LANL General

Los Alamos
NATIONAL LABORATORY
EST. 1943
ory/University of California
Environmental Stewardship (ENV)
Groundwater Protection Program (ENV-GPP)
PO Box 1663, MS M992
Los Alamos, New Mexico 87545
(505) 665-4681/Fax: (505) 667-9553

National Nuclear Security Administration
Los Alamos Site Operations, MS A316
Environmental Restoration Program
Los Alamos, New Mexico 87544
(505) 667-7203/FAX (505) 665-4504

Date: January 27, 2005
Refer To: ENV-GPP: 05-0003

Mr. James P. Bearzi
Chief, Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6303

RECEIVED
JAN 2005
NMED Hazardous Waste Bureau

RE: REQUEST FOR WELL WATER LEVEL DATA
LOS ALAMOS NATIONAL LABORATORY
EPA ID: NM0890010515

Dear Mr. Bearzi:

Attached to this letter, please find the water-level measurements, as requested in your letter of December 27, 2004.

Additional clarification was needed to prepare this response; therefore the New Mexico Environment Department (NMED) Hazardous Waste Bureau (HWB) staff was contacted to discuss the specific items requested in your letter. Our discussion clarified that in addition to the data requested, this response will include data from characterization alluvial wells drilled before 1997. Furthermore, it was clarified that this response will include a current potentiometric surface map and a second map depicting average water level decline rates for the regional aquifer at the Los Alamos National Laboratory (The Laboratory).

Your letter references a Laboratory report and a map contained in that report. Please note that this report was not a regulatory submittal to NMED, was developed to serve as a reference for many customers, particularly water supply managers, and did not contain a potentiometric surface map. However, follow-up discussion clarified HWB's request, and we believe this response satisfies your request in a straightforward and comprehensive manner.

Please contact Charles Nylander at (505) 665-4681, or Mat Johansen at (505) 665-5046 with any questions or concerns.

Sincerely,

Charles Nylander
Program Manager
Groundwater Protection Program

Sincerely,

Mat Johansen
Groundwater Program Manager

13893

CY/MJ/bms

Enclosures: a/s

CY:
J. Young, NMED HWB
S. Yanicak, NMED DOE OB, MS J993
L. King, EPA 6PD-N
J. Ordaz, DOE LASO, MS A316
D. Gregory, DOE LASO, MS A316
K. Hargis, LANL ENV-DO, MS J591
D. McInroy, LANL ENV-R, MS M992
ENV-ECR File, MS M992
RPF (Er2005-0047), MS M707
GPP-File, MS M992

Los Alamos
NATIONAL LABORATORY
Est. 1943
The World's Greatest Science Protecting America
Los Alamos National Laboratory/University of California
Risk Reduction and Environmental Stewardship -
Remediation Services (RRES-RS)
Environmental Characterization and Remediation (ECR), MS M992
Los Alamos, New Mexico 87545
(505) 667-0808/FAX (505) 665-4747

From: Armand Groffman Date: 08/05/05

Phone: 667-2682 Fax Number: 665-4747

To: Laurie Travizo FAX Number: 827-1545
Phone Number: Organization: NMED HWB

To: FAX Number:
Phone Number: Organization:

To: FAX Number:
Phone Number: Organization:

Number of Pages (excluding cover): 2

Comments:
Cover letter for Groundwater incl measurements.

Hard copy to follow

UNCLASSIFIED

Los Alamos
NATIONAL LABORATORY
EST. 1943 ory/University of California
Environmental Stewardship (ENV)
Groundwater Protection Program (ENV-GPP)
PO Box 1663, MS M992
Los Alamos, New Mexico 87545
(505) 665-4681/Fax: (505) 667-9553

National Nuclear Security Administration
Los Alamos Site Operations, MS A316
Environmental Restoration Program
Los Alamos, New Mexico 87544
(505) 667-7203/FAX (505) 665-4504

Date: January 27, 2005
Refer To: ENV-GPP: 05-0003

Mr. James P. Bearzi
Chief, Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6303

RECEIVED
JAN 2005
NMED Hazardous Waste Bureau

RE: REQUEST FOR WELL WATER-LEVEL DATA
LOS ALAMOS NATIONAL LABORATORY
EPA ID: NM0890010515

Dear Mr. Bearzi:

Attached to this letter, please find the water-level measurements, as requested in your letter of December 27, 2004.

Additional clarification was needed to prepare this response; therefore the New Mexico Environment Department (NMED) Hazardous Waste Bureau (HWB) staff was contacted to discuss the specific items requested in your letter. Our discussion clarified that in addition to the data requested, this response will include data from characterization alluvial wells drilled before 1997. Furthermore, it was clarified that this response will include a current potentiometric surface map and a second map depicting average water level decline rates for the regional aquifer at the Los Alamos National Laboratory (The Laboratory).

Your letter references a Laboratory report and a map contained in that report. Please note that this report was not a regulatory submittal to NMED, was developed to serve as a reference for many customers, particularly water supply managers, and did not contain a potentiometric surface map. However, follow-up discussion clarified HWB's request, and we believe this response satisfies your request in a straightforward and comprehensive manner.

Please contact Charles Nylander at (505) 665-4681, or Mat Johansen at (505) 665-5046 with any questions or concerns.

Sincerely,

Charles Nylander
Program Manager
Groundwater Protection Program

Sincerely,

Mat Johansen
Groundwater Program Manager

CY/MJ/hms

Enclosures: a/s

CY:
J. Young, NMED HWB
S. Yanicak, NMED DOE OB, MS J993
L. King, EPA 6PD-N
J. Ordaz, DOE LASO, MS A316
D. Gregory, DOE LASO, MS A316
K. Hargis, LANL ENV-DO, MS J591
D. McInroy, LANL ENV-R, MS M992
ENV-ECR File, MS M992
RPF (Er2005-0047), MS M707
GPP-File, MS M992

Los Alamos National Laboratory
Environmental Stewardship Division
Technical Services

Groundwater Level Data Submittal to NMED
January 2005

LA-UR-05-0457

This groundwater level data submittal is provided by Los Alamos National Laboratory (LANL) to the New Mexico Environment Department (NMED) pursuant to the letter request from James P. Bearzi, Chief, Hazardous Waste Bureau, dated December 27, 2004, RE: Request for Well Water Level Data, Los Alamos National Laboratory, EPA ID: NM0890010515.

1.0 Summary of Groundwater Level Data Submittal

LANL is transmitting to NMED all water level measurements from all alluvial, intermediate, and regional aquifer wells installed since 1997. The data includes data from more then 24 regional aquifer wells installed since 1997. The data are presented in separate tables for each individual well in Microsoft Excel spreadsheet format.

Information included with the data submittal includes the following:

- X,Y,Z-coordinates, Well ID, Canyon (geographic location)
- Head elevation, X,Y,Z coordinates and survey method
- Date well was drilled and construction completion
- Depth of well, screened intervals, elevation, screen length, and filter pack
- Date of measurements and water level measurements
- Relative quality of water level data and rationale
- Percent error in water level measurements
- Brief description of how water levels were measured (tape or transducers)
- Calibration dates of transducers
- Datum used and consistency between monitoring events
- Summaries of water level measuring activities completed,
- Summaries of all data collected,
- Copies of field notes,
- Cross-referenced table comparing proposed with actual water level measurement activities outlined in previously submitted work plans or field implementation plans
- Rationale as to why LANL did not use more recent water level data for the report, i.e., (Manual and Transducer Data from Test Wells at Los Alamos National Laboratory, 1992-1993; [La-14132]).
- Potentiometric surface water level map with metadata describing input into the map.

Note: groundwater level data provided in this data submittal to NMED have not been reviewed for accuracy and therefore are preliminary in nature. Some groundwater level data have been given preliminary review for quality assurance purposes, but final quality review of the data in this submittal has not been performed.

2.0 Groundwater Level Data for Regional Aquifer Wells Installed Since 1997

Table 2.1 lists the regional aquifer groundwater monitoring wells installed at LANL since 1997, and includes the well name, total depth, completed depth, surveyed location coordinates, completion type information, date of completion, and the general location of the wells. Table 2.1 is also included in a spreadsheet titled "Regional & Intermediate Well Information.xls" on the accompanying data CD.

Table 2.2 lists the well construction information for the regional aquifer wells installed since 1997, and includes information for the depth to the top and bottom of screens, annulus material, perforation size, and sump length.

Table 2.1. General Information and Location Data for Regional Aquifer Wells Installed Since 1997 at LANL.

Well Name	General Location	Date Completed	Total Depth (Ft)	Depth Completed (Ft)	Completion	East (ft)	North (ft)	Elev (ft)	Well Comment	Coord Source	Coord Confidence	Coord Comment
CDV-R-15-3	TA-15	9/24/2000	1722	1675	Regional	1623221	1762349.2	7258.9	Regional Aquifer	Kopp et al. 2002	Good	Brass monument
CDV-R-37-2	Water Canyon	8/1/2003	1664	1587.3	Regional	1619219	1759327.3	7330.6	Regional Aquifer	Kopp et al. 2003	Good	Brass monument
R-1	Mortandad Canyon	3/12/2004	1165	1080.1	Regional	1632355.1	1769598.8	6881.3	Regional Aquifer	WCR 4/19/04	Good	Casing xy, brass cap z
R-12	Lower Sandia Canyon	6/8/1998	847	847	Regional	1647429.3	1767908.9	6499.6	Regional Aquifer	Broxton et al. 2001	Good	Casing xy, brass cap z
R-13	Mortandad Canyon	10/30/2001	1133	1029	Regional	1640988.36	1766988.39	6673.1	Regional Aquifer	LANL 2003, LA-UR-03-1373	Good	Casing xy, brass cap z
R-14	Mortandad Canyon	12/19/2002	1330	1293	Regional	1629855.01	1768953.12	7062.1	Regional Aquifer	LANL 2003, LA-UR-03-1664	Good	Brass monument
R-15	Lower Mortandad Can	9/21/1999	1107	1030	Regional	1635308.6	1768272.5	6820.0	Regional Aquifer	Longmire et al. 2001	Good	Brass monument
R-16	Cañada del Buey	12/19/2002	1287		Regional	1659283.61	1756710.97	6256.9	Regional Aquifer	LANL 2003, LA-UR-1841	Good	Brass monument
R-19	Mesita del Potrillo	9/19/2000	1903	1877	Regional	1629918.4	1760252.1	7066.3	Regional Aquifer	Broxton et al. 2001	Good	Brass monument
R-2	Pueblo Canyon	10/28/2003	944	943.3	Regional	1631495	1777585	6690.0	Regional Aquifer	WQDB 11/11/04	Unknown	No survey data in WCR
R-20	Pajarito Canyon	12/19/2002	1365	1336	Regional	1637835.4	1759694.51	6694.4	Regional Aquifer	LANL 2003, LA-UR-03-1839	Good	Brass monument
R-21	Cañada del Buey	11/26/2002	995	941.4	Regional	1641284.17	1759143.05	6656.2	Regional Aquifer	Kleinfelder Figure 1	Good	Brass Monument
R-22	TA-54	12/10/2000	1489	1473	Regional	1645324.4	1757111.1	6650.5	Regional Aquifer	Ball et al. 2002 LA-13893-MS	Good	Brass Monument
R-23	Pajarito Canyon	12/19/2002	935	886.3	Regional	1647913.6	1755165.37	6527.8	Regional Aquifer	LANL 2003, LA-UR-03-2059	Good	Brass Monument
R-25	TA-16	9/28/2000	1942	1934	Regional	1615177.17	1764063	7516.1	Regional Aquifer	Broxton et al. 2002	Good	Casing xy, brass cap z
R-26	TA-16 West	1/1/2004			Regional	1610269.2	1764721.4	7641.6	Regional Aquifer	WQDB Summary Data	Good	Check WCR
R-28	Mortandad Canyon	3/8/2004	1005	980.3	Regional	1638989.9	1768356.8	6728.5	Regional Aquifer	Kleinfelder 2004 WCR	Good	Casing xy, brass cap z
R-31	North Fork Ancho Can	12/1/2000	1103	1078	Regional	1637353.8	1745648.4	6362.5	Regional Aquifer	Vaniman et al. 2002	Good	Brass Monument
R-32	Pajarito Canyon	11/17/2002	1008	1002	Regional	1640797.67	1757730.25	6637.6	Regional Aquifer	LANL 2003, LA-UR-03-3984	Good	Brass Monument
R-34	Cedro Canyon	9/10/2004	1065	920.7	Regional	1643597.44	1764027.86	6630.0	Regional Aquifer	Kleinfelder 2004 WCR	Good	Casing xy, brass cap z
R-4	Pueblo Canyon	1/6/2004	843	840	Regional	1639290	1776528	6577.5	Regional Aquifer	Kleinfelder 2004 WCR	Good	Casing xy, brass cap z
R-5	Pueblo Canyon	6/19/2001	902	864	Regional	1646707	1773063	6472.6	Regional Aquifer	LANL 2003, LA-UR-03-1600	Good	Brass Monument
R-6	DP Mesa	1/1/2005	1303		Regional	1614661	1775188	7350.0	Regional Aquifer	WQDB 11/11/04	Unknown	
R-7	Los Alamos Canyon	2/26/2001	1097	977	Regional	1631673	1773650	6779.2	Regional Aquifer	Stone et al. 2002	Good	Casing xy, brass cap z
R-8A	Los Alamos Canyon	4/22/2002	880	850	Regional	1641139.01	1772554.62	6544.7	Regional Aquifer	LANL 2003, WCR	Good	Brass Monument
R-9	Los Alamos Canyon	10/18/1999	771	758	Regional	1648241.4	1770843.9	6382.8	Regional Aquifer	Broxton et al. 2001	Good	Casing xy, brass cap z

Table 2.2. Well Completion information for Regional Aquifer Wells

Hole ID	Zone	Top of Screen (ft)	Bottom of Screen (ft)	Perf Size (in)	Annulus Pack	Sump Length (ft)	Screen Source	Screen Comment
CDV-R-15-3	1	617.7	624.5	0.01	20-40 silica sand	30.1	WCR	4.5 in. ID
CDV-R-15-3	2	800.8	807.8	0.01	20-40 silica sand	30.1	WCR	4.5 in. ID
CDV-R-15-3	3	964.8	980.9	0.01	20-40 silica sand	30.1	WCR	4.5 in. ID, bentonite lower screen
CDV-R-15-3	4	1235.1	1278.9	0.01	8-12 silica sand	30.1	WCR	4.5 in. ID
CDV-R-15-3	5	1348.4	1355.3	0.01	6-9 silica sand	30.1	WCR	4.5 in. ID, bentonite lower screen
CDV-R-15-3	6	1637.9	1644.8	0.01	8-12 silica sand	30.1	WCR	4.5 in. ID
CDV-R-37-2	1	914.4	939.5	0.01	20-40 silica sand	31.3	WCR	4.5 in. ID
CDV-R-37-2	2	1188.7	1213.8	0.01	20-40 silica sand	31.3	WCR	4.5 in. ID
CDV-R-37-2	3	1353.7	1377.1	0.01	8-12 silica sand	31.3	WCR	4.5 in. ID
CDV-R-37-2	4	1549.3	1556	0.01	8-12 silica sand	31.3	WCR	4.5 in. ID
R-1		1031.1	1057.4	0.02	10-20 silica sand	22.6	WCR 2004	
R-11		856.3	878.5	0.02	10-20 silica sand	23	Kleinfelder 2004 WCR	4.46 ID
R-12	0	800	820	0.01	30-70 Grade Sand	10.5	LANL 1998, 59665	Temporary Completion
R-12	1	459	467.5	0.01	20-40 silica sand	30	WCR	4.5 in. ID
R-12	2	504.5	508	0.01	30-70 silica sand	30	WCR	4.5 in. ID
R-12	3	801	839	0.01	20-40 silica sand	30	WCR	4.5 in. ID
R-13	1	958.3	1018.7	0.01	20-40 silica sand	10.7	WCR	4.5 in. ID
R-14	1	1200.6	1233.2	0.01	20-40 silica sand	22.5	WCR	4.5 in. ID
R-14	2	1286.5	1293.1	0.01	20-40 silica sand	22.5	WCR	4.5 in. ID
R-15		958.6	1020.3	0.01	20-40 silica sand	10.3	WCR	5.0 in. ID
R-16	1	641	648.6	0.01	20-40 silica sand	32.1	WCR	4.5 in. ID, behind casing, non functional
R-16	2	863.4	870.9	0.01	20-40 silica sand	32.1	WCR	4.5 in. ID
R-16	3	1014.8	1022.4	0.01	20-40 silica sand	32.1	WCR	4.5 in. ID
R-19	1	827.2	843.6	0.01	6-9 sand	37.9	WCR	4.5 in. ID
R-19	2	893.3	909.6	0.01	6-9 sand	37.9	WCR	4.5 in. ID
R-19	3	1171.4	1215.4	0.01	6-12 sand	37.9	WCR	4.5 in. ID
R-19	4	1410.2	1417.4	0.01	6-12 sand	37.9	WCR	4.5 in. ID
R-19	5	1582.6	1589.8	0.01	6-9 sand	37.9	WCR	4.5 in. ID
R-19	6	1726.8	1733.9	0.01	6-9 sand	37.9	WCR	4.5 in. ID
R-19	7	1832.4	1839.5	0.01	20-40 silica sand	37.9	WCR	4.5 in. ID
R-2		906.4	929.6	0.02	10-20 silica sand	13.7	Kleinfelder 2004 WCR	4.46 in. ID
R-20	1	904.6	912.2	0.01	20-40 silica sand	16.8	WCR	4.5 in. ID
R-20	2	1147.1	1154.7	0.01	20-40 silica sand	16.8	WCR	4.5 in. ID
R-20	3	1328.8	1336.5	0.01	20-40 silica sand	16.8	WCR	4.5 in. ID
R-21	1	888.8	906.8	0.02	10-20 silica sand	34.6	WCR	6.0 in. ID
R-22	1	872.3	914.2	0.01	6-9 sand	36.7	WCR	4.5 in. ID
R-22	2	947	988.9	0.01	20-40 silica sand	36.7	WCR	4.5 in. ID
R-22	3	1272.2	1278.9	0.01	6-9 sand, Fm sand	36.7	WCR	4.5 in. ID
R-22	4	1378.2	1384.9	0.01	8-12 sand	36.7	WCR	4.5 in. ID
R-22	5	1447.3	1452.3	0.01	20-40 silica sand	36.7	WCR	4.5 in. ID
R-23	1	816	873.2	0.01	20-40 silica sand	13.1	WCR	4.5 in. ID
R-25	1	737.6	758.4	0.01	20-40 silica sand	30	WCR	5.17 in. ID
R-25	2	882.6	893.4	0.01	20-40 silica sand	30	WCR	5.17 in. ID
R-25	3	1054.6	1064.6	0.01	20-40 silica sand	30	WCR	5.17 in. ID, damaged/cement
R-25	4	1184.6	1194.6	0.01	20-40 silica sand	30	WCR	5.17 in. ID
R-25	5	1294.7	1304.7	0.01	20-40 silica sand	30	WCR	5.17 in. ID
R-25	6	1404.7	1414.7	0.01	20-40 silica sand	30	WCR	5.17 in. ID
R-25	7	1604.7	1614.7	0.01	20-40 silica sand	30	WCR	5.17 in. ID
R-25	8	1794.7	1804.7	0.01	20-40 silica sand	30	WCR	5.17 in. ID
R-25	91	1894.7	1904.7	0.01	20-40 silica sand	30	WCR	5.17 in. ID, screen parted
R-25	92	1871.5	1875		20-40 silica sand	30	WCR	Replacement under packer
R-26	1	651.8	669.9	0.01	10-20 silica sand	34	Kleinfelder Figure 1	5.0 in. ID
R-26	2	1421.8	1445	0.02	10-20 silica sand	34	Kleinfelder Figure 1	4.5 in. ID
R-28		934.3	958.1	0.02	10-20 silica sand	22.2	WCR 2004	4.5 in. ID
R-31	1	439.1	454.4	0.01	30-70 silica sand	60.6	WCR	4.5 in. ID
R-31	2	515	545.7	0.01	20-70 silica sand	60.6	WCR	4.5 in. ID
R-31	3	666.3	676.3	0.01	20-70 silica sand	60.6	WCR	4.5 in. ID
R-31	4	826.6	836.6	0.01	6-9 sand and slough	60.6	WCR	4.5 in. ID
R-31	5	1007.1	1017.1	0.01	6-9 sand and slough	60.6	WCR	4.5 in. ID
R-32	1	867.5	875.2	0.01	20-40 silica sand	21.4	WCR	4.5 in. ID
R-32	2	931.8	934.9	0.01	20-40 silica sand	21.4	WCR	4.5 in. ID
R-32	3	972.9	980.6	0.01	20-40 silica sand	21.4	WCR	4.5 in. ID
R-34		883.7	906.6	0.02	08-20 silica sand	14.1	Kleinfelder 2004 WCR	4.5 in. ID
R-4		792.9	816	0.02	10-20 silica sand	24	Kleinfelder 2004 WCR	4.5 in. ID
R-5	1	326.4	331.5	0.01	10-40 silica sand	20.3	WCR	4.5 in. ID
R-5	2	372.8	388.8	0.01	slough	20.3	WCR	4.5 in. ID
R-5	3	676.9	720.3	0.01	20-40 silica sand	20.3	WCR	4.5 in. ID
R-5	4	858.7	863.7	0.01	20-40 silica sand	20.3	WCR	4.5 in. ID
R-7	1	363.2	379.2	0.01	20-40 silica sand	39.6	WCR	4.5 in. ID
R-7	2	730.4	746.4	0.01	20-40 silica sand	39.6	WCR	4.5 in. ID
R-7	3	895.5	937.4	0.01	20-40 silica sand	39.6	WCR	4.5 in. ID
R-8a	1	705.3	755.7	0.01	slough, 20-40 sand	22	WCR	4.5 in. ID
R-8a	2	821.3	828	0.01	20-40 silica sand	22	WCR	4.5 in. ID
R-9	1	683	748.5	0.01	20-40 silica sand	9.5	WCR	4.5 in. ID

The groundwater level data for the regional aquifer are from regional aquifer characterization wells (R-wells) that have been equipped with the Westbay® multiple port (MP) monitoring system, as well as from single completion monitoring wells at LANL. Transducers that measure piezometric pressures typically have a measurement precision of ±0.1% of the full-scale measurement capability. Thus, a typical measurement error for a 100 psi transducer is 0.23 ft, and for a 1000 psi transducer is 2.31 ft.

Groundwater level data for the regional aquifer at LANL are currently being reviewed and validated according to procedure ENV-WQH-SOP-062, *Groundwater Level Data Processing, Review, and Validation*. After groundwater level data are reviewed and validated, the data are being compiled into a database. Construction and population of the database with water level data is currently ongoing; these data will be available at wqdbworld.lanl.gov. Table 2.3 lists the data fields currently being populated in the database and which are included in the in the accompanying groundwater level data spreadsheets; this table also provides the metadata explanation for data fields included in the spreadsheets.

Table 2.3. Regional Aquifer Groundwater Level Data Fields and Metadata.

Database Field	Metadata
Well Name	The common name of the well.
Date Time	Date and time of the water level measurement. Typically exact for transducer (XD) measurements. If time of a measurement was not documented or is not known for manual water level measurements (MM), the time was posted as 12:00 noon to prevent the software from defaulting to midnight.
Pressure (psia)	Raw data pressure measurement in pounds per square inch absolute (psia). Documented for absolute pressure measurements in Westbay® wells and for other absolute-measuring transducers. Not documented for compensated transducer measurements. The absolute pressure must be corrected for the atmospheric pressure present at the surface of the zone of saturation. Pressure data from single completion wells using compensated transducers have null values.
Temperature (C)	Temperature measured by the transducer in degrees Celsius.
Atmospheric (psia)	The atmospheric pressure in psia that was used to correct the absolute water pressure measurement for calculating the water level. This value represents the calculated or measured atmospheric pressure that is present at the surface of the zone of saturation, not necessarily the atmospheric pressure that was measured at the ground surface of the well. Groundwater level data from compensated transducers (usually used in single completion wells) have null values.
Piezometric WL (ft)	The calculated piezometric water level in ft above mean seal level for transducer data or the manually measured water level in ft above mean sea level. For Westbay® data, the piezometric water level is calculated using the WinGT software from Westbay®. For compensated transducers, the piezometric water level is calculated by software provided by the transducer manufacturer.
Probe No.	The logical number of the transducer probe used in Westbay® MP completion wells. Usually probe 1 is installed in monitoring port 1A, probe 2 in MP2A, etc, but typically different for each Westbay® well installation. The traveler probe used for groundwater sampling, well installation pressure measurements, and Westbay® installation trouble-shooting has arbitrarily been assigned probe #10 for each Westbay® well. Thus, all groundwater sampling water level data from Westbay® wells can be obtained by filtering the database for probe #10 (see groundwater sampling note below). Groundwater level data from single completion wells have null values.

Database Field	Metadata
Probe Status	The reported status of the Westbay® probe at the time of data collection. "Shoe out" data indicate that the probe was attached to the port and measuring formation pressure outside (Po) the Westbay® casing. "Arm out" data indicate the probe was landed at a port and measuring pressure inside (Pi) the Westbay® casing. "Arm in" data indicate that the probe was not landed at a port and the pressure is Pi at an unknown location within the Westbay® casing. Groundwater level data from single completion wells have null values.
Probe Description	The description of the probe in a given well. "Traveller" refers to a probe that is capable of moving to any port within the Westbay® casing to obtain a pressure measurement. Other probe descriptions typically refer to the port name where a dedicated transducer has been installed as part of a string of transducers. Traveller probes typically have a high pressure rating to operate all possible pressure conditions in a well, and therefore may obtain less precise pressure measurements than probes dedicated to a specific measurement port, and which typically have lower pressure ratings and obtain more precise measurements. The type of transducer used for the pressure measurement is considered in assigning the data quality code. Groundwater level data from single completion wells indicate the manufacturer of the transducer or may have null values if the manufacturer is not known.
SN Transducer	The serial number of the pressure transducer used for the measurement. Null if the serial number is not known.
Port No.	The port number assigned to a monitoring port within the Westbay® WinGT software. By convention necessitated by the software, port #1 is typically assigned to MP1A, port #11 is typically assigned to MP1B, and port #21 is typically assigned to MP1C, etc. Similarly, port #2 is typically assigned to MP2A, #12 is assigned to MP2B, #22 is assigned MP2C, etc. Due to variations in Westbay® installations, the convention may vary slightly from well to well. Groundwater level data from single completion wells have null values.
Port Description	The name of the port assigned during construction as described in the Westbay® completion report for each well; e.g. MP1A, MP5B, MP9, etc. Groundwater level data from single completion wells have null values.
Port Depth (ft)	The depth of the Westbay® port from ground surface in ft. Port depth data are from the Westbay® completion reports for each well. Groundwater level data from single completion wells have null values.
WL Method Code	The method used to obtain the water level measurement shown in the Piezometric WL field for a record. This field is further described in the Water Level table in the WQDB. MM = Manual Measurement data obtained from field notes and/or the Groundwater level Measurement Form from ENV-WQH-SOP 045; XD = water level data obtained from pressure transducer measurement. Null values indicate transducer data (XD).

Database Field	Metadata
WL Type Code	The type of data provided in the Piezometric WL field. DR = Raw data from manual measurement or pressure transducer. Null values indicate raw data. DV = Daily value selected from transducer data where raw data may not be available; MD = Mean daily value from transducer data, usually a mean of several measurements obtained during groundwater sampling of Westbay® wells, see note below. DI = Transducer data were interpolated from apparently drifting transducer measurements using manual water level measurements obtained before and after the transducer data.
Comments	Comments about the pressure measurement.
Data Qual Code	The data quality code assigned by the data steward during data validation according to ENV-WQH-SOP-062. The data quality codes are listed in the table titled "Data Qual Codes" (see Table below). Null values or a value of "V" indicate data that have been determined to be valid by the validation procedure.
Valid Reason Code	The validation reason code assigned by the data steward during data validation according to ENV-WQH-SOP-062. The validation reason codes are listed in the table titled "Data Validation Reason Codes" (see Table below). These codes refer to the reason why data have been determined to be invalid. Data determined to be valid typically have null values.

Note on pressure data obtained from groundwater sampling of Westbay® completed wells. During groundwater sampling of Westbay® wells, multiple runs are made into the well to collect the appropriate volume of water from each zone/port. The maximum volume of water that can currently be collected from an individual run into the well is about 4 L. Therefore it is common for samplers to make 4 to 10 runs into the well to collect adequate sample volume from an individual port/zone.

To insure and document that the sampling probe connects properly to the port, the inside pressure (Pi) and outside pressure (Po) data are recorded for each port on the "Groundwater sampling Field Data Sheet" every run into the well. The Po data represent formation water level data and pressures typically vary slightly from run to run, partly because the traveler probe used for sampling has a high pressure rating to accommodate all possible pressures in a well. The higher pressure rating of the probe may introduce some additional error in the pressure measurements.

In order to calculate the water level from the groundwater sampling pressure data, a representative Po pressure value was selected for each day that a port was sampled. The single (usually mean) daily pressure value was determined from field data sheets and was used to eliminate needless noise in the pressure and resulting water level data and to simplify data entry requirements. The representative Po pressure data were entered into the Westbay® WinGT software for calculation of the water level and for storage and archiving of the pressure data. If a significant trend was noted in the Po pressure data on a particular day, such as a significant lowering of Po pressures during groundwater sampling, then the individual sampling-run pressure data were entered into the WinGT software and notes were entered in the comment field to indicate unusual pressure occurrences. Anomalously high or low Po pressure data that were not repeated in subsequent runs were eliminated; typically only one representative Po pressure value (usually a mean value) was used to represent the Po pressure and to calculate water level for a particular day. If sampling occurred at a port on multiple days, a representative Po pressure value was used for each day of sampling. Thus the groundwater sampling water level data typically have only one Po value and water level for a given day.

Because the time of the sampling run is not recorded on the field data sheet, groundwater sampling water level data were usually assigned a time of 12:00 noon unless additional information about the time of the sampling event was available.

Table 2.4 lists the data fields in the GLD table titled "Data Qual Codes" and provides the metadata explanation for each field.

Table 2.4. Data Quality Codes used in the Groundwater Level Database

Data Quality Code	Data Quality Description	Comment
I	Data Invalid	The data have been determined to be invalid by the data review and validation procedure ENV-WQH-SOP-062.
IQ	Data Invalid with some Validity Question	The data have been determined to be invalid by the data review and validation procedure ENV-WQH-SOP-062, but questions about the data exist that might be clarified by additional review of the data after collection of additional data or further understanding of the well or equipment conditions that created the data.
V	Data Valid	The data have been determined to be valid through the data review and validation procedure ENV-WQH-SOP-062. Null entry implies data valid.
VQ	Data Considered Valid but with some Validity Question	The data have been determined to be valid through the data review and validation procedure ENV-WQH-SOP-062. However, due to some irregularity in the measurement or collection of the data, some question may exist about the data that may be answered after further data collection and review of the questionable data.
VR	Data considered valid but with reduced measurement accuracy	The accuracy of measurement was less than optimal, due to the equipment used or due to the records available for review. In Westbay® wells, traveler measurements using a high pressure-rated transducer are less accurate than lower-rated transducers; thus these traveler measurements are typically assigned this quality code. Manual measurements that do not contain adequate information according to ENV-WQH-SOP-045 may be assigned this quality code.

Table 2.5 lists the data fields in the GLD table titled "Data Validation Reason Codes;" and provides the metadata explanation for each field.

Table 2.5. Data Validation Reason Codes used in the Groundwater Level Database

Data Validation Reason Code	Data Validation Reason Description	Comment
D	Port/Zone is dry, pressure data not valid	
DN	Port/Zone is nearly dry, within 0.5 ft of port	Pressure data may not represent water level data
E	Equipment malfunction	
M	Motor Arm/Shoe report inconsistent	Westbay® transducer data that are not consistent with the reported placement of arm or shoe, indicates a limited equipment failure but data may be determined to be valid
MA	Measurement tool accuracy not optimal	Accuracy of measurement not as good as may be possible. For manual measurements, adequate information may not be available to determine the accuracy of the measurement. For transducer measurements, a high pressure-rated transducer may have been used for the measurement that results in additional measurement inaccuracy.
NC	Data do not conform with other data for this zone	For various or unknown reasons, the water level data do not conform to known water level conditions for the well or port.
Pi	Pressure data is Pi not Po	For Westbay® wells, transducer probes do not always connect appropriately to the measurement port, resulting in inside pressure (Pi) measurements that may be reported as outside pressure (Po) measurements, resulting in invalid data.
RL	Reference Level at XD installation not documented	For single completion wells, the reference water level at transducer installation was not available (manual measurement not obtained), but the last water level from the recent preceding transducer data was used as the reference water level. Indicates possible reduced measurement accuracy.
RW	Transducer was removed from the well	Pressure data recorded by transducer but not valid water level data because the transducer was above the water level in the well or was removed from the well completely.
WC	Well construction makes pressure data questionable	Well construction may not provide reliable pressure measurements in wells that do not have sand filter packs adjacent to the screen. Indicated for wells or ports in wells where completion information or resulting pressure data suggests potentially muted pressure responses or responses that do not correspond to known water level conditions.
WS	Water level measured in sump	The measured water level is below the screen interval and within the sump; data are not indicative of formation water level.

Table 2.6 summarizes the period of record groundwater level data for regional aquifer characterization wells.

Table 2.6. Summary of Period of Record Groundwater Level Data for Regional Aquifer Characterization Wells.

Following sections include additional port and construction information for multiple completion regional aquifer wells installed at LANL since 1997 and time series graphs of valid water level data for each well.

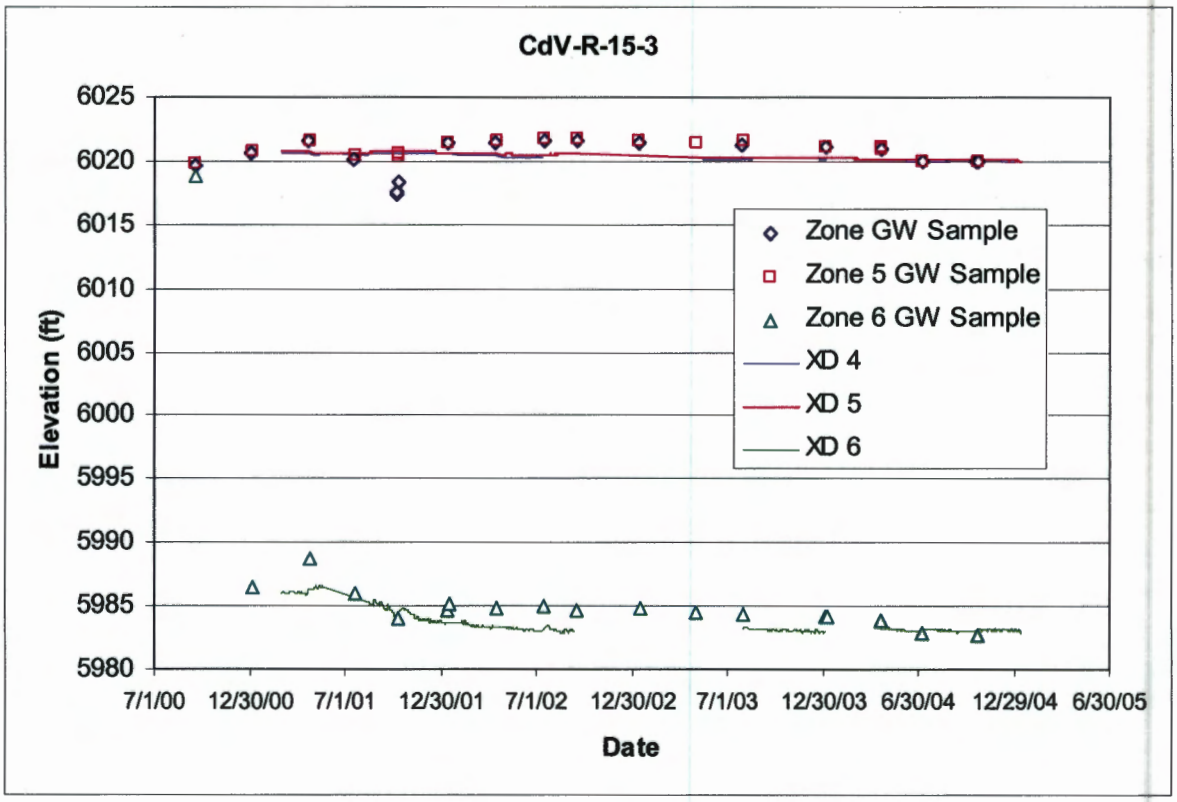
Note: GW = data obtained during groundwater sampling events; XD = measurements from installed transducers; MP = measurement port.

CDV-R-15-3

Groundwater level data for well CDV-R-15-3 are located in a spreadsheet titled "CDV-R-15-3 GW Level data."

Measurement and Sampling Ports in CDV-R-15-3											
Zone	Screen Top Depth (ft)	Screen Bottom Depth (ft)	Screen Top Elev (ft)	Screen Bottom Elev (ft)	Screen Length (ft)	Port	Port Depth (ft)	Port Elevation (ft)	Distance from Bottom of Screen (ft)	Sump Volume (L)	Comment
1	617.7	624.5	6641.2	6634.4	6.8	**MP1A**	624.3	6634.6	0.2		Within Screen
						PP1	629.7	6629.2	-5.2	13.1	Below Screen
						MP1B	635.3	6623.6	-10.8	27.2	Below Screen
2	800.8	807.8	6458.1	6451.1	7.0	MP2A	807.3	6451.6	0.5		Within Screen, not instrumented w/ XD
						PP2	812.6	6446.3	-4.8	12.1	Below Screen
						MP2B	818.3	6440.6	-10.5	26.5	Below Screen
3	964.8	980.9	6294.1	6278.0	16.1	MP3A	969.0	6289.9	11.9		Within Screen
						MP3B	979.3	6279.6	1.6		Within Screen
						PP3	984.7	6274.2	-3.8	9.6	Below Screen
						MP3C	990.3	6268.6	-9.4	23.7	Below Screen
4	1235.1	1278.9	6023.8	5980.0	43.8	**MP4A**	1254.4	6004.5	24.5		Within Screen, Regional Aquifer
						PP4A	1259.6	5999.3	19.3		Within Screen
						MP4B	1275.1	5983.8	3.8		Within Screen
						PP4B	1280.5	5978.4	-1.6	4.0	Below Screen
						MP4C	1286.1	5972.8	-7.2	18.1	Below Screen
5	1348.4	1355.3	5910.5	5903.6	6.9	**MP5A**	1350.1	5908.8	5.2		Within Screen
						PP5	1355.4	5903.5	-0.1	0.3	Below Screen
						MP5B	1361.1	5897.8	-5.8	14.6	Below Screen
6	1637.9	1644.8	5621.0	5614.1	6.9	**MP6A**	1640.1	5618.8	4.7		Within Screen
						PP6	1645.5	5613.4	-0.7	1.8	Below Screen
						MP6B	1651.1	5607.8	-6.3	15.9	Below Screen

Note: CDV-R-15-3 Brass Cap Ground Elevation: 7258.9 ft; all depths are from this elevation;
MP = Monitor Port; PP = Pump Port; Monitor Ports shown in bold are instrumented ports

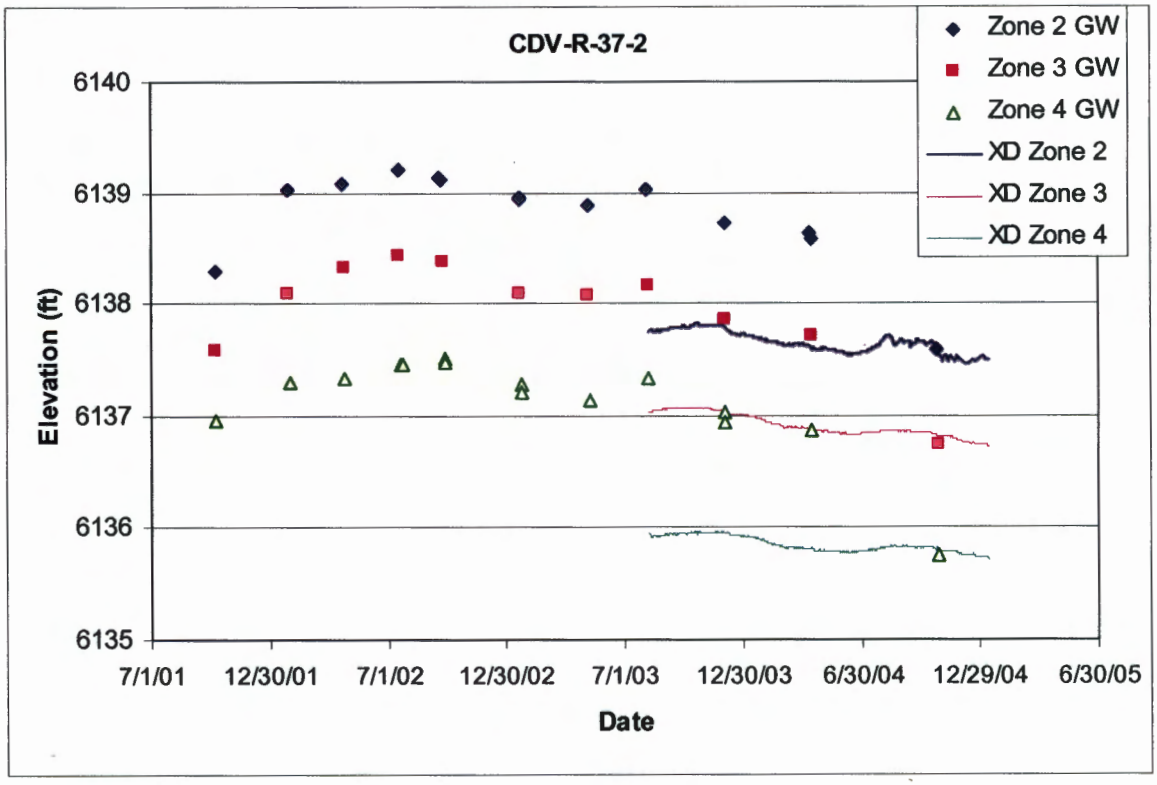


2.1 CDV-R-37-2

Groundwater level data for well CDV-R-37-2 are located in a spreadsheet titled "CDV-R-15-3 GW Level data."

Measurement and Sampling Ports in CDV-R-37-2											
Zone	Screen Top Depth (ft)	Screen Bottom Depth (ft)	Screen Top Elev (ft)	Screen Bottom Elev (ft)	Screen Length (ft)	Port	Port Depth (ft)	Port Elevation (ft)	Distance from Bottom of Screen (ft)	Sump Volume (L)	Comment
1	914.4	939.5	6416.2	6391.1	25.1	**MP1A**	934.9	6395.7	4.6		Within Screen, Intermediate
						PP1	940.2	6390.4	-0.7	1.5	Below Screen
						MP1B	945.9	6384.7	-6.4	13.8	Below Screen
2	1188.7	1213.8	6141.9	6116.8	25.1	**MP2A**	1200.3	6130.3	13.5		Within Screen, Regional Aquifer
						PP2	1205.7	6124.9	8.1		Within Screen
						MP2B	1216.2	6114.4	-2.4	5.2	Below Screen
3	1353.7	1377.1	5976.9	5953.5	23.4	**MP3A**	1359.3	5971.3	17.8		Within Screen
						PP3	1365.0	5965.6	12.1		Within Screen
						MP3B	1375.2	5955.4	1.9		Within Screen
4	1549.3	1556.0	5781.3	5774.6	6.7	**MP4A**	1550.6	5780.0	5.4		Within Screen
						PP4	1556.0	5774.6	0		Base of Screen
						MP4B	1561.6	5769.0	-5.6	12.1	Below Screen

Note: CDV-R-37-2 Brass Cap Ground Elevation: 7330.6 ft; all depths are from this elevation;
MP = Monitor Port; PP = Pump Port; Monitor Ports shown in bold are instrumented ports

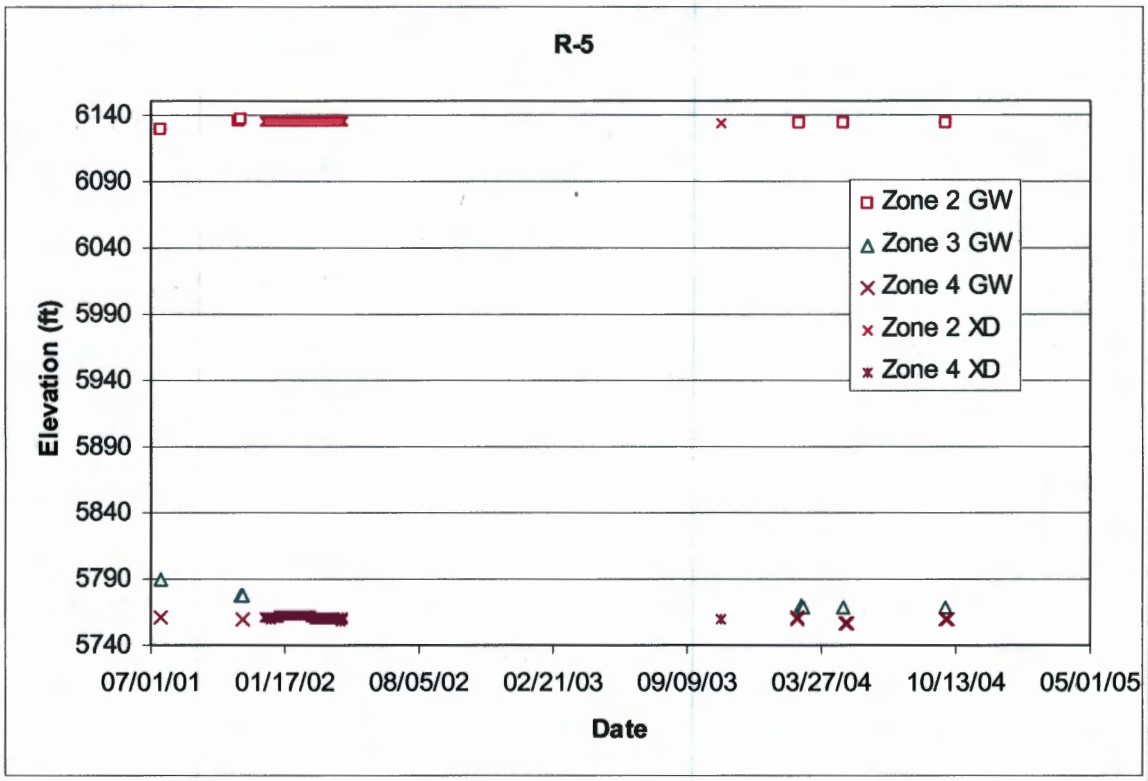


2.2 R-5

Groundwater level data for well R-5 are located in a spreadsheet titled "R-5 GW Level data."

R-5 Port Data											
Zone	Screen Top Depth (ft)	Screen Bottom Depth (ft)	Screen Top Elev (ft)	Screen Bottom Elev (ft)	Screen Length (ft)	Port	Port Depth (ft)	Port Elevation (ft)	Distance from Bottom of Screen (ft)	Sump Volume (L)	Comment
1	326.4	331.5	6146.2	6141.1	5.1	**MP1A**	329.5	6143.1	2.0		Within Screen, Intermediate Zone
						PP1	334.9	6137.7	-3.4	9.8	Below Screen
						MP1B	350.4	6122.2	-18.9	54.7	Below Screen
2	372.8	388.8	6099.8	6083.8	16	**MP2A**	383.9	6088.7	4.9		Within Screen, Intermediate Zone
						PP2	388.8	6083.8	0.0	0.0	At Bottom of Screen
						MP2B	394.4	6078.2	-5.6	16.2	Below Screen
3	676.9	720.3	5795.7	5752.3	43.4	**MP3A**	695.1	5777.5	25.2		Within Screen, Regional Aquifer, Dry
						MP3B	718.6	5754.0	1.7		Within Screen, MP for GW samples
						PP3	724.0	5748.6	-3.7	10.7	Below Screen
4	858.7	863.7	5613.9	5608.9	5	**MP4A**	860.9	5611.7	2.8		Within Screen
						PP4	866.3	5606.3	-2.6	7.5	Below Screen
						MP4B	871.9	5600.7	-8.2	23.7	Below Screen

Note: R-5 Brass Cap Ground Elevation: 6472.6 ft; all depths are from this elevation;
MP = Monitor Port; PP = Pump Port; Monitor Ports shown in bold are instrumented ports
Groundwater samples collected from MP3B because monitoring port MP3A is dry

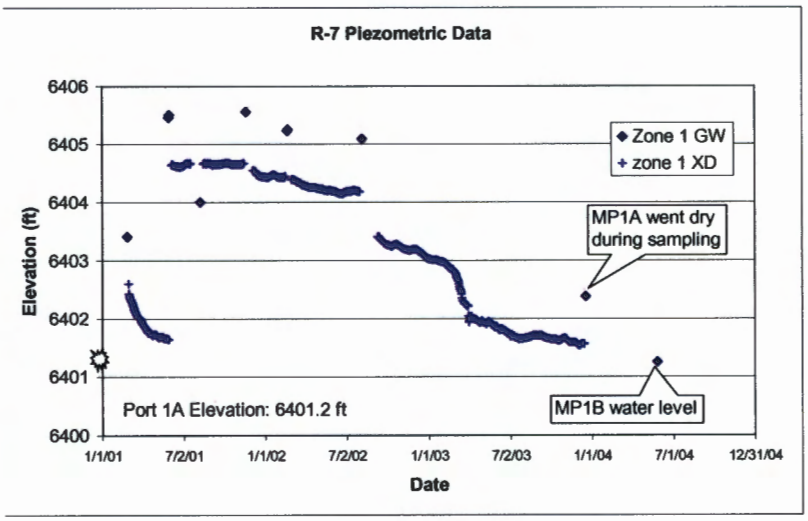


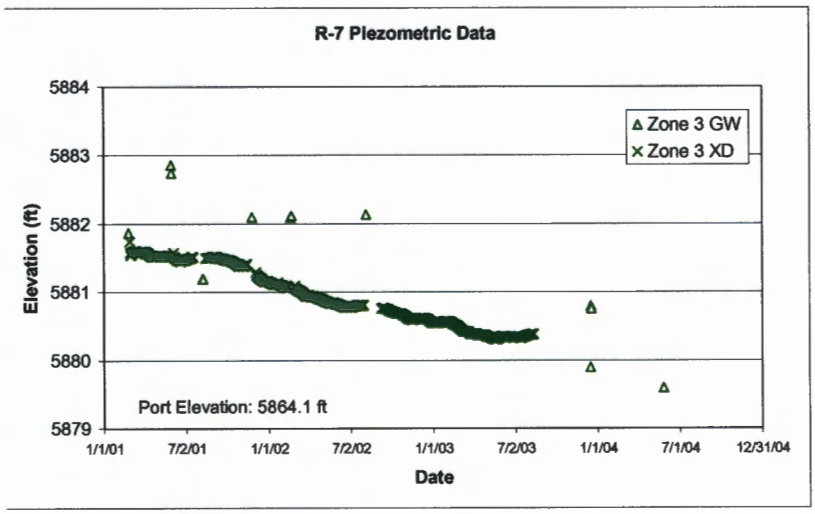
2.3 R-7

Groundwater level data for well R-7 are located in a spreadsheet titled "R-7 GW Level data."

R-7 Measurement and Sampling Ports											
Zone	Screen Top Depth (ft)	Screen Bottom Depth (ft)	Screen Top Elev (ft)	Screen Bottom Elev (ft)	Screen Length (ft)	Port	Port Depth (ft)	Port Elevation (ft)	Distance from Bottom of Screen (ft)	Sump Volume (L)	Comment
1	363.2	379.2	6416.0	6400.0	16.0	**MP1A**	378.0	6401.2	1.2		Within screen, Intermediate Zone
						PP1	383.3	6395.9	-4.1	8.9	Below screen
						MP1B	389.0	6390.2	-9.8	21.2	Below screen
2	730.4	746.4	6048.8	6032.8	16.0	**MP2A**	744.8	6034.4	1.6		Within screen, Intermediate Zone
						PP2	750.1	6029.1	-3.7	8.0	Below screen
						MP2B	755.8	6023.4	-9.4	20.3	Below screen
3	895.5	937.4	5883.7	5841.8	41.9	**MP3A**	915.1	5864.1	22.3		Within screen, Regional Aquifer
						MP3B	935.3	5843.9	2.1		Within screen
						PP3	940.6	5838.6	-3.2	6.9	Below screen
						MP3C	946.3	5832.9	-8.9	19.2	Below screen

Note: R-7 Brass Cap Ground Elevation: 6779.2 ft; all depths are from this elevation;
MP = Monitor Port; PP = Pump Port; Monitor Ports shown in bold are instrumented ports



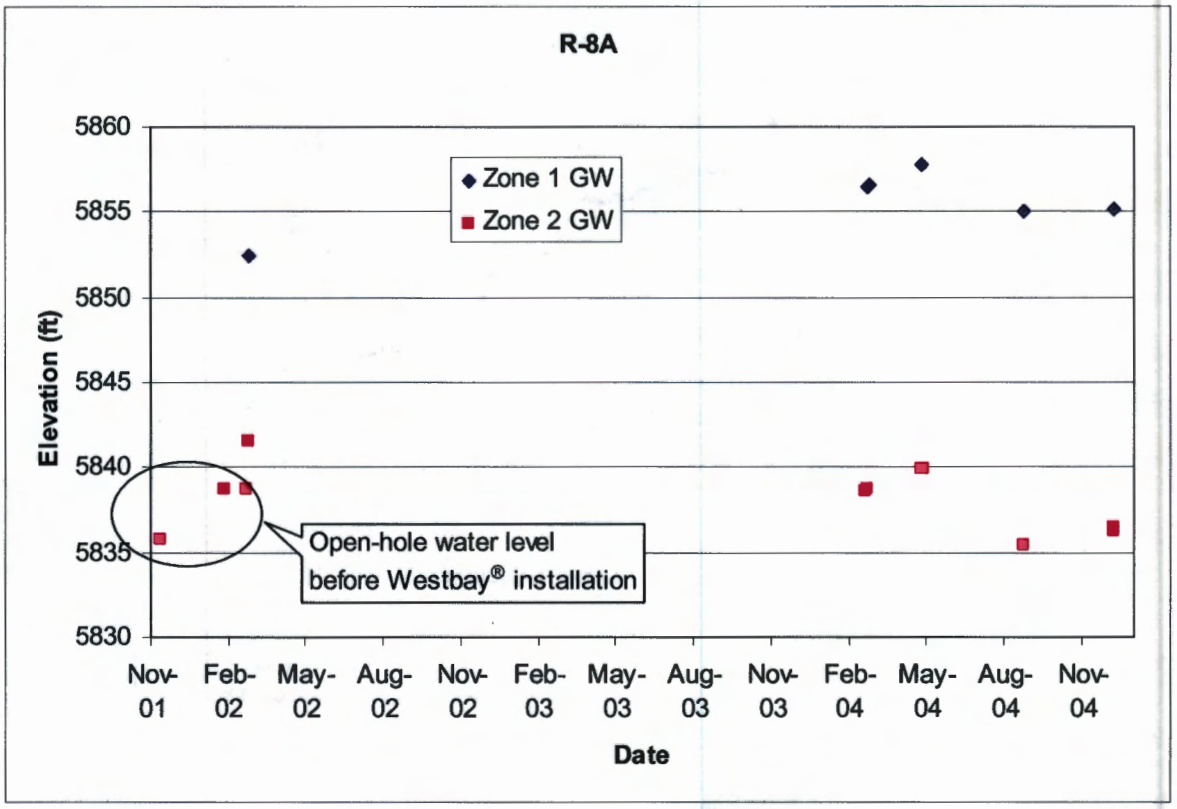


2.4 R-8a

Groundwater level data for well R-8a are located in a spreadsheet titled "R-8a GW Level data."

R-8a Port Data											
Zone	Screen Top Depth (ft)	Screen Bottom Depth (ft)	Screen Top Elev (ft)	Screen Bottom Elev (ft)	Screen Length (ft)	Port	Port Depth (ft)	Port Elevation (ft)	Distance from Bottom of Screen (ft)	Sump Volume (L)	Comment
1	705.3	755.7	5839.4	5789.04	50.4	MP1A	711.1	5833.64	44.6		Regional Aquifer
						MP1B	721.4	5823.34	34.3		Within Screen
						MP1C	751.3	5793.44	4.4		Within Screen
						PP1	756.7	5788.04	-1.0	2.2	Below Screen
						MP1D	762.3	5782.44	-6.6	14.3	Below Screen
2	821.3	828.0	5723.4	5716.74	6.7	MP2A	825.0	5719.74	3.0		Within Screen
						PP2	830.4	5714.34	-2.4	5.2	Below Screen
						MP2B	836.0	5708.7	-8.0	17.3	Below Screen

Note: R-8a Brass Cap Ground Elevation: 6544.74 ft; all depths are from this elevation;
MP = Monitor Port; PP = Pump Port; Monitor Ports shown in bold are instrumented ports

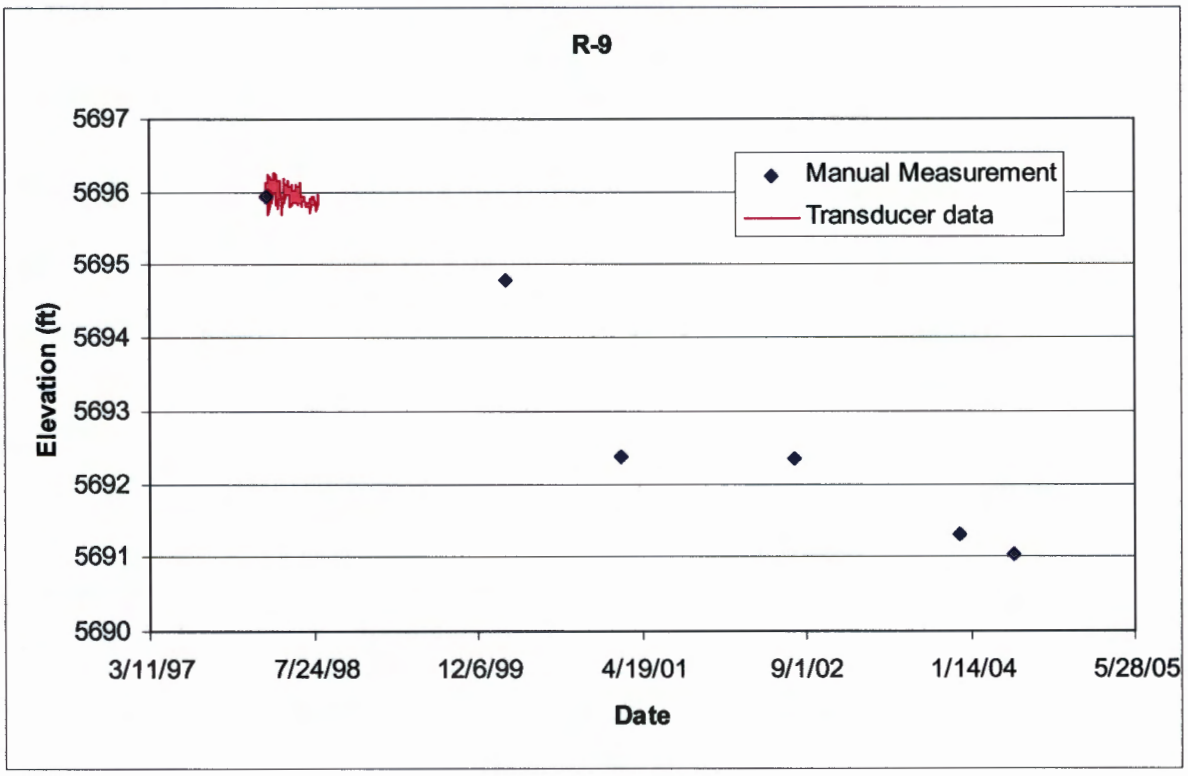


2.5 R-9

Groundwater level data for well R-9 are located in a spreadsheet titled "R-9 GW Level data."

R-9 Construction Information													
Zone	Screen Top Depth (ft)	Screen Bottom Depth (ft)	Screen Top Elev (ft)	Screen Bottom Elev (ft)	Screen Length (ft)	Pump Intake Depth (ft)	Pump Intake Elevation (ft)	Depth to Top of Sump (ft)	Top of Sump Elevation (ft)	Depth to Sump Bottom (ft)	Sump Length (ft)	Sump Volume (L)	Comment
1	683.0	748.5	5699.8	5634.3	65.5	741.4	5641.4	748.5	5634.3	758	9.5	29.7	Regional Aquifer

Note: R-9 Brass Cap Ground Elevation: 6382.8; all depths are from this elevation;



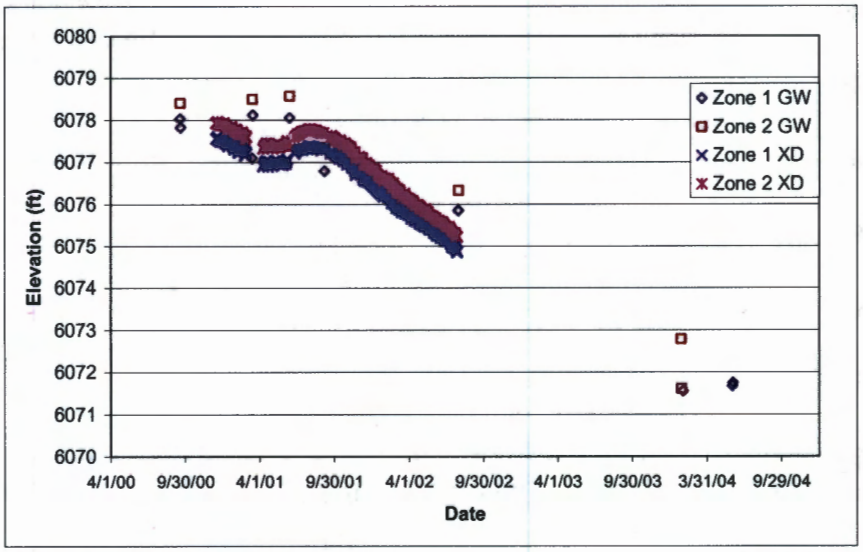
2.6 R-12

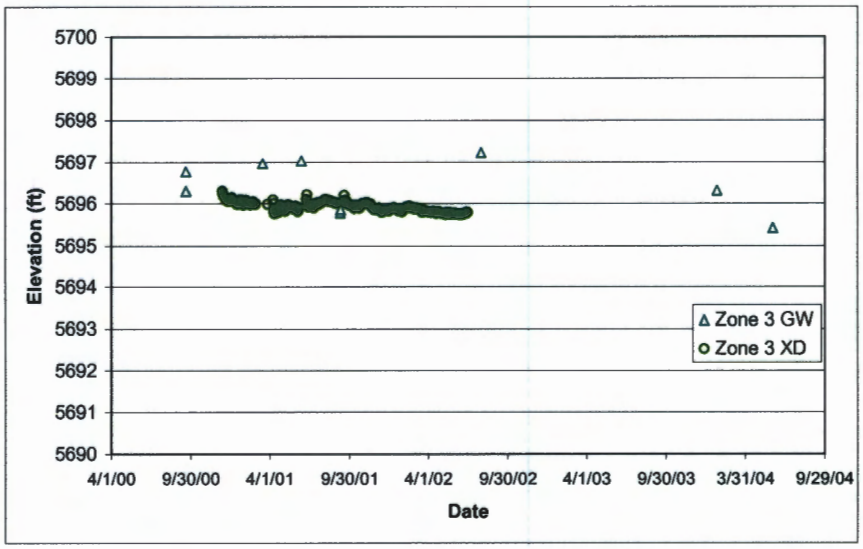
Groundwater level data for well R-12 are located in a spreadsheet titled "R-12 GW Level data."

R-12 Port Data											
Zone	Screen Top Depth (ft)	Screen Bottom Depth (ft)	Screen Top Elev (ft)	Screen Bottom Elev (ft)	Screen Length (ft)	Port	Port Depth (ft)	Port Elevation (ft)	Distance from Bottom of Screen (ft)	Sump Volume (L)	Comment
1	459.0	467.5	6040.6	6032.1	8.5	MP1A	468.1	6031.5	-0.6	1.1	Intermediate Zone, below screen
						PP1	473.5	6026.1	-6.0	11.3	Below screen
						MP1B	479.1	6020.5	-11.6	21.9	Below screen
2	504.5	508.0	5995.1	5991.6	3.5	MP2A	507.0	5992.6	1.0		Intermediate Zone
						PP2	512.4	5987.2	-4.4	8.3	Below screen
						MP2B	518.0	5981.6	-10.0	18.9	Below screen
3	801.0	839.0	5698.6	5660.6	38	MP3A	810.8	5688.8	28.2		Regional Aquifer
						PP3A	816.2	5683.4	22.8		
						MP3B	821.8	5677.8	17.2		
						PP3B	827.2	5672.4	11.8		
						MP3C	832.9	5666.7	6.1		

Brass Cap Elevation: 6499.6 ft All measurements from this elevation

MP = measurement port, pp = pumping port



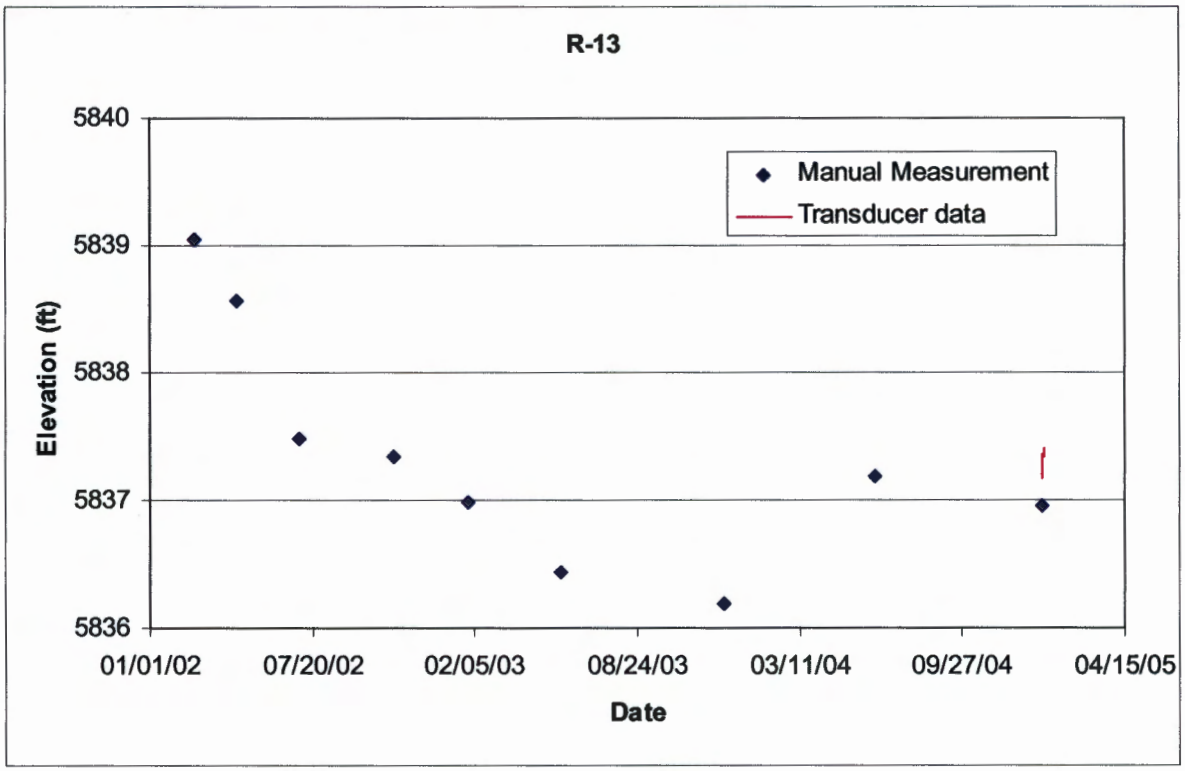


2.7 R-13

Groundwater level data for well R-13 are located in a spreadsheet titled "R-13 GW Level data."

R-13 Construction Information													
Zone	Screen Top Depth (ft)	Screen Bottom Depth (ft)	Screen Top Elev (ft)	Screen Bottom Elev (ft)	Screen Length (ft)	Pump Intake Depth (ft)	Pump Intake Elevation (ft)	Depth to Top of Sump (ft)	Top of Sump Elevation (ft)	Depth to Sump Bottom (ft)	Sump Length (ft)	Sump Volume (L)	Comment
1	958.3	1018.7	5714.8	5654.4	60.4	935.36	5737.7	1018.7	5654.4	1029.4	10.7	33.5	Regional Aquifer

Note: R-13 Brass Cap Ground Elevation: 6673.05 ft; all depths are from this elevation;

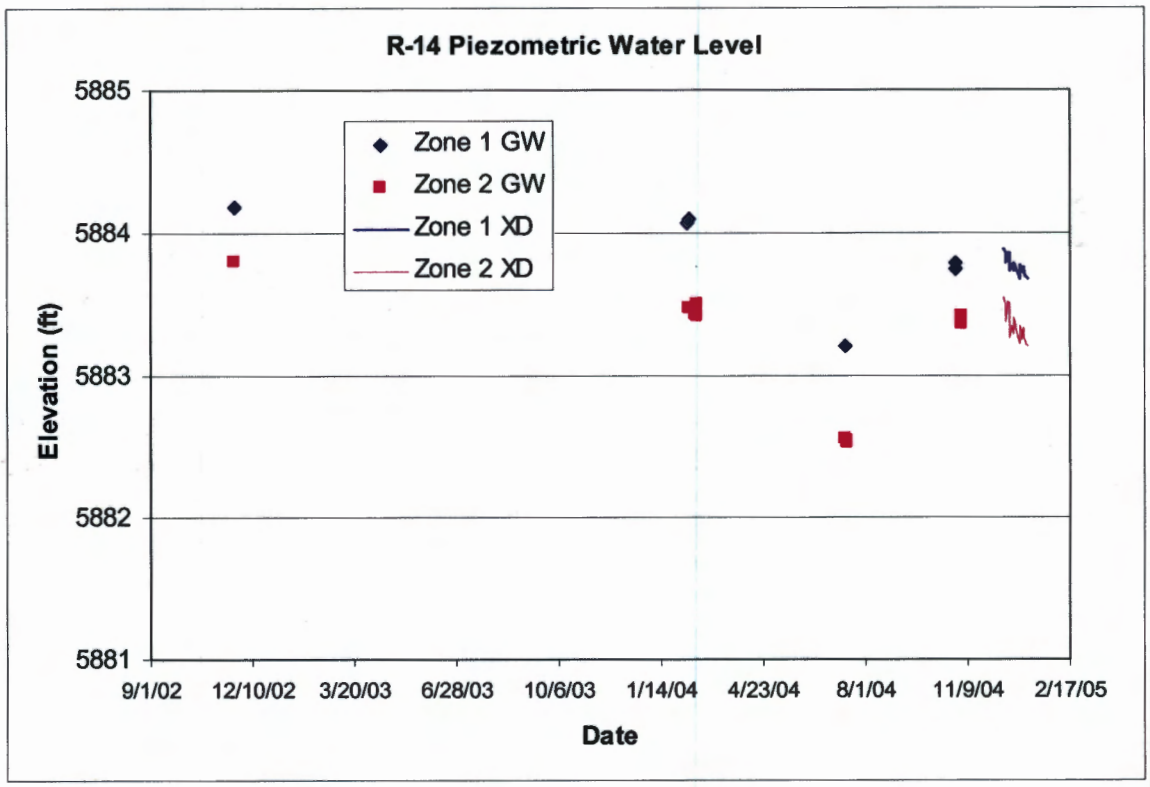


2.8 R-14

Groundwater level data for well R-14 are located in a spreadsheet titled "R-14 GW Level data."

R-14 Port Data											
Zone	Screen Top Depth (ft)	Screen Bottom Depth (ft)	Screen Top Elev (ft)	Screen Bottom Elev (ft)	Screen Length (ft)	Port	Port Depth (ft)	Port Elevation (ft)	Distance from Bottom of Screen (ft)	Sump Volume (L)	Comment
1	1200.6	1233.2	5861.48	5828.88	32.6	MP1A	1204.5	5857.58	28.7		Within Screen, Regional aquifer
						MP1B	1229.6	5832.48	3.6		Within Screen
						PP1	1234.9	5827.18	-1.7	3.7	Below Screen
						MP1C	1240.6	5821.48	-7.4	16.0	Below Screen
2	1286.5	1293.1	5775.58	5768.98	6.6	MP2A	1288.5	5773.58	4.6		Within Screen
						PP2	1293.8	5768.28	-0.7	1.5	Below Screen
						MP2B	1299.5	5762.58	-6.4	13.8	Below Screen

Note: R-14 brass cap elevation 7062.08 ft; all measurements from this elevation. MP = measuring port, PP = pumping port

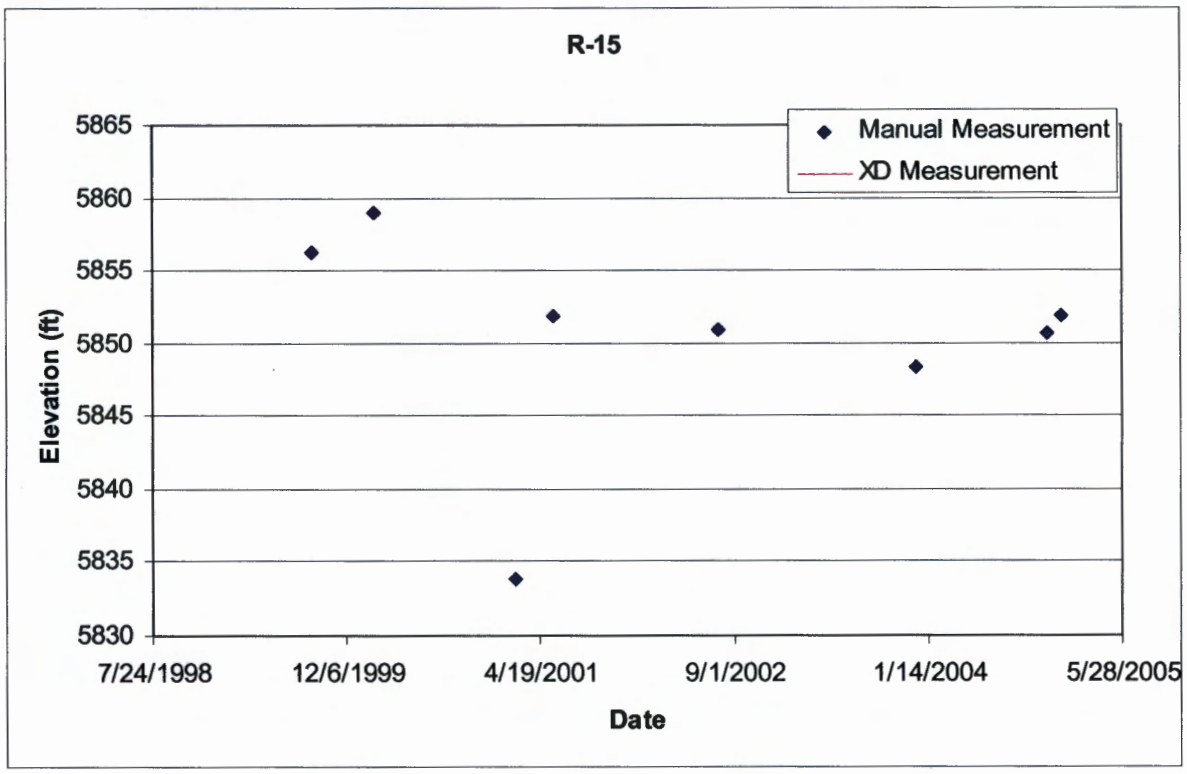


2.9 R-15

Groundwater level data for well R-15 are located in a spreadsheet titled "R-15 GW Level data."

R-15 Construction Information													
Zone	Screen Top Depth (ft)	Screen Bottom Depth (ft)	Screen Top Elev (ft)	Screen Bottom Elev (ft)	Screen Length (ft)	Pump Intake Depth (ft)	Pump Intake Elevation (ft)	Depth to Top of Sump (ft)	Top of Sump Elevation (ft)	Depth to Sump Bottom (ft)	Sump Length (ft)	Sump Volume (L)	Comment
1	958.6	1020.3	5861.4	5799.7	61.7	1015.6	5804.4	1020.3	5799.7	1030.6	10.3	39.8	Regional Aquifer

Note: R-15 Brass Cap Ground Elevation: 6820.0 ft; all depths are from this elevation;

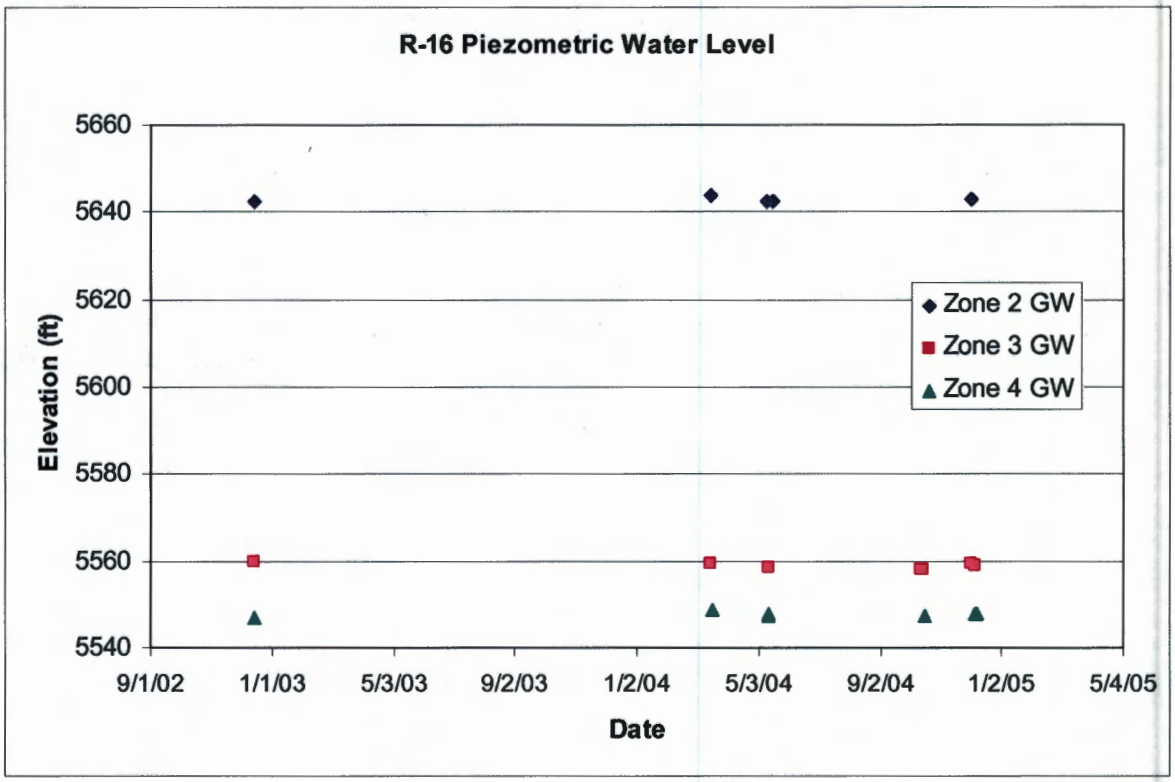


2.10 R-16

Groundwater level data for well R-16 are located in a spreadsheet titled "R-16 GW Level data."

R-16 Port Data											
Zone	Screen Top Depth (ft)	Screen Bottom Depth (ft)	Screen Top Elev (ft)	Screen Bottom Elev (ft)	Screen Length (ft)	Port	Port Depth (ft)	Port Elevation (ft)	Distance from Bottom of Screen (ft)	Sump Volume (L)	Comment
						MP1A					Screen #1 is
1	641.0	648.6	5615.9	5608.3	7.6	PP1				0.0	behind 11-in. dia.
						MP1B				0.0	steel casing, Regional Aquifer
						MP2A	866.1	5390.8	4.8		Within Screen
2	863.4	870.9	5393.5	5386.0	7.5	PP2	871.4	5385.5	-0.5	1.1	Below Screen
						MP2B	877.1	5379.8	-6.2	13.4	Below Screen
						MP3A	1018.4	5238.5	4.0		Within Screen
3	1014.8	1022.4	5242.1	5234.5	7.6	MP3B	1023.8	5233.1	-1.4	3.0	Below Screen
						PP3	1029.4	5227.5	-7.0	15.1	Below Screen
						MP4A	1238.0	5018.9	6.6		Within Screen
4	1237.0	1244.6	5019.9	5012.3	7.6	PP4	1243.4	5013.5	1.2		Within Screen
						MP4B	1249.0	5007.9	-4.4	9.5	Below Screen

Brass Cap Elevation: 6256.87 All depth measurements are from this elevation

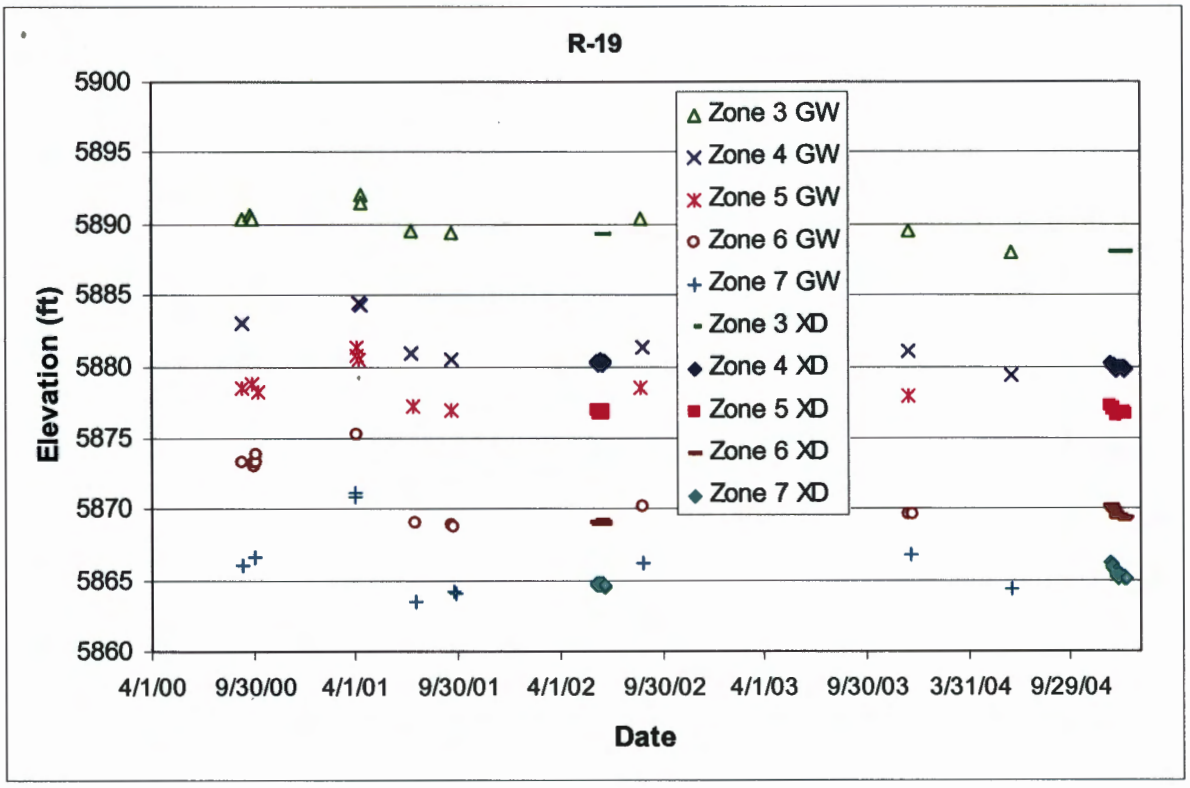


2.11 R-19

Groundwater level data for well R-19 are located in a spreadsheet titled "R-19 GW Level data."

Measurement and Sampling Ports in R-19											
Zone	Screen Top Depth (ft)	Screen Bottom Depth (ft)	Screen Top Elev (ft)	Screen Bottom Elev (ft)	Screen Length (ft)	Port	Port Depth (ft)	Port Elevation (ft)	Distance from Bottom of Screen (ft)	Sump Volume (L)	Comment
1	827.2	843.6	6239.1	6222.7	16.4	**MP1A**	844.2	6222.1	-0.6	1.3	Below Screen, Intermediate
						PP1	849.6	6216.7	-6	13.0	Below Screen
						MP1B	855.2	6211.1	-11.6	25.1	Below Screen
2	893.3	909.6	6173.0	6156.7	16.3	**MP2A**	909.3	6157.0	0.3		Within Screen Intermediate
						PP2	914.7	6151.6	-5.1	11.0	Below Screen
						MP2B	920.3	6146.0	-10.7	23.1	Below Screen
3	1171.4	1215.4	5894.9	5850.9	44.0	MP3A	1190.7	5875.6	24.7		Within Screen, Regional Aquifer
						PP3	1196.1	5870.2	19.3		Within Screen
						MP3B	1201.7	5864.6	13.7		Within Screen
4	1410.2	1417.4	5656.1	5648.9	7.2	**MP4A**	1412.9	5653.4	4.5		Within Screen
						PP4	1418.3	5648.0	-0.9	1.9	Below Screen
						MP4B	1423.9	5642.4	-6.5	14.1	Below Screen
5	1582.6	1589.8	5483.7	5476.5	7.2	**MP5A**	1586.1	5480.2	3.7		Within Screen
						PP5	1591.5	5474.8	-1.7	3.7	Below Screen
						MP5B	1597.1	5469.2	-7.3	15.8	Below Screen
6	1726.8	1733.9	5339.5	5332.4	7.1	**MP6A**	1730.1	5336.2	3.8		Within Screen
						PP6	1735.4	5330.9	-1.5	3.2	Below Screen
						MP6B	1741.1	5325.2	-7.2	15.6	Below Screen
7	1832.4	1839.5	5233.9	5226.8	7.1	**MP7A**	1834.7	5231.6	4.8		Within Screen
						PP7	1840.0	5226.3	-0.5	1.1	Below Screen
						MP7B	1845.7	5220.6	-6.2	13.4	Below Screen

Note: R-19 Brass Cap Ground Elevation: 7066.3 ft; all depths are from this elevation;
MP = Monitor Port; PP = Pump Port; Monitor Ports shown in bold are instrumented ports

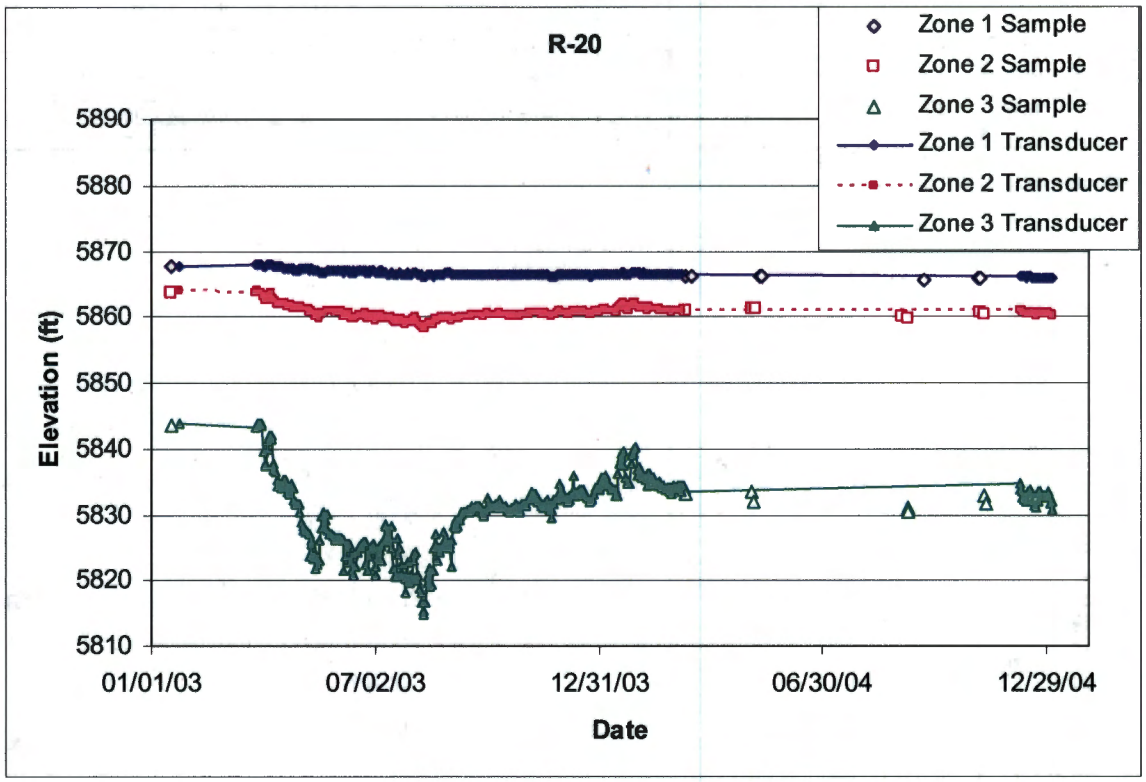


2.12 R-20

Groundwater level data for well R-20 are located in a spreadsheet titled "R-20 GW Level data."

Measurement and Sampling Ports in R-20											
Zone	Screen Top Depth (ft)	Screen Bottom Depth (ft)	Screen Top Elev (ft)	Screen Bottom Elev (ft)	Screen Length (ft)	Port	Port Depth (ft)	Port Elevation (ft)	Distance from Bottom of Screen (ft)	Sump Volume (L)	Comment
1	904.6	912.2	5789.8	5782.2	7.6	**MP1A**	907.0	5787.4	5.2		Within Screen, Regional Aquifer
						PP1	912.4	5782.0	-0.2	0.4	Below Screen
						MP1B	918.0	5776.4	-5.8	12.5	Below Screen
2	1147.1	1154.7	5547.3	5539.7	7.6	**MP2A**	1149.7	5544.7	5		Within Screen
						PP2	1155.0	5539.4	-0.3	0.6	Below Screen
						MP2B	1160.7	5533.7	-6.0	13.0	Below Screen
3	1328.8	1336.5	5365.6	5357.9	7.7	**MP3A**	1330.0	5364.4	6.5		Within Screen
						PP3	1335.4	5359.0	1.1		Within Screen
						MP3B	1341.0	5353.4	-4.5	9.7	Below Screen

Note: R-20 Brass Cap Ground Elevation: 6694.35 ft; all depths are from this elevation;
MP = Monitor Port; PP = Pump Port; Monitor Ports shown in bold are instrumented ports

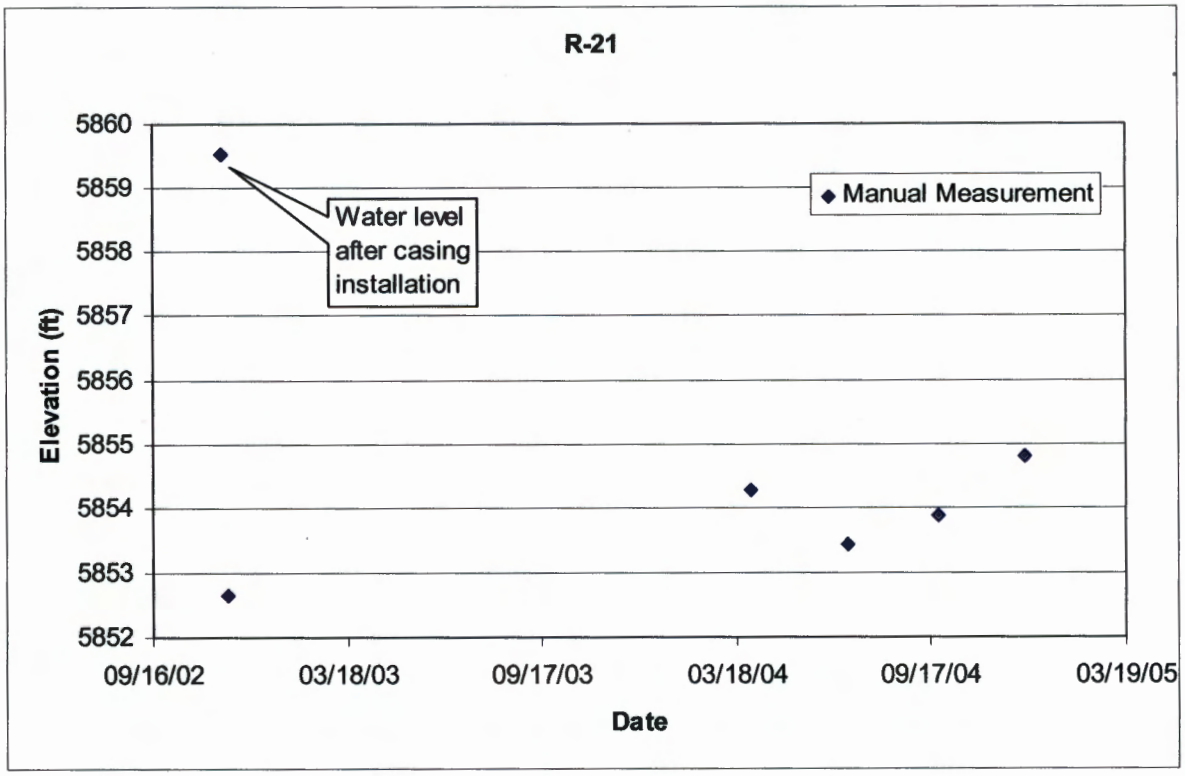


2.13 R-21

Groundwater level data for well R-21 are located in a spreadsheet titled "R-21 GW Level data."

R-21 Construction Information													
Zone	Screen Top Depth (ft)	Screen Bottom Depth (ft)	Screen Top Elev (ft)	Screen Bottom Elev (ft)	Screen Length (ft)	Pump Intake Depth (ft)	Pump Intake Elevation (ft)	Depth to Top of Sump (ft)	Top of Sump Elevation (ft)	Depth to Sump Bottom (ft)	Sump Length (ft)	Sump Volume (L)	Comment
1	888.8	906.8	5767.4	5749.4	18.0		6656.2	906.8	5749.4	941.4	34.6	192.4	Regional Aquifer

Note: R-21 Brass Cap Ground Elevation: 6656.24 ft; all depths are from this elevation;

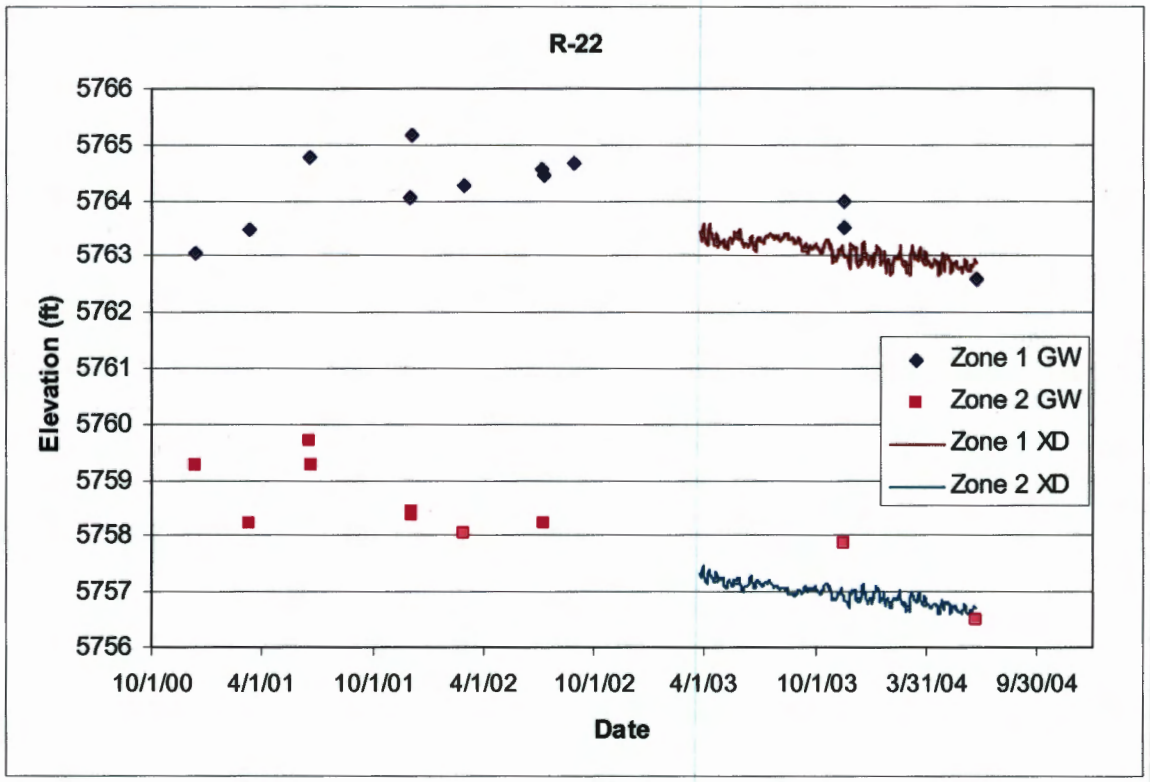


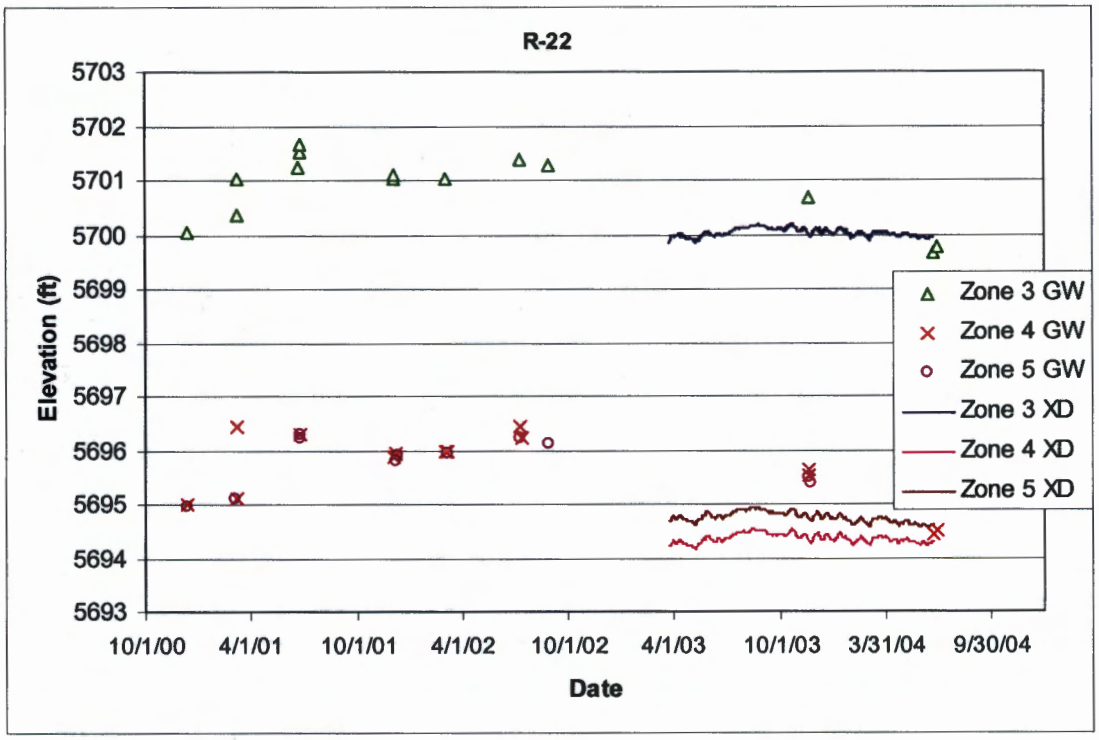
2.14 R-22

Groundwater level data for well R-22 are located in a spreadsheet titled "R-22 GW Level data."

R-22 Measurement and Sampling Ports											
Zone	Screen Top Depth (ft)	Screen Bottom Depth (ft)	Screen Top Elev (ft)	Screen Bottom Elev (ft)	Screen Length (ft)	Port	Port Depth (ft)	Port Elevation (ft)	Distance from Bottom of Screen (ft)	Sump Volume (L)	Comment
1	872.3	914.2	5778.2	5736.3	41.9	**MP1A**	907.1	5743.4	7.1		Within Screen, Regional Aquifer
						PP1	912.4	5738.1	1.8		Within Screen
						MP1B	918.1	5732.4	-3.9	8.4	Below Screen
2	947.0	988.9	5703.5	5661.6	41.9	**MP2A**	962.8	5687.7	26.1		Within Screen
						PP2	967.7	5682.8	21.2		Within Screen
						MP2B	973.4	5677.1	15.5		Within Screen
3	1272.2	1278.9	5378.3	5371.6	6.7	**MP3A**	1273.5	5377.0	5.4		Within Screen
						PP3	1278.9	5371.6	0		Within Screen
						MP3B	1284.5	5366.0	-5.6	12.1	Below Screen
4	1378.2	1384.9	5272.3	5265.6	6.7	**MP4A**	1378.0	5272.5	6.9		Above Screen
						PP4	1383.4	5267.1	1.5		Within Screen
						MP4B	1389.1	5261.4	-4.2	9.1	Below Screen
5	1447.3	1452.3	5203.2	5198.2	5.0	**MP5A**	1448.2	5202.3	4.1		Within Screen
						PP5	1453.6	5196.9	-1.3	2.8	Below Screen
						MP5B	1459.2	5191.3	-6.9	14.9	Below Screen

Note: R-22 Brass Cap Ground Elevation: 6650.5 ft; all depths are from this elevation;
MP = Monitor Port; PP = Pump Port; Monitor Ports shown in bold are instrumented ports



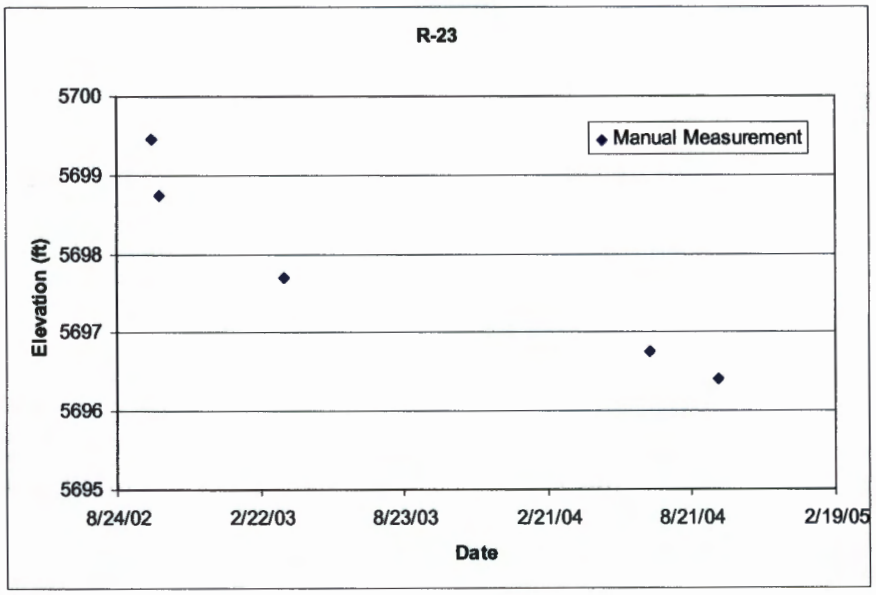


2.15 R-23

Groundwater level data for well R-23 are located in a spreadsheet titled "R-23 GW Level data."

R-23 Construction Information													
Zone	Screen Top Depth (ft)	Screen Bottom Depth (ft)	Screen Top Elev (ft)	Screen Bottom Elev (ft)	Screen Length (ft)	Pump Intake Depth (ft)	Pump Intake Elevation (ft)	Depth to Top of Sump (ft)	Top of Sump Elevation (ft)	Depth to Sump Bottom (ft)	Sump Length (ft)	Sump Volume (L)	Comment
1	816.0	873.2	5711.8	5654.6	57.2	870.7	5657.1	873.2	5654.6	886.3	13.1	41.0	Regional Aquifer

Note: R-23 Brass Cap Ground Elevation: 6527.75 ft; all depths are from this elevation;

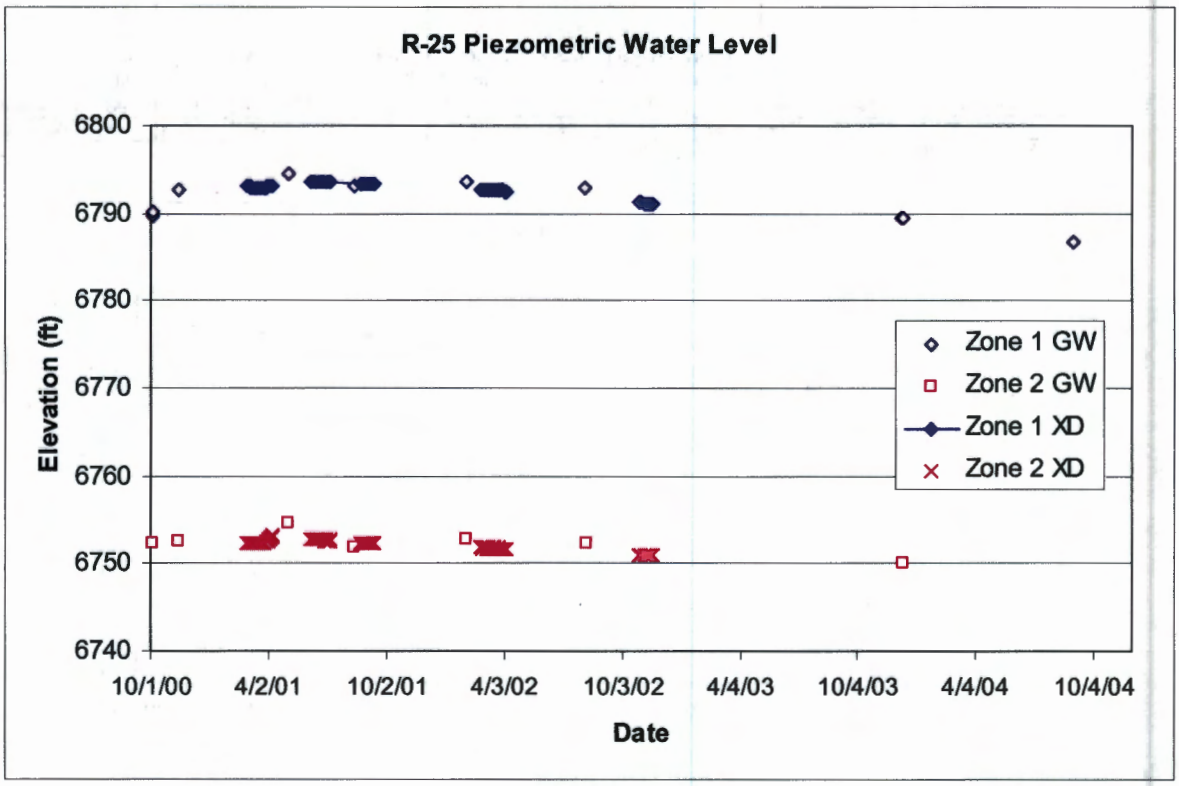


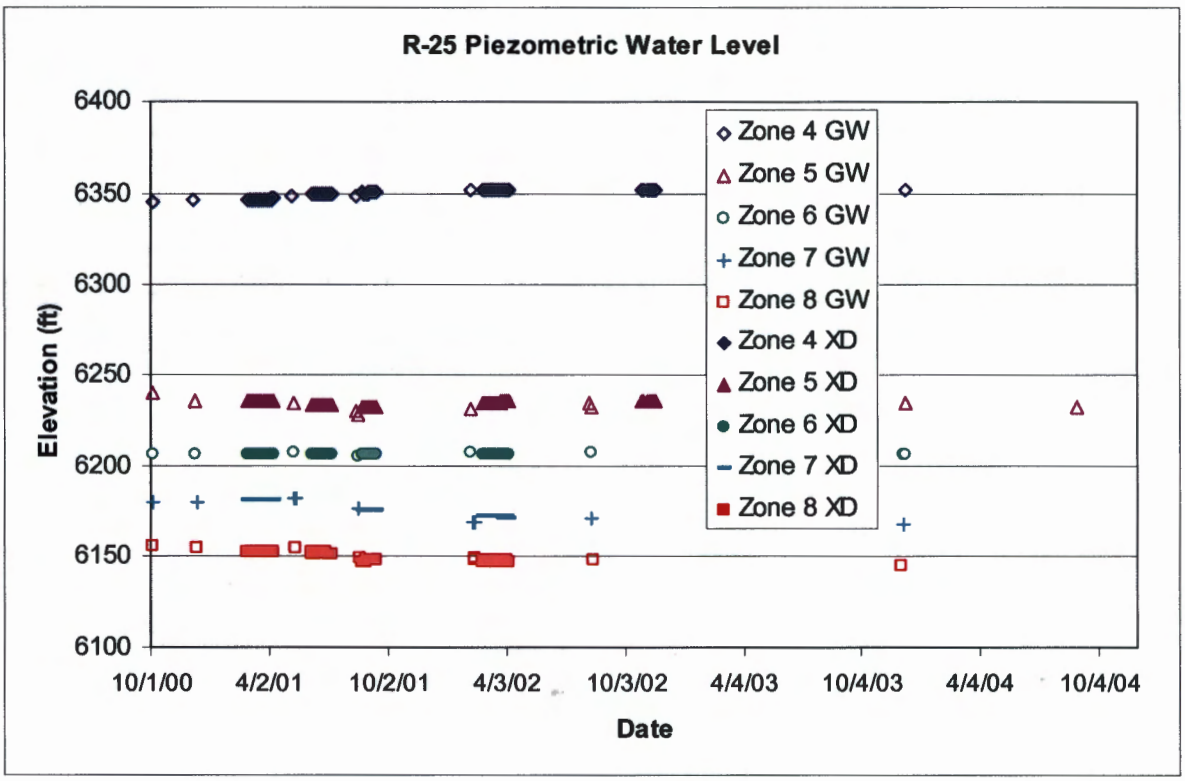
2.16 R-25

Groundwater level data for well R-25 are located in a spreadsheet titled "R-25 GW Level data."

Measurement and Sampling Ports in R-25											
Zone	Screen Top Depth (ft)	Screen Bottom Depth (ft)	Screen Top Elev (ft)	Screen Bottom Elev (ft)	Screen Length (ft)	Port	Port Depth (ft)	Port Elevation (ft)	Distance from Bottom of Screen (ft)	Sump Volume (L)	Comment
1	738.1	757.9	6778.0	6758.2	19.8	**MP1A**	754.8	6761.3	3.1		Within Screen, Intermediate Zone
						PP1	760.1	6756.0	-2.2	6.4	Below Screen
						MP1B	765.8	6750.3	-7.9	22.9	Below Screen
2	883.1	892.9	6633.0	6623.2	9.8	**MP2A**	891.8	6624.3	1.1		Within Screen
						PP2	897.2	6618.9	-4.3	12.5	Below Screen
						MP2B	902.8	6613.3	-9.9	28.7	Below Screen
3	1055.1	1064.1	6461.0	6452.0	9.0	**MP3A**	1063.4	6452.7	-6.3	18.2	Assume Screen 3 bottom 6459 ft
						PP3	1068.8	6447.3	-11.7	33.9	Below Screen
						MP3B	1084.2	6431.9	-27.1	78.5	Below Screen
4	1185.9	1194.1	6330.2	6322.0	8.2	**MP4A**	1192.4	6323.7	1.7		Within Screen, Intermediate Zone
						PP4	1197.8	6318.3	-3.7	10.7	Below Screen
						MP4B	1203.4	6312.7	-9.3	26.9	Below Screen
5	1295.1	1304.1	6221.0	6212.0	9.0	**MP5A**	1303.4	6212.7	0.7		Within Screen, Regional Aquifer
						PP5	1308.8	6207.3	-4.7	13.6	Below Screen
						MP5B	1314.4	6201.7	-10.3	29.8	Below Screen
6	1405.1	1414.1	6111.0	6102.0	9.0	**MP6A**	1406.3	6109.8	7.8		Within Screen
						PP6	1411.7	6104.4	2.4		Within Screen
						MP6B	1417.3	6098.8	-3.2	9.3	Below Screen
7	1605.1	1614.1	5911.0	5902.0	9.0	**MP7A**	1606.0	5910.1	8.1		Within Screen
						PP7	1611.4	5904.7	2.7		Within Screen
						MP7B	1617.1	5899.0	-3	8.7	Below Screen
8	1795.1	1804.1	5721.0	5712.0	9.0	**MP8A**	1796.0	5720.1	8.1		Within Screen
						PP8	1801.4	5714.7	2.7		Within Screen
						MP8B	1807.0	5709.1	-2.9	8.4	Below Screen
9	1895.1	1904.1	5621.0	5612.0	9.0	**MP9**	1825.1	5691.0	79		Screen 9 blocked by sediment

Note: R-25 Brass Cap Ground Elevation: 7516.1 ft; all depths are from this elevation;
MP = Monitor Port; PP = Pump Port; Monitor Ports shown in bold are instrumented ports



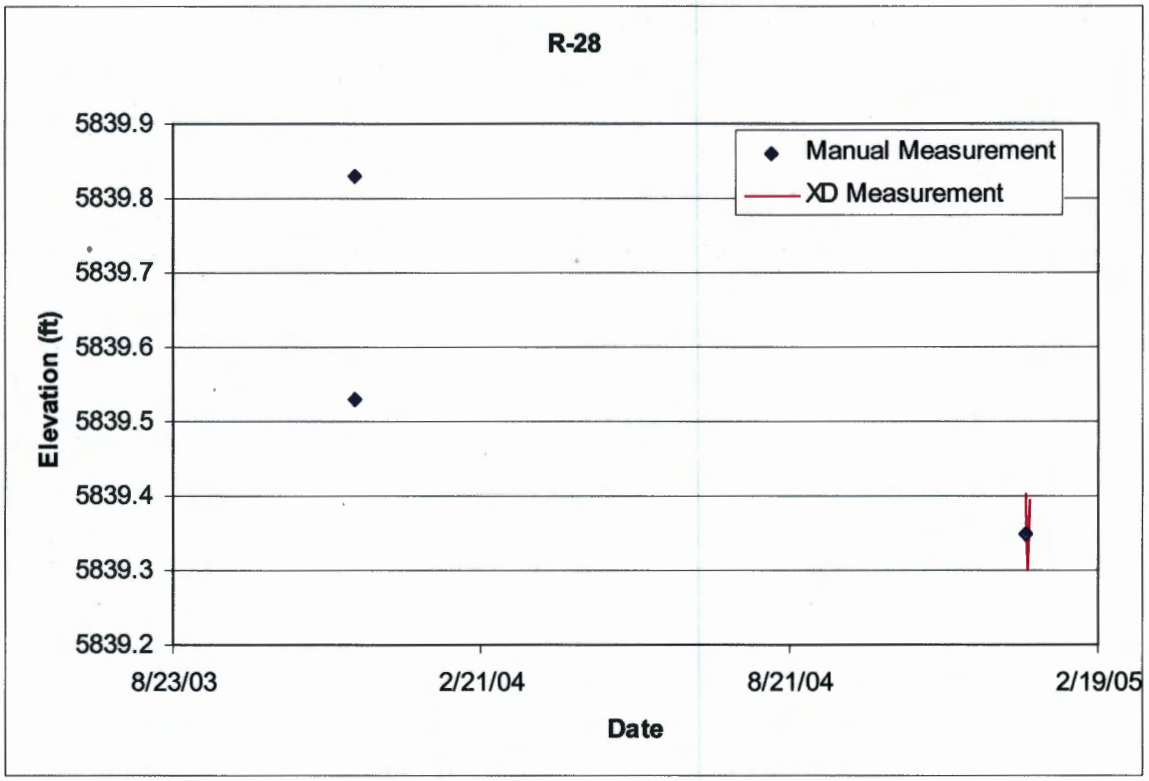

R-25 Piezometric Water Level
Elevation (ft)
6400
6350
6300
6250
6200
6150
6100
10/1/00
4/2/01
10/2/01
4/3/02
10/3/02
4/4/03
10/4/03
4/4/04
10/4/04
Date
Zone 4 GW
Zone 5 GW
Zone 6 GW
Zone 7 GW
Zone 8 GW
Zone 4 XD
Zone 5 XD
Zone 6 XD
Zone 7 XD
Zone 8 XD

2.17 R-28

Groundwater level data for well R-28 are located in a spreadsheet titled "R-28 GW Level data."

R-28 Construction Information													
Zone	Screen Top Depth (ft)	Screen Bottom Depth (ft)	Screen Top Elev (ft)	Screen Bottom Elev (ft)	Screen Length (ft)	Pump Intake Depth (ft)	Pump Intake Elevation (ft)	Depth to Top of Sump (ft)	Top of Sump Elevation (ft)	Depth to Sump Bottom (ft)	Sump Length (ft)	Sump Volume (L)	Comment
1	934.3	958.1	5794.2	5770.4	23.8		6728.5	958.1	5770.4	980.3	22.2	68.2	Regional Aquifer

Note: R-28 Brass Cap Ground Elevation: 6728.53 ft; all depths are from this elevation;

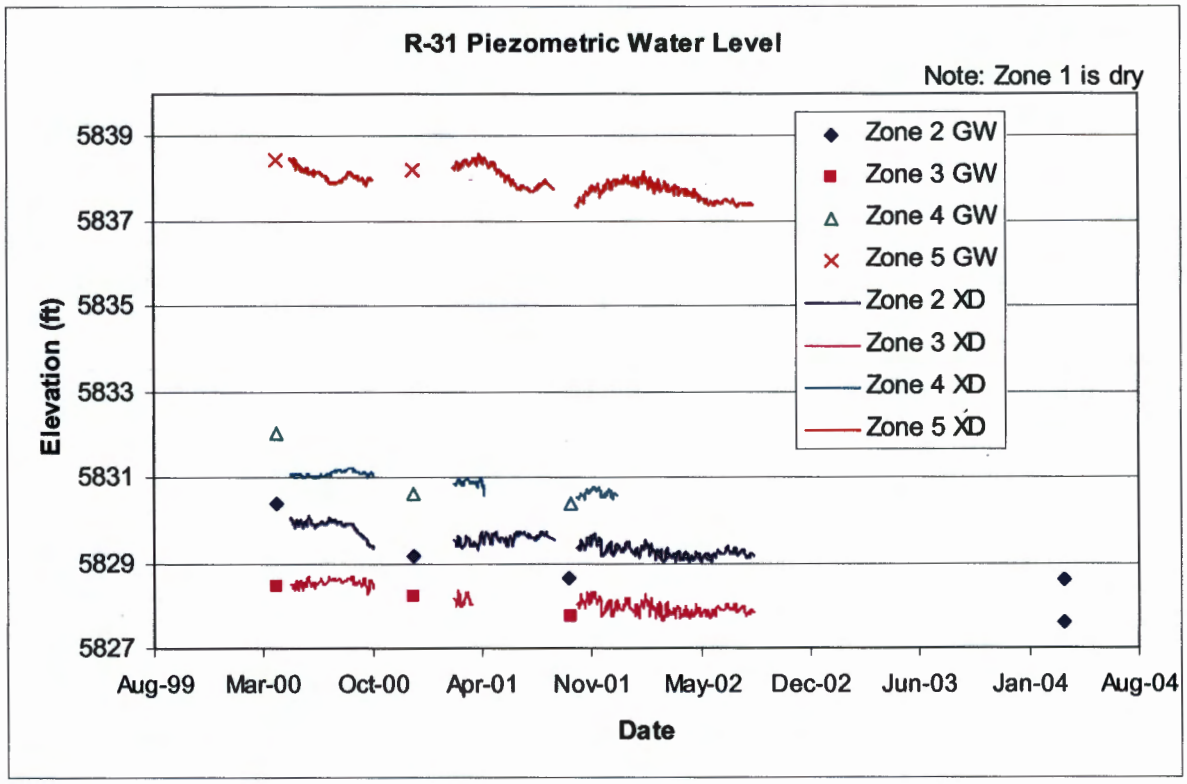


2.18 R-31

Groundwater level data for well R-31 are located in a spreadsheet titled "R-31 GW Level data."

R-31 Port Data											
Zone	Screen Top Depth (ft)	Screen Bottom Depth (ft)	Screen Top Elev (ft)	Screen Bottom Elev (ft)	Screen Length (ft)	Port	Port Depth (ft)	Port Elevation (ft)	Distance from Bottom of Screen (ft)	Sump Volume (L)	Comment
1	439.1	454.4	5923.4	5908.1	15.3	MP1A	453.8	5908.7	0.6		Intermediate Zone
						PP1	459.2	5903.3	-4.8	13.9	Below screen
						MP1B	464.8	5897.7	-10.4	30.1	Below screen
2	515.0	545.7	5847.5	5816.8	30.7	MP2A	532.2	5830.3	13.5		Top of Regional Aquifer
						MP2B	542.5	5820.0	3.2		
						PP2	547.9	5814.6	-2.2	6.4	Below screen
						MP2C	553.5	5809.0	-7.8	22.6	Below screen
3	666.3	676.3	5696.2	5686.2	10	MP3A	670.3	5692.2	6.0		
						PP3	675.6	5686.9	0.7		
						MP3B	681.3	5681.2	-5.0	14.5	Below screen
4	826.6	836.6	5535.9	5525.9	10	MP4A	830.9	5531.6	5.7		
						PP4	836.3	5526.2	0.3		
						MP4B	841.9	5520.6	-5.3	15.3	Below screen
5	1007.1	1017.1	5355.4	5345.4	10	MP5A	1011.3	5351.2	5.8		
						PP5	1016.7	5345.8	0.4		
						MP5B	1022.3	5340.2	-5.2	15.1	

Brass Cap Elevation: 6362.5 ft All Depths from this elevation

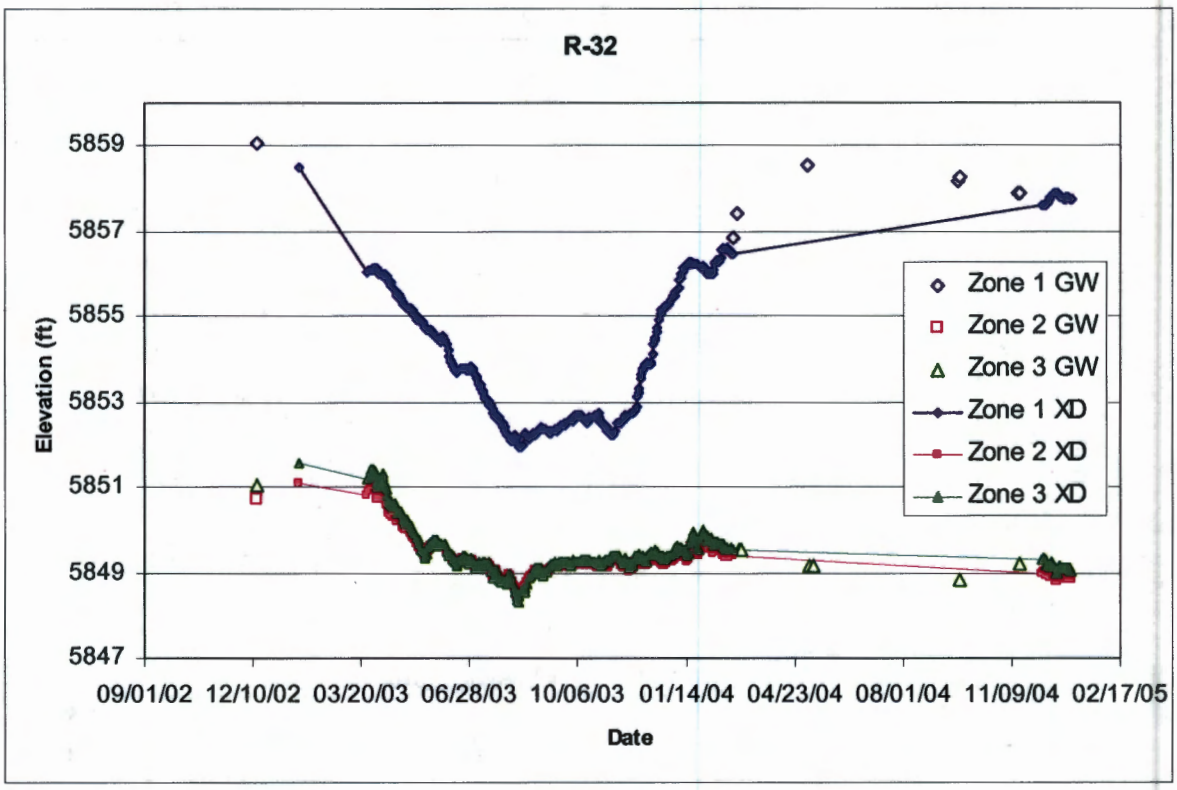


2.19 R-32

Groundwater level data for well R-32 are located in a spreadsheet titled "R-32 GW Level data."

R-32 Port Data											
Zone	Screen Top Depth (ft)	Screen Bottom Depth (ft)	Screen Top Elev (ft)	Screen Bottom Elev (ft)	Screen Length (ft)	Port	Port Depth (ft)	Port Elevation (ft)	Distance from Bottom of Screen (ft)	Sump Volume (L)	Comment
1	867.5	875.2	5770.1	5762.4	7.7	**MP1A**	870.9	5766.7	4.3		Within Screen, Regional Aquifer
						PP1	876.3	5761.3	-1.1	2.4	Below Screen
						MP1B	881.9	5755.7	-6.7	14.5	Below Screen
2	931.8	934.9	5705.8	5702.7	3.1	**MP2**	933.1	5704.5	1.8		Within Screen
3	972.9	980.6	5657.0	5657.0	7.7	**MP3A**	976.0	5661.6	4.6		Within Screen
						PP3	981.4	5656.2	-0.8	1.7	Below Screen
						MP3B	987.1	5650.5	-6.5	14.1	Below Screen

Note: R-32 Brass Cap Ground Elevation: 6637.63 ft; all depths are from this elevation;
MP = Monitor Port; PP = Pump Port; Monitor Ports shown in bold are instrumented ports

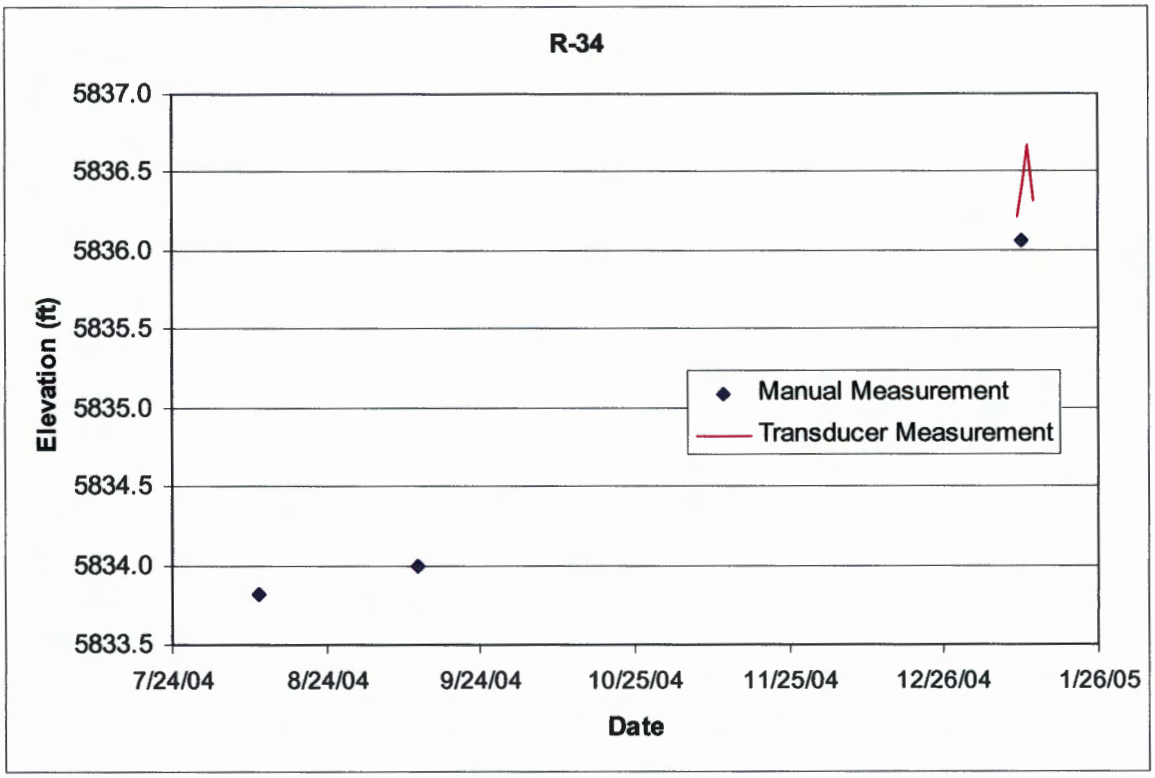


2.20 R-34

Groundwater level data for well R-34 are located in a spreadsheet titled "R-34 GW Level data."

R-34 Construction Information													
Zone	Screen Top Depth (ft)	Screen Bottom Depth (ft)	Screen Top Elev (ft)	Screen Bottom Elev (ft)	Screen Length (ft)	Pump Intake Depth (ft)	Pump Intake Elevation (ft)	Depth to Top of Sump (ft)	Top of Sump Elevation (ft)	Depth to Sump Bottom (ft)	Sump Length (ft)	Sump Volume (L)	Comment
1	883.7	906.6	5746.3	5723.4	22.9			906.6	5723.4	920.7	14.1	44.1	Regional Aquifer

Note: R-34 Brass Cap Ground Elevation: 6629.99 ft; all depths are from this elevation;



3.0 Groundwater Level Data from Intermediate Wells installed since 1997

Table 3.1 lists the intermediate groundwater monitoring wells installed at LANL since 1997, and includes the well name, total depth, completed depth, surveyed location coordinates, completion type information, date of completion, and the general location of the wells. Table 3.1 is also included in a spreadsheet titled "Well Information.xls" on the accompanying data CD.

Table 3.2 lists the well construction information for the intermediate wells installed since 1997, and includes information for the depth to the top and bottom of screens, annulus material, perforation size, and sump length.

Table 3.1. General Information and Location Data for Intermediate Wells Installed Since 1997 at LANL.

Well Name	General Location	Date Completed	Total Depth (Ft)	Depth Completed (Ft)	Completion	East (ft)	North (ft)	Elev (ft)	Well Comment	Coord Source	Coord Confidence	Coord Comment
CdV-16-1(i)	TA-16	3/23/2004	683	657.8	Intermediate	1615079.9	1764413	7382.2	Intermediate Monitoring Well	Kleinfelder 2004 WCR	Good	casing xy, brass cap z
CdV-16-2(i)	TA-16	3/23/2004	1063	1037.1	Intermediate	1616743.8	1764236.4	7457.1	Intermediate Monitoring Well	Kleinfelder 2004 WCR	Good	casing xy, brass cap z
CdV-16-3(i)	TA-16	3/29/2004	1405	0	Intermediate	1615981.6	1762434.5	7486.4	Open borehole, no casing	Kleinfelder 2004 WCR	Good	casing xy, nail in pad z
MCOBT-4.4	Mortandad Canyon	6/1/2003	767	725	Intermediate	1634190	1768515	6836.2	Intermediate Well	WQDB	Good	ER Survey
R-9i	Los Alamos Canyon	4/1/2000	322	280	Intermediate	1648208.8	1770834.7	6383.2	Intermediate Well	Broxton et al. 2001	Good	Casing xy, brass cap z

Table 3.2. Well Completion information for Intermediate Wells

Hole ID	Zone	Top of Screen (ft)	Bottom of Screen (ft)	Perf Size (in)	Annulus Pack	Sump Length (ft)	Screen Source	Screen Comment
CDV-16-1(i)	1	624	634	0.02	10-20 filter pack	13.8	Kleinfelder 2004 WCR	4.5 in. ID
CDV-16-2(i)	1	850.2	867.8	0.01	10-20 filter pack	21.9	Kleinfelder 2004 WCR	4.46 in. ID
CDV-16-2(i)	2	992	1015.2	0.02	10-20 filter pack	21.9	Kleinfelder 2004 WCR	4.46 in. ID
CDV-16-3(i)	0						Kleinfelder 2004 WCR	Open hole, not competed
MCOBT-4.4		485.4	524	0.01	20-40 silica sand	21	WCR	4.5 in. ID
R-9i	1	189.1	199.5	0.01	20-40 silica sand	29.6	WCR	5.0 in. ID
R-9i	2	269.6	280.3	0.01	20-40 silica sand	29.6	WCR	5.0 in. ID

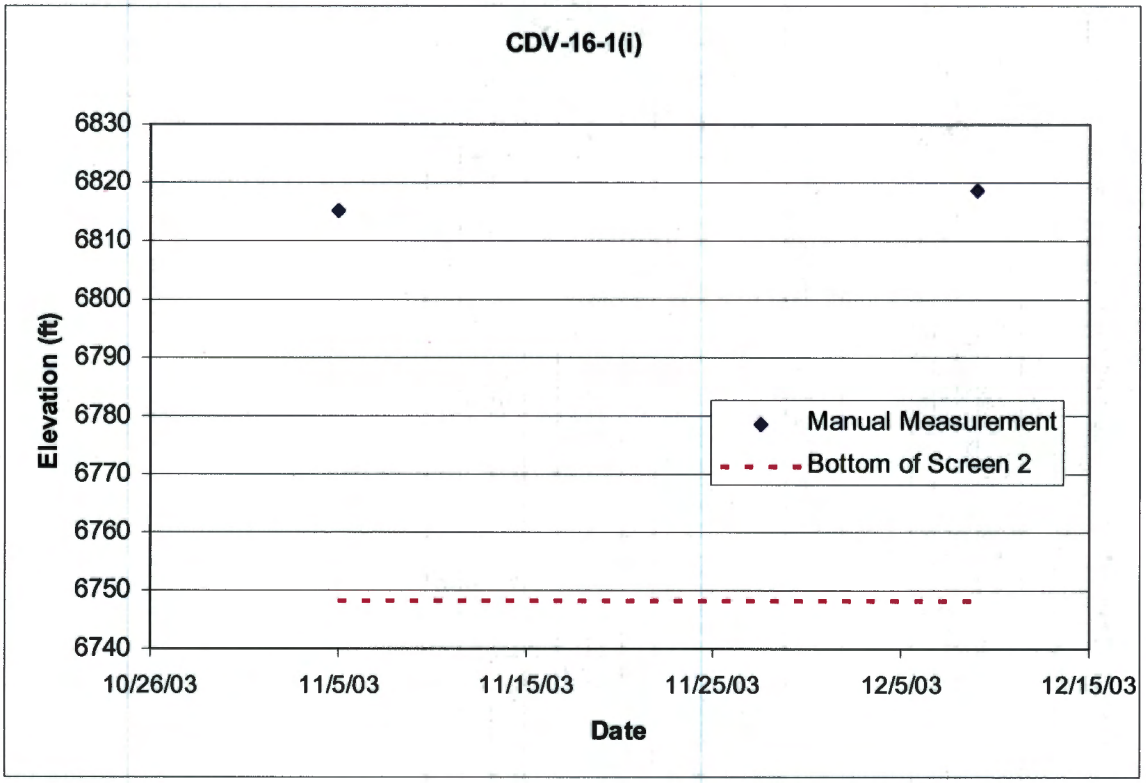
Following sections include additional port and construction information for single and multiple completion intermediate wells installed at LANL since 1997. Time series water level data for each well are also shown for each well.

3.1 CDV-16-1(i)

CDV-16-1(i) Construction Information													
Zone	Screen Top Depth (ft)	Screen Bottom Depth (ft)	Screen Top Elev (ft)	Screen Bottom Elev (ft)	Screen Length (ft)	Pump Intake Depth (ft)	Pump Intake Elevation (ft)	Depth to Top of Sump (ft)	Top of Sump Elevation (ft)	Depth to Sump Bottom (ft)	Sump Length (ft)	Sump Volume (L)	Comment
1	624.0	634	6758.2	6748.2	10.0			634.0	6748.2	657.8	23.8	73.1	Intermediate Zone

Note: CDV-16-1(i) Ground Elevation: 7382.17 ft; all depths are from this elevation;

CDV-16-1(i)	
Manual Measurements	
Date	WL Elev (f
11/5/2003	6815.2
12/9/2003	6818.7

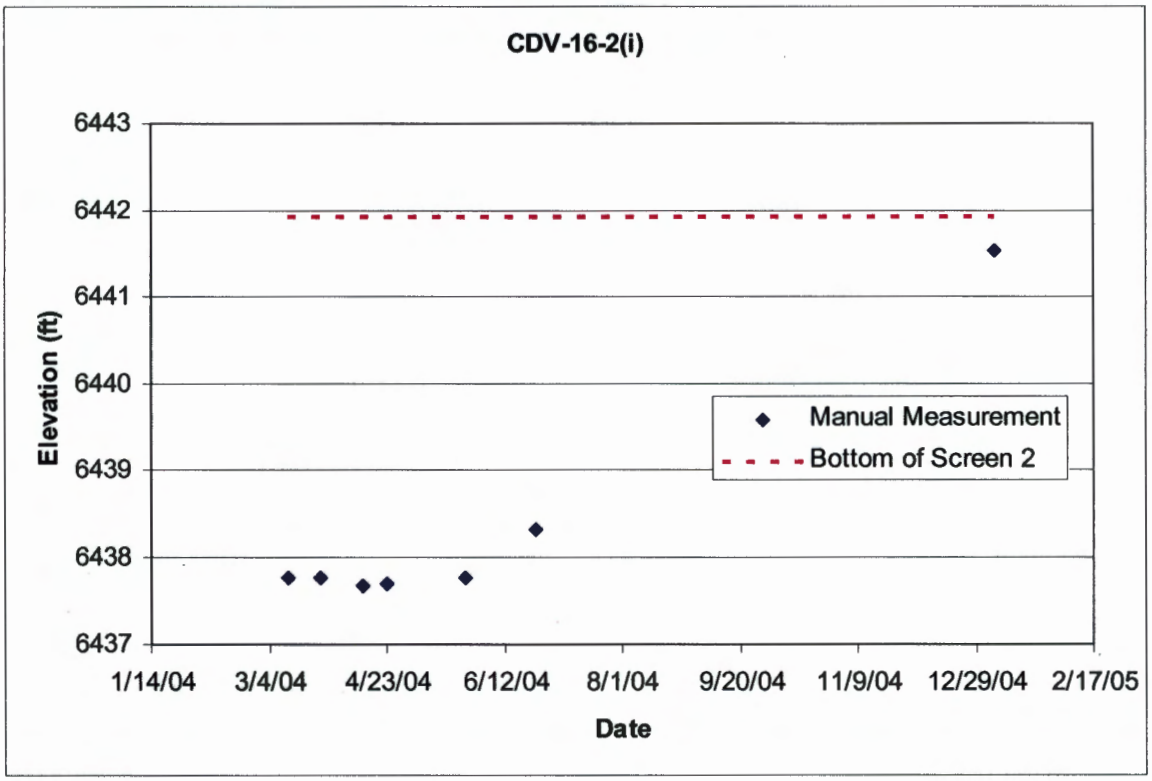


3.2 CDV-16-2(i)

CDV-16-2(i) Construction Information													
Zone	Screen Top Depth (ft)	Screen Bottom Depth (ft)	Screen Top Elev (ft)	Screen Bottom Elev (ft)	Screen Length (ft)	Pump Intake Depth (ft)	Pump Intake Elevation (ft)	Depth to Top of Sump (ft)	Top of Sump Elevation (ft)	Depth to Sump Bottom (ft)	Sump Length (ft)	Sump Volume (L)	Comment
1	850.2	867.8	6606.9	6589.3	17.6			867.8	6589.3	1037.1	169.3	520.1	Intermediate Zone
2	992.0	1015.2	6465.1	6441.9	23.2			1015.2	6441.9	1037.1	21.9	67.3	Regional Aquifer

Note: CDV-16-2(i) Ground Elevation: 7457.11 ft; all depths are from this elevation;

No formation water level data available; water has been measured in the sump.

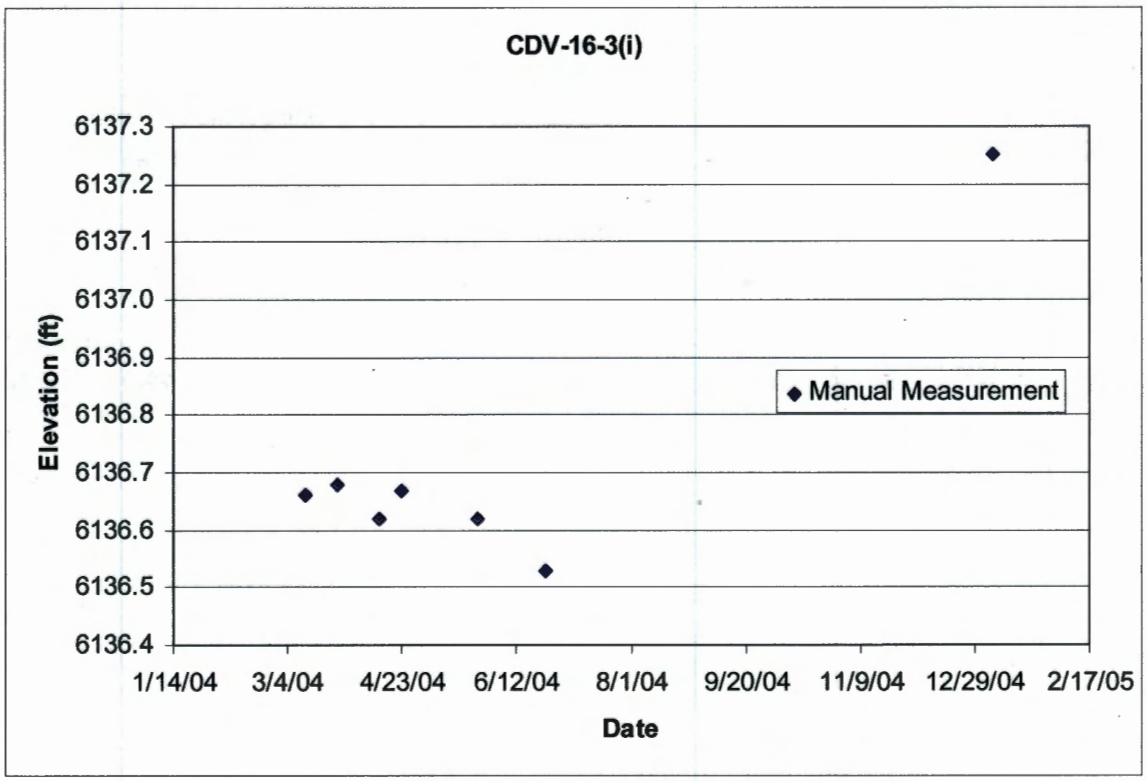


3.3 CDV-16-3(i)

CDV-16-3(i) Construction Information													
Zone	Screen Top Depth (ft)	Screen Bottom Depth (ft)	Screen Top Elev (ft)	Screen Bottom Elev (ft)	Screen Length (ft)	Pump Intake Depth (ft)	Pump Intake Elevation (ft)	Depth to Top of Sump (ft)	Top of Sump Elevation (ft)	Depth to Sump Bottom (ft)	Sump Length (ft)	Sump Volume (L)	Comment
1					0.0							0.0	Regional Aquifer

Note: CDV-16-3(i) Brass Cap Ground Elevation: 7486.8 ft; all depths are from this elevation;
Well not completed, open borehole with surface pad and protective casing

Manual Measurements	
Date	WL Elev (f
3/12/2004	6136.7
3/26/2004	6136.7
4/13/2004	6136.62
4/23/2004	6136.67
5/26/2004	6136.62
6/25/2004	6136.53
1/6/2005	6137.25

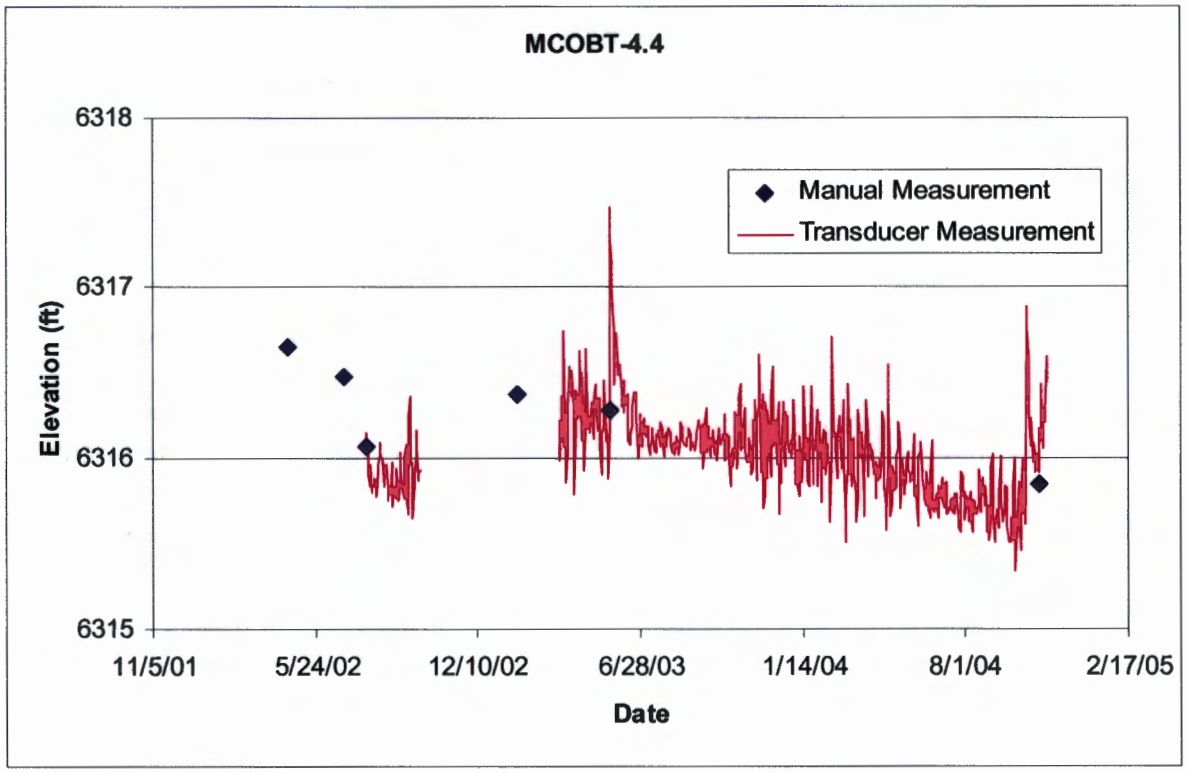


3.4 MCOBT-4.4

Groundwater level data for well MCOBT-4.4 are located in a spreadsheet titled "MCOBT-4.4 GW Level data."

MCOBT-4.4 Construction Information													
Zone	Screen Top Depth (ft)	Screen Bottom Depth (ft)	Screen Top Elev (ft)	Screen Bottom Elev (ft)	Screen Length (ft)	Pump Intake Depth (ft)	Pump Intake Elevation (ft)	Depth to Top of Sump (ft)	Top of Sump Elevation (ft)	Depth to Sump Bottom (ft)	Sump Length (ft)	Sump Volume (L)	Comment
1	485.4	524	6350.8	6312.2	38.6			524.0	6312.2	545	21.0	64.5	Intermediate Zone

Note: MCOBT-4.4 Ground Elevation: 6836.2 ft; all depths are from this elevation;

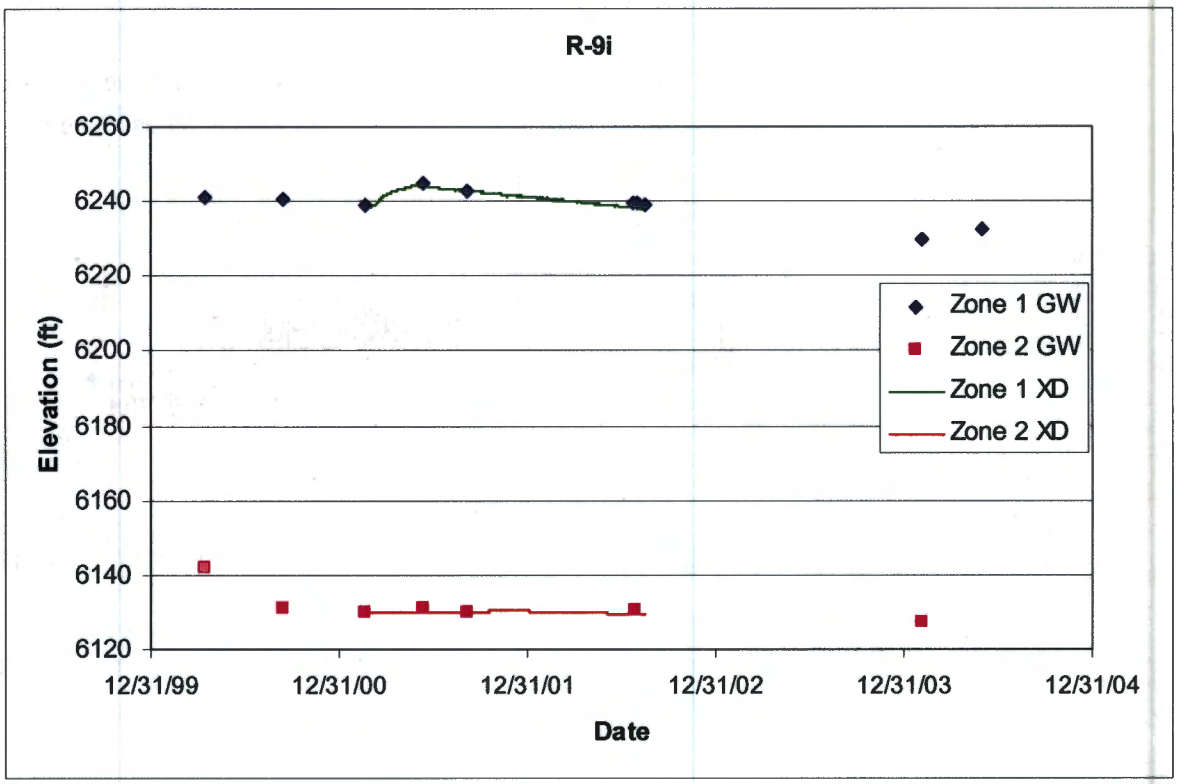


3.5 R-9i

Groundwater level data for well R-9i are located in a spreadsheet titled "R-9i GW Level data."

R-9i Port Data											
Zone	Screen Top Depth (ft)	Screen Bottom Depth (ft)	Screen Top Elev (ft)	Screen Bottom Elev (ft)	Screen Length (ft)	Port	Port Depth (ft)	Port Elevation (ft)	Distance from Bottom of Screen (ft)	Sump Volume (L)	Comment
						MP1A	198.8	6184.4	0.7		Intermediate Zone
1	189.1	199.5	6194.1	6183.7	10.4	PP1	204.1	6179.1	-4.6	13.3	Below screen
						MP1B	209.8	6173.4	-10.3	29.8	Below screen
						MP2A	278.8	6104.4	1.5		Intermediate Zone
2	269.6	280.3	6113.6	6102.9	10.7	PP2	284.1	6099.1	-3.8	11.0	Below screen
						MP2B	289.8	6093.4	-9.5	27.5	Below screen

Brass Cap Elevation: 6383.2 ft
Note: MP = Monitoring Port, PP = Pumping Port, Ports shown in Bold are instrumented with transducers



4.0 Groundwater Level Data from Alluvial wells installed since 1997

Table 4-1 lists the alluvial aquifer groundwater monitoring wells installed at LANL since 1994. Alluvial wells completed since 1994 have been used to monitor water levels during the period 1997 to the present and are thus included here. Table 4-1 provides the well name, general location, date of completion, borehole depth, well depth, surveyed location coordinates and ground surface elevations, and references for the source of location information for each of the of the wells. Table 4-1 is also included in a worksheet within the file named "Alluvial Well Information.xls" on the accompanying data CD.

Table 4-2 lists the well construction information for the alluvial aquifer wells installed since 1994, and includes information for the depth to the top and bottom of screens, annulus material, perforation size, and sump length for each well. Table 4-2 is also included in a worksheet within the file named "Alluvial Well Information.xls" on the accompanying data CD.

Table 4-3 lists well construction and location information for alluvial wells installed in DP Canyon during September and October 2002 and includes well depths, screened intervals, and surveyed location coordinates and elevations. All of these wells were constructed without filter packs. All locations and elevations provided in this table were determined with a survey quality GPS unit. Table 4-3 is also included in a worksheet within the file named "Alluvial Well Information.xls" on the accompanying data CD.

Table 4-4 lists the alluvial wells in which water level measurements were monitored with pressure transducers, the period of record for each well's transducer water level data, the measurement intervals, data quality assessment codes, and the names of the Excel spreadsheet files that contain the data. A comprehensive analysis of the Los Alamos Canyon and Pueblo Canyon data was provided in the Los Alamos Canyon-Pueblo Canyon Investigation Report (LANL, 2004, ER2004-0027) previously submitted to NMED in April 2004. The Excel files for each alluvial well monitored with pressure transducers are included in the accompanying data CD. Table 4-4 is also included in a worksheet within the file named "Alluvial Well Information.xls" on the accompanying data CD. Plots of the transducer water level data are provided in Figures 4-1 through 4-26 following Table 4-4 and are also included in the Excel files for each alluvial well on the accompanying data CD.

Table 4-5 lists the alluvial wells in which water level measurements were measured manually, the period of record for each well's transducer water level data, the measurement intervals, data quality assessment codes, and the names of the Excel spreadsheet files that contain the data. The monthly manual water level data were previously provided in the Los Alamos Canyon-Pueblo Canyon Investigation Report submitted to NMED in April 2004. Table 4-5 is also included in a worksheet within the file named "Alluvial Well Information.xls" on the accompanying data CD. The Excel files containing the manual water level data are included on the accompanying data CD. Plots of the manual water level data are included in the Excel file "Manual Alluvial WL Data+Graphs (final).xls" on the accompanying data CD.

Table 4-1. Information and Location Data for Alluvial Aquifer Wells at LANL[a]

Well Name	General Location	Date Completed	Borehole Depth (Ft)	Well Depth (Ft)	Easting (ft)[b]	Northing (ft)[b]	Ground Surf. Elev. (ft amsl)	Survey Method	Coordinate Confidence
18-BG-1	Threemile Canyon	8/1/1994	37.0	35.0	1634152.9	1762575.36	6776.5	Licensed Surveyor	Good
18-BG-4	Threemile Canyon	2/18/1998	25.0	6.8	1633600	1760750	6725	None - est. from FIMAD map	Moderate
18-MW-7	Threemile Canyon	7/6/1994	32.0	30.0	1634846.3	1761791.52	6755.5	Licensed Surveyor	Good
18-MW-8	Threemile Canyon	8/4/1994	40.0	37.9	1634714.3	1760658.14	6747.8	Licensed Surveyor	Good
18-MW-12	Threemile Canyon	11/6/1996	43.8	41.0	1636139.9	1760607.8	6725.7	Licensed Surveyor	Good
CDV-16-2655	Cañon de Valle	9/27/1997	12.0	7.6	1611299.50	1764152.90	7583.70	Licensed Surveyor	Good
CDV-16-2656	Cañon de Valle	11/5/1997	9.2	8.2	1613634.45	1764932.80	7443.20	Licensed Surveyor	Good
CDV-16-2658	Cañon de Valle	9/16/1997	12.0	7.2	1615071.40	1764469.60	7375.60	Licensed Surveyor	Good
CDV-16-2659	Cañon de Valle	9/8/1997	10.0	7	1616712.10	1765035.10	7300.50	Licensed Surveyor	Good
LAO-B	Los Alamos Canyon	4/28/1994	27.5	27.19	1615148.84	1775170.43	7322.57	Licensed Surveyor	Good
LAO-0.3	Los Alamos Canyon	5/27/1994	12.0	11.25	1624799.01	1774511.64	6967.82	Licensed Surveyor	Good
LAO-0.6	Los Alamos Canyon	5/6/1994	17.5	13.35	1626748.11	1774332.90	6910.34	Licensed Surveyor	Good
LAO-0.8	Los Alamos Canyon	5/11/1994	17.5	12.85	1627699.74	1774274.66	6887.04	Licensed Surveyor	Good
LAO-0.91	Los Alamos Canyon	5/12/1994	15.5	14.85	1628654.28	1774207.01	6861.16	Licensed Surveyor	Good
LAO-1.6g	Los Alamos Canyon	3/20/1996	36.0	30.82	1636083.42	1772557.63	6657.68	Licensed Surveyor	Good
LLAO-1b	Lower Los Alamos Canyon	7/16/1997	24.17	24.17	1659738.70	1772381.65	5848.84	Licensed Surveyor	Good
LLAO-2	Lower Los Alamos Canyon	9/26/1996	32.5	30.64	1662717.26	1773906.36	5770.18	Licensed Surveyor	Good
LLAO-3	Lower Los Alamos Canyon	7/22/1997	22.0	21.5	1665475.00	1775952.59	5692.12	Licensed Surveyor	Good
LLAO-4	Lower Los Alamos Canyon	9/30/1996	21.0	18.09	1671820.23	1774468.01	5515.21	Licensed Surveyor	Good
LLAO-5	Lower Los Alamos Canyon	6/27/1996	42.0	24.22	1672275.43	1774271.64	5504.71	Licensed Surveyor	Good
MCO-0.6	Mortandad Canyon	2/25/1999	3.1	3.05	1623987.76	1771179.47	7187.92	Licensed Surveyor	Good
PAO-1	Pueblo Canyon	10/30/1998	16	13.7	1624165.85	1778998.72	6954.5	Licensed Surveyor	Good
PAO-2	Pueblo Canyon	11/2/1998	16.2	13.91	1625040.9	1778710	6930.4	Licensed Surveyor	Good
PAO-2.5	Pueblo Canyon	8/31/1998	13.9	10.25	1630646.12	1777700.31	6722.4	Licensed Surveyor	Good
PAO-3	Pueblo Canyon	8/27/1998	17.5	13.5	1637747.7	1776856.31	6578.6	Licensed Surveyor	Good

Table 4-1 (continued). Information and Location Data for Alluvial Aquifer Wells at LANL[a]

Well Name	General Location	Date Completed	Borehole Depth (Ft)	Well Depth (Ft)	Easting (ft)[b]	Northing (ft)[b]	Ground Surf. Elev. (ft amsl)	Survey Method	Coordinate Confidence
PAO-4	Pueblo Canyon	7/24/1997	15.5	9.82	1646090.28	1775098.35	6437.37	Licensed Surveyor	Good
PAO-5N	Pueblo Canyon	3/24/1998	22.5	15.3	1649271.93	1773133.5	6369.79	Licensed Surveyor	Good
PAO-5S	Pueblo Canyon	3/23/1998	21.9	20.9	1649180.35	1772991.48	6368.33	Licensed Surveyor	Good
LAP-1	Los Alamos Canyon	5/17/2001	12.5	Piez. #1: 11.01 Piez. #2: 9.00 Piez. #3: 7.01	1622074.52	1775295.20	7061.18	Licensed Surveyor	Good
LAP-1.5	Los Alamos Canyon	5/15/2001	12.9	Piez. #1: 11.20 Piez. #2: 8.70 Piez. #3: 6.20	1627393.80	1774281.17	6897.32	Licensed Surveyor	Good
LAP-1.7	Los Alamos Canyon	5/16/2001	18.5	Piez. #3: 8.50	1627554.03	1774282.37	6892.58	Licensed Surveyor	Good
LAP-3	Los Alamos Canyon	5/11/2001	10.6	9.48	1627746.15	1774243.85	6881.45	Licensed Surveyor	Good
LAP-3.5	Los Alamos Canyon	5/16/2001	15.0	Piez. #1: 13.64 Piez. #2: 11.12 Piez. #3: 8.62	1627925.31	1774291.95	6876.76	Licensed Surveyor	Good
LAP-4	Los Alamos Canyon	3/21/2001	17.5	Piez. #1: 15.68 Piez. #2: 12.65 Piez. #3: 9.69	1640584.00	1772716.99	6536.64	Licensed Surveyor	Good
LAP-5.7	Los Alamos Canyon	3/23/2001	17.5	Piez. #1: 14.64 Piez. #2: 12.65 Piez. #3: 10.65	1645485.10	1771630.21	6441.46	Licensed Surveyor	Good
LAP-6	Los Alamos Canyon	3/22/2001	15.0	13.50	1646196.02	1771332.32	6424.99	Licensed Surveyor	Good
LAUZ-1	DP Canyon	1994	NA	10.55	1633435.13	1774809.81	7032.42	Licensed Surveyor	Good
LAUZ-2	DP Canyon	1994	NA	10.47	1634014.47	1774728.6	7026.72	Licensed Surveyor	Good
16-MW-6293	Martin Spring Canyon	01/27/2000	10	7.3					
16-MW-6294	Martin Spring Canyon	01/26/2000	10	7.6					
16-MW-2695	Martin Spring Canyon	01/31/2000	8	6.9					

[a] Data are provided for alluvial aquifer wells completed at LANL from 1994 through 2004 from which water level data have been collected since 1997.
[b] Coordinates are NM State Plane NAD 1983.

Table 4-2. Well Completion information for Alluvial Aquifer Wells

Well Name	Diameter (in)	Top of Screen (ft)	Bot. of Screen (ft)	Slot Size (in)	Annulus Filter Pack	Sump Length (ft)	Screen Information Source	Screen Comment
16-MW-2693	4	2.0	7.0	0.01	Sand 20-40	0.3	Field notes	Sch. 40 PVC; 30-70 sand in prepack
16-MW-2694	4	2.5	7.3	0.01	Sand 20-40	0.3	Field notes	Sch. 40 PVC; 30-70 sand in prepack
16-MW-2695	4	1.5	6.5		Sand 20-40	0.3	Field notes	Sch. 40 PVC; 30-70 sand in prepack
18-BG-1	2	10.0	35.0	NA	NA	NA	Field notes	Sch. 40 PVC
18-BG-4	4	2.5	6.5	0.01	Sand 20-40	0.3	Gray, 2001	Sch. 40 PVC
18-MW-7	2	10.0	30.0	NA	NA	NA	Field notes	Sch. 40 PVC
18-MW-8	2	8.0	38.0	NA	NA	NA	Field notes	Sch. 40 PVC
18-MW-12	2	5.0	40.0	NA	NA	NA	Field notes	Sch. 40 PVC
CDV-16-2655	4	2.3	7.3	0.01	Sand 30-70	0.3	Gray, 2001	Sch. 40 PVC; 30-70 sand in prepack
CDV-16-2656	4	3	8	0.01	Sand 30-70	0.3	Gray, 2001	Sch. 40 PVC; 30-70 sand in prepack
CDV-16-2658	4	1.9	6.9	0.01	Sand 30-70	0.3	Gray, 2001	Sch. 40 PVC; 30-70 sand in prepack
CDV-16-2659	4	1.7	6.7	0.01	Sand 30-70	0.3	Gray, 2001	Sch. 40 PVC; 30-70 sand in prepack
LAO-B	4	11.84	26.84	0.01	Sand 10-20	0.35	Gray, 2001	Sch. 40 PVC
LAO-0.3	4	5.9	10.9	0.01	Sand 20-40	0.35	Gray, 2001	Sch. 40 PVC
LAO-0.6	4	8.0	13.0	0.01	Sand 20-40	0.35	Gray, 2001	Sch. 40 PVC
LAO-0.8	4	7.5	12.5	0.01	Sand 20-40	0.35	Gray, 2001	Sch. 40 PVC
LAO-0.91	4	9.5	14.5	0.01	Sand 20-40	0.35	Gray, 2001	Sch. 40 PVC
LAO-1.6g	4	10.47	25.47	0.01	Sand 20-40	0.35	Gray, 2001	Sch. 40 PVC
LLAO-1b	4	11.32	21.32	0.01	Sand 20-40	2.85	Gray, 2001	Sch. 40 PVC
LLAO-2	4	17.79	27.79	0.01	Sand 10-20	2.85	Gray, 2001	Sch. 40 PVC
LLAO-3	4	8.65	18.65	0.01	Sand 20-40	2.85	Gray, 2001	Sch. 40 PVC
LLAO-4	4	5.24	15.24	0.01	Sand 10-20	2.85	Gray, 2001	Sch. 40 PVC
LLAO-5	4	11.37	21.37	0.01	Sand 20-40	2.85	Gray, 2001	Sch. 40 PVC
MCO-0.6	2.25	1.05	3.05	0.01	Sand 16-40	0.05	Gray, 2001	Stainless steel
PAO-1	4	5.89	10.89	0.01	Sand 20-40	2.85	Gray, 2001	Sch. 40 PVC
PAO-2	4	6.06	11.06	0.01	Sand 20-40	2.85	Gray, 2001	Sch. 40 PVC
PAO-2.5	4	2.4	7.4	0.01	Sand 20-40	2.85	Gray, 2001	Sch. 40 PVC
PAO-3	4	5.62	10.62	0.01	Sand 20-40	2.85	Gray, 2001	Sch. 40 PVC
PAO-4	4	1.97	6.97	0.01	Sand 20-40	2.85	Gray, 2001	Sch. 40 PVC
PAO-5N	4	7.43	12.43	0.01	Sand 20-40	2.85	Gray, 2001	Sch. 40 PVC
PAO-5S	4	8.05	18.05	0.01	Sand 20-40	2.85	Gray, 2001	Sch. 40 PVC
LAP-1#1	2	10.36	10.86	0.02	Sand 8-12	0.15		
LAP-1#2	2	8.35	8.85	0.02	Sand 8-12	0.15		
LAP-1#3	2	6.36	6.86	0.02	Sand 8-12	0.15	Gray, 2001	Sch. 40 PVC; hand cut slots
LAP-1.5#1	2	10.55	11.05	0.02	Sand 8-12	0.15		
LAP-1.5#2	2	8.05	8.55	0.02	Sand 8-12	0.15		
LAP-1.5#3	2	5.55	6.05	0.02	Sand 8-12	0.15	Gray, 2001	Sch. 40 PVC; hand cut slots
LAP-1.7#3	2	7.85	8.35	0.02	Sand 8-12	0.15	Gray, 2001	Sch. 40 PVC; hand cut slots
LAP-3	2	8.33	9.33	0.02	Sand 8-12	0.15	Gray, 2001	Sch. 40 PVC; hand cut slots
LAP-3.5#1	2	12.99	13.49	0.02	Sand 8-12	0.15		
LAP-3.5#2	2	10.47	10.97	0.02	Sand 8-12	0.15		
LAP-3.5#3	2	7.97	8.47	0.02	Sand 8-12	0.15	Gray, 2001	Sch. 40 PVC; hand cut slots
LAP-4#1	2	15.03	15.53	0.02	Sand 8-12	0.15		
LAP-4#2	2	12.00	12.50	0.02	Sand 8-12	0.15		
LAP-4#3	2	9.04	9.54	0.02	Sand 8-12	0.15	Gray, 2001	Sch. 40 PVC; hand cut slots
LAP-5.7#1	2	13.99	14.49	0.02	Sand 8-12	0.15	Gray, 2001	Sch. 40 PVC; hand cut slots
LAP-6	2	10.35	13.35	0.02	Sand 8-12	0.15	Gray, 2001	Sch. 40 PVC; hand cut slots
LAUZ-1	4	5.35	10.35	NA	NA	0.2	Field notes	Sch. 40 PVC
LAUZ-2	4	5.27	10.27	NA	NA	0.2	Field notes	Sch. 40 PVC
18-BG-1	2	10.0	35.0	NA	NA			Sch. 40 PVC
18-BG-4	4	2.5	6.5	0.01	Sand 20-40	0.3	Gray, 2001	Sch. 40 PVC
18-MW-7	2	10.0	30.0	NA	NA			Sch. 40 PVC
18-MW-8	2	8.0	38.0	NA	NA			Sch. 40 PVC
18-MW-12	2	5.0	40.0	NA	NA			Sch. 40 PVC

Table 4-3. DP Canyon Well Information

Well Name	Well No.	Diam. (in)	Depth (ft toc)	Stickup (ft ags)	Depth (ft bgs)	Screen Top (ft bgs)	Screen Bottom (ft bgs)	Screen Length (ft)	x coordinate	y coordinate	Surface Elevation (ft amsl)
DPBN-1A	1	1	8.81	3.00	5.81	4.71	5.71	1.00	1633437.23	1774794.74	7032.29
	2	1	7.82	3.00	4.82	3.72	4.72	1.00			
	3	1	6.83	3.00	3.83	1.73	3.73	2.00			
DPBN-1B	1	1	8.59	2.92	5.67	4.47	5.57	1.10	1633445.86	1774806.35	7032.71
	2	1	7.46	2.92	4.54	3.34	4.44	1.10			
	3	1	6.35	2.92	3.43	1.18	3.33	2.15			
DPBN-1C	1	1	9.13	2.88	6.25	4.65	6.15	1.50	1633456.98	1774815.86	7032.48
	2	1	7.63	2.88	4.75	3.75	4.65	0.90			
	3	1	6.71	2.88	3.83	2.13	3.73	1.60			
DPBN-2A	1	1	8.39	2.90	5.49	4.39	5.39	1.00	1633471.62	1774776.47	7033.21
	2	1	7.39	2.90	4.49	3.39	4.39	1.00			
	3	1	6.40	2.90	3.50	2.40	3.40	1.00			
DPBN-2B	1	1	8.68	3.00	5.68	4.23	5.58	1.35	1633480.59	1774796.90	7032.02
	2	1	7.33	3.00	4.33	2.63	4.23	1.60			
	3	1	5.77	3.00	2.77	1.07	2.67	1.60			
DPBN-2C	1	1	11.33	2.88	8.45	6.60	8.35	1.75	1633484.08	1774817.28	7032.98
	2	1	9.59	2.88	6.71	5.91	6.61	0.70			
	3	1	8.96	2.88	6.08	4.23	5.98	1.75			
DPBN-3A	1	1	10.06	3.00	7.06	6.21	6.96	0.75	1633510.31	1774771.65	7032.96
	2	1	9.32	3.00	6.32	5.22	6.22	1.00			
	3	1	8.30	3.00	5.30	3.20	5.20	2.00			
DPBN-3B	1	1	7.93	2.94	4.99	4.04	4.89	0.85	1633510.04	1774785.84	7031.88
	2	1	7.07	2.94	4.13	3.18	4.03	0.85			
	3	1	6.19	2.94	3.25	1.30	3.15	1.85			
DPBN-3C	1	1	9.46	2.80	6.66	5.86	6.56	0.70	1633509.72	1774807.60	7031.96
	2	1	8.77	2.80	5.97	4.47	5.87	1.40			
	3	1	7.37	2.80	4.57	2.47	4.47	2.00			
DPBN-4A	1	1	9.96	2.54	7.42	6.07	7.32	1.25	1633553.44	1774775.50	7031.93
	2	1	8.78	2.54	6.24	4.89	6.14	1.25			
	3	1	7.51	2.54	4.97	2.62	4.87	2.25			
DPBN-4B	1	1	10.28	2.81	7.47	6.12	7.37	1.25	1633563.39	1774794.89	7031.53
	2	1	9.01	2.81	6.20	4.85	6.10	1.25			
	3	1	7.76	2.81	4.95	2.60	4.85	2.25			
DPBN-4C	1	1	11.02	2.50	8.52	7.42	8.42	1.00	1633568.72	1774813.56	7032.79
	2	1	10.04	2.49	7.55	6.45	7.45	1.00			
	3	1	9.02	2.49	6.53	5.43	6.43	1.00			
DPBN-5A	1	1	8.56	2.12	6.44	5.59	6.34	0.75	1633609.83	1774764.78	7030.29
	2	1	7.76	2.12	5.64	4.79	5.54	0.75			
	3	1	7.01	2.12	4.89	3.04	4.79	1.75			
DPBN-5B	1	1	11.24	2.57	8.67	6.87	8.57	1.70	1633616.77	1774782.90	7031.05
	2	1	9.53	2.57	6.96	5.06	6.86	1.80			
	3	1	7.75	2.57	5.18	3.08	5.08	2.00			

Table 4-3 (continued). DP Canyon Well Information

Well Name	Well No.	Diam. (in)	Depth (ft toc)	Stickup (ft ags)	Depth (ft bgs)	Screen Top (ft bgs)	Screen Bottom (ft bgs)	Screen Length (ft)	x coordinate	y coordinate	Surface Elevation (ft amsl)
DPBN-5C	1	1	11.73	2.94	8.79	8.24	8.69	0.45	1633621.16	1774800.44	7031.36
	2	1	11.25	2.94	8.31	6.06	8.21	2.15			
	3	1	9.10	2.94	6.16	3.91	6.06	2.15			
DPBN-6A	1	1	10.29	2.24	8.05	6.70	7.95	1.25	1633697.52	1774739.29	7030.73
	2	1	9.00	2.20	6.80	5.45	6.70	1.25			
	3	1	7.78	2.25	5.53	3.13	5.43	2.30			
DPBN-6B	1	1	9.21	2.83	6.38	5.43	6.28	0.85	1633703.17	1774757.34	7028.88
	2	1	8.36	2.82	5.54	4.19	5.44	1.25			
	3	1	7.12	2.82	4.30	1.20	4.20	3.00			
DPBN-6C	1	1	11.54	2.88	8.66	7.21	8.56	1.35	1633702.33	1774768.73	7029.83
	2	1	10.17	2.88	7.29	4.69	7.19	2.50			
	3	1	7.68	2.88	4.80	1.45	4.70	3.25			
DPBN-6D	1	1	11.09	2.85	8.24	6.14	8.14	2.00	1633701.97	1774780.55	7030.42
	2	1	9.09	2.85	6.24	4.14	6.14	2.00			
	3	1	7.09	2.85	4.24	1.69	4.14	2.45			
DPBN-7A	1	1	10.90	2.67	8.23	6.63	8.13	1.50	1633808.42	1774731.59	7028.64
	2	1	9.41	2.67	6.74	5.14	6.64	1.50			
	3	1	7.89	2.67	5.22	2.62	5.12	2.50			
DPBN-7B	1	1	9.70	2.90	6.80	5.60	6.70	1.10	1633805.08	1774752.93	7027.37
	2	1	8.69	2.90	5.79	3.69	5.69	2.00			
	3	1	6.70	2.90	3.80	1.10	3.70	2.60			
DPBN-7C	1	1	10.27	2.85	7.42	6.37	7.32	0.95	1633802.24	1774770.32	7028.00
	2	1	9.30	2.84	6.46	5.01	6.36	1.35			
	3	1	7.91	2.83	5.08	2.68	4.98	2.30			
DPBN-8A	1	1	9.21	2.51	6.70	6.00	6.60	0.60	1634000.87	1774702.96	7025.06
	2	1	8.70	2.51	6.19	5.49	6.09	0.60			
	3	1	8.02	2.51	5.51	3.81	5.41	1.60			
DPBN-8B	1	1	8.43	2.23	6.20	5.60	6.10	0.50	1634006.52	1774729.83	7024.34
	2	1	7.90	2.23	5.67	5.07	5.57	0.50			
	3	1	7.36	2.23	5.13	3.53	5.03	1.50			
DPPN-1.1	1	2	9.12	3.00	6.12	5.45	5.95	0.50	1633449.20	1774802.80	7032.55
	2	2	7.80	3.00	4.80	4.13	4.63	0.50	1633448.85	1774801.43	7032.27
	3	2	6.30	3.00	3.30	2.63	3.13	0.50	1633448.41	1774799.98	7032.24
DPPN-4.5N	1	2	11.91	3.00	8.91	8.24	8.74	0.50	1633587.18	1774792.28	7031.65
	2	2	10.77	3.00	7.77	7.10	7.60	0.50	1633587.15	1774793.52	7031.92
	3	2	7.66	3.00	4.66	3.99	4.49	0.50	1633586.98	1774795.89	7031.82
DPPN-5.7N	1	2	9.06	3.00	6.06	5.39	5.89	0.50	1633684.52	1774756.19	7029.72
	2	2	7.67	3.00	4.67	4.00	4.50	0.50	1633686.04	1774757.23	7029.54
	3	2	6.07	3.00	3.07	2.40	2.90	0.50	1633687.50	1774758.17	7029.50
DPPN-7.7	1	2	10.45	2.99	7.46	6.79	7.29	0.50	1633973.35	1774730.08	7024.49
	2	2	8.71	3.00	5.71	5.04	5.54	0.50	1633974.77	1774729.22	7024.47
	3	2	7.17	2.78	4.39	3.72	4.22	0.50	1633976.25	1774727.90	7024.56
DPW-1.1N	NA	2	11.57	2.97	8.60	3.43	8.43	5.00	1633464.48	1774822.64	7033.84
DPW-1N	NA	2	8.73	2.83	5.90	3.18	5.73	2.55	1633468.54	1774838.19	7034.65

Table 4-3 (continued). DP Canyon Well Information

Well Name	Well No.	Diam. (in)	Depth (ft toc)	Stickup (ft ags)	Depth (ft bgs)	Screen Top (ft bgs)	Screen Bottom (ft bgs)	Screen Length (ft)	x coordinate	y coordinate	Surface Elevation (ft amsl)
DPW-1S	NA	2	9.52	3.00	6.52	1.55	6.35	4.80	1633432.97	1774813.48	7032.67
DPW-3.2N	NA	2	12.05	3.04	9.01	4.44	8.84	4.40	1633526.38	1774831.13	7034.53
DPW-3.5N	NA	2	10.27	2.95	7.32	1.05	7.15	6.10	1633545.86	1774799.15	7031.44
DPW-3.5S	NA	2	12.26	3.00	9.26	3.09	9.09	6.00	1633539.04	1774769.04	7032.40
DPW-4.4N	NA	2	11.17	2.94	8.23	1.06	8.06	7.00	1633575.91	1774791.73	7031.09
DPW-4.6N	NA	2	11.21	3.05	8.16	4.99	7.99	3.00	1633587.08	1774821.51	7032.55
DPW-4.9S	NA	2	8.85	2.85	6.00	3.33	5.83	2.50	1633606.94	1774760.75	7030.93
DPW-5.7N	NA	2	10.81	2.91	7.90	2.03	7.73	5.70	1633667.88	1774789.22	7031.02
DPW-5.8N	NA	2	12.07	3.07	9.00	3.83	8.83	5.00	1633673.26	1774812.06	7032.32
DPW-6.2S	NA	2	8.66	3.50	5.16	1.79	4.99	3.20	1633730.93	1774739.39	7028.90
DPW-6.5N	NA	2	10.21	3.00	7.21	3.54	7.04	3.50	1633758.72	1774794.01	7030.20
DPW-7.1S	NA	2	11.30	2.91	8.39	0.82	8.22	7.40	1633819.62	1774737.66	7028.76
DPW-7.4N	NA	2	9.25	2.96	6.29	4.02	6.12	2.10	1633900.18	1774779.15	7028.10
DPW-7.5S	NA	2	12.14	3.10	9.04	1.27	8.87	7.60	1633905.30	1774716.27	7027.50
DPW-7.9S	NA	2	10.73	3.04	7.69	0.72	7.52	6.80	1633994.52	1774718.22	7025.22

Table 4-4. Summary of Alluvial Water Level Data from Pressure Transducers

Well Name	Period of Record	Measurement Interval	Data Quality	Data File Name
LAO-B	8/25/2000-12/14/2004	hourly	V	LAO-B hourly data 08-25-00 to 12-14-04.xls
LAO-0.3	8/25/2000-12/14/2004	hourly	V	LAO-0.3 hourly data 08-25-00 to 12-14-04.xls
LAO-0.91	8/25/2000-12/14/2004	hourly	V	LAO-0.91 hourly data 08-25-00 to 12-14-04.xls
LAO-1.6g	8/25/2000-12/6/2004	hourly	V	LAO-1.6g hourly data 08-25-00 to 12-6-04.xls
PAO-1	8/22/2000-11/20/2004	hourly	V	PAO-1 hourly data 08-22-00 to 11-2-04.xls
PAO-3	8/23/2000-12/15/2004	hourly	V	PAO-3 hourly data 08-23-00 to 12-15-04.xls
PAO-4	8/23/2000-12/15/2004	hourly	V	PAO-4 hourly data 08-23-00 to 12-15-04.xls
PAO-5N	8/24/2000-12/15/2004	hourly	V	PAO-5N hourly data 08-24-00 to 12-15-04.xls
LAP-1	7/24/2001-9/25/2003 4/7/2004-12/14/2004	30-mimute	V	LAP-1 WL data 07-24-01 to 12-14-04.xls
LAP-1.5	7/24/2001-9/25/2003 4/7/2004-12/14/2004	30-mimute	V	LAP-1.5 WL data 07-24-01 to 12-14-04.xls
LAP-1.7	4/7/2004-12/14/2004	30-mimute	V	LAP-1.7 WL data 04-07-04 to 12-14-04.xls
LAP-3	7/24/2001-9/25/2003 4/7/2004-12/14/2004	30-mimute	V	LAP-3 WL data 07-24-01 to 12-14-04.xls
LAP-3.5	11/13/2001-9/25/2003 4/7/2004-12/14/2004	30-mimute	V	LAP-3.5 WL data 11-13-01 to 12-14-04.xls
LAP-4	4/18/2001-6/13/2003 3/30/2004-12/15/2004	30-mimute	V	LAP-4 WL data 4-18-01 to 12-15-04.xls
LAP-5.7	7/24/2001-6/13/2003 3/30/2004-12/15/2004	30-mimute	V	LAP-5.7 WL data 7-24-01 to 12-15-04.xls
LAP-6	3/23/2001-6/13/2003 4/14/2004-6/16/2004	30-mimute	V	LAP-6 WL data 3-23-01 to 6-16-04.xls
LAUZ-1	3/7/2002-12/4/2003	30-mimute	V	LAUZ-1 WL data 03-07-02 to 12-4-03.xls
LAUZ-2	3/7/2002-12/4/2003	30-mimute	V	LAUZ-2 WL data 03-07-02 to 12-4-03.xls
DPPN-1.1	12/19/02-6/19/03	30-mimute	V	DPPN-1.1 WL data 12-19-02 to 06-19-03.xls
DPPN-4.5N	12/19/02-6/19/03	30-mimute	V	DPPN-4.5N WL data 12-19-02 to 06-19-03.xls
DPPN-7.7	2/4/03-12/4/03	30-mimute	V	DPPN-7.7 WL data 02-04-03 to 12-04-03.xls
DPW-7.1S	2/19/03-5/6/03	30-mimute	V	DPW-7.1S WL data 2-19-03 to 5-6-03.xls
CDV-16-2655	10/16/1999-10/18/2004	hourly	NR	CDV-16-2655 WL data.xls
CDV-16-2656	7/22/1999-10/19/2004	hourly	NR	CDV-16-2656 WL data.xls
CDV-16-2658	7/31/1999-10/19/2004	hourly	NR	CDV-16-2658 WL data.xls
CDV-16-2659	7/22/1999-10/19/2004	hourly	NR	CDV-16-2659 WL data.xls

NR = not reviewed

Table 4-5. Alluvial Water Level Data from Manual Measurements

Well Name	Period of Record	Measurement Interval	Data Quality	Data File Name
LAO-B	4/94-8/94; 1/95-4/95; 11/95-7/96; 11/96-9/99; 6/00-9/02	Monthly	V	Manual Alluvial WL Data+Graphs (final).xls
LAO-B (water sampling data)	6/00-5/02	Monthly, Quarterly	NR	Sample_wls_Los Alamos Cyn wells_1-13-04.xls
LAO-0.3	6/94-10/94; 1/95-4/95; 11/95-7/96; 11/96-9/99; 6/00-9/02	Monthly	V	Manual Alluvial WL Data+Graphs (final).xls
LAO-0.3 (water sampling data)	6/00-5/02	Monthly, Quarterly	NR	Sample_wls_Los Alamos Cyn wells_1-13-04.xls
LAO-0.6	5/94-10/94; 1/95-4/95; 11/95-7/96; 11/96-9/99; 6/00-9/02	Monthly	V	Manual Alluvial WL Data+Graphs (final).xls
LAO-0.6 (water sampling data)	6/00-10/00	Monthly	NR	Sample_wls_Los Alamos Cyn wells_1-13-04.xls
LAO-0.8	5/94–10/94; 1/95–4/95; 11/95–7/96; 11/96–9/99; 7/00–9/02	Monthly	V	Manual Alluvial WL Data+Graphs (final).xls
LAO-0.91	6/94–10/94; 1/95–4/95; 11/95–7/96; 11/96–9/99; 6/00–9/02	Monthly	V	Manual Alluvial WL Data+Graphs (final).xls
LAO-1.6g	11/96–9/99; 6/00–9/02	Monthly	V	Manual Alluvial WL Data+Graphs (final).xls
LAO-1.6g (water sampling data)	4/97; 6/00-11/01	Monthly, Quarterly	NR	Sample_wls_Los Alamos Cyn wells_1-13-04.xls
LLAO-1b	8/97–9/99; 6/00–9/02	Monthly	V	Manual Alluvial WL Data+Graphs (final).xls
LLAO-1b (water sampling data)	2/99; 6/00-5/02	Monthly, Quarterly	V	Sample_wls_Los Alamos Cyn wells_1-13-04.xls
LLAO-2	11/96–9/99; 6/00–9/02	Monthly	V	Manual Alluvial WL Data+Graphs (final).xls
LLAO-3	8/97–9/99; 6/00–9/02	Monthly	V	Manual Alluvial WL Data+Graphs (final).xls
LLAO-4	11/96–9/99; 6/00–9/02	Monthly	V	Manual Alluvial WL Data+Graphs (final).xls
LLAO-4 (water sampling data)	5/97; 6/00-10/00	Monthly	NR	Sample_wls_Los Alamos Cyn wells_1-13-04.xls
LLAO-5	11/96–9/99; 6/00–9/02	Monthly	V	Manual Alluvial WL Data+Graphs (final).xls
LLAO-5 (water sampling data)	5/97; 6/00-05/02	Monthly, Quarterly	NR	Sample_wls_Los Alamos Cyn wells_1-13-04.xls
MCO-0.6	3/99-9/99; 8/00; 1/01-7/01; 1/02-3/02	Monthly	V	Manual Alluvial WL Data+Graphs (final).xls
PAO-1	11/98–9/99; 6/00–9/02	Monthly	V	Manual Alluvial WL Data+Graphs (final).xls
PAO-1 (water sampling data)	6/00-5/02	Monthly, Quarterly	NR	Sample_wls_Pueblo_dk_sp_1-05-04.xls
PAO-2	11/98–9/99; 6/00–9/02	Monthly	V	Manual Alluvial WL Data+Graphs (final).xls
PAO-2 (water sampling data)	06/01-10/01	Quarterly	NR	Sample_wls_Pueblo_dk_sp_1-05-04.xls
PAO-2.5	12/98–9/99; 8/00–1/01; 6/01–9/02	Monthly	V	Manual Alluvial WL Data+Graphs (final).xls
PAO-3	11/98–9/99; 8/00–9/02	Monthly	V	Manual Alluvial WL Data+Graphs (final).xls
PAO-3 (water sampling data)	04/01-10/01	Quarterly	NR	Sample_wls_Pueblo_dk_sp_1-05-04.xls
PAO-4	8/97–9/99; 6/00–9/02	Monthly	V	Manual Alluvial WL Data+Graphs (final).xls
PAO-4 (water sampling data)	6/00-5/02	Monthly, Quarterly	NR	Sample_wls_Pueblo_dk_sp_1-05-04.xls
PAO-5N	3/98–9/99; 6/00–9/02	Monthly	V	Manual Alluvial WL Data+Graphs (final).xls
PAO-5N (water sampling data)	6/00-10/00; 6/02	Monthly, Quarterly	NR	Sample_wls_Pueblo_dk_sp_1-05-04.xls
PAO-5S	3/98–9/99; 6/00–9/02	Monthly	V	Manual Alluvial WL Data+Graphs (final).xls
LAUZ-1	8/97-10/98	Variable	V	Manual Alluvial WL Data+Graphs (final).xls
LAUZ-1(water sampling data)	08/97-10/98; 04/01-05/02	Quarterly	NR	Sample_wls_Los Alamos Cyn wells_1-13-04.xls
LAUZ-2	8/97-10/98	Variable	V	Manual Alluvial WL Data+Graphs (final).xls
LAUZ-2 (water sampling data)	08/97-10/98	Quarterly	NR	Sample_wls_Los Alamos Cyn wells_1-13-04.xls

Table 4-5 (continued). Alluvial Water Level Data from Manual Measurements

Well Name	Period of Record	Measurement Interval	Data Quality	Data File Name
18-BG-1	6/00–7/00	Variable	NR	Manual Alluvial WL Data+Graphs (final).xls
18-BG-4	6/00–7/00	Variable	NR	Manual Alluvial WL Data+Graphs (final).xls
18-MW-7	6/00–7/00	Variable	NR	Manual Alluvial WL Data+Graphs (final).xls
18-MW-8	6/00–7/00	Variable	NR	Manual Alluvial WL Data+Graphs (final).xls
18-MW-12	6/00–7/00	Variable	NR	Manual Alluvial WL Data+Graphs (final).xls
16-MW-6293	10/00-01/05	Variable	NR	TA-16 alluvial wells field parameters2.xls
16-MW-6294	10/00-01/05	Variable	NR	TA-16 alluvial wells field parameters2.xls
16-MW-6295	03/00-01/05	Variable	NR	TA-16 alluvial wells field parameters2.xls

NR = not reviewed

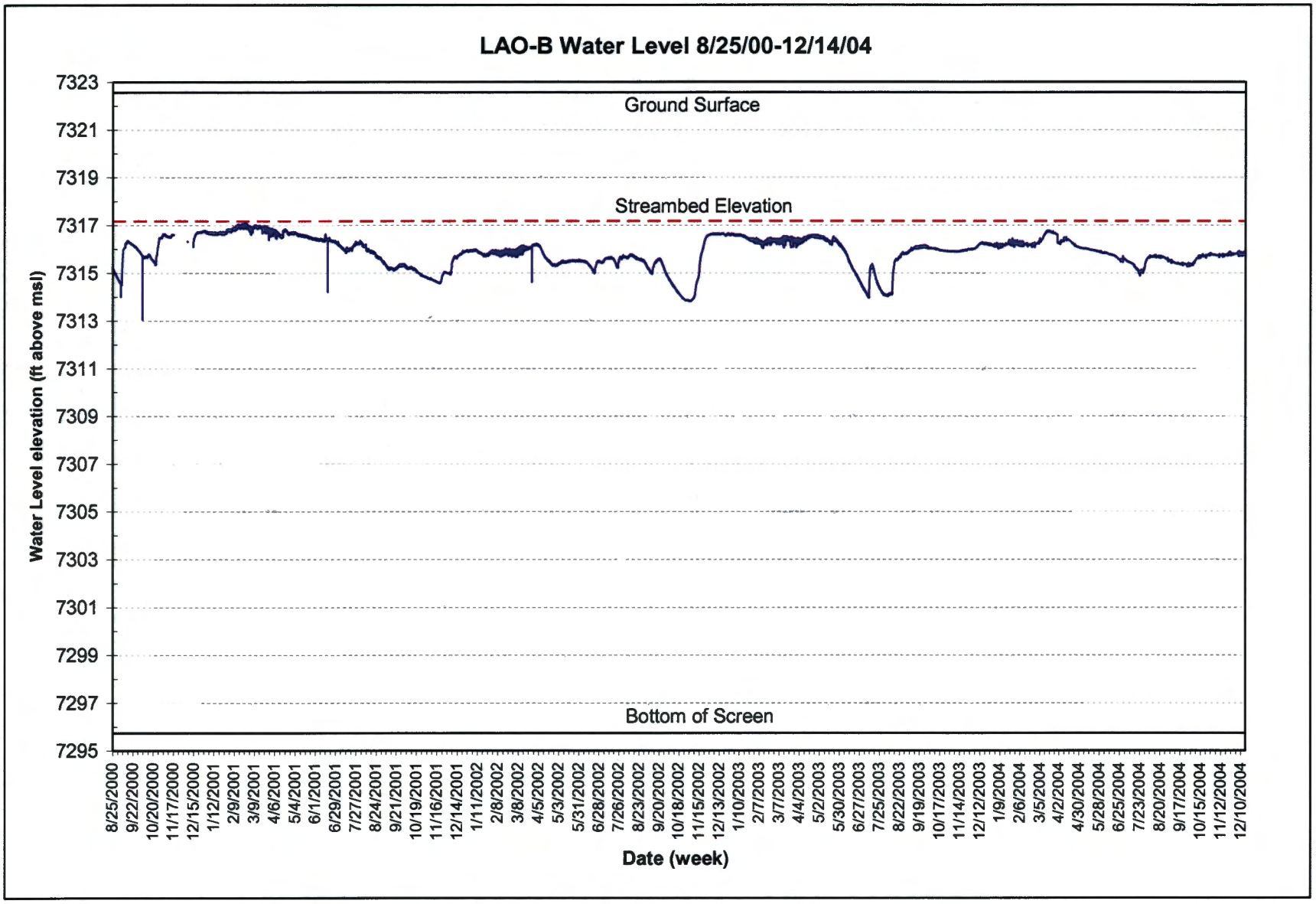


Figure 4-1. LAO-B transducer water level data

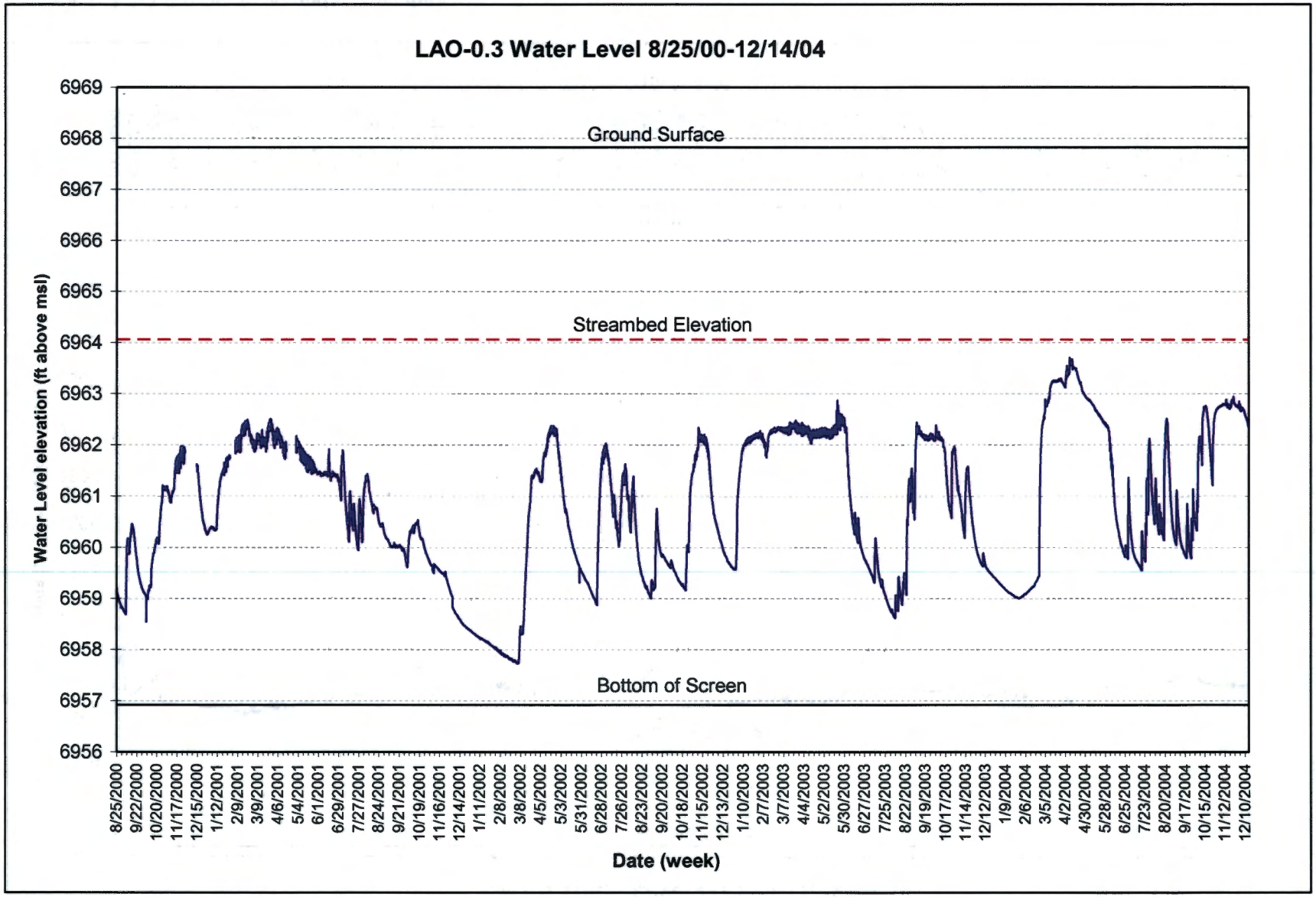


Figure 4-2. LAO-0.3 transducer water level data

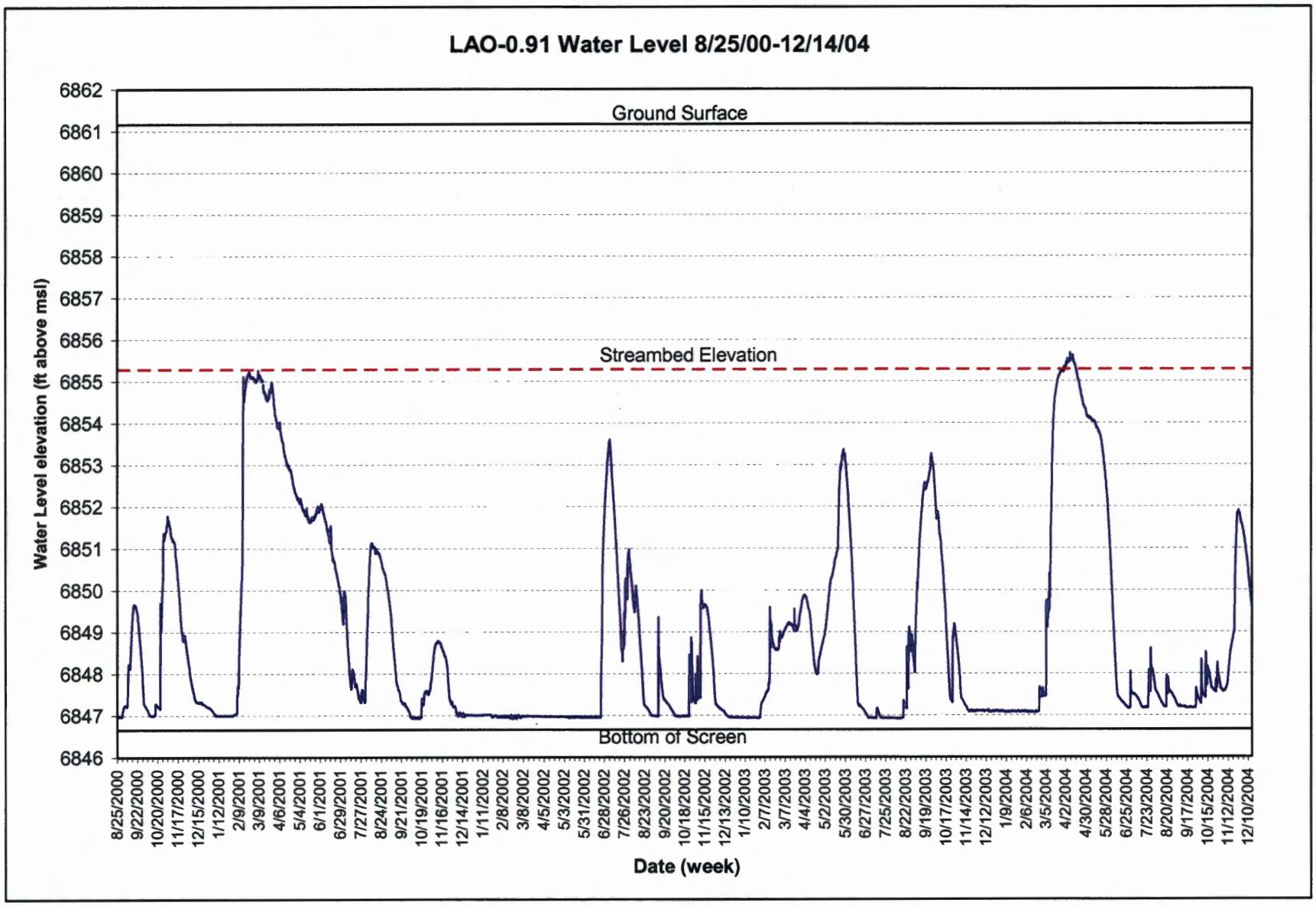


Figure 4-3. LAO-0.91 transducer water level data

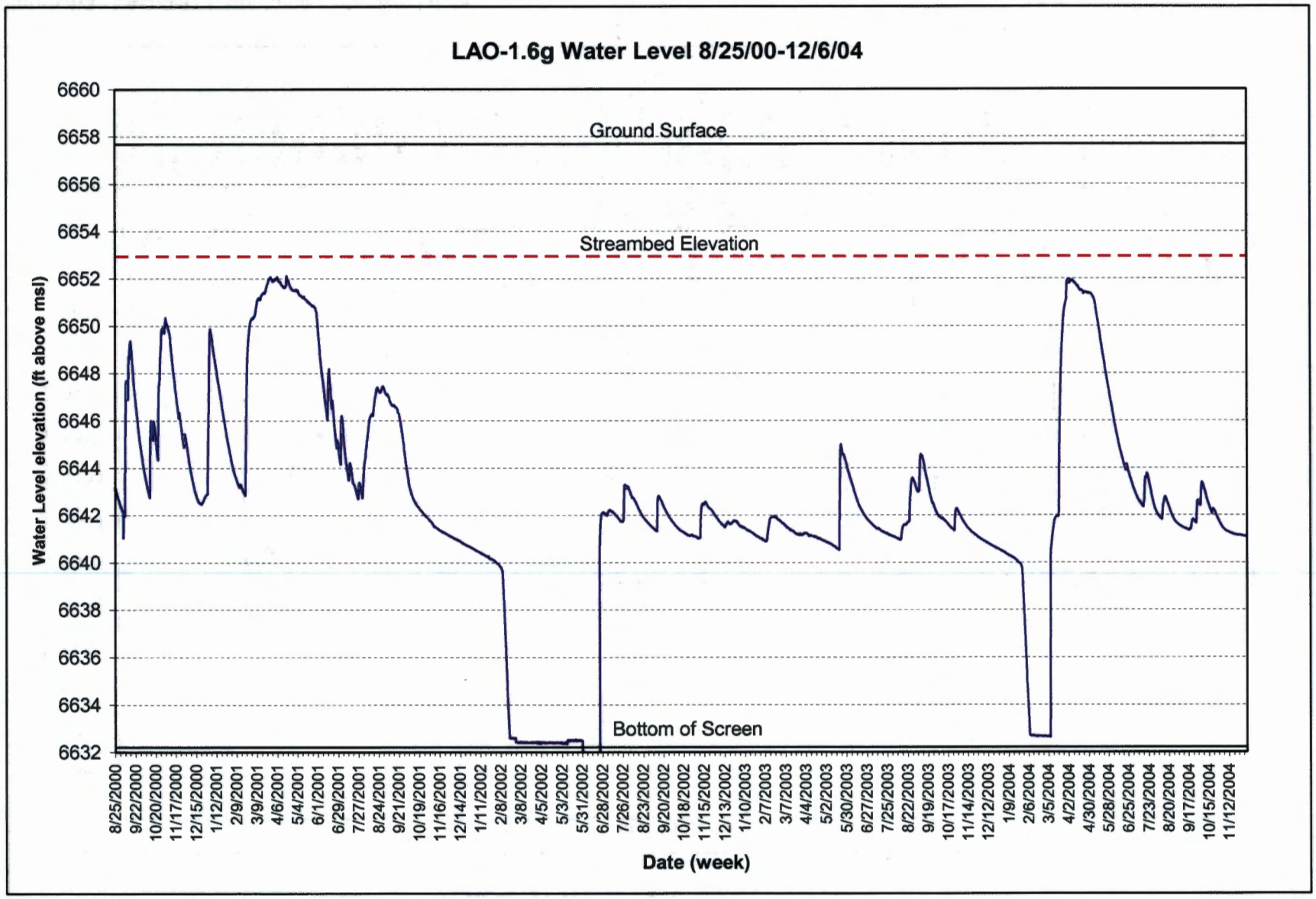


Figure 4-4. LAO-0.1.6g transducer water level data

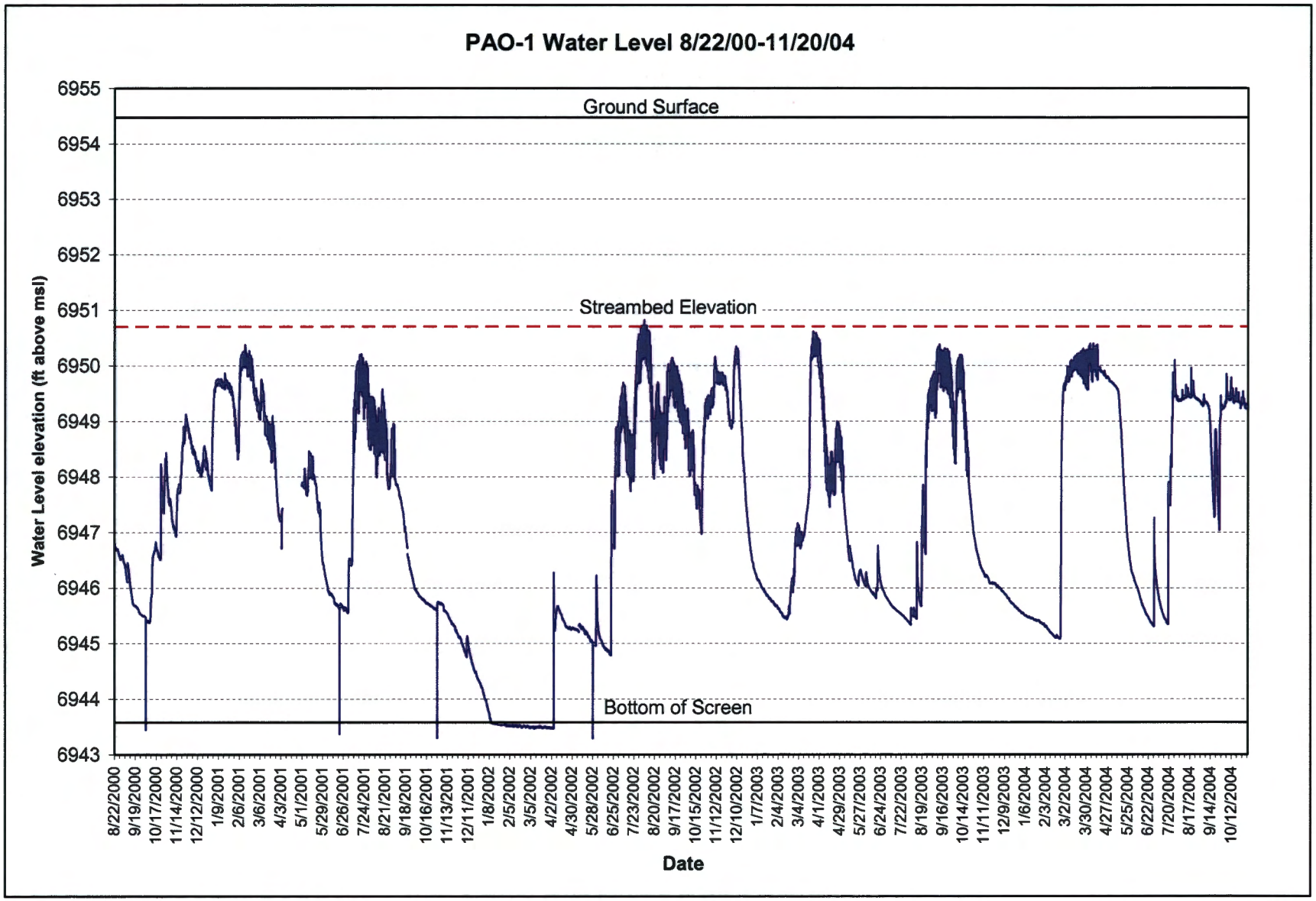


Figure 4-5. PAO-1 transducer water level data

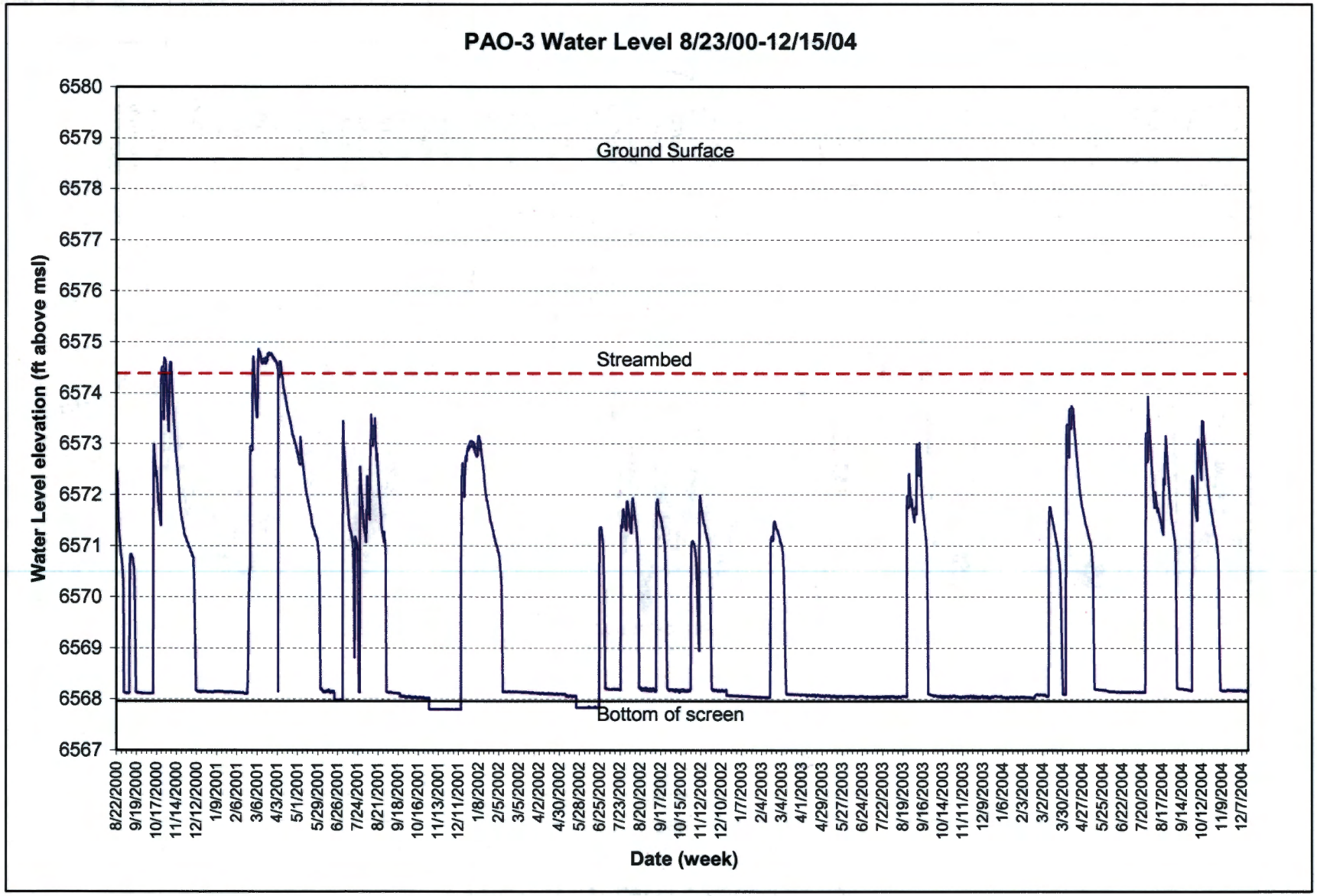


Figure 4-6. PAO-3 transducer water level data

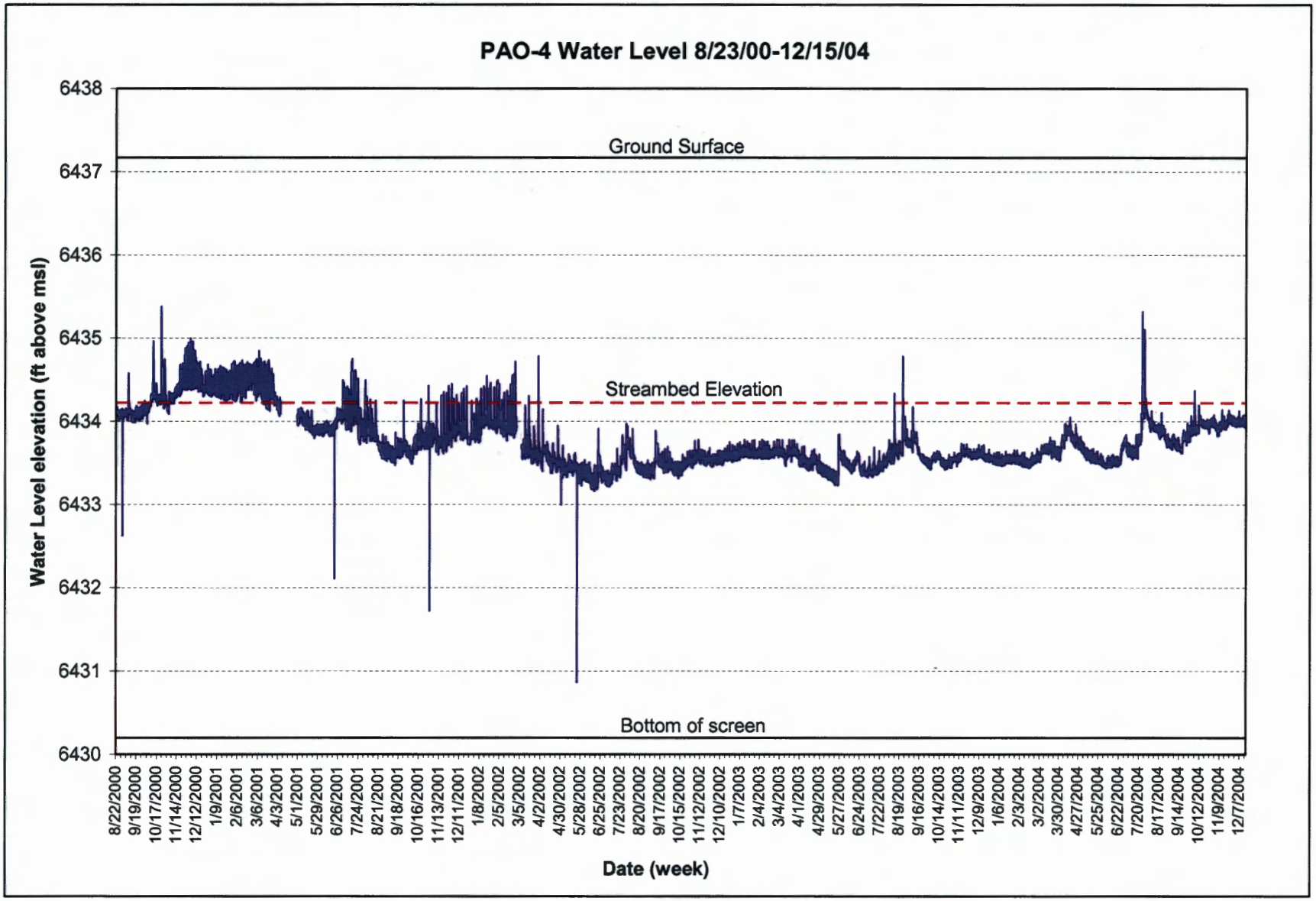


Figure 4-7. PAO-4 transducer water level data

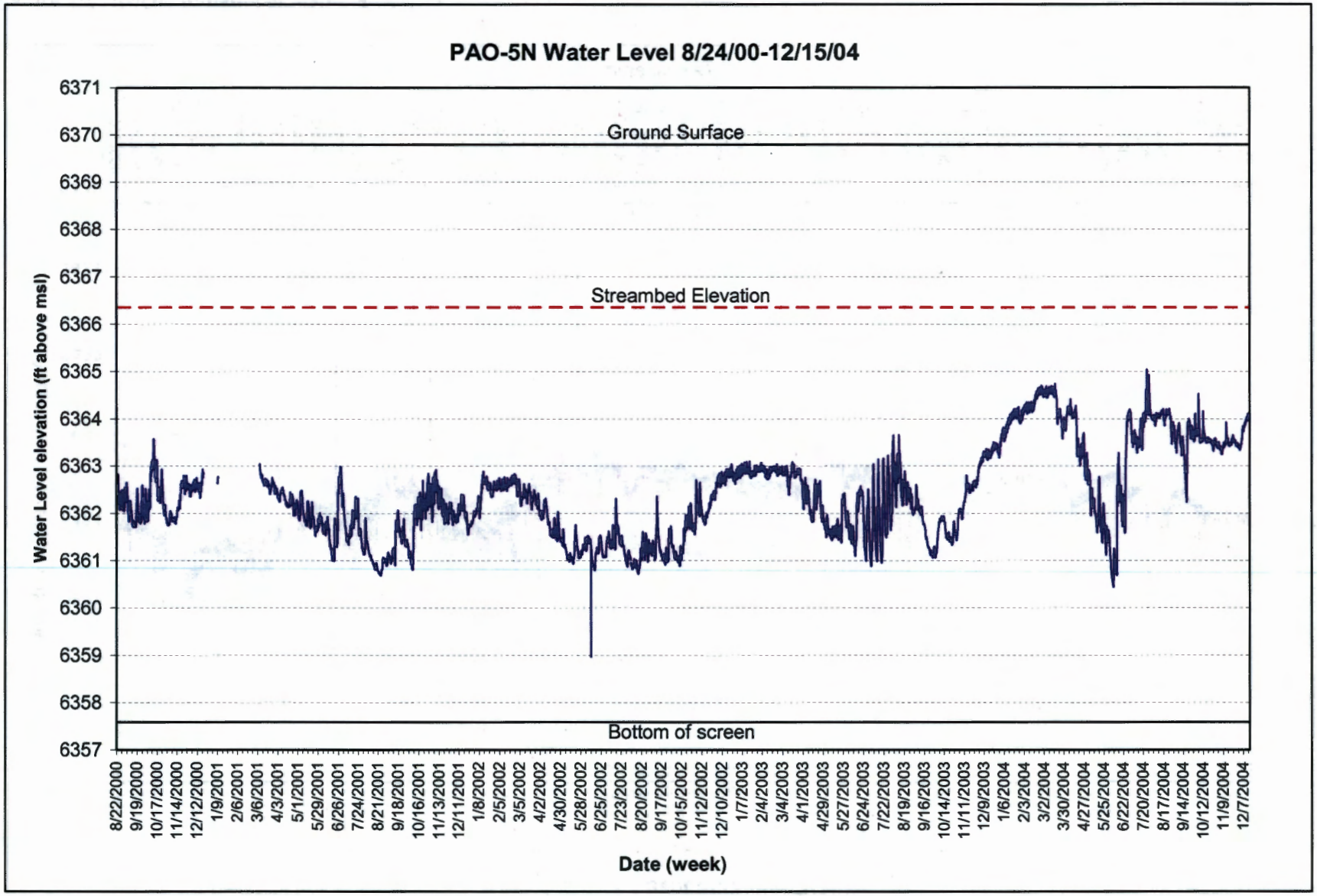


Figure 4-9. PAO-5N transducer water level data

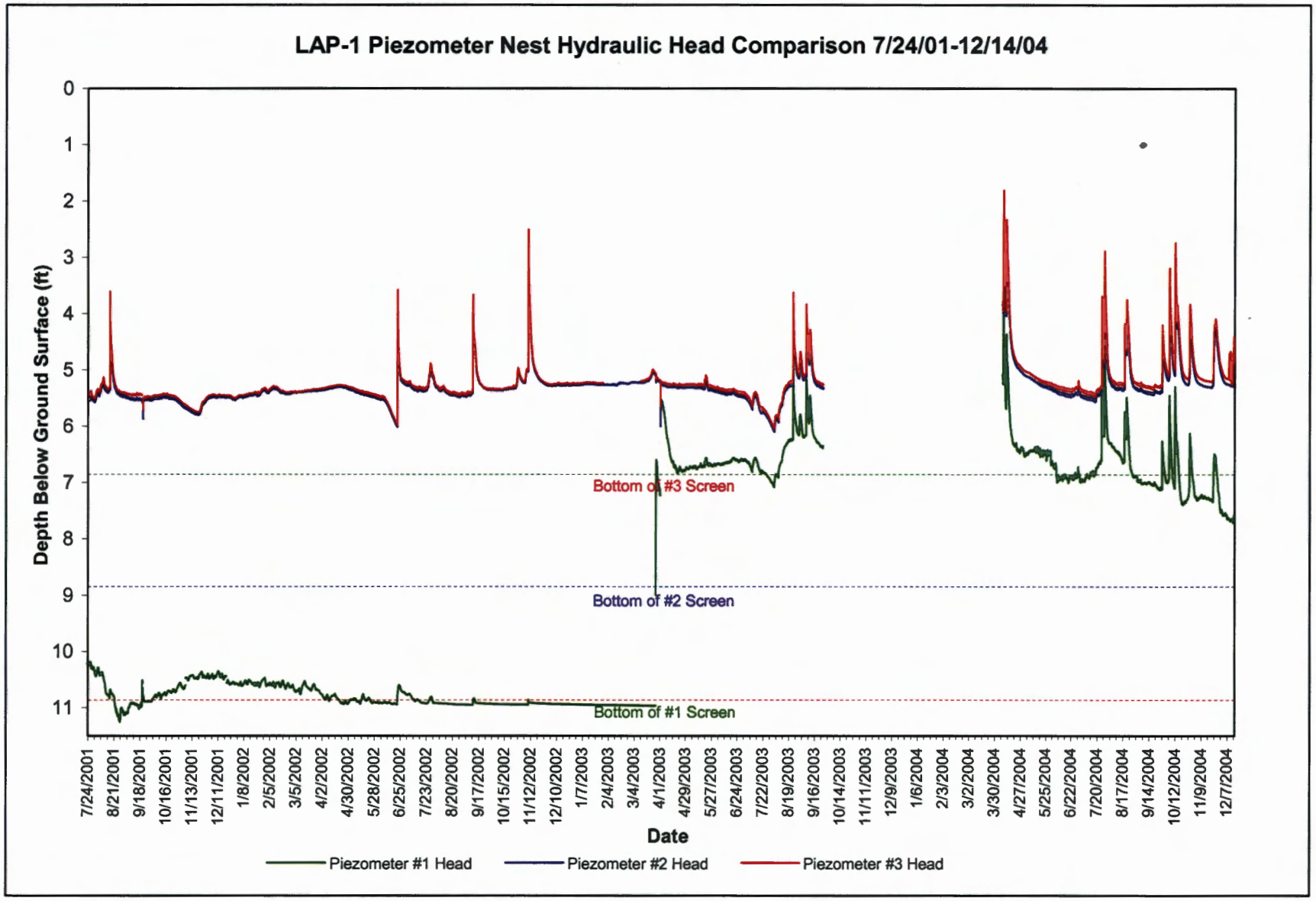


Figure 4-9. LAP-1 transducer water level data

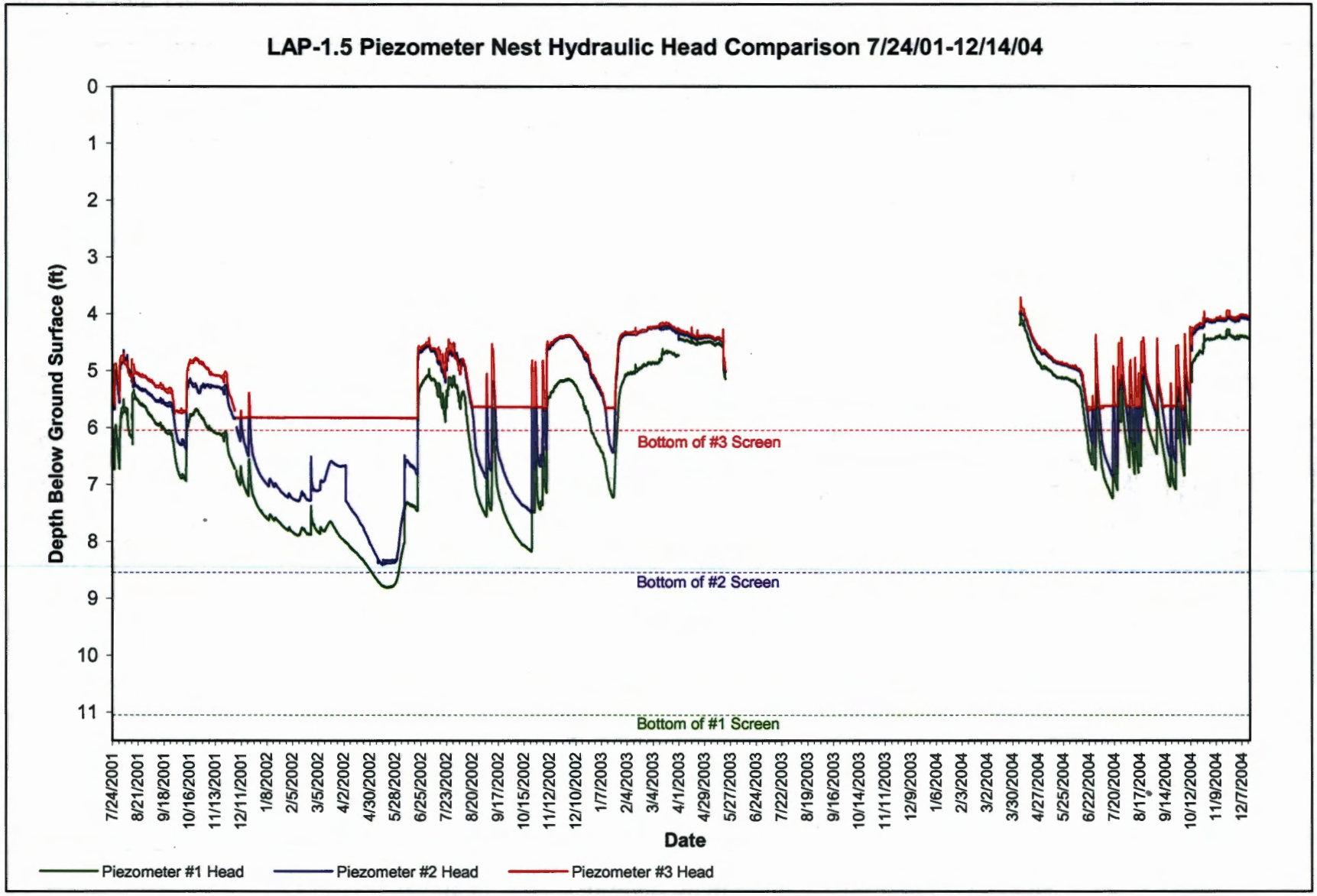


Figure 4-10. LAP-1.5 transducer water level data

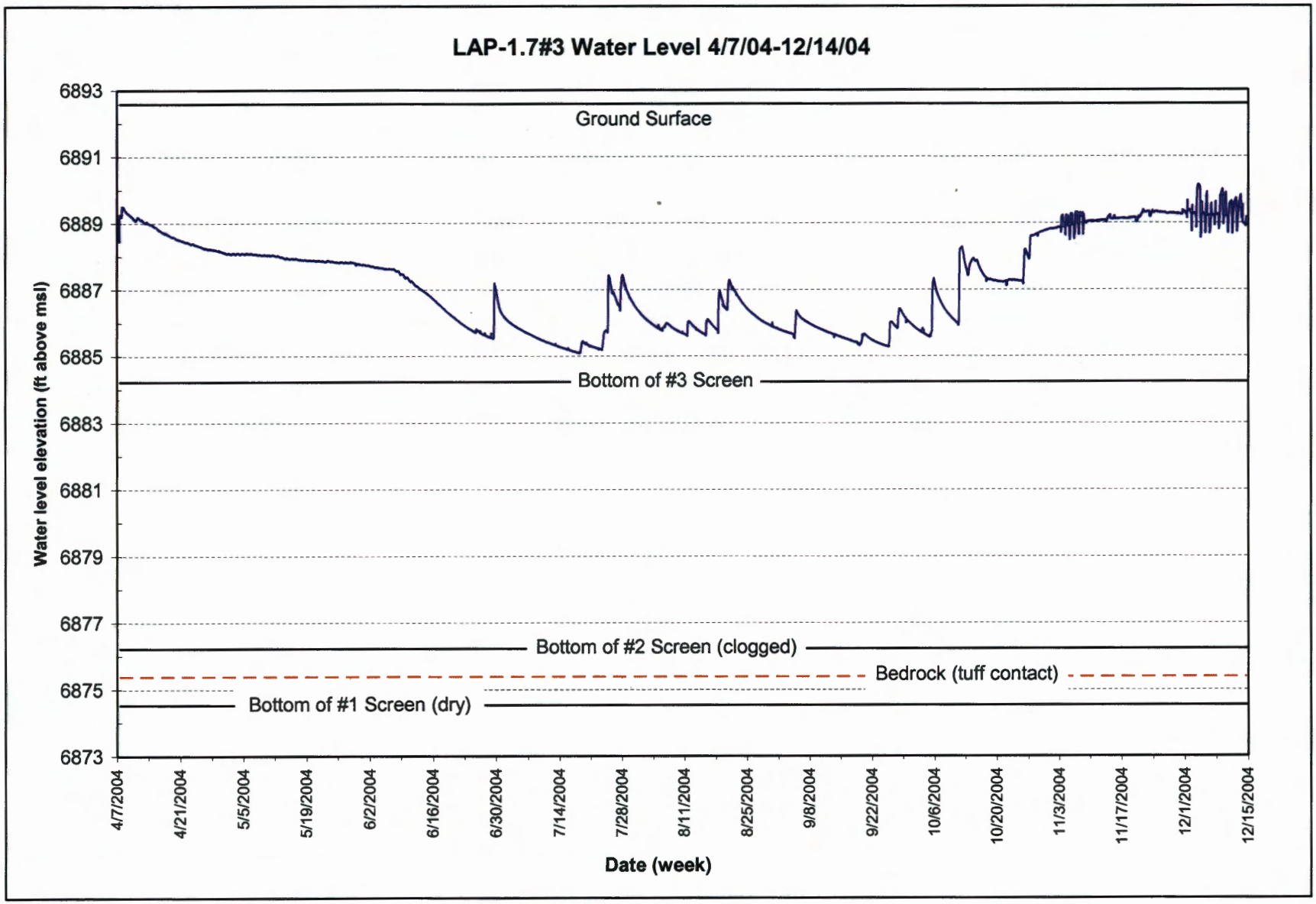


Figure 4-11. LAP-1.7 transducer water level data

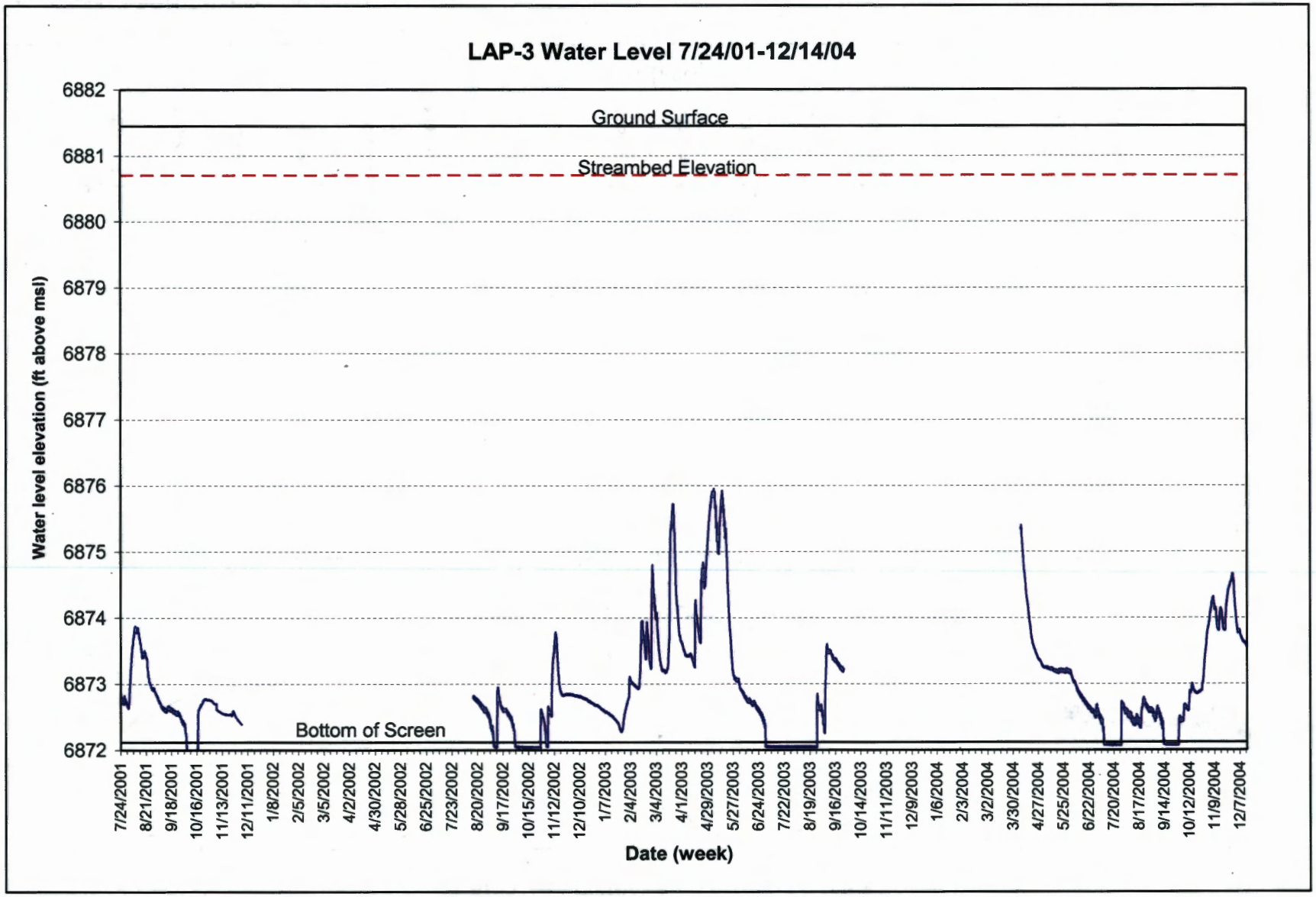


Figure 4-12. LAP-3 transducer water level data

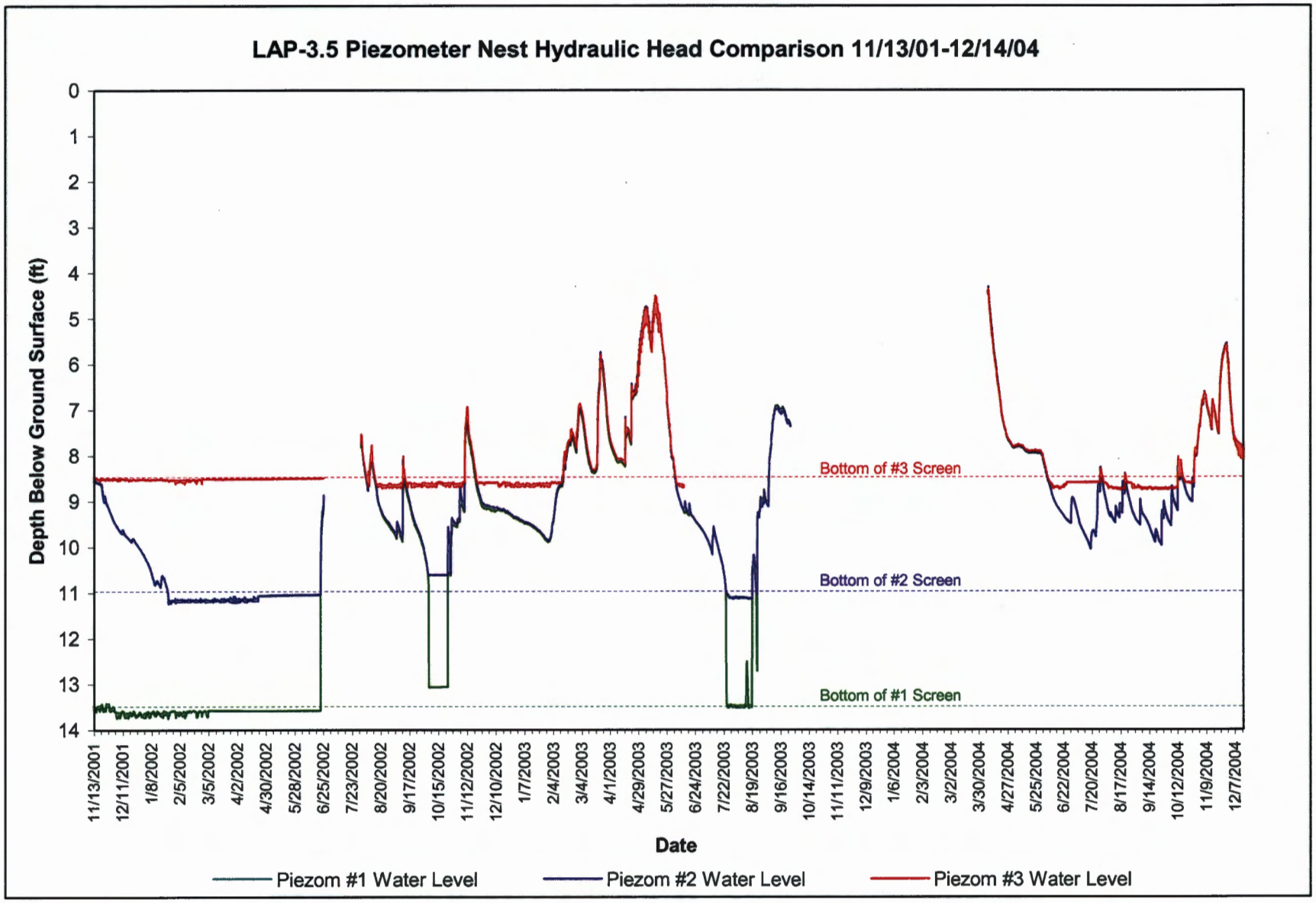


Figure 4-13. LAP-3.5 transducer water level data

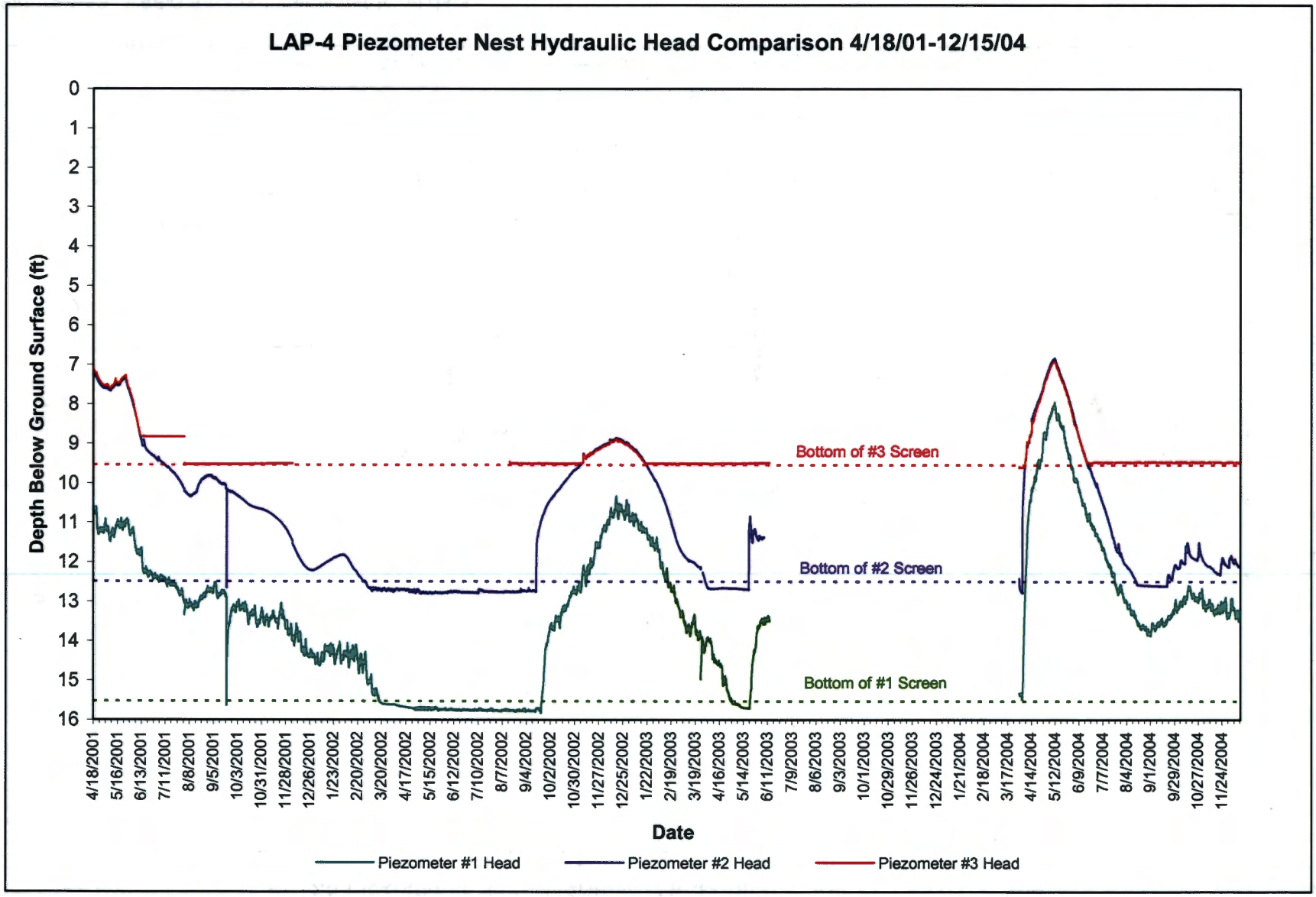


Figure 4-14. LAP-4 transducer water level data

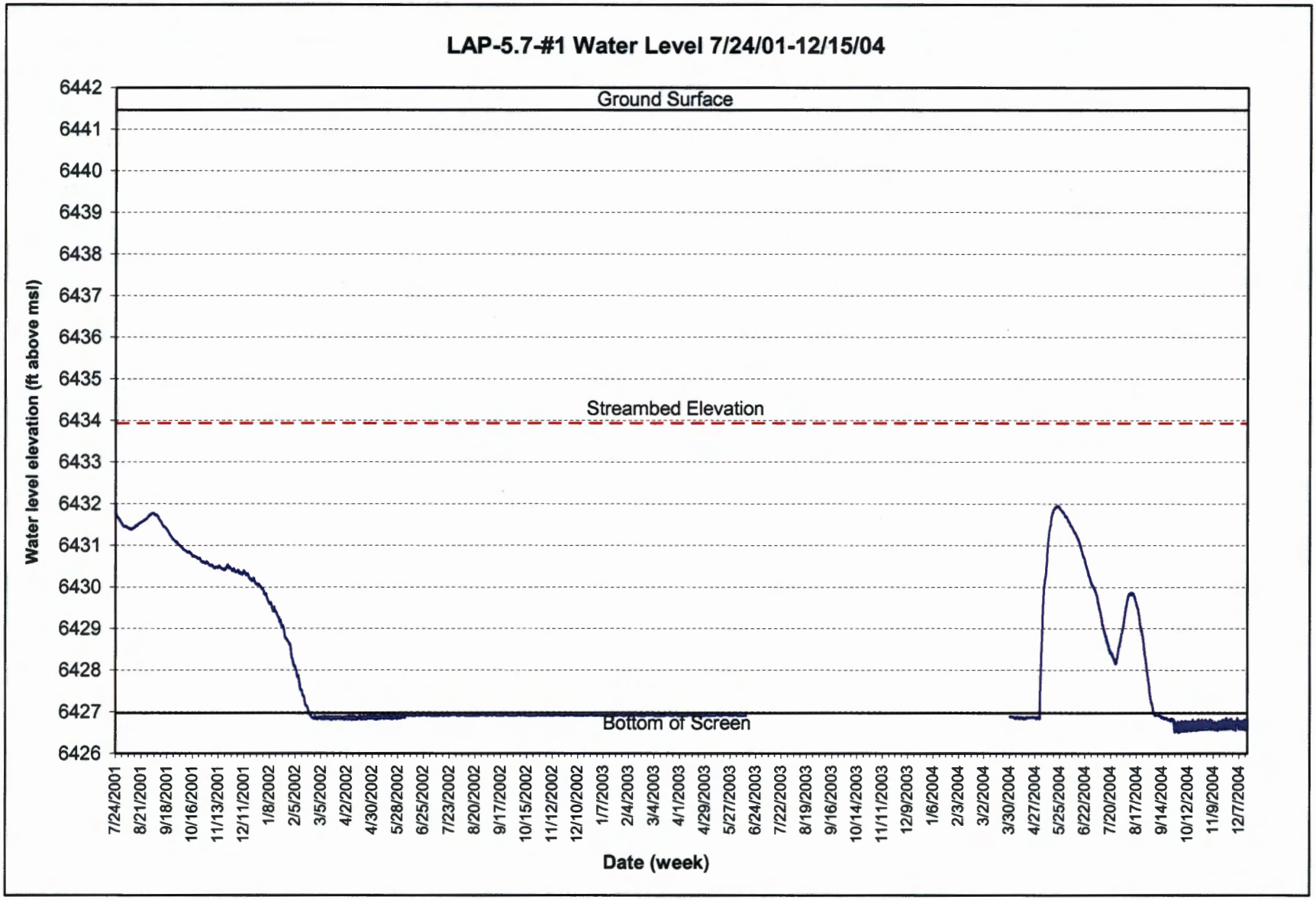


Figure 4-15. LAP-5.7 transducer water level data

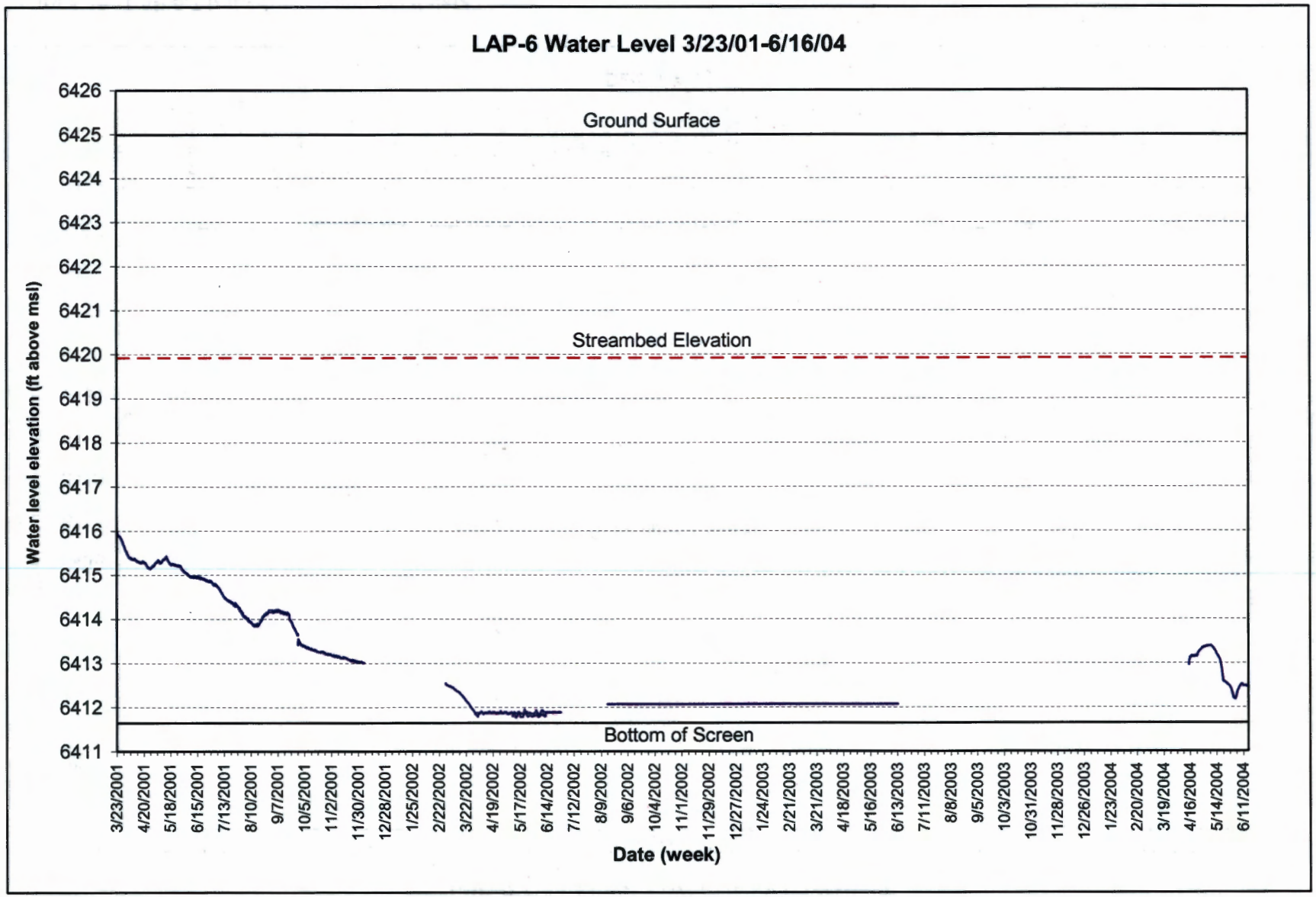


Figure 4-16. LAP-6 transducer water level data

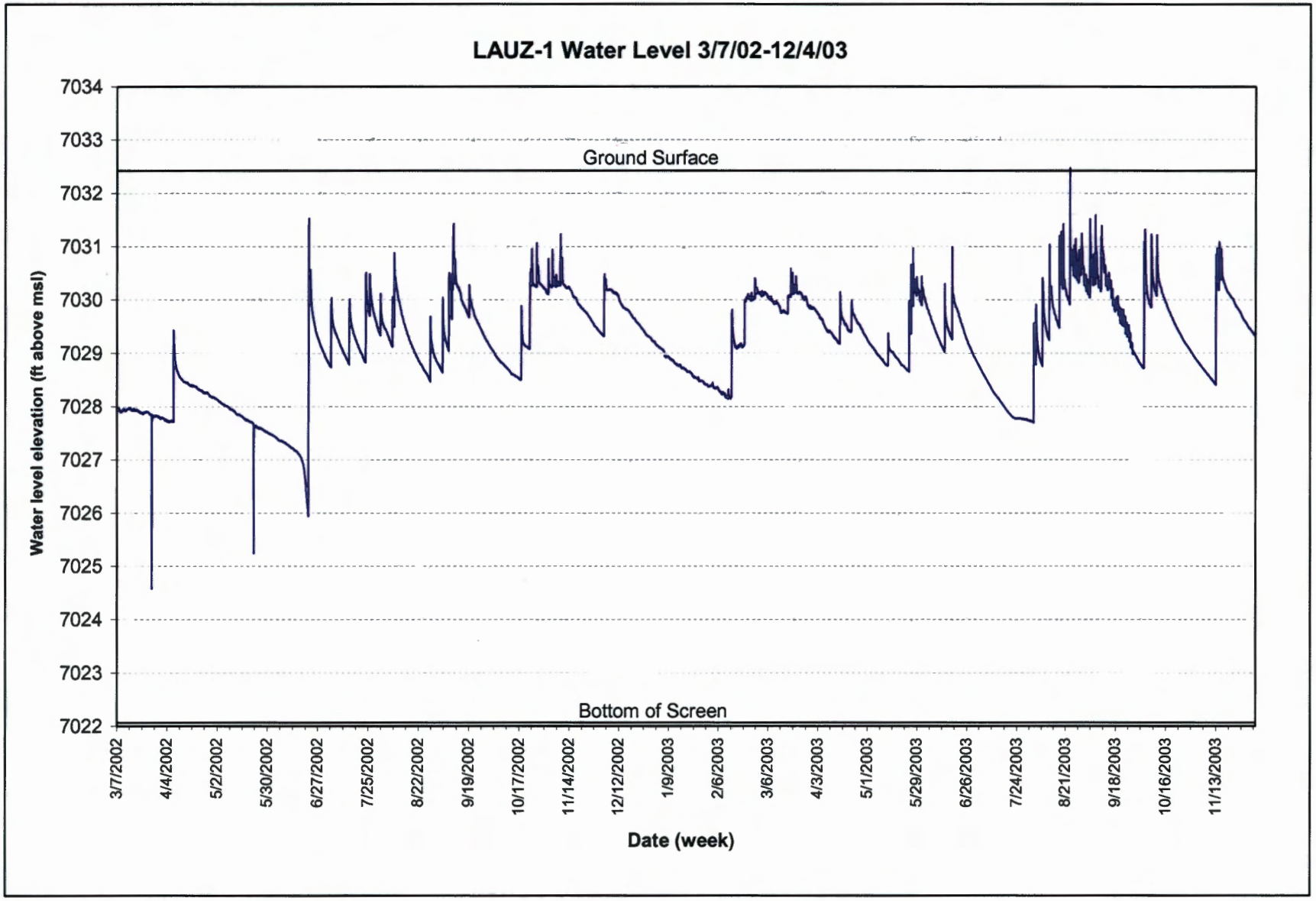


Figure 4-17. LAUZ-1 transducer water level data

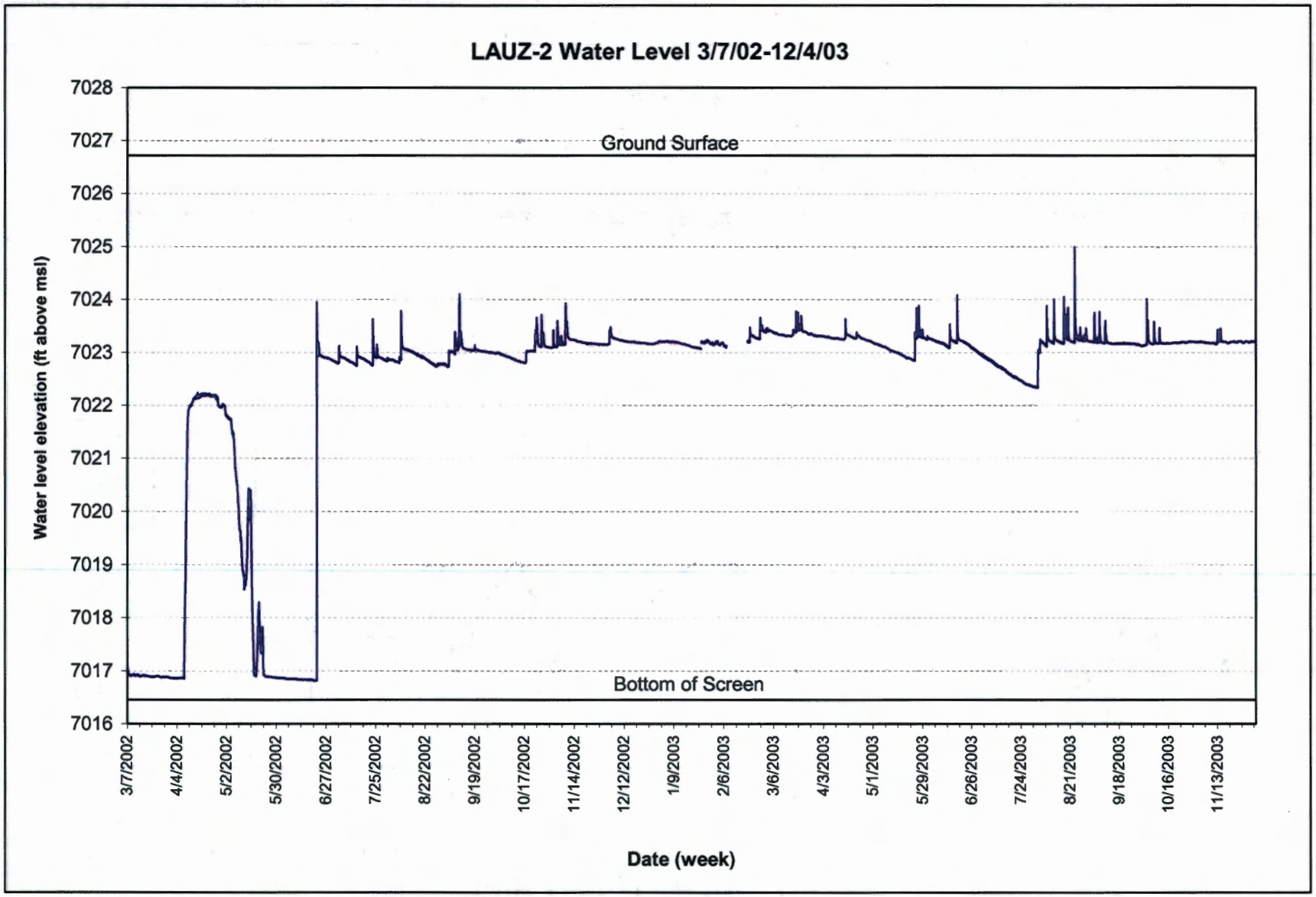


Figure 4-18. LAUZ-2 transducer water level data

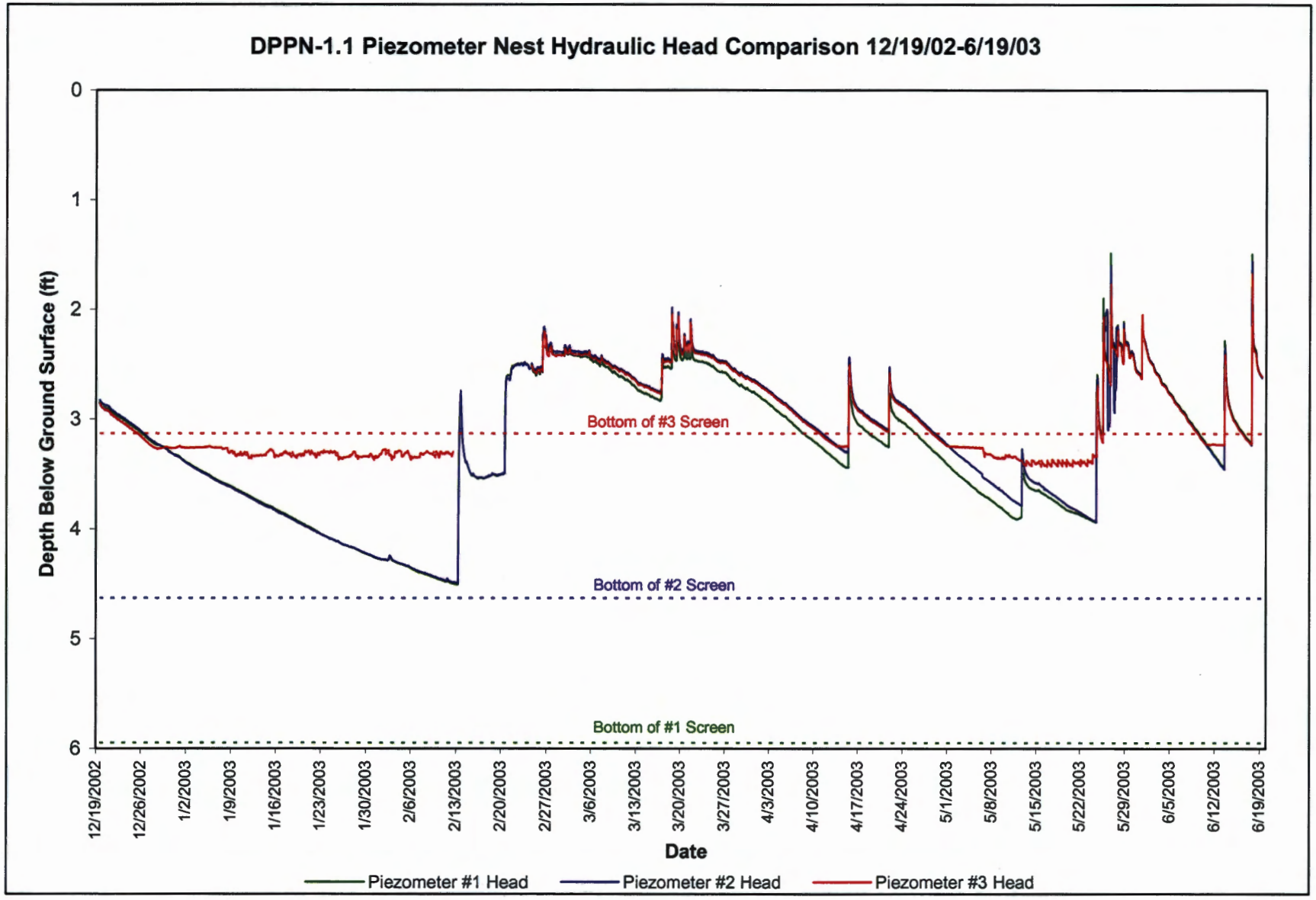


Figure 4-19. DPPN-1.1 transducer water level data

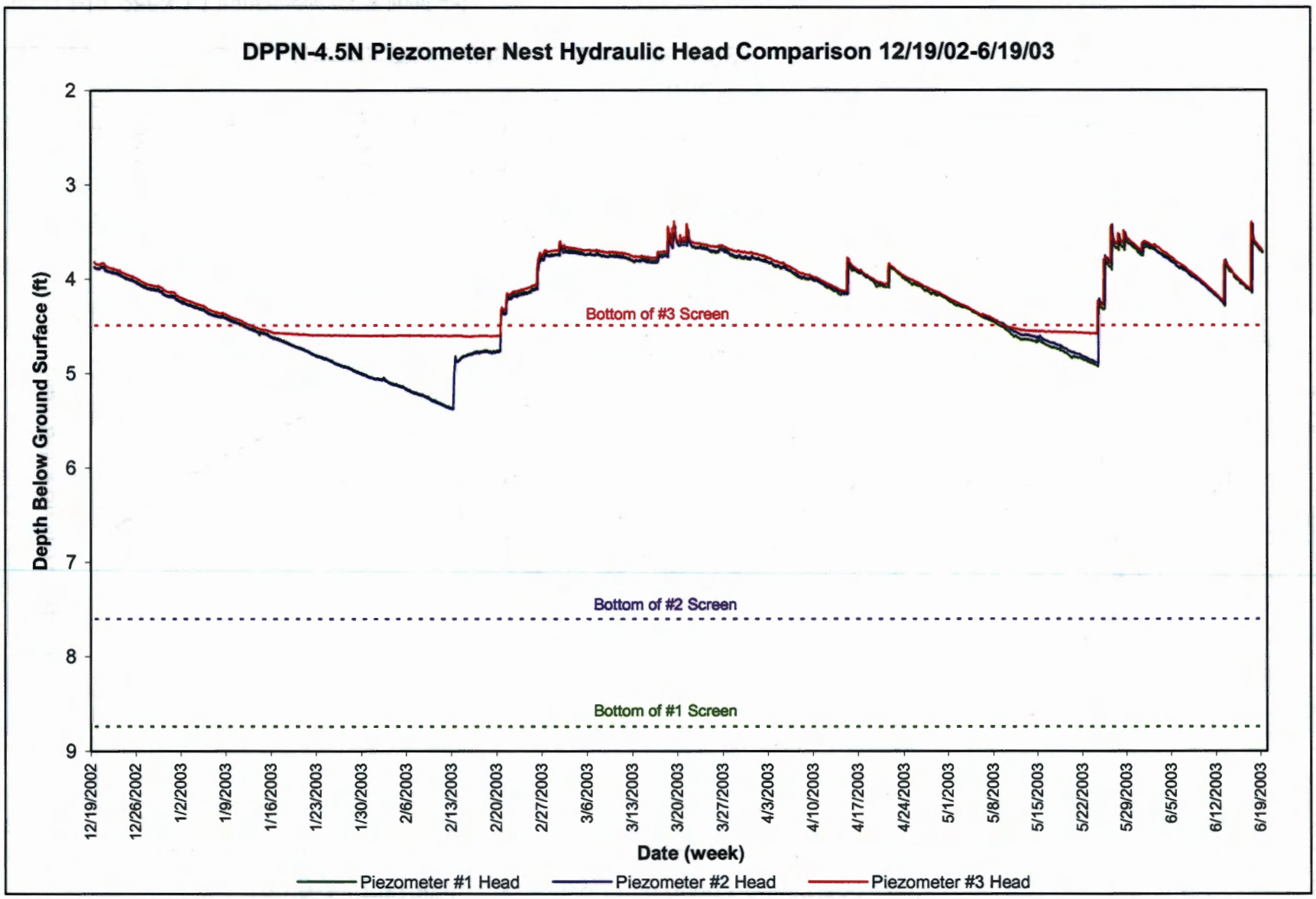


Figure 4-20. DPPN-4.5N transducer water level data

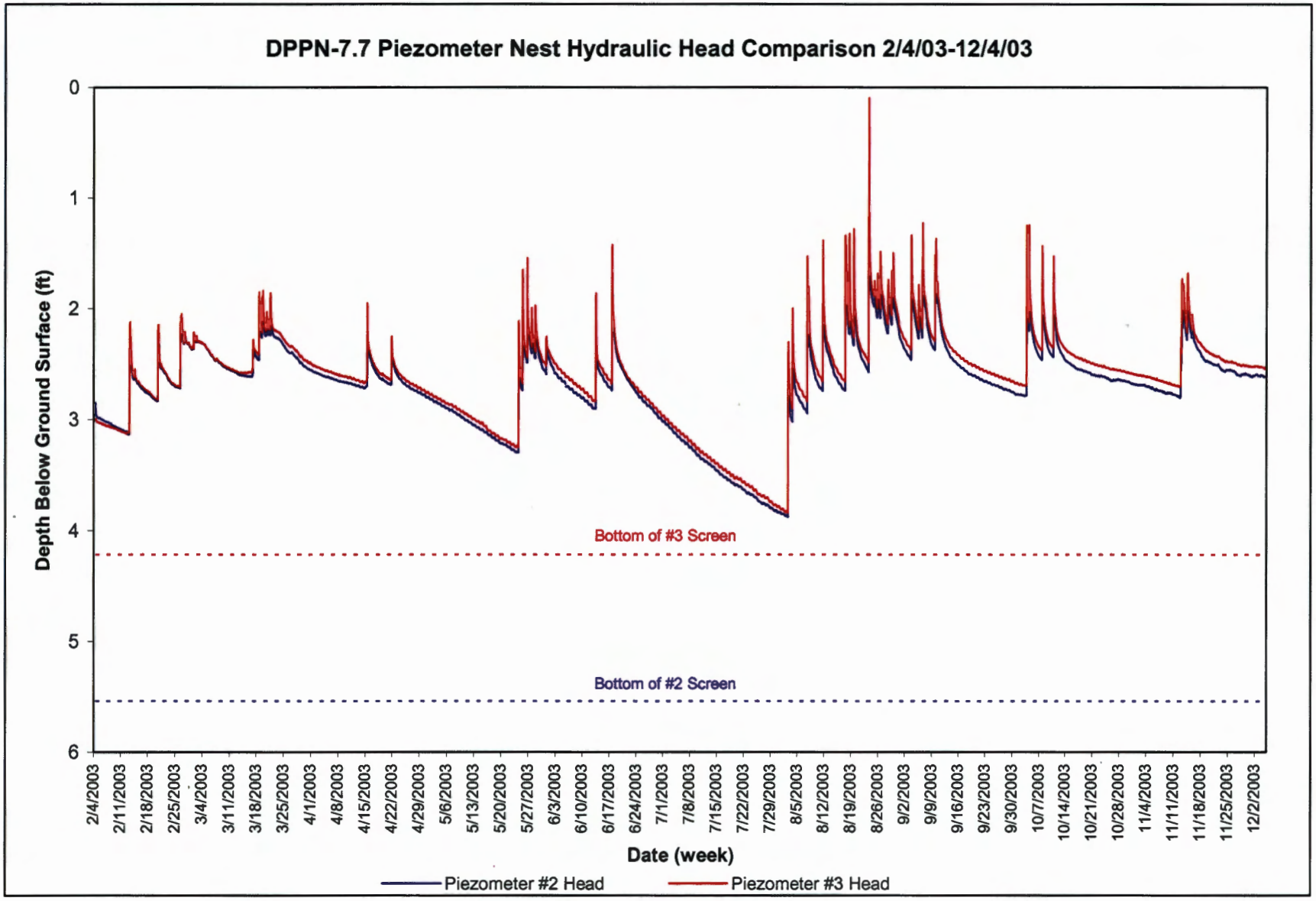


Figure 4-21. DPPN-7.7 transducer water level data

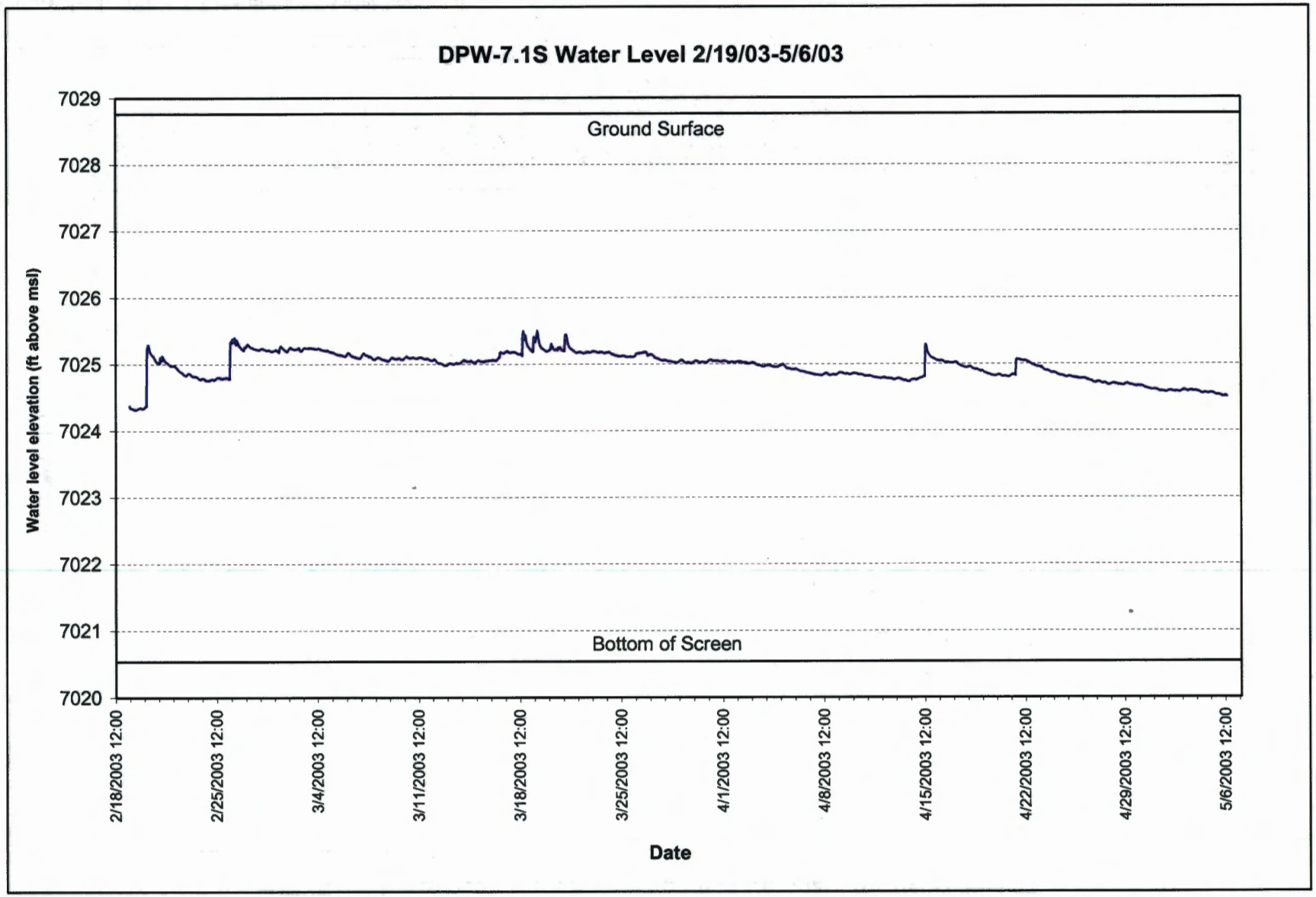


Figure 4-22. DPW-7.1S transducer water level data

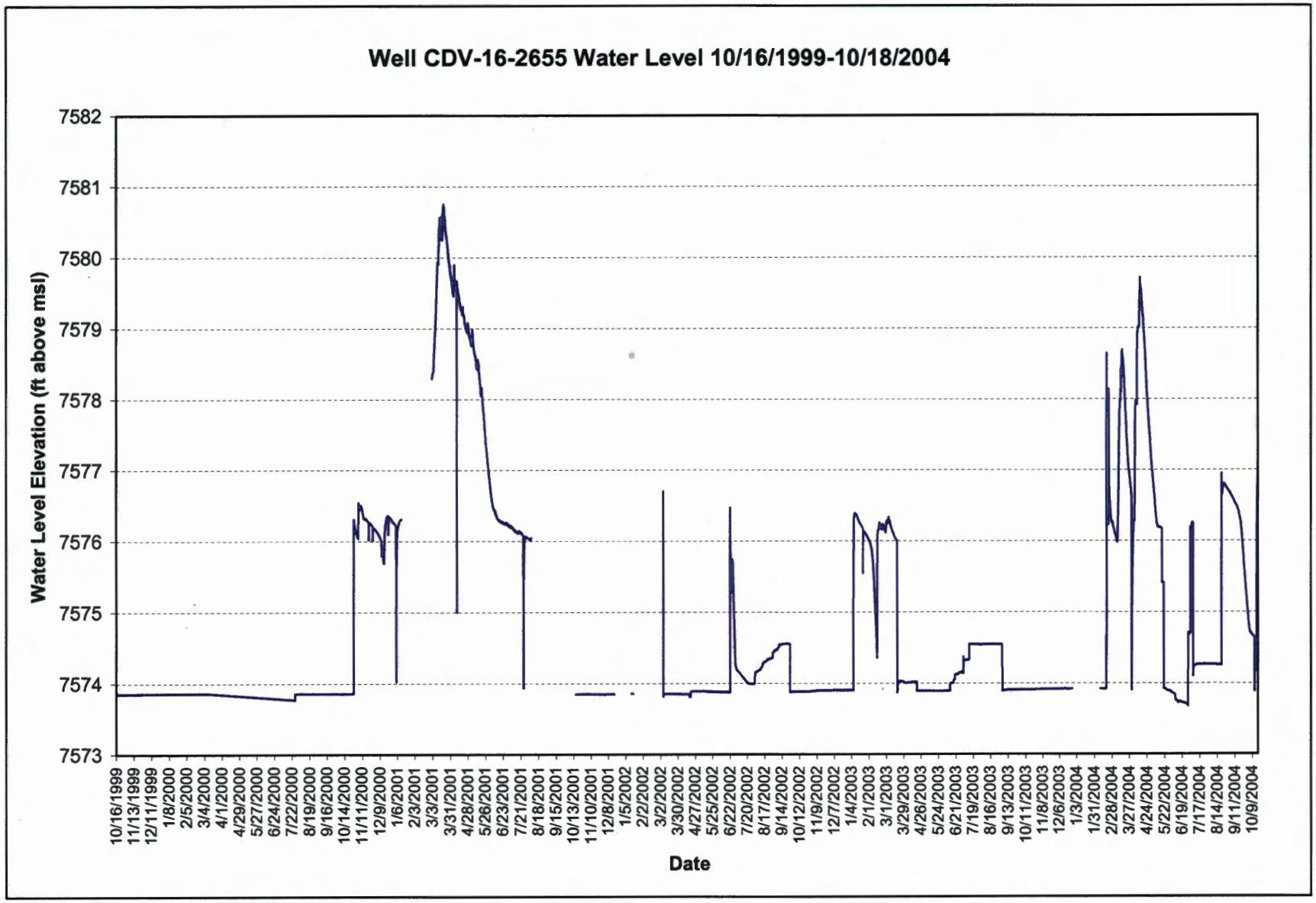


Figure 4-23. CDV-16-2655 transducer water level data

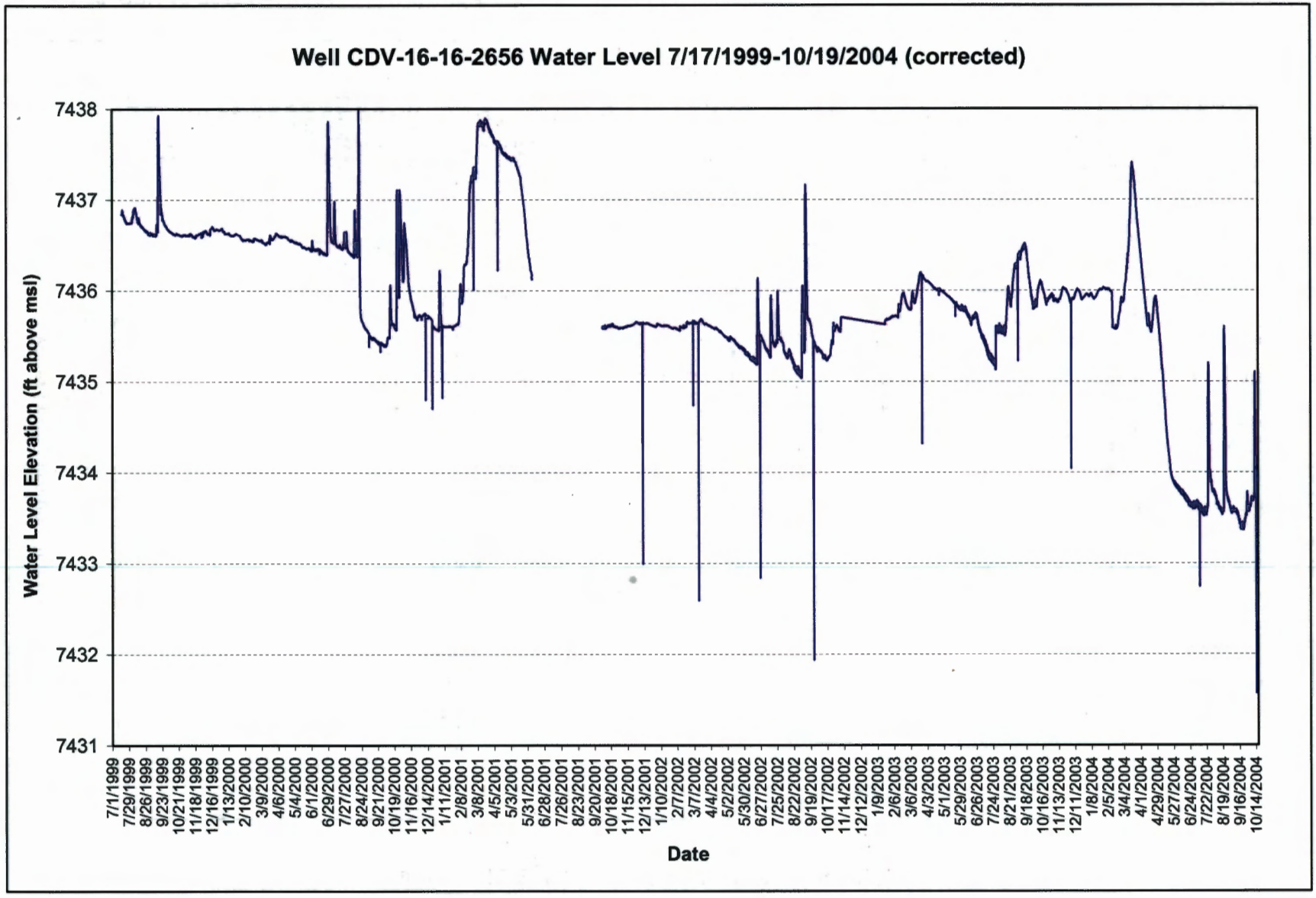


Figure 4-24. CDV-16-2656 transducer water level data

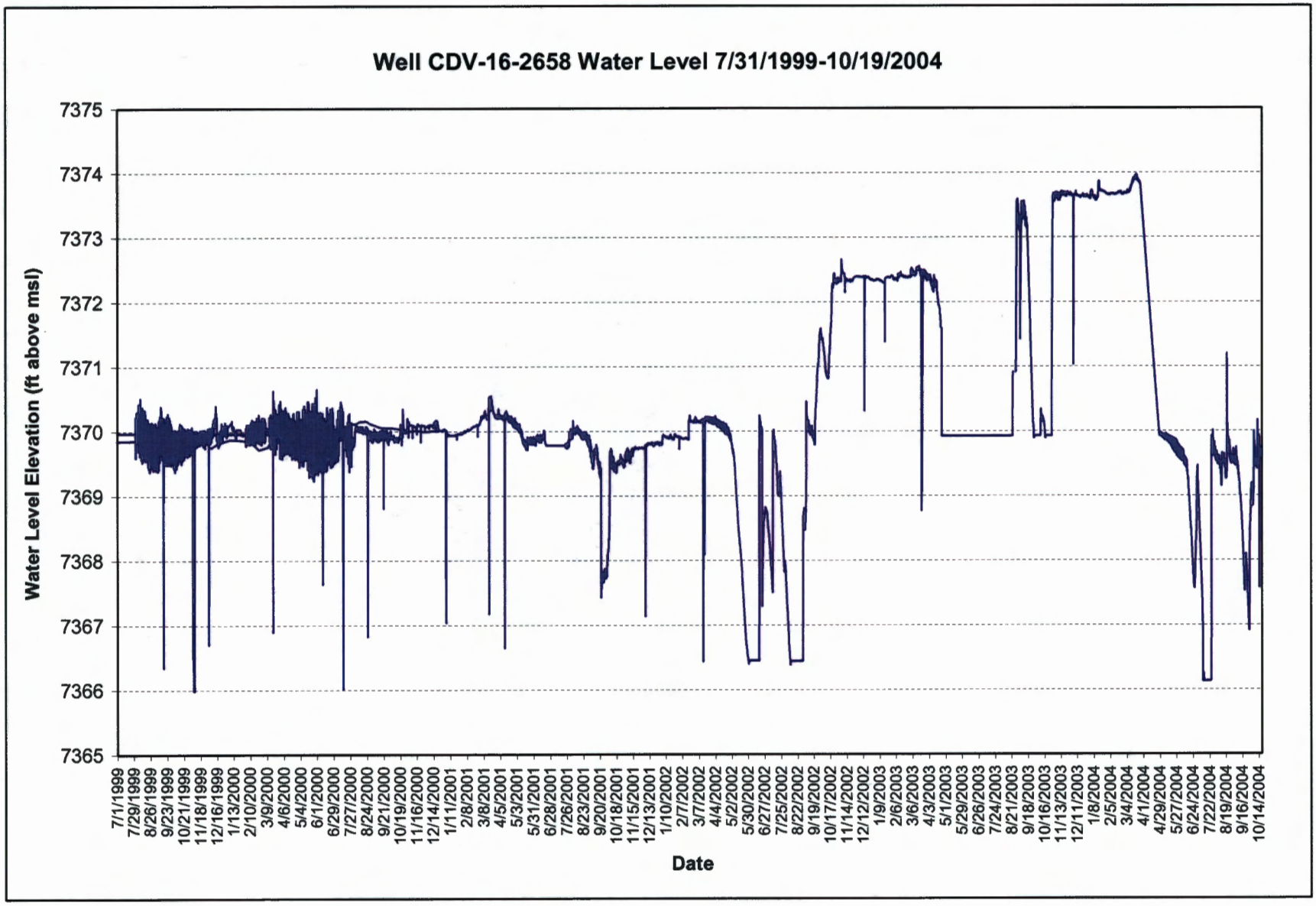


Figure 4-25. CDV-16-2658 transducer water level data

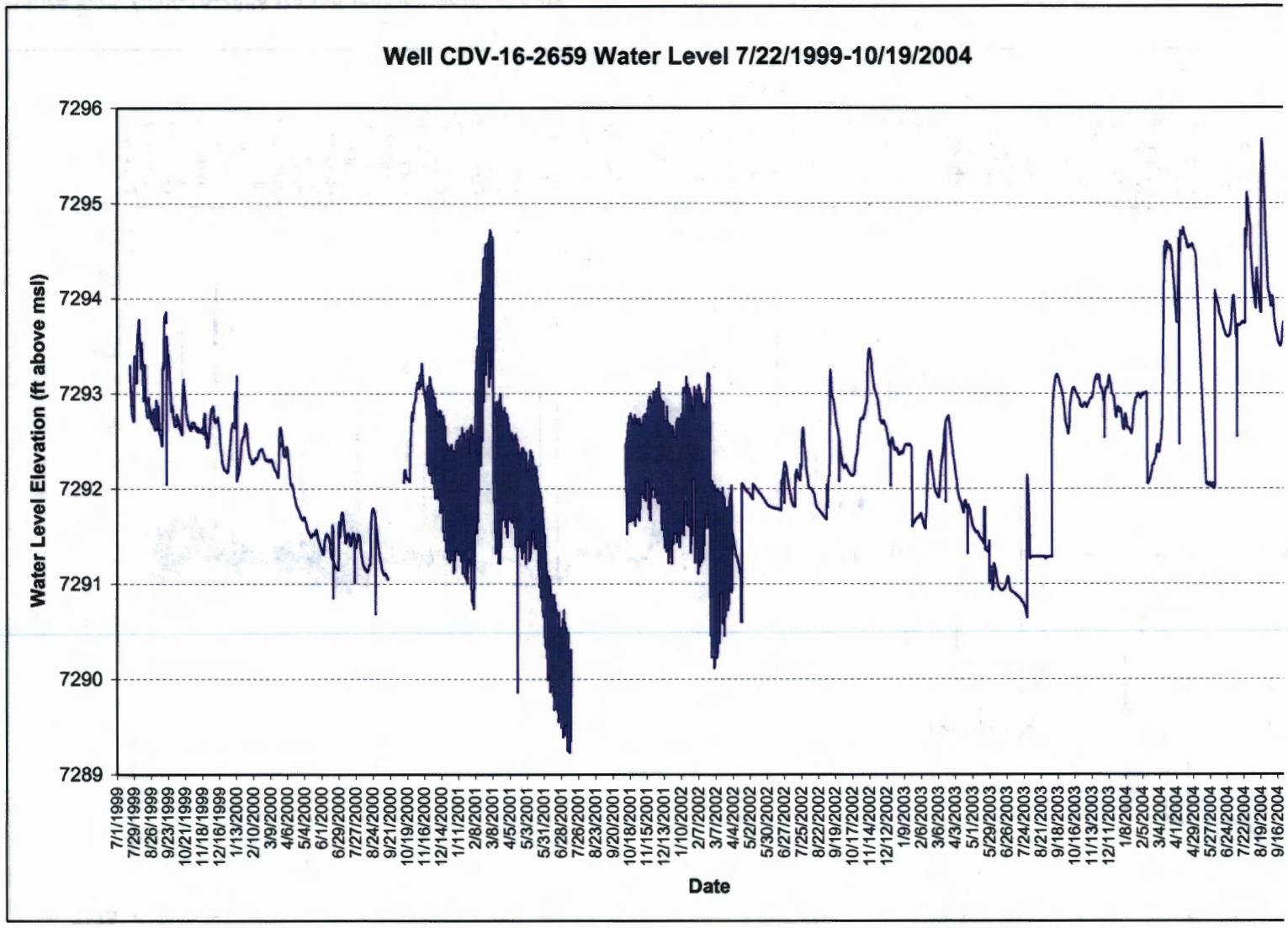


Figure 4-26. CDV-16-2659 transducer water level data

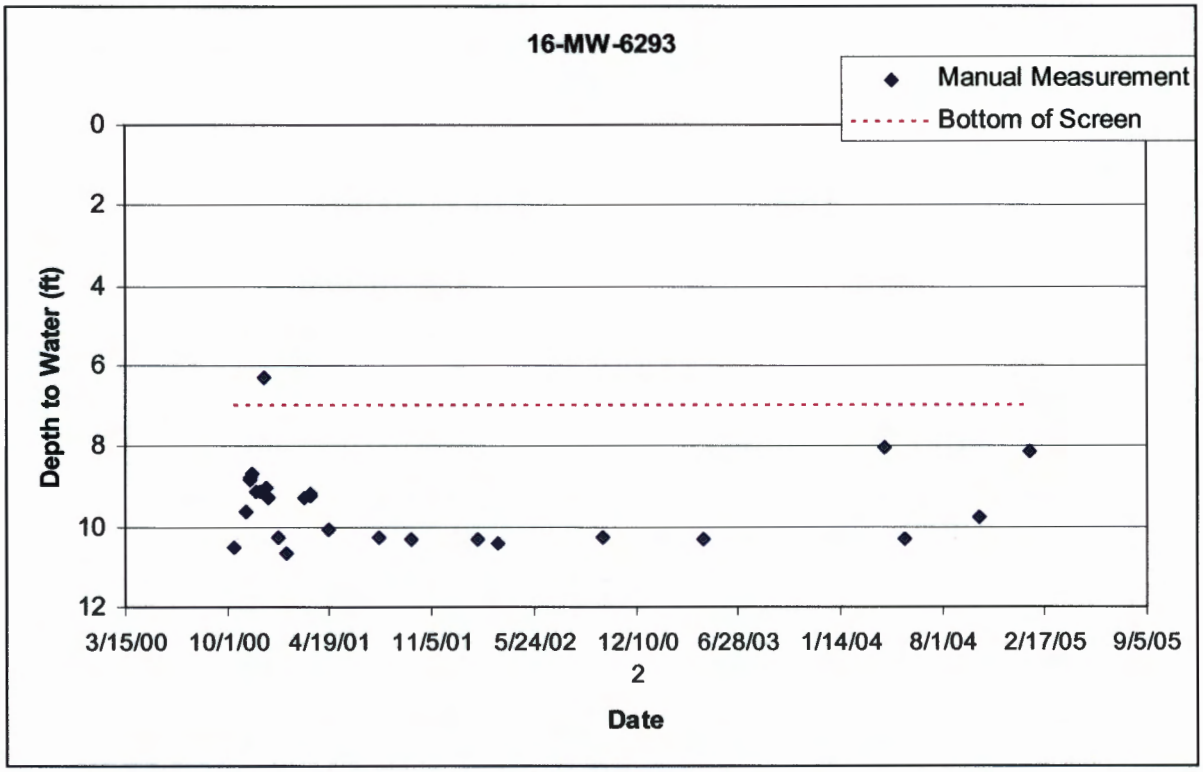


Figure 4-27. Alluvial Well 16-MW-6293 Manual Groundwater Level Data.

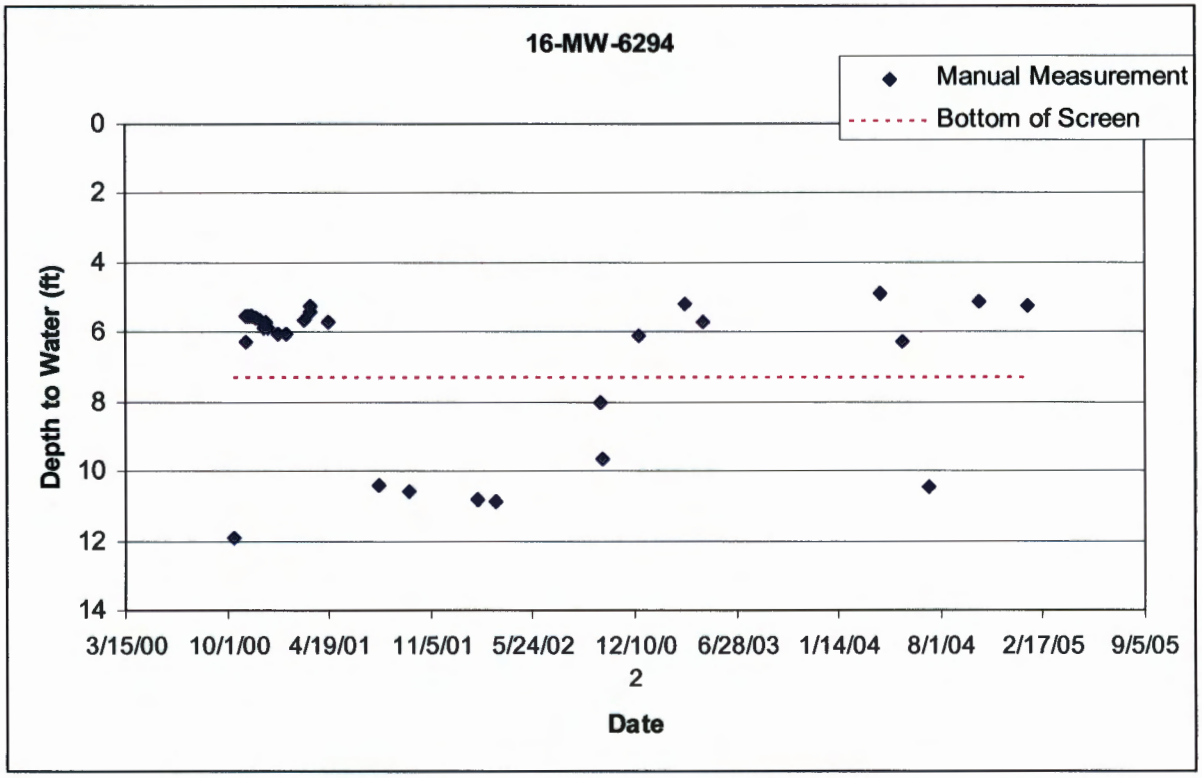


Figure 4-27. Alluvial Well 16-MW-6294 Manual Groundwater Level Data.

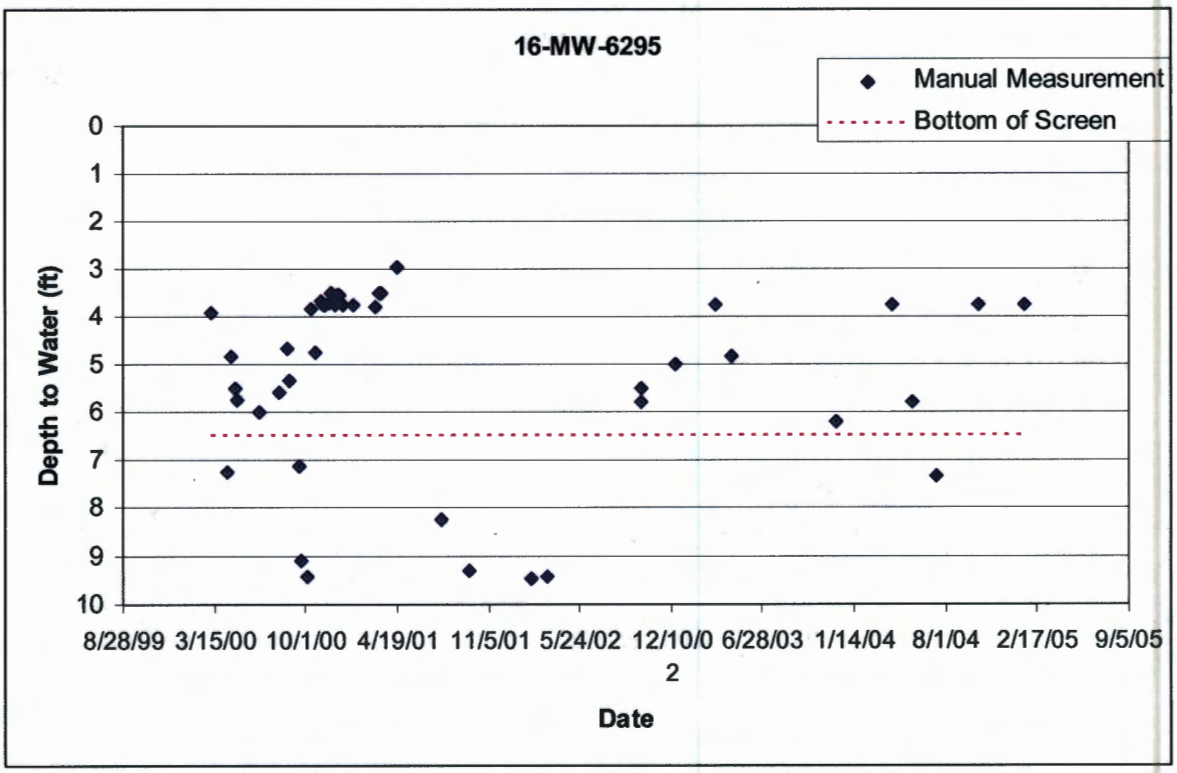


Figure 4-27. Alluvial Well 16-MW-6294 Manual Groundwater Level Data.

5.0 Construction of 2005 Piezometric Water Level Contours for the Top of the Regional Aquifer

Figure 5.1 is a contour map that represents the groundwater elevation of the top of the regional aquifer in the vicinity of LANL (Keating and Kelley, 2005, see larger size map enclosed with data submittal). In most locations, the top of the regional aquifer is clearly unconfined and so this surface corresponds to the water table. In some locations, primarily in the eastern portion of the plateau, the aquifer is confined or leaky-confined; thus the mapped surface in this area corresponds to the potentiometric surface.

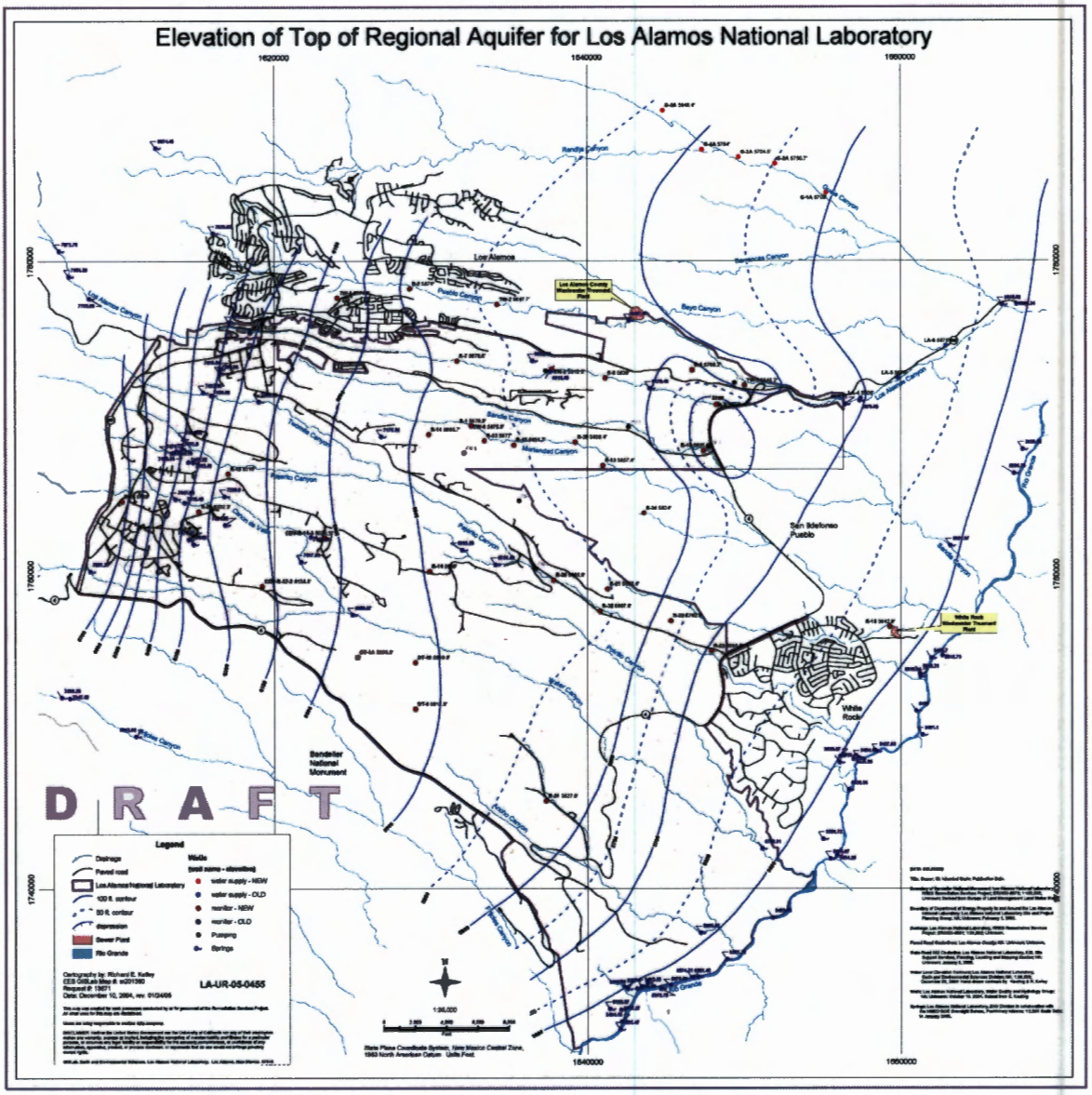


Figure 5.1. Elevation of the top of the regional aquifer at Los Alamos National Laboratory.

The symbols shown on the map indicate various types of wells. Most wells used to develop the contours are wells with relatively short screens, completed at or near the top of the aquifer (solid circles). Only data from the shallowest screen in the regional aquifer in multiple completion wells are used. In lower Los Alamos and Guaje Canyons; water supply wells are the only type of well available

to constrain the contours; these are indicated by a colored checkered symbol. Other water supply wells, not used to estimate the contour elevations, are indicated for reference by grey checkered symbols.

The sources of data include published reports (Koch and Rogers, 2003; Koch et al., 2004), well completion reports, and personal communication from LANL staff involved in drilling. Recent R-well water level data are from the Water Quality and Hydrology (WQH) water quality database (WQDB), these data will be available at wqdbworld.lanl.gov. The R-well data should be considered preliminary and subject to change. Data used are listed in Table 5.1.

Table 5.1. Water Level Data used to create the Revised Piezometric Water Level Contours for the Top of the Regional Aquifer at LANL.

Well Name-Screen Zone	Water Elevation (ft)	Data Vintage		Well Name-Screen Zone	Water Elevation (ft)	Data Vintage
CDV-R15-3-4	6020.1	2004		R-14-1	5883.7	2005
CDV-R-37-2-2	6138.8	2004		R-15	5851.7	2005
DT-10	5919.8	2003		R-16-2	5642.9	2004
DT-5A	5958.8	2003		R-18	6118.0	2004
DT-9	5917.9	2002		R-19-3	5888.0	2005
G-1A	5705.0	2001		R-20-1	5865.9	2003
G-2A	5750.7	2001		R-21	5853.4	2004
G-3A	5704.5	2001		R-22-1	5762.9	2004
G-4A	5784.0	2001		R-23	5696.6	2004
G-5A	5848.4	2001		R-25-5	6232.3	2004
H-19	6228.0	1949		R-26-1	7034.8	2003
LA-4	5706.0	1987		R-28	5839.4	2005
LA-5	5673.0	1987		R-31-3	5827.9	2002
LA-6	5678.0	1995		R-32-1	5857.8	2005
R-1	5879.9	2005		R-33	5877.0	2004
R-2	5874.0	2004		R-34	5834.0	2004
R-5-3	5769.2	2004		TW-1	5840.2	2003
R-7-3	5879.6	2004		TW-2	5847.7	2000
R-8	5836.0	2004		TW-3	5812.5	1999
R-9	5691.0	2004		TW-4	6071.5	2003
R-12-3	5695.9	2004		TW-8	5875.5	2003
R-13	5837.4	2005				

Timing of data collection. The red symbols represent recent measurements (the oldest data in this group is TW-3, measured in 1999). Data from the Guaje wellfield are "non-pumping" water levels. Some older data were included to improved the spatial extent of measurements; these are indicated by blue symbols. We use the water level at H-19, which has not been measured since 1949. The error associated with including this older data point can be assessed by examining historical trends in TW-4, which is closer than H-19 to water supply wells. Water levels have declined ~4 ft in 40 years due to water supply pumping; therefore the expected error at H-19 due to temporal trends is approximately 4 ft.

Water levels in Los Alamos Canyon wells (LA-4, LA-5, LA-6) are also used to improve spatial distribution of measurements. The most recent measurements, listed in Table 5.2, are used to constrain the contours. If water levels in these wells have continued to recover since the last

measurement, they may be approaching 1948 levels. The range of water levels shown for each well in Table 5.2 is a rough approximation to the degree to which data on the map may underestimate current water levels in these wells.

Table 5.2. Water Level Data from Wells in Lower Los Alamos Canyon.

Well	Water level	Year	Water level	Year	Approximate Uncertainty
LA-4	5706	1987	5786	1948	80
LA-5	5673	1987	5769	1948	96
LA-6	5678	1995	5765	1948	87

Water levels in the vicinity of the Rio Grande. Hydrologic data available in the vicinity of the river include heads measured in R-16, spring elevations, and river elevations. It is likely that some springs, particularly those significantly higher in elevation than the river (e.g. Ancho Spring, Basalt Spring) are discharging perched aquifers and so their elevations should not be used to constrain the contours. It has not been demonstrated that major ion chemistry in perched aquifers is distinct from major ion chemistry in the regional aquifer, and so major ion chemistry of spring waters cannot be used to distinguish between the two water types. To acknowledge uncertainty in the hydrologic system near the Rio Grande, we have not extended contours east of the 5700 foot contour.

6.0 Revised Water Level Decline Rate Map

(By David Rogers and Richard Koch)

We prepared a new map (Figure 6.1) that shows the revised preliminary annual water level decline rate at LANL for the top of the regional aquifer. This map is an updated version of the "Map showing annual rate of change of water level in test wells, 1992-2003" which is figure 14 in Koch et al. (2004). That report provided an evaluation of data quality and a data interpretation for groundwater level records that include up to fifty years of manual readings and ten years of transducer readings from eight regional aquifer wells at Los Alamos. Data used in that map are given in Table 6.1. Data from more recently drilled wells were not included because those wells were not part of the scope of that particular report.

Figure 6.1 adds decline rates determined for recently drilled regional aquifer wells (Table 6.2) to the values we used in the previous map in Koch et al. (2004). Water level decline rates determined from recently drilled wells may be of lower quality than Test Well values, or not obtainable, because the period of record is short, data may be sparse due to the short record period, and water levels in the wells may not have immediately stabilized after well construction and drilling. For these reasons, decline rates could not be determined for all of the recently drilled wells. The quality of data added to the new map is discussed in more detail below.

The updated map (Figure 6.1), which combines values from new wells and those previously published in Koch et al. (2004), is similar to the earlier map in that report. Addition of more values adds detail to the prior map. The main features of the map are an area of high water level decline rate (over 1 ft/yr) along Pueblo Canyon, which lies at the northern edge of data coverage, and an elongated zone of high decline rate (up to 0.8 ft/yr) that runs north to south, just east of and including PM-5, PM-4, and PM-2. This zone then extends east along Pajarito Canyon to R-23.

To determine water level decline rate values from recent characterization wells, we tabulated the manual readings or pressure readings obtained during sampling (in the case of Westbay wells) and transducer readings for each well. Pressure readings were converted to water level values. We looked at the length of record for the water level measurements, the overall trends, and determined whether the data gave a valid water level decline rate. Table 6.2 includes the period of record, identification and depth of zone used to determine the rate, notes on the type of data used to

determine the rate, and an evaluation of data quality. We determined decline rates by linear fit to data or by differencing initial and final values, depending on the type of data available.

One possible limitation in the use of sampling pressures (inside and outside the Westbay casing) is that the transducer used for these measurements has a high pressure rating and therefore lower precision than transducers installed in a well. We have found that a series of measurements obtained during sampling with a given transducer may track with related installed transducer measurements but have a slight offset. In cases where a different pressure transducer is later used for obtaining sampling pressures, the data may continue to track transducer data but have a different offset due to the lower precision of the sampling transducer. Therefore, a series of water levels based only on sampling pressures may yield a less precise water level slope through time.

An identification and discussion of data used in the water level decline rate map follows.

- CDV-R-15-3 and CDV-R-37-2 have long stable transducer records.
- R-1 and R-2 are newly drilled and have insufficient data to determine a water level decline rate.
- For R-5 we omitted the earliest values from a port that went dry later. R-5 shows the largest decline rate for data used on the map, and is opposite in sign to the 10-year rise seen at nearby TW-1, but is similar to the recent trend at TW-1.
- R-7 has a long, stable transducer record.
- R-8a is newly drilled and has inadequate data.
- R-9 has a long record of manual water level measurements, and R-12 has a long record of sampling pressure measurements.
- R-13, R-14, and R-15 each have a good series of either manual or sampling pressure measurements although R-15 has one obviously bad value that is 30 ft off; a possible transcription error.
- R-16 has limited data from sampling pressures and shows the only increase in water level in the values used.
- R-19 has limited but stable sampling pressure data.
- For R-20 we used the sampling pressure data for the period following the PM-2 aquifer test, as that test created a large temporary fluctuation in water level in that well.
- R-21 had insufficient data.
- For R-22 we used the sampling pressure data.
- The data for R-23 give a high decline rate; we omitted the first value and think the remaining values may be questionable.
- The regional ports in R-25 and the intermediate ports show very different water level behaviors, making it difficult to determine what the trend at the top of the regional aquifer may be. Additional review of these data are necessary.
- R-26 and R-28 are recently drilled and have insufficient data.
- R-31 has stable transducer data.
- R-32 had data affected by the PM-2 aquifer test and we could not obtain a decline rate for the well.
- R-34 has data too sparse to determine a rate.
- Data for Test Wells are discussed in Koch et al. (2004). The decline rates for these wells cover an approximately ten year period which is longer than for any of the more recent wells. As noted, we omitted the water level rise in TW-1, which occurred over the past 10 years, from the map. Water levels in both R-5 and TW-1 have fallen in recent years. The water level in TW-1 has declined since a high in June 2000 at a rate of over 10 ft/yr. Data for R-5 begin in July 2001.

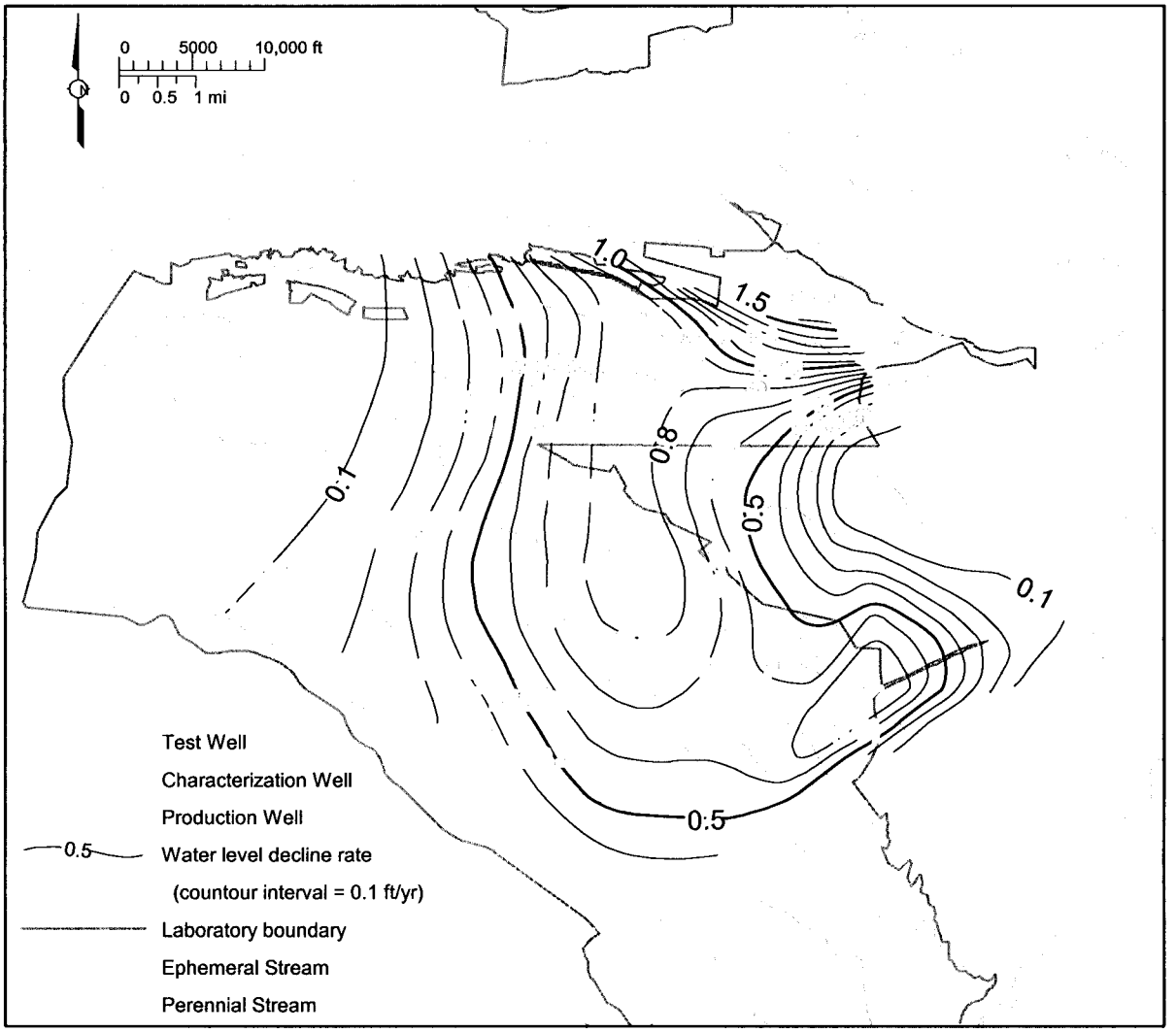


Figure 6.1. Revised Preliminary Map of Annual Water Level Decline Rate at LANL.

Table 6.1. Tabulation of water level decline rates from Test Well water level data

Well	Initial Water Elevation (ft)	Initial Elevation Year	Most Recent Water Elevation (ft)	Recent Elevation Year	No. of Years	Water Level Change since Installation (ft)	Rate of Change since Installation (ft/yr)	Elevation around 1992 (ft)	Year	No. of Years	Water Level Change since about 1992 (ft)	1992 - 2003 Rate of change (ft/yr)
TW-1	5776.9	1951	5840.2	2003	52	63.3	1.22	5831.7	1992	11	8.5	0.77
TW-2	5888.7	1949	5847.7	2000	51	-41.0	-0.80	5856.4	1992	8	-8.7	-1.09
TW-3	5844.4	1951	5812.2	2001	50	-32.2	-0.64	5819.8	1992	9	-7.6	-0.84
TW-4	6078.5	1951	6071.5	2003	52	-7.0	-0.13	6072.6	1992	11	-1.1	-0.10
TW-8	5907.5	1960	5878	2003	43	-29.5	-0.69	5885.2	1992	11	-7.2	-0.65
DT-5A	5970.7	1960	5958.8	2003	43	-11.9	-0.28	5961.2	1993	10	-2.4	-0.24
DT-9	5931.7	1960	5917.9	2002	42	-13.8	-0.33	5921	1992	10	-3.1	-0.31
DT-10	5929.3	1960	5919.8	2003	43	-9.5	-0.22	5923.4	1993	10	-3.6	-0.36

Data from Koch et al. (2004).

Table 6.2. Tabulation of water level decline rates from R well water level data since 1997.

(all units in ft unless noted)												from initial and final data values	rates from linear fit to data			
Well	Well Elevation	Port name	Port or screen depth	Port or screen elevation	initial date	initial water level	final date	final water level	duration of record (days)[1]	duration of record (years)	water level decline	water level decline rate (ft/yr)	water level decline rate (ft/yr)	water level decline rate (ft/day)	note on data used for rate	data quality note on decline rate
CDV-R-15-3	7258.9	MP4A	1254.4	6004.5	03/01/01	6020.62	01/06/05	6020.04	1385	3.85	0.58	0.15	0.15	0.0004	transducer data	Valid
CDV-R-37-2	7330.6	MP2A	1200.3	6130.3	08/08/03	6137.76	01/05/05	6137.47	507	1.41	0.29	0.20	0.18	0.0005	transducer data	Valid
R-1	6881.3	single	1031.1	5850.2	01/07/05	5879.95	01/10/05	5879.99	3	0.01	-0.04	-4.29			manual data- short record	Inadequate data
R-2	6690.0	single	906.4	5783.6					0	0.00						Inadequate data
R-5	6472.6	MP3A	695	5777.5	11/13/01	5777.49	09/29/04	5768.70	1036	2.88	8.79	3.05	1.68	0.0046	sampling pressure data- sparse, omitted first value	Valid with assumptions
R-7	6779.2	MP3A	915.1	5864.1	03/01/01	5881.58	12/15/03	5880.06	1004	2.79	1.52	0.54	0.55	0.0015	transducer data	Valid
R-8a	6544.7	MP1A	711.1	5833.6											sampling pressure data	Inadequate data
R-9	6382.8	single	683.0	5699.8	03/02/98	5695.93	05/27/04	5691.04	2245	6.24	4.89	0.78	0.80	0.0022	manual data	Valid
R-12	6499.6	MP3A	810.8	393.7	09/20/00	5696.30	06/03/04	5695.42	1333	3.70	0.88	0.24	0.18	0.0005	sampling pressure data- same slope for 2 yrs transducer data	Valid
R-13	6673.1	single	958.3	5714.8	02/25/02	5839.05	01/03/05	5836.95	1028	2.86	2.10	0.74	0.62	0.0017	manual data	Valid, limited data
R-14	7062.1	MP1A	1204.5	5857.6	11/23/02	5884.18	11/04/04	5883.42	701	1.95	0.76	0.39	0.37	0.001	sampling pressure data	Valid, limited data
R-15	6820.0	single	958.6	5861.4	09/06/99	5856.20	12/23/04	5851.85	1907	5.30	4.35	0.82	0.47	0.0013	manual data- one bad value- use first decline rate	Valid, limited data
R-16	6256.9	MP2A	866.1	5390.8	12/14/02	5642.27	12/02/04	5642.89	708	1.97	-0.62	-0.32	-0.29	-0.0008	sampling pressure data	Questionable, limited data
R-19	7066.3	MP3A	1190.7	5875.6	09/11/00	5890.41	06/14/04	5887.92	1353	3.76	2.49	0.66	0.55	0.0015	sampling pressure data	Valid, limited data
R-20	6694.4	MP1A	907	5787.4	01/18/03	5867.57	11/05/04	5865.82	647	1.80	1.75	0.97	0.84	0.0023	sampling pressure data after PM-2 aquifer test, 2004 only	Valid post aquifer test
R-21	6656.2	single	888.8	5767.4											short record- data indeterminate	Inadequate data
R-22	6650.5	MP1A	907.1	5743.4	06/19/01	5764.79	06/21/04	5762.60	1082	3.01	2.19	0.73	0.58	0.0016	sampling pressure data- omitted first two values	Valid
R-22	6650.5	MP1A	907.1	5743.4	03/26/03	5763.43	06/21/04	5762.89	445	1.24	0.55	0.44	0.51	0.0014	transducer data	
R-23	6527.8	single	816	5711.8	10/08/02	5699.45	09/24/04	5696.41	706	1.96	3.04	1.55	0.80	0.0022	manual data omitted 1st data points	Valid w/ questions, limited data set
R-25	7516.1	MP5A	1303.4	6212.7											data and trend indeterminate	Questionable data from regional ports
R-26	7641.6	MP2A	1427	6214.6											no data	Inadequate data
R-28	6728.5	single	934.3	5794.2											no data	Inadequate data
R-31	6362.5	MP2A	542.5	5820.0	04/07/00	5830.41	03/19/04	5827.59	1422	3.95	2.82	0.71			sampling pressure data	
R-31	6362.5	MP2A	542.5	5820.0	05/04/00	5830.05	08/28/02	5829.17	834	2.32	0.88	0.38	0.37	0.001	transducer data	Valid
R-32	6637.6	MP1A	870.9	5766.7	12/14/02	5859.04	11/16/04	5857.86	692	1.92	1.18	0.61	0.40	0.0011	sampling pressure- data sparse and uneven	Inadequate data, affected by PM-2 aquifer test
R-32	6637.6	MP1A	870.9	5766.7	01/21/03	5858.48	01/03/05	5857.75	702	1.95	0.73	0.38	-1.97	-0.0054	transducer data- short, uneven record	
R-34	6630.0	single	883.7	5746.3	08/10/04	5833.82	01/10/05	5836.06	150	0.42	-2.24	-5.38	-5.59	-0.0153	manual data- sparse, short record	Inadequate data

Note: best values highlighted

1. Number of days calculated assumes 360 days/year (using an Excel worksheet function).

7.0 References and Bibliography

The following reports and documents contain groundwater level data for wells installed since 1997 at LANL.

Ball, T., M. Everett, P. Longmire, D. Vaniman, W. Stone, D. Larssen, K. Greene, N. Clayton, and S. McLin, February 2002, "Characterization Well R-22 Completion Report," Los Alamos National Laboratory report LA-13893-MS, Los Alamos, New Mexico (Ball et al. 2002).

Broxton, D.E., R. Warren, D. Vaniman, B. Newman, A. Crowder, M. Everett, R. Gilkeson, P. Longmire, J. Marin, W. Stone, S. McLin, and D. Rogers, May 2001, "Characterization Well R-12 Completion Report," Los Alamos National Laboratory report LA-13822-MS, Los Alamos, New Mexico (Broxton et al. 2001a).

Broxton, D., R. Gilkeson, P. Longmire, J. Marin, R. Warren, D. Vaniman, A. Crowder, B. Newman, B. Lowry, D. Rogers, W. Stone, S. McLin, G. WoldeGabriel, D. Daymon, and D. Wycoff, May 2001, "Characterization Well R-9 Completion Report," Los Alamos National Laboratory report LA-13742-MS, Los Alamos, New Mexico (Broxton et al. 2001b).

Broxton, D., D. Vaniman, W. Stone, S. McLin, J. Marin, R. Koch, R. Warren, P. Longmire, D., Rogers, N. Tapia, May 2001, "Characterization Well R-19 Completion Report," Los Alamos National Laboratory report LA-13823-MS, Los Alamos, New Mexico (Broxton et al. 2001c).

Broxton, D., R. Warren, P. Longmire, R. Gilkeson, S. Johnson, D. Rogers, W. Stone, B. Newman, M. Everett, D. Vaniman, S. McLin, J. Skalski, and D. Larssen, March 2002, "Characterization Well R-25 Completion Report," Los Alamos National Laboratory report LA-13909-MS, Los Alamos, New Mexico (Broxton et al. 2002).

Gray, Robert, N., November 2001, "Report on Alluvial Well Completions 1994-2001," Prepared for the Environmental Restoration Project, Los Alamos National Laboratory, 56 pages with appendices.

Keating, Elizabeth, and Kelley, Rick, 2005, "Groundwater Elevation Contour Map of the Top of the Regional Aquifer in the vicinity of LANL," Los Alamos National Laboratory report LA-UR-05-0455, Los Alamos, New Mexico.

Kleinfelder, March 19, 2004, "Final Completion Report, Characterization Well R-11 Los Alamos National Laboratory, Los Alamos, New Mexico, Project No. 37151, Prepared for: The United States Department of Energy and the Nuclear Security Administration through the United States Army Corps of Engineers, Sacramento District, Prepared by Kleinfelder Inc, 8300 Jefferson NE, Ste B, Albuquerque, NM 87113, 27 pages, with appendices.

Kleinfelder, March 23, 2004, "Final Completion Report, Characterization Well R-4, Los Alamos National Laboratory, Los Alamos, New Mexico, Project No. 37151/7.12, Prepared for: The United States Department of Energy and the Nuclear Security Administration through the United States Army Corps of Engineers, Sacramento District, Kleinfelder, 8300 Jefferson NE, Ste B, Albuquerque, NM 87113, 29 pages, with appendices.

Kleinfelder, April 5, 2004, "Final, Well R-2 Completion Report, Los Alamos National Laboratory, Los Alamos, New Mexico, Project No. 37151/Task 11, Document No. ALB04RP001, Prepared for: The United States Department of Energy and the Nuclear Security Administration through the United States Army Corps of Engineers, Sacramento District, Kleinfelder, 8300 Jefferson NE, Ste B, Albuquerque, NM 87113, 17 pages, with appendices.

Kleinfelder, April 19, 2004, "Final Well R-1 Completion Report, Los Alamos National Laboratory, Los Alamos, New Mexico, Project No. 37151/17.12, Prepared for: The United States Department of

Energy and the Nuclear Security Administration through the United States Army Corps of Engineers, Sacramento District, Prepared by Kleinfelder, 8300 Jefferson NE, Ste B, Albuquerque, NM 87113, 20 pages, with appendices.

Kleinfelder, April 28, 2004, "Final Well R-28 Completion Report, Los Alamos National Laboratory, Los Alamos, New Mexico, Project No. 37151/16.12, Prepared for: The United States Department of Energy and the Nuclear Security Administration through the United States Army Corps of Engineers, Sacramento District, Prepared by Kleinfelder, 8300 Jefferson NE, Ste B, Albuquerque, NM 87113, 22 pages, with appendices.

Kleinfelder, May 7, 2004, "Final, Well CdV-16-1(i) Completion Report, Los Alamos National Laboratory, Los Alamos, New Mexico, Project No. 37151/9.12, Prepared for: The United States Department of Energy and the Nuclear Security Administration through the United States Army Corps of Engineers, Sacramento District, Kleinfelder, 8300 Jefferson NE, Ste B, Albuquerque, NM 87113, 22 pages, with appendices.

Kleinfelder, May 14, 2004, "Final, Well CdV-16-2(i) Completion Report, Los Alamos National Laboratory, Los Alamos, New Mexico, Project No. 37151/10.12, Prepared for: The United States Department of Energy and the Nuclear Security Administration through the United States Army Corps of Engineers, Sacramento District, Kleinfelder, 8300 Jefferson NE, Ste B, Albuquerque, NM 87113, 20 pages, with appendices.

Kleinfelder, May 18, 2004, "Final, Borehole CdV-16-3(i) Completion Report, Los Alamos National Laboratory, Los Alamos, New Mexico, Project No. 37151/11.12, Prepared for: The United States Department of Energy and the Nuclear Security Administration through the United States Army Corps of Engineers, Sacramento District, Kleinfelder, 8300 Jefferson NE, Ste B, Albuquerque, NM 87113, 17 pages, with appendices.

Kleinfelder, November 2004, "Final Completion Report, Characterization Well R-34, Los Alamos National Laboratory, Los Alamos, New Mexico, Project No. 37151, Prepared for: The United States Department of Energy and the Nuclear Security Administration through the United States Army Corps of Engineers, Sacramento District, Prepared by Kleinfelder Inc, 8300 Jefferson NE, Ste B, Albuquerque, NM 87113, 27 pages, with appendices.

Koch, R.J. and Rogers, D.B., 2003. Water Supply at Los Alamos, 1998 - 2001, LA-13985-PR, Los Alamos National Laboratory, 28 pp.

Koch, R.J., Rogers, D.B., Tapia, N.J. and McLin, S.G., 2004. Manual and transducer groundwater levels from test wells at Los Alamos National Laboratory, 1992-2003, LA-14132, Los Alamos National Laboratory, 36 pp.

Kopp, H.W., A.J. Crowder, M.C. Everett, D.T. Vaniman, D.D. Hickmott, W.J. Stone, N. Clayton, S.G. Pearson, and D.E. Larssen, April 2002, "Well CdV-R-15-3 Completion Report," Los Alamos National Laboratory report LA-13906-MS, Los Alamos, New Mexico (Kopp et al. 2002).

LANL (Los Alamos National Laboratory), May 22, 1998, "Hydrogeologic Workplan," Los Alamos, New Mexico (LANL 1998).

LANL, April 2004, "Los Alamos and Pueblo Canyons Investigation Report," Los Alamos National Laboratory Report LA-UR-04-2714, Los Alamos, New Mexico.

Longmire, P., D. Broxton, W. Stone, B. Newman, R. Gilkeson, J. Marin, D. Vaniman, D. Counce, D. Rogers, R. Hull, S. McLin, and R. Warren, May 2001, "Characterization Well R-15 Completion Report," Los Alamos National Laboratory report LA-13749-MS, Los Alamos, New Mexico (Longmire et al. 2001).

McLin, S.G., September 1996, "Analysis of Water Level Fluctuations in Pajarito Plateau Wells," in New Mexico Geological Society Guidebook, 47th Field Conference, Jemez Mountains Region, New Mexico, pp. 421–426 (McLin 1996).

McLin, S.G., W.D. Purtymun, and M.N. Maes, April 1997, "Water Supply at Los Alamos during 1995," Los Alamos National Laboratory report LA-13216-PR, Los Alamos, New Mexico (McLin et al. 1997a).

McLin, S.G., W.D. Purtymun, and M.N. Maes, December 1998, "Water Supply at Los Alamos during 1997," Los Alamos National Laboratory report LA-13548-PR (McLin et al. 1998).

Nylander, C., T. Ball, K. Bitner, K. Henning, E. Keating, P. Longmire, B. Robinson, D. Rogers, W. Stone, D. Vaniman, April 2002, "Groundwater Annual Status Report for Fiscal Year 2001," Los Alamos National Laboratory report LA-13931-SR, Los Alamos, New Mexico (Nylander et al. 2002).

Purtymun, W.D., and J.W. Herceg, 1972, "Summary of the Los Alamos Municipal Well-Field Characteristics, 1947–1971," Los Alamos Scientific Laboratory report LA-5040-MS, Los Alamos, New Mexico (Purtymun and Herceg 1972).

Purtymun, W.D., and J.W. Herceg, 1976, "Water Supply at Los Alamos during 1975," Los Alamos Scientific Laboratory report LA-6461-MS, Los Alamos, New Mexico (Purtymun and Herceg 19726.

Purtymun, W.D., 1984, "Hydrologic Characteristics of the Main Aquifer in the Los Alamos Area: Development of Groundwater Supplies," Los Alamos National Laboratory LA-9957-MS, Los Alamos, New Mexico (Purtymun 1984).

Purtymun, W.D., and A.K. Stoker, 1988, "Current Status of Wells and Future Water Supply," Los Alamos National Laboratory report LA-11332-MS, Los Alamos, New Mexico (Purtymun and Stoker 1988).

Purtymun, W.D., 1995, "Geologic and Hydrologic Records of Observation Wells, Test Holes, Test Wells, Supply Wells, Springs, and Surface Water Stations in the Los Alamos Area," Los Alamos National Laboratory report LA-12883-MS, Los Alamos, New Mexico (Purtymun 1995).

Rogers, David B., and Koch, Richard J., 2005, "Revised Preliminary Map of Annual Water Level Decline Rate at LANL," Los Alamos National Laboratory report LA-UR-05-4456, Los Alamos, New Mexico.

Shomaker & Associates, January 1999, "Well Report: Construction and Testing, Guaje Replacement Wells GR-1, GR-2, GR-3, and GR-4, Santa Fe County, New Mexico," John Shomaker & Associates, Inc., report prepared for University of California, Los Alamos National Laboratory, Los Alamos, New Mexico, and Chavez-Grieves Consulting Engineers, Inc., Albuquerque, New Mexico (Shomaker & Associates 1999).

Stone, W.J., D.T. Vaniman, P. Longmire, D.E. Broxton, M.C. Everett, R. Lawrence, D.E. Larssen, April, 2002, "Characterization Well R-7 Completion Report," Los Alamos National Laboratory report LA-13932-MS, Los Alamos, New Mexico (Stone et al. 2002).

Vaniman, D., J. Marin, W. Stone, B. Newman, P. Longmire, N. Clayton, R. Lewis, R. Koch, S. McLin, G. WoldeGabriel, D. Counce, D. Rogers, R. Warren, E. Kluk, S. Chipera, D. Larssen, W. Kopp, March 2002, "Characterization Well R-31 Completion Report," Los Alamos National Laboratory report LA-13910-MS, Los Alamos, New Mexico (Vaniman et al. 2002).

8.0 Appendix A: Field Notebook Copies and Field Data Sheets

Part 1: "Untitled" Logbook for transducers – ESH-18 from 4/99-5/03
This notebook contains field data and activities associated with pressure transducers and manual water levels in alluvial, intermediate, and regional wells.

Part 2: "Westbay Installation, Retrieval, and Surface Check Field Records". Field records from the installation and retrieval of pressure transducers at the following wells:

R-5 10/29/03 – 1/23/04
R-7 8/28/02 – 12/15/03
R-9i 6/8/01 – 2/3/04
R-12 12/14/00 – 7/30/02
R-14 1/21/03 – 12/14/04
CDV-R15-3 4/23/01 – 10/22/04
R-19 12/10/04
R-20 1/23/03 – 12/17/04
R-22 11/5/02 – 6/21/04
R-25 4/30/00 – 12/03/03
R-31 8/29/01 – 03/17/04
R-32 1/21/03 – 12/7/04
CDV-R37-2 8/8/03 – 1/5/05

Part 3: "Transducer Field Data," from 11/2003-1/2005; copies of field notebook containing data associated with installing, maintaining, and removing pressure transducers for ENV-WQH.

Part 4: "Alluvial Well Probes" ER-2001-0088, 11/00-01/02; and "Alluvial Well Probes #2" ER-2001-0088, 1/02-5/03. Notebook copies containing field data relating to the installation, removal, calibration, and maintenance of pressure transducers used to obtain water level data from alluvial groundwater wells in Los Alamos canyon, Pueblo canyon, and DP canyon. Field data includes alluvial wells: LAO-B, LAO-0.3, LAO-0.91, LAO-1.6g, PAO-1, PAO-2, PAO-3, PAO-4, PAO-5N, LAUZ-1 and LAUZ-2.

Part 5: "Los Alamos, Pueblo, and Mortandad Water Levels" ER-2001-0089, 01/01-09/02. Field notebook copies containing manual water level measurements for alluvial groundwater wells: LAO-B, LAO-0.3, LAO-0.6, LAO-0.8, LAO-0.91, LAO-1.6g, PAO-1, PAO-2, PAO-2.5, PAO-3, PAO-4, PAO-5N, PAO-5S, and MCO-0.6 in Los Alamos, Pueblo, and Mortandad canyons.

Part 6: "Piezometer and Well Installation Activities in Los Alamos and Pueblo Canyons," ER2001-0230, 03/01-07/02; and "Piezometer Activities in Los Alamos Canyon (including DP Canyon)" ER2001-0230 Vol.2, 05/02-06/03. Field notebook copies containing field data and activities related to the installation, development, and water level monitoring of piezometers in Los Alamos canyon, Pueblo canyon, and DP canyon.

Part 7: Water-Level Elevation Data Sheets from the DP Canyon tracer study, 11/02-08/03, hard copies. Water level field forms from the DP Canyon tracer study, 11/02-08/03.

Part 8:	"LA/Pueblo Field Logbook #461", 10/99-10/01. Field notebook copies containing general field data and activities for canyons investigations. This notebook includes some manual water level data collected during alluvial groundwater sampling in Los Alamos and Pueblo canyons.
Part 9:	"Surface and Alluvial Sampling in Los Alamos, DP, and Pueblo Canyons," ER ID 4931-4840, 10/01-7/02. Field notebook copies containing some manual water level data obtained while collecting alluvial groundwater samples in Los Alamos, Pueblo, and DP canyons.
Part 10:	ER2002-0320 Log Book Volume 1 "Hydrogeologic and CMS Investigations at TA-16, PRS 16-021©-99, IT Corp.; 5/98-9/99. ER2002-0320 Log Book Volume 2 "Hydrogeologic and CMS Investigations at TA-16, PRS 16-021©-99, IT Corp.; 11/99-9/01. ER2002-0320 Log Book Volume 3 "Hydrogeologic and CMS Investigations at TA-16, PRS 16-021©-99, IT Corp.; 9/01-11/04. Field notebook copies containing field data and activities pertaining to TA-16, PRS 16-021. These notebooks include manual water level data, and pressure transducer field activities for alluvial groundwater wells: CdV-16-2655, CdV-16-2656, CdV-16-2657, CdV-16-2658, CdV-16-2659, CdV-16-2660.
Part 11:	"DP Canyon Tracer Study Field Notebook" ER ID 4932-4866 September 2002 – January 2003 "DP Canyon Tracer Study Field Notebook" ER ID 4931-6335 February 2003 – April 2003 These field notebooks contain field data and activities associated with the DP Canyon Tracer Study. Field data includes manual water level data, and field data for the installation and removal of pressure transducers in piezometers and alluvial groundwater wells in DP Canyon.

9.0 Appendix B. Groundwater Level Monitoring Program Quality Assurance Project Plan and Standard Operating Procedures

9.1 Quality Assurance Project Plan

9.2 RRES-WQH-SOP-045, Manual Water Level Measurements

9.3 ENV-WQH-SOP-016, Pressure Transducer Installation, Removal, and Maintenance

9.4 ENV-WQH-SOP-062, Groundwater Level Data Review and Validation

9.5 ENV-WQH-SOP-064, Westbay® Pressure Transducer Installation, Removal, and Maintenance

10.0 Appendix C. Files included on attached CD

The below described water level data files are included in the enclosed data compact disk (CD).

10.1 Regional Aquifer and Intermediate Zone Files

Excel spreadsheet file containing location information and construction information for regional aquifer and intermediate wells.

Regional & Intermediate well information.xls

Excel spreadsheet files containing location data, port data, screen information, data QA, time series chart, and water level data for regional aquifer and intermediate zone wells.

CdVR-15-3 GW Level Data.xls
CdVR-37-2 GW Level Data.xls
R-5 GW Level Data.xls
R-7 GW Level Data.xls
R-9 GW Level Data.xls
R-12 GW Level Data.xls
R-13 GW Level Data.xls
R-14 GW Level Data.xls
R-15 GW Level Data.xls
R-16 GW Level Data.xls
R-19 GW Level Data.xls
R-20 GW Level Data.xls
R-21 GW Level Data.xls
R-22 GW Level Data.xls
R-23 GW Level Data.xls
R-25 GW Level Data.xls
R-28 GW Level Data.xls
R-31 GW Level Data.xls
R-32 GW Level Data.xls
R-33 GW Level Data.xls
R-34 GW Level Data.xls

MCOBT-4.4 GW Level Data.xls
R-9i GW Level Data.xls

10.2 Alluvial Groundwater Data Files

Excel spreadsheet file containing location information and construction information for alluvial wells.

Alluvial Well Information.xls

Excel spreadsheet file containing manual water level data for alluvial wells.

Manual Alluvial WL Data+Graphs (final).xls
Sample_wls_Los Alamos Cyn wells_1-13-04.xls
Sample_wls_Pueblo_dk_sp_1-5-04.xls
TA-16 alluvial Wells Field Parameters2.xls

Excel spreadsheet files containing time series charts and water level data for alluvial wells.

LAO-B hourly data 08-25-00 to 12-14-04.xls
LAO-0.3 hourly data 08-25-00 to 12-14-04.xls
LAO-0.91 hourly data 08-25-00 to 12-14-04.xls
LAO-1.6g hourly data 08-25-00 to 12-6-04.xls
PAO-1 hourly data 08-22-00 to 11-2-04.xls
PAO-3 hourly data 08-23-00 to 12-15-04.xls
PAO-4 hourly data 08-23-00 to 12-15-04.xls
PAO-5N hourly data 08-24-00 to 12-15-04.xls
LAP-1 WL data 07-24-01 to 12-14-04.xls
LAP-1.5 WL data 07-24-01 to 12-14-04.xls
LAP-1.7 WL data 04-07-04 to 12-14-04.xls
LAP-3 WL data 07-24-01 to 12-14-04.xls
LAP-3.5 WL data 11-13-01 to 12-14-04.xls
LAP-4 WL data 4-18-01 to 12-15-04.xls
LAP-5.7 WL data 7-24-01 to 12-15-04.xls
LAP-6 WL data 3-23-01 to 6-16-04.xls
LAUZ-1 WL data 03-07-02 to 12-4-03.xls
LAUZ-2 WL data 03-07-02 to 12-4-03.xls
DPPN-1.1 WL data 12-19-02 to 06-19-03.xls
DPPN-4.5N WL data 12-19-02 to 06-19-03.xls
DPPN-7.7 WL data 02-04-03 to 12-04-03.xls
DPW-7.1S WL data 2-19-03 to 5-6-03.xls
CDV-16-2655 WL data.xls
CDV-16-2656 WL data.xls
CDV-16-2658 WL data.xls
CDV-16-2659 WL data.xls

ENV-WQH QAPP Traveler

Date: 1/25/05

Section 1: Action Request

1. Document #: ENV-WQH-QAPP-GWLM
2. Document title: Groundwater Level Monitoring Project
3. Description of action:

- ☒ New QAPP
- ☐ Revision of existing QAPP
- ☐ Deletion of QAPP

Description of and reason for action:

New program

4. Attachments modified, added, or removed: ☐ Yes ☐ No
5. Reviewers:

R Koch, D Roger, M Alexander, A Groffman

Section 2: Evaluation and Approval

1. Signatures:

Preparer	R. Koch, ENV-WQH Print Name	1-25-05 Date
Jeff Walterscheid for MRA Team or Project Leader	M. Alexander, ENV-WQH Print Name	1-25-05 Date
Team or Project Leader	A. Groffman, ENV-WQH Print Name	01/25/05 Date
ENV-WQH Group Leader	S. Rae, ENV-WQH Group Leader Print Name	Jan 25. 2005 Date

Preparer: After all signatures have been obtained, submit this form with a copy of draft and final procedure to the ENV-WQH QA office.

Los Alamos National Laboratory

Environmental Services

Water Quality and Hydrology Group

Quality Assurance Project Plan

for the

Groundwater Level Monitoring Project

Signatures

Prepared by: R. Koch, ENV-WQH	Date: 1-25-05
Approved by: A. Groffmann, ENV-WQH	Date: 01/25/05
Approved by: Jeff Walterscheid for MRA M. Alexander, ENV-WQH	Date: 1-25-05
Approved by: S. Rae, ENV-WQH Group Leader	Date: Jan. 25-2005

CONTROLLED DOCUMENT

This copy is uncontrolled if no signatures are present or if the copy number stamp is black.
Users are responsible for ensuring they work to the latest approved revision.

General information about this procedure

In this procedure

Section	Topic	Page
1	**Quality Program** Organization	 3
2	**Personnel Development** Personnel Training and Qualification	 9
3	**Quality Improvement** Improving Quality	 11
4	**Documents and Records** Project Documents Project Records Electronic Media	 14 15 16
5	**Work Processes** Planning and Performing Work Data Quality Objectives Data Collection and Analysis Instrumentation and Equipment Data Handling and Documentation Data Validation	 17 20 21 22 23 24
6	**Design**	25
7	**Procurement**	26
8	**Inspection and Acceptance Testing**	27
9	**Management Assessment** Program Management Assessments	 28
10	**Independent Assessment** Program Assessments Assessing Suppliers	 29 30

History of revisions

This table lists the revision history and effective dates of this procedure.

Revision	Date	Description of Changes
0	1/20/05	New document.

Attachments

The following are attachments to this document.

Number	Attachment
1	Groundwater Level Monitoring Project Structure

SECTION 1

Quality Program

Organization

Introduction

This plan describes the processes that are used by the Water Quality and Hydrology Group (ENV-WQH) to assure the quality of groundwater level monitoring products and services delivered to the Groundwater Protection Program (GPP) and to other customers. ENV-WQH strives to conduct monitoring in the most scientifically defensible, cost effective, and safe manner and communicate the results to customers so that groundwater resources at Los Alamos National Laboratory (LANL or Laboratory) can be managed effectively.

Purpose of Quality Plan

This QA Project Plan describes the policies and requirements that ensure the support provided to the Groundwater Level Monitoring Project are conducted in a consistent, agreed-upon manner. Drivers for the quality plan include:

- DOE Order 414.1A, Quality Assurance;
- DOE Order 450.1, Environmental Protection Program;
- DOE Order 5400.5, Radiation Protection of the Public and the Environment
- RRES-EPP-IMP, Revision 2, Integrated Management Plan for the Environmental Protection Programs (or current version);
- LANL Groundwater Protection Management Program Plan.

Organization, continued

Policy

The Groundwater Level Monitoring (GWLM) Project supports RRES Division and the Environmental Protection Program in efforts to protect:

- public health and environment by implementing rigorous compliance programs designed to assure institutional compliance with state and federal environmental protection regulations;
- designated uses of the water resources at LANL by applying sound environmental, ecological, and engineering principles towards mitigation of the impact of groundwater use by LANL;
- groundwater resources during emergencies by assuring technical capabilities are available to measure and evaluate unplanned use of groundwater resources;
- public health and environment by the measurement, assessment, and reduction of risks caused by potential contamination of groundwater resources by LANL derived materials.

The Water Quality and Hydrology (ENV-WQH) Group provides the lead technical and regulatory support for the GPP and the GWLM Project. This support will be provided in accordance with the ENV-WQH portion of the project Task Plans for the LANL Groundwater Protection Management Program and Enhanced Environmental Monitoring and Surveillance. The GWLM Project Lead is responsible for the demonstration of compliance, which will be demonstrated through the successful implementation of this project plan and applicable procedures.

Purpose of the project

LANL will comply with the monitoring requirements of the following:

- RCRA Operating Permit (1993),
- Groundwater Protection Management Program Plan (1994)
- Hydrogeologic Work Plan (1996)
- NMED Consent Order (2004)

Compliance will be demonstrated through the successful implementation of this project plan and applicable procedures.

Organization, continued

Structure of the quality program

The QA Project Plan, including implementing procedures, is a sub-tier document to the RRES-WQH Quality Management Plan. The following documents provide requirements to ensure that support to the GLMP is in accordance with implementing procedures and plans.

- RRES-WQH Quality Management Plan (QMP)
- QA Project Plan for the Groundwater Level Monitoring Project (this document)
- Implementing procedures
  - RRES-WQH-SOP-045, *Manual Water Level Measurements*
  - ENV-WQH-SOP-016, *Pressure Transducer Installation, Removal, and Maintenance*
  - ENV-WQH-SOP-064, *Westbay Transducer Installation, Removal, and Maintenance*
  - ENV-WQH-SOP-062, *Groundwater Level Data Review and Validation*
  - Westbay Mosdax Sampler Probe Operations Manual
  - Westbay Mosdax Transducer Probe Operations Manual
  - In-Situ Transducer Operations Manual(s)

Group organization

ENV-WQH is responsible for the development and implementation of the GWLM Project. The WQH QMP contains a description of the Group organization, level of authorities, and lines of communication. The Group is organized by project teams under the line management direction of the Group Leader. Project teams are cross-functional and focus on specific LANL water quality responsibilities, deliverables, and products. Project teams are guided by Team Leaders who have the responsibility to assure the project is completed. The ENV-WQH organization is shown in Attachment 1 of the WQH QMP.

Organization, continued

Project organization

The Groundwater Protection Program (GPP) is responsible for the GWLM Project. A technical staff level GWLM Project Lead conducts program development data interpretation, and reporting. The GWLM Project Lead reports to the Groundwater Monitoring Project Leader for programmatic direction.

The WQH Operations Team implements field activity for the project by providing groundwater level measurements and operation and maintenance of equipment. The Operations Team Leader is responsible for field line safety. The Operations Team Groundwater Monitoring Lead conducts field activity in support of the project.

The Groundwater Monitoring Project Leader provides direction as required by the Groundwater Protection Program. Reference Attachment 1 for the GWLM Project organization.

Applicable regulatory quality criteria

Applicable quality criteria include:

- PRD-110-01, LANL Quality Assurance Management Plan
- DOE Order 450.1, Environmental Protection Program
- DOE Order 5400.5, Radiation Protection of the Public and the Environment
- DOE Order 6430.1A, Design Criteria (Water Distribution Systems)
- IMP 300-00-00, Integrated Work Management for Work Activities
- LPR 308-00-00, Integrated Quality Management
- LPR 404-00-00, Environmental Protection
- LIR 404-50-01, Water Pollution Control
- New Mexico Environment Department Consent Order for LANL
- LANL Resource Conservation and Recovery Act (RCRA) Operating Permit including the Hazardous and Solid Waste Amendment (HSWA) module governing corrective action and monitoring

Organization, continued

Other Drivers

Other drivers for ENV-WQH include LANL, DOE, NMED, and outside requests for technical assistance in meeting community needs for water resource monitoring and information.

ENV-WQH has specific Office of Institutional Coordination functional responsibility for the Surface and Groundwater Section of LPR 404-00-00, Performance Requirements: Environmental Protection.

Implementation

The following table lists specific responsibilities:

Who	What
WQH Group Leader	Assure that qualified staff properly conduct groundwater level monitoring activities. Ensure all information is accurate and complete.
GPP Program Manager	Responsible for overall management of the Groundwater Protection Program.
Groundwater Monitoring Project Leader	Responsible for the GWLM Project. Provide direction as required by the GPP to the Groundwater Level Project Lead. Ensure that groundwater level monitoring activities are performed in accordance with the requirements specified in this plan. Provide implementation, planning, and scheduling oversight in conjunction with the Operations Team Groundwater Monitoring Lead.
Groundwater Level Project Lead	Implement the GWLM Project activities in accordance with the requirements specified in this plan. Coordinate activities with Groundwater Monitoring Technical Lead and Operations Team Groundwater Monitoring Lead.
Groundwater Monitoring Technical Lead	Responsible for technical oversight and quality of the GWLM Project.

Organization, continued

Implementation

The following table lists specific responsibilities:

Who	What
Operations Team Leader	Provide field support, equipment operation and maintenance, and documentation for groundwater level monitoring activities. Provide implementation, planning, and scheduling oversight in conjunction with the Groundwater Monitoring Technical Lead.
Operations Team Groundwater Monitoring Lead	Coordinate field activity, equipment operations and maintenance, and documentation for groundwater level monitoring activities.
WQH staff and contractors	Conduct groundwater level monitoring activities in accordance with the requirements specified in the monitoring plan.

SECTION 2

Personnel Development

Personnel Training and Qualification

Required personnel education/ experience

Qualified team members will be hired and trained as prescribed in the WQH QMP. The LANL personnel division maintains documentation of education qualification.

WQH provides support to the Groundwater Level Monitoring Project and requires personnel with a variety of the following skills:

- Bachelors and/or masters degree in environmental sciences, water resources management, hydrogeology, engineering, or equivalent studies.
- Advanced scientific data analysis and interpretation skills.
- Proficiency with database, spreadsheet, and word processing computer software products.
- Knowledge of federal and State of New Mexico regulations pertaining to groundwater.
- Strong oral and written communication skills.

Training of personnel

All personnel performing project-related work are required to obtain appropriate training prior to performing work governed by a procedure or be directly mentored while performing work. Training for all project personnel will be performed and documented according to the following WQH procedures:

- RRES-WQH-QP-024, *Personnel Training*
- RRES-WQH-QP-031, *Orienting New Employees*
- RRES-ES-Field, *General Field Work for All*
- RRES-ES-Driving, *Driving, Towing, and Winches for All*
- ENV-WQH-SOP-016, *Pressure Transducer Installation, Removal and* Maintenance
- ENV-WQH-SOP-064, *Westbay Transducer Installation, Removal, and Maintenance*
- RRES-WQH-SOP-045, *Manual Water Level Measurements*
- RRES-WQH-SOP-050, *Groundwater Sampling Using Westbay System*
- ENV-WQH-SOP-062, *Groundwater Level Data Processing, Review, and Validation*

Personnel Training and Qualification, continued

Implementation

The following table lists specific responsibilities:

Who	What
WQH Group Leader	Authorize project personnel to work.
ES Team Leader and Operations Team Leader	Ensure project personnel working under their authority have the appropriate level of training, experience, and education for the project. Ensure all project personnel are authorized to perform the work required.

SECTION 3

Quality Improvement

Improving Quality

Policy

The GWLM Project subscribes to the WQH WMP principles of problem prevention and continuous improvement. The Operations Team and the Environmental Surveillance Team are committed to evaluating improvement opportunities identified by trending and reporting of groundwater level monitoring data.

Performance reports

Routine Data Reports:
The Groundwater Level (GWL) Project Lead prepares and submits routine data reports to the Groundwater Monitoring Project Leader, the GPP Program Manager, and the ENV-WQH Group Leader. The GWL Project Lead will provide critical evaluation and quality assurance control of the groundwater level data, equipment maintenance and calibration, and field procedures, and provide quality-assured data and discussion of data problems in the routine data reports. Quality-assured groundwater level data will be incorporated into the WQDB. Summary data reports will be provided to users of groundwater level monitoring data.

Annual Quality Improvement Performance Report:
The GWL Project Lead will monitor and trend the GWLM Project performance and identify project deficiencies and efficiencies by evaluating the following:

- Verification of receipt of groundwater level data and incorporation in the Water Quality Database
- Routine Data Reports
- Input from users of groundwater level monitoring data
- New findings derived from groundwater investigation and monitoring activities

Improving Quality, continued

Performance reports, con't

The GWL Project Lead will provide an annual quality improvement performance report to the Groundwater Monitoring Project Leader, GPP Program Manager and ENV-WQH Group Leader defining project modifications required, issues identified, and planned corrective actions. The GWL Project Lead will monitor, trend, and document issues and corrective actions.

Periodic groundwater level data updates:
The GWL Project Lead will provide periodic groundwater level data updates to the Groundwater Monitoring Project Leader, GPP Program Manager and the ENV-WQH Group Leader. The periodic updates and communication will be conducted via e-mail, or in memorandum form.

Periodic performance reports on water level equipment inspection and inventory:
Periodic performance reports on the well equipment inspection and inventory will be provided by the Operations Team Leader or his designee to the GWL Project Lead, Groundwater Monitoring Project Leader, and the ENV-WQH Group Leader via e-mail report or similar form. These performance reports will address items such as:

- Equipment performance
- Required system modifications/upgrades
- Problems or deficiencies identified during assessment activities or during routine performance of work, and corrective action plans

Performance report distribution

The following receive copies of program performance reports:

- ENV-WQH Group Leader
- GPP Program Manager
- Groundwater Monitoring Project Leader
- Groundwater Monitoring Technical Lead
- GWL Project Lead
- ENV-WQH Environmental Surveillance Team Leader
- ENV-WQH Operations Team Leader
- ENV-WQH Operations Team Groundwater Lead
- ENV-WQH QA Specialist
- GWLM Project personnel

Corrective actions within WQH

Corrective actions for all ENV-WQH owned activities are initiated, tracked, corrected, and documented according to the RRES-WQH Quality Management Plan and RRES-WQH-QP-033, *Issues Reporting and Actions Tracking*.

Improving Quality, continued

Implementation

The following table lists specific responsibilities:

Who	What
GPP Program Manager	Monitor and trend program performance and ensure issues are corrected in a timely manner.
Operations Team Leader or Designee	Provide well equipment inventory and inspection reports.
GWL Project Lead	Ensure quality of data reports and implements and corrects issues in a timely manner. Complete and submit the annual quality improvement performance report to ENV-WQH Group Leader and GPP Program Manager.
Operations Team Groundwater Montoring Lead/ ENV-WQH staff and contractors	Identify opportunities for process improvement, health and safety enhancement, environmenal protection, or other improvements of the program's operations. Ensure issues are reported and corrected in a timely manner.

SECTION 4

Documents and Records

Project Documents

Revising this plan

This plan will be controlled through the ENV-WQH procedure RRES-WQH-QP-021, *Document Control*. The Groundwater Monitoring Project Leader, at least one reviewer, and the Group Leader or designee will approve all revisions to this plan. Revisions to the plan will be provided to the QA Specialist.

Document control

This document will be controlled under the organization's document control system (RRES-WQH-QP-021, *Document Control*) to ensure that those performing work for the system will receive a controlled copy and all revisions. Those who will receive or have nearby access to a controlled copy include:

- ENV-WQH Group Leader
- GPP Program Manager
- Groundwater Monitoring Project Leader
- Groundwater Monitoring Technical Lead
- ENV-WQH Environmental Surveillance Team Leader
- ENV-WQH Operations Team Leader
- ENV-WQH Operations Team Groundwater Lead
- GWL Project Lead
- ENV-WQH QA Specialist
- GWLM Project personnel

Procedures

Procedures will be developed as necessary and in accordance with the policy in the RRES-WQH QMP and according to Quality Procedure RRES-WQH-QP-023, *Preparation, Review, and Approval of Procedures and Hazard Control Plans*.

Program Records

Records resulting from this program

The number, type, and detail of all records to be kept will provide sufficient information to allow an individual with equivalent education and training to verify or reconstruct the results. Implementing procedures specify the records, forms, logbook entries, or other information to be kept as documentation of the performance of the procedure.

Records to be kept in the ENV-WQH records system (RRES-WQH-QP-025, *Records Management*) include the following:

- Logbook entries to record and document field activities
- Manual water level measurement field forms
- Transducer operations field forms
- Electronic water level data files in original binary format
- Electronic water level data files in spreadsheet or text format
- E-mail, memorandums to record, general correspondence that affects the project
- Data review and validation form
- Routine data reports
- Annual Quality Improvement Performance Reports
- Documentation of periodic groundwater level data updates
- Documentation of periodic performance reports on well equipment inspection and inventory

Records final disposition and retention period

All records will be maintained and available (after the deadline for submittal as given in applicable procedures) for auditing in the records center at the ENV-WQH group office (RRES-WQH-QP-025, *Records Management*).

Electronic Media

Policy

The project will utilize electronic means as necessary to maintain data and perform calculations on the data. Groundwater level monitoring data obtained through manual measurements will be maintained in paper copy and the data will be incorporated into electronic data files. Groundwater level monitoring data obtained from pressure transducers is stored in binary format electronic files that are proprietary to the transducer manufacturers. These raw files will be appropriately labeled and stored in original format digital files on a common (shared) ENV-WQH group server.

Routine data reports will typically incorporate groundwater level data that are reduced from the original raw data files and validated by the GWL Project Lead; these reports will be kept in hard copy as the official record. Validated and reduced groundwater level data will be maintained in electronic file format (spreadsheets, text files, or databases) by the GWL Project Lead and the data will be maintained in the Water Quality Database (WQDB) and follow appropriate procedures for record storage and retention.

Validated groundwater level data will be made available for review to organizations external to ENV-WQH and external to LANL on the Water Quality Database (WQDB). The WQDB is located at http://wqdbworld.lanl.gov/.

Electronic Data Files: Raw Data Files, Databases, and Spreadsheets

Backups -- All electronic data files used to store data and generate reports that will be used in demonstrating compliance will be maintained on a common (shared) drive of a ENV-WQH group computer server. These electronic data files will be backed up daily to a separate computer and/or to removable media to minimize potential losses of data.

Verification of data –Groundwater level data that are obtained through manual measurement methods will be entered into an electronic file format (spreadsheet or database), which will undergo 100% verification by someone other than the data entry person. These reviews will be documented and forwarded to the appropriate record series.

Verification of calculations -- A person other than the person who generates the groundwater level data calculations will review for accuracy all calculations performed manually and/or in spreadsheets and databases. This review will be documented and forwarded to the appropriate record series.

Electronic data file control -- The integrity of all validated electronic groundwater level data will be ensured by maintaining the data on a common (shared) server. This will enable the database administrator to control access to these data files, allowing only trained authorized persons access to the data files.

SECTION 5

Work Processes

Planning and Performing Work

Policy

Work that provides support to the GWLM Project will be planned and documented as described in this document and appropriate implementation procedures (see RRES-WQH-QMP, Section 5). Work will be performed according to applicable plans, implementing procedures, and hazard control plans. The Operations and Environmental Surveillance Team Leaders will provide first line supervision of personnel assigned to project tasks to ensure work is performed to support the Quality Program. Before changing a work process that affects the project quality specifications, the Team Leaders and GWL Project Lead will ensure the same level of planning and review as used in the initial project planning steps.

Work processes

All work should be regarded as a process. Each process consists of a series of actions and is planned and carried out by qulaified workers using specified work processes and equipment under adminsitrative, technical, and environmental controls established by management to achieve an end result. Workers are the best resource of contributing ideas for improving work processes and will be involved in work process design, process evaluation, and providing the feedback necessary for improvement.

All work is planned and performed using the principles of Integrated Safety Management and in compliance with the RRES-WQH-QMP and IMP 300-00-00, Integrated Work Management for Work Activities.

Work performance

Management should ensure that the following are clearly identified and conveyed to workers prior to beginning work:

- customer and data requirements for the work and final product
- acceptance criteria applicable to work and final product
- hazards associated with the work
- technical standards applicable to work and final product
- safety, administrative, technical, and environmental controls to be employed during the work.

Planning and Performing Work, continued

Description of work processes

The work processes used to meet the requirements of this plan can be divided as follows:

- Groundwater Level Monitoring Plan - The Groundwater Level Monitoring Plan describes the well locations to be monitored for groundwater level and the type of groundwater level monitoring to be performed.
- Groundwater Level Monitoring - Groundwater level monitoring activities will be performed according to established procedures.
- Groundwater Level data management, data collection QA, and data evaluation
- Routine Data Reports
- Information Management
- Support Operations (data collection, tracking, and validation), process verification and peer review, and instrumentation and equipment).

Implementation

Groundwater Level Monitoring Plan (GWLMP) development and implementation is required for efficient monitoring of groundwater levels in the LANL area. The Monitoring Plan is reviewed annually and modifications made based upon regulator and other groundwater level data users' needs and review and analysis of previous years' data and the annual performance report.

The following table lists specific responsibilities:

Who	What
GWL Project Lead	Ensure that the GWLM Project is implemented in accordance with program requirements. Oversee GWLM Project to ensure work is performed to achieve program quality specifications. Define scope of GWLM Project activities through preparation and periodic revision of this plan.
Groundwater Monitoring Technical Lead	Oversee technical quality of GWLM Project. Oversee the GWLM Project to ensure work is performed to achieve program quality specifications. Participate in the annual review of the GWLM Project. Coordinates with GWL Project Lead.

Table continued on next page.

Planning and Performing Work, continued

Implementation, con't

Who	What
Operations Team Leader	Oversee the GWLM Project to ensure work is performed to achieve program quality specifications. Participate in the annual review of the GWLM Project. Oversee Operations Team Groundwater Monitoring Lead.
Operations Team Groundwater Monitoring Lead	Provide field operations, documentation, and equipment operation and maintenance support in accordance with relevant groundwater level monitoring procedures.

Data Quality Objectives

What are DQOs?

Data quality objects (DQOs) are defined as "a systematic planning tool based on the Scientific Method for establishing criteria for data quality and for developing data collection designs" (EPA QA/G-4, *Guidance for the Data Quality Objectives Process*, 1994). DQOs are statements of the required quality of data obtained by the project and the uncertainty level a decision maker is willing to accept for results derived from the data. As such, DQOs are a management tool used to limit the chance that data obtained by the project might lead to an incorrect conclusion. The DQO process defines the required level of data defensibility and hence the level of documentation desired. DQOs must strike a balance between time, money, and data quality. This QAPP is an integral part of the DQO process.

The DQOs for the Groundwater Level Monitoring Project were developed in accordance with EPA QA/G-4, *Guidance for the Data Quality Objectives Process*, 1994.

Review and assessment of DQOs

An annual review of DQOs and reiteration, if necessary, will be conducted to determine that the collected data met the performance criteria specified in the established DQOs.

Program DQOs

DQOs for the GWLM Project are discussed in the Groundwater Level Monitoring Plan.

Implementation

The following personnel have specific responsibilities for the GWLM DQOs:

Who	What
Groundwater Monitoring Project Leader	Ensure the DQO process is implemented. Conduct annual review and reiteration of the DQOs.
GWL Project Lead	Ensure DQOs are annually reviewed and reiterated, if necessary. Conduct annual review and reiteration of the DQOs.

Data Collection and Analysis

Purpose

This section outlines the responsibilities for data collection and analysis for the Groundwater Level Monitoring Project. Data collection will be conducted in accordance with RRES-WQH-SOP-045, *Manual Water Level Measurements*, ENV-WQH-SOP-016, *Pressure Transducer Installation, Removal, and Maintenance*, ENV-WQH-SOP-064, *Westbay Pressure Transducer Installation, Removal, and Maintenance,* and RRES-WQH-SOP-050, *Groundwater Sampling Using Westbay System.* Data analysis will be conducted in accordance with ENV-WQH-SOP-062, *Groundwater Level Data Review and Validation.*

Implementation

The following table lists specific responsibilities:

Who	What
GWL Project Lead	Responsible for technical oversight of groundwater level data collection and analysis. Primarily responsible for data collection, and the review, quality control, analysis, and validation of groundwater level data. Ensures that data are collected and equipment operated and maintained in accordance with project requirements. Collects groundwater level data but primarily works with the Operations Team Groundwater Monitoring Lead and staff to direct data collection activities. Ensures measurements are taken, equipment maintained, instruments are calibrated, and that documentation is maintained.
Operations Team Leader	Responsible for providing properly trained field personnel and appropriate equipment for the collection of groundwater level data in cooperation with the GWL Project Lead.
Operations Team Groundwater Monitoring Lead	Coordinates groundwater level field activities. Responsible for carrying out measurements, maintaining equipment, ensuring that instruments are calibrated, ensuring that documentation is maintained.

Instrumentation and Equipment

Policy

Water level equipment will be maintained and calibrated to ensure quality transducer water level data. All ENV-WQH technical work that depends upon the accuracy of data will be performed using equipment for which the calibration status and limits of accuracy are known and controlled.

ENV-WQH personnel shall perform maintenance and calibration procedures on all groundwater level monitoring field instruments at intervals prescribed by the equipment manufacturer to ensure accuracy of measurements and shall maintain appropriate records of maintenance and calibration activities. All field equipment shall be calibrated using methods provided by the equipment manufacturer or the equipment shall be transmitted to the manufacturer for calibration such that the equipment is maintained to meet program requirements. All field calibrations will be documented as prescribed by ENV-WQH procedures.

Equipment and instrumentation calibration and maintenance requirements are set forth in the

- Groundwater Level Monitoring Plan,
- RRES-WQH-SOP-45, *Manual Groundwater Measurements*,
- ENV-WQH-SOP-016, *Pressure Transducer Installation, Removal, and Maintenance,* and
- ENV-WQH-SOP-064, *Westbay Pressure Transducer Installation, Removal, and Maintenance*
- RRES-WQH-SOP-054, *Field Analytical Procedures.*

Implementation

The following table lists specific responsibilities:

Who	What
Operations Team Leader	Provide oversight of water level equipment maintenance and calibration.
Operations Team Groundwater Monitoring Lead	Ensure implementing procedures are used for any equipment and instrumentation use in data collection. Ensure that data are collected and equipment operated and maintained in accordance with project requirements.

Data Handling and Documentation

Policy

ENV-WQH personnel involved in the collection, retrieval, and analysis of groundwater level monitoring data shall maintain secure control of data files at all times until data files are transferred to the WQH server.

Groundwater level monitoring data retrieval and data transfer

ENV-WQH personnel will follow guidance in RRES-WQH-SOP-045.0, *Manual Water Level Measurements,* ENV-WQH-SOP-016, *Pressure Transducer Installation, Removal, and Maintenance*, and ENV-WQH-SOP-064, *Westbay Pressure Transducer Installation, Removal, and Maintenance* as well as manufacturer instructions and procedures for installation and operation of the transducer equipment and software.

Implementation

The following table lists specific responsibilities:

Who	What
ENV-WQH Operation Team Members	Ensure operation of transducer equipment and software for the collection of groundwater level data follow established procedures. Responsible for the security of groundwater level data files from the creation of the data files at the time of data download/transfer/collection at the well to the safe transmittal of data files to the GWLM Project Lead.
GWL Project Lead	Ensure procedures for data collection and handling and control during data retrieval and transmittal are followed. Responsible for the secure curation of groundwater level monitoring data files on the WQH common server.

Data Validation

Policy

Groundwater level data shall be reviewed for completeness and appropriateness and validated on a routine basis as the data are collected for each well. A determination as to the acceptance or rejection of the data shall be provided by the GWL Project Lead according to ENV-WQH-SOP-062, *Groundwater Level Data Review and Validation*. The Project Leader is primarily resonsible for the validation of groundwater level monitoring data.

Implementation

The following table lists specific responsibilities:

Who	What
Groundwater Monitoring Technical Lead	Reviews groundwater level monitoring data reports to ensure that validation procedures are appropriate. Coordinates with GWL Project Lead.
GWL Project Lead	Implements review and validation of the groundwater level monitoring data.

SECTION 6
Design

Policy

Minimal design activity may be necessary for this project. Design activities, when identified, are conducted and reviewed in accordance with established Laboratory, DOE, and other appropriate standards and requirements. Facility engineering designs incorporate and implement sound engineering/scientific principles. Verification and validation of the adequacy of designs are conducted before relying on the performance of the design function.

SECTION 7
Procurement

Procurement of items and services

Procurement of items used in this project will follow the LANL procurement process and the requirements in the RRES-WQH-QMP. Most items required for this project are commercial grade in nature and no special procurement requirements or needs are necessary. For items for which special requirements are necessary, the ENV-WQH Operations Team Leader, the GWL Project Lead, and project members will identify such items or services.

Implementation

The following table lists responsibilities:

Who	What
Operations Team Leader	Recommend to Group Leader contracting items and services. Develop acceptance criteria.
GWL Project Lead and WQH Staff	Recommend to Operations Team Leader contracting items. Develop acceptance criteria.

SECTION 8
Inspection and Acceptance Testing

Policy

Any materials will be inspected and/or tested prior to acceptance for use in this project. Most supplies used during performance of project activities are commercial grade in nature and require no special acceptance practices or procedures.

Transducer equipment and associated data logging equipment and cabling, etc. are tested prior to installation according to ENV-WQH-SOP-016, *Pressure Transducer Installation, Removal, and Maintenance* and ENV-WQH-SOP-064, *Westbay Pressure Transducer Installation, Removal, and Maintenance*

Implementation

The following table lists responsibilities:

Who	What
Groundwater Monitoring Technical Lead and GWL Project Lead	Verify that all materials meet acceptance criteria.

SECTION 9
Management Assessment

Internal assessments

The ENV-WQH Group conducts internal management assessments of all projects and programs in the group in accordance with requirements in RRES-WQH-QP-028, *Management Self-Assessments*. Assessments of the project are documented and filed as records.

Responding to assessments

When deviations of requirements are found during a management assessment, a deficiency report is initiated to document the deviation. Corrective actions are tracked and documented in accordance with RRES-WQH-QP-033, *Issues Reporting and Actions Tracking.*

Implementation

The following table lists responsibilities:

Who	What
GPP Program Manager and Groundwater Monitoring Project Leader	Ensure program management assessments are conducted.

SECTION 10

Independent Assessment

Project Assessments

Policy

Independent assessments are those assessments conducted by organizations external to ENV-WQH. As required by the RRES-WQH-QMP, the ENV-WQH support to the Groundwater Level Monitoring Project may be assessed by outside organizations. ENV-WQH will not provide any independent assessments of the Groundwater Level Monitoring Project.

Internal audits

Annual audits/assessments will be conducted, with input from the GWL Project Lead identifying one or more areas of the project to be audited each year.

Implementation

Annual audits/assessments will be conducted, with input from the GWL Project Lead.

The following table lists responsibilities:

Who	What
GWL Project Lead	Approve audit schedules. Provide input to the QA Specialist as to the content of audit. Review audit reports for factual accuracy. Address all findings and implementation corrective actions as appropriate.
QA Specialist	Idenitfy areas to be addressed during internal audits. Review audit procedures to ensure they meet the requirements in this section.
Team Members	Cooperate with auditors by providing information, data, etc. Implement corrective actions as directed by the Team Leader or GWL Project Lead.

Assessing Suppliers

Policy

The GWL Project Lead (in coordination with the QA Specialist) will ensure that periodic assessments are conducted to determine whether required equipment and software from the following organizations meets quality specifications:

- transducer equipment manufacturers supplying equipment
- vendors and contractors supplying services

If problems are found with a supplier's product, WQH will work with that supplier until the problem is corrected or will obtain alternate suppliers.

Transducer Equipment Manufacturers

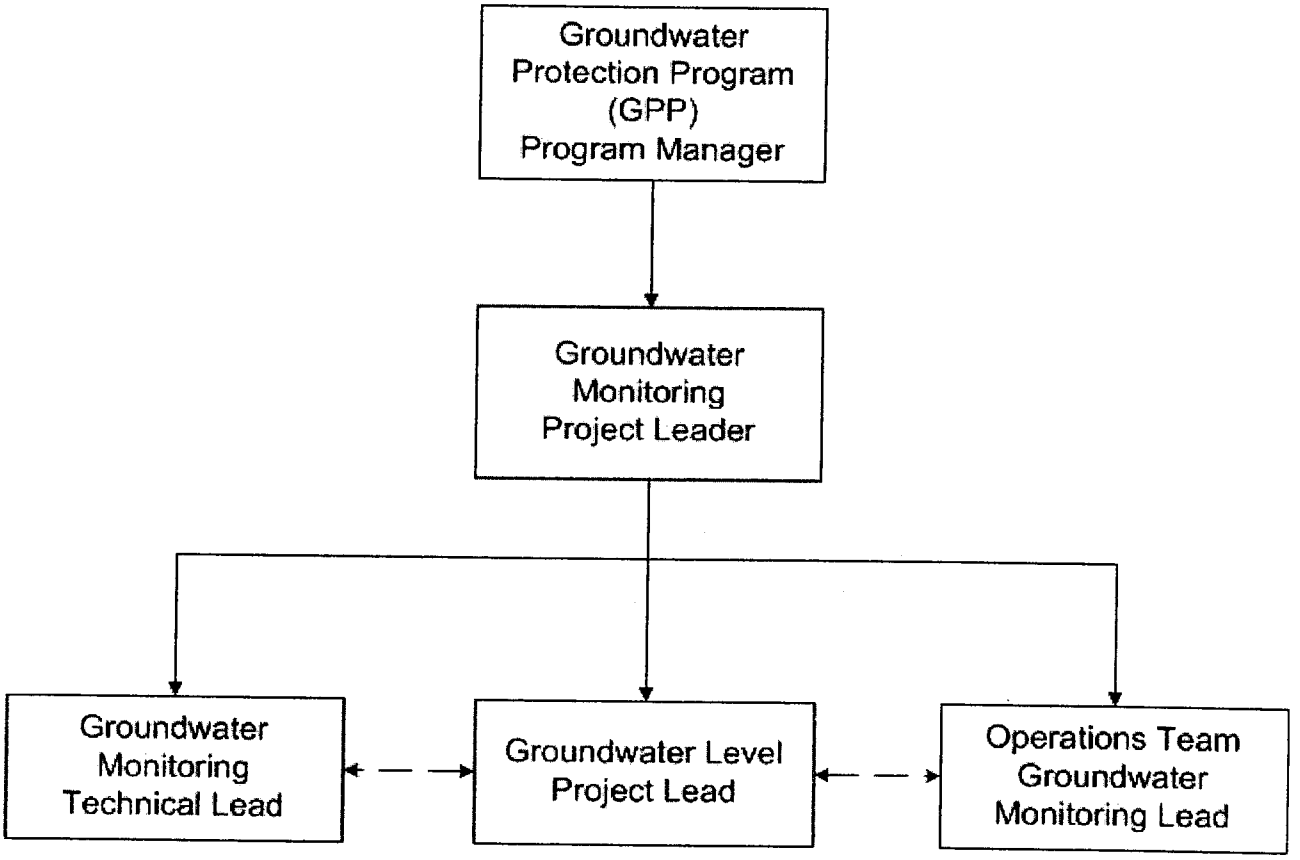
The ENV-WQH goal is to perform annual audits of manufacturers that provide groundwater level equipment and software used in calculations for determining groundwater level data. These audits will be conducted by the GWL Project Lead in conjunction with the QA Specialist and/or any other persons the coordinator deems appropriate.

Implementation

The following table lists specific responsibilities:

Who	What
GWL Project Lead	Approve audit/assessment schedules. Review audit reports for factual accuracy. Address all findings and implement corrective actions as appropriate.
QA Specialist	Identify areas to be addressed during audits of suppliers. Review audit procedures to ensure they meet the requirements in this section.
Operations Team Leader	Implement corrective actions as appropriate.

Groundwater Level Monitoring Project



MANUAL GROUNDWATER LEVEL MEASUREMENTS

Purpose

This Water Quality and Hydrology (WQH) Group procedure describes the process for manually measuring the depth to groundwater and determining the groundwater elevation in an open borehole or cased monitoring well.

Scope

This procedure applies to all RRES-WQH staff and contract personnel who manually measure groundwater levels.

In this procedure

This procedure addresses the following major topics:

Topic	See Page
General Information About This Procedure	3
Who Requires Training to This Procedure?	3
Before Leaving for the Field	5
Establishing a Measuring Point	8
Measuring Groundwater Level with a Water Level Meter	10
Records Resulting from this Procedure	15

Hazard Control Plan

The hazard evaluation associated with this work is documented in RRES-ES-Field, *General Field Work for All,* Attachment 1: Initial risk for manual measurement of groundwater level = **minimal**. Residual risk = **low**. Work permits required: None.

Signatures

First authorization review date is one year from group leader signature below; subsequent authorizations are on file in group office.

Prepared by: R. Koch, RRES-WQH	Date: 9/16/04
Reviewed by: J. Walterscheid, RRES-WQH	9/17/04
Approved by: M. Alexander, Team Leader	Date: 9/19/04
Approved by: D. Rogers, Team Leader	Date: 9/16/04
Approved by: S. Rae, RRES-WQH Safety Committee Chair	Date: Sept 20. 2004
Approved by: S. Rae, RRES-WQH Group Leader	Date: Sept 20. 2004

General information about this procedure

Attachments

This procedure has the following attachments:

Number	Attachment Title	No. of pages
1	Measuring Point Diagram	1
2	Groundwater Level Measurement form	1
3	Water Level Meter Calibration and Maintenance form	1

History of revisions

This table lists the revision history and effective dates of this procedure.

Revision	Date	Description Of Changes
0	8/04	New document

Who requires training to this procedure

All RRES-WQH staff and contract personnel who use water level meters and manually measure groundwater levels.

Training method

The training method for this procedure is "self-study" (reading) and is documented in accordance with the procedure for training (RRES-WQH-SOP-024).

Personnel who have not previously measured groundwater levels manually at LANL should be mentored before performing this procedure alone.

Prerequisites

In addition to training to this procedure, comprehension of and authorization to the following is required:

- RRES-ES-Field, *General Field Work for All*
- RRES-ES-Driving, *Driving, Towing, and Winching for All*
- RRES-WQH-SOP-004, Radio and Cellular Phone Use

If using a water level meter with an electric reel and a small electric generator, training to the following is required:

- Electrical Safety Awareness Training

General information, continued

Definitions

Electric water level meter: a device designed for measuring depth to water in wells using a flat graduated measurement tape attached to a weighted stainless steel probe containing an electrode, which emits an audible and visible signal when contact is made with water. This is the most common and preferred device for manually measuring groundwater levels.

Land surface datum (LSD): the elevation in ft mean sea level (msl) of the ground surface at the well. Normally determined by survey methods, but may be estimated from topographical maps in the absence of a geodetic survey.

Measuring point (MP): reference point marked on a well casing from where all water levels are measured. This point may be the top of casing or may be a location permanently marked on the well casing. Because the MP may change from time to time, the MP must be documented for each groundwater level measurement.

Reference point (RP): an arbitrary datum established by permanent marks, and used to check the MP or to re-establish the MP should the original MP be destroyed or changed.

Piezometer: an observation well with a short screened interval used to measure groundwater level. Piezometers are usually narrow diameter wells that do not allow for the collection of groundwater samples and may be nested at different depths within one well boring or casing.

Potentiometric surface: The level at which water stands in a well for a specific saturated zone; also called piezometric surface.

Background Information

Groundwater level measurements are generally used to construct potentiometric surface maps. Groundwater level data are also used to determine hydraulic conductivity, groundwater flow direction, flow velocity, hydraulic gradients, impacts due to pumping or other groundwater stresses

References

The following documents are referenced in this procedure:

- RRES-ES-Field, General Field Work for All
- RRES-WQH-SOP-015, Down Hole Video Camera Use

Note

Actions specified within this procedure, unless preceded with "should" or "may," are to be considered mandatory guidance (i.e., "shall").

Before leaving for the field

Materials and instruments

Prior to leaving for the field, assemble the following equipment:

- Electric water level meter with tape marked in 1 ft intervals and graduated to 0.01 ft length appropriate to well(s) being measured
- Groundwater Level Measurement form (Attachment 2)
- Waterproof Pen
- Duct Tape
- Well location file notebook with well location map, measuring point diagram, and as-built diagram of well construction with Land Surface Datum (LSD)
- Deionized water and Kim Wipes
- AA batteries or 9-volt batteries, as needed
- Keys for the well
- Small generator (if electric reel is being used)
- Field notebook
- Hand-held calculator
- Protective gloves and safety glasses with side shields
- Nitrile gloves

Establish working condition of water level meter

Before using a water level meter, establish the working condition of the meter by filling a bucket, length of tubing, or similar container with fresh tap water.

Insert the water level meter into the container and check that the audible tone device and/or the lighted signal device operate properly when the sensor contacts the water. If there is no response by the water level meter, follow manufacturer instructions for checking and replacing the batteries and repeat the test. If there is still no response, check for corrosion in the battery compartment and all electrical connections and contacts between the reel and the tape and the tape and the sensor unit. Follow manufacturer instructions for cleaning and maintenance of the water level meter.

Note the point on the sensor device where contact with the water causes the audible tone to activate. Slowly move the sensor device in and out of the water a few times to simulate measuring a water level and check that the audible tone is activated at the same point on the sensor each time the device is lowered into the water. If a discrepancy >0.01 ft is noted, clean the sensor device per manufacturers instructions and repeat the test. If the sensor device consistently has a discrepancy >0.01 ft, return the water level meter to the manufacturer for repair or replacement.

Before leaving for the field, continued

Calibration

All water level meters will be checked and calibrated at least annually or any time after a meter has been hung up, pulled on, twisted, or kinked during use. Record calibration on the Water Level Meter Calibration and Maintenance Form (Attachment 3) and maintain form in the WQH equipment files. Attach a calibration tag to the water level meter with any measurement-offset instructions.

1) Measure the distance from the top of the container (see previous section) to the water with a tape measure graduated in 0.01 ft increments. Check that the depth to water measured by the water level meter corresponds to the measured depth to water. Alternately, measure the distance between the point on the sensor device where water is detected to the first depth markings on the water level meter.

2) Check the total length of the water level meter for accuracy using an acceptable steel tape that is maintained in the office for use only for calibrating tapes (NIST Standard).

3) If the measured distance between the sensor point and the tape markings do not coincide (step 1) and/or if the length of the water level meter does not correspond with the steel tape (step 2), note the measurement discrepancy(ies) on the Water Level Meter Calibration and Maintenance Form (Attachment 3) and mark and affix a tag to the water level meter with the measurement calibrated offset distance in ft.

Note:

Use the same water level measuring device each time for a given well to ensure measurement consistency.

When planning to collect water level measurements from a number of wells, it is prudent to begin with those wells that are the least contaminated and proceed toward wells having increasing levels of contamination. A review of the most current water quality data for the wells of interest should be conducted in order to plan the water level measuring event.

Water Level Meter Maintenance:

To maintain the water level meter tape in good working condition:

- Periodically check the tape for breaks, kinks, and possible stretching
- Do not let the tape rub across the top of the casing
- Clean tape, probe, and reel while retrieving from the well to avoid possible contamination of other wells. Pull the tape through a clean cloth dampened with deionized water.

Before leaving for the field, continued

Assessing data accuracy and limitations

Criteria for assessing data accuracy are as follows:

- Water level measurements should be repeated at least three times to establish the repeatability, precision, and accuracy of the measurement. Repeat the measurement by raising the tape about 0.5 ft and lowering until the water level meter senses contact with the water.
- Repeated measurements of static water level using the same electric water level meter tape should agree within ± 0.02 ft for groundwater depths less than about 200 ft.
- Repeated measurements of static water level using the same electric water level meter tape should agree within ± 0.05 ft for groundwater depths from 200 to about 750 ft.
- Repeated measurements of static water level using the same water level meter tape should agree within ± 0.1 ft for groundwater depths from 750 ft to 2,000 ft.

The accuracy with which the measuring point (MP) measurement is established corresponds to the accuracy of the resulting groundwater elevation measurements. Where water levels are measured to 0.01 ft, establish the MP to an accuracy of 0.01 ft. Where water levels are measured to 0.1 ft, establish the MP to an accuracy of 0.1 ft.

Establishing a measuring point

Assumptions

The following assumptions are made when establishing a permanent measuring point (MP).

- For consistency, groundwater level measurements are routinely measured from the same MP.
- The land-surface datum (LSD) of the well is determined by geodetic survey when the well is installed or is estimated by a team leader responsible for the initial water level measurement in the well.
- Because the MP of a well may change over time, routinely check the distance between the MP and LSD and document the MP height on the Groundwater Level Monitoring Form (Attachment 2).
- MPs should not normally change; if a new MP must be established, indicate why the point was moved and the location of the new point on the Measuring Point Diagram (Attachment 1).

Establish a measuring point

At the completion of installation of a monitoring well, or when inventorying an existing monitoring well, establish a MP. The MP must be as permanent as possible, clearly defined, marked, and easily located. The MP is measured in reference to LSD and is the most convenient point from which to measure the groundwater level in a well.

To establish a permanent MP, perform the following steps:

Step	Action
1	Designate a convenient point at the top of the outer or riser-casing as the MP.
2	Position the MP at an accessible point on the casing.
3	Clearly mark the MP with an engraved arrow. Do not allow engravings or filings to enter the well.
4	Measure the height of the MP in feet above or below the LSD (Attachment 1).
5	Record the height of the MP on the Groundwater Level Measurement form (Attachment 2) and in the field logbook.
6	Record the date the MP was established, the height of the MP above or below the LSD, and a detailed description of the MP on the Measuring Point Diagram (Attachment 1) and in the field logbook.
7	Depending on the purpose of the groundwater level measurements, it may be desirable to obtain a geodetic survey for the LSD and the MP.

Continued on next page.

Establishing a measuring point, continued

Establish a measuring point, cont'd

Step	Action
8	Establish at least one clearly marked reference point (RP) somewhere near the well. At most wells, the brass cap in the concrete pad will be used as the RP.
9	Make a detailed sketch of the MP and the RP on the Measuring Point Diagram (Attachment 1) and if possible, take a photograph and include in the well location file. Mark the MP and the RP on the photograph.

Recording data

All MP data are recorded on the Measuring Point Diagram and the Groundwater Level Measurement form. The completed forms are maintained in the WQH well files.

Note: If no MP can be found at a well, establish and document the MP used to measure the groundwater level on the Groundwater Level Measurement Form.

Measuring groundwater level with a water level meter

Conditions for using a water level meter

Use an electric water level meter to measure static groundwater levels in the following wells:

- Open boreholes
- Cased monitoring wells
- Piezometers

Water level meters may be used with less precision and accuracy in the following circumstances:

- When water is dripping into the well or condensing on the inside casing walls.
- In wells that are being pumped, particularly with large-discharge pumps.
- When a series of measurements are needed in quick succession, such as in aquifer tests.

Caution

Do not use a water level meter to measure water level in a borehole, well, or access tube where a transducer is installed unless a separate access tube is present for deployment of the water level meter. Use of a water level meter in a well or tube with a transducer or other type of cable or tubing may lead to tangling of the water level meter probe with the cable.

To measure the water level in a well equipped with a transducer and no separate access tube for water level measurement, remove the transducer from the well before measuring the water level. Re-install the transducer in the well after obtaining the water level measurement.

A water level meter may be used in a shallow alluvial well equipped with a transducer. Use care to avoid tangling.

Down Hole Video Camera

A down hole video camera may be used in place of a water level meter to measure the water level in a borehole or well. Follow this procedure and RRES-WQH-SOP-015, *Down Hole Video Camera Use* to measure the water level visually. Complete the Manual Groundwater Level Measurement Form (Attachment 2), noting the precision with which the winch mechanism used with the down hole video camera is capable of measuring depth.

Assumptions

The following assumptions are made when preparing to use an electric water level meter for water level measurements:

- An established MP exists and the distance from the MP to LSD is known. Reference Attachments 1 and 2.
- All established MPs and well data will be maintained in the WQH well files.
- Tape stretch is negligible for groundwater level measurements.

Measuring groundwater level with a water level meter, continued

Measuring groundwater level cont'd

To measure groundwater level with a water level meter, perform the following steps:

Step	Action
1	Check the calibration date of the water level meter (all water level meters will be numbered to track calibration). If needed, perform the calibration procedure on the water level meter. Record the calibration information on the Water Level Meter Calibration and Maintenance form (Attachment 3) and on the Groundwater Level Measurement Form (Attachment 2) Clean the probe with DI water and dab dry prior to entry into a well.
2	Unlock the protective steel well-head cover and remove the well cap. Note the well name, date, and time of day in the field notebook and on the Groundwater Level Measurement Form (Attachment 2). Locate the Measuring Point (MP) of the well and document the MP and the LSD on the Groundwater Level Measurement Form. Measure the MP height from the LSD and record the height on the Groundwater Level Measurement Form or reference well location file for MP height. Note in the comments field of the Groundwater Level Measurement Form if air is moving in or out of the well.
3	Obtain all groundwater level measurements using the same sensitivity setting (if equipped) on the audible/visual indicator to provide consistent measurements.

Continued on next page.

Measuring groundwater level with a water level meter, continued

Measuring groundwater level cont'd

Step	Action
4	Turn on the water level meter and check that the audible/visual signal operates. Lower the water level meter probe slowly into the well until the audible/visual signal indicates that the water surface is encountered. Note: for wells equipped with a pump assembly and a water level access tube, insert the water level meter probe into the small diameter access tube at the wellhead assembly. Note: Pump assemblies should NOT be temporarily raised or lowered to perform water level measurements. If the water level is below "top of pump," then record information accordingly. Do not force a water level probe past pumps or other obstructions in a well.
5	When the water surface is contacted, slowly raise and lower the probe in the well, noting at the MP the measured depth where the signal sounds. Repeat this step of the measurement until the depth results are reproduced at least three times. Reference Assessing Data Accuracy and Limitations on page 6 of this document. • If the check measurement does not agree with the original measurement within the accuracy given in the data accuracy section, continue to make check measurements until the reason for the lack of agreement is determined or until the results are shown to be repeatable. • Document unusual occurrences such as water cascading into the well, etc. on the Groundwater Level Measurement form. Record the measured depth to water (DTW) at the MP in the "Measured Depth to Water" column of the Groundwater Level Measurement form. Note: Measurement should be recorded to 0.01 ft, or provide comment why the measurement was not obtainable to this precision.

Continued on next page.

Measuring groundwater level with a water level meter, continued

Measuring groundwater level (cont'd)

Step	Action
6	If appropriate with the equipment available, measure total depth (TD) of well by lowering the weighted water level probe (or video camera) to the bottom of the well. Record the TD of the well on the Groundwater Level Measurement form. • Do not remove or adjust the pump or otherwise disturb the water column to accomplish this measurement. • Disable the water level sensing signal before lowering the probe. • Measure TD by manually raising and lowering the probe and determining the depth where the weight of the probe is no longer sensed. Note: this method is not appropriate for wells deeper than about 300 ft. NOTE: Be sure to add additional probe length from sensor to bottom of probe as this is not accounted for on the measuring tape. • Refer to the well construction diagram or well summary sheet for as-built well TD information.
7	When measurements are complete, turn off the water level meter and carefully remove the water level meter tape from the well by winding onto the meter reel. Clean the water level meter tape and probe using DI water and dabbing dry. Note: use caution when retrieving the water level probe from the well. Retrieve the tape and probe in the center of the casing, do not allow the tape or probe to contact casing if possible, and do not all allow the probe to swing wildly upon retrieval from the well.

Continued on next page.

Measuring groundwater level with a water level meter, continued

Measuring groundwater level (cont'd)

Step	Action
8	Calculate water elevation from measurement data and enter water elevation on the Groundwater Level Measurement form (Attachment 2). Groundwater Elevation = Land Surface Datum (LSD) + Measurement Point (MP) Height above LSD – Depth to Water Measurement from Measurement Point. Refer to the well construction diagram for the depth and elevation of the bottom of the screen interval (note that well construction diagrams are usually referenced to the LSD, not the MP). • Check that the measured groundwater level is within the screen interval or the range of prior measurements. • If the groundwater elevation is below the bottom the screen, note on the Groundwater Level Measurement form that water is present in the sump but not present in the well.

Recording data

All calibration and maintenance data associated with each water level meter will be maintained in the Water Level Meter Calibration and Maintenance form files.

- All groundwater measurement data are recorded in the Groundwater Level Measurement form to the appropriate accuracy for the depth being measured.
- The Groundwater Level Measurement forms will be maintained in the WQH well location files. Refer to "Assessing data accuracy and limitations" in this document.

Records resulting from this procedure

Records

The following records are generated as a result of this procedure:

- Measuring Point Diagram form
- Groundwater Level Measurement form
- Water Level Meter Calibration and Maintenance form

Click here to record self study training to this document.

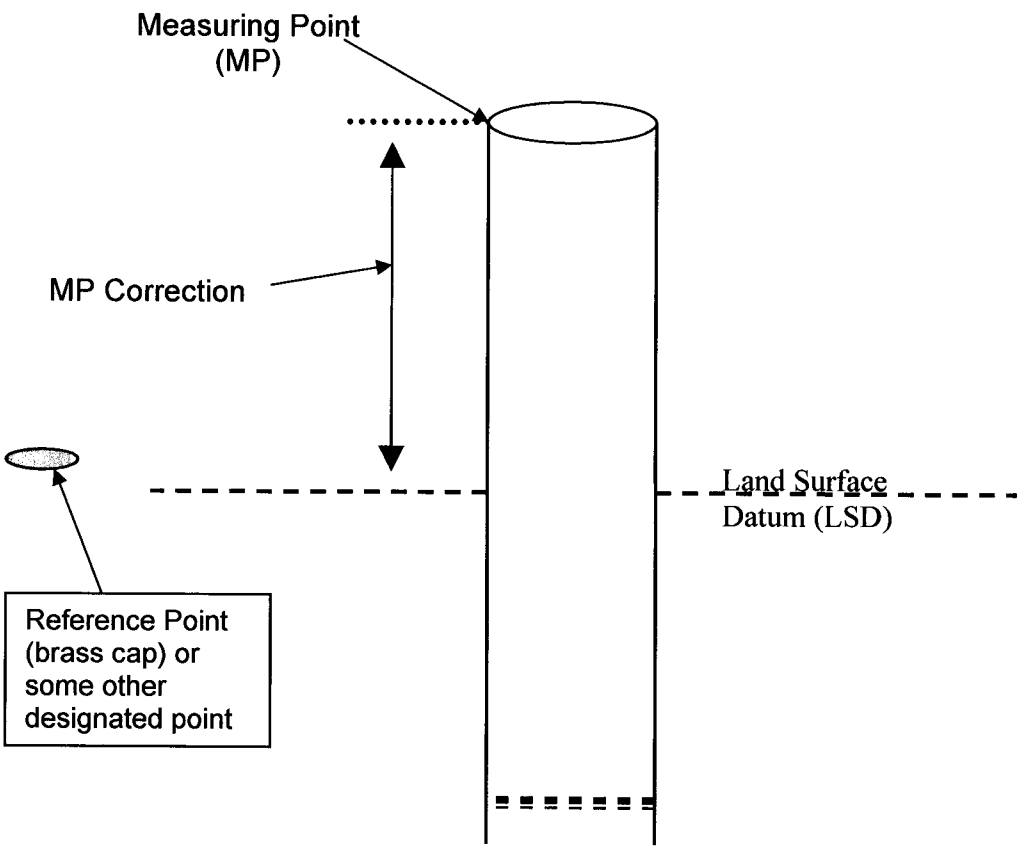
MEASURING POINT DIAGRAM

Well Name = _____

MP Description = _____

MP Height (ft) = _____
(note: (+) = above LSD, (-) = below LSD)

LSD (ft) = _____ LSD Description: _____



Los Alamos National Laboratory
Water Quality and Hydrology
Groundwater Level Measurement Form

Sheet __ of __

Technical Area _____ Project Name: _____

Location/Field: _____ Personnel: _____ Signature: _____

				Measuring Point (MP)				Water Level		Total Depth	
			A		B	C	D	= C - B	= A + B - C	= D - B	
Well Name	Date	Time	Land Surface Datum (LSD) (Ft MSL) [1]	Document MP (LSD or TOC) [2]	MP above (+) or below (-) LSD (Ft)	Measured Depth to Water (DTW) (Ft)	Measured Depth of Well from MP (Ft)	DTW from LSD (Ft)	Groundwater Elevation (Ft MSL)	Total Depth of Well from LSD (ft)	Comment [3]

Measurement Method and Water Level Meter Type: _____

Water Level Meter Serial Number: _____

Additional Comments: _____

1) Note the Land Surface Datum (LSD) of the well, usually the elevation of the brass cap or ground level

2) MP = Measuring Point; TOC = Top of Casing; State MP if other

3) Include any pertinent information about the water level measurement

RRES-WQH-HCP-045

Water Level Meter Calibration and Maintenance Form

Los Alamos National Laboratory
Water Quality and Hydrology
Water Level Meter Calibration and Maintenance

			Water Level Meter				Calibration Measured Distance from Sounder Point to:						
Date	Time	Inspector Name	Manufacturer	Serial Number	Total Length (ft)	Alarm Operates (Y/N)	1.00 ft mark	30.00 ft mark	60.00 ft mark	100.00 ft mark	500 ft mark	1000 ft mark	Equipment Condition, Comments, Describe Maintenance

RRES-WQH-HCP-045

ENV-WQH Procedure Traveler

Date: 1/19/05

Section 1: Action Request

1. Document #: ENV-WQH-SOP-016.4
2. Document title: Pressure Transducer Installation, Removal, and Maintenance
3. Description of action:

- ☐ New procedure
- ☒ Revision of existing procedure
- ☐ Deletion of procedure

Description of and reason for action:

Extracted Westbay transducer steps and placed in separate procedure (064.0)

4. Attachments modified, added, or removed: ☐ Yes ☒ No
5. Reviewers:

S. Allen / M. Alexander / D. Katzman / R. Koch

Section 2: Evaluation and Approval

1. Safety and security review: The hazard level associated with this procedure has been determined, and the appropriate safety- and security-related hazards have been addressed in accordance with IMP 300-00-00.

ENV-WQH Safety Officer	S. Rae, ENV-WQH Group Leader Print Name	Date

2. Signatures:

Preparer	Shannon Allen, ENV-WQH Print Name	1-19-05 Date
Team or Project Leader	Armand Groffman, Project Leader Print Name	01/20/05 Date
ENV-WQH Group Leader	Steve Rae, ENV-WQH Group Leader Print Name	1-20-05 Date
ENV-ECR Group Leader	Alison Dorries, ENV-ECR Group Leader Print Name	1/31/05 Date

Preparer: After all signatures have been obtained, submit this form with a copy of draft and final procedure to the ENV-WQH QA office.

PRESSURE TRANSDUCER INSTALLATION, REMOVAL, AND MAINTENANCE

Purpose

This procedure describes installation, removal, and maintenance procedures for the water level recording pressure transducers that are placed in groundwater monitoring wells, piezometers, or surface water locations.

Scope

This procedure applies to all ENV-WQH, ENV-ECR, and contractor personnel authorized to operate or maintain the water level recording pressure transducers, or assist with these tasks.

In this procedure

This procedure addresses the following major topics:

Topic	See Page
General Information About This Procedure	3
Who Requires Training to This Procedure?	3
General Requirements for Transducer Installation or Removal	8
Calibration and Maintenance of Pressure Transducer Equipment	9
Transducer Selection and Installation Guidance	14
Transducer Installation	15
Transducer Data Retrieval	18
Transducer Removal	20
Records Resulting from This Procedure	21

Integrated Work Management

The work specified in this procedure is conducted with applicable Integrated Work Documents, in accordance with LANL IMP 300-00-00, Integrated Work Management for Work Activities.

CONTROLLED DOCUMENT

This copy is uncontrolled if no signatures are present or if the copy number stamp is black. Users are responsible for ensuring they work to the latest approved revision.

Signatures First authorization review date is one year from group leader signature below; subsequent authorizations are on file in group office.

Prepared by. Shannon Allen, ENV-WQH	Date: 1-19-05
Reviewed and Approved by. Richard Koch, ENV-WQH	Date: 1-21-05
Reviewed and Approved by. Danny Katzman, ENV-ECR	Date: 1-20-05
Reviewed and Approved by. Armand Groffman, Project Lead	Date: 01/20/05
Approved by. Steve Rae, ENV-WQH Group Leader	Date: 01/21/05
Approved by. Alison Dorries, ENV-ECR Group Leader	Date: 1/21/05

General Information About This Procedure

Attachments

This document has the following attachments:

Number	Attachment Title	No. of pages
1	Transducer Performance Check and Maintenance Form	1
2	Transducer Data Retrieval, Installation, and Removal Form	1
3	Manufacturer Operating Manuals	1

History of revision

This table lists the revision history and effective dates of this procedure.

Revision	Date	Description Of Changes
0	12/98	New document.
1	06/00	Annual review
2	12/01	Annual review
3	08/03	Annual review
4	01/05	Annual review, significant revisions

Who requires training to this procedure

ENV-WQH and ENV-ECR staff and contractors who work with pressure transducer equipment require training before implementing this procedure.

Training method

The training method for this procedure is both **read-training** and **on-the-job** training. Training is in accordance with group specific procedures for training. Annual refresher training to this procedure is "self-study" (reading).

Prerequisites

In addition to training to this procedure, the following training is also **required** prior to performing this procedure:

- RRES-WQH-SOP-045, Manual Groundwater Level Measurements
- In-Situ Inc. Transducer Operator's Manual read-training

References

The following documents were referred to in preparation of this procedure:

- ENV-WQH-QAPP-GWLMP, Quality Assurance Project Plan for the Groundwater Level Monitoring Project
- RRES-WQH-SOP-045, Manual Groundwater Level Measurements
- In-Situ, Inc. Operator's Manual for the miniTroll
- In-Situ, Inc. Operator's Manual for the Hermit 1000C
- In-Situ, Inc. Technical Note 002, Instrument Calibration

General Information About This Procedure, continued

Terminology

Absolute pressure: the total or absolute pressure measured by a sensor without correction for atmospheric pressure. A pressure measurement that includes atmospheric pressure is an absolute pressure. Units are expressed in psia (pounds per square inch absolute).

Depth test: a test performed to evaluate the accuracy of a pressure transducer in which the actual known depth under the surface of water a transducer is placed is compared to the reading given by the transducer.

Drift test: a test performed to evaluate the stability of a pressure sensor. A transducer is suspended at a known depth below water surface, and is set to record values over a set period of time. Data is then evaluated to ensure the transducer has recorded stable water pressure values for the duration of the test. Any variation in values must be within the measurement precision of the instrument.

Gage pressure: the pressure measured relative to atmospheric pressure. Measurements exclude atmospheric pressure and are said to be compensated or gaged for atmospheric pressure. A vented or gage pressure transducer sensor utilizes a vent tube in the cable that exposes one side of the pressure sensor to atmospheric pressure, measuring pressure of the water column only. Units are expressed in psig (pounds per square inch gage).

Ground Elevation: The elevation of the ground surface of the well expressed in feet above mean sea level. If the well has a concrete surface pad, usually the elevation of the top of the concrete pad is used. If a brass cap is present to identify a well, usually the elevation of the brass cap in the concrete pad.

Performance Check: a check of the performance of the transducer to ensure the transducer is still within calibration. Performance checks can be done by doing a drift test and/or a depth test.

Pressure Head: The height in feet of a column of water that can be supported by the gage pressure measured at a point in a well.

Pressure Transducer (Transducer): A device that measures pressure. There are two types of pressure transducers, those that measure absolute pressure, and those that measure gage pressure.

psi: Unit of pressure measurement in pounds per square inch.

psia: Unit of pressure measurement in pounds per square inch absolute, see absolute pressure.

psig: Unit of pressure measurement in pounds per square inch gage, see gage pressure.

General Information About This Procedure, continued

Terminology, continued

Raw Data Files: Electronic pressure transducer data files that are obtained from pressure transducers or data loggers at a well site. Raw data files are usually binary computer files that can be opened, read, and interpreted only by software developed by the transducer manufacturer. The raw data files must be stored and archived appropriately in order to protect the original data from the pressure transducer. Raw data files contain the raw pressure measurements and date/time stamp from the transducer and may also contain information entered into the transducer software program at the time of installation, such as well name, date/time, measurement interval, reference water elevation at the time of installation, etc.

Reference Level: The elevation of the surface of the water in a single completion well at the time of installation of the transducer. Determined by manual measurement of the groundwater elevation according to RRES-WQH-SOP-045.

Water Elevation: The elevation of the surface of the water in a well, expressed in feet above mean sea level.

Water Level: 1) Depth to water (DTW) in a well below ground surface expressed in feet, or 2) The Water Elevation expressed in feet above mean sea level. Refer to RRES-WQH-SOP-045, *Manual Groundwater Measurements*, for information about measuring groundwater level in a well.

Pressure transducer equipment

Transducer equipment is used to periodically measure water levels in individual wells or surface water locations at user-specified intervals and record these values in computer memory for later retrieval.

Two types of transducer equipment are currently used in monitoring wells at LANL.

- 'Compensated' or 'gaged' pressure transducers have pressure sensors that are compensated for atmospheric pressure. One side of the pressure sensor diaphragm is vented to the atmosphere, thus compensating for changes in atmospheric pressure and measuring water pressure only (pounds per square inch gaged or psig). Using these transducers, calculations of water depth above the transducer exclude atmospheric pressure considerations. These transducers employ a tube in the cabling to vent the transducer to the atmosphere and are used in most shallow monitoring wells and single-completion deep monitoring wells . Examples of 'compensated' or 'gaged' transducers include the standard In-Situ, Inc. miniTroll® and Troll® transducers.

General Information About This Procedure, continued

Pressure transducer equipment, continued

- 'Absolute' or 'uncompensated' pressure transducers measure absolute pressure (pounds per square inch absolute, psia) and are not compensated for atmospheric pressure. Pressure measurements from this type of transducer include atmospheric pressure as a component; therefore atmospheric pressure must be subtracted from the absolute measurement to determine the pressure due to water. All transducers used with the Westbay® MP multiple port monitoring system measure absolute pressure. Additionally, other manufacturers, including In-Situ, Inc. produce absolute pressure measuring transducers, thus personnel must be aware of the type of transducer that is used so that data can be processed accordingly.

Note

Actions specified within this procedure, unless preceded with "should" or "may," are to be considered mandatory guidance (i.e., "shall").

General Requirements for Transducer Installation or Removal

Equipment

Suggested equipment for installation and removal of transducers in monitoring wells or surface water locations

- Transducer(s)
- Transducer cable
- Data logger (if required)
- Manufacturer operating manual
- Transducer Performance Check and Maintenance Form (Attachment 1)
- Portable computer and RS-232 direct-cable connection
- Floppy disk(s) or other removable electronic media for data storage
- Batteries – must In-Situ products require AA batteries
- Silicon lubricating grease
- Waterproof ink pen(s)
- Water level meter
- Groundwater Level Measurement Form
- Well construction diagram
- Water level history of well (if known)
- Generator with ground fault circuit interrupt (GFCI) (where necessary)
- Electric extension cord
- Tripod for installations with cable greater than 300 ft
- Deionized water
- Paper towels
- Trash bags
- Keys to well

Equipment check

Before departing for the well site, test data loggers and transducers for functionality, see Calibration and Maintenance of Pressure Transducer section of this procedure. Prepare water level meter according to RRES-WQH-SOP-045, *Manual Groundwater Level Measurements*.

Required personnel

Two people, one supervising operator and one assistant, are required to install or remove a pressure transducer from a monitoring well.

A single operator is adequate to retrieve data from the recording data logger if approved by the Operations Team Leader and only when using Enhanced Communications Procedures. Reference the Working Alone Policy in RRES-WQH-SOP-002, *General Field Work*, and RRES-ES-Field, *General Field Safety for All*.

Calibration and Maintenance of Pressure Transducer Equipment

Policy

Pressure transducer equipment must be properly maintained and calibrated according to manufacturer instructions. Equipment maintenance and calibration records must be maintained to insure the quality of data from transducer equipment. All calibration of pressure transducers is performed by the manufacturer. The performance of a pressure transducer may be checked through a performance check.

Equipment

The following equipment is suggested for transducer maintenance and calibration checking.

- Pressure transducer
- Transducer Cable
- Data Logger – Hermit or other type if needed
- Portable computer and RS-232 direct-cable connection
- Tape measure graduated in 0.01 ft
- Transducer Performance Check and Maintenance Form (Attachment 1)
- Marking Pen
- Silicon grease for O-ring lubrication
- Batteries for transducer equipment

Transducer maintenance

Follow requirements of each equipment manufacturer (Attachment 3) to maintain transducer equipment.

Document maintenance on the Transducer Performance Check and Maintenance Form (Attachment 1).

Perform routine maintenance each time a transducer is installed or removed from a well. Routine maintenance includes:

- Check/change batteries
- Check/lubricate O-rings
- Check cables, vent lines
- Keep equipment clean, work area uncluttered
- Wipe cable and transducers with clean cloth soaked in deionized water during removal from well
- Cap all connections to prevent damage from rust and corrosion
- Do a performance check if needed, check date of calibration

Calibration and Maintenance of Pressure Transducer Equipment, continued

Avoiding cross-contamination

Transducer equipment is typically installed in a specific well and dedicated to that well, therefore minimizing cross contamination issues. When removing a transducer from a well, label the transducer equipment with the well number for future reinstallation.

If transducer equipment must be installed in a different well, wipe the cable and transducer housing with a clean cloth soaked in deionized water prior to installation to prevent potential cross contamination.

Automatic daylight savings time adjustment

Transducer software clocks and internal clocks in portable computer used with transducer equipment must have the time set to Mountain Standard Time (MST) at all times, without any daylight-savings time adjustment in the spring and fall.

Disable the automatic daylight savings time adjustment setting in Microsoft Windows-based computers used with transducer equipment. This will prevent the clock from changing to daylight savings time.

Transducer calibration and performance checks

A transducer may be considered to be properly calibrated as long as the transducer returns values that are within pre-determined measurement precision specifications (see Table 1). How long a transducer will maintain calibration depends on the amount of regular use the transducer has experienced, whether or not the transducer was exposed to environmental extremes, and how the transducer was handled during use, transportation, and storage.

Transducer calibration is performed by the manufacturer. Record transducer calibration date(s) on the Transducer Performance Check and Maintenance form (Attachment 1) and on the forms maintained in the WQH transducer files.

Perform transducer performance checks prior to installation of a transducer if calibration was done more than one year prior to installation date, or if transducer is suspected of malfunctioning, and document the calibration check on the Transducer Performance Check and Maintenance Form (Attachment 1).

Calibration and Maintenance of Pressure Transducer Equipment, continued

Performance check

To conduct a performance check (depth test) on a pressure transducer, perform the following steps:

Step	Action
1	For compensated transducers, take a pressure measurement when the transducer is in the air. Insure that the transducer measurement in air is 0 psi, within the measurement precision of the transducer. Record air measurement on the Transducer Performance Check and Maintenance Form [Air Pressure (psi)]. (Attachment 1)
2	Place transducer in well or water column at first position by performing the following steps: **Step** / **Action** 1 — Temporarily position the transducer 1 to 2 ft below water level. 2 — Record the water depth [PH1 (ft)] on the Transducer Performance Check and Maintenance Form. 3 — Secure the cable and mark the transducer cable at the top of casing or at another convenient Measuring Point.
3	Measure a specific length of the remaining cable that extends from the well. Use a measured length that is within the rated capacity of the transducer (reference Transducer Selection & Installation Guidance in this document). Record the length measured on the cable [Cable Length (ft)]. Use the full range of the transducer for the calibration check if the well/water column depth allows.

Table continued on next page.

Calibration and Maintenance of Pressure Transducer Equipment, continued

Performance check, continued

Step	Action
4	Place transducer in well or water column at the second position by performing the following steps: **Step** / **Action** 1 — Lower the transducer and cable in the well or water column the measured length as determined in Step 3 above. 2 — Position the measured mark on the cable at the top of casing/water column at the previously used Measuring Point. 3 — Record the measured water depth provided by the transducer on the Transducer Maintenance and Performance Check Form [PH2 (ft)].
5	Verify that the difference between the transducer depth measurements [PH2 – PH1] corresponds with the length measured on the cable within the measurement precision of the transducer (reference Transducer Selection & Installation Guidance, Table 1, in this document). If not, check the cable or transducer to ensure that it hangs freely in the well or water column and repeat the calibration check. If necessary, ship the transducer to the manufacturer for calibration.

Calibration and Maintenance of Pressure Transducer Equipment, continued

Performance check, continued

A drift test may also be done to evaluate performance of a pressure transducer. To do a drift test, perform the following steps:

Step	Action
1	Secure transducer at a known depth in a contained water column.
2	Record pressure readings for 15 minutes.
3	Determine the error tolerance of the transducer by multiplying the pressure rating of the transducer (psi) by 0.001 (0.1%).
4	Check readings for any noticeable drift that is beyond the error tolerance.
5	If measurements are not within error tolerance, or a noticeable drift occurs: • Recheck the pressure measurements. • If necessary, return transducer to manufacturer for calibration and/or repair.
6	Record findings on the Transducer Performance Check and Maintenance Form (Attachment 1).

Transducer Selection and Installation Guidance

Transducer selection and installation guidance for pressure transducers

Do not submerge transducers in water pressures greater than the specific pressure rating of the transducer. The pressure rating is provided by the manufacturer for each transducer. At standard pressures and temperatures in water, a general pressure –depth conversion is 2.31 ft/psi. Table 1 provides guidance for maximum water depths **(note: not depth below ground level)** transducers and indicates the measurement precision characteristic of different pressure rated transducers.

Table 1

Pressure Rating (psi)	Maximum Depth Below Water Surface (ft)	Measurement Precision (ft) (±0.1% Full Scale)
15	34.7	0.03
30	69.3	0.07
50	115.5	0.12
100	231.0	0.23
200	462.0	0.46
250	577.5	0.58
300	693.0	0.69
500	1155.0	1.16
1000	2310.0	2.31

Before installing a transducer in a well:

- Obtain the groundwater level,
- determine the range of expected water level fluctuations in the well or surface water location,
- determine the depth below water surface that the transducer will be placed to measure the full range of expected fluctuation.

Use a transducer with the lowest pressure rating possible for the specific application, because measurement precision decreases with higher pressure ratings (see Table 1 above).

Examples:

In single completion monitoring wells open to the atmosphere at LANL, annual water level fluctuations may be less than 15 ft, which would indicate installation of a transducer with a pressure rating of 15 psi at a depth of 15 to 17 ft below the water level. Shallow alluvial wells may experience water level fluctuations of 30 ft or more.

In monitoring wells adjacent to water supply wells or in water supply wells, the daily water level drawdown might be 100 to 150 ft or more. Given an anticipated drawdown of 150 ft, a transducer with a pressure rating of 100 psi should be installed at a depth of 170 to 200 ft below the water surface, for example.

Transducer Installation

Prepare for transducer installation

To prepare for transducer installation in single completion wells, perform the following steps:

Step	Action
1	Manually measure the groundwater level using a water level meter according to RRES-WQH-SOP-045, *Manual Groundwater Level Measurements*, and perform the following steps: **Step** / **Action** 1 — Record the date, time, and measured depth to water. 2 — Calculate the groundwater elevation on the Groundwater Level Measurement Form. 3 — Record the groundwater elevation on the Transducer Installation and Removal Form (Attachment 2). 4 — If possible, measure the total depth of the well and record depth on Groundwater Level Measurement Form
2	Apply silicone lubricant to O-rings on transducer connections following manufacturer instructions.
3	Connect transducer cable to pressure probe and to data logger/portable computer according to manufacturer instructions.
4	Check for appropriate communications with transducer.
5	Record the transducer serial number and well information on the Transducer Data Retrieval, Installation, and Removal Form (Attachment 2).

Transducer Installation, continued

Install transducer

To install the transducer(s), perform the following steps:

Step	Action
1	Carefully lower transducer into the well. • Do not allow cable to rub against sharp edge of metal casing and • Do not allow the transducer to contact water level at high rate of speed; this will damage the pressure sensor. • Do not submerge transducer to a water depth pressure greater than the pressure rating of the transducer (reference Transducer Selection and Installation Guidance in this document)
2	If a bench performance check was not performed, and the transducer has not been calibrated by the manufacturer in the last year, perform the performance check in the well as described in Transducer Calibration section. Record performance check data on the Transducer Performance Check and Maintenance Form (Attachment 1).
3	Install pressure transducer:

Step	Action
1	Install pressure transducer at an appropriate depth to monitor the full range of expected water level fluctuation (reference Transducer Selection and Installation Guidance in this document) and according to manufacturer instructions.
2	Affix and secure the transducer cable at the top of the casing to prevent cable slippage. Do not kink or pinch the vent tube in a compensated transducer cable.
3	Mark the transducer cable to document cable placement and detect cable slippage or tampering.
4	Monitor transducer measurements via portable computer/ data logger for at least 15 minutes to insure water level stabilization, placement, and detect possible cable stretch or sensor drift. Measurements should remain stable over 15-minute period.

Table continued on next page.

Transducer Installation, continued

Install transducer, continued

Step	Action
4	Initialize measurement software / data logging software according to manufacturer instructions. • Program the software for appropriate measurement sampling interval for the intended purpose and use of the data. • Enter the groundwater elevation measurement obtained before installation of the transducer as the reference level. In a shallow well installation, another water level may be taken after the transducer is installed. • Program software to begin measurements immediately after installation.
5	Replace caps and locks on well shelter.
6	To verify that the transducer is functioning correctly, check transducer within 1 week after installation. • Check for cable slippage and cable stretch. • Check measurement data for signs of cable slippage, stretch or sensor drift. • If indications of data problems exist, measure the groundwater level and reinstall the transducer, if problems persist, replace the transducer.

Transducer Data Retrieval

Transducer Data Retrieval

Retrieve transducer data from wells on a regular basis to insure the continued quality of the transducer data. The frequency of retrievals will be determined by the work plan under which the data is collected. To retrieve data from transducer equipment, perform the following steps:

Step	Action
1	Connect portable computer to data logging equipment or transducer cable and start manufacturer provided software specific for the transducer equipment.
2	If a manual groundwater level measurement is to be obtained, stop the data logging program. Note the time and date on the Transducer Data Retrieval, Installation, and Removal Form (Attachment 2). If a manual groundwater level measurement is not to be obtained, do not stop the logging program, and go to step 3.
3	Extract the transducer data set according to manufacturer instructions. Record data retrieval information on Transducer Data Retrieval, Installation, and Removal Form (Attachment 2). Document data retrieval information, including: • Transducer serial number • Transducer operating condition • Data quality – initial assessment • Battery power • Beginning and ending dates/times of retrieved data in MST. • Pressure head and groundwater elevation at time of data retrieval. • Raw data file name. Name the raw digital data file appropriately to include the well name and date of data retrieval.
4	View the data collected since transducer installation. Ascertain that appropriate data have been collected.
5	Copy the data file to floppy disk or other removable electronic media for safe keeping.
6	If a manual groundwater level is going to be obtained, go to step 7. If a manual groundwater level is not going to be obtained, go to step 10.
7	Delete the data from the transducer or data logger using the manufacturer software. **Note: only delete the transducer data after insuring that the data file has been properly transferred and stored to the portable computer, and has been backed up on a removable disk.**

Table continued on next page.

Transducer Data Retrieval, continued

Transducer Data, Retrieval, continued

Step	Action
8	Manually measure the groundwater level according to RRES-WQH-SOP-045, *Manual Groundwater Level Measurements*. If the well construction allows manual groundwater level measurement without disturbing the transducer (separate access ports), perform the following steps: **Step** / **Action** 1 — Manually measure the groundwater level 2 — Record the groundwater elevation measurement on the Transducer Data Retrieval, Installation, and Removal Form If the well does not have separate access tubes for the transducer and the water level meter, perform the following steps: **Step** / **Action** 1 — Remove the transducer from the well 2 — Manually measure the groundwater level 3 — Reinstall the transducer following the Transducer Installation Procedure 4 — Record the groundwater elevation measurement on the Transducer Data Retrieval, Installation, and Removal Form
9	Check that the transducer clock is the correct time (MST).
10	Restart the data logger software following the transducer installation procedure, use the newly obtained groundwater elevation as the reference level.
11	Transmit data file to the Groundwater Level Project Leader. • Insure that data file is secured and data transmittal is completed. • Do not remove data file from portable computer or removable media before data is backed up on a server.

Transducer Removal

Transducer Removal

To remove the transducer from a single completion well, perform the following steps:

Step	Action
1	Retrieve transducer data from data logger as described in the Transducer Data Retrieval section above. Record the time (MST), pressure head, and groundwater elevation data on the Transducer Data Retrieval, Installation, and Removal Form (Attachment 2).
2	Discontinue the data logging program per manufacturer instructions.
3	Remove the cable and transducer(s) from the well. • Use cable pulling system if cable longer than 300 ft. • The cable should not scrape against sharp edges of well casing. • Clean and maintain transducer equipment as described in Transducer Equipment Maintenance section. • Package transducers appropriately for transportation according to manufacturer instructions.
4	Manually measure the groundwater level according to RRES-WQH-HCP-045, *Manual Groundwater Level Measurements*. Record the time (MST) and groundwater level measurement on the Transducer Data Retrieval, Installation, and Removal Form.
5	Replace well caps and locks.

Records Resulting From This Procedure

Records

The following records generated as a result of this procedure shall be permanently stored with ENV-WQH:

- Transducer Performance Check and Maintenance Form (Attachment 1)
- Transducer Data Retrieval, Installation, and Removal Form (Attachment 2)
- Groundwater Level Measurement Form (RRES-WQH-HCP-045, Attachment 3)
- Raw water level data electronic file on electronic media
- Logbook summary of individual installations/removals with dates
- Other significant information

TRANSDUCER PERFORMANCE CHECK AND MAINTENANCE FORM

Los Alamos National Laboratory
Water Quality and Hydrology
In Situ Transducer Performance Check and Maintenance Form

						Performance Check							
Date	Time	Well Name	Inspector Name	Serial Number	Battery Voltage Check/ replace	Factory Cali-bration Date	Air Pres-sure (psi)	PH 1 (ft)	Cable Length (ft)	PH 2 (ft)	PH 2 - PH 1 (ft)	Check OK?	Equipment Condition, Comments, Describe Maintenance, Calibration Check

Note: To convert pressure measurements to ft, use conversion factor: 2.31 ft/psi

RRES-WQH-SOP-016

TRANSDUCER DATA RETRIEVAL, INSTALLATION, AND REMOVAL FORM

Los Alamos National Laboratory
Water Quality and Hydrology
Transducer Data Retrieval, Installation, and Removal Form

Date	Time	Well Name	Land Surface Datum (ft)	Personnel	Data Retrieve/ Install/ Remove	Trans-ducer Serial Number	Ground water Elevation (ft)	Pressure Head (ft)	Battery Voltage	Records Retrieved, Dates start/stop	Raw Data File Name	Well Condition, Comments, Describe Installation/Removal, source of Groundwater Elevation, etc

MANUFACTURER OPERATING MANUALS

In-Situ Operations Manuals for Pressure Transducers

MiniTROLL Operator's Manual for MiniTROLL Model SSP-100

WinSitu 4.0 User's Guide

Hermit 3000 Data Logger Operator's Manual

In-Situ Inc. Data Manager Software Operator Manual

Solinst Level Logger Manual

GROUNDWATER LEVEL DATA PROCESSING, REVIEW, AND VALIDATION

Purpose

This Water Quality and Hydrology (ENV-WQH) Group procedure describes the process for the review and validation of groundwater level data obtained from pressure transducers.

Scope

This procedure applies to all ENV-WQH, students, and contract personnel who work with groundwater level data obtained from pressure transducers.

In this procedure

This procedure addresses the following major topics:

Topic	See Page
General Information about this Procedure	2
Who Requires Training to this Procedure	2
General Information for Data Processing, Review, and Validation	5
Raw Data File Handling	8
Processing Transducer Data	10
Transducer Data Review and Validation	15
Records Resulting from this Procedure	20

Signatures

Prepared by. Richard Koch, Project Leader, ENV-WQH	Date: 11-15-04
Approved by: David Rogers, Team Leader, ENV-WQH	Date: 11/17/04
Approved by Steve Rae, ENV-WQH Safety Committee Chair	Date: Nov. 17. 2004
Approved by Steve Rae, ENV-WQH Group Leader	Date: Nov. 17. 2004

CONTROLLED DOCUMENT
This copy is uncontrolled if no signatures are present or if the copy number stamp is black. Users are responsible for ensuring they work to the latest approved revision.

General Information about This Procedure

Attachments

This document has the following attachments:

Number	Attachment Title	No. of pages
1	Groundwater Level Data Review and Validation Form	1

History of revision

This table lists the revision history and effective dates of this procedure.

Revision	Date	Description Of Changes
0	11/04	New document.

Who requires training to this procedure

The following personnel require training before implementing this procedure:

- All ENV-WQH staff, students, and contract personnel who perform groundwater level calculations using data derived from pressure transducers.

Training method

The training method for this procedure is "self-study" (reading), which is documented in accordance with the procedure for training (RRES-WQH-QP-024, *Training)*.

Personnel performing this procedure for the first time should be mentored by a knowledgeable colleague for compliance with the on-the-job training requirement.

Prerequisites

In addition to training to this procedure, the following training is also required for all personnel performing the procedure:

- RRES-WQH-SOP-001, *Office Work*
- ENV-WQH-SOP-016, *Pressure Transducer Installation, Removal, and Maintenance*
- RRES-WQH-SOP-045, *Manual Groundwater Measurements*
- RRES-WQH-QP-025, *Records Management*
- ENV-WQH-QAPP-GWLM, *Quality Assurance Program Plan for Groundwater Level Monitoring*
- Westbay® WinGT® and MLOG® software familiarity
- In-Situ, Inc. Win-Situ® and/or Data Manager® software familiarity

General Information about This Procedure (continued)

References

The following documents are referenced in this procedure:

- RRES-WQH-SOP-016, *Pressure Transducer Installation, Removal, and Maintenance*
- RRES-WQH-SOP-045, *Manual Groundwater Measurements*
- RRES-WQH-SOP-050, *Groundwater Sampling using Westbay System*
- RRES-WQH-QAPP-GWLM, *Quality Assurance Program Plan for Groundwater Level Monitoring*

Terminology

Absolute pressure: the total or absolute pressure measured by a sensor without correction for atmospheric pressure. A pressure measurement that includes atmospheric pressure is an absolute pressure. Units are expressed in psia (pounds per square inch absolute).

Calculated data files: Groundwater level data files that result from calculation of the raw data files into groundwater elevation data using the proprietary software provided by the transducer manufacturer. Calculated data files can be comma separated value (csv) text files (or similarly separated values, such as tab or space separated), spreadsheet files, database files, etc.

Gage pressure: the pressure measured relative to atmospheric pressure. Measurements exclude atmospheric pressure and are said to be compensated or gaged for atmospheric pressure. A vented or gage pressure transducer sensor utilizes a vent tube in the cable that exposes one side of the pressure sensor to atmospheric pressure, measuring pressure of the water column only. Units are expressed in psig (pounds per square inch gage).

Ground elevation: The elevation of the ground surface of the well expressed in feet above mean sea level. If the well has a concrete surface pad, usually the elevation of the top of the concrete pad. If a brass cap is present to identify a well, usually the elevation of the brass cap in the concrete pad.

Pressure head: The height in feet of a column of water that can be supported by the gage pressure measured at a point in a well.

Pressure transducer (transducer): A device that measures pressure. There are two types of pressure transducers, those that measure absolute pressure, and those that measure gage pressure.

Piezometric Elevation: 1) The elevation to which the water at a specific point in an aquifer will rise; 2) The water elevation calculated from pressure data.

General Information about This Procedure (continued)

Terminology (continued)

Pi: Pressure inside the Westbay® casing, designated by 'arm out' motor position of the transducer. Pi measured above the deionized water column in the Westbay® casing is equal to atmospheric pressure at a given port elevation; calculated piezometric elevation will approximate the elevation of the port. Pi measured below the deionized water level inside the Westbay® casing will be the pressure head of the deionized water column; calculated piezometric elevation will be that of the elevation of the top of the deionized water column.

Po: Pressure in the formation outside the Westbay® casing at a specific monitoring port, designated by 'shoe out' motor position of the transducer. Po of 'dry' monitoring ports will approximate Pi at that port if the port is above the DI water column. Po of 'wet' monitoring ports should not normally equal the Pi of the port. Calculated piezometric elevation represents the piezometric water level at the location of the monitoring port.

psi: Unit of pressure measurement in pounds per square inch.

psia: Unit of pressure measurement in pounds per square inch absolute, see absolute pressure.

psig: Unit of pressure measurement in pounds per square inch gage, see gage pressure.

Raw data files: Electronic pressure transducer data files that are obtained from pressure transducers or data loggers at a well site. Raw data files are usually binary computer files that can be opened, read, and interpreted only by software developed by the transducer manufacturer. The raw data files must be stored and archived appropriately in order to protect the original data from the pressure transducer. Raw data files contain the raw pressure measurements and date/time stamp from the transducer and may also contain information entered into the transducer software program at the time of installation, such as well name, date/time, measurement interval, reference water elevation at the time of installation, etc.

Reference level: The elevation of the surface of the water in a well at the time of installation of the transducer. Determined by manual measurement of the groundwater elevation according to RRES-WQH-SOP-045.

Water elevation: The elevation of the surface of the water in a well, expressed in feet above mean sea level.

Water level: 1) Depth to water (DTW) in a well below ground surface expressed in feet, or 2) The Water Elevation expressed in feet above mean sea level. Refer to RRES-WQH-SOP-045, *Manual Groundwater Measurements*, for information about measuring groundwater level in a well.

General Information for Data Processing, Review, and Validation

Temperature Corrected Water Density Values

Use the correct density value of water during processing of the raw transducer data to reduce the amount of error introduced by the calculation process.

Some transducer manufacturer software programs, such as recent versions of the Data Manager® program by In-Situ, Inc., allow user input of water density values. Water density is dependent on the quantity of dissolved minerals or contaminants and temperature (In-Situ, Inc, 2000). The density of water containing relatively few dissolved minerals or contaminants, such as most groundwater at Los Alamos, is primarily dependant on temperature.

Temperature of the water is typically measured by transducer equipment and is usually available during processing of the raw data files. Use the table below for selecting appropriate water density values based on the average temperature of the water derived from the transducer measurements.

Density Values of Pure Water as function of Temperature

Temp (C)	Density (g/cc)	Temp (C)	Density (g/cc)	Temp (C)	Density (g/cc)
1	0.9999	11	0.9996	21	0.9980
2	0.9999	12	0.9995	22	0.9978
3	1.0000	13	0.9994	23	0.9975
4	1.0000	14	0.9992	24	0.9973
5	1.0000	15	0.9991	25	0.9970
6	0.9999	16	0.9989	26	0.9968
7	0.9999	17	0.9988	27	0.9965
8	0.9998	18	0.9986	28	0.9962
9	0.9998	19	0.9984	29	0.9959
10	0.9997	20	0.9982	30	0.9956

Source: In-Situ, Inc. (2000)

Latitude and Elevation Correction Parameters for Water Density

If user input of latitude and elevation values for correction of acceleration due to gravity on the water level calculation is required, use the following parameters as a guide for utilizing this correction.

- The elevation of the groundwater is obtained from manual measurement (see RRES-WQH-SOP-045, *Manual Groundwater Level Measurements*). Input the groundwater elevation to the nearest 10 ft as appropriate.
- Approximate latitude of the Los Alamos area is 36 degrees north.
- Document parameters used to calculate water level data in the calculated data file.

General Information for Data Processing, Review, and Validation, continued

Calculating water levels in Westbay® wells

As a general guideline for calculating water levels in Westbay® wells that utilize absolute pressure measurement transducers, select the fixed value option for atmospheric pressure in the WinGT® software to adjust the absolute pressure measurements.

- ξ Use a fixed atmospheric pressure that exists at the approximate elevation of the surface of the saturated zone for which the water level calculation is being prepared. The Pi value of monitoring ports located near the top of an intermediate zone or at the top of the regional aquifer will typically measure the atmospheric pressure at the elevation nearest the top of the saturated zones. Use the average Pi value of a port if multiple measurements are available.

Caution: Be certain that the port for the Pi measurement nearest the surface of the saturated zone is above the deionized water inside the Westbay® casing. The top of the deionized water column inside the Westbay® casing is typically located between the monitoring zone at the top of the regional aquifer and the next lower monitoring zone. Check the Westbay® completion report and piezometric calculations of the deionized water level obtained the Pi measurements from monitoring zones below the top of the regional aquifer.

- ξ If Pi values are not available for the surface of the saturated zone, it is possible to calculate atmospheric pressure at a specific elevation: For the standard atmosphere, variation of pressure with elevation is approximately linear in the elevation range 8202 ft to 4921 ft, which correspond to 10.83 psi and 12.26 psi, respectively, for a slope of 4.36x10-4 psi/ft. The correction for increased pressure is Patm at transducer (psi) = Patm at surface + [4.36x10-4 psi/ft x transducer depth (ft)].
- ξ Atmospheric pressure fluctuates daily and seasonally due to temperature changes in the atmosphere and passing weather fronts. Using a fixed rather than fluctuating atmospheric pressure will prevent introduction of potential error in the resulting water level data.

General Information for Data Processing, Review, and Validation, continued

Calculating water levels in Westbay® wells, continued

- The type of atmospheric pressure to select to adjust absolute formation pressure data may be different for different wells and for different zones within a well, depending on the hydrologic properties of each zone in the well. It may be necessary to construct overlapping time series plots of monitoring port pressure data and atmospheric pressure data measured at the well to determine, for example, if there is an immediate response to atmospheric pressure at each monitoring port, in order to determine how best to adjust for atmospheric pressure. In a shallow well with an unconfined aquifer, it may be appropriate to use the well's own atmospheric pressure measured at ground surface for the adjustment.
- The resulting calculated water level characteristics of each zone will depend on which atmospheric pressure corrections are used. General guidelines to follow include the following: Deeper zones of saturation, such as those in the Los Alamos area, typically do not exhibit immediate responses to atmospheric pressure changes, and therefore it is not appropriate to use the well's own atmospheric pressure to adjust the measured pressure.
- As mentioned above, if in doubt, use the fixed average atmospheric pressure (Pi) measured at, or calculated for, the surface of each zone of saturation .

Raw Data File Handling

Policy

The raw electronic transducer data files will be handled according to requirements for Data Handling in the Quality Assurance Program Plan for the Groundwater Level Monitoring Program, ENV-WQH-GWLM-QAPP.

Handling raw data

To retrieve raw electronic pressure transducer data (raw data) files from the transducer, field personnel shall perform the following steps:

Step	Action
1	Retrieve raw data files from transducer equipment in accordance with ENV-WQH-SOP-016, *Pressure Transducer Installation, Removal, and Maintenance,* Transducer Data Retrieval section.
2	Review raw data files for completeness and appropriateness. Record comments about the transducer data on the Transducer Data Retrieval, Installation, and Removal Form (ENV-WQH-SOP-016, Attachment 4) or the Westbay® Groundwater Sampling Field Data Sheet (RRES-WQH-SOP-050, Attachment 3).
3	Transfer the raw data files from transducer or data logging equipment to a portable computer.
4	Create a file name that includes the well name and date of transfer from transducer.
5	If possible, save the raw data file to a nonvolatile removable media device for safeguarding and transport to the GWLM Project Leader.
6	Deliver raw data files to the GWLM Project Leader.
7	When given direction from the GWLM Project Leader, delete the raw data files from the portable computer.
8	Record groundwater pressure data obtained during groundwater sampling on the Westbay® Groundwater Sampling Field Data Sheet (RRES-WQH-SOP-050, Attachment 3)
9	Archive the field data sheets in WQH sampling record files

Raw Data File Handling, continued

Handling raw data, continued

The GWLM Project Leader will perform the following steps:

Step	Action
1	Transfer the raw data files to the common (shared) WQH server for permanent storage.
2	Provide direction to field personnel to delete raw data files from the portable computer.
3	Transfer the Po and Pi data to WinGT® software for calculation into water level data according to this procedure. Archive processed data files on the WQH server.

Processing Transducer Data

Background

The raw electronic transducer data files are processed to obtain meaningful groundwater level data. The raw binary pressure data files are converted into useable data format using transducer manufacturer proprietary software.

In-Situ, Inc. transducers and data loggers create a raw data file with a 'bin' extension. Westbay® data loggers create either 'WD2' or 'WDF' raw data files.

Processing Data from In-Situ, Inc. Data Files

Compare information in the data file with information recorded during installation of the transducer on the Transducer Data Retrieval, Installation, and Removal Form (ENV-WQH-SOP-016, Attachment 4) by performing the following steps:

Step	Action
1	Open the data file using WinSitu® or DataManager® software programs. Data file will have a .bin filename extension.
2	Verify that the data file name represents data for the correct well. If necessary, change the data file name to reflect the well name.
3	Check that beginning and ending dates and times are in Mountain Standard Time, and that the transducer serial number and other information in the data file header correspond with field records.
4	Determine that the reference water elevation in the data file corresponds with the manual water elevation obtained when the transducer was installed. Note: If a manual water level was not obtained at the beginning of a data file, use the most recent water elevation calculated from an immediately preceding transducer data set. This method can be used if the elapsed time between the end of the prior data set and the beginning of the next transducer data set is less than 2 hours and the water level change is less than 0.2 ft.
5	Enter the appropriate water density into the software using the table in Temperature Corrected Water Density Values section of this document.

Table continued on next page.

Processing Transducer Data, continued

Processing Data from In-Situ, Inc. Transducers, continued

Step	Action
6	Enter the approximate latitude (36 degrees north for Los Alamos area) and approximate elevation of the water into the software to provide appropriate corrections for water density (reference Latitude and Elevation Correction Parameters for Water Density section of this document). NOTE: Transducer data may be displayed as pressure (psi), pressure head (ft), depth from surface (ft), or in elevation from mean sea level (ft msl) if the groundwater elevation is entered as the reference elevation.
7	Verify that the beginning pressure head recorded by the transducer corresponds with the pressure head recorded when the transducer was installed.
8	Calculate groundwater elevation using the appropriate parameters (refer to Steps 5 and 6 above) in the Data Manager® software. Compensation for atmospheric pressure is not necessary for typical In-Situ Inc. gage transducers used at LANL.
9	Transfer transducer water level data to text file or spreadsheet format for further data review and validation.

Processing Transducer Data (Continued)

Processing Data from Westbay® Transducers

Compare information in the data file with information recorded during installation of the transducer on the MOSDAX Probe String Installation/Retrieval Field Form (ENV-WQH-SOP-016, Attachment 5) by performing the following steps:

Step	Action
1	Open the data file using WinGT® or MLOG® (Convert Utility) software programs. Data file will have a .WD2 or .WDF filename extension.
2	When prompted by the software, verify that the time zone value is set to -7.00 hours in relation to Coordinated Universal Time.
3	Verify that beginning and ending dates and times, the transducer serial numbers, and other information in the data file header correspond with field data recorded on the Probe String Installation/Retrieval Field Record (ENV-WQH-SOP-016, Attachment 5) or the field data recorded on the Westbay® Groundwater Sampling Field Data Sheet (RRES-WQH-SOP-050, Attachment 3).
4	Verify that correct well zone information, port name, port depth, and probe numbers coincide with those for the appropriate well, as published in the well completion report.
5	Verify that the correct ground elevation of the well (brass cap elevation) has been entered into the data file header.
6	Review the Pi and Po pressure data from the Westbay® Probe String Installation Data Form (ENV-WQH-SOP-16, Attachment 5) or the Westbay® Groundwater Sampling Field Data Sheet (RRES-WQH-SOP-050, Attachment 3) for each port and check that measured pressure data is consistent with previous measurements.

Table continued on next page.

Processing Transducer Data (Continued)

Processing Data from Westbay® Transducers (continued)

Step	Action
7	Determine that each probe was properly attached to the appropriate port by checking that Po values are similar to previous Po values for each port. If Po values are not similar to previous measurements, determine if measured Po values are consistent with: ξ Previous Pi values (if the probe did not properly connected to monitoring port) or ξ Atmospheric pressures at the elevation of the port (for monitoring ports above the level of the deionized water in the Westbay® casing) or ξ Equivalent to surface atmospheric pressure (response for probes not installed in the well).
8	Review time series of the pressure data to check for possible sensor drift with time or cyclical, spiking, or fading response that may indicate failure of the transducer or of the transducer power supply.
9	Import data file to WinGT® data file (.wgt extension file) by performing either: ξ Import the data file into an existing WinGT® data file (.wgt extension file) that has previously been created for that well. NOTE: Use this option only ff assured that a WDF or WD2 data file is appropriate for a given well. This will save time in entering correct well information, port depths, zone intervals, etc., and allows the transducer data to be merged with pre-existing data for well. **OR** ξ Manually enter or import Po and Pi data from groundwater sampling events (WDF or WD2 data file) into a WinGT® data file (wgt extension file) that has been created for that well

Table continued on next page.

Processing Transducer Data (Continued)

Processing Data from Westbay® Transducers (continued)

Step	Action
10	Select the atmospheric pressure source for use in adjusting absolute formation pressure data. The WinGT® software provides three choices for selecting atmospheric pressure data: a) The well's own atmospheric pressure measurements obtained concomitantly with the monitoring port pressure data, b) Atmospheric pressure data from another nearby well, or c) A fixed value for atmospheric pressure. NOTE: As a general guideline for calculating water levels in Westbay® wells that utilize absolute pressure measurement transducers, select the fixed value option for atmospheric pressure in the WinGT® software to adjust the absolute pressure measurements. Reference "Calculating water levels in Westbay® well", General Information for Data Processing, Review, and Validation section of this document.
11	Calculate the piezometric water elevation for each monitoring port using the WinGT software. NOTE: ξ If header file contains 0.00 for the elevation of the well, the software will calculate depth to the piezometric level of the water, based on the depth of each monitoring port. ξ If header file contains the appropriate ground elevation of the well in ft above mean sea level (amsl), the software will calculate piezometric water elevation in ft amsl for each monitoring port.
12	Transfer piezometric groundwater elevation data to spreadsheet file format for further review and validation.

Transducer Data Review and Validation

Policy

Groundwater level data shall be reviewed for completeness and appropriateness and validated on a routine basis as the data are collected for each well. A determination as to the acceptance or rejection of the data shall be provided by the GWLM Project Leader.

Conducting data review and validation

Suggested steps for performing data review and validation of transducer groundwater level data are provided below; however, data review and validation personnel must review and evaluate the data for each well on an individual basis, as not all potential problems with data can be addressed in a procedure.

To conduct data review and validation, perform the following steps:

Step	Action
1	Open the spreadsheet created in Processing Transducer Data, Step 12.
2	Plot the time series of the groundwater elevation (hydrograph), and if available, the time series of the atmospheric pressure data.
3	Document the following information on the Transducer Data Review and Validation Form (Attachment 1) ξ Well name ξ Reviewer Name ξ Date of data review ξ Transducer manufacturer, serial number, and the pressure rating of the transducer ξ File name of the raw data file and the calculated data file ξ Start and end time of the transducer data ξ Data review comments ξ State if data are valid or invalid ξ Reason for invalidating data

Table continued on next page.

Transducer Data Review and Validation, continued

Data Review Procedure (continued)

Step	Action
4	Review the hydrograph to determine if a correlation exists with atmospheric pressure data. Interpret the results to determine if groundwater level data from absolute-measuring transducers require recalculation using a different selection for atmospheric pressure. ξ Single completion wells open to the atmosphere that use compensated transducers will typically show an inverse correlation between atmospheric pressure and water level inside the well. ξ For Westbay®-equipped wells using absolute transducers, if the groundwater level data were calculated using the well's real-time atmospheric pressure correction and the water level shows a direct inverse correlation to atmospheric pressure, the water level fluctuation may be an artifact of over-correcting a stable water level pressure response. Recalculate the groundwater level data using a fixed atmospheric pressure (refer to step 4 in the data processing section). ξ Compare the revised hydrograph with atmospheric pressure to evaluate any aquifer response to atmospheric pressure.

Table continued on next page.

Transducer Data Review and Validation, continued

Data Review Procedure (continued)

Step	Action
5	Review the hydrograph by performing the following steps: **Single completion well**

Step	Action
1	Determine if beginning and ending water levels correspond with manually measured water levels obtained before the transducer was installed and at time of retrieval of transducer data. ξ If beginning transducer water level is different from the manual water level obtained at the time of transducer installation, determine the source of the difference. Some normal water level change could have occurred between the time of the manual measurement and the beginning of transducer measurements, especially if transducer measurements began over several hours after the manual measurement. ξ Check that the correct reference elevation was used during transducer installation and for water level calculations, revise and recalculate the groundwater level data if necessary.
2	Check the beginning of transducer water level data for signs of cable stretch or slippage. Identify suspect data. ξ If ending transducer water level does not coincide with the manual water level obtained at the end of the data series, check calculations to determine the source of the error. ξ If beginning transducer water level coincides with the manual water level obtained at the time of installation, but the ending transducer water level does not coincide with the manual water level obtained at the end of the data series, transducer sensor drift may have occurred, transducer battery voltage may have declined causing erroneous measurements, or the manual measurement may contain an error. Obtain another manual measurement. ξ If transducer water level measurement does not coincide with the ending transducer water level, reject the transducer data, and have the transducer checked and calibrated according to ENV-WQH-SOP-016.

Table continued on next page

Transducer Data Review and Validation, continued

Data Review Procedure (continued)

Step	Action
5	**Multiple Completion well**

Step	Action
1	Compare the hydrograph of newly obtained data with hydrographs of previous data sets, if available, and with water levels obtained during installation and retrieval of the transducers and/or with water levels obtained during groundwater sampling.
2	Plot all data on the hydrograph and review the data for inconsistencies or irregularities
3	Note especially perched zones or water table zones that may be reported dry during sampling events. Continuous absolute pressure data from these zones may erroneously indicate a water level fluctuating in response to atmospheric pressure. If calculated water elevation is within 0.5 ft of the elevation of the monitoring port, check if sample events have reported the zone dry; reject erroneous data and report the zone dry if appropriate.
4	Check zones where Pi is similar to Po. Ensure that the transducer properly attached to the port and was recording appropriate data
5	Evaluate Pi data of zones below the deionized water level in the Westbay® casing by calculating the water level and plotting the hydrograph of the Pi water level. Note and document any significant water level changes and investigate unusual circumstances. If water level changes occur, check field notes of transducer installation and retrieval and groundwater sampling events to determine the source of the water level change.

Table continued on next page.

Transducer Data Review and Validation, continued

Data Review Procedure (continued)

Step	Action
6	Review and assess trends observed in water level data on daily, seasonal, and yearly scales. Focus on unusual spikes or cyclical trends that may indicate equipment problems. Guidance: ξ Rising water levels may cause over pressurization of the transducer; look for reduced sensitivity or flat data responses. ξ Falling or highly fluctuating water levels may drop below the level of the transducer; look for uncharacteristic water level responses and check if response possibly the result of groundwater sampling event, nearby well pumping, etc. ξ Malfunctioning transducers may record normal-looking data that has no relation to water level. Review water level data for changes in character over time.
7	Reject water level data that are determined to be erroneous, atypical, or nonconformal. Several years of data may need to be obtained before a data set can be properly evaluated using these parameters. Document all primary and subsequent reviews of data on the Transducer Data Review and Validation Form (Attachment 1).
8	Validate groundwater level data that meet the criteria of the review process.
9	Document the data review and validation process on the Groundwater Level Data Review and Validation Worksheet (Attachment 1).

Records Resulting From This Procedure

Records

The following records generated as a result of this procedure shall be permanently stored with ENV-WQH:

- ξ Transducer Data Review and Validation Form (Attachment 1)
- ξ Raw data files
- ξ Calculated data files

GROUNDWATER LEVEL DATA REVIEW AND VALIDATION FORM

Los Alamos National Laboratory
Water Quality and Hydrology
Transducer Data Review and Validation Form

Well Name:

Data Reviewer:

	Transducer				Data Review					Data Validation	
Date	Manufacturer	Serial No.	Port	Sensor Range (psi)	Raw Data File Name	Calculated Data File Name	Date/Time Data Start	Date/Time Data End	Groundwater Level Data Review Comments	Data Valid? Y/N	Comment / Reason for Invalidation of Data

RRES-WQH-QP-062

ENV-WQH Procedure Traveler

Date: 1/19/05

Section 1: Action Request

1. Document #: ENV-WQH-SOP-064.0
2. Document title: Westbay Pressure Transducer Installation, Removal, and Maintenance
3. Description of action:

☒ New procedure
☐ Revision of existing procedure
☐ Deletion of procedure

Description of and reason for action:

Steps for Westbay transducer were extracted from existing procedure (RRES-WQH-SOP-016.4, Pressure Transducer Installation, Removal, and Maintenance) and placed in a new procedure.

4. Attachments modified, added, or removed: ☐ Yes ☒ No
5. Reviewers:

Shannon Allen / Mike Alexander / Rich Koch

Section 2: Evaluation and Approval

1. Safety and security review: The hazard level associated with this procedure has been determined, and the appropriate safety- and security-related hazards have been addressed in accordance with IMP 300-00-00.

ENV-WQH Safety Officer	Steve Rae, WQH Group Leader Print Name	Date

2. Signatures:

Preparer	Shannon Allen, ENV-WQH Print Name	1-19-05 Date
Team or Project Leader	Armand Groffman, Project Leader Print Name	01/20/05 Date
ENV-WQH Group Leader	Steve Rae, ENV-WQH Group Leader Print Name	1-20-05 Date
ENV-ECR Group Leader	Alison Dorries, ENV-ECR Group Leader Print Name	1/21/05 Date

Preparer: After all signatures have been obtained, submit this form with a copy of draft and final procedure to the ENV-WQH QA office.

WESTBAY® PRESSURE TRANSDUCER INSTALLATION, REMOVAL, AND MAINTENANCE

Purpose

This procedure describes installation, removal, and maintenance, of the Westbay® brand water level recording pressure transducers that are placed in groundwater monitoring wells.

Scope

This procedure applies to all ENV-WQH, ENV-ECR, and contractor personnel authorized to operate or maintain the water level recording pressure transducers, or assist with these tasks.

In this procedure

This procedure addresses the following major topics:

Topic	See Page
General Information About This Procedure	3
Who Requires Training to This Procedure?	3
General Requirements for Transducer Installation or Removal	7
Calibration and Maintenance of Pressure Transducer Equipment	8
Transducer Selection and Installation Guidance	11
Westbay® Transducer Installation	12
Westbay® Transducer Data Retrieval	14
Westbay® Transducer Removal	15
Records Resulting From This Procedure	16

Integrated Work Management

The work specified in this procedure is conducted with applicable Integrated Work Documents, in accordance with LANL IMP 300-00-00, Integrated Work Management for Work Activities.

CONTROLLED DOCUMENT

This copy is uncontrolled if no signatures are present or if the copy number stamp is black. Users are responsible for ensuring they work to the latest approved revision.

Signatures First authorization review date is one year from group leader signature below; subsequent authorizations are on file in group office.

Prepared by. Shannon Allen, ENV-WQH	Date: 1-19-05
Approved by. Richard Koch, ENV-WQH	Date: 01-21-05
Approved by. Armand Groffman, Project Leader	Date: 01/20/05
Approved by. Steve Rae, ENV-WQH Group Leader	Date: 0/21/05
Approved by. Alison Dorries, ENV-ECR Group Leader	Date: 1/21/05

General Information About This Procedure

Attachments

This document has the following attachments:

Number	Attachment Title	No. of pages
1	Westbay® Transducer Calibration Check and Maintenance Form	1
2	MOSDAX Probe String Installation/Removal Field Form	1
3	Manufacturer Operating Manuals	1

History of revision

This table lists the revision history and effective dates of this procedure.

Revision	Date	Description Of Changes
0	01/05	New document.

Who requires training to this procedure

ENV-WQH staff, ENV-ECR staff, and contractors who work with Westbay® pressure transducer equipment require training before implementing this procedure.

Training method

The training method for this procedure is both **read-training** and **on-the-job** training. Training is provided in accordance with group-specific procedures for training. Annual refresher training to this procedure is "self-study" (reading).

Prerequisites

In addition to training to this procedure the following training is also **required** prior to performing this procedure:

- RRES-WQH-SOP-045, Manual Groundwater Level Measurements
- Westbay® Operations Manuals for MOSDAX Pressure Probes read-training and Westbay® operations training

References

The following documents were referred to in preparation of this procedure:

- ENV-WQH-QAPP-GWLMP, Quality Assurance Project Plan for the Groundwater Level Monitoring Project
- RRES-WQH-SOP-045, Manual Groundwater Level Measurements
- Westbay® Operations Manuals for MOSDAX Pressure Probes
- Westbay® Operations Manual for MOSDAX Handheld Controller

General Information About This Procedure, continued

Terminology

Absolute pressure: the total or absolute pressure measured by a sensor without correction for atmospheric pressure. A pressure measurement that includes atmospheric pressure is an absolute pressure. Units are expressed in psia (pounds per square inch absolute).

Calibration: pressure transducers are factory calibrated. Calibration checks can be done to determine the accuracy of a pressure transducer reading against a known value.

Gage pressure: the pressure measured relative to atmospheric pressure. Measurements exclude atmospheric pressure and are said to be compensated or gaged for atmospheric pressure. A vented or gage pressure transducer sensor utilizes a vent tube in the cable that exposes one side of the pressure sensor to atmospheric pressure, measuring pressure of the water column only. Units are expressed in psig (pounds per square inch gage).

Ground Elevation: The elevation of the ground surface of the well expressed in feet above mean sea level. If the well has a concrete surface pad, usually the elevation of the top of the concrete pad. If a brass cap is present to identify a well, usually the elevation of the brass cap in the concrete pad is used.

Pressure Head: The height in feet of a column of water that can be supported by the gage pressure measured at a point in a well.

Pressure Transducer (Transducer): A device that measures pressure. There are two types of pressure transducers, those that measure absolute pressure, and those that measure gage pressure.

Pi: Pressure inside the Westbay® casing. Pi measured above the deionized water column in the Westbay® casing is equal to atmospheric pressure at a given port elevation; calculated piezometric elevation will approximate the elevation of the port. Pi measured below the deionized water level inside the Westbay® casing will be the pressure head of the deionized water column; calculated piezometric elevation will be that of the elevation of the top of the deionized water column.

Po: Pressure in the formation outside the Westbay® casing at a specific monitoring port. Po of 'dry' monitoring ports will approximate Pi at that port if the port is above the DI water column. Po of 'wet' monitoring ports should not normally equal the Pi of the port. Calculated piezometric elevation represents the piezometric water level at the location of the monitoring port.

psi: Unit of pressure measurement in pounds per square inch.

psia: Unit of pressure measurement in pounds per square inch absolute, see absolute pressure.

General Information About This Procedure, continued

Terminology, continued

psig: Unit of pressure measurement in pounds per square inch gage, see gage pressure.

Raw Data Files: Electronic pressure transducer data files that are obtained from pressure transducers or data loggers at a well site. Raw data files are usually binary computer files that can be opened, read, and interpreted only by software developed by the transducer manufacturer. The raw data files must be stored and archived appropriately in order to protect the original data from the pressure transducer. Raw data files contain the raw pressure measurements and date/time stamp from the transducer and may also contain information entered into the transducer software program at the time of installation, such as well name, date/time, measurement interval, reference water elevation at the time of installation, etc.

Water Elevation: The elevation of the surface of the water in a well, expressed in feet above mean sea level.

Water Level: 1) Depth to water (DTW) in a well below ground surface expressed in feet, or 2) The Water Elevation expressed in feet above mean sea level. Refer to RRES-WQH-SOP-045, *Manual Groundwater Measurements*, for information about measuring groundwater level in a well.

Westbay® MP System

The Westbay® MP (Multi-Port) System is a modular multi-level groundwater monitoring system that consists of plastic casing components that are permanently installed in selected monitoring wells at LANL to monitor multiple zones of saturation and/or multiple zones within the regional aquifer. The plastic casing components utilize monitoring ports at specific depths in the well to access pressure information (water level data) and to collect groundwater samples. Deionized water is placed inside the Westbay® plastic casing below the level of the regional aquifer to prevent collapse at depth due to formation water pressure and to reduce buoyancy of the plastic casing. The well completion reports provide detailed information about the construction and installation of the each of the Westbay® MP Systems.

A MOSDAX transducer probe is used to access the monitoring ports and obtain pressure data. Individual MOSDAX transducers may be connected to each monitoring port for extended periods to collect relatively continuous pressure/groundwater level data. When multiple transducers are deployed, a single cable connects all transducers to a Westbay® or MAGI data logger at surface.

Operation of the Westbay® MP System equipment should only be undertaken by authorized personnel.

General Information About This Procedure, continued

Pressure transducer equipment

Transducer equipment is used to periodically measure water levels in individual wells at user-specified intervals and record these values in computer memory for later retrieval.

Two types of transducer equipment are currently used in monitoring wells at LANL.

- 'Compensated' or 'gaged' pressure transducers have pressure sensors that are compensated for atmospheric pressure. One side of the pressure sensor diaphragm is vented to the atmosphere, thus compensating for changes in atmospheric pressure and measuring water pressure only (pounds per square inch gaged or psig). Using these transducers, calculations of water depth above the transducer exclude atmospheric pressure considerations. These transducers employ a tube in the cabling to vent the transducer to the atmosphere and are used in most shallow monitoring wells and single-completion deep monitoring wells . Examples of 'compensated' or 'gaged' transducers include the standard In-Situ, Inc. miniTroll® and Troll® transducers.
- 'Absolute' or 'uncompensated' pressure transducers measure absolute pressure (pounds per square inch absolute, psia) and are not compensated for atmospheric pressure. Pressure measurements from this type of transducer include atmospheric pressure as a component; therefore atmospheric pressure must be subtracted from the absolute measurement to determine the pressure due to water. All transducers used with the Westbay® MP multiple port monitoring system measure absolute pressure. Additionally, other manufacturers, including In-Situ, Inc. produce absolute pressure measuring transducers, thus personnel must be aware of the type of transducer that is used so that data can be processed accordingly.

Note

Actions specified within this procedure, unless preceded with "should" or "may," are to be considered mandatory guidance (i.e., "shall").

General Requirements for Transducer Installation or Removal

Equipment

Suggested equipment for installation and removal of Westbay® transducers in monitoring wells

- Transducer(s)
- Transducer cable(s)
- Data logger
- Manufacturer operating manuals
- Portable computer and RS-232 direct-cable connection for communicating with transducer equipment and retrieving water level data
- Floppy disk(s), or other removable electronic media for data storage backup
- Silicon lubricating grease
- Waterproof ink pen(s)
- Well construction diagram
- MP casing installation report
- Previous transducer installation and removal field records
- Installation/Removal Field Form
- Mast or Monopod with transducer wheel
- Westbay® transducer winch
- Generator with ground fault circuit interrupt (GFCI)
- Electric extension cord
- Deionized water
- Paper towels
- Trash bags
- Keys to well

Equipment check

Before departing for the well site, test data loggers and transducers for functionality, see Calibration and Maintenance of Pressure Transducer section of this procedure.

Required personnel

Two people, one supervising operator and one assistant, are required to install or remove a Westbay® pressure transducer from a monitoring well.

A single operator is adequate to retrieve data from the recording data logger if approved by the Team Leader and only when using Enhanced Communications Procedures. Reference the Working Alone Policy in RRES-WQH-SOP-002, *General Field Work*, and RRES-ES-Field, *General Field Safety for All.*

Calibration and Maintenance of Pressure Transducer Equipment

Policy

Pressure transducer equipment must be properly maintained and calibrated according to manufacturer instructions. Equipment maintenance and calibration records must be maintained to insure the quality of data from transducer equipment. Westbay transducers are factory calibrated by Westbay personnel.

Transducer maintenance

Westbay Transducer Maintenance

Perform routine maintenance each time a transducer is installed or removed from a well. Routine maintenance includes:

- Check/lubricate O-rings
- Check cables
- Perform surface check of transducer arm and shoe functions
- Keep equipment clean, work area uncluttered
- Wipe transducers with clean cloth soaked in deionized water during removal from well, and wipe dry before storing in cases.
- Cap all connections after wiping dry to prevent damage from rust and corrosion
- Record any maintenance problems on the Westbay Transducer Calibration Check and Maintenance Form (Attachment 1)

Avoiding cross-contamination

Transducer equipment is typically installed in a specific well and dedicated to that well, therefore minimizing cross contamination issues. If it is necessary to remove a transducer from a well, label the transducer equipment with the well number for future reinstallation.

If transducer equipment must be installed in a different well, wipe the cable and transducer housing with a clean cloth soaked in deionized water prior to installation to prevent potential cross contamination.

Automatic daylight savings time adjustment

Transducer software clocks and internal clocks in portable computer used with transducer equipment must have the time set to Mountain Standard Time (MST) at all times, without any daylight-savings time adjustment in the spring and fall.

Disable the automatic daylight savings time adjustment setting in Microsoft Windows-based computers used with transducer equipment. This will prevent the clock from changing to daylight savings time.

Calibration and Maintenance of Pressure Transducer Equipment, continued

Transducer calibration

A transducer may be considered to be properly calibrated as long as the transducer returns values that are within pre-determined measurement precision specifications. The measurement precision of a Westbay® MOSDAX transducer is 0.1% of the pressure rating. How long a transducer will maintain calibration depends on the amount of regular use the transducer has experienced, whether or not the transducer was exposed to environmental extremes, and how the transducer was handled during use, transportation, and storage.

Transducer calibration is performed by the manufacturer.

Calibration checks

To conduct a calibration check on the Westbay MP System Transducer, bench check atmospheric pressure measurements of each transducer by comparing transducer atmospheric pressure measurements with a local meteorological station. This check must be done at the TA-64 ENV-WQH compound, using meteorological data from the TA-6 meteorological station, to get an accurate result. Other locations must be evaluated prior to use.

Step	Action
1	Record the calibration check location, time, and the transducer barometric measurement in psi on the Westbay® Transducer Calibration Check and Maintenance Form (Attachment 1).
2	Record the local barometric pressure, station location, and the date and time of the measurement on the Westbay® Transducer Calibration Check and Maintenance Form (Attachment 1). The barometric pressure recorded at TA-6 can be found on the LANL weather web page, http://weather.lanl.gov/data_request.asp. (Measurements are not available on the web site for one to two hours after being recorded.) Convert pressure in millibars (mb) to psi by multiplying the pressure in mb by 0.01450 psi/mb. Record the atmospheric pressure in psi on the Westbay® Transducer Calibration Check and Maintenance Form (Attachment 1).
3	Determine the error tolerance of the transducer by multiplying the pressure rating of the transducer (psi) by 0.001 (0.1%). Record the error tolerance on the Westbay Transducer Calibration Check and Maintenance Form (Attachment 1).

Table continued on next page.

Calibration and Maintenance of Pressure Transducer Equipment, continued

Calibration checks, continued

Step	Action
4	Determine the acceptable range of atmospheric pressure measurements by adding/subtracting the error tolerance determined in Step 3 to/from the atmospheric pressure obtained from the meteorological station. Record the acceptable range on the Westbay Transducer Calibration Check and Maintenance Form (Attachment 1).
5	Compare the atmospheric pressure measured by the transducer with the acceptable range. Verify that measurements are within the acceptable range and document on the Westbay Transducer Calibration Check and Maintenance Form (Attachment 1). If atmospheric pressure measurements do not compare with meteorological values, • Recheck the pressure measurements. • If necessary, return transducer to manufacturer for calibration and/or repair.

Transducer Selection and Installation Guidance

Transducer selection and installation guidance for Westbay® transducers

Do not submerge transducers to water depths with pressures greater than the specific pressure rating of the transducer. The pressure rating is provided by the manufacturer for each transducer. At standard pressures and temperatures in water, a general pressure –depth conversion is 2.31 ft/psi. Table 1 provides guidance for maximum depths a transducer can go below the surface of the water before the pressure sensor is damaged. Westbay MP casings are often filled with deionized water to compensate for outside formation water pressure and to reduce buoyancy of the plastic casing. The depth below ground surface of this deionized water varies in each well.

A pressure profile of each port is compiled at the time of MP casing installation. This pressure profile includes the formation water pressures outside of each measuring port (Po), and the corresponding pressure inside of the casing (Pi). This information is needed to select the appropriate transducer for each port.

Table 1

Pressure Rating (psi)	Maximum Water Depth (ft)
100	231.0
250	577.5
500	1155.0
1000	2310.0

Before installing a transducer in a well:

- Determine the pressure outside of the MP casing for each port in which a transducer will be installed.
- Determine the pressure inside of the MP casing for each port in which a transducer will be installed.
- Determine the range of expected water level fluctuations in the zone

The pressure rating on the transducer must be greater than the pressure outside of the MP casing, and the pressure inside of the MP casing to avoid damaging the pressure sensor. Use a transducer with the lowest pressure rating possible, because measurement precision decreases with higher pressure ratings.

Westbay® Transducer Installation

Prepare for transducer installation

To prepare for transducer installation, perform the following steps:

Step	Action
1	Set up transducer winch and mast or monopod at well site.
2	Apply silicone lubricant to O-rings on transducer connections following manufacturer instructions.
3	Connect transducer cable to MOSDAX pressure probe and to data logger/portable computer according to manufacturer instructions.
4	Check for appropriate communications with transducer.
5	Perform surface check of arm out, shoe out, shoe in, and arm in functions.
6	Record the transducer serial number and well information on the Westbay Transducer Installation, and Removal Form (Attachment 2)

Install transducer

To install the Westbay® transducer(s), perform the following steps:

Step	Action
1	Carefully lower the MOSDAX transducer string into the well. • Do not allow cable to rub against sharp edge of metal casing • Do not allow the transducer to contact deionized water at high rate of speed; this will damage the pressure sensor.
2	Monitor water pressure measurements while transducer is lowered into the well to ensure the transducer is not being submerged to a water pressure higher than the rated pressure.
3	Attach transducer probes to Westbay monitoring ports **Step** / **Action** 1 — Install MOSDAX pressure probes in accordance with Westbay® manufacturer instructions. 2 — Record all pressure data on the Westbay® Transducer Installation/Removal Form (Attachment 2). 3 — Install Data Logging equipment in secure location at well.
4	Initialize measurement software/data logging software according to manufacturer instructions. • Program the software for appropriate measurement sampling interval for the intended purpose and use of the data.

Table continued on next page.

Westbay® Transducer Installation

Install transducer, continued

Step	Action
5	Replace caps and locks on well shelter.
6	To verify that the transducer is functioning correctly, check transducer installation within 1 week of installation. • Check measurement data for signs of sensor drift. • If indications of data problems exist, reinstall the transducer, if problems persist, replace the transducer.

Westbay® Transducer Data Retrieval

Westbay Transducer Data Retrieval

Retrieve transducer data from wells at least **quarterly** to insure the continued quality of the transducer data. To retrieve data from transducer equipment, perform the following steps:

Step	Action
1	Connect portable computer to data logging equipment and start manufacturer provided software specific for the transducer equipment.
2	Stop the data logging program. Note the time and date in a field logbook.
3	Retrieve transducer data set according to manufacturer instructions. Document data retrieval information in a field logbook, including: • Transducer operating condition • Battery power • Beginning and ending dates/times of retrieved data in MST. • Raw data file name. Name the raw digital data file appropriately to include the well name and date of data retrieval.
4	View the data collected since transducer installation. Ascertain that appropriate data have been collected.
5	Copy the data file to floppy disk or other removable media for safe keeping.
6	Delete the data from the transducer or data logger using the manufacturer software. **Note: only delete the transducer data after insuring that the data file has been properly transferred and stored to the portable computer, and has been backed up on a removable disk.**
7	Check that the transducer clock is the correct time (MST). Restart the data logging
8	Transmit data file to the Groundwater Level Project Leader. • Insure that data file is secured and data transmittal is completed. • Do not remove data file from portable computer or removable media until data is backed up on a server.

Westbay® Transducer Removal

Westbay Transducer Removal

To remove the transducer(s) from a multiple completion well, perform the following steps:

Step	Action
1	Retrieve transducer data from data logger as described in the Transducer Data Retrieval section above.
2	Disconnect MOSDAX pressure probes from monitoring ports by following Westbay® operation manual procedures. Record P(o) and P(i) pressure data on the Westbay® MOSDAX Pressure Probe Installation/Removal Form (Attachment 2).
3	Remove the cable and transducer(s) from the well. • The cable should not scrape against sharp edges of well casing. • Rinse transducers with deionized water and wipe dry with a paper towel prior to storing in a transport case. • Package transducers appropriately for transportation according to manufacturer instructions.
4	Replace well caps and locks.

Records Resulting From This Procedure

Records

The following records generated as a result of this procedure shall be permanently stored with ENV-WQH:

- MOSDAX Probe String Installation/Removal Field Record (Attachment 2)
- Westbay® Transducer Calibration Check and Maintenance Form (Attachment 1)
- Raw water level data electronic file on electronic media
- Field logbook summary of individual installations/removals, and data retrievals with dates

WESTBAY TRANSDUCER CALIBRATION CHECK AND MAINTENANCE FORM

Los Alamos National Laboratory
Water Quality and Hydrology
Westbay Transducer Calibration Check and Maintenance Form

Transducer Serial Number: _____ PSI Rating: _____ Error Tolerance (psi): _____

	Meteorological Station				Calibration Check						
Date	Station Name	Time of Measure-ment	Barometric Pressure (mb)	Barometric Pressure (psia) (1mb = 0.01450 psia)	Calibration Check Location	Time of Measure-ment	Transducer Barometric Pressure (psia)	Acceptable Range (psia)	Calib Check Passed?	Inspector Name	Equipment Condition, Comments, Describe Maintenance, Calibration Check

Note: To convert millibar (mb) pressure measurements to psi, use conversion factor: 0.01450 psi/mb

MOSDAX PROBE STRING INSTALLATION/REMOVAL FIELD FORM

Los Alamos National Laboratory
Water Quality and Hydrology

MOSDAX Probe String Installation/Removal Field Form

Well Name		Personnel:	
Surface Elevation (ft)		Date:	

Check Operation: _____Installation Data ____Removal Data

Port No.	Zone No.	Port Depth (ft)	Collar Depth (ft)	Cable No.	Cable Length (ft)	Tool No.	Probe Serial No.	Prev. Pi (psia)	Prev. Po (psia)	Pi Inside MP (psia)	Po Outside MP (psia)	Comment

Data Logging Settings

Schedule				MDL Settings	
Scan Rate:				Power Save:	
Collect Rate:				Beeper:	
Start Time:				External Power?	

Installation/Retrieval Notes:

MANUFACTURER OPERATING MANUALS

1) Westbay Operations Manuals for MOSDAX Pressure Probes

   Pressure Profiling with the MOSDAX Pressure Probe – Model 2523, Operations Manual
   Mprofile Quick Reference Guide
   MOSDAX Datalogger – Model 2524A, Operations Manual
   MAGI MOSDAX Automated Groundwater Interface, Rev 1.4, Operations Manual
   MOSDAX Handheld Controller – Model 2525, Operations Manual
   Westbay® MLOG Software Manual
   Westbay® WinGT Software Manual

2) In-Situ Operations Manuals for Pressure Transducers

   MiniTROLL Operator's Manual for MiniTROLL Model SSP-100
   WinSitu 4.0 User's Guide
   Hermit 3000 Data Logger Operator's Manual
   In-Situ Inc. Data Manager Software Operator Manual

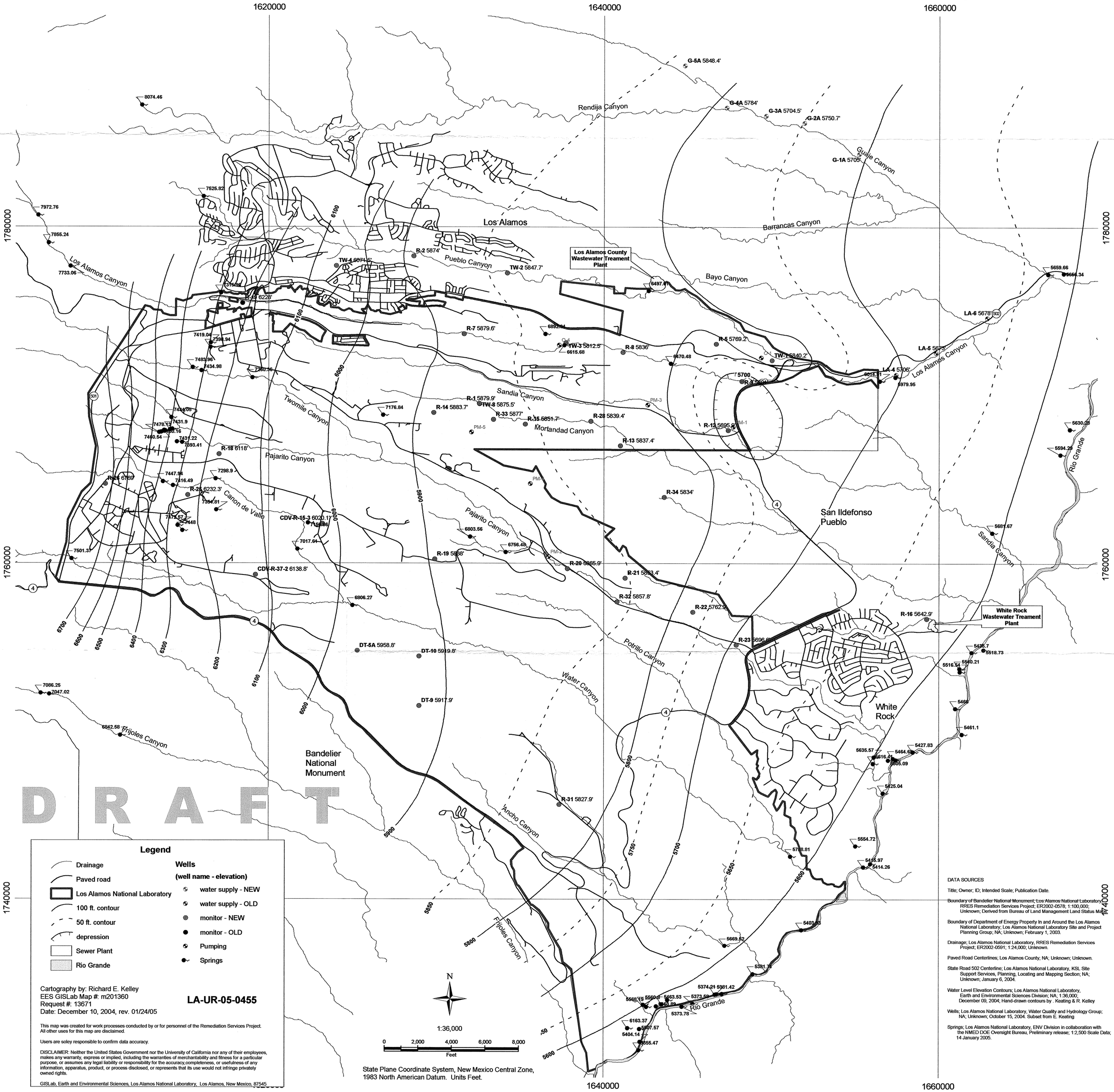
Groundwater Level Data Submittal to NMED
LA-UR-05-0457

January 27, 2005

Los Alamos National Laboratory
Environmental Stewardship Division
Technical Services
Groundwater Protection Program

Appendix A: Field Notebook Copies and Field Data Sheets

Elevation of Top of Regional Aquifer for Los Alamos National Laboratory



Appendix A: Field Notebook Copies and Field Data Sheets

Part 1: "Untitled" Logbook for transducers – ESH-18
April 1999 – May 2003
This notebook contains field data and activities associated with pressure transducers and manual water levels in alluvial, intermediate, and regional wells.

Part 2: "Westbay Installation, Retrieval, and Surface Check Field Records". Field records from the installation and retrieval of pressure transducers for the following wells:

R-5	10/29/03 – 1/23/04
R-7	8/28/02 – 12/15/03
R-9i	6/8/01 – 2/3/04
R-12	12/14/00 – 7/30/02
R-14	1/21/03 – 12/14/04
CDV-R15-3	4/23/01 – 10/22/04
R-19	12/10/04
R-20	1/23/03 – 12/17/04
R-22	11/5/02 – 6/21/04
R-25	4/30/00 – 12/03/03
R-31	8/29/01 – 03/17/04
R-32	1/21/03 – 12/7/04
CDV-R37-2	8/8/03 – 1/5/05

Part 3: "Transducer Field Data"
November 2003 – January 2005
Copies of field notebook containing data associated with installing, maintaining, and removing pressure transducers for ENV-WQH.

Part 4: "Alluvial Well Probes, Vol. 0"
August 2000 – November 2000
"Alluvial Well Probes" ER-2001-0088
November 2000 – January 2002
"Alluvial Well Probes #2" ER-2001-0088
January 2002 – May 2003
Notebook copies containing field data relating to the installation, removal, calibration, and maintenance of pressure transducers used to obtain water level data from alluvial groundwater wells in Los Alamos canyon, Pueblo canyon, and DP canyon. Field data includes alluvial wells: LAO-B, LAO-0.3, LAO-0.91, LAO-1.6g, PAO-1, PAO-2, PAO-3, PAO-4, PAO-5N, LAUZ-1 and LAUZ-2.

Part 5: "Los Alamos, Pueblo, and Mortandad Water Levels" ER-2001-0089
January 2001- September 2002

Field notebook copies containing manual water level measurements taken in alluvial groundwater wells: LAO-B, LAO-0.3, LAO-0.6, LAO-0.8, LAO-0.91, LAO-1.6g, PAO-1, PAO-2, PAO-2.5, PAO-3, PAO-4, PAO-5N, PAO-5S, and MCO-0.6 in Los Alamos, Pueblo, and Mortandad canyons.

Part 6: "Piezometer and Well Installation Activities in Los Alamos and Pueblo Canyons" ER2001-0230
March 2001 – July 2002
"Piezometer Activities in Los Alamos (including DP Canyon)" ER2001-0230 Vol.2
May 2002 – June 2003
Field notebook copies containing field data and activities related to the installation, development, and water level monitoring of piezometers in Los Alamos canyon, Pueblo canyon, and DP canyon.

Part 7: Water-Level Elevation Data Sheets from the DP Canyon tracer study, hard copies.
November 2002- August 2003
Water level field forms from the DP Canyon tracer study.
November 2002- August 2003

Part 8: "LA/Pueblo Field Logbook #461"
October 1999 – October 2001
Field notebook copies containing general field data and activities for canyons investigations. This notebook includes some manual water level data collected during alluvial groundwater sampling in Los Alamos and Pueblo canyons.

Part 9: "Surface and Alluvial Sampling in Los Alamos, DP, and Pueblo Canyons" ER ID 4931-4840.
October 2001 – July 2002
Field notebook copies containing some manual water level data obtained while collecting alluvial groundwater samples in Los Alamos, Pueblo, and DP canyons.

Part 10: ER2002-0320 Log Book Volume 1 "Hydrogeologic and CMS Investigations at TA-16, PRS 16-021©-99, IT Corp.
May 1998 – September 1999
ER2002-0320 Log Book Volume 2 "Hydrogeologic and CMS Investigations at TA-16, PRS 16-021©-99, IT Corp.
November 1999 – September 2001
ER2002-0320 Log Book Volume 3 "Hydrogeologic and CMS Investigations at TA-16, PRS 16-021©-99, IT Corp.
September 2001 – November 2004

Field notebook copies containing field data and activities pertaining to TA-16, PRS 16-021. These notebooks include manual water level data, and pressure transducer field activities for groundwater wells: CdV-16-2655, CdV-16-2656, CdV-16-2657, CdV-16-2658, CdV-16-2659, CdV-16-2660.

Part 11: "DP Canyon Tracer Study Field Notebook" ER ID 4932-4866
September 2002 – January 2003
"DP Canyon Tracer Study Field Notebook" ER ID 4931-6335
February 2003 – April 2003
These field notebooks contain field data and activities associated with the DP Canyon Tracer Study. Field data includes manual water level data, and field data for the installation and removal of pressure transducers in piezometers and alluvial groundwater wells in DP Canyon.

April 26, 1999

Station	SN	Model	Coef	Battery date
tw4	301053	~~PXD 360-20~~ PXD 360		3-16-96
	201572	PXD 260-20		10.26 V

MCWBS 00208 LTM 3000
* Clock 25 minutes slower than PC Clock 82 %
File mcwbs.bin

MCWB ~~20~~ L3K 232 LTM 3000
S.SB * Clock 13 min slower than PC Clock 99 %
File name MCWB SSB.BIN

MCWB L3K 00727 LTM 3000
S.SA * Clock 26 min slower than PC Clock 79 %
File name MCWB SSA.bin
MCWB L3K 00927 LTM 3000
6.2A *Clock 21 minutes behind PC 92 %
File name MCWB62A.bin

April 28, 1999

TW1 L3K 00194 LTM 3000 85 %
X clock 20 min behind PC
TW1.BIN Filename

TW1A L3K LTM 3000 90 %
* Clock 46 min behind PC
* bring back a hermit 1000
TW1a.bin File

TW2 L3K 020030 LTM 3100 clock in sync 10.47V
Battery dead Brought in mistake ~~10.23V~~
TW2A SN 020026 clock in sync 10.23V
~~Battery dead~~ Brought in TW2a.bin
TW3 L3K 06219 LTM 3000
~~Battery taken~~ Brought in
File name TW3.bin

2.

May ~~8~~ 10, ~~18~~ 1999

G-4 GSN 201~~582~~ - LTm 3600 10.43 V

The data was stopped Append

File name G4~~3~~.BIN in Directory well 99

Clock 3 minutes behind PC

20 psi Restarted May 11, 12:01

Tower Coordinates

# satellites	Location
5	N 35° 54.200'
	W 106° 16.831'
5	N 35° 54.227'
	W 106° 16.847'
5	N 35° 54.171'
	W 106° 16.836'
5	N 35° 54.195'
	W 106° 16.744'

Stables

4	N 35° 53.667'
	W 106° 17.064'
5	N 35° 53.663
	W 106° 17.057
5	N 35° 53 711
	W 106° 17 119
5	N 35° 53. 679
	W 106° 17 110

May 10, 1999

DT-9 SN 201735 LTM 3000 L3K 00191 Battery 85%
File DT9.bin 1999 Dir
24 minutes behind PC
Resynced clock Start 5/10/99 15:01

DT 10 SN L3K 00689
201583 LTM 3000 Battery 99%
filename DT10.bin Data 99 Dir
18 min behind PC
Restarted 5/10/99 13:01

May 26, 1999 20 psi

M CDSO-6 observation pvd
Serial 200 203

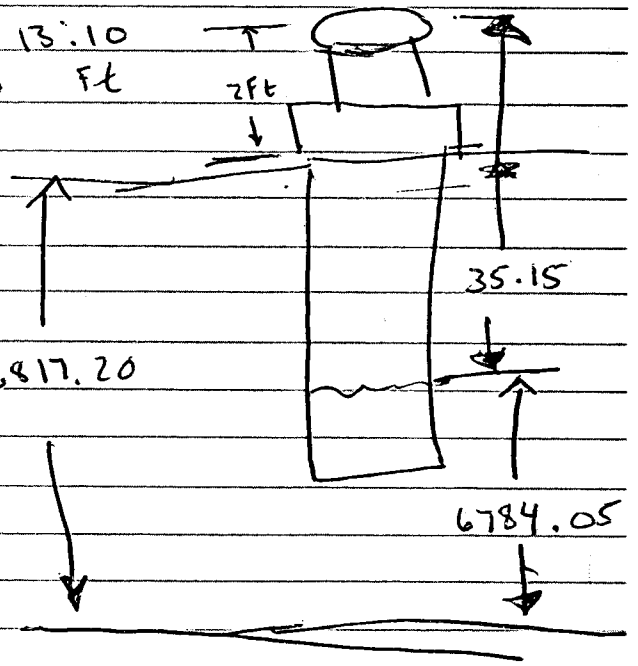
water Level 35.15 ft @ 13:10
Surface elevation 6817.20 Ft

6819.20
- 35.5

6784.05

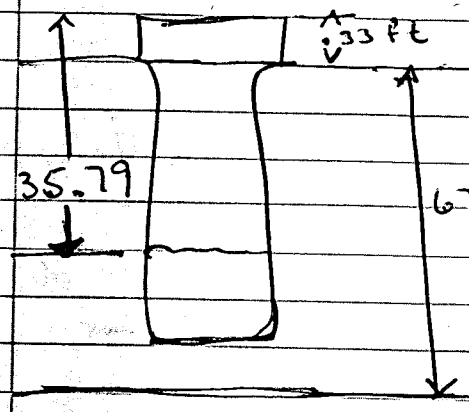
Set for Surface Readings
at 6784.05 Ft

Transducer Submerged
10.966 Ft
Start date
May 26, 1999
13:01



May 26, 1999

CDB07 Serial # ~~020031~~ 201587



Top of Hat ~~.33 ft~~ .3 ft

Surface Elevation 6771.81 Ft

Water level = 6736.35

14:00

Transducer Submerged 9.105 Ft

Start time 14:01

~~May 28, 1999~~ June 1 1999

June 1, 1999 CDB06 Serial # 20023

File name C:/data99\cdb06.bin

still in synch with clock

CDB07 Serial # 20031

clocks in synch File name C:\data99\cdb07.bin

June 11, 1999

LAO-6 C:\water\lac\lao6 Serial #

PC time 10 minutes ahead Battery Cap 60%

LAO-~~4~~5

Screw Cap snapped off on data Logger Battery 47%

C:\water\lac\ ~~lao4.bin~~ Lao-5.bin

PC 12 min ahead

stop test bring in for battery change

SN 201574 LM 30000

SN on Header file LZ# 000209

LAO-4 SN 00210

Data logger pulled because of battery

still need to down load

Saved file to water\lac\ lao-4.bin

PM 4 Flow rates

May 28, 1999 Friday
WL 13.3 Time 13:08
Flow rate Time 13:09

~~00262 9000 to 00262~~
~~00261 8000~~ to
00263 3000 to 00 263 6000 1.57.81
June 1, 1999 08:59 WL 9.1
Flow rate 11019000 to 11022000 1.59.30

	6-2-99	WL	9.8	13111000 to 13114000		1.59.38
8:05	6-4-99	WL	8.2	17476000 to 17479000		1.58.89
7:45	6-7-99	WL	5.5	23913000 to 23916000		1.59.12
7:30	6-8-99	WL	6.1	26054000 to 26057000		1.59.11
8:30	6-9-99	WL	6.1	28323000 to 28326000		1.59.93
8:45	6-10-99	WL	5.4	30518000 to 30521000		1.58.52
9:24	6-11-99	WL	6.4			
9:52	6-14-99	WL	3.9	39298000 to 39301000		1.59.83
7:55	6-15-99	WL	6.1	41286000 to 41289000		1.59.03
8:28 am	6-16-99	WL	6.4	43524000 to 43527000		1:58.73
7:46	6-14-99	WL	7.8	47839000 to 47842000		1:58.23
8:00	6-22-99	WL	9.4	56637000 to ~~[illegible]~~000	56640000	1:55.37
12:15	6-22-99	WL	56.0 ft	56741		
	Pump off 9:00		62.5 off Chart			

June 11, 1999
LAO-3
25 mins behind PC SN L3K00220
C:\water\lac\lao-3.bin
brought in for battery

LADP-3 3100 020011 ser #
No Response Brought in need to download data

LAOI 1.1 3100 SN 020022
12 min Behind PC Clock
LAOI.bin Brought in for battery

LAO-1 3000
12 min behind pc Battery cap 75%

Lao C serial #U3000223
Brought in battery
need to download data
LAO 7 Serial # 00222
need to download data
Brought in
Downloaded C:\water\Lac\LAO7.bin

June 25, 1999
CdB06 Downloaded and removed transducer
SN 020023 3100
Battery Status good 10.48 V
16 seconds behind pc
filename C:\data99\CdB062.bin

6-14-99
Data loggers in compound
3100 $

SN 020011	3000	Tw2A
SN 020022	L3K 00217	LA0-6
SN 020003 ✓	L3K 00220	
	L3K 00211	
	L3K 00209	
	L3K 00195	
	L3K 00223	
	L3K 00219	
	L3K 00222	
	L3K 00210	

June 25, 1999
CDB07 SN 020031 L. 3100
Download and removed transducer
Battery 10.21 looks good
5 seconds behind PC
C:\Data99\CDB072.bin

July 2, MCWB-5 3000
26 min behind PC
Stopped and Restarted Battery 82%
~~Data 99~~ mort\mcwb5a.bin

Fluid above 2.416
Reference 6848.722 ft

---

mcwb 5.5b July 2 1999 3000
Res
15 Min behind PC Battery 99%
C:\mort mcwb55b reset test

July 2, 1999
MCWB 5.5A Battery 87% 3000
C:\mort\mcwb55A
35 min behind PC

July 2, 1999 MCWB 6.2A 3000
21 min behind PC Batt Cap 92%
c:\mort\mcwb62A

July 2, 1999
MCWB 6.5 E 3'' Battery Cap 65%
c:\mort\mcwb 6.2A 18 min behind

July 2, 1999 M.
MCWB 6.5 C 3100
24 min behind PC 97% Battery operate
C:\mort\ ~~mcwb~~ 65B

July 2, 1999
MCWB 6.5 B Battery 50%
C:\mort\ MCWB 65B
Brought in

July 2, 1999

MCWB 7A 3100 Batt 82%
C:\mort\ MCWB 7A
Stopped and Restarted

July 2 1999
MCWB 7.2 3000
C:\mort\MCWB72.bin Battery 85%
stopped and Restarted 2min behind PC

July 2, 1999 MCWB 7.4A 3000
C:\mort\ MCWB74A.bin
serial# 020004 removed from well because
of battery

July 2, 1999 3100
MCWB 7.4B
C:\mort\ MCWB 74B
Brought in 020006

July 2, 1999 3100
MCWB 7.73B
C:\mort\ MCWB 7.73B

3-25-99

Aug 19, 1999
R-25
Cable East wall
20 ft Joints
depth counter is off according to Joint
1st screen 739 ft
1st water ~~746~~ on wall 746
water level 868 Ft .25

1st Screen 738.5
2nd screen 883.5
3rd Screen 1056 Ft
4th Screen 1186 Ft
5th " " 1296
6th 1406
7th 1606
8th 1776
9th 1896
2ft off 870' 11" ft waterlevel on ugrout

web page Sept 27, 1999
244

Sept 4 meeting gite Sue

pimentric head

Oct 13, 1999

LAO-6 LTM 3000 L3K 00225
Data Logger 8 min behind pc clock
Battery Capacity 65%
file name Lao 6-992.bin ← Data Down load
Ref Level 0.000
Specific gravity 1
Data Logger Removed
Test Stopped oct 13, 1999 8:06 am
Transducer and cable still in well

LAO-4 No Data logger Ser# 201 577 transducer
There is cable
LAO-3A No Data Logger has transducer
TW-3 No Data Logger 201599 transducer

MCWB 5 LTM 3000 L3K 00208
Dat logger 1min Transducer 141
ahead of pc Battery 62%
file download mcwb5-990
Ref level 6848.922
Stopped test and brought in

OCT 15 1999 MCWB 6.5 E
Data logger 1min ahead of PC
Battery capacity 72% Ser# L3K 00928
file MCWB 6.5e99.bin
Reference level 6804.050 Braught in
OCT 15 1999 MCWB B 5.5A Data logger
Data logger Same time as PC
Battery capacity 84%
File download MCWB 5.5A 99.bin
left in field

LAO-2 OCT 27, 1999
Elevation LSD 6592.97

WL 15.2' MP 7"

Tw-3
WL 785.3 MP

LAO-3

LAO P 3

Elevation MP 32.5"
RL 6436.56
6756.7'
WL 322.85'
start 12:01 am

LAO-1
Remard LTM 3000 11.6 ← WL
Download data MP 13.0" 6836.30
LAOI 1.1
WL 293.89
MP 3.14
Elevation 80 6837.94 6834.80
6837.94 Elevation MP
RL 6844.05

Ref level = WL MP 13"
6842.0

R-25

Trailer
Lens Tissue
Defogger
Lens Cleaner
Kim wipes
Spray cleaner Fantastic
Paper towels
Rubber gloves

11-3-99

Name	Organization	Z-Number
Neal Tapia	ESH-18	119419
Mark Everett	MK/PMC	116938
Lorenzo Martinez	EES-4	086618
Glen Woodward	DYNATEC	117371
Casey Howe	Dynatec	147970
Joseph T. Sena	SAIC	109635
Larry Thorem	Dynatec	114415
Mark Van Eckhout	E-ER	112017
Ron Truebblood	SAIC	167229
Andy Crowder	MK/PMC	114967
Richard Koch	SAIC	114816

Nov 8, 1999

LAO - 1 Serial # 199
Clock 3 min ahead of PC
~~downloaded File C:\water\Data99\LAC~~
No Time Reset needed for standard time
download File C:\windows\Desktop\Data\1990 oct28\
start test 15:01 TU1-001.bin

LAO I 1.1 Ser # 155
clock 3 min ahead of PC
No time reset needed for standard time
S
C:\windows\Desktop\Data\1990 oct.28\ To2-0001.bin
Start Test 15:01

LADP-3
Clock 3 min ahead of PC
No time Reset needed
Start Test 15:01

Tw-3 SN-188
C:\windows\Desktop\Data\SN 188\1999 OCT.28\T01-009.bin
Clock 3min ahead of PC
start test 15:01

LAO-2 SN 235
Clock 3 min ahead of PC already set to Standard time
start test 15:01

LAO-3 SN 254 (mini troll) Ser # 12099
Clock set for standard time
stopped and restarted both trolls
start Test 15:01

Nov 8, 1999

LAO-4 SN 238 (mini troll) SN 12339

Downloaded data from both troll's

Stopped both tests and reset clocks to standard time.

Start test ~~13:01~~ 15:01

LAO-4.5 C SN 158 mini troll

Downloaded data

stopped test set clock to standard time

start test 15:01:00

Nov 15

Sur Elevation 6640 PM-3 WL -780

WL 775.02

6642.00
- 775.02
~~5867.02~~
5866.98 = ref level

LAO-C 7050.0 Elevation

SN 225

WL = 4.25 ft

Su 20 inch = 1'.8" = 1.67 ft

RL = 7051.67 - 4.25 = 7047.42 ft

LAO - 0.7 6904.0 Elevation SN 218

WL 13.79 Su = 2.17

RL = 6,892.38

Nov 23, 1999
G-3 404
WL 404.20 @ 1300 hrs

Ground Ele = 6139.00
Stick-Up = 2.08
6141.08
404.20

$\frac{25''}{12} = 2.08$

$\boxed{\text{Ref} = 5736.88}$

Set to record every 3hr. starting on Wed 11-24-99 at 00:01 hr.

WL = 195.436 ft

MiniTroll SN = 144

TROLL SN = 11557 WL = 195.652

Jan 4 2000
MCWB 5
Water Level @ 29.65 mp 2.6 Ft
~~Ref level = 6876.22~~
Ref level ~~Elevation~~ = 6876.22 + 2.6 - 29.65
pH = 1.708 Ft
Ref Lev = 6849.17

MCWB 5.5 A
Download C:\situ\com\ MCWB 55A 2000
5 min behind PC
Battery 74% SN 00 721 brought in

Minitroll SN ~~172~~ 136 Put in

WL 35.65 Ft MP 2.6 Ft Elevation 6858.36 Ft
RL = 6858.36 + 2.6 - 35.65 = 6825.31
pH = 3.445 Ft
MCWB = 5.5 B
Download MCWB55B00.BIN 1 min behind PC
Battery CAP 88% SN L3K 232
brought in
Installed Minitroll SN
WL 35.80 MP 2.7 FT EL = 6856.89 TOC
REF LVL = 6856.89 + 2.7 FT - 35.80 = 6823.79
pH = 4.2 FT
~~Date Started~~ Test 01-04-2000

Jan 05 2000
MCWB 6.2A ELEVATION 6848.29
Downloaded File MCWB62A 00
Batt Cap 77%
WL 43.20 Ft MP = 2.75 TOC
Ref Level = 6848.29 + 2.75 - 43.20 Ft = 6807.84
Minitroll SN 167 pH = 6.125 Ft

Jan 05 2000

MCWB 6.5C SN LSK 215

DownLoaded data MCWB 6500 Removed Datalogger Battery cap

WL - 45.65 mp = 2.9 Elevation = 6841.02 70%.

Ref Level = 6841.02 + 2.9 - 45.65 ft = 6798.27

Minitroll SN 175 pH =

MCWB 6.5D

~~Installed minitroll SN 180~~ dry

WL None 45 ft

MCWB 6.5E No Data Logger

WL = 45.74 mp 2.7 Elevation 6843.80

REF Level = 6843.80 + 2.7 - 45.74 = 6800.76 WL = toc

minitrol SN 180 pH = 6.5 ft

Jan 06 2000

MCWB 7A SN 20007 Batt cap 50%.

Downloaded data C:\winsitu\mcwb7a00.bin

10:20 AM

WL = 43.32 Ft mp Elevatin 6831.17

Ref = 6831.17 + 2.7 - 43.32 = 6790.55

SN 214 minitroll pH = 9.353

Test begun Jan 07

MCWB 7B

Left data logger in Battery still good 10.2V SN 20023

Data Send July 03 99 Downloaded

to C:\winsitu\mcwb7800.bin

Reference level 6789.990

pH = 3.646 ft Restarted Jan 07 00:01:00

MCWB 7.4B

Elevation 6813.07 WL 51.12 mp 2.8 Ft

SN minitroll Ref Level = 6764.75 Ft

Date started 01-07-00 00:01:00

SN 3100 20006 Not Responding need to download data

pH = 19.8 ft

Jan 26 2000

MCWB 7.4A

LTM 3p00 not responding need to download data SN 020004

installed minitroll SN 163

Elevation 6812.40 WL = 46.5 ft 6768.6 ft

Ref Level = 6812.40 + 2.7 − 46.5 ft = ~~6788~~

PH = 25.9 Ft

one back MCWB 7.7A no previous tranducer

WL = 42.49 mp = 2.7 Elevation = 6798.31

SN 194

Ref = 6738.52 PH = 7.9 ft

MCWB 7.7B

Batt voltage 9.2 V not brought in

Downloaded data MCWB77B2

LAOI Water Sampling Jan 18, 19, 20 21,

39
~~40~~.910 38.37
- 1.63 72.10 2.910
- 1.37
1.63

Feb 7 2000.37 ~~28.37~~

MCWB 7.7B

Cable MCWB 7.7B

Downloaded LTM 3100 and brought in
SN 020010 C:\winsitu\ mcw077b~~0~~.bin
12:00 pm stoped test
Battery voltage 10.5 V Clock 5 min behind
pc mp = 4 - 1.55 = 2.45 ~~2.55~~ 1.55 = ~~[illegible]~~
WL = 60.04 mp = 1.55 ft ~~[illegible]~~ Ref
Ref level = 6798.97 + 2.45 ft - ~~[illegible]~~ 60.04 ft
Ref level = ~~6740.48 ft~~ = 6741.38
PH = 12.646 .9 Temp 49.158 F

MCWB 6.5D

TD = 47.11 Toc (metal)
well Dry set transducer slighty
above bottom 1" (approx) mp = 2.55 Ft
WL = 0 mp = 4 - 1.45 = ~~[illegible]~~ ft (Toc) cement
Ref Level = 6843.20 + 2.55 ft - ~~[illegible]~~ ft - 38.37
~~Ref level = 6797.65~~

Ref level = 6843.20 + 2.55 ft - 38.37 Ft = 6807.38

38.37 ft comes from the amount of cable down the well measured from top of metal casing (length of cable = 40 ft amount of cable extending past top of metal casing = 1.63 ft
so 40 - 1.63 = 38.37 Ft

Feb 9, 2000
TSW B-6 SN 00176
mp = 2.5 ft TD = 40.00 Ft
Elevation 6853.21 Ft WL Dry
ref level = 6853.21 + 2.5 - 40.0 Ft = 6815.71
Start date Feb 10, 2000 00:01:00

April 29, 2000
DT-1 SN 208

DT-10 WL
DT-5A Error # 6040
unknown Failure occurred

May 24, 2000

MCWB 7.7B SN 193
no fire damage. forms burned
clock 1 min behind pc Downloaded data

MCWB 7.7A No fire damage SN 194
Clock 1 min ahead
down loaded data

MCWB 7.4 B ~~SN 183~~
No communication Link made

MCWB 7.4a SN 183
downloaded data

MCWB 7B
LTM 3000 SN 20023
No fire damage Battery 10.33 V
5 mins behind PC
C:\winsitu\mcwb7.B00.bin

MCWB 7A SN 214
Cable Melted still looks ok Shelter
Scorched Downloaded Data

MCWB 6.5 D SN 179 1 min
behind pc Downloaded data

MCWB 6.5 E SN 180
Downloaded No Fire damage

MCWB 6.5 C SN 175
Down loaded No Fire damage

May 24, 2000

~~MCWB~~ TSWB 6 SN 176
No fire damage No water Downloaded
Clock fine

MCWB 6.2A SN 167
No fire damage
~~No communications established~~
Downloaded

MCWB 5.5 B
No communications No Fire damage

MCWB 5.5A SN 156
No Fire damage Downloaded data

MCWB 5 SN 201
No fire damage

May 25

LAOC SN 225
Downloaded data clock 1min behind PC

LAO 7 SN 218
time clock fine Downloaded data

June 29, 2000
LAO-1 SN 00 199
5inch casing Batteries must be dead
try new batteries SN

LAO I 1.1 00155 not responding
3inch casing 2 T Boxes
1 Batt pack

LAO-2 not responding
removed transducer 3inch pipe SN00235
Removed 1 batt pack 1 tbox

LAO-3 two transducers
minitrol serial ~~#~~ ~~2~~ 25 stop test
LARGE Troll 12099. 12:07
Stop test 12:07
2inch pvc 1 tbox

July 3, 2000

LAO-1 SN 00199 changed batteries
changed cable still no response

LAO 2 SN 00 235 Change to known good
batteries and cable still no response

LAO I 1.1
SN 00 155 New Batteries worked
downloaded data Test stopped
~~for some reason test stoped 11 06-99~~
~~and not restarted~~
test stopped 7-03-00

July 5

LAO.7
No data Retreived SN 218

LAOC SN 00225
No data Retreived

LAO 4 two transducers 2in hole
SN 12339 Big troll
Extracted data one T box
stop kof July 5 15:19

Mini troll No Data retreived SN 238

LAO 4.5 c
one minitroll Did not retrieve data
SN 158

July 7
SN 00225 LAO-C
Test Aponted 3-10-00 downloaded data

LAO-4 SN 00238
Downloaded data

LAO-0.7 SN 218
Data ends 3-25-00
Downloaded data

LAO 4.5C SN
Last Data point 3.05-00 ~~10~~ 1
Downloaded data 00158

July 24
POI-4 the cable wase down 6"
reset cable to propper reference level
t we **Pulled out not respond**
mg

Poi
144 100 psi March 1 st

SN -144 looks like water damage
was not able to download data.

.60

A.065

6371.22 6196.3 1A
6653 6534.163 2A
6534.

6653 6371.22
6534 6196.3
119 ft 2A 173.92

inside top
inside bottom

pipe fally

R-19 7-26-00 R-19 Elevation 7075

1174.75 WL 7075 3.34 ft

stick up

Bummer

Reference = 7075 + 3.34 - 1174.75

Reference = 5903.59

Test started screen 7 8:36

Cable slipped

Started First Test 15 gal/min

gallons	Time	gas pressure
30	2:01.97	262 psi
30	2:02.75	262
30	2:02.32	14.7077 gal/min
30	2:02.50	
30	2:02.75	

Screen 7 Ref level 5903.59 ft WL = 1174.75 SW = 3.34 ft

gal	Time
30	2:04:14
30	2:04:07
30	2:04:00
30	2:03:87

Linearity 0.2350

scale 99.851

0.0990

Test Name R-19PumpTest 7

test started 10:26:00

120 gal / 493.08 sec = 0.2434 gal/sec = 14.6021 gal/min

22 min Inserted water (injection)

SN 45207

Screen 6

WL = 1177

Ref Level = 7078.34 = 1177.00

Ref Level = ~~set~~ 5900.06

gal	Time
30	2:31:75
30	2:32.96
30	2:32.94
30	2:33.25

pH = 24.520

Test name PumpTest 6

120 gallons / 610.9 sec = 0.1964 gal/sec = 11.7859 gal/min

Screen 5
WL = 1177

~~Reference~~ = Pump Test 5
Reference = 5899.34
PH = 19.770 ft
Start of Test 14:48

Gallons
30 2:30.22

water rose 130 ft above transducer shut transducer down and restarted to get exponential decay.

Screen 1
1) 827 - 844
2) 893 - 910
3) 1171 - 1215
4) 1410 - 1417
5) 1583 - 1590
6) 1727 - 1734
7) 1832 - 1840

water table 1199

7-0202

Map 3 of Los Alamos Canyon

$y = mx + b$

$\frac{.2}{14}$

38 52

$y = 0.014286x + b$

5914.2 5914

.98

.34

$y = -\cancel{0.012987}\,x + 5907.8$

Screen 7

$y = -0.016644 + 5914.8$

started downtrend @ 56 mins

t Δ

56

ESH

inside radius of well casing $r_{(c)}$ .417

$r_{(w)}$

8-7-00

1241 - 3.5 = WL with no packer
1240 - 2.8
1237.2 WL static Screen 6
screen 6 Test Name
PumpTest W-6
7257 cdV-R15-3

Ref Level = 7257 + 2.8 - 1237.2
Ref level = 6022.6
left test overnight 65 ft wh
packers still holding 11 g/m
after 24 hours 4:26 18
static 5992.482 screen 6 184 ft
6022.600 reference 65.048

6122.610 pH = 65.048
- 5992.482 - 30.118
0030.118 34.930 pH static

Depth to water = 7259.810
- 5992.482
Dept to water 1267.318

Test saved to c:\winsitu\Data\SN45207
cdV-r15-3.bin

10

8.8 - 00 cdv - P15 - 3 out of test
Screen 5
WL 1246 + 2.8 no packer was not
Reference = 1246 + 2.8 = 1248.8 ~~must~~
7257 - 1248.8 ~~to screen~~
- 1248.8 between
6008.2 72.139 ft pH screens
Test name cdv - P15 - 3 s
16 gal water = 59.2 ft head
10:23 packer 300 psi
Elevation start of test 6007.988

10:45 start of slug 15 gal
Stop test 11:26 packer held at 300 psi
the water went up never came down

Screen 4 water table cdS-P15-3

1233.57 } screen 4
1289.94 } 75 ft between packers

water Level state no packers = 41 post/ 1242.5
Ref Level 7257
- 1242.5
6014.5

15 gallon slug

Start test 4:10
14.3 g/min

26 g/min 18:36 min
30 g 1:10 47
30 g 1:10 34 packer 500 psi
30 g 1:10 35

40.5 min stopped slug

Aug 10 Jason Voicemail

~~230.00~~ ~~207.00~~ 15%

230.00 195.50 skautski

445-9344

Nov 1, 2000
SN 0160 pulled mcwb 7.4b
sent cable and transducer
to insitu cable 70-

Nov 18, 2000

MCWB 5
SN 201 (Pulled replaced with Minitroll SN 003264)
Downloaded data
C:\winsitu\Data Man xxx\Data\ SN201 \ 2000 Jan.05 \ TU1-0001.b.s
Reference level 6849.17

Set to start 11-19 2000 00:01 every 3hrs
Reference Level = 6849.17
gravity = 1
pH = 10.18 ft
Blacktape @ casing edge outside.

Nov 27, 2000
Tw-8 SN-243 pulled Downloaded data
pH = 13.260 ft level 5878.167
level Reference 5879.450
γ = .999 Stop test to remove and replace
10:03 am
PH after install 14.073ft SN 3254

$$\begin{array}{r} 14.073 \\ -\ 13.260 \\ \hline 00.813 \end{array}$$

new Reference = 5879.450
− .813
5878.637

Site date start 28-11-2000
12:01 am

Nov 27, 2000
MCWB 5.5 B SN 192
Level Reference 6823.790 ref
Stop test Nov 27, 2000 1102 am
Installed 3274 pH = 3.37 ft
Reference level
6823.790 Start date
11-28-2000 00:01:00

MCWB 5.5 A
SN 156 pulled and downloaded
Reflevel 6825.310
pH ? Nov 27, 2000 11:24
Installed SN 3348
Ref level 6825.310 pH : 1.629 Ft
Start det Nov 28, 2000 00:01

Nov 29, 2000
MCWB-6.2A SN 167
Downloaded data Clock fine
replaced with SN 3318
ref level 6807.840 stopped test
Test Start Nov 30, 00:01:00

MCWB-4.5E
SN-180 ref level 6800.760
Extracted test data Stop test
replaced with SN 3256
pH- .669

MCWB-6.5 D on pad file says
MCWB 6.5 C
SN 175 Removed Replaced
with SN 3328
Ref level 6798.270 ft
pH - 3.212 of new numbers
Stopped test

Dec 2000

TSW8-6
SN-176 cable 50 Ft For MCW8-7B
Data shows no water downloaded
Ref level 6815.710
SN 003434 installed
Scheduled start 12-12-2000

MCW8-7A Downloaded data SN-214 removed
ref level 6790.50
Installed SN 003218 pH - 7.41 Ft
Scheduled start 12/12/00

MCW8-7.4A SN-183 one minute ahead of pc
Ref 6768.6
installed SN 3372
12-18-2000 6647.63
TW2 SN 242 Ref level 5848.33
pH - 20.20 798.30
SN 3422 installed same ref level

TW-2a SN 147 removed
SN 3278 Ref level 6534.41
pH 7.291
TW-1 SN 3566 100 psi
pH - 139.390

y = mx + b

Jan 9 2008

LAO - 4 5 c

Elevation 6451.75 Needs

WL = 11.4 ft Battery fixed

mp = 1.5

Reference level 6451.75

+ 1.5

6453.25

− 11.4

6441.85

PH = 13.339

SN 3330

~~LAO - 4.5~~ LAO - 4

WL 13.05 to c

MP 2.4

Elevation - 6518.73

+ 2.4

6521.13

Ref level = 6521.13 PH - 12.849

− 13.05

6508.08

SN 3288 Synchronize de

LAO 23 SN 3430

mp .8

WL 8.8

Elevation 6578.10

Ref level = 6570.10

PH - 9.667

Feb 21, 2001 water off sets

MCWB 6.5 C
data set 7-3-95 - 11-29 2000
offsett - 3.030 ft

MCWB 6.5 E
data set 1-06-2000 → 11-29-2000 off set pr of
data set 7-03-99 → 12-02-99 off set -6.55999 ft
-3.926 Ft

MCWB 7a
data sets had to be corrected
for periods 7/07/1997 - 7/01/199
1-07/-2000 - 12/11/2000
The data reflected TOC Readings
meaning they were inverted.
The procedure used to correct the data is
((data - Ref level)(-1)) + Ref level
PH

data set 1-07-2000 → +9.098
~~+2.96~~
~~corrected +6.1360 Ft~~
data set 7-07 1997 corrected ~~+3.212 ft~~
→ +6.1360

MCWB - 7.4 A
data set 07-07-97 → 04-09-99 toc reading had to
be converted to surface ((data - RL)(-1)) + RL)

MCWB 55b
data sets 7-4-97 to 1-4 2000 represent toc levels
Need to correct by ((data - RL)(-1)) + RL
data set 1-5-00 → 11-27-2000 offset 4.356999

MCWB - 6.5 C
data set 2 offset -3.082999
data set 3 off set by pressure head
data set 1 left as is

March 14 - 2000

TW-3	6595.31	
LADP3-3	6756.7	mp 32.5
LAOI 1.1	6834.80	
LAOC	7049.98 ft	
LAO-1	6836.24 ft	
LAO.7	6904.0	

TW-3
Removed minitroll beta tester
no data recovered
SN / 0188 SN 3664 installed
WL - 784.49

LADP-3

March 16
LAO-1

WL TOC 6.06
Elevation 6836.24
MP = 13.25

6836.24
+ 1.125
6837.365
- 6.06
6831.305

PH = 19.674

Reference 1
= 6836.24
+ 13.25
6849.59
- 1.125
6848.465

Tape @ toc

Test scheduled for 3-17-2001 12:01 AM
SN 3664

March 16, 2004
LAO I - 1.1I
WL 292.66
Elevation 6834.80

mp @ 2.6 Ft

~~3344 mp~~ SN 3644

Ref Level = 6834.80
+ 2.6
6837.40
- 292.66
6544.74

pH - 20.568
change
6543.223
mp = 13

LAO 6
WL - 3.85 7049.98 Ft Elevation
mp - 12

7050.98
- 3.85 SN 3200
RL = 7047.13
pH = 9.484 Ft
Battery 2.6 ✓

LAO - 0.7
WL - 12.24 1.77
Elevation 6904.0 mp 2.17
SN 00 3628
2.5 ✓

6904.0
2.17
6906.17
- 12.24
6893.93

pH = 12.452 Ft

6904.0
12.452
6891.548

DT-5A 7144.0 Ft
DT-10 7020 Ft
DT-9 6935

mp

~~DT-5A~~

DT-9 March 20, 2001
Elevation 6935 WL - 1018.55
mp = 9"

6935 $\frac{9}{12}$ .75

6935.75
1018.55
5817.20

pH = ~~21.752~~
21.752

Subtract correct reference level

SN 3202

March 27, 2001

DT-10 Elevation 7020 Ft
old Reflevel 5919.718 Head 22.473

23.028
- 22.473
.555

pH = 23.028

Ref level = 5919.718
+ .555
5920.263

SN 3344

Start date
April 5 2001 pH = 23.078

7020.000
5920.263
1099.737

April 9, ~~2000~~ 2001

1. Check transducers going in R-12
2. Call David Frank about R-25
   662-1362

R-12

Lorrenzo and I attempted to install transducers into well

Retrieval Feb 28 2001

Probes	SN	Pi	Po	MDL 2690
1	2627	11.81	~~31.79~~	31.51
2	2626	11.82	~~48.81~~	48.55
3	2196	55.5 ~~13~~	~~15.25~~	15.15

Test started April 10, 2000 probe 3 sat probes 1 and 2 did not
Charged battery in MDI Plus car battery.

Previous	Port	PO
	1A	31.79
	2A	48.81
	3A	15.25

April to ~~Sept~~ 2001

DT-10 Data
Data Set
June 19, 1993 - Sept 21 1994 offset +
Feb 26, 2000 - March 20, 2001 offset +

18-BG-1	west	casa	1	1000 meters
18-BG-4	west	casa	2	no cap on well
18-MW-8	North East	corner	casa 2	NO tool needed
18 MW 7	South side	Casa 1		need tool
18-MW-12	in casa	gate		need tool 1

Kathleen Trujillo

April 12, 2001

G-3

WL - 391.05 SN 3588

Elevation 6139.00 mp 2.25

Ref Elevation 5800.20 w 2 Sqn

pH = 190.780

April 17, 2001

TW-3 PXD 261 100 psi

WL 785.23 SN 7294

Linearity .190

Scale 99.141

Elevation = 6595.31 off set .018

mp = 1.73

ref level = 6595.31

1.73

6597.04

- 785.23

5811.81

Hermit 3000 100% 10.6 V tape at yellow tarry

pH = 19.132

2.67

19.6

April 20, 2001

OT-59

WL - 1185.84 Elevt + stickup 7144.63

Ref : 59 58.79

SN ~~0.3304~~ pH 28.782

(was not working)

[we changed it out & did not write in new SN]

POI-4

ground ele = 6372.29

MP ele = 6375.77 ft (use this)

(-)

WL = 161.46 Top of PVC SN 3234

Ref Level = 6214.31

pH. 17.97u

April 23, 2001
11:00
CDV - R - 15

First Rec Thurs March 01 11:25:27
Last Rec Mon Apr 23 09:01:00

memory used 3.0%

File CDV - R 15
2468 records no error
Stop data logging
at 11:03

59

5-29-01
R-7 Remove for sampling

Data First Recording Feb 28 14:05 11
LAST Recording May 29 03 :02:00
No ALARMS

Memory used 4.0%
Records Read # 2874 No ERRORS

Probe 1 Ser 02591 P0 P1
02592 11.86 11.64
11.82 11.80
02593 19.45 54.49
Left Battery at well site and Power cables put MDL into Sleep

5-30-01
MCWB-5 3264 Battery 95%
Data points
1549
REFERENCE Level - 6849.170 ft
PH = 7.735 ft
Level 6846.720
pH after cable change 7.765 ft
Reference level = 7.
Downloaded data

~~5 30 01~~

~~Tw-8~~

June 5. 01

~~R-25~~

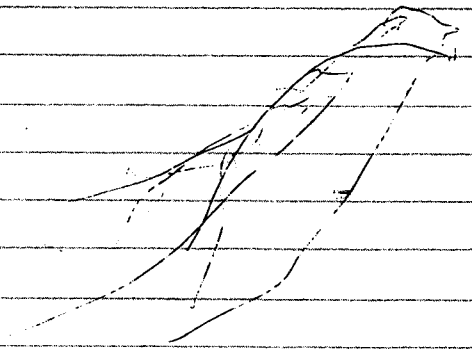
~~Probe 9 PI PO~~

June 7 2001

R-25

	~~Probe 9~~	PI	PO	
168.28	Probe 9	167.89	180.04	drifting up
	Probe 8	155.33	198.97	
	Probe 7	173.19	132.28	bad data
	Probe 6	14.90	53.44	
168.43	Probe 5	11.85	20.78	
168.31	Probe 4	11.80	20.75	
	Probe 3	11.72	11.62	unaveraged unplotted
	Probe 2	11.69	67.22	
	Probe 1	11.62	25.54	

Changed battery probe 9 bad data



R-9, 6/8/01
memory used 3%
3/1/01 2:29:08 pm 1st Recording
3/2/01 6/8/01 6:01 a.m. Last Recording
Total Records 2387
No alarms or errors reported

		P.O. (psi)	P.I. (psi)	temp
Probe 2	2599	23.02	28.73	12.9°C
Probe 1	2594	37.65	11.91	11.02 °C

R-12 6/8/01
12/4/00 1134 am 1st Record
6/8/01 320 am. Last Record
8757 Records
Memory used 14%

Probe #	P.O. (psi)	P.I. (psi)	Temp
3	2196	15.07	55.46	23.66 °C
2	2626	48.63	11.99	19.28 °C
1	2627	31.59	11.94	18.79 °C

June 11, 2001

MCWB-5.5 B Serial # 3274

Battery 100%

upgraded Firmware 2.02 - 2.08

Reference level 6823.790 ft

pH = 6.116 6826.530 elevation water level

11-28-2000 - 06-11-2001 1563 data points

Extracted data to c:\wirisitu\Data1\SN03274

Stopped test at 8:05 am standard time

to replace teflon cable.

pH = 5.920 Ft after cable change

6.116
- 5.920
0.196

Ref Level = 6823.530
+ .196
6823.726 New Reference

started test 12:01 pm

MCWB-5.5A Serial # 3348

Battery 100%.

upgraded Firmware 2.08 99% free memory Ref level

water level 6828.732 pH 5.051 Ft 6825.310

11-27 2000 - June 11, 2001 1563 data points

Extracted data to SN 003348 1min ahead of pc

pH = 5.119

5.051
- 5.119
- .068

New Reference level = ~~6825.310~~
6828.732
- .068
~~6825.242~~

to keep same water level

MCWB-6.2A SN 3318

replaced poly cable

100%. Running upgraded Firmware to 2.08

water level = 6811.703 Ft Ref level 6807.840

pH = 9.536 Ft

11-29-2000 - June 11, 2001 1548 points

New Ref level 6811.703 pH = 10.101 Ft

test Start 12:01

June 11, 2001
MCWB - 6.5 C Ser # 3328
100% Remaining 99% Free
Ref level 6798.270 Ft
water level 6800.855 pH = 5.799 Ft
11-29-2000 - June 11, 2001 upgraded version 2.08
Could not place cable all the way to the bottom
Cable was 5 Ft short from in-situ
pH = 3.866 Ft
Start time 12:01

MCWB 6.5 D
No trans
dnsen

MCWB - 6.5 E Ser # 3256

Ref level 6800.760 Ft pH 9.152 Ft
Water level ~~6810.101~~
6810.101
11-29-2000 - June 11, 2001 1548 points
Extracted data replaced cable
Upgraded Firmware
New pH = 9.652 ref level = 6810.101
Started 12:01

TSWB - 4 Ser # 3439
Ref level 6815.100 water level 6815.274 pH = .129 Ft
up
12-12-2000 - 6-11-2001 452 points
New Ref level 6815.274 pH = .123
started 12:01 upgraded Firmware
replaced teflon cable

June 11 2001
Two-1 SN 3566 100 psi
extracted data 1389 points
stopped test to get update ver → 2.08
12-20-2000 June 11-2001
Started 3:61 poly cable

Tw-1A SN -132
Battery dead Extract data
Jan 27 00 June 6-2001

June 13, 2001
LAO-1

came to replace minitroll with 30 psi
installed Battery pack
Down loaded data stopped test
updated Firmware.
Ref level = 6831.305 pit = 17.165 Ft
water level 6828.800

Set new minitroll ser # 3222
pit 17.186 Reference level 6828.800

Removed 3664 100 psi
Saved under win-situ\data\SN03664
708 data points 3-17 2001 - June 13, 2001
Start time 12:01 pm June 13, 2001

LAOF-1.1
Came to replace minitroll with 30psi
ser# 3644 was removed 100 psi
pit = 8.899 Ft water level 6544.699
Ref level
Saved file to
win-situ\Data\ ser # 03644
3-17-2001 - June 13-2001
Ref level 6544.740 Ft
New minitrol serial # 3354
pit = 20.887 Ref level = 6544.699
Started 12:01 June 13 uploaded Firmware

Jul-13-01

Tw-2 June 14, 2001

~~[illegible]~~ 5892.300 SN 3422

Reference level 5 water level 5842.816

pH = 26.714 ft

Did not place Teflon Cable in well. Max needs work done to well

Still need to install

6647.65
5842.816

June 18, 2001

Tw-1A SN-132 Removed

pH = 38.83 Ft water level 6191.738 Ft

Ref level 6197.030

Downloaded to winsitu\DATA manxxx\Data\SN132

Stopped test 9:02:42

Installed SN 3644 100 psi

Reference level ~~6197.0~~ 6191.738 Ft

New batteries June 18, 2001

pH = 41.068 Ft test started 12:01

Tw-2A SN-6534 30 psi removed

pH = 7.276 Ft

water level = 6534.392

ref level 6534.410 Ft

12-19-2000 - June 18-2001

saved file to C\win-situ\Data\SN03278

Extracted data stopped test

installed SN 3664 100 psi

Reference level 6534.92 pH 7.102 Ft

June 25- 2001 Install

R - 9i Po Pi

Probe 1 SN 2594 23.03 28.54

Probe 2 SN 2599 37.51 11.85

Did not recharg battery

started test 10:54 am sawings time

R - 12 Cleared memory

Probe 1 2627 Pi 11.70 Po 31.64

Probe 2 2824 11.94 48.66

Probe 3 2196 55.17 15.16

June 28

TW-1 SN 3566 100 psi

= WL = 5864.760 pH 60.475

Ref level = 5864.760 pH - 76.592 Ft

Start test 12:01 pm

Blue fl 33.194

SHB3 SN 3268 30 psi

Ref level 6947.147

water level 6946.874 pH = 20.280

Stopped test 11:30

Extracted data

1516 data points

12-21-2000

June 28, 2001

upgraded firmware

installed teflon 3268

pH = 27.334 Ref level 6946.874

start of test 15:9

Tw-8 June 29-0001

WL- 998.15 6877.62 Elevation

Ref level

SN-3280 30 psi mp = .65

6877.62 PH = 14.4 ft

+ .65

6878.27

- 998.15

Ref level = 5880.12

July 07-2001

DT-9 SN

Added external Batter

Stop test and calibrated upgraded version

water level 5817.~~200~~ 394 pH- 21.948

downloaded data to win-situ\DATA\SN3280

Started test 12:01

DT- 10

Stopped Test

Downloaded data

Upgraded version

restarted 12:01

July-~~18~~ 2001

MicroB-6.5 D SN 179 ← good

Replaced minitroll Feb & 2000 - July-8-2001

pH - ~~dry~~ dry Ref level 6807.380 Water level dry

pH dry Ref level 6807.380 SN 3248

saved to win situ Bataman~11 Data SN 179

started 5

68

70%
9.92 v
20023
LTM 3100 seed

mcwb 7B
Saved two files
mcwb 7B A c:\winsitu\data 7-3-99 - 12-3
mcwb 7B B 1-7-00 12-31-00
installed SN 3246
wL - 46.76 Elevation mp 1.79
.124

2.37 - .55 top of PVC PH - 6.514 Ft
2.37 6832.45 Elevation 6832.45
.57 + 1.78 6834.23
1.78 6834.23 - 41.76 Ref level =
6792.47 6792.345
.124
SN ~~5218~~ 3245

mcwb - 7A step test replaced
upgrade Firm ware
cable to teflon 12-12-2000 - July 10, 2001
saved data to \winsitu\Data\SN 3218
local reference 6790.550 Ft
wL - 6792.405 PH - 9.268 Ft
PH - 11.423 after reinstall
start test 12:01 Kept same
transducer

July 11 - 2001

mcwb 7.2 well sentinal 3000 (3k00 43.
Battery 35%,
time 9:16:06
downloaded c:\situ com\mcwb72a pc 9:36:55
ref level 6756.240 test begun 7-03-99 00:01
converted file to ascii mcwb72as, ~~txt~~ dat
last data point 7/11/01 9:01 hat
WL - 66.78 6821.19 6755.385
6818.86 + - 66.78
+ 2.33 6756.41 Ref level = 6756.41
6821.19 SN 3304 installed
PH = 3.459 Ft

69

July 11, 2001
mcwb 7.4A SN 3372
replace teflon and upgrade to 3.0 Firmware

WL- 6791.460 pH 27.530 Ref level 6767.600
stopped test restarted

Start 12-12-200 saved to \win-situ\data\ SN 3372
pH = 27.737 Ref level = 6791.460
5 start test 12:01 PM
updated to 3.0

5 mcwb - 7.4B SN 32778

WL - 52.18 mp = 2.4 Elevation = 6813.07
td = 70

Ref level = 6813.07 = 6815.47
+ 2.40 - 52.18
6815.47 6763.29

upgraded to 3.0 Firm ware
test begun 12:01
pH = 19.154 Ft

mcwb - 7.7A > SN-194

43 Start Jan 7 2000 12:01 AM 4413 data points
saved to G:\winsitu\Dataman xxx\Data\SN 194 2000 Jan
dry Reference 6738.520 Ft

installed SN - 3294 extra 30
pH = .224 reference 6738.320
(Dry)

July 11, 2001 SN-193

MW B - 7.7 B SN 193

Ref level 6741.380 ~~Ref level~~

H 10.837 Ft 10.837

Feb 8 2000 Start date

Saved data to C:\Winsitu\Data manxxx\ Data

SN 193

New Ref level 6741.375 Feb 08

SN-3210 installed Start 15:01

pH =

July 12, 2001

Tw-2

Ref level = old Ref 5842.300 @ 26.714 pH

decimal

next day pressure head 21.048 Ft after lowering in new teflon cable

26.714

- 21.048

5.666

water level was 5842.816

Jan 14 wl 5842.893

pH - 21.392

- 21.048

- .344

5842.816

- .344

5842.472 = Ref level

July 17, 2001
CDV - R-15
mem used 2%
Stopped fst 1:14 pm
CPVR159.wd2
Records 1752 no errors

May 22, 2001 End of data

July 18, 2001
R-7
Downloaded data
mem used .060 ERROR 000
First Rec Feb 28 14 05
Last Rec July 18 08 28 : 28
Down loaded to path R7A.WD2
Records 4255

Tw-8
c:\winsitu\data\
SN 03259

		Po	Pi
Probe 1	~~SN 02589~~ 02591	13.17	11.72
Probe 2	02592	11.86	11.90
Prob 3	02593	19.45	54.27

July 20 2001
Tw-4 install SN 2672 30 psi
WL = 1184.06 Elevation = 7244.56 mp = 7.1

Ref level = 7244.56 pi = 19.202 ft
+ 1.4 13.95
7245.96 237.52
- 1184.06
6071.90
- 2.22
WL = 6069.680 6069.68 Ref level

1200
- 23.72
1176.28

July 23, 2001
LADP-3
WL = 322.14 Toc Elevation 6756.7 mp = 2.3
installed SN 3284 pH = 6.651 Ft
WL = 6432.860

6756.7
+ 2.3
- 322.14
6436.86

Aug 8 ~~2001~~ 2001
~~Probes~~ R-25 Battery dead @
PO 11.25 v
Probe 9 power Failure
memory used 3%
July 5, dead battery
Down loaded File

Prev Po		PO	Pi	
25.54	Probe 1	25.46	11.70	C:\mbg32\Data\ R25A.wa2
67.22	Probe 2	67.09	11.75	Received 2592 0 erro
11.62	Probe 3	11.60	11.73	
22.75	probe 4	23.27	11.85	
20.78	probe 5	20.76	~~[illegible]~~ ← 11.86	~~[illegible]~~
53.49	Probe 6	53.36	11.94	
132.28	Probe 7	76.26	83.10	← check
198.97	Probe 8	199.00	165.10	
180.04	Probe 9	189.28	174.68	

Steps field check

Aug 14, 2001

		80	P1
27	2591	13.18	11.74
	2592	11.87	11.89
Probe 3	2593	19.45	53.90

charged battery

DATE, level (data) well name.

August 17, 2001

~~Sampling~~

Well level testing. EPA

- 9:30 start time approx

well name

MCWB4 - NOT checked Black Widows infestation

MCWB5 - level = 29.48

MCO-5.1A - NOT FOUND

MCWB 5.5B level: 35.36

MCWB 5.5A Level = 35.06

MCO-6B level: 39.85

MCO-6A key?

MCO-6.5A NOT FOUND

MCO 6.6B

MCWB6.5C ~~43~~ level = 43.80

MCWB6.6 level = 50.30 DRY (> 11:30 am

MCWB7B level

MCWB 7A level

Gwoby3
HG 9:01

0817

* - WORK AROUND CABLE (TRANSDUCER): (BLUG CABLE)

Aug 24, 2001

R-28		Pi	Po
Probe 00	2688	11.27	
Probe 1	2595	11.75	25.40
Probe 2	2600	11.72	67.04
✓ Probe 3	2631	11.73	11.62
Probe 4	2630	11.84	23.14
Probe 5	2629	11.84	20.20
Probe 6	2628	11.94	53.44
Probe 7	2539	83.10	126.13
Probe 8	2475	165.53	196.90
Probe 9	2474	178.12	185.81

Start time 2:01 for 1 hour

Aug 29, 2001

R-31		Po Pi	
Probe 00	02294	1	Zone 0
Probe 01	02497	11.84/11.84	Zone 1
Probe 02	02496	16.00/11.89	2
Probe 03	02495	43.01/12.05	3
probe 04	02199	133.00/40.61	4
probe 05	02197	222.03/118.90	5

Sept 5, 2001

Neal Lorenzo
by hand
R-9;

	SN	Po	Pi
Probe 0	2691	11.74	
Probe 1	2594	37.15	11.90
Probe 2	2599	23.07	28.57

Download File R912.wdz
Records 4130
First Record Thursday March 01 2:29:08
Last Record Sept 05 04:58:47
Memory used 6.0%

Sept 21, 2001

		Po
probe 1	11.91	37.04
probe 2	28.07	23.04

start time 1:01

Oct 5, 2001
CDV - R-15
First Record, A
Aug 13, 9:21
LAST Recording OCT 05, 2001
No ERROR
Total Records 3408
Memory used 5.0%
Down loaded CIVRIS 2.wd2 in data
Directory

OCT 10, 2001
Installation R - 31

Probe		Cable		P1	PO
0	22.54				
1		475.0	0 - 1	11.84	11.83
2		88.7	1 - 2	11.84	16.00
3		127.75	2A - 3A	11.97	70.80
4		160.66	3A - 4A	22.92	141.50
5		180.41	4A - 5A	100.72	222.62

OCT 19, 2001 CDV - R-15-3

		PI	PO
94		11.60	11.60
97		11.80	11.80
98	Probe 3	11.88	16.85
0	Probe 4	22.02	60.38
SN 2590	Probe 5	147.27	170.51

OCT - 19 - 2001
SHB-3 SN 3268 Removed for Sampling
Data saved to c:\winsitu\data\SN 03268\
6-28-01 to 10-19-2001 904 Samples
defined Ref = 6946.874 PH = 27.294
6

53.50

SH B-3 6946.874 WL
6946.9

OCT - 30
LADP - 3 Removed By Max?
EPA The mimitroll did not work
Could not download data need to
send to in-situ.

November 14, 2001
R-7 Records 2917
1st Augis, 2001 10:21 wed Nov 14 @ 9:01
Saved R72

Probe		PO	PI	SN
	1	13.17	11.65	
	2	11.57	11.90	
	3	19.43	53.79	2593

Dec 5 2001
R-7 Install

Probe	PO	PI	SN	Length
1	13.12	11.41		410
2	11.89	11.90	2592	367.9
3	19.36	53.52	2593	170.6

Start time 15:01

Dec 17, 2001

R-5 Install First time

	SN	Psi in	out	Cable	
Probe 1	2635	11.76	11.76	359.5	0 1
Probe 2	2634 r250	11.77	31.65	54.4	1-
Probe 3	2633 r250	11.90	11.90	311.2	2-
Probe 4	2624 r250 psi	79.35	76.41	165.8	3-4

Probes 2ft above port

Started logging 15:01

5 17.1
2 29.39
1 11.8

Feb 11, 2001

R-25 Po Pi File R-25AB

Probe 1 1 June 5, 2001

2 emergency feb 01

3 break out Power failure

4 33 ohms between pinard

5 cable

6

7

2002?

8

9

Feb 4, 2001

CDV - R-15 -3

Probe	Po	Pi
1	11.55	11.55
2	11.76	11.76
3	18.80	11.86
4	60.33	34.65
5	170.02	159.87

New charged battery cleared data

Feb 15 02

Start Aug 15, Feb 15 4 errors

mem used 1.8 Records 5399

file 17F.wd2

SN	probe	Pout	Pin		Length
2591	1	13.08	11.78	0-1	910
2592	2	11.82	11.92	1-2	367.8
2593	3	19.24	53.57	2-3	170.6

March 1, 2002
R-7 Install bought new battery

Probe	Po	Pi
25911	13.05	11.43
2592	11.82	11.59
2593	19.30	52.90

03-20-2002

G-3 Elevation 6139.00 WL - 341.05

WL = 395.69 Ref level

April 3 2002

~~LAO 0.7~~

LAO C Ref level 7047.130

pH = 12.093 ft 7049.919 ft

Downloaded to C:\winsitu\DATA\SN03200.
03-17 000100 LAO-C.bin

Drop of ~~1/2~~ foot April 2 ?

WL = 4.52 MP .85

Elevation 7049.98 ft

pH = 11.866 ft

7049.98 ft - 12.273 + 1

Ref level = 7038.707

~~7049.98~~ 7046.42

Ref level = ~~7045.42~~ 7046.42

7047.130 pH = 9.484 2.367

Ref level = 7049.497

04-03-02

LAO0.7 SN 3628

saved to C:\win-site\Data\

old ref 6893.930

WL = 6898.930 ft pH = 14.089 ft

old pH 12.52

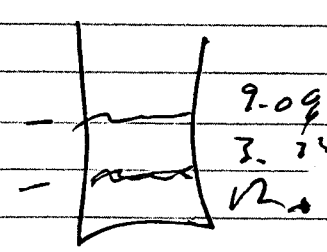
Elevation 6904.0 ft New pH 9.089 ft

WATER LEVEL - 15.87 ft

~~MP - 2.17~~

6890.36

New ref. level - 6890.36



4-03-2002 old Ref level 6828.8 Ft

LAO-1 SN 3222

WL - 6811.799 pH .192 DRY

4-17-2002

LAOP-3 install SN 3254

Elevation 6756.7 . rp = 2.3

6756.7

+ 2.3

0

pH = 3.277 Ft

Cable length 19.9

350.

· 19.9

= 330.1

WL = 330.1

- 3.277

326.823

Ref level = 6756.7

+ 2.3

- 326.823

6432.17+ Ft

June 4, 2002

R-19 First install 100 psi

	in	out	
port 1	11.65	11.72	no water
port 2	11.71	16.10	
port 3	12.03	17.69	
port 4	11.98	110.21	
port 5	~~56.61~~ 55.20	183.79	
port 6	118.69	242.6	
port 7	163.89	286.34	
port 8			

R-19 Install June 4-2002

	probe SN	Port	Pi	Po	Length
1	3025		11.78	11.71	870.Pt
2	3022		16.24	16.78	65.2
3	3020			22.69	292.9
4	2585		11.94	110.19	211.3
5	2518		57.39	183.85	173.3
6	2520		119.27	242.82	144.0
7	2206		164.05	286.26	104.6

June 19

WL 414.6 Elevation 6139.00

MP = 2.25

Ref Level = 5726.65

PK = 79360

July 2, 2002

Well: MCWB-5

Data collected by Neal Tapia on 7/2/02

Serial#: 3264

T - 46.05°F
H_2O level - 868.39'
pH - .372' (dry)

(started) Test 5/31/2001, 3179 data points

Saved to file S/N03264 Win Site/ data

Upgraded firmware

Test well 8

S/N: 3280 (filed saved as SN)
H_2O T - 69.71°F
H_2O level - ~~5893.~~ 5893.444'
PH - 13.248'

Test started 6/29/2001 2943 data points collected

upgraded firmware

Well: LAO-C (filed saved as SN)

SN: 3200
H_2O T: 46.4°F
H_2O level: 7051.184'
PH: 13.538'

Test started 4/3/02 719 data points collected

Upgraded firmware

88

July 2, 2002

Test Well 2A

(filed saved as SN)

SN: 3664
H_2O T: 52.661°F
H_2O level: 6541.477'
PH: 6.6'

Test started 6/18/01 3031 data points

upgraded firmware

Test Well 2

SN: 3422
H_2O T: 92.88°F
H_2O level: 5841.520'
PH: 20.44'
H_2O elev: 5841.520'

Test started 7/12/2001 2840 data points

upgraded firmware

Test well 1 *

SN: 3566 (file saved as SN)
H_2O T: 55.98°F
H_2O level: 5924.701'
PH: 60.430'

Test started 6/28/2001 2952 data points

upgraded firmware

* needs duct tape to cover up well

July 2, 2002

Test Well: 1A

SN: 3644
H_2O T: 52.09 °F
H_2O level: 6220.345'
PH: 28.391'

Test started 6/18/2001 3032 data points

upgraded firmware

Data collected by: N. Tapia, L. Clendchen, A. Bissell on 7/3/02

July ~~A~~ 3, 2002

MCWB 5.5B
SN 3274
Temp 48.816 F
Water Level 6820.722 Ft DRY
June 11-01-01 3095 data samples
upgrading

MCWB-5.5A
SN-3348
H_2O T: 47.133 °F
H_2O level: 6823.538'
PH dry

Test started: 7/11/01 3095 data samples

upgraded firmware

MCWB-6.2A
SN-3318
H_2O T 46.52°F
H_2O level-6801.646'
PH-dry
upgraded firmware Test started 7/11/01 3096 data points

July 3, 2002

MCWB-6.5D*

*needs new battery pack
SN 3248
H_2O T: 48.136°F
H_2O level: 6807.326'
PH: dry
test started on 7/10/01 2865 data points
upgraded firmware

MCWB-6.5B

SN 3256
H_2O T: 48.239°F
H_2O level: 6810.101 ft
PH: Dry
test started on 6/11/01 3096 data points
upgraded firmware

TSWB-6

SN 3434
H_2O T: 49.181°F
H_2O level: 6815.274 ft
PH:
test started on ~~14~~ 6/11/01 3096 data points
upgraded firmware

MCWB-6.5D

SN: 3328
H_2O T: 47.598°F
H_2O level: 6800.193'
PH: dry ~~dry~~
test started on 6/11/01 3095 data points
upgraded firmware

July 8, 2002 Data collected by: N. Tapia, L. Clendenen

MCWB-7B*

*battery pack needed (really slow)

SN 3246

H_2O T: 48.14°F

H_2O level: 6789.93'

PH: dry

test started on 6/11/01 2897 data points

upgraded firmware

MCWB-7A

SN-3218

H_2O T: 47.644°F

H_2O level: 6785.277' PH:

test started on: 7/10/01 2905 data points

upgraded firmware

MCWB-7.2 (running slow)

SN-3304

H_2O T: 48.51°F

H_2O level: 6756.032'

PH: 3.077 ft

test started on: 7/11/01 2897 data points

upgraded firmware

MCWB-7.4B

SN-3278

H_2OT -48.638°F

H_2O level- 6758.504'

PH: 14.34'

test started on: 7/11/01 2897 data points

~~upgraded firmware~~

92

July 22, 2002
R - 25

probe	PO	Pi
1		
2		
3		
4		
5		
6		
7		
8		

Data

Power Failure

Feb 22 - ?
R25to2 download

R - 9i | file - R9i 7 1
7/24/02 Emu R, NERI T, LETA C
1.50 pm - 11,453 - TOTAL DATA POINTS

PROBE	P_i	P_f
1 - 2594	35.15	11.93
2 - 2599	32.74	28.37

July 26 2002

MCOBT - 4.4

pH 8 1/2 1/2

cable length = 530 Ft

Probe length 10 1/2 inches

1.51 psi = 3.499201

Elevation = 6779.2 Ft

$\frac{17}{2}$ 8 $\frac{1}{2}$

$\frac{1/2}{\frac{12}{1}}$

$\frac{1}{12}$ $\frac{1}{2}$ $\frac{1}{24}$

~~3 7/8~~

2 8/8
- 2 7/8

36
- 3 3/8

35 8/8

32 5/8

.625
8) 5.00
48
20
16
4

mp = 32 5/8

mp = 32.625 inches = 2.718 Ft

6779.2
+ 2.718
6781.91875 Ft

530 Ft
-
.0416

530.
- 8.0416
521.9584

WL = 521.9584

6781.918
- 521.958
Ref = 6259.96

Aug 20, 2002

R-19 Removal: Neal Tapia, Smc Rieburn

	SN	Po	Pi
probe 1			
Probe 2			
Probe 3			
Probe 4			
Probe 5			
probe 6			
probe 7	02206		

Did not work
2-weeks

Sept 3, 2002

R-25 testing
Ran for 1 week and power failure occurred
Mdl 2688
probe 2444 2196 250 psi
Scan 1:00 collect hourly
8/31/02 Stop logging
8/28/02 Start data
Weird data was collected

Sept 11

POI -4
Downloaded data and removed
downloaded to Ipaq
low battery

SN 3234
wl= 6212.059 pH=15.74 Ft
Test started 4-21-01

9/12/02 - CDV R-15-3

TRANSDUCER REMOVAL - Eric R, Greta H.

	P_i	P_o	SN
PROBE 1	11.59	11.61	2596
2	11.79	11.79	2597
3	14.88	14.50	2598
4	56.46	60.33	2589
5	181.76	169.83	2590

FILE - [illegible] / [illegible]

DOWNLOADED - CDVR152.WI2 = # 2407 (Rogers)

September 17, 02

DT-9

BV = 5.56 V cal 10-26-2003

WL = 5817.2 pH = 21.724

Start 7/9/04

points

Stopped test to reset date

was not on mountain standard time

Started new test

09/17/02

DT-10 3344 cal date 10-20-00

B = 7.08 Volts 5720 - 0.75 Ft

ph = 22.919 ft

Start 7/09/04 stopped to upgrade

and change date

3479 points restarted

DT - 5A SN-3370 cal date 10-20-00

BV = 6.75V WL = 5958.972

Start pH = 28.964

upgrade yes dates 7904

3479 points

started test date wrong

10-22-2002
POI-4
9-11-02 WL = 6212.069 mp = 3.5 ft =
Ground elevation = 6372.29
WL = 163.72
Installed new batteries reinstalled SN 3234

Ref level = 6372.29 Elevation
+ 3.5 mp
− 163.72 WL
6212.07 Ref level

Ph. 15.23

10-22-2002 LADP-3
WL = 6432.091 Stepped by to
down load ph = 3.193 ft
Correct WL

May 5, 2003
LAO-4
Removed cable and Probe. Minitroll
not working.

Research

Feb 23, 1998 G-3 Gr 6189.0 EL mp-2.0
WL 323.15 12 Moon
Ref level 5817.85

TW-2A - 2-8-98
Elevation top 6653.03 WL= 1175.51 RL=5575.52

TW-2 2-28-98
Ref level = 5856.03 93

TW-4 Elevation July 7, 1997 7246.33 WL= 1173.71
Ref level 6072.62 WL= 1173.71 1994 WL=1176.6

TW-5 March 21 1995 Ref level 5854.52 Ho.8

Westbay Instruments Inc.
A Schlumberger Company

MOSDAX Probe String Installation Field Record

Project: ESH Surveillance
Client:
Well No.: R-5
Location: Pueblo Canyon
By: DL, SP, JW, RK
Date: 10/29/03
1230-1235

Installation Data

1200 10/29/03

Port No.	Zone No.	Nom. Depth (m) ft	Collar Depth (m)	Cable No.	Cable Length (m)	Probe No.	Probe S/N	Prev. Press. Data (Po, psia)	Pi Inside MP (psia)	Po Outside MP (psia)
0	Atm.	0		~~0~~		0	2566	✓		
				0-1	N/A					
1A	1	N/A			↓	1	2635	11.69	11.63	11.69
				1-2						
2A	2	N/A			N/A	2	2634	31.12	11.69	31.11
				2-3						
3A	3	N/A			N/A	3	2633	11.88	11.75	11.88
				3-4						
4A	4	N/A			N/A	4	2624	76.15	76.73	76.16

Datalogging Settings

Schedule		MDL Settings	
Scan Rate:	~~00:01:00~~ 01:00:00	Power Save	off
Collect Rate:	~~00:03:00~~ 03:00:00	Beeper	on
Start time:	12:01:03 actual 13:16:xx	External Power?	yes 12V marine battery, no solar

Note: These transducers were turned on by S. Allen, D. Larsson, J. Walterscheid, & R. Koch. Transducers were previously installed - Details are unknown. [illegible] as a training exercise.

MOSDAX Probe String Retrieval Field Record

Project: ESH · Surveillance Well No.: R-5 By: S. Allen / J. Waltrsd

Client: Location: Date: 1/23/04

Installation Data

Port No.	Zone No.	Nom. Depth (ft)	Collar Depth (ft)	Cable No.	Cable Length (ft)	Probe No.	Probe S/N	Prev. Press. Data (Po,psia)	Pi Inside MP (psia)	Po Outside MP (psia)	
0	surface			0-1		0	2566		11.71	NA	
1A	1			1-2		1	2635	11.69	Shoe will not come in	11.77	
2A	2			2-3		2	2634	31.11	11.91	31.07	SI
				~~3-4~~							
3A	3			3-4		3	26~~36~~ 33 SA 1/23/04	11.88	11.94	11.88	SI
4A	4					4	2624	76.16	76.90	76.32	SI

5A
1/23/04

Datalogging Settings

Schedule		MDL Settings	
Scan Rate:	NA	Power Saver?	NA
Collect Rate:		Beeper?	
Start Time:		External Power?	

MOSDAX Probe String Install
Field Record

Borehole No.	R-7	By	Neal Tapia/ Eric Richsomer
Location	TA-16	Date	Aug 28, 2002

Installation Data

Port No.	Zone No.	Collar Depth (ft)	Cable No.	Cable Length (ft)	Probe No.	Probe S/N	Prev. Press. Data (Po,psia)	Pi Inside MP (psia)	Po Outside MP
0	0	0			0	2689			
			0-1	410.0					
1A	1				1	2591		11.71	~~[illegible]~~ 12.70
			1-2	367.8					
2A	2				2	2592		11.90	11.85
			2-3	170.6					
3A	3				3	2593		~~11.89~~ 53.01	~~12.21~~ ~~[illegible]~~ ~~[illegible]~~ 19.11

Notes

MOSDAX Probe String Retrieval Field Record

Project: Env. Surv.
Client: NA
Well No.: R-7
Location: LA Canyon
By: S. Allen, J. Walterschied
Date: 12/15/03

Installation Data

Port No.	Zone No.	Nom. Depth (ft)	Collar Depth (ft)	Cable No.	Cable Length (ft)	Probe No.	Probe S/N	Prev. Press. Data (Po,psia)	PI Inside MP (psia)	Po Outside MP (psia)
0										
1	1						2591		11.57	11.83
2	2						2592		11.84	11.83
3	3						2593		(*) 52.80	18.82
									in again	-69.34
	2. Data for Zone 3 is suspect.									

Datalogging Settings

Schedule		MDL Settings	
Scan Rate:		Power Saver?	
Collect Rate:		Beeper?	
Start Time:		External Power?	

MOSDAX Probe String Retrieval Field Record

Project:	WB777	Borehole No.:	R-9i	By:	Neal Tapia
Client:	LANL	Location:	LA Canyon	Date:	06/08/01

Installation Data

Port No.	Zone No.	Nom. Depth (ft)	Collar Depth (ft)	Cable No.	Cable Length (ft)	Probe No.	Probe S/N	Prev. Press. Data (Po, psia)	Pi Inside MP (psia)	Po Outside MP (psia)	
0	Atmos	0				0	2691				
				0 – 1A	?						
1A	Screen 1	198.80				1	2594		11.91	37.65	13.80
				1A – 2A	?						
2A	Screen 2	278.80				2	2599		28.73	23.02	20.03

Datalogging Settings

Schedule		MDL Settings	
Scan Rate:	1 h	Power Save	
Collect Rate:		Beeper	
Start time:		External Power?	

MOSDAX Probe String Retrieval Field Record

Project:	WB777	Borehole No.:	R-9i	By:	Neal Tapia
Client:	LANL	Location:	LA Canyon	Date:	06/08/01

Installation Data

Port No.	Zone No.	Nom. Depth (ft)	Collar Depth (ft)	Cable No.	Cable Length (ft)	Probe No.	Probe S/N	Prev. Press. Data (Po, psia)	Pi Inside MP (psia)	Po Outside MP (psia)
0	Atmos	0				0	2691			
				0 – 1A	?					
1A	Screen 1	198.80				1	2594		11.91	37.65
				1A – 2A	?					
2A	Screen 2	278.80				2	2599		28.73	23.02

Datalogging Settings

Schedule		MDL Settings	
Scan Rate:	1 h	Power Save	
Collect Rate:		Beeper	
Start time:		External Power?	

MOSDAX Probe String Install
Field Record

Project:	WB777	Borehole No.:	R-9i	By:	Neal Tapia / L Clendenen
Client:	LANL	Location:	LA Canyon	Date:	8/8/2002

Installation Data

Port No.	Zone No.	Nom. Depth (ft)	Collar Depth (ft)	Cable No.	Cable Length (ft)	Probe No.	Probe S/N	Prev. Press. Data (Po, psia)	Pi Inside MP (psia)	Po Outside MP (psia)
0	Atmos	0				0	2691			
				0 – 1A	?					
1A	Screen 1	198.80				1	2594		11.96	35.04
				1A – 2A	?					
2A	Screen 2	278.80				2	2599		28.25	22.72

Datalogging Settings

Schedule		MDL Settings	
Scan Rate:	1 h	Power Save	
Collect Rate:		Beeper	
Start time:		External Power?	

MOSDAX Probe String Retrieval Field Record

Project: _____ Well No.: R-9i By: JB RV

Client: _____ Location: LA Canyon Date: 2/3/04

Installation Data

Port No.	Zone No.	Nom. Depth (ft)	Collar Depth (ft)	Cable No.	Cable Length (ft)	Probe No.	Probe S/N	Prev. Press. Data (Po,psia)	Casing Pi Inside MP (psia)	Zone Po Outside MP (psia)
0	Atmos.	0		0-1A	?	2691	0			
1A	Screen 1	198.8		1A-2A	?	2594	1		11.67	13.68
2A	Screen 2	278.8		—		2599	2		17.57	20.01

Datalogging Settings

Schedule		MDL Settings	
Scan Rate:		Power Saver?	
Collect Rate:		Beeper?	
Start Time:		External Power?	

MOSDAX Probe String Installation Field Record

Project:	WB777	Borehole No.:	R-12	By:	DL/LM
Client:	Los Alamos National Lab	Location:		Date:	Dec 14, 2000

Installation Data

Port No.	Zone No.	Nom. Depth (ft)	Collar Depth (m)	Cable No.	Cable Length (ft	Probe No.	Probe S/N	Prev. Press. Data (Po, psia)	Pi Inside MP (psia)	Po Outside MP (psia)
0	Atmos	0				0	2690		11.68	---
				0–1A	490					
1A	Screen 1	468.1				1	2627		11.87	31.79
				1A-2A	38.9					
2A	Screen 2	507.0				2	2626		11.88	48.81
				2A-3A	303.8					
3A	Screen 3	810.8				3	2196		55.58	15.25

Datalogging Settings

Schedule		MDL Settings	
Scan Rate:		Power Save	
Collect Rate:		Beeper	
Start time:		External Power?	

MOSDAX Probe String Retrieval Field Record

Project:	WB777	Borehole No.:	R-12	By:	DL/LM
Client:	Los Alamos National Lab	Location:		Date:	Feb 28, 2001

Installation Data

Port No.	Zone No.	Nom. Depth (ft)	Collar Depth (m)	Cable No.	Cable Length (ft	Probe No.	Probe S/N	Prev. Press. Data (Dec/00) (Po, psia)	Pi Inside MP (psia)	Po Outside MP (psia)
0	Atmos	0				0	2690	11.68	11.56	---
				0–1A	490					
1A	Screen 1	468.1				1	2627	31.79	11.81	31.64
				1A-2A	38.9					
2A	Screen 2	507.0				2	2626	48.81	11.82	48.67
				2A-3A	303.8					
3A	Screen 3	810.8				3	2196	15.25	55.5	15.10

Datalogging Settings

Schedule		MDL Settings	
Scan Rate:		Power Save	
Collect Rate:		Beeper	
Start time:		External Power?	

MOSDAX Probe String Installation Field Record

Project:	WB777	Borehole No.:	R-12	By:	
Client:	Los Alamos National Lab	Location:		Date:	

Installation Data

Port No.	Zone No.	Nom. Depth (ft)	Collar Depth (m)	Cable No.	Cable Length (ft	Probe No.	Probe S/N	Prev. Press. Data (Po, psia)	Pi Inside MP (psia)	Po Outside MP (psia)
0	Atmos	0				0	2690	11.56		
				0–1A	490					
1A	Screen 1	468.1				1	2627	30.64 ~~11.61~~	11.78	~~12.11~~ 31.51
				1A-2A	38.9			48.67		
2A	Screen 2	507.0				2	2626	~~11.82~~	11.79	~~12.07~~ 48.55
				2A-3A	303.8					
3A	Screen 3	810.8				3	2196	~~15.10~~	55.3	15.15

Datalogging Settings

Schedule		MDL Settings	
Scan Rate:		Power Save	
Collect Rate:		Beeper	
Start time:		External Power?	

MOSDAX Probe String ~~Retrieval~~ Install Field Record

Project:	WB777	Borehole No.:	R-12	By:	Neal Tapia
Client:	Los Alamos National Lab	Location:		Date:	04/09/2001

Installation Data

Port No.	Zone No.	Nom. Depth (ft)	Collar Depth (ft)	Cable No.	Cable Length (ft)	Probe No.	Probe S/N	Prev. Press. Data (_____) (Po, psia)	Pi Inside MP (psia)	Po Outside MP (psia)
0	Atmos	0				0	2690			
				0–1A	490					
1A	Screen 1	468.1				1	2627	31.79	11.81	31.51
				1A-2A	38.9					
2A	Screen 2	507.0				2	2626	48.81	11.82	48.55
				2A-3A	303.8					
3A	Screen 3	810.8				3	2196	15.25	55.5	15.15

Datalogging Settings

Schedule		MDL Settings	
Scan Rate:	1 Hour	Power Save	
Collect Rate:	3 Hours	Beeper	
Start time:		External Power?	

Notes Battery internal For data logger was charged over night. 12 v Battery charged For 1 Hour by using battery cables and connecting to running truck

MOSDAX Probe String Retrieval Field Record

Project:	WB777	Borehole No.:	R-12	By:	Neal Tapia
Client:	Los Alamos National Lab	Location:		Date:	6-8-01

Installation Data

Port No.	Zone No.	Nom. Depth (ft)	Collar Depth (ft)	Cable No.	Cable Length (ft)	Probe No.	Probe S/N	Prev. Press. Data (_____) (Po, psia)	Pi Inside MP (psia)	Po Outside MP (psia)
0	Atmos	0				0	2690			
				0–1A	490					
1A	Screen 1	468.1				1	2627	31.51	55.46	15.07
				1A-2A	38.9					
2A	Screen 2	507.0				2	2626	48.55	11.99	48.63
				2A-3A	303.8					
3A	Screen 3	810.8				3	2196	15.15	55.46	15.07

Datalogging Settings

Schedule		MDL Settings	
Scan Rate:	1 hour	Power Save	y
Collect Rate:	3 hours	Beeper	y
Start time:		External Power?	y

MOSDAX Probe String Retrieval Field Record

Project:	WB777	Borehole No.:	R-12	By:	Neal + Lorentz
Client:	Los Alamos National Lab	Location:	R-12	Date:	Sept 5, 01

Installation Data

Port No.	Zone No.	Nom. Depth (ft)	Collar Depth (ft)	Cable No.	Cable Length (ft)	Probe No.	Probe S/N	Prev. Press. Data (_____) (Po, psia)	Pi Inside MP (psia)	Po Outside MP (psia)
0	Atmos	0				0	2690			11.70
				0–1A	490					
1A	Screen 1	468.1				1	2627		11.95	31.69
				1A-2A	38.9					
2A	Screen 2	507.0				2	2626		11.99	48.71
				2A-3A	303.8					
3A	Screen 3	810.8				3	2196		55.24	15.12

Datalogging Settings

Schedule		MDL Settings	
Scan Rate:		Power Save	
Collect Rate:		Beeper	
Start time:		External Power?	

First Recording June 26 9:38
Last Recording Sept 08 7:56
Memory Used 3.0%
Download R122.WD2 File name
Number of Records 2512

Brought Battery in for Recharge

MOSDAX Probe String Installation Field Record

Project:	WB777	Borehole No.:	R-12	By:	Neal Tapia
Client:	Los Alamos National Lab	Location:		Date:	9/21/2001

Installation Data

Port No.	Zone No.	Nom. Depth (ft)	Collar Depth (m)	Cable No.	Cable Length (ft	Probe No.	Probe S/N	Prev. Press. Data (Po, psia)	Pi Inside MP (psia)	Po Outside MP (psia)
0	Atmos	0				0	2690			
				0–1A	490					
1A	Screen 1	468.1				1	2627		11.92	31.63
				1A-2A	38.9					
2A	Screen 2	507.0				2	2626		11.99	48.67
				2A-3A	303.8				~~11.99~~	~~48~~
3A	Screen 3	810.8				3	2196		55.06	15.29

Datalogging Settings

Schedule		MDL Settings	
Scan Rate:	1:00	Power Save	yes
Collect Rate:	3:00	Beeper	yes
Start time:	12:01	External Power?	yes

MOSDAX Probe String Retrieval Field Record

Project:	WB777	Borehole No.:	R-12	By:	DL/LM
Client:	Los Alamos National Lab	Location:		Date:	~~Feb 28, 2001~~ 7/30/2002

Installation Data

Port No.	Zone No.	Nom. Depth (ft)	Collar Depth (m)	Cable No.	Cable Length (ft	Probe No.	Probe S/N	Prev. Press. Data (Dec/00) (Po, psia)	Pi Inside MP (psia)	Po Outside MP (psia)
0	Atmos	0				0	2690	11.68	11.56	---
				0–1A	490					
1A	Screen 1	468.1				1	2627	31.79	11.81	31.64
				1A-2A	38.9				11.95	30.62
2A	Screen 2	507.0				2	2626	48.81	11.82	48.67
				2A-3A	303.8				11.97	47.64
3A	Screen 3	810.8				3	2196	15.25	55.5	15.10

Datalogging Settings

Schedule		MDL Settings	
Scan Rate:		Power Save	
Collect Rate:		Beeper	
Start time:		External Power?	

test Started: 6/26/01 File name: R1202

Data Points: 12,521

memory used: 28%

shoe broken probe 3

Westbay Instruments Inc.
A Schlumberger Company

MOSDAX Probe String Installation Field Record

Project: WB777 Well No.: R14 By: DL
Client: LANL Location: Date: 21 JAN 2003

Installation Data

(NOV 25/02)

Port No.	Zone No.	Nom. Depth ~~(m)~~ (ft)	Collar Depth ~~(m)~~	Cable No.	Cable Length ~~(m)~~ (ft)	Probe No.	Probe S/N	Prev. Press. Data (Po, psia)	Pi Inside MP (psia)	Po Outside MP (psia)
0	ATMOS	0				0		11.45		
				0-1				23.49		
1	MP1A	1204.5				1		~~59.79~~		
				1-2						
2	MP2A	1288.5				2		59.79		
	NOTE: Pi = 94.23 - SO TAKE CARE WITH									
						DEPLOYING A 100 PSI XDUCER.				

Datalogging Settings

Schedule		MDL Settings	
Scan Rate:		Power Save	
Collect Rate:		Beeper	
Start time:		External Power?	

Los Alamos National Laboratory
Water Quality and Hydrology

MOSDAX Probe String Installation/Retrieval Field Form

Well Name	R-14	Personnel:	SA, CM, GH
Surface Elevation (ft)	7062.08	Date:	12/14/04

Check Operation: X Installation Data ___ Retrieval Data

Port No.	Zone No.	Port Depth (ft)	Collar Depth (ft)	Cable No.	Cable Length (ft)	Probe No.	Probe Serial No.	Prev. Pi (psia)	Prev. Po (psia)	Pi Inside MP (psia)	Po Outside MP (psia)	Comment
0	0	0	NA	NA	NA	0	3402	NA	NA	11.56	–	
1	1A	1204.5	1207	0-1	1235	1	3056	58.17	23.39	54.02	23.37	Prev. data from sampling
2	2A	1288.5	1291	1-2	84	2	3057	94.18	59.51	90.17	59.60	Prev. data from sampling

SA
12/14/04

Data Logging Settings

Schedule				MDL Settings	
Scan Rate:	00	30	00	Power Save:	
Collect Rate:	00	30	00	Beeper:	
Start Time:	10	01	00	External Power?	

Installation/Retrieval Notes:

MOSDAX Probe String Retrieval Field Record

Project:	WB777	Borehole No.:	CdV-R15	By:	Neal Tapia
Client:	LANL	Location:	TA-15	Date:	04/23/2001

Installation Data

Port No.	Zone No.	Nom. Depth (ft)	Collar Depth (ft)	Cable No.	Cable Length (ft)	Probe No.	Probe S/N	Prev. Press. Data (Po, psia)	Pi Inside MP (psia)	Po Outside MP (psia)
0	Atmos	0				0	2694			11.38
				0 – 1A	660.0					
1A	1	624.3				1	2596		11.63	11.52
				1A – 3B	355.0					
3B	3	979.3				2	2597		11.82	11.73
				3B – 4A	275.1					
4A	4	1254.4				3	2598		11.95	18.85
				4A– 5A	95.7					
5A	5	1350.1				4	2518		11.93	60.38
				5A –6A	290.0					
6A	6	1640.1				5	2520		123.73	171.15

Datalogging Settings

Schedule		MDL Settings	
Scan Rate:		Power Save	
Collect Rate:		Beeper	
Start time:		External Power?	

Notes: String was removed for Sampling
All componets were removed and installed stored at ER Drilling yard. Black Box and 12 v battery were left at well location.

First recording Thurs March 01, 11:25
Last recording Monday April 23, 09:01:00
memory used 3.0%.
stopped data logging 11:03
2468 records
no errors

12.11

F1. Arm out
F2 Shoe out
F3 Shoe in
F4 Arm in

MOSDAX Probe String Installation Field Record

Project:	WB777	Borehole No.:	CdV-R15	By:	Neal Tapia
Client:	LANL	Location:	TA-15	Date:	May 3, 2001

Installation Data

Port No.	Zone No.	Nom. Depth (ft)	Collar Depth (ft)	Cable No.	Cable Length (ft)	Probe No.	Probe S/N	Prev. Press. Data (Po, psia)	Pi Inside MP (psia)	Po Outside MP (psia)
0	Atmos	0				0	2694			
				0 – 1A	660.0					
1A	1	624.3				1	2596		11.49	11.53
				1A – 3B	355.0					
3B	3	979.3				2	2597		11.67	11.73
				3B – 4A	275.1					
4A	4	1254.4				3	2598		11.77	18.82
				4A– 5A	95.7					~~18.82~~
5A	5	1350.1				4	2518		11.81	60.37
				5A –6A	290.0					
6A	6	1640.1				5	2520		123.41	171.18

Datalogging Settings

Schedule		MDL Settings	
Scan Rate:	1 hour	Power Save	
Collect Rate:	3 hours	Beeper	
Start time:	12:34	External Power?	

Note: MDL charged over night 12V battery charged for 3 hours

MOSDAX Probe String Retrieval Field Record

Project:	WB777	Borehole No.:	CdV-R15	By:	Neal Tapia
Client:	LANL	Location:	TA-15	Date:	July 17 2001

Installation Data

Port No.	Zone No.	Nom. Depth (ft)	Collar Depth (ft)	Cable No.	Cable Length (ft)	Probe No.	Probe S/N	Prev. Press. Data (Po, psia)	Pi Inside MP (psia)	Po Outside MP (psia)
0	Atmos	0				0	2694			
				0 – 1A	660.0					
1A	1	624.3				1	2596			
				1A – 3B	355.0					
3B	3	979.3				2	2597			
				3B – 4A	275.1					
4A	4	1254.4				3	2598			
				4A– 5A	95.7					
5A	5	1350.1				4	2518			
				5A –6A	290.0					
6A	6	1640.1				5	2520		N/A	N/A
									see notes	

Datalogging Settings

Schedule		MDL Settings	
Scan Rate:		Power Save	
Collect Rate:		Beeper	
Start time:		External Power?	

Notes cable short. Last data point July 18, 2001 Dave Larsen took two probes need to re program MDL no pressure were taken. Emergency removal

MOSDAX Probe String Installation Field Record

Project:	WB777	Borehole No.:	CdV-R15	By:	Nec Taoka
Client:	LANL	Location:	TA-15	Date:	8-13-01

Installation Data

Port No.	Zone No.	Nom. Depth (ft)	Collar Depth (ft)	Cable No.	Cable Length (ft)	Probe No.	Probe S/N	Prev. Press. Data (Po, psia)	Pi Inside MP (psia)	Po Outside MP (psia)
0	Atmos	0				0	~~2694~~			
				0 – 1A	660.0		2684			
1A	1	624.3				1	2596	11.53	11.98	11.60
				1A – 3B	355.0					
3B	3	979.3				2	2597	11.73	11.98	11.78
				3B – 4A	275.1					
4A	4	1254.4				3	2598	18.82	11.98	18.83
				4A– 5A	95.7					
5A	5	1350.1				4	~~2518~~	60.37	11.95	60.37
				5A –6A	290.0		2589			
6A	6	1640.1				5	~~2520~~	2590	123.41	170.70
								171.18		

Datalogging Settings

Schedule		MDL Settings	
Scan Rate:	1 hr	Power Save	✓
Collect Rate:	3 hrs	Beeper	✓
Start time:	9:40:00	External Power?	yes

Battery charged.
No problems

MOSDAX Probe String Retrieval Field Record

Project:	WB777	Borehole No.:	CdV-R15	By:	Neal Tapia/ERTC
Client:	LANL	Location:	TA-15	Date:	1-11-2002

Installation Data

Port No.	Zone No.	Nom. Depth (ft)	Collar Depth (ft)	Cable No.	Cable Length (ft)	Probe No.	Probe S/N	Prev. Press. Data (Po, psia)	Pi Inside MP (psia)	Po Outside MP (psia)	
0	Atmos	0				0	2694				
				0 – 1A	660.0						
1A	1	624.3				1	2596		11.66	11.56	
				1A – 3B	355.0						
3B	3	979.3				2	2597		11.85	11.85	Perched
				3B – 4A	275.1						
4A	4	1254.4				3	2598		11.97	18.84	
				4A– 5A	95.7						
5A	5	1350.1				4	2589		34.89	60.37	– 100psi
				5A –6A	290.0						
6A	6	1640.1				5	2570		160.13	170.06	

Datalogging Settings

Schedule		MDL Settings	
Scan Rate:	1:00	Power Save	
Collect Rate:	3:00	Beeper	
Start time:	Aug 13, ~~[illegible]~~ 1-11-2002	External Power?	12 V Rechek

9 Errors

Data\CDCR15a.wd2

Data 7479

MOSDAX Probe String Retrieval Field Record

Project:	WB777	Borehole No.:	CdV-R15	By:	
Client:	LANL	Location:	TA-15	Date:	

Installation Data

Port No.	Zone No.	Nom. Depth (ft)	Collar Depth (ft)	Cable No.	Cable Length (ft)	Probe No.	Probe S/N	Prev. Press. Data (Po, psia)	Pi Inside MP (psia)	Po Outside MP (psia)
0	Atmos	0				0	~~2694~~	2524		
				0 – 1A	660.0		~~2694~~			
1A	1	624.3				1	2596	11.60	11.58	11.61
				1A – 3B	355.0					
3B	3	979.3				2	2597	11.78	11.78	11.79
				3B – 4A	275.1					
4A	4	1254.4				3	2598	18.83	11.88	18.86
				4A– 5A	95.7					
5A	5	1350.1				4	~~2518~~	60.37	11.68	60.40
				5A –6A	290.0		2589			
6A	6	1640.1				5	~~2520~~	170.70	123.34	170.30
							2590			

Datalogging Settings

Schedule		MDL Settings	
Scan Rate:		Power Save	
Collect Rate:		Beeper	
Start time:		External Power?	

MOSDAX Probe String Retrieval Field Record

Project:	WB777	Borehole No.:	CdV-R15 ~ 3	By:	Neal y Eric
Client:	LANL	Location:	TA-15	Date:	April 12, 2002

Installation Data

Port No.	Zone No.	Nom. Depth (ft)	Collar Depth (ft)	Cable No.	Cable Length (ft)	Probe No.	Probe S/N ~~2684~~	Prev. Press. Data (Po, psia)	Pi Inside MP (psia)	Po Outside MP (psia)
0	Atmos	0				0	~~2694~~			
				0 – 1A	660.0		2687			
1A	1	624.3				1	2596	11.55	11.61	11.54
				1A – 3B	355.0					
3B	3	979.3				2	2597	11.76	11.81	11.75
				3B – 4A	275.1					
4A	4	1254.4				3	2598	18.80	15.69	18.79
				4A– 5A	95.7					
5A	5	1350.1				4	25~~18~~ 89	60.33	57.24	60.32
				5A –6A	290.0					
6A	6	1640.1				5	252~~0~~ 90	170.02	182.50	169.90

Datalogging Settings

Schedule		MDL Settings	
Scan Rate:		Power Save	
Collect Rate:		Beeper	
Start time:		External Power?	

3212 Records

Download ~~CdV-R15~~

Data\CR015 1.WD2

MOSDAX Probe String Installation Field Record

Project:	WB777	Borehole No.:	CdV-R15 - 3	By:	Neal y Lorenzo
Client:	LANL	Location:	TA-15	Date:	April 25, 2002

Installation Data

Port No.	Zone No.	Nom. Depth (ft)	Collar Depth (ft)	Cable No.	Cable Length (ft)	Probe No.	Probe S/N	Prev. Press. Data (Po, psia)	Pi Inside MP (psia)	Po Outside MP (psia)
0	Atmos	0				0	~~2694~~ 2689			
				0 – 1A	660.0					
1A	1	624.3				1	2596	11.54		
				1A – 3B	355.0					
3B	3	979.3				2	2597	11.75		
				3B – 4A	275.1					
4A	4	1254.4				3	2598	18.79		
				4A– 5A	95.7					
5A	5	1350.1				4	25~~18~~ 89	60.32		
				5A –6A	290.0					
6A	6	1640.1				5	25~~20~~ 90	169.90		

Datalogging Settings

Schedule		MDL Settings	
Scan Rate:	1 hr	Power Save	yes
Collect Rate:	3 hr	Beeper	yes
Start time:	12:01	External Power?	12 v recharged

MOSDAX Probe String Installation Field Record

Project:	WB777	Borehole No.:	CdV-R15	By:	NEAL TODDA Eric KLEINSUMER
Client:	LANL	Location:	TA-15	Date:	7/24/02

Installation Data

Port No.	Zone No.	Nom. Depth (ft)	Collar Depth (ft)	Cable No.	Cable Length (ft)	Probe No.	Probe S/N	Prev. Press. Data (Po, psia)	Pi Inside MP (psia)	Po Outside MP (psia)
0	Atmos	0				0	2694			
				0 – 1A	660.0					
1A	1	624.3				1	2596		11.59	11.69
				1A – 3B	355.0					
3B	3	979.3				2	2597		11.77	11.89
				3B – 4A	275.1					
4A	4	1254.4				3	2598		15.86	14.90
				4A– 5A	95.7				~~11.77~~	~~11.89~~
5A	5	1350.1				4	2518		~~15.86~~	~~14.90~~
				5A –6A	290.0				60.29	56.56
6A	6	1640.1				5	2520	~~169.95~~	181.81	169.95

Datalogging Settings

Schedule		MDL Settings	
Scan Rate:		Power Save	
Collect Rate:		Beeper	
Start time:		External Power?	

MOSDAX Probe String Installation Field Record

Project: WB777 Well No.: CdV-R-15-3 By: JCW, AB

Client: LANL Location: TA-15 Date: May 16, 2003

Installation Data

Port No.	Zone No.	Nom. Depth (ft)	Collar Depth (ft)	Cable No.	Cable Length (ft)	Probe No.	Probe S/N	Prev. Press. Data (Po,psia)	Pi Inside MP (psia)	Po Outside MP (psia)
0	Atmos					0	2687			
				0-1A	660.0					
1A	1	624.3				1	2596	11.69	11.51	~~11.32~~ AB 7/16/03
				1A-3B	355.0					
3B	3	979.3				2	2597	11.89	11.76	11.73
				3B-4A	275.1					
4A	4	1254.4				3	2598	14.90	13.42	18.86
				4A-5A	95.7					
5A	5	1350.1				4	2589	56.56		60.19
				5A-6A	290.0					
6A	6	1640.1				5	2590	169.95		181.23

Datalogging Settings

Schedule		MDL Settings	
Scan Rate:		Power Saver?	
Collect Rate:		Beeper?	
Start Time:		External Power?	

MOSDAX Probe String Retrieval Field Record

Project: WB777 Well No.: CdV-R-15-3 By: JCW, AB
Client: LANL Location: TA-15 Date: 7/30/03

Installation Data

Port No.	Zone No.	Nom. Depth (ft)	Collar Depth (ft)	Cable No.	Cable Length (ft)	Probe No.	Probe S/N	Prev. Press. Data (Po,psia)	Pi Inside MP (psia)	Po Outside MP (psia)
0	Atmos					0	2687			
				0-1A	660.0					
1A	1	624.3				1	2596	-	11.68	11.58
				1A-3B	355.0					
3B	3	979.3				2	2597	11.73	11.88	11.76
				3B-4A	275.1					
4A	4	1254.4				3	2598	18.86	14.01	18.69
				4A-5A	95.7					
5A	5	1350.1				4	2589	60.19	55.56	60.21
				5A-6A	290.0					
6A	6	1640.1				5	2590	181.23	180.86	180.85

Datalogging Settings

Schedule		MDL Settings	
Scan Rate:		Power Saver?	On
Collect Rate:		Beeper?	off
Start Time:	4/02/03	External Power?	off ?

MOSDAX Probe String
Surface Check Field Record

Project: WB 777 Well No.: CDV-R15-3 By: SP, JW
Client: LANL Location: TA-15 Date: 8/1/03

Surface Check Data

Port No.	Zone No.	Cable No.	Cable Length (ft)	Probe No.	Probe S/N	Arm Out	Shoe Out	Shoe In	Arm In	Po Outside (psia)	Temp. (°C) F
6A	6	5A-6A	290	5	2590	✓	✓	✓	✓	11.44	87.48
5A	5	4A-5A	95.7	4	2589	✓	✓	✓	✓	11.35	86.07
4A	4	3B-4A	275.1	3	2598	✓	✓	✓	✓	11.42	84.43
3B	3	1A-3B	355.0	2	2597	✓	✓	✓	✓	11.46	89.51
1A	1	0-1A	660	1	2596	15	23	23	19		93.09

Reception Errors: UTC received
NAK "

MOSDAX Probe String Installation Field Record

Project: WB777 Well No.: CdV-R-15-3 By: SP, JW

Client: LANL Location: TA-15 Date: 8/1/03

Installation Data

Port No.	Zone No.	Nom. Depth (ft)	Collar Depth (ft)	Cable No.	Cable Length (ft)	Probe No.	Probe S/N	Prev. Press. Data (Po,psia)	Pi Inside MP (psia) (20 min)	Arm Out	Shoe Out	Po Outside MP (psia) (casing)
6A	6	1640.1		5A-6A	290	5	2590	180.85	167.87	✓	✓	180.59
5A	5	1350.1		4A-5A	95.7	4	2589	60.21	60.18	✓	✓	55.31
4A	4	1254.4		3B-4A	275.1	3	2598	18.69	18.69	✓	✓	13.73
3B	3	979.3		1A-3B	355.0	2	2597	11.76	11.77	✓	✓	11.84
1A	1	624.3		0-1A	660	1	2596	11.58	11.58	✓	✓	11.63
O	atmos	surface		—	—	—	2687	—	1138	—	-	—

Datalogging Settings

Schedule		MDL Settings	
Scan Rate:	1 hr 01:00:00	Power Saver?	on
Collect Rate:	3 hr 03:00:00	Beeper?	off
Start Time:		External Power?	12v with solar panel

Duration - 99:99:99

MOSDAX Probe String Retrieval Field Record

Project: NA
Client: Hickwott

Well No.: CdV-15
Location: ↗

By: S.A, A.B, R.V.
Date: 1/6/04

Installation Data

Port No.	Zone No.	Nom. Depth (ft)	Collar Depth (ft)	Cable No.	Cable Length (ft)	Probe No.	Probe S/N	Prev. Press. Data (Po,psia)	Pi Inside MP (psia)	Po Outside MP (psia)
0	atmos.					0	2687	NA	NA	NA
1A	1	624.3	0-1A	660		1	2596	11.58	NA (broke)	NA (broke)
3B	3	979.3	1A-3B	355.0		2	2597	11.77	11.82	11.78
4A	4	1254.4	3B-4A	275.1		3	2598	18.69	13.74	18.69
5A	5	1350.1	4A-5A	95.7		4	2589	60.~~27~~18	55.29	60.19
6A	6	1640.1	5A-6A	290		5	2590	NA ~~180.85~~ 169.87	180.62	169.79

SA
1/6/04

Datalogging Settings

Schedule		MDL Settings	
Scan Rate:	01:00:00	Power Saver?	
Collect Rate:	03:00:00	Beeper?	SA
Start Time:	NA	External Power?	

MOSDAX Probe String
Surface Check Field Record

Project: NA
Client: Don Hickmott

Well No.: CdV-R-15-3
Location: "

By: 1/9/04
Date: A.B., R.V., A.M.

Surface Check Data

Port No.	Zone No.	Cable No.	Cable Length (ft)	Probe No.	Probe S/N	Arm Out	Shoe Out	Shoe In	Arm In	Po Outside (psia)	Temp. (°C)	
6A	6	5A-6A	290	5	EM 2590	✓	✓	✓	✓	11.52	62.57	250 psi
5A	5	4A-5A	95.7	4	2589	✓	✓	✓	✓	11.43	58.74	250 psi
4A	4	3B-4A	275.1	3	2598	✓	✓	✓	✓	11.44	58.03	100 psi
3B	3	1A-3B	355.0	2	2597	✓	✓	✓	✓	11.47	60.09	100 psi
1A	1	0-1A	660	1	2596	✓	✓	✓	✓	11.42	59.89	100 psi
0	atmos.	—	—	—	MDL 2687	—	—	—	—	—	—	—

AB 1/9/04

Note: probes at an indoor temp., not outside temp. kept in warm trailer untill attached to string for surface check. AB 1/9/04

MOSDAX Probe String Installation Field Record

Project: NA
Client: Don Hickmott
Well No.: Cdv-R-15-3
Location: "
By: A.B, R.V., A.M.
Date: 1/9/04

Installation Data

Port No.	Zone No.	Nom. Depth (ft)	Collar Depth (ft)	Cable No.	Cable Length (ft)	Probe No.	Probe S/N	Prev. Press. Data (Po,psia) zone	Pi Inside MP (psia) casing	Arm Out	Shoe Out	Po Outside MP (psia) zone
6A	6	1640.1		5A-6A	290	25	EM2590	~~169.87~~ OK	—	—	—	not working
5A	5	1350.1		4A-5A	95.7	4	2589	~~60.18~~ OK	55.00	✓	✓	60.18
4A	4	1254.4		3B-4A	275.1	3	2598	18.69	13.35	✓	✓	14.11
3B	3	979.3		1A-3B	355.0	2	2597	11.77	11.89	✓	✓	11.78
1A	1	624.3		0-1A	660	1	2596	11.58	11.68	✓	✓	11.56
0	atmos.	—	surface	—	—	—	MDL 2687	—	—	—	—	—

RK 1/9/04

Datalogging Settings

Schedule		MDL Settings	
Scan Rate:	01:00:00	Power Saver?	on
Collect Rate:	03:00:00	Beeper?	off
Start Time:	~~00~~ 11:09:38 AM 1/9/04	External Power?	12v w/ solar power
Duration	99:99:99		

Note: Connection to 6A failing. Start logging all other ports untill further direction from AO UQH, Westbay and Hickmott.

MOSDAX Probe String Retrieval Field Record

Project: _____ Well No.: CdV-R-15-3 By: S.A., R.V., A.B

Client: D. Hickmott Location: DX Date: 4/19/04

Installation Data

Port No.	Zone No.	Nom. Depth (ft)	Collar Depth (ft)	Cable No.	Cable Length (ft)	Probe No.	Probe S/N	Prev. Press. Data (Po,psia)	Pi Inside MP (psia)	Po Outside MP (psia)
0	atmos.	–	–	–	–	0	2687	NA	NA	11.34
1A	1	624.3		0-1A	660	1	2596	11.56	11.56	11.56
3B	3	979.3		1A-3B	355.0	2	2597	11.78	11.76	11.76
4A	4	1254.4		3B-4A	275.1	3	2598	14.11	13.23	13.89
5A	5	1350.1		4A-5A	95.7	4	2589	60.18	54.89	60.14
6A	6	1640.1		5A-6A	290	5	2590	not working	NA	NA

Datalogging Settings

Schedule		MDL Settings	
Scan Rate:		Power Saver?	
Collect Rate:		Beeper?	
Start Time:		External Power?	

File saved as cdv-37 WDF 2004-04-19 13-23.WD2

First record: Wed April 02, 11:00:13 2003

Last record: Mon April 19, 11:09:38 2004

MOSDAX Probe String Installation Field Record

Project: _____ Well No.: CdV-R-15-3 By: S. Allen, A. Bauer

Client: D. Hickmott Location: DX Date: 4/22/04

Installation Data

Port No.	Zone No.	Nom. Depth (ft)	Collar Depth (ft)	Cable No.	Cable Length (ft)	Probe No.	Probe S/N	Prev. Press. Data (Po,psia)	Pi Inside MP (psia)	Po Outside MP (psia)
6A	6	1640.1		~~5~~6A	291	5	2590	NA	179.44	169.76
5A	5	1350.1		4A-5A	95.7	4	2589	60.14	54.35	60.11
4A	4	1254.4		3B-4A	275.1	3	2598	~~13.89~~	12.80	18.62
3B	3	979.3		1A-3B	355.0	2	2597	11.76	11.60	11.76
1A	1	624.3		0-1A	660	1	2596	11.56	11.40	11.55
0	atmos	—	—	—						

Datalogging Settings

Schedule		MDL Settings	
Scan Rate:		Power Saver?	
Collect Rate:		Beeper?	
Start Time:		External Power?	

MOSDAX Probe String
Surface Check Field Record

Project: _____ Well No.: CdV-15-3 By: S. Allen, A. Baca

Client: D. Hickmott Location: DX Date: 4/22/04

Surface Check Data

Port No.	Zone No.	Cable No.	Cable Length (ft)	Probe No.	Probe S/N	Arm Out	Shoe Out	Shoe In	Arm In	Po Outside (psia)	Temp. (°C)
6A	6	5A-6A	290	~~2~~ 5	2590	✓	✓	✓	✓	11.28	69.44
5A	5	4A-5A	95.7	4	2589	✓	✓	✓	✓	11.16	69.68
4A	4	3B-4A	275.1	3	2598	✓	✓	✓	✓	11.20	67.58
3B	3	1A-3B	355.0	2	2597	✓	✓	✓	✓	11.21	69.25
1A	1	0-1A	660	1	2596	✓	✓	✓	✓	11.15	~~66.92~~ 67.17

MOSDAX Probe String
~~Installation~~ Retrieval Field Record

Project: 2004 Investigation
Client: Dan Hickmott
Well No.: CdV-R-15-3
Location: DX
By: A.B. WRV, A.M.
Date: 7/6/04

Installation Data

Port No.	Zone No.	Nom. Depth (ft)	Collar Depth (ft)	Cable No.	Cable Length (ft)	Probe No.	Probe S/N	Prev. Press. Data (Po,psia)	Casing Pi Inside MP (psia)	Zone Po Outside MP (psia)	
0	atmos	—	surface	—	—	0	2687	—	— ~~11.64~~	— ~~11.56~~	barometric
1A	1	624.3		0-1A	660	1	2596	11.56	~~11.56~~	~~11.64~~	100 psi
3B	3	979.3		1A-3B	355.0	2	2597	11.76	11.84	11.76	100 psi
4A	4	1254.4		3B-4A	275.1	3	2598	13.89	14.14	18.62	100 psi
5A	5	1350.1		4A-5A	95.7	4	2589	60.14	55.72	60.13	250 psi
6A	6	1640.1	~~surface~~ 2004	5A-6A	290	5	2590	—	181.08	169.77	250 psi

Datalogging Settings

Schedule		MDL Settings	
Scan Rate:		Power Saver?	
Collect Rate:		Beeper?	
Start Time:		External Power?	

File saved as: cdv_15WDF 2004-07-06 10-40
First record: Wed April 02, 11:00:13, 2003
Last record: Tues Jul 06, 08:54:21, 2004

MOSDAX Probe String
Surface Check Field Record

Project: 2004 Investigation
Client: Don Hickmott

Well No.: CdV-R-15-3
Location: DX

By: AB, WRV, AM
Date: 7/9/04

Surface Check Data

Port No.	Zone No.	Cable No.	Cable Length (ft)	Probe No.	Probe S/N	Arm Out	Shoe Out	Shoe In	Arm In	Po Outside (psia)	Temp. (°C)
6A	6	5A-6A	290	5	2590	✓	✓	✓	✓	11.46	81.95
5A	5	4A-5A	95.7	4	2589	✓	✓	✓	✓	11.33	84.75
4A	4	3B-4A	275.1	3	2598	✓	✓	✓	✓	11.41	84.08
3B	3	1A-3B	355.0	2	2597	✓	✓	✓	✓	11.41	81.00
1A	1	0-1A	660	1	2596	✓	✓	✓	✓	11.35	84.24
0	atmos	—	—	—	2687	—	—	—	—	—	—

MOSDAX Probe String
Installation Field Record

Project: 2004 Investigation
Client: Don Hickmott

Well No.: CdV-R-15-3
Location: DX

By: AB, WRV, AM
Date: 7/9/04

Installation Data

Port No.	Zone No.	Nom. Depth (ft)	Collar Depth (ft)	Cable No.	Cable Length (ft)	Probe No.	Probe S/N	Prev. Press. Data (Po,psia)	Pi Inside MP (psia) (Casing)	Po Outside MP (psia) (Zone)
6A	6	1640.1		5A-6A	290	5	2590	169.77	180.59	169.77
5A	5	1350.1		4A-5A	95.7	4	2589	60.13	55.27	60.10
4A	4	1254.4		3B-4A	275.1	3	2598	18.62	13.69	18.60
3B	3	979.3		1A-3B	355.0	2	2597	11.76	—	—
1A	1	624.3		0-1A	660	1	2596	11.56	—	—
0	atmos	—	surface	—	—	—	2687	—	—	—

* Problems w/ installation (see field logbook). Remove string and re-install. AB 7/9/04

Datalogging Settings

Schedule		MDL Settings	
Scan Rate:	03:00:00	Power Saver?	~~NA~~ on
Collect Rate:	03:00:00	Beeper?	~~NA~~ off
Start Time:	NA	External Power?	solar power

MOSDAX Probe String
Surface Check Field Record

Project: 2004 Investigation
Client: Don Hickmott

Well No.: CdV-R-15-3
Location: DX

By: ABURV, SA
Date: 7/12/04

Surface Check Data

Port No.	Zone No.	Cable No.	Cable Length (ft)	Probe No.	Probe S/N	Arm Out	Shoe Out	Shoe In	Arm In	Po Outside (psia)	Temp. (°C)
6A	6	5A-6A	290	5	2590	✓	✓	✓	✓	11.46	59.69
5A	5	4A-5A	95.7	4	2589	✓	✓	✓	✓	11.37	59.77
4A	4	3B-4A	275.1	3	2598	✓	✓	✓	✓	11.46	75.99
3B	3	1A-3B	355.0	2	2597	✓	✓	✓	✓	11.45	79.82
1A	1	0-1A	660	1	2596	✓	✓	✓	✓	11.38	81.08
0	—	—	—	0	2687	—	—	—	—	—	—

MOSDAX Probe String Installation Field Record

Project: 2004 Investigation
Client: Don Hickmott
Well No.: CN-R-15-3
Location: DX
By: AB, WAV, SA
Date: 7/12/04

Installation Data

Port No.	Zone No.	Nom. Depth (ft)	Collar Depth (ft)	Cable No.	Cable Length (ft)	Probe No.	Probe S/N	Prev. Press. Data (Po,psia)	Pi Inside MP (psia) (casing)	Po Outside MP (psia) (zone)
6A	6	1640.1		5A-6A	290	5	2590	169.77	180.58	169.77
5A	5	1350.1		4A-5A	95.7	4	2589	60.13	55.29	60.10
4A	4	1254.4		3B-4A	275.1	3	2598	18.62	13.73	18.60
3B	3	979.3		1A-3B	355.0	2	2597	11.76	11.84	11.76
1A	1	624.3		0-1A	660	1	2596	11.56	11.63	11.57
0	atmos.	—	Surface	—	—	—	2687	—	—	—

Datalogging Settings

Schedule		MDL Settings	
Scan Rate:	01:00:00	Power Saver?	on
Collect Rate:	03:00:00	Beeper?	off
Start Time:	11:05:00 July 12, 2004	External Power?	solar panel

MOSDAX Probe String Retrieval Field Record

Project: 2004 Investigation Well No.: CdV-R15-3 By: SA, CM, RV

Client: Don Hickmott Location: DX Date: 10/19/04

File name saved as: cdv_15 WDF 2004 10-19 11-24.WD2

Retrieval Data

Port No.	Zone No.	Nom. Depth (ft)	Collar Depth (ft)	Cable No.	Cable Length (ft)	Probe No.	Probe S/N	Prev. Press. Data (Po,psia)	Pi Inside MP (psia)	Po Outside MP (psia)
1A	1	623.3		0-1A	660	1	2596	11.57	11.53	11.60
3B	3	979.3		1A-3B	355.0	2	2597	11.76	11.74	11.79
4A	4	1254.4		3B-4A	275.1	3	2598	18.60	13.33	18.63
5A	5	1350.1		4A-5A	95.7	4	2589	60.10	54.87	60.14
6A	6	1640.1		5A-6A	290	5	2590	169.77	180.23	169.76

File Info

First Record: _____

Last Record: _____

Total: _____

~~Download~~ cdv15_WDF 2004-10-19 10 ~~51.WD2~~

MOSDAX Probe String
Surface Check Field Record

Project: 2004 Investigation Well No.: CDV- R15-3 By: RV, SA, AM

Client: Don Hickmott Location: DX Date: 10/22/04

Surface Check Data

Port No.	Zone No.	Cable No.	Cable Length (ft)	Tool ~~Probe~~ No.	Probe S/N	Arm Out	Shoe Out	Shoe In	Arm In	Po Outside (psia)	Temp. (°C)	
6A	6	5A-6A	290	~~2590~~ 5	2590	—	—	—	—	—	—	Forgot
5A	5	4A-5A	95.7	4	2589	✓	✓	✓	✓	11.22	55.35	
4A	4	3B-4A	275.1	3	2598	✓	✓	✓	✓	11.29	57.46	
3B	3	1A-3B	355.0	2	2597	✓	✓	✓	✓	11.28	56.98	
1A	1	Top-1A	660	1	2596	✓	✓	✓	✓	11.22	54.73	

MOSDAX Probe String Installation Field Record

Project: 2004 Investigation Well No.: COV- R15-3 By: RV, SA, AM
Client: Don Hickmott Location: DX Date: 10/22/04

Installation Data

Port No.	Zone No.	Nom. Depth (ft)	Collar Depth (ft)	Cable No.	Cable Length (ft)	Probe No.	Probe S/N	Prev. Press. Data (Po,psia)	Pi Inside MP (psia)	Po Outside MP (psia)
6A	6	1640.1			290	5	2590	169.76	179.77	169.76
5A	5	1350.1			95.7	4	2589	60.14	54.45	60.10
4A	4	1254.4			275.1	3	2598	18.63	12.91	18.63
3B	3	979.3			355.0	2	2597	11.79	11.68	11.80
1A	1	624.3			660	1	2596	11.60	11.48	11.60

Datalogging Settings

Schedule		MDL Settings	
Scan Rate:		Power Saver?	
Collect Rate:		Beeper?	
Start Time:		External Power?	

Los Alamos National Laboratory
Water Quality and Hydrology

MOSDAX Probe String Installation/Retrieval Field Form

Well Name	R-19	Personnel:	S. Allen, G. Holland, A. Bauer
Surface Elevation (ft)	7066.3	Date:	12/10/04

Check Operation: X Installation Data ___ Retrieval Data

Port No.	Zone No.	Port Depth (ft)	Collar Depth (ft)	Cable No.	Cable Length (ft)	Probe No.	Probe Serial No.	Prev. Pi (psia)	Prev. Po (psia)	Pi Inside MP (psia)	Po Outside MP (psia)	Comment
0	Amos	~~317.2~~ 28	NA	0-1	875	0	3405	NA	~~12.11~~	NA	NA	
1A	1	~~844.2~~ 707.3	846.7	1-2	65.2	1	3025	11.78	12.11	11.82	11.73	
2A	2	909.3	911.8	2-3	292.9	2	3022	11.96	16.90	11.89	16.69	
3B	3	1201.7	1204.2	3-4	211.3	3	3020	12.33	22.59	12.00	22.03	
4A	4	1412.9	NA	4-5	173.3	4	2585	11.98	110.62	12.10	110.15	
5A	5	1586.1	NA	5-6	144.0	5	2518	57.39	184.3	59.90	183.98	
6A	6	1730.1	1732.6	6-7	104.6	6	2520	119.27	243.74	121.76	243.30	
7A	7	1834.7	1837.2	—	—	7	2206	164.05	287.20	166.31	286.93	

SM 12/10/04

Data Logging Settings

Schedule				MDL Settings	
Scan Rate:	00	30	00	Power Save:	X
Collect Rate:	00	30	00	Beeper:	X
Start Time:	13	01	00 12/10/04	External Power?	Solar panel

Installation/Retrieval Notes:

Westbay Instruments Inc.
A Schlumberger Company

MOSDAX Probe String Installation Field Record

Project: R-20 Well No.: R-20 By: GK
Client: Location: PATTERSON RD Date: 1/23/03

Installation Data

Port No.	Zone No.	Nom. Depth ~~(m)~~ (ft)	Collar Depth (m)	Cable No.	Cable Length ~~(m)~~	Probe No.	Probe S/N	Prev. Press. Data (Po, psia)	Pi Inside MP (psia)	Po Outside MP (psia)
									~~181.23~~	
0	ATM-					0	2768		11.62	
				~~001~~						
1	1A					1	3052	46.70	12.04	46.82
				1-2						
2	2A					2	3013	150.2	103.60	150.3
				2-3						
3	3A					3	3012	219.60	181.23	219.74

Datalogging Settings

Schedule		MDL Settings	
Scan Rate:		Power Save	
Collect Rate:		Beeper	
Start time:		External Power?	

MOSDAX Probe String Retrieval Field Record

Project: _____ Well No.: R-20 By: A. Baum, R. Velasquez

Client: _____ Location: Pajarito Canyon Date: 3/8/04

Installation Data

Port No.	Zone No.	Nom. Depth (ft)	Collar Depth (ft)	Cable No.	Cable Length (ft)	Probe No.	Probe S/N	Prev. Press. Data (Po,psia)	Pi Inside MP (psia)	Po Outside MP (psia)
0	Atm.	0				0		11.62	11.68	
1	1A	907.0	~~0~~	0-1		1	3052	46.82	~~46.20~~ 46.31	46.20
2	2A	1149.7		1-2		2	3013	150.3	103.30	149.07
3	3A	1330.0		2-3		3	3012	219.74		215.53

Datalogging Settings

Schedule		MDL Settings	
Scan Rate:	1 hr 01:00:00	Power Saver?	on
Collect Rate:	3 hr 03:00:00	Beeper?	off
Start Time:	1/23/03	External Power?	solar panel

Los Alamos National Laboratory
Water Quality and Hydrology

MOSDAX Probe String Installation/Retrieval Field Form

Well Name	R-20	Personnel:	S. Allen, M. Sandoval, A. Bauer
Surface Elevation (ft)	6695	Date:	12/7/04

Check Operation: X Installation Data ___ Retrieval Data

Port No.	Zone No.	Port Depth (ft)	Collar Depth (ft)	Cable No.	Cable Length (ft)	Probe No.	Probe Serial No.	Prev. Pi (psia)	Prev. Po (psia)	Pi Inside MP (psia)	Po Outside MP (psia)	Comment
0	Atmos.	0	—	0-1	4682	0	12768	11.68	—	NA	NA	
1	MP1A	907.0	909.5	1-2	~~150.3~~	1	3052	12.04	46.20	11.89	~~48.91~~	46.04
2	MP2A	1149.7	1152.2	2-3	~~219.74~~	2	3013	103.30	149.01	100.82	148.94	
3	MP3A	1330.0	1332.5	—	—	~~32608~~ 2608	2608	191.23	215.53	178.61	215.56	

Data Logging Settings

Schedule				MDL Settings	
Scan Rate:	00	30	00	Power Save:	
Collect Rate:	00	30	00	Beeper:	
Start Time:	03	01	00	External Power?	Solar Panel

Installation/Retrieval Notes:

Los Alamos National Laboratory
Water Quality and Hydrology

MOSDAX Probe String Installation/Retrieval Field Form

Well Name	R-20	Personnel:	SA, GH
Surface Elevation (ft)	6694.35	Date:	12/16/04

Check Operation: ____ Installation Data X Retrieval Data

Port No.	Zone No.	Port Depth (ft)	Collar Depth (ft)	Cable No.	Cable Length (ft)	Probe No.	Probe Serial No.	Prev. Pi (psia)	Prev. Po (psia)	Pi Inside MP (psia)	Po Outside MP (psia)	Comment
0	NA	surface	NA	NA	NA	0	2768	—	—	—	—	
1A	1	907.0	909.5	0-1	937.7	1	3052	11.39	46.04	12.13	46.04	
2A	2	1149.7	1152.2	1-2	249.24 ~~150.5~~	2	3013	100.52	143.94	101.07	148.92	
3A	3	1331.0	1337.5	2-3	~~211.74~~ 197.3	3	2608	178.61	215.56	178.87	215.09	

Data Logging Settings

Schedule				MDL Settings	
Scan Rate:			NA - Retrieve	Power Save:	
Collect Rate:				Beeper:	
Start Time:				External Power?	

Installation/Retrieval Notes:

Transducers retrieved for possible urgent sampling by request of DOE. Transducers will be re-installed as soon as possible for PM-4 Aquifer test.

Los Alamos National Laboratory
Water Quality and Hydrology

MOSDAX Probe String Installation/Retrieval Field Form

Well Name	R-20	Personnel:	S. Allen, R. Velasquez
Surface Elevation (ft)	6694.35	Date:	12/17/04

Check Operation: X Installation Data ___ Retrieval Data

Port No.	Zone No.	Port Depth (ft)	Collar Depth (ft)	Cable No.	Cable Length (ft)	Tool ~~Probe~~ No.	Probe Serial No.	Prev. Pi (psia)	Prev. Po (psia)	Pi Inside MP (psia)	Po Outside MP (psia)	Comment
3A	3	1330.0	1332.5	2-3	150.3	3	2608	178.87	215.09	178.82	214.71	
2A	2	1149.7	1152.2	1-2	249.74	2	3013	101.07	148.92	101.00	148.82	
1A	1	907.0	909.5	0-1	937?	1	3052	19.13	46.04	12.08	45.97	
0	surface	NA	NA	NA	NA	0	2768	–	–	–	11.69	

SA 12/17/04

Data Logging Settings

Schedule				MDL Settings	
Scan Rate:	00	30	00	Power Save:	
Collect Rate:	00	30	00	Beeper:	
Start Time:	10	01	00 (1045 11/17/04)	External Power?	

Installation/Retrieval Notes:

Logger data not cleared - continuation.

Westbay Instruments Inc.
A Schlumberger Company

MOSDAX Probe String Installation Field Record

Project: WB777 Well No.: R22 By: ALL
Client: LANL Location: Date: 05 NOV 2002

Installation Data

Port No.	Zone No.	Nom. Depth ~~(m)~~ (ft)	Collar Depth (m)	Cable No.	Cable Length ~~(m)~~ (ft)	Probe No.	Probe S/N	Prev. Press. Data (Po, psia)	PI Inside MP (psia)	Po Outside MP (psia)
0		0								
				0-1	940.0					
1A		907.1				1	3021-100	20.49	11.98	20.55
				1-2	55.7					
2A		962.8				2	3026-100	30.54	12.01	41.92
				2-3	310.7				32.71	
3A		1273.5				3	3017-250	151.96	~~32.58~~	151.94
				3-4	104.5					
4A		1378.0				4	3016-250	195.12	77.80	194.74
				4-5	70.2					
5A		1448.2				5	2009-250	230.29	108.40	225.42

MOSDAX Probe String Retrieval Field Record

Project: RRES-WQH Well No.: R-22 By: S. Allan, A. Banar

Client: Env. Surv. Location: — Date: 11/17/03

Installation Data

Port No.	Zone No.	Nom. Depth (ft)	Collar Depth (ft)	Cable No.	Cable Length (ft)	Probe No.	Probe S/N	Prev. Press. Data (Po,psia)	PI Inside MP (psia)	Po Outside MP (psia)
0	Surface	N/A	—	—	—	0	2779	—	~~11.88~~	~~20.44~~
1	MPA1	907.1	889.6	0-1A	N/A	1	3021	N/A	11.88	20.44
2	MP2A	962.8	965.3	1A-2A	N/A	2	3026	N/A	11.95	41.92
3	MP3A	1273.5	1276.0	2A-3A	N/A	3	3017	N/A	32.78	151.99
4	MP4A	1378.0	1380.5	3A-4A	N/A	4	3016	N/A	77.90	194.83
5	MP5A	1448.2	1450.7	4A-5A	N/A	5	2609	N/A	108.43	225.43

5A 4/24/03

Datalogging Settings

Schedule		MDL Settings	
Scan Rate:	03:00:00	Power Saver?	N/A
Collect Rate:	03:00:00	Beeper?	N/A
Start Time:		External Power?	Solar Panel

Westbay Instruments Inc.
A Schlumberger Company

MOSDAX Probe String Installation Field Record

Project: RRES-WQH
Client: ENV. SERV.
Well No.: R-22
Location: —
By: A. Banar, S. Hilm
Date: 11/24/03 R. Velasquez

Installation Data

Port No.	Zone No.	Nom. Depth (~~m~~ ft)	Collar Depth (~~m~~ ft)	Cable No.	Cable Length (~~m~~ ft)	Probe No.	Probe S/N	Prev. Press. Data (Po, psia)	Pi Inside MP (psia)	Po Outside MP (psia)
5A ~~MP5A~~	MP5A	1448.2	1450.7	4A-5A	N/A	5	2609	225.33 ~~108.13~~	108.16	225.34
4	MP4A	1378.0	1380.5	3A-4A	N/A	4	3016	194.83	77.62	194.74
3	MP3A	1273.5	1276.0	2A-3A	N/A	3	3017	151.99	32.52	151.91
2	MP2A	962.8	965.3	1A-2A	N/A	2	3026	41.92	12.02	41.94
1	MP1A	907.1	889.6	0-1A	N/A	1	3021	20.44	11.91	20.46

RA 11/24/03

Datalogging Settings

Schedule		MDL Settings	
Scan Rate:	03:00:00	Power Save	NA
Collect Rate:	03:00:00	Beeper	NA
Start time:	11/24/03 1500	External Power?	Solar panel

MOSDAX Probe String
Surface Check Field Record

Project: RRES-WQH
Client: Env. Surv.

Well No.: R-22
Location: –

By: A. Banar, S. Allen, R. Val.
Date: 11/24/03

Surface Check Data

Port No.	Zone No.	Cable No.	Cable Length (ft)	Probe No.	Probe S/N	Arm Out	Shoe Out	Shoe In	Arm In	Po Outside (psia)	Temp. (°C) °F
5A	5	4A-5A	N/A	~~5~~ 4A	2609	✓	✓	✓	✓	11.53	56.25
4A	4	3A-4A	N/A	4	3016	✓	✓	✓	✓	11.48	53.81
3A	3	2A-3A	N/A	3	3017	✓	✓	✓	✓	11.60	55.64
2A	2	1A-2A	N/A	2	3026	✓	✓	✓	✓	11.59	57.35
1A	1	0-1A	N/A	1	3021	✓	✓	✓	✓	11.54	56.25

SA
11/24/03

MOSDAX Probe String Retrieval Field Record

Project: 2RES-UGH Well No.: R-22 By: A. Baum, WR Velasquez

Client: Env. Surv. Location: TA-54 Date: 6/21/04

Installation Data

Port No.	Zone No.	Nom. Depth (ft)	Collar Depth (ft)	Cable No.	Cable Length (ft)	Probe No.	Probe S/N	Prev. Press. Data (Po,psia)	Pi Inside MP (psia)	Po Outside MP (psia)	
0	~~MP~~ Surface	—				0	2779	—	—	—	
1	MP1A	907.1	889.6	0-1A	940.0	1	3021	20.46	211.93	20.41	100 psi
2	MP2A	962.8	965.3	1A-2A	55.7	2	3026	41.94	12.04	41.88	100 psi
3	MP3A	1273.5	1276.0	2A-3A	310.7	3	3017	151.91	32.65	151.95	250 psi
4	MP4A	1378.0	1380.5	3A-4A	104.5	4	3016	194.74	77.78	194.78	250 psi
5	MP5A	1448.2	~~887.6~~ Adjusted 1450.7	~~0~~ 4A-5A	70.2	5	2609	225.34	108.30	225.35	

Datalogging Settings

Schedule		MDL Settings	
Scan Rate:	03:00:00	Power Saver?	NA
Collect Rate:	03:00:00	Beeper?	NA
Start Time:	NA	External Power?	Solar panel

MOSDAX Probe String Retrieval Field Record

Project:	WB777	Borehole No.:	R-25	By:	Neal Tapia
Client:	LANL	Location:	TA-16	Date:	4-30-00

Installation Data

Port No.	Zone No.	Nom. Depth (ft)	Collar Depth (ft)	Cable No.	Cable Length (ft)	Probe No.	Probe S/N	Prev. Press. Data (Po, psia)	Pi Inside MP (psia)	Po Outside MP (psia)
0	0	0				0	2688			
				0 – 1	850.0					
1A	1	754.8				1	2595		11.50	25.[illegible]
				1 – 2	137.06					
2A	2	891.8				2	2600		11.58	67.58
				2 – 3	171.58					
3A	3	1063.4				3	2631		11.58	11.63
				3 – 4	129.01					
4A	4	1192.4				4	2630	✓	11.70	22.18
				4 – 5	111.0					
5A	5	1303.4				5	2629	✓	11.72	21.77
				5 – 6	102.9					
6A	6	1406.3				6	2628	✓	11.77	53.37
				6 – 7	199.7					
7A	7	1606.0				7	2539	✓	73.41	129.18
				7 – 8	189.96					
8A	8	1796.0				8	2475	✓	155.33	199.48
				8 - 9	29.06					
9	9	1825.1				9	2474	✓	167.92	190.91

Datalogging Settings

Schedule		MDL Settings	
Scan Rate:		Power Save	
Collect Rate:		Beeper	
Start time:		External Power?	

Notes SN ~~Sd~~ Em 2539 was wet probe 7 wet. Needed to cut cable reconnect now top. 8-9 cable kinked and wrapped around other trans ducer and 7-8 cable was kinked. white crystalation on cable

MOSDAX Probe String Installation Field Record

Project:	WB777	Borehole No.:	R-25	By:	DL/DS/JK
Client:	LANL	Location:	TA-16	Date:	December 13, 2000

Installation Data

Port No.	Zone No.	Nom. Depth (ft)	Collar Depth (ft)	Cable No.	Cable Length (ft)	Probe No.	Probe S/N	Prev. Press. Data (Po, psia)	Pi Inside MP (psia)	Po Outside MP (psia)
0	0	0				0	2688			
				0 – 1	850.0					
1A	1	754.8				1	2595	24.02	11.45	25.27
				1 – 2	137.06					
2A	2	891.8				2	2600	67.01	11.56	67.09
				2 – 3	171.58					
3A	3	1063.4				3	2631	14.48	11.56	11.59
				3 – 4	129.01					
4A	4	1192.4				4	2630	21.13	11.64	21.38
				4 – 5	111.0					
5A	5	1303.4				5	2629	23.45	11.67	21.77
				5 – 6	102.9					
6A	6	1406.3				6	2628	53.40	11.73	53.53
				6 – 7	199.7					
7A	7	1606.0				7	2539	128.70	73.19	129.78
				7 – 8	189.96					
8A	8	1796.0				8	2475	200.62	155.38	198.35
				8 - 9	29.06					
9	9	1825.1				9	2474	185.08	168.00	183.89

Datalogging Settings

Schedule		MDL Settings	
Scan Rate:		Power Save	
Collect Rate:		Beeper	
Start time:		External Power?	

MOSDAX Probe String Retrieval Field Record

Borehole No.	R-25	By	Neal Tapia/ Lorenzo Martinez
Location	TA-16	Date	06/07/2001

Installation Data

Port No.	Zone No.	Collar Depth (ft)	Cable No.	Cable Length (ft)	Probe No.	Probe S/N	Prev. Press. Data (Po,psia)	Pi Inside MP (psia)	Po Outside MP
0	0	0			0	2688			
			0-1	850.0					
1A	1	754.8			1	2595		11.62	25.54
			1-2	137.06					
2A	2	891.8			2	2600		11.69	67.22
			2-3	171.58					
3A	3	1063.4			3	2631		11.72	11.62
			3-4	129.01					
4A	4	1192.4			4	2630		11.80	22.75
			4-5	111.0					
5A	5	1303.4			5	2629		11.85	20.78
			5-6	102.9					
6A	6	1406.3			6	2628		14.90	53.44
			6-7	199.7					
7A	7	1606.0			7	2539		73.19	132.28
			7-8	189.6					
8A	8	1796.0			8	2475		155.33	198.97
			8-9	29.06					
9	9	1825.1			9	2474		167.89	180.04

Notes Probe 7 data corrupted was not in port. Probe 9 drifting up.

MOSDAX Probe String Installation Field Record

Borehole No.	R-25	By	Neal Tapia/ Eric R., Greg H. (Lizard, Dave Garcia)
Location	TA-16	Date	2/25/02

Installation Data

Port No.	Zone No.	Collar Depth (ft)	Cable No.	Cable Length (ft)	Probe No.	Probe S/N	Prev. Press. Data (Po,psia)	Pi Inside MP (psia)	Po Outside MP
0	0	0			0	2688			
			0-1	850.0					
1A	1	754.8			1	2595		11.56	25.12
			1-2	187.06					
2A	2	891.8			2	2600		11.62	66.80
			2-3	171.58					
3A	3	1063.4			3	2631		11.64	11.67 * no water
			3-4	129.01					
4A	4	1192.4			4	2630		11.79	23.86
			4-5	117.0					
5A	5	1303.4			5	2629		11.79	21.34
			5-6	102.9					
6A	6	1406.3			6	2628		22.83	53.37
			6-7	199.7					
7A	7	1606.0			7	2339		109.56	125.30
			7-8	189.6					
8A	8	1796.0			8	2475		191.54	196.96
			8-9	29.06					
9	9	1825.1			9	2474		204.08	196.05

Notes No water in 3A

MOSDAX Probe String Installation Field Record

Borehole No.	R-25	By	~~Neal Tapia~~ ERIC R, BETH G, GREG H, LORENZO M.
Location	TA-16	Date	10/30/02

Installation Data

Port No.	Zone No.	Collar Depth (ft)	Cable No.	Cable Length (ft)	Probe No.	Probe S/N	Prev. Press. Data (Po,psia)	Pi Inside MP (psia)	Po Outside MP
0	0	0			0	2688			
			0-1	850.0					
1A	1	754.8			1	2595	25.12	11.49	24.47
			1-2	137.06					
2A	2	891.8			2	2600	46.80	11.54	46.45
			2-3	171.58					
3A	3	1063.4			3	2631	11.67	11.61	11.65
			3-4	129.01					
4A	4	1192.4			4	2630	23.86	11.71	23.91
			4-5	111.0					
5A	5	1303.4			5	2629	21.34	21.90	11.72
			5-6	102.9					
6A	6	1406.3			6	2628	53.37	26.33	26.33
			6-7	199.7					
7A	7	1606.0			7	2539	125.30	113.07	113.11
			7-8	189.6					
8A	8	1796.0			8	2475	196.96	196.28	195.07
			8-9	29.06					
9	9	1825.1			9	2474	196.05	COULD NOT FIND PORT	

Notes WE TRIED TO FIND PORT 9 FOR ≈ 1.5 HRS WE WERE UNSUCCESSFUL, THEREFORE WE INSTALLED REST OF PROBES.

EJL 10/30/02

113.01

MOSDAX Probe String Retrieval Field Record

Project: Groundwater Surveillance
Client: LANL

Well No.: R-25
Location: TA-16

By: J. Waltersfried, A. Baner
Date: 12/02/03
12/03/03

Installation Data

Port No.	Zone No.	Nom. Depth (ft)	Collar Depth (ft)	Cable No.	Cable Length (ft)	Probe No.	Probe S/N	Prev. Press. Data (Po,psia)	PI Inside MP (psia)	Po Outside MP (psia)	
0	0	0	—	—	—	0	2777	—	—	—	
1A	1	754.8	—	0-1A	850.0	1	2600	—	—	—	100 psi
2A	2	891.8	-	1-2	137.06	2	2595	—	—	—	100 psi
3A	3	1063.4	-	2-3	171.58	3	2631	—	—	—	100 psi
4A	4	1192.4	-	3-4	129.01	4	2630	—	—	—	100 psi
5A	5	1303.4	—	4-5	111.0	5	2629	—	—	—	100 psi
6A	6	1406.3	—	5-6	102.9	6	2628	—	—	—	100 psi
7A	7	1606.0	-	6-7	199.7	7	2539	—	—	—	250 psi
8A	8	1796.0	-	7-8	189.96	8	2475	—	—	—	500 psi
9	9	1825.1	-	8-9	29.06	9	2601	—	—	—	500 psi

AJB
12/03/03

Datalogging Settings Pet-logger not logging

Schedule		MDL Settings	
Scan Rate:		Power Saver?	
Collect Rate:		Beeper?	
Start Time:		External Power?	

MOSDAX Probe String Removal Field Record

Borehole No.	R-31	By	Neal Tapia/ Lorenzo
Location	TA-16	Date	8-29-2001

Installation Data

Port No.	Zone No.	Collar Depth (ft)	Cable No.	Cable Length (ft)	Probe No.	Probe S/N	Prev. Press. Data (Po,psia)	Pi Inside MP (psia)	Po Outside MP
0	0	0			0	2294			
			0-1						
1A	1	456.3			1	2497		11.84	11.84
			1-2						
2A	2	534.7			2	2496		11.89	16.08
			2-3						
3A	3	672.8			3	2495		12.,05	43.01
			3-4						
4A	4	833.4			4	2199		40.61	133.06
			4-5						
5A	5	1013.8			5	2197		118.4	222.83

Notes

MOSDAX Probe String Installation Field Record

Borehole No.	R-31	By	Neal Tapia/ Lorenzo
Location	TA-39	Date	Oct. 10,2001

Installation Data

Port No.	Zone No.	Collar Depth (ft)	Cable No.	Cable Length (ft)	Probe No.	Probe S/N	Prev. Press. Data (Po,psia)	Pi Inside MP (psia)	Po Outside MP
0	0	0			0	2294			
			0-1	475.0					
1A	1	456.3			1	2497		11.84	11.83
			1-2	88.7					
2A	2	534.7			2	2496		11.84	16.00
			2-3	127.5					
3A	3	672.8			3	2495		11.97	70.80
			3-4	160.66					
4A	4	833.4			4	2199		22.92	141.50
			4-5	180.41					
5A	5	1013.8			5	2197		100.72	222.62

Notes

MOSDAX Probe String Retrieval Field Record

Project: _____ Well No.: R-31 By: A. Baum, R. Velasquez

Client: _____ Location: TA-39 Date: 3/18/04 (3/17 AB VVA)

Installation Data

Port No.	Zone No.	Nom. Depth (ft)	Collar Depth (ft)	Cable No.	Cable Length (ft)	Probe No.	Probe S/N	Prev. Press. Data (Po,psia)	Pi Inside MP (psia)	Po Outside MP (psia)
0	0	0	—	0-1	475.0	0	2294	—	—	—
1A	1		456.3	1-2	88.7	1	2497	11.83	11.74	11.78
2A	2		534.7	2-3	127.5	2	2496	16.00	11.87	15.70
3A	3		672.8	3-4	160.66	3	2495	70.80	12.03	76.30
4A	4		833.4	4-5	180.41	4	2199	141.50	22.93	132.07
5A	5		1013.8	—	—	5	2197	222.62	100.79	222.59

Datalogging Settings

Schedule		MDL Settings	
Scan Rate:		Power Saver?	
Collect Rate:		Beeper?	
Start Time:		External Power?	

~~Download file to Company computer: File name:~~

~~First record~~ 3/18/04 Data logger missing.

~~Last record~~

Westbay Instruments Inc.
A Schlumberger Company

MOSDAX Probe String Installation Field Record

Project: WB777 Well No.: R32 By: DC
Client: LANL Location: PAJARITO Road Date: 21 JAN 2003
INSTALLED 1/23/02 (DEC 14/03)

Installation Data

Port No.	Zone No.	Nom. Depth ~~(m)~~ ft	Collar Depth ~~(m)~~	Cable No.	Cable Length ~~(m)~~	Probe No.	Probe S/N	Prev. Press. Data (Po, psia)	Pi Inside MP (psia)	Po Outside MP (psia)
0	ATMOS	0			900'	0		11.66		11.60
				0-1	~~62.2~~					
1	MP1A	870.9			62.2	1		51.95	30.71	51.71
				1-2	~~42.9~~					
2	MP2	933.1			42.9	2		75.31	59.56	75.46
				2-3	~~900~~					
3	MP3A	976.0			*	3		94.05	78.11	94.27

* Footage corrected to show correct footage between
JCW 2/26/04

Datalogging Settings

Schedule		MDL Settings	
Scan Rate:	00:30:00	Power Save	
Collect Rate:	00:30:00	Beeper	
Start time:	16:00	External Power?	

ELEVATION - TO BRASS CAP - 6637.63 ft

Downloaded file to Compaq. Data: WNT 2004-02-20 IPS R-32

First Record: 3/26/03 16:01:00

Last Record: 2/26/04 09:01:00

Total: 10783

Logger ID: 2767 Version 1.4

MAGI

MOSDAX Probe String Retrieval Field Record

Project: _____ Well No.: R-32 By: JCW MS

Client: _____ Location: Pajar. to Canyon Date: 2/26/04

Installation Data

# of Records	Port No.	Zone No.	Nom. Depth (ft)	Collar Depth (ft)	Cable No.	Cable Length (ft)	Probe No.	Probe S/N	Prev. Press. Data (Po,psia)	Pi Inside MP (psia)	Po Outside MP (psia)
2695	0	Atmos	0	0		900'		Logger 2767	11.60		11.58
					0-1	~~62.5~~					
2695	1	MP1A	870.9			622	1	3024	51.71	32.66	50.82
					1-2	~~42.9~~					
2695	2	MP2	933.1			42.9	2	3023	75.46	59.53	74.72
					2-3	~~900'~~					
2695	3	MP3A	976.0				3	2632	94.27	*	93.38

Footages were wrong on initial installation sheet, footage has been corrected

* Shoe did not retract, could not get inside pressure. Broke shoe to retrieve.

Datalogging Settings

Schedule		MDL Settings	
Scan Rate:		Power Saver?	
Collect Rate:		Beeper?	
Start Time:		External Power?	

Los Alamos National Laboratory
Water Quality and Hydrology

MOSDAX Probe String Installation/Retrieval Field Form

Well Name	R-32	Personnel:	S. Allen, M. Sandoval, A. Banar
Surface Elevation (ft)	6634	Date:	12/7/04

Check Operation: X Installation Data ___ Retrieval Data

Port No.	Zone No.	Port Depth (ft)	Collar Depth (ft)	Cable No.	Cable Length (ft)	Probe No.	Probe Serial No.	Prev. Pi (psia)	Prev. Po (psia)	Pi Inside MP (psia)	Po Outside MP (psia)	Comment
0	Atmos.	0	—	0-1	900	0	12767	—	11.58	NA	11.56	
1	MP1A	870.9	873.4	1-2	62.2	1	3024	32.66	50.82	31.21	51.32	
2	MP2A	933.1	935.6	2-3	42.9	2	3023	59.53	74.72	58.03	74.56	
3	MP3A	976.0	978.5	—	—	3	2632	—	93.38	~~76.67~~ 76.56	93.31	

Data Logging Settings

Schedule				MDL Settings	
Scan Rate:	00	30	00	Power Save:	
Collect Rate:	00	30	00	Beeper:	
Start Time:	13	01	00	External Power?	solar panel

Installation/Retrieval Notes:

MOSDAX Probe String Installation Field Record

Project: WB777 Well No.: CdV-R-37-2 By: J. Uelterschoid, A. Baum

Client: Don Hickmott Location: TA-37 Date: 8/8/03

Installation Data

Port No.	Zone No.	Nom. Depth (ft)	Collar Depth (ft)	Cable No.	Cable Length (ft)	Probe No.	Probe S/N	Prev. Press. Data (Po,psia)	Pi Inside MP (psia)	Arm Out Rd.	Shoe Out Rd.	Po Outside MP (psia)
4A	4	1550.6	1550.6	3A-4A	191.3	4	3071	119.61 ~~[illegible]~~	118.61	✓15	✓15	166.11
3A	3	1359.3	1359.3	2A-3A	159.0	3	2625	36.97 ~~[illegible]~~	36.06	✓15	✓16	83.66
2A	2	1200.3	1200.3	1A-2A	159.0	2	2152	11.91 ~~11.87~~	11.87	✓15	✓15	15.06
1A	1	934.9	934.9	0-1A	954.9	1	3027	11.77	11.81	✓15	✓15	11.69

BA

12/12/03

Datalogging Settings

Schedule		MDL Settings	
Scan Rate:	1 hr 01:00:00	Power Saver?	on
Collect Rate:	3 hr 03:00:00	Beeper?	off
Start Time:	8/8/03 09:35	External Power?	12 V w. the solar panel

Duration 99:99:99

Dave 604-506 2861

Westbay 1800-663-2700

MOSDAX Probe String
Surface Check Field Record

Project: WB777 Well No.: CdV-R-37-2 By: J. Wolterscheid / Baker

Client: Don Hickmott Location: TA-37 Date: 8/8/03

Surface Check Data

Port No.	Zone No.	Cable No.	Cable Length (ft)	Probe No.	Probe S/N	Arm Out	Shoe Out	Shoe In	Arm In	Po Outside (psia)	Temp. (°C)
4A	4	3A-4A	191.3	4	3070	✓15	✓23	✓23	✓17	11.36	71.29
3A	3	2A-3A	159.0	3	2625	✓15	✓23	✓23	✓17	11.41	75.78
2A	2	1A-2A	265.4	2	2152	✓15	✓23	✓23	✓17	11.40	70.53
1A	1	0-1A	954.9	1	3027	✓15	✓23	✓23	✓17	11.42	71.25

SM 12/12/03

MOSDAX Probe String Retrieval Field Record

Project: W6777
Client: Don Hickmott

Well No.: CDV-37-2
Location: TA-37

By: S. Allen, A. Banar
Date: 12/1/03

Installation Data

Port No.	Zone No.	Nom. Depth (ft)	Collar Depth (ft)	Cable No.	Cable Length (ft)	Probe No.	Probe S/N	Prev. Press. Data (Po,psia)	PI Inside MP (psia)	Po Outside MP (psia)
1A	1	934.9	934.9	0-1A	954.9	1	3027	11.69	11.85	11.72
2A	2	1200.3	1200.3	1A-2A	159.0	2	2152	15.06	11.95	15.09
3A	3	1359.3	1359.3	2A-3A	159.0	3	2625	83.66	36.14	83.68
4A	4	1550.6	1550.6	3A-4A	191.3	4	3071	166.11	118.67	166.12
0	0	—	—	—	—	0	2688	N/A	11.46	-

SA
12/1/03

Datalogging Settings

Schedule		MDL Settings	
Scan Rate:	1 hr 01:00:00	Power Saver?	on
Collect Rate:	3 hr. 03:00:00	Beeper?	off
Start Time:	8/8/03 0935	External Power?	12V w/ solar panel

MOSDAX Probe String
Installation ~~Retrieval~~ Field Record

Project: —
Client: D. Hickmot

Well No.: Cdv-R37-2
Location: ESA

By: S. Allen / J. Walters
Date: 12/10/03

Installation Data

Port No.	Zone No.	Nom. Depth (ft)	Collar Depth (ft)	Cable No.	Cable Length (ft)	Probe No.	Probe S/N	Prev. Press. Data (Po,psia)	PI Inside MP (psia)	Po Outside MP (psia)
4A	4	1550.6	1550.6?	3A-4A	191.3	~~3~~ 4	3071	166.12	118.27	166.13
3A	3	1359.3	1359.3?	2A-3A	159.0	3	2625	83.68	35.71	83.66
2A	2	1200.3	1200.3?	1A-2A	159.0	2	2152	15.09	11.76	15.06
1A	1	934.9	934.9?	0-1A	159.0	1	3027	11.72	11.64	11.76

SA
12/10/03

Datalogging Settings

Schedule		MDL Settings	
Scan Rate:	01:00:00	Power Saver?	~~n/a~~ on
Collect Rate:	03:00:00	Beeper?	✓
Start Time:	12/10/03 12:00:00	External Power?	yes - solar panel.

MOSDAX Probe String
Surface Check Field Record

Project: —

Client: D. Hickmott

Well No.: Cdv - R37-2

Location: ESA

By: S. Allen, J. Waltersdorf

Date: 12/10/03

Surface Check Data

Port No.	Zone No.	Cable No.	Cable Length (ft)	Probe No.	Probe S/N	Arm Out	Shoe Out	Shoe In	Arm In	Po Outside (psia)	Temp (°C) °F
1	MP1A	0-1	954.9	1	~~2~~ 3027	✓	✓	✓	✓	11.27	61.60
2	MP2A	1-2	159.0	2	2152	✓	✓	✓	✓	11.24	68.73
3	MP3A	2-3	159.0	3	2625	✓	✓	✓	✓	11.33	67.92
4	MP4A	3-4	191.3	4	3071	✓	✓	✓	✓	11.24	65.52

12/10/03

MOSDAX Probe String Retrieval Field Record

Project: —

Well No.: CdV-R-37-2

By: S. Allen, A. Bauer

Client: D. Hickmott

Location: ESA

Date: 4/12/04

Installation Data

Port No.	Zone No.	Nom. Depth (ft)	Collar Depth (ft)	Cable No.	Cable Length (ft)	Probe No.	Probe S/N	Prev. Press. Data (Po,psia)	Pi Inside MP (psia)	Po Outside MP (psia)
0	0	—	—	—	—	0	2688 (data logger)	NA	11.46	—
1A	1	934.9	934.9	0-1A	954.9	1	3027	11.76	11.68	11.70
2A	2	1200.3	1200.3	1A-2A	159.0	2	2152	15.06	11.75	15.01
3A	3	1359.3	1359.3	2A-3A	159.0	3	2625	83.66	35.76	83.61
4A	4	1550.6	1550.6	3A-4A	191.3	4	3071	166.13	118.30	166.06

Datalogging Settings

Schedule		MDL Settings	
Scan Rate:		Power Saver?	
Collect Rate:		Beeper?	
Start Time:		External Power?	

Downloaded file name: CdV_37UDF 2004-04-12 12-50. WDB2

First record: Thu Aug 17 8:17:40, 2003

Last record: Mon Apr 12 9:11:32, 2004

Total: 9985

MOSDAX Probe String
Surface Check Field Record

Project: _____ Well No.: cdu-R-37-2 By: S. Allen, A. Banar

Client: _____ Location: _____ Date: 4/15/04

Surface Check Data

Port No.	Zone No.	Cable No.	Cable Length (ft)	Probe No.	Probe S/N	Arm Out	Shoe Out	Shoe In	Arm In	Po Outside (psia)	Temp. (°C)
4	4A	3A-4A	191.3	4	3071	✓	✓	✓	✓	11.30	70.98
3	3A	2A-3A	159.0	3	2625	✓	✓	✓	✓	11.31	72.90
2	2A	1A-2A	265.4	2	2152	✓	✓	✓	✓	11.27	67.64
1	1A	0-1A	954.9	1	3027	✓	✓	✓	✓	11.31	70.25

MOSDAX Probe String Installation Field Record

Project: _____ Well No.: CdV-137-2 By: S. Allen, A. Baner

Client: Dan Hickmott Location: _____ Date: 4/15/04

Installation Data

Port No.	Zone No.	Nom. Depth (ft)	Collar Depth (ft)	Cable No.	Cable Length (ft)	Probe No.	Probe S/N	Prev. Press. Data (Po,psia)	Pi Inside MP (psia)	Po Outside MP (psia)
4	4A	~~934~~ 1550	1550.6	3A-4A	191.3	4	3071	166.06	118.25	166.05
3	3A	1359.3	1359.3	2A-3A	159.0	3	2625	83.61	36.71	83.59
2	2A	1200.3	1200.3	1A-2A	265.4	2	2152	15.01	11.78	15.00
1	1A	934.9	934.9	0-1A	954.9	1	3027	11.70	11.70	11.72
0	Logger	0 ft	0	0	0	0	2688	11.46	NA	11.46

Datalogging Settings

Schedule		MDL Settings	
Scan Rate:	01:00:00	Power Saver?	No
Collect Rate:	03:00:00	Beeper?	yes
Start Time:		External Power?	Solar Panel / Battery

MOSDAX Probe String Retrieval Field Record

Project: _____ Well No.: Cdv-R-37-2 By: A. Barr, w RV Jaymar

Client: Don Hickmott Location: ESA Date: 10/26/04

File name saved as: cdv-37 WDF 2004-10-26 08-28

Retrieval Data

Port No.	Zone No.	Nom. Depth (ft)	Collar Depth (ft)	Cable No.	Cable Length (ft)	Probe No.	Probe S/N	Prev. Press. Data (Po,psia)	Casing Pi Inside MP (psia)	Zone Po Outside MP (psia)	
0	logger	0	~~0~~	0	0	0	2688	—	11.29	—	
1	1A	934.9	~~0~~	0-1A	954.9	1	3027	11.72	11.68	11.72	
2	2A	1200.3		1A-2A	265.4	2	2152	15.00	11.77	15.01	
3	3A	1359.3		2A-3A	159.0	3	2625	83.59		83.58	shoe not responding
4	4A	~~[illegible]~~ 1550.6		3A-4A	191.3	4	3071	166.05	118.24	166.05	

File Info

First Record: Thurs Apr 15, 08:56:09, 2004

Last Record: Tues Oct 26, 04:23:45, 2004

Total: 7753

Shoe on probe #3 not responding, had to break.

MOSDAX Probe String
Surface Check Field Record

Project: _____ Well No.: CdV-R-37-2 By: A Bauer, VR Velasquez

Client: D. Hickmott Location: ESA Date: 10/28/04

Surface Check Data

Port No.	Zone No.	Cable No.	Cable Length (ft)	Probe No.	Probe S/N	Arm Out	Shoe Out	Shoe In	Arm In	Po Outside (psia)	Temp. (°C)	
4	4A	3A-4A	191.3	4	3071	✓	✓	✓	✓	11.36	61.59	
3	3A	2A-3A	159.0	3	2625	✓	✓	✓	✓	11.38	58.37	100 psi
2	2A	1A-2A	265.4	2	2152	✓	✓	✓	✓	11.27	57.94	100 psi
1	1A	0-1A	954.9	1	3027					11.30	57.53	100 psi
0	logger	—	0	0	2688	—	—	—	—	11.30	55.65	

MOSDAX Probe String Installation Field Record

Project: _____ Well No.: CdV-R-37-2 By: A. Brown, W. Rodriguez

Client: D. Hickmott Location: ESA Date: 10/28/04

Installation Data

Port No.	Zone No.	Nom. Depth (ft)	Collar Depth (ft)	Cable No.	Cable Length (ft)	Probe No.	Probe S/N	Prev. Press. Data (Po,psia)	casing Pi Inside MP (psia)	zone Po Outside MP (psia)
4	4A	1550.6	—	3A-4A	191.3	4	3071	166.05	11.69	11.75
3	3A	1359.3	—	2A-3A	159.0	3	2625	83.58	11.76	14.97
2	2A	1200.3	—	1A-2A	265.4	2	2152	15.01	35.51	83.58
1	1A	934.9	—	0-1A	954.9	1	3027	11.72	118.09	166.05
0	logger	0	—	—	0	0	2688	—	—	11.29

Datalogging Settings

Schedule		MDL Settings	
Scan Rate:	00:30:00	Power Saver?	NA
Collect Rate:	01:00:00	Beeper?	NA
Start Time:	10/28/04 12:00:00	External Power?	yes - Solar

Los Alamos National Laboratory
Water Quality and Hydrology

MOSDAX Probe String Installation/Retrieval Field Form

Well Name	Cdv-R37-2	Personnel:	S. Allen, C. Montoya
Surface Elevation (ft)	7330.6	Date:	12/15/04

Check Operation: X Installation Data X Retrieval Data - switch out probe #3.

	Port No.	Zone No.	Port Depth (ft)	Collar Depth (ft)	Cable No.	Cable Length (ft)	Tool ~~Probe~~ No.	Probe Serial No.	Prev. Pi (psia)	Prev. Po (psia)	Pi Inside MP (psia)	Po Outside MP (psia)	Comment
Retrieve	1A	1	934.9	NA-	0-1A	954.9	~~3027~~	3027	11.69	11.75	11.73	11.73	
	2A	2	1200.3	NA	1A-2A	265.4	2	2152	11.76	14.97	11.81	14.94	
	3A	3	1359.3	NA	2A3A	159.0	3	2625	35.51	83.55	No Inside Pressure	83.55	shoe not coming in, works with Home
	4A	4	1550.6	NA	3A-4A	191.3	4	~~118.09~~ 3071	118.09	166.03	118.12	166.05	
	switch		probe		#3		to	3055	surface		pressure		11.33
Install	4A	4	1550.6	NA	3A-4A	191.3	4	3071	118.12	166.05	118.13	166.03	
	3A	3	1359.3	NA	2A-3A	159.0	3	3055	NA	83.55	35.53	83.55	
	2A	~~NA~~ 2	1200.3	NA	1A-2A	265.4	2	2152	11.81	14.94	11.80	14.95	
	1A	~~NA~~ 1	934.9	NA	0-1A	954.9	1	3027	11.73	11.73	11.73	11.73	

Data Logging Settings

Schedule				MDL Settings	
Scan Rate:	00	30	00	Power Save:	
Collect Rate:	01 ~~00~~	00	00	Beeper:	
Start Time:	11	01	00	External Power?	

Installation/Retrieval Notes:

Los Alamos National Laboratory
Water Quality and Hydrology

MOSDAX Probe String Installation/Retrieval Field Form

Well Name	cdv-R37-2	Personnel:	SA, RV, CM
Surface Elevation (ft)	7330.6	Date:	1/5/05

Check Operation: X Installation Data X Retrieval Data

	Port No.	Zone No.	Port Depth (ft)	Collar Depth (ft)	Cable No.	Cable Length (ft)	~~Probe~~ Tool No.	Probe Serial No.	Prev. Pi (psia)	Prev. Po (psia)	Pi Inside MP (psia)	Po Outside MP (psia)	Comment
	0	0						2688					
Retrieve	1A	1 ~~A~~	934.9		0-1	954.9	~~3027~~ 1	3027	11.73	11.73	11.62	11.72	
	2A	2 ~~A~~	1200.3		1-2	265.4	2	2152	11.80	14.95	11.70	14.95	
	3A	3 ~~A~~	1359.3		2-3	159.0	3	3055	35.53	83.55	35.45	83.54	
	4A	4 ~~A~~	1550.6		3-4	191.3	4	3071	118.13	166.03	118.02	166.03	
		switch	probe	#2		to		SN	3061				
Install	0	0	Surface				0	2688					
	1A	1	934.9		0-1	954.9	1	3027	11.62	11.72	11.62	11.72	
	2A	2	1200.3		1-2	265.4	2	3061	11.70	14.95	11.73	14.97	
	3A	3	1359.3		2-3	159.0	3	3055	35.45	83.54	35.43	83.55	
	4A	4	1550.6		3-4	191.3	4	3071	118.02	166.03	118.02	166.02	

Data Logging Settings

Schedule				MDL Settings	
Scan Rate:	00	30	00	Power Save:	
Collect Rate:	01	00	00	Beeper:	On
Start Time:	12	01	00 1/5/05 at 1255	External Power?	Solar Panel

Installation/Retrieval Notes: We are pulling out #2 + #1 probes to switch out probe #2, SN 2152 with SN 3061 due to strange data.
Data logger was cleared as nec. to replace probe.
Data File: cdv-37_010505.WD2 saved to computer and USB Key.

11/13/03 S. Allen and Max Maes collect data from LADP-3 in preparation for NMED sample collection. Download mini-troll #3254 from LADP-3 to compaq laptop computer.
WL elevation = 6431.59 ft.
Program started on 4/11/2002. Battery capacity 100%.

11/17/03 S. Allen and A. Banar, Rick Velasquez on-site at R-22. Pull transducers + download from R-22. Set-up bench test with equipment from R-22.
Datalogger ID 2779, probe 1 (3021), 2-(3026), 3-(3017), 4-(3016), 5-(2609). Collect pressure data for QA check of probes, and compare with met station data from TA-6. All probes + data logger passed QA check.

11/24/03 Check bench test data for R-22 equipment. Bench test data looks acceptable.
Install equipment listed above (11/17/03) in R-22. Start logging at 1500. S. Allen, A. Banar, + R. Velasquez.

12/1/03 S. Allen, A. Banar + R. Velasquez on-site cdv-37 to remove transducer string at 10:00.
1016 Save file 2003-12-01 10-26cdv37.WD2 to data file.
1017 Stop logging.
1018 Pull in all shoes + record pressure data. Raise string + pull in all arms.
Disconnect data logger + data cable.
Logger, data cable + transducers will be brought to TA-59 for bench testing.
1530 S. Allen, A. Banar, + R. Velasquez set up bench test for cdv-37 probes.
1540 Start bench test for data logger 2688, probes 1 3027, 2-2152, 3-2625, 4-3071.

12/02/03 1345 Remove transducers from R-25. Break all shoes, no data to download. Field crew: J. Walterschied, A. Bauer.
Removed probes: port 0, 2777; port 1, 2600; port 2, 2595; port 3, 2631; port 4, 2630; port 5, 2629; port 6, 2628.
1615 off site.

12/03/03 1045 J. Walterschied + A. Bauer on site of R-25. Remove probes: port 7, 2539; port 8, 2475; port 9, 2601.
1205 off site. Probes to go to compound for storage.

12/10/03 815 S. Allen on-site TA-59 to check cdv-37 bench test.
WDF2003-12-10 cdv37_benchtest
Bench test data looks fine.
Mob to cdv-37 to install transducers.
1020 S. Allen & J. Walterschied on-site at cdv-37. Set-up to install transducers
1030 Begin Installing. See Install records for information.
1200 Complete Installation and begin data logging.
1215 Mob to TA-59.
1415 Give D. Shavll WD2 files from R-22 11/17/ and cdv-37 12/1/03 to upload to hydron system. Files were uploaded in WD2 format.
1440 Set-up bench test / troubleshooting for R-25 transducer string.
Unable to find R-25 data logger 2777.
Use data logger from R-19 2524.
Add tool (#8) to R-19 data logger.
(#8) R-25 port 1 probe # 2600 - working o.k.
1608 - After connecting other probes - probe 1 (2600) does not appear to be working.
Cannot connect to probe 1 or probe 2 directly. — will try another day with a systematic check.

12/15/03 - S. Allen, J. Waltersdorf, C. Montoya, A. Martinez on-site at R-9 to pull transducers.
1140 Download WDF 2003-12-15 11-47 R-9.
This well does not have a mast plate, and we are unable to pull transducers or sample.
We are going to take the data logger, and battery back to DA-59.
Battery has uncertain charge, and we will charge it. Data logger needs to be turned off.
1411 Download R-7
WDF 2003-12-15 14-13_R7.WD2 to data file
Prep to ~~Install~~ SA 12/15/03 Remove transducers.
1510 Complete removing transducers.
Pack-up site.

900
1/6/04 S. Allen, A. Baner, & R. Velasquez on-site cdv-15 to remove transducers.
1000 Download data ~~at~~ WDF 2004-01-06 10-06 cdv-15
1002 Stop logging.
1130 Complete transducer removal.
Prep for sampling.

1/7/04 S. Allen sets up bench test for cdv-15 transducers. Inform M. Alexander about kinks in cables 1 & 5.
He says we cannot order from Westbay until cost accounts for foreign accts. are set up.
Record Pressure readings in Probe QA notebook.
1000 - Begin Data logging bench test for cdv-15.
0 .2687 1-2596 2-2597 3-2598 4-2589 5.2590
(945) Give D. Shanoll data file from cdv-15 1/6/04 for archiving.

1/8/03 0745 A. Baum on site at TA-59 to check CdV-15-3 bench test.
WDF 2004-01-09 07-55. WD2
Mob to CdV-15-3 to install transducers.
0815 A. Baum, R. Velasquez, A. Martinez on site at CdV-R-15-3 to install transducers. Set up equipment.
0850 Begin surface checks and installation. See Install Records for information.
1035 Can not connect to 6A eventhough surface checks were OK. Left message for D. Hickmott on criticality of data from 6A. Land all other probes and begin logging data untill further direction.
11:09 Complete installation and begin logging. Pack up equipment. Secure Site.

1/23/04 1000 Jeff Walterscheid, Mila Alexander, Shannon Allen (RIC), and Bryan Koehler (AA-2) on-site R-5 to remove transducers. Tailgate safety meeting held by Jeff Walterscheid.
1012 S. Allen downloads file R-5_WDF2004-01-23 10-21 to MLOG data folder on COMPAQ laptop.
1023 Stop data logging.
1025 Attempt to bring in shoe at port 1. Shoe will not come in - only 1 Rotation. Break shoe & remove transducers.
1200 All personnel off-site.

2/3/04 1230 A. Baum + R. Velasquez on site at R-9 to remove transducers. Tailgate safety meeting. No datalogger. A. Baum returns to campground to retrieve.
1330 Begin removing transducers. See MODAX Retrieval Field Record.
1410 Cable head to probe #2 (SN 2599) is rusting at cable junction.
1415 Finish transducer removal. Begin sample setup.

2/26/04 1000 J. Walterscheid and M. Sandoval on site at R-32. Set up to remove transducers. File name on Compaq laptop Data: ~~WDF 2003-08-11 R-32~~ WDF 2004-02-26 11-5 R-32. Stop datalogging.
1115 Remove transducers.
1245 Finish removal. Switch equipment to sample.

3/8/04 R-20

1000 A Baum & R Velasquez assemble equipment.
1110 Retrieve trailer from FSF yard.
1145 On site at R-20. Tailgate safety meeting. Set up equipment.
1210 Download data from MLOG. File name WDF 2004-03-08 12-19 R-20.
Begin removing transducers.
1225 No response from probe #1 sw 3052 or probe 3 sw 3012. Have to break shear
1420 Finish removing transducers. Pack up equipment & secure well.
1500 Demobilize at R-20.
1520 Return trailer to FSF yard.

3/18/04 Monday 0928 Check in at TA-39 access control. Get briefing ~~from~~ J. Gotfrith.
0940 Find recycle dumpster in front of well. R-31
0950 Return to access control. Talk to J. King. He will attempt to contact Connie, who is processing paperwork to have Albu. Company remove trailer. This may take several weeks.
~~09~~ Adjusted 1020 Return to R-31 site and assess. Will attempt to get Wanlass in to remove transducers.
1040 Tailgate safety meeting. Field crew: A Baum, R. Velasquez. Set up equipment.
1055 Have to saw a bigger hole in transducer housing to remove cable head.
1115 Datalogger will not function with this set of probes and can not reprogram. Will have to return to company for another datalogger.
1315 Return to R-31
1325 Begin removing transducers.
1440 Finish removing transducers. Show broken on probe #2 ~~99~~, zone 4.
Set up to sample.

4/12/04 1230 ~~Download~~ Stop logging cdv-37.
~~Download cdv_37 WDF 2004-04-12 11-47.WD2~~
~~to MLog data file.~~ Computer is frozen — download did not compute.
1241 Download cdv_37WDF 2004-04-12 12-50.WD2
to MLog data file.
First Record: Thu. Aug. 7 8:17:40 2003
Last Record: Mon. Apr. 12 9:11:32 2004
Total 9985

4/12/04 1545 Set-up bench test for cdv-37 equipment
Start bench test.

4/15/04 800 On-site bench to retrieve equipment.
Save cdv-37-benchtest WDF 2004-04-15 08-12.WD2
Give D. Schual data files from recent cdv-37 downloads for upload to HYDRON.
Clear data from data logger.
Mob to cdv-37 to complete sampling and re-install transducers.
1250 Set-up for transducer installation.
1430 Complete installation.
1430 Begin data logging at cdv-37-2.
First Record is at 4/15/04 (1330) standard time.

4/19/04 1300 On site at CDV-R-15-3 to remove transducers. Tailgate safety meeting. Field crew: S Allen, R. Velasquez, A. Barner. Download data to saved file cdv-37 WDF 2004-04-19 13-23.WD2 to Mbg data file.
First record Wed. Aug 02, 11:00:13-2003 Last record Mon April 19, 11:09:38 2004 Total 16666
1500 Finish removing transducers. Off site of CDV-15.
1520 Set up bench test for cdv-15 transducers. Record QA pressure readings into Black QA notebook for verification against met station readings.
1545 (1445) Begin bench test logging.

4/20/04 900 R. Velasquez stops bench test.
1320 Download cdv-15 data & give to Dave Shaull for upload to Hydron.
S. Allen & R. Velasquez build new transducer cable for cdv-R-15-3 5A-6A.

4/21/04 S. Allen & R. Velasquez complete building new transducer cable & repair broken transducers for cdv-R-15-3.

10/18/04 CdV - 15

4/22/04 1245 S. Allen and A. Baner on-site at CdV-R-15-3 to install
Install transducers: 1-2590, 2-2597, 3-2598, 4-2599,
and 5-2590.
1430 Complete installation. Wait for Division level
walk around before unhooking from winch and
starting data logger.
1550 Beverly Ramsey, Mike Alexander, & Jeff
Walterscheid on site for management
walk around.
1600 Walk around personnel off-site.
1554 - data logger time 14:54 -
Start data logging
Pack-up trailer.
Off-site.

6/9/04 S. Allen on-site TA-64 to repair
transducers.

1415	Repair	2595	- 100 psi	shoe, valve, Arm spring
1435	Repair	2631	- 100 psi	shoe, valve
1445	Repair	2601	- 500 psi	Arm
1455	Repair	2600	- 100 psi	shoe, valve
1505	Repair	2632	- 100 psi	shoe, valve

6/21/04 1120 A. Baner and W.R. Velasquez on site of R-22. Download data from
datalogger. Saved to Cooper computer as R-22 WDF 2004-06-21 11-33.WDZ
First Record: Wed March 26, 19:01:00, 2003
Last Record: Mon. June 21, 09:06:23, 2004
Total : 21212
1130 Begin removing transducer. See MODAX Probe String Retrieval Field Record
1315 End transducer removal. Begin Sampling.

07/06/04 0955 Check in at TA-8 Access Control
1010 On site at CdV-R-15-3. Tailgate safety meeting. Set up to remove transducers
1030 Save file as cdv-15WDF 2004-07-06 10-40. A Baner, W.R. Velasquez, A. Martinez
First Record Wed April 02, 11:00:13, 2003
Last Record Tues Jul 06, 08:54:21, 2004 Total: 20292
1030 Begin transducer removal.

7/6/04 cont. 12:15 Finish removing transducers. Change out equipment to begin sampling.

7/9/04 1005 Set up equipment to install transducers in CdV-R-15-3.
1015 Begin installation. See MODAX Surface Check and Installation Field Records.
1125 Break shoe on probe #3. Retrieve all probes to fix.
1300 Can not get probe #4 (sw 2589) to respond to shoe functions. Other probes appear to function. Pulling string back out of well for diagnostic.
1340 Face seal insert and plastic guide broken. Will repair Monday and attempt re-installation.
1355 off site of CdV-15.

7/12/05 1010 S. Allen, A. Baum, WRVelasquez on site. Tailgate safety meeting. Set up equipment. cdv-R-15-3.
1020 Replace face seals and inserts on probe #3 and #4. Check surface functions
1025 Begin installation again. See Field Records.
1200 (1105) Logger time - start data logging at cdv-15.
1210 Finish installing transducers.
Off site of CdV-15.

1110 Stop logging at Cdv-15. S. Allen, R. Velasquez, & C. Montoya on-site.
Download cdv_15WDF.204, 11-24.WDZ to data file.
Pull transducers.
1240 Complete pulling transducers.
~~1~~1500 Set-up bench test at TA=64
Start bench test at 1600 DST, 1500 ST.

10/22/04 1115 Begin Installing transducers. R. Velasquez & A. Martinez on-site.
1140 S. Allen on-site.
1330 Complete transducer installation.
(700) S. Allen checked & stopped bench test

PA

10/26/04 CdV-R-37-2

0815 On site at CdV-37. Field crew: A Baum, UR Velasquez

0828 Stop logging. Download file cdv_37 WDF 2004-10-26 08-28

First record Thurs Apr 15, 08:56:09, 2004

Last record Tues Oct 26, 04:23:45, 2004

Total 7753

Pull transducers

Shue on probe #3 not responding. Have to break shue.

1000 Finish pulling transducers

10/28/04 Checked bench test for cdv-37 transducers

Every looks fine - temperature readings varied ~ 2° F for 5A

Recorded data for met station checks.

Bench test file saved as cdv_37_benchtst

10 28 04

10/28/04 0950 On site at CdV-37. Field crew: A. Baum, UR Velasquez. Install transducers.

1145 Start data logger 10/28/04 12:00:00

R-19 Bench Test Checks

12/6/04 R-20

1130 Bench testing for R-19 was done from 12/3/04 - 12/6/04 using calibrated MAGI logger # 3402.
Data + graph of measurements appear fine.
Met Station checks all O.K.

1135 Bench testing for R-20 was done from 12/3/04 - 12/6/04 using calibrated MAGI # 3405.
Data + graph of measurements appear fine.
Met Station checks all O.K.

Bench Tests for R-32 and R-14 were set up this morning. They will be checked in the morning.

12/7/04 R-19 R-32 Bench Test Checks

Bench testing for R-32 and R-14 was done 12/6/04 - 12/7/04 using calibrated MAGI loggers #3402 & #3405.
Data + graph of measurements appear fine.
Met Station checks all O.K.

1000-1220

12/7/04 On site at R-32. Tailgate safety meeting. Walk down IWD.
S. Allen, Melissa Sandoval, A. Banner.
Install transducers (See MOSDAX Probe String Field Form.)
Sign + release IWD.

12/7/04 On site at R.20. Field crew S. Allen, M. Sandoval, A. Banner. Tailgate safety meeting.
Begin installing transducers (see MOSDAX Probe String Field Form)
1300 - 1430

12/10/04 0845 Check in at TA8 Access Control
0855 Check in at TA-16 Access Control
0915 On site at R-19. Tailgate safety meeting. Walk down IWD. Set up equipment.
Field crew: S. Allen, G. Helland, A. Banner.
0945 Begin installation of transducers.

12/13/04 QA Check R-19, R-20, + R-32

1325 S. Allen and C. Montoya on-site at R-19.
Connect to Data logger to retrieve data.
First Record 12/10/04 1:01:00 PM
Last Record 12/13/04 1:31:00 PM
Download file: R_19qacheck 121304
Battery charge is good.

1410 On-site R-20.
First Record 12/7/04 14:~~44~~ PM 47:05
Last Record 12/13/04 14:17:05
Data is recorded every 30 minutes, but loggers did not start at specified time.
Logger started at time of "start logging".
Stop logging. Download: R-20QACheck 12304
Re-Start logger with 02:01:00 PM as start time.
Logger appears to have correct duration until next proper reading.
Battery charge is good.

1425 On-site R-32.
First Record 12/7/04 12:41:14 PM
Last Record 12/13/04 02:11:14 PM
Stop Logging — same problem as R-20.
Re-start logger with start time of 02:01:00.
Appears to be working now.
R-32 QA Check 121304 downloaded to data file.
Battery looks good.

1510 Upload QA data files to Raw Transducer data file on stylar. Data looks good on all three files.

SA
12/13/04

12/14/04 R-14 Install

0830 S. Allen, C. Montoya, G. Helland on site R-148 for installation.

Safety tailgate meeting held by S. Allen.

Workers signed JHA

Set logger to record every 30 minutes.

1015 Start logging 10:01:00

See field form for more information.

1035 S. Allen, C. Montoya, G. Helland off-site.

SA 12/14/04

12/15/04 Cdv-R37-2

815 S. Allen and C. Montoya on-site at Cdv-R37-2. Safety tailgate meeting held, IWD reviewed and signed for work in ESA.

900 Begin retriving transducers in order to switch out probe #3, SN 2625, which is reporting "Arm In" data - probe is however hooked into port according to pressure data.

Download: cdv_37_121504 data file to data folder. Back-up data on USB data key.

Clear data from data logger.

Shoe will not come in on probe 3, SN 2625.

Retract all other shoes and bring up string until tension is on probe 3.

Home brings in shoe & arm.

Trip out probes to 2625 & remove.

Replace 2625 with SN 3055, 100 psi.

Install probe string.

Start data logging 12/15/04 11:01:00 after syncing time to laptop - as laptop is in sync w/ DT-4 time on desktop

1140 Exit ESA Access control.

1510 Upload file cdv_37_121504 to raw transducer data file on stryker.

Fax Rich Koch Installation / Retrieval form

SA
12/15/04

12/16/04 R-20

810 On-site S. Allen and G. Helland on-site R-20 to remove transducers for possible "urgent" sampling to be requested by DOE. Safety tailgate meeting held by S. Allen.

820? M. Alexander stops by on his way up the hill.

Pull 5 transducer string after stopping logging.

950 S. Allen & G. Helland off-site.

See field ~~act~~ SA 12/16/04 date sheet for retrieval information.

Wanderer trailer will be left at site for use in sampling or re-installation.

SA
12/16/04

12/17/04 R-20

930 S. Allen + R. Velasquez on-site at R-20
R. Velasquez briefed on safety tailgate meeting + IWD.
Install transducers.
1045 Complete Installation. Pack up trailer to move back to DA-64.

SA
12/17/04

12/20/04 CDV-37, R-14, R-20, R-32

1350 S. Allen and C. Moyland on site at CDV-37.
Battery is O.K. - 2 green flashes
First Record 12/15/04 8:30:00
Last Record 12/20/04 13:01:00
Memory used 0.78%
Download data file CDV_37_QACheck_122004
to laptop.
Everything looks fine.
1420 On-site at R-14.
Battery is O.K. - green flash
First Record 12/14/04 10:03:09
Last Record 12/20/04 14:01:00
Memory used 1.18%
Download file: R-14_QACheck_122004
Everything looks fine.
1441 On-site R-32.
Battery is fully charged - solid green
First Record: 12/7/04 12:41:14
Last Record: 12/20/04 14:30:33
Memory Used: 3.53%
Download file: R_32_QACheck_122004
Data logger is still not collecting at times specified.
1448 Stop logging to re-set times of collection.
1449 Re-start data logger - to set start time at 14:31:00 when logged off - logger says 12 min. till next reading. This is O.K. - I do not know why it does not collect at times set to collect. I will check R-32 in next few days.
1500 On-site R-20
Battery is fully charged - steady green light.
First Record: 12/7/04 12:41:53
Last Record: 12/20/04 15:01:00
Memory Used: 3.14%
Download data file: R_20_QACheck_122004

All looks good

PA 12/20/04

12/21/04 G-3

0840 S. Allen, C. Montoya, Steve McLin, and Greg Holland on-site at G-3 to switch out In-situ transducer.

0845 Begin pulling transducer out of well.

G-3 DTW = 370.86 bTOC
Stick-up 2.21
0905 368.65 ft bgs

Surface Elevation 6139.00
- 368.65
5770.35 water level elevation

We will install a 100 psi transducer we would like to install at ~570 ft bgs

0930 Transducer has been lowered into well.
Connect to ~~w~~ 18396
Battery capacity 10090, 7.75 V
~~Star~~ Set test G3_122104 to start at 12/21/04 at 18:01:00.
Clock was synchronized to Steve McLin's watch.
Set level reference to 5770.35 at 0950.

0954 5770.427 ft Actual depth 199.994 ft

1330 Back on-site G-3 to re-set transducer
Greg Holland had to lower transducer to install ~~set~~ mushroom cap, so we need to re-set level reference.
Re-set level reference to 5770.35 at 1330.
1330 Level 5770.404 actual depth 200.288 ft.
1400 off-site.

BA 12/21/04

12/23/04 R-15

0907 S. Allen, M. Marsh, & A. Martinez on-site at R-15 to install transducer. IWD safety briefing was held back at the office.

0915 DTW = 971.85 ft bTOC
3.70 ft TOC - surface
968.15 ft bgs

Surface elevation = 6820.00 ft
- 968.15
5851.85 groundwater elevation

Connect to Advanced troll 22269.
Set level reference 5851.85 ft
actual depth 36.335 ft
Set to start at 12/23/04 16:01:00
100% battery 2.75 V

1001 5851.853 ft.

1015 On-site at TW-8 to install transducer.

1025 DTW = 1007.42 ft bTOC

Surface elevation = 6875.5
Stickup = 1.5 ft
6877.00
- 1007.42
9.58

6877.00
- 1007.42
5869.58 elevation of water surface

Set level reference at 5869.58
actual depth 12.6.35 ft

1120 Off site

12/23/04 G-3

1230 S. Allen + J. Walterschid on-site at G-3 to download data off transducer.
Connect to 18396, and download data file: SN18396 2004-12-21 18010063_122104b
1310 Email data file to Steve McLain.

SA
12/03/04

1250 S. Allen, R. Velasquez, and C. Montoya on-site at R-13. IWD is reviewed, safety tailgate meeting held.
IWD is signed by workers.
4bh DTW R-13 = 839.64 ft bTOC

Stickup = 3.54 ft Top of outer steel casing to top of cement pad.
Surface Elevation = 6673.1
+ stickup 3.54
6676.64
- measurement 839.64
Water level Elevation: 5837.00
Install # 3430 Battery 100% (2.74V) Storage 99% free
1335 Set level reference to 5837.0
1340 Check reference level = reads 5837.01 looks good. Actual depth 30. ft
1400 on-site R-15 to download data.
Connect to: 22269 Battery 100% (2.71V)
Storage: 98% Free
Extract test: 2004-12-23 160100 R_15_122304.bin to data file.
1415 On-site TW-8.
Connect to # 22425
Battery Cap. 100% (2.71V)
Storage 98% free
Extract test SN22425 2004-12-23 160100 TW_8_122304.bin
1445 On-site at R-20 to check transducers
First Record Tue. Dec. 07 12:41:53, 2004
Last Record Mon. Jan. 03 14:31:00, 2005
Down load R-20 QA Check 010305
Memory used 7.45%
Battery is full - solid green

1/3/05 R-32

1455 On-site at R-32 for QA check.
First Record Tue Dec. 07 12:4:14 2004
Last Record Mon Jan 03 14:31:00 2005
Download: R_32_QA Check_010305 to data file
memory used 7.8%
Battery good - solid green.

SA
1/3/05

1/4/05 PM-5, PM-2

1100 S. Allen & S. McLin on-site at PM-5.
Meter reading.
+182.95 E 6 total gallons

County transducer reading 136.9 ft water above transducer

Flow is approx. ~5-6 gallons per minute of air, pump is not currently running.

S. McLin is downloading off of Solinst transducer SN 45264 SN # 48883 level logger to his laptop. Battery 100%

PM-5 BP 62947 - SN # 49883 Barometric 100% battery

1121 On-site at PM-2.
Pump is off.
Total gallons 335.12 E 6

S. McLin downloads data. 53583 Level logger PM-2
62957 barometric PM-2

1137 On-site PM-4
total gallons
Not pumping +222.42 E 6

Unable to download off of Hermit 3000 at PM-4.

PA 1/4/05

1/5/05 Cdv-37

1110 S. Allen, R. Velasquez and C. Montoya on-site at cdv-37 to switch out probe #2, which is giving strange data.
Safety tailgate + IWD briefing held.
~~Swit~~ Replace probe # 2152 with # 3061 at zone 2A.
1330. Off-site.

Data logger was cleared in order to delete 2152 and add 3061.
Data File cdv_37_010505.WDZ was saved to the data folder, and was uploaded to Stryker on 1/6/05.
Logger was re-started on 1/5/05 at 1255 - start time set at 12:01:00 to scan every 30 min. and collect every hour.
*This solar panel should be cleaned off after snow events.

SA
1/5/05

1/6/04 R-19 R-14 cdv-15

1030 S. Allen and C. Montoya on-site at R-19 to clear solar panel & download data.
First Record Dec. 10 11:17:41 2004
Last Record Jan 6 10:01:00 2005
Memory Used 15.69%
Battery charge is good - 3 green flash.
Panel was ½ covered with snow.
Download data ~~R19_010605.WDZ~~
to data folder. R19_121004_010605.WDZ

1050 On-site at cdv-15 for downloading.
No snow on panel
First Record Oct - 19 2004 15:12:42
Last Record Jan. 6 2005 09:22:26
Memory Used 5.88%
Battery charge is good - solid green
1055 Stop logging to re-set time to 1 minute after the hour.
1059 Re-set logger to start at 10:01:00 in order to sync readings.
Logger time was ~~synced~~ set with laptop DT-4 adjusted time prior to start.

1240 On-site at R-14.
No snow on panel.
Battery fully charged.
First Record - Dec. 14 10:03:09 2004
Last Record - Jan 6 12:31:00 2005
Memory Used. 4.71%
Download: R14_121404__010605

1335 At TA-64 lab to test the old G-S mini-troll, SN 3588
SN3588 reading in air on workbench -0.052 psi
Depth testing also fine, 1 ft difference on cable = 1 ft difference reading.

1/7/05 R-1, R-28

1030 S. Allen, R. Velasquez, A. Martinez on-site at R-1 to install minitroll transducer. Safety tailgate meeting held.
Combo lock 1955

1042 DTW = 1004.28 ft bTOC top of outer Steel casing
stickup 2.79 ft
1001.49 ft bgs

Surface elevation 6881.21
− 1001.49 ft bgs
5879.72 wl elevation

Connect to 18631
Battery 100% 2.75V
Storage cap. 99% free
Set level reference to 5879.72
1124 Actual depth ~~20.957~~ 20.956 ft
Set test R1_010705 to start 1/7/05 14:01:00.
1150 On-site at R-28 to install transducer.
Combo lock 1955

1203 DTW = 892.18 ft bTOC

0.87 ft from top of inner casing to top of outer steel casing
Numbers do not match survey
Surface elevation 6728.61
measured Stickup 3.00 ft
6731.61 ft
DTW ft bTOC 892.18 ft
5839.43 wl elevation
Install 18653 in R-28
100% Battery 2.71V

1/7/05 R-28, R-13

Reference level set to 5839.426

1235 Actual depth 32.235 ft

1238 Actual depth 32.270 ft

1244 Actual depth 32.297 ft

1245 Actual depth 32.30 ft

1247 Actual depth 32.30 ft update level reference to 5839.43 to compensate for stretch.

Set test to begin 01/07/05 at 14:01:00, and collect every 30 minutes.

1300 On-site at R-13. Connect to 3430

Battery 100% 2.74V

Storage 99% free

Extract test SN03430 2005-01-03 1400R_13_01305.bin

Manual Reading 5837.335 ft

Actual Depth 31.045 ft

SA

1/7/05

1/10/05 R-34

1020 S. Allen, C. Montoya, & R. Velasquez meet R. Gonzales (San. I escort) at gate to Mortandad Canyon.
Mob to R-34 to install minitroll transducer.

1050 DTW R-34 = 796.68 ft bTOC (outer steel)

Stickup = 2.75 ft cement pad to top of outer steel casing

Surface Elevation = 6629.99
stickup = 2.75
6632.74 ft Top of Steel casing
DTW = 796.68 ft from top of Steel cas.
5836.06 WL Elevation

1120 Install # 18633
Battery Cap. 100% 2.72 V
Cal. Date 12/01/04
Memory 99% free

Update clock to sync with laptop
Set level reference to 5836.06
1124 5836.073 actual depth 29.243 ft
Set test R34 to start at 14:01:00
1129 5836.082 actual depth 29.252 ft
1134 5836.100 act. depth 29.270 ft
Set test R34 to record every hour.
1136 5836.102 act. depth 29.272 ft
Re-set level reference to 5836.06
1139 5836.063 Act. depth 29.272
1200 On-site at R-1 to download data
Extract test SN18631 2005-01-07 140100 R1_010705.bin
1220 On-site R-28
Extract test R28_010705__011005

Alluvial well Probes Field Notes 8/16/00 - 11/20/00

8-16-00

- ESH-18 has proposed to plug and abandon ~40 moisture access holes and alluvial wells in Mortandad Canyon. Danny wants to try to take possession of some of these wells, to measure WL's, if nothing else. We need to talk to Nylander & Rogers re. this.

- we have fire money for total of 19 transducers -(need to order 9 more)

LA Can = 6
Pueblo " = 4
Pajarito " = 5
Mortandad = 4

- Order the transducers for Mortandad for now - we size and order cables at the wells are installed in October.

- Danny wants to get transducers in Pueblo Canyon ASAP

ESH-18 website to access runoff data
http://drambuie.lanl.gov/cgi-bin/esh18/esh18-streamflow.
- Look under "Current Streamflow Conditions"

8/22/00 Transducer Calibrations

Serial #	well ID	Date Calibrated
40624	PAO-1	8/22/00
40490	PAO-4	8/22/00
40587	PAO-3	8/23/00
40630	PAO-5N	

8/22/00 cont. Probe # 40491 malfunctioned - lost communication
- authorized to return to In-Situ for diagnosis / repair
use RMA # 8829 (Return Merchandise Authorization #)
Use In-Situ's Fed Ex # 109968560 - Priority 1
Send to In-Situ, Inc
210 S. 3rd St.
Laramie, WY 82070

Installing transducer in PAO-1

WL = 10.54 ft btoc
- 2.87 stickup
WL = 7.67 ft bgs bot. screen = 10.89 ft bgs

10.89
+ 2.87
13.76 ft btoc = target depth of probe

Probe installed to target depth - then set reference level at 10.54 ft btoc.
All sensors checked OK. - readings @ 30 min. intervals

8/23/00 Mob. to PAO-4 in Pueblo Can. @ 8:45 AM
to install Troll MP-8000 probe
WL = 5.59 ft btoc
- 2.51 ft stickup
WL = 3.08 ft bgs bot. screen = 6.97 ft bgs
+ 2.51 stickup
target depth of probe = 9.48 ft btoc

Returned to town to retrieve well docks and bought PVC couplers. Returned to PAO-4 @ 10:30
Installed Probe in PAO-4 @ 10:55 AM (WL = 5.55
set ref. level to measure WL depth btoc. → ft btoc)
Checked parameters: level, temp, pH, conductivity all worked fine. - readings @ 30 min. intervals
DO was reading - .035 mg/L ! - maybe the water

8/23/00 Cont, is anearobic bec. this well is short distance downstream of sewage plant discharges? Need to come back w/ cal. solns. to check DO sensor.

Mob. to PAO-3 @ 11:09

WL = 9.24 ft btoc
- 3.10 ft stickup
WL = 6.14 ft bgs

bot. screen = 10.62 ft btoc
stickup + 3.10
probe target depth = 13.72 ft btoc

Installed Troll MP8000 Probe in PAO-3 @ 11:30 AM.
at target depth
Set up readings @ 30 min. intervals
checked all sensors - reading OK
depart field @ 11:45

8/24/00 Mob to PAO-5N @ 10:30 A.M.

WL = 10.09 ft bgs
+ 2.92 ft stickup
= 13.01 ft bgs

bot. screen = 12.43 ft bgs
+ stickup + 2.92
target depth = 15.35 ft bgs

Installed probe at target depth @ 10:50 A.M.
Set to measure at 30 min. intervals
checked all sensors - working OK
demob from PAO-5N @ 11:05 A.M.

8/25/00 Mob to LAO-B @ 9:30 A.M.
Pulled out bladder pump - will store at FSF
WL = ? ft bgs bot. screen =

The water level sounder borrowed from FSF was not working, could not measure WL or install probe to proper depth. Called Shannon who is using our sounder today. left LAO-B site at 10:00 to meet up w/ Shannon. Gave her key to LAO-B, 0.3, 0.6, 0.8, 0.91 so she could measure WLs in LAO-0.6 and LAO-0.8.

Shannon drove to LA-Can. lower gate at 10:30 to meet Neal w/ ESH-18 and measure WLs in ESH-18 wells LAO-6, LAO-4S, LAO-3 and LAO-2. I drove to LAO-1.6g to set up for probe installation when Shannon is done with ESH-18 wells. Arrived at LAO-1.6g @ ~ 10:35.

- Pulled out bladder pump - will store at FSF.
- hooked up probe and tested it for proper operation
- wait for Shannon - Shannon called @ 10:50. The ESH wells are smaller diam.? Portyman shows @ 3" diam. Because of their dedicated bladder pumps, they could not get the sounder probe past the pump (in LAO-6 I presume) without pulling pump.

LAO-1.6g bot. of screen is 25.47 ft. btoc
+ 2.88 ft stickup
bot of screen = 28.35 ft btoc
= target depth of probe

~~LM 8/25/00~~

~~- in order to get water quality sensors into screened interval (~ 6" lower than pressure transducer) should target 0.5 ft above screen bot. → set bot. of probe at~~

~~28.35~~
~~- 0.50~~
~~27.85 ft btoc~~

- No, go ahead and set pressure transd. at bot. of screen so when well dries up, the pH sensor is still submerged (i.e. at top of sump.)

Shannon arrived @ 11:55
WL = 17.38 ft btoc, for LAO-1.6g
- 2.88 ft stickup
= 14.50 ft bgs

Installed probe at target depth @ 12:10 P.M.
Set to measure at 30-min. intervals
- checked all sensors - working OK
- reference level set to read WL depth btoc.
demob. from LAO-1.6g at 12:20 P.M.

8/25/00 cont.

Mob. to LAO-0.91 @ 12:30 P.M.

WL = 17.84 ft btoc
- 3.63 ft stickup
14.21 ft bgs

bot. screen = 14.50 ft bgs
+ 3.63 ft stickup
target depth = 18.13 ft btoc

T.D. meas. @ 18.10 ft btoc
WL: - 17.84 ft btoc
.26 ft = wat. col. ht.

- Apparently this well has ~ 0.5' sump.
- Set probe so it is ~ 1-5 mm above bot. of sump
- The pH sensor will stay wet (for now) but the pressure sensor and temp sensor are above the WL.
- Installed probe tested at 0.117 ft wat. col. ht.
- set ref. level to read depth btoc
- checked all sensors - working properly
- set to read at 30-min. intervals
- demob from LAO-0.91 at 1:06 P.M.

Mobe to LAO-0.3 @ 1:25 P.M.

WL = 11.06 ft btoc
TD = 13.37 ft btoc

bot screen 10.90 ft bgs
+ 2.43 stickup
13.33

Apparently there is no sump in this well, just a PVC cap on bot. of screen.
Hang probe just off of bot. ~ 5 mm
Installed probe in LAO-0.3 @ 1:45 P.M. - 30 min. rdg.
Checked all sensors - OK
Demob from LAO-0.3 @ 1:52 P.M.

* NOTE! Did not have a 4-in. well dock for this installation - probe was hung from toc w/ duct tape - need to return w/ well dock and do proper installation

25/00 - also used 35' cable, but needs a 15' cable! Return for later installation w/ 15' cable and 4-in well dock.
cont. Mob to LAO-B @ 2:05 P.M.

WL = 9.81 ft btoc bot. screen = 26.84 ft bgs
TD = 29.51 ft btoc
- 2.46 ft stickup 27.05
TD = 27.05 ft bgs - 26.84
.21 ft = bot. cap.

So set probe just off of bottom
- installed probe @ 2:15
- set up for 30-min. interval rdgs.
- tested all sensors - working OK

10/26/00 Mobilized to Pueblo Canyon to download transducer data
Mob. to PAO-1 @ 0930. - PAO-1 probe battery = 78%, data storage = 85% left.
Downloaded data successfully - checked data file
WL data OK, pH data OK, temp. data OK, no conductivity data; DO data was erratic for 1st 1/3 of period, then stopped working
WL = 9.82 ft btoc (manual measurement)
Demob. from PAO-1 at 1007.

Measured WL in PAO-2 @ 12.35 ft btoc @ 1034

Mob. to PAO-5N at 1130; WL = 10.86 ft. btoc
Downloaded transducer data - data looks OK except DO appears to have quit working towards end of test period.
battery capacity = 77% rem., storage cap. = 85% rem.

Mob. to PAO-5S @ 1150; meas. WL = 20.78 ft btoc
Mob. to PAO-4 @ 1240; meas. WL = 5.46 ft btoc
checked probe: battery = 65% rem., data cap. = 85% rem.
downloaded data OK, battery on laptop is about gone.
Need to reset name of device from PAO-3 to PAO-4.
(Have to shut down test to do that - will do later).

10/26/00 cont. Mob. to PAO-3 @ 1310; WL meas. @ 7.78' btoc
Downloaded probe data; this probe was labeled "PAO-4"; need to change name to PAO-3; will do later.
Downloaded data successfully - appears to be a problem with the pressure sensor which maxed out 2 diff. periods @ about 15' WL depth. → =0 - was read depth btoc well had dried out.
- battery capac. = 99%; data cap. = 85% rem.
Demob. from PAO-3 @ 1333.

Hiked in to PAO-2.5 - arrive @ 1403
WL = 11.09 ft btoc

Mob. to LAO-1.6g @ 1454; meas. WL @ 12.05 ft btoc
checked probe: battery cap. = 100% rem.; data = 85% free
Downloaded data OK - laptop battery is low, so didn't check data for proper sensor responses - will do later.

Mob. to LAO-1.2 @ 1509; meas. WL @ dry; T.D. = 25.78 ft btoc. = 0.4 ft ags.

Mob. to LAO-0.91 @ 1518; meas. WL @ 14.96 ft btoc
checked probe: battery cap. = 88% rem; data = 85% free
downloaded data OK - battery in laptop low - so will check data later.

Mob. to LAO-0.8 @ 1534; meas. WL @ 14.60 ft btoc

Mob. to LAO-0.6 @ 1544; meas. WL @ 7.35 ft btoc

Head back to office @ 1546

Summary of battery conds.:

well	rem. capacity
PAO-1	78%
PAO-5N	77%
PAO-4	65%
PAO-3	99%
LAO-1.6g	100%

10/27/00 Continue downloading probe data from alluvial wells + measuring water levels

Mob. to LAO-B @ 9:15; meas. WL = 8.77 ft btoc
- Checked probe: battery capacity = 100% remaining
  data capacity = 85% free
- downloaded probe data OK
- All data looks good except DO readings started fluctuating wildly starting at last major recharge event (last Sunday).
- Need to recalibrate DO sensor

Mob to LAO-0.3 @ 1000; meas. WL = 9.30 ft btoc
Checked probe: battery capacity = 93% remaining
  data storage = 85% free
Downloaded data OK
This well still has the 35-ft cable in it. Need to switch out to 15-ft cable. Also, the probe was not hung on docking ring, and this should be done also.
Checked data - looks OK, except DO readings fluctuated wildly throughout sampling period, though general trend is apparent.

Mob. to MCO-0.6 @ 1031; meas WL = 5.25 ft. btoc

Mob. to MCO-7.2 @ 1057; ~~[illegible]~~. meas. WL = 97.71 ft btoc

meas. TD = 98.29 ft btoc

depart field @ 1107 - return to office

well	batt. capac.
LAO-B	100%
LAO-0.3	93%

10/31/00 Mob. to LAO-0.3 @ 9:45
Pulled probe and disconnected the long cable, then connected the new 15-ft cable.
Stopped the test that was running while performing this operation. Need to reset reference level after rehanging probe.
- Rehung probe to ~5 mm off of bottom of well, as before.
- measured WL @ 9.06 ft btoc.
- Created new test called "LAO-0.3 test 2"
- set ref. level @ 9.06 ft btoc.
- Started test at 11:28 per probe clock (note - the probe was initially set to daylight savings time - it was left that way to maintain consistency with the other installed probes. The device clock was about 5 mins. fast compared to my watch and the computer clock though. But since the computer clock had reset to standard time, I decided to leave the device clock unchanged.
- Demob. from LAO-0.3 @ 1030
- Mob to PAO-4 @ 10:50 to reprogram device name; stopped test (nec. to edit device info)
- Edited Device info so the probe is correctly named "PAO-4".
- Then programmed new test called "PAO-4 test 2"
- reset reference level to 5.47 ft btoc. (mesured WL)
- demob. from PAO-4 @ 11:03. after starting test.
- mob to PAO-3 @ 11:15
- meas. PAO-3 WL @ 7.55 ft btoc.
- ~~created~~ stopped test - reset device info - device name changed to "PAO-3".
- created new test call "PAO-3 test 2"
- reset reference level to 7.55 ft btoc
- demob. from PAO-3 @ 11:23 after starting test

11/13/00 (Mon.) - Calibrating Troll 8000 probes:

Last Fri. the DO sensors were removed from probes 40491 and 40492 which were previously calibrated by Mark Van Echout on 9/5/00 (40492) and 9/6/00 (40491). The sensors were cleaned and repolarized. The DO sensors were reinstalled in the probes today.

- Checking the probes' status:

40491: initial readings
- CPU Run time = 2420.75 secs. (40.35 mins)
- Battery capacity = 100% remaining (Battery installed on 8/29/2000)
- Storage capacity: 210,858 bytes of 212992 free (98%)

After selecting "Refresh Device Info":
- CPU Run time = 2436.38 secs. (40.6 mins)
- Battery capacity = 65% remaining (7.3 v)

40492:
- CPU Run time = 1550.25 secs. (25.8 mins.)
- Battery capacity = 62% remaining (7.2 v) (installed on 8/28/00)
- Storage capac. = 212,389 of 212,992 free (99%)

After selecting "Refresh device info":
- CPU Run time = 1571.99 secs. (26.2 mins)
- Battery capac. = 100% remaining (7.5 v)

40491 - selected refresh device info again (13:40)
- → Bat. Capac. = 74% remaining (7.3 v)
- → " = 51% " (7.1 v) (13:43)
- → " = 91% " (7.4 v) (13:56)
  (CPU Run time = 2476.11 secs)
- → " = 100% " (7.4 v)
  (run time = 2574.12 s)

11/13/00 (cont.) - calibration cont.

	Probe : 40492 [redacted]	[redacted] 40491
	- calibrated DO 100% OK (14:30) - calibrated pH OK (14:45) - calibrating EC (14:45 - 15:00) OK - calibrate 0% DO: (15:05-	calibrated EC OK (14:3[illegible] calibrating pH - program froze up - restarted pH Cal. @ 14:50 - stable @ 1[illegible] calibrate 100% DO: 14:55-
11/14/00	0% DO calibration completed overnight. Finished @ 0900. - Programmed test: "LAO-B @ 11/14/00" for 30-min readings - reset clock to standard time	100% DO calibration compl[illegible] @ 0900. - Battery capac. reading 4[illegible] - selected "Refresh Devi[illegible] Info → battery capac. = 100% remaining (7.6 V) CPU run time = 2475.0[illegible] - started % DO calibration @ 0930 - complete 11:2[illegible]

- assembled probe # 40716 (new)
- installed EC, pH, DO sensors - complete at 1000
- set device clock to standard time at 1004
- Battery capac. = 99% remaining (7.4V)
- CPU run time = 256.86 secs.
- programmed test template = caltest template
- Started 3-pt. pH calibration @ 10:20 - pH 7 complete @ 10:3[illegible]
  - pH 4 started @ 10:34 - complete @ → not stabilizing and canceled calib.
- restarted 2-pt. calib. @ 10:45 → pH 4 stabilized @ 10:50 - rinsed 3x in DI water and started pH 7 calib. @ 10:56 → stable @ 11:00 - pH calib. complete - reading 6.998 pH in pH 7 standard soln.
- Rinsed probe 3x in DI water - then put in 450 µS/cm EC soln. - let sensor stabilize 11:24 - 11:37
- Started EC calibration @ 11:37 - stable @ 11:48
- Rinsed 3x in DI water, then let sensor stabilize in DI water for 100% DO calib. 11:55 → 12:00

11/14/00 cont.

- programmed test in 40491:
  LAO-03C11-14-00 for 30 min. readings

40716: → didn't click "next" to finish EC calib. before rinsing and putting probe in DI water - so had to cancel EC calib. → went ahead with 100% DO calib. - will have to redo EC calib. later.
- started 100% DO calib. @ 12:00
- stable @ 12:57 → put back in EC soln. @ 13:00
- let stabilize in EC soln till 13:08
- calibrate EC @ 13:08 - 13:20 = stable
- put probe in NaS soln @ 13:28 - let stabilize till 13:33
- calibrate 0% DO @ 13:35 - 16:10 = stable
- probe #40716 calibration = complete
- battery capac. = 100% remaining (7.4v)
- CPU run time = 706.14 s

- assembled probe # 40655 (new) set device clock @ 12:10
- programmed "caltest template" w/ 5-min. intervals
- put probe in DI water & started 100% DO calib. @ 12:11
- canceled DO calib. @ 13:12 because need computer to install units in field.
- calibrate pH & EC 1st → let stabilize in pH 4 soln from 13:15 - 13:21; cal. pH 4 13:21 - 13:29 = stable.
- put in pH 7 soln @ 13:32 → let stabilize till 13:36
- cal. pH 7 @ 13:36 - 13:41 = stable
- put in EC 450 µS/cm soln @ 16:35
- start EC calib. @ 16:55
- EC stable @ 17:05
- rinsed probe 3x in DI water - started 100% DO calib. @ 17:14 → stable @ 0800, 11/16/00 when checked on return. See 11/16/00 notes for % DO calibration.

(from LAO-B) - Disassembled probe # 40630 @ 17:00 - pulled sensors - cleaned DO anode and refilled membrane tip w/ electrolyte - put DO sensor on polarizer - removed from polarizer @ 0805 on 11/16/00. See 11/16/00 notes for attl. inf.

11/14/00 cont.

- mob. to LAO-B w/ Shannon @ 14:04
- Download data from probe # 40630
  battery capac. = 91% remaining
  CPU run time = 15,671.36 secs.
- Downloaded data OK
- manual reading = 8.479 ft btoc (probe)
- checked w/ WL sounder = 8.43 ft btoc
- checked device info again → Batt. = 77% (7.3 v)
  CPU run time = 15841.67 secs.
- Pulled probe # 40630 from LAO-B @ 14:20
- Installed probe # 40492 in LAO-B @ 14:27
- set reference WL @ 8.43 ft btoc
- started running "test" LAO-B@11-14-00" at 14:33
- Demob from LAO-B @ 14:40
- Mob to LAO-0.3 @ 14:50
- Download data from probe # 40622
  battery = 78% remaining (7.3 V)
  CPU run time 13942.67 s
  Extracted data from LAO-0.3 test 2 OK
- Checked refresh device info → 49% batt. rem. (7.21
  CPU run time = 13996.06 s.
- pulled probe # 40622 from LAO-0.3 @ 15:00
- installed probe # 40491 in LAO-0.3 @ 15:02
  battery cap. = 100% rem. - CPU run time 3483.19
- set reference level to meas. WL = 8.77 ft btoc
- started test "LAO-0.3 @11-14-00" @ 15:19
- demob from LAO-0.3 @ 15:23
- remob to LAO-B @ 15:35 - reprogramed LAO-B@11-14-00 to read correct reference level btoc.
- restarted LAO-B@11-14-00 test @ 15:43
- demob from LAO-B @ 15:47

1/16/00 - Transducer calibration activities:
- place probe # 40655 in NaS soln. for 0% DO calibration at 0820. Started 0% DO calib. @ 0820.
- % DO stable @ 0920; probe 40655 calibration complete
- Edited device info → named it DOTROLL #40655
- Refresh Device info → Batt. capac. = 73% remaining (7.3 V) CPU run time = 954.28 s; 212992 bytes free (100%)
- Refresh device info again → battery = 92% rem. (7.4 V)
- waited 3 mins → refresh device info again → battery = 100% rem. (7.5 V)

Disassembled probe # 40622 (from LAO-0.3) - cleaned EC sensor; removed cap from DO sensor, cleaned anode and cathode, refilled new cap with electrolyte soln; put DO sensor on polarizer @ 10:10. (w/ DI water immersion)
- removed from polarizer @ 11:55 - reassembled probe. (see below for calibration notes)

(from LAO-B) Reassemble probe # 40630: polarized DO sensor was immersed in DI water @ 0805. @ 10:47 the DO sensor, EC sensor (cleaned) and pH sensor were reinstalled. Probe immersed in pH 4 soln. @ 11:00. Let stabilize till →
Started pH 4 calib. @ 11:35 - Stable @ 11:40
Started pH 7 calib. @ 11:45 - stable @ 11:49 (read 6.996 pH)
- Rinse probe and immerse in EC soln @ 11:53
- Start EC calib. @ 12:06 - stable @ 12:17
- had problems starting DO (100%) calibration - redundant error messages - finally was able to delete old caltest template and reprogram caltest template - started 100% DO calibration @ 13:00 - stable at 16:00 upon return from field. See below

Probe # 40622 calibration: immersed in pH 4 soln. @ 12:00
- renamed to "DOTROLL # 40622" - reset device clock to std. time
- start pH 4 calib. @ 12:13 - stable @ 12:16 - put in pH 7 soln 12:22
- start pH 7 calib. @ 12:28 - stable @ 12:35 (read 7.000 pH)
- put in EC soln @ 12:40 - start EC calib. @ 12:45 - stable @ 12:50
- reading .416 mS/cm → put in new EC soln. & start recal. @ 13:09
EC stable @ 13:23; unhooked from computer to take to field. (sitting in DI water since 13:30) (see below)

11/16/00

- taking calibrated probes # 40716 and # 40655 to field for installation - leave Pueblo @ 13:25
- Did not have FM80-3 key to get in TA-2 gates - had to wait for someone to come & unlock
- mob to LAO-0.91 @ 14:05 - downloaded LAO-0.91 test data - having problems downloading data - program gets about 2/3 through download process, then freezes up. Tried twice - then rebooted computer & tried again. Reduced commun. speed from 57600 Baud to 19200 Baud. Downloaded file OK. Stopped LAO-0.91 test. Pulled probe # 40493. Installed probe # 40655
- Programed test "LAO-0.91@111600" for 5-min. intervals. set reference WL @ 14.40 ft btoc as measured.
- Started test LAO-0.91@111600 @ 14:41

Mob to LAO-1.6g @ 15:04 - downloaded data from test "LAO-1.6g test" OK @ 15:09
- Stopped test - refresh device info → battery capac. readings w/ ~1 min. bat. = 49%, 59%, 71%, 69%, 74% (7.3V) · pulled probe # 40621 @ 15:16
Installed probe # 40716 @ 15:20
- programed test "LAO-1.6g@111600" @ 5-min. ints.
- set reference WL = 13.18 ft btoc
- started test @ 15:24
- demob. from LAO-1.6g @ 15:32

Probe 40630 calib. Cont.: immersed in NaS soln @ 16:20

started 0% DO calib. @ 16:22

Probe 40622 calib. Cont.: deleted old tests @ 16:20
added "caltest template" w/ 5-min. intervals.
started 100% DO calib. @ 16:25

11/20/00 - upon return after weekend, Probe 40630 showed "stable" in Na2S soln. for 0% DO calib. Therefore, calib. was supposedly complete. However, when manual reading was taken in Na2S soln, it read 16.647 mg/L when it should have read 0. Decided to redo DO calibration of probe #40630:

- Rinsed probe in DI water 3x → manual reading = 6.694 mg/L.
- placed probe # 40630 in DI water & started 100% DO calib. @ 0900. - attempted to start calib. - Program gave error message: "Illegal operation" and shut down. when I restarted win-situ & connected to probe #40630, it came up as "40630: ERRORS" - when selected Device Errors "RAM Fail" was checked. I selected "Clear Errors" and attempted new probe calibration. when I tried to start the DO calib., I got error message again: "This program has performed an illegal operation and will be shut down. If the problem persists, contact the program vendor." Selected "Details" →

"Win-Situ caused and invalid page fault in module WIN-SITU.EXE at 0177:0040bd74. Registers:

EAX = 00000000 CS = 0177 EIP = 0040bd74 EFLGS = 00010297
EBX = 012e5758 SS = 017f ESP = 0078e914 EBP = 012e55b8
ECX = 00000000 DS = 017f ESI = 00000000 FS = 37bf
EDX = 0056000e ES = 017f EDI = 0078e8f8 GS = 0000

Bytes at CS: EIP:
8b 86 b0 00 00 00 8b 7e 04 85 c0 74 2e 8b cf e8

Stack dump:
0078e8f8 0078e988 00424cd8 ffffff31 012e5758
0078ea38 bff52471 012e5758 4f44010e 204c4143
25303031 616c7000 0900 6574 ffff 076b 00ffffff
100b07d0

- restarted win-Situ - deleted existing test: "caltest templates"
- then tried to program new test, but got error: "device clock not set" - so I reset the device clock and attempted to program new "caltest template" = successful.
- Attempted to start 100% DO calib. @ 0918 = started OK.

11/20/00 cont. - Meanwhile, probe # 40622 was stable in DI water for 100% DO calib. - place in NaS soln and started 0% D calib. @ 0928. - Completed % DO calib. @ 1020. Checked manual reading = -1.6 mg/L; checked again @ 10:27 → reading 0.105 mg/L. → calib. Complete.

Probe # 40493 - disassembled probe - cleaned DO sensor - refilled electrolyte soln. with new membrane cap - put on polarizer 10:28. - cleaned EC sensor w/ detergent + rinsed - both DO & pH sensors soaking in DI water.

Probe # 40621 - disassembled probe - cleaned DO sensor - refilled electrolyte soln w/ new membrane cap put on polarizer @ 10:55 - cleaned EC sensor w/ det + rinsed - both DO & pH sensors soaking in DI water

probe # 40630 - 100% DO calib. completed OK - put probe in NaS soln - 0% DO calib. completed OK @ 10:50 - check DO reading @ 11:00 → read -0.001 mg/L → calib. complete.

→ renamed to "DOTROLL #40621" + reset device clock

Probe # 40621 - reassembled probe - installed sensors @ 13:22. - calibrated pH 4 - stable @ 13:37 - put in pH 7 soln @ 13:43 - pH 7 calib stable @ 13:47 (reading pH = 7.006) Rinsed & put in 450 µS/cm EC soln @ 13:53

→ renamed to "DOTROLL #40493" + reset device clock

Probe # 40493 - reassembled sensors in probe @ 13:42. started pH 4 calib. @ 13:55 - stable @ 14:00 - put in pH 7 soln - stable @ 14:07 → read 6.999 pH put in EC soln. @ 14:11 - start EC cal. @ 14:21 - stable @ 14:[illegible] - rinsed and put in DI water - st. 100% DO calib. @ 14:55

Probe # 40621 → EC stable @ 14:15 - read 0.426 µS/cm put in DI water preparatory to 100% DO calib @ 14:21 - disconnected computer to take to field for probe installations in Pueblo Canyon. Soaking in DI water till 16:45. Start 100% DO calib. @ 16:46

20/00 cont. Mob to PAO-1 @ 15:15 - pulled probe # 40624 after downloading data - installed probe # 40622 @ 15:25 - measured WL = 9.16 ft btoc. Set ref. level as measured - programmed test "PAO-1@ 11-20-00" for 5-min. intervals - started test at 15:31. Demob from PAO-1 @ 15:37

* NOTE!: This well need to have the top of PVC fitting installed over the well dock ring @ next visit!

Mob. to PAO-5N @ 16:07 - Download data from probe # 40494 OK - pulled probe ~~#~~ 40494 and installed probe # 40630 @ 16:12 - programmed test "PAO-5N@ 11-20-00" for 5-min intervals - set reference WL @ 10.36 ft btoc. Started test PAO-5N@11-20-00 @ 16:16. Demob from PAO-5N @ 16:22.

Probe # 40493 - 100% DO calib. = stable upon return to office @ 16:40. Put in EC soln. and started 0% DO calib. @

12/14/00 - WGI staff mtg.: Tomorrow = mandatory QA/QC training - to run till noon. Purchasing = big QA issue. need to be specific on details. QA/QC session to st. 8:00 sharp - cannot ship any "hazardous material" unless properly trained (defn. includes "just about everything".

12/5/00 - WGII QA/QC Training - LANL QA program

QA/QC - presenter John Day w/ "Team One" in Albuq. = LANL QA contractor

Larry Maasen: 667-1691 ER Project Quality Control officer - talk to him about SOP/QP issues

ER web page: <http// erinternal.lanl.gov/documents/procedures/qps.html> (for SOPs, etc.)

CONTENTS

PAGE NO.	REFERENCE	DATE
	In this fiddbook we are	
	following "ER SOP-7.01, Rev. 1	
	"Pressure transducers"	
	and ER SOP-7.02, Rev. 1	
	"Fluid level measurements"	
	- Shawn Purdue 11/20/00	

Alluvial well Probes

(1)

11-21-00 : Probe # 40493 calibration was completed last night - it sat in DI water overnight.

- Probe # 40621 0% DO calibration ran overnight - was stable upon arrival at office @ 0800. Rinsed and put in DI water.

Mob. to Pueblo Canyon to install probes in PAO-4 and PAO-3.

Arrive at PAO-3 at 8:50
Download data from probe # 40490
- Pulled probe # 40490 and installed probe # 40493 @ 0900, Programed test "PAO-3@11-21-00" for 5-min intervals. Set reference WL @ 10.10 ft btoc per measurement
- checked sensor readings - all working OK
- started test "PAO-3@11-21-00" at 9:07
- Demob. from PAO-3 @ 9:10
- Mob to PAO-4 @ 9:24

11-21-00 cont

(2)

Download data @ PA0-4 from probe # 40587 (PA04 test 2)
- pulled probe # 40587 and installed probe # 40621 @ 9:30
- programmed test "PA0-4@11-21-00" for 5-min. intervals.
- set reference WL @ 5.25 ft bloc per measurement
- started test "PA0-4@11-21-00" at 9:37
- Demob. from PA0-4 @ 9:40

- Disassembled probe # 40494 - cleaned sensors - installed new membrane cap on DO sensor - put DO sensor in DI water and on polarizer @ 2:35 - deleted all tests from memory except for caltest template - renamed to "DOTROLL # 40494" - reset clock to standard time - refreshed device info → battery capacity = 98% (7.4V); cpu run time = 15456.11 secs. - put pH sensor in DI water for storage.
- Disassembled probe # 40587 - cleaned sensors - installed new membrane cap on DO sensor -

11-21-00 cont.

(3)

- put DO sensor and pH sensor in DI water for storage - put DO sensor on polarizer @ 2:50 - deleted all tests from memory except caltest - renamed to "DOTROLL # 40587" - reset clock to standard time. Refreshed device info → battery capacity = 96% (7.4V) cpu run time = 16404.47 secs.

11/27/00: Took DO sensors off of polarizers. 2 sets of sensors are now cleaned, polarized and ready for recalibration.

- connected to probe # 40624 (pulled from PA0-1 @ 11/20/00)
- deleted all old tests + data, renamed to "DOTROLL # 40624", reset device clock to standard time; programmed "caltest template" (5-min intv.)
- checked device information: battery capacity = 100% remaining (7.4 V) mem. capac. = 100%.

- connected to probe # 40490 (pulled from PA0-3 @ 11/21/00)

11/27/00 cont.:

- deleted all old tests and data from probe # 40490. Renamed to "DOTROLL #40490" + reset device clock to standard time. programmed "caltest template" with 5-min. intervals. Checked device info: battery capacity = 100% remaining (7.4 V); memory capacity = 100%

- Probes 40490 and 40624 still need to have sensors removed and cleaned.

- Probes 40494 and 40587 are ready for recalibration.

11/28/00: Disassembled probe # 40624. cleaned sensors - put pH sensor in DI water. polished anode & electrode on Do sensor - replaced membrane cap & refilled w/ electrolyte solution - put Do sensor on polarizer at 15:35. Put Do sensor in DI water.
- reassembled probe w/ plugs in sensor ports.

11/29/00: removed Do sensor from polarizer at 15:55.

12/1/00 - Bob Gray and Shannon Purdue - trip into Los Alamos Canyon to download probe data. Mob to LAO-1.6g @ 9:40. Connected to probe OK. Battery capac. = 100% CPU run time = 15389.27 s. Extracted data from test "LAO-1.6g@111600" Storage capacity: 170460 bytes of 212992 bytes free (80% free). Disconnected from probe and demobed from LAO-1.6g @ 9:56 - all data looks ok - sensors appear to be operating normally.

- Mob to LAO-0.91 @ 10:10 - Connected to probe OK - Battery capacity = 100%; CPU run time = 15667.84 s.; 170320 bytes of 212992 bytes free - 79% free - Extracted data from "LAO-0.91@11-16-00" test. - OK - checked data. DO sensor started acting erratic ~ 2 days ago (on day 12 of current test). all other sensors appear to be working normally. Disconnected

12/1/00 cont.

from probe and demobed from LAO-0.91 @ 10:25.

Working in lab during afternoon: RG Disassembled probe #40490 and cleaned sensors. DO anode was v. dirty w/ heavy AgCl deposit. Replaced w/existing membrane cap and new electrolyte soln on DO sensor. Put DO sensor in DI water and placed on polarizer @ 14:15. Put pH sensor in DI water. Cleaned/dried out sensor ports and emplaced w/ stainless steel plugs + reassembled probe.

12/1/00

12/4/00

8:27 - Arrive at LAO3 to Down Load transducer information.

68% Battery capacity
CPU runtime 3229.68

Last test ABend/stopped on 11/17/00 19:42.59

Restarted on 12/4/00 8:37.09

Stopped at 8:40.19
to
Started test LAO 3 12-01-00

9:00 in LAO-0.3
Battery Cap = 58%
CPU runtime = 5974.52
Linear test LAO-0.3
at 11/14/00 ABend
Last reading 11/28/00 6:49
Restart 12/4/00 9:08

12/4/00 cont.

- removed DO sensor from polarizer @ 14:15.
- installed sensors in probe # 40494. initial battery capac. reading = 0% remaining (6.4 v)
- started pH 4 calib. @ 14:34
- pH 4 stable @ 14:37
- started pH 7 calib. @ 14:52
- pH 7 stable at 14:55. (read 7.019)
- after pH calib., battery cap. read 45% (7.1v), then 5-min. later was reading 67% (7.3v).
- started EC calib. in 450 uS/cm soln. @ 15:13 - several attempts to calib. failed bec. sensor would not stabilize. possibly due to unstable temp. in trailer - I had the door open for awhile and the temp. dropped.
- closed the trailer door & turned on heat to raise temp. - further attempts failed to stabilize bec. of dropping temp. Tried sitting probe on top of box to get off of floor - but temp. still dropping. @ 15:50 gave up. Bat. cap. = 82% (7.3 v)

12/4/00 cont.

- installed sensors in probe # 40490.
- started pH 4 calib. @ 15:17
- initial bat. cap. = 98% (7.4 v)
- finished pH 4 and pH 7 calib. @ 15:30
- started EC calib. (450 uS/cm) @ 15:38 - same stabilization probs as on prev. page - dropping temp. in trailer causing sensors to be unstable.
- will have to try again later during mid-day when temps are more constant
- also will try to buy some foam to insulate the probes with

12/6/00:

- attempting to continue EC calibration with foam rubber wrapped around the probes for insulation. The temp. was still not stable enough to achieve calibration. Tried moving the probes into the bldg. When attempted

12/6/00 cont:

to continue calibration, probe # 40494 stopped communicating. When attempt was made to reestablish communication, it came up with "Device Errors" = ** "RAM Fail". Discontinued attempts to work with this probe. will ** send back to In-Situ.

Device info for # 40494:
Battery capac. = 63% (7.4V) initial
Refresh Device info = 100% (7.5V)
CPU run time = 15972.80 s.

- attempts to calibrate # 40490 EC continued to fail bec. temp. hadn't stabilized yet after moving indoors. Decided to try EC calib. later. Began 100% DO calib. @ 0950. ~~Finally~~ 12/6/00 - stable at 10:30. Began multiple attempts at EC cal. @ 10:45 - Finally stabilized at 12:50. Put in NaS soln for 0% DO cal. @ 12:50. 0% DO calib. = stable @ 13:50 (after return from lunch) - calibration complete for probe # 40490. bat. readings:

71% (7.3V) 91% (7.4V) CPU run time =
87% (7.3V) 100% (7.5V) 18941.14 s.
- (over 10-min. period)

12/6/00 cont.

- installed sensors in new probe # 40654
- connected to probe - initial device information: bat. capac. = 0% (7.0V); refreshed device info → 13% (7.1V) waited 2 mins. to try again. → 18% (7.1V); @ 2 more mins, tried again → 23% (7.1V) - 2 mins. → 33% (7.1V) 5 mins → 43% (7.2V); 5 mins → 41% (7.2V).
- This probe has bad battery - will ** have to send back to In-Situ

- installed sensors in new probe # 40658.
- connected - initial device info readings = 100% battery capac. (7.4V) CPU run time = 1085.94 s
- synchronized device clock to computer
- renamed to "DOTROL # 40658"
- programmed "caltest" w/ 5-min intervals.
- started pH 4 calib. @ 1053. stable @ 1057
- started pH 7 cal. @ - see next page

#40658 cont.

12/6/00 - forgot to click "next" before changing pH soln. - had to restart pH calib. Started pH7 calib. @ 1114. pH 7 stable @ 1117. pH 4 st. @ 1122.
- stable at 1128. (pH cal. complete)
- attempted EC calib. st. @ 1134
- Finally stabilized after several attempts @ 1235. (used foam insulation to stabilize temp.)
- Put in DI water for 100% DO calib. @ 12:42 - stable at 13:50 (@ return from lunch).
- Put in Na$_2$S soln. for 0% DO calib. @ 13:55
- 0% DO stable @ 15:45
- bat. cap. = 100% (7.5V)
- cpu run time = 1631.75s

12/6/00 - Mob. to LAO-B @ 15:05.
Connected to malfunctioning probe #40492.
initial device info readings:
bat. capac. = 100% (7.4V)
cpu run time = 3355.23 s.
Shannon's new test "LAO-B12-04-00 had "ABEND" - only 2 readings were taken before abnormal termination.
refresh device information →
bat cap = 95% (7.4V) - wait 1 min.
89% (7.4V) - "
85% (7.3V) - "
81% (7.3V) - "
80% (7.3V) - "
77% (7.3V) - "
73% (7.3V) - "
74% (7.3V)
- pulled probe #40492 @ 15:21
- installed probe #40490
- programmed test "LAO-BC120600" for 30-min. intervals
- started test @ 15:27
- Device info: bat. cap. = 100% (7.6V)
cpu run time = 18966.44s
refresh → 100% 7.4V

12/6/00 cont.

demob. from LAO-B @ 15:35.
- Return to lab trailer - 0% DO calib. stable for probe # 40658.
- programed test "LAO-0.3@120600" for 30-min. intervals.
- mob to LAO-0.3 @ 16:05 - connected to malfunctioning probe # 40491 - Shannon's new test had ABEND error - checked device info:

initial:	battery cap. 91% (7.4V)	
	cpu run time 6044.545	
after 1 min:	79 %	(7.3 v)
"	77%	(7.3 v)
"	73%	(7.3 v)
"	70%	(7.3 v)
"	68%	(7.3 v)
"	66%	(7.3 v)

- pulled probe 40491 @ 16:18 + pulled cable which apparently has clogged vent tube.
- installed probe # 40658 in LAO-0.3 @ 16:29 and started test (installed new 15-ft cable)
- demob from LAO-0.3 @ 16:35

12/7/00 Pueblo Canyon

11:15 S. Purdue and K. Greene on-site at PAO-1 (#40622). Battery Capacity 26% remaining (7.1V) CPU Runtime 31491.25

11:18 Extracted Test data from test PAO-1@11-20-00
- Program Crashed during extraction
- restarted Computer
Restarted Program
2% Battery Capacity (7.0 v)
Refresh device info → 11% (7.0 v)
Tried to Extract data, program would not extract any data, said "Test data was extracted to the following files" - - - - PAO-1@11-20
- Refreshed Device Info
- 1% battery (7.0 v)

after 1 min	4%	(7.0 v)
"	1%	(7.0 v)
"	6%	(7.0 v)

Manual depth reading PAO-1 : 8.93 ft from TOC
" 6% (7.0 v)

1135 mob to PAO-2 ↓

C:\WIN-SITU\Data\SN40622 2000-11-20 153059 PAO-1 @ 11-20-00.bin ← getting "invalid data file format (3)" message when try to view

(16)

12/7/00. Pueblo Canyon

1150 On-site at PAO-2
Depth to Water 10.81 f. from TOC
Installed PVC cap

1250 On-site at PAO-3 (#40493)
Battery Capacity 94% (7.4 v)
CPU Runtime 32400.77
Extracted Data, could not see graph
- Refresh Device Info
67% (7.3 v)
CPU 32515.32
- Refresh Device
69% (7.3 v)
67% (7.3 v) (data looks ok)

1353 On-site at PAO-2.5
DTW = 11.12 f from TOC

1450 On-site at PAO-4 (#40621)
Battery Capacity 100% (7.4 v)
C.PU Runtime = 31347.75
Extracting Test Data
- Refresh Device info
Battery Cap. = 71% (7.3 v)
after 1 min. 69% (7.3 v)
" 65% (7.3 v)
- data OK but DO is reading as low as -4.5 mg/L

SP 12/7/00

(17)

12/7/00 Pueblo Canyon

1520 On-site at PAO-5N (#40630)
Battery Capacity = 100% (7.4 v)
CPU Runtime = 33984.43
Extracted Test Data - not all
test PAO-5N @ 11-20-00

1520 DTW for PAO-5S = 20.17 f from TOC

1525 Program frozen on block 301 of 395

Ctrl/Alt/Del → End Task
Connect to TROLL 40630
Battery Capacity 42% (7.2 v)
Unable to extract data,
(*) Extract Data - Launch Data Manager
c:\WIN-SITU\Data\SN40630 2000-11-20
155136 PAO-5N @ 11-20-00.bin
(*) → view
(*) → "Invalid data file format - (3)"
Refresh Device Info
Battery Capacity 85% (7.3 v)
after 1 min. = 89% (7.4 v)
" = 84% (7.3 v) SP 12-7-00
" = 80% (7.3 v)
Manual Depth Reading →
DTW = 10.64 f. from TOC
Attempted to Extract Data again - same messages as (*).

12/8/00 - Disassembled malfunctioning probe # 40491. Cleaned sensors and refilled DO electrolyte w/ same membrane cap as before (still looked clean & intact). Put DO sensor on polarizer at 15:17. Disassembled malfunctioning probe # 40492. Cleaned sensors and refilled DO electrolyte w/ new membrane cap. Put DO sensor on DO polarizer at 15:50.

- Probes 40491 and 40492 plus 40654 and 40494 were reassembled without sensors and packed in original shipping boxes for return to In-Situ.

12/8/00

12/12/00 Pueblo Canyon

945 S. Purdue and K. Greene
On-site at PAO 5N
TROLL #40630
Battery Capacity 100% (7.4V)
CPU Runtime 39113.35
Storage Capacity 150390 Bytes of
70% free 212992 Bytes Free

948 Extracted Test Data
view data
- Depth data / All Parameters
before 12/07/00 1501
are strange values
After 12/07/00 1501 readings
are reasonable
@ 12/02/00 21:01 → 12/07/00 1501
Values are strange
Parameters now seem to be
reasonable —

1000 Mob to ~~S-PAO~~ PAO-1

1050 On-site at PAO-1 12-13-00
Connect to TROLL 40822
Battery Capacity 25% (7.1 V)
CPU cap. 36961.76
Storage Cap. 150170 bytes of
70% 212992 bytes free

1055 Extract Test data

View data →
12/01/00 20:40 → 12/07/00 11:20
Data has same strange negative values as PA05N.
Refresh device info
Battery Capacity = 3% (7.0v)
After 1 min = 7% (7.0v)

1240. On-site at LA0-B
Connect to TROLL # 440490
Battery Cap. = 100% (7.4 v)
CPU Runtime 19091.67
Storage Cap.: 212730 bytes of
99.9% .. 212992 bytes Free
Test LA0-B @ 120600
Abended on 12/07/00 at 03:23
Started New Test
LA0-B 121200 at 12:46

1250 Mob. to LA0-0.3
1300 On-site at LA0-0.3
Troll # 40658
Battery Capacity 100% (7.5v)
CPU Runtime 1779.87
Storage Capacity 212960 bytes of
99.9% Free 212992 bytes free
Test LA0-0.3 @ 120600
Abended after 2 readings

13:08 Started New Test
LA0-0.3 @ 121200 with
5 min. sampling interval
1315 Off-site LA0-0.3

12/13/00 Shannon P. and Bob G.

- mob to LA0-B @ 13:25 to recheck ABENDED probe # 40490 that was reprogramed yesterday. Test "LA0-B @ 121200" ABENDED after only 2 5-min readings.
initial device info readings:
bat. = 100% (7.4 V) CPU = 19146 s
refresh → 86% (7.3 V)
after 1 min: 79% (7.3 V)
" 75% (7.3 V)
" 68% (7.3 V)
" 65% (7.3 V)
" 61% (7.2 V)
" 58% (7.2 V)
- Disconnected from probe 40490 and pulled from LA0-B @ 13:44
- mob to LA0-0.3 @ 13:55 to recheck ABENDED probe 40658 that was reprogramed yesterday

12/13/00 cont.

test "LAO-0.3 @ 12:00" ABENDED after 2 readings. (5 min. ints.)

Checked device info:

initial: bat. 100% (7.5 v)

CPU = 1825.765

after 1 min: refresh = 100% (7.5v)

" 100% (7.4)

" 96% (7.4)

" 91% (7.4)

" 85% (7.3)

" 81% (7.3)

" 78% (7.3)

" 74% (7.3)

" 73% (7.3)

Disconnected and pulled probe #40658 from LAO-0.3 @ 14:14

will have to return both of these probes to In-Situ.

- Disassembled #40658 and #40490 for shipping, cleaned all sensors, did not take apart DO probe for cleaning.
- Assembled new transducer #40660 with All new sensor probes.

12/13/00

Connected #40660 to PC for calibration.

Initial battery capacity was 56% (7.2v), All bytes free

refresh after 1 minute CPU Runtime = 1104.22

" 62% (7.2v)

" 60% (7.2v)

" 56% (7.2v)

" 52% (7.2v)

" 50% (7.2v)

" 48% (7.2v)

" 44% (7.2v)

" 43% (7.2v)

" 41% (7.2v)

" 48% (7.2v)

" 48% (7.2v)

" 49% (7.2v)

" 47% (7.2v)

a few minutes 72% (7.3v)

1 min. 65% (7.3v)

Assembled probe #40653 with new probes

Shut down for the night

Left both probes #40653 and #40660 in DI water

12/13/00 BP

12/14/00

845 Began Calibrating #40660 with 450 µs/cm Ec
- Connected #40653 to PC
Battery Capacity 95% (7.4v)
CPU Runtime 1060.87
Refresh = 96% (7.4v)

9:07 Begin Ec cal. of 40653
9:15 Ec cal. stable for 40660
9:19 Start pH 4 Cal. for 40660
9:23 40660 pH 4 cal. stable
9:30 40660 pH 7 stable
40660 EC & pH cal. complete
9:34 Connected to new probe #40654 which had previously given low battery readings on 12/6. Rechecked battery voltage.
- initial battery reading = 19% (7.1 V).
refresh device info → 30% (7.1 V)
wait 1 min → 29% (7.1 V)
" → 27% (7.1 V)
Temp. of probe is 50.1°F
wait 1 min → 22% (7.1 V)
- will send this unit back to In-Situ
- reconnected to probe # 40660 and started DO cal. @ → see next page

EC calibration of 40653 complete at 9:45. pH 4 cal. of 40653 stable at 9:53. pH 7 stable at 10:03
pH cal. of 40653 = complete.
- upon attempting to program test "caltest" w/ 5-min. intervals, got error message on 40660:
"Error #65535 - unknown failure occurred. Inf. will now be refreshed."
- attempted to program test again - got same error message.
- disconnected and reconnected to probe 40660. Then set device clock to synchronize with computer. Then was able to add "caltest" template successfully for 5-min. intervals reading DO and temp. only.
- Started 40660 100% DO cal. @ 10:03
- started 40653 100% DO cal. @ 10:08
- 40660 100% DO stable @ 10:43 - started 0% DO calib. @ 10:44.
- 40653 100% DO stable @ 10:48 - started 0% DO calib. @ 10:53
- 40660 0% DO stable at 11:24 →
new scale coeff. = 11.6152
offset = -5.6124. Calc. for 7000 ft elev.

(26) 12/14/00

Probe # 40660 calibration complete @ 11:26.

Final device info:

battery capac. = [redacted].3 V [redacted] 53 mA °F

CPU run time = 1516.51 s.

- programmed test "LAO-B@12-14-00" for meas. int. of 5 mins, "event mode" = DO change of 10 mg/L and default storage interval every 6 readings. (probe energizes every 5 mins - records data every 30 mins or if DO readings fluctate by ≥ 10 mg/L).

#40653 DO stable @ 11:52 → 12-14-00

new scale coeff. = 10.0033,

offset coeff. = -3.6462

(calc. for elev. = 7000 ft)

Probe 40653 calib. complete @ 11:58

Final device info:

∴ battery capac. = 100% (7.4V)

CPU run time = 1255.14 s

- programmed test "LAO-0.3@12-14-00" w/ 5-min meas. interval & event mode = ΔDO ≥ 10 mg/L w/ default storage interval = every 6 readings (30-min.)

12/14/00 (27)

Mob to LAO-B @ 14:40 to install probe # 40660. Probe installed w/ orig. cable at 14:50. Set reference WL to 8.92 ft btoc as measured.

Checked all sensors - initial readings

DO = 20.324 mg/L

Temp. = 6.844 °C

EC = 103.977 µS/cm

- rechecked WL and it appeared to drop -
- remeasured WL and set reference WL = 8.93 ft btoc.
- read DO again @ 14:59 = 17.969 mg/L
- started test "LAO-B@12-14-00" at 15:03
- Demob from LAO-B @ 15:10

On-site LAO-0.3 at 15:20

- installed probe # 40653 @ 15:25
- measured WL = 8.66 ft btoc (set ref. WL)
- initial readings: battery = 94% (7.4V)

Temp = 7.614 °C

Level = 8.664 ft btoc

pH = 6.293

EC = 301.312 mS/cm

DO = 6.463 mg/L

test "LAO-0.3@12-14-00 started @ 15:32

demob from LAO-0.3

12-15-00 Shannon P. & Bob G.
mob. to LAO-0.91 @ 10:40 to download data. - probe # 40655
initial device info:
bat. capac. - 100% - 7.4V
CPU run time = 29667 s
memory = 129930 of 212992 bytes free (61% free)
- extracted data from test "LAO-0.91@111600".
- probe still working - but DO sensor is starting to give erratic values and pH acted funny @ ~15 days into test. Erratic DO readings @ ~13-15 days and again at ~27 days to present. The point at 15 days may be when we last downloaded data. Does the act of data extraction affect the operation of the sensors? (i.e. DO went from screwy readings back to normal behavior, pH dropped ~0.1)
- refreshed device info. after data extraction →

12-15-00 cont.
bat. capac. = 100% - 7.4V
CPU run time = 29771 s.
demob from LAO-0.91@ 11:05
*Note! This probe is working fine - the way all the other ones with poor battery readings should be.
- Note - this well needs a PVC cap.

- Mob to LAO-1.69 @ 11:15
connect to probe # 40716
bat. = 100% - 7.5 V
CPU run time = 29428 s
memory: 129950 bytes of 212992 bytes free - 61% free
- extract data from test "LAO-1.69@111600"
- DO sensor had some spikes toward beginning of test, and a small perturbation at 15 days when last extracted data, but otherwise the dat looks ok. pH data shows small blip @ 15 days also. All sensors appear to be operating fine.
- refreshed device info →
battery = 100% (7.5 V)
CPU run time = 29527 s

12-15-00

Demob from LAO-1.6 g @ 11:35

* Note - this well needs a pv cap.

- Mob to LAO-0.3 @ 11:50 to check on probe # 40653 installed yesterday and verify operation. Probe is running OK - extracted data from test "LAO-0.3 @ 12-14-00". Data looks good. All sensors are operating properly. Refreshed device info → battery = 80% (7.3 V)
  CPU run time = 2293 s
  memory = 99% free.
- Demob from LAO-0.3 @ 12:05.
- Mob to LAO-B @ 12:14 to check on probe # 40660 installed yesterday. Probe is running OK. DO has dropped from 17.57 to 2.88 mg/L
  - all sensors appear to be working OK.
  - Refresh device info →
    battery = 50% (7.2 V)
    CPU run time = 2529 s
    mem = 99% remaining
  - Demob from LAO-B @ 12:28.

12-15-00

Mob. to PAO-1 @ 14:05

- Connected to probe # 40622
- (previously had bad data after 17590 mins. ET - try to reextract data on different laptop so the previous file is not appended
- initial device information:
  battery = 24% (7.1 V)
  CPU run time = 40132.97 s
  memory = ~~Ex~~ RO 141,140 bytes of 212,992 bytes free (66% free)
- Downloaded all data OK. "PAO-1 @ 11-16-00"
  Most of the DO readings are <10 however, so a recalibrated unit is needed here. The Ec readings are drifting upward. pH looks OK. The level data shows a daily fluctuation that may be due to daily melting of snowpack.
- Refresh device info →
  battery = 3% (7.0 V) - extremely
  wait 1 min → 6% (7.0 V) low battery
  " → 2% (7.0 V) readings
  Temp = 5.957 °C - should replace unit?
- demob from PAO-1 @ 2:27

12-15-00

- Mob to PAO-5N @ 15:05 to download data from probe # 40630 (previously had bad data file due to software problem)
- initial device info:
  Battery capac. = 100% (7.4v)
  CPU run time = 42345 s
  memory = 141110 bytes of 212992 bytes free (66% free)
- Extracted data from "PAO-5N@11-20-00" The 1st attempt was OK up to about 5 days ago, when the values changed to negative #'s. Renamed that file from *.BIN to *.OLD. and re-extracted data again. The whole dataset looks OK the 2nd time. All sensors appear to operating normally. The DO reading was stuck on -0.05 for the 1st 16 days (on 12-7) when the 1st attempt to extract data apparently caused the sensor to start working normally. It recently rose to 4.56 mg/L (in last 2 days) - Should recalibrate

12-15-00

refreshed device information →
battery = 80% remaining (7.3 V)
CPU run time = 42704 s
refresh again 5-min. later →
battery = 91% (7.4 V)
Demob from PAO-5N @ 15:40

12/18/00

0840 S. Purdue on-site at trailer.
- Assembled Transducer # 40661 used PH sensor, used Ec sensor, used DO sensor that was cleaned and polarized on 11/28/00
- Replaced 2 caps on DO sensors that were wrinkled (screens) and set into polarizers for 1 hour.

0920 Began Calibration of # 40661

Initial Readings
Battery Capacity = 12% (7.1v)
CPU Runtime = 270.08
100% of Storage capacity Remaining
Refresh device Info -
Battery Capacity = 27% (7.1v)

(34) 12/18/00

- Refreshed device info - BC = 27% (7.1v)
Calibrated Sensor in PH 4 Buffer
calibration complete at 9:32
PH 7 calibration complete at 9:39

0945 Start Conductivity Calibration
in 450 ± 0.5% µS/cm stable at 10:09
Cell Constant 4.1739
Created "Caltest" with 5 min.
sample interval.
Synchronized device clock to PC clock.

1015 Began 100% DO Calibration
1110 Completed 100% DO cal
1112 Began 0% DO Cal. (*) Na2S Cal. solution had some precipitate at bottom of bottle.
1240 0% DO cal complete
Delta T 0.0290
Scale 8.3724
Offset -4.6393

Refresh Device info → BC = 82% (7.3v)
after 1 min = 80% (7.3v)

— Assembled Probe # 40656
with used sensors.
Initial Device Info -
Battery Capacity = 0% (6.9v)
CPU Runtime = 311.79
100% Storage Capacity free

12/18/00 (35)

refresh device info: (several minutes later)
BC = 31% (7.1v)
after 1 min = 32% (7.1)v
" = 31% (7.1v)
" SF 12/18/00 "
"

1040 Began calibration of #40656
1042 Started 450 µS/cm Ec calibration
1052 Completed Ec Calibration, CC = 4.1368
1057 Began PH 4 Calibration
1101 Completed PH4, Began PH 7
1106 Completed PH Cal. Scale = 4724.58
Offset = 7.0050
1115 Added Caltest w/ 5 min. interval
1118 Began 100% DO cal.
1240 100% DO cal complete
Started 0% DO Cal (*) Na2S cal. sol. had precipitate
1355 Calibration of #40656 complete
Delta T: 0.0290, Scale 8.6758
DO Offset -3.4153
→ Rinsed Probe and stored
in DI water. Refresh Info
BC = 74% (7.3v)
S. Purdue 12/18/00

(36) 12/18/00

1255 Assembled Probe # 40659 used sensors
Initial Device Info
Battery Capacity = 27% (7.1v)
CPU Runtime = 317.89
100% Storage Cap. Remaining
1309 Began Ec Calibration
1320 Finish Ec Calibration
Cell Constant 4.1259
Begin PH4 Calibration
1332 Finish PH4 Calibration
Begin PH7 Cal.
1335 PH Calibration Complete
Scale = 4912.9035, Offset 6.8258
Add Caltest with 5 sec. Int.
Edit Clock - synchronize w/ PC
1340 Begin 100% DO Cal.
1420 100% DO cal Complete
1428 Begin 0% DO cal.
1538 Calibration of 40659
completed. DO Scale 5.6072
Offset -6.1484
1539 Device Info =
Battery Cap = 48% (7.2V)
After 1 min = 60% (7.2 V)
" = 54% (7.2 v)

12/19/00 (37)

Bob. G. and Shannon P. - replacing probes
Mob. to PAO-4 @ 10:40 - connect to
probe # 40621. Initial device info:
Battery = 100% (7.4V)
CPU = 4317382 s
memory = 132210 bytes of 212992 bytes free
(62% free)
Extracted data from test "PAO-4@11-21-00"
- pH data flatlined starting on 12-10.,
EC looks OK. DO has normal
responses, but negative values
- refresh device info →
battery = 80% (7.3 V) @ 7.827°c
- waited 1 min. → same readings
- disconnected and pulled probe 40621
from well @ 10:55
- installed new probe # 40659 @ 10:59
initial device info:
battery = 81% (7.3V)
CPU run time = 624.13 s
memory = 99% free
- refresh device info → battery = 74% (7.3V)
@ 7.853°c
- programmed test "PAO-4 @ 12-19-00" for
5-min. intervals & 30-min. data recording
or DO = Δ 10 mg/L

12/19/00

- meas. WL = 5.27 ft btoc
  set reference level to ↑
- started test "PAO-4 @ 121900"
  @ 11:06
- refresh device info →
  battery = 39% (7.2v) @ 7.813°C
  wait 1 min: 36% (7.1 V)
  wait 5 min: 40% (7.2 V)

demob from PAO-4 @ 11:15.

- mob to LAO-0.91 @ 11:40
- connect to probe # 40655
  initial device info:
  battery = 100% (7.4v) @ 11.15°C
  CPU run time = 33780.79 s
  memory = 118290 of 212992 bytes free
  (55% free)

Extracted data from test "LAO-0.91 @ 111600"

- DO data erratic starting @ ~~[illegible]~~ 12-15 the last time data was extracted.
- temp OK, pH OK, EC OK.
- refresh device info →
  battery = 86% (7.3 v) @ 11.239°C
- stopped test "LAO-0.91 @ 111600" @ 11:54
- pulled probe 40655 from well

12/19/00

- installed probe # 40656 @ 11:59
- initial device info
  battery = 84% (7.3 v) @ 9.738°C
  CPU run time = 643.68 s
  memory = 99% free
- programed test "LAO-0.91 @ 121900"
  for 5-min. readings / recording data
  at 30-min. intervals or at DO
  change = Δ 10 mg/L
- measured WL = 17.52 ft btoc
  and set reference level
- checked sensor readings:
  temp = 10.513°C
  pH = 6.343
  EC = 255.361 µS/cm
  DO = 8.867 mg/L DO
- refresh Device info →
  43% battery (7.2v) @ 10.57°C
  wait 5-mins → reset device
  clock to synchronize w/ computer
- battery = 33% (7.1 V) @ 10.683°C
- started test LAO-0.91 @ 121900 @ 12:15
- demob from LAO-0.91 @ 12:20
- mob to PAO-1 @ 12:55
- connect to probe # 40622

(40) 12/19/00

initial device info:
battery = 21% (7.1V)
CPU run time = 44276.58 s
memory = 129760 of 212992
bytes free (60% free)
temp. = 5.446 °C

Extract data from "PAO-1@11-20-00"
- Data looks OK except for negative values of DO.
- refresh device info →
- battery = 21% (7.1V) after data extraction.
- battery = 1% (7.0V) after refreshing device info.
- stopped ~~the~~ test PAO-1@11-20-00 @ 13:04
- pulled probe 40622 from well.
- installed probe # 40661 in PAO-1 @ 13:09
- initial device info:
battery = 91% (7.4V)
CPU run time = 665.84 s
mem = 99% free
- took sensor readings

12/19/00 (41)

temp. = 4.667 °C
level = 4.847 ft
pH = 6.410
EC = 245.038 mS/cm
DO = 3.392 mg/L

- programed test "PAO-1@121900" for 5-min. readings w/ 30-min. recording interval or @ ΔDO = 10 mg/L.
- set reference level @ 9.10 ft btoc as measured.
- started test "PAO-1@121900" @ 13:14
- refreshed device information →
battery = 42% (7.2V) @ 5.052 °C
- demob from PAO-1 @ 13:20

- Disassembled and cleaned probes # 40655, 40621, 40622
Polarized 2 DO sensors
Warmed Probes # 40622
40624
40587
in Danny's office overnight

~~Spencer~~ 12/19/00

(42) 12/20/00

945 Connected to Probe # 40624
Initial Device Info - BC = 0% (6.9v)
Temp - 16.509 CPU = 16235.99 , Storage = 100%
Refresh after 2 min = BC = 28% (7.1v)
" 46% (7.2v)
" 54% (7.2v)
" 60% (7.2v)
" 67% (7.3v)

945 Connected to Probe # 40622
Initial Device Info - BC = 0% (6.8v)
CPU Runtime = 44327.86 , Storage = 129250
Temp = 17.047 °c 60% free
Refresh after 2 min = BC: 0% (7.0v)
" 0% (7.0v)
" 3% (7.0v)
" 11% (7.0v)
" 12% (7.0v)

1000 Connected to Probe # 40587
Initial Device Info - BC: 19% (7.1v)
CPU = 16415.15 , Storage = 100% free
Temp = 16.078°c
Refresh after 2min = 26% (7.1v)
" 56% (7.2v)
" 60% (7.2v)
" 64% (7.3v)
" 67% (7.3v)

12/20/00 (43)

1000 Connected to Probe # 40621
Initial Device Info - BC = 74% (7.3v)
CPU = 43695.20 , Storage 100% free
Temp = 13.303°c
Refresh after 2min = 81% (7.3v)
" 83% (7.3v)
" 84% (7.3v)
" 84% (7.3v)
" 83% (7.3v)

1024 Connect to Probe # 40655
Initial Device Info: BC: 91% (7.4v)
CPU Runtime 33836.52 Storage = 55% free
Temp = 16.675°c Refresh after 2 min =
93% (7.4v)
Refresh = 93% (7.4v)
" 93% (7.4v)

1031 Begin assembling # 40655 for calibration - used sensors
1041 re-connected - BC = 100% (7.4v)
Deleted Test LAO-9.1@11600
Edited Caltest Template to Linear - 30 min interval
1044 Began Ec Calibration
1119 Ec cell Constant = 4.1491
1146 pH calibration complete
Scale = 4754.7907
Offset = 6.9509

12/20/00

started 100% DO Calibration - left to run overnight - 820 12/21/00 - complete

9:55 started 0% DO cal

15:57 0% DO Cal. Complete

Scale: 10.4197 offset: -6.5961

1100 Connect to #40621 for Calibration

Initial device Info: BC = 100% (7.5v)

CPU = 43741.12, storage = 100% free

1129 PH 4 Cal, and PH 7 cal complete. Scale = 4885.3130

offset = 6.8237

1151 Ec Calibration Complete

Cell Constant 3.7166

Moved trailer to F&F

started 100% DO Calibration - left to run overnight

12/21/00 08:20 - 100% DO cal still unstable - Next extract in 1185 hours, 24 minutes -

RAM FAIL - Dissassembled probe to mail back to In-Situ.

- Packed Probes #40621 and 40622 to send back to In-Situ

12/21/00

1010 Assembled probe #40587

Initial Info = Batt. Cap: 78% (7.3v)

Storage = 100% free, CPU = 16461.13

1021 Began Ec Calibration

1049 getting strange 0#!0 readings - disconnect + reconnect (no error messages)

Unable to Connect - checked fittings -

Unable to Connect - rebooted PC

Unable to Connect. Try to hook up to #40624 - successful connection - re-attach to #40587

- Unable to connect to #40587
- re-attach to #40624 - Connected,
- re-attach to #40587 - connected

ERRORS → RAM Fail

Batt. Cap = 92% (7.4v)

- Start Ec Calibration again. Read count does not go up with elapsed time.
- Cancel Calibration.

1125 - Disconnect and store in DI water.

2 Ram Fails in a row on older PC. - Dont think I should hook up another probe to it.

(46)

12/21/00 ...

1430 Dropped off Probes # 40621, #40622, and #40587 at BUS 4 for shipping back to In-situ

15:13 Connect to Probe # 40624 for Calibration. Initial Info BC: 85% (7.3v) storage = 99% free CPU Runtime = 16299.48 Begin Ec Calibration

1525 Ec Cal. Complete Cell C. = 3.8633

1549 PH Cal. Complete Scale = 4903.7864 Offset = 6.8251

1553 Start 100% DO Cal.

12/22/00

810 100% DO cal. Completed overnight. Started 0% DO Cal.

1005 0% DO Cal complete Scale = 9.4253, offset = -3.8903

1038 S. Purdue and J. Kofoed on-site at LAO-1.6g #40716 - Initial Device BC = 100% (7.5v) Storage 51% free CPU Runtime = 36433.80 Extract test data

(47)

12/22/00

stopped test at 10:42 pulled - 40716 Installed # 40624 Started test LAO-1.6g @ 122200 at ~~10:54~~ (*) went back and added ref. level 18.10 ft. Initial device info Battery Capacity 100% (7.5v) CPU Runtime = 16523.28 Storage Cap = 99% Refresh after 2 min = BC = 100% (7.4v) " 100% (7.4v)

1115 Started (*) test LAO-1.6g @ 122200

1140 on-site at PAO-5N #40630 Initial Info: BC = 40% (7.2v) storage 58% CPU = 48333.54 Test PAO-5N @ 11-20-00 Aborted on 12-21-00 7:21 AM Extracted data - Installed 40655 in PAO-5N Initial Device Info BC: 61% (7.2v) Storage Cap = 99% free CPU Runtime = 34456.90

1153 Started test PAO-5N @ 122200 refresh device info BC = 56% (7.2v)

1155 De-mob from PAO-5N

01/04/01 LA Canyon

S. Purdue and B. Gray

847 LAO-B #40660

Storage 93% free, BC = 67% (7.3v)

CPU = 22275 LAO-BC 12-1406

Extract Data - looks ok

Refresh BC = 38% (7.2v) Temp. =

after 1 min. 35% (7.1v) 5.66°C

912 LAO-0.3 # 40653

mem. = 93% free

init. bat. = 96% - 7.4V

CPU = 21960 s

extracted data from LAO-0.3 @ 12:14:00

data looks OK

temp. = 6.23°C

refresh → bat = 66% - 7.3V

after 1 min → 61% - 7.2V

Took PVC cap to modify for cable slot - need to reinstall later...

1003 LAO-0.91 probe # 40666

Storage Cap = 74% free

CPU = 16450 sec, BC = 73% (7.3v)

1004 Extracting test LAO-0.91 @ 121900

Refresh Device Info BC = 44% (7.2v)

Temp = 10.678°C Refresh (1 min) 43% (7.2v)

10:19 LAO-1.6g probe # 40624

- Initial device info:

mem = 95% free

bat = 100% - 7.5V

CPU = 29448 s

- extract data from test LAO-1.6g @ 122200

data looks OK

- refresh device info →

bat. = 96% - 7.4V

temp. = 10.982°C

after 1 min. bat = 91% - 7.4V

1400-1500 moved storage trailer at SMO

1515 Connected to Probe # 40630

Initial Device Info =

Battery Capacity 0% (6.7v)

Storage Cap. 58% free

CPU Runtime = 48385

Refresh at 1517 → BC = 2% (7.0v)

at 1519 BC = 22% (7.1v)

at 1521 BC = 36% (7.1v)

at 1523 BC = 47% (7.2v)

Temp = 18.798°C at 1525 BC = 51% (7.2v)

at 1527 BC = 57% (7.2v)

at 1529 BC = 60% (7.2v)

at 1531 BC = 64% (7.3v)

Shane Purdue 01/04/01

01/04/01

#40630 at 1533 Battery Cap. = 65% (7.3v)
Disconnected –
1535 Connected to Probe # 40716
Initial Device Info
BC = 46% (7.2v) storage = 51% free
CPU Runtime = 36494
Temp = 19.287°C
Refresh Device Info at 1538 - BC = 61% (7.2v)
Refresh at 1540, BC = 67% (7.3v)
Refresh at 1542, BC = 70% (7.3v)
1545 Installed conducting sensor
and PH sensor SP 1/4/01 in Probe 40716
1555 Re-connect to Probe # 40716 for Cal.
Initial Device Info
BC = 93% (7.4v) CPU = 36526.88
Deleted LAO-1.6go111600 off of
probe –
1558 Begin PH 4 cal. · Error Message →
"Unable to Read PH sensor"
Check connections
Make sure Device has power
Clicked OK → Program now frozen
Cntrl-Alt-Delete → End Task
Re-Connected to #40716
1605 Began PH 4 cal again
1614 Began PH 7 cal

1/04/01

1617 PH Cal. complete
Scale = 4812.5784 offset = 6.9723
1623 Began Ec Calibration
1645 Program Frozen - decide to
stop for the day
Shut down Computer –
Left probe in Ec Cal solution
for the night.

1/05/01

825 Re-connect to 40716
Initial Device Info
BC = 100% (7.5v) 100% Storage
CPU = 37098
830 SP 27 Began Ec Calibration
838 Finish Ec Calibration
Cell Constant 4.0304
Disconnect and store in DI water
1020 S. Purdue and K. Greene on-site
at PAO-1 #40661
Storage Cap. 94% free
BC = 62% (7.2v)
CPU 17445.91
1025 Extracting test PAO-1 @ 121900
DO data looks to be jumping
around.

(52) 01/05/01

1030 Refresh Device Info 34% (7.1v)
after 1 min 25% (7.1v)
(*) Bring a cut Flat-topped cover to this well.

1043 on-site at PAO-2
DTW = 11.98 ft from blue mark

1120 PAO-2.5 DTW 11.12 ft TOC (PVC)

1403 On-site at PAO-3 J. Kofood and S. Purdue
Probe # 40493
Storage Capacity 38% free
Battery Cap 82% (7.3v)
CPU Runtime 61309.86
Extracting test ~~404~~ 01/05/01
PAO-3@11-21-00
refresh BC = 59% (7.2v)
60% (7.2v)
Level readings captured about 25 days prior. All other parameters changed consistancy on same day.
PAO-3 Manual reading DTW 13.63 ft TOC

1435 On-site at PAO-4
#40659

1/5/01 (53)

Initial Device Info
storage = 94% free
BC = 58% free (7.2v)
CPU runtime = 17682.14
Extract test PAO-4@121900
Refresh Device Info
BC = 24% (7.1v)
after 1 min = 21% (7.1v)

1455 On-site PAO-5N
#40655
storage 99% free
BC = 32% (7.1v)
CPU = 34509.39
TEST ABENDED 1 reading after test was started.
- I created new test PAO-5N010501
Manual Water level (reference level)
PAO-5N DTW = 10.08 ft

1506 - Started Test PAO-5N@010501
Extracted current data
Refresh - BC = 18% (7.1v)
Temp = 6.419° C

Shawn Purdue 1/5/01

(54) 1/8/01

1320 Connected to Probe # 40716 to do DO Calibration
Initial Device Info -
Batt. Cap = 100% (7.4v)
storage = 100% free
CPU Runtime = 37163
1323 Begin 100% DO Cal (5 sec. caltest)
1500 Begin 0% DO cal
1630 leave DO 0% cal running overnight

1335 Assemble and connect probe # 40630 for Calibration
Initial Device Info:
Storage Cap 100% free
BC: 31% (7.1v) CPU: 48473.9
1336 Refresh BC: 39% (7.2v)
Begin PH 4 Cal.
1344 Begin PH 7 Cal.
1347 PH Cal Complete Scale: 4800.4194
Offset 7.0321
1352 Begin Ec Cal. in 450 µS solution
1453 Ec Cal Complete - cell constant =3.7097
1457 Begin 100% DO cal. (5 sec. caltest)
1517 Begin 0% DO cal - leave running overnight

1/09/01 (55)

815 Probe # 40630
0% DO cal Completed overnight
Scale of 7.3835 offset -5.2775
Refresh Device Info
BC = 77% (7.3v) storage 99%
CPU = 49033.84
Disconnect, and store probe in DI water
817 Probe # 40716
0% DO cal completed overnight
Scale 6.0474, offset -3.1600
Refresh Device Info BC = 100% (7.5v)
Storage = 99% free, CPU = 37549.30
Disconnect and store in DI water.
910 Disassembled probe # 40630 and thoroughly cleaned precipitated Na_2SO_4 from probe and sensors, including xtals that grew inside nose of probe. Reassembled and check operation. All sensors appear to work OK.
Bat. = 88% - 7.4V
after 1 min. - refresh → 76% - 7.3V
@ 16.6 °C. Probe placed in DI water.
915 # 40716 checked ok operation - still in Na_2SO_4 soln. - needs to be cleaned!

1-9-01

#40716 measured 1.6 mg/L DO in the Na_2SO_4 soln - it should have read zero. The DO sensor should be recalibrated.

9:34 This probe was disassembled and cleaned - then reassembled and put in DI water.

9:50 restarted 100% DO calibration of probe # 40716.

11:05 Begin 0% DO Calibration @ see 1524

1116 Connect to Probe # 40630
Initial Info - BC 100% (7.5V)
CPU 49093.02

Probe in Na2S Take reading of DO → 0.128 mg/L
After 1 min - DO = 0.052 mg/L
Disconnect and rinse and store probe in DI water.

1440 S. Purdue and J. Kofoed on-site at PAO-5N
Probe # 40655
BC = 10% (7.0V) Storage 99% free
CPU = 34573.66
Refresh - BC = 6% (7.0V)
Test ABENDED, Pull #40655
Install #40630

1/9/01

1448 Connect to probe 40630
BC = 100% (7.4V) storage 99% free
CPU = 49109.38
Water level = 10.28 ft

14:53 Start Test. PAO-5N 010901
for Event 5 min or 10 mg/L
to record every 30 min.
- Refresh device Info. BC = 77% (7.3V)
CPU = 49139.84

1524 Probe #40716 DO Cal is unstable and next reading is in 1193 hours
Disconnected, rinsed and stored probe in DI water
Program was frozen

1/10/01

S. Purdue in Calibration Trailer

912 Connect to #40716 for DO Calibration. Initial Device Info
Storage = 99% free BC = 100% (7.5V)
CPU Runtime = 42664.34
- Deleted Linear DO Cal Tests

917 Began New DO Calibration, 100% DO on Newer PC.

1/10/01

922 Connect to Probe #40655
Initial Device Info - Storage 99% free
BC = 65% (7.3v) CPU = 34600.73
924 Refresh - BC = 61% (7.2v)
926 Start "CALTimeTest" with
Linear 30 min. Interval to
see if this is why probe
was "ABEND"ing in PAO-SN
1127 #40716 is still unstable -
"Next Extract in" flashes 1179
hours before going to a 5 -
minute interval.
→ Return to Win Site
Does not let me
1132 Flashed "Next extract in 1173 hours"
then began 5 minute interval
again.
-Cancel Calibration
Disconnect + Shut down Computer

1/11/01

1300 Probe #40655 "CAL timeTest"
stopped, seems O.K. except for
DO readings.
Battery refreshings give 100% 7.4v

1/11/01

1311 Refresh - BC = 100% (7.5v)
CPU = 34906 storage 99% free
1323 Connect to 40716
Initial Info = BC = 100% (7.5v)
Storage 99% free, CPU = 42983.27
- will replace DO sensor on 40716
- will clean and re-calibrate 40655
1347 Installed #40716 with a
brand new DO sensor and
began DO cal. 100%

1/15/01 S. Purdue in Cal. Trailer - smo
1010 Place probe #40716 in 0% DO
Solution - Begin 0% DO cal at 1016
1018 Dissassemble and Clean #40655
Re-assembled with same pH sensor
and Conductivity sensor, used DO
sensor that was cleaned and calibrated
on 12/18/00
1029 Connected to Probe #40655
Initial Device Info - Storage = 99% free
Battery Cap. = 0% (6.8)
CPU = 34917.47
Deleted PAO-SN 0122200 and
PAO-SN 010501 and DO cal
tests

1/15/01

1035 Refresh Device Info - BC = 24% (7.1v)
: Storage = 100% free ; CPU = 35112.82
1037 Refresh Device Info - BC = 62% (7.2v)
Begin Ec Calibration
1112 Ec Cal. Complete cell. const. = 4.0936
1132 PH Cal. Complete Scale: 4813.6662 Off: 6.9308
1136 Change Caltest to 5 min. Int. + begin 100% DO cal
1112 #40716 0% DO cal is complete
Scale = 10.2926
Offset = -6.3844
Rinsed probe thoroughly and stored in DI. Water.

1/22/01

925 S. Purdue on-site at cal. Trailer
Begin 0% DO cal on probe #
40655
1320 DO cal Complete, Scale: 6.7829
Offset: -9.2829
1350 S. Purdue and D. Thompson on-site
at LAO-B
Probe # 40660 BC = 59% (7.2v)
extract test CPU = 40406.98 Storage = 86% free
1357 Refresh BC = 27% (7.1v)
1358 Refresh BC = 16% (7.1v)
1359 Refresh BC = 21% (7.1v)
1400 Refresh BC = 19% (7.1v)

1/22/01 LA Canyon

1420 On-site LAO-0.3
Probe # 40653 storage = 87% free
BC = 89% (7.4V) CPU = 40021.15
Extracted test LAO-0.3 @ 12:14:00
Temp = 4.71°C
1426 Refresh BC = 61% (7.2v)
1427 Refresh BC = 62% (7.2v)
1428 Refresh BC = 61% (7.2v)
1429 Refresh BC = 46% (7.2v)

1450 On-Site LAO-0.91
Probe # 40656 STORAGE = 89% free
BC = 63% (7.3 V) CPU = 34[illegible]6.52
Extracted test LAO-0.91 @ 1219:00
Temp = 9.91°C

1500 Refresh BC = 34% (7.1)
1501 Refresh BC = 32% (7.1)
1502 Refresh BC = 30% (7.1)
1503 Refresh BC = 24% (7.1)

1515 On-Site LAO-1.6g
Probe # 40624 STORAGE = 89% free
BC = 100% (7.5V) CPU = 4[illegible]83.68
Extracted test LAO-1.6g @ 12:2200
∴ Temp = 10.85 C

1/22/01

1520 REFRESH: BC=88% (7.4V)
1521 REFRESH: BC=88% (7.4V)
1522 REFRESH: BC=87% (7.4V)
~~1523 REFRESH BC=~~ SP 1/22/01

1/23/01 Pueblo Canyon

1315 S. Purdue and D. Frank on site at PAO-1
Probe # 40661 storage = 88% free
BC = 53% (7.2v) 35440 = CPU
Extract Test PAO-1 @ 121900
Temp = 4.05°C
1319 Refresh device Info = 14% (7.1v)
1320 Refresh BC = 13% (7.1v)
1321 Refresh BC = 8% (7.0v)
1420 On-site at PAO-3 probe # 40493
Storage = 14% free, BC = 78% (7.3v)
CPU = 79453 @ PAO-3 still looks dry
Extracted test PAO-3 @ 11.21.00
1426 BC = 42% (7.2v) CPU = 79572
1427 BC = 46% (7.2v)
1428 BC = 46% (7.2v)
1445 On-site PAO-4 probe # 40659
Storage = 88% free BC = 53% (7.2v)
CPU = 35588
Extract test PAO-4 @ 121900
1447 Refresh BC = 14% (7.1V)

1/23/01

1448 Refresh BC = 8% (7.0v)
1449 Refresh BC = 14% (7.1v)
1450 Refresh BC = 17% (7.1v)
1451 Refresh BC = 17% (7.1v)
1507 On-site PAO-5N probe # 40630
Storage = 99% free, BC = 30% (7.1v)
CPU = 49751 unit moved Temp = 5.64
Test ABENDED on 1/10/01 at 5:06
Extract test PAO-5N @ 010901
Read Temp. = 5.684°C
Read level = 10.290 ft
Read pH = 6.648 pH
Conductivity = 365.689 uS/cm
DO = -4.475 mg/L
1515 Refresh Device Info = BC = 30% (7.1V)
1516 Refresh BC = 30% (7.1v)
1517 Refresh BC = 27% (7.1v)
1518 Refresh BC = 33% (7.1v)
1519 Refresh BC = 36% (7.1v)
1524 Start New Test PAO-5N @ 012301

S. Purdue 1/23/01

1/24/01

1010 S. Purdue and D. Frank on-site PAO-5N
Int. Dev. Info = BC = 78% (7.3v)
storage 99% free, CPU # 649838
Test PAO-5N@ 012301 Abandoned 1/31/01
Extract test ↑, pull # 40630
1017 Installed probe # 40716
BC = 53% (7.2v) storage = 99% free
CPU = 43191
DTW = 10.10 ft
1021 Start Test PAO-5N@012401
1022 Refresh - BC = 57% (7.2v)
1250 S. Purdue on-site at Cal. Trailer to calibrate "Loaner" probes.
Loaner probes # 40082, # 40126, 40132, 40101, 40118, 40143
Disassembled and cleaned # 40630 for shipping to In-Situ.
1345 Assembled # 40118 and began EC Cal.
1422 EC Calibration Complete cc = 3.7926
1403 Assembled # 40143 and began EC Calibration Int. Info -
BC = 100% (9.2v) Alkaline
storage 97% free CPU = 1587.96
1447 Ec Cal. Complete. Cell Constant = 3.8319

1/24/01

1440 # 40118 PH cal. Complete
Scale = 4731.1295 offset 7.1026
1447 100% DO cal. started
1508 # 40143 PH cal complete
Scale = 4743.4036 offset 6.9250

1/25/01 S. Purdue, Cal. Trailer
800 Start 0% DO cal on # 40118 and 40143
1027 Probe # 40118 0% DO Cal Complete
Scale = 8.3915, offset -1.8568
# 40143 - program frozen
CTRL - ALT - Delete → End Task
Reconnected to # 40143 and 0% DO cal Test was still running.
1031 * Rinsed and Cleaned # 40118, stored in DI
# 40118 - Info after Calibration
BC = 98% remaining, (9.1v) CPU = 1958.70
Storage = 100% free
1032 Refresh = BC = 97% (9.1v)
1042 Program on "old PC" probe # 40143 frozen again? — NaS in Cal Cup appears to have precipitated out — Snowy + cold today, only ~ 55°F in trailer
— Cancel Calibration, and move to other PC. Delete old DO cal tests

1/25/01

1054 #40143 Device Info BC = 74% (8.5v)
Storage = 100% free, CPU = 7519.83
Begin New 100% DO calibration
1215 Begin New 0% DO cal
1342 0% DO Cal Complete - stored in DI H_2O
Scale = 9.7416 Offset = -4.6109
1111 Cleaned, Assembled and connected
to probe #40101 - Initial Dev. Info
BC = 100% (9.1v) storage 97% free
CPU Runtime = 1696 - Deleted linear
tests on Device
1115. Began Ec Calibration
1213 Complete Ec Cal. cell Constant 4.1138
1233 Complete PH Cal - Scale = 4758.9485
Offset = 6.7101
1237 Begin 100% DO cal.
1345 Begin 0% DO cal stored in DI water
1530 Calibration Complete Do Calibration
Scale = 6.6341, Offset = -2.4727
1414 Connect to #40082 Initial Info-
BC = 100% (9.2v) CPU = 1692.40 Storage = 97%
Begin Ec Calibration
1440 Ec Cal. Complete - cell constant = 4.0910
1453 PH Cal. Complete - Scale = 4795.9870
Offset = 6.7808
1500 Begin 100% DO Cal
1600 - S. Purdue off-site / Cal. Trailer

1/26/01

825 S. Purdue on-site at Cal. Trailer
830 Begin 0% DO Cal on #40082
900 Connect to #40126 for Cal.
Initial Info BC = 98% (9.1v)
Storage = 100% free, CPU = 1652
Begin Ec Calibration
918 PC frozen — CTRL-ALT-DEL → End Task
Re-connect to #40126, Begin Ec cal again
frozen again → restart PC
Connect again - Device Info
BC = 93% (8.9v) CPU = 2297.56
922 Begin Ec Cal. Again
940 Ec Cal Complete Cell Constant = 3.6114
958 PH Cal Complete Scale = 4760.7990
Offset = 6.8585
1003 Begin 100% DO Cal.
1157 Program flashes "Next extract in 1193 hours"
(after PC) then goes back to 5 min. Intervals
1202 same as above, cancel Cal. and restart PC
1206 Begin 100% DO cal again.
934 #40082 DO Cal Complete
Scale = 7.4950, Offset = -4.4762
Device Info After Cal - BC = 98% (9.1v)
CPU = 2087.78 storage = 99% free
Disconnect and store in DI water
S. Purdue 1/26/01

1/26/01

943 Connect to #40132, Initial Dev. Info
BC = 100% (9.1v), st = 97% free, CPU = 1700.22
Begin Ec Cal
1017 Ec Cal Complete - cell Constant = 4.0428
1031 PH Cal Complete - scale = 4701.465, offset = 6.7488
1035 Begin 100% DO Cal.
1232 Begin 0% DO Cal.
1345 DO Cal Complete Scale = 9.1641
Offset = -2.5244 - store in DI water
1233 Probe #40126 100% DO complete
1236 Begin 0% DO Cal.
1346 DO Cal Complete Scale = 7.4516
Offset = -7.3280
Device Info After Cal.
BC = 96% (9.0V) st = 99% free
CPU = 2784.74
Disconnect and store in DI water
#40132 device info after Calibration - BC = 99% (9.1v)
Storage = 99% free CPU = 2208.52

S. Purdue 1/26/01

1/29/01

1019 ~~1149~~ 1/29/01 S. Purdue and M. Trujillo on-site at PAO-4. #40659 Initial Dev. Info - BC = 52% (7.2v) storage = 86% free
CPU = 41419
- Extract Test PAO-4 @ 12:19:00
- Stop Test, pull probe #40659
Install probe #40082, OTW = 5.0 ft
1022 Start Test PAO-4 @ 012901
Device Info - BC = 99% (9.1v)
CPU = 2099.64 storage = 99% free
1023 Refresh Device Info BC = 99% (9.1v)
1105 On-site at LAO-0.3
Connect to #40653, Int. Dev. Info - BC = 82% (7.3v), CPU = 46884.02
Storage = 84% free
Extract Test LAO-0.3 @ 12:14:00
1108 Stop test, pull #40653,
Install #40101
Initial Dev. Info - BC = 97% (9.0v)
Storage = 99% free CPU = 2325.94
OTW - ~~PA~~ 1/29/01 LAO-0.3 = 4.20 ft.
1114 Start Test LAO-0.3 @ 012901
~~1200~~

S. Purdue 1-29-01

1/29/01

1149 ~~Con~~ On-site at LAO-0.~~6~~91
40656 Device Info - BC: 55% (7.2V)
CPU = 41361.35, Storage 96% free
1151 Stop Test LAO-0.9012190 0, Pull
DTW 17.84' Install #40143
Connect to 40143 - BC = 83% (8.74)
CPU = 7681.71, Storage 99% free
1154 Start Test LAO-0.91 @ 012901
I dont think there is water in
1200-1230 lunch break the well.
1420 On-site at LAO-B, very
deep snow.
Connect to LAO-B # 40660
Device Info - BC = 54% (7.2V)
Storage 83% free, CPU = 47448.36
Extract test LAO-B @ 12-14.00
1435 DTW = 8.25 ft (after installing
40118
1433 Start test LAO-B @ 012901
Dev. Info BC = 98% (9.1V)
Storage 99% free, CPU = 2245.83
1530 On-site at Cal Trailer,
disassemble and clean probes
#5 40660, 40653, 40659, 40656, 40630
for shipping back to In-Situ

1/30/01

1030 S. Purdue + D. Frank on-site
at PHO-3 #40493
BC = 77% (7.3V) storage 5% free
CPU = 86366.74
Extract Test PHO-3 @ 11:21.00
Computer frozen on block
SOS of 1570
CNTRL - ALT - Delete — End Task
Re-connect and continue
extraction
- Program Frozen again
Re-connect and continue Extraction
- Program Frozen again
Re-connect and continue Extraction
- Program Frozen again
1040 - Stop Test DTW = 13.65 ft
Pull Probe
Connect to Probe #40132
BC = 98% (9.1V), storage 99% free
CPU = 2217.90
set ref. level at 13.55
1047 Start Test PHO-3 @ 1300
1500 On-site PHO-1
Connect to 40661
BC = 49% (7.2V) CPU = 42511
Storage = 86% free

1/30/01

Extract Test PA0-1@121900

PA0-1 DTW = 8.09 ft Pull probe

connect to #40126 Int. Device

Info - BC = 99% (9.0v) St = 99%

CPU = 2796.01

1502 Start Test PA01 @ 013001

1620 Return to Office

1/31/01 S. Purdue on-site Calibration

Probes in Trailer to be sent back Trailer -

40661, 40653, 40660

40659, 40655, 40656

40630, 40493

9:00 Cleaned and disassembled #40661

and #40493 for shipping to

In-Situ

2/2/01

Transported probes to BUS-4, and

left for shipping to In-Situ.

2/6/01

1105 S. Purdue + J. Kofead on-site

at ~~PA0~~ 020601 LA0-0.3 to

adjust incorrect water level reference

Connect to #40101

Battery Cap = 70% (8.4v)

Storage = 207290 97% free

CPU Runtime 10258

DTW = 8.25 ft

1110 Stopped test LA0-0.3@012901

Ed Extracted test

Edit Level Reference to 8.25 ft

1108 PC time start Test LA0-0.3@020601

1115 de-mob

2/26/01 S. Purdue and K. Greene

9:15 PA0-3 on-site connect to

#40132 BC = 45% (7.8v)

storage 91% free

CPU = 28871.18

Extract test PA03@01130

Read water level DTW = 8.771 ft

Manual DTW = 8.78 ft.

922 Refresh Device Info

Storage Cap. 91% CPU 28928.46

BC 47% (7.9v)

925 Off-site

940 On-site at PA0-4

Connect to #40082

Storage = 91% free BC = 40% (7.7v)

CPU = 29748.96

Extract Test PA04@012901

Level Read = 5.014 ft.

Manual level reading = 4.91 ft.

945 Refresh Device Info BC = 37% (7.7v)

Storage = 91% CPU = 29807.83

(74) 2/26/01

1005 On-site PAO-5N connect to
#40716 Int. Device Info
storage 99% free, BC = 0% (7.0v)
CPU = 43252.36
Test PAO-5N @012401
ABENDED on 1/24/01 at 10:51
Level read = 10.072 ft
Manual DTW = 10.03 ft
Temp = 5.741 °C
1010 Start Test PAO-5N@022601
1012 Refresh device info - storage 99%
BC = 36% (7.1v) CPU = 43293.63
1020 DTW PAO-55 = 19.91 ft
1120 On-site PAO-1 connect to
#40126 BC = 32% (7.6v)
storage 91% free CPU = 29339.58
Extract test PAO-1@013001
Temp = 2.472 °C
Level = 7.822 ft
Manual DTW = 7.86 ft from TOC
(*) Bring grinded cover to PAO-1 - Flat
1140 PAO-2 DTW = 13.09 ft.
1315 S. Purdue and M. Trujillo on-site at
LAO-0.3. Connect to probe
(*) Needs cover #40101 BC = 41% (7.8v)
Storage = 90% free CPU = 30172.11

2/26/01 (75)

Extract Test LAO-0.3
Level = 8.050 ft, Manual DTW = 8.05 ft
1321 Refresh Device Info - BC = 41% (7.8v)
Storage = 90% free, CPU = 30220.22
1325 off-site
1335 On-site LAO-0.6 = 6.98 ft. DTW-TOC
1420 On-site LAO-1.6g connect to
#40624 BC = 100% (7.4v)
CPU = 82061.78, storage 78% free
Extract test LAO-1.6g @ 112000
level = 10.859 ft.
Manual DTW = 10.82 ft
(*) Needs a cover
1426 Refresh Device Info BC = 72% (7.2v)
Storage = 78% free
CPU Runtime 82126.32
1500 Back to Office
S. Purdue 2/26/01

2/27/01 J. Koford and S. Purdue
1250 On-site LAO-B connect to
#40118 BC = 40% (7.7v)
CPU = 30877.30, storage 90% free
Extract test LAO-B@012901
level reading = 20.703 ft
Temp = 4.290 °C
Manual DTW = 8.10 ft

2/27/01

Transducer level = 20.702 ft,
Manual level = 8.10 ft
12.55 - Stop test to edit level reference:
Value in Parameter wizard reads
8.25 ft as level reference (from last edit)
I Changed level reference to
8.10 ft, - update reading,
transducer still reads 20.707 ft.
- Exit Parameter wizard.
Now readings for level are
8.10 ft, but "Actual Depth"
reading says 20.707 ft. -
1301 Start Test LAO-B@022701
1302 Refresh Device info BC: 40% (7.7v)
Storage 90% free, CPU = 30978.01
1330 LAO - 0.8 DTW : 13.81 ft from TOC
1340 On-site LAO - 0.91 connect to
#40143 - BC = 25% (7.4v)
CPU Runtime = 36448.78, Storage = 70% free
Extract Test LAO-0.91@012901
Level reading 7.929 ft,
Manual w/tape = 9.69 ft
1342 Stop test LAO-0.91@012901
to edit level reference
1343 LAO-0.91@022701 start test
with edited level reference.

2/27/01

1345 Refresh Device Info BC = 26% (7.4v)
CPU = 36537.78, storage 90% free
1410 LAO - 1.2 DTW 6.17 ft TOC stick

3/8/01

1200 S. Purdue on-site Calibration
Trailer.
1225 Connect to #40116, Initial
Device Info - Storage = 97% free
BC = 85% (8.8v) CPU = 3866.35
1229 Start Ec Calibration
1303 Ec Calibration Complete
cell constant = 3.8595
1321 PH Cal. Complete, scale = 5028.7892
Offset = 6.7478
1325 Begin 100% DO Calibration
1435 100% DO Complete, begin 0% DO
1520 0% DO Cal. Complete, scale = 9.9769
Offset = -4.0267

3/8/01

1235 Assemble + clean #40155
1240 Connect to 40155, Initial
Device Info - Storage = 95% free,
BC = 100% (9.3v), CPU = 19803.13
1245 Begin Ec Calibration
1301 Ec Cal Complete, cell constant =
3.8021

3/8/01

1315 PH Cal. Complete Scale: 4834.03
Offset: 6.8185
1318 Begin 100% DO Cal.
1435 100% DO Cal Complete
~~1520~~ 1549 0% DO Cal Complete
Scale = 5.7989, Offset -4.4528
1550 Post-Cal Device Info - Storage = 95% free
BC = 100% (9.3v) CPU = 19835.46
Disconnect + store in DI water.
1520 #40116 Post Calibration Device
Information - storage = 97% free
BC = 84% (8.7v) CPU = 3954.59
Disconnect and store in DI water

3/9/01

~~10~~ 9.40 S. Purdue and B. Gray on-site PAO-SN
PAO-SN - DTW = 9.8'
Pull probe #40716, no test to
extract, error messages
Install #40155, Initial Device
Info BC = 100% (9.3v), storage = 94%
CPU = 20130.52
956 Start Test PAO-SN@030901
957 Refresh device info BC = 100% (9.2v)
CPU = 20251.75, storage = 94% free

3/9/01

1035 on-site LAO-1.6g
Connect to #40624 Initial Device
Info - BC = 100% (7.4v) storage = 74% free
CPU = 92849.65
Extract test LAO-1.6g@122200
1044 Stop test, pull #40624
1051 Connect to 40116 - Initial Dev.
Info BC = 82% (8.7v), CPU = 4207.3,
storage = 97% free
DTW = 9.57 ft
1052 Start Test LAO-1.6g@030901
1100 off-site
clean probes for shipping

1400 Drop off #40624
and #40716 at
S. Purdue BUS-4 for
shipping to
In-situ
3/9/01

3/14/01

910 S. Purdue and J. Crocker on-site at LAO-0.91 to pull transducer for calibration.
Connect to #40143 Initial Info
BC = 0% (6.7v), Storage = 86% free,
CPU = 51167.35
Extract Test LAO-0.91 @ 022701

PC time
909 Stop Test, pull probe
918 Refresh Dev. Info, BC 0% (6.5v)
CPU = 51210.91, Storage (86% free)
930 On-site LAO-0.3, connect to #40101, BC = 19% (7.2v)
storage 85% CPU = 45873.19)

PC time
928 Extract test LAO-0.3 @ 020601
stop test, pull probe
935 Off-site
950 Drop off John C. at MK office
1000 On-site cal. Trailer
Replace battery pack in #40143, clean and replace sensors, polarized DO sensor
1041 Connect to 40143 for calibration
Initial Dev. Info, BC = 100% (9.5v)
storage = 86% free, CPU = 51222.52
Synchronize device clock to PC clock

3/14/01

1043 Begin Ec Cal 40143
1106 Ec Cal Complete - cell Const = 3.8606
1110 Begin 100% DO cal
1150 100% DO Cal Complete, begin PH cal
1200 Complete PH cal. Scale = 4604.8856, Offset = 6.8428
1203 Begin 0% DO Cal
1254 100% DO cal complete, Scale = 9.1864 Offset = -2.2566 cal complete
1045 Replace battery pack in probe #40101
1117 Synchronize clock, connect to #40101
Initial Dev. Info - BC = 100% (9.4v)
storage = 85% free, CPU = 45931.05
1119 Begin Ec Calibration
1154 Ec Cal Complete cell Constant = 4.0430
1156 Begin 100% DO cal. 1330, complete
1340 PH cal complete, scale = 4722.5250
offset = 6.8138
1345 Begin 0% DO cal.
1451 0% DO cal complete, scale = 9.2019
offset = -7.6227
1255 #40143 - Post Cal device info
BC = 100% (9.4v) CPU = 51409.82
Storage = 86% free, Disconnect and store in DI water.

(82)

3/14/01

1455 Off-site at trailer, mob to office to pick up J. Crocker

1520 On-site LAO-0.91

DTW = 9.96 ft TOC

Install probe #40143

1523 start Test LAO-0.91 03/14/01

BL = 100% (9.4) R=86%, CPM=5/658.4

1525 off-site

1535 on-site LAO-0.3

Install probe #40101

1542 start Test LAO-0.3 03/14/01

1550 off-site

S. Purdue 3/15/01

3/19/01

(83)

1510 S. Kofod and S. Purdue - on-site at PAO-3

Laptop computer will not function properly - It is saying that the device in the modular bay cannot be identified, and I can go no farther.

1515 off-site

S. Purdue 3/19/01

3/20/01

855 S. Purdue and J. Koford
On-site at PAO-1
Unable to connect, battery may be dead
Replaced batteries
Connect to #40126
Extract test PAO-1 @ 013001
PC frozen 2 times after Extract
916 Start Test PAO-1 @ 032001
Dev. Info BC = 100% (9.3v)
CPU = 51459.71, storage = 84% free
900 Off-site (got stuck in snow)
1055 On-site LAO-B
Connect to #40118
Extract test LAO-B @ 022701
Device Info - BC = 0% (6.7v)
Storage = 84% free, CPU = 51708.6
Stop test to switch battery
1110 Water level DTW = 8.30 ft
~~Initial~~ 4/3/01 Device Info BC = 100% (9.4v)
CPU = ~~71~~ 4/3/01 51723.96 storage = 84% free
1120 Off-site, back to office for Lunch
1400 S. Purdue and C. Shultz
On-site at PAO-3
Connect to #40132
BC = 1% (6.8v), Storage = 84% free
CPU = 50859

3/20/01

Extract test PAO-3 @ 013001
Stop test, device info
BC = 2% (6.9v) CPU = 50901.19
Storage = 84% free
Replaced batteries, New Dev. Info
BC = 100% (9.5v) Storage 84% free
CPU = 5098 DTW = 6.91 ft
Set level reference to 6.91 ft
1420 Start Test PAO-3 @ 032001
1425 off-site
1445 On-site at PAO-4, connect to #40082, Initial Info BC = 0% (6.5)
storage = 84% free, CPU = 51728.74
Extract test PAO-4 @ 012901
Stop test, pull, change battery
Re-Install probe
Initial Info BC = 100% (9.5v)
CPU = 51788.43, storage = 84% free
DTW = 5.15 ft, set land reference
1502 Start Test PAO-4 @ 040601
1510 off-site
1530 On-site at PAO-5N
Connect to #40155
Dev. Info BC = 65% (8.3v)
CPU = 31364.93, storage 91% free
Extract test PAO-5N @ 020901
1540 Offsite

(86) 3/21/01

1250 S. Purdue and C. Shultz
on-site at LAO-1.6g
Connect to #40116
Initial Dev. Info. BC = 57% (8.1v)
Storage = 93% free, CPU = 16227.74
Extract test LAO-1.6g030901

1315 On-site LAO ~~-1.6~~ 0.91 3/21/01
Connect to #40143 Initial
Dev. Info BC = 74% (8.5v)
Storage = 83% free CPU = 58524
Extract Test LAO-0.91@031401

1330 On-site LAO-0.3
Connect to #40101
Initial Dev. Info BC = 75% (8.5v)
CPU = 53403.55, storage = 83% free
Extract test LAO-0.3@031401

1340 Mob to FSF to drop off
surface water sampling waste
and get pallets to take to
PAO-5N.

1430 On-site at PAO-5N to build
Swamp bridge

1500 Mob to MK office.

S. Purdue 3/21/01

3/23/01 (87)

1330 S. Purdue and J. Kofoed
on-site at LAP-6B
Installed minitroll #3089
at a depth of 16 ft
TD = 16.3 ft DTW = 12.13 ft
BC = 100% CPU = 67 sec.
storage 100% free
Start test LAP-6BR032301
for 30 min. linear interval

1410 Off-site, mob to office.

S. Purdue 3/23/01

845 S. Purdue and D. Steven on-site at PAO-1. Connect to #40126
Extract test PAO-1 @ 032001
(739) PC time stop Test BC = 53% (8.0v)
Pull probe, CPU = 67262.17
storage = 79% free
852 Connect to #40624
Change device clock to current time
856 Started test PAO-1 @ 040501
Dev. Info BC = 100% (9.4v)
CPU = 318.06, storage = 99% free
1307 S. Purdue and D. Frank on-site at PAO-3, connect to #4932
Extract test PAO-3 @ 032001
Stop test at 1203 (PC time)
BC = 59% (8.2v) CPU 66697
storage: 79% free
pull probe
Install #40654
BC = 100% (9.2v) CPU 372.11
storage = 99% free
DTW = 7.35 ft TOC
1318 Start test PAO-3 @ 040501
1320 Mob to PAO-4

1338 On-site PAO-4 connect to #40082 BC 58% (8.1) CPU 67540.66
storage = 79% free
Extract test PAO-4 @ 032001
Stop test, pull probe
1343 Install #40630
BC = 100% (9.2v), storage 99% free,
CPU = 459.40
Set device clock, start
1347 test PAO-4 @ 040501
Mob to PAO-5N
1405 On-site at PAO-5N connect to #40155 BC = 43% (7.8v)
storage = 86% free, CPU = 47113.09
Extract test PAO-5N @ 030901
Stop test 13:08 (PC time)
DTW = 10.63 ft TOC
Connect to #40622
BC = 100% (9.4v) CPU = 280.80
storage - 97% free
set level reference
set device clock
1414 Start test PAO-5N @ 040501
1420 Mob to Office
S. Purdue 4/5/01

(90) 4/9/01

1050 On-site Calibration trailer
-cleaned and disassembled
~~pbs~~ SP 4/9/01 probes #40155
#40126
#40082
#40132
De-connect for Shipping
back to In-situ.

S. Purdue 4/9/01

(91) 4/17/01

1320 S. Purdue and D. Steven
on-site at LAO-B
connect to # 40118
BC = 43% (7.8v), storage = 75% free
CPU = 79445
Extract Test LAO-B@032001
(1216) Stop Test, pull probe
Install # 40493
BC = 100% (9.4v), CPU = 293.53
Storage = 99% free
DTW = 8.24 ft TOC
(1235) Start test LAO B@041701
1335 Mob to LAO-0.3
1350 Connect to # 40101
BC = 37% (7.7v)
CPU = 80086, storage 75% free
(1252) Extract test LAO-0.3@031401
(1253) Stop test, pull probe
1356 Install # 40716
BC = 100% (9.4v) CPU = 567.12
storage cap = 99% free
Mob to LAO-0.91, gate is
locked out, cannot get through.
Mob to SMO trailer to clean
probes for shipping to In-situ.
1450 Probes # 40118 and 40101 are clean
and packed. S. Purdue

(92) 4-18-01

Calibrating probes @ lab trailer from 0900 -

- set up temp. test on probe # 40653 and started running while in bucket of water @ 1129 to get DO sensor stabilized.
- DO cal. completed on probe # 40587 and started temp. test running @ 1341
- Mob to LA Can - download data from transducer in LAP-6A @ 14:10.
- transducer in LAP-6A read 12.812 ft btoc. Water level meter reads 12.75 ft btoc
- Error is 0.06 ft which is max error (0.2% of full scale of 30 ft)
- Stopped the test and started new test w/ WL reset to 12.~~812~~ 75 ft btoc level reference @ 1425
- Mob to LA Canyon @ LA0-1.6g @ 1600. Pulled probe # 40116 after downloading data from test LA01.6g@030901. Installed probe # 40653. set ref WL = 8.80 ft btoc. started test

(73)

4-18-01 cont.

LA01.6g@041801 @ 1614. battery = 100%, mem. = 99% free.

S. Rue

4/18/01

(94) 4/19/01 LA Canyon

0855 S. Purdue and B. Gray on-site at LAO-0.91
Connect to #40143

0900 (800) Extract test LAO-0.91@031401
Stop test, pull probe

Pulled probe 40143 and installed #40587. Set ref. w/L to 11.86 ft btoc. Started test LAO-0.91@041901 @ 0909.
- note - probe clock is on standard time. Test = event program - reading DO every 5 mins but recording data at 30-min. intervals unless DO readings fluctuate by > ± 50 mg/l.

0915 Depart field and drive to lab trailer @ FSF.

4/30/01 Pueblo (95)

9:45 S. Purdue and D. Steven on-site at PAO-1 #40624
BC = 100% (9.3v) storage 99% free
CPU = 351.96
Test PAO-1 @
took one reading 4/30/01 8:56 AM
then stopped - ABEND

955 DTW = 9.48 ft TOC

956 Start Test PAO-1@047001
Mob to PAO-2 for water level
*see water level notebook

1015 Mob to PAO-1 to check transducer to see if still running - wait until 10:30

1026 Connect to 40624
test #PAO-1@043001 ABENDed

1028 start new test PAO-1@043001b with linear 5 min. intervals

1034 Refresh Device, test still running
Mob to PAO-3

1116 On-site at PAO-3 connect to #40654 BC = 50% (8.0v)
Storage (92% free)
CPU 2508831
Extract test PAO-3@040501
Everything looks fine except for DO
1120 mob to PAO-4

4/30/01 Pueblo LA Canyon

1135 On-site at PAO-4, connect to
40630 BC: 99% (9.1v)
storage 99% free CPU = 1923.87
Test PAO-4 @ 040501 Aborted
on 4/7/01 at ~~18:07~~ 4/30/01 00:18
1142 Start test PAO-4 @ 043001
1148 Refresh - test still running
DTW = 5.59 ft TOC
Mob to PAO-5N
1205 On-site at PAO-5N, connect to
40622 BC = 61% (8.2v)
storage 92% free CPU 24896.97
1209 Test PAO-5N @ 040501 - Extract
DO looks O.K.
1215 Mob to LA Canyon
Lunch
1320 On-site at LAO-1.6g
Connect to # 40653
BC = 72% (8.5v) storage 96% free
CPU = 12877.92
Extract test LAO-1.6g @ 041801
Mob to LAO 1.2 for water level.
1345 On-site at LAO-0.91, connect to
40587 BC: 74% (8.5v)
Storage 96% free CPU 16442.37

4/30/01 LA Canyon

(1247) Extract test LAO-0.910 041901
1420 On-site at LAO-0.3, connect to
40716, BC = 100% (9.3v)
storage 99% free, CPU 612.90
Test LAO-0.3 @ 041701 Aborted
on 4/17/01 at 12:58, one reading
Create a new test LAO-0.30 043001
linear w/ 5 min. intervals
(1324) Start New test
DTW = 8.26 ft TOC
1455 On-site at LAO-B, connect to
# 40493, BC = 70% (8.4v)
storage = 95% free, CPU = 13271.29
(1402) Extract test LAO-B @ 041701
1505 Data looks good - de-mob.

S. Rhodes 4/30/01

5/1/01 PM + LA Canyons

9:30 S. Purdue + B. Gray on-site at PAO-1 Connect to #40624
Test PAO-1 @ 043001b has stopped running after 3 readings at 5 min. intervals
Temp = 5.12°C pull #40624 and install #40621
BC = 100% (9.4V), CPU = 325.14
storage = 99% free.
Set ref. WL @ 9.48 ft. btoc
Started test "PAO-1@050101" @ 09:42

10:50 On-site at LAO-0.3, connect to # 40716 test LAO-0.3@043001 aborted after 2 5 min. intervals
T = 5.94°C pull, install
# 40658 BC = 99% (9.1V)

(939) Start test LAO-0.3@050101
PTW = 8.25 ft TOC

1110 On-site LAP-4 connect to
#1 # 40659 running fine BC = 100% (9.2V)
storage 98% free
#2 # 40656 running BC = 100% (9.1V)
#3 # 40492 running BC = 100% (9.3V)

R M
5-1-01

5/1/01 cont.

11:23 on site at LAP-5.7

meas. WL in LAP-5.7 #1 = 11.66 ft btoc
LAP-5.7 #2 = 11.65 ft btoc
LAP-5.7 #3 = 11.64 ft btoc

11:29 On site at LAP-6

- downloaded data from mini-Troll in LAP-6
- battery = 88% (2.5 V)
- storage = 98% free

Transducer reading 12.806 ft btoc
Manual WL meas. @ 12.80 ft btoc.

11:48 on-site at PAO-4 to download data from probe and ~~reset probe clock to standard time~~. and replace probe.
Extracted data from test PAO-4 043001 (probe # 40630). Test was still running. Stopped test, and pulled # 40630 to return to In-situ.
Installed # 40491 - Set reference WL = 5.73 ft btoc

5/1/01 cont.

started test PA04@ 050101 @ 12:02.

12:15 on-site at PA0-3 to reprogram probe clock from daylight saving time to standard time. Connected to # 40654.
Download data from test PA04@ 040501.
Stopped test PA04@ 040501.
battery = 49% (7.9 V)
data - 91% free
Reset probe clock to 11:19 (standard time)
programmed test " PA0-4@ 050101.
Started new test @ 12:21

12:38 on-site at PA0-5N to reprogram probe clock to standard time.
connect to probe # 40622
BC = 51% (8.2V) storage = 91% free
Downloading PA0-5N@ 040501
1242 Stop test, reprogram clock to 11:42
1244 Start test PA0-5N@ 050101
14:01 Measure WL in MCO-0.6
WL = 5.37 ft btoc
TD = 7.24 ft btoc

SP 5/1/01

5/21/01 S. Plunkett and J. Kotsoed

1415 On-site at LA0B
Connect to # 40493 BC = 48%
storage = 89% free - extract Test, looks good
1440 On-site at LA0-0.3 # 40658
BC = 58% (8.2v) storage = 93% free
CPU = 24217.69 - extract Test, looks good
1500 On-site at LA0-1.6 # 40653
BC = 51% (8.0v) storage = 89% free
CPU = 33304 Extract Test, looks good
1530 On-site at LA0-0.91 # 40587
BC = 53% (8.0v) storage = 89% free
CPU = 37254 Extract Test
DO sensor out of calibration

5/21/01

5/25/01 Pueblo Canyon

830 S. Purdue and K. Greene on-site at PAO-3. Connect to probe # 40654. BC=25% (7.4v)
storage 84% free, CPU= 49818.41
Extract test PAO-4@0050101
(*) Name of test is incorrect
This test started on 5/1/01 11:21 Am
stopped on 5/25/01 7:37 Am
Installed probe # 40660
Delete "trailer" test
Started test PAO-3@0052501
at 753 BC=70% (8.4V)
storage 80% free, CPU=14826.4
905 On-site at PAO-4. Connect to
# 40491, BC= 63% (8.3v)
CPU=24167.95 Storage 92%
Extract test PAO-4@0050101
started on 5/01/01 at 11:02 Am
stopped on 5/25/01 at 8:10 Am
Pull #40491. Install #40494
BC= 79% (8.6v), Storage=76% free
Delete Cal test Storage=99% free
820 Start test PAO-4@0052501
935 On-site at PAO-5N
Connect to # 40622

5/25/01 Pueblo

BC=37% (7.7v) CPU=49548.3
Storage=84%, Extract test
PAO-5N@0050101, stop test
Install # 40661 BC=73% (8.5v)
storage=76% free CPU=17387.19
Delete Cal test and other linear test
(851) Started test PAO-5N@0052501
1030 mob to ~~office~~ 5/25/01 SMO
to return PCs and probes

Jim Purdue
5/25/01

(104) 5/30/01

1230 S. Purdue on-site at Calibration trailer.
Cleaned and dissassembled probes from Pueblo Canyon.
Calibrated pH and Cond. for #40716 and #40630, #40624

S. Purdue

5/31/01 (105)

1145 On-site S. Purdue calibration trailer to conduct DO calibrations
1200 Begin 100% DO calibration on #40624 and #40630
1330 Begin 0% DO cal.
1500 Calibration Complete
Download Data from last visits to LA and PU on to floppy disk for back-up.

S. Purdue 5/31/01

6/4/01 LA Canyon

955 S. Purdue and J. Kotsed on-site
at LAP-6B, SOP #
BC = 83% (2.5v) Storage 98% free
CPU = 781 running fine
Extract test LAP-6B @ 041801
~~Mob to next well~~ 6/4/01
Manual DTW = 13.03 ft TOC
1007 On-site LAP 5.7
#1 DTW = 12.02 ft TOC
#2 DTW = 12.02 ft TOC
#3 DTW = 12.01 ft TOC
1020 On-site LAP-4, connect to #1
# 40659 BC = 96% (9v) storage 95% free
CPU = 1398.91 Extract test LAP4#1@041801
Connect to # 40656
BC = 96% 9.v Storage = 94% free
CPU = 1404.12
Extract test LAP4#2 041801
Connect to # 40492
BC = 100% 9.2v storage 95% free
CPU = 1367.78
Extract test LAP4#3@041801
1040 On-site at LAO-1.6g connect
to # 40653 BC = 87% (7.7v)
storage 85% free, CPU = 47034.69
Extract test LAO-1.6g @ 041801

Stop test, pull probe # 40653
Install # 40490 BC = 82% (8.7v)
storage 76% free CPU = 17510.18
Delete Cal test and linear test #1
Manual DTW 11.75 ft
(959) Start test LAO-1.6g @ 060401
1125 On-site at LAO-0.91 connect
to # 40587 BC = 40% (7.7v)
storage 85% free, CPU = 50951.64
Extract test LAO-0.91 @ 041901
(1023) Stop test, pull probe # 40587
Install # 40655, BC = 79% (8.6v)
storage 99% free, CPU = 17537.89
Manual water level = 12.83 ft TOC
(1033) Start Test LAO-0.91 @ 060401
1142 on-site at LAP-3.5
DTW - #1 Dry - TD 16.47 ft TOC
#2 DTW = 10.22 ft TOC
#3 DTW = 10.20 ft TOC
1146 on-site LAP-3 DTW = 10.51 ft TOC
1148 LAO-0.8 DTW = 14.58 ft TOC
1158 LAO-0.6 DTW = 7.38 ft TOC
1205 On-site at LAO-0.3, connect
to # 40658, BC = 44% 7.8v
st = 89% free CPU = 37994.48
Extract test "PAO-0.3@050101"
Should be LAO-0.3

6/4/01 (cont.) LA Canyon

stop test, pull #40658
Install #40624 BC = 100% (9.4v)
storage 99% free, cpu = 410.95
Manual DTW = 8.84 ft TOC
(1121) Start test: LAO-0.3 @ 060401
1345 On-site at LAO-B, connect
to #40493 BC = 34% (7.6v)
Storage 89% free, cpu = 47989.50
Extract test LAOB-@ 041701
stop test, pull #40493
Install #40630 BC: 100% (9.2v)
storage: 99% free cpu = 3425.72
Manual DTW = 8.60 ft TOC
(1302) Start test LAOB @ 060401
1405 Mob to trailer

6/4/01

6/5/01 PU canyon

910 S. Purdue and J. Kofoed on-site
at PAO-1 to change transducer
and take water levels.
Connect to #40621 BC = 48% (7.9v)
Storage 88% free, cpu = 34888.02
Extract test PAO-1 @ 050101
Stop test, Pull #40621
~~6/5/01~~ Manual Water level
DTW = 11.37 ft TOC
Install #40716 BC = 100% (9.4v)
Storage = 99% free 456.15
(825) Start test PAO1 @ 060501
925 Mob down canyon for
water levels - see water level notebook
1000 On-site at PAO-3, connect to
#40660 BC = 53% (8v)
storage = 79% free cpu = 25800.37
Extract test PAO-3 @ 052501
Well looks dry
Manual water level = DTW = 13.54 ft
TD - 16.54 ft
1020 On-site at PAO-4 connect to
#40494 BC = 56% (8.1v)
storage = 96% free cpu = 28557.91
Extract test PAO4 @ 052501
DTW = 5.84 ft TOC

(110) 6/5/01

1038 On-site at PAO-5N
#40666 BC = 51% (8.0V)
96% storage free, CPU = 28469.85
Extract test PAO-5N e052501
1039 DTW = 11.26 ft TOC
1043 PAO-5S ~~DTW~~ = 21.10 ft TOC
Dry

6/5/01

S. Purdue
C. Shultz

6/19/01 LA Canyon (111)

918 Connect to #40490 at
LAO-1.6a BC = 54% (8.1V)
storage 95% free, CPU = 32395.32
Extract test, water level
had one recharge -

6/19/01

(112) 6/21/01 Pueblo Canyon

S. Purdue and C. Shultz on-site at PAO-1 to take water samples — connect to # 40716

BC = 70% (8.4v), Storage 94% free

CPU = 16324

Extract test PAO-1 @ 060501

1215 Connect to # 40660 at PAO-3

BC = 39% (7.7v), Storage 72% free

CPU = 41771.13. Extract test PAO-3 @ 052501, Water level in well is below transducer

1255 On-site at PAO-4, connect to # 40494, BC = 38%

storage = 91% free, CPU = 44506

Extract test PAO-4 @ 052501

looks good

R Gray 7/5/01

7/5/01 Pueblo Canyon (113)

Bob Gray and Curtis Shultz

1155 - download data from PAO-1

Probe # 40716

Extract data from Test PAO-1 @ 060501

battery = 8.1 V (58% remaining)

CPU = 90% free

1310 - Download data from PAO-3

Connect to # 40660

Battery capac. = 7.4V (26% remaining)

CPU = 67% free

extract test PAO-3 @ 052501

1332 - Download PAO-4

Connect to # 40494

Battery = 7.1 V (14% remaining)

CPU = 86% free

extract test PAO-4 @ 052501

1350 Download PAO-5N

connect to # 40661

Battery 7.3 V (23% remaining)

CPU = 86% free

extract test PAO-5N @ 052501

R Gray 7/5/01

7-11-01 Bob Gray @ lab trailer

Summary of probe status by well at this time:

LAO-B: # 40630 installed @ 6/4/01
w/ 100% battery (9.2 V)
(not checked since)

LAO-0.3: # 40624 installed @ 6/4/01
w/ 100% battery (9.4 V)
(not checked since)

LAO-0.91: # 40655 installed @ 6/4/01
w/ 79% battery (8.6 V)
(not checked since)

LAO-1.6g: # 40490 installed @ 6/4/01
w/ 82% battery (8.7 V)
- checked 6/19/01: battery = 54% (8.1 V)

PAO-1: # 40716 installed @ 6/5/01
w/ 100% battery (9.4 V)
- checked 6/21/01: battery = 70% (8.4 V)
- checked 7/5/01: battery = 58% (8.1 V)

PAO-3: # 40660 installed @ 5/25/01
w/ 70% battery (8.4 V)
- checked 6/5/01: battery = 53% (8.0 V)
- checked 6/21/01: battery = 39% (7.7 V)
- checked 7/5/01: battery = 26% (7.4 V)

RG 7-11-01

7-11-01

PAO-4: # 40494 installed 5/25/01
w/ 79% battery (8.6 V)
- checked 6/5/01: battery = 56% (8.1 V)
- checked 6/21/01: battery = 38%
- checked 7/5/01: battery = 14% (7.1 V)

PAO-5N: # 40661 installed 5/25/01
w/ 73% battery (8.5 V)
- checked 6/5/01: battery = 51% (8.0 V)
- checked 7/5/01: battery = 23% (7.3 V)

At lab trailer from 0900 - 1630:
- put new batteries in and calibrated pH for probes: 40621, 40587, 40653, 40658, 40654, 40622

40653 had technical probs. (thought test was running, but could not stop it or delete it and could not set new pH settings until used winsitu v. 2.35 in debug mode).

40621 had "RAM Fail" error after changing batteries. cleared errors. Then pH would not stabilize twice until a new pH sensor was installed - then it calibrated ok.

- Also installed new pH sensor in 40653 prior to pH calibration, but old sensor is probably OK.

(116) 7-11-01

The clock time was over 40 min. off for # 40653. It was reset OK, but need to keep an eye on the clock time for this one.

RG 7-11-01

7-12-01 Bob Gray (117)

- Calibrating probes in lab trailer @ 0800 -
- replaced batteries and calibrated pH for 40491 & 40493
- 1st calibration (pH) attempt on 40491 failed to achieve required accuracy - the readings were highly abnormal, and calculated scale and offset values were extreme (Scale = 303837.7884, offset = -514.5445). Installed a new pH sensor in 40491 and then the pH calibrated OK.

0950 - began EC calibrations on 8 probes with fresh batteries & pH calibrations.

1142 - completed EC calibrations for 40653, 40587, 40491, 40493

1335 S. Purdue and A. Alexander on-site at PAO-1. Connect to #40716
BC = 50% storage: 88% free

1340 Stop test PAO-1@060501 (40716)
Extract test, pull probe
Install #40491 BC = 100%
storage = 100% free
DTW = 7.93 ft. edit land ref.

(1246) Start test PAO-1@071201

1400 PAO-2 DTW = 14.73 ft

RG 7-12-01

Pueblo Canyon 7/12/01

1413 PAO-2.5 DTW 11.03 ft TOC
1427 On-site at PAO-3 (#40660)
BC=16%, storage=65% free
Extract test PAO-3@052501
Stop test, pull probe
Install probe #40587
BC=100%, storage=100% free
DTW=10.24 ft
(1333) Start test PAO-3@071201
1455 PAO-4 connect to #40494
BC=6% (7.0v) storage (84% free)
Extract test PAO-4@052501
(1353) Stop test, Pull probe
Install #40653, BC=100%
storage 100% free
(1426) Start test PAO-4@071201
1525 On-site PAO-5N connect to
40661 BC=10% (7.0v) storage (84% free)
Extract test PAO-5N@052501
Stop test, pull probe.
(1430) PAO-5N@071201 start test
in probe #40493 BC=100%
storage=100% free
1539 Mob to trailer.
(calibration of 40654, 40621, 40622, and 40658 completed @ 1205 - 1437.) RG 7-18-01

LA Canyon 7/13/01

850 S. Purdue and A. Funk on-site at LAOB. Safety Tailgate.
Connect to #40630 BC=44% (7.8v)
storage=87% free, CPU=42098.40
Extract Test LAOB@060401
(752) Stop test, pull probe
Install #40622 BC=100% (9.4v)
storage=100% free, CPU=50010
DTW=9.11 ft, edit level ref.
(800) Start Test LAOB@071301
920 on-site LAO-0.3 connect to #40624
BC=52% (8.0) St.=87% free
CPU=39008 Extract test
LAO-0.3@060401
(822) Stop test LAO-0.3
Install #40621 BC=100%
storage=100% DTW=10.09 ft
(830) Start test LAO-0.3@071301
1020 On-site at LAO-0.91 connect
to #40655 BC=34% (7.6v)
storage=~~100%~~ 87% free CPU=56083.46
Extract Test LAO-0.91@060401
(911) Stop test, pull probe
Install #40654 BC=100%, st=100%
CPU=50293.95 DTW=17.10 ft
Edit land reference
RG 7-18-01

LA Canyon 7/13/01

(928) Start test LAO-0.91 @ 071301

Mob to LAO-1.2

1100 On-site @ LAO-1.6g connect to # 40490 BC=33%(7.6v)

storage= 87% free, CPU=56267.51

Extract test LAO-1.6g@060401

(1001) Stop test, pull probe

Install #40658 BC=100%, storage= 100% free, CPU=20800859.27

DTW= 17.00 ft TOC, Edit load Ref.

(1017) Start Test LAO-1.6g@071301

Mob to LAP-4

1155 On-site at LAP-4

#1 connect to # 40659

BC= 91% (8.9v) storage= 92% free

Extract test LAP4#1@041801

#2 Connect to # 40656

BC=91% (8.9v) storage= 92% free

Extract test LAP4#2@041801

#3 Connect to # 40492

BC= 99% (9.1v) storage= 92% free

Extract test LAP4#3@041801

#3 looks dry

1225 On-site at LAP-6B connect to mini-troll #3088 BC=79%(7.5v), storage= 97% free. Extract, test LAP6B@041801

RJ 7-18-01

7/24/01 - Probe Lab

Bob Gray and Simon Mudd (GAP-0978)

- described Mini-Troll operation
- assigned Mini-Troll serial numbers:

5615

5515

5600 for use in measuring stream flow heights in Pueblo Canyon

- Also assigned 1 mini-troll cable @ 20' length and 2 cables at 30' lengths for this application

RJ 7/24/01

900 S. Purdue and J. Toya on-site at LAOB. Safety Tailgate meeting, slips trips falls, rain.
Connect to #40622
BC = 95% (9.0v), CPU = 52862.32,
storage = 95% free
Extract test LAOB@071301
Data looks fine, Depth tolerance = 8.89 ft
DTW (manual) = 8.89 ft TOC

925 On-site at LAP1, connect to #1 #5560
BC = 100% (2.7v) CPU = 113.00, storage 99% free
Extract test LAP-1 #1 @ 7-24-01
Connect to #2 #5535 BC = 100% (2.7v)
CPU = 118.00, storage 99% free
Extract test LAP1 #2 @ 7-24-01
Connect to #3, #5616, BC = 100% (2.7v)
CPU = 11.00, storage = 99% free
Extract test LAP1 #3 @ 7-24-01

1050 On-site at LAO-0.3, ~~connect to #~~
Connect to #40621, BC = 95% (9.0v)
storage 95% free, CPU = 37554.08
Extract test LAO-0.3@071301
DTW = 8.834 ft

1115 On-site at LAP1.5 connect to
#1, #5572 Extract test LAP 1.5#1@072401
#2, # ? , Extract test LAP1.5#2@072401

#3, #5536 Extract test LAP-1.5#3@072401

1130 Onsite LAP-3 connect to 5692
Extract test LAP-3@072401

1155 On-site at LAO-~~0.6~~ 0.91, connect to
#40654, BC = 87% (8.8v), storage 95% free
CPU = 53150.93
Extract test LAO-0.91@071301
DTW = 14.057 ft TOC

1240 On-site at LAO-1.6g connect to
#40658, BC = 95% (9.0v), storage 95% free
CPU = 208037163
Extract test LAO-1.6g@071301
DTW = 15.39 ft TOC

1305 LAP-5.7 connect to #5612
Extract test LAP 5.7 #1 @ 072401

1310 LAP-6 connect to #5593
Extract test LAP-6@072401

1340 On-site PAO-4 connect to #40653
Battery 95% (9.0v), storage 95% free,
CPU = 157219.36
Extract test PAO-4@071201
* PAO-5N needs a new bridge
DTW PAO-4 5.73 ft TOC

1400 On-site PAO-3, connect to #40587
BC = 96% (9.0v), storage 95% free
Extract test PAO-3@071201
CPU = 54288

(124) 8/8/01 Pueblo Canyon

1520 On-site at PAO-1, connect to # 40491, BC = 94% (9.0v), storage = 95%, CPU = 27459.15
Extract PAO-1C 071201

Sh Purve 8/8/01

RA 11/12/01

9/19/01 (125)

S. Purve and A. Toya on-site at Calibration Trailer to follow SOP 7.01, R1
Connect to # 40494, submerge into capped PVC pipe. Depth from TOC is 0.93 ft. Set level reference to 0.93 ft. Start test "caltest".
Run for 1 minute.
Raise transducer 1 ft., Run for 1 min. readings are within 5% of 1.93 ft.
Lower transducer back to 0.93 ft., run for 15 sec. <5% change.
Run for 15 min at 0.93 ft. <5% change, pull transducer.
Connect to # 40659 for level check. Leave at 0.93 ft for 1 min., <5% change.
1.88 ft for 1 min, <5% change
2.88 ft for 1 min. <5% change.
Hang at 0.93 ft from TOC for 15 min. <5% change
Connect to # 40492 for depth response + drift readings.
<5% change, see "caltest"

RA 11/12/01

9/19/01 (cont)

for #40492 on 9/19/01.
Connect to #40656 for level depth response and drift test.
see "caltest" for #40656.
<5% change.

1120 Mob to LAOB. S. Purdue and A. Toya, safety tailgate

1135 On-site at LAOB connect to 40622 BC = 83%, storage 87%
CPU = 57469
Extract test LAOB@071301

(1038) Stop test, pull probe

(1048) Install #40494, BC = 100%
storage 99% free, CPU = 66133
DTW = 9.85 ft, soil level reference.

(1053) Start test LAOB@091901

1255 On-site at LAP-1, connect to #1
#5560, BC = 100%, storage 98%, CPU = 221.0
Extract test LAP-1#1@7-24-01
#2 Connect to #5535, BC = 100%, storage = 98%
CPU = 226.00 Extract test LAP-1#2 7-24-01
Level Data looks innaccurate, large spike in center
Connect to #5616 in #3, BC = 98%
storage = 98% CPU = 219.00

RG 11/12/01

9/19/01 (cont)

Extract test LAP-1#3@7-24-01
Level Data has same spike.

1315 On site at LAO-0.3, connect to #40621, BC = 83% storage: 87%
CPU = 42141
Extract test LAO-0.3@071301

(1221) stop test LAO-0.3@071301, pull probe
Install 40656, DTW = 10.23 ft TOC
BC = 93%, storage = 99%,
CPU = 3524

(1227) Start Test LAO-0.3@091901

1350 On-site at LAP-1.5, connect to #5572, BC = 100%, St = 98%, CPU = 249
Extract test LAP-1.5@081501
connect to #5708 BC = 100% st = 98%
CPU = 172, Extract test LAP-1.5#2@081501
Connect to #5536 BC = 100%
St = 98% CPU = 238
Extract test LAP-1.5#3@081501

1415 On-site at LAP-3, connect to #5692 BC = 100%, St: 98%
CPU = 228
Extract test LAP3@070201

gas leaked

1510 On-site at LAO-0.9 connect to #40659 BC = 76% st = 81%
CPU = 57763

RG 11/12/01

9/19/01 (cont.)

Extract test LAO-0.91@071301

(1413) Stop test, pull probe

1520 Install #40492 BC=100%

storage=99% free, CPU=3479

DTW=17.38 ft TOC update land ref.

(1421) Start test LAO-0.91@091901

1545 On-site at LAO-1.6g connect

to #40658 BC=83%, St=87% free

CPU=20808323.75

Extract Test LAO-1.6g@071301

(1447) Stop test, pull probe

Install #40659 BC=94%

St=100% free, CPU=3438

1550 DTW=14.10 ft TOC

(1453) Start test LAO-1.6g@091901

1610 On-site LAP-4, connect to #1

#5614, BC=98% St=98% CPU=200

Extract test LAP-4#1@080201

#5636 Extract test LAP-4#2@080201

BC=100% St=98% CPU=198

Connect to #5706 BC=100% St=98%

CPU=197.00 Extract test LAP-4#3@080201

1625 On-site at LAP 5.7 connect to

#5612 BC=100% St=98% CPU=225

Extract test LAP 5.7#1@072401

RG 11/12/01

9/19/01

1635 On-site LAP-6, connect #5593,

BC=100%, St=98%, CPU=226

Extract test LAP-6@072401

9/19/01

RG 11/12/01

9/20/01 & 9/10/01

S. Purdue on-site at calibration trailer to perform depth response and drift tests on pressure transducers, ER SOP 7.01, R1

Connect to # 40624, perform depth response and drift test.
<5% change, no significant drift

Connect to # 40660, perform depth response + drift test.
<5% change, no significant drift

Connect to # 40661, perform depth response + drift test
<5% change, no significant drift

Connect to # 40716, perform depth response + drift test
<5% change, no significant drift.

1300 S. Purdue and A. Toya have safety tailgate, gather supplies + mob to PAO-1

1335 On-site at PAO-1, connect to # 40491 BC = 82% (8.7v) St = 87%
CPU = 32156, Extract test PAO-1 @ 071201

(1238) Stop test PAO-1 @ 071201

1243 Install # 40661 BC = 100%
St. = 99% free, CPU = 66132

RG 11/12/01

9/20/01 (cont)

DTW = 10.68 ft TOC

(1246) Start test PAO-1 @ 092001

1425 On-site at PAO-3, connect to # 40587, BC = 85%, storage = 87% free
CPU = 58996, Extract test PAO-3 @ 071201 level - 13.56 ft 1.005 dry.

(1331) Stop test PAO-3 @ 071201, pull probe
Install # 40660, BC = 100%, St = 99%
CPU = 63848 DTW = 13.60 ft, update lev. ref.

(1338) Start test PAO-3 @ 092001

1455 On-site at PAO-4. Connect to # 40653, BC = ~~161929~~ 228 & 9/10/01, St = 87%,
CPU = 161929 Extract test PAO-4 @ 071201

(1359) Stop test, pull probe
Install # 40716 BC = 63%, St = 99%
DTW = 5.99 ft CPU = 38032

1525 On-site at PAO-5N, connect to # 40493 BC = 83%, St = 87%
CPU = 55905
Extract test PAO-5N @ 071201

(1427) Stop test, pull probe
Install # 40624 BC = 62%
St = 99%, CPU = 39883

RG 11/12/01

9/20/01 (cont.)

1535 DTW = 11.31 ft TOC PAO-5N
(1435) Start test PAO-5N @ 092001
1610 On-site at LAP-4
Connect to #2 to re-set level reference. Connect to #5636 Extract test LAP#2@080201
Stop test. DTW = 12.16 ft TOC
Edit level reference.
(1611) Start test LAP-4#2@092001
Connect to LAP-4 #1 #5614
Extract test LAP-4#1@080201
Stop test. DTW = 17.52 ft TOC Edit test
(1517) Start test LAP-4#1@092001

9/20/01

RG 11/12/01

11/6/01

0905 - Bob Gray and Deborah Steven on-site at LAO-B. Safety tailgate held.
Connect to # 40494
Battery = 88% (8.8V)
Storage = 90% free
CPU run time = 71394.24 s
Extracted test data from LAOBC 091901
All sensors look ok, though conductivity may be drifting upward slightly
Check WL depth — transducer reading = 10.266 ft btoc.
Check with sounder —
measured 10.63 ft btoc
- 0.28 ft correction
10.35
Stopped test LAOBC 091901 and reset WL ref. to 10.266 ft btoc.
Programmed new test LAOBC110601 and started it at 0927.

1047 - on-site at LAO-0.3
Connect to # 40656
Battery = 74% (8.5 V)
CPU run time = 8760.79 s
Storage = 90% free

RG 11/12/01

11/6/01 cont

measured WL = 10.98
- 0.28
10.70 ft btoc

transducer reads 10.624

extracted test LAO-0.3@091901

- stopped test, reset WL ref = 10.70

1358 - started new test LAO-0.3@110601

1358 - on site at LAO-0.91

connect to # 40492

Battery = 84% (8.7 V)

CPU = 8714.91

Storage = 90% free

extract test LAO-0.91@091901

- pH is reading too low - current level shows pH = 4.4 and was meas. as low as 1.73; pH sensor not functioning properly!

Transducer WL reading = 16.113 ft btoc

manual WL reading = 16.39 ft btoc
- 0.28
16.11 ft btoc

= right on.

but ref. elev. previously set at 6750'

RA 11/12/01

11/6/01 cont

- stopped test
- reset ref. elev. = 6861 per survey inf.
- reset ref. WL = 16.11 ft btoc

1413 - start new test LAO-0.91@110601

1428 - on site at LAO-1.6g

connect to # 40659

Battery = 74% (8.5 V)

CPU = 8674.43 s

Storage = 91% free

- extract test LAO-1.6g@091901

* - pH readings don't look right - is flatlining upper value of ~6.2 and only fluctuating below that
- conductivity appears to be drifting upward
- elev. ref of 6750 previously set is incorrect
- stopped test
- transducer reading WL = 18.896 ft btoc
- manual WL reading = 19.25
- 0.28
18.97 ft btoc
- 18.896
0.074 ft off

reset elev. ref. to 6658 ft per survey inf.

reset WL ref to 18.97 ft btoc

- 1440 started new test LAO-1.6g@110601

R Gray 11/6/01

11/8/01

Bob Gray and Deb Steven downloading transducers in Pueblo Canyon

1015 - on site at PAO-1. Safety tailgate held

measured WL = 12.03
-0.28
11.75 ft btoc

connect to # 40661

Battery = 82% (8.7 v)

CPU run time = 71,468.78 s

Storage = 90% free

extract test PAO-1@ 092001

- Sensors appear to be working OK, though there is little fluctuation seen in pH and EC - not surprising since flow conds. have been static (stream dry).
- transducer measured WL = 11.691 ft btoc = 0.06 ft off.

Stopped test and reset reference elevs.

- ref. elev. changed from 7000 to 6954 ft per survey inf.
- reset WL ref. to 11.75 ft btoc.

1030 - started new test PAO-1@ 110801.

1037 - on site at PAO-2 to measure WL

16.40
-0.28
WL = 16.12 ft btoc

RR 11/12/01

11/8/01 cont'

1052 - on site at PAO-2.5

measured WL = 11.47
-0.28
= 11.19 ft btoc

1105 - on site at PAO-3 - raining lightly

connect to # 40660

battery = 82% (8.7 V)

CPU = 69,188s

Storage = 90% free

extract test PAO-3@ 092001

transducer WL measured @ 13.857 ft btoc

manual WL measured @ 16.30
-0.28
16.02 ft btoc

The bottom of the screen is 13.72 ft btoc

The well is dry - only measured water sitting in bottom of sump.

~~11-2~~ RR 11/8/01

1127 - on site at PAO-4

measured WL = 6.16
-0.28
5.88 ft btoc

- connect to # 40716

battery = 47% (7.9 v)

CPU run time = 43383s storage = 90% free

RR 11/12/01

11/8/01 cont.

extract test PAO-4@092001

transducer WL = 5.807 ft btoc

~ 0.07 ft off

stopped test

reset reference elev. to 6437 ft (from 6500) per survey inf.

reset ref. wl to 5.88 ft btoc

1140 - started new test PAO-4@110801

1150 - on site at PAO-5N

measured WL = 10.072

-0.28

10.44 ft btoc

Connect to # 4624

battery = 47% (7.9V)

storage = 90% free

CPU = 45221 s

extract test PAO-5N@092001

transducer WL = 10.501

stop test - reset elev. ref from 6250 to 6370 per survey inf.

reset WL ref to 10.44 ft btoc

1208 start new test PAO-5N@110801

* Note - removed PVC caps from PAO-1 and PAO-5N - need to cut slots in caps for transducer cables and replace.

1216 - mob to office

R Gray 11/8/01

11/13/01

Bob Gray and Ryan Channell at probe lab for calibrations.

1132 - connect to #40658

Battery = 90% (8.9 v)

Storage = 87%

CPU run time = 20808400.69 s

- previously installed clean pH and EC sensors

1140 - start pH calibration

1155 - pH calibration complete

1410 - EC calibration complete

1423 - start depth test on #40658

1450 - ran ~~drift~~ depth test twice w/ similar results - 8% error on 1st 1-ft change - 0% error on 2nd 1-ft change - 18% error on 3rd 1-ft change.

- #40658 depth readings have a problem. will not deploy this probe.

R Gray 11/13/01

11/15/01

- Bob Gray and Ryan Channell at the lab trailer for SOP 7.01 Calibrations.
- The notes were recorded in the piezometers field book (ER 2001 - 0230) see p. 108-114.

R Gray

11/15/01

11/20/01

Ryan Channell at lab trailer for transducer calibrations following SOP 7.01

0905 connected to # 40653, which is sitting in 6' length of casing full of water

probe already passed depth test, only needs drift test.

- programmed probe to read depth w/ Ref. depth = 5.371 ft. - the same as the water column height above the pressure sensor. (RAC) 11-20-01)

0915 Start ~~depth~~ drift test. (RAC) 11-20-01)

0930 stopped ~~depth~~ drift test - Results OK

(largest discrepancy = 5.368 to 5.358

0.010 ft is ~~1% error~~ (RAC 11-20-01) 0.19% error

see caltest # 3

probe # 40653 passed 7.01 tests OK.

0940 connect to # probe # 40491

Storage = 87%

battery = 85% (8.8 V)

CPU Run time = 32234.75

programmed probe to read water depth w/ Ref. depth = 5.320 ft.

0953 Start depth test (cal test #2)

0958 stopped depth test

11/20/01

vent from 5.324 > 0.036
to 4.360 > 0.020
to 3.380 > 0.010
to 2.390

- error is less than 5% passed test o K
Reset level Ref. to measured actual depth = 5.365 ft.

1008 Start drift test (cal test #3)

1023 Stopped drift test - extract data
vent from 5.372 to 5.365 ft
0.007 ft is largest discrepancy
< 1% error see cal test #3

probe # 40491 passed 7.01 tests ok.

1042 connect to probe # 40621
battery = 87%
Storage = 87% free
CPU Run time = 42217.43
- Reset Reference level to actual = 5.304

1051 - Start depth test (cal test #2)
vent from 5.31 > 0.01
to 4.32 > 0.00
to 3.32 > 0.00
to 2.32

depth test passed okay.

11/20/01

Reprogrammed depth ref. to 5.315 ft. for drift test. (= actual depth reading)

1102 - Start drift test (cal test #3)

1117 - Stopped drift test - extract data looks good, largest discrepancy = 0.004 ft. (see cal test #3)

probe # 40621 passed 7.01 tests ok.

1122 connect to probe # 40655
battery = 44% (7.8 v)
Storage = 87% free
CPU Runtime = 56237.97

1124 disconnect probe # 40655 to change batteries.

1140 connect to # 40655
battery = 100% (9.4v)
Storage = 87%
CPU Runtime = 56267.54
- Reset Reference depth to actual = 5.334 ft

1150 - Start depth test (cal test #1)
vent from 5.33 > 0.02
to 4.35 > 0.01
to 3.34 > 0.00
to 2.34

depth test passed okay

11/20/01

- Reset Reference depth to actual = 3.498 ft
probe was placed in 3' piece of casing filled w/ water.

1203 Start drift test (caltest #3)

1218 Stop drift test - extract data
went from 3.524 to 3.492
a difference of 0.032 ft.
an error of ~~3.2%~~ (RAC 11-20-01) 0.91 %
40655 passed drift test
(see caltest #3)

Bob Gray on site @ 11:45 AM.

1210 - connect to probe # 40630
battery = 100% (9.5V)
storage = 87% free
CPU Run time - 42252.43
(Charged batteries at 12100)
- Reset Reference depth to actual = 5.305 ft.
(probe was placed in 6' piece of casing filled w/ water)

1216 - Start depth test (caltest #1)
went from 5.30 to 4.30 to 3.31 to 2.31

11/20/01

#40630 passed depth test ok.
(see caltest #)

1223 - Start drift test on 40630

1239 - stopped drift test.
largest discrepancy = 0.016 ft.
error = 0.30 %
# 40630 passed drift test
(see cal test #2) RJ 11/20/01

1414 - connect to # ~~40628~~ # 40621
battery = 88% (8.8 V)
storage = 87% free
CPU = 42327.44 s
- ready for pH calibration after installing pH and EC sensors.

1420 - Start pH calib.
1432 - End pH calib.
1440 - Start EC calib.
} # 40621

1450 - EC calib. complete.

1502 - connect to # 40658
start drift test.

1517 - Stop drift test.
max. drift = 0.007 ft = within instrument specs.
Passed drift test ok.

1530 - on site at LAD-0.91 - connect to
40492 - extract LAD-0.91 @ 110601

11/20/01

- 1538 - stopped test
- probe # 40492 info:
  battery = 82% (8.7 v)
  storage = 88% free
  CPU = 10351.78 s.
- pull probe from well
- measured WL @ 16.38 ft btoc. 1st
- install probe # 40621
- reset ref. elev. to 6861 ft. per survey inf.
- set ref. WL to 16.38 ft btoc
- program test LAO-0.91 @ 112001. for 30-min. readings.

1551 - started test - demob from LAO-0.91.

1605 - on site at LAO-1.6g
connect to # 40659
battery = 72% rem. (8.5 v)
storage = 88% free
CPU = 10282.96 s.
extract test LAO-1.6g @ 110601
meas. WL = 19.28 ft btoc
transducer WL = 19.264.

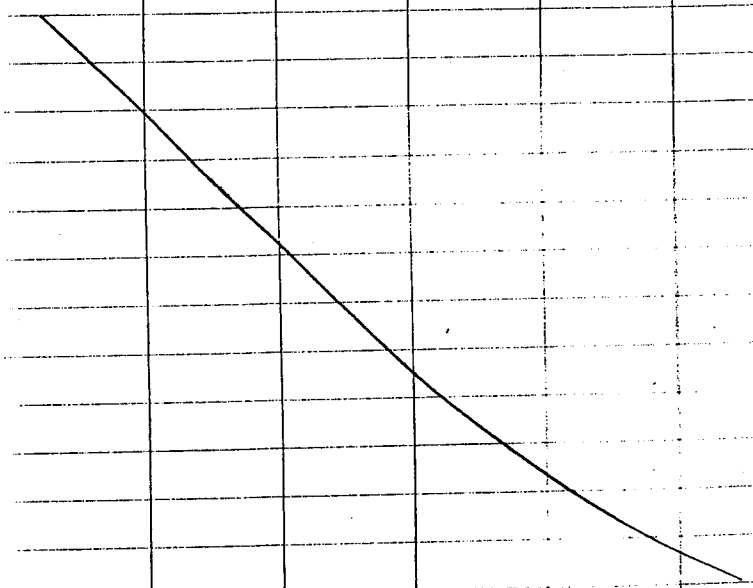
1611 - stopped test - pulled probe

1613 - install # 40658

11/20/01

- reset ref. elev. to 6658 ft per survey
- set ref. WL to 19.27 ft btoc per rem WL measurement
- programmed test LAO-1.6g @ 112001 for 30-min. readings
- 1616 - start test - disconnect

1620 - demob from LAO-1.6g
take equip. back to Lab trailer.



11/20/01

(148) 11/29/01

0900 - Bob Gray and Ryan channel at Lab trailer for MPTROLL 8000 calibrations
- calibrated pH and EC sensors for probe #'s: 40587
40659
40654
40492
40493
40622
- calibrations completed @ 11:55
13:30 - on site at PAO-1 ; WL = 12.26 ft btoc
connect to probe # 40661
Battery = 76% (8.6 V)
storage = 86% free
CPU Runtime = 73845.89 sec
extract PAO-1 @ 11:08:01
data looks okay
Stopped test @ 13:40
13:42 installed probe # 40654
set Ref. elevation to 6954'
set water level Ref to 12.20' BTOC
programmed new test, PAO-1@112901
for 30 minute Readings
13:46 start test
14:10 on site at PAO-3

11/29/01 (149)

Measured PAO-3 WL = 16.00 ft btoc
connect to # 40660 battery = 77% (8.6V)
Storage = 86% free ; CPU = 71547.28 s
Extract PAO-3C092001 - well is dry
Decided not to replace probe until WL comes back
14:30 - on site at PAO-4
measured WL = 5.86 ft btoc
- connect to # 40716
Battery = 43% (7.8V)
Storage = 86% free
CPU = 45761.22 s
- extract PAO-4 @ 110801 - data looks ok
14:39 - stopped test - pulled probe
14:41 - installed probe # 40659
~~RAC Ref~~ Reset elevation to 6437'
Set water level @ 5.82' BTOC
programmed new test PAO-4 @ 112901 for 30 minute Readings
14:43 start test
14:50 - return to lab trailer

R Gray
11/29/01

(150) 12-4-01

- Bob Gray and Ryan Channel in Pueblo Canyon to replace PAO-5S MP TROLL 8000 Probe.

10:15 - on site at PAO-5S
- measured WL = 11.06 ft btoc

10:16 - connect to # 40624
battery = 43% (7.8 V)
storage = 86% free
CPU run time = 48117.7 s
Extract test PAO-5N @ 110801 - Data looks OK
Stopped test at 10:22 - pulled probe.

10:24 - installed # 40622 in PAO-5S
Battery = 88% (8.8 V)
Storage = 87% free
CPU run time = 57961.91 s
Reset ~~evt.~~ RAC elev. to 6368 ft.
Reset ref. WL to 11.05 ft. btoc
(actual depth = 4.645 ft)

10:33 - started test PAO-5S @ 120401

10:36 - disconnect and demob from PAO-5S
Mob to LA Canyon

11:18 - on site at LAO-B
measured WL = 10.11 ft btoc
Connect to # 40494
battery = 80% (8.7 V)

(151)

12-4-01

Storage = 85% free
CPU run time = 74533.545
Extract test LAO-B @ 110601
Data looks OK.

11:32 - Stopped test, pulled probe

11:35 - Installed # 40493
Battery = 86% (8.8 V)
Storage = 87% free
CPU run time = 56225.46 s
Reset ref. elev. to 7023 ft
reset WL ref. to 10.09 ft btoc
(actual depth = 18.861 ft)

11:45 - Started test LAO-B @ 120401
Reset Ref. WL to 10.09 ft btoc
(actual depth ~~3.778~~ 18.861 ft.)

11:46 - disconnect and RAC demob from LAO-B.

12:03 - on site at LAO-0.3
Measured WL = 11.40 ft btoc
connect to # 40656
battery = 70% (8.4 V)
storage = 85%
CPU = 11888.37 s.
Extract test LAO-0.3 @ 110601
Data looks OK

12-04-01

12:11 stopped test - pull probe

12:12 installed # 40492 in LAO-0.3
Battery = 85% (8.3V)
Storage = 88% free
CPU = 10432.51s
Reset ref. elev. to 6968 ft
Reset WL ref to 11.41 ft btoc
(actual depth = 1.580 ft)

12:19 Start test LAO-0.3 @ 120401

12:20 Disconnect and demob from LAO-0.3

16:33 start drift test for probe # ~~5572~~ 5572

16:48 stopped drift test
5.766 to 5.775 = 0.009 largest discrepancy. passed drift test okay

16:34 start drift test for probe # 5708

16:49 stopped drift test
7.924 to 7.916 = 0.008 largest discrepancy. passed drift test okay.

1/8/02

Bob Gray and Ryan Channel at Lab trailer to calibrate MPTROLL 8000 probes.

0830 - arrive at trailer - tailgate held

calibrated probe #s
40630
40656
40653
40587
40490
40491
40716
40494

- all 8 probes got new pH sensors (the old pH sensors were thrown away - except for 3 old pH sensors in units still deployed: # 40621 in LAO-0.91
40660 in PAO-3
40658 in LAO-1.6g)

- one of the EC sensors was bad today - a total of 3 EC sensors are now bad, leaving only 16 working (incl. the ones calibrated today and assuming the 8 currently deployed are ok.

3:45 - calibs. complete - departed lab. R Gray 1/8/02

(154)

1/10/02 - Bob Gray + Shannon Purdue swapping out MPI Rolls in alluvial well -
920 - on site at PAO-1 - tailgate safety mtg. held
PAO-1 WL measured at 13.74 ft btoc
Transducer reading = 13.74 ft btoc (actual depth 0.419 ft)
connect to 40654 - battery = 68% (8.4V)
storage = 80% free - CPU = 62599
extract test PAO-1 @ 112901 (9:25) - pulled probe
929 - installed # 40716 battery = 4540 (7.8V)
storage = 86% free, CPU = 45730 s.
Reset ref. elev. to 6454 ft. set ref WL to 13.74'
937 - start test PAO 1 @ 011002
1003 - on site at PAO-3 WL = 8.69 ft btoc
Connect to 40660 transducer WL = 8.806 ft btoc
Actual depth = 5.051 ft battery 69% (8.4V) st. = 79% free
CPU = 76116 extract PAO-3 @ 092001
1009 - stopped test - pulled probe
1012 - installed # 40656 - reset ref. elev. 10657.9'
battery = 71% (8.4V) storage = 87% CPU = 12033 s
reset ref WL to 8.63'
1019 - start test PAO 3 @ 011002
1031 - on site at PAO-4 - measured WL = 5.25' btoc
1034 connect to # 40659 - transd. WL = 5.37'
(actual depth 4.177') battery = 66% (8.3V)
storage = 81% CPU = 15076 s
extracting PAO 4 @ 112901 (10:36) - stopped test
pulled probe; 10:41 - installed 40491
reset ref. elev. to 6437'
reset WL ref to 5.23' - battery = 83% (8.7V)
Storage = 87% CPU = 32670 s
10:44 - start test PAO-4 @ 011002
11:04 - on site PAO-5N

1/10/02

(155)

Connect to # 40622 battery = 16% (8.2V)
Storage = 80% CPU = 62022 s.
transducer WL = 10.720 (actual = 4.975')
measured WL = 10.78 ft btoc
extract test PAO-5N @ 120401 (11:07)
11:07 - stopped test - pulled probe
1110 - installed # 40494
battery = 81% (8.7V)
storage = 85% CPU = 74704 s
11:12 - start test PAO-5N @ 011002
1130 Mob to Calibration trailer to store PCS and probes.

SC
1/10/02

This page left blank
— Sam Pirie
1/10/02

Charles A. Smoldt
1/10/02

Alan C. Fort
1/10/02

CURVE TABLES

HOW TO USE CURVE TABLES

Table I. contains Tangents and Externals to a 1° curve. Tan. and Ext. to any other radius may be found nearly enough, by dividing the Tan. or Ext. opposite the given Central Angle by the given degree of curve.

To find Deg. of Curve, having the Central Angle and Tangent: Divide Tan. opposite the given Central Angle by the given Tangent.

To find Deg. of Curve, having the Central Angle and External: Divide Ext. opposite the given Central Angle by the given External.

To find Nat. Tan. and Nat. Ex. Sec. for any angle by Table I.: Tan. or Ext. of twice the given angle divided by the radius of a 1° curve will be the Nat. Tan. or Nat. Ex. Sec.

EXAMPLE

Wanted a Curve with an Ext. of about 12 ft. Angle of Intersection or I. P. = 23° 20′ to the R. at Station 542 + 72.

Ext. in Tab. I opposite 23° 20′ = 120.87
120.87 ÷ 12 = 10.07. Say a 10° Curve.

Tan. in Tab. I opp. 23° 20′ = 1183.1
1183.1 ÷ 10 = 118.31.

Correction for A. 23° 20′ for a 10° Cur. = 0.16
118.31 + 0.16 = 118.47 = corrected Tangent.

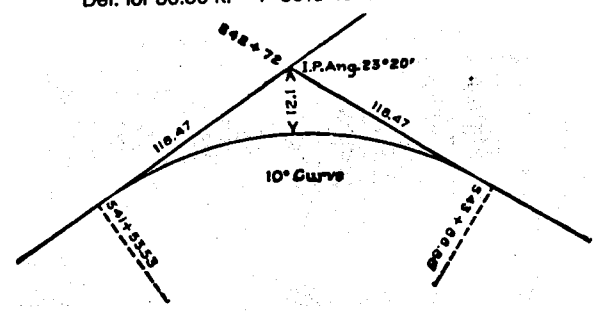
(If corrected Ext. is required find in same way)
Ang. 23° 20′ = 23.33° ÷ 10 = 2.3333 = L. C.

2° 19½′ = def. for sta.	542		I. P. = sta.	542 + 72
4° 49½′ = " " "	+ 50		Tan. =	1 .18.47
7° 19½′ = " " "	543		B. C. = sta.	541 + 53.53
9° 49½′ = " " "	+ 50		L. C. =	2 .33.33
11° 40′ = " " "	543 + 86.86		E. C. = Sta.	543 + 86.86

100 − 53.53 = 46.47 × 3′(def. for 1 ft. of 10° Cur.) = 139.41′ = 2° 19½′ = def. for sta. 542.

Def. for 50 ft. = 2° 30′ for a 10° Curve.

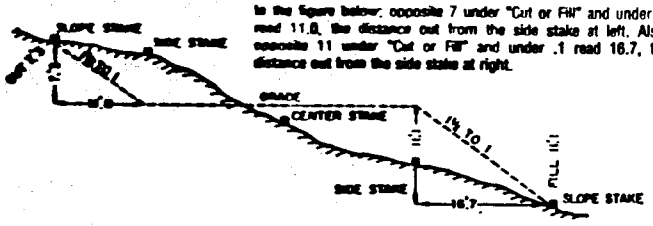
Def. for 36.86 ft. = 1° 50½′ for a 10° Curve.



DISTANCES FROM SIDE STAKES FOR CROSS-SECTIONING

Roadway of any Width. Side Slopes 1½ to 1.

In the figure below, opposite 7 under "Cut or Fill" and under .3 read 11.8, the distance out from the side stake at left. Also, opposite 11 under "Cut or Fill" and under .1 read 16.7, the distance out from the side stake at right.



Cut or Fill	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	Cut or Fill
	Distance out from Side or Shoulder Stake										
0	0.0	0.2	0.3	0.5	0.6	0.8	0.9	1.1	1.2	1.4	0
1	1.5	1.7	1.8	2.0	2.1	2.3	2.4	2.6	2.7	2.9	1
2	3.0	3.2	3.3	3.5	3.6	3.8	3.9	4.1	4.2	4.4	2
3	4.5	4.7	4.8	5.0	5.1	5.3	5.4	5.6	5.7	5.9	3
4	6.0	6.2	6.3	6.5	6.6	6.8	6.9	7.1	7.2	7.4	4
5	7.5	7.7	7.8	8.0	8.1	8.3	8.4	8.6	8.7	8.9	5
6	9.0	9.2	9.3	9.5	9.6	9.8	9.9	10.1	10.2	10.4	6
7	10.5	10.7	10.8	11.0	11.1	11.3	11.4	11.6	11.7	11.9	7
8	12.0	12.2	12.3	12.5	12.6	12.8	12.9	13.1	13.2	13.4	8
9	13.5	13.7	13.8	14.0	14.1	14.3	14.4	14.6	14.7	14.9	9
10	15.0	15.2	15.3	15.5	15.6	15.8	15.9	16.1	16.2	16.4	10
11	16.5	16.7	16.8	17.0	17.1	17.3	17.4	17.6	17.7	17.9	11
12	18.0	18.2	18.3	18.5	18.6	18.8	18.9	19.1	19.2	19.4	12
13	19.5	19.7	19.8	20.0	20.1	20.3	20.4	20.6	20.7	20.9	13
14	21.0	21.2	21.3	21.5	21.6	21.8	21.9	22.1	22.2	22.4	14
15	22.5	22.7	22.8	23.0	23.1	23.3	23.4	23.6	23.7	23.9	15
16	24.0	24.2	24.3	24.5	24.6	24.8	24.9	25.1	25.2	25.4	16
17	25.5	25.7	25.8	26.0	26.1	26.3	26.4	26.6	26.7	26.9	17
18	27.0	27.2	27.3	27.5	27.6	27.8	27.9	28.1	28.2	28.4	18
19	28.5	28.7	28.8	29.0	29.1	29.3	29.4	29.6	29.7	29.9	19
20	30.0	30.2	30.3	30.5	30.6	30.8	30.9	31.1	31.2	31.4	20
21	31.5	31.7	31.8	32.0	32.1	32.3	32.4	32.6	32.7	32.9	21
22	33.0	33.2	33.3	33.5	33.6	33.8	33.9	34.1	34.2	34.4	22
23	34.5	34.7	34.8	35.0	35.1	35.3	35.4	35.6	35.7	35.9	23
24	36.0	36.2	36.3	36.5	36.6	36.8	36.9	37.1	37.2	37.4	24
25	37.5	37.7	37.8	38.0	38.1	38.3	38.4	38.6	38.7	38.9	25
26	39.0	39.2	39.3	39.5	39.6	39.8	39.9	40.1	40.2	40.4	26
27	40.5	40.7	40.8	41.0	41.1	41.3	41.4	41.6	41.7	41.9	27
28	42.0	42.2	42.3	42.5	42.6	42.8	42.9	43.1	43.2	43.4	28
29	43.5	43.7	43.8	44.0	44.1	44.3	44.4	44.6	44.7	44.9	29
30	45.0	45.2	45.3	45.5	45.6	45.8	45.9	46.1	46.2	46.4	30
31	46.5	46.7	46.8	47.0	47.1	47.3	47.4	47.6	47.7	47.9	31
32	48.0	48.2	48.3	48.5	48.6	48.8	48.9	49.1	49.2	49.4	32
33	49.5	49.7	49.8	50.0	50.1	50.3	50.4	50.6	50.7	50.9	33
34	51.0	51.2	51.3	51.5	51.6	51.8	51.9	52.1	52.2	52.4	34
35	52.5	52.7	52.8	53.0	53.1	53.3	53.4	53.6	53.7	53.9	35
36	54.0	54.2	54.3	54.5	54.6	54.8	54.9	55.1	55.2	55.4	36
37	55.5	55.7	55.8	56.0	56.1	56.3	56.4	56.6	56.7	56.9	37
38	57.0	57.2	57.3	57.5	57.6	57.8	57.9	58.1	58.2	58.4	38
39	58.5	58.7	58.8	59.0	59.1	59.3	59.4	59.6	59.7	59.9	39
40	60.0	60.2	60.3	60.5	60.6	60.8	60.9	61.1	61.2	61.4	40

This field book is for documenting work by the Canyons focus area of the ER Project. Work documented in this book pertains to the calibration and field work related to transducers used in the alluvial wells and piezometers in Los Alamos and Pueblo Canyons. Work was done following Procedure 7.01, Rev. 1 "Pressure Transducers".

The following individuals are authorized to make entries in this field notebook:

Robert Gray
Ryan Chamel
Shannon Purdue
Alethea Baner
Deborah Steven

The paper in this book is made of 50% high grade rag stock with a WATER RESISTING surface sizing.

CONTENTS

PAGE NO.	REFERENCE	DATE
1 –	Calibration and field records for transducers ~~used in Los Alamos and~~ Pueblo Canyon.	1/22/02 –

1/22/02 1

Ryan Channell at Lab Trailer at 0930
Bob Gray at Lab Trailer at 1000
1002 connected to # 40630
conductivity Reading is 457.106
pH Reading is 7.131 - okay
1025 disconnect from probe.
1005 connected to # 40490
conductivity Reading is bad
& needs to be Re calibrated.

1013 Recalibrate conductivity for
40630 → Reading 449.725

1017 The EC sensor in # 40490
reads 211,794 µS/cm in the 408 µS/cm
cal. soln. Apparently the sensor has
gone bad. Replaced the EC sensor
with one from the probes pulled
from Pueblo Can. 2 weeks ago.

1030 connected to probe # 40653
conductivity was reading 462 µS/cm
Recalibrated & now Reads 449.582
new cell constant is 4.0741
checked pH & is Reading 7.338

1/22/02 cont.

need to recalibrate pH sensor.

- 10:50 After installing another EC sensor in # 40490 it was still reading > 100,000 µS/cm.
- removed pH sensor and EC sensor from # 40490 and installed them in # 40661. The EC readings were at the proper magnitude and the EC calibrated successfully on the 1st try. It appears that # 40490 has become defective. Marked it as such - will have to return to In-Situ for repairs.
- new cell constant for # 40661 EC was set at 4.0538.
- 11:00 - calibrating pH on # 40661

40653 Recalibrated pH sensor now reading 6.993.

1112 disconnect from probe.

1110 - pH cal. complete for # 40661 scale = 50687722 offset = 6.9734

1115 - attempting EC calib. on # 40587
- would not calibrate for 3 tries -
- was getting cell constant values ~ 5.7

1/22/02 cont.

- decided to swap out EC sensors to see if sensor has gone bad.
- replaced EC sensor in # 40587 and when reconnected, it came up with device errors (RAM FAIL).

1138 - cleared the errors and started new EC calibration (bat. = 87%)

1142 - EC cal. OK - reading 449.105 µS/cm w/ new cell constant = 4.1946

1145 - checked pH cal. in pH 7 soln. - got error reading "Try Again (error # 65535)
- repeated attempt and got same message again.

1147 - started recalibration of pH
- got message "Error # 6002 - could not read pH sensor"
- the probe quit communicating - hooked it up with other cable and connected OK - upon reconnection, it gave "Device Errors - RAM fail" again - cleared the errors and read pH @ 7.018 in pH 7 soln -

11:55 - pH cal. is OK.

1/22/02 cont.

13:19 - on site at LAO-B with Bob Gray, Shannon Purdue and Ryan Channel to swap out probe.

13:21 - LAO-B WL measured 9.28' btoc

13:22 - connect to # 40493
transducer reads 9.267' btoc
(actual = 9.686')
battery = 73% (8.5 V)
storage = 78% free
CPU = 61606.61 s.

13:23 - extract test LAO-B@120401 and stopped test - disconnected and pulled # 40493

13:25 - installed # 40630 in LAO-B

13:27 - connect to # 40630
battery = 100% (9.5V)
storage = 87%
CPU = 42641.53 s.
reset ref. elev. to 7323'
reset ref. WL to 9.26' btoc

13:32 - started test LAO-B@012202

13:45 - on site at LAO-0.3. RM 1/22/02
Measured LAO-0.3 WL = ~~12.09~~ 12.11' btoc
connect to 40492 12.117' btoc
transducer WL = ~~11.410~~' RM 1/22/02 btoc
(actual depth = 0.895'

1/22/02

battery = 76% (8.6 V)
storage = ~~4%~~ RM 79%
CPU = 15774.95 s

13:50 - extract test LAO-0.3@120401

13:52 - stopped test - disconnect and pulled # 40492.

13:53 - installed # 40661
battery = 80% (8.7V)
storage = 86%
CPU = 73963 s
- reset ref. elev. to 6968'
- reset WL ref. to 12.10' btoc

13:57 - start test LAO-0.3@012202

14:09 - on-site at LAO-0.91
WL measured at 17.84' btoc
- connect to # 40621
transducer WL = 17.78' btoc
(actual depth 0.112')
- extracted test LAO-0.91@112001
- battery = 74% (8.5V)
storage = 76%
CPU = 49232 s

14:12 - stop test, pull probe
- install # 40587

1/22/02
14:15 - connect to # -
failed to connect to # 40587.
14:18 - reinstalled # 40621 for now.
40587 is malfunctioning - will
have to send in for repairs
- left ref. wl the same - (well is
dry)
- programmed new test
14:23 - start test LAO-0.91@012202
14:48 - on site at LAO-1.6
measured WL = 20.38' btoc
connect to 40658
transducer WL = 20.34' btoc
battery = 75% (8.5V)
Storage = 76%
CPU = 20815697s
extracted file 1.6g@112001
14:50 - stopped test - pulled probe
14:52 - installed 40653
battery = 85% (8.8V)
Storage = 87%
CPU = 1623845
reset ref. elev. to 6658'
reset WL ref. to 20.31' btoc
14:56 - start test LAO-1.6g@012202

1/22/02
15:05 - on site at LAP-4
- connect to # 5614 in LAP-4 #1
transducer WL = 17.032 ft btoc
(actual depth = 1.670 ft)
- manual WL = 17.08 ft btoc
15:07 - extract LAP-4 #1@120601
15:08 - connect to #5636 in LAP-4 #2
manual WL = 14.90 ft btoc
transducer WL = 14.909 ft btoc
(actual depth = 0.724 ft)
(#2 has hard bottom - no mud)
15:10 - extract LAP-4 #2@120601
15:12 - #3 TD = 12.51 ft btoc (dry)
(feels mucky - WL probe came
out with sand on it)
15:36 - on site at LAP-1.5
connect to #5572 in LAP-1.5 #1
transducer WL = 10.646' (actual = 3.256)
manual WL = 10.68' btoc
extract LAP1.5 #1@120601
(#1 has hard bottom - clean)
15:39 connect to #5706 in LAP-1.5 #2
transducer WL = 10.121' btoc (actual 1.169')
manual WL = 10.08' btoc
extract LAP1.5 #2@120601
(soft bottom in #2 - but clean probe)

1/22/02

15:42 - connect to #5536 in LAP-1.5 #3
transducer WL = 8.841' btoc
(actual depth = 0.012')
manual WL = Dry (TD = 9.16' btoc)
extract LAP-1.5 #3 @ 120601

15:52 - on site at LAP-1
- connect to #5560 in LAP-1 #1
transducer WL = 13.573' btoc
(actual depth = 0.355')
manual WL = 13.52' btoc
soft bottom in #1 - clean probe

15:55 - connect to #5535 in LAP-1 #2
transducer WL = 8.383' (3.791 actual)
manual WL = 8.47' (hard bot.)
extract LAP-1 #2 @ 122001
(prev. extracted LAP-1 #1 @ 122001)

15:57 - connect to #5616 in LAP-1 #3
trans. WL = 8.431 (1.630 actual)
manual WL = 8.40' btoc
(hard bot.)
extract LAP-1 #3 @ 122001

16:00 - mob. to lab trailer to unload equip.

[illegible]
1/22/02

2/26/02

1310 S. Purdue & A. Bauer at PAO-1. Connect to #40716 BC = 31% (7.5V)
Storage = 78% CPU = 51082
Extract test PAO-1e @ 011002 Jan 10, 02

TO
2/28/02
Bob Gray and Ryan Channel
Downloading transducers
09:29 - on-site at PAO-5N
Safety Mtg held
measured WL in PAO-5N = 10.22' btoc
connect to 40494 @ 9:31
Battery 71% 8.4V
CPU Run 88003 sec.
storage 77% free
Transducer WL = 10.23'
actual depth = 5.661'
extract PAO-5N @ 01/10/02
Data looks okay
9:35 disconnect from 40494
09:49 - on site at PAO-4
PAO-4 WL = 5.77 ft btoc
connect to 40491 @ 9:51
Battery = 71% 8.5V
CPU Run time = 37992 sec
Storage capacity = 78% free
Transducer WL = 4.727'
actual depth = 3.800'
extract test PAO-4 @ 01/10/02
Data looks okay
disconnect @ 9:57

2/28/02
10:08 on site at PAO-3
PAO-3 WL = 13.61 ft btoc
connect to 40656 (10:10)
battery 64% (8.3V)
CPU 17393 s storage 77% free
Transducer WL = 13.54'
actual depth = 0.272'
extract test PAO-3 @ 01/10/02
WL dropped below pressure sensor 34 days ago.
disconnect @ 10:18 Data looks okay
WL dropped below bottom of screen.
10:36 - on site at PAO-1
measured WL in PAO-1 = 13.81' btoc
connect to #40716
battery = 30%
CPU = 51343 s
Storage = 78% free
transducer WL = 13.809'
actual depth = .348'
extract PAO-1 @ 01/10/02
Data looks okay
disconnect @ 10:41
11:12 on site at LAO-B
measured WL = 9.16 ft btoc
connect to 40630

2/28/02
Battery = 92% 8.7V
CPU Run = 46695 sec
Storage capacity = 81% free
Transducer WL = 9.141'
actual depth = 19.742'
extract LAO-B @ 01/22/02
apparent daily pressure changes possibly due to closed cabble vent.
otherwise data looks good.
disconnect @ 11:22
11:35 on site at LAP-1
measured WL in piez. #1 = 13.57' btoc
connect to #5560
transducer WL = 13.637' btoc
actual depth = 0.292'
Battery 83% 2.5V
CPU Run time = 255 sec
storage = 95% free
extract ~~LAP-1~~ LAP-1#1 12/20/01
Data looks okay
disconnect @ 11:38
11:39 connect to #5535 in piez. #2
LAP-1 #2 WL measured at 8.41 ft btoc
Transducer WL = 8.412'
actual depth = 3.770'

2/28/02
Battery 83% 2.5V
CPU Run = 698 sec
Storage = 95% free
extract LAP-1 #2 @ 12/20/01
Data looks okay
disconnect @ 11:42
11:43 connect to #5616 in piez. #3
LAP-1 #3 measured WL = 8.36 ft btoc
transducer WL = 8.393'
actual depth = 1.667'
Battery = 73% 2.4V
CPU Run = 266 sec
storage = 95% free
extract LAP-1 #3 @ 12/20/01
Data looks okay
disconnect @ 11:45
13:13 on site at LAO-0.3
measured WL = 12.47 ft btoc
connect to # 40661
Transducer WL = 12.465'
actual depth = 0.591'
Battery = 69% 8.4V
CPU Run = 78010 sec
storage = 80% free
extract = LAO-0.3 @ 01/22/02
WL dropped by 0.4' over last 37 days

2/28/02
Data looks okay
~~ex~~ disconnect @ 13:20
13:26 on site at LAP-1.5
measured WLs:
LAP-1.5 #1 = 10.71 ft btoc
LAP-1.5 #2 = 10.08 ft btoc
LAP-1.5 #3 = dry (TD = 9.09' btoc)
Connect to #5572 in LAP-1.5 #1
battery = 83% 2.5V
CPU = 704 sec
Storage = 95% free
extract = LAP-1.5 #1 @ 12/06/01
Transducer WL = 10.778'
actual depth = 3.124'
data looks okay
disconnect @ 13:33
connect to #5706 in LAP-1.5 #2
Transducer WL = 10.105'
actual depth = 1.185'
Battery = 83% 2.5V
CPU = 663 sec
Storage = 95% free
extract = LAP-1.5 #2 @ 12/06/01
data looks okay
disconnect @ 13:35

2/28/02
connect to #5536 in LAP-1.5 #3
Battery = 80% 2.5V
CPU = 696 sec
Storage = 95% free
Transducer WL = 8.835'
actual depth = 0.018'
extract = LAP-1.5 #3 @ 12/06/01
except for two events in december
this well has been dry
70 days ago & 80 days ago.
data looks okay
disconnect @ 13:40
13:55 on site @ LAP-1
connect to #5535 in LAP-1 #2
extract LAP-1 #2 @ 12/20/01
13:56 stopped test & disconnect.
Removed #5535 & installed
#5708 into LAP-1 #2
Battery 100% 2.7V
CPU 44 sec
Storage 99% free
programing test LAP-1 #2 @ 02/28/02
Set Ref. WL to 8.40' (actual depth 3.815')
14:06 start test.
14:09 disconnect

2/28/02

Note - #5535 mini-troll pulled because its pressure readings jump back and forth by 0.01 ft. Plan to return to In-Situ for recalibration.

14:17 on site at LAO-0.91
measured WL = 17.85 ft btoc
Connect to # 40621
Battery = 70% 8.4V
CPU = 53328 sec
Storage = 69% free
Transducer WL = 17.756'
actual depth = 0.135'
extract LAO-0.91 @ 01/22/02
Data looks okay
~~disconnect @~~ RAC
10 days ago drop in water level & temperature
disconnect @ 14:24
14:40 on site @ LAO-1.6G
measured WL = 28.08'
connect to # 40653
Battery = 75% 8.5V
CPU = 166248 sec
Storage = 80% free

2/28/02

Transducer WL = 27.958'
actual depth = .908'
extract LAO-1.6G @ 01 22 02
~19 days ago water level dropped from 20' to 28' within one week
water level dropped below bottom of screen
drop in water level occurred between 17 & 10 days ago
14:47 stopped test.
~~Proge~~ RAC
Reset Ref. WL to 28.08'
actual depth = .906'
program new test LAO-1.6g @ 02 28 02
14:50 start new test & disconnect
15:00 on site @ LAP-4
installed # 5612 in LAP-4 #3
measured WLs:
LAP-4 #1 = 17.32 ft btoc
LAP-4 #2 = 15.52 ft btoc
LAP-4 #3 = dry (TD = 12.45')
15:04 connect to # 5614 in LAP-4 #1
Battery = 75% 2.5V
CPU = 669 sec
Storage = 95% free
Transducer WL = 17.325'
actual depth = 1.377'

2/28/02

extract LAP-4 #1 @ 12/06/01
last 6 weeks water level has
changed ~ 0.6' up & down
data looks okay
disconnect @ 15:09
15:10 connect to #5636 in LAP-4 #2
Battery 100% 4.5V
CPU 294 sec
Storage 95% free
Transducer WL = 15.515'
actual depth = 0.118'
extract LAP-4 #2 @ 12/06/01
in last 17 days water level
dropped 0.7'
data looks okay
15:14 disconnect
15:15 connect to #5612 LAP-4 #3
Battery = 88% 2.5V
CPU = 73 sec
Storage = 96% free
Reset Ref WL to 12.45' BTOC
actual depth = -0.085'
program test LAP4 #3 @02 28 02
15:20 start test & disconnect

2/28/02

15:30 on site @ LAP-5.7
connect to #5593 in LAP-5.7 #1
Battery - 83% 2.5V
CPU - 293 sec
Storage = 95% free
Transducer WL = 17.622' (dry)
actual depth = -0.110'
actual TD = 17.56' (Readings 17.62' on tape)
extract LAP-5.7 #1 @ 12/06/01
WL dropped ~ 3' since 12/06/01
up to one week ago when it dried up.
15:36 disconnect
15:40 on site @ LAP-6
15:44 connect to #5692 in LAP-6
installed probe # 5692 into LAP-6
measured WL = 15.52
TD = 16.29'
Battery = 88% 2.5V
CPU = 70 sec
Storage = 96% free
Transducer WL = - started new test @ 15:56 LAP-6 02 28 02
actual depth =
Reset WL to = 15.51 ft btoc
(actual depth = 0.573 ft)
15:52 - demob from Can. to trailer

3/7/02

Bob Gray & Ryan Channell @ DP Canyon to install transducers. Held tailgate safety meeting

9:40 installed probe # 40658 into LAUZ-1

Batt 80% 8.7V

CPU 20815915.6 sec

Storage 76% free

edit onboard ~~pres~~ RAC pressure.

Reset TOC level Ref. to 7.03'

actual depth 5.27'

pH reading 7.18

EC reading 398.982 uS/cm @ temp. 5.881°C

programmed test LAUZ-1 @ 030702 for 15 minute readings.

9:51 start test LAUZ-1 @ 030702 & disconnect

10:15 installed probe # 40622 into LAUZ-2

Batt = 82% 8.7V

CPU = 62210.8 sec

Storage = 80% free

edit onboard pressure

Reset Ref elevation to 7027'

Reset TOC level Ref. to 10.12.04' btoc

actual depth = 0.244'

3/7/02

10:23 started test LAUZ-2 @ 030702 for 15 minute readings. & disconnect.

10:56 on site at PAO-5N

measured WL = 10.76 ft btoc

connect to probe # 40494

Battery = 71% (8.4V)

CPU = 80857.99 s

Storage = 75% free

10:59 transducer WL reading = 10.763'

actual depth = 5.128'

11:00 Download PAO-5N @ 011002

stopped test - disconnected, pulled probe

11:02 Installed probe # 40493

Battery = 81% (8.7 V)

CPU = 61740.92 s

Storage = 78% free

Edit Onboard Pressure Settings

reset ref. elev. to 6370' (actual 5.086')

reset TOC WL ref. to 10.75' btoc

11:14 start test PAO-5N @ 030702 &

RAC ~~11:14~~ disconnect

11:28 on site at PAO-4

measured WL = 5.98 ft btoc

Connect to probe # 40491

Batt = 71% 8.4V

CPU = 38818.03 sec

3/7/02

storage = 77% free

~~AM edit onboard pr~~

Transducer WL = 4.508'

actual depth = 3.581'

extract test PA0-4 @ 011002

11:29 stop test

checked onboard pressure settings display mode was set to level-surface instead of level-TOC therefore the data in test PA0-4 @ 011002 reflects WL changes opposite to TOC readings.

11:40 disconnect from 40491 (when viewed datafile for PA0-4 @ 011002, the datamanager default setting was Level-TOC, so the data looked OK.)

11:45 Installed # 40659

Battery = 74% (8.5V)

CPU = 15250.08 s

Storage = 81% free

Edit Onboard Pressure settings

reset elev. ref. level to 6437'

reset WL ref. to 5.96' btoc

(actual depth = 3.576')

3/7/02

11:46 - start test PA0-4 @ 030702

12:16 on site at LA0-B connect to # 40630

Measured WL = 9.07' btoc

Batt = 89% 8.9V

CPU = 47510.82 sec

Storage = 79% free

Transducer WL = 9.077'

actual depth = 19.805'

extract test LA0B @ 012202

12:18 stop test & disconnect

pulled probe + cable # 63449 (30 ft)

(This cable may have clogged air vent causing diurnal barometric effects in WL readings. Or it may be due to air tight lid on well. Replacing cable with new one to determine which is cause)

12:25 install probe # 40492 + new cable (35').

battery = 83% (8.7 V)

CPU = 15910.36 s

Storage = 79% free

edit onboard pressure settings

Reset elev. Ref level to 7323'

Reset WL ref to 9.05' bTOC

actual depth = 19.749'

3/7/02

12:34 Start test LAO-B @ 030702 &
disconnect.

12:48 On site at LAO-0.3
Measured WL = 11.90 ft btoc
connect to # 40661
battery = 68% (8.4v)
CPU = 78817.26
storage = 79% free
transducer WL = 11.932 ft btoc
(actual depth = 1.125 ft)
extract LAO-0.3 @ 012202
~~stop test & disconnect~~ RAC
looks like WL rose approx. 0.6' about
one day ago.

12:54 stop test & disconnect.

12:55 installed # 40654
battery = 75% (8.5v)
CPU = 62749.455
storage = 80% free
edit on board pressure
Reset Ref. elev. to 6968'
Reset Ref. WL to = 11.90'
actual depth = (actual depth = 1.106')
Reset clock to match computer

13:06 Start test LAO-0.3 @ 030702
& disconnect

3/7/02

13:16 On site at LAO-0.91
Measured WL = 17.85' btoc
connect to # 40621
transducer WL = 17.778' btoc
(actual depth = 0.133')
extract test LAO-0.91 @ 012202

13:18 disconnect.

13:20 - demob from Canyon

3/7/02

3/5/02

Ryan Channell @ Lab trailer for MP Troll 8000 calibrations. Calibrated pH & EC sensors for probe #'s: 40654
40493
40622
40492
40659
40658
40655

10:40 connect to probe # 40654
10:50 begin pH cal
Manual Reading = 6.999 pH
11:10 begin EC cal
Knew = 4.0803
SC = 449.916
good cal Results
11:20 disconnect
11:30 connect to probe # 40493
storage = 78% free
Battery = 81% (8.7 V)
CPU = 61669.41
11:35 begin pH cal
manual reading = 6.996 pH
11:45 begin EC cal
Knew = 4.1857

3/5/02
SC = 449.25
good cal Results
12:00 disconnect
12:45 connect to probe # 40492
Storage = 79% free
Battery = 84% (8.7V)
CPU = 15838.75
12:50 begin pH cal
manual Reading = 6.993 pH
Knew = 4.0483
SC = 449.346
good cal Results
1:20 disconnect
1:30 connect to probe # 40659
storage = 81% free
Battery = 75% (8.5V)
CPU = 15169.99
1:35 begin pH cal
manual reading = 6.991 pH
Knew = 4.0194
SC = 449.787
good cal Results
2:08 disconnect

3/5/02

2:15 connect to probe # 40658
storage = 76% free
Battery = 82% (8.7v)
CPU = 20815772.71

2:20 begin pH cal
manual Reading 7.075 pH
Knew = 6.2013
SC = 449.456
Good cal Results

2:55 disconnect

3:00 connect to probe # 40622
storage 80% free
battery = 83% (8.7v)
CPU = 62140.88

3:05 begin pH cal
manual Reading = 6.997 pH
Knew = 4.0919
SC = 450.621

3:45 disconnect

4:00 connect to probe # 40655
storage = 87% free
Battery = 100% (9.3v)
CPU = 56485.98
manual pH Reading = 7.002
Knew = 6.9380
SC = 450.472

4:35 disconnect

3-5-02

3/14/02

- Bob Gray and Ryan Channel at probe lab trailer @ 8:30 for calibrating EC sensors to KBr standards.
- Heat safety tailgate @ 8:35.
- cleaned 2 EC sensors and installed in probes # 40630 and # 40494
- 9:05 : immersed probe # 40630 in 1 ppm standard. - reset cell constant to 4.000.

9:10	: reading EC =	48.934	@	20.011°C
9:12	- "	48.951	@	20.315°C
9:14	- "	48.958	@	20.479°C
9:16	- "	48.967	@	20.696°C
9:18	- "	48.973	@	20.871°C
9:20	- "	48.978	@	21.053°C

- converted readings to 25°C - readings not stable. check add'l. readings:

9:40	-	49.010	@	22.637°C
~~9:42~~	- RR			
9:55	-	49.013	@	23.145°C

- Decided to calibrate an EC sensor to the In-Situ 450 µS/cm standard 1st - then check readings in the KBr standards.

3/14/02

9:59 - connect to # 40494 to calibrate EC sensor.

- 1st calib. attempt gave EC reading of ~~24~~ RAC 234.238 µS/cm @ 21.622°C which required a new cell constant of 7.214 (should be close to 4.0!).
- It appears that this EC sensor may have gone bad.
- Try calibrating the EC sensor in # 40630 in the 450 µS/cm standard.

10:07 - immersed # 40630 in standard and connected to probe.

1st calib. attempt gave EC reading of 290.884 µS/cm @ 21.306°C which required a new cell constant of 6.4453

- May have a bad EC sensor

10:25 - connect to # 40655

- calibrated EC - reading 371.814 µS/cm at 17.089°C → new cell constant = 4.1096.
- checked calibrated reading in the 450 µS/cm standard - 383.400 @ 17.525 C → SC = 447.26 @ 25°C

3/14/02

10:30 connect to probe # 40661

calibrated EC - reading ~~450~~ RAC .109

395.965 µS/cm @ 18.702°C

new cell constant = 6.4079

SC = 450.109

10:41 RAC place probe in KBr solution.

10:45 - calibrated #40655 EC

new cell constant = 4.142

- immersed #40661 in 1ppm KBr standard
- 40655 calibration reading EC @ 377.94 µS/cm @ 18.777°C
- after cal. reading = 392.542 @ 18.242°C → SC = 450.72

10:52 #40661 readings in 1 ppm KBr:

↳	81.498	@	20.791°C
10:56	81.509	@	20.862
11:01	81.504	@	20.803
11:04	81.496	@	20.738
11:09	81.481	@	20.726

11:14 immersed #40661 in 5 ppm KBr:

11:19	81.472	@	20.218
11:22	81.466	@	19.936
11:25	81.456	@	19.871
11:28	81.443	@	19.571
11:31	81.429	@	19.406

3/14/02

11:27 - immersed # 40655 in 1 ppm KBr to let sit awhile & stabilize

11:35 - immersed # 40661 in 10 ppm KBr to let stabilize.

11:38 - 81.412 @ 18.960°C

11:41 - 81.408 @ 18.930°C

11:44 - 81.403 @ 18.848°C

11:47 - 81.397 @ 18.707°C

11:50 - 81.390 @ 18.713°C

40655 readings in 1 ppm KBr standard:

13:00	51.558 @	20.758°C
13:03	51.562 @	20.852°C
13:06	51.565 @	20.946°C
13:09	51.570 @	21.070°C
13:12	51.575 @	21.206°C

40661 readings in 50 ppm KBr

13:10	81.501 @	21.436°C
13:13	81.506 @	21.694°C
13:16	81.511 @	21.786°C
13:19	81.517 @	21.970°C
13:22	81.525 @	22.192°C

3/14/02

13:16 immersed # 40655 in 5 ppm KBr standard.

13:25	51.624 @	21.780°C
13:28	51.624 @	21.673°C
13:31	51.605 @	~~21.777~~ RA 21.171°C
13:34	51.585 @	20.834°C
13:37	51.566 @	20.457°C

13:26 immersed # 40661 in 100 ppm KBr standard.

13:35	152.878 @	20.756°C
13:38	152.260 @	20.177°C
13:41	151.632 @	20.378°C
13:44	151.184 @	20.201°C
13:47	150.778 @	20.000°C

13:42 immersed # 40655 in 10 PPM KBr

13:48	51.507 @	19.664°C
13:51	51.494 @	19.469°C
13:54	51.486 @	19.300°C
13:57	51.476 @	19.095°C
14:00	51.462 @	18.814°C

13:50 immersed # 40661 in EC 450 Cal standard

14:07 after 4 readings sensor is still reading high (456.978) (@ 25°C)

3/14/02

14:10 immersed # 40655 in 60 ppm KBr standard

14:15 60.935 @ 17.595

14:18 61.224 @ 17.531

14:21 60.934 @ 17.426

14:24 60.482 @ 17.298

14:27 59.993 @ 17.223

14:25 EC Reading for # 40661 is 461.773. (@ 25° c)

14:31 immersed # 40655 in 100 ppm KBr standard

14:35 132.264 @ 17.008°C

14:38 131.528 @ 16.938°C

14:41 131.297 @ 16.880°C

14:44 130.265 @ 16.892°C

14:47 129.871 @ 16.955°C

14:50 immersed #40661 in 450 µs/cm standard to recheck sensor calibration

15:00 reading Ec @ 243.173 @ 17.350°c

⇒ SC = 284.78 @ 25°c

15:03 Ec = 368.087 @ 17.624°c

⇒ SC = 428.45 @ 25°c

3/14/02

15:08 EC = 245.807 @ 17.950°c

⇒ SC = 284.06 @ 25°c

This Ec sensor has gone bad. Labeled probe to indicate bad EC sensor.

15:15 - drive to WGI office to get keys for storage unit and retrieve boxes for shipping MPTROLLs to In-Situ for repair

3/14/02

4/4/02

Bob Gray and Ryan Channel in DP Canyon to download transducer data.

11:35 - held safety tailgate mtg.

11:40 - Connect to probe #40658 in LAUZ-1

measured WL = 7.25 ft btoc

extract test LAUZ-1@030702

- WL has dropped ~ 0.2' since 3/7/02

- transducer WL reading = 7.241 ft btoc (actual depth = 5.067 ft)

battery = 64% (8.3 V)

storage = 65% free

CPU = 20822024.21 s

11:52 - connect to #40622 in LAUZ-2

- mesured WL = 12.26 ft btoc

- transducer WL = 12.279 ft btoc (actual depth = 0.057 ft)

battery = 68% (8.4V)

CPU = 68315.41 s

Storage = 70% free

- extract test LAUZ-2@030702

- well is dry

12:00 - demob from Canyon R. Davis 4/4/02

4/4/02

14:10 - on site at LAO-0.3

connect to #40654

Measured WL = 8.85 ft btoc

Transducer WL = 8.902 (actual 4.108')

battery = 64% (8.3 V)

Storage = 74% free ; CPU = 65849.415

extract LAO-0.3@030702

- WL has risen ~3.0 ft since 3/11 but starting to drop off now (down ~0.1' from high @ 3/22 - 3/30

R. Davis 4/4/02

4/11/02

3:04 PM (15:04) - on site at LAUZ-1
- Bob Gray and Armand Groffman
  - held safety mtg.
- 15:05 - connect to # 40658
  battery 63% (8.3 V)
  CPU run time = 20823628.475
  storage = 63% free
  - extract LAUZ-1 @ 030702
15:30 - Demob from site

A Gray
4/11/02

4/23/00

0910 - Bob Gray at Probe Lab trailer to work on MPTROLL testing & calibration. → battery = 79% (8.6 V)
0935 - Connect to # 40660 after installing EC test load diagnostic element labeled 175.2 to 189.8 µS/cm.
- Reset cell constant to default value = 5.0
- read conductivity measurement = 188.119 µS/cm
- Test load reading is within range specified, but near the high end.
10:20 - install low range EC test load in # 40624 and connect.
- reset cell constant to 5.0
- read conductivity = 187.484 µS/cm = within specified range
battery = 48% (7.9 V)

Ryan Chunnell & Jared Lyman on site @
LAO-0.91
measured wl: 17.86 ft Boc
12:55 connect to #40621 in LAO-0.91
Battery = 63% (8.3V)
CPU = 60014.81
Storage = 58% free
transducer wl = 17.79 ft (actual) = 0.101 ft
12:57 extract LAO-0.91 @ 012202
1:00 demob from site.
1:15 on site @ LAO-1.6g
measured wl = 28.10 ft Boc
1:20 connect to #40653 in LAO-0.91
Battery = 70% (8.4V)
CPU = 173160.55s
Storage = 69% free
transducer wl: 28.122 (actual = 0.863ft)
1:25 extract LAO-1.6g @ 022802
1:27 demob from site.
2:55 on site in DP canyon @ LAUZ-1
3:00 connect to #40658 in LAUZ-1
Battery = 59% (8.2V)
CPU = 20827750.43
Storage = 56% free
transducer wl: 6.795 ft (actual) = 5.513ft)

measured wl = 6.81 ft Boc
3:05 extract LAUZ-1 @ 030702
Removed water sample from well for testing.
3:15 on site @ LAUZ-2
3:17 connect to #40622 in LAUZ-2
Battery = 63% (8.3V)
CPU = 74018.66
Storage = 61%
transducer wl: 7.143 ft (actual = 5.193 ft)
measured wl: 7.0 ft
3:20 extract LAUZ-2 @ 030702
3:22 demob from site.

4/30/02

5/1/02

9:15 on site in Pueblo Canyon @ PAO-5N
Ryan Chamnell & Jared Lyman in Pueblo Canyon.
• Held safety meeting
9:18 connect to # 40493 in PAO-5N
Battery = 68% (8.4V)
CPU = 67743.7
Storage = 68% free
Transducer WL = 11.474 ft (actual 4.355 ft)
measured WL = 11.50 ft BOC
9:27 extract PAO-5N @ 030702
~~9:30 collect water sample for testing in Lab trailer~~ RAC 5/1/02
* Did NOT collect water sample from well
9:45 on site @ PAO-4
9:47 connect to # 40659 in PAO-4
Battery = 62% (8.2V)
CPU = 21237.87s
Storage = 71% free
transducer WL = 6.286 ft (actual) = 3.251 ft
measured WL = 6.28 ft BOC
9:50 extract PAO-4 @ 030702
9:55 collected water sample for testing in Lab trailer.

10:05 demob from site
10:40 on site @ PAO-1 in Pueblo Canyon
10:45 connect to # 40716 in PAO-1
Battery = 10% (7.0V)
CPU = 58081.31s
Storage = 66% free
transducer WL = 12.04 ft. (actual = 2.113 ft)
measured WL = 12.0 ft BOC
10:51 extract PAO-1 @ 011002
10:55 demob from site - leave Pueblo Canyon
11:23 on site in LA Canyon @ LAO-B
11:25 connect to # 40492 in LAO-B
Battery = 68% (8.4 V)
CPU = 21920.93s
Storage = 69% free
transducer WL = 9.651 ft. (actual = 19.15 ft.)
measured WL = 9.68 ft. BOC
11:30 extract LAO-B @ 030702
11:35 demob from site.
Collected water sample for testing in Lab trailer.

5-1-02

5/7/02

Ryan Channell @ Lab trailer to calibrate MP 8000 transducers @ 0900 hours.

0905 connect to probe # 40494

Battery = 83% (8.7V)

CPU = 80923.71s

storage = 75% free

on 3/14/02 probe had a clean EC sensor installed

calibration on 3/14/02 resulted in a high cell constant of 7.214

0910 loaded low conductivity sensor test load into probe # 40494

Reading = 179.402 uS/cm

medium test load Reading = 1755.415 uS/cm

high test load Readings = 17,446.792 uS/cm

probe was Reading within specified Range of low & medium test loads but did not pass high test load.

high test load Range is 17,520 to 18,980 uS/cm & probe Reads 17,446.792 uS/cm.

0920 disconnect from probe

1030 connect to probe # 40630

loaded Low conductivity test load & probe is Reading 187.817 uS/cm

probe is within Range of test load.

5/7/02

Battery: 97% (9.1V)

CPU: 47627.35

storage: 79% free

10:41 begin pH calibration

Manual Reading = 7.006 pH (okay)

11:00 first calibation attempt failed.

11:10 second calibration attempt passed

Knew = 4.1660

SC = 450.15

11:15 disconnect from probe

calibration Results okay.

11:23 connect to probe # 40494

probe stats are on page 44.

11:25 begin pH calibration

Manual Reading = 6.960 pH

pH sensor may be bad.

~ 15 minutes to stablize & ran pH calibration two times.

Knew = 4.4054 } calibration okay.

SC = 450.57

12:00 connect to probe # 40660

Battery = 79% (8.6V)

CPU = 76263.61s

storage = 79% free

12:07 begin pH calibration

Manual Reading = 7.000 pH

5/7/02

Knew = 5.7707
SC = 449.198
EC calibration is okay after three attempts
EC test load was okay even though
Knew is a high value.

12:50 disconnect.

12:55 connect to probe # 40491
Battery = 82% (8.7V)
CPU = 38851.67s
Storage = 77% free

1:05 loaded Low EC test load into probe
Reading = 187.306 uS/cm
probe is Reading within Range of test load

1:10 begin pH calibration
Manual Reading = 7.000 pH
Knew = 4.1545
SC = 449.642

1:40 disconnect - calibration Results okay

1:50 connect to probe # 40655
Battery: 100% (9.4V)
CPU: 56770.64s
Storage: 87% free

1:52 loaded Low EC test load into probe
Reading = 187.350 uS/cm
probe is Reading within Range of test load

5/7/02

2:00 begin pH calibration
manual reading = 7.040 pH
Knew = 6.3783
SC = 450.134

2:35 disconnect from probe
calibration Results are okay.

2:40 connect to probe # 40624
Battery Replaced 5-7-02
Battery = 100% (9.5V)
CPU = 48194.75s
Storage = 86% free
passed Low Range EC test load on 4/23/02

2:43 begin pH calibration
manual Reading = 6.992 pH
Knew = 5.1235
SC = 450.76

3:10 disconnect from probe
Calibration Results look okay.

3:25 connect to probe # 40661
Loaded Low Range EC test load & probe
Reads = 187.645 uS/cm
probe is reading within Range of test load.
Battery = 78% (8.6V)
CPU = 79047.66s
Storage = 79% free

5/7/02

3:35 begin pH calibration

manual reading = 7.001 pH

K_{new} = 4.0859

SC = 450.04

4:05 disconnect from probe

calibration results look okay.

5-7-02

5/8/02

0945 Ryan Charnell & Shannon Purdue on site @ PAO-5N in Pueblo Canyon

0948 held safety meeting for daily activities

Changed MP 8000 transducers in Pueblo Canyon.

0950 connect to probe # 40493 in well PAO-5N

Battery = 68% (8.4 V)

CPU = 68692.11

storage = 67% free

transducer wl = 11.847 ft. (actual = 3.982 ft)

0952 extract PAO-5N@030702

0958 programmed new test PAO-5N@050902

Reset reference wl to = 11.85 ft.

1004 started test, & demobed

1017 on site @ PAO-4

connect to probe # 40659 in PAO-4

Battery = 61% (8.2V)

CPU = 22188.98

Storage = 69% free

transducer wl = 6.357 ft (actual = 3.179 ft.)

1020 extract PAO-4 @ 030702

1022 remove probe from well

1025 installed probe # 40624 in PAO-4

5/9/02

1029 programed new test PAO-4 @ 050902
reset ref. WL to 6.29 ft.
10:35 start new test & demob.
10:45 on site @ PAO-3
connect to probe # 40656
Battery = 59% (8.2V)
CPU = 25022.45
Storage = 64% free
transducer WL = 13.595 ft (actual = 0.219 ft)
10:47 extract test PAO-3 @ 011002
programed new test PAO-3 @ 050902
Reset ref. WL to 13.627 ft.
10:53 disconnect & demob.
didn't replace probe in PAO-3.
11:30 on site @ PAO-1
Connect to probe # 40716 in PAO-1
Battery = 9% (7.0V)
CPU = 59034.78
storage = 65% free
11:33 extract test PAO-1 @ 011002
& stopped test.
installed probe # 40661 in PAO-1
11:40 programed new test PAO-1 @ 050902
started new test
disconnect & demob from Rueblo Canyon

5/9/02

1:40 on site in LA Canyon @ LAO-B
Connect to probe # 40492
Battery = 67% (8.3V)
CPU = 22882.19
Storage = 68%
1:42 extract LAO-B @ 030702
Stopped test & pulled probe
1:45 installed probe # 40630
Batt = 97% (9.0V)
CPU = 47731.64
Storage = 79% free
1:47 programed new test LAO-B @ 050902
Reset ref. WL to 9.53 ft.
1:50 start new test & disconnected
2:04 on site @ LAO-0.3
connect to probe # 40654 in LAO-0.3
Battery = 60% (8.2V)
CPU = 69717.95
Storage = 68% free
2:06 extract test LAO-0.3 @ 030702
pull transducer
2:09 replaced probe with # 40494
Battery = 82% (8.7V)
CPU = 81171.93
Storage = 75% free

5/9/02

2:10 programed new test LAO-0.3@050902
Reset Ref. WL @ 9.49 ft.
2:12 start test & disconnect from probe
demob from site.
2:23 on site @ LAO-0.91
connect to probe # 40621
Battery = 61% (8.2v)
CPU = 61028.54
storage = 56% free
2:25 extract test LAO-0.91 @ 012202
disconnect from probe & pull
2:30 Replaced with probe # 40655
Battery = 100% (9.3v)
CPU = 56867.52
Storage = 87% free
programed new test LAO 0.91 @ 050902
Reset Ref. WL @ 17.87 ft.
2:30 start new test & disconnect
2:47 on site @ LAO-1.6g
connect to probe # 40653
Battery = 69% (8.4v)
CPU = 174178.00s
storage = 67% free
2:52 extract test LAO-1.6g @ 022802
disconnect from probe & pull

5/9/02

2:55 connect to probe # 40660
Battery = 78% (8.6v)
CPU = 76401.92
Storage = 79% free
programed new test LAO-1.6g @ 050902
Reset Ref. WL. to 28.08 ft.
3:00 start new test & disconnect
demob from LA canyon.

5/9/02

5/16/02

Ryan Channell @ Lab trailer to check electronics in multi parameter probes. Loading Low Range EC test load to confirm working probe.

10:37 connect to probe # 40621
Reading = 186.803 uS/cm
probe passed test.

10:41 disconnect.

10:50 connect to probe # 40653
Reading = 186.358 uS/cm
Probe passed test.

10:52 disconnect.

11:00 connect to probe # 40654
Reading = 187.728 uS/cm
probe passed test

11:02 disconnect

5/30/02

Ryan Channell @ Lab trailer to check electronics in multi parameter probes using Low Range test for EC test bad.

8:45 connect to probe # 40716
Reading = 187.804 uS/cm
probe passed test okay

8:50 disconnect.

8:58 connect to probe # 40654
Battery = 71% (8.4V)
CPU = 69772.45
storage = 68% free

calibrate probe for EC & pH

9:00 begin pH calibration
manual Reading = 6.991 pH
Knew = 4.0345
SC = 450.01
good calibration results

10:08 disconnect.

9:15 connect to probe # 40716
Battery = 35% (7.6V)
CPU = 59088.31
storage = 65% free

disconnect to change Battery.

9:36 connect to probe # 40716

5/30/02

Battery reading = 100% (9.5 V)

9:41 Begin pH calibration

manual reading = 6.998 pH

Know = 4.1399

SC = 449.236

good calibration results.

10:45 connect to probe # 40659

loaded Low EC test load.

reading = 187.034 uS/cm

probe passed test okay

10:50 disconnect

10:58 connect to probe # 40493

loaded Low EC test load

reading = 186.519 uS/cm

probe passed test okay

11:00 disconnect.

11:08 connect to probe # 40492

loaded Low EC test load

reading = 187.814 uS/cm

probe passed test okay

11:10 disconnect

11:20 connect to probe # 40716

program test COND - TEMP

for 1 minute readings.

probe was immersed into sample

water from LA canyon well LAO-B

11:22 start test & let run until

water reaches ambient temperature.

11:37 calibration solution for EC

is okay.

SC = 450.54 @ 27.611 °C &

473.009 uS/cm.

12:50 SC = 450.79

Solution seems to be okay.

3:00 connect to probe # 40716

program test for temperature &

EC readings.

Readings every 15 seconds.

Pueblo canyon well PAO-4

3:00 connect to probe # 40654

program test for temp. & EC

DP canyon well LAUZ-1

15 second readings.

good results.

5-30-02

6/12/02

900 S. Purdue and A. Banar on-site at PAO-1.
Safety Tailgate briefing by S. Purdue.
We will be downloading from transducers in LA & PU canyons.

905 Connect to #40661 in PAO-1 BC = 65% (8.3V)
Storage = 72% free
CPU = 82863.10
Extract test PAO-1@050902

955 On-site at PAO-3
Connect to #40656
DTW Manual = 15.40 ft bTOC
BC = 57% (8.1V)
Storage = 58% free
CPU = 28817
Extract test PAO-3@050902
Visable drop in water level is due to sample purging.

10:19 On-site at PAO-4.
Manual DTW = 6.51 ft bTOC
Connect to #40624
BC = 94% (9.0V)

6/12/02

Storage = 97% free
CPU = 51974
Extract test PAO-4@050902

1105 On-site at LAO-B
Connect to #40630
BC = 82% free (8.7V)
Storage = 73% free
CPU = 51463
Extract test LAO-B@050902

1120 Mob to ~~LAO-0.3~~ LAP-1 SP 6/12/02

1128 On-site at LAP-1
Connect to #5560 LAP #1
BC = 70% free, Storage = 93% free
CPU = 530
Extract test LAP-1#1@122001

1135 Connect to #5708 LAP-#2
BC = 93% (7.6V) St = 97% free
CPU = 367.00
Extract test LAP#2 022802

1137 Connect to #5616 LAP #3
BC = 63% (2.4V) St = 93% free
CPU = 551
Extract test LAP#3 ~~0~~ 122001 SP 6/12/02

1140 Mob to LAO-0.3

1143 On-site at LAO 0.3

This page left blank
JP 6/12/02

This page left blank
JP 6/12/02

6/12/02 (cont.)

Connect to #40494 in LAO 0.3
BC = 70% (8.4v) st. = 69% free
CPU = 84868
Extract test LAO-0.3 @ 050902
manual DTW = 11.13 ft btoc
1150 Mob to LAO-0.6 1203 DTW = 8.21 ft btoc
1210 On-site at LAP 1.5
Connect to #1 5572
BC = 70% (12.4v) st = 93% free
CPU = 976
Extract test LAP-1.5 #1 @ 120601
1217 DTW at 1207 = 10.35 ft btoc
Connect to #2 5706
BC = 70% (2.4v) st = 93% free
CPU = 946
Extract test LAP-1.5 #2 @ 120601
DTW at 1208 = 9.61 ft bTOC
1219 Connect to #5536
BC = 70% (2.4v) st = 93% free
CPU = 979
Extract test LAP-1.5 #3 @ 120601
Dry - TD = 9.15 ft btoc
1239 On-site at LAP 3.5
Connect to #5600 LAP 3.5 #1
BC = 45% (2.2v) st = 95% free

6/12/02 (cont.)

CPU = 678
1243 Extract test LAP-3.5 #1 @ 111301
6/12/02 DTW = 16.43 ft bTOC
1245 Connect to #5515 LAP 3.5 #2
BC = 47% (2.2v) st = 95% free
CPU = 641
1246 Extract test LAP-3.5 #2 @ 111301
DTW at 1236 - dry - TD = 13.97 ft btoc
Connect to #5615 LAP 3.5 #3
BC = 68% (2.4v) st = 95% free
CPU = 637
1247 Extract test LAP-3.5 #3 @ 111301
DTW at 1236 - dry - TD = 11.47 ft bTOC
1302 On-site at LAO-0.91
Connect to #40605
BC = 89% (8.9v) st = 81% free
CPU = 60584
1307 Extract test LAO-0.91 @ 050902
DTW at 1302 17.87 ft bTOC
1312 Mob to LAO-1.2 See water level notebook.
1340 On-site at LAO-1.6a
Connect to #40660
BC = 76% (8.4v) st = 73% free
CPU = 80116

6/12/02 (cont.)

1343 Extract test LAO-1.6g@050902.
1355 On site at LAP-4.
Connect to #5614, LAP-4 #1
BC = 63% (2.4v) St = 93% free
CPU ~ 954.
1358 Extract test LAP-4#1@120601
1400 Connect to #5634, LAP-4 #2
BC = 100% (3.4v) St = 93% free
CPU = 585
1401 Extract test LAP-4#2@120601
1410 On site at LAP-5.7
Connect to #5593 LAP 5.7 #1
BC = 63% (2.4v) St = 93% free
CPU = 594
1415 Extract Test LAP-5.7#1@120601
1421 On site at LAP-6
Connect to #5692
BC = 70% (2.4v) St = 94% free
CPU = 365
1422 Extract test LAP-6@022802
1453 On site at LAUZ-1
Connect to #40658
BC = 50% (8.0V) St = 41% free
CPU = 20837089
1458 Extract test LAUZ-1@030702

6/12/02 (cont.)

1510 On site at LAUZ-2
Connect to #40622
BC = 55% (8.1V) St = 45% free
CPU = 83359
1513 Extract test LAUZ-2@030702
1530 Mob to WGI office.

Charles Smith 6/12/02

Rec. 6/13/02

7/30/02

10:30 Ryan Channell @ SMO Lab trailer to calibrate multi-parameter transducers to be deployed in field.

10:49 connect to # 40716
Batt = 100% (9.4 V)
Storge = 64%
CPU = 60377.44

10:50 delete tests to free up storage space.

11:04 new storage = 78 %
calibrate probe for EC & pH
Reset probe clock to match computer clock - ~~eastern~~ MC daylight savings time
new manual pH Reading = 6.993
Knew = 4.1561
SC = 449.1
good calibration Results

11:32 disconnect.

11:05 connect to # 40654
Batt = 68%
Storage = 67%
CPU = 71809.49

11:07 delete old tests to free up storage space

11:16 new storage = 76%

11:17 Reset probe clock to match computer clock - (DST)
calibrate probe for EC & pH
new manual pH Reading = 4.009
Knew = 4.0981
SC = 450.196
good calibration Results

12:08 disconnect.
replaced Batt = 100%

11:40 connect to # 40653
Batt = 81% (8.7 V)
Storage = 67%
CPU = 174231.50

11:41 delete old tests to free up storage space.
new storage = 80%
Reset probe clock to match computer clock (DST)

7/30/02

calibrate probe for EC & pH
new manual pH reading = 6.972
Knew = 4.1644
SC = 450.12
good calibration results
12:27 disconnect
12:14 connect to # 40621
Batt = 76% (8.5v)
storage = 56%
CPU = 61085.68
12:15 delet old tests to free up storage space
new storage space = 80%
12:30 Battery capacity dropped to 66%
disconnect to change Batt.
12:47 connect to # 40621
Batt = 100%
Reset probe clock to match computer clock (DST)
calibrate probe for EC & pH
new manual pH reading = 6.995
Knew = 4.1762
SC = 449.954
good calibration results
1:14 disconnect

7/30/02

12:51 connect to # 40659
Batt = 75%
storage = 69%
CPU = 22252.20
12:52 ~~delte~~ delete old tests to free up storage space
new storage space = 88%
~~12:~~1:01 Reset probe clock to match computer clock (DST)
calibrate probe for EC & pH
new manual pH reading = 6.993
Knew = 4.5584
SC = 449.64
good calibration results
1:48 disconnect.

7/30/02

7/31/02 Ryan Channel & Bob Gray
in LA Cou. to replace MPTROLL probes.
10:42 - on site at LAO-B
Measured DTW = 9.33 ft btoc

10:45 connect to # 40630
Batt = 76% (8.6V)
storage = 64% free
CPU = 56855
extract LAOB@050902 test & view
data - Data looks good
10:51 stop test & disconnect.
10:50 installed new probe # 40659
10:55 connect to # 40659
Batt = 73% (8.5V)
storage = 88%
CPU = 22069
edit probe clock to standard time
program new test LAOB@073102 for
30 minute readings.
elevation = 7323 set for probe
set level ref to 9.32' above top of casing
11:01 start test & disconnect.
11:37 on site at LAO-0.3
measured WL = 8.70 ft btoc
connect to # 40494

transducer WL = 8.680 ft btoc
(actual depth = 4.265 ft)
Batt = 68% (8.4V)
storage = 60%
CPU = 90229
extract ~~LOAB~~ LAO-0.3@050902
data looks okay
11:41 stop test & disconnect
pulled probe to replace w/ new one.
11:40 installed probe # 40654
Batt = 100% (9.3V)
storage = 76%
CPU = 71843
reset clock to standard time.
reset elevation to = 6968'.
set level ref to 8.69' above top of casing
program new test LAO-0.3 @ 073102
for 30 minute readings.
11:47 start test & disconnect.
14:03 on site at LAO-0.91
measured WL = 14.01 ft btoc
14:06 connect to # 40655
Batt = 79% 8.6V
storage = 72%
CPU = 65962
extract LAO-0.91@050902

7/31/02

Probe Reading 21.714' (BTOC) actual 3.916'
data looks okay
14:10 stop test & disconnect
Pulled probe
14:13 installed probe # 40621
Batt = 100% 9.6V
storage = 80%
CPU = 61816
set elevation to 6861'
set Ref level to 14.02'
probe reading 14.018' actual 3.863'
Reset clock
program new test LAO-0.91 @ 073102
14:17 start test & disconnect
14:30 on site at LAO-1.6g
measured WL = 17.34 ft btoc
14:35 connect to # 40660
Batt = 63% 8.3V
storage = 64%
CPU = 85491
probe reading = 17.447 actual = 11.476'
extract LAO-1.6g @ 050902
data looks okay
14:39 Stop test & disconnect
pulled probe

7/31/02

14:43 installed probe # 40716
Batt = 100% 9.3V
storage = 78%
CPU = 61167
set elevation to 6658'
set Ref level to 17.31'
probe reading = 17.311' actual 11.468'
program new test LAO-1.6g @ 073102
14:46 start test & disconnect

R [illegible] 7/31/02

8/5/02

8:50 Ryan Channell @ transducer lab trailer for calibrations

8:51 connect to # 40630
Batt = 83% (6.7V)
storage = 64%
CPU = 56929.20
calibrate probe for EC & pH
new manual pH Reading = 6.991
Knew = 4.2696
SC = 449.1

9:22 good calibration Results
disconnect.

9:24 connect to # 40660
Batt = 70% 8.4V
Storage = 64%
CPU = 85564.33
new manual pH Reading = 7.001
Knew = 5.5874
Sc = 450.46

9:47 good calibration Results
disconnect.

8/5/02

9:50 connect to # 40493
Batt = 80% 8.7V
storage = 67%
CPU = 68748.03
calibrate for EC & pH
new manual pH Reading = 6.994
Knew = 4.4554
Sc = 449.81

10:10 good calibration Results
disconnect.

10:12 connect to # 40494
Batt = 74% 8.5V
Storage = 60%
CPU = 90303.67
calibrate EC & pH
~~new manual pH Reading =~~
~~Knew =~~ Ryan 8-5-02
~~SC =~~

10:42 cancel pH calibration - 17 minutes to stabilize the pH sensor with pH 4.01
* probably bad sensor *

10:43 disconnect

10:43 connect to # 40655
Batt = 83% 8.7V
Storage = 72%
CPU = 66035.70
calibrate EC & pH
new manual pH reading = 7.102
Knew = 4.3515
Sc = 449.78
10:58 good calibration results
disconnect

8-5-02

13:45 Ryan Channell & Bob Gray on site
in Pueblo Canyon @ well PAO-5N
water level in well = 11.95' BTOC
13:49 connect to # 40491
Batt = 67% 8.3V
storage = 61%
CPU = 48609
transducer water level = 11.930'
actual = 3.962'
extract PAO-5N @ 050902
data looks okay
13:52 stop test & disconnect pull
probe.
13:54 connect to # 40630
set level ref to = 11.93'
set elevation to = 6370'
program new test PAO-5N @ 080502
13:59 start test & disconnect.
14:12 on site at PAO-4
measured wl = 5.93 ft btoc
14:13 connect to # 40624
Batt = 82% 8.7✓
storage = 70%
CPU = 57883s
transducer water level = 5.937'
actual depth = 3.552'

extract test PAO-4 @ 050902
data looks okay
14:16 stop test & disconnect pull probe from well
14:18 installed # 40653
set elevation to 6437' RAC
set Ref level to = ~~5.93'~~ 5.93'
program new test PAO-4 @ 080502
14:28 start test & disconnect
14:41 on site at PAO-3
measured wl = 10.26 ft btoc
connect to # 40656
Batt = 52% 8.0V
storage = 48%
CPU = 34742s
transducer water level = 10.157
actual depth = 3.689
extract test PAO-3 @ 050902
data looks okay
14:47 stop test & disconnect - pull probe from well
14:49 connect to # 40655
set elevation to 6579'
set Ref level to 10.24'
program new test PAO-3 @ 080502

~~Ref~~ RAC ~~Set~~ Reset probe clock
14:53 start test & disconnect
15:15 on site at PAO-1
measured wl = 6.91 ft btoc
15:17 connect to # 40661
Batt = ~~97%~~ RAC 65% 8.3V
storage = 63%
CPU = 88806s
transducer water level = 6.870'
actual depth = 7.188'
extract test PAO-1 @ 050902
15:21 stop test & disconnect - pull probe from well (possible clogged cable)
15:24 install & connect to # 40493
set elevation to 6954'
set Ref level to 6.81'
program new test PAO-1 @ 080502
Reset clock on probe
15:26 start test & disconnect.

R Tarazy 8/5/02

8/8/02

1:45 Ryan Channell & Shannon Purche on site in DP Canyon @ LAUZ-1

1:46 connect to # 40658
Batt = 33% 7.6V
storage = 20%
CPU = 20850840.05

1:48 stop test LAUZ-1 @ 030702
data looks okay

1:53 disconnect & pull probe
install new probe into well

1:55 connect to # 40660
Batt = 71%
storage = 64%
CPU = 85672.63
Set elevation to = 6660
set Ref level to = ~~4.95~~ 4.77'

2:00 Start test & disconnect.

2:07 on site @ LAUZ-2

2:08 connect to # 40622
Batt = 44% 7.8V
storage = 25%
CPU = 96159.27

8/8/02

2:10 stop test LAUZ-2 @ 030702
disconnect & pull probe
install new probe into well

2:12 connect to # 40491
Batt = 71% 8.4V
storage = 61%
CPU = 48804.72
set elevation to = 6660
set level ref = 5.92'

2:16 Start test LAUZ-2 @ 080802
disconnect.

08/08/02

8/23/02

Ryan Channell @ transducer lab trailer to check the pH sensors.

11:58 connect to # 40624
insert probe into pH 4.0 solution
sensor reads = 3.502
insert probe into pH 7.0 solution
sensor reads = 6.107
12:02 disconnect
12:05 connect to # 40656
insert probe into pH 4.0 solution
sensor reads = 3.926
insert probe into pH 7.0 solution
sensor reads = 7.204
12:08 disconnect
12:10 connect to # 40492
insert probe in pH 4.0 solution
sensor reads = 3.848
insert probe in pH 7.0 solution
sensor reads = 6.999
12:13 disconnect

RC
8/23/02

9/11/02

Ryan Channell @ transducer lab trailer to calibrate probes.

11:42 connect to # 40661
Batt = 72% (8.5V)
storage = 63%
CPU = 88953.28
calibrate probe for EC & pH
new manual pH reading = 7.002
Knew = 6.4319
SC = 450.64
good calibration results
12:03 disconnect

11:52 connect to # 40624
Batt = 87% (8.8V)
storage = 70%
CPU = 58020.47
calibrate probe for EC & pH
new manual pH reading = 6.784
Knew = 5.3993
SC = 449.764
good calibration results
12:27 disconnect

84
9/11/02

12:23 connect to # 40658
Batt = 100% (9.4V) Replaced
Storage = 44%
cpu = 20851004.63
calibrate probe for EC + pH
new manual reading = 6.988
Knew = 4.7286
SC = 450.65
Good calibration Results
1:15 disconnect.

12:43 Connect to # 40622
Batt = 100% (9.4V) Replaced
Storage = 44%
CPU = 96322.06
calibrate probe for EC + pH
new manual Reading = 6.873
Knew = 4.1821
SC = 449.1
good calibration Results
1:29 disconnect.

85
9/11/02

1:22 connect to # 40656
Batt = 60%
Storage = 48%
CPU = 34881.82
calibrate probe for EC + pH
new manual Reading = 6.991
Knew = ~~4.1821~~ RAC 6.1051
SC = ~~449.1~~ 449.59
Good calibration Results
1:47 disconnect.

9/11/02

9/12/02

Bob Gray and Ryan Chonell in LA Canyon to download transducers and swap out calibrated probes.

10:42 - on site at LAO-B
measured WL = 9.73 ft btoc

10:44 connect to #40659
Batt = 58% (8.2V)
storage = 80%
CPU = 27321
transducer WL = 9.712'
actual = 19.136'
download LAO-B @ 073102

10:49 Stop test - data looks okay
pull probe & replace probe.

10:50 installed probe # 40658
Batt = 100% (9.4V)
storage = 44%
CPU = 20852843
delete old test
new storage = 100%
Reset clock to match computer.
program test LAO-B @ 091202
for 1 hour sampling interval
edit level TOC reference to 9.72' btoc

10:57 Start test LAO-B @ 091202 - disconnect

9/12/02

11:29 on site at LAO-0.3
measured WL = 9.50 ft btoc

11:31 connect to #40654
transducer WL = 9.493'
actual depth = 3.454'
Batt = 83% (8.7V)
storage = 68%
CPU = 76542s
download test LAO-0.3 @ 073102
data looks okay.

11:35 stop test & pull probe to be replaced.

11:38 connect to # 40622
Batt = 100% (9.3V)
storage = 44%
CPU = 93304s
Reset clock to match computer.
~~= 8.80'~~ RAC
delete test to increase storage
new storage = 100%
set WL to 9.49' BTOC
program new test LAO-0.3 @ 091202
for 1 hour readings.

11:43 start test & disconnect.

2:35 PM On site at LAO-0.91

9/12/02

Measured WL in LAO-0.91
= 16.59 ft btoc

2:38 Connect to # 40621
Batt = 92% (8.9V)
storage = 72%
CPU = 66556s
download test LAO-0.91 @ 073102
transducer WL = 16.567'
actual depth = 1.313'
data looks okay.

2:40 stop test & disconnect

2:42 installed # 40656
Batt = 60% (8.2V)
storage = 48%
CPU = 34964s
delete old tests
new storage = 85%
Set level Ref to 16.59'
program new test LAO-0.91 @ 091202 for 1 hour readings

2:49 start test & disconnect
updated probe clock to match computer

3:05 On site at LAO-1.6g
Measured WL = 17.83 ft btoc

3:06 Connect to # 40716
transducer WL = 17.823'
actual depth = 10.956'

Batt = 86% (8.8V)
storage = 70%
CPU = 65874s
download test LAO-1.6g @ 073102
data looks okay

3:11 STOP test & disconnect

3:14 installed # 40661
Batt = 73% (8.5V)
storage = 63%
CPU = 89037s
~~trans~~ RAC
edit Ref. level TOC = 17.81'
Edit probe clock to match computer
program new test LAO-1.6g @ 091202

3:18 START TEST & disconnect

3:38 Demob to lab trailer

R Bray
9/12/02

12/11/02

10:35 On site at LAO-B
measured WL = 8.39 ft btoc
10:40 Connect to # 40658
Battery 83% (8.7V)
CPU = 20857814 secs.
Storage = 91% free
Extract test LAO-B @ 091202
Transducer WL = 8.394 ft btoc.
Battery is ok, left probe in place and test running.
11:44 On-site at LAO-0.3
measured WL = 10.17 ft btoc
connect to # 40622
battery = 85% (8.8V)
storage = 91% free
CPU = 102240
Extract test LAO-0.3 @ 091202
Transducer WL = 10.197
(actual depth = 2.81)
Battery ok, so left probe in and running.
14:53 On-site at LAO-0.91
Connect to # 40656
Battery = 45%

12/11/02
Storage = 77% free
CPU = 40112
Manual WL = 17.72 ft btoc
Transd. WL = 17.696 ft
Actual Depth 0.265 ft
Extract test LAO-0.91 @ 091202
15:00 Stopped test & pulled probe
Installed # 40621
(note - # 40621 got new batteries, but sensors were left in and not calibrated)
reset reference level to 17.71 ft btoc
Programmed new test for 1-hr readings of WL & Temp. only.
15:07 start test LAO-0.91 @ 121102
16:20 on site at LAO-1.6
connect to #
battery = 54%
manual WL = 19.05 btoc
transd. WL = 19.010 (actual 9.740)
extract test LAO-1.6 @ 041202
*-note - removed rubber gasket from well housing

R Moran 12/11/02

940 S. Purdue at A. Banar
on-site at PAO-3.
Safety tailgate given.
Connect to # 40655
BC = 65 % Storage = 48%
CPU = 80879
Extract test PAO-3e080502
944 Stop test PAO-3e080502
~~Pull probe~~ SP 12/17/02
Transducer water level =
6.968 ft, Actual = 0.312 (ft)
Manual WL = 13.61 ft TOC
TD = 16.60 ft TOC
~~Hour~~ SP 12/17/02 Pull transducer.
Install # 40716
BC = 90% (8.9v)
CPU. Runtime = 66066.32
Storage = 100%
Update level information —
Set level reference to
manual water level reading 13.61 ft TOC
1000 Start test PAO-3e121702
1020 On-site at PAO-4
Connect to # 40653
BC = 46%
CPU 78961.6
SP

Storage = 56% free
Extract test PAO-4e080502
Transducer Water level = 6.07 ft
Actual Depth = 5.426 ft
Manual Water level = 6.05 ft TOC
Pull probe
Install # 40564 SP 12/17/02
Set level Reference and
elevation. DTW = 6.02 ft TOC
1038 Start test PAO-4e121702
1100 On-site PAO-5N
Connect to # 40630
BC = 64% CPU = 71701
Storage = 40% free
Extract test PAO-5Ne080502
SP ~~Stop test~~ leave test on
Manual Water Level = 10.08 ft TOC
Transducer Water level = 10.138 ft
Actual depth = 5.740 ft
Transducer has enough battery,
leave transducer in well
1445 On-site at PAO-1
Connect to # 40493
BC = 48% Storage = 42% free
CPU = 83409.22

12/17/02

Extract test PAO-1@080502

1455 Stop test PAO-1@080502

Manual water level = 8.63 ft TOC

Transducer Water level = 8.637 ft

Pull probe (Actual level = 5.379 ft)

Install #40492

BC = 7% storage = 100% free

CPU = 23280.14 (6.9.21)

1500 Start test PAO-1@121702

Level reference + elevation set.

1510 Hike out of Pueblo Canyon.

S. Purdue 12/17/02

1345 S. Purdue and A. Banar at LAUZ-1. Will be replacing transducer

Connecting to #40660

Battery 44%

CPU: 102326.48

Storage: 37% free

1346 Extract test LAUZ-1@080802.

1347 Stop test LAUZ-1@080802

1348 Pull probe, install #40624

1350 Water level 5.98

1351 Start test LAUZ-1 at 01/06/03 at 1355.

Probe 40624 battery 86%, CPU = ~~58958~~ 58958

storage: 99% free

1400 S. Purdue and A. Banar off-site.

S. Purdue 1/6/03

1/22/03

Bob Gray and Shannon Purdue in DP canyon to download data.

10:55 On-site at LAUZ-1
- measured WL = 6.41 ft btoc

11:03 Connect to MPTROLL # 40624
Battery = 71% (8.4V)
Storage = 96% free
transducer WL = 6.400 ft btoc
(actual 6.009 ft)
CPU = 61794 s.
extract test LAUZ-1@010603

11:15 Connect to mini troll # 8876 in DPPN1.1 #1
Battery = 100% (2.67 V)
Storage = 97% free
CPU = 167 s.
Transducer WL = 7.017 ft btoc
(actual 2.016 ft)
Manual WL = 7.02 ft btoc

~~11:22 Connect to #~~ - RG 1/22/03
extract test DPPN1.1#1@121902

11:22 Connect to # 8932 in piez. #2
manual WL = 7.03 ft btoc
battery = 100% (2.63 V)
Storage = 97% free CPU = 166 s

1/22/03

transducer WL = 7.024 ft btoc
(actual = 0.621 ft)
extract test DPPN1.1 #2 @ 121902

11:26 Connect to # 8935 in piez. #3
manual WL = dry
Battery = 100% (2.65 V)
Storage = 97% free CPU = 168 s
transducer WL = 6.334 ft btoc
(actual = -0.127 ft)
extract test DPPN1.1 #3 @ 121902

11:32 On-site at DPPN-4.5N
connect to # 8866 in piez. #1
manual WL = 7.79 ft btoc
transducer WL = 7.799 ft btoc
(actual 3.971 ft)
battery = 100% (2.69 V)
Storage = 97% free CPU = 165 s.
extract test DP4.5N#1@121902

11:36 connect to # 5615 in piez. #2
manual WL = 7.77 ft btoc
transducer WL = 7.800 ft btoc
(actual 2.842 ft)
battery = 100% (2.72 V)
storage = 98% free CPU = 159 s
extract test DP4.5N#2@121902

1/22/03

11:39 Connect to # 8901 in piez. #3
manual WL = dry * ft. btoc
transducer WL = 7.595 ft btoc
(actual -0.036 ft)
battery = 100 % (2.70 v)
storage = 97 % free CPU = 1645
extract test DP4.5N #3 @ 12 19 02
* wet on bot. only
11:48 On site at LAUZ-2
manual WL = 5.98 ft btoc
Connect to MP Troll # 40491
battery = 33% (7.6 v)
storage = 31% free
CPU = 67679
Transducer WL = 6.080 ft TOC
Actual depth = 6.169 ft
Extract test LAUZ-2@080802

S. Purdue
1/22/03

1/24/03

1055 S. Purdue + A. Groffman
on-site at LAUZ-2.
Safety tailgate meeting
held.
Connect to # 40491
Battery Capacity 34% (7.6 v)
Storage 30% free
CPU = 68028.03
Extract test LAUZ-2@080802
Stop test, disconnect, pull probe.
1057 Install # 40655 in LAUZ-2
Battery Capacity = 71% (8.4V)
Storage = 99% free
CPU = 82242.7
Set level reference.
Manual DTW = 5.97 ft TOC
(1101) Start test LAUZ-2@012403.

S. Purdue
1/24/03
Charles E. Amrhein
2/3/03

5/6/03 -

Bob Gray & Armand Groffman in DP Con. to download transducers.

13:45 - connect to #8901 in DPPN-4.5N #3
extract test DP4.5N#3@121902
- Last reading was @ 13:31 = 7.389 ft btoc

13:59 - connect to #5615 in DPPN-4.5N #2
extract test DP45N#2@121902
- Last reading @ 13:34 = 6.876 ft btoc
battery = 98% (2.6V)

14:04 - connect to #40660 in DPPN-4.5N #1
battery = 88% (8.8V) - storage = 93% free
extract test DP4.5#1@022403
- Last reading @ 13:02 = 7.419 ft btoc
(note - this transducer set to standard time)

14:09 transducer WL in #1 = 7.419 (actual 3.901')

14:15 connect to #8876 in DPPN-1.1#1
battery = 86% (2.5V), storage = 94% free
transducer WL = 6.534 ft btoc ?
- (actual depth = 2.499 ft)
extract test DPPN1.1#1@022403
(note! This was the aquifer test data - actual name = DPPN1.1#1_022403

14:23 extract test DPPN1.1#1@022403

14:26 connect to #8932 in DPPN-1.1 #2

5/6/03

battery = 89% (2.6V)
Storage = 90% free
transducer WL = 6.496 ft btoc
(actual depth = 1.149 ft)
extract test DPPN1.1#2@022403

14:31 - connect to #8935 in DPPN-1.1 #3
battery = 89% (2.6V) storage = 94% free
extract test DPPN1.1#3@022403
transducer WL = 6.243
(actual depth ≐ -0.095 ft)
well appears to be dry

14:43 - measured manual WLs
#1 = 6.54 ft btoc
#2 = 6.52 ft btoc
#3 = dry, TD = 6.25
+0.06 (meter correction)
6.31 ft btoc

14:51 remeasured #1 = 6.53 ft btoc
transducer WL = 6.542 (actual 2.491)

14:56 #2 transducer WL = 6.497 (actual 1.148)
- stopped test in #2 & reset ref. level to 6.52 ft btoc

15:02 Start new test DPPN1.1#2@050602

15:08 measured WL in LAU2-1 = 5.92' btoc
connect to #40659

5/6/03

battery = 64% (8.3V)
storage = 80% free
transducer WL = 5.988' (actual depth = 6.396')
extract test LAUZ-1@020703

15:13 remeasured WL on high side of casing = 5.96' btoc

15:25 measured WL in DPPN-4.5N #3 = 7.37 ft btoc

15:28 measured WL in DPPN-4.5N #2 = 7.40 ft btoc

15:30 measured WL in DPPN-4.5N #1 = 7.41 ft btoc

15:32 connect to # 8901 in piez. #3
transducer WL = 7.394 ft btoc
(actual depth = 0.165 ft)
extract test DP4.5N#3@121902

15:34 - stop test to reset reference level
* (Note! this test ran on savings time)
(1-hr ahead of what it should have been - need to correct data!)
reset reference level to 7.37' btoc + reset clock

15:39 start new test DPPN4.5#3@050603

15:40 connect to # 5615 in piez. #2
transducer WL = 6.889' btoc
(actual depth = 3.753')

5/6/03

15:42 extract test DP4.5N#2@121902

15:44 stop test to reset reference level
* Note! This test ran on savings time - need to correct data to standard time)
- reset clock
- reset reference level to 7.40' btoc

15:47 start new test DPPN4.5#2@050603

15:50 connect to # 40660 in piezom. #1
transducer WL = 7.423 ft btoc (actual 3.897')
extract test DP4.5#1@022403
stop test to reset reference level
reset ref. level to 7.41 ft btoc

15:54 start new test DPPN4.5#1@050603

16:06 measured WL in DPW-7.15 = 7.21 ft btoc

16:07 connect to # 40656
battery = 65% (8.3V)
storage = 82% free
transducer WL = 7.163 ft btoc
(actual depth 2.896 ft)

16:09 extract test DPW-7.15@021903
- DO is reading negative values

16:16 stop test to reset WL reference
reset ref. level to 7.21' btoc

16:19 start new test DPW-7.15@050603

5/6/03

16:24 Connect to # 40491 in LAUZ-2
battery = 30% (7.5 V)
storage = 54% free
transducer WL = 6.047' btoc
(actual depth 5.869')

16:27 extract test LAUZ-2@021903
manual WL = 6.05' btoc
note! - device clock is 7 mins, 50 s slow

16:30 stop test to reset clock

16:32 start new test LAUZ-2@050603

16:35 Measured WLs in DPPN-7.7
#3 = 5.65' btoc
#2 = 5.92' btoc
#1 = 6.77' btoc

16:50 Connect to # 5515 in piez. #3
battery = 100% storage = 97% free
transducer WL = 5.612' btoc
(actual depth 1.529')

16:54 extract test DPPN7.7#3@021203

16:55 stop test to reset reference level

16:57 start new test DPPN7.7#3@050603

16:59 connect to # 5600 in piezom. #2
battery = 98%, storage = 97% free
transducer WL = 5.941 (actual depth 2.701')

5/6/03

17:00 extract test DPPN7.7#2@020403
stop test - reset ref. level to 5.92'

17:02 start new test DPPN7.7#2@050603

17:05 depart field

R Bray
5/6/03

5/12/03

Bob Gray and Jared Lyman in Pueblo Can. to download transducers

14:24 measured DTW = 11.26' btoc in PAO-5N

14:25 Connect to # 40630 in PAO-5N
battery = 42% remaining (7.8 V)
storage = 14% free
CPU = 87681 s
extract test PAO-5N@080502
transducer WL = 11.328' btoc
(actual depth = 4.549 ft)

14:33 stopped test to clear memory and reset reference level. & clear out memory - deleting old tests

14:47 reset reference level to 11.26'
reset clock (standard time)

14:49 start test PAO-5N@051203
- note: battery = 29% (7.5 V) storage ≈ 49% free

15:07 Onsite at PAO-4
measured WL = 6.32 ft btoc
connect to # 40654
transducer WL = 6.314 ft btoc
(actual depth = 3.333 ft)
Battery = 76% (8.6 V)
storage = 94% free

5/12/03
CPU = 78866 s.

15:11 extract test PAO-4@121702

15:30 on site at PAO-3
measured WL = 13.62 ft btoc
connect to # 40716
battery = 81% (8.7 V)
storage = 93% free
CPU = 68078
transducer WL = 13.619 ft btoc
extract test: actual depth 0.431'
PAO-3@121702

16:05 On site at PAO-1
measured WL = 10.59 ft btoc
connect to # 40492
transducer WL = 10.858 ft btoc
(actual depth = 3.593 ft)
battery = 70% remaining (8.4 V)
storage = 93% free
CPU = 25310 s.

16:09 extract test PAO-1@121702

16:11 stop test to reset reference level
reset clock, reset ref. level to 10.59'

16:15 start test PAO-1@051203

5/15/03

Bob Gray & Jared Lyman in LA Canyon to download transducer data.

11:05 - Conduct safety tailgate

11:10 - on site at LAO-B

manual WL = 8.71 ft btoc

connect to # 40658

transducer WL = 8.697' (actual 20.152')

battery = 72% rem (8.5V)

storage = 77% free

CPU = 20866289 s

11:15 extract test LAO-B @ 091202

11:34 on site at LAO-0.3 (stream is flowing)

manual WL = 7.90 ft btoc (N. side)

connect to # 40622

transducer WL = 7.984' btoc

(actual depth = 5.029')

battery = 73% rem. (8.5V)

storage = 77% free

CPU = 110676 s.

11:40 extract test LAO-0.3 @ 091202

11:46 stop test - reset clock

reset ref. level to 7.90' btoc

11:49 start test LAO-0.3 @ 051503 (1-hr ints.)

12:06 On site at LAO-0.91 (stream is dry)

manual WL = 14.04' btoc

5/15/03

12:08 connect to # 40621

transducer WL = 14.080' btoc

(actual depth = 3.897')

battery = 82% rem (8.7V)

storage = 93% free

CPU = 68841

12:11 extract test LAO-0.91 @ 121002

12:14 stop test - reset clock

reset reference level to ~~14.08'~~ 14.04'

12:16 start test LAO-0.91 @ 051503

(1-hr intervals)

12:31 On site at LAO-1.6g

manual WL = 19.93' btoc

connect to # 40661

transducer WL = 19.896' btoc

(actual depth = 8.904')

battery = 49% rem (7.9V)

storage = 41% free

CPU = 102440 s

extract test LAO-1.6g @ 091202

12:39 stop test - reset clock

reset ref. level to 19.93 ft btoc

12:43 start test LAO-1.6g @ 051503

CONTENTS

PAGE NO.	REFERENCE	DATE

01/03/01 LA Canyon

①

S. Purdue, B. Gray, M. Maics

1006 On-site at LAO-6A

~~Time~~ SP 1/3/01 ~~DTW~~ SP 1/3/01 ~~TD~~ SP 1/3/01

1010 - Hit top of bladder pump
- no water

1015 LAO-6 Dry, TD 16.59 ft from TOC

1017 LAO-5 Dry, TD SP 1/3/01 23.25 ft from TOC

0817 (on ground, across rd. from 6)

1026 LAO-4.5 WL = 4.58 ft TOC

*TD = 8.88 ft TOC

*TD may be bailer stuck in hole

- some kind of obstruction in well

1036 LAO-4.5 A WL = 13.37 ft TD = 20.30 ft TOC

1041 LAO-4.5 B WL = ~~37~~ SP 1/3/01 Dry TD = 37.41 ft TOC

1046 LAO-4.5 C WL = 11.79 ft TD = 19.10 ft TOC

1055 LAO-4 WL = 13.02 ft TD = 26.39 ft TOC

1110 LAO-3 unable to access

1115 LAO-3A WL = 9.51 ft TOC

WL' = ~~19~~ 17.13 ft

TD = 30.46

1125 LAO-2 WL

1158 LAO-1 WL = 12.10 ft bTOC (steel)

12:15 LAO-0.7 WL = 13.62 ft bTOC

1224 LAO-C WL = 4.29 ft bTOC

* ESH Well WL are measured from TOC (steel)

(4) 01/04/01

S. Purdue, B. Gray

930 LAO - 0.61 DTW 7.46 ft TOC PVC

941 LAO - 0.8 sp DTW 15.13 ft TOC PVC

TD = 15.48 ft TOC

1035 LAO - 1.2 23.52 DTW TOC steel

27.77 TD TOC

1/05/01 - S. Purdue and K. Greene

905 MCO - 7.2 97.72 ft top of PVC casing

935 MCO - 0.6 5.80 ft TOC

1/8/01

1025 LAO - 1.2 Dry, TD 25.78

1051 LAO - 1.8 TD 15.05 ft Dry

1101 LAO - 1.6g WL = 11.52 ft btoc

1/9/01 48 sp 1/9/01

910 LLAO - 1 13.50 ft TOC (PVC)

920 LLAO - 2 23.18 ft TOC sp (PVC)

930 LLAO - 3 18.91 ft TOC (PVC)

945 LLAO - 4 4.92 ft TOC (PVC)

955 LLAO - 5 13.88 ft TOC (PVC)

2/1/01 DTW TD 2/1/01 sp

1107 LLAO - 1 15.69 ft ~~26.71~~

1121 LLAO - 2 24.05 ft ~~31.07~~

1135 **LLAO-3** **18.47** ~~24.35~~ from TOC

PM	Well	DTW	TD not accurate sp 2/1/01 from TOC
1145	LLAO-4	4.61	~~19.02~~
1155	LLAO-5	13.71	~~23.48~~ TOC
	2/2/01	S. Purdue and J. Kafood	
955	PAO-2	13.88	16.63 TOC
1135	LAO-0.6	7.41	15.77 TOC
1150	LAO-0.8	13.99	15.61 TOC
1205	LAO-1.2	Dry	25.78 TOC
1305	MCO-0.6	5.90	7.25 TOC
	2/7/01		
1050	MCO-7.2	97.74	TOC
	2/27/01	S. Purdue and N. Topin at LAO-6	
820	LAO-6	Dry,	TD = 16.59 ft TOC (steel)
E	LAO-4.5c	DTW =	11.35 ft from steel casing
830	b?	DTW =	31.51 ft "
West	a?	DTW =	12.93 ft "
845	LAO-4	DTW =	11.75 ft steel casing
850	LAO-3	DTW =	6.53 ft steel casing
855	LAO-3A	DTW =	7.26 ft "
900	LAO-2	DTW	14.89 ft TOC steel casing
908	LAO-1.8	DTW	13.33 ft TOC steel
918	LAO-1	DTW	5.60 ft TOC steel
940	LAO-4.5	DTW	7.20 ft TOC steel
945	LAO-6a	DTW	16.49 ft - Dry "
955	LAO-5	DTW	~~23.25~~ - Dry
1015	LAO-c	DTW	3.85 TOC steel

(4)

[illegible]

[illegible] LAO - [illegible] 12.61 ft [illegible]

8:47 LLAO-1 DTW 15.70 ft TOC PVC
8:55 LLAO-2 DTW 24.31 ft TOC PVC
9:10 LLAO-3 DTW 16.40 ft TOC PVC
9:22 LLAO-4 DTW 4.50 ft TOC PVC
9:35 LLAO-5 DTW 13.15 ft TOC PVC

3/5/01
940 MCO-7.2 DTW 97.75 ft TOC PVC

3/8/01
LAO-6 Dry steel casing to top of cement
8:45 cement = 7" thick 10½"
Top of PVC casing to Top of steel casing = 1½"

8:48 LAO-6A DTW = 15.53 ft TOSC
TO PVC to TOSC = 12¾"
20.5" top of steel casing to LASL survey marker
10.5" LASL marker to ground surface

8:56 LAO-5 DTW = 10.81 ft TOSC
steel casing flush with cement block - 4" thick

(*) TOSC = Top of steel casing

(5)

3/8/01
903 LAO-4.5 5.55 ft TOSC outer large casing
0.95 ft TO inner steel casing to TO outer steel casing
Top of steel casing over 15" to ground
910 LAO-4.5a DTW = 11.50 ft TOSC
PVC - TOSC = 1.16 ft
LASL survey marker cement - TOSC = 20"
ground - cement = 2"
912 LAO-4.5b DTW 34.80 ft from TOSC
PVC - TOSC = 15¾"
cement to TOSC = 28½"
ground to cement = 5"
915 LAO-4.5c DTW = 9.40 ft from RK at 4 3/8"
PVC to TOSC 4"
cement to TOSC 19¾"
ground to TO cement 4 3/8"
925 LAO-4 DTW = 9.40 ft outer steel casing
inner steel casing to outer steel 12"
outer steel to TO cement 15¾"
TO cement to ground surface 4"
935 LAO-3A DTW 6.13 ft TO inner PVC casing
Top of 2" PVC to 4" PVC 2½"
Top of 4" PVC to TOSC 4¼"
cement to TOSC 12"
Ground to top of cement 4"

3/8/01

935 LAO-3 DTW 6.06 ft outer TOSC

Top of inner cased TOSC 10"

cement to TOSC 8 1/2"

ground to cement 4"

941 LAO-2 DTW = 12.24 ft TOSC

inner casing to TOSC 12"

cement to TOSC 17"

cement is flush to the ground

950 LAO-1.8 DTW = 13.32 ft TOSC

ground to TOSC = 2 1/2"

955 LAO-1.2 DTW = 5.91 ft TOSC

ground to TOSC = 5"

1005 LAO-1 DTW = 5.75 ft TOSC outer

inner casing to TOSC = 1.35 ft

TOSC to cement = 13 1/4"

ground to cement = 4 1/4"

1050 LAO-C 3.04 ft TOSC

inner casing to TOSC 17"

TOSC to ~~inner casing~~ cement 12"

cement to ground 4"

1055 LAO-0.7 DTW 12.45 ft TOSC

inner casing to TOSC 12"

TOSC to cement 12.77 ft

cement to ground 4"

S. Plourde 3/8/01

3/9/01

Shannon D and B. Gray on-site

1130 at LAO-0.61 DTW = 6.98 ft PVC TOC

1145 LAO-0.8 DTW = 14.32 ft PVC TOC

S. Plourde 3/9/01

(8) 3/16/01

830 S. Purdue and N. Tapia
on-site at LA Canyon

835	LAO-6	DTW	10.40 ft TO PVC C
837	LAO-6a	"	14.91 ft TOSC
843	LAO-5	"	9.31 ft TOSC
850	LAO-4.5	"	4.96 ft TOSC
852	LAO-4.5a	"	10.89 ft TOSC
853	LAO-4.5b	"	31.82 ft TOSC
854	LAO-4.5c	"	8.80 ft TO PVC C
903	LAO-4	"	8.89 ft TOSC
912	LAO-3a	"	6.11 ft TO inner PVC
914	LAO-3	"	6.09 ft TOSC
916	LAO-2	"	12.65 ft TOSC
925	LAO-1.8	"	14.36 ft TOSC
945	LAO-1.2	"	5.90 ft TOSC
955	LAO-1	"	6.06 ft TOSC
1028	LAO-I-1.1	"	292.66 ft TO PVC C

Help N. Tapia install transducers in LAO-1 and LAO-I-1.1

1310	LAO-C	"	3.85 ft. TOSC
1340	LAO-0.6	"	6.95 ft TOC
1346	LAO-0.7	"	12.25 ft TOSC
1352	LAO-0.8	"	14.39 ft TOC

S. Purdue 3/16/01

LA Canyon 3/23/01 (9)

840 S. Purdue and N. Tapia
on-site at LA Canyon

841	LAO-6	DTW =	10.31 ft TO PVC
843	LAO-6a	DTW =	14.82 ft TOSC
845	LAO-5	DTW =	9.20 ft TOSC
855	LAO-4.5	DTW =	3.6165 ft TOSC SP 3/23/01
856	LAO-4.5a	DTW =	10.59 ft TOSC
8:58	LAO-4.5b	DTW =	30.37 ft TOSC
9:00	LAO-4.5c	DTW =	8.50 ft TO PVC
9:05	LAO-4	DTW =	8.90 ft TOSC
9:11	LAO-3a	DTW =	6.60 ft TOSC
9:13	LAO-3	DTW =	5.95 ft TOSC
9:17	LAO-2	DTW =	12.70 ft TOSC
9:22	LAO-1.8	DTW =	14.50 ft TOSC
9:26	LAO-1.2	DTW =	5.70 ft TOSC
9:35	LAO-1	DTW =	6.21 ft TOSC
943	LAO-0.8	DTW =	14.33 ft TO PVC
950	LAO-0.7	DTW =	12.08 ft TOSC
955	LAO-0.6	DTW =	6.85 ft TOC
1005	LAO-0.C SP 3/23/01	DTW	3.67 ft TOC

S. Purdue 3-23-01

(10) 3/30/01 R. Stevens, S. Purdue

1050 LLAO-2 DTW 23.35 ft TOC
TD 32.10 ft TOC

1103 LLAO-3 DTW 15.30 ft TOC
TD 24.47 ft TOC

1115 LLAO-4 DTW 4.26 ft TOC
TD 19.25 ft TOC

S. Purdue
3/30/01

(11) 4/9/01 LA Canyon

1425 S. Purdue & R. Evans on-site
@ LAO-0.6 DTW 6.89 ft. TOC.

1435 LAO-0.8 DTW 14.53 ft TOC

1515 LAO-1.2 DTW 5.94 ft TOC

S. Purdue
4/9/01

(12x)

4/30/01 D. Steen, S. Purdue

1008 PAO-2 DTW = 13.69 ft TOC TD = 16.97

1213 PAO-5S DTW = 19.47 ft TOC PVC

TD = 21.~~20~~ 12 ft

SP. 4/30/01

1330 LAO-1.8 - 15.05 TD, dry

1337 LAO-1.2 DTW 6.11 ft TOC

1355 LAO-0.8 DTW 14.51 ft TOC

1410 LAO-0.6 DTW 6.98 ft TOC

S. Purdue 4/30/01

(12b)

5/1/01 - Mortandad Canyon

Shannon Purdue & Bob Gray

14:01 - on-site @ MCO-0.6

measured WL = 5.37 ft btoc

TD = 7.24 ft btoc

R. Gray 5/1/01

(14)

5/3/01 S. Purdue, C. Shutt, B. Kennedy

LLAO-1	1330	DTW	10.19	ft	TOC
LLAO-2	1340	DTW	24.72	ft	TOC
LLAO-3	1351	DTW	16.11	ft	TOC
LLAO-4	1402	DTW	5.23	ft	TOC
LLAO-5	1408	DTW	12.52	ft	TOC

S. Purdue 5/3/01

(15)

5/7/01 S. Purdue N. Tapia

LAO-C	8:38	DTW	3.88	ft	TOC	steel
LAO-0.7	8:45	DTW	12.54	ft	TOC	steel
LAO-1	8:51	DTW	7.00	ft	TOC	st
LAO-2	9:10	DTW	15.02	ft	TOC	st.
LAO-3A	9:12	DTW	7.06	ft	TOC	~~st~~ inner PVC
LAO-3	9:15	DTW	6.91	ft	TOC	st - outer
LAO-4	9:23	DTW	10.78	ft	TOC	st
LAO-4.5a	9:28	DTW	10.39	ft	TOC	st
LAO-4.5b	9:31	DTW	27.01	ft	TOC	st
LAO-4.5c	9:33	DTW	8.18	ft	TOC	~~st~~ inner PVC
LAO 4.5	9:35	DTW	4.55	ft	TOC	st.
LAO 6a	9:41	DTW	16.22	ft	TOC	st
LAO 5	950	DTW	10.42	ft	TOC	st.

S. Purdue 5/7/01

(16)

Sl. von P. , Jenny K.

6/4/01 SOP. F.02

0832 S. LLAO-1 DTW = 15.08 ft TOC

0845 LLAO-2 DTW = 25.01 ft TOC

0855 LLAO-3 DTW = 8.05 ft TOC

0907 LLAO-4 DTW = 6.58 ft TOC

0915 LLAO-5 DTW = 12.24 ft TOC

1105 LAO-1.8 Dry — 15.08 ft Dry

1112 LAO-1.2 DTW = 6.55 ft TOC

Sl. Purdue

6/4/01

(17)

6/5/01

S. Purdue and J. Kofoed SOP#

PAO-2

0935 DTW = 14.24 ft TOC

0946 PAO-2.5 DTW = 10.72 ft TOC

1115 MCO-0.6 DTW = 7.24 ft TOC - mud

Sl. Purdue

6/5/01

6/26/01

LLAO-2

9:32 AM

DTW

25.81 ft. toc

LLAO-3 9:44 AM

DTW

19.66 ft. toc.

LLAO-4 9:55 AM

DTW

8.94 ft. toc

LLAO-5 10:07 AM

DTW

13.73 ft. toc

TD

23.75 ft. toc

7/13/01 S. Purdue, A. Funk

940	LAO-0.6	7.21 ft TOC
946	LAP-1.5	#1 - 9.06 ft TOC
		#2 - 8.15 ft TOC
		#3 - 8.04 ft TOC
952	LAP-1.7	#1 - Dry TD = 21.17 ft
		#2 - Dry TD = 19.50 ft
		#3 - 8.66 ft TOC
958	LAO-0.8	15.10 ft TOC
1002	LAP-3	11.28 ft TOC
1005	LAP-3.5	#1 - Dry TD = 16.45 ft
		#2 - 11.65 ft TOC
		#3 - Dry TD = 11.38 ft
1047	LAO-1.2	7.39 ft TOC
1052	LAO-1.8	Dry TD = 15.08 ft
1215	LAP-5.7	#1 - 12.36 ft TOC
		AF ~~#2 - Dry TD = 15.48~~
		~~#3~~
		#2 - 12.35 ft TOC
		#3 - 12.35 ft TOC
1255	LAP-1	#1 - 13.64 ft TOC (Mud)
		#2 - 8.50 ft TOC
		#3 - 8.39 ft TOC
1335	MCO 0.6	7.21 ft Mud TOC

8/8/01 Spurdue + S. Toyer

1107 LAO- 0.6 DTW = 7.31 ft TOC

1125 LAP- 1.7 #1 DTW = DRY TD=26.15 ft

#2 DTW = DRY TD=19.28 ft

#3 DTW = 7.98 ft TOC

1129 LAO- 0.8 DTW=14.32 ft TOC

1138 LAP - 3.5 #1 DTW=Dry, 16.46 ft TOC

#2 DTW= 10.57 ft TOC

#3 DTW= 10.66 ft TOC

1228 LAO- 1.2 DTW = 6.95 ft TOC

1510 PAO-2 DTW= 13.21 ft TOC

8/8/01

S. Toyer

(20) 8/8/01 Spurdue + S. Toya

1107 LAO- 0.6 DTW = 7.31 ft TOC
1125 LAP- 1.7 #1 DTW = DRY TD=26.15 ft
#2 DTW = DRY TD=19.28 ft
#3 DTW = 7.98 ft TOC
1129 LAO- 0.8 DTW=14.32 ft TOC
1138 LAP - 3.5 #1 DTW=Dry, 16.46 ft TOC
#2 DTW= 10.57 ft TOC
#3 DTW= 10.66 ft TOC
1228 LAO- 1.2 DTW = 6.95 ft TOC
1510 PAO-2 DTW = 13.21 ft TOC

3/8/01

9/19/01 (21)

S. Purdue and A. Toya on-site LA Canyon for water levels

1340 LAO- 0.26 DTW = 7.85 ft TOC
1401 LAP 1.7 DTW #1 = TD=21.18 ft DRY
LAP 1.7 #2 TD ~~ft~~ = 19.35 ft DRY
LAP 1.7 #3 DTW = 9.45 ft
1410 LAO - 0.8 DTW=15.00 ft TOC
1420 LAP 3.5 #1 TD DTW=16.49 ft DRY
LAP 3.5 #2 DTW 12.02 ft TOC
LAP 3.5 #3 TD 11.46 ft DRY
1535 LAO-1.2 DTW 7.29 ft TOC
1545 LAP 5.7 #2 13.10 ft TOC
LAP 5.7 #3 13.08 ft TOC

9/19/01

(22) 9/20/01

S. Purdue and A. Toya in Pueblo Canyon for water level measurements

1400 PAO-2 DTW = 13.70 ft TOC

1410 PAO-2.5 ~~DTW~~ = DRY TD = 13.45 ft TOC

S. Purdue 9/20/01

(23) 11/19/01

10:15 S. Purdue and C. Shultz on-site at PAO-1 to take water levels. Safety Tailgate given by S. Purdue. Todays goals are to take water levels in PN, LA, and Mortandad Canyons. Using Solinst Depth Indicator #18528

1020 DTW PAO-1 = 11.97 ft TOC

1026 PAO-2 DTW = 16.12 ft TOC

1047 PAO-2.5 DTW = 11.18 ft TOC

1100 PAO-3 DTW = 16.00 ft TOC

1114 PAO-4 DTW = 5.32 ft TOC

1127 PAO-5N DTW = 10.80 ft TOC

1132 PAO-5S DTW = 20.94 ft TOC

1213 LAP-6 DTW = 14.97 ft TOC

1221 LAP-5.7 #1 DTW = 14.05 ft TOC

1222 LAP-5.7 #2 DTW = 14.04 ft TOC

1223 LAP 5.7 #3 ~~DTW~~ = 13.56 DRY ft TOC

1233 LAP 4 #1 DTW = 16.66 ft SP 11/19/01 ~~DTW = 13.97 ft TOC~~ SP 11/19/01

1234 LAP 4 #2 DTW = 13.97 ft TOC

1235 LAP 4 #3 Dry TD = 12.49 ft TOC

1243 LAO-1.6 DTW = 19.26 ft TOC

1250 LAO-1.8 ~~DTW~~ = Dry TD = 15.08 ft TOC SP 11/19/01

1257 LAO-1.2 Dry TD = 25.67 ft TOC

1320 LAO-0.91 DTW = 16.34 ft TOC

(24) 11/19/01

1406 LAP 3.5 #1 DTW = 16.40 ft TOC
1407 LAP 3.5 #2 DTW = 11.49 ft TOC
1408 LAP 3.5 #3 DTW = 11.40 ft TOC
1412 LAP 3 DTW = 11.65 ft TOC
1415 LAO-0.8 DTW = 15.11 ft TOC
1423 LAP 1.7 #1 Dry TD = 21.16 ft TOC
1424 LAP 1.7 #2 Dry TD = 19.36 ft TOC
1425 LAP 1.7 #3 DTW = 9.62 ft TOC
1427 LAP 1.5 #1 DTW = 9.12 ft TOC
1428 LAP 1.5 #2 DTW = 8.32 ft TOC
1429 LAP 1.5 #3 DTW = 8.10 ft TOC
1435 LAO-0.6 DTW = 8.08 ft TOC
1442 LAO-0.3 DTW = 10.91 ft TOC
1450 LAP-1 #1 DTW = 13.60 ft TOC
1451 LAP-1 #2 DTW = 8.80 ft TOC
1452 LAP-1 #3 DTW = 8.75 ft TOC
1505 LAO-B DTW 10.54 ft TOC
1540 MCO-0.6 Dry ~~DTW~~ TD = 7.18 ft TOC
SP 11/19/01

Steve Rice
11/19/01

LA Canyon 12/17/01 (25)

Water levels - S. Rochner + D. Steven

Time	Well ID		(Ft) TOC
0910	LLAO-1		22.14 DTW
0915	LLAO-2		26.48 "
0923	LLAO-3		21.19 "
0935	LLAO-4		5.23 "
0944	LLAO-5		13.88 "
1000	LAP-6		15.05 "
1005	LAP-5.7	#1	14.28 "
		#2	14.27 "
		#3	DRY @ 13.54
1015	LAP-4	#1	17.25 DTW
		#2	15.02
		#3	TD = 12.50 ft ~~12.5~~ DRY @ 6 12/17/01 SP 12/18/01
1030	LAO-1.6(y)		19.75 DTW
1040	LAO-1.8		DRY @ 15.07
1045	LAO-1.2		DRY @ 25.58
1050	LAO-0.91		17.89 DTW
1100	LAP-3.5	#1	DRY @ 16.47
		#2	12.70 DTW
		#3	DRY @ 11.46
1110	LAP-3		12.31 DTW
1115	LAO-0.8		15.10 "
1125	LAP-1.7	#1	DRY @ 21.13
		#2	DRY 19.37
		#3	10.29 DTW

(26) 12/17/01

Time	Well ID		Ft.	TOC
1128	LAP-1.5	#1	10.15	DTW
		#2	9.40	"
		#3	DRY @ 9.14	
1135	LAO-0.6		8.61	DTW
1143	LAO 0.3	Unable to access		
1150	LAP-1	#1	13.90	DTW
1151		#2	8.51	"
1151		#3	8.45	"
1335	LAO-B		9.25	"

Pueblo Canyon water levels

Time	Well ID	Ft	TOC
1400	PAO-1	12.79	DTW
1410	PAO-2	16.11	"
1420	PAO-2.5	11.17	"
1433	PAO-3.0 12/17/01	9.07	"

Note: Water dammed up just before road crossover downstream ≈ 50 ft from PAO 3.0

Note: Sewage break @ PAO 2.5 from manhole ≈ 15 ft East/downstream of PAO 2.5

1445	PAO 3.0 4 @ 12/17/01	5.53	DTW
1500	PAO-5N	10.84	"

Steve Pinkus 12/18/01

(27)

1/22/02 — 1.2 — 1/22/02

LAO-~~1.8~~ = Dry TD = 25.70' btoc
(measured at 14:30)
14:40 - LAO-1.8 = Dry TD = 15.08'

1/22/02

1/25/02

S. Porche & A. Bower on site to do monthly water levels. Beginning with Pueblo Canyon, then Los Alamos Canyon.

Time	Well	Depth (ft TOC)	Comments
0915	PAO-1	13.72	
0920	PAO-2	16.13	~~Frozen~~ (solid)
0935	PAO-2.5	NA	Frozen, no access.
0950	PAO-3	10.23	
1000	PAO-4	5.77	
1015	PAO-5N	10.57	
1020	PAO-5S	20.31	
1040	LAP-16 (8 Tubes)	15.14	
1045	LAP-5.7 #1	15.72	
1047	LAP-5.7 #2	—	Dry TD=15.57
1049	LAP-5.7 #3	tubing	Dry TD=13.53
10:55	LAP-4 #1	17.50	
10:56	LAP-4 #2	14.83	
10:58	LAP-4 #3	—	Dry TD=12.51
11:05	LAO-1.6G	20.41	
11:10	LAO-1.8	15 (bailed?)	Dry TD=15.08
11:15	LAO-1.2	—	Dry TD=25.71
11:30	LAO-0.91	17.85	
11:37	LAP-3.5 #1	—	Dry TD=16.49
11:33	LAP-3.5 #2	—	Dry TD=12.82
11:39	LAP-3.5 #3	—	Dry TD=11.46

1/25/02

Time	Well	Depth (ft TOC)	Comments
11:42	LAP-3	12.34	
11:44	LAO-0.8	15.13	
11:46	LAP-1.7 #1	—	Dry TD=21.18
11:47	LAP-1.7 #2	—	Dry TD=19.40
11:48	LAP-1.7 #3	—	Mud TD=11.48
11:50	LAP-1.5 #1	10.73	
11:51	LAP-1.5 #2	10.13	
11:52	LAP-1.5 #3	—	Dry TD=9.15
13:20	LAO-0.6	9.61	
13:27	LAO-0.3	12.14	
13:32	LAP-1 #1	13.58	
13:33	LAP-1 #2	8.43	
13:34	LAP-1 #3	8.37	
1355	MCO-0.6	—	Dry TD=7.21

AHB 1/25/02

2/26/02

S. Purchert A. Banar on site to measure water levels at LA Canyon, Mortendad Canyon, and Pueblo Canyon

Time	Well	Depth (ft TOC)	Comments
08:41	LLAO-1	21.30	
08:51	LLAO-2	25.42	
09:04	LLAO-3	20.36	
09:15	LLAO-4	4.97	
09:22	LLAO-5	13.61	
10:10	LAP-6	15.52	
10:15	LAP-5.7 #1	dry	TD=17.62
10:16	LAP-5.7 #2	dry	TD=15.54
10:17	LAP-5.7 #3	dry	TD=13.52
10:24	LAP-4 #1	17.77	
10:25	LAP-4 #2	15.49	
10:26	LAP-4 #3	dry	TD=12.51
10.36	LAO-1.66	28.07	
10:43	LAO-1.8	dry	TD=15.07
10:48	LAO-1.2	dry	TD=25.72
10:56	LAO-0.91	17.84	
11:05	LAP-3.5 #1	dry	TD=16.49
11:06	LAP-3.5 #2	dry	TD=12.82
11:07	LAP-3.5 #3	dry	TD=11.46
11:09	LAP-3	12.35	TD=12.36
11:11	LAO-0.8	15.14	Small white worms found clinging to probe. ~2-3mm long

2/26/02

Time	Well	Depth (ft TOC)	Comments
11:15	LAP-1.7 #1	dry	TD=26.17
11:16	LAP-1.7 #2	dry	TD=19.43
11:17	LAP-1.7 #3	10.74	
11:20	LAP-1.5 #1	10.57	
11:21	LAP-1.5 #2	9.90	
11:22	LAP-1.5 #3	dry	TD=9.16
11:30	LAO-0.6	10.01	
11:37	LAO-0.3	12.45	
11:43	LAP-1 #1	13.58	
11:44	LAP-1 #2	8.42	
11:45	LAP-1 #3	8.35	
12.08	LAO-B	9.17	
13:10	PAO-1	13.80	TD=16.64
13:25	PAO-2	16.00	
13:38	PAO-2.5	11.17	
13:50	PAO-3	13.60	
14:36	PAO-4	5.86	
1500	PAO-5N	10.29	

2/26/02

3/7/02 Ryan Channell and Bob Gray

09:25 - Arrive on site in DP Canyon at LAUZ-1. Held safety tailgate.

09:30 - Measured wl in LAUZ-1 = 7.05 ft btoc

T.D. = 12.90 (hard bottom)

10:03 - Measured wl in LAUZ-2 = 12.13 ft btoc

TD = ~~12.70~~ 12.76 ft btoc

- note tape and wl probe came up covered w/ yellow-orange wet muck.

915 Stop 3/28/01 Purdue and D. Stevens out doing water levels using SOP 7.02

916 MLO 0.6 7.23 ft TOC mud

953 PAO-1 DTW = 13.82 ft TOC

1000 PAO-2 DTW = 16.00 ft TOC

1010 PAO-2.5 DTW = 11.11 ft TOC

1030 PAO-3 DTW = 13.61 ft TOC

1040 PAO-4 DTW = 6.03 ft TOC

1051 PAO-5N DTW = 10.78 ft TOC

1217 LAP-6B DTW = 16.08 ft TOC

1222 LAP-5.7 #1 TD = 17.60 ft TOC dry

#2 TD = 15.55 ft TOC dry

#3 TD = 13.53 ft TOC dry

1230 LAP 4 #1 DTW = 18.60 ft TOC

#2 DTW = 15.73 ft TOC

#3 TD = 12.51 ft TOC dry

1242 LAO-1.6 DTW = 28.08 ft TOC

1247 LAO-1.8 TD = 15.07 ft TOC dry

1251 LAO-1.2 TD = 25.72 ft TOC dry

1335 LAO-0.91 DTW = 17.88 ft TOC

1345 LAP-3.5 #1 dry TD = 16.49 ft TOC

#2 dry TD = 12.81 ft TOC

#3 dry TD = 11.47 ft TOC

1350 LAP-3 mud 12.35 ft TOC

3/28/02

1352 LAO-0.8 15.18 ft TOC
1401 LAP 1.7 #1 dry 21.17
dry 19.45
mud ~~dry~~ 10.95
1405 LAP 1.5 #1 DTW = 10.28 ft TOC
SP 4/29/02 #3 dry TD = 9.15 ft TOC
SP 4/29/02 #2 DTW = 10.92 ft TOC
1411 LAO-0.6 ~~dry TD = 10.25 ft~~ 3/28/02
DTW = 10.30 ft TOC
1419 LAO-0.3 DTW = 8.72 ft TOC
1425 LAP-1 #2 DTW 8.40 ft TOC
SP 3/28/02 #1 DTW 13.63 ft TOC
#3 DTW 8.35 ft TOC
1435 LAO-B DTW = 8.85 ft TOC

S. Purdue
Charles Minnella
3/28/02
5/8/02

4/29/02

1000 S Purdue and A Baker leave office to do water levels in Pueblo

Time	Well	Depth (ft TOC)	Comments
1020	LAO-B	9.71	Reservoir Rd. Gate locked out by Forest Service.
1037	LAP-1 #1	13.87	
1038	LAP-1 #2	8.36	
1039	LAP-1 #3	8.32	
1043	LAO-0.3	8.27	
1047	LAO-0.6	10.55	
1059	LAP-1.5 #1	11.48	
1100	LAP-1.5 #2	10.99	
1101	LAP-1.5 #3	dry	TD = 9.15
1106	LAP-1.7 #1	dry	TD = 21.17
1107	LAP-1.7 #2	dry	TD = 19.46
1108	LAP-1.7 #3	~~dry~~ AB 4/29/02 Mud	TD = 11.40
1115	LAO-0.8	15.14	
1120	LAP-3	12.36	TD = 12.37
1123	LAP-3.5 #1	dry	TD = 16.49
1124	LAP-3.5 #2	mud	TD = 12.82
1125	LAP-3.5 #3	dry	TD = 11.47
1135	LAO-0.91	17.86	
1144	LAO-1.2	dry	TD = 25.72 Vegetation at bottom.
1148	LAO-1.8	dry	TD = 15.03
1158	LAO-1.6G	23.07	

S. Purdue 4/29/02

4/29/02

Time	Well	Depth (ft TOC)	Comments
1206	LAP-4 #1	dry	TD = 18.66
1207	LAP-4 #2	15.72	
1208	LAP-4 #3	dry	TD = 12.51
1217	~~LAS~~ LAP 5.7 #1	dry	TD = 16.42
1218	LAP-5.7 #2	dry	TD = 15.56
1219	LAP-5.7 #3	dry	TD = 13.53
1222	LAP 6B	dry	TD = 16.37
1300	On-site at LLAO-1. Waiting for San I. escort (Ryan Gonzales)		
1337	LLAO-1	~~dry~~ 20.75	~~TD = 26.54~~
1345	LLAO-2	26.18	
1356	LLAO-3	21.25	
1407	LLAO-4	5.96	
1415	LLAO-5	13.32	
1433	PAO-5N	11.47	
1448	PAO-4	6.18	
1500	PAO-3	13.63	
1522	PAO-2.5	11.15	Construction Cannot access wells from
1608	PAO-1	12.00	this side. Will go around.
1614	PAO-2	16.00	

4/29/02

6/12/02

0800 S. Purdue and A. Baner leave office to take water level readings and download transducer data. Safety Tailgate meeting held.

Time	Well	Depth (ft TOC)	Comments
0902	PAO-1	12.48 ft. bTOC	
	PAO-2, PAO-25		No access due to RMCI construction.
0954	PAO-3	15.40 ft bTOC	
1017	PAO-4	6.51 ft bTOC	
1108	LAO-B	9.58 ft bTOC	
1129	LAP-1 #1	13.84 ft bTOC	
1130	LAP-1 #2	8.67 ft bTOC	
1131	LAP-1 #3	8.62 ft bTOC	
1146	LAO-0.3	11.13 ft bTOC	
1200	LAO-0.6	8.21 ft. bTOC	
1207	LAP 1.5 #1	10.35 ft. bTOC	
1208	LAP 1.5 #2	9.61 ft. bTOC	
1209	LAP 1.5 #3	dry	TD = 9.15 ft. bTOC
1223	LAP-1.7 #1	dry	TD = 21.18 ft. bTOC
1224	LAP-1.7 #2	dry	TD = 19.43 ft. bTOC
1225	LAP-1.7 #3	dry	TD = 11.43 ft. bTOC
1230	LAO-0.8	15.15 ft. bTOC	
1233	LAP-3	dry	TD = 12.35 ft. bTOC
1236	LAP-3.5 #1	dry	TD = 16.48 ft. bTOC
1237	LAP-3.5 #2	dry	TD = 13.97 ft. bTOC
1238	LAP-3.5 #3	dry	TD = 11.47 ft. bTOC

(Continued on page 38)

(38)

6/12/02

Time	Well	Depth	Comments
1302	LAO-0.91	17.87 ft. bTOC	
1323	LAO-1.2	dry	TD=25.72 ft. bTOC
1330	LAO-1.8	dry	TD=15.04 ft. bTOC
1338	LAO-1.6G	30.31 ft. bTOC	
1353	LAP-4 #1	dry	TD=18.56 ft. bTOC
1354	LAP-4 #2	dry	TD=15.70 ft. bTOC
1355	LAP-4 #3	dry	TD=12.52 ft. bTOC
1412	LAP-5.7 #1	dry	TD=17.62 ft. bTOC
1413	LAP-5.7 #2	dry	TD=15.60 ft. bTOC
1414	LAP-5.7 #3	dry	TD=13.53 ft. bTOC
1425	LAP-6	dry	TD=16.37 ft. bTOC
1455	LAUZ-1	7.76 ft. bTOC	
1507	LAUZ-2	12.24 ft. bTOC	

Checked by [illegible] 6/12/02

[illegible] 6/12/02

DOCUMENT/DISTRIBUTION SHEET
WGII/PMC/SEA TEAM AT LOS ALAMOS
ER SUBCONTRACT G66170008-8G

File Number: 5901
MK Number: 18.950 0089
Number of Pages: 4
Provided By Document Controls 3 pgs

Basic Type: Proj. Mgt.____ Proj. Tech. ✓ Proposal/Date____

Project Code: 4931(CPFF) 0003.87 4932(T&M)____ 23448(FFP)____

DOCUMENT DATE: 8/8/02 - 9/5/02 CATEGORY: SE KEY WORD:____

TO: Project File / RPF AUTHOR/ORIGINATOR: Shannon Purdue

TITLE/SUBJECT: Field Notebook Pages 39-43, LA, PU, MO Water Level Measurements ER-~~2000~~ 8/19/02 2001-0089

Distribution: Coversheet & Attachments: ✓ Coversheet only: X
E-mailed: E Faxed: F (No Copies Needed)

Diskette Included:____ Virus Scanned:____

____Apperson C.	____Gibson, M.	____Newell, D
____Banar, A.	____Gillespie, K.	✓ Purdue, S
____Bell, P.	____Gleason, L	____Sagez, K.
____Benson, T.	____Gomez, L.	____Sanchez, S
____Burns, T.	____Gray, R.	____Schultz, C
____Calhoun, S.	____Hill, D.	____Shepard, M
____Causey, L	____Hogg, M	____Smiroldo, C.
____Crocker, J.	____Kisiel, K.	____Steven, D
____Crowder, A.	____La Orange, M.	____Thompson, D
____DeJoia, J.	____Logan, V.	____Toya, A.
____Evans, R.	____Lowry, B.	____Wald-Hopkins
____Fraley, D.	____Maldanado, M	____Williams, D
____Funk, A.	____Martin, B.	✓ RPF
____Geise, J.	____Martorello, D	
____Germain, N.	____Neeper, D	

Others:____

Page Count: 4 including blue sheet

Internal Review By:
By:____
Date:____

Submitted for LANL Review:
By:____
Date:____

QA Review Required:
Yes ✓ No____
Reviewed by: Done by C.S. 9/9/02
Signature Date

Document is:
Single Sided ✓ Double Sided____

Duplicate/Fire Proof Storage:
Yes____ No ✓

QA Record:
Yes____ No ✓

Special Requests:____

Submitted By: [signature] Date: 1/9/03 Distribution Done by: RV/1.17.03

(38)

6/12/02

Time	Well	Depth	Comments
1302	LAO-0.91	17.87 ft. bTOC	
1323	LAO-1.2	dry	TD=25.72 ft. bTOC
1330	LAO-1.8	dry	TD=15.04 ft. bTOC
1338	LAO-1.66	30.31 ft. bTOC	
1353	LAP-4 #1	dry	TD: 18.56 ft bTOC
1354	LAP-4 #2	dry	TD: 15.70 ft bTOC
1355	LAP-4 #3	dry	TD = 12.52 ft bTOC
1412	LAP-5.7 #1	dry	TD= 17.62 ft. bTOC
1413	LAP-5.7 #2	dry	TD= 15.60 ft. bTOC
1414	LAP-5.7 #3	dry	TD= 13.53 ft. bTOC
1425	LAP-6	dry	TD= 16.37 ft. bTOC
1455	LAU2-1	7.76 ft. bTOC	
1507	LAU2-2	12.24 ft. bTOC	

Charles S. Purdue
Submitted 6/12/02 6/18/02

(39)

8/8/02 8:00 S. Purdue and R. Channel
Safety tailgate briefing - mob to MO

8:20 MCO-0.6 TD = 7.21 ft TOC mud
8:45 LAO-B 8/8/02 DTW = 9.36 ft TOC
8:52 LAP-1 #1 DTW = 13.88 ft TOC
8:53 LAP-1 #2 DTW = 8.36 ft TOC
8:54 LAP-1 #3 DTW = 8.30 ft TOC
8:59 LAO-0.3 DTW = 9.53 ft TOC
9:04 LAO-0.6 DTW = 7.31 ft TOC
9:10 LAP-1.5 #1 DTW = 8.50 ft TOC
9:11 LAP-1.5 #2 DTW = 7.92 ft TOC
9:12 LAP 1.5 #3 DTW = 7.88 ft TOC
9:14 LAP 1.7 #1 DTW = dry - TD = 21.18 ft TOC
9:15 LAP 1.7 #2 dry TD = 19.46 ft TOC
9:16 LAP 1.7 #3 DTW = 7.95 ft TOC
9:17 LAO-0.8 DTW = 15.07 ft TOC
9:20 LAP-3 DTW = 11.40 ft TOC
9:22 LAP-3.5 #1 DTW = 11.54 ft TOC
9:23 LAP-3.5 #2 DTW = 11.49 ft TOC
9:24 LAP-3.5 #3 DTW = 11.40 ft TOC
9:31 LAO-0.91 DTW = 15.25 ft TOC
9:38 LAO-1.2 dry TD ~~DTW~~ = 25.75 ft TOC
9:42 LAO-1.8 dry TD = 15.02 ft TOC
9:48 LAO-1.6 DTW = 17.83 ft TOC
9:55 LAP-4 #1 dry TD 18.65 ft TOC
9:55 LAP-4 #2 dry TD = 14.45 ft TOC
9:56 LAP-4 #3 dry TD 12.53 ft TOC

8/8/02 (cont.)

10:00 CAP 5.7 #1 dry TD = 17.64 ft TOC
10:01 CAP 5.7 #2 after mud @ 8/8/02 = 15.59 ft TOC
10:02 CAP 5.7 #3 dry TD = 13.53 ft TOC
10:05 CAP 6 – dry TD = 16.35 ft TOC
10:15 LLAO-1 DTW = 21.00 ft TOC
10:24 LLAO-2 DTW = 27.02 ft TOC
10:35 LLAO-3 DTW = 21.27 ft TOC
10:43 LLAO-4 DTW = 8.01 ft TOC
10:49 LLAO-5 DTW = 14.90 ft TOC
11:32 PAO-5N DTW = 12.06 ft TOC
11:42 PAO-4 DTW = 6.02 ft TOC
11:50 PAO-3 DTW = 10.15 ft TOC
12:00 PAO-2.5 DTW = 11.16 ft TOC
12:55 PAO-2 DTW = 13.31 ft TOC
13:05 PAO-1 DTW = 6.96 ft TOC
13:46 CAHZ-1 DTW = 5.44 ft TOC
14:15 CAHZ-2 DTW 5.92 ft TOC

S. Purdue
8/8/02

9/4/02

1000 S. Purdue on-site at gate to LLAO-1 to wait for Ryan Gonzales (San. I. escort).
1005 Claudine Martinez on-site Safety Tailgate Meeting
10:10 LLAO-1 DTW 20.77 ft TOC
10:24 LLAO-2 DTW 27.04 ft TOC
10:35 LLAO-3 DTW 21.28 ft TOC
10:47 LLAO-4 DTW 8.31 ft TOC
10:55 LLAO-5 DTW 14.66 ft TOC

S. Purdue
9/4/02

(42) 9/5/02

830 S. Purdue and A. Banar on-site at TA-48 for water level measurements.
Safety Tailgate Meeting held.

8:50 MCO-0.6 - Dry TD = 7.23 ft TOC
9:35 LAO-B - DTW: 9.83 ft.TOC
9:45 LAP-1 #1 DTW: 13.90 ft.TOC
9:46 LAP-2 #2 DTW: 8.43 ft.TOC
9:47 LAP-1 #3 DTW: 8.38 ft.TOC
9:55 LAO-0.3 DTW: 10.90 ft.TOC
10:02 LAO-0.6 DTW: 7.77 ft.TOC
10:10 LAP-1.5 #1 DTW: 9.67 ft.TOC
10:11 LAP-1.5 #2 DTW: 8.67 ft.TOC
10:12 LAP-1.5 #3 DTW: 8.52 ft.TOC
10:13 LAP-1.7 #1 Dry TD: 21.17 ft.TOC
10:14 LAP-1.7 #2 Dry TD: 19.49 ft.TOC
10:15 LAP-1.7 #3 DTW: 10.06 ft.TOC
10:17 LAO-0.8 DTW: 15.11 ft.TOC
10:21 LAP-3 DTW: 11.98 ft.TOC
11:17 LAO-0.91 DTW: 17.84 ft.TOC
Note: Restricted access to Omega Site. No water level obtained from LAP-3.5.
11:28 LAO-1.2 DTW: 8.07 ft.TOC
11:32 LAO-1.8 Dry TD: 15.03 ft.TOC
11:38 LAO-1.6G DTW: 19.10 ft.TOC

9/5/02 (43)

11:47 LAP-4 #1 Dry TD: 18.65 ft.TOC
11:48 LAP-4 #2 Dry TD: 15.71 ft.TOC
11:49 LAP-4 #3 Dry TD: 12.50 ft.TOC
11:55 LAP-5.7 #1 Dry TD: 17.64 ft.TOC
11:56 LAP-5.7 #2 Dry TD: 15.60 ft.TOC
11:57 LAP-5.7 #3 Dry TD: 13.53 ft.TOC
12:00 LAP-6B Dry TD: 14.07 ft.TOC
13:15 PAO-1 DTW: 8.24 ft.TOC
13:23 PAO-2 DTW: 14.06 ft.TOC
14:10 PAO-2.5 DTW: 11.17 ft.TOC
14:21 PAO-3 DTW: 13.62 ft.TOC
14:35 PAO-4 DTW: 6.25 ft.TOC
14:48 PAO-5 DTW: 11.77 ft.TOC
14:55 mob to WCI office

S. Purdue 9/5/02
Charles Dunsbee 9/2/02

CONTENTS

PAGE NO.	REFERENCE	DATE
	The activities documented	
	in this field book are	
	being performed pursuant	
	to the following SOPs:	
	- ER SOP 4.01, R2 - Drilling Methods	
	- ER SOP 5.01, R2 - Monitor well	
	and RFI Borehole Construction	
	- ER SOP 12.01 R3 - Field logging,	
	Handling, and Documentation of	
	Borehole Materials	
	- ER SOP 7.01, R0, Pressure Transducers	
	- ER SOP 7.02, R0, Fluid Level	
	Measurements	
	R Gray 3/18/01	
note:	All combination locks on	
	well housings = 6020	

Field Book No. ER2001-0230

Piezometer and well installation Activities in Los Alamos and Pueblo Canyons

March 19, 2001

Field team members on site are Robert Gray, Deborah Steven, Dave Franks, Ken Gillespie, Dave Hill

Stewart Brothers Drilling Co. (Stanley Johnson, Paul Garcia, Steve Odom) are mobilizing CME-750 hollow-stem auger rig to 1st nested piezometer site LAP-6

Ken, Dave, Dave, Deb, and Bob on site at 1400. Setting up signage, etc.

Bob met the Drill crew at the State Rt. 4 gate to LA Can. at 1430.

R Gray
3/19/01

March 19, 2001 continued

Weather clear and warm, no wind.
Drill crew setting up rig and equipment from 1430 till

Deborah did rad screening background survey at 1430 to 1500. Background level calc. @ 3/20/01 ~~670~~ 725 DPM.

Started drilling borehole @ LAP-6 @ 1600.

0-2.5 ft β/γ ≈ 680-700 dpm but not sustained, avg 5-600 dpm
2.5-5 ft β/γ ≈ 350-450 dpm
5-7.5 ft β/γ ≈ 450 dpm
3/20/01 ~~7.5-9~~ 7-7.5 ft ≈ 500 dpm saturated
9-10 ft β/γ ≈ 400 dpm very wet
10-12.5 ft β/γ ≈ 350 dpm - clay damp
12.5-15 ft β/γ ≈ 400 dpm - wet @ top / damp @ bottom
TD = 15 ft Stop drilling @ 1715
leave site @ 1745

R Gray
3/19/01

March 20, 2001

Crew on site @ LAP-6 @ 0700
Pack up and move to LAP-5 x 0830
Background survey β/γ complete by 0835 CC = ~~540~~ dpm
3/20/01 (β) 762

Weather sunny, clear, warm
Start drilling @ 0925
1st run - 0-2.5' β/γ ≈ 400 dpm
2nd run - 2.5-5' β/γ ≈ 325 dpm
3rd run 5-7.5 β/γ ≈ 350-400 dpm
4th run 7.5-10 β/γ ≈ 350 dpm
5th run 10.0-12.5 β/γ ≈ 300-400 dpm
6th run 12.5-15.0' β/γ ≈ 350 dpm

T.D.'d LAP-5 borehole #1 @ 15.0 ft depth @ 1030. saturated alluvium encountered at ~2.5' depth to 6.0' depth. Drilled damp to sl. damp, weathered tuff from 6.25' to T.D. Looks like Otowi Mbr, but that should not be present at this location. Decided we may be drilling through a large boulder. Told driller to move to new location (LAP-5a) ~ 25 ft NW of borehole #1. R Gray
3/20/01

March 20, 2001 continued

Field Team is Bob Gray, Deborah Steren, & Dave Frank. Stewart Bros. crew is Stanley Johnson and Steve Odom + Paul Garcia.

Move rig to LAP-5a site 1030 - 1145

Begin drilling @ 1145

~~Run 1 0 - 2.5' β/γ ≈ 400 dpm~~

Run 1 0.7' - 2.5' β/γ ≈ 250 dpm

Run 2 2.5' - 5.0' β/γ ≈ 250-300 dpm

3 5.0' - 7.5' β/γ ≈ 300-400 dpm

4 7.5 - 10.0' β/γ ≈ 400-500 dpm

5 10.0 - 12.5' β/γ ≈ 400 dpm

Encountered alluvium to 6.6' depth. Saturated @ ~4.2 ft - 6.6 ft. Hit weathered tuff @ 6.6 ft. Drilled to 30' depth to see if in a boulder or in the Otowi

Run 6 12.5 - 15.0' β/γ ≈ 400 dpm

7 15.0 - 17.5' β/γ ≈ 400-500 dpm

8 17.5 - 20.0' β/γ ≈ 300-400 dpm

R Gray 3/20/01

March 20, 2001 (cont'd)

305 - Stop for 15 min lunch

drill running @ 1335

Run # 9 20.0 - 22.5' β/γ ≈ 350 dpm

10 22.5' - 25.0' β/γ ≈ 350-450 dpm

11 25.0' - 30.0' β/γ ≈ 500 dpm

TD - 30' @ 1400

Backfill hole w/ drill cuttings

depart LAP-5 @ 1525 w/ supplies for LAP-4

core was damp from 6.6' to ~22', then moist @ ~22' - 30'.

Begin Background β/γ @ 1525

Rig arrive @ LAP-4 @ 1530

β/γ c.c. = 713 dpm

Begin drilling @ 1610 - encounter large cobbles that must be removed by shovel ≈ 2 ft.

begin drilling again @ 1620

Run #1 ~~2.0~~ - 0.0' - 2.5' β/γ ≈ 400 dpm

run center bit from 2.5' - 3.0' cobble zone

Run # 2 3.0 - 5.0' β/γ ≈ 400 dpm

end run @ 5.0' for day

end description @ 1705

depart site @ 1715 (Drill Crew + Deb & Dave)

R Gray 3/20/01

March 20, 2001 (continued)

R. Gray staked new piezometer sites:

LAP-4.3 @ ~ 0.25 mi. east of LAP-4
on N. side of road, S. of stream

LAP-4.7 @ ~ 0.5 mi. east of LAP-4
on N. side of road, S. of stream
RG 3/20/01

LAP-5.2 @ ~ 0.25 mi. east of LAO-4.5
~ 300' N. of road, S. of stream

LAP-5.7 @ ~ 2000 ft. east of LAO-4.5
~ 150' N. of road (down natural wash)
on S. side of stream

LAP-6A @ ~ 15' w. of LAO-6A
RG on S. side of road, N. of stream
LAP-6.1 ~ 2000' E. of LAO-6, n. side rd.
R Gray departed field @ 1810.

RGray 3/20/01

March 21, 2001

Field team: Bob Gray, Deborah Steven, Dave Frank, Ken Gillespie.
Arrive in field at site LAP-4 in Los Alamos Canyon for continuation of piezometer installation project @ 0700.
Conducted tailgate safety mtg. @ 0715.
Stewart Bros. performing rig inspection @ 0730 -
Deb conducting new rad survey for background level calculation @ 0730 - 0745.
Scott Raposo (RCT) on site 0740 to replace Deb. while she goes to Beryllium training.

0830 - average background readings taken
CC #s the same = 713 dpm
Drilling str 0759
Run #3 5.0 - 7.5' B/G ≈ 400 dpm
#4 7.5' - 10.0' B/G ≈ 400 dpm
#5 10.0 - 12.5' B/G ≈ 300-400 dpm
#6 12.5' - 15.0' B/G ≈ 300 dpm
#7 15.0' - 17.5' B/G ≈ 400 dpm
#8 17.5' - 20.0' B/G ≈ (not drilled)

RGray 3/21/01

March 21, 2001 (continued)

Drilling borehole for piezometer LAP-4 continued.

Bob Gray off-site from 0950 - 1020 to escort JCI reps. to newly staked locs. (LAP-4.3, 4.7, 5.2, 5.7, LAP-6A, 6.1) for utilities clearance and excavation permit revision.

T.D.'d borehole LAP-4 @ 17.5' @ 1040

Bottom of alluvium encountered @ 15.8 ft

very weathered tuff (saturated) 15.8 - 16.05 ft

clay, moist @ 16.05 - 16.35 ft

wet, weathered tuff 16.35 ft - 17.5 ft

- Saturated alluvium is @ 6.9 ft - 15.8 ft
- Base of saturation is top of clay (16.05 ft)
  - = 9.15 ft saturation
    (8.9 ft of saturated alluvium)

- All rad. readings were below background.
- Scott Raposo left site @ 1055
- Driller pulled small augers and started reaming hole to 10½ in. diam. @ 1110.
- Reamed hole to 16.0 ft depth

R Gray 3/21/01

March 21, 2001 (continued)

Cut slots in PVC pipe for 6-in. screens @ bot. of each piezometer

Reaming hole @ 1300 - 1330

Deborah Steven back on-site @ 1330

Ken Gillespie and Dave Frank left site @ 1200.

Begin building well @ 1330

Letting 1st bentonite seal hydrate @ 1415 - 1500, 2nd bentonite seal hydrating @ 1530 - 1615

Driller and helper went to R-9 laydown yard to get pea gravel for borehole annulus @ 1545 - 1610

Completed well construction up to annular seal (bentonite @ 1'-3' bgs) @ 1715.

Will pour cement surface seal, set well housing, and pour surface pad in the morning.

Departed field @ 1720.

R Gray 3/21/01

March 22, 2001

Bob Gray and Ken Gillespie on site with Drill crew at 0715. (LAP-4) Conducted tailgate mtg., cleaned up site, and set well housing over piezometers. Moved rig to LAP-6A site @ 0840 - 0850. Paul Garcia on site @ 0855 with 2x4's to build form for concrete pad @ LAP-4. Poured concrete surface seal and concrete pad for LAP-4 @ 0910-0930.

LAP-4:

- Measured the height of the top of the open well housing @ 2.95 ft. above top of concrete pad.
- Top of concrete pad is 0.30 ft above ground surface.
- Top of PVC for Piezometer #1 is 0.28 ft below top of open well housing
- TD of piezometer #1 is 18.65 ft below top of casing
- WL = 14.69 ft btoc (Piez. #1)

R Gray
3/22/01

March 22, 2001 (continued)

- Measured top of PVC casing for piezom. # 2 @ 0.25 ft below top of open well housing
- TD of piezom. # 2 is 15.71 ft btoc
- WL of piezom. # 2 is 9.75 ft btoc

- Measured top of PVC casing for piezom. # 3 @ 0.29 ft below top of open well housing.
- TD of piezom. # 3 is 12.54 ft btoc
- WL of piezom. # 3 is 8.90 ft btoc

(above WLs meas. w/ Solinst # 18528 WL meter)

- Rechecked WLs with slope indicator Co. WL meter that is labeled with -0.30 ft correction factor)

(Slope Indicator Co. meter) WL's

- Piezom # 1 = ~~14.90 ft~~ 14.89 ft btoc (TD = 18.87' btoc)

measured the scale on 2nd meter - reads 1.15' @ 1.0 ft on tape measure (+0.135' to WL sensing depth)

→ correction factor = -0.285'

R Gray
3/22/01

March 22, 2001 cont.

Measured Solinst tape: TD measurements are 0.06 ft short. (because WL sensor is 0.06 ft above bottom of probe)

So for - Slope Indicator Co. (blue) meter:

- To measure TD, subtract 0.15 ft from reading
- To measure WL, subtract 0.285 ft from reading

- Slope indicator Co. meter readings cont.
  Piezom #2 TD = 15.95' reading
  WL = ? Sensor not working properly; could not get it to stop buzzing.
- Plan on not using ~~this~~ meter!

Drill crew mobilized to LAP-6A @ 0945.

Background readings taken @ 0900
β|γ Contamination Criteria (C.C) = 63 cpm
drilling begun ≈ 1045
Run #1 β|γ ≈ 500 dpm
#2 β|γ ≈ 400 dpm
#3 β|γ ≈ 400 dpm

R Brown 3/22/01

March 22, 2001 cont.

LAP-6A Cont'd
Run #4 β|γ ≈ 350 dpm
#5 β|γ ≈ 300 dpm saturated
#6 β|γ ≈ 350 dpm
TD @ 10.5' (clay)

TD'd LAP-6A @ 1200
Lunch break @ 1200 - 1230
Decided to leave borehole open for now, and move rig ~ 20 ft to north and try again (LAP-6B)

- move rig and set up @ LAP-6B till 1305 st. dry. LAP-6B @ 1310

Begin drilling @ 1305
Run #1 β|γ ≈ 300 dpm
#2 β|γ ≈ 300 dpm
#3 β|γ ≈ 300 dpm
#4 not taken
#5 β|γ ≈ 300 @ top - ≈ 500-600 dpm @ bottom
#6 β|γ ≈ 450 dpm Saturated
#7 β|γ ≈ 400 dpm "
1425 TD = 15.0'

R Brown 3/22/01

March 22, 2001 (cont.)

LAP-6B encountered saturated alluvium @ 9.8' - 13.5' w/ moist clay (90%) + basalt gravel (10%) @ 13.5' - 15.0'.

- Building single piezometer well at LAP-6B site from 1430 - 1700
- Hand cut slots for 3' screen set with bot. of screen @ 13.35 ft.
- D. Steven left site at 1630

measured PVC stickup @ LAP-6B @ 3.05 ft above ground surface

WL = 12.14 ft btoc

TD = 16.30 ft btoc.

(soft bottom, silt)

Set well housing over casing. Plan to mix cement for pad in the morning

R Gray left site at 1725.

R Gray

3/22/01

March 23 2001

- R. Gray, K. Gillespie, Drill crew on site LAP-6B @ 0700.
- Conducted tailgate mtg.
- Crew poured concrete pad for LAP-6B single piezometer - finished @ 0745.
- Cleaned up site and moved to loc. for LAP-5.7 ~ 2000 w. of LAP-6B, and 100 ft. N. of road @ 0815
- Deb. S. and Dave F. on-site @ 0830
- St. drlg. LAP-5.7 @ 0910

Background taken and C.C. = 719 cpm

Drilling began @ ~ 0930

Run 1 B/G ≈ 400-500 cpm

2 B/G ≈ 300-400 cpm

3 B/G ≈ 350 cpm

Center bit 7-7.5'

4 B/G ≈ 500 cpm

5 B/G ≈ [illegible] cpm

#6 12.5 - 15.0 - Ø recovery

7 B/G ≈ 500-600 cpm

R Gray

3/23/01

March 23, 2001 cont.

TD'd LAP-5.7 @ 17.5 ft depth @ 1020

- Had zero recovery @ 12.5-15.0', then extremely weathered, decomposed, saturated tuff @ 15.0'-17.5'. Appears to be Otowi Formation, but may be somewhat reworked in upper 1 foot because basalt gravels were present @ ~5mm - 1 in. diam., rounded, ~2% of core in upper 1 foot.

- Since the contact bet. sand/gravel and the decomposed tuff was in the missing interval, decided to move the rig ~5 ft to the north, center bit down to 7.5 ft, then recore the interval below 7.5 ft with core catcher to nail down the contact for well design purposes.

Begin drilling LAP 5.7A @ 1056am

Run out @ 1115 - no recovery 7.5-10'

Driller modify catcher - Run 2 1127

1125 - Thunder, dark clouds overhead

10'-12.5' 6/8 ≈ 300-550 dpm

12.5-15.0' 6/8 ≈ 400-500 dpm

Saturated

R. Dias 3/23/01

March 23, 2001

1150 - light rain begin

15.0'-17.5' 6/8 ≈ 600 dpm

TD = 17.5'

Pour rain heavy, light again

≈ 1225 (Chuck and drillers go get trailer w/equipment.)

Heavy rain again @ 1233

Rain stopped for out ≈ 1305 and drillers back with well eq. - no trailer.

Bob & Bo site @ 1315, drillers cutting screen.

Begin reaming @ 1345, overcast again

1400 - Rain stopped and Bob orchestrate 1st piezometer placed

- 1530 - the hole caved in while trying to set piezometer #2. This made it impossible to set piezometer #2 at the proper depth. Will have to pull the piezometers and ream out the hole again and rebuild the wells. Will have to do this on Monday since there isn't enough time to complete the work today. Cleaned up site, stashed safety gear, and departed site at 1610.

R. Dias 3/23/01

March 26, 2001

Bob Gray and Ken Gillespie on site at LAP-5.7A @ 0810. Drill crew arrived on site @ 0855 (they blew a tire on the drive up from Grants). Conducted tailgate H&S mtg. @ 0900. Rig inspection performed.

- Driller's using sand pump @ 0930 till 1010 to see if he can get back down to 12.65' bgs where bottom of piezom. # 2 is supposed to sit. Worked sand pump till 1010 and got bot. of piezometer #2 down to 12.63' bgs and called it good enough.
- Resumed well construction @ 1015 - poured 8-12 sand for piezom. # 2 filter pack up to 11.7 ft; then 30-70 sand up to 11.5 ft. Placed coated bentonite pellets for 2nd seal @ 11.0 - 11.5 ft depth, then 30-70 sand up to 10.8 ft depth.
- Set piezometer #3 with 6-in screen and 0.15 ft sump @ top of screen = 9.99 ft below grd. surf (0.01 ft higher than design).

R Gray 3/26/01

March 26, 2001 cont.

1105 - pouring 8-12 sand for piezom. #3 filter pack from 9.7 ft to 10.8 ft depth. Need 30-70 sand at 9.5 - 9.7 ft - Discovered we are out of 30-70 sand on site.

1115 - Drill crew departs site to drive up to FSF to get another bag of 30-70 sand and a few more bags of 3/8" bentonite chips for annular seal @ 1.0 - 9.5 ft.

1157 - Drill crew back on site with 30-70 sand and bentonite chips.

Resumed well construction activities @ 1205. Placed 30-70 sand up to 9.5 ft, then placed bentonite chips up to 1.0 ft depth.

- Finished placing bentonite annular seal @ 1240.

Measured casing stickups for LAP-5.7A:

#1 = 2.47 ft ags
#2 = 2.50 ft ags
#3 = 2.48 ft ags

NOTE! - measured the ground surface level mark on piezom. #1 @ 0.51 ft bgs. So the 1st piezometer sunk 0.51 ft after initial

R Gray 3/26/01

March 26, 2001 cont.

installation, and then piezoms #2 & #3 were lined up with #1, so they are all ~ 0.5 ft too low.

LAP-5.7A:

Measured TDs of 3 piezometers below top of casing:

#1 = 17.61 ft btoc TD
#2 = 15.54 ft btoc TD
#3 = 13.59 ft btoc TD

(note: subtract 0.06 ft from each measurement as tape correction factor)

LAP-5.7A:

Measured water levels below top of casing:

#1 = 14.66 ft btoc
#2 = 11.04 ft btoc
#3 = 10.59 ft btoc

LAP-5.7A water level calcs.:

#1 WL btoc = 14.66 ft
-2.47 ft casing stickup ags
#1 WL = 12.19 ft bgs

R Gray 3/26/01

March 26, 2001 cont.

LAP-5.7A water level calcs. cont.

#2 WL btoc = 11.04 ft
- 2.50 ft casing stickup ags
#2 WL = 8.54 ft bgs

#3 WL btoc = 10.59 ft
- 2.48 ft casing stickup ags
#3 WL = 8.1 ft bgs

LAP-4 calcs. from measurements made on March 22:

#1 WL btoc = 14.69 ft

Top of open well housing is 2.95 ft above the top of the concrete pad, and the concrete pad is 0.30 ft. ags.

2.95
+ 0.30
Top of open well housing ags = 3.25 ft

Top of PVC casing for #1 = 0.28 ft below top of open well housing.

Top of PVC casing for #2 = 0.25 ft below top of open well housing

Top of PVC casing for #3 = 0.29 ft below top of open well housing.

R Gray 3/26/01

March 26, 2001 cont.:

LAP-4 Calcs. continued:

#1 3.25 ft ht. of top of open well housing ags
- 0.28 ft toc dist. below top of housing
#1 = 2.97 ft toc stickup ags

3.25 ft ht. top of open housing ags
#2 - 0.25 ft toc dist. below top of housing
#2 = 3.00 ft toc stickup ags

3.25 ft ht. top of open housing ags
#3 -0.29 ft toc dist. below top of housing
#3 = 2.96 ft toc stickup ags

March 22, 2001 water level calcs (LAP-4):

#1 WL = 14.69 ft btoc
- 2.97 ft toc stickup ags
#1 WL = 11.72 ft bgs

3/26/01

March 26, 2001 cont.

LAP-4 3/22/01 water level calcs. cont.

#2 WL = 9.75 ft btoc
- 3.00 toc stickup ags
#2 WL = 6.75 ft bgs

#3 WL = 8.90 ft btoc
- 2.96 ft toc stickup ags
#3 WL = 5.94 ft bgs

LAP-4 $H_3 - H_2 = -0.81$ ft
LAP-4 $H_2 - H_1 = -4.97$ ft

LAP-5.7A $H_3 - H_2 = -0.43$ ft
LAP-5.7A $H_2 - H_1 = -3.65$ ft

Decided to pull the piezometers up 0.5 ft so that the screens lined up properly with the filter pack. Pulled each casing up to correct level with tension strap and hoist line. No shifting of annular seal occurred.

3/26/01

March 26, 2001 cont.

Remeasured LAP-5.7a toc stickups ags:

#1 stickup = 3.01 ft ags
#2 stickup = 3.00 ft ags 3.00 OK RG
#3 stickup = 3.00 ft ags 3.00 OK RG

Bailed ~ 1 gallon of water from each piezometer @ 1520.

Mixed concrete, set well housing, poured surface seal and surface pad @ 1530 till

Remeasured WL's in piezometers @

LAP-5.7A WLs: measured @ 1605

#1 = 16.58 ft btoc
#2 = 11.51 ft btoc
#3 = 11.46 ft btoc

Piezometer #1 likely needs more time to recharge.

R Gray departed field @ 1615

R Gray 3/26/01

April 4, 2001

Bob Gray measured WL in LAP-6B @ 1620: WL = 12.64 ft btoc
- downloaded data from Mini-troll (last reading was 12.696 61 btoc)

1630 - Measured WL's in piezometers LAP-5.7A:

#1 = 11.64 ft btoc = 8.63 ft bgs
#2 = 11.63 ft btoc = 8.63 ft bgs
#3 = 11.61 ft btoc = 8.61 ft bgs

1643 - measured WL's in piezometers LAP-4

~~#3 RG~~
~~#1 = 9.56 ft btoc~~
~~RG - 2.97 ft stickup~~
~~RG 6.59 ft bgs~~

9.56
- 2.96
6.60 ft bgs

#2 = 9.70 ft btoc
- 3.00 ft stickup
6.70 ft bgs

#1 = 13.52 ft bgs
- 2.97 ft stickup
10.55 ft bgs

4/4/01

4-18-01

1455: in LA Canyon

Measure WLs in LAP-4

#1 = 13.93 ft btoc
-2.97 ft stickup
10.76 ft bgs

#2 = 10.28 ft btoc
-3.00 ft stickup
7.28 ft bgs

#3 = 10.17 ft btoc
-2.96 ft stickup
7.21 ft btoc

Installed MPTROLL 8000 probe # 40659 in piezom. #1. Set ref. WL @ 13.33 ft btoc - started test LAP4#1e 041801 @ 15:28

Installed probe # 40656 in piezom #2. set ref. WL = 10.09 ft btoc Started test LAP4#2e 041801 e 15:35

Installed probe # 40492 in piezom. #3. set ref WL = 10.19 ft btoc Started test LAP4#3e 041801

1543 #1 13.44 ft btoc

Note: all probe clocks set to Standard time.

R Bruce

4-18-01

Measured WL in LAP-5.7A

#1 = 11.70 ft btoc
-3.01
8.69 ft bgs

#2 = 11.69 ft btoc
-3.00
8.69 ft bgs

#3 = 11.67 ft btoc
-3.00
8.67

R Bruce 4-18-01

5-10-01 Sunny, warm, breezy

- Setting up at LAP-2 site in Los Alamos Canyon.
- Field team members are Bob Gray, Deborah Steven, Ken Gillespie.

Background rad β/γ survey taken @ 1111 - C.C. = 775 dpm

14:30 - Drill rig and crew arrive on site. Unloading equipment and setting up on LAP-2 site till 16:30.

16:30 - depart site and return to office

R Gray
5-10-01

5-11-01 On site @ 0700 - clear and cool. Bob Gray + Deb Steven

Held Tailgate mtg., crew did rig safety check list

0730 - started drlg. LAP-2 borehole.

0805 - hit refusal (cobble) @ 5' depth. Pull off of borehole LAP-2 and set up to drill LAP-2(a) ~ 5' west of LAP-2

0840 - start drilling LAP-2(a)

Ken Gillespie on site 0915 - 0935 w/ rebar caps for the rebar stuck in straw bales as erosion control.

TD'd LAP-2(a) @ 15.0 ft @ 10:00.

Saturated zone = 11.5' - 13.65'

13.65' = contact w/ weathered tuff (damp). Decided to pull off this hole and leave open for now.

Moved rig to LAP-3 loc. @ started drlg. LAP-3 borehole @ 1045.

Dana Williams visited site for walk down inspec. @ 10:10 - 11:00

R Gray
5-11-01

5-11-01 continued

TD'd LAP-3 @ 10.6 ft @ 12:20.
Saturation @ 7.8' - 9.4'; damp weathered tuff contact @ 9.4'
Building single piezometer well screened at 8.2' - 9.2' bgs till 15:30.
JCI Cowards on-site @ 14:30-15:00 to inspect 3 alternate sites for utility clearance: LAP-3.5 loc. ~ 100' East of LAP-3. LAP-1.7 loc. ~ 150' west of LAO-0.8; and LAP-1.5 loc. ~ 300' west of LAO-0.8.
Drill Crew left site at 15:30.
Deb. went to JCI office to work on excavation permit revision at 15:00.
Bob Gray departed site @ ~~15:40~~. RG
WL in LAP-2(a) measured @ 11.0' bgs (T.D. @ 11.9' bgs) prior to backfilling
Deb back with approved excav. permit revision @ 15:40
Bob & Deb off-site @ 15:55.

R Gray 5-11-01

5-14-01 Monday
Field Team members Bob Gray and Deborah Steven met Drill crew on-site at LAP-3 in Los Alamos Canyon at 0800.
Weather is clear to partly cloudy, warm.
Held tailgate safety mtg. at 0815.
Drill crew went to FSF to get quickrete and saw @ 0825.
Drill crew back on site at 0900.
Building forms and mixing cement and pouring concrete pad for LAP-~~4~~3 till 10:00.
Cleaning up site till 10:30 (plus finishing concrete surface)
Measured LAP-3 surface completion details:
Top of open well housing = 2.85' above top of concrete pad.
Top of concrete pad = 0.40' above ground surface.
Top of PVC casing = 0.385' below top of open well housing.

R Gray 5/14/01

5-14-01 continued

12.85
0.40
3.250' ags = top of open housing
- 0.385'
2.865' ags = toc
Round to nearest .01' →
top of casting = 2.87' above ground surf.
for LAP-3.

Deb went to FSF for [illegible] marker cap @ 10:[illegible]
Measured LAP-3 water level @ 10:40
WL = 10.41 ft btoc
- 2.87 ft stickup
LAP-3 WL = 7.54 ft bgs

LAP-3 TD = 12.37 ft btoc (by sounder)
-0.06 ft WL probe extension
[illegible].31 ft past sounder tip.
- 2.87 ft stickup
9.44 ft bgs = TD

9.44' bgs TD
- 7.54' bgs WL
1.90' saturated thickness

R. Bray 5/14/01

5-14-01 continued

LAP-2A borehole surf. elev. was est. ~ 5.0 ft above stream level (water surface) - water depth in stream is ~ 0.5'.
Ground surface at LAP-3 is est. ~ 4.0 ft below surface at LAP-2A

[illegible] background hole @ 1200 with ESP 1
CC = [illegible] dpm 700
DD 5/14/01

Started drilling LAP-3.5 @ 11:45 - raining lightly off and on
- Lost all recovery below 10' due to wet sands sliding out of barrel.
Put on core catcher to try to recover saturated sands below 12.5'
- Quit raining @ ~ 13:00.
- T.D.'d hole at 15.0' in moist weathered tuff at 13:35.
- assembling casing, cutting screen slots, reaming out borehole to 10 1/2-in. till 15:20

R. Bray 5/14/01

5-14-01 continued

- Building well @ LAP-3.5 from 15:20 till 18:00
- note - after 8-12 sand was poured up to 9.3' for #3 filter pack, the augers were lifted enough to remove upper 5' flight. After the upper flight was removed, the #3 piezometer had dropped ~1 ft. and the top of the materials measured at 10.6 ft (just below bottom of #3 T.D.). Apparently, there was a void in the sidewall that the sand dropped into. Had to put in more 8-12 sand to bring the #3 filterpack up to 9.3', above the screen.
- Final ht. of stickups was 3.08 ft above ground surface - so all screen depths and TDs are 0.08 ft higher than design drawing.
- Field team departed site at 18:15.

R. Gray
5/14/01

5-15-01 (Tuesday) - Clear, sunny & warm. Bob Gray on site at LAP 3-5 @ 0730 with Drill Crew. Conducted tailgate safety mtg. @ 0740. Crew assembled forms and mixed/poured concrete pad for LAP-3.5 till 0850. Stanley moved rig to LAP-1.5 site while the pad was being poured. Gathered up equip., cleaned up site, and moved trailer & equip to new staging area for LAP-1.5 @ 0900.

LAP-3.5 surface completion measurements:
Measured height of open well housing at 3.36' above ground surface (approx.)
piez. #1 toc = 0.21' below top of housing
piez. #2 toc = 0.20' " " " "
piez. #3 toc = 0.22' " " " "
Assume #2 stickup = 3.08' ags (per yest.)
#1 stickup = 3.07' ags
#3 stickup = 3.06' ags

#1 WL = Dry /TD = 17.49' btoc
#2 WL = Dry /TD = 16.09' btoc
#3 WL = 10.29' btoc /TD = 13.27' btoc
(no water in #2 - bentonite likely settled into the screened interval)

R. Gray
5/15/01

5-15-01 cont.

Started drilling LAP-1.5 @ 0945
Encountered saturation at 4.6'.
Contact w/ unsat. tuff encounted at 11.2'.
TD'd hole @ 12.8' @ 10:45.
Reaming hole to 10½-in. diam
down to 11.2' till 12:05.
β/γ rad survey background check @ 0950
LAP1.5 CC = 749 dpm (ESP-1 #8062)
β/γ rad survey background check @ 1000
LAP1.7 CC = 721 dpm (ESP-1 #8062)

LAP-1 CC = 618 dpm (ESP-1 #8062)
12:05 - 13:30 measuring and cutting well casing and cutting screen slots.
13:30 - start building wells in LAP-1.5
15:10 - Finished pouring downhole materials
- checked each piezom. for water - all 3 have water OK.
Piezom. #1 TD set at 11.2' bgs w/ 3.0' stickup
Piezom. #2 TD set at 8.7' bgs " " "
Piezom. #3 TD set at 6.2' bgs " " "
- Tear down rig and move to LAP-1.7 site.

R Gray 5/15/01

5-15-01 cont.

16:02 - start drilling LAP-1.7
17:45 (#1 only) - measured WLs in LAP-1.5:
#1 WL = 9.23 ft btoc / TD = 14.12' (soft bot.)
#2 WL = 7.93 ft btoc / TD = 11.32' btoc
#3 WL = 7.75 ft btoc / TD = 8.65' btoc
#1 WL = 8.32 ft btoc (@ 18:30)

TD'd LAP-1.7 @ 18.5' @ 18:10
Lost recovery (flowing fine sand) @ 10.0' - 16.5'. Encountered contact w/ wet tuff at 17.2'.

Deb departed site @ 18:15
Drill crew departed site at 18:25
R. Gray departed site at 18:45
→ LAP 1.5 WLs measured at 18:30

Note: LAP-1.5 #3 toc is 0.005' lower than toc for #1 and #2 (i.e. #3 stickup = 2.995')

R Gray 5/15/01

5-16-01 - Los Alamos Canyon piezometer installations continued. Field team today is Bob Gray only + drill crew (Stewart Bros. crew = Stanley Johnson - driller, + helpers Duane Wilcox and James Torrez). - R. Gray purchased PVC end caps @ Dahl Plumbing 0700 - 0730.

Bob Gray on site at 0730. Weather is clear and warm. Tailgate Mtg. held. Drill crew started reaming LAP-1.7 borehole to 10½-in. diam. @ 0740. In prep. for installing nested piezometers.

0815 - checked water levels in LAP-1.5

#1 WL = 8.29 ft btoc

#2 WL = 7.89 ft btoc

#3 WL = 7.63 ft btoc

Finished reaming borehole LAP-1.7 at 0900. When pulled bit off of bottom to check depth, flowing sands filled in bottom 3' of hole. Will have to have water inside augers to equalize pressure and keep flowing sands from coming into auger during well construction.

R Gray 5/16/01

5-16-01 cont.

Crew is cutting screens and pipe and moving materials from 0900 till 10:15

0925 - Stanley went to FSF to get more filter pack sand and bentonite pellets.

10:10 - Stanley back on-site

10:20 - 10:40 Reaming back down to T.D.

10:45 - Start building well @ LAP-1.7

12:00 - Finished pouring downhole materials

Moving rig and equip. back to LAP-3.5 site till 13:35

Measured WLs in LAP-1.7 @ 13:28:

#1 WL = 4.22' btoc

#2 WL = 14.50' btoc → 14.85' (13:33)

#3 WL = 5.25' btoc

14.95' (13:34)

#1 TD = 20.38' btoc

#2 TD = 19.40' btoc 6.44' (13:39)

#3 TD = 11.36' btoc

15.72' (13:42)

#1 WL = 4.25' btoc (13:40)

#3 WL = 5.41' btoc (13:41)

R Gray 5/16/01

5-16-01 cont.

13:47 LAP-3 WL = 10.49' btoc

LAP-1.7 info:

#1 measured TD = 20.38' btoc
- 3.00' stickup
17.38' bgs

#1 Design TD = 18.20' bgs
- 17.38
0.82' of sand in well

#2 measured TD = 19.40' btoc
- 3.00' stickup
16.40' bgs

#2 design TD = 16.50' bgs
- 16.40'
0.10' sand in well

#3 measured TD = 11.36' Btoc
- 3.00' stickup
8.36' bgs

#3 design TD = 8.50' bgs
- 8.36'
0.14' sand in well

R Bray 5/16/01

5-16-01 cont.

Tearing out orig. well LAP-3.5 from 13:35 till 14:02 - filled holes with bentonite chips.

LAP-1.7 info continued:

Piezom. #1 was set in unsat. (?) but wet tuff. There should not be over 16' water col. in this well. This is residual water from the installation process when high pressure flowing sands forced itself into the well. Also, there is 0.82' of material (presumably fine sand) in the bottom of the well. Need to go in with sand pump and clean out well, plus bail out all the water.

Piezom #2 WL was dropping rapidly when measured at 13:28 - 13:42. It fell 1.22' in 14 mins.

Piezom. #3 WL fell 0.16' from 13:28 to 13:41 (13 mins.)

small thicknesses of sand in bots. of #2 and #3 are below screen bottoms.

R Bray 5/16/01

5-16-01 cont.

- Rig set up to redrill LAP-3.5 at new location 2 ft. west of orig. loc.
- Drilled w/ center bit to 12.5' and cored from 12.5'-15.0' to establish tuff contact. till 15:10.
- reaming borehole to 10½ in. diam till 16:30
- Building LAP-3.5 wells @ 16:35 till completed pouring downhole materials @ 17:40.

17:55 - Measured WLs in LAP-3.5:

#1 WL = 11.81' btoc / TD = 16.42' btoc
#2 WL = 10.10' btoc / TD = 13.74' btoc
#3 WL = 10.15' btoc / TD = 11.30' btoc

Water levels rising rapidly after removing the locking caps. Left caps on loosely to permit WLs to rise overnight.

R. Gray 5/16/01

5-16-01 cont.

18:05 - rechecked WLs in LAP-1.7:
#1 WL = 4.38' btoc
#2 WL = 18.95' btoc
#3 WL = 5.94' btoc

18:10 - rechecked WLs in LAP-1.5:
#1 WL = 8.35' btoc
#2 WL = 7.90' btoc
#3 WL = 7.76' btoc

R. Gray and drill crew left site at 18:30

R. Gray 5-16-01

5-17-01 (Thursday)

0650 - Bob Gray on-site in LA Can. (TA-2). Weather is clear, calm, cool.

0720 - Drill crew arrived on-site after picking up cement and wheelbarow at drill yard. Conducted tailgate mtg. and safety inspection.

0745 - checked wls in LAP-3.5:

#1 WL = 16.39' btoc / TD = 16.41' btoc
#2 WL = 10.06' btoc / TD = 13.73' btoc
#3 WL = 9.99' btoc / TD = 11.30' btoc

Note - toc for #3 is 0.01' lower than #1 and #2 - this inf. was superceded by 5-18 measurements - see p. 48 RG 5/18/01

#1, #2 stickup = 3.00'
#3 stickup = 2.99'

0755 - checked wls in LAP-1.7:

#1 WL = 4.52'
#2 WL = dry (TD = ~~1.94~~ RG 19.45' btoc)
#3 WL = 7.25' btoc

R Gray 5/17/01

5-17-01 continued

0800 - Checked wls in LAP-1.5:

#1 WL = 8.34' btoc
#2 WL = 7.93' btoc
#3 WL = 7.87' btoc

0805 - checked WL in LAP-3

LAP-3 WL = 10.47' btoc

0800 - 0830 Move rig to LAP-1 site

Crew is pouring concrete pads for LAP-3.5 and LAP-1.5.

0830 - rigging up on LAP-1 side - put call in to ESH-1 for RCT to perform rad screening of core.

0900 - John Jameson and Chris Lovato (RCTs) on-site for rad screening of core.

R Gray 5/17/01

5-17-01 cont.

0910 - start drilling LAP-1 borehole.
1105 - finish drilling LAP-1: TD = 12.5'
RCTs did rig swipe and wrote clearance tag and departed site at 11:30.
Reaming LAP-1 to 10½-in diam to 11.0' depth till 12:10.
Cutting casing and screens till 13:20.
Building wells at LAP-1 from 13:30 till finished pouring downhole materials at 15:00. Checked WLs in all 3 wells - all have water w/ rising levels.
- Drove to office to copy well design drawings at 15:30. Back on-site at 16:30.
- Departed site at 16:40.

R Gray 5/17/01

5-18-01

Crew on site at 0700 - building forms & pouring concrete pads at LAP-1, LAP-1.5, LAP-1.7 and running sand pump and bailer in LAP-1.7 till 10:45. Clean up sites and pack up gear and move rig and equip to FSF.

Bob Gray back at 14:30 to stamp id #s in well vaults and put locks on vault lids.
14:50: LAP-1 WLs measured:
#1 = 13.61' btoc / TD = 13.91' btoc
#2 = 8.38' btoc / TD = 12.31' btoc
#3 = 8.26' btoc / TD = 10.07' btoc
Note LAP-1 #1 and #3 wells are 0.01' lower than #2 well.
#2 stickup = 3.0' ags
#1, #3 stickup = 2.99' ags
15:20 - measured WLs in LAP-3.5:
#1 WL = 16.43' btoc (0.03' off of bottom)
#2 WL = 10.04' btoc
#3 WL = 9.99' btoc

R Gray 5/18/01

5-18-01 cont.

LAP-3.5 measurements cont.

#2 toc = 0.27' below top of vault
#1 toc = 0.005' below #2 toc
#3 toc = 0.025' below #2 toc
Top of vault = 3.15' ags

#1 stickup = 3.150'
− .275
2.875' ags

#2 stickup = 3.15'
− .27'
2.88' ags

#3 stickup = 3.150'
− .295
2.855' ags

Measured LAP-3 WL @ 15:51:
WL = 10.43' btoc

16:21: measured LAP-1.5 WLS:
#1 = 8.34' btoc / TD = 14.08' btoc
#2 = 7.94' btoc / TD = 11.32' btoc
#3 = 7.98' btoc / TD = 8.64' btoc

[illegible] 5/18/01

5-18-01 cont.

LAP-1.5 #1, #2, #3 toc = 0.61' below top of vault.
Top of vault = 3.57' ags
3.57
− .61
2.96' = LAP-1.5 toc stickup

16:45 - measured LAP-1.7 WLS

#1 WL = dry (just wet on bot.)
T.D. = 21.00'
#2 WL = 19.43' btoc / TD = 19.30' btoc
#3 WL = 7.27' btoc / TD = 11.42' btoc

LAP-1.7
#1 and #2 toc = 0.29' below top of vault
#3 toc is 0.01' below #1 & #2 toc

Top of vault is 3.35' ags
#1 and #2 stickup = ~~3.00'~~ 3.06' ags
#3 stickup is 3.05' ags
Depart field at 17:00

[illegible] 5/18/01

The notes on this page were copied from p. 106 - 107 in fieldbook ER-2001-0088 (Alluvial well probes) - original notes by Shannon Purdue.

6/4/01 Manual water levels measured:

0955 LAP-6B DTW = 13.03 ft TOC

1007 on-site LAP-5.7
#1 DTW = 12.02 ft TOC
#2 DTW = 12.02 ft TOC
#3 DTW = 12.01 ft TOC

1142 on-site at LAP-3.5
#1 DTW = dry - TD 16.47 ft TOC
#2 DTW = 10.22 ft TOC
#3 DTW = 10.20 ft TOC

1146 on-site LAP-3
DTW = 10.51 ft TOC

- WLs not measured in LAP-1, LAP-1.5, LAP-1.7
Transducers downloaded in LAP-4 & LAP-6

R Gray 6/14/01

7-24-01 - Los Alamos Canyon
Bob Gray and Joe Toya
- installing transducers in piezometers

1115 - mob to LAP-1 (stream is flowing)
- checked WLs:
#1 = 13.22 ft btoc
(T.D. = 13.95' btoc - soft bot.)
#2 = 8.50 ft btoc
(T.D. = 12.30' btoc - hard bot.)
#3 = 8.38 ft btoc
(T.D. = 10.12' btoc - soft bot.)

1150 - installed Mini-Troll #5560 in LAP-1 #1.
Set reference WL = 13.15' btoc
Set device clock to standard time
1200 - started test LAP-1 #1 @ 7-24-01
reading WL + temp. at 30-min. intervals.
1205 - installed Mini-Troll #5535 in LAP-1 #2
Set device clock to standard time
Set reference WL = 8.50' btoc
1207 - started test LAP-1 #2 @ 7-24-01

R Gray 7-24-01

7/24/01 LA Canyon

1209 - installed Mini-Troll # 5616 in LAP-1 #3.
- set device clock to standard time
- set WL ref. to 8.39' btoc

1213 - started test LAP-1 #3 @ 7-24-01

1254 - Mob to LAP-1.5 (stream dry)

checked WLs:

#1 = 9.44' btoc (TD = 14.12' btoc) soft bot

#2 = 8.41' btoc (TD = 11.38' btoc) hard bot

#3 = 8.25' btoc (TD = 8.69' btoc) soft bot.

1305 - Mob. to LAP-1.7 (stream dry)

checked WLs:

#1 = dry (T.D. = 21.17 ft bgs) hard bot.

#2 = dry (T.D. = 19.48 ft bgs) "

#3 = 8.96' btoc (T.D. = 11.48' btoc)

1334 - Install Mini-Troll # 5572 in LAP-1.5 #1
- set device clock to standard time
- set reference WL = 9.42' btoc

1342 - Started test LAP-1.5 #1 @ 07-24-01

1344 - installed Mini-troll # 5708 in LAP-1.5 #2
- Set device clock to standard time

R Gray 7-24-01

7/24/01 LA Canyon

- Set reference WL = 8.41' btoc

1349 - started test LAP-1.5 #2 @ 07-24-01

1351 - installed Mini-troll # 5530 in LAP-1.5 #3
- set device clock to standard time
- set reference WL = 8.20' btoc
- started test LAP-1.5 #3 @ 072401

1437 - mob to LAP-3 (stream dry)
WL = 11.48' btoc TD = 12.37' btoc

1447 - installed Mini-troll # 5692 in LAP-3
- Set device clock to standard time
- set reference WL = btoc

1453 - Started test LAP-3 @ 072401

1501 - Mob. to LAD-3.5 - measured WLs:

#1 = dry - TD = 16.46' btoc - soft bot.

#2 = 11.87' btoc - TD = 13.76' btoc hard bot.

#3 = dry - TD = 11.38' btoc - hard bot.

1525 - observed stream flow emanating from dry channel at location adjacent to gabion structure ~0.6 mi. upstream from LAD-1.69 (stream dried up ~0.4 mi. downstream from its beginning)

1540 - Mob to LAP-4 and download data from MP Trolls. (stream dry)

R Gray 7-24-01

7-24-01 LA Canyon

- Connect to Troll # 40659
- download test LAP-4 #1 @ 041801 (has water)
- Battery = 90% (8.9V)
  Storage capacity = 91% free
  CPU runtime = 2843 secs.
- connect to Troll # 40656 (@ 1550)
- download test LAP4 #2 @ 041801
  (has water)
  Battery = 90% (8.9 v)
  Storage 91% free CPU = 2836 secs.

1554 - connect to Troll # 40492
  Battery = 97% (9.1V)
  Storage = 91% free CPU = 2781 secs.
  download test LAP4 #3 @ 041801
  well is dry - need to come back
  another day to replace w/ Mini-trolls

1606 - Mob. to LAP-5.7 - Check WLs:
  #1 = 12.68 ft btoc ; TD = 17.63' btoc (hard bot)
  #2 = 12.68 ft btoc ; TD = 15.47' btoc (soft bot)
  #3 = 12.68 ft btoc ; TD = 13.61' btoc (soft bot)
  (note ; TOC height @ #1 is + 0.01' from
  TOC for #2 and #3 - making equiv.
  WL actually 12.67' btoc @ #1)
  - suggests a slight upward gradient
  (stream dry)

R Gray 7-24-01

7-24-01 LA Canyon

1624 - installed Mini-troll # 5612 in
  LAP-5.7 #1
  set device clock to standard time
  set reference WL = 12.50' btoc
  (note - assumed elevation of this site
  at 6500' msl for pressure sensor
  settings - need to verify this!)

1628 - started test LAP5.7 #1 @ 072401

1634 - Mob to LAP-6
  connect to mini-troll # 3088
  download test LAP6B @ 041801
  WL is ~ 13.7' btoc

1638 - stopped test LAP6B @ 041801
  Device information for # 3088:
  Battery = 75% (2.5V)

1640 - Pulled mini-troll # 3088 (loaner)
  to return to In-Situ

Measured LAP-6 TD = 16.21 ft btoc

1649 - installed mini-troll # 5593
  set device clock to standard time
  Set reference water level = 13.75' btoc
  (note - assumed elevation of this site
  at 6450' msl for pressure sensor
  settings - need to verify this!) should be 6395

1655 - started test LAP-6 @ 072401

mob. to office

R Gray 7/24/01

8-2-01 Field team: Bob Gray & Shannon Purdue.

0920 - On-site at LAP-1.7 to attempt development of piezometers #1 & #2

0927 - checked water levels:
#1 = dry
#2 = dry
#3 = 8.64 ft btoc

0930 - Poured ~ 2 gals of DI water into piezometer #1.
- Dropped sounder into well to check WL and got no response. Pulled up sounder and checked its operation by hanging it in the DI water bottle and the sounder did not sound.

0945 - decided to go back to lab trailer and attempt to clean off corrosion on sounder tip with emory paper.

1030 - back on-site at LAP-1.7 after cleaning sounder sensor - working OK.

R Gray 8/2/01

8-2-01

LAP-1.7 #1 WL = ? Sounder apparently does not work in DI water - will come back later with drinking water to try that.

1251 - on-site at LAP-4 to replace MPTROLLs with minitROLLs

Connect to # 40659
Battery 89% (8.9 V)
Storage = 90% free
CPU = 3103 s
Download Test LAP-4 #1 @ 041801

Connect to # 40656
Battery = 89% (8.9 V)
Storage = 90% free
CPU = 3095.70 s
Download Test LAP-4 #2 @ 041801

Connect to # 40492
Battery = 96% (9.0 V)
Storage = 90% free
CPU = 3036 s
Download Test LAP-4 #3 @ 041801

- Stopped all tests and pulled probes from wells

R Gray 8/2/01

8/2/01

1330 - installed Mini-Troll # 5614 in LAP-4 #1.
battery = 100% (2.7 V)
memory = 99% free
CPU = 73 s
set reference WL = 16.32 ft btoc
set clock to standard time
Programmed test LAP-4#1@080201 for 30-min readings
1340 - started test LAP-4#1@080201
1342 - installed Mini-Troll # 5636 in LAP-4 #2. Battery = 100% (4.9 V?)
Memory = 99% free, CPU = 66 s.
set reference WL = 13.19 ft btoc
set clock to standard time
1349 - started test LAP-4#2@080201
1351 - installed Mini-Troll # 5706 in LAP-4 #3 (dry well)
Battery = 100% (2.8 V)
Memory = 99% free
CPU = 70 s
- set clock to standard time
- set pressure settings to read depth (water column height) will reset to a TOC reference WL later when there is water in well.

R Gray 8/2/01

8/2/01

1356 - started test LAP-4 #3 @ 080201
- note - checked WL and the probe did read 0.024 ft of head (water in sump), so set reference WL = 12.47 ft btoc as measured with sounder before starting test. (design screen bot. = 12.5 ft btoc)
- Took probes and cables back to lab trailer. Filled 2 5-gal. water bottles with tap water from the FSF to use for development at LAP-1.7.
- 1505 - on-site at LAP-1.7. Poured ~ 2 gals of water into piezometer #4 and attempted using surge block to loosen up material behind screen and get well to make water (note - #1 piezometer was screened in the tuff and will likely stay dry. The water we poured in this morning had sealed in by the time we returned and the well was dry.
- Checked WL - water is dropping rapidly in #2 (~ 0.2' in 1 min.)

R Gray 8/2/01

8/2/01

- Poured the rest of 5-gals into #2, then operated surge block in well for ~10 mins, then rechecked wls.

1528 - 8.95 ft btoc
1529 - 9.11 ft btoc
1530 - 9.20 ft btoc
1531 - 9.34 ft btoc
1532 - 9.50 ft btoc
1533 - 9.59 ft btoc

- will come back later to see if well dries up completely.

1540 - mob back to office

R Murray 8/2/01

The following notes were copied from the water levels field book:

7/13/01 - S. Purdue, A. Funk

0946	LAP-1.5	#1	- 9.06 ft TOC
		#2	- 8.15 ft TOC
		#3	- 8.04 ft TOC
0952	LAP-1.7	#1	- Dry TD = 21.17 ft
		#2	- Dry TD = 19.50 ft
		#3	- 8.66 ft TOC
1002	LAP-3		11.28 ft TOC
1005	LAP-3.5	#1	- Dry TD = 16.45 ft
		#2	- 11.65 ft TOC
		#3	- Dry TD = 11.38 ft
1215	LAP-5.7	#1	- 12.36 ft TOC
		#2	- 12.35 ft TOC
		#3	- 12.35 ft TOC
1255	LAP-1	#1	- 13.64 ft TOC (mud)
		#2	- 8.50 ft TOC
		#3	- 8.39 ft TOC

R Murray 8/9/01

The following notes were copied from the Water Levels field book.

8/8/01 - S Purdue and J. Toya

1107	LAO-0.6	DTW = 7.31 ft TOC
1125	LAP-1.7	#1 - Dry TD = 21.15 ft
		#2 - Dry TD = 19.28 ft
		#3 - 7.98 ft TOC
1138	LAP-3.5	#1 - Dry TD = 16.46 ft
		#2 - 10.57 ft TOC
		#3 - 10.66 ft TOC

R Gray
8/9/01

8/9/01

R. Gray and S. Purdue

1100 - on-site at LAP-3.5 for well development activities.
#1 - Dry TD = 16.46 ft TOC
#2 - 10.50 ft TOC
#3 - 10.48 ft TOC. (TD = 11.38)

1115 - poured ~ 1 gal. of water into #3 and surged it for 5 mins. Then pumped out well, then switched to bailer. Bailed v. dirty water for ~ 15 mins till there was only about 3 in of water in well.
1130 - poured 3 more gals of water into #3 and surged for 5 mins - then bailed down to 3 in. again - water still v. dirty.
1150 - started surging in #2 - surged for ~ 5 mins.
1259 - check #3 wl = 10.43 ft btoc
TD = 11.28 ft btoc
1305 - started pumping from #2.
1311 - pumped 15 gals from #2 till water ran clear.

R Gray 8/9/01

8/9/01 - pumping from #2 into #3 to stir up silt and try to remove. - pumped and bailed till clear
- pumped into #1 3 times and bailed - still dirty.
1415 - Measured wl in #3
#3 - WL = 10.49 ft btoc
TD = 11.47 ft btoc
#2 - TD = 14.88 ft btoc ← ? wrong RG 8-14-01
WL = 10.55 ft btoc
#1 - WL = 16.07 ft btoc
TD = 16.47 ft btoc

Canyons pager went off - have to demob from Canyon

1435 - mob back to lab trailer and drop off equipment.

R. Gray 8/9/01

8-14-01 - R. Gray & Steve Calhoun
0930 - On-site @ LAP-3.5
Measured WLs in LAP-3.5
#1 WL = 14.49 ft btoc
TD = 16.47 ft btoc
(~0.18 ft silt in bot.)
#2 WL = 10.15 ft btoc
TD = 13.88 ft btoc
(~1.0 ft or more silt in bot.) ?
#3 WL = 10.08 ft btoc
TD = 11.47 (hard bot.)

0944 - ran surge block up and down #2 and remeasured TD = 13.96 ft TOC
0954 - started pumping out #2 - pumped v. dirty water for 1st 2½ gals. The WL dropped below the pump. Shut off pump. Let sit for awhile to recharge.
1000 - turned pump on again in #2 started running mod. clear @ 5 gals. Water is running clear @ 10 gals.
1008 - pumped from #2 into #1 then used surge block in #1

8-14-01

to force water into screen.

1013 - stopped surging #1 and dropped pump into #1 & pumped ~ 2 gals till wl dropped below pump.

1017 - started bailing - pulled 4 bailers full of v. dirty water + sand - pulled 1 more full bailer - the well is making good water now

1020 - dropped pump into #1 & started pumping again - pumped ~ 1 gal. dirty water till sucking air - turned off pump for 1 min. and started it again. Pumped ~ 1/2 gal. till sucking air. Let sit 3 mins then turned on pump again (water is clearing up). Pumped total to ~ 4 gals before sucking air. Let sit again to recharge. wl is rising ~ 0.1'/min.

1045 - #1 wl stabilized @ 10.32 ft toc - ran pump into #1 again & pumped ~ 1.5 gal of mostly

8-14-01

clear (sl. cloudy) water from #1.

- Then bailed 3 bailers of similarly mostly clear water from #1. Call this well successfully developed.
- Checked water in #2 - bailed v. clear water from #2. Checked water in #3. Bailed moderately clear (sl. cloudy) water from #3 (has small amount suspended gray silt in it - likely coming straight from stream).
- LAP-3.5 development complete @ 1055.

1105 - mob to LAP-1.7 and check wls.

#1 = Dry TD = 21.17 ft btoc

#2 = Dry TD = 19.29 ft btoc

#3 = 8.58 ft btoc

TD = 11.48 ft btoc (had bot.)

1110 - pumped ~ 1/2 gal. of black water from #3 till sucking air - water likely has high ash content? - observed v. small black particulate matter. Smells like sewage!

8-14-01

1115 - poured ~ 1 gal water into #3 and surged it for 5 mins. Then bailed out 5 bailers (w 1.5 ft high) of v. black, smelly water.

1124 - poured ~ 2 gals water into #2 and surged, then bailed dry.

1135 - poured another 2 gals into #2, surged, then bailed several bailers - each coming up with ~ 10 inches toward end of bailing - making water? Still v. dirty.

1149 - checked wL = 18.91 ft btoc for #2. Will come back and recheck after lunch.

1340 - Checked LAP-1.7 #2 wL = 19.21 ft btoc (only 0.08 ft off bottom)

1345 - poured 2.5 gals into #2 and surged for 5 mins. Then bailed well.

1355 - pumped ~ 5 gals from bucket into #2, then surged for 5 mins. Then bailed v. dirty water till bailed dry @ 1434

8-14-01

1435 - measured wL = 19.19 ft btoc in LAP-1.7 #2 = below bot. of screen. Giving up on this well. Could not get to produce water.

1437 #3 wL = 8.61 ft btoc.

1440 - Demob from LAP-1.7 #1 & #2 piezometers are dry.

1445 - On-site at LAP-1.5 Download data from #1 (#5572). Download test LAP-1.5@07240. Current wL = approx. 9.2 ft btoc

1450 - pulled transducer from #1 to develop well. (note a black film on the transducer)

Measured TD of #1 = 14.14 ft btoc

- After stirring up silt on bottom measured TD = 14.18 ft btoc (Design TD = 14.20 ft btoc)

1455 - put pump into #1 and pumped out ~ 1/2 gal v. dirty (dark gray) water, then ~ 1/4 gal of mud. clear water till started sucking air + let well sit for 5 mins to recharge

8-14-01

LAP-1.5 cont. (#1)

1507 - started pump again - pumped another ~ ½ gal. v. dirty water then bailed 4 bailers of v. dirty water.

1512 - poured ~ 2 gals clean water into #1 well and surged for ~ 5 mins. Then pumped out ~ 1.5 gals extremely v. dirty (v. dark gray - near black) water till sucked air.

1522 - poured 2 gals clean water into #1 and surged for 5 mins. Then pumped out. Poured total of 10 gals clean water & pumped while moving pump up and down to stir up silt. Pumped till sucking air - bailed mod. dirty water after pumping. Somewhat improved compared with original condition, but still not completely developed.

1610 - reinstalled transducer in #1 and packed up and mob. to office.

R. Gray 8/14/01

8-15-01 S. Calhoun + R. Gray

0915 - On site at LAP-1.5
Measured #1 wl = 8.82 ft btoc
- the transducer is reading 8.832 ft btoc (will need to reset the reference level)
- downloaded test LAP-1.5 #1 @ 072401
- downloaded test LAP-1.5 #2 @ 072401
transducer reading 8.28 ft btoc in #2
- sounder level reading 8.16 ft btoc

0930 - downloaded test LAP-1.5 #3 @ 072401
- transducer in #3 reading 8.22 ft btoc
- sounder reading in #3 reads 8.27 ft btoc.

0935 - pulled transducer from LAP-1.5 #2 for well development.

0940 - drew 3 bailers full of v. dirty water then placed pump in well

0959 - 5 gals of dirty water pumped
- pump malfunctioning - bottom unit not working - removed it and got upper unit working OK

1023 - started surging #2

1030 - drive back to lab trailer for funnel and to switch batteries on charger

8-15-01

1055 - back on-site @ LAP - 1.5
started pumping #2 well while pouring water into it. Poured ~2gals into #2 while pumping.
1109 - pumped total 12 more gals out of #2 till water was running clear.
1110 - pulled transducer from #3 and attempted to bail well. Nothing but wet silt in this well now. The pumping of #2 has drawn down the WL in #3 (which only had a ~1ft water column this morning)
1112 - pumped water from #2 into #3 and then pulled 3 bailers of dirty water. Put pump in #3 and pumped dry - poured ~2gals into #3 and surged 5 mins. Then pumped ~7 gals from #3 well - water running alternately clear to mod. cloudy as recharge fails to keep up with pump.
1150 - drive to office.

8-15-01

1320 - Pumped #3 dry - was sl. cloudy w/ small amount fine sand. Call this adequately developed.
335 - hooked up pump in #1 and pumped mod. dirty gray water till dry. Hooked up second pump in #2 pumping from #2 into #1 and pumping out of #1. Pumped 5 gals this way till water was running sl. cloudy (gray - silt). Pumped ~7 gals this way till wells dry.
350 - pumped into #1 and surged for 5 mins. Then pumped out v. dirty (dark gray) water (~1gal), then pumped #2 into #1 and pumped #1 for 5 more gals. #1 still running mod. dirty (med. gray) while #2 is sl. cloudy (light tan).
1410 - let sit to recharge - both #2 & #1 going dry.
1415 - resumed pumping #1.
1430 - after pumping 2 more gals from #1, water is sl. cloudy - call it good. #2 pumps sl. cloudy to clear.

8-15-01

1435 - development complete for LAP-1.5 (#1, #2, #3)
Reinstalled transducers in all 3 wells
1450 - stopped test LAP-1.5 #1 @ 072401
programmed new test LAP-1.5 #1 @ 081501
Mini-troll # 5572 device info:
battery = 100% (2.7v) Storage = 99% free

1500 - connect to # 5536 in #3
device info - 100% battery, storage 99% free
extracted LAP-1.5 #3 @ 072401 & stopped test
programmed test LAP-1.5 #3 @ 081501
1505 - connect to # 5708 in #2
device info: 100% battery, storage 99% free
extracted test LAP-1.5 #2 @ 072401 & stopped it.
programmed test LAP-1.5 #2 @ 081501
1508 - setreference WL = 8.10 ft btoc in #3
1510 - set ref WL = 8.27 ft btoc in #2
1512 - set ref. WL = 8.42 ft btoc in #1
1515 - started tests in LAP-1.5 #1, #2, #3.
1525 - on-site at LAP-3.5
#1 WL = 10.50 ft btoc
#2 WL = 10.30 ft btoc
#3 WL = 10.19 ft btoc

8-15-01

1530 - on site at LAP-3
1533 - connect to mini-troll # 5692
battery = 100%, storage = 99% free
extract test LAP-3 @ 072401
transducer reading 10.78 ft btoc
sounder reads 10.75 ft btoc
1545 - drive to lab trailer to unload equipment.

R Harris 8/15/01

9-20-01

S. Calhoun & R Gray

0920 - on site at LAP-1

checked WLs: #1 = Dry (wet mud on bot. - T.D. = 13.94 ft btoc
- 2.99 ft stickup
10.95 ft bgs

(actually, ~ 0.2' of mud was on sounder when pulled up)

Actual TD for #1 = 11.01 ft bgs ~~[illegible]~~ 9/20/01 per design.

~ 0.26 ft of mud in bot. of well.

Measured WL in #2 = 8.52 ft btoc
- 3.00 ft stickup
5.52 ft bgs

#2 TD = 12.30 ft btoc
- 3.00 ft stickup
9.30 ft bgs (3.8' water)

= hard bot

#3 WL = 8.45 ft btoc
- 2.99
5.46 ft bgs

TD = 10.12 ft btoc (hard bottom)
- 2.99
7.13 ft (4.6 ft water)

9/20/01 Cont.

0935 - pulled transducers from piezoms. #1, #2, and #3.

noted ~ 0.8 ft of black sooty ~~scum~~ scum on transducer #2 and ~ 0.2 ft of mud on transducer #1. [illegible] 9/20/01

0940 - surged LAP-1 #2 for 5 mins.

0945 - pulled bailer w/ ~ 2.5 ft of v. black, smelly water. 2nd bailer was full of same, black water.

0947 - put pump down #2 piezometer and pumped ~ 2 gals of v. black water till well went dry in ~ 1 min.

0950 - adjacent stream went from v. minimal flow to ~ 4 inches deep. = Apparent new discharge from LA reservoir.

0955 - timed rate of WL recovery in #2

9.50 ft btoc @ 0955:20 - 34 s
9.40 ft btoc @ 0955:54 - 38 s
9.30 ft btoc @ 0956:32 - 60 s
9.20 ft btoc @ 0957:32 - 53 s
9.10 ft btoc @ 0958:25 - 67 s
9.00 ft btoc @ 0959:32

9/20/01 cont.

1000 - pumped # 2 again - got ~ 1.5 gal before wc dropped below pump. (total pumped = 3 gals)

1003 - put 2nd pump into # 3 and pumped ~ 0.5 gals of brown water till wc dropped below pump.

1007 - pulled pump from # 3 and started surging after pouring 1 gal of water into well.

1012 - put pump back into # 3 and pumped ~ 0.75 gals of v. brown water.

1013 - pumped # 2: ~ 1 more gal till dry - water color lightened to med gray. (total pumped = 4 gals)

1017 - pumped # 3 for 15 s - ~ 1 liter before went dry. water still v. brown. Total pumped = 1.5 gals.

1020 - pumped # 2: ~ 1/2 gal med. gray water

Let wells recharge

9/20/01 cont.

1040 - pulled pumps from wells and surged them (# 2 & # 3)

1050 - pumped ~ 1/2 gal. out of # 3 (total pumped = 2 gals) - still v. brown

- pumped black water from # 2 (total pumped = 5.5 gals.)

1115 - pumped 0.75 more gals of black water from # 2 (total 6.25 gals)

- pumped ~ 1/2 liter from # 3 (total 2.1 gals)

1135 - pumped ~ 1/2 gal of med.-brn water from # 2 after pouring ~ 2 gals of water into # 2 while pumping and letting sit to recharge for 10 mins

1137 - poured ~ 1 gal water into # 1 and surged - water level dropped v. quickly.

1140 - pumped # 1 while pouring ~ 2 gals into it - pumped & bailed dry

1145 - # 1 ~~wl~~ TD 9/20/01

	13.96	ft btoc
TD	-2.99	stickup
TD =	10.97	ft bgs

(note - all TD measurements are 0.06 ft short)

9/20/01 cont.

Corrected measured TDs for LAP-4:

#1 = 11.03 ft bgs
#2 = 4.36 ft bgs
#3 = 7.19 ft bgs

1150 - drive to office

1420 - on site at LAP-4 using Slope Indicator Co. water level probe

*Note: Correction for WL = -0.28'
Correction for TD = -0.14'

LAP-4 #1 WL = 16.17
- 0.28
15.89 ft btoc

#1 TD = 18.87
- 0.14
18.73 ft btoc
(hard bot.)

#2 WL = 13.43
- 0.28
13.17 ft btoc

9/20/01 cont.

LAP-4 #2 TD = 15.93
- 0.14
15.79 ft btoc

#3 WL = dry
TD = 12.74
- 0.14
12.60 ft btoc

1438 - pulled 2 bailers out with mod. dirty (med. brown) water of #2

1440 - pulled 4 bailers out of #1 with dark gray water (likely ash) (last bailer had only 0.5 ft)

1445 - dropped pump into #2 - pumped out ~ ½ gal before dry.
- poured ~1 gal water into #2 and surged for 5 mins.
- poured 2 more gals into well and surged
- pumped out 1.5 gals till dry
- poured in 2 more gals & pumped out mod. brown water to v. dark brown just before dry

9/20/01 cont.

- Total pumped out = 5 gals. (poured in = 5 gals)
- Try pouring in water more slowly while pumping
- pumped out ~ 2 gals. mod. dirty water (poured in 1 gal)
- surged #2 for 5 more mins then let recover

1510 surged #1 while adding 1 gal. for 5 mins. - added 3 more gals
- pumped out ~ 4 gals till water ran sl dirty (lt. brown)

1520 - pumped ~ 1 gal out of #2
- v. dirty (dk brown) to lightening up (med. brn) & less dirty.
- poured ~ ½ gal into #2 - pumped out ~ ½ gal v. dirty (dk brn) water, then ~ 3.5 gals of med. to lt brn water (5.5 from fnltn) (total pumped from #2 = 10 gals)

1536 - put pump into #1 - pumped ~ ½ gal med-lt brn water
Total pumped out of #1 fnltn = ½ gal

1540 - put pump in #2 & pumped lt brn water (~ ½ gal - total 6 gals pumped from fnltn).

9/20/01

1550 - pumped another 1.5 gals out of #2 - lt brown, sl. dirty water.
total pumped from #2 = 7.5 gals.

1600 - depart from LMP-4 site to drive to Office.

[illegible]
9/20/01

9/21/01

Alluvial Well Development.

0835: On site. Shannon Purdue and Steve Calhoun. Will start with LAP-1.

0840: Water levels:

#1 = 13.58' btoc
- 2.99' Stickup
10.59' bgs

TD = 11.01 bgs so have 0.42' of water in well.

#2 = 8.53 btoc
- 3.00 stickup
5.53' bgs

TD = 9.3' bgs so have 3.77 of water in well.

#3 = 8.49' btoc
- 2.99' stickup
5.50' bgs

TD = 7.13' bgs so have 1.63' of water in well.

0850: Surged #2 and #3 for approx. 5 minutes each.

0900: Will begin pumping.
Pumped approx. 3 gals from #3 but added approx. 1½ gal of potable water.

Steve Calhoun 9/21/01

9/21/01 Continued

#3 still very turbid.

0910: Moved pump to #2. Removed approx. 3 gals. Water very turbid. Added approx. ½ gal potable water to #3 and surged while pumping #2.

0925: Moved pump to #3. Removed approx. 1½ gal. of very turbid water. Abundant v.fine sediment being removed. Added approx. ½ gal potable water to #2 and surged while pumping #3.

0935: Moved pump to #2. Added approx. 1½ gals potable water and removed approx. 3½ gal. Water still very turbid. No perceptable difference in water clarity. Continued to pump an additional 1½ gal. Toward the end, water actually seemed to be clearing up a little.

1000: Moved pump to #3. Added approx. 1 gal. of potable water to #2 and surged while pumping #3. Removed approx. 1½ gal. from #3. Well not recharging very fast. Water still very turbid.

Steve Calhoun 9/21/01

9/21/01 Continued

1020 Moved pump back to #2. Pumped approx. 1½ gals. Water still very turbid. Filled 5 gal bucket with approx. 4 gal. potable water. Set up recirculation system w/ one pump in bucket and one pump in well. Recirculated for approx. 10 minutes. Subsequently removed approx. 5 gals. Water seemed to clear up significantly.

1105: Moved pump to #3. Removed approx. ¼ gal. of very turbid water. Set up recirculation system w/ approx. 4 gals. of potable water. Added approx. 2 gals. more of potable water during procedure. Subsequently removed approx. 1½ gals. Well still not producing much water and water still very turbid; however, it may be a little clearer than when we started.

1130 Moved pump to #2. When emptied bucket from #3, bottom of bucket had little or no sand or silt. Turbidity seemed to be caused by v. fine silt & clay sediment. Water in #2 still fairly clear.

Steve Callison 9/21/01

9/21/01 Continued

1145: Removed another 5 gals. from #2. Still quite clear.
Began placing transducers back in wells and calibrating.

1205: Left site

1330: Arrived at LAP-4.

1345: Water Levels:
#1 = 16.59' btoc
TD = 18.73' btoc so have 2.14' of water.
#2 = 13.15' btoc
TD = 15.79' btoc so have 2.64' of water.
#3 = Dry. Will surge #1 & #2.

1400 Placed pump in #1. Water very turbid. Well does not recover very rapidly; a poor producer. Removed approx. 1 gal.

1405 Placed pump in #2. Water started out very turbid but cleared somewhat as pumping proceeded. Recharge kept up fairly well with pump for at least 2 or 3 minutes. Removed approx. 2½ gals. Will move pump to #1 and surge #2.

Steve Callison 9/21/01

9/21/01 Continued

1420 Moved pump to #1. This well produces so little water it will be difficult to adequately develop it. Removed approx. 1 qt. of v. turbid water. Surged #2 while pumping #1.

1425 Moved pump back to #2. Removed 7 gals water. Water flowing relatively clear.

1455 Moved pump back to #1. Will set up recirculation with 5 gals. of potable water. Recirculated for at least 10 minutes. Water possibly clearing a little but well still not producing. ~~Water table too low?~~ 9/21/01 S.C. Not worth continuing with #1.

1515: Moved pump to #2. Water initially fairly turbid but cleared quickly. Removed approx. 5 gals. Water much clearer than when started. Have hit a point at which water clarity seems to have stabilized.

1550: Pulled pump. Reinstalled transducers and calibrated.

1615: Off site.

Steve Calhoun 9/21/01

Friday 9/28/01

Alluvial Well Development

0845: Arrived @ LAP-5.7. Shannon Purdue and Steve Calhoun. Weather clear and calm. Temp. ~70°F.

0850: Downloaded info. from transducer in well #1.

0855: Water levels:

#1 = 13.36' btoc
17.63' TD btoc
4.27' Water column

#2 = 13.37' btoc
15.44' TD btoc
2.07' Water column

#3 = 13.35' btoc
13.60 TD btoc
0.25' Water column

0900: Used bailer to withdraw some water from each well. All seem to have very turbid water. Wells #1 & #2 have bad odor w/ dark, almost black water. #1 & #2 both seem to have a fair amount of coarse sediment on bottom.

0910: Will pump and surge wells #1 and #2. #3 probably not worth the effort.

Steve Calhoun 9/28/01

9/28/01 Continued

0910: Surged both #1 and #2 for approx. 5 minutes.

0920: Began pumping #1. It suprisingly only produced about ½ gal. before pumping dry. Water was black. Moved pump to #2. Water was black initially but began clearing. Well recharges fast enough to keep up with pump. Removed 10 gals at which point water was relatively clear.

0930: Moved pump back to #1. Pumped another approx. ½ gal. of black water before well went dry. Will surge both #1 and #2 again. Surged each for approx. 3 minutes.

0940: Moved pump back to #2. Water fairly dark again but after approx. 2.5 gals. it began clearing. After 5 gals. it was relatively clear. Removed a total of 10 gals.

0950: Moved ~~down~~ 9/28/01 S.C. pump back to #1. Pumped dry almost immediately. Will set up recirculation system using 5 gals of potable water.

1005: After approx. 10 mins. of recirculating,

Steve Collins 9/28/01

9/28/01 Continued

water vol. in bucket is down approx. 3 gals. Stopped recirculating to allow well to recharge on its own for awhile while pumping periodically. Recharge water is clearer than when we started. Pumped until the initial 5 gals had been recovered. Water flowing fairly clear but still recharging slowly.

1015: Surged both #1 and #2 for approx. 3 mins. each.

1025: Moved pump to #2. Removed another 8 gals. Water initially flowing quite turbid after surging but began clearing fairly quickly. At same time, bailed approx. 2 gal from #1 in an effort to remove some of the coarse sand. Well seems to be producing sand. The more we surge and bail, the worse the sand seems to get.

1055: Surged #2.

1100: Pumping #2. As before, turbid at first but clearing significantly after approx. 2.5 gals. Recharge rate has increased to the point that ~~the~~ 9/28/01 pump can almost maintain max. pumping rate.

Steve Collins 9/28/01

9/28/01 Continued

#2 is doing great. Water is quite clear and well is recharging fast enough to keep up with max. pumping rate! Removed total of 20 gals. Last 5 gals. took 7 minutes to pump. Water very clear.

1125: Moved pump to #1. Water started out fairly clear but well still not recharging very quickly. Pumped approx. 2 gals. Then set up recirculation system with another 5 gals. of potable water. Recirculated for a few minutes and removed pump to surge. Put pump back in well. Recirculated some more. Stopped recirculation and just pumped well. Pumped the original 5 gals and continued pumping. Suprisingly, well is now keeping up with pump and water is fairly clear. Pumped an additional 3 gals. continuously w/o stopping. Continued to pump and allow to recharge. Have made a definite improvement in #1! Pumped another 5 gals. w/o stopping.

Steve Calhoun 9/28/01

9/28/01 Continued

1205: Removed a total of 13 gals from #1 plus the 5 gals of recirculation water. Water is running very clear. Both wells #1 and #2 are looking good!

1210: Picked up equipment. Final water level @ 13.39'. Reinstalled and calibrated transducer in well #1.

1220: Off site.

1225: Stopped @ LAP-6B
Water Level 14.42 btoc
TD 16.20 and soft bottom (btoc)
Water column = 1.78'

1330: Arrived @ LAP-6B.
Pulled transducer after downloading info.

1335: Began bailing to remove some of the coarser sediment. Bailed approx. 2 gal. Water very turbid (reddish brown). Installed pump. Well recharges fast enough to keep up with pumps max. pump rate. Pumped 10 gals (non stop). Water clearing up nicely. Surged well. Reinstalled pump. (Surged for approx. 3 min.)

Steve Calhoun 9/28/01

9/28/01 Continued

1405: Began pumping again. Water very turbid after surging. While surging, screen seemed longer than other piezometer screens (~3'±). Based on original water column height, the upper ~1' of screen is above water table. Will add potable water to try to flush this out somewhat. Pumped an additional 8 gallons.

1420: Added ~4 gals. of potable water to well and surged for approx. 5 min. The 4 gals of potable water hardly raised the water level and we poured it as fast as we could through the funnel.

1430: Began pumping again. Water very turbid again after surging. Removed another 10 gallons. Water still somewhat turbid. Pulled pump.

1450: Surged well for approx. 3 minutes. Reinstalled pump and removed 5 gals. Water still fairly turbid but better.

1505: Surged well for approx. 2 minutes. Reinstalled pump and removed 5 gals.

Steve Callon 9/28/01

9/28/01 Continued

1520: Surged well for approx. 2 minutes and reinstalled pump. Even after surging, well initially flowed moderately clear. Well still recharging fast enough to keep up w/ pump. Removed 10 gals. Water is very clear. Don't think we can do much more for this well. It's looking (very) pretty good!

1540: Reinstalled transducer and calibrated. Water level @ 14.46' btoc (approx).

1550: Off site.

1610: Drop equip. off at trailer.

S.C. 9/28/01

Steve Callon 9/28/01

11/6/01

Bob Gray and Deb Steven downloading transducer data

0939 - on-site at LAP-1. Held Safety tailgate

- connect to # 5560

extract test ~~LAP#1@7-24-01~~ LAP#1@092101 LQ 11/6/01

checked WL w/ meter: 13.94
- 0.28
13.66' btoc

Incorrect ref. pt.! see below

transducer reads 13.609 ft btoc

- good enough. (0.05' off)

0950 - connect to # 5535

extract test LAP#2@092101

checked WL w/ meter = 9.14
- 0.28
8.86' btoc

Incorrect ref. pt.! see below

transducer reading = 8.794 ft btoc (0.09' too low)

battery = 98% remaining

CPU run time = 375 s.

1000 connect to # 5616

extracted test LAP#1#3@092101

measured WL = 9.09
- 0.28
8.81 ft btoc

incorrect ref. pt. - see below

transducer reading = 8.626 ft btoc

11/6/01 cont

#5616 battery = 93%

CPU = 358 s

remeasured WL in #3 = 8.91
- 0.28
8.63 ft btoc

#5616 meas. WL - transducer WL

(8.63 - 8.626 = 0.004' off) = GOOD! ✓

remeasured WL in #2 = 8.98
- 0.28
8.70 ft btoc

remeasured WL in #1 = ~~13.90~~ 13.76 11/6/01
- 0.28
13.48 ft btoc

Reconnect to # 5560 (LAP#1)

reading WL = 13.607
- 13.48
= 0.127 ft off ✗ (too low)

Stop test LAP-1#1@092101

reset ref. WL = 13.48 ft btoc

Started new test LAP-1#1@110601 at 1012.

5560 battery = 95%

run time = 364 s

storage = 97% free

11/6/01 Cont.

reconnect to # 5535 (LAP-1 #2)
battery = 95 % run time = 376 s
WL reads 8.793 ft btoc
- 8.70 meas
0.093' off * (too low)
stopped test LAP-1 #2 @ 092101
reset WL ref. = 8.70 ft btoc
1018 - started new test LAP-1 #2 @ 110601

1110 - onsite at LAP-1.5
connect to # 5572
Battery = 98% (2.6 V)
CPU run time = 384 s
Storage = 97% free
Extract LAP-1.5@081501 (LAP-1.5#1)
Transducer WL reading = 9.044 'btoc
Measured WL = 9.28
- 0.28
9.00 ft btoc

1116 connect to # 5708
Battery = 98% (2.6V)
CPU run time = 300 s
Storage = 97% free
Extract LAP-1.5#2 @ 081501

11/6/01

LAP-1.5 #2 transducer WL = 6.985' btoc
manual WL measured at 8.55
- 0.28
8.270
- 6.985
1.285' off

Set WL ref = 8.27 ft btoc
* also reset ref. elev. to 6897 ft per survey info.
(changed from prev. setting of 6825)
1129 - started new test LAP-1.5 #2 @ 110601

reconnect to #5572 - stopped LAP-1.5@081501
reset ref. elev. from 6825 to 6897 ft.
reset ref. WL to 9.00 ft btoc
1135 - started new test LAP-1.5#1@110601
1138 - connect to # 5536
Battery = 98% (2.6 V)
CPU run time = 368 s
Storage = 97% free
extract test LAP-1.5#3@081501
transducer reads WL = 7.988 ft btoc
manual WL reading = 8.29
0.28
8.01 ft btoc

11/06/01 Cont.

stopped test LAP-1.5#3@081501
reset elev. ref. to 6897 ft
reset WL ref to 8.01 ft btoc
1144 - started new test LAP-1.5#3@110601

1335 - on site at LAP-3
connect to # 5692
Battery = 98% (2.6 V)
CPU = 356 s
Storage = 97% free
Extracted test LAP-3@072401
Transducer WL reading = 11.626 btoc
Manual WL = 11.98
- 0.28
11.70 ft btoc

Stopped test LAP-3@072401
reset ref. elev. to 6881 per survey info.
reset ref WL to 11.70 ft btoc
1345 - started new test LAP-3@110601
1350 - measured WL in LAO-0.8 = 15.30
- 0.28
15.02' btoc

1450 - on site at LAP-4
connect to # 5614
extract data from LAP-4#1@092101

11/06/01 Cont.

Battery = 90% (2.6V)
CPU = 337 s
Storage = 97% free
transducer WL reading = 16.310 ft btoc
manual WL reading = 16.61
- 0.28
16.33 ft btoc

- Stopped test - reset ref. elev. to 6537 ft
(from 6525 previous setting)
- reset WL ref. to 16.33 ft btoc
1500 - start new test LAP-4 #1@110601
1502 - connect to # 5636
Battery = 100% (4.7V)
CPU = 333 s
Storage = 97% free
- extract test LAP-4#2@092101
transducer WL reading = 13.796 ft btoc
manual WL reading = 14.00
- 0.28
13.72 ft btoc

- stopped test
- reset elev. ref from 6525 to 6537 ft
- reset WL ref. to 13.72 ft btoc
1506 - started new test LAP-4#2@110601

11/6/01

1508 - connect to # 5706
battery = 100% (2.6V)
CPU = 328
Storage = 97% free
extract LAP-4 #3 @ 080201
WL = dry
measured TD = 12.75
-0.28
12.47 ft btoc

stopped test
reset ref. elev. from 6525 to 6537 ft.
kept ref. WL at 12.47
1512 - started new test LAP-4 #3 @ 110601
1521 - on site at LAP-5.7
connect to # 5612 (piez. #1)
battery = 98% (2.6V)
CPU = 362 s
storage = 97% free
extract test LAP-5.7 #1 @ 092801
Transducer WL = 13.953 ft btoc
measured WL = 14.25
-0.28
13.97 ft btoc
stopped test, set ref. elev. = 6442 (from 6300)
set ref WL = 13.97 ft btoc

11/6/01 cont.
1530 - started new test LAP-5.7 #1 @ 110601
measured WL in LAP-5.7 #3 = dry
T.D. = 13.84
-0.28
13.56 ft btoc

measured WL in LAP-5.7 #2 = 14.21
-0.28
13.93
ft btoc

1537 - on site at LAP-6
connect to # 5593
battery = 95% (2.6V)
CPU = 364 s
storage = 97% free
extract LAP-6 @ 092801
transducer WL = 15.039
measured WL = 15.17
-0.28
14.89 ft btoc

stop test
reset ref elev. to 6425 ft per survey info
reset ref WL to 14.89 ft btoc
1547 - started new test LAP-6 @ 110601
1550 - head back to town.

R. Chang
11/6/01

11/13/01

- Bob Gray and Ryan Channell at probe lab to calibrate mini-trolls.
- calibrate according to SOP 7.01.

1030 - Deconned probe cables and mini-trolls. Connect to # 5600.
- battery = 78% (2.5 V)
- Memory = 87% free - reset clock
- CPU run time = 73 s.

Deleted 3 tests (Simon Mudd's data)

1045 - started depth response test (see calTest #1)

1050 - depth response test complete
- all measurements OK (error < 0.1%) (criteria per SOP 7.01 is < 5%)

1102 - started drift test (see Caltest #2)

1117 - stopped drift test.
- drift test results OK - WL constant
- disconnected # 5600

1120 - connect to # 5515
battery = 78% (2.5V)
Memory = 87% free
CPU run time = 65 s

Deleted 3 old tests (Simon Mudd's)
- reset clock

1123 - started depth response test

11/13/01 (continued)

1127 - stopped depth response test
- results show < 5% error (see cal test #1)

1131 - started drift test

1146 - stopped drift test
- test results show constant WL (max fluctuation = 0.004 ft) (see cal test #2)

1147 - disconnect from # 5515

1154 - connect to # 5615
battery = 100%
Storage = 99% free
CPU run time = 64 s
- reset clock

1205 - start depth test

1210 - stopped depth test
- results show ouch ~ 0.4 ft for each 1 ft of depth variation (see cal test #1)

1213 - rerun depth test again

1217 - depth test complete - erroneous results again as before (see caltest #2. Also initial depth is off by ~ 1 ft (reads 1.707 vs. 2.85 ft read by # 5515)

11/13/01 (continued)

Mini troll # 5615 is not reading pressure correctly - need to return to In Situ?

1358 - talked to In Situ tech support - we had not set the units to measure depth in feet. when the adjustment was made, the readings looked fine. The depth test is OK! (< 0.1% error)

1400 - started drift test. on #5615

1415 - drift test complete
- results look OK.

1417 - disconnect from # 5615

1515 - on site at LAP-3.5 - held tailgate safety mtg.

measured #1 WL = 16.41 ft btoc
#2 WL = 11.42 "
#3 WL = 11.32 "

- according to well design, bot. of #1 screen = 16.36 ft btoc RM 11/13/01
#1 TD measured 16.49 ft btoc.

- Installed mini-trolls in LAP-3.5
#1 - connect to # 5600 in piez. #1
set ref. elev. to 6877 ft
set WL ref. to 16.37 ft btoc

11/13/01 (cont.)

- programmed test LAP-3.5 #1 @ 11 13 01
- connect to # 5515 in piezom #2
set ref. elev. to 6877 ft.
set WL ref. to 11.42 ft btoc
- connect to # 5615 in piez. #3
set ref. elev. to 6877 ft
set WL ref. to 11.32 ft btoc
- programmed tests as above (30-min. readings) 5600 RM 11301
- note - clock on # ~~5615~~ was ~ 2 hrs off. reset to computer clock.
checked # 5515 - clock was 40 mins off - reset to computer clock
- started tests LAP-3.5 #1 @ 11 13 01
LAP-3.5 #2 @ 11 13 01

at 1611
- started LAP-3.5 #3 @ 11 13 01 @ 1615

* need to check clocks in # 5600 and 5515 to see if they keep time OK

* - also # 5615 is reading - 0.027 ft actual depth when it should be ~ 0.14 ft

R [signature] 11/13/01

11/15/01

Bob Gray and Ryan Channell at the lab trailer for transducer calibrations following SOP 7.01.

0930 - connect to # 40587, which is sitting in 6' length of casing full of water.

- programmed probe to read depth w/ ref. depth = 5.389 ft - the same as the water column height above the pressure sensor.

0940 - start depth test

0944 - depth test stopped - results OK (largest discrepancy = 0.03 ft is < 5% error) see caltest #1

- reprogrammed depth ref. to 3.991 ft after hanging the probe with tape for drift test (= actual depth reading)

0951 - start drift test

1007 - stopped drift test - extract data

- looks OK, largest discrepancy = 0.002' (see caltest #2)

Probe # 40587 passed 7.01 tests OK.

1015 - connect to probe # 40658 (the one that failed depth test on 11-13-01)

- set depth ref. to actual reading = 5.333 ft

11/15/01 continued

1016 - start depth test on # 40658

1020 - stop depth test - extract data (see caltest #4)

went from 5.33 } 0.42 ft - sup to be 1'
to 4.41 (may be off due to
to 3.41 jiggling in wind)
to 2.41

- reset level ref. to measured actual depth = 5.341 ft

1029 - start new depth test (caltest #5)

1033 - stopped depth test - extract data

went from 5.34 } 0.96
to 4.38
to 3.38 } 0.97
to 2.41 (0.75% error)

- error is less than 5% - passed test OK.

1042 - connect to # 40654 battery = 79% (8.6V) memory = 87%, CPU run time 57845.75 s

- reset level ref. to actual depth = 5.363 ft

1045 - start depth test (caltest #1)

went from 5.36
to 4.36
to 3.36
to 2.36

depth test passed OK.

11/15/01 continued

- taped up probe to hang in middle of water column for drift test
- reset ref. depth to actual depth = 3.924'

1054 - started drift test.

1109 - stopped drift test - largest fluctuation range = 0.004 ft (see caltest #2) drift test passed ok.

#40654 passed SOP 7.01 tests OK.

1115 - Connect to # 40490
battery = 44% (7.8 v)
storage = 87% free
CPU run time = 56408.91 s

1117 - disconnect to change battery.

1128 reconnect to # 40490
battery = 100% (9.5V)
Storage = 87% free
CPU Runtime = 211424.14
clock Reading changed to 1/1/2001 00:05:00
manufacture date = 1/31/2001
calibration date = 4/5/2001
Reset clock to computer clock = 11:32
- reset reference depth to actual = 5.326'

1137 - start depth test # 40490

11/15/01 continued

1142 - stopped depth test (see caltest #1)
went from 5.34 - 0.01 ft diff.
to 4.35 - 0.03 ft diff
to 3.38 - 0.03 ft diff.
to 2.35 - 0.03 ft diff.
max error = 3% - depth test passed ok.

- hung probe in casing for drift test
- reset ref. depth to actual = 3.690'

1146 - start drift test

1201 - stopped drift test
max. depth variation = 0.028 ft.
(see caltest #2)
drift test passed ok

#40490 passed SOP 7.01 tests ok.

- device showed errors - Ram fail.
- changed large battery pack 1st, then lithium backup battery. The lithium backup battery must have been dead, so RAM fail occurred - cleared the errors - the probe is working ok, but the cpu run time has changed to a large number.

11/15/01 continued

1305 - connect to # 40493
battery = 87%
storage = 87%
CPU Run time = 55983.45
set depth ref. to actual reading = 5.327 ft.
1311 start depth test # 40493
1316 stopped depth test (see cal test #1)
went from 5.33 - ~~0.00 ft diff~~
to 4.33 - 0.01 ft diff
to 3.34 - 0.01 ft diff
to 2.33
Max. error = 1% - depth test passed ok
hung probe in casing for drift test
reset ref depth to actual = 3.778 ft.
1323 start drift test
1337 stopped drift test
Max. depth variation = ~~0.009 ft.~~ RAC 0.009 ft
3.783' to 3.774' (see cal test #2)
drift test passed ok
40493 passed SOP 7.01 tests OK.

1356 - connect to # 40653
battery = 86% (8.8 v)
storage = 87% free
CPU Run time = 162014.23

11/15/01 continued

set depth ref. to actual reading = 5.327
1404 start depth test # 40653
1408 stopped depth test (see cal test #1)
went from 5.33
to 4.33
to 3.33
to 2.33
- passed depth test ok (see cal test #1)
- placed probe in 2nd casing for drift test.
- set depth ref. to actual = 3.485 ft.
1411 - start drift test on # 40653
1426 - stopped drift test - max deviation (cal test #2)
= 0.067 ft = 6.7% - check it again (see below)
1412 - connect to # 40622
battery = 89% (8.8 v)
memory = 87% CPU = 57546.53 s
- reset ref - depth to actual = 5.329 ft
1421 - started depth test
1425 - stopped depth test - see cal test #1
went from 5.33
to 4.33
to 3.33 # 40622
to 2.34 passed depth test ok
* # 40653 failed drift test because the pipe end cap was leaking - need to repair

11/15/01 continued

1438 - started # 40622 drift test

1454 - stopped drift test.

started at 5.338 @ 14:35:51

stopped at 5.345 @ 14:50:51

max deviation = 0.007 ft

= 0.7% error.

40622 passed drift test

1510 - onsite at LAP-3.5 to check operation of mini-Trolls that were installed on 11/13/01.

1512 - connect to # 5600 - piez. #1

- extracted test LAP-3.5 #1 @ 111301
- data looks ok
- measured WL = 16.44 ft btoc
- transducer WL = 16.426 ft btoc

*still reads actual depth = -0.021 ft

1516 - connect to # 5515 - piez. #2

- extracted test LAP-3.5 #2 @ 111301
- data looks ok
- measured WL = 11.45 ft btoc
- transducer WL = 11.466 ft btoc

1520 - connect to # 5615 - piez. #3

- extracted test LAP-3.5 #3 @ 111301
- data looks ok

11/15/01 cont.

measured #3 WL = 11.36 ft btoc

transducer WL = 11.365 ft btoc

* reads actual depth = -0.071 ft

1526 - demob from LAP-3.5 to town

[illegible] 11/15/01

12-04-01

Bob Gray & Ryan Channel in LA Can. to remove LAP-1.5 transducers and perform SOP 7.01 tests on them, plus LAP-3. Held safety tailgate.

13:54 - on site at LAP-1.5

Measured WLs: #3 = 8.67 ft btoc
#2 = 8.85 ft btoc
#1 = 9.71 ft btoc

Connect to #5536 in piez. #3

Extract test LAP-1.5 #3 @ 110601
transducer WL in #3 = 8.678 ft btoc

14:00 - stopped test in #3

14:03 - connect to ~~#5536~~ 12/4/01 in piez. #2
#5708

Extract test LAP-1.5 #2 @ 110601
transducer WL in #2 = 8.148 ft btoc
rechecked manual WL in #2 = 8.85 ft btoc
(over 0.7 ft off!)

14:10 - stopped test in #2

14:12 - connect to #5572 in piezom #1

Extract test LAP-1.5 #1 @ 110601
transducer WL in #1 = 9.727 ft btoc

14:13 - stopped test in #1.
- Pulled probes from all 3 wells.

14:18 - demob from LAP-1.5

12-04-01

14:21 on site at LAP-3
Measured WL = 11.81 ft btoc
Connect to #5692
Extract test LAP-3 @ 110601
transducer WL = 11.926 ft btoc
(off by 0.12 ft!)

14:27 - stopped test - pulled probe

14:30 - demob from LAP-3.

14:40 - on site at FSF Probe lab trailer for SOP 7.01 tests on mini-wells
- marked 1 ft intervals on cables

15:10 - connect to #5536
- the transducer is reading an * actual depth of -0.008 ft when there is over 5 ft of water in casing (!! - the probe was not in the water yet!) 5.898 ft
- Set ref. depth to actual = 5.827
(#5536 level is probably the accurate one - #5692 was in LAP-3 which off by 0.11 ft from manual measurement)

15:17 - Connect to #5692
reading actual depth = 5.783 ft

15:21 - start both tests (#5536 & 5692) depth tests

12-04-01 RJ 12/4/01

15:26 - stopped ~~dri~~ depth tests.

extract tests -

#5692 - max. deviation = 0.03'
- meas. 1.78' at 1.81'

RJ 12/4/01 ~~0.02 / 5.783~~ = $\frac{0.03}{1.81}$ = 1.7% error - passed depth test (<5%)

#5536 - max. deviation = 0.04'

RJ 12/4/01 ~~0.02 / 5.898~~ = occurred at actual depth reading of 1.86' which should have been 1.90'

$\frac{0.04}{1.90}$ = 2.1% error - less than 5% - passed depth test

- Measured total depth of water in casing at 5.95' with tape measure.
- subtract 0.08' for height of pressure sensor from tip of probe gives depth of 5.87'.

#5692 read 5.801 ft at bottom 0.07 RJ 12/4/01

error = 0.06' : $\frac{0.06}{5.87}$ = 1.2% error.

RJ 12/4/01 0.07

#5536 read 5.888 ft at bottom

error = $\frac{0.02}{5.87}$ = 0.3% error

15:53 - started drift tests on #5692 and #5536.

#5692 actual depth max. error was 1.78' vs actual 1.87' = 4.3% error

12-4-01

- when #5692 was read in LAA-3, it had error of 0.11 ft. At measured wl = 11.81 ft bpc that equates to ~ 0.39 ft of head (actual depth)

Design TD = 9.48'
- 0.08' height of press. sensor from probe tip
- 0.07' assumed height of probe tip off bolt.
9.33
+ 2.87 casing stickup
12.2'

12.2 - 11.81 = 0.39 ft of water col. ht.

error % = $\frac{0.11}{0.39}$ = 28.2% error!

#5692 fails depth test in well!

15:58 - stopped drift tests.

#5692 - max deviation = 0.004'

$\frac{0.004'}{5.95'}$ = 0.07% error

$\frac{0.004}{5.87}$ = 0.07% error (corrected actual depth)

#5692 passed drift test!

#5536 max deviation = 0.004' = 0.07% error

#5536 passed drift test.

16:05 - disconnected from #5692 & #5536

12-4-01

connect to # 5572 and # 5708
- with probes sitting in 5.87' water col.,
5572 reads 5.763 ft actual depth
5708 reads 7.933 ft actual depth
** (this is the probe that was in LAP-1.5 #2, that had head errors of +0.7 ft @ 12/4/01 and 1.29 ft on 11/6/01) !!

16:16 - start depth tests on # 5572 and # 5708
16:21 - stopped depth tests
for #5572 - transducer read 5.77' at actual measured depth = 5.87'

$\frac{0.1}{5.87}$ = 1.7% error

max. deviation = 0.04' - reading 1.73' instead of 1.77'

$\frac{0.04}{1.77}$ = 2.26 % error

#5572 < 5% - passed depth test.

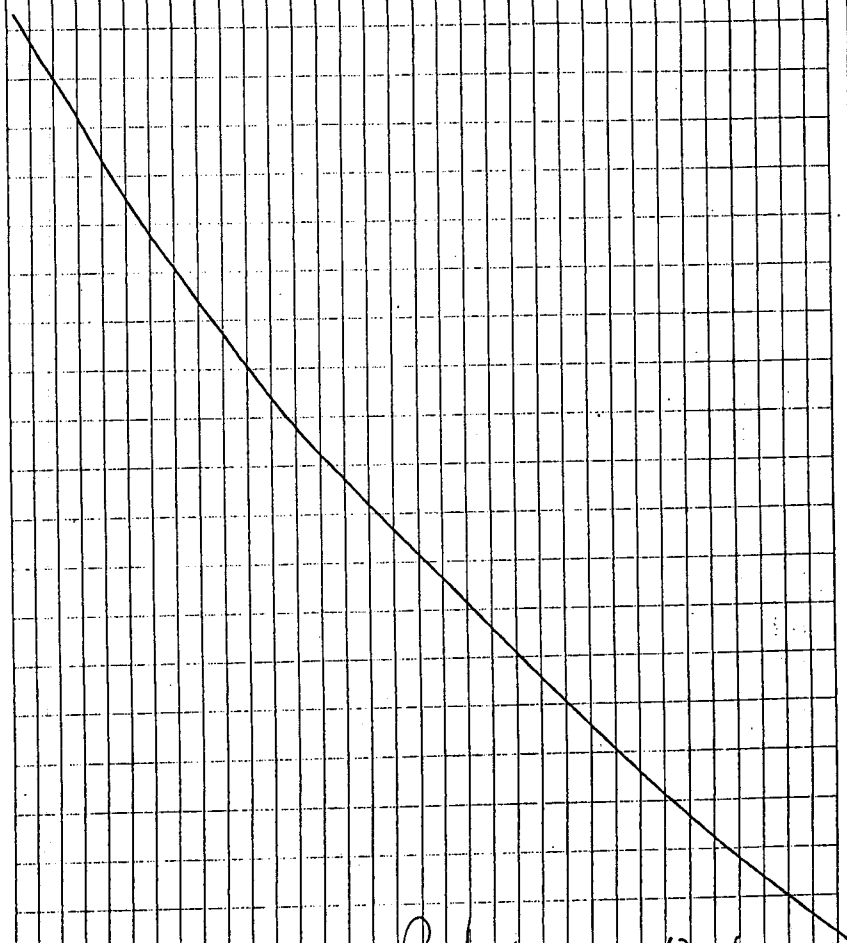
for # 5708 reads 7.93 instead of 5.87 = 2.06 ft error

$\frac{2.06}{5.87}$ = 3.5% error!

~~#5572~~ failed depth test!
~~RR 12/4/01~~
#5708

12-4-01

#5708 max. deviation was 0.04' for all one-foot intervals.
- it passes the depth test on relative basis from foot to foot.



R Irving 12-4-01

12/6/01

Bob Gray and Ryan Channell in LA Cau. to pull Mini-trolls for SOP 7.01 tests.

09:03 - on site at LAP-6 - Held safety stand gate

WL = 15.03 btoc

TD = 16.37 btoc (uncorrected)

- connect to #5593
- ~~extract~~ RR 12/6/01

battery = 95% (2.6 V)

Storage = 97% free

CPU run time = 450.0 s

- extract test LAP-6 @ 110601

09:13 - stopped test, pulled probe

- transducer WL = 14.889 ft btoc

= 0.14' error = 10.4% error!
1.34

09:20 - demob from LAP-6

09:30 - on site at LAP-5.7

Mini-troll is in piezom. #1

WLs: #1 = 14.14 ft btoc

#2 = 14.13 ft btoc

#3 = dry (TD = 13.55' btoc - uncorrected)

09:35 - connect to #5612

12/6/01

#5612 battery = 95% (2.65)

Storage = 97% free

CPU run time = 450.0 s

09:37 - extract test LAP-5.7 #1 @ 110601

Data looks OK

09:39 - stopped test

transducer WL reading = 14.171' btoc (only 0.03' off)

09:40 - pulled probe

- note - black soot was coating the bottom 3 inches of probe.

09:42 - demob from LAP-5.7

09:49 - on site at LAP-4

Measured WLs: #1 = 16.99 ft btoc

#2 = 14.52 ft btoc

#3 = dry - TD 12.50' btoc (uncorrected)

* (note - add 0.07' to TD readings!)

Connect to #5614 in piezom #1

battery = 88% (2.5 V)

Storage = 97% free

CPU = 423.0 s

Transducer WL = 16.984 ft btoc (< 0.01' off)

extract test LAP-4 #1 @ 110601

Data looks ok 09:57 - stopped test & pulled probe

12/6/01

connect to # 5636 in piezom #2
battery = 100% (4.7 v)
storage = 97% free
CPU = 421 s
Transducer WL = 14.459 ft btoc
(< 0.04' off)

10:01 - extract test LAP-4 #2 @ 110601
Data looks OK

10:03 - stopped test - pulled probe

10:04 - connect to # 5706 on piezom #3
transducer WL reading = 12.461 'btoc
(actual depth = 0.028') - (the ref. WL was set at 12.47 ft when well was dry.)

10:05 - extract test LAP-4 #3 @ 110601
data OK - well is dry

10:06 - stopped test - pulled probe

10:08 - demob from LAP-4

11:00 - onsite at probe lab trailer for SOP 7.01 tests on mini-trolls.

11:10 - start depth tests on # 5593 & 5612
#5593 initial depth reads 5.834'
#5612 initial depth reads 5.779'
(actual measured depth above pressure sensors is 5.87')

12/6/01

11:15 stopped depth tests on 5593 & 5612

		vs actual	error %
#5612 -	5.78	5.87	1.5%
1-min	4.79	4.87	1.6%
readings:	3.79	3.87	2.1%
	2.77	2.87	3.5%
	1.76	1.87	5.9%

- max relative deviation = 0.03'

$\frac{0.03}{1.87}$ = 1.6% error (relative depths)

- relative depth readings on #5612 OK but actual depth failed! (>5% error)

		vs actual	error %
#5593 -	5.84	5.87	0.5%
1-min	4.85	4.87	0.4%
readings	3.85	3.87	0.5%
	2.83	2.87	1.4%
	1.81	1.87	3.2%

- max relative deviation = 0.04'

$\frac{0.04}{1.87}$ = 2.1% error (relative depths)

- #5593 passed depth test for both absolute depth and relative depth readings. (<5% error)

12/6/01

11:28 - start drift tests on 5593 & 5612

11:43 - stopped drift tests.

#5612 - max relative deviation = 0.007'

$\frac{0.007}{5.87}$ = 0.1% error (relative)

= passed drift test ok

#5593 - max relative deviation = 0.003'

= passed drift test ok

AM 12/6/01

- start depth tests on 5614 & ~~5593~~ 5636

#5614 initial depth reading = 5.890 ft

(vs. actual depth = 5.87') = off by 0.02'

#5636 initial depth reading = 5.903 ft

= off by 0.04' 2nd reading = 5.913 ft

3rd reading = 5.916 ft

#5614 2nd reading = 5.917 (off by 0.04')

12:04 - start depth tests on 5614 and 5636

#5614 -		vs. actual	% error
1-min	5.93	5.87	0.9 %
readings	4.95	4.87	1.6 %
	3.94	3.87	1.8 %
	2.92	2.87	1.7 %
	1.91	1.87	2.1%

max. relative deviation = 0.04'

= 2.1% error

#5614 passed depth test on both actual and relative depths

12/6/01

		vs actual	% error
#5636	5.92	5.87	0.9 %
1-min	4.92	4.87	1.0 %
readings	3.91	3.87	1.0 %
	2.89	2.87	0.7%
	1.87	1.87	0.0%

max. relative deviation = 0.05' = 2.7% error

#5636 passed depth test on both relative and actual basis.

12:17 - start drift test on 5614 & 5636

12:33 - stop tests

#5614 results - max. relative deviation = 0.003' = passed drift test

#5636 results - max rel. deviation = 0.006' = passed drift test

12:36 - connect to #5706

initial depth reading = 5.854'

(vs. actual 5.87')

12:38 - start depth test

12:43 - stop test

#5706		vs. actual	% error
	5.88	5.87	0.2 %
1-min.	4.93	4.87	1.2 %
readings	3.93	3.87	1.6 %
	2.92	2.87	1.7%
	1.92	1.87	2.7%

12-6-01

max. relative deviation = 0.05'

$\frac{0.05}{1.87}$ = 2.7% error

#5706 passed depth test on both actual and relative basis.

12:47 - start drift test #5706

13:02 - stop test

greatest relative deviation = 0.004'

#5706 passed drift test

13:40 - on site at LAP-1.5 (elev. 6897')

install #5572 in #1

install #5706 in #2

install #5536 in #3

13:46 - connect to #5572 in #1

#1 WL measured at 4.68 ft btoc

13:49 #1 WL = 9.69 ft btoc

reset ref. elev. to 6897 ft

reset TOC ref. depth to 9.69'

(actual depth = 4.223')

13:51 programmed test - dBconnect

- connect to #5706 in #2

reset ref. elev. to 6897'

reset TOC ref. depth to 8.98' btoc (measured WL in #2)

(actual depth = 2.310')

programmed test - dBconnect

12-6-01

13:55 - connect to #5536 in #3

measured #3 WL = 8.83 ft btoc

reset elev. to 6897 ft

reset TOC ref. depth to 8.83 ft btoc

(meas. TD = 9.15' btoc - uncorrected)

programmed test.

14:00 - start test LAP-1.5 #3 @ 120601

14:01 - start test LAP-1.5 #2 @ 120601

14:02 - start test LAP-1.5 #1 @ 120601

14:23 - on site at LAP-4 (elev. 6537')

install #5614 in #1

install #5636 in #2

(#3 is dry - will deploy there later)

14:26 - connect to #5614 in #1

- reset elev. ref. to 6537'

- measured #1 WL = 16.87' btoc

- reset TOC ref. depth to 16.82' btoc

(actual depth = 1.831 ft)

- programmed test - dBconnect

14:30 - connect to #5636 in #2

reset ref. elev. to 6537'

- measured WL = 14.50 ft btoc

- reset TOC ref. depth to 14.50' btoc

(actual depth = 1.125')

- programmed test

12-6-01

14:34 - start test LAP-4 #2 @ 120601

14:35 - start test LAP-4 #1 @ 120601

14:41 - on site at LAP-5.7 (elev. 6441')

- installed # 5593 in pier. #1

- reset elev. ref. to 6441'

measured WL = 14.13' btoc

reset TOC ref. depth to 14.13' btoc (actual depth = 3.387')

14:49 - start test LAP-5.7 #1 @ 120601

14:52 - demob back to probe lab.

14:10 - onsite at probe lab - unload equip. Ryan departed site for day

14:18 - connect to # 5692 (problem probe) for test set up - plan to run drift test at 15-min. readings in casing inside trailer for the next week or so to see if drift probs. are detected over longer time span than the 15-min. drift test specified in SOP 7.01.

- placed # 5692, # 5612, & # 5708 in casing filled with water. Measured depth of water = 4.09 ft. minus 0.08' distance pressure sensor to probe tip = 4.01'

12-6-01

5692 initial depth reading = 3.943'

5612 initial depth reading = 3.918'

5708 initial depth reading = 6.166'

15:31 - start "long term drift" test in # 5692 - disconnect

15:33 - connect to # 5612

15:35 - start "long term drift" test in # 5612 - disconnect

15:36 - connect to # 5708

15:38 - start "long term drift" test in # 5708 - disconnect

15:40 - demob from Lab. to office

12/6/01

12-20-01

Bob Gray at Lab trailer - 0900

0930 - checked WL in casing for mini-Troll drift tests - the WL dropped by 0.21' due to evaporation since tests were started on 12-6

0932 - connect to #5708
battery = 98% (2.6 V)
storage = 96% free
CPU = 144 s
- extract test "long term drift"

1st reading was 6.67' and final reading was 6.506' = 0.339' increase when the WL actually dropped by 0.21'

- The total error over 2 week period of test was +0.549', besides the absolute error of measuring over 6' water col. height in max. 4.01' depth of casing for test.
- The results also showed diurnal depth fluctuations of 0.05' to 0.01' that correspond to the temperature fluctuations
- #5708 needs to be returned to Instro for repair!

12-20-01 cont.

0950 - connect to #5692
battery = 98% (2.6 V)
storage = 96% free
CPU = 143 s
- extract test "long term drift"

1st reading was 3.942' and final reading was 3.734 = a drop of 0.208' compared to actual WL drop of 0.21' = pretty much right on!

error % = $\frac{.002'}{3.734}$ = 0.06% (relative depths = OK)

#5692 passes all tests OK.

1000 - Connect to #5612
battery = 98% (2.6V)
storage = 96% free
CPU = 155 s.
- extract test "long term drift"
- 1st reading was 3.921' and final reading was 3.716' = a drop of 0.205' vs. actual drop of 0.21'

error = $\frac{.005}{3.716}$ = 0.13%

#5612 relative depth readings = OK
#5612 passes all tests OK.

12-20-01 cont.

1007 - pulled #'s 5708, 5692, and 5612 out of casing.

1010 - reconnect to #5708 while out of water: pressure reading shows 2.776' vs. actual depth = 0.0'.

1022 - reconnect to #5612 while out of water: reads -0.107' actual depth vs true 0.00'

1031 - reconnect to #5692 while out of water: reads -0.083' actual depth vs. true 0.00'

1101 - on-site at LAP-1 - tailgate safety mtg.
connect to #5560 in piezom. #1
Battery = 93% (2.6 V)
Storage = 96% free
CPU = 477 s.
WL reading is 13.435' btoc (LAP-1 #1)
(actual depth = 0.343')
Measured WL = 13.54' btoc

1106 - 2nd transducer reading = 13.441'
= 0.10' too high

1112 - measured WL in LAP-1 #2
= 8.50' btoc

12/20/01 cont.

1114 - measured WL in LAP-1 #3
= 8.45' btoc

1116 - extract test LAP-1 #1 @ 110601

1117 - stopped test (data looks OK)

1119 - connect to #5535 in LAP-1 #2
battery = 90% (2.6 V)
storage = 96% free
CPU = 490 s
WL reading is 8.449' btoc
(actual depth = 3.666') = 0.05' too high
vs. measured WL = 8.50' = right on 12/20/01

1122 - extract test LAP-1 #2 @ 110601
- data looks ok, except pressure readings show frequent jumps of ~0.01' every 1 to 3 hrs, back and forth.

1126 - stopped test

1130 - connect to #5616 in LAP-1 #3
battery = 88% (2.5 V)
storage = 96% free
CPU = 479 s
WL reading is 8.454' btoc
(actual depth = 1.583')
= 0.004' too low vs. meas. WL = 8.45'

1132 - extract test LAP-1 #3 @ 092101
data looks ok

12/20/01 cont.

1134 - stopped test.
1136 - pulled probes for SOP 7.01 tests.
1250 - on-site at lab trailer for tests.
- connect to # 5535
- reset to depth mode
- reading depth of -0.100' out of water
1255 - start caltest - depth
1300 - stop test
(note - the water column height in the casing dropped by 0.02' between 1st and last measurements due to the lessening displacement caused by the transducer cable as it was pulled up)

#5535 depth test results:

1-min readings	vs actual	% error
5.80	5.87	1.2%
4.81	4.87	1.2%
3.81	3.86	1.3%
2.81	2.86	1.7%
1.80	1.85	2.7%

#5535 passed depth test OK.
1314 - connect to # 5560
- reset to depth mode
- reading depth of -0.118' out of water

12/20/01 cont.

1317 - start caltest - depth
1323 - stop test
#5560 depth test results

1-min. readings	vs actual	% error
5.78	5.87	1.5%
4.80	4.87	1.4%
3.80	3.86	1.6%
2.79	2.86	2.4%
1.79	1.85	3.2%

#5560 passed depth test OK
1331 - connect to # 5616, reset to depth mode
depth reading = -0.075' out of water
1333 - start caltest - depth
1338 - stop test
#5616 depth test results

1-min. readings	vs actual	% error
5.80	5.87	1.2%
4.85	4.87	0.4%
3.85	3.86	0.3%
2.84	2.86	0.7%
1.84	1.85	0.5%

#5616 passed depth test OK
1350 - placed #5535, #5560, & #5616 in casing with 4.09' (-0.08' to sensor) = 4.01' of water

12-20-01 cont.

1404 - start caltest-drift on #5616
1406 - start caltest-drift on #5560
1407 - start caltest-drift on #5535
1437 - stopped all 3 drift tests and extracted data

#5535 drift test results - started at 3.97' and ended at 3.97' after 32 mins. lowest reading = 3.964' and highest reading was 3.974' = max deviation of 0.015'; #5535 passed drift test ok.
#5616 drift test results - started at 3.99' and ended at 3.99' after 33 mins. lowest reading = 3.983 and highest reading = 3.987 = max deviation of 0.004'; #5616 passed drift test ok.
#5560 drift test results - started at 3.96' and ended at 3.95' after 33 mins. lowest reading = 3.949' and highest reading = 3.962' = max deviation of 0.013'; #5560 passed drift test OK.

1507 - on-site at LAP-1 (elev. 7061') measured water levels

12-20-01 cont.

LAP-1 #1 = 13.55' btoc
LAP-1 #2 = 8.49' btoc
LAP-1 #3 = 8.45' btoc
- reinstalled transducers
1519 - connect to #5616 in LAP-1 #3
reset ref. elev. to 7061' & TOC mode
reset ref wl to 8.45' btoc
(actual depth = 1.610')
programmed new test LAP-1 #3 @ 122001
1527 - connect to #5560 in LAP-1 #1
reset to TOC mode, ref elev = 7061'
reset ref wl to 13.55' btoc
(actual depth = 0.376')
programmed new test LAP-1 #1 @ 122001
1536 - connect to #5535 in LAP-1 #2
reset to TOC mode
reset ref elev. to 7061'
reset ref. wl to 8.49' btoc
(actual depth = 3.693')
programmed new test LAP-1 #2 @ 122001
1541 - started test LAP-1 #2 @ 122001
1542 - started test LAP-1 #1 @ 122001
1543 - started test LAP-1 #3 @ 122001

[signature]
12/20/01

1/22/02

Ryan Channell at Lab trailer at 0915

0930 checked calibration of MP TROLL 8000

0930 connected to # 40660 to check pH and is Reading 6.966
conductivity is Reading 309.370

0936 disconnect from # 40660

0938 connect to # 40622
pH Reading is 6.969
conductivity Reading is 313.437

0946 disconnect

0950 connect to # 40659
pH Reading is 6.855
conductivity Reading is 272.729

1/22/02

2/28/02

Bob Gray and Ryan Channel downloading transducers in LA Can. (See Alluvial Probes Fieldbook #2, pages 12 - 19 for notes regarding pezometers LAP-1, LAP-1.5, LAP-4, LAP-5.7, LAP-6)

2/28/02

4/4/02

Ryan Channel and Bob Gray on-site at LAP-1. at 13:45. ft btoc

Measured WLs: LAP-1 #1 = 13.78
LAP-1 #2 = 8.39
LAP-1 #3 = 8.33

Connect to #5560 in LAP-1 #1
battery = 78% (2.5 V)
storage = 94% free
CPU = 347 s

13:48 - extract LAP-1 #1 @ 122001
transducer WL = 13.84 ft (actual = 0.088)

13:53 - connect to #5708 in LAP-1 #2
transducer WL = 8.357 ft (actual 3.857)
battery = 100% (2.6 V)
Storage = 99% free; CPU = 169 s

13:54 extract LAP-1 #2 @ 022802
(readings are "block," looking - jumping between values rather than smooth curve)

13:59 - connect to #5616 in LAP-1 #3
transducer WL = 8.391 (actual 1.670)
battery = 68% (2.4 V)
Storage = 94% free; CPU = 362 s.
extract LAP-1 #3 @ 122001

Note - dessicant caps are all light blue.

14:05 - demob from LAP-1

4/4/02

14:23 - on-site at LAP-1.5 ft btoc
Measured WLs - LAP-1.5 #1 = 11.03
#2 = 10.41
#3 = dry

14:25 - connect to #5572 in LAP-1.5 #1
transducer WL = 11.126 (2.777)
battery = 78% (2.5 V)
storage = 94%; CPU = 795 s
- extract test LAP-1.5 #1 @ 120601
2 small recharge events in last month but now dropping. WL is ~1.2' lower than @ 12/6/01

14:29 - connect to #5706 in LAP-1.5 #2
transducer WL = 10.558 (0.732)
battery = 75% (2.5 V)
storage = 94% free; CPU = 758 s
- extract test LAP-1.5 #2 @ 120601
WLs similar to above, but has dropped ~1.4' since 12/6/02.

14:33 - connect to #5536 in LAP-1.5 #3
transducer WL = 8.839 (0.014)
battery = 78% (2.5 V)
storage = 94% free
CPU = 790 s
extract LAP-1.5 #3 @ 120601

4/4/02

* Note - LAP-1.5 #1 is missing dessicant and o-ring in cap!
- the other caps were OK - dessicant = blue

14:38 demob from LAP-1.5.

14:40 - on site at LAP-3
* note - have not replaced the transducer in this piezometer!
measured WL = appears to be wet on bottom only (12.35 ft btoc) (~ 0.02 ft)

14:43 - on-site at LAP-3.5
#1 is dry
#2 is dry
#3 is dry
* Note! - need to bring out the PVC couplers to hold docking rings in place! (currently using duct tape)
- did not download data since the wells are all dry.

14:50 - on site at LAP-0.91
measured WL = 17.87 ft btoc
(T.D. = 18.3 ft)
Connect to # 40621
transducer WL = 17.791 (0.1)

4/4/02

battery = 65% (8.3V)
storage = 63%
CPU = 57184.32 s
extract test LAP-0.91 @ 012202
- minor WL fluctuations < 0.1 ft, but has leveled off for last month or so.

15:25 - on site at LAP-6
WL measured at 16.27 ft btoc
connect to # 5692
transducer WL = 16.175 (actual -0.092)
extract LAP-6 @ 022802
WL is down ~ 0.5 ft since 2/28
battery = 78% (2.5V)
storage = 95%, CPU = 171 s

15:30 on site at LAP-5.7
connect to # 5593 in LAP-5.7 #1
measured WL = dry (just wet on bot)
extract test LAP-5.7 #1 @ 120601
- has been dry since ~ Feb. 20
battery = 79% (2.5V)
storage = 94%, CPU = 401 s
transducer WL = 17.579 (-0.066)
- Note: dessicant cap = blue

15:44 - on site at LAP-4
measured WLs:

4/4/02 ft btoc

LAP-4 #1 = 18.59

#2 = 15.71 (just wet on bot)

#3 = dry

15:47 - connect to #5614 in LAP-4 #1

extract test LAP-4#1@120601

dried up on ~ March 16

battery = 70% (2.4V)

storage = 94% ; CPU = 764 s

transducer wl = 18.62 (0.082)

15:50 - connect to #5636 in LAP-4 #2

transducer wl = 15.643 (-0.01)

battery = 100% (4.4v)

storage = 94% · CPU = 394 s

extract test LAP-4 #2@120601

- dried up ~ March 10.

15:52 - connect to #5612 in LAP-4 #3

transducer wl = 12.261 (-0.275)

battery = 75% (2.5 V)

storage = 95% ; CPU = 164 s

extract test LAP-4 #3@022802

* Note! - @ ~ March 25, the pressure readings jumped up by ~ 0.2 ft even though the well has been dry the whole time.

4/4/02

Decided to stop test and pull #5612 to have In-situ check for repair

Note - all dessicant caps intact and = blue.

16:08 - on site at LAO-1.6g

measured wl = 28.07 ft btoc

transducer wl = 28.084 (0.901)

connected to #40653

battery = 72% (8.5V)

storage = 74% CPU = 170310.47 s

extract test LAO-1.6g@022802

4/30/02

Ryan Chanrell & Jared Lyman on site
@ LAP-1 @ 11:25 ft toc
measured WL's : LAP-1 #1 : 13.86
LAP-2 #2 : 8.37
LAP-3 #3 : 8.31

Connect to #5560 in LAP-1 #1
Battery : 73% 2.4V
Storage : 94% free
CPU : 420
11:30 - extract LAP-1 #1 @ 122001
transducer WL = 13.935 (Actual = -0.007 ft)
11:35 connect to # 5708 in LAP-1 #2
Battery : 98% 2.6V
CPU - 247
Storage - 98% free
transducer WL = 8.359 ft (actual = 3.854 ft.)
11:37 extract LAP-1 #2 @ 022802
11:39 connect to # 5616 in LAP-1 #3
Battery = 65% 2.4V
CPU = 437.0
storage = 94%
transducer WL = 8.377 (actual = 1.684 ft)
11:41 extract LAP-1 #3 @ 122001

4/30/02

11:50 on site @ LAO-0.3
measured WL : 8.34 ft
transducer WL : 8.40 ft
actual depth : 4.611 ft
11:55 connect to # 40654
Battery : 62% (8.2V)
Storage : 70%
CPU : 68696.84s
11:56 extract LAO-0.3 @ 030702
demob from site

12:03 on site @ LAP-1.5 ft toc
measured WL's : LAP-1.5 #1 : 11.51
LAP-1.5 #2 : 11.04
LAP-1.5 #3 : dry
12:06 connect to # 5572 in LAP-1.5 #1
Battery = 75% (2.5V)
CPU = 865
storage = 94%
transducer WL : 11.582 ft (actual = 2.321 ft)
12:07 extract LAP-1.5 #1 @ 120601
12:08 connect to # 5706 in LAP-1.5 #2
Battery = 75% (2.5V)
CPU = 831
storage = 94% free
transducer WL : 11.061 ft (actual = 0.229 ft)

4/30/02

12:11 extract LAP-1.5#2 @ 120601
12:13 connect to # 5536 in LAP-1.5 #3
Battery = 73% (2.4V)
CPU = 864
Storage = 99% free
transducer WL: 8.84 ft (actual 0.013 ft)
12:15 extract LAP-1.5 #3 @ 120601
12:29 on site @ LAP-3.5 — Pt Box
measured WL's LAP-3.5 #1 dry
LAP-3.5 #2 dry
LAP-3.5 #3 dry
12:32 connect to # 5600 in LAP-3.5 #1
Battery 53% (2.3V)
CPU = 531
Storage = 96% free
transducer WL = 16.463 (actual = -0.059 ft)
12:35 extract LAP-3.5 #1 @ 111301
12:37 connect to # 5515 in LAP-3.5 #2
Battery = 53% (2.3V)
CPU = 501
Storage = 36%
transducer WL = 13.941 (actual = 0.075 ft)
12:40 extract LAP-3.5 #2 @ 111301
12:42 connect to # 5615 in LAP-3.5 #3
Battery = 70% (2.4V)
CPU = 497

4/30/02

Storage = 96%
transducer WL = 11.368 (actual) = -0.074 ft)
12:45 extract LAP-3.5 #3 @ 111301
12:47 depart from site

1:50 on site @ LAP-4 #1 dry
LAP-4 #2 15.70
LAP-4 #3 dry (no transducer)

1:52 connect to # 5614 in LAP-4 #1
Battery = 68% (2.4V)
CPU = 838
Storage = 99%
transducer WL = 18.695 ft (actual = 0.008 ft)
1:55 extract LAP-4 #1 @ 120601
1:58 connect to # 5636 in LAP-4 #2
Battery = 100% (4.9V)
CPU = 469
Storage = 99%
transducer WL = 15.612 ft (actual = 0.021 ft)
2:00 extract LAP-4 #2 @ 120601
2:07 on site @ LAP-6
measured WL = LAP-6 #1 : dry
no transducers < LAP-6 #2 : dry (no transducer)
LAP-6 #3 : dry (no transducer)

4/30/02

2:10 connect to #5593 in LAP-6 #1
Battery 75% (2.5v)
CPU = 477
Storage = 94%
transducer wl = 17.591 ft (actual = -0.059 ft)
2:12 extract LAP-6 #1 @ 120601
2:17 connect to #5692 in LAP-3
Battery = 73% (2.4 v)
CPU = 246
Storage = 95%
transducer wl = 16.164 ft (actual = -0.08 ft)
measured wl - dry
2:20 extract LAP-3 @ 122802
2:22 demob from site & leave LA canyon

4/30/02

6/25/02

10:50 - on site at LAP-3.5
connect to #5615 in piezom. #3
battery = 70% 2.4v
storage = 95% free
CPU = 685 s.
Download LAP-3.5#3@111301 RD data #1
well is still dry.
10:56 - connect to #5600 in piez. #2
battery = 45% (2.2v)
storage = 95% free
CPU = 729 s
Download LAP-3.5 #1@111301
- was dry till last Fri. storm, then came up 4½ ft.
11:02 - connect to #5515 in piez. #2
battery = 47% (2.2 v)
storage = 95% free
CPU = 689 s
Download LAP-3.5#2@111301
was dry till last Fri - wl up ~2'
Tests stopped in all 3 transducers.
The three transducers were pulled for redeployment in Pueblo Can. stream bed flood sampling stations.

R Lyons 6/25/02

7/31/02 - Bob Gray and Ryan Channel in LA Cou. to download transducer data.

11:14 - on site at LAP-1, measured wl's

LAP-1 #1 = 13.86 ft btoc
#2 = 8.23 ft btoc
#3 = 8.18 ft btoc

11:17 connect to # 5560 piezo #1
Batt = 68% (2.4V)
Storage = 92%
CPU = 666
probe readings 13.911' (TOC)
actual depth 0.01'
extract LAP-1 #1 @ 122001 test
data looks okay.
edit clock to standard time

11:20 stop test & reset clock
program new test LAP-1 #1 @ 073102

11:21 Start new test.

11:22 disconnect.

11:23 connect to # 5708 in piezo #2
Batt = 90% (2.6V)
storage = 96%
CPU = 515s
probe Reading 8.214' (TOC)
actual depth 3.999'
extract LAP-1 #2 @ 022802 test
data looks okay

11:25 stop test to reset clock
program new test LAP-1 #2 @ 073102

11:26 start test & disconnect

11:28 connect to # 5616 in piezo #3
Batt = 60% (2.3V)
Storage = 92%
CPU = 692
probe Reading = 8.191' (TOC)
actual depth = 1.863'
extract LAP-1 #3 @ 122001 test
data looks okay

11:29 stop test to reset clock
program new test LAP-1 #3 @ 073102

11:30 start test & disconnect

11:56 on site LAP-1.5 - measured wls:

LAP-1.5 #1 = 8.20 ft btoc
#2 = 7.67 ft btoc
#3 = 7.63 ft btoc

11:58 connect to # 5572 in piezo #1
Batt = 70% (2.4V)
storage = 92%
CPU = 1112
probe Reading = 8.281' (TOC) actual = 5.621'
extract LAP-1.5 #1 @ 120601 test
data looks okay

7/31/02

12:00 stop test to Reset clock
program new test LAP-1.5 #1 @ 073102
Reset level ref to 8.20'

12:02 start test & disconnect

12:03 connect to # 5706 in piezo # 2
Batt = 73% (2.4 V)
storage = 92%
CPU = 10804
probe Reading = ~~7.764'~~ 7.674' (TOC) actual = 3.626'
extract test LAP-1.5 #2 @ 120601
data looks good

12:05 stop test to Reset clock
program new test LAP-1.5 #2 @ 073102

12:06 start test & disconnect

12:07 connect to # 5536 in piezo #3
Batt = 70% (2.4 V)
storage = 92%
CPU = 1117s
probe Reading = 7.846' (TOC) actual = 1.007'
extract test LAP-1.5 #3 @ 120601
data looks okay

12:10 stop test to Reset clock & Ref level
edit clock
Reset Ref. level to 7.63' (TOC)
program new test LAP-1.5 #3 @ 073102

7/31/02

12:11 start test & disconnect

12:20 on-site at LAP-3 - no transducer
measured WL = 10.87 ft btoc

12:53 on-site at LAP-3.5 - measured WLs
LAP-3.5 #1 = 10.51 ft btoc
#2 = 10.42 ft btoc
#3 = 10.35 ft btoc
Drove back to lab trailer to get another transducer + PVC couplings.

13:30 - installed 1 mini-troll and 2 MPTROLLS in LAP-3.5 #1, #2, and #3

13:46 Connect to # 40490 in piezo #1
Batt = 100% (9.6 V)
storage = 100% free
CPU = 61s
set elevation to 6877'
set Ref level to 10.53' (BTOC)
program new test LAP-3.5 #1 @ 073102

13:49 start test & disconnect

13:50 connect # 40587 in piezo #2
Batt = 100% (9.5 V)
storage = 99%
CPU = 16s
reset clock, edit elevation to 6877'
& set Ref level to 10.45' (BTOC)

program new test LAP-3.5 #2 @ 073102
13:52 start test & disconnect
13:53 connect to #5692 in piezo #3
Batt = 100% 2.8V
storage = 97%
cpu = 2203
set elevation to 6877'
Reset clock, edit Ref level to 10.40' (Bro
program new test LAP-3.5 #3 @ 073102
13:56 start new test & disconnect
14:55 on site at LAP-4. measured WLs
LAP-4 #1 = dry
LAP-4 #2 = wet on bot
LAP-4 #3 = dry
14:57 connect to #5636 in piezo #2
Batt = 100% 4.3V
storage = 92%
cpu = 728s
probe Reading = 15.668' actual -0.035'
extract LAP-4 #2 @ 120601
data looks okay
15:00 disconnect
15:01 connect to #5614 in piezo #1
Batt = 58% 2.3V
Storage = 92%
cpu = 1093s

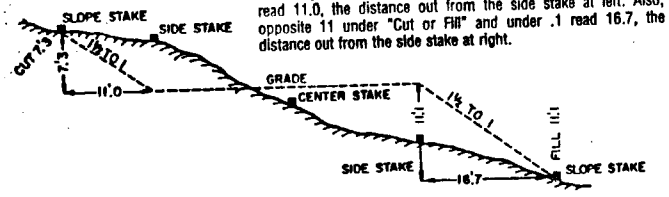
probe Reading = 18.699' actual = 0.003'
extract LAP-4 #1 @ 120601
data looks okay
15:03 disconnect.
15:10 on site at LAP-5.7
measured WLs -
LAP-5.7 #1 = dry
#2 = wet mud on bot.
#3 = dry
15:13 connect to #5593 in LAP-5.7 #1
Batt = 65% 2.4V
storage = 92%
cpu = 740
probe Reading 17.550' actual -0.037'
extract LAP-5.7 #1 @ 120601
data looks okay
15:15 disconnect, Return to trailer

7/31/02

DISTANCES FROM SIDE STAKES FOR CROSS-SECTIONING

Roadway of any Width. Side Slopes 1½ to 1.

In the figure below: opposite 7 under "Cut or Fill" and under .3 read 11.0, the distance out from the side stake at left. Also, opposite 11 under "Cut or Fill" and under .1 read 16.7, the distance out from the side stake at right.



Cut or Fill	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	Cut or Fill
	Distance out from Side or Shoulder Stake										
0	0.0	0.2	0.3	0.5	0.6	0.8	0.9	1.1	1.2	1.4	0
1	1.5	1.7	1.8	2.0	2.1	2.3	2.4	2.6	2.7	2.9	1
2	3.0	3.2	3.3	3.5	3.6	3.8	3.9	4.1	4.2	4.4	2
3	4.5	4.7	4.8	5.0	5.1	5.3	5.4	5.6	5.7	5.9	3
4	6.0	6.2	6.3	6.5	6.6	6.8	6.9	7.1	7.2	7.4	4
5	7.5	7.7	7.8	8.0	8.1	8.3	8.4	8.6	8.7	8.9	5
6	9.0	9.2	9.3	9.5	9.6	9.8	9.9	10.1	10.2	10.4	6
7	10.5	10.7	10.8	11.0	11.1	11.3	11.4	11.6	11.7	11.9	7
8	12.0	12.2	12.3	12.5	12.6	12.8	12.9	13.1	13.2	13.4	8
9	13.5	13.7	13.8	14.0	14.1	14.3	14.4	14.6	14.7	14.9	9
10	15.0	15.2	15.3	15.5	15.6	15.8	15.9	16.1	16.2	16.4	10
11	16.5	16.7	16.8	17.0	17.1	17.3	17.4	17.6	17.7	17.9	11
12	18.0	18.2	18.3	18.5	18.6	18.8	18.9	19.1	19.2	19.4	12
13	19.5	19.7	19.8	20.0	20.1	20.3	20.4	20.6	20.7	20.9	13
14	21.0	21.2	21.3	21.5	21.6	21.8	21.9	22.1	22.2	22.4	14
15	22.5	22.7	22.8	23.0	23.1	23.3	23.4	23.6	23.7	23.9	15
16	24.0	24.2	24.3	24.5	24.6	24.8	24.9	25.1	25.2	25.4	16
17	25.5	25.7	25.8	26.0	26.1	26.3	26.4	26.6	26.7	26.9	17
18	27.0	27.2	27.3	27.5	27.6	27.8	27.9	28.1	28.2	28.4	18
19	28.5	28.7	28.8	29.0	29.1	29.3	29.4	29.6	29.7	29.9	19
20	30.0	30.2	30.3	30.5	30.6	30.8	30.9	31.1	31.2	31.4	20
21	31.5	31.7	31.8	32.0	32.1	32.3	32.4	32.6	32.7	32.9	21
22	33.0	33.2	33.3	33.5	33.6	33.8	33.9	34.1	34.2	34.4	22
23	34.5	34.7	34.8	35.0	35.1	35.3	35.4	35.6	35.7	35.9	23
24	36.0	36.2	36.3	36.5	36.6	36.8	36.9	37.1	37.2	37.4	24
25	37.5	37.7	37.8	38.0	38.1	38.3	38.4	38.6	38.7	38.9	25
26	39.0	39.2	39.3	39.5	39.6	39.8	39.9	40.1	40.2	40.4	26
27	40.5	40.7	40.8	41.0	41.1	41.3	41.4	41.6	41.7	41.9	27
28	42.0	42.2	42.3	42.5	42.6	42.8	42.9	43.1	43.2	43.4	28
29	43.5	43.7	43.8	44.0	44.1	44.3	44.4	44.6	44.7	44.9	29
30	45.0	45.2	45.3	45.5	45.6	45.8	45.9	46.1	46.2	46.4	30
31	46.5	46.7	46.8	47.0	47.1	47.3	47.4	47.6	47.7	47.9	31
32	48.0	48.2	48.3	48.5	48.6	48.8	48.9	49.1	49.2	49.4	32
33	49.5	49.7	49.8	50.0	50.1	50.3	50.4	50.6	50.7	50.9	33
34	51.0	51.2	51.3	51.5	51.6	51.8	51.9	52.1	52.2	52.4	34
35	52.5	52.7	52.8	53.0	53.1	53.3	53.4	53.6	53.7	53.9	35
36	54.0	54.2	54.3	54.5	54.6	54.8	54.9	55.1	55.2	55.4	36
37	55.5	55.7	55.8	56.0	56.1	56.3	56.4	56.6	56.7	56.9	37
38	57.0	57.2	57.3	57.5	57.6	57.8	57.9	58.1	58.2	58.4	38
39	58.5	58.7	58.8	59.0	59.1	59.3	59.4	59.6	59.7	59.9	39
40	60.0	60.2	60.3	60.5	60.6	60.8	60.9	61.1	61.2	61.4	40

ER 2001-0230

Vol. 2

Piezometer activities in Los Alamos (including DP Canyon)

8/5/02 -

The paper in this book is made of 50% high grade rag stock with a WATER RESISTING surface sizing.

ER 2001-0230 Vol. 2

CONTENTS

PAGE NO.	REFERENCE	DATE
The	activities documented in	
this	field book are being	
performed	pursuant to	
the	following SOPs:	
ER	SOP 4.01, R2 - Drilling Methods	
ER	SOP 5.01, R2 - Monitor Well	
	and RFI Borehole Construction	
ER	SOP 12.01 R3 - Field Logging,	
	Handling, and Documentation	
	of borehole materials	
ER	SOP 7.01, R0 Pressure	
	Transducers	
ER	SOP 7.02, R0, Fluid Level	
	measurements	
Robert	Gray, Shannon Purdue,	
	are authorized to make entries.	
	R Gray 8/5/02	
note:	Combination locks on piezometer	
	well housings = 6020	

8/5/02

Bob Gray and Armand Groffman in DP Canyon to download transducers and check water levels.

09:54 - on site at LAUZ-1
measured WL = 5.68 ft btoc

09:57 - connect to # 40658
battery = 28% (7.4V)
storage = 46048 bytes of 212992 (21% free)
CPU run time = 28849050.125
Extract test LAUZ-1@030702
transducer WL = 5.665' btoc
(actual depth = 6.642)
temp = 12.355 °C
pH = 6.885
Cond. = 1016.292 uS/cm

10:50 On site at LAUZ-2
measured WL = 6.17 ft btoc
connect to # 40622
transducer WL = 6.32 ft btoc
battery = 45% (7.8 V)
storage = 26% free
CPU = 95148 s
extract test LAUZ-2@030702

11:03 depart field

R Gray
8/5/02

8/15/02

Bob Gray and Ryan Channel

14:22 on site at LAP-3

measured WL = 11.52 ft btoc

- installed miniTROLL # 5535

set ref. elev. to 6881 ft msl

set TOC ref. level to 11.50

- reset clock to standard time

14:31 - start test LAP-3 @ 081502

14:39 - on site at LAP-3.5

checked WLs:

#1 = 11.65

#2 = 11.60

#3 = dry

connect to # 40490 in piez. #1

Batt 100% 9.4V

storage 98%

CPU 504s

extract test LAP-3.5 @ ~~0703~~ 073102

in piezo #1

Recharge event in data

14:43 disconnect

14:44 connect to # 40587 in piez #2

Batt = 100% 9.3V

storage = 98%

CPU = 469s

8/15/02

extract test LAP-3.5 @ 073102 in piez # 2 (Recharge event)

14:44 disconnect

14:45 connect to # 5692 in piez # 3

Batt = 100% 2.7V

Storage = 97%

CPU = 2246 s

extract test LAP-3.5 @ 073102

in piez # 3

transducer WL 9.301' (actual = -.116')

data looks good - well is dry.

14:48 disconnect

14:49 connect to # 40587 in piez #2

transducer WL = 1.903'

probe is not Reading Level TOC

properly only giving actual depth

14:51 disconnect

14:52 connect to # 40490 in piez #1

Transducer WL = 4.327'

probe is not Reading Level TOC

properly only giving actual depth

14:53 disconnect

8/15/02

15:24 connect to #5612 in piez #3 @ LAP-4.
installed mini troll probe into dry well
Batt = 100% 2.8V
storage = 99%
CPU = 73s
set ref wl to 12.65' TD + stick up
set elevation to 6537'
reset probe clock to standard time
program new test LAP-4#3 @ 081502
actual depth = 0.010'
15:28 start test. & disconnect
15:42 on site at LAP-6
well is dry
design TD = 16.55 ft btoc
distance tip of MPTROLL 8000 probe to pressure sensor orifice = 0.60 ft
- will set reference depth to 15.95 ft btoc
- elev. = 6425 ft msl
* note - at LAP-4 installation the reference depth was set to 12.65 ft btoc which is the

8/15/02

actual depth of the well's T.D. but the pressure sensor is hanging 0.10 ft above the bottom of the well, so when water comes into
* the well, the readings from test
* LAP-4#3@081502 need to be
* corrected by subtracting from the depth
* btoc readings by 0.10 ft!
15:48 - installed # 40494 in LAP-6.
battery = 77% (8.6 V)
storage = 60%
CPU = 90406.96 s
- updated clock - set to standard time.
* note - in LAP-3 and LAP-4#3 installations, the clocks were mistakenly set 1 hour ahead of Daylight Savings Time instead of 1 hr behind to be on standard time!
- data from tests:
* LAP-3@081502
* LAP-4#3@081502
* will need to be corrected by subtracting 2 hrs from the recorded times to = standard time
14:54 - start test LAP-6@081502

8/15/02

9/12/02

Bob Gray and Ryan Channel downloading transducers in LA Canyon.

11:10 on site at LAP-1
Measured WLs:
LAP-1 #1 = 13.81 ft btoc
RD ~~LAP-2 #~~
LAP-1 #2 = 7.54 ft btoc
LAP-1 #3 = 7.50 ft btoc
connect to # 5560 in LAP-1 #1
transducer WL = 13.843'
actual depth = 0.085'
Batt = 65% (2.4V)
storage = 91%
CPU = 788
download test LAP-1 #1 @ 073102
data looks okay

11:14 disconnect
connect to # 5708 in LAP-1 #2
transducer WL = 7.519'
actual depth = 4.694'
Batt = 88% (2.5V)
storage = 95%
CPU = 648s
download test LAP-1 #2 @ 073102
data looks okay

9/12/02

11:16 disconnect

11:17 connect to # 5616 in LAP-1 #3
transducer WL = 7.506'
actual depth = 2.555'
Batt = 53% (2.3V)
storage = 91%
CPU = 820s
download test LAP-1 #3 @ 073102
data looks okay

11:18 disconnect

11:52 on site at LAP-1.5
Measured WLs:
LAP-1.5 #1 = 8.99 ft btoc
LAP-1.5 #2 = 8.15 ft btoc
LAP-1.5 #3 = 8.00 ft btoc

11:56 connect to # 5572 in LAP-1.5 #1
transducer WL = 8.991'
actual depth = 4.827'
Batt = 68% (2.4V)
storage = 91%
CPU = 1240s
download test LAP-1.5 #1 @ 073102
data looks okay

11:58 disconnect

(cont.)

11:59 connect to #5706 in LAP-1.5 #2
transducer WL = 8.122'
actual depth = 3.168'
Batt = 68% (2.4V)
storage = 91%
CPU = 12165
download test LAP-1.5 #2 @ 073102
data looks okay

12:01 disconnect

12:02 connect to #5536 in LAP-1.5 #3
transducer WL = 7.997'
actual depth = 0.640'
Batt = 68% (2.4V)
storage = 91%
CPU = 12465
download test LAP-1.5 #3 @ 073102
data looks okay

12:04 disconnect

12:12 on site at LAP-3.5
measured WLs:
LAP-3.5 #1 = 11.47 ft btoc
LAP-3.5 #2 = 11.42 ft btoc
LAP-3.5 #3 = 11.34 ft btoc

(cont.)

12:46 connect to #40490 in LAP-3.5 #1
transducer WL = 4.493'
actual depth = NOT given
Batt = 100% (9.3V)
Storage = 96%
CPU = 1305s
download test LAP-3.5 #1 @ 073102
level Ref @ start of test = 10.53'
LAP-3.5 #1 @ 073102
default mode is BTOC
pressure head @ start of test was 5.372'
test data Reading Recorded @ 11:49 pm was 11.413' BTOC.
data looks okay

12:22 stop test to Reprogram
edit level to 11.47' TOC
set start time to now
transducer WL = 11.468'
actual depth = 4.492'
program new test LAP-3.5 #1 @ 091202
30 minute Readings

12:25 start test & disconnect

(cont)

12:27 connect to #40587 in LAP-3.5 #2
transducer WL = 2.064'
actual depth = NOT given
Batt = 100% (9.2V)
storage = 96%
CPU = 1279s
download test LAP-3.5 #2 @ 073102
data looks okay
12:29 stop test & reprogram
Reset level Ref to 11.42'
transducer WL = 11.422'
actual depth = 2.064'
program new test LAP-3.5 #2 @ 091202
12:30 Start test & disconnect

12:31 connect to #5692 in LAP-3.5 #3
transducer WL = 9.441'
actual depth = 0.024'
Batt = 100% (2.7V)
storage = 96%
CPU = 2326s
download test LAP-3.5 #3 @ 073102
level Ref ~~&~~ RAC @ beginning of test
was 10.400'
data looks okay but not reading

proper mode - needs to be corrected.
12:36 stop test to reprogram
edit level to = 11.34'
Probe reading level surface mode
for previous test
change to level TOC
transducer WL = 11.34'
actual depth = 0.024'
program new test LAP-3.5 #3 @ 091202
12:39 start test & disconnect
3:26 PM - on site at LAP-4
Measured WLs
LAP-4 #1 = dry
LAP-4 #2 = wet mud on bot.
LAP-4 #3 = dry
connect to #5614 in pier #1
Batt = 53% (2.3V)
storage = 91%
CPU = 1220s
transducer WL = 18.696'
actual depth = 0.007'
download test LAP-4 #1 @ 120601
dry since early spring ~ March
3:31 disconnect

9/12/02

3:32 connect to #5636 in piez #2
Batt = 100%
storage = 91%
CPU = 856s
transducer WL = 15.644'
actual depth = -0.011'
download test LAP-4 #2 @ 120601
couple of small Recharge events
data looks okay
3:35 disconnect.
3:36 connect to #5612 in piez. #3
Batt = 100% (2.7V)
storage = 99%
CPU = 148s
transducer WL = 12.683'
actual depth = -0.019'
download test LAP4 #3 @ 081502
dry hole - data looks okay
3:38 disconnect.
3:40 Demob to lab trailer

R Gray 9/12/02

9/11/02
Bob Gray & S. Purdue
11:10 On-site at LAP-1
- Connect to #5560 in piez. #1
battery = 50% (2.3 V)
Storage = 89% free; CPU = 1020 s.
Extract test LAP-1 #1 @ 073102
- Stop test to pull probe and change batteries. Decided to keep the test running & not pull probe
- Manual WL meas. = 13.89
(T.D. = 13.94)
Transducer WL = 13.93
(actual depth = -0.003) (dry)
11:20 connect to #5708 in piez. #2
battery = 73% (2.4V)
storage = 94% free; CPU = 905 s
Manual WL = 8.30 ft btoc
Transducer WL = 8.270
(actual depth = 3.943 ft)
Extract test LAP-1 #2 @ 073102
11:25 connect to #5616 in piez. #3
battery = 25% (2.1 V)
storage = 99% free CPU = 1064 s
Manual WL = 8.23 ft btoc
Transducer WL = 8.429 ft btoc
(actual depth = 1.811)

12/11/02

Extract test LAP-1#3@073102

11:30 Stopped test - pull probe & change batteries. Reinstall.

Reset level reference to 8.23 ft.

11:36 Start new test LAP-1#3@121102

11:58 On-site at LAP-1.5

connect to #5572 in piez. #1

battery = 45% (2.2V)

Storage = 84% free

CPU = 1479 s.

Manual WL = 8.27

Transd. WL = 8.274

(Actual depth = 5.524)

Extract test LAP-1.5#1@073102

12:04 Connect to #5706 in piez. #2

Manual WL = 7.53

Transd. WL = 7.512 (actual = 3.778)

Battery = 47% (2.2V)

Storage = 84% free

CPU = 1463 s.

extract test LAP-1.5#2@073102

12:08 Connect to #5536 in piez. #3

Manual WL = 7.46

Transd. WL = 7.490 (actual 1.147)

battery = 45% (2.2V)

12/11/02

Storage = 84% free

CPU = 1484 s

extract test LAP-1.5#3@073102

13:04 On-site at LAP-3.5

connect to MPTROLL #40490 in #1

Battery = 79% (8.6 V)

Storage = 79% free

CPU = 11142 s

Manual WL = 12.06 ft btoc

Transd. WL = 12.106

(actual 3.854)

Extract test LAP-3.5#1@091202

13:15 Stopped test - pulled probe

13:20 connect to #40587 in #2 (MP)

Battery = 76% (8.6V)

Storage = 79% free

CPU = 11130 s

Manual WL = not taken

Transd. WL = 12.035 (actual 1.451)

Extract test LAP-3.5#2@091202

13:24 Stopped test pulled probe

13:30 connect to #5692 in #3

battery = 98% !? can't be right

(battery installation date 6/8/2001)

Storage = 94% free

CPU = 2580 s.

12/11/02

Manual WL = dry

transd. WL = 11.468

(actual depth - 0.105)

extract test LAP-3.5 #3 @ 09/12 02

13:36 Stopped test, pulled probe to replace batteries

Measured TD = 11.52

well is dry; hung transducer so is touching bottom of well.

Distance from tip of transducer to pressure sensor opening = 0.07 ft.

11.52
- 0.07
11.45 ft btoc

12/11/02 Set new reference level to 11.45

1417 Start Test LAP 3.5 #3 @ 12/11/02

Connect to 8438 in #2

Set level reference to DTW = 12.04 ft TOC

1423 Start test LAP 3.5 #2 @ 12/11/02

1424 Connect to # 8879 in #1

Set level reference to 12.06 ft TOC

1428 Start test LAP 3.5 #3 @ 12/11/02

1437 on site at LAP-3

connect to # 5535

Manual WL = 11.54

Transd. WL = 11.516

(actual depth = 0.821 ft)

Battery = 90% (2.6 V)

Storage = 97% free

CPU = 378 s

Extract test LAP-3 @ 08/15/02

15:33 On-site at LAP-6

connect to MP Troll # 4044

battery = 44% (2.9 V)

Storage = 39% free incorrect!

CPU = 103238 s

Manual WL = DRY (T.D. = 14.12) 12/11

Transd. WL = 15.95 (actual = 0.00)

extract test LAP-6 @ 08/15/02

Well has been dry during entire test period.

Left test running

15:45 On site at LAP-5.7

Connect to # 5543

battery = 47% (2.2 V)

Storage = 89% free

CPU = 1100 s

Manual WL = dry

Transducer WL = 17.525

(actual - 0.013)

12/11/02

1600 on site at LAP-4
Connect to #5614 in #1
battery - 40%
Extract LAP4 #1 @ 120601
Trans. WL - 13.554 (actual = 5.148)
Manual WL = 13.62
* needs to be reset!
connect to #5636
battery = 100%
Transd. WL = 11.839 (actual 3.794)
Manual WL = 11.91
Extract test LAP-4#2 @ 120601
Connect to #5612 #3
battery = 100%
transd. WL = 12.113 (actual 0.551)
Manual WL = 11.90
extract test LAP-4 #3 @ 081502

Charles A. Sawyer 12/11/02
S. Pace 2/3/03

Last Page Copied
Sub. to RPF 2/5/03

3/11/03

10:40 on site at LAP-1
Bob Gray and Clancy Pigman in LA Canyon to download transducers.
Conduct Safety mtg.
Connect to #5560 minitroll Pro in piez. #1
battery = 25% (2.1 V)
storage = 87% free
downloaded LAP-1 #1 @ 073102
well is dry (wet on bottom)
10:50 connect to miniTroll Pro #5708 in piez. #2
battery = 65% (2.4 V)
storage = 92% free
Transducer WL = 8.224 ft btoc
(actual depth = 3.989 ft)
extract test LAP-1 #2 @ 073102
Manual WL = 8.25 ft btoc
11:01 connect to #5616 in piez. #3
battery = 100% (2.6 V)
storage = 87% free
Transducer WL = 8.204 ft btoc
(actual depth = 1.837 ft)
extract test LAP-1 #3 @ 121102
Manual WL = 8.21 ft btoc
note: moisture was observed in the cable cap and daily fluctuations in the pressure

3/11/03

data started occurring on Feb. 3 (max. apparent head deviation = ~0.6') - possible moisture in the cable vent?

11:16 stopped test - pulled probe to replace cable (last reading was taken at 11:06)

11:24 cable replaced & probe reinstalled. Communication cable has gone bad (the connector end fell into snow and got wet) - have to go to lab trailer to get another communication cable.

12:03 Manual WL = 8.21 ft btoc

12:17 Still couldn't connect computer program - tried putting on old transducer cable and it worked OK. Somehow the other transducer cable has gone bad (it worked OK in the lab this morning).

12:36 Started new test LAP-1#3@031103

12:58 on-site at LAP-1.5

connect to # 5572 in piez. #1

battery = battery = 17% (2.0v)

storage = 88% free

3/11/03

transducer WL = 7.850 ft btoc

(actual depth = 5.969 ft)

extract test LAP-1.5#1@073102

manual WL = 7.81 ft btoc

13:07 stopped test to reset reference level to 7.88 ft btoc (reset to 7.81')

13:11 start new test LAP-1.5#1@031103

connect to # 5706 in piezom. #2

battery = 20% (2.0 v)

storage = 88% free

transducer WL = 7.216 ft btoc

(actual depth = 4.074 ft)

extract test LAP-1.5#2@073102

manual WL = 7.24 ft btoc

stopped test - reset ref. level to 7.24 ft

13:19 Started new test LAP-1.5#2@031103

13:21 connect to # 5536 in piezom. #3

battery 20% (2.0V)

storage = 87% free

transducer WL = 7.209 ft btoc

(actual depth = 1.428 ft)

extract test LAP-1.5#3@073102

manual WL = 7.18 ft btoc

stopped test - reset ref. level to 7.18 ft

13:28 start new test LAP-1.5#3@031103

3/11/03

13:34 Measured WLs in LAP-1.7
#1 = dry (TD = 21.18)
#2 = dry (TD = 19.48)
#3 = 6.48 ft btoc

13:40 on site at LAP-3
connect to # 5535
battery = 88% (2.5V)
storage = 95% free
extract test LAP-3@081502
transducer WL = 11.126 ft btoc
(actual depth = 1.211 ft)
manual water level = 11.15 ft btoc

13:48 on site at LAP-3.5
connect to # 8879 in piezom. #1
battery = 96% (2.6V)
storage = 93% free
extract test LAP-3.5#1@121102
transducer WL = 11.089 (actual 5.071 ft)
manual WL = 11.07 ft btoc

13:55 connect to #8938 in piezom #2
battery = 100% (2.7V)
storage = 93% free
extract test LAP-3.5#2@121102
transducer WL = 11.045 (actual 2.766 ft)
manual WL = 11.03

3/11/03

14:00 connect to # 5692 in piezom #3
battery = 100% (2.7V)
storage = 93% free
extract test LAP-3.5#3@121102
transducer WL = 10.970 (actual 0.392')
manual WL = 10.99 ft btoc

note - the stream quits flowing at ~ 20 m east of LAP-1.7

14:35 on site at LAP-6
connect to # 4094
extract test LAP-6@081502
well is dry.

14:46 on site at LAP-5.7
connect to # 5593 in LAP-5.7#1
extract test LAP-5.7#1@120601
battery = 17% (2.0V)
storage = 88% free
well is dry

15:06 on site at LAP-4
connect to # 5614 in piezom #1
battery = 5% (1.9V)
storage = 88% free
extract test LAP-4#1@120601
transducer WL = 16.503 ft btoc
(actual depth = 2.200 ft)

3/11/03

manual WL = 16.55 ft btoc

15:15 connect to # 5636 in piez. #2

battery = 100% (3.6 v)

storage = 88% free

transducer WL = 14.880 ft btoc

(actual depth = 0.754 ft)

extract test LAP-4 #2 @ 120601

manual WL = 14.96

15:22 connect to # 5612 in piez #3

battery = 88% (2.5 v)

storage = 95% free

transducer WL = 12.686 ft btoc

(actual depth = -0.022 ft)

well is dry

15:27 extract test LAP-4 #3 @ 081502

15:30 Pack up and return to lab trailer

R. Gray 3/11/03

3/12/03

Bob Gray and Clancy Pigman at the calibration trailer to construct slugs

08:30 - safety tailgate held

Slug dimensions:

slug no. 1: ~~1.4~~ RM 1.04 ft length

0.085 ~~0.083~~ RM ft diam.

slug no. 2: 2.04 ft length

0.085 ~~0.08~~ RM ft diam.

slug no. 3: 2.12 ft length

0.11 ft diam.

slug no. 4: 3.04 ft length

0.11 ~~0.105~~ RM ft diam.

minus: 2 × 0.075 ft length × 0.07 ft diam recess in both ends

slug no. 5: 5.07 ft length

0.11 ft diam.

10:59 - on site at LAP-4 to conduct slug tests. connect to # 5636 in piezom. # 2

extract test # LAP-4 #2 @ 120601

manual WL = 14.95; transd. WL = 14.869

actual depth = 0.764 ft

3/12/03

Top of transducer is at 14.45 ft btoc
T.D. = 15.77 ft btoc
- 14.95
0.82 ft water column height

11:05 - stopped test - reprogram transducer for slug test. reset ref. level to 14.95 ft

11:13 - start slug test in LAP-4 #2 (#1 slug) test data in file: LAP-4#2_031203fh1 with 0.5 sec. readings

11:30 - head is falling very slowly. stopped above test. with 0.5 s readings

11:31 - started test LAP-4#2fh1b with 1-minute readings

(note - transducer clock is ~ 4 mins ahead of computer clock).

12:05 on site at LAP-1.5
connect to #5706 in piezom #2
extract test LAP-1.5#2@031103
(note - test name was "LAP-1.5@031103")
transducer WL = 7.255 ft btoc
(actual depth = 4.058 ft)
set up slug test with slug #4 *
program LAP-1.5 #2 - fh1 with 0.5 s intervals
manual WL = 7.25 ft btoc
T.D. = 11.66 ft btoc

3/12/03
11.66
- 7.25
4.46 ft water column height

11.66
- 1.30 allowance for transducer
10.36
Hung the bottom of the slug at 10.25'

12:27 started slug test "LAP-1.5#2fh1"

12:39 stopped test - WL recovered to 4.069 ft actual depth

12:41 started test LAP-1.5 #2rh1

12:48 stopped test - WL recovered to 4.056 ft actual depth.

14:15 on site at LAP-4
stopped test LAP-4#2fh1b
- decided that slow recovery is due to this well not having been developed. Need to do development work here before any more slug testing attempts!

14:21 started test LAP-4#2@031203 (30-min. readings)

14:58 on site at LAP-1.5 to continue slug tests in piez. #2

3/12/03

15:00 LAP-1.5 #2 manual WL = 7.25 ft btoc
transducer WL = 7.256' (actual 4.058')
set up slug test LAP-1.5#2_fh2 using
slug no. 3 *

15:07 start slug test
15:14 stop test - WL recovered to 7.250 ft
15:14 start rising head test LAP-1.5#2_rh2
15:24 stop test - WL recovered to 7.257 ft
set up slug tests with slug #2
15:29 start test LAP-1.5 #2_fh3
15:35 stop test - WL recovered to 7.250'
15:36 start test LAP-1.5#2_rh3
15:45 stop test
15:47 set up new tests with slug #4
and start LAP-1.5#2_fh4
16:01 stop test - WL recov. to 7.246'
start test LAP-1.5#2_rh4
16:10 stop test - WL recov. to 7.254'
16:10 Manual WL reading in LAP-1.5#1 = 7.79'
16:11 connect to #5572 in piezom. #1
transducer WL = 7.806' btoc
(actual depth = 5.983')
extract test LAP-1.5#1@031103 - stop test
reset ref. level to 7.79' btoc
16:14 start slug test LAP-1.5#1_rh1 w/ slug #4
f RA

3/12/03

16:15 - screwed up the slug depth, stop
test, wait to reequilibrate and try again
16:22 - WL recovered to 7.802' - started
new test LAP-1.5#1_fh1 (slug #4)
- very slow recovery observed
16:31 - connect to #5536 in piez. #3
transducer WL = 7.177' btoc (actual 1.431')
manual WL = 7.19' btoc
- extract test LAP-1.5#3@031103
16:32 - stopped test
- pulled probes from piezometers #2 & #3
and changed batteries.
16:48 - started new test LAP-1.5#3@031203
with 30-min. readings.
16:49 - connect to #5706 in piez. #2
transducer WL =
manual WL = 7.24 ft btoc
reset reference level to 7.24 ft
16:55 start test LAP-1.5#2@031203
w/ 30-min. readings.
16:56 reconnect to #5572 in piez. #1
16:59 stopped test LAP-1.5#1_fh1
17:00 started test LAP-1.5#1_fh1b with
1-min. intervals.
Pack up & depart field.

3/12/03

3/13/03

08:30 - on site at LAP-1.5 to continue slug tests - Bob Gray & Clancy Pigman = field team

08:35 - conducted safety mtg.
- measured WL in LAP-1.5#1 = 7.70 ft btoc
- transducer WL = 7.699 ft btoc

08:38 - stopped test LAP-1.5#1_fh1b (slug #1)

08:41 - started rising head test LAP-1.5#1_rh1

09:00 on site at LAP-~~1.7~~ 3.5 RA
connect to # 5692 in LAP-~~1.7~~ 3.5 #3
extract test LAP-~~1.7~~ 3.5#3@121102

09:05 stopped test
manual WL = 11.14 ft btoc
transducer WL = 11.111 ft btoc
(actual depth = 0.251 ft)
reset reference level to 11.14 ft

09:23 - start test LAP-~~1.7~~ 3.5#3_fh1
using slug #1
(WL @ beginning of test was 11.148')
(after dropping the slug past probe, it stabilized at 11.139 before the displacement occurred)

09:53 stopped test (WL recovered to 11.138')
started test LAP-~~1.7~~ 3.5#3_rh1

3/13/03

10:13 stopped test - WL recov. to 11.148'

10:17 connect to # 8938 in LAP-~~1.7~~ 3.5 #2
transducer WL = 11.190 ft btoc
(actual depth = 2.621 ft)
manual WL = 11.18 ft btoc
extract test LAP-3.5#2@121102

10:22 stopped test - reset ref. level to 11.18'

10:37 - start falling head test LAP-3.5#2_fh1
using slug #2

10:44 stopped test - WL recov. to 11.178'

10:45 started rising head test LAP-3.5#2_rh1

10:51 stopped test - WL recovered to 11.18'

10:55 - start test LAP-3.5#2_fh2 w/ slug #1

11:03 - stop test - WL recovered to 11.179'

11:04 - start test LAP-3.5#2_rh2

11:10 - stopped test - recovered to ~~11.179~~ 11.186'

11:20 - start test LAP-3.5#2_fh3 w/ slug #2

11:30 - stopped test - WL recovered to 11.180'

11:31 - start test LAP-3.5#2_rh3

11:38 - stopped test - WL recovered to

11:42 - connect to # 8879 in LAP-3.5 #1
manual WL = 11.22 ft btoc
transducer WL = 11.205'
(actual depth = 4.955')

11:43 extract test LAP-3.5#1@121102, stopped test
reset reference level to 11.22 ft

3/13/03

11:46 start falling head test LAP-3.5#1_fh1
using slug #4
11:54 - stop test - WL recovered to 11.21'
11:56 - start rising head test LAP-3.5#1_rh1
12:03 - stop test - WL recovered to 11.221'
12:05 - start test LAP-3.5#1_fh2 (slug #2)
12:13 - stop test - WL recovered to 11.21'
12:13 - start test LAP-3.5#1_rh2
12:21 - stop test - WL recovered to 11.215'
12:23 - start test LAP-3.5#1_fh3 (slug #4)
12:30 - stop test - WL recovered to 11.209'
12:30 - start test LAP-3.5#1_rh3
12:38 - stop test - WL recovered to 11.22'
12:39 - start test LAP-3.5#1@031303
(30-min intervals)
12:41 - start test LAP-3.5#2@031303
12:42 - start test LAP-3.5#3@031303
12:55 on site at LAP-1.5
connect to #5572 in LAP-1.5#1
extract test LAP-1.5#1_rh1
13:02 stopped test - WL recovered to 7.701 ft
13:06 Connect to #5536 in LAP-1.5#3
transducer WL = 7.196' (actual 1.392')
manual WL = 7.20' btoc
extract test LAP-1.5#3@031203

3/13/03

13:08 stopped test (@ 7.193')
13:43 - start test LAP-1.5#3_fh1 (slug #1)
13:48 - stop test - WL recovered to 7.193'
13:48 - start test LAP-1.5#3_rh1
13:54 - stop test - WL recovered to 7.192'
13:55 - start test LAP-1.5#3_fh2 (slug #1)
14:06 - stop test - WL recovered to 7.188'
14:06 - start test LAP-1.5#3_rh2
14:12 - stop test - WL recovered to 7.189'
14:15 - start long term monitoring
test LAP-1.5#3@031303 (30-min intervals)
14:20 - connect to #5572 in LAP-1.5#1
1% battery remaining! - disconnect,
pull probe and change batteries.
14:33 - start test LAP-1.5#1_fh2
(initial WL = 7.71' - actual depth 6.07')
14:45 on site @ LAP-1.7
MANUAL WL = 6.56' BTOC
TD = 11.49' BTOC
14:55 connect to #8866 just installed in
LAP-1.7 - set reference level to 6.43'
15:03 on site at LAP-3
connect to #5535
transducer WL = 11.119' (actual 1.213')
manual WL = 11.16'

3/13/03

15:06 extract test LAP-3@031502
stop test.
15:18 Start test LAP-3_fh1 (slug #1)
(initial WL was 11.157' - actual 1.202')
- note: had trouble getting the slug post the transducer - multiple drops were required - this data set is suspect.
15:28 - stop test - WL recovered to 11.158'
15:29 - Start test LAP-3_rh1
15:36 · stop test - WL recovered to 11.167
15:36 - start test LAP-3_fh2
15:42 - stop test - WL recovered to 11.150
15:42 · Start test LAP-3_rh2
15:48 - stop test - WL recovered to 11.162
~~15:48~~ RS
15:50 Start long term monitoring test LAP-3@031303 (30-min. intervals)
15:54 on site at LAP-1.7
manual WL = 6.54
transducer WL = 6.542 (actual 4.693')
15:59 - Start test LAP-1.7#3 fh1
~~- stop test - WL recovered to~~ RS
16:05 on site at LAP-1.5
connect to # 5572 in LAP-1.5#1

3/13/03

16:06 extract test LAP-1.5#1_fh2
1609 stop test - WL recovered to 7.70'
1609 start test LAP-1.5#1_rh2
16:14 on site at LAP-1.7
connect to # 8866 in LAP-1.7#3
extract test LAP-1.7#3_fh1
water level recovered to 5.94'
(still 0.6' short)
16:16 stop test to reprogram at longer interval.
16:17 Start test LAP-1.7#3_fh1b with 5-min. intervals.
16:22 on site at LAP-1.5
connect to # 5572 in LAP-1.5#1
extract test LAP-1.5#1_rh2
16:25 Stopped test - WL recovered to 7.802
16:26 Start long-term test LAP-1.5#1@031303 (30-min. intervals)
16:30 Depart field and return equip. to calibration trailer

RS 3/13/03

3/25/03

11:05 on site at LAP-4 - downloaded transducer in #3 - well is dry
- connect to # 5636 in #2
transducer WL = 15.185'
(actual depth = 0.524')
manual WL = 15.20'
downloaded test LAP-4 #2 @ 031203

11:13 - connect to #564 in #1
battery = 5%!
Transducer WL = 16.864' (actual 1.838')
Manual WL = 16.91' btoc
(off by 0.05')
extract test LAP-4 #1 @ 120601

11:17 stopped test - pulled probe to develop well and run slug tests

11:25 Started bailing well #1 - mod. silty-gray color water
bailed ~ 1 liter of v. dirty water w/ dark gray to black silt

11:30 Added 1 gal. water, surged & bailed till WL down to ~0.5'
water still very dark - almost black

11:40 Added another 1 gal water, surged & bailed. - still v. turbid

3/25/03

11:47 - added 1.5 gals water - surged & bailed, tried to pump, but tubing is collapsing.

12:00 - Broke for lunch

12:25 - bailed ~ 2 liters v. turbid water

12:30 - Drive to Metzgers to buy better tubing

1:15 - Back on site at LAP-4. Tried pumping piezometer #1 with the Masterflex pump, but the tubing is still collapsing.

1:35 - Drive to UP canyon to get the Geopump

2:10 - Back on site with Geopump. Pumping better, but have to set to slow rate to keep from pumping well dry. Pumped about 2 liters and well went dry

2:15 Shut off pump to allow well to recover - WL depth = 18.70'

2:20 WL recovered to 18.50' - pulled pump hose and decided to resume pouring in water, surging and bailing

2:24 poured in 1 gal. surged & bailed

3/25/03

2:28 - poured in 1 more gal - surged/bailed

2:32 - poured in 1 more gal - surged/bailed still getting v. turbid water out (total added = 6.5 gals)

2:36 - added ½ gal - surged / bailed - still v. turbid water (high silt content)

2:44 - added ½ gal - surged / bailed (total added = 7.5 gals)

2:58 - have added 1 more gal (total added = 8.5 gals) surged/bailed - still v. turbid

3:05 - finished bailing - water level is at 18.23 ft btoc - getting less sand out, but still v. turbid with dark gray silt (or ash?) smells somewhat like rotten eggs. Our efforts did not appear to improve well recharge or water clarity.

3:15 Extracted test LAP-4 #2@031203 - the WL in #2 rose ~ 0.06' when we added water to #3 @ 11:51 reading. It has been falling since then, but is not yet back to equilibrium.

3/25/03

(2:51 reading was 15.173, 15:21 reading was 15.175; prior to WL change, static was 15.18) diff. = 0.005' vs. displacement = 0.055'

3:25 #1 WL = 18.04' btoc

[.005 / .055 - within 90% recovery for #2 WL]

3:27 stopped test LAP-4 #2@031203 to prepare for slug test

3:30 - reinstalled probe # 5614 in piez. #1

3:32 - start test LAP-4 #1@032503 with 30-min readings (- set ref. level to 17.94)

3:33 reconnect to # 5636 in piez. #2

3:36 - dropped 1' slug into #2 after starting test LAP4#2_f1a with 0.5 s readings (slug #1) (NOTE: changed name to LAP4#2-f1a)

3:41 stopped test with 0.5 s readings started test LAP4#2_f1b with 5-min. readings (NOTE: need to change name to LAP4#2_f2b!) ** see note

3:43 demob from LAP-4 site

4:00 on-site at LAP-1.7 - connecting to # 8866. Computer problems - messages saying memory failure and memory has changed!

3/25/03

4:15 - finally got computer to boot OK (sort of - several icons have changed)
- extract test LAP-1.7#3_fh1b

4:19 started test LAP-1.7#3_rh1a with 0.5 s intervals
- note - stream flow persists adjacent to this well, but stops at a pool located ~ 10 m west of LAO-0.8

4:24 stopped test LAP1.7#3_rh1A and started test LAP1.7#3_rh1b with 5-minute intervals

R Gray, 3/25/03

3/27/03

8:39 Bob Gray and Clancy Pigman on-site at LAP-1.7 - Safety mtg. held. Plan to continue well development and slug testing activities at LAP-1.7, LAP-4 and LAP-1

8:43 connect to transducer #8866 in LAP-1.7 #3
extract test LAP1.7#3_rh1b and stop test - pull probe

9:16 on site at LAP-4
connect to transducer #5636 in LAP-4 #2
- stop & extract test LAP4#2_fh1b + LAP4#2_fh1a (change to fh2a & b)

9:30 started test LAP4#2_rh1a - pulled #1 slug.

9:35 checked transducer #5614 in LAP-4 #1 - extracted LAP#2 @ 032503 and stopped test - set up for falling head test in piezom #1 (has 1.8' of water in it - using #2 slug (2')
Checked manual WL = 16.92' btoc
transducer WL = 16.925 (actual 1.796)

9:45 started test LAP4#1_fh1a

3/27/03 5636 RA

9:46 connect to #~~3866~~ in piez. #2
stopped & extracted test LAP4#2_rh1a

9:47 Started test LAP4#2_rh1b with 5-min. intervals

9:500 reconnect to #5614 in LAP-4 #1

9:51 stopped/extracted LAP4#1_fh1a & started LAP4#1_fh1b with 5-min intervals

10:19 on site at LAP-1
Connect to #5560 in LAP-1 #1
well is dry acc. to transducer
manual WL = 13.91' btoc
transducer WL = 13.962 (actual -0.034)

10:25 connect to #5708 in LAP-1 #2
transducer WL = 8.095' (actual 1.118')
manual WL = 8.13' btoc
extract test LAP-1 #2@ 073102

10:33 connect to #5616 in LAP-1 #3
transducer WL = 8.175' (actual 1.877')
manual WL = 8.085'
extract test LAP-1 #3@ 031103

* note! the transducer was not hanging down on the cable hanger all the way. when we moved it down into the proper position, the

3/27/03

new transducer reading is:
8.076 ft btoc
actual depth = 1.976 ft

8.175' (incorrect reading)
- 8.076' (correct reading)
0.099' = amount that the 3/11/03 - 3/27/03 data will have to be corrected by using transducer readings.

- actual correction to manual WL should be 8.175
- 8.085
0.090' (subtract this # from the data)

10:46:
Reconnect to #5708 in LAP-1 #2 and stopped test LAP-1 #2@ 073102
reset reference level to manual level at 8.13'

10:53 - start test LAP-1 #2 fh1 with slug #4 (3')

11:08 stopped test - WL recovered to 8.102'
(static was 8.117 prior to injection)

11:10 Start test LAP-1 #2_rh1

11:17 WL recovered to 8.201'
(initial level was 8.100 before pulling slug.

~~24~~ 3/27/03

11:20 stopped test - WL recov. to 8.138'
11:25 break for lunch
12:36 back on site. Clancy had dropped the #4 slug back in the well before we left for lunch, but WL's were not monitored
- Start test LAP-1#2_rh2 test by pulling the #4 slug
- static WL prior to test = 8.104
- max displacement = 9.391
12:46 stopped test - WL recov. to 8.132
12:49 started test LAP-1#2_fh3 (#1 slug)
static WL prior to test = 8.114
max displacement = 7.843
12:58 stopped test - WL recov. to 8.103
12:59 started test LAP-1#2_rh3 (#1 slug)
static WL prior to test = 8.107
max displacement = 8.400
13:05 stopped test - WL recovered to 8.117
13:10 connect to #5946 in LAP-1#3
extract test LAP-1#3@ 031103 / stop test
stop test - reset ref. level to 8.09'
13:14 start test LAP-1#3_fh1 with slug #1
static WL = 8.110
max displacement = 7.800

3/27/03

13:17 stopped test - WL recov. to 8.103
13:19 started test LAP-1#3_rh1
13:28 stopped test - WL recov. to 8.115
pulled transducer from #3 and started bailing
13:34 pulled 3/4 liter - clean water
13:35 pulled 3/4 liter - mod. turbid
13:36 pulled ½ liter - v. turbid (brown)
13:37 "
13:38 " 1 liter - "
13:39 " " "
13:40 " " "
13:41 - 13:49 bailing ~ 1 liter/min.
well is keeping up recovery OK, but the water is staying v. turbid
13:49 - water is starting to clear up.
- continuing to bail ~ 1 liter/min
13:53 - water is mod. turbid (light brown)
13:56 - stopped bailing - water is sl. turbid (v. light brown)
- total bailed = ~ 22 liters (~ 5 gals)
14:05 - started test LAP-1#3_fh2
static WL = 8.121'
max displacement = 7.677'
14:12 - stopped test - WL recov. to 8.118'

3/27/03

14:13 start test LAP-1#3_rh2
static wl = 8.110
max displacement = 8.391
14:19 Stopped test - WL recov. to 8.119
14:21 Started test LAP-1#3_fh3 (slug #1)
static wl = 8.109'
max displacement = 7.828'
14:26 stopped test - WL recov. to 8.111'
14:27 Started test LAP-1#3_rh3
static wl = 8.107'
max displacement = 8.384'
14:34 stopped test - wl recov. to 8.12'
14:36 connected to #5560 in LAP-1#1
stopped/extracted test LAP-1#1@073102
- pulled probe to add water/surge/bail and see if we can get this well to make water
15:36 stopped bailing - added a total of 5 gals of water to well - ~~cons~~ consistently pulling out sand - water is v. turbid coming out of well.
- measured wl @ 13.49 ft btoc
reinstalled transducer in #1
15:40 - connect to #5616 in piez. #~~2~~ 3
transducer wl = 8.149 (actual 1.904)

3/27/03

manual wl = 8.18' btoc
reset ref. level to 8.18'
15:46 started test LAP-1#3@032703 (30-min. readings)
15:47 connect to #5708 in LAP-1#2
transducer wl = 8.231 (actual 4.009)
manual wl = 8.23'
15:49 start test LAP-1#2@032703 (30-min readings)
15:50 connect to #5560 in LAP-1#1
transducer wl = N/A (actual 1.564')
manual wl = 12.32' btoc
15:53 - remeasured manual wl = 12.17'
reset ref. level to 12.17'
* note - wl appears to be rising rapidly!
15:55 start test LAP-1#1@032703 (30-min. readings)
* note battery level is 17% in LAP-1#1
16:18 on site at LAP-4
connect to #5614 in LAP-4#1
stop & extract test LAP4#_fh1b
16:21 start test LAP4#1_rh1a (#2 slug)

3/27/03

16:23 Connect to #5636 in LAP-4#2
stop/extract test LAP-4#2 rh1b
(WL had already stabilized in test rh1a)

16:26 start test LAP-4#2@032703
(30-min. intervals)

16:28 reconnect to #5614 in piezom.#1

16:31 stop test LAP4#1_rh1a
start test LAP-4#1@032703
(30-min. intervals)

Depart Field

R [illegible]
3/27/03

3/27/03

16:23 connect to #5636 in LAP-4#2
stop/extract test LAP-4#2 rh1b
(WL had already stabilized in test rh1a)

16:26 start test LAP-4#2@032703
(30-min. intervals)

16:28 reconnect to #5614 in piecom.#1

16:31 stop test LAP4#1_rh1a
start test LAP-4#1@032703
(30-min. intervals)

Depart Field

R. [illegible]
3/27/03

4/1/03

8:30 - on site at LAP-1
Clancy Pigman & Bob Gray performing slug test and well development activities - Safety mtg. held

8:33 - connect to #5560 in LAP-1 #1
transducer WL = 10.232' (actual 3.671')
manual WL = 10.22 ft btoc
extract test LAP-1#1@032703

8:40 - connect to #5708 in LAP-1#2
transducer WL = 8.228' (actual 4.013')
manual WL = 8.235'
extract test LAP-1#2@032703

8:45 - connect to #5616 in LAP-1#3
transducer WL = 8.185' (actual 1.866')
manual WL = 8.19'
extract test LAP-1#3@032703

8:49 - reconnect to #5560 in LAP-1#1
and stop test LAP-1#1@032703 in order to start slug tests.

8:53 - start test LAP-1#1_fh1 with slug #2

8:58 - stopped test

8:59 - start test LAP-1#1-fh1b (1-min. intervals)

9:08 - on site at LAP-1.5
connect to #5572 in LAP-1.5#1
manual WL = 7.73' btoc
transducer WL = 7.727' (actual 6.055')

4/1/03

9:10 extract test LAP-1.5#1e 031303

9:11 stopped test and pulled probe to conduct additional development of this well

9:15 start surging/bailing LAP-1.5#1

9:33 have bailed 2.5 gals of v. turbid water (med. gray) initial head in well was ~6'. After bailing - the WL is keeping up at ~1' of head.

9:50 Have bailed a total of 5 gals. - The water has cleared up substantially until it is now only slightly turbid (pale brown - gray)

Let WL recover for a few minutes - WL is rising at 0.1' in 10s.

9:55 started bailing/surging again

10:05 have bailed a total of 7.5 gals - well is making more water now - the bailer is coming up consistently about ½ full (1.5 ft) - water is moderately turbid (lt brown).

10:10 - stopped surging and started bailing only - water is clearing up again (pulling up ~1' full every 30s.)

10:19 - stopped bailing - have bailed total 10 gals

4/1/03

- water has cleared up substantially until is only ~~sg.~~ v. slightly turbid (pale brown).

10:20 reinstalled transducer # 5572 in LAP-1.5#1 - WL is rising at ~0.1'/10s.

10:44 got error message on computer: "A fatal exception ~~[illegible]~~ 06 has occurred at 0157:00005BAE" - had to pull battery to turn computer off - rebooted OK

10:50 - check WL
manual WL = 7.605
transducer WL = 7.588

10:52 reset ref. level to 7.600 ft.

10:54 WL stabilized at 7.594' btoc (actual depth = 6.206)
- checked manual WL again and was 0.01' off
reset ref. elev. to 7.585' btoc

10:57 WL stable at 7.581' btoc (actual depth = 6.216')

11:01 start test LAP-~~[illegible]~~1.5#1 - fh 3 (slug #~~[illegible]~~4)

11:16 stopped test - WL recov. to 7.412
from static @ 7.566 (diff = 0.154)
max displac. @ 6.334
1.232

4/1/03

(note - mislabeled test as LAP-1-rh3) (see below)

11:20 - start test LAP-1.5#1_rh3 (slug #2)

11:23 - disconnect and mob to LAP-1

11:30 - on site at LAP-1

11:35 - connect to #5560 in LAP-1#1
stopped test LAP-1#1_fh1b (slug #2)
water level recov. to 10.242' btoc
from static wl @ 10.232'
initial displac. was @ 9.678'

11:40 start test LAP-1#1_rh1a (slug #2)
(0.5 s intervals) - wl recov. to 10.632

11:51 stop test, start test LAP-1#1_rh1b
(1-min. intervals)

12:02 on site at LAP-1.5

12:10 Connect to #5572 in LAP-1.5#1
extract test LAP-1.5#1_rh3
(mislabeled as LAP-1#1_rh3 - check the serial no.!) * changed the file name on the hard drive

12:11 stop test - wl recov. to 7.47' from static @ 7.423'
max displac. was at 9.183'

12:15 start test LAP-1.5#1_fh4 w/ slug #2

12:46 Stopped test wl recov. to 7.401' from static at 7.419'
max displac was @ 6.823'

12:48 start test LAP-1.5#1_rh4a (0.5s ints.) (slug #2)

4/1/03

- static was 7.413
- max displ. was @ 8.029

12:55 - stopped test - wl recov. to 7.428

12:57 - disconnected from #5572 to check other transducers in piezoms. #2 & #3

12:58 - connect to #5536 in LAP-1.5#3
extract test LAP-1.5#3@031303
(test was started at 14:15)
transducer wl = 7.266' (actual depth 1.321')
manual wl = 7.28' btoc

13:01 stopped test - reset ref. level to 7.28'

13:02 Started long term test LAP-1.5#3@040103
Connect to #5706 in LAP-1.5#2
extract test LAP-1.5#2@031203
transducer wl = 7.344' (actual depth 3.991')
manual wl = 7.34'

13:05 stopped test and started new long-term test LAP-1.5#2@040103

13:06 Connect to #5572 in LAP-1.5#1

13:07 Start long term test LAP-1.5#1@040103

13:14 on site at LAP-1
connect to #5560 in LAP-1#1

13:16 stop/extract test LAP-1#1_fh1b
wl recov. to 10.258'
(static was 10.244, max displ. @ 10.805')

4/1/03

13:20 - pulled probe #5560 from LAP-1 #1 to conduct additional well development

13:25 - Started surging/bailing LAP-1 #1

13:50 - have bailed ~ 4 gals water started out v. turbid, but has cleared substantially until now it is only sl. turbid to mod. clear (v. pale brown)

13:55 - finished bailing - a total of 5 gals was removed today (all formation water)

13:56 - reinstalled transducer #5560 in LAP-1#1
- water level is rising rapidly

14:01 - WL recov. to 10.172' (actual 3.731') and still rising above this morning's static level

14:08 WL rose to 9.249' btoc (actual depth = 4.605')

14:20 WL has risen to 9.002' btoc and still rising

14:22 Disconnect and drive back to calibration trailer for a new laptop battery.

14:44 Back on site at LAP-1

14:46 connect to #5560 in LAP-1#1
transducer WL = 8.914' (actual 4.989')
manual WL = 8.91' btoc

4/1/03

- set up for new slug tests with slug #4

14:51 start test LAP-1#1_fh2a (0.5 sec.)

14:56 stopped test; started LAP-1#1_fh2b (1 min.) (WL had recov. to 8.562' from static 8.908'; max displ. was @ 7.635')

14:59 - disconnect & mob. to LAP-3

15:18 - on site at LAP-3
- connect to #5535
Battery = 83%

15:20 transducer WL = 10.715' (actual 1.645')
manual WL = 10.71' btoc
extract test LAP-3@031303
(note - there was a significant recharge event that occurred starting ~ March 18 and lasting for ~ 1 week where the WL came up ~ 3 ft. However it has since declined to about it's previous level).

15:23 stopped test and pulled transducer to conduct well development.

15:28 started bailing - water is extremely turbid (brown)
- surging and bailing

15:52 - have bailed 5 gals of extr. turbid water (looks like chocolate milk)

4/1/03

15:55 - still bailing - water is starting to clear up some to mod. turbid (med. brown)

15:58 flushed bailing LAP-3 - a total of 6 gals of formation water has been removed.

16:00 reinstall transducer in LAP-3

16:18 wL recovered to equilibrium at 10.72' btoc (actual 1.650')

reset ref. level to 10.72'

16:19 Start test LAP-3_fh3 (slug #1)

static wL = 10.722'

max displ. is @ 10.353'

16:22 stopped test - wL recov. to 10.722'

16:22 Start test LAP-3_rh3

16:28 stopped test - wL recov. to 10.726'

max displ. was @ 10.437'

16:30 Start test LAP-3_fh4 (slug #1)

static wL was 10.716'

max displ. was @ 10.304'

16:33 stopped test - wL recov. to 10.718'

16:34 Start test LAP-3_rh4

static wL was 10.719'

max displ. was @ 11.047'

16:37 stopped test - wL recov. to 10.727'

4/1/03

16:38 - start long-term test LAP-3@040103

16:47 on site at LAP-1

16:49 Connect to # 5560 in LAP-1#1

stop/extract test LAP-1#1_fh2b

wL recov. to 8.834

(vs. static wL @ 8.908')

16:51 start test LAP-1#1_rh1 (slug #4)

static wL was 8.827

max displ. was @ 10.116'

17:03 stopped test - wL recov. to 8.984'

17:05 start long term test LAP-1#1@040103

17:10 return to calib. trailer to copy data and unload.

4/1/03

5/28/03

Bob Gray downloading piezom. transducers in DP Canyon.

10:38 connect to # 40660 in DPPN-4.5N #1
battery = 86%
storage = 91% free
extract test DPPN4.5#1@050603

10:44 connect to # 5615 in DPPN-4.5N #2
battery = 98%
storage = 95% free
extract test DPPN4.5#2@050603

10:48 connect to # 8901 in DPPN-4.5N #3
battery = 94%
storage = 89% free
extract test DPPN4.5#3@050603

11:07 connect to # 40656 in DPW-7.1S
battery = 63%
storage = 77% free
extract test DPW-7.1S@050603

11:09 DO meter reading = 2.67 mg/L
Probe reading 5.68 mg/L

11:12 stopped test - pulled probe

11:22 installed probe #40624
measured manual wl = 6.56' btoc
probe info: battery = 76%
storage = 89% free

5/28/03

11:25 reset clock (to standard time)

11:26 measured manual wl = 6.57' btoc
reset ref. level to 6.57'
- probe reading = 6.57' (actual depth 3.58')
- note: probe was hung (3.513') ↑
approx 8 inches above bottom of well

11:37 start test DPW-7.1S @ 052803
(30-min. readings for wl, T, DO, pH, C)

13:30 Shannon Purdue & Bob Gray on site at DPPN-1.1 for slug testing
connect to #8876 - piezom. #1
extract test DPPN1.1#1@022403
transducer wl = 5.215' (actual 3.818)
manual wl = 5.41' btoc
note - the cable hanger was not all the way down on the hook. with probe on bottom, read 5.218'
Reset ref. level to 5.41'

13:46 started test DPPN1.1#1 fh1 with #2 slug (2') - initial wl = 5.414'

13:51 stopped test - wl recov. to 5.396'

13:54 start test DPPN1.1#1 rh1 - initial wl = 5.461

13:59 stopped test - wl recov. to 5.395'

14:01 start test DPPN-1.1#1 fh2 (slug #1) (1.0')

- initial wl = 5.413
14:07 stopped test - wl recov. to 5.397'
14:08 start test DPPN-1.1 #1 rh2
initial wl = 5.414
1412 stop test DPPN-1.1 #1 rh2
wl recover to = 5.400
14:14 start test DPPN-1.1 #1 fh3 (slug #2)
initial wl = 5.418
14:20 stopped test - wl recov. to 5.401'
14:22 start test DPPN-1.1 rh3
initial wl = 5.420
1427 Stop test - water level
recovered to = 5.406
1428 Start test DPPN-1.1 #1 @ 052803
1429 Connect to #8932 in
DPPN 1.1 #2
BC = 82%, storage 93% free
trans. wl = ~~4.7~~ 5.427 btoc
Actual depth = 2.241
manual wl = 5.43' btoc
extract test DPPN 1.1 #2 @ 050603
stop test DPPN 1.1 #2 @ 050603
1436 start test DPPN-1.1 #2 fh1 (slug #1)
initial wl = 5.423
1440 stopped test - wl recov. to 5.419

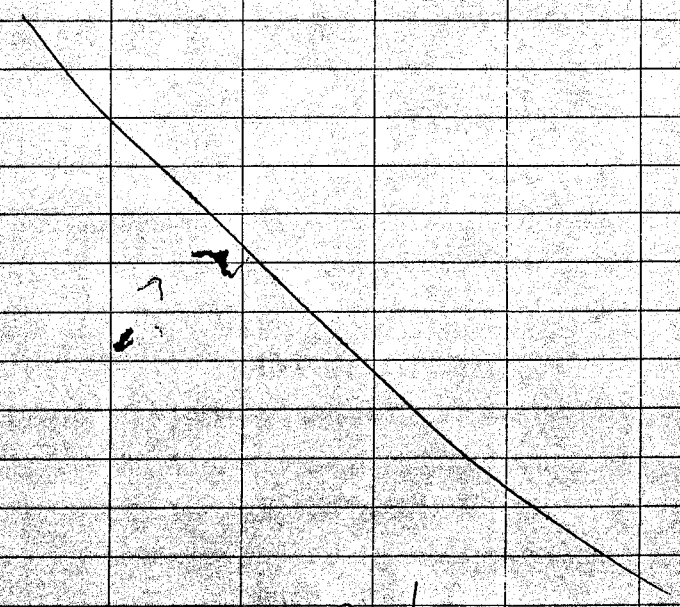
14:41 start test DPPN-1.1 #2 rh1
initial wl = 5.425
14:44 stop test - wl recov. to 5.421
14:46 start test DPPN-1.1 #2 fh2
initial wl = 5.426
14:49 stopped test - wl recov. to 5.423
14:50 start test DPPN-1.1 #2 rh2
initial wl = 5.673' !? - the program
must not have started right away
before the slug was pulled
14:53 stopped test - wl recov. to 5.428'
14:55 start test DPPN-1.1 #2 fh3 (slug #1)
initial wl = 5.429'
14:59 stopped test - wl recov. to 5.426'
15:00 start test DPPN-1.1 #2 rh3
initial wl = 5.432'
15:03 stopped test - wl recov. to 5.430'
15:05 start test DPPN-1.1 #2 @ 052803
connect to #8935 in DPPN-1.1 #3
battery = 81% storage = 92% free
transducer wl = 5.418' (actual 0.730')
manual wl = 5.44' btoc
extract test DPPN 1.1 #3 @ 022403
- stop test
~~reset ref. level to 5.44'~~ fm 5/28/03

5/28/03

15:11 start test DPPN-1.1#3 fh1 (slug#1)
initial WL = 5.409'
15:15 stopped test - WL recov. to 5.407
15:16 start test DPPN-4#3 rh1
initial WL = 5.410'
15:18 stopped test - WL recov. to 5.406
15:24 start test DPPN-1.1#3 fh2 (slug#1)
initial WL = 5.414
15:27 stopped test - WL recov. to 5.410
15:28 start test DPPN-1.1#3 rh2
initial WL = 5.412'
15:32 stopped test - WL recov. to 5.413'
15:36 start test DPPN-1.1#3@052803
15:42 connect to # 8901 in DPPN-4.5N #3
battery = 92% RM 5/28/03 storage = 89% free
Manual ~~transducer~~ WL = 6.61' btoc
transducer ~~manual~~ WL = 6.583'
extract test DPPN4.5#3@050603
stop test
rest WL ref. to 6.61'
15:50 start test DPPN4.5#3 fh1 (slug#1)
initial WL = 6.608
16:01 stop test - WL recov. to 6.608'
16:02 start test DPPN4.5#3 rh1 initial WL = 6.610
16:08 stop test - WL recov to 6.608'

5/28/03

~~16:08~~ RM 5/28/03
16:10 start test DP4.5#3 fh2 (slug#1)
initial WL = 6.608'
16:20 stop test - WL recov. to 6.608'
16:21 start test DPPN4.5#3 rh2
initial WL = 6.612'
16:25 stop test - WL recov. to 6.610
16:26 Pack up & depart field



5/28/03

6/2/03

10:05 Jared Lymon and Bob Gray on-site at DPPN-4.5N to conduct slug tests.

10:08 conduct tailgate safety mtg.

10:09 measured WL in DPPN-4.5N #2 = 6.68 ft btoc

10:13 connect to #5615N Piezometer #2
battery = 98% storage = 95% free
transducer water level = 6.491'
(actual depth 4.665)

10:20 extract test DPPN4.5#2@050603

10:22 stopped test, reset reference level to 6.68'.

10:40 start test DPPN4.5#2 FH1 with slug #2. Initial ~~displacement~~ 6/2/03 water level at 6.679'

10:44 Stop test. water level recovered to 6.679'.

10:45 Start test DPPN4.5#2 RH1 with slug #2. Initial water level 6.685'.

10:48 Stop test. Water level recovered to 6.686'.

6/2/03

10:52 Start Test. DPPN4.5#2 FH2. Slug #1
Initial water level = 6.684'.

10:54 Stop test. W.L. recovered. 6.680'.

10:55 Start test. DPPN4.5#2 RH2
initial WL. 6.685'.

10:58 Stop test. WL recovered to 6.682'.

SL 6/2/03

11:00 Start test DPPN4.5#2 FH3 slug #2
initial WL 6.683'.

11:04 Stop test WL recovered to 6.679

11:06 Start test DPPN4.5#2 RH3
initial WL 6.679

11:09 Stop test. WL recovered to 6.681.

11:11 measured WL in DPPN-4.5N #1
= 6.69 ft btoc
bot. screen = 11.74 ft btoc
- 6.69 WL
5.05 sat. th.

11:16 connect to #40660 in DPPN-4.5N #1
battery = 86% storage = 91% free.
transducer water level 6.686'.
Actual depth = 4.618'.

11:19 extract test DPPN4.5#1@050603

11:20 Stop test, pull probe.

6/2/03

11:21 Pulled #5615 From piezo #2 put in piezo #1 for slug test.

11:34 measured piez. #1 WL = 6.70 ft btoc
reset reference level to 6.70 ft

11:37 start test DPPN4.5#1 FH1 slug #2
initial WL = 6.698'

11:43 Stop test WL recovered to 6.701'.

11:44 Start Test DPPN 4.5#1 RH1
initial WL = 6.701'

11:50 Stop test WL recovered 6.686'.

11:54 Start test DPPN4.5#1 FH2 slug #1
initial WL = 6.699'.

11:57 Stop test WL recovered to 6.694'.

11:58 Start test DPPN4.5#1 RH2
initial WL 6.697'.

12:00 Stop test WL recovered to 6.702'.

12:02 Start test DPPN 4.5#1 FH3 slug #2
initial WL 6.623'

12:05 Stop test WL recovered 6.692'.

12:06 Start test DPPN 4.5#1 RH3
initial WL 6.696'.

12:09 Stop test WL recovered to 6.698'

12:10 reinstalled #5615 in piezom #2

12:12 measured #2 WL = 6.67 ft btoc
reset reference level to 6.67 ft

6/2/03

12:16 Start test DPPN 4.5#2 @ 060203
reinstalled #40660 in piez. #1.

12:17 piezom #1 WL measured at 6.69' btoc
reset reference level to 6.69 ft

12:21 start test DPPN4.5#1 @ 060203

12:25 Depart field for lunch

13:50 measured WL in DPPN-4.5N#3 = 6.65' btoc

13:52 connect to #8901
battery = 92% storage 98% free.
Transducer WL 6.640'.
actual depth 0.922 ft.
extract test DPPN-4.5N#3 @ 052603
Stop test

13:58 Start test DPPN-4.5N#3 FH3 slug #1
initial WL 6.636'.

14:05 Stop test WL recovered 6.634'.

14:06 Start test DPPN-4.5N#3 RH3
initial WL 6.638'.

14:11 Stop test. WL recovered to 6.639'.

14:14 Start test DPPN4.5N#3 FH4 slug #1
initial WL 6.641'

14:20 Stop test. WL recovered to 6.634

14:22 Start test DPPN 4.5N#3 RH4
initial WL = 6.643'

14:27 Stop test. WL recovered to 6.639

6/2/03

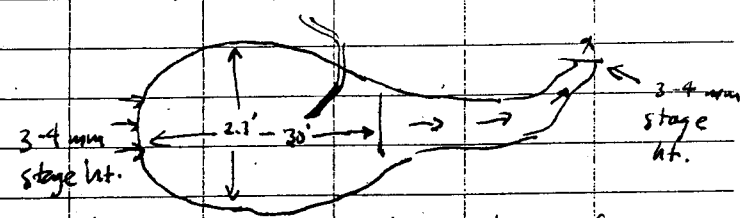
14:29 start test DPPN4.5 #3 @ 060203

14:54 connect to # 8866 in the stream channel at station DP7

- extract test DPr 3 @ 032803

note - the transducer is submerged in a small pool of water - current static level is no flow condition (actually a minimal flow is occurring but barely a trickle)

- checked depth of transducer below WL with sounder tape = ~ 0.88'
- max. depth of pool = 1.30 ft
  avg. depth of pool = ~ 0.50 ft
- size of pool in plan view is ~ 2.3 ft x 3.0 ft at outlet
- depth of flow from outlet is ~ 3-4 mm.



- ht. of upper channel surface at upper inlet = 0.98' above current static WL. Recommend defining channel geometry just

6/2/03

above pool to define discharge rate.

15:25 arrive at DPPN 7.7
measured water level in DPPN 7.7#2 = 5.56'

15:28 connect to # 5600 in piezo #2
batt = 98% storage = 96% free
trans. WL = 5.529
actual depth 3.090

15:30 extract test DPPN 7.7#2 @ 050603
stop test. Reset reference level to 5.56'.

15:39 Start test DPPN 7.7#2 FH1 slug #2
initial WL = 5.553'.

15:43 Stop test WL recovered to 5.079'.

15:44 Start test DPPN 7.7#2 FH1b
in 1 min. intervals.

15:45 measured WL in DPPN-7.7#3
= 5.27 ft btoc

15:47 connect to #5515 in piezo #3
battery 100% storage 96% free.
transducer WL 5.260'.
actual depth 1.915'.
extract test DPPN 7.7#3 @ 050603

15:49 Stop test.

15:54 Start test DPPN 7.7#3 FH1

15:54 abort test (misprogramming)

6/2/03

16:02 Start test DPPN 7.7#3 RH1 slug 1
initial WL = 5.26.9
16:09 Stop test WL recovered to 5.266'.
16:12 Start test DPPN 7.7#3 FH2 slug 1
initial WL = 5.273'
16.25 Stop test WL recovered to 5.255'
16:26 Start test DPPN 7.7#3 RH2 slug 1
initial WL = 5.268'
16:29 connect to 5600 piezo #2
extract DPPN 7.7#2 FH1b
16:30 Stop test. WL ~~dropped past~~ JG 6/2/03
~~initial WL~~ recovered to 5.42'.
16:34 Start test DPPN 7.7#2 @ 060203
for long-term monitoring
16:37 Stop test DPPN 7.7#3 RH2
WL recovered 5.261'.
16:38 Start test DPPN 7.7#@ 060203
16:45 Depart Field

R Gray 6/2/03

6/5/03

14:00 Bob Gray on site at DPW-7.15
connect to # 40624
Battery = 70%, Storage = 87% free
14:02 extract test DPW-7.15 @ 052803
note - the DO sensor is reading negative values. After a 2nd reading at +0.07 mg/L, it dropped rapidly over 1st 2 days to stabilize at ~ -1.5 mg/L
- pH is reading ~4.5 (too low)
- EC is reading between 550-650 µS/cm
pH sensor has gone bad, and DO sensor shows relative changes corresponding to fluctuating WLs, but is out of calibration. EC sensor seems OK
14:13 transducer WL = 6.806 (actual depth 3.277)
manual WL = 6.83 ft btoc
14:22 On site at DPPN-7.7#3
Manual WL = 5.39 ft btoc
connect to # 5515
battery = 100%, storage = 95% free
transducer WL = 5.382 ft btoc
(actual depth = 1.794 ft)
14:26 extract test DPPN 7.7#3 @ 060203
14:28 Stop test

6/5/03

14:35 start test DPPN7.7 #3 fh1 (slug #1)
initial WL = 5.380
14:45 stop test - WL recovered to 5.36'
14:46 start test DPPN7.7 rh3
initial WL = 5.371 ft btoc
14:56 stop test - WL recovered to 5.374'
14:57 measured WL in DPPN-7.7 #2 = 5.68'
~~14:56 stopped~~ RG 6/5/03 14:59 - start test DPPN7.7#3@060503
15:03 connect to # 5600 in piezo #2
battery = 95%, storage = 95% free
15:04 transducer WL = 5.687' btoc (actual 2.956')
extract test DPPN-7.7#2@060203
15:06 stopped test - note - on last Monday (6/2/03) the test DPPN7.7#2 ~~rh2~~ rh1 was not performed ~~to completion~~ but the long term monitoring test did record the recovery over a period of ~2 hrs.
15:19 start test DPPN7.7#2 fh2 (slug #1)
initial WL = 5.687 ft btoc
immed. before slug was dropped, the WL was 5.700'. Max displacement went to 5.412'
15:26 stopped test. very slow recovery
WL recov. to 5.472' (~232 in 7 mins)
15:27 start test DPPN7.7#2 fh2b (1-min readings)

6/5/03

initial WL = 5.478'
16:06 - stopped test - WL recov. to 5.633'
16:11 start test DPPN7.7#2 rh2a (0.5 sec.)
~~16:11~~ RG initial WL = 5.650
max displacement went to 5.957
16:21 stopped test, WL recov. to 5.877
16:22 start test DPPN7.7#2 rh2b (5-min.)
initial WL = 5.867
16:30 depart field

RG
6/5/03

6/12/03

15:06 Jared Lyman & Bob Gray on site at LAP-1 - conduct tailgate safety mtg.
- measured WLs in LAP-1
#1 = dry RM 6/12/03 9.63' btoc
#2 = 8.44' btoc
#3 = 8.39' btoc

15:12 connect to # 5560 in LAP-1 #1
battery 100% 2.7 volts
Storage 91% free
transducer water level 9.656 ft.
actual depth 4.247'.
extract test LAP-1 #1 @ 040103

15:18 connect to # 5708 in LAP-1 #2
battery = 55% 2.3 volts
storage = 87% free
transducer WL 8.448'
actual depth 3.792'.
extract test LAP-1 #2 @ 032703

15:24 connect to # 5616 in LAP-1 #3
battery = 93% 2.6 Volts
storage 83% free

transducer WL 8.400'
actual depth 1.650'.
extract test LAP-1 #3 @ 032703

15:38 on site at LAP-1.5
measured WLs
#1 = 8.36' btoc
#2 = 8.20' "
#3 = 8.12' "

15:41 connect to # 5572 in LAP-1.5 #1
battery 100% 2.7 Volts
Storage 67% free
transducer WL 8.395'.
actual depth 5.402'.
extract test LAP-1.5 #1 @ 040103

15:46 connect to # 5706 in LAP-1.5 #2
battery 100%
Storage 84% free
transducer WL 8.206'
actual depth 3.128.
extract test LAP-1.5 #2 @ 040103

15:51 connect to # 5536 in LAP-1.5 #3
battery 58% 2.3 Volts
Storage 84% free

6/12/03
transducer WL 8.126'
actual depth 0.476
extract test LAP-1.5 #3 @ 040103

16:00 on-site at LAP-3
measured wl = 11.59' btoc
connect to # 5535
battery = 75% ~~Actual depth =~~ RA 6/12/03
storage = 91% free
transducer wl = 11.606'
actual depth 0.765'
extract test LAP-3 @ 040103

16:10 on site at LAP-3.5
measured wls =
#1 = 12.12' btoc
#2 = 12.07' btoc
#3 = dry
connect to # 8879 in LAP-3.5 #1
battery = 74% (2.4V)
storage = 93% free
transducer wl = -9.778' (actual depth
extract test LAP-3.5 #1 @ 031303 25.958')
- the plot shows that this probe seemed to be working ok until about 21 days ago, when it started showing a constant

6/12/03
climb until it now reads ~9.8' above the toc. All settings are OK.

16:19 stopped test and pulled transducer to inspect. Looks like rust fouling up all the pressure ports. Cleaned the ports, but the unit still reads abnormally high head. Pull unit to send in for repair.

16:34 connect to #8838 in LAP-3.5 #2
battery = 82% 2.5 Volts
storage = 93% free
transducer WL = 12.086'
actual depth 1.714
extract test LAP-3.5 #2 @ 031303

16:36 connect to #5692 in LAP-3.5 #3
transducer WL = 11.513'
battery = 100% 2.6 Volts
storage = 88% free
actual depth -0.122
extract test LAP-3.5 #3 @ 031303

16:39 stop test. Pull probe to install in piezometer #1.

16:45 installed #5692 in LAP-3.5 #1
measured wl = 12.11 ft btoc

26

6/12/03

reset ref. level to 12.11 ft

16:49 - start test LAP-3.5#1@061203

16:50 - depart field

R. Gray
6/12/03

6/13/03

9:09 Jared Lyman and Bob Gray in Los Alamos Canyon - on site at LAP-6 Hold safety mtg.

9:10 Measured LAP-6 WL = dry

connect to MPTROLL # 40494

battery = 15% remaining (7.1 V)

storage = 6% free

~~extr~~ RG 6/13/03

transducer WL = 15.950 ft btoc

(actual depth = 0.000)

extract test LAP-6@081502

9:16 stopped test and pulled probe

9:24 on site at LAP-5.7

measured WL = dry in LAP-5.7#1

connect to # 5593

battery = 1% (1.7 V)

storage = 86% free

transducer WL = 17.553' btoc

(actual depth -0.04')

extract test LAP-5.7#1@120601

9:30 stopped test - pulled probe

9:43 on site at LAP-4

measured WLs:

#1 = 16.47' btoc

#2 = 14.49' btoc

#3 = dry

6/13/03

9:46 connect to # 5614 in LAP-4 #1
battery = 95% 2.6 Volts
Storage = 85% free
Tranducer WL = 6.450'
actual depth 2.271'
extract test LAP-4 # 1 @ 032703

9:49 stop test. Pull probe.
Could not connect to #2. will pull probe and use a different cable to download data.
Apparently cable is bad.

9:55 connect to # 5612 in LAP-4 #3
battery = 75% 2.5 Volts
Storage = 93% free
Transducer WL = 12.667'
actual depth = -0.004
Extract test LAP4 #3 @ 081502

9:59 Stop Test, pull probe.

10:04 Pulled # 5636 from piezom. #2 and connected to different cable but still could not connect with the win-Situ Software
- removed the old batteries & replaced with batteries from

6/13/03

5614.

10:12 connected successfully to # 5636 that was installed in LAP-4 # 2
battery reading is 100% (4.9 V) ?
Can't be over 3.0 V!
Storage = 83% free
extract test LAP-4 # 2 @ 032703
(test had abnormal end) from dead batteries
Last reading was @ 6/7/03 9:26:41 (standard time)

Note: the data from probe # 5636 seems to indicate that it is functioning OK, but it does not recognize the correct battery voltage!

10:37 on site at LAO-1.6g
measured WL = 17.86 ft btoc
connect to # 40661
battery = 49% (7.9 V)
Storage = 39% free
transducer WL = 17.894 (actual 10.939')
extract test LAO-1.6g @ 051503
- noted recharge event began @ 5:43 AM on 5/20/03 (likely from Reservoir release) was ~ 5 ft rise which peaked @ 14:43 on 5/22/03

6/13/03

11:08 on site at LAO-0.91
measured WL = 16.51' btoc
connect to # 40621
battery = 82% (8.7 V)
storage = 9% free
transducer WL = 16.453' (actual depth 1.485')
extract test LAO-0.91@051503

11:13 stop test
reset reference level to 16.51'

11:17 start new test LAO-0.91@061303
(1-hr readings)

11:29 on site at LAO-0.3
measured WL = 10.04' btoc
connect to # 40622
battery = 76% (8.6 V)
storage = 76% free
transducer WL = 9.997'
(actual depth = 2.929')
extract test LAO-0.3@051503

11:50 Depart field

6/13/03

6/19/03

8:50 Jared Lyman and Bob Gray in DP Canyon to download & swap out transducers

8:54 Held tailgate safety mtg.

8:57 On site at DPPN-1.1 - measure WL's:
DPPN-1.1 #1 = 5.61 ft btoc
DPPN-1.1 #2 = 5.62 "
DPPN-1.1 #3 = 5.61 "

8:59 Connect to # 8876 in DPPN-1.1 #1
battery = 79% (2.5V) storage 97% free
transducer WL = 5.589 (actual depth 3.636')
extract test DPPN-1.1#1@052803

9:03 Stop test

9:04 Connect to # → cannot connect to the probe in DPPN-1.1 #2 (~~# 5708~~) RB 6/19/03

9:08 Connected successfully to # 8932 in DPPN-1.1 #2
battery 79% 2.5 Volts
storage 97% free
transducer WL = 5.611'
actual depth = 2.057'
extract test DPPN1.1#2@052803

9:10 Stop test

6/19/03

9:13 Connect to # 8935 in DPPN 1.1 #3
battery = 79% (2.5 V) storage 97%
transducer WL = 5.634' actual depth = 0.566'
extract test DPPN 1.1 #3 @ 052803

9:15 Stop Test.

9:19 Pull probe #8876 from DPPN 1.1 #1

9:20 Install MPTROLL # 40656
in DPPN 1.1 #1

9:24 pull # 8932 from DPPN-1.1 #2

9:26 pull # 8935 from DPPN-1.1 #3
(to swap out cable only)

9:27 Install MPTroll # 40494 in DPPN-1.1 #2

9:29 reinstall #8935 in DPPN-1.1 #3
with 20 ft. cable.

9:38 reset reference level to 5.62' btoc
(actual depth 0.501') y(measured)

9:41 Start test DPPN 1.1 #3 @ 061903
(½-hr readings)

9:43 Connect to # 40656 in DPPN-1.1 #1
measured WL = 5.61 ft btoc
reset reference level to 5.61'
(actual depth 3.020 ft)

9:47 Start test DPPN-1.1 #1 @ 061903.

9:49 Connect to # 40494 in DPPN-1.1 #2
reset reference level to 5.62'
(actual depth 1.675')

6/19/03

note - this is per reading made at 8:57. The WL sounder does not reach past the top of the MPTROLL probe and the WL is below the top of the probe. WL has reequilibrated, and the WL in #1 reequilibrated to same depth that was measured @ 8:57, so we assume the same has occurred in #2.

9:57 Start test DPPN 1.1 #2 @ 061903

10:14 on site at DPPN-4.5
measured WLs: RA 6/19/03
DPPN-4.5 #3 = 6.68' btoc
DPPN-4.5 #2 = 6.71' btoc
DPPN-4.5 #1 = 6.72' btoc

10:17 connect to # 8901 in ~~#1~~ #3 RA 6/19/03
battery = 91% (2.6 V) storage 98% free
transducer WL = 6.654'
(actual depth = 0.908 ft)
note - the bottom of the screen is at 8.74 ft bgs } this inf. is
WL = 3.68 ft bgs } for #1!
= 5.06 ft of head, but the transducer only shows actual depth = 0.908 ft!? - OK - compare to #3 depth →

6/19/03

3 depth = 4.49 ft bgs (bot of screen)

3 WL = 3.68 ft

0.81 ft (+0.17 sump = 0.98' to TD)

10:28 extract test DPPN4.5 #3 @ 060203

10:31 Stop test

reset reference level to 6.68'

(actual depth 0.908 ft)

10:34 connect to #5615 in DPPN 4.5 #2

battery = 98% (2.6V) storage 95% free

transducer WL = 6.685'

actual depth = 4.603'

extract test DPPN 4.5 #2 @ 060203

10:36 Stop Test.

reset reference level to 6.71'

Pull probe.

10:41 install MPTroll #40490 in piezo #2

10:43 connect to #40660 in DPPN 4.5 #1

battery = 85% (8.8V) storage = 89% free

transducer WL 6.690'

actual depth 4.569'

10:45 extract test DPPN 4.5 #1 @ 060203

10:46 Stop test

reset reference level to 6.72'.

10:47 Connect to # 40490 in piezo #2

battery = 88% (8.8V) storage = 100% free

~~transducer WL~~ = JC

10:50 Set reference level to 6.71'

transducer actual depth reading = 3.550'

10:52 Start test DPPN 4.5 #2 @ 061903

10:53 connect to 40664 in Piezo #1

Start test DPPN 4.5 #1 @ 061903

10:54 Connect to 8901 piezo #3

Start test DPPN 4.5 #3 @ 061903.

11:11 on site at DPPN-7.7

measure WLs.

DPPN 7.7 #1 = 8.64' btoc

DPPN 7.7 #2 = 5.48' btoc

DPPN 7.7 #3 = 5.21' btoc

11:13 connect to #5600 in DPPN 7.7 #2

battery = 95% (2.6V)

storage = 93% free

transducer WL = 5.498' btoc

(actual depth = 3.145')

extract test DPPN 7.7 #2 rh2b

11:18 stop test, pull probe

11:23 connect to # 5515 in DPPN 7.7 #3

battery = 100% (2.7V) storage = 96% free

transducer WL = ~~5.650~~ 5.190' btoc

(actual depth = 1.985')

6/19/03

extract test DPPN7.7 #3 @ 060503

11:28 connect to #40655 in #2
measured wl = 4.69' btoc (4.69')

11:32 reset reference level to 4.77'
Start test DPPN 7.7#2 @ 061903

11:38 Stop test DPPN 7.7#2 - delete

11:40 Connect to #5515 in piezo #3
Extract test DPPN7.7#3 @ 061903
Stop test

11:41 reset reference level to 5.21 ft.
actual depth 1.988'

11:43 pull probe to swap cable

11:44 re instal #5515 with 20ft. cable.

11:45 reset reference level to 5.21'
actual depth = 2.003'.

11:48 start test DPPN 7.7#3 @ 061903

11:49 connect to DPPN7.7 #2
start test DPPN 7.7#2 @ 061903

11:55 depart field

6/19/03

6/19/03
On site at LAP-3 @ 15:41
measured wl = ~~dry~~ 11.60' JC 6/19/03

15:43 Connect to LAP-3 #5535
battery 73% (2.7V) storage 91% free
transducer WL 11.609'
actual depth 0.673'
extract test LAP-3 @ 040103

15:47 Stop test. Pull probe to switch cable

15:52 Reinstall #5535 with 20ft. cable.

15:54 Connect to #5535

15:56 reset reference level to 11.61' btoc
(actual depth = 0.757')

15:57 Start test LAP3 @ 061903

16:03 on site at LAP-3.5
measured wls:
LAP-3.5 #1 = 12.19' btoc
#2 = 12.15' btoc
#3 = dry

16:05 Connect to #5692 in LAP-3.5#1
battery = 100% (2.6V) storage = 88% free
transducer wl = 12.172' btoc
(actual depth = 4.038')
extract test LAP-3.5#1 @ 061203

88

6/19/03

15:07 Connect to #8938 in LAP-3.5#2
battery = 86% (2.5V) storage 93%
transducer WL = 12.140'
actual depth = 1.660'
extract test LAP3.5#2@031303

15:10 depart field

[signature] 6/19/03

Los Alamos Environmental Restoration Project

WATER-LEVEL ELEVATION DATA SHEET

ER SOP-07.02, R1

Date: 11/11/02 Technical Area: 21 Field Unit: Canyons Focus Area

Measured by (print name) Shannon Purdue Signature:

LOCATION	LOG		ELEVATION[1] (ft)		TAPE READING				DEPTH TO WATER (ft)	ELEVATION GROUNDWATER (ft)	Comments
	Date	Time	GL Datum	(TOC)[2]	Meas. Pt.	Water Level (ft)	TOC to Ground Surface	DTW BGS (ft)			
LAUZ-1	11-Nov-02	903	NA	NA	TOC	4.73	NA	NA	4.73	NA	
DPW-1S	11-Nov-02	903	7032.67	7035.67	TOC	5.24	3.00	2.24	5.24	7030.43	
DPBN-1A #1	11-Nov-02	910	7032.29	7035.29	TOC	4.92	3.00	1.92	4.92	7030.37	
DPBN-1A #2	11-Nov-02	911	7032.29	7035.29	TOC	4.99	3.00	1.99	4.99	7030.30	
DPBN-1A #3	11-Nov-02	912	7032.29	7035.29	TOC	5.00	3.00	2.00	5.00	7030.29	
DPBN-1B #1	11-Nov-02	907	7032.71	7035.63	TOC	5.36	2.92	2.44	5.36	7030.27	
DPBN-1B #2	11-Nov-02	909	7032.71	7035.63	TOC	5.37	2.92	2.45	5.37	7030.26	
DPBN-1B #3	11-Nov-02	906	7032.71	7035.63	TOC	5.36	2.92	2.44	5.36	7030.27	
DPBN-1C #1	11-Nov-02	1121	7032.48	7035.36	TOC	5.34	2.88	2.46	5.34	7030.02	
DPBN-1C #2	11-Nov-02	1122	7032.48	7035.36	TOC	5.34	2.88	2.46	5.34	7030.02	
DPBN-1C #3	11-Nov-02	1123	7032.48	7035.36	TOC	5.34	2.88	2.46	5.34	7030.02	
DPW-1N	11-Nov-02	1125	7034.65	7037.62	TOC	7.83	2.97	4.86	7.83	7029.79	
DPW-1.1N	11-Nov-02	1124	7033.84	7036.67	TOC	6.95	2.83	4.12	6.95	7029.72	
DPPN-1.1 #1	11-Nov-02	915	7032.55	7035.55	TOC	5.31	3.00	2.31	5.31	7030.24	
DPPN-1.1 #2	11-Nov-02	916	7032.27	7035.27	TOC	5.30	3.00	2.30	5.30	7029.97	
DPPN-1.1 #3	11-Nov-02	917	7032.24	7035.24	TOC	5.29	3.00	2.29	5.29	7029.95	
DPBN-2A #1	11-Nov-02	918	7033.21	7036.11	TOC	6.13	2.90	3.23	6.13	7029.98	
DPBN-2A #2	11-Nov-02	919	7033.21	7036.11	TOC	6.14	2.90	3.24	6.14	7029.97	
DPBN-2A #3	11-Nov-02	920	7033.21	7036.11	TOC	6.12	2.90	3.22	6.12	7029.99	
DPBN-2B #1	11-Nov-02	1114	7032.02	7035.02	TOC	5.05	3.00	2.05	5.05	7029.97	
DPBN-2B #2	11-Nov-02	1115	7032.02	7035.02	TOC	5.12	3.00	2.12	5.12	7029.90	
DPBN-2B #3	11-Nov-02	1116	7032.02	7035.02	TOC	5.12	3.00	2.12	5.12	7029.90	
DPBN-2C #1	11-Nov-02	1118	7032.98	7035.86	TOC	6.24	2.88	3.36	6.24	7029.62	
DPBN-2C #2	11-Nov-02	1119	7032.98	7035.86	TOC	6.24	2.88	3.36	6.24	7029.62	
DPBN-2C #3	11-Nov-02	1120	7032.98	7035.86	TOC	6.23	2.88	3.35	6.23	7029.63	
DPBN-3A #1	11-Nov-02	921	7032.96	7035.96	TOC	6.66	3.00	3.66	6.66	7029.30	
DPBN-3A #2	11-Nov-02	922	7032.96	7035.96	TOC	6.66	3.00	3.66	6.66	7029.30	
DPBN-3A #3	11-Nov-02	923	7032.96	7035.96	TOC	6.58	3.00	3.58	6.58	7029.38	
DPBN-3B #1	11-Nov-02	926	7031.88	7034.82	TOC	5.69	2.94	2.75	5.69	7029.13	
DPBN-3B #2	11-Nov-02	927	7031.88	7034.82	TOC	5.72	2.94	2.78	5.72	7029.10	
DPBN-3B #3	11-Nov-02	928	7031.88	7034.82	TOC	5.71	2.94	2.77	5.71	7029.11	
DPBN-3C #1	11-Nov-02	1109	7031.96	7034.76	TOC	5.69	2.80	2.89	5.69	7029.07	
DPBN-3C #2	11-Nov-02	1110	7031.96	7034.76	TOC	5.65	2.80	2.85	5.65	7029.11	
DPBN-3C #3	11-Nov-02	1111	7031.96	7034.76	TOC	5.31	2.80	2.51	5.31	7029.45	
DPW-3.2N	11-Nov-02	1112	7034.53	7037.57	TOC	7.81	3.04	4.77	7.81	7029.76	
DPW-3.5N	11-Nov-02	1107	7031.44	7034.39	TOC	5.83	2.95	2.88	5.83	7028.56	
DPW-3.5S	11-Nov-02	930	7032.40	7035.40	TOC	6.71	3.00	3.71	6.71	7028.69	
DPBN-4A #1	11-Nov-02	932	7031.93	7034.47	TOC	6.28	2.54	3.74	6.28	7028.19	
DPBN-4A #2	11-Nov-02	933	7031.93	7034.47	TOC	5.71	2.54	3.17	5.71	7028.76	
DPBN-4A #3	11-Nov-02	934	7031.93	7034.47	TOC	5.77	2.54	3.23	5.77	7028.70	
DPBN-4B #1	11-Nov-02	1100	7031.53	7034.34	TOC	5.95	2.81	3.14	5.95	7028.39	
DPBN-4B #2	11-Nov-02	1101	7031.53	7034.34	TOC	5.94	2.81	3.13	5.94	7028.40	
DPBN-4B #3	11-Nov-02	1102	7031.53	7034.34	TOC	5.94	2.81	3.13	5.94	7028.40	
DPBN-4C #1	11-Nov-02	1105	7032.79	7035.29	TOC	7.06	2.50	4.56	7.06	7028.23	
DPBN-4C #2	11-Nov-02	1106	7032.79	7035.28	TOC	7.04	2.49	4.55	7.04	7028.24	
DPBN-4C #3	11-Nov-02	1107	7032.79	7035.28	TOC	7.04	2.49	4.55	7.04	7028.24	
DPW-4.6N	11-Nov-02	1057	7032.55	7035.60	TOC	7.55	3.05	4.50	7.55	7028.05	
DPPN-4.5N #1	11-Nov-02	1054	7031.65	7034.65	TOC	6.70	3.00	3.70	6.70	7027.95	
DPPN-4.5N #2	11-Nov-02	1055	7031.92	7034.92	TOC	6.69	3.00	3.69	6.69	7028.23	
DPPN-4.5N #3	11-Nov-02	1056	7031.82	7034.82	TOC	6.63	3.00	3.63	6.63	7028.19	
DPW-4.4N	11-Nov-02	1059	7031.09	7034.03	TOC	5.94	2.94	3.00	5.94	7028.09	
DPW-4.9S	11-Nov-02	937	7030.93	7033.78	TOC	6.08	2.85	3.23	6.08	7027.70	
DPBN-5A #1	11-Nov-02	938	7030.29	7032.41	TOC	4.89	2.12	2.77	4.89	7027.52	
DPBN-5A #2	11-Nov-02	938	7030.29	7032.41	TOC	4.71	2.12	2.59	4.71	7027.70	
DPBN-5A #3	11-Nov-02	940	7030.29	7032.41	TOC	4.68	2.12	2.56	4.68	7027.73	
DPBN-5B #1	11-Nov-02	1047	7031.05	7033.62	TOC	5.81	2.57	3.24	5.81	7027.81	
DPBN-5B #2	11-Nov-02	1048	7031.05	7033.62	TOC	5.82	2.57	3.25	5.82	7027.80	
DPBN-5B #3	11-Nov-02	1049	7031.05	7033.62	TOC	5.82	2.57	3.25	5.82	7027.80	
DPBN-5C #1	11-Nov-02	1050	7031.36	7034.30	TOC	6.62	2.94	3.68	6.62	7027.68	
DPBN-5C #2	11-Nov-02	1051	7031.36	7034.30	TOC	6.62	2.94	3.68	6.62	7027.68	
DPBN-5C #3	11-Nov-02	1052	7031.36	7034.30	TOC	6.52	2.94	3.58	6.52	7027.78	
DPW-5.8N	11-Nov-02	1036	7032.32	7035.39	TOC	8.32	3.07	5.25	8.32	7027.07	
DPW-5.7N	11-Nov-02	1035	7031.02	7033.93	TOC	6.71	2.91	3.80	6.71	7027.22	
DPPN-5.7 #1	11-Nov-02	NM	7029.72	7032.72	TOC	NA	3.00	NA	NA	NA	Not measured
DPPN-5.7 #2	11-Nov-02	NM	7029.54	7032.54	TOC	NA	3.00	NA	NA	NA	Not measured
DPPN-5.7 #3	11-Nov-02	NM	7029.50	7032.50	TOC	NA	3.00	NA	NA	NA	Not measured
DPBN-6A #1	11-Nov-02	944	7030.73	7032.97	TOC	6.42	2.24	4.18	6.42	7026.55	
DPBN-6A #2	11-Nov-02	946	7030.73	7032.93	TOC	6.34	2.20	4.14	6.34	7026.59	
DPBN-6A #3	11-Nov-02	946	7030.73	7032.98	TOC	6.40	2.25	4.15	6.40	7026.58	
DPBN-6B #1	11-Nov-02	1023	7028.88	7031.71	TOC	5.96	2.83	3.13	5.96	7025.75	
DPBN-6B #2	11-Nov-02	1024	7028.88	7031.70	TOC	4.85	2.82	2.03	4.85	7026.85	
DPBN-6B #3	11-Nov-02	1025	7028.88	7031.70	TOC	4.86	2.82	2.04	4.86	7026.84	
DPBN-6C #1	11-Nov-02	1026	7029.83	7032.71	TOC	6.02	2.88	3.14	6.02	7026.69	

Los Alamos Environmental Restoration Project

WATER-LEVEL ELEVATION DATA SHEET

ER SOP-07.02, R1
Field Unit: Canyons Focus Area

Date: 11/11/02 Technical Area: 21

Measured by (print name) Shannon Purdue Signature: [illegible]

LOCATION	LOG		ELEVATION[1] (ft)		TAPE READING				DEPTH TO WATER (ft)	ELEVATION GROUNDWATER (ft)	Comments
	Date	Time	GL Datum	(TOC)[2]	Meas. Pt.	Water Level (ft)	TOC to Ground Surface	DTW BGS (ft)			
DPBN-6C #2	11-Nov-02	1027	7029.83	7032.71	TOC	6.02	2.88	3.14	6.02	7026.69	
DPBN-6C #3	11-Nov-02	1028	7029.83	7032.71	TOC	6.03	2.88	3.15	6.03	7026.68	
DPBN-6D #1	11-Nov-02	1029	7030.42	7033.27	TOC	6.45	2.85	3.60	6.45	7026.82	
DPBN-6D #2	11-Nov-02	1030	7030.42	7033.27	TOC	6.64	2.85	3.79	6.64	7026.63	
DPBN-6D #3	11-Nov-02	1030	7030.42	7033.27	TOC	6.67	2.85	3.82	6.67	7026.60	
DPW-6.2S	11-Nov-02	948	7028.90	7032.40	TOC	5.99	3.50	2.49	5.99	7026.41	
DPW-6.5N	11-Nov-02	1022	7030.20	7033.20	TOC	7.65	3.00	4.65	7.65	7025.55	
DPBN-7A #1	11-Nov-02	951	7028.64	7031.31	TOC	6.33	2.67	3.66	6.33	7024.98	
DPBN-7A #2	11-Nov-02	953	7028.64	7031.31	TOC	6.38	2.67	3.71	6.38	7024.93	
DPBN-7A #3	11-Nov-02	954	7028.64	7031.31	TOC	6.36	2.67	3.69	6.36	7024.95	
DPBN-7B #1	11-Nov-02	1015	7027.37	7030.27	TOC	4.71	2.90	1.81	4.71	7025.56	
DPBN-7B #2	11-Nov-02	1016	7027.37	7030.27	TOC	4.73	2.90	1.83	4.73	7025.54	
DPBN-7B #3	11-Nov-02	1017	7027.37	7030.27	TOC	4.74	2.90	1.84	4.74	7025.53	
DPBN-7C #1	11-Nov-02	1019	7028.00	7030.85	TOC	5.31	2.85	2.46	5.31	7025.54	
DPBN-7C #2	11-Nov-02	1020	7028.00	7030.84	TOC	5.31	2.84	2.47	5.31	7025.53	
DPBN-7C #3	11-Nov-02	1021	7028.00	7030.83	TOC	5.33	2.83	2.50	5.33	7025.50	
DPW-7.1S	11-Nov-02	956	7028.76	7031.67	TOC	6.45	2.91	3.54	6.45	7025.22	
DPW-7.4N	11-Nov-02	1014	7028.10	7031.06	TOC	7.35	2.96	4.39	7.35	7023.71	
DPW-7.5S	11-Nov-02	958	7027.50	7030.60	TOC	8.00	3.10	4.90	8.00	7022.60	
DPPN-7.7 #1	11-Nov-02	1000	7024.49	7027.48	TOC	8.77	2.99	5.78	8.77	7018.71	
DPPN-7.7 #2	11-Nov-02	1000	7024.47	7027.47	TOC	5.08	3.00	2.08	5.08	7022.39	
DPPN-7.7 #3	11-Nov-02	1001	7024.56	7027.34	TOC	4.92	2.78	2.14	4.92	7022.42	
DPW-7.9S	11-Nov-02	1006	7025.22	7028.26	TOC	6.96	3.04	3.92	6.96	7021.30	
DPBN-8A #1	11-Nov-02	1002	7025.06	7027.57	TOC	6.60	2.51	4.09	6.60	7020.97	
DPBN-8A #2	11-Nov-02	1003	7025.06	7027.57	TOC	6.59	2.51	4.08	6.59	7020.98	
DPBN-8A #3	11-Nov-02	1004	7025.06	7027.57	TOC	6.60	2.51	4.09	6.60	7020.97	
DPBN-8B #1	11-Nov-02	1007	7024.34	7026.57	TOC	5.51	2.23	3.28	5.51	7021.06	
DPBN-8B #2	11-Nov-02	1008	7024.34	7026.57	TOC	5.50	2.23	3.27	5.50	7021.07	
DPBN-8B #3	11-Nov-02	1009	7024.34	7026.57	TOC	5.49	2.23	3.26	5.49	7021.08	
LAUZ-2	11-Nov-02	1010	NA	NA	TOC	5.80	NA	NA	5.80	NA	

Measurement Method and Probe Type: Solinst water depth indicator, Ser. No. 18528
Comments:

[1] Use the appropriate measuring point
[2] TOC is Top of Casing
[3] NAPL (Non Aqueous Phase Liquid). If NAPL is encountered, the groundwater level must be corrected.

Los Alamos Environmental Restoration Project

WATER-LEVEL ELEVATION DATA SHEET

ER SOP-07.02, R1
Field Unit: Canyons Focus Area

Date: 11/18/02 Technical Area: 21

Measured by (print name) Shannon Purdue Signature: [illegible]

LOCATION	LOG		ELEVATION[1] (ft)		TAPE READING				DEPTH TO WATER (ft)	ELEVATION GROUNDWATER (ft)	Comments
	Date	Time	GL Datum	(TOC)[2]	Meas. Pt.	Water Level (ft)	TOC to Ground Surface	DTW BGS (ft)			
LAUZ-1	18-Nov-02	920	NA	NA	TOC	5.04	NA	NA	5.04	NA	
DPW-1S	18-Nov-02	921	7032.67	7035.67	TOC	5.52	3.00	2.52	5.52	7030.15	
DPBN-1A #1	18-Nov-02	924	7032.29	7035.29	TOC	5.17	3.00	2.17	5.17	7030.12	
DPBN-1A #2	18-Nov-02	925	7032.29	7035.29	TOC	5.19	3.00	2.19	5.19	7030.10	
DPBN-1A #3	18-Nov-02	925	7032.29	7035.29	TOC	5.21	3.00	2.21	5.21	7030.08	
DPBN-1B #1	18-Nov-02	926	7032.71	7035.63	TOC	5.66	2.92	2.74	5.66	7029.97	
DPBN-1B #2	18-Nov-02	926	7032.71	7035.63	TOC	5.64	2.92	2.72	5.64	7029.99	
DPBN-1B #3	18-Nov-02	927	7032.71	7035.63	TOC	5.63	2.92	2.71	5.63	7030.00	
DPBN-1C #1	18-Nov-02	929	7032.48	7035.36	TOC	5.60	2.88	2.72	5.60	7029.76	
DPBN-1C #2	18-Nov-02	929	7032.48	7035.36	TOC	5.59	2.88	2.71	5.59	7029.77	
DPBN-1C #3	18-Nov-02	930	7032.48	7035.36	TOC	5.60	2.88	2.72	5.60	7029.76	
DPW-1N	18-Nov-02	932	7034.65	7037.62	TOC	8.00	2.97	5.03	8.00	7029.62	
DPW-1.1N	18-Nov-02	930	7033.84	7036.67	TOC	7.16	2.83	4.33	7.16	7029.51	
DPPN-1.1 #1	18-Nov-02	927	7032.55	7035.55	TOC	5.54	3.00	2.54	5.54	7030.01	
DPPN-1.1 #2	18-Nov-02	928	7032.27	7035.27	TOC	5.58	3.00	2.58	5.58	7029.69	
DPPN-1.1 #3	18-Nov-02	928	7032.24	7035.24	TOC	5.60	3.00	2.60	5.60	7029.64	
DPBN-2A #1	18-Nov-02	935	7033.21	7036.11	TOC	6.30	2.90	3.40	6.30	7029.81	
DPBN-2A #2	18-Nov-02	936	7033.21	7036.11	TOC	6.30	2.90	3.40	6.30	7029.81	
DPBN-2A #3	18-Nov-02	936	7033.21	7036.11	TOC	6.30	2.90	3.40	6.30	7029.81	
DPBN-2B #1	18-Nov-02	934	7032.02	7035.02	TOC	5.28	3.00	2.28	5.28	7029.74	
DPBN-2B #2	18-Nov-02	935	7032.02	7035.02	TOC	5.29	3.00	2.29	5.29	7029.73	
DPBN-2B #3	18-Nov-02	935	7032.02	7035.02	TOC	5.30	3.00	2.30	5.30	7029.72	
DPBN-2C #1	18-Nov-02	932	7032.98	7035.86	TOC	6.43	2.88	3.55	6.43	7029.43	
DPBN-2C #2	18-Nov-02	933	7032.98	7035.86	TOC	6.43	2.88	3.55	6.43	7029.43	
DPBN-2C #3	18-Nov-02	934	7032.98	7035.86	TOC	6.41	2.88	3.53	6.41	7029.45	
DPBN-3A #1	18-Nov-02	937	7032.96	7035.96	TOC	6.83	3.00	3.83	6.83	7029.13	
DPBN-3A #2	18-Nov-02	936	7032.96	7035.96	TOC	6.82	3.00	3.82	6.82	7029.14	
DPBN-3A #3	18-Nov-02	938	7032.96	7035.96	TOC	6.82	3.00	3.82	6.82	7029.14	
DPBN-3B #1	18-Nov-02	938	7031.88	7034.82	TOC	5.86	2.94	2.92	5.86	7028.96	
DPBN-3B #2	18-Nov-02	938	7031.88	7034.82	TOC	5.86	2.94	2.92	5.86	7028.96	
DPBN-3B #3	18-Nov-02	939	7031.88	7034.82	TOC	5.87	2.94	2.93	5.87	7028.95	
DPBN-3C #1	18-Nov-02	940	7031.96	7034.76	TOC	5.89	2.80	3.09	5.89	7028.87	
DPBN-3C #2	18-Nov-02	940	7031.96	7034.76	TOC	5.42	2.80	2.62	5.42	7029.34	
DPBN-3C #3	18-Nov-02	940	7031.96	7034.76	TOC	5.42	2.80	2.62	5.42	7029.34	
DPW-3.2N	18-Nov-02	941	7034.53	7037.57	TOC	8.98	3.04	5.94	8.98	7028.59	
DPW-3.5N	18-Nov-02	942	7031.44	7034.39	TOC	5.98	2.95	3.03	5.98	7028.41	
DPW-3.5S	18-Nov-02	943	7032.40	7035.40	TOC	6.82	3.00	3.82	6.82	7028.58	
DPBN-4A #1	18-Nov-02	944	7031.93	7034.47	TOC	5.91	2.54	3.37	5.91	7028.56	
DPBN-4A #2	18-Nov-02	944	7031.93	7034.47	TOC	5.90	2.54	3.36	5.90	7028.57	
DPBN-4A #3	18-Nov-02	945	7031.93	7034.47	TOC	5.91	2.54	3.37	5.91	7028.56	
DPBN-4B #1	18-Nov-02	945	7031.53	7034.34	TOC	6.04	2.81	3.23	6.04	7028.30	
DPBN-4B #2	18-Nov-02	946	7031.53	7034.34	TOC	6.05	2.81	3.24	6.05	7028.29	
DPBN-4B #3	18-Nov-02	946	7031.53	7034.34	TOC	6.04	2.81	3.23	6.04	7028.30	
DPBN-4C #1	18-Nov-02	947	7032.79	7035.29	TOC	7.19	2.50	4.69	7.19	7028.10	
DPBN-4C #2	18-Nov-02	947	7032.79	7035.28	TOC	7.17	2.49	4.68	7.17	7028.11	
DPBN-4C #3	18-Nov-02	948	7032.79	7035.28	TOC	7.17	2.49	4.68	7.17	7028.11	
DPW-4.6N	18-Nov-02	949	7032.55	7035.60	TOC	7.65	3.05	4.60	7.65	7027.95	
DPPN-4.5N #1	18-Nov-02	950	7031.65	7034.65	TOC	6.76	3.00	3.76	6.76	7027.89	
DPPN-4.5N #2	18-Nov-02	950	7031.92	7034.92	TOC	6.74	3.00	3.74	6.74	7028.18	
DPPN-4.5N #3	18-Nov-02	950	7031.82	7034.82	TOC	6.70	3.00	3.70	6.70	7028.12	
DPW-4.4N	18-Nov-02	948	7031.09	7034.03	TOC	6.01	2.94	3.07	6.01	7028.02	
DPW-4.9S	18-Nov-02	951	7030.93	7033.78	TOC	6.15	2.85	3.30	6.15	7027.63	
DPBN-5A #1	18-Nov-02	952	7030.29	7032.41	TOC	4.81	2.12	2.69	4.81	7027.60	
DPBN-5A #2	18-Nov-02	952	7030.29	7032.41	TOC	4.77	2.12	2.65	4.77	7027.64	
DPBN-5A #3	18-Nov-02	952	7030.29	7032.41	TOC	4.75	2.12	2.63	4.75	7027.66	
DPBN-5B #1	18-Nov-02	953	7031.05	7033.62	TOC	5.88	2.57	3.31	5.88	7027.74	
DPBN-5B #2	18-Nov-02	953	7031.05	7033.62	TOC	5.88	2.57	3.31	5.88	7027.74	
DPBN-5B #3	18-Nov-02	954	7031.05	7033.62	TOC	5.89	2.57	3.32	5.89	7027.73	
DPBN-5C #1	18-Nov-02	955	7031.36	7034.30	TOC	6.68	2.94	3.74	6.68	7027.62	
DPBN-5C #2	18-Nov-02	955	7031.36	7034.30	TOC	6.67	2.94	3.73	6.67	7027.63	
DPBN-5C #3	18-Nov-02	956	7031.36	7034.30	TOC	6.62	2.94	3.68	6.62	7027.68	
DPW-5.8N	18-Nov-02	958	7032.32	7035.39	TOC	8.39	3.07	5.32	8.39	7027.00	
DPW-5.7N	18-Nov-02	959	7031.02	7033.93	TOC	6.78	2.91	3.87	6.78	7027.15	
DPPN-5.7 #1	18-Nov-02	1000	7029.72	7032.72	TOC	5.91	3.00	2.91	5.91	7026.81	
DPPN-5.7 #2	18-Nov-02	1000	7029.54	7032.54	TOC	5.91	3.00	2.91	5.91	7026.63	
DPPN-5.7 #3	18-Nov-02	1000	7029.50	7032.50	TOC	5.82	3.00	2.82	5.82	7026.68	
DPBN-6A #1	18-Nov-02	1006	7030.73	7032.97	TOC	6.46	2.24	4.22	6.46	7026.51	
DPBN-6A #2	18-Nov-02	1006	7030.73	7032.93	TOC	6.42	2.20	4.22	6.42	7026.51	
DPBN-6A #3	18-Nov-02	1007	7030.73	7032.98	TOC	6.46	2.25	4.21	6.46	7026.52	
DPBN-6B #1	18-Nov-02	1005	7028.88	7031.71	TOC	5.26	2.83	2.43	5.26	7026.45	
DPBN-6B #2	18-Nov-02	1005	7028.88	7031.70	TOC	4.97	2.82	2.15	4.97	7026.73	
DPBN-6B #3	18-Nov-02	1005	7028.88	7031.70	TOC	4.96	2.82	2.14	4.96	7026.74	
DPBN-6C #1	18-Nov-02	1003	7029.83	7032.71	TOC	6.09	2.88	3.21	6.09	7026.62	

Los Alamos Environmental Restoration Project

WATER-LEVEL ELEVATION DATA SHEET

Date: 11/18/02 Technical Area: 21

ER SOP-07.02, R1
Field Unit: Canyons Focus Area

Measured by (print name) Shannon Purdue Signature:

LOCATION	LOG		ELEVATION[1] (ft)		TAPE READING				DEPTH TO WATER (ft)	ELEVATION GROUNDWATER (ft)	Comments
	Date	Time	GL Datum	(TOC)[2]	Meas. Pt.	Water Level (ft)	TOC to Ground Surface	DTW BGS (ft)			
DPBN-6C #2	18-Nov-02	1003	7029.83	7032.71	TOC	6.08	2.88	3.20	6.08	7026.63	
DPBN-6C #3	18-Nov-02	1004	7029.83	7032.71	TOC	6.10	2.88	3.22	6.10	7026.61	
DPBN-6D #1	18-Nov-02	1001	7030.42	7033.27	TOC	7.21	2.85	4.36	7.21	7026.06	
DPBN-6D #2	18-Nov-02	1001	7030.42	7033.27	TOC	6.79	2.85	3.94	6.79	7026.48	
DPBN-6D #3	18-Nov-02	1002	7030.42	7033.27	TOC	6.80	2.85	3.95	6.80	7026.47	
DPW-6.2S	18-Nov-02	1007	7028.90	7032.40	TOC	6.05	3.50	2.55	6.05	7026.35	
DPW-6.5N	18-Nov-02	1008	7030.20	7033.20	TOC	7.55	3.00	4.55	7.55	7025.65	
DPBN-7A #1	18-Nov-02	1012	7028.64	7031.31	TOC	6.46	2.67	3.79	6.46	7024.85	
DPBN-7A #2	18-Nov-02	1013	7028.64	7031.31	TOC	6.47	2.67	3.80	6.47	7024.84	
DPBN-7A #3	18-Nov-02	1013	7028.64	7031.31	TOC	6.47	2.67	3.80	6.47	7024.84	
DPBN-7B #1	18-Nov-02	1010	7027.37	7030.27	TOC	4.77	2.90	1.87	4.77	7025.50	
DPBN-7B #2	18-Nov-02	1011	7027.37	7030.27	TOC	4.78	2.90	1.88	4.78	7025.49	
DPBN-7B #3	18-Nov-02	1011	7027.37	7030.27	TOC	4.81	2.90	1.91	4.81	7025.46	
DPBN-7C #1	18-Nov-02	1009	7028.00	7030.85	TOC	5.43	2.85	2.58	5.43	7025.42	
DPBN-7C #2	18-Nov-02	1009	7028.00	7030.84	TOC	5.43	2.84	2.59	5.43	7025.41	
DPBN-7C #3	18-Nov-02	1010	7028.00	7030.83	TOC	5.41	2.83	2.58	5.41	7025.42	
DPW-7.1S	18-Nov-02	1014	7028.76	7031.67	TOC	6.67	2.91	3.76	6.67	7025.00	
DPW-7.4N	18-Nov-02	1016	7028.10	7031.06	TOC	7.58	2.96	4.62	7.58	7023.48	
DPW-7.5S	18-Nov-02	1015	7027.50	7030.60	TOC	7.89	3.10	4.79	7.89	7022.71	
DPPN-7.7 #1	18-Nov-02	1017	7024.49	7027.48	TOC	10.12	2.99	7.13	10.12	7017.36	
DPPN-7.7 #2	18-Nov-02	1018	7024.47	7027.47	TOC	5.40	3.00	2.40	5.40	7022.07	
DPPN-7.7 #3	18-Nov-02	1019	7024.56	7027.34	TOC	5.20	2.78	2.42	5.20	7022.14	
DPW-7.9S	18-Nov-02	1020	7025.22	7028.26	TOC	7.13	3.04	4.09	7.13	7021.13	
DPBN-8A #1	18-Nov-02	1020	7025.06	7027.57	TOC	6.73	2.51	4.22	6.73	7020.84	
DPBN-8A #2	18-Nov-02	1021	7025.06	7027.57	TOC	6.73	2.51	4.22	6.73	7020.84	
DPBN-8A #3	18-Nov-02	1021	7025.06	7027.57	TOC	6.73	2.51	4.22	6.73	7020.84	
DPBN-8B #1	18-Nov-02	1022	7024.34	7026.57	TOC	5.54	2.23	3.31	5.54	7021.03	
DPBN-8B #2	18-Nov-02	1022	7024.34	7026.57	TOC	5.54	2.23	3.31	5.54	7021.03	
DPBN-8B #3	18-Nov-02	1023	7024.34	7026.57	TOC	5.56	2.23	3.33	5.56	7021.01	
LAUZ-2	18-Nov-02	1024	NA	NA	TOC	5.87	NA	NA	5.87	NA	

Measurement Method and Probe Type: Solinst water depth indicator, Ser. No. 18528
Comments:

[1] Use the appropriate measuring point
[2] TOC is Top of Casing
[3] NAPL (Non Aqueous Phase Liquid). If NAPL is encountered, the groundwater level must be corrected.

Los Alamos Environmental Restoration Project

WATER-LEVEL ELEVATION DATA SHEET

ER SOP-07.02, R1

Date: 11/25/02 Technical Area: 21 Field Unit: Canyons Focus Area

Measured by (print name) Shannon Purdue Signature:

LOCATION	LOG		ELEVATION[1] (ft)		TAPE READING				DEPTH TO WATER (ft)	ELEVATION GROUNDWATER (ft)	Comments
	Date	Time	GL Datum	(TOC)[2]	Meas. Pt.	Water Level (ft)	TOC to Ground Surface	DTW BGS (ft)			
LAUZ-1	25-Nov-02	836	NA	NA	TOC	5.35	NA	NA	5.35	NA	
DPW-1S	25-Nov-02	NA	7032.67	7035.67	TOC	NM	3.00	NA	NM	NA	
DPBN-1A #1	25-Nov-02	839	7032.29	7035.29	TOC	5.46	3.00	2.46	5.46	7029.83	
DPBN-1A #2	25-Nov-02	839	7032.29	7035.29	TOC	5.46	3.00	2.46	5.46	7029.83	
DPBN-1A #3	25-Nov-02	840	7032.29	7035.29	TOC	5.49	3.00	2.49	5.49	7029.80	
DPBN-1B #1	25-Nov-02	841	7032.71	7035.63	TOC	5.92	2.92	3.00	5.92	7029.71	
DPBN-1B #2	25-Nov-02	841	7032.71	7035.63	TOC	5.92	2.92	3.00	5.92	7029.71	
DPBN-1B #3	25-Nov-02	842	7032.71	7035.63	TOC	5.91	2.92	2.99	5.91	7029.72	
DPBN-1C #1	25-Nov-02	941	7032.48	7035.36	TOC	5.85	2.88	2.97	5.85	7029.51	
DPBN-1C #2	25-Nov-02	942	7032.48	7035.36	TOC	5.85	2.88	2.97	5.85	7029.51	
DPBN-1C #3	25-Nov-02	943	7032.48	7035.36	TOC	5.84	2.88	2.96	5.84	7029.52	
DPW-1N	25-Nov-02	939	7034.65	7037.62	TOC	8.23	2.97	5.26	8.23	7029.39	
DPW-1.1N	25-Nov-02	940	7033.84	7036.67	TOC	7.38	2.83	4.55	7.38	7029.29	
DPPN-1.1 #1	25-Nov-02	843	7032.55	7035.55	TOC	5.87	3.00	2.87	5.87	7029.68	
DPPN-1.1 #2	25-Nov-02	843	7032.27	7035.27	TOC	5.84	3.00	2.84	5.84	7029.43	
DPPN-1.1 #3	25-Nov-02	844	7032.24	7035.24	TOC	5.81	3.00	2.81	5.81	7029.43	
DPBN-2A #1	25-Nov-02	844	7033.21	7036.11	TOC	6.51	2.90	3.61	6.51	7029.60	
DPBN-2A #2	25-Nov-02	845	7033.21	7036.11	TOC	6.51	2.90	3.61	6.51	7029.60	
DPBN-2A #3	25-Nov-02	845	7033.21	7036.11	TOC	dry	2.90	NA	dry	NA	
DPBN-2B #1	25-Nov-02	936	7032.02	7035.02	TOC	5.48	3.00	2.48	5.48	7029.54	
DPBN-2B #2	25-Nov-02	936	7032.02	7035.02	TOC	5.49	3.00	2.49	5.49	7029.53	
DPBN-2B #3	25-Nov-02	937	7032.02	7035.02	TOC	5.49	3.00	2.49	5.49	7029.53	
DPBN-2C #1	25-Nov-02	938	7032.98	7035.86	TOC	6.63	2.88	3.75	6.63	7029.23	
DPBN-2C #2	25-Nov-02	938	7032.98	7035.86	TOC	6.63	2.88	3.75	6.63	7029.23	
DPBN-2C #3	25-Nov-02	939	7032.98	7035.86	TOC	6.62	2.88	3.74	6.62	7029.24	
DPBN-3A #1	25-Nov-02	846	7032.96	7035.96	TOC	6.99	3.00	3.99	6.99	7028.97	
DPBN-3A #2	25-Nov-02	846	7032.96	7035.96	TOC	7.00	3.00	4.00	7.00	7028.96	
DPBN-3A #3	25-Nov-02	847	7032.96	7035.96	TOC	6.98	3.00	3.98	6.98	7028.98	
DPBN-3B #1	25-Nov-02	847	7031.88	7034.82	TOC	6.02	2.94	3.08	6.02	7028.80	
DPBN-3B #2	25-Nov-02	847	7031.88	7034.82	TOC	6.03	2.94	3.09	6.03	7028.79	
DPBN-3B #3	25-Nov-02	848	7031.88	7034.82	TOC	6.03	2.94	3.09	6.03	7028.79	
DPBN-3C #1	25-Nov-02	935	7031.96	7034.76	TOC	6.03	2.80	3.23	6.03	7028.73	
DPBN-3C #2	25-Nov-02	935	7031.96	7034.76	TOC	5.61	2.80	2.81	5.61	7029.15	
DPBN-3C #3	25-Nov-02	936	7031.96	7034.76	TOC	5.60	2.80	2.80	5.60	7029.16	
DPW-3.2N	25-Nov-02	933	7034.53	7037.57	TOC	9.14	3.04	6.10	9.14	7028.43	
DPW-3.5N	25-Nov-02	NA	7031.44	7034.39	TOC	NM	2.95	NA	NM	NA	
DPW-3.5S	25-Nov-02	848	7032.40	7035.40	TOC	6.94	3.00	3.94	6.94	7028.46	
DPBN-4A #1	25-Nov-02	848	7031.93	7034.47	TOC	6.01	2.54	3.47	6.01	7028.46	
DPBN-4A #2	25-Nov-02	849	7031.93	7034.47	TOC	6.01	2.54	3.47	6.01	7028.46	
DPBN-4A #3	25-Nov-02	849	7031.93	7034.47	TOC	6.02	2.54	3.48	6.02	7028.45	
DPBN-4B #1	25-Nov-02	932	7031.53	7034.34	TOC	6.15	2.81	3.34	6.15	7028.19	
DPBN-4B #2	25-Nov-02	932	7031.53	7034.34	TOC	6.15	2.81	3.34	6.15	7028.19	
DPBN-4B #3	25-Nov-02	933	7031.53	7034.34	TOC	6.15	2.81	3.34	6.15	7028.19	
DPBN-4C #1	25-Nov-02	930	7032.79	7035.29	TOC	7.30	2.50	4.80	7.30	7027.99	
DPBN-4C #2	25-Nov-02	930	7032.79	7035.28	TOC	7.28	2.49	4.79	7.28	7028.00	
DPBN-4C #3	25-Nov-02	931	7032.79	7035.28	TOC	7.28	2.49	4.79	7.28	7028.00	
DPW-4.6N	25-Nov-02	929	7032.55	7035.60	TOC	7.77	3.05	4.72	7.77	7027.83	
DPPN-4.5N #1	25-Nov-02	928	7031.65	7034.65	TOC	6.86	3.00	3.86	6.86	7027.79	
DPPN-4.5N #2	25-Nov-02	928	7031.92	7034.92	TOC	6.85	3.00	3.85	6.85	7028.07	
DPPN-4.5N #3	25-Nov-02	929	7031.82	7034.82	TOC	6.80	3.00	3.80	6.80	7028.02	
DPW-4.4N	25-Nov-02	NA	7031.09	7034.03	TOC	NM	2.94	NA	NM	NA	
DPW-4.9S	25-Nov-02	851	7030.93	7033.78	TOC	6.23	2.85	3.38	6.23	7027.55	
DPBN-5A #1	25-Nov-02	850	7030.29	7032.41	TOC	4.91	2.12	2.79	4.91	7027.50	
DPBN-5A #2	25-Nov-02	850	7030.29	7032.41	TOC	4.87	2.12	2.75	4.87	7027.54	
DPBN-5A #3	25-Nov-02	851	7030.29	7032.41	TOC	4.84	2.12	2.72	4.84	7027.57	
DPBN-5B #1	25-Nov-02	926	7031.05	7033.62	TOC	6.01	2.57	3.44	6.01	7027.61	
DPBN-5B #2	25-Nov-02	927	7031.05	7033.62	TOC	6.01	2.57	3.44	6.01	7027.61	
DPBN-5B #3	25-Nov-02	927	7031.05	7033.62	TOC	6.00	2.57	3.43	6.00	7027.62	
DPBN-5C #1	25-Nov-02	924	7031.36	7034.30	TOC	6.80	2.94	3.86	6.80	7027.50	
DPBN-5C #2	25-Nov-02	925	7031.36	7034.30	TOC	6.79	2.94	3.85	6.79	7027.51	
DPBN-5C #3	25-Nov-02	925	7031.36	7034.30	TOC	6.77	2.94	3.83	6.77	7027.53	
DPW-5.8N	25-Nov-02	923	7032.32	7035.39	TOC	8.45	3.07	5.38	8.45	7026.94	
DPW-5.7N	25-Nov-02	NA	7031.02	7033.93	TOC	NM	2.91	NA	NM	NA	
DPPN-5.7 #1	25-Nov-02	921	7029.72	7032.72	TOC	6.03	3.00	3.03	6.03	7026.69	
DPPN-5.7 #2	25-Nov-02	921	7029.54	7032.54	TOC	6.03	3.00	3.03	6.03	7026.51	
DPPN-5.7 #3	25-Nov-02	922	7029.50	7032.50	TOC	5.94	3.00	2.94	5.94	7026.56	
DPBN-6A #1	25-Nov-02	854	7030.73	7032.97	TOC	6.58	2.24	4.34	6.58	7026.39	
DPBN-6A #2	25-Nov-02	854	7030.73	7032.93	TOC	6.52	2.20	4.32	6.52	7026.41	
DPBN-6A #3	25-Nov-02	855	7030.73	7032.98	TOC	6.57	2.25	4.32	6.57	7026.41	
DPBN-6B #1	25-Nov-02	920	7028.88	7031.71	TOC	5.15	2.83	2.32	5.15	7026.56	
DPBN-6B #2	25-Nov-02	920	7028.88	7031.70	TOC	5.11	2.82	2.29	5.11	7026.59	
DPBN-6B #3	25-Nov-02	921	7028.88	7031.70	TOC	5.08	2.82	2.26	5.08	7026.62	
DPBN-6C #1	25-Nov-02	919	7029.83	7032.71	TOC	6.19	2.88	3.31	6.19	7026.52	

Los Alamos Environmental Restoration Project

WATER-LEVEL ELEVATION DATA SHEET

Date: 11/25/02 Technical Area: 21

ER SOP-07.02, R1
Field Unit: Canyons Focus Area

Measured by (print name) Shannon Purdue Signature:

LOCATION	LOG		ELEVATION[1] (ft)		TAPE READING				DEPTH TO WATER (ft)	ELEVATION GROUNDWATER (ft)	Comments
	Date	Time	GL Datum	(TOC)[2]	Meas. Pt.	Water Level (ft)	TOC to Ground Surface	DTW BGS (ft)			
DPBN-6C #2	25-Nov-02	919	7029.83	7032.71	TOC	6.19	2.88	3.31	6.19	7026.52	
DPBN-6C #3	25-Nov-02	919	7029.83	7032.71	TOC	6.20	2.88	3.32	6.20	7026.51	
DPBN-6D #1	25-Nov-02	918	7030.42	7033.27	TOC	7.58	2.85	4.73	7.58	7025.69	
DPBN-6D #2	25-Nov-02	918	7030.42	7033.27	TOC	7.67	2.85	4.82	7.67	7025.60	
DPBN-6D #3	25-Nov-02	919	7030.42	7033.27	TOC	dry	2.85	NA	dry	NA	
DPW-6.2S	25-Nov-02	856	7028.90	7032.40	TOC	6.16	3.50	2.66	6.16	7026.24	
DPW-6.5N	25-Nov-02	915	7030.20	7033.20	TOC	7.53	3.00	4.53	7.53	7025.67	
DPBN-7A #1	25-Nov-02	858	7028.64	7031.31	TOC	6.58	2.67	3.91	6.58	7024.73	
DPBN-7A #2	25-Nov-02	858	7028.64	7031.31	TOC	6.58	2.67	3.91	6.58	7024.73	
DPBN-7A #3	25-Nov-02	859	7028.64	7031.31	TOC	6.58	2.67	3.91	6.58	7024.73	
DPBN-7B #1	25-Nov-02	914	7027.37	7030.27	TOC	4.60	2.90	1.70	4.60	7025.67	
DPBN-7B #2	25-Nov-02	914	7027.37	7030.27	TOC	4.91	2.90	2.01	4.91	7025.36	
DPBN-7B #3	25-Nov-02	915	7027.37	7030.27	TOC	4.92	2.90	2.02	4.92	7025.35	
DPBN-7C #1	25-Nov-02	912	7028.00	7030.85	TOC	5.51	2.85	2.66	5.51	7025.34	
DPBN-7C #2	25-Nov-02	913	7028.00	7030.84	TOC	5.51	2.84	2.67	5.51	7025.33	
DPBN-7C #3	25-Nov-02	913	7028.00	7030.83	TOC	5.50	2.83	2.67	5.50	7025.33	
DPW-7.1S	25-Nov-02	NA	7028.76	7031.67	TOC	NM	2.91	NA	NM	NA	
DPW-7.4N	25-Nov-02	910	7028.10	7031.06	TOC	7.67	2.96	4.71	7.67	7023.39	
DPW-7.5S	25-Nov-02	901	7027.50	7030.60	TOC	7.91	3.10	4.81	7.91	7022.69	
DPPN-7.7 #1	25-Nov-02	903	7024.49	7027.48	TOC	10.28	2.99	7.29	10.28	7017.20	
DPPN-7.7 #2	25-Nov-02	903	7024.47	7027.47	TOC	5.51	3.00	2.51	5.51	7021.96	
DPPN-7.7 #3	25-Nov-02	904	7024.56	7027.34	TOC	5.29	2.78	2.51	5.29	7022.05	
DPW-7.9S	25-Nov-02	NA	7025.22	7028.26	TOC	NM	3.04	NA	NM	NA	
DPBN-8A #1	25-Nov-02	904	7025.06	7027.57	TOC	6.80	2.51	4.29	6.80	7020.77	
DPBN-8A #2	25-Nov-02	905	7025.06	7027.57	TOC	6.80	2.51	4.29	6.80	7020.77	
DPBN-8A #3	25-Nov-02	905	7025.06	7027.57	TOC	6.80	2.51	4.29	6.80	7020.77	
DPBN-8B #1	25-Nov-02	906	7024.34	7026.57	TOC	5.55	2.23	3.32	5.55	7021.02	
DPBN-8B #2	25-Nov-02	906	7024.34	7026.57	TOC	5.55	2.23	3.32	5.55	7021.02	
DPBN-8B #3	25-Nov-02	907	7024.34	7026.57	TOC	5.55	2.23	3.32	5.55	7021.02	
LAUZ-2	25-Nov-02	909	NA	NA	TOC	5.90	NA	NA	5.90	NA	

Measurement Method and Probe Type: Solinst water depth indicator, Ser. No. 18528
Comments:

[1] Use the appropriate measuring point
[2] TOC is Top of Casing
[3] NAPL (Non Aqueous Phase Liquid). If NAPL is encountered, the groundwater level must be corrected.

Los Alamos Environmental Restoration Project

WATER-LEVEL ELEVATION DATA SHEET

ER SOP-07.02, R1

Date: 12/02/02 Technical Area: 21 Field Unit: Canyons Focus Area

Measured by (print name) Shannon Purdue Signature: C

LOCATION	LOG		ELEVATION[1] (ft)		TAPE READING				DEPTH TO WATER (ft)	ELEVATION GROUNDWATER (ft)	Comments
	Date	Time	GL Datum	(TOC)[2]	Meas. Pt.	Water Level (ft)	TOC to Ground Surface	DTW BGS (ft)			
LAUZ-1	2-Dec-02	930	NA	NA	TOC	5.67	NA	NA	5.67	NA	
DPW-1S	2-Dec-02	NA	7032.67	7035.67	TOC	NM	3.00	NA	NM	NA	
DPBN-1A #1	2-Dec-02	932	7032.29	7035.29	TOC	5.80	3.00	2.80	5.80	7029.49	
DPBN-1A #2	2-Dec-02	932	7032.29	7035.29	TOC	5.80	3.00	2.80	5.80	7029.49	
DPBN-1A #3	2-Dec-02	932	7032.29	7035.29	TOC	5.83	3.00	2.83	5.83	7029.46	
DPBN-1B #1	2-Dec-02	933	7032.71	7035.63	TOC	6.24	2.92	3.32	6.24	7029.39	
DPBN-1B #2	2-Dec-02	933	7032.71	7035.63	TOC	6.22	2.92	3.30	6.22	7029.41	
DPBN-1B #3	2-Dec-02	933	7032.71	7035.63	TOC	6.22	2.92	3.30	6.22	7029.41	
DPBN-1C #1	2-Dec-02	935	7032.48	7035.36	TOC	6.13	2.88	3.25	6.13	7029.23	
DPBN-1C #2	2-Dec-02	935	7032.48	7035.36	TOC	6.13	2.88	3.25	6.13	7029.23	
DPBN-1C #3	2-Dec-02	935	7032.48	7035.36	TOC	6.13	2.88	3.25	6.13	7029.23	
DPW-1N	2-Dec-02	937	7034.65	7037.62	TOC	8.52	2.97	5.55	8.52	7029.10	
DPW-1.1N	2-Dec-02	936	7033.84	7036.67	TOC	7.66	2.83	4.83	7.66	7029.01	
DPPN-1.1 #1	2-Dec-02	934	7032.55	7035.55	TOC	6.18	3.00	3.18	6.18	7029.37	
DPPN-1.1 #2	2-Dec-02	934	7032.27	7035.27	TOC	6.17	3.00	3.17	6.17	7029.10	
DPPN-1.1 #3	2-Dec-02	934	7032.24	7035.24	TOC	6.16	3.00	3.16	6.16	7029.08	
DPBN-2A #1	2-Dec-02	940	7033.21	7036.11	TOC	6.78	2.90	3.88	6.78	7029.33	
DPBN-2A #2	2-Dec-02	940	7033.21	7036.11	TOC	6.78	2.90	3.88	6.78	7029.33	
DPBN-2A #3	2-Dec-02	940	7033.21	7036.11	TOC	dry	2.90	NA	dry	NA	
DPBN-2B #1	2-Dec-02	939	7032.02	7035.02	TOC	5.74	3.00	2.74	5.74	7029.28	
DPBN-2B #2	2-Dec-02	939	7032.02	7035.02	TOC	5.75	3.00	2.75	5.75	7029.27	
DPBN-2B #3	2-Dec-02	939	7032.02	7035.02	TOC	dry	3.00	NA	dry	NA	
DPBN-2C #1	2-Dec-02	938	7032.98	7035.86	TOC	6.90	2.88	4.02	6.90	7028.96	
DPBN-2C #2	2-Dec-02	938	7032.98	7035.86	TOC	6.90	2.88	4.02	6.90	7028.96	
DPBN-2C #3	2-Dec-02	938	7032.98	7035.86	TOC	6.88	2.88	4.00	6.88	7028.98	
DPBN-3A #1	2-Dec-02	941	7032.96	7035.96	TOC	7.21	3.00	4.21	7.21	7028.75	
DPBN-3A #2	2-Dec-02	941	7032.96	7035.96	TOC	7.23	3.00	4.23	7.23	7028.73	
DPBN-3A #3	2-Dec-02	941	7032.96	7035.96	TOC	7.20	3.00	4.20	7.20	7028.76	
DPBN-3B #1	2-Dec-02	942	7031.88	7034.82	TOC	6.26	2.94	3.32	6.26	7028.56	
DPBN-3B #2	2-Dec-02	942	7031.88	7034.82	TOC	6.30	2.94	3.36	6.30	7028.52	
DPBN-3B #3	2-Dec-02	942	7031.88	7034.82	TOC	dry	2.94	NA	dry	NA	
DPBN-3C #1	2-Dec-02	943	7031.96	7034.76	TOC	6.28	2.80	3.48	6.28	7028.48	
DPBN-3C #2	2-Dec-02	943	7031.96	7034.76	TOC	5.86	2.80	3.06	5.86	7028.90	
DPBN-3C #3	2-Dec-02	943	7031.96	7034.76	TOC	5.86	2.80	3.06	5.86	7028.90	
DPW-3.2N	2-Dec-02	944	7034.53	7037.57	TOC	9.35	3.04	6.31	9.35	7028.22	
DPW-3.5N	2-Dec-02	NA	7031.44	7034.39	TOC	NM	2.95	NA	NM	NA	
DPW-3.5S	2-Dec-02	945	7032.40	7035.40	TOC	7.17	3.00	4.17	7.17	7028.23	
DPBN-4A #1	2-Dec-02	946	7031.93	7034.47	TOC	6.24	2.54	3.70	6.24	7028.23	
DPBN-4A #2	2-Dec-02	946	7031.93	7034.47	TOC	6.22	2.54	3.68	6.22	7028.25	
DPBN-4A #3	2-Dec-02	946	7031.93	7034.47	TOC	6.23	2.54	3.69	6.23	7028.24	
DPBN-4B #1	2-Dec-02	947	7031.53	7034.34	TOC	6.34	2.81	3.53	6.34	7028.00	
DPBN-4B #2	2-Dec-02	947	7031.53	7034.34	TOC	6.34	2.81	3.53	6.34	7028.00	
DPBN-4B #3	2-Dec-02	947	7031.53	7034.34	TOC	6.34	2.81	3.53	6.34	7028.00	
DPBN-4C #1	2-Dec-02	948	7032.79	7035.29	TOC	7.49	2.50	4.99	7.49	7027.80	
DPBN-4C #2	2-Dec-02	948	7032.79	7035.28	TOC	7.48	2.49	4.99	7.48	7027.80	
DPBN-4C #3	2-Dec-02	948	7032.79	7035.28	TOC	7.48	2.49	4.99	7.48	7027.80	
DPW-4.6N	2-Dec-02	949	7032.55	7035.60	TOC	7.97	3.05	4.92	7.97	7027.63	
DPPN-4.5N #1	2-Dec-02	950	7031.65	7034.65	TOC	7.06	3.00	4.06	7.06	7027.59	
DPPN-4.5N #2	2-Dec-02	950	7031.92	7034.92	TOC	7.04	3.00	4.04	7.04	7027.88	
DPPN-4.5N #3	2-Dec-02	950	7031.82	7034.82	TOC	7.01	3.00	4.01	7.01	7027.81	
DPW-4.4N	2-Dec-02	NA	7031.09	7034.03	TOC	NM	2.94	NA	NM	NA	
DPW-4.9S	2-Dec-02	958	7030.93	7033.78	TOC	6.42	2.85	3.57	6.42	7027.36	
DPBN-5A #1	2-Dec-02	957	7030.29	7032.41	TOC	5.08	2.12	2.96	5.08	7027.33	
DPBN-5A #2	2-Dec-02	957	7030.29	7032.41	TOC	5.05	2.12	2.93	5.05	7027.36	
DPBN-5A #3	2-Dec-02	957	7030.29	7032.41	TOC	5.02	2.12	2.90	5.02	7027.39	
DPBN-5B #1	2-Dec-02	956	7031.05	7033.62	TOC	6.19	2.57	3.62	6.19	7027.43	
DPBN-5B #2	2-Dec-02	956	7031.05	7033.62	TOC	6.19	2.57	3.62	6.19	7027.43	
DPBN-5B #3	2-Dec-02	956	7031.05	7033.62	TOC	6.18	2.57	3.61	6.18	7027.44	
DPBN-5C #1	2-Dec-02	955	7031.36	7034.30	TOC	6.97	2.94	4.03	6.97	7027.33	
DPBN-5C #2	2-Dec-02	955	7031.36	7034.30	TOC	6.97	2.94	4.03	6.97	7027.33	
DPBN-5C #3	2-Dec-02	955	7031.36	7034.30	TOC	6.95	2.94	4.01	6.95	7027.35	
DPW-5.8N	2-Dec-02	959	7032.32	7035.39	TOC	8.57	3.07	5.50	8.57	7026.82	
DPW-5.7N	2-Dec-02	NA	7031.02	7033.93	TOC	NM	2.91	NA	NM	NA	
DPPN-5.7 #1	2-Dec-02	1000	7029.72	7032.72	TOC	6.18	3.00	3.18	6.18	7026.54	
DPPN-5.7 #2	2-Dec-02	1000	7029.54	7032.54	TOC	6.17	3.00	3.17	6.17	7026.37	
DPPN-5.7 #3	2-Dec-02	1000	7029.50	7032.50	TOC	dry	3.00	NA	dry	NA	
DPBN-6A #1	2-Dec-02	1004	7030.73	7032.97	TOC	6.73	2.24	4.49	6.73	7026.24	
DPBN-6A #2	2-Dec-02	1004	7030.73	7032.93	TOC	6.69	2.20	4.49	6.69	7026.24	
DPBN-6A #3	2-Dec-02	1004	7030.73	7032.98	TOC	6.74	2.25	4.49	6.74	7026.24	
DPBN-6B #1	2-Dec-02	1003	7028.88	7031.71	TOC	5.35	2.83	2.52	5.35	7026.36	
DPBN-6B #2	2-Dec-02	1003	7028.88	7031.70	TOC	5.21	2.82	2.39	5.21	7026.49	
DPBN-6B #3	2-Dec-02	1003	7028.88	7031.70	TOC	5.22	2.82	2.40	5.22	7026.48	
DPBN-6C #1	2-Dec-02	1002	7029.83	7032.71	TOC	6.34	2.88	3.46	6.34	7026.37	

SR 1/30/03

Los Alamos Environmental Restoration Project

WATER-LEVEL ELEVATION DATA SHEET

Date: 12/02/02 Technical Area: 21

ER SOP-07.02, R1
Field Unit: Canyons Focus Area

Measured by (print name) Shannon Purdue Signature:

LOCATION	LOG		ELEVATION[1] (ft)		TAPE READING				DEPTH TO WATER (ft)	ELEVATION GROUNDWATER (ft)	Comments
	Date	Time	GL Datum	(TOC)[2]	Meas. Pt.	Water Level (ft)	TOC to Ground Surface	DTW BGS (ft)			
DPBN-6C #2	2-Dec-02	1002	7029.83	7032.71	TOC	6.33	2.88	3.45	6.33	7026.38	
DPBN-6C #3	2-Dec-02	1002	7029.83	7032.71	TOC	6.34	2.88	3.46	6.34	7026.37	
DPBN-6D #1	2-Dec-02	1001	7030.42	7033.27	TOC	6.99	2.85	4.14	6.99	7026.28	
DPBN-6D #2	2-Dec-02	1001	7030.42	7033.27	TOC	7.32	2.85	4.47	7.32	7025.95	
DPBN-6D #3	2-Dec-02	1001	7030.42	7033.27	TOC	dry	2.85	NA	dry	NA	
DPW-6.2S	2-Dec-02	1015	7028.90	7032.40	TOC	6.30	3.50	2.80	6.30	7026.10	
DPW-6.5N	2-Dec-02	1016	7030.20	7033.20	TOC	7.58	3.00	4.58	7.58	7025.62	
DPBN-7A #1	2-Dec-02	1019	7028.64	7031.31	TOC	6.65	2.67	3.98	6.65	7024.66	
DPBN-7A #2	2-Dec-02	1019	7028.64	7031.31	TOC	6.65	2.67	3.98	6.65	7024.66	
DPBN-7A #3	2-Dec-02	1019	7028.64	7031.31	TOC	6.66	2.67	3.99	6.66	7024.65	
DPBN-7B #1	2-Dec-02	1018	7027.37	7030.27	TOC	5.01	2.90	2.11	5.01	7025.26	
DPBN-7B #2	2-Dec-02	1018	7027.37	7030.27	TOC	5.01	2.90	2.11	5.01	7025.26	
DPBN-7B #3	2-Dec-02	1018	7027.37	7030.27	TOC	5.04	2.90	2.14	5.04	7025.23	
DPBN-7C #1	2-Dec-02	1017	7028.00	7030.85	TOC	5.63	2.85	2.78	5.63	7025.22	
DPBN-7C #2	2-Dec-02	1017	7028.00	7030.84	TOC	5.63	2.84	2.79	5.63	7025.21	
DPBN-7C #3	2-Dec-02	1017	7028.00	7030.83	TOC	5.62	2.83	2.79	5.62	7025.21	
DPW-7.1S	2-Dec-02	NA	7028.76	7031.67	TOC	NM	2.91	NA	NM	NA	
DPW-7.4N	2-Dec-02	1032	7028.10	7031.06	TOC	7.75	2.96	4.79	7.75	7023.31	
DPW-7.5S	2-Dec-02	1024	7027.50	7030.60	TOC	7.93	3.10	4.83	7.93	7022.67	
DPPN-7.7 #1	2-Dec-02	1025	7024.49	7027.48	TOC	10.03	2.99	7.04	10.03	7017.45	
DPPN-7.7 #2	2-Dec-02	1025	7024.47	7027.47	TOC	5.56	3.00	2.56	5.56	7021.91	
DPPN-7.7 #3	2-Dec-02	1025	7024.56	7027.34	TOC	5.34	2.78	2.56	5.34	7022.00	
DPW-7.9S	2-Dec-02	NA	7025.22	7028.26	TOC	NM	3.04	NA	NM	NA	
DPBN-8A #1	2-Dec-02	1027	7025.06	7027.57	TOC	6.82	2.51	4.31	6.82	7020.75	
DPBN-8A #2	2-Dec-02	1027	7025.06	7027.57	TOC	6.82	2.51	4.31	6.82	7020.75	
DPBN-8A #3	2-Dec-02	1027	7025.06	7027.57	TOC	6.83	2.51	4.32	6.83	7020.74	
DPBN-8B #1	2-Dec-02	1028	7024.34	7026.57	TOC	5.58	2.23	3.35	5.58	7020.99	
DPBN-8B #2	2-Dec-02	1028	7024.34	7026.57	TOC	5.58	2.23	3.35	5.58	7020.99	
DPBN-8B #3	2-Dec-02	1028	7024.34	7026.57	TOC	5.58	2.23	3.35	5.58	7020.99	
LAUZ-2	2-Dec-02	1030	NA	NA	TOC	5.91	NA	NA	5.91	NA	

Measurement Method and Probe Type: Solinst water depth indicator, Ser. No. 18528
Comments:

[1] Use the appropriate measuring point
[2] TOC is Top of Casing
[3] NAPL (Non Aqueous Phase Liquid). If NAPL is encountered, the groundwater level must be corrected.

Los Alamos Environmental Restoration Project

WATER-LEVEL ELEVATION DATA SHEET

Date: 12/9/02 Technical Area: 21

ER SOP-07.02, R1
Field Unit: Canyons Focus Area

Measured by (print name) Shannon Purdue Signature:

LOCATION	LOG		ELEVATION[1] (ft)		TAPE READING				DEPTH TO WATER (ft)	ELEVATION GROUNDWATER (ft)	Comments
	Date	Time	GL Datum	(TOC)[2]	Meas. Pt.	Water Level (ft)	TOC to Ground Surface	DTW BGS (ft)			
LAUZ-1	9-Dec-02	845	NA	NA	TOC	4.84	NA	NA	4.84	NA	
DPW-1S	9-Dec-02	NA	7032.67	7035.67	TOC	NM	3.00	NA	NM	NA	
DPBN-1A #1	9-Dec-02	846	7032.29	7035.29	TOC	5.12	3.00	2.12	5.12	7030.17	
DPBN-1A #2	9-Dec-02	846	7032.29	7035.29	TOC	5.12	3.00	2.12	5.12	7030.17	
DPBN-1A #3	9-Dec-02	846	7032.29	7035.29	TOC	5.13	3.00	2.13	5.13	7030.16	
DPBN-1B #1	9-Dec-02	848	7032.71	7035.63	TOC	5.48	2.92	2.56	5.48	7030.15	
DPBN-1B #2	9-Dec-02	848	7032.71	7035.63	TOC	5.48	2.92	2.56	5.48	7030.15	
DPBN-1B #3	9-Dec-02	848	7032.71	7035.63	TOC	5.47	2.92	2.55	5.47	7030.16	
DPBN-1C #1	9-Dec-02	957	7032.48	7035.36	TOC	5.45	2.88	2.57	5.45	7029.91	
DPBN-1C #2	9-Dec-02	957	7032.48	7035.36	TOC	5.46	2.88	2.58	5.46	7029.90	
DPBN-1C #3	9-Dec-02	958	7032.48	7035.36	TOC	5.45	2.88	2.57	5.45	7029.91	
DPW-1N	9-Dec-02	959	7034.65	7037.62	TOC	7.89	2.97	4.92	7.89	7029.73	
DPW-1.1N	9-Dec-02	958	7033.64	7036.67	TOC	7.01	2.83	4.18	7.01	7029.66	
DPPN-1.1 #1	9-Dec-02	849	7032.55	7035.55	TOC	5.43	3.00	2.43	5.43	7030.12	
DPPN-1.1 #2	9-Dec-02	849	7032.27	7035.27	TOC	5.48	3.00	2.48	5.48	7029.79	
DPPN-1.1 #3	9-Dec-02	850	7032.24	7035.24	TOC	5.42	3.00	2.42	5.42	7029.82	
DPBN-2A #1	9-Dec-02	852	7033.21	7036.11	TOC	6.42	2.90	3.52	6.42	7029.69	
DPBN-2A #2	9-Dec-02	852	7033.21	7036.11	TOC	6.26	2.90	3.36	6.26	7029.85	
DPBN-2A #3	9-Dec-02	853	7033.21	7036.11	TOC	6.25	2.90	NA	6.25	NA	
DPBN-2B #1	9-Dec-02	954	7032.02	7035.02	TOC	5.18	3.00	2.18	5.18	7029.84	
DPBN-2B #2	9-Dec-02	955	7032.02	7035.02	TOC	5.19	3.00	2.19	5.19	7029.83	
DPBN-2B #3	9-Dec-02	955	7032.02	7035.02	TOC	5.19	3.00	NA	5.19	NA	
DPBN-2C #1	9-Dec-02	953	7032.98	7035.86	TOC	6.33	2.88	3.45	6.33	7029.53	
DPBN-2C #2	9-Dec-02	954	7032.98	7035.86	TOC	6.33	2.88	3.45	6.33	7029.53	
DPBN-2C #3	9-Dec-02	954	7032.98	7035.86	TOC	6.32	2.88	3.44	6.32	7029.54	
DPBN-3A #1	9-Dec-02	900	7032.96	7035.96	TOC	6.77	3.00	3.77	6.77	7029.19	
DPBN-3A #2	9-Dec-02	900	7032.96	7035.96	TOC	6.79	3.00	3.79	6.79	7029.17	
DPBN-3A #3	9-Dec-02	901	7032.96	7035.96	TOC	6.77	3.00	3.77	6.77	7029.19	
DPBN-3B #1	9-Dec-02	902	7031.88	7034.82	TOC	5.83	2.94	2.89	5.83	7028.99	
DPBN-3B #2	9-Dec-02	902	7031.88	7034.82	TOC	5.83	2.94	2.89	5.83	7028.99	
DPBN-3B #3	9-Dec-02	903	7031.88	7034.82	TOC	5.83	2.94	NA	5.83	NA	
DPBN-3C #1	9-Dec-02	950	7031.96	7034.76	TOC	5.85	2.80	3.05	5.85	7028.91	
DPBN-3C #2	9-Dec-02	950	7031.96	7034.76	TOC	5.37	2.80	2.57	5.37	7029.39	
DPBN-3C #3	9-Dec-02	951	7031.96	7034.76	TOC	5.38	2.80	2.58	5.38	7029.38	
DPW-3.2N	9-Dec-02	952	7034.53	7037.57	TOC	8.94	3.04	5.90	8.94	7028.63	
DPW-3.5N	9-Dec-02	NA	7031.44	7034.39	TOC	NM	2.95	NA	NM	NA	
DPW-3.5S	9-Dec-02	903	7032.40	7035.40	TOC	6.74	3.00	3.74	6.74	7028.66	
DPBN-4A #1	9-Dec-02	905	7031.93	7034.47	TOC	5.83	2.54	3.29	5.83	7028.64	
DPBN-4A #2	9-Dec-02	905	7031.93	7034.47	TOC	5.82	2.54	3.28	5.82	7028.65	
DPBN-4A #3	9-Dec-02	905	7031.93	7034.47	TOC	5.84	2.54	3.30	5.84	7028.63	
DPBN-4B #1	9-Dec-02	948	7031.53	7034.34	TOC	6.01	2.81	3.20	6.01	7028.33	
DPBN-4B #2	9-Dec-02	948	7031.53	7034.34	TOC	6.01	2.81	3.20	6.01	7028.33	
DPBN-4B #3	9-Dec-02	949	7031.53	7034.34	TOC	6.01	2.81	3.20	6.01	7028.33	
DPBN-4C #1	9-Dec-02	947	7032.79	7035.29	TOC	7.15	2.50	4.65	7.15	7028.14	
DPBN-4C #2	9-Dec-02	947	7032.79	7035.28	TOC	7.13	2.49	4.64	7.13	7028.15	
DPBN-4C #3	9-Dec-02	947	7032.79	7035.28	TOC	7.14	2.49	4.65	7.14	7028.14	
DPW-4.6N	9-Dec-02	946	7032.55	7035.60	TOC	7.63	3.05	4.58	7.63	7027.97	
DPPN-4.5N #1	9-Dec-02	945	7031.65	7034.65	TOC	6.73	3.00	3.73	6.73	7027.92	
DPPN-4.5N #2	9-Dec-02	945	7031.92	7034.92	TOC	6.72	3.00	3.72	6.72	7028.20	
DPPN-4.5N #3	9-Dec-02	946	7031.82	7034.82	TOC	6.68	3.00	3.68	6.68	7028.14	
DPW-4.4N	9-Dec-02	NA	7031.09	7034.03	TOC	NM	2.94	NA	NM	NA	
DPW-4.9S	9-Dec-02	906	7030.93	7033.78	TOC	6.11	2.85	3.26	6.11	7027.67	
DPBN-5A #1	9-Dec-02	907	7030.29	7032.41	TOC	4.76	2.12	2.64	4.76	7027.65	
DPBN-5A #2	9-Dec-02	907	7030.29	7032.41	TOC	4.74	2.12	2.62	4.74	7027.67	
DPBN-5A #3	9-Dec-02	907	7030.29	7032.41	TOC	4.71	2.12	2.59	4.71	7027.70	
DPBN-5B #1	9-Dec-02	943	7031.05	7033.62	TOC	5.85	2.57	3.28	5.85	7027.77	
DPBN-5B #2	9-Dec-02	944	7031.05	7033.62	TOC	5.85	2.57	3.28	5.85	7027.77	
DPBN-5B #3	9-Dec-02	944	7031.05	7033.62	TOC	5.85	2.57	3.28	5.85	7027.77	
DPBN-5C #1	9-Dec-02	942	7031.36	7034.30	TOC	6.66	2.94	3.72	6.66	7027.64	
DPBN-5C #2	9-Dec-02	942	7031.36	7034.30	TOC	6.64	2.94	3.70	6.64	7027.66	
DPBN-5C #3	9-Dec-02	943	7031.36	7034.30	TOC	6.63	2.94	3.69	6.63	7027.67	
DPW-5.8N	9-Dec-02	941	7032.32	7035.39	TOC	8.31	3.07	5.24	8.31	7027.08	
DPW-5.7N	9-Dec-02	NA	7031.02	7033.93	TOC	NM	2.91	NA	NM	NA	
DPPN-5.7 #1	9-Dec-02	938	7029.72	7032.72	TOC	5.87	3.00	2.87	5.87	7026.85	
DPPN-5.7 #2	9-Dec-02	938	7029.54	7032.54	TOC	5.86	3.00	2.86	5.86	7026.68	
DPPN-5.7 #3	9-Dec-02	939	7029.50	7032.50	TOC	5.77	3.00	NA	5.77	NA	
DPBN-6A #1	9-Dec-02	909	7030.73	7032.97	TOC	6.42	2.24	4.18	6.42	7026.55	
DPBN-6A #2	9-Dec-02	909	7030.73	7032.93	TOC	6.36	2.20	4.16	6.36	7026.57	
DPBN-6A #3	9-Dec-02	910	7030.73	7032.98	TOC	6.41	2.25	4.16	6.41	7026.57	
DPBN-6B #1	9-Dec-02	937	7028.88	7031.71	TOC	5.08	2.83	2.25	5.08	7026.63	
DPBN-6B #2	9-Dec-02	938	7028.88	7031.70	TOC	4.90	2.82	2.08	4.90	7026.80	
DPBN-6B #3	9-Dec-02	938	7028.88	7031.70	TOC	4.91	2.82	2.09	4.91	7026.79	
DPBN-6C #1	9-Dec-02	936	7029.83	7032.71	TOC	6.05	2.88	3.17	6.05	7026.66	

Sheet 2 of 2

WATER-LEVEL ELEVATION DATA SHEET

Date: 12/09/02 Technical Area: 21

ER SOP-07.02, R1
Field Unit: Canyons Focus Area

Measured by (print name) Shannon Purdue Signature: [illegible]

LOCATION	LOG		ELEVATION[1] (ft)		TAPE READING				DEPTH TO WATER (ft)	ELEVATION GROUNDWATER (ft)	Comments
	Date	Time	GL Datum	(TOC)[2]	Meas. Pt.	Water Level (ft)	TOC to Ground Surface	DTW BGS (ft)			
DPBN-6C #2	9-Dec-02	936	7029.83	7032.71	TOC	6.05	2.88	3.17	6.05	7026.66	
DPBN-6C #3	9-Dec-02	937	7029.83	7032.71	TOC	6.06	2.88	3.18	6.06	7026.65	
DPBN-6D #1	9-Dec-02	933	7030.42	7033.27	TOC	6.71	2.85	3.86	6.71	7026.56	
DPBN-6D #2	9-Dec-02	933	7030.42	7033.27	TOC	7.06	2.85	4.21	7.06	7026.21	
DPBN-6D #3	9-Dec-02	934	7030.42	7033.27	TOC	dry	2.85	NA	dry	NA	
DPW-6.2S	9-Dec-02	911	7028.90	7032.40	TOC	6.04	3.50	2.54	6.04	7026.36	
DPW-6.5N	9-Dec-02	932	7030.20	7033.20	TOC	7.35	3.00	4.35	7.35	7025.85	
DPBN-7A #1	9-Dec-02	912	7028.64	7031.31	TOC	6.30	2.67	3.63	6.30	7025.01	
DPBN-7A #2	9-Dec-02	912	7028.64	7031.31	TOC	6.31	2.67	3.64	6.31	7025.00	
DPBN-7A #3	9-Dec-02	913	7028.64	7031.31	TOC	6.31	2.67	3.64	6.31	7025.00	
DPBN-7B #1	9-Dec-02	929	7027.37	7030.27	TOC	4.71	2.90	1.81	4.71	7025.56	
DPBN-7B #2	9-Dec-02	929	7027.37	7030.27	TOC	4.70	2.90	1.80	4.70	7025.57	
DPBN-7B #3	9-Dec-02	930	7027.37	7030.27	TOC	4.72	2.90	1.82	4.72	7025.55	
DPBN-7C #1	9-Dec-02	927	7028.00	7030.85	TOC	5.33	2.85	2.48	5.33	7025.52	
DPBN-7C #2	9-Dec-02	927	7028.00	7030.84	TOC	5.33	2.84	2.49	5.33	7025.51	
DPBN-7C #3	9-Dec-02	928	7028.00	7030.83	TOC	5.33	2.83	2.50	5.33	7025.50	
DPW-7.1S	9-Dec-02	NA	7028.76	7031.67	TOC	NM	2.91	NA	NM	NA	
DPW-7.4N	9-Dec-02	925	7028.10	7031.06	TOC	7.51	2.96	4.55	7.51	7023.55	
DPW-7.5S	9-Dec-02	916	7027.50	7030.60	TOC	7.83	3.10	4.73	7.83	7022.77	
DPPN-7.7 #1	9-Dec-02	918	7024.49	7027.48	TOC	9.79	2.99	6.80	9.79	7017.69	
DPPN-7.7 #2	9-Dec-02	918	7024.47	7027.47	TOC	5.31	3.00	2.31	5.31	7022.16	
DPPN-7.7 #3	9-Dec-02	919	7024.56	7027.34	TOC	5.12	2.78	2.34	5.12	7022.22	
DPW-7.9S	9-Dec-02	NA	7025.22	7028.26	TOC	NM	3.04	NA	NM	NA	
DPBN-8A #1	9-Dec-02	920	7025.06	7027.57	TOC	6.67	2.51	4.16	6.67	7020.90	
DPBN-8A #2	9-Dec-02	920	7025.06	7027.57	TOC	6.67	2.51	4.16	6.67	7020.90	
DPBN-8A #3	9-Dec-02	921	7025.06	7027.57	TOC	6.67	2.51	4.16	6.67	7020.90	
DPBN-8B #1	9-Dec-02	922	7024.34	7026.57	TOC	5.52	2.23	3.29	5.52	7021.05	
DPBN-8B #2	9-Dec-02	922	7024.34	7026.57	TOC	5.51	2.23	3.28	5.51	7021.06	
DPBN-8B #3	9-Dec-02	923	7024.34	7026.57	TOC	5.52	2.23	3.29	5.52	7021.05	
LAUZ-2	9-Dec-02	924	NA	NA	TOC	5.82	NA	NA	5.82	NA	

Measurement Method and Probe Type: Solinst water depth indicator, Ser. No. 18528
Comments:

[1] Use the appropriate measuring point
[2] TOC is Top of Casing
[3] NAPL (Non Aqueous Phase Liquid). If NAPL is encountered, the groundwater level must be corrected.

Los Alamos Environmental Restoration Project

WATER-LEVEL ELEVATION DATA SHEET

Date: 12/23/02 Technical Area: 21

ER SOP-07.02, R1
Field Unit: Canyons Focus Area

Measured by (print name) Shannon Purdue Signature: [illegible]

LOCATION	LOG		ELEVATION[1] (ft)		TAPE READING				DEPTH TO WATER (ft)	ELEVATION GROUNDWATER (ft)	Comments
	Date	Time	GL Datum	(TOC)[2]	Meas. Pt.	Water Level (ft)	TOC to Ground Surface	DTW BGS (ft)			
LAUZ-1	23-Dec-02	825	NA	NA	TOC	5.48	NA	NA	5.48	NA	
DPW-1S	23-Dec-02	826	7032.67	7035.67	TOC	5.94	3.00	NA	5.94	NA	
DPBN-1A #1	23-Dec-02	827	7032.29	7035.29	TOC	5.62	3.00	2.62	5.62	7029.67	
DPBN-1A #2	23-Dec-02	827	7032.29	7035.29	TOC	5.63	3.00	2.63	5.63	7029.66	
DPBN-1A #3	23-Dec-02	828	7032.29	7035.29	TOC	5.66	3.00	2.66	5.66	7029.63	
DPBN-1B #1	23-Dec-02	828	7032.71	7035.63	TOC	6.05	2.92	3.13	6.05	7029.58	
DPBN-1B #2	23-Dec-02	828	7032.71	7035.63	TOC	6.05	2.92	3.13	6.05	7029.58	
DPBN-1B #3	23-Dec-02	829	7032.71	7035.63	TOC	6.04	2.92	3.12	6.04	7029.59	
DPBN-1C #1	23-Dec-02	924	7032.48	7035.36	TOC	5.97	2.88	3.09	5.97	7029.39	
DPBN-1C #2	23-Dec-02	924	7032.48	7035.36	TOC	5.97	2.88	3.09	5.97	7029.39	
DPBN-1C #3	23-Dec-02	925	7032.48	7035.36	TOC	5.97	2.88	3.09	5.97	7029.39	
DPW-1N	23-Dec-02	922	7034.65	7037.62	TOC	8.37	2.97	5.40	8.37	7029.25	
DPW-1.1N	23-Dec-02	923	7033.84	7036.67	TOC	7.51	2.83	4.68	7.51	7029.16	
DPPN-1.1 #1	23-Dec-02	NA	7032.55	7035.55	TOC	NM	3.00	NM	NM	NM	Transducer in well.
DPPN-1.1 #2	23-Dec-02	NA	7032.27	7035.27	TOC	NM	3.00	NM	NM	NM	Transducer in well.
DPPN-1.1 #3	23-Dec-02	NA	7032.24	7035.24	TOC	NM	3.00	NM	NM	NM	Transducer in well.
DPBN-2A #1	23-Dec-02	829	7033.21	7036.11	TOC	6.62	2.90	3.72	6.62	7029.49	
DPBN-2A #2	23-Dec-02	829	7033.21	7036.11	TOC	6.62	2.90	3.72	6.62	7029.49	
DPBN-2A #3	23-Dec-02	830	7033.21	7036.11	TOC	dry	2.90	NA	dry	NA	
DPBN-2B #1	23-Dec-02	921	7032.02	7035.02	TOC	5.61	3.00	2.61	5.61	7029.41	
DPBN-2B #2	23-Dec-02	921	7032.02	7035.02	TOC	5.60	3.00	2.60	5.60	7029.42	
DPBN-2B #3	23-Dec-02	922	7032.02	7035.02	TOC	5.60	3.00	NA	5.60	NA	
DPBN-2C #1	23-Dec-02	919	7032.98	7035.86	TOC	6.74	2.88	3.86	6.74	7029.12	
DPBN-2C #2	23-Dec-02	919	7032.98	7035.86	TOC	6.74	2.88	3.86	6.74	7029.12	
DPBN-2C #3	23-Dec-02	920	7032.98	7035.86	TOC	6.73	2.88	3.85	6.73	7029.13	
DPBN-3A #1	23-Dec-02	830	7032.96	7035.96	TOC	7.06	3.00	4.06	7.06	7028.90	
DPBN-3A #2	23-Dec-02	830	7032.96	7035.96	TOC	7.07	3.00	4.07	7.07	7028.89	
DPBN-3A #3	23-Dec-02	831	7032.96	7035.96	TOC	7.05	3.00	4.05	7.05	7028.91	
DPBN-3B #1	23-Dec-02	831	7031.88	7034.82	TOC	6.11	2.94	3.17	6.11	7028.71	
DPBN-3B #2	23-Dec-02	831	7031.88	7034.82	TOC	6.12	2.94	3.18	6.12	7028.70	
DPBN-3B #3	23-Dec-02	832	7031.88	7034.82	TOC	6.11	2.94	NA	6.11	NA	
DPBN-3C #1	23-Dec-02	917	7031.96	7034.76	TOC	6.15	2.80	3.35	6.15	7028.61	
DPBN-3C #2	23-Dec-02	917	7031.96	7034.76	TOC	5.71	2.80	2.91	5.71	7029.05	
DPBN-3C #3	23-Dec-02	918	7031.96	7034.76	TOC	5.72	2.80	2.92	5.72	7029.04	
DPW-3.2N	23-Dec-02	916	7034.53	7037.57	TOC	9.24	3.04	6.20	9.24	7028.33	
DPW-3.5N	23-Dec-02	915	7031.44	7034.39	TOC	6.18	2.95	NA	6.18	NA	
DPW-3.5S	23-Dec-02	833	7032.40	7035.40	TOC	7.03	3.00	4.03	7.03	7028.37	
DPBN-4A #1	23-Dec-02	834	7031.93	7034.47	TOC	6.10	2.54	3.56	6.10	7028.37	
DPBN-4A #2	23-Dec-02	834	7031.93	7034.47	TOC	6.09	2.54	3.55	6.09	7028.38	
DPBN-4A #3	23-Dec-02	835	7031.93	7034.47	TOC	6.10	2.54	3.56	6.10	7028.37	
DPBN-4B #1	23-Dec-02	913	7031.53	7034.34	TOC	6.23	2.81	3.42	6.23	7028.11	
DPBN-4B #2	23-Dec-02	913	7031.53	7034.34	TOC	6.23	2.81	3.42	6.23	7028.11	
DPBN-4B #3	23-Dec-02	914	7031.53	7034.34	TOC	6.23	2.81	3.42	6.23	7028.11	
DPBN-4C #1	23-Dec-02	911	7032.79	7035.29	TOC	7.40	2.50	4.90	7.40	7027.89	
DPBN-4C #2	23-Dec-02	911	7032.79	7035.28	TOC	7.38	2.49	4.89	7.38	7027.90	
DPBN-4C #3	23-Dec-02	912	7032.79	7035.28	TOC	7.36	2.49	4.87	7.36	7027.92	
DPW-4.6N	23-Dec-02	909	7032.55	7035.60	TOC	7.86	3.05	4.81	7.86	7027.74	
DPPN-4.5N #1	23-Dec-02	NA	7031.65	7034.65	TOC	NM	3.00	NM	NM	NM	Transducer in well.
DPPN-4.5N #2	23-Dec-02	NA	7031.92	7034.92	TOC	NM	3.00	NM	NM	NM	Transducer in well.
DPPN-4.5N #3	23-Dec-02	NA	7031.82	7034.82	TOC	NM	3.00	NM	NM	NM	Transducer in well.
DPW-4.4N	23-Dec-02	910	7031.09	7034.03	TOC	6.20	2.94	NA	6.20	NA	
DPW-4.9S	23-Dec-02	835	7030.93	7033.78	TOC	6.32	2.85	3.47	6.32	7027.46	
DPBN-5A #1	23-Dec-02	836	7030.29	7032.41	TOC	4.98	2.12	2.86	4.98	7027.43	
DPBN-5A #2	23-Dec-02	837	7030.29	7032.41	TOC	4.95	2.12	2.83	4.95	7027.46	
DPBN-5A #3	23-Dec-02	837	7030.29	7032.41	TOC	4.93	2.12	2.81	4.93	7027.48	
DPBN-5B #1	23-Dec-02	907	7031.05	7033.62	TOC	6.10	2.57	3.53	6.10	7027.52	
DPBN-5B #2	23-Dec-02	907	7031.05	7033.62	TOC	6.09	2.57	3.52	6.09	7027.53	
DPBN-5B #3	23-Dec-02	907	7031.05	7033.62	TOC	6.08	2.57	3.51	6.08	7027.54	
DPBN-5C #1	23-Dec-02	906	7031.36	7034.30	TOC	6.88	2.94	3.94	6.88	7027.42	
DPBN-5C #2	23-Dec-02	906	7031.36	7034.30	TOC	6.86	2.94	3.92	6.86	7027.44	
DPBN-5C #3	23-Dec-02	907	7031.36	7034.30	TOC	6.85	2.94	3.91	6.85	7027.45	
DPW-5.8N	23-Dec-02	905	7032.32	7035.39	TOC	8.45	3.07	5.38	8.45	7026.94	
DPW-5.7N	23-Dec-02	904	7031.02	7033.93	TOC	6.94	2.91	NA	6.94	NA	
DPPN-5.7 #1	23-Dec-02	903	7029.72	7032.72	TOC	6.12	3.00	3.12	6.12	7026.60	
DPPN-5.7 #2	23-Dec-02	902	7029.54	7032.54	TOC	6.11	3.00	3.11	6.11	7026.43	
DPPN-5.7 #3	23-Dec-02	902	7029.50	7032.50	TOC	5.98	3.00	NA	5.98	NA	
DPBN-6A #1	23-Dec-02	838	7030.73	7032.97	TOC	6.67	2.24	4.43	6.67	7026.30	
DPBN-6A #2	23-Dec-02	838	7030.73	7032.93	TOC	6.61	2.20	4.41	6.61	7026.32	
DPBN-6A #3	23-Dec-02	839	7030.73	7032.98	TOC	6.66	2.25	4.41	6.66	7026.32	
DPBN-6B #1	23-Dec-02	901	7028.88	7031.71	TOC	5.21	2.83	2.38	5.21	7026.50	
DPBN-6B #2	23-Dec-02	901	7028.88	7031.70	TOC	5.17	2.82	2.35	5.17	7026.53	
DPBN-6B #3	23-Dec-02	902	7028.88	7031.70	TOC	5.17	2.82	2.35	5.17	7026.53	
DPBN-6C #1	23-Dec-02	859	7029.83	7032.71	TOC	6.28	2.88	3.40	6.28	7026.43	

Sheet 2 of 2

WATER-LEVEL ELEVATION DATA SHEET

Date: 12/~~02~~23/02 (or 1/3/03)

Technical Area: 21

ER SOP-07.02, R1
Field Unit: Canyons Focus Area

Measured by (print name) Shannon Purdue Signature: [illegible]

LOCATION	LOG		ELEVATION[1] (ft)		TAPE READING				DEPTH TO WATER (ft)	ELEVATION GROUNDWATER (ft)	Comments
	Date	Time	GL Datum	(TOC)[2]	Meas. Pt.	Water Level (ft)	TOC to Ground Surface	DTW BGS (ft)			
DPBN-6C #2	23-Dec-02	900	7029.83	7032.71	TOC	6.26	2.88	3.38	6.26	7026.45	
DPBN-6C #3	23-Dec-02	900	7029.83	7032.71	TOC	6.28	2.88	3.40	6.28	7026.43	
DPBN-6D #1	23-Dec-02	856	7030.42	7033.27	TOC	6.70	2.85	3.85	6.70	7026.57	
DPBN-6D #2	23-Dec-02	856	7030.42	7033.27	TOC	6.83	2.85	3.98	6.83	7026.44	
DPBN-6D #3	23-Dec-02	857	7030.42	7033.27	TOC	6.84	2.85	NA	6.84	NA	
DPW-6.2S	23-Dec-02	840	7028.90	7032.40	TOC	6.26	3.50	2.76	6.26	7026.14	
DPW-6.5N	23-Dec-02	855	7030.20	7033.20	TOC	7.46	3.00	4.46	7.46	7025.74	
DPBN-7A #1	23-Dec-02	841	7028.64	7031.31	TOC	6.54	2.67	3.87	6.54	7024.77	
DPBN-7A #2	23-Dec-02	841	7028.64	7031.31	TOC	6.55	2.67	3.88	6.55	7024.76	
DPBN-7A #3	23-Dec-02	842	7028.64	7031.31	TOC	6.54	2.67	3.87	6.54	7024.77	
DPBN-7B #1	23-Dec-02	854	7027.37	7030.27	TOC	4.95	2.90	2.05	4.95	7025.32	
DPBN-7B #2	23-Dec-02	854	7027.37	7030.27	TOC	4.96	2.90	2.06	4.96	7025.31	
DPBN-7B #3	23-Dec-02	855	7027.37	7030.27	TOC	4.97	2.90	2.07	4.97	7025.30	
DPBN-7C #1	23-Dec-02	852	7028.00	7030.85	TOC	5.58	2.85	2.73	5.58	7025.27	
DPBN-7C #2	23-Dec-02	852	7028.00	7030.84	TOC	5.58	2.84	2.74	5.58	7025.26	
DPBN-7C #3	23-Dec-02	853	7028.00	7030.83	TOC	5.56	2.83	2.73	5.56	7025.27	
DPW-7.1S	23-Dec-02	842	7028.76	7031.67	TOC	6.83	2.91	NA	6.83	NA	
DPW-7.4N	23-Dec-02	851	7028.10	7031.06	TOC	7.70	2.96	4.74	7.70	7023.36	
DPW-7.5S	23-Dec-02	843	7027.50	7030.60	TOC	7.84	3.10	4.74	7.84	7022.76	
DPPN-7.7 #1	23-Dec-02	843	7024.49	7027.48	TOC	8.87	2.99	5.88	8.87	7018.61	
DPPN-7.7 #2	23-Dec-02	844	7024.47	7027.47	TOC	5.55	3.00	2.55	5.55	7021.92	
DPPN-7.7 #3	23-Dec-02	844	7024.56	7027.34	TOC	5.34	2.78	2.56	5.34	7022.00	
DPW-7.9S	23-Dec-02	846	7025.22	7028.26	TOC	7.18	3.04	NA	7.18	NA	
DPBN-8A #1	23-Dec-02	847	7025.06	7027.57	TOC	6.80	2.51	4.29	6.80	7020.77	
DPBN-8A #2	23-Dec-02	847	7025.06	7027.57	TOC	6.79	2.51	4.28	6.79	7020.78	
DPBN-8A #3	23-Dec-02	848	7025.06	7027.57	TOC	6.80	2.51	4.29	6.80	7020.77	
DPBN-8B #1	23-Dec-02	849	7024.34	7026.57	TOC	5.54	2.23	3.31	5.54	7021.03	
DPBN-8B #2	23-Dec-02	849	7024.34	7026.57	TOC	5.55	2.23	3.32	5.55	7021.02	
DPBN-8B #3	23-Dec-02	850	7024.34	7026.57	TOC	5.55	2.23	3.32	5.55	7021.02	
LAUZ-2	23-Dec-02	851	NA	NA	TOC	5.88	NA	NA	5.88	NA	

Measurement Method and Probe Type: Solinst water depth indicator, Ser. No. 18528
Comments:

[1] Use the appropriate measuring point
[2] TOC is Top of Casing
[3] NAPL (Non Aqueous Phase Liquid). If NAPL is encountered, the groundwater level must be corrected.

Los Alamos Environmental Restoration Project

WATER-LEVEL ELEVATION DATA SHEET

Date: 01/06/03 Technical Area: 21

ER SOP-07.02, R1
Field Unit: Canyons Focus Area

Measured by (print name) Shannon Purdue Signature: C

LOCATION	LOG		ELEVATION[1] (ft)		TAPE READING				DEPTH TO WATER (ft)	ELEVATION GROUNDWATER (ft)	Comments
	Date	Time	GL Datum	(TOC)[2]	Meas. Pt.	Water Level (ft)	TOC to Ground Surface	DTW BGS (ft)			
LAUZ-1	6-Jan-03	1044	NA	NA	TOC	5.99	NA	NA	5.99	NA	
DPW-1S	6-Jan-03	1045	7032.67	7035.67	TOC	6.44	3.00	3.44	6.44	7029.23	
DPBN-1A #1	6-Jan-03	1046	7032.29	7035.29	TOC	6.17	3.00	3.17	6.17	7029.12	
DPBN-1A #2	6-Jan-03	1046	7032.29	7035.29	TOC	6.18	3.00	3.18	6.18	7029.11	
DPBN-1A #3	6-Jan-03	1046	7032.29	7035.29	TOC	6.19	3.00	3.19	6.19	7029.10	
DPBN-1B #1	6-Jan-03	1047	7032.71	7035.63	TOC	6.57	2.92	3.65	6.57	7029.06	
DPBN-1B #2	6-Jan-03	1047	7032.71	7035.63	TOC	6.58	2.92	3.66	6.58	7029.05	
DPBN-1B #3	6-Jan-03	1047	7032.71	7035.63	TOC	dry	2.92	dry	dry	dry	
DPBN-1C #1	6-Jan-03	1130	7032.48	7035.36	TOC	6.50	2.88	3.62	6.50	7028.86	
DPBN-1C #2	6-Jan-03	1130	7032.48	7035.36	TOC	6.50	2.88	3.62	6.50	7028.86	
DPBN-1C #3	6-Jan-03	1130	7032.48	7035.36	TOC	6.49	2.88	3.61	6.49	7028.87	
DPW-1N	6-Jan-03	1129	7034.65	7037.62	TOC	dry	2.97	dry	dry	dry	
DPW-1.1N	6-Jan-03	1129	7033.84	7036.67	TOC	8.00	2.83	5.17	8.00	7028.67	
DPPN-1.1 #1	6-Jan-03	NA	7032.55	7035.55	TOC	NM	3.00	NM	NM	NM	Transducer in well, WL not taken.
DPPN-1.1 #2	6-Jan-03	NA	7032.27	7035.27	TOC	NM	3.00	NM	NM	NM	Transducer in well, WL not taken.
DPPN-1.1 #3	6-Jan-03	NA	7032.24	7035.24	TOC	NM	3.00	NM	NM	NM	Transducer in well, WL not taken.
DPBN-2A #1	6-Jan-03	1048	7033.21	7036.11	TOC	7.11	2.90	4.21	7.11	7029.00	
DPBN-2A #2	6-Jan-03	1048	7033.21	7036.11	TOC	7.11	2.90	4.21	7.11	7029.00	
DPBN-2A #3	6-Jan-03	1048	7033.21	7036.11	TOC	dry	2.90	NA	dry	dry	
DPBN-2B #1	6-Jan-03	1127	7032.02	7035.02	TOC	6.07	3.00	3.07	6.07	7028.95	
DPBN-2B #2	6-Jan-03	1127	7032.02	7035.02	TOC	6.07	3.00	3.07	6.07	7028.95	
DPBN-2B #3	6-Jan-03	1127	7032.02	7035.02	TOC	dry	3.00	NA	dry	dry	
DPBN-2C #1	6-Jan-03	1128	7032.98	7035.86	TOC	7.22	2.88	4.34	7.22	7028.64	
DPBN-2C #2	6-Jan-03	1128	7032.98	7035.86	TOC	7.22	2.88	4.34	7.22	7028.64	
DPBN-2C #3	6-Jan-03	1128	7032.98	7035.86	TOC	7.20	2.88	4.32	7.20	7028.66	
DPBN-3A #1	6-Jan-03	1050	7032.96	7035.96	TOC	7.50	3.00	4.50	7.50	7028.46	
DPBN-3A #2	6-Jan-03	1050	7032.96	7035.96	TOC	7.51	3.00	4.51	7.51	7028.45	
DPBN-3A #3	6-Jan-03	1050	7032.96	7035.96	TOC	7.50	3.00	4.50	7.50	7028.46	
DPBN-3B #1	6-Jan-03	1050	7031.88	7034.82	TOC	6.57	2.94	3.63	6.57	7028.25	
DPBN-3B #2	6-Jan-03	1051	7031.88	7034.82	TOC	6.57	2.94	3.63	6.57	7028.25	
DPBN-3B #3	6-Jan-03	1051	7031.88	7034.82	TOC	dry	2.94	NA	dry	dry	
DPBN-3C #1	6-Jan-03	1125	7031.96	7034.76	TOC	6.60	2.80	3.80	6.60	7028.16	
DPBN-3C #2	6-Jan-03	1126	7031.96	7034.76	TOC	6.21	2.80	3.41	6.21	7028.55	
DPBN-3C #3	6-Jan-03	1126	7031.96	7034.76	TOC	6.21	2.80	3.41	6.21	7028.55	
DPW-3.2N	6-Jan-03	1125	7034.53	7037.57	TOC	9.68	3.04	6.64	9.68	7027.89	
DPW-3.5N	6-Jan-03	1124	7031.44	7034.39	TOC	6.58	2.95	3.63	6.58	7027.81	
DPW-3.5S	6-Jan-03	1051	7032.40	7035.40	TOC	7.48	3.00	4.48	7.48	7027.92	
DPBN-4A #1	6-Jan-03	1051	7031.93	7034.47	TOC	6.54	2.54	4.00	6.54	7027.93	
DPBN-4A #2	6-Jan-03	1052	7031.93	7034.47	TOC	6.54	2.54	4.00	6.54	7027.93	
DPBN-4A #3	6-Jan-03	1052	7031.93	7034.47	TOC	6.54	2.54	4.00	6.54	7027.93	
DPBN-4B #1	6-Jan-03	1123	7031.53	7034.34	TOC	6.65	2.81	3.84	6.65	7027.69	
DPBN-4B #2	6-Jan-03	1123	7031.53	7034.34	TOC	6.64	2.81	3.83	6.64	7027.70	
DPBN-4B #3	6-Jan-03	1123	7031.53	7034.34	TOC	6.63	2.81	3.82	6.63	7027.71	
DPBN-4C #1	6-Jan-03	1122	7032.79	7035.29	TOC	7.81	2.50	5.31	7.81	7027.48	
DPBN-4C #2	6-Jan-03	1122	7032.79	7035.28	TOC	7.79	2.49	5.30	7.79	7027.49	
DPBN-4C #3	6-Jan-03	1122	7032.79	7035.28	TOC	7.78	2.49	5.29	7.78	7027.50	
DPW-4.6N	6-Jan-03	1121	7032.55	7035.60	TOC	8.27	3.05	5.22	8.27	7027.33	
DPPN-4.5N #1	6-Jan-03	NA	7031.65	7034.65	TOC	NM	3.00	NM	NM	NM	Transducer in well, WL not taken.
DPPN-4.5N #2	6-Jan-03	NA	7031.92	7034.92	TOC	NM	3.00	NM	NM	NM	Transducer in well, WL not taken.
DPPN-4.5N #3	6-Jan-03	NA	7031.82	7034.82	TOC	NM	3.00	NM	NM	NM	Transducer in well, WL not taken.
DPW-4.4N	6-Jan-03	1123	7031.09	7034.03	TOC	6.64	2.94	3.70	6.64	7027.39	
DPW-4.9S	6-Jan-03	1053	7030.93	7033.78	TOC	6.71	2.85	3.86	6.71	7027.07	
DPBN-5A #1	6-Jan-03	1054	7030.29	7032.41	TOC	5.38	2.12	3.26	5.38	7027.03	
DPBN-5A #2	6-Jan-03	1054	7030.29	7032.41	TOC	5.35	2.12	3.23	5.35	7027.06	
DPBN-5A #3	6-Jan-03	1054	7030.29	7032.41	TOC	5.30	2.12	3.18	5.30	7027.11	
DPBN-5B #1	6-Jan-03	1120	7031.05	7033.62	TOC	6.47	2.57	3.90	6.47	7027.15	
DPBN-5B #2	6-Jan-03	1120	7031.05	7033.62	TOC	6.47	2.57	3.90	6.47	7027.15	
DPBN-5B #3	6-Jan-03	1120	7031.05	7033.62	TOC	6.47	2.57	3.90	6.47	7027.15	
DPBN-5C #1	6-Jan-03	1118	7031.36	7034.30	TOC	7.27	2.94	4.33	7.27	7027.03	
DPBN-5C #2	6-Jan-03	1119	7031.36	7034.30	TOC	7.25	2.94	4.31	7.25	7027.05	
DPBN-5C #3	6-Jan-03	1119	7031.36	7034.30	TOC	7.25	2.94	4.31	7.25	7027.05	
DPW-5.8N	6-Jan-03	1118	7032.32	7035.39	TOC	8.76	3.07	5.69	8.76	7026.63	
DPW-5.7N	6-Jan-03	1117	7031.02	7033.93	TOC	7.27	2.91	4.36	7.27	7026.66	
DPPN-5.7 #1	6-Jan-03	1115	7029.72	7032.72	TOC	6.42	3.00	3.42	6.42	7026.30	
DPPN-5.7 #2	6-Jan-03	1116	7029.54	7032.54	TOC	6.42	3.00	3.42	6.42	7026.12	
DPPN-5.7 #3	6-Jan-03	1116	7029.50	7032.50	TOC	6.01	3.00	3.01	6.01	7026.49	
DPBN-6A #1	6-Jan-03	1055	7030.73	7032.97	TOC	6.96	2.24	4.72	6.96	7026.01	
DPBN-6A #2	6-Jan-03	1055	7030.73	7032.93	TOC	6.92	2.20	4.72	6.92	7026.01	
DPBN-6A #3	6-Jan-03	1055	7030.73	7032.98	TOC	6.97	2.25	4.72	6.97	7026.01	
DPBN-6B #1	6-Jan-03	1114	7028.88	7031.71	TOC	5.50	2.83	2.67	5.50	7026.21	
DPBN-6B #2	6-Jan-03	1115	7028.88	7031.70	TOC	5.46	2.82	2.64	5.46	7026.24	
DPBN-6B #3	6-Jan-03	1115	7028.88	7031.70	TOC	5.47	2.82	2.65	5.47	7026.23	
DPBN-6C #1	6-Jan-03	1114	7029.83	7032.71	TOC	6.57	2.88	3.69	6.57	7026.14	

Los Alamos Environmental Restoration Project

WATER-LEVEL ELEVATION DATA SHEET

Date: 01/06/03 Technical Area: 21

ER SOP-07.02, R1
Field Unit: Canyons Focus Area

Measured by (print name) Shannon Purdue Signature:

LOCATION	LOG		ELEVATION[1] (ft)		TAPE READING				DEPTH TO WATER (ft)	ELEVATION GROUNDWATER (ft)	Comments
	Date	Time	GL Datum	(TOC)[2]	Meas. Pt.	Water Level (ft)	TOC to Ground Surface	DTW BGS (ft)			
DPBN-6C #2	6-Jan-03	1114	7029.83	7032.71	TOC	6.57	2.88	3.69	6.57	7026.14	
DPBN-6C #3	6-Jan-03	1114	7029.83	7032.71	TOC	6.57	2.88	3.69	6.57	7026.14	
DPBN-6D #1	6-Jan-03	1112	7030.42	7033.27	TOC	6.87	2.85	4.02	6.87	7026.40	
DPBN-6D #2	6-Jan-03	1113	7030.42	7033.27	TOC	6.88	2.85	4.03	6.88	7026.39	
DPBN-6D #3	6-Jan-03	1113	7030.42	7033.27	TOC	6.88	2.85	4.03	6.88	7026.39	
DPW-6.2S	6-Jan-03	1058	7028.90	7032.40	TOC	6.56	3.50	3.06	6.56	7025.84	
DPW-6.5N	6-Jan-03	1111	7030.20	7033.20	TOC	7.70	3.00	4.70	7.70	7025.50	
DPBN-7A #1	6-Jan-03	1059	7028.64	7031.31	TOC	6.75	2.67	4.08	6.75	7024.56	
DPBN-7A #2	6-Jan-03	1059	7028.64	7031.31	TOC	6.74	2.67	4.07	6.74	7024.57	
DPBN-7A #3	6-Jan-03	1100	7028.64	7031.31	TOC	6.74	2.67	4.07	6.74	7024.57	
DPBN-7B #1	6-Jan-03	1110	7027.37	7030.27	TOC	5.20	2.90	2.30	5.20	7025.07	
DPBN-7B #2	6-Jan-03	1111	7027.37	7030.27	TOC	5.20	2.90	2.30	5.20	7025.07	
DPBN-7B #3	6-Jan-03	1111	7027.37	7030.27	TOC	5.21	2.90	2.31	5.21	7025.06	
DPBN-7C #1	6-Jan-03	1110	7028.00	7030.85	TOC	5.82	2.85	2.97	5.82	7025.03	
DPBN-7C #2	6-Jan-03	1110	7028.00	7030.84	TOC	5.82	2.84	2.98	5.82	7025.02	
DPBN-7C #3	6-Jan-03	1110	7028.00	7030.83	TOC	5.82	2.83	2.99	5.82	7025.01	
DPW-7.1S	6-Jan-03	1100	7028.76	7031.67	TOC	7.04	2.91	4.13	7.04	7024.63	
DPW-7.4N	6-Jan-03	1108	7028.10	7031.06	TOC	7.82	2.96	4.86	7.82	7023.24	
DPW-7.5S	6-Jan-03	1101	7027.50	7030.60	TOC	7.94	3.10	4.84	7.94	7022.66	
DPPN-7.7 #1	6-Jan-03	1102	7024.49	7027.48	TOC	8.20	2.99	5.21	8.20	7019.28	
DPPN-7.7 #2	6-Jan-03	1103	7024.47	7027.47	TOC	5.65	3.00	2.65	5.65	7021.82	
DPPN-7.7 #3	6-Jan-03	1103	7024.56	7027.34	TOC	5.43	2.78	2.65	5.43	7021.91	
DPW-7.9S	6-Jan-03	1105	7025.22	7028.26	TOC	7.19	3.04	4.15	7.19	7021.07	
DPBN-8A #1	6-Jan-03	1105	7025.06	7027.57	TOC	6.78	2.51	4.27	6.78	7020.79	
DPBN-8A #2	6-Jan-03	1105	7025.06	7027.57	TOC	6.78	2.51	4.27	6.78	7020.79	
DPBN-8A #3	6-Jan-03	1106	7025.06	7027.57	TOC	6.78	2.51	4.27	6.78	7020.79	
DPBN-8B #1	6-Jan-03	1106	7024.34	7026.57	TOC	5.53	2.23	3.30	5.53	7021.04	
DPBN-8B #2	6-Jan-03	1106	7024.34	7026.57	TOC	5.53	2.23	3.30	5.53	7021.04	
DPBN-8B #3	6-Jan-03	1107	7024.34	7026.57	TOC	5.54	2.23	3.31	5.54	7021.03	
LAUZ-2	6-Jan-03	1107	NA	NA	TOC	5.88	NA	NA	5.88	NA	

Measurement Method and Probe Type: Solinst water depth indicator, Ser. No. 18528
Comments:

[1] Use the appropriate measuring point
[2] TOC is Top of Casing
[3] NAPL (Non Aqueous Phase Liquid). If NAPL is encountered, the groundwater level must be corrected.

Los Alamos Environmental Restoration Project

WATER-LEVEL ELEVATION DATA SHEET

Date: 2/17/2003 Technical Area: 21

ER SOP-07.02, R1
Field Unit: Canyons Focus Area

Measured by (print name) Shannon Purdue Signature: [illegible]

LOCATION	LOG		ELEVATION[1] (ft)		TAPE READING				DEPTH TO WATER (ft)	ELEVATION GROUNDWATER (ft)	Comments
	Date	Time	GL Datum	(TOC)[2]	Meas. Pt.	Water Level (ft)	TOC to Ground Surface	DTW BGS (ft)			
LAUZ-1	2/17/2003	8:52	NA	NA	TOC	5.78	NA	NA	5.78	NA	
DPW-1S	2/17/2003	8:53	7032.67	7035.67	TOC	6.31	3.00	NA	6.31	NA	
DPBN-1A #1	2/17/2003	8:54	7032.29	7035.29	TOC	NM	3.00	NA	NM	NA	Transducer in well
DPBN-1A #2	2/17/2003	8:54	7032.29	7035.29	TOC	6.31	3.00	3.31	6.31	7028.98	
DPBN-1A #3	2/17/2003	8:55	7032.29	7035.29	TOC	6.30	3.00	3.30	6.30	7028.99	
DPBN-1B #1	2/17/2003	8:55	7032.71	7035.63	TOC	6.52	2.92	3.60	6.52	7029.11	
DPBN-1B #2	2/17/2003	8:55	7032.71	7035.63	TOC	6.51	2.92	3.59	6.51	7029.12	
DPBN-1B #3	2/17/2003	8:55	7032.71	7035.63	TOC	NM	2.92	NA	NM	NA	Dry
DPBN-1C #1	2/17/2003	9:48	7032.48	7035.36	TOC	6.56	2.88	3.68	6.56	7028.80	
DPBN-1C #2	2/17/2003	9:48	7032.48	7035.36	TOC	6.56	2.88	3.68	6.56	7028.80	
DPBN-1C #3	2/17/2003	9:48	7032.48	7035.36	TOC	6.55	2.88	3.67	6.55	7028.81	
DPW-1N	2/17/2003	9:50	7034.65	7037.62	TOC	NM	2.97	NA	NM	NA	Dry
DPW-1.1N	2/17/2003	9:49	7033.84	7036.67	TOC	8.08	2.83	5.25	8.08	7028.59	
DPPN-1.1 #1	2/17/2003	8:56	7032.55	7035.55	TOC	6.54	3.00	3.54	6.54	7029.01	
DPPN-1.1 #2	2/17/2003	8:56	7032.27	7035.27	TOC	6.54	3.00	3.54	6.54	7028.73	
DPPN-1.1 #3	2/17/2003	8:56	7032.24	7035.24	TOC	NM	3.00	NA	NM	NA	Dry
DPBN-2A #1	2/17/2003	8:57	7033.21	7036.11	TOC	NM	2.90	NA	NM	NA	Bromide probe in well
DPBN-2A #2	2/17/2003	8:57	7033.21	7036.11	TOC	7.23	2.90	4.33	7.23	7028.88	
DPBN-2A #3	2/17/2003	8:57	7033.21	7036.11	TOC	NM	2.90	NA	NM	NA	Dry
DPBN-2B #1	2/17/2003	9:47	7032.02	7035.02	TOC	NM	3.00	NA	NM	NA	Bromide probe in well
DPBN-2B #2	2/17/2003	9:47	7032.02	7035.02	TOC	NM	3.00	NA	NM	NA	Bromide probe in well
DPBN-2B #3	2/17/2003	9:47	7032.02	7035.02	TOC	NM	3.00	NA	NM	NA	Dry
DPBN-2C #1	2/17/2003	9:47	7032.98	7035.86	TOC	NM	2.88	NA	NM	NA	Bromide probe in well
DPBN-2C #2	2/17/2003	9:47	7032.98	7035.86	TOC	NM	2.88	NA	NM	NA	Bromide probe in well
DPBN-2C #3	2/17/2003	9:47	7032.98	7035.86	TOC	NM	2.88	NA	NM	NA	Bromide probe in well
DPBN-3A #1	2/17/2003	8:58	7032.96	7035.96	TOC	7.67	3.00	4.67	7.67	7028.29	
DPBN-3A #2	2/17/2003	8:58	7032.96	7035.96	TOC	7.68	3.00	4.68	7.68	7028.28	
DPBN-3A #3	2/17/2003	8:58	7032.96	7035.96	TOC	7.67	3.00	4.67	7.67	7028.29	
DPBN-3B #1	2/17/2003	8:59	7031.88	7034.82	TOC	6.75	2.94	3.81	6.75	7028.07	
DPBN-3B #2	2/17/2003	8:59	7031.88	7034.82	TOC	6.76	2.94	3.82	6.76	7028.06	
DPBN-3B #3	2/17/2003	8:59	7031.88	7034.82	TOC	NM	2.94	NA	NM	NA	Dry
DPBN-3C #1	2/17/2003	9:47	7031.96	7034.76	TOC	6.84	2.80	4.04	6.84	7027.92	
DPBN-3C #2	2/17/2003	9:47	7031.96	7034.76	TOC	6.37	2.80	3.57	6.37	7028.39	
DPBN-3C #3	2/17/2003	9:47	7031.96	7034.76	TOC	6.37	2.80	3.57	6.37	7028.39	
DPW-3.2N	2/17/2003	9:47	7034.53	7037.57	TOC	9.95	3.04	6.91	9.95	7027.62	
DPW-3.5N	2/17/2003	9:44	7031.44	7034.39	TOC	6.92	2.95	NA	6.92	NA	
DPW-3.5S	2/17/2003	9:00	7032.40	7035.40	TOC	7.75	3.00	4.75	7.75	7027.65	
DPBN-4A #1	2/17/2003	9:01	7031.93	7034.47	TOC	6.77	2.54	4.23	6.77	7027.70	
DPBN-4A #2	2/17/2003	9:01	7031.93	7034.47	TOC	6.77	2.54	4.23	6.77	7027.70	
DPBN-4A #3	2/17/2003	9:02	7031.93	7034.47	TOC	6.78	2.54	4.24	6.78	7027.69	
DPBN-4B #1	2/17/2003	9:42	7031.53	7034.34	TOC	6.96	2.81	4.15	6.96	7027.38	
DPBN-4B #2	2/17/2003	9:42	7031.53	7034.34	TOC	6.96	2.81	4.15	6.96	7027.38	
DPBN-4B #3	2/17/2003	9:42	7031.53	7034.34	TOC	6.95	2.81	4.14	6.95	7027.39	
DPBN-4C #1	2/17/2003	9:39	7032.79	7035.29	TOC	8.19	2.50	5.69	8.19	7027.10	
DPBN-4C #2	2/17/2003	9:40	7032.79	7035.28	TOC	8.18	2.49	5.69	8.18	7027.10	
DPBN-4C #3	2/17/2003	9:40	7032.79	7035.28	TOC	8.18	2.49	5.69	8.18	7027.10	
DPW-4.6N	2/17/2003	9:38	7032.55	7035.60	TOC	8.69	3.05	5.64	8.69	7026.91	
DPPN-4.5N #1	2/17/2003	9:35	7031.65	7034.65	TOC	7.78	3.00	4.78	7.78	7026.87	
DPPN-4.5N #2	2/17/2003	9:36	7031.92	7034.92	TOC	7.76	3.00	4.76	7.76	7027.16	
DPPN-4.5N #3	2/17/2003	9:37	7031.82	7034.82	TOC	NM	3.00	NA	NM	NA	Dry
DPW-4.4N	2/17/2003	9:40	7031.09	7034.03	TOC	7.03	2.94	NA	7.03	NA	
DPW-4.9S	2/17/2003	9:02	7030.93	7033.78	TOC	7.93	2.85	5.08	7.93	7025.85	
DPBN-5A #1	2/17/2003	9:03	7030.29	7032.41	TOC	5.78	2.12	3.66	5.78	7026.63	
DPBN-5A #2	2/17/2003	9:04	7030.29	7032.41	TOC	5.76	2.12	3.64	5.76	7026.65	
DPBN-5A #3	2/17/2003	9:04	7030.29	7032.41	TOC	5.73	2.12	3.61	5.73	7026.68	
DPBN-5B #1	2/17/2003	9:33	7031.05	7033.62	TOC	6.89	2.57	4.32	6.89	7026.73	
DPBN-5B #2	2/17/2003	9:33	7031.05	7033.62	TOC	6.89	2.57	4.32	6.89	7026.73	
DPBN-5B #3	2/17/2003	9:34	7031.05	7033.62	TOC	6.89	2.57	4.32	6.89	7026.73	
DPBN-5C #1	2/17/2003	9:31	7031.36	7034.30	TOC	7.72	2.94	4.78	7.72	7026.58	
DPBN-5C #2	2/17/2003	9:32	7031.36	7034.30	TOC	7.70	2.94	4.76	7.70	7026.60	
DPBN-5C #3	2/17/2003	9:32	7031.36	7034.30	TOC	7.69	2.94	4.75	7.69	7026.61	
DPW-5.8N	2/17/2003	9:31	7032.32	7035.39	TOC	9.27	3.07	6.20	9.27	7026.12	
DPW-5.7N	2/17/2003	9:30	7031.02	7033.93	TOC	7.66	2.91	NA	7.66	NA	
DPPN-5.7 #1	2/17/2003	9:28	7029.72	7032.72	TOC	6.78	3.00	3.78	6.78	7025.94	
DPPN-5.7 #2	2/17/2003	9:29	7029.54	7032.54	TOC	6.81	3.00	3.81	6.81	7025.73	
DPPN-5.7 #3	2/17/2003	9:29	7029.50	7032.50	TOC	NM	3.00	NA	NM	NA	Dry
DPBN-6A #1	2/17/2003	9:07	7030.73	7032.97	TOC	7.33	2.24	5.09	7.33	7025.64	
DPBN-6A #2	2/17/2003	9:07	7030.73	7032.93	TOC	7.29	2.20	5.09	7.29	7025.64	
DPBN-6A #3	2/17/2003	9:07	7030.73	7032.98	TOC	7.35	2.25	5.10	7.35	7025.63	
DPBN-6B #1	2/17/2003	9:26	7028.88	7031.71	TOC	5.88	2.83	3.05	5.88	7025.83	
DPBN-6B #2	2/17/2003	9:26	7028.88	7031.70	TOC	5.77	2.82	2.95	5.77	7025.93	
DPBN-6B #3	2/17/2003	9:26	7028.88	7031.70	TOC	5.78	2.82	2.96	5.78	7025.92	
DPBN-6C #1	2/17/2003	9:25	7029.83	7032.71	TOC	6.89	2.88	4.01	6.89	7025.82	

Los Alamos Environmental Restoration Project

WATER-LEVEL ELEVATION DATA SHEET

Date: 2/17/03 Technical Area: 21

ER SOP-07.02, R1
Field Unit: Canyons Focus Area

Measured by (print name) Shannon Purdue Signature:

LOCATION	LOG		ELEVATION[1] (ft)		TAPE READING				DEPTH TO WATER (ft)	ELEVATION GROUNDWATER (ft)	Comments
	Date	Time	GL Datum	(TOC)[2]	Meas. Pt.	Water Level (ft)	TOC to Ground Surface	DTW BGS (ft)			
DPBN-6C #2	2/17/2003	9:25	7029.83	7032.71	TOC	6.87	2.88	3.99	6.87	7025.84	
DPBN-6C #3	2/17/2003	9:25	7029.83	7032.71	TOC	6.87	2.88	3.99	6.87	7025.84	
DPBN-6D #1	2/17/2003	9:23	7030.42	7033.27	TOC	7.31	2.85	4.46	7.31	7025.96	
DPBN-6D #2	2/17/2003	9:23	7030.42	7033.27	TOC	7.34	2.85	4.49	7.34	7025.93	
DPBN-6D #3	2/17/2003	9:24	7030.42	7033.27	TOC	NM	2.85	NA	NM	NA	Dry
DPW-6.2S	2/17/2003	9:08	7028.90	7032.40	TOC	6.91	3.50	3.41	6.91	7025.49	
DPW-6.5N	2/17/2003	9:23	7030.20	7033.20	TOC	7.94	3.00	4.94	7.94	7025.26	
DPBN-7A #1	2/17/2003	9:09	7028.64	7031.31	TOC	6.93	2.67	4.26	6.93	7024.38	
DPBN-7A #2	2/17/2003	9:09	7028.64	7031.31	TOC	6.93	2.67	4.26	6.93	7024.38	
DPBN-7A #3	2/17/2003	9:09	7028.64	7031.31	TOC	6.93	2.67	4.26	6.93	7024.38	
DPBN-7B #1	2/17/2003	9:21	7027.37	7030.27	TOC	5.45	2.90	2.55	5.45	7024.82	
DPBN-7B #2	2/17/2003	9:21	7027.37	7030.27	TOC	NM	2.90	NA	NM	NA	Bromide probe in well
DPBN-7B #3	2/17/2003	9:21	7027.37	7030.27	TOC	5.47	2.90	2.57	5.47	7024.80	
DPBN-7C #1	2/17/2003	9:19	7028.00	7030.85	TOC	6.09	2.85	3.24	6.09	7024.76	
DPBN-7C #2	2/17/2003	9:19	7028.00	7030.84	TOC	NM	2.84	NA	NM	NA	Bromide probe in well
DPBN-7C #3	2/17/2003	9:19	7028.00	7030.83	TOC	6.08	2.83	3.25	6.08	7024.75	-
DPW-7.1S	2/17/2003	9:20	7028.76	7031.67	TOC	7.25	2.91	NA	7.25	NA	
DPW-7.4N	2/17/2003	9:17	7028.10	7031.06	TOC	7.91	2.96	4.95	7.91	7023.15	
DPW-7.5S	2/17/2003	9:11	7027.50	7030.60	TOC	7.94	3.10	4.84	7.94	7022.66	
DPPN-7.7 #1	2/17/2003	9:12	7024.49	7027.48	TOC	7.45	2.99	4.46	7.45	7020.03	
DPPN-7.7 #2	2/17/2003	9:13	7024.47	7027.47	TOC	5.73	3.00	2.73	5.73	7021.74	
DPPN-7.7 #3	2/17/2003	9:13	7024.56	7027.34	TOC	5.51	2.78	2.73	5.51	7021.83	
DPW-7.9S	2/17/2003	9:14	7025.22	7028.26	TOC	7.25	3.04	NA	7.25	NA	
DPBN-8A #1	2/17/2003	9:15	7025.06	7027.57	TOC	6.87	2.51	4.36	6.87	7020.70	
DPBN-8A #2	2/17/2003	9:15	7025.06	7027.57	TOC	6.87	2.51	4.36	6.87	7020.70	
DPBN-8A #3	2/17/2003	9:15	7025.06	7027.57	TOC	6.87	2.51	4.36	6.87	7020.70	
DPBN-8B #1	2/17/2003	9:16	7024.34	7026.57	TOC	5.58	2.23	3.35	5.58	7020.99	
DPBN-8B #2	2/17/2003	9:16	7024.34	7026.57	TOC	5.58	2.23	3.35	5.58	7020.99	
DPBN-8B #3	2/17/2003	9:16	7024.34	7026.57	TOC	5.59	2.23	3.36	5.59	7020.98	
LAUZ-2	2/17/2003	9:16	NA	NA	TOC	5.92	NA	NA	5.92	NA	

Measurement Method and Probe Type: Solinst water depth indicator, Ser. No. 18528
Comments: NA - Not Applicable NM - Not Measured

[1] Use the appropriate measuring point
[2] TOC is Top of Casing
[3] NAPL (Non Aqueous Phase Liquid). If NAPL is encountered, the groundwater level must be corrected.

WATER-LEVEL ELEVATION DATA SHEET

Date: 2/24/2003 **Technical Area:** 21

ER SOP-07.02, R1
Field Unit: Canyons Focus Area

Measured by (print name) Jared Lyman / Shannon Purdue Signature:

LOCATION	LOG		ELEVATION[1] (ft)		TAPE READING				DEPTH TO WATER (ft)	ELEVATION GROUNDWATER (ft)	Comments
	Date	Time	GL Datum	(TOC)[2]	Meas. Pt.	Water Level (ft)	TOC to Ground Surface	DTW BGS (ft)			
LAUZ-1	24-Feb-03	950	NA	NA	TOC	4.87	NA	NA	4.87	NA	
DPW-1S	24-Feb-03	1004	7032.67	7035.67	TOC	5.40	3.00	NA	5.40	NA	
DPBN-1A #1	24-Feb-03	956	7032.29	7035.29	TOC	5.42	3.00	2.42	5.42	7029.87	
DPBN-1A #2	24-Feb-03	957	7032.29	7035.29	TOC	5.40	3.00	2.40	5.40	7029.89	
DPBN-1A #3	24-Feb-03	958	7032.29	7035.29	TOC	5.40	3.00	2.40	5.40	7029.89	
DPBN-1B #1	24-Feb-03	1006	7032.71	7035.63	TOC	5.51	2.92	2.59	5.51	7030.12	
DPBN-1B #2	24-Feb-03	1007	7032.71	7035.63	TOC	5.51	2.92	2.59	5.51	7030.12	
DPBN-1B #3	24-Feb-03	1008	7032.71	7035.63	TOC	5.51	2.92	2.59	5.51	7030.12	
DPBN-1C #1	24-Feb-03	1013	7032.48	7035.36	TOC	5.61	2.88	2.73	5.61	7029.75	
DPBN-1C #2	24-Feb-03	1015	7032.48	7035.36	TOC	5.60	2.88	2.72	5.60	7029.76	
DPBN-1C #3	24-Feb-03	1017	7032.48	7035.36	TOC	5.60	2.88	2.72	5.60	7029.76	
DPW-1N	24-Feb-03	1018	7034.65	7037.62	TOC	8.00	2.97	5.03	8.00	7029.62	
DPW-1.1N	24-Feb-03	1019	7033.84	7036.67	TOC	7.14	2.83	4.31	7.14	7029.53	
DPPN-1.1 #1	24-Feb-03	1009	7032.55	7035.55	TOC	5.53	3.00	2.53	5.53	7030.02	
DPPN-1.1 #2	24-Feb-03	1010	7032.27	7035.27	TOC	5.53	3.00	2.53	5.53	7029.74	
DPPN-1.1 #3	24-Feb-03	1012	7032.24	7035.24	TOC	5.54	3.00	2.54	5.54	7029.70	
DPBN-2A #1	24-Feb-03	NA	7033.21	7036.11	TOC	NM	2.90	NM	NM	NM	Probe in well.
DPBN-2A #2	24-Feb-03	1023	7033.21	7036.11	TOC	6.41	2.90	3.51	6.41	7029.70	
DPBN-2A #3	24-Feb-03	1024	7033.21	7036.11	TOC	dry	2.90	NA	dry	NA	
DPBN-2B #1	24-Feb-03	NA	7032.02	7035.02	TOC	NM	3.00	NM	NM	NM	Probe in well.
DPBN-2B #2	24-Feb-03	NA	7032.02	7035.02	TOC	NM	3.00	NM	NM	NM	Probe in well.
DPBN-2B #3	24-Feb-03	1021	7032.02	7035.02	TOC	5.35	3.00	NA	5.35	7029.67	
DPBN-2C #1	24-Feb-03	NA	7032.98	7035.86	TOC	NM	2.88	NM	NM	NM	Probe in well.
DPBN-2C #2	24-Feb-03	NA	7032.98	7035.86	TOC	NM	2.88	NM	NM	NM	Probe in well.
DPBN-2C #3	24-Feb-03	NA	7032.98	7035.86	TOC	NM	2.88	NM	NM	NM	Probe in well.
DPBN-3A #1	24-Feb-03	1032	7032.96	7035.96	TOC	6.95	3.00	3.95	6.95	7029.01	
DPBN-3A #2	24-Feb-03	1033	7032.96	7035.96	TOC	6.95	3.00	3.95	6.95	7029.01	
DPBN-3A #3	24-Feb-03	1033	7032.96	7035.96	TOC	6.95	3.00	3.95	6.95	7029.01	
DPBN-3B #1	24-Feb-03	1030	7031.88	7034.82	TOC	6.01	2.94	3.07	6.01	7028.81	
DPBN-3B #2	24-Feb-03	1031	7031.88	7034.82	TOC	6.01	2.94	3.07	6.01	7028.81	
DPBN-3B #3	24-Feb-03	1032	7031.88	7034.82	TOC	6.01	2.94	NA	6.01	NA	
DPBN-3C #1	24-Feb-03	1025	7031.96	7034.76	TOC	6.11	2.80	3.31	6.11	7028.65	
DPBN-3C #2	24-Feb-03	1026	7031.96	7034.76	TOC	5.48	2.80	2.68	5.48	7029.28	
DPBN-3C #3	24-Feb-03	1028	7031.96	7034.76	TOC	5.48	2.80	2.68	5.48	7029.28	
DPW-3.2N	24-Feb-03	1035	7034.53	7037.57	TOC	9.24	3.04	6.20	9.24	7028.33	
DPW-3.5N	24-Feb-03	1036	7031.44	7034.39	TOC	6.29	2.95	NA	6.29	NA	
DPW-3.5S	24-Feb-03	1037	7032.40	7035.40	TOC	7.00	3.00	4.00	7.00	7028.40	
DPBN-4A #1	24-Feb-03	1044	7031.93	7034.47	TOC	6.08	2.54	3.54	6.08	7028.39	
DPBN-4A #2	24-Feb-03	1045	7031.93	7034.47	TOC	6.08	2.54	3.54	6.08	7028.39	
DPBN-4A #3	24-Feb-03	1046	7031.93	7034.47	TOC	6.09	2.54	3.55	6.09	7028.38	
DPBN-4B #1	24-Feb-03	1041	7031.53	7034.34	TOC	6.36	2.81	3.55	6.36	7027.98	
DPBN-4B #2	24-Feb-03	1042	7031.53	7034.34	TOC	6.35	2.81	3.54	6.35	7027.99	
DPBN-4B #3	24-Feb-03	1043	7031.53	7034.34	TOC	6.35	2.81	3.54	6.35	7027.99	
DPBN-4C #1	24-Feb-03	1038	7032.79	7035.29	TOC	7.55	2.50	5.05	7.55	7027.74	
DPBN-4C #2	24-Feb-03	1039	7032.79	7035.28	TOC	7.54	2.49	5.05	7.54	7027.74	
DPBN-4C #3	24-Feb-03	1040	7032.79	7035.28	TOC	7.54	2.49	5.05	7.54	7027.74	
DPW-4.6N	24-Feb-03	1047	7032.55	7035.60	TOC	8.07	3.05	5.02	8.07	7027.53	
DPPN-4.5N #1	24-Feb-03	NA	7031.65	7034.65	TOC	NM	3.00	NM	NM	NM	
DPPN-4.5N #2	24-Feb-03	NA	7031.92	7034.92	TOC	NM	3.00	NM	NM	NM	
DPPN-4.5N #3	24-Feb-03	NA	7031.82	7034.82	TOC	NM	3.00	NM	NM	NM	
DPW-4.4N	24-Feb-03	1048	7031.09	7034.03	TOC	6.41	2.94	NA	6.41	NA	
DPW-4.9S	24-Feb-03	1054	7030.93	7033.78	TOC	6.52	2.85	3.67	6.52	7027.26	
DPBN-5A #1	24-Feb-03	1053	7030.29	7032.41	TOC	5.19	2.12	3.07	5.19	7027.22	
DPBN-5A #2	24-Feb-03	1053	7030.29	7032.41	TOC	5.15	2.12	3.03	5.15	7027.26	
DPBN-5A #3	24-Feb-03	1054	7030.29	7032.41	TOC	5.13	2.12	3.01	5.13	7027.28	
DPBN-5B #1	24-Feb-03	1051	7031.05	7033.62	TOC	6.28	2.57	3.71	6.28	7027.34	
DPBN-5B #2	24-Feb-03	1051	7031.05	7033.62	TOC	6.32	2.57	3.75	6.32	7027.30	
DPBN-5B #3	24-Feb-03	1052	7031.05	7033.62	TOC	6.31	2.57	3.74	6.31	7027.31	
DPBN-5C #1	24-Feb-03	1049	7031.36	7034.30	TOC	7.11	2.94	4.17	7.11	7027.19	
DPBN-5C #2	24-Feb-03	1050	7031.36	7034.30	TOC	7.09	2.94	4.15	7.09	7027.21	
DPBN-5C #3	24-Feb-03	1050	7031.36	7034.30	TOC	7.08	2.94	4.14	7.08	7027.22	
DPW-5.8N	24-Feb-03	1055	7032.32	7035.39	TOC	8.76	3.07	5.69	8.76	7026.63	
DPW-5.7N	24-Feb-03	1056	7031.02	7033.93	TOC	7.14	2.91	NA	7.14	NA	
DPPN-5.7 #1	24-Feb-03	1057	7029.72	7032.72	TOC	6.31	3.00	3.31	6.31	7026.41	
DPPN-5.7 #2	24-Feb-03	1058	7029.54	7032.54	TOC	6.31	3.00	3.31	6.31	7026.23	
DPPN-5.7 #3	24-Feb-03	1058	7029.50	7032.50	TOC	dry	3.00	NA	dry	NA	
DPBN-6A #1	24-Feb-03	1108	7030.73	7032.97	TOC	6.88	2.24	4.64	6.88	7026.09	
DPBN-6A #2	24-Feb-03	1109	7030.73	7032.93	TOC	6.87	2.20	4.67	6.87	7026.06	
DPBN-6A #3	24-Feb-03	1109	7030.73	7032.98	TOC	6.88	2.25	4.63	6.88	7026.10	
DPBN-6B #1	24-Feb-03	1105	7028.88	7031.71	TOC	5.43	2.83	2.60	5.43	7026.28	
DPBN-6B #2	24-Feb-03	1106	7028.88	7031.70	TOC	5.36	2.82	2.54	5.36	7026.34	
DPBN-6B #3	24-Feb-03	1107	7028.88	7031.70	TOC	5.35	2.82	2.53	5.35	7026.35	
DPBN-6C #1	24-Feb-03	1103	7029.83	7032.71	TOC	6.44	2.88	3.56	6.44	7026.27	

Los Alamos Environmental Restoration Project

WATER-LEVEL ELEVATION DATA SHEET

Date: 02/24/03 Technical Area: 21

ER SOP-07.02, R1
Field Unit: Canyons Focus Area

Measured by (print name) Jared Lyman / Shannon Pustel Signature:

LOCATION	LOG		ELEVATION[1] (ft)		TAPE READING				DEPTH TO WATER (ft)	ELEVATION GROUNDWATER (ft)	Comments
	Date	Time	GL Datum	(TOC)[2]	Meas. Pt.	Water Level (ft)	TOC to Ground Surface	DTW BGS (ft)			
DPBN-6C #2	24-Feb-03	1104	7029.83	7032.71	TOC	6.44	2.88	3.56	6.44	7026.27	
DPBN-6C #3	24-Feb-03	1104	7029.83	7032.71	TOC	6.44	2.88	3.56	6.44	7026.27	
DPBN-6D #1	24-Feb-03	1100	7030.42	7033.27	TOC	7.08	2.85	4.23	7.08	7026.19	
DPBN-6D #2	24-Feb-03	1101	7030.42	7033.27	TOC	7.20	2.85	4.35	7.20	7026.07	
DPBN-6D #3	24-Feb-03	1101	7030.42	7033.27	TOC	dry	2.85	NA	dry	NA	
DPW-6.2S	24-Feb-03	1111	7028.90	7032.40	TOC	6.46	3.50	2.96	6.46	7025.94	
DPW-6.5N	24-Feb-03	1112	7030.20	7033.20	TOC	7.64	3.00	4.64	7.64	7025.56	
DPBN-7A #1	24-Feb-03	1115	7028.64	7031.31	TOC	6.63	2.67	3.96	6.63	7024.68	
DPBN-7A #2	24-Feb-03	1116	7028.64	7031.31	TOC	6.63	2.67	3.96	6.63	7024.68	
DPBN-7A #3	24-Feb-03	1118	7028.64	7031.31	TOC	6.62	2.67	3.95	6.62	7024.69	
DPBN-7B #1	24-Feb-03	NA	7027.37	7030.27	TOC	NM	2.90	NM	NM	NM	Probe in well.
DPBN-7B #2	24-Feb-03	1114	7027.37	7030.27	TOC	5.10	2.90	2.20	5.10	7025.17	
DPBN-7B #3	24-Feb-03	1115	7027.37	7030.27	TOC	5.10	2.90	2.20	5.10	7025.17	
DPBN-7C #1	24-Feb-03	NA	7028.00	7030.85	TOC	NM	2.85	NM	NM	NM	Probe in well.
DPBN-7C #2	24-Feb-03	1113	7028.00	7030.84	TOC	5.72	2.84	2.88	5.72	7025.12	
DPBN-7C #3	24-Feb-03	1113	7028.00	7030.83	TOC	5.72	2.83	2.89	5.72	7025.11	
DPW-7.1S	24-Feb-03	NA	7028.76	7031.67	TOC	NM	2.91	NA	NM	NA	Transducer in well.
DPW-7.4N	24-Feb-03	1119	7028.10	7031.06	TOC	7.76	2.96	4.80	7.76	7023.30	
DPW-7.5S	24-Feb-03	1121	7027.50	7030.60	TOC	7.85	3.10	4.75	7.85	7022.75	
DPPN-7.7 #1	24-Feb-03	1122	7024.49	7027.48	TOC	7.35	2.99	4.36	7.35	7020.13	
DPPN-7.7 #2	24-Feb-03	NA	7024.47	7027.47	TOC	NM	3.00	NM	NM	NM	Transducer in well.
DPPN-7.7 #3	24-Feb-03	NA	7024.56	7027.34	TOC	NM	2.78	NM	NM	NM	Transducer in well.
DPW-7.9S	24-Feb-03	1123	7025.22	7028.26	TOC	7.20	3.04	NA	7.20	NA	
DPBN-8A #1	24-Feb-03	1124	7025.06	7027.57	TOC	6.82	2.51	4.31	6.82	7020.75	
DPBN-8A #2	24-Feb-03	1125	7025.06	7027.57	TOC	6.82	2.51	4.31	6.82	7020.75	
DPBN-8A #3	24-Feb-03	1126	7025.06	7027.57	TOC	6.82	2.51	4.31	6.82	7020.75	
DPBN-8B #1	24-Feb-03	1127	7024.34	7026.57	TOC	5.56	2.23	3.33	5.56	7021.01	
DPBN-8B #2	24-Feb-03	1128	7024.34	7026.57	TOC	5.55	2.23	3.32	5.55	7021.02	
DPBN-8B #3	24-Feb-03	1128	7024.34	7026.57	TOC	5.55	2.23	3.32	5.55	7021.02	
LAUZ-2	24-Feb-03	1130	NA	NA	TOC	5.88	NA	NA	5.88	NA	

Measurement Method and Probe Type: Solinst water depth indicator, Ser. No. 18528
Comments:

[1] Use the appropriate measuring point
[2] TOC is Top of Casing
[3] NAPL (Non Aqueous Phase Liquid). If NAPL is encountered, the groundwater level must be corrected.

Los Alamos Environmental Restoration Project

WATER-LEVEL ELEVATION DATA SHEET

Date: 3/25/2003 Technical Area: 21

ER SOP-07.02, R1
Field Unit: Canyons Focus Area

Measured by (print name) Shannon Purdue Signature:

LOCATION	LOG		ELEVATION[1] (ft)		TAPE READING				DEPTH TO WATER (ft)	ELEVATION GROUNDWATER (ft)	Comments
	Date	Time	GL Datum	(TOC)[2]	Meas. Pt.	Water Level (ft)	TOC to Ground Surface	DTW BGS (ft)			
LAUZ-1	25-Mar-03	805	NA	NA	TOC	4.83	NA	NA	4.83	NA	
DPW-1S	25-Mar-03	NA	7032.67	7035.67	TOC	NM	3.00	NM	NM	NM	DMLS Sampler in well.
DPBN-1A #1	25-Mar-03	806	7032.29	7035.29	TOC	5.11	3.00	2.11	5.11	7030.18	
DPBN-1A #2	25-Mar-03	806	7032.29	7035.29	TOC	5.11	3.00	2.11	5.11	7030.18	
DPBN-1A #3	25-Mar-03	807	7032.29	7035.29	TOC	5.11	3.00	2.11	5.11	7030.18	
DPBN-1B #1	25-Mar-03	807	7032.71	7035.63	TOC	5.46	2.92	2.54	5.46	7030.17	
DPBN-1B #2	25-Mar-03	807	7032.71	7035.63	TOC	5.45	2.92	2.53	5.45	7030.18	
DPBN-1B #3	25-Mar-03	807	7032.71	7035.63	TOC	5.44	2.92	2.52	5.44	7030.19	
DPBN-1C #1	25-Mar-03	847	7032.48	7035.36	TOC	5.47	2.88	2.59	5.47	7029.89	
DPBN-1C #2	25-Mar-03	847	7032.48	7035.36	TOC	5.47	2.88	2.59	5.47	7029.89	
DPBN-1C #3	25-Mar-03	847	7032.48	7035.36	TOC	5.47	2.88	2.59	5.47	7029.89	
DPW-1N	25-Mar-03	846	7034.65	7037.62	TOC	7.85	2.97	4.88	7.85	7029.77	
DPW-1.1N	25-Mar-03	846	7033.84	7036.67	TOC	7.01	2.83	4.18	7.01	7029.66	
DPPN-1.1 #1	25-Mar-03	848	7032.55	7035.55	TOC	5.45	3.00	2.45	5.45	7030.10	
DPPN-1.1 #2	25-Mar-03	847	7032.27	7035.27	TOC	5.45	3.00	2.45	5.45	7029.82	
DPPN-1.1 #3	25-Mar-03	847	7032.24	7035.24	TOC	5.45	3.00	2.45	5.45	7029.79	
DPBN-2A #1	25-Mar-03	NA	7033.21	7036.11	TOC	NM	2.90	NM	NM	NM	Bromide probe in well.
DPBN-2A #2	25-Mar-03	809	7033.21	7036.11	TOC	6.17	2.90	3.27	6.17	7029.94	
DPBN-2A #3	25-Mar-03	809	7033.21	7036.11	TOC	6.16	2.90	3.26	6.16	7029.95	
DPBN-2B #1	25-Mar-03	NA	7032.02	7035.02	TOC	NM	3.00	NM	NM	NM	Bromide probe in well.
DPBN-2B #2	25-Mar-03	NA	7032.02	7035.02	TOC	NM	3.00	NM	NM	NM	Bromide probe in well.
DPBN-2B #3	25-Mar-03	845	7032.02	7035.02	TOC	5.15	3.00	2.15	5.15	7029.87	
DPBN-2C #1	25-Mar-03	845	7032.98	7035.86	TOC	6.27	2.88	3.39	6.27	7029.59	
DPBN-2C #2	25-Mar-03	NA	7032.98	7035.86	TOC	NM	2.88	NM	NM	NM	
DPBN-2C #3	25-Mar-03	845	7032.98	7035.86	TOC	6.27	2.88	3.39	6.27	7029.59	
DPBN-3A #1	25-Mar-03	810	7032.96	7035.96	TOC	6.69	3.00	3.69	6.69	7029.27	
DPBN-3A #2	25-Mar-03	NA	7032.96	7035.96	TOC	NM	3.00	NM	NM	NM	Bromide probe in well.
DPBN-3A #3	25-Mar-03	810	7032.96	7035.96	TOC	6.68	3.00	3.68	6.68	7029.28	
DPBN-3B #1	25-Mar-03	810	7031.88	7034.82	TOC	5.74	2.94	2.80	5.74	7029.08	
DPBN-3B #2	25-Mar-03	NA	7031.88	7034.82	TOC	NM	2.94	NM	NM	NM	Bromide probe in well.
DPBN-3B #3	25-Mar-03	810	7031.88	7034.82	TOC	5.75	2.94	2.81	5.75	7029.07	
DPBN-3C #1	25-Mar-03	844	7031.96	7034.76	TOC	5.75	2.80	2.95	5.75	7029.01	
DPBN-3C #2	25-Mar-03	NA	7031.96	7034.76	TOC	NM	2.80	NM	NM	NM	Bromide probe in well.
DPBN-3C #3	25-Mar-03	844	7031.96	7034.76	TOC	5.30	2.80	2.50	5.30	7029.46	
DPW-3.2N	25-Mar-03	843	7034.53	7037.57	TOC	8.87	3.04	5.83	8.87	7028.70	
DPW-3.5N	25-Mar-03	NA	7031.44	7034.39	TOC	NM	2.95	NM	NM	NM	DMLS Sampler in well.
DPW-3.5S	25-Mar-03	811	7032.40	7035.40	TOC	6.64	3.00	3.64	6.64	7028.76	
DPBN-4A #1	25-Mar-03	812	7031.93	7034.47	TOC	5.75	2.54	3.21	5.75	7028.72	
DPBN-4A #2	25-Mar-03	NA	7031.93	7034.47	TOC	NM	2.54	NM	NM	NM	Bromide probe in well.
DPBN-4A #3	25-Mar-03	812	7031.93	7034.47	TOC	5.76	2.54	3.22	5.76	7028.71	
DPBN-4B #1	25-Mar-03	842	7031.53	7034.34	TOC	5.99	2.81	3.18	5.99	7028.35	
DPBN-4B #2	25-Mar-03	NA	7031.53	7034.34	TOC	NM	2.81	NM	NM	NM	Bromide probe in well.
DPBN-4B #3	25-Mar-03	842	7031.53	7034.34	TOC	5.98	2.81	3.17	5.98	7028.36	
DPBN-4C #1	25-Mar-03	841	7032.79	7035.29	TOC	7.13	2.50	4.63	7.13	7028.16	
DPBN-4C #2	25-Mar-03	841	7032.79	7035.28	TOC	7.11	2.49	4.62	7.11	7028.17	
DPBN-4C #3	25-Mar-03	841	7032.79	7035.28	TOC	7.11	2.49	4.62	7.11	7028.17	
DPW-4.6N	25-Mar-03	840	7032.55	7035.60	TOC	7.59	3.05	4.54	7.59	7028.01	
DPPN-4.5N #1	25-Mar-03	838	7031.65	7034.65	TOC	6.70	3.00	3.70	6.70	7027.95	
DPPN-4.5N #2	25-Mar-03	839	7031.92	7034.92	TOC	6.68	3.00	3.68	6.68	7028.24	
DPPN-4.5N #3	25-Mar-03	839	7031.82	7034.82	TOC	6.64	3.00	3.64	6.64	7028.18	
DPW-4.4N	25-Mar-03	NA	7031.09	7034.03	TOC	NM	2.94	NM	NM	NM	DMLS Sampler in well.
DPW-4.9S	25-Mar-03	813	7030.93	7033.78	TOC	6.02	2.85	3.17	6.02	7027.76	
DPBN-5A #1	25-Mar-03	813	7030.29	7032.41	TOC	4.66	2.12	2.54	4.66	7027.75	
DPBN-5A #2	25-Mar-03	814	7030.29	7032.41	TOC	4.64	2.12	2.52	4.64	7027.77	
DPBN-5A #3	25-Mar-03	814	7030.29	7032.41	TOC	4.62	2.12	2.50	4.62	7027.79	
DPBN-5B #1	25-Mar-03	837	7031.05	7033.62	TOC	5.78	2.57	3.21	5.78	7027.84	
DPBN-5B #2	25-Mar-03	837	7031.05	7033.62	TOC	5.78	2.57	3.21	5.78	7027.84	
DPBN-5B #3	25-Mar-03	837	7031.05	7033.62	TOC	5.78	2.57	3.21	5.78	7027.84	
DPBN-5C #1	25-Mar-03	834	7031.36	7034.30	TOC	6.62	2.94	3.68	6.62	7027.68	
DPBN-5C #2	25-Mar-03	835	7031.36	7034.30	TOC	6.61	2.94	3.67	6.61	7027.69	
DPBN-5C #3	25-Mar-03	836	7031.36	7034.30	TOC	6.60	2.94	3.66	6.60	7027.70	
DPW-5.8N	25-Mar-03	833	7032.32	7035.39	TOC	8.24	3.07	5.17	8.24	7027.15	
DPW-5.7N	25-Mar-03	NA	7031.02	7033.93	TOC	NM	2.91	NM	NM	NM	DMLS Sampler in well.
DPPN-5.7 #1	25-Mar-03	832	7029.72	7032.72	TOC	5.88	3.00	2.88	5.88	7026.84	
DPPN-5.7 #2	25-Mar-03	832	7029.54	7032.54	TOC	5.88	3.00	2.88	5.88	7026.66	
DPPN-5.7 #3	25-Mar-03	832	7029.50	7032.50	TOC	5.78	3.00	2.78	5.78	7026.72	
DPBN-6A #1	25-Mar-03	815	7030.73	7032.97	TOC	6.44	2.24	4.20	6.44	7026.53	
DPBN-6A #2	25-Mar-03	815	7030.73	7032.93	TOC	6.41	2.20	4.21	6.41	7026.52	
DPBN-6A #3	25-Mar-03	815	7030.73	7032.98	TOC	6.45	2.25	4.20	6.45	7026.53	
DPBN-6B #1	25-Mar-03	832	7028.88	7031.71	TOC	5.06	2.83	2.23	5.06	7026.65	
DPBN-6B #2	25-Mar-03	832	7028.88	7031.70	TOC	4.93	2.82	2.11	4.93	7026.77	
DPBN-6B #3	25-Mar-03	832	7028.88	7031.70	TOC	4.94	2.82	2.12	4.94	7026.76	
DPBN-6C #1	25-Mar-03	831	7029.83	7032.71	TOC	6.08	2.88	3.20	6.08	7026.63	

WATER-LEVEL ELEVATION DATA SHEET

Date: 03/25/03 Technical Area: 21

ER SOP-07.02, R1
Field Unit: Canyons Focus Area

Measured by (print name) Shannon Purdue Signature:

LOCATION	LOG		ELEVATION[1] (ft)		TAPE READING				DEPTH TO WATER (ft)	ELEVATION GROUNDWATER (ft)	Comments
	Date	Time	GL Datum	(TOC)[2]	Meas. Pt.	Water Level (ft)	TOC to Ground Surface	DTW BGS (ft)			
DPBN-6C #2	25-Mar-03	832	7029.83	7032.71	TOC	6.06	2.88	3.18	6.06	7026.65	
DPBN-6C #3	25-Mar-03	832	7029.83	7032.71	TOC	6.08	2.88	3.20	6.08	7026.63	
DPBN-6D #1	25-Mar-03	830	7030.42	7033.27	TOC	10.38	2.85	7.53	10.38	7022.89	
DPBN-6D #2	25-Mar-03	830	7030.42	7033.27	TOC	7.32	2.85	4.47	7.32	7025.95	
DPBN-6D #3	25-Mar-03	830	7030.42	7033.27	TOC	dry	2.85	dry	dry	dry	
DPW-6.2S	25-Mar-03	816	7028.90	7032.40	TOC	6.08	3.50	2.58	6.08	7026.32	
DPW-6.5N	25-Mar-03	829	7030.20	7033.20	TOC	7.29	3.00	4.29	7.29	7025.91	
DPBN-7A #1	25-Mar-03	816	7028.64	7031.31	TOC	6.27	2.67	3.60	6.27	7025.04	
DPBN-7A #2	25-Mar-03	817	7028.64	7031.31	TOC	6.27	2.67	3.60	6.27	7025.04	
DPBN-7A #3	25-Mar-03	817	7028.64	7031.31	TOC	6.26	2.67	3.59	6.26	7025.05	
DPBN-7B #1	25-Mar-03	828	7027.37	7030.27	TOC	4.79	2.90	1.89	4.79	7025.48	
DPBN-7B #2	25-Mar-03	828	7027.37	7030.27	TOC	4.77	2.90	1.87	4.77	7025.50	
DPBN-7B #3	25-Mar-03	828	7027.37	7030.27	TOC	4.78	2.90	1.88	4.78	7025.49	
DPBN-7C #1	25-Mar-03	827	7028.00	7030.85	TOC	5.38	2.85	2.53	5.38	7025.47	
DPBN-7C #2	25-Mar-03	827	7028.00	7030.84	TOC	5.38	2.84	2.54	5.38	7025.46	
DPBN-7C #3	25-Mar-03	827	7028.00	7030.83	TOC	5.36	2.83	2.53	5.36	7025.47	
DPW-7.1S	25-Mar-03	818	7028.76	7031.67	TOC	6.55	2.91	3.64	6.55	7025.12	
DPW-7.4N	25-Mar-03	825	7028.10	7031.06	TOC	7.44	2.96	4.48	7.44	7023.62	
DPW-7.5S	25-Mar-03	818	7027.50	7030.60	TOC	7.65	3.10	4.55	7.65	7022.95	
DPPN-7.7 #1	25-Mar-03	819	7024.49	7027.48	TOC	6.98	2.99	3.99	6.98	7020.50	
DPPN-7.7 #2	25-Mar-03	820	7024.47	7027.47	TOC	5.34	3.00	2.34	5.34	7022.13	
DPPN-7.7 #3	25-Mar-03	821	7024.56	7027.34	TOC	5.07	2.78	2.29	5.07	7022.27	
DPW-7.9S	25-Mar-03	NA	7025.22	7028.26	TOC	NM	3.04	NM	NM	NM	DMLS sampler in well.
DPBN-8A #1	25-Mar-03	822	7025.06	7027.57	TOC	6.58	2.51	4.07	6.58	7020.99	
DPBN-8A #2	25-Mar-03	822	7025.06	7027.57	TOC	6.58	2.51	4.07	6.58	7020.99	
DPBN-8A #3	25-Mar-03	823	7025.06	7027.57	TOC	6.58	2.51	4.07	6.58	7020.99	
DPBN-8B #1	25-Mar-03	823	7024.34	7026.57	TOC	5.52	2.23	3.29	5.52	7021.05	
DPBN-8B #2	25-Mar-03	824	7024.34	7026.57	TOC	5.52	2.23	3.29	5.52	7021.05	
DPBN-8B #3	25-Mar-03	824	7024.34	7026.57	TOC	5.52	2.23	3.29	5.52	7021.05	
LAUZ-2	25-Mar-03	824	NA	NA	TOC	5.79	NA	NA	5.79	NA	

Measurement Method and Probe Type: Solinst water depth indicator, Ser. No. 18528
Comments:

[1] Use the appropriate measuring point
[2] TOC is Top of Casing
[3] NAPL (Non Aqueous Phase Liquid). If NAPL is encountered, the groundwater level must be corrected.

Los Alamos Environmental Restoration Project

WATER-LEVEL ELEVATION DATA SHEET

Date: 4/15/2003 **Technical Area: 21**

ER SOP-07.02, R1
Field Unit: Canyons Focus Area

Measured by (print name) Jared Lyman **Signature:**

LOCATION	LOG		ELEVATION[1] (ft)		TAPE READING				DEPTH TO WATER (ft)	ELEVATION GROUNDWATER (ft)	Comments
	Date	Time	GL Datum	(TOC)[2]	Meas. Pt.	Water Level (ft)	TOC to Ground Surface	DTW BGS (ft)			
LAUZ-1	15-Apr-03	NA	NA	NA	TOC	NA	NA	NA	NA	NA	
DPW-1S	15-Apr-03	NM	7032.67	7035.67	TOC	NM	3.00	NM	NM	NM	DMLS Sampler in well.
DPBN-1A #1	15-Apr-03	9:27	7032.29	7035.29	TOC	5.95	3.00	2.95	5.95	7029.34	
DPBN-1A #2	15-Apr-03	9:26	7032.29	7035.29	TOC	5.97	3.00	2.97	5.97	7029.32	
DPBN-1A #3	15-Apr-03	9:24	7032.29	7035.29	TOC	5.95	3.00	2.95	5.95	7029.34	
DPBN-1B #1	15-Apr-03	9:31	7032.71	7035.63	TOC	6.34	2.92	3.42	6.34	7029.29	
DPBN-1B #2	15-Apr-03	9:30	7032.71	7035.63	TOC	6.32	2.92	3.40	6.32	7029.31	
DPBN-1B #3	15-Apr-03	9:29	7032.71	7035.63	TOC	dry	2.92	dry	dry	dry	
DPBN-1C #1	15-Apr-03	11:43	7032.48	7035.36	TOC	6.28	2.88	3.40	6.28	7029.08	
DPBN-1C #2	15-Apr-03	11:42	7032.48	7035.36	TOC	6.27	2.88	3.39	6.27	7029.09	
DPBN-1C #3	15-Apr-03	11:40	7032.48	7035.36	TOC	6.27	2.88	3.39	6.27	7029.09	
DPW-1N	15-Apr-03	11:35	7034.65	7037.62	TOC	dry	2.97	dry	dry	dry	
DPW-1.1N	15-Apr-03	11:37	7033.84	7036.67	TOC	7.80	2.83	4.97	7.80	7028.87	
DPPN-1.1 #1	15-Apr-03	NM	7032.55	7035.55	TOC	NM	3.00	NM	NM	NM	Transducer in well.
DPPN-1.1 #2	15-Apr-03	NM	7032.27	7035.27	TOC	NM	3.00	NM	NM	NM	Transducer in well.
DPPN-1.1 #3	15-Apr-03	NM	7032.24	7035.24	TOC	NM	3.00	NM	NM	NM	Transducer in well.
DPBN-2A #1	15-Apr-03	9:35	7033.21	7036.11	TOC	6.85	2.90	3.95	6.85	7029.26	
DPBN-2A #2	15-Apr-03	9:34	7033.21	7036.11	TOC	6.83	2.90	3.93	6.83	7029.28	
DPBN-2A #3	15-Apr-03	9:33	7033.21	7036.11	TOC	dry	2.90	dry	dry	dry	
DPBN-2B #1	15-Apr-03	11:30	7032.02	7035.02	TOC	6.16	3.00	3.16	6.16	7028.86	
DPBN-2B #2	15-Apr-03	11:29	7032.02	7035.02	TOC	5.85	3.00	2.85	5.85	7029.17	
DPBN-2B #3	15-Apr-03	11:27	7032.02	7035.02	TOC	dry	3.00	dry	dry	dry	
DPBN-2C #1	15-Apr-03	11:34	7032.98	7035.86	TOC	6.98	2.88	4.10	6.98	7028.88	
DPBN-2C #2	15-Apr-03	11:33	7032.98	7035.86	TOC	6.98	2.88	4.10	6.98	7028.88	
DPBN-2C #3	15-Apr-03	11:32	7032.98	7035.86	TOC	6.97	2.88	4.09	6.97	7028.89	
DPBN-3A #1	15-Apr-03	9:45	7032.96	7035.96	TOC	7.25	3.00	4.25	7.25	7028.71	
DPBN-3A #2	15-Apr-03	9:44	7032.96	7035.96	TOC	7.32	3.00	4.32	7.32	7028.64	
DPBN-3A #3	15-Apr-03	9:43	7032.96	7035.96	TOC	7.26	3.00	4.26	7.26	7028.70	
DPBN-3B #1	15-Apr-03	9:40	7031.88	7034.82	TOC	6.34	2.94	3.40	6.34	7028.48	
DPBN-3B #2	15-Apr-03	9:39	7031.88	7034.82	TOC	6.36	2.94	3.42	6.36	7028.46	
DPBN-3B #3	15-Apr-03	9:38	7031.88	7034.82	TOC	dry	2.94	dry	dry	dry	
DPBN-3C #1	15-Apr-03	11:25	7031.96	7034.76	TOC	6.30	2.80	3.50	6.30	7028.46	
DPBN-3C #2	15-Apr-03	11:24	7031.96	7034.76	TOC	5.96	2.80	3.16	5.96	7028.80	
DPBN-3C #3	15-Apr-03	11:22	7031.96	7034.76	TOC	5.96	2.80	3.16	5.96	7028.80	
DPW-3.2N	15-Apr-03	11:21	7034.53	7037.57	TOC	9.42	3.04	6.38	9.42	7028.15	
DPW-3.5N	15-Apr-03		7031.44	7034.39	TOC	NM	2.95	NM	NM	NM	DMLS Sampler in well.
DPW-3.5S	15-Apr-03	9:48	7032.40	7035.40	TOC	7.25	3.00	4.25	7.25	7028.15	
DPBN-4A #1	15-Apr-03	9:52	7031.93	7034.47	TOC	6.30	2.54	3.76	6.30	7028.17	
DPBN-4A #2	15-Apr-03	9:51	7031.93	7034.47	TOC	6.29	2.54	3.75	6.29	7028.18	
DPBN-4A #3	15-Apr-03	9:49	7031.93	7034.47	TOC	6.30	2.54	3.76	6.30	7028.17	
DPBN-4B #1	15-Apr-03	11:19	7031.53	7034.34	TOC	6.45	2.81	3.64	6.45	7027.89	
DPBN-4B #2	15-Apr-03	11:18	7031.53	7034.34	TOC	6.45	2.81	3.64	6.45	7027.89	
DPBN-4B #3	15-Apr-03	11:17	7031.53	7034.34	TOC	6.45	2.81	3.64	6.45	7027.89	
DPBN-4C #1	15-Apr-03	11:15	7032.79	7035.29	TOC	7.61	2.50	5.11	7.61	7027.68	
DPBN-4C #2	15-Apr-03	11:12	7032.79	7035.28	TOC	7.60	2.49	5.11	7.60	7027.68	
DPBN-4C #3	15-Apr-03	11:11	7032.79	7035.28	TOC	7.60	2.49	5.11	7.60	7027.68	
DPW-4.6N	15-Apr-03	11:10	7032.55	7035.60	TOC	8.06	3.05	5.01	8.06	7027.54	
DPPN-4.5N #1	15-Apr-03	NM	7031.65	7034.65	TOC	NM	3.00	NM	NM	NM	Transducer in well.
DPPN-4.5N #2	15-Apr-03	NM	7031.92	7034.92	TOC	NM	3.00	NM	NM	NM	Transducer in well.
DPPN-4.5N #3	15-Apr-03	NM	7031.82	7034.82	TOC	NM	3.00	NM	NM	NM	Transducer in well.
DPW-4.4N	15-Apr-03	NM	7031.09	7034.03	TOC	NM	2.94	NM	NM	NM	DMLS Sampler in well.
DPW-4.9S	15-Apr-03	9:53	7030.93	7033.78	TOC	6.45	2.85	3.60	6.45	7027.33	
DPBN-5A #1	15-Apr-03	9:58	7030.29	7032.41	TOC	5.19	2.12	3.07	5.19	7027.22	
DPBN-5A #2	15-Apr-03	9:56	7030.29	7032.41	TOC	5.18	2.12	3.06	5.18	7027.23	
DPBN-5A #3	15-Apr-03	9:55	7030.29	7032.41	TOC	5.14	2.12	3.02	5.14	7027.27	
DPBN-5B #1	15-Apr-03	11:08	7031.05	7033.62	TOC	6.30	2.57	3.73	6.30	7027.32	
DPBN-5B #2	15-Apr-03	11:07	7031.05	7033.62	TOC	6.31	2.57	3.74	6.31	7027.31	
DPBN-5B #3	15-Apr-03	11:06	7031.05	7033.62	TOC	6.30	2.57	3.73	6.30	7027.32	
DPBN-5C #1	15-Apr-03	11:05	7031.36	7034.30	TOC	7.06	2.94	4.12	7.06	7027.24	
DPBN-5C #2	15-Apr-03	11:03	7031.36	7034.30	TOC	7.05	2.94	4.11	7.05	7027.25	
DPBN-5C #3	15-Apr-03	11:01	7031.36	7034.30	TOC	7.05	2.94	4.11	7.05	7027.25	
DPW-5.8N	15-Apr-03	11:00	7032.32	7035.39	TOC	8.58	3.07	5.51	8.58	7026.81	
DPW-5.7N	15-Apr-03		7031.02	7033.93	TOC	NM	2.91	NM	NM	NM	DMLS Sampler in well.
DPPN-5.7 #1	15-Apr-03	10:58	7029.72	7032.72	TOC	6.25	3.00	3.25	6.25	7026.47	
DPPN-5.7 #2	15-Apr-03	10:57	7029.54	7032.54	TOC	6.25	3.00	3.25	6.25	7026.29	
DPPN-5.7 #3	15-Apr-03	10:56	7029.50	7032.50	TOC	dry	3.00	dry	dry	dry	
DPBN-6A #1	15-Apr-03	10:03	7030.73	7032.97	TOC	6.78	2.24	4.54	6.78	7026.19	
DPBN-6A #2	15-Apr-03	10:01	7030.73	7032.93	TOC	6.74	2.20	4.54	6.74	7026.19	
DPBN-6A #3	15-Apr-03	10:00	7030.73	7032.98	TOC	6.79	2.25	4.54	6.79	7026.19	
DPBN-6B #1	15-Apr-03	10:54	7028.88	7031.71	TOC	5.29	2.83	2.46	5.29	7026.42	
DPBN-6B #2	15-Apr-03	10:53	7028.88	7031.70	TOC	5.26	2.82	2.44	5.26	7026.44	
DPBN-6B #3	15-Apr-03	10:52	7028.88	7031.70	TOC	5.26	2.82	2.44	5.26	7026.44	
DPBN-6C #1	15-Apr-03	10:50	7029.83	7032.71	TOC	6.38	2.88	3.50	6.38	7026.33	

Los Alamos Environmental Restoration Project

WATER-LEVEL ELEVATION DATA SHEET

Date: 04/15/03 **Technical Area:** 21

ER SOP-07.02, R1
Field Unit: Canyons Focus Area

Measured by (print name) Jared Lyman **Signature:**

LOCATION	LOG		ELEVATION[1] (ft)		TAPE READING				DEPTH TO WATER (ft)	ELEVATION GROUNDWATER (ft)	Comments
	Date	Time	GL Datum	(TOC)[2]	Meas. Pt.	Water Level (ft)	TOC to Ground Surface	DTW BGS (ft)			
DPBN-6C #2	15-Apr-03	10:49	7029.83	7032.71	TOC	6.37	2.88	3.49	6.37	7026.34	
DPBN-6C #3	15-Apr-03	10:46	7029.83	7032.71	TOC	6.38	2.88	3.50	6.38	7026.33	
DPBN-6D #1	15-Apr-03	10:45	7030.42	7033.27	TOC	9.94	2.85	7.09	9.94	7023.33	
DPBN-6D #2	15-Apr-03	10:43	7030.42	7033.27	TOC	7.76	2.85	4.91	7.76	7025.51	
DPBN-6D #3	15-Apr-03	10:41	7030.42	7033.27	TOC	dry	2.85	dry	dry	dry	
DPW-6.2S	15-Apr-03	10:04	7028.90	7032.40	TOC	6.40	3.50	2.90	6.40	7026.00	
DPW-6.5N	15-Apr-03	10:40	7030.20	7033.20	TOC	7.40	3.00	4.40	7.40	7025.80	
DPBN-7A #1	15-Apr-03	10:09	7028.64	7031.31	TOC	6.55	2.67	3.88	6.55	7024.76	
DPBN-7A #2	15-Apr-03	10:08	7028.64	7031.31	TOC	6.69	2.67	4.02	6.69	7024.62	
DPBN-7A #3	15-Apr-03	10:06	7028.64	7031.31	TOC	6.71	2.67	4.04	6.71	7024.60	
DPBN-7B #1	15-Apr-03	10:33	7027.37	7030.27	TOC	5.06	2.90	2.16	5.06	7025.21	
DPBN-7B #2	15-Apr-03	10:31	7027.37	7030.27	TOC	5.08	2.90	2.18	5.08	7025.19	
DPBN-7B #3	15-Apr-03	10:30	7027.37	7030.27	TOC	5.08	2.90	2.18	5.08	7025.19	
DPBN-7C #1	15-Apr-03	10:38	7028.00	7030.85	TOC	5.69	2.85	2.84	5.69	7025.16	
DPBN-7C #2	15-Apr-03	10:37	7028.00	7030.84	TOC	5.69	2.84	2.85	5.69	7025.15	
DPBN-7C #3	15-Apr-03	10:35	7028.00	7030.83	TOC	5.66	2.83	2.83	5.66	7025.17	
DPW-7.1S	15-Apr-03	NM	7028.76	7031.67	TOC	NM	2.91	NM	NM	NM	
DPW-7.4N	15-Apr-03	10:28	7028.10	7031.06	TOC	7.81	2.96	4.85	7.81	7023.25	
DPW-7.5S	15-Apr-03	10:11	7027.50	7030.60	TOC	7.90	3.10	4.80	7.90	7022.70	
DPPN-7.7 #1	15-Apr-03	10:16	7024.49	7027.48	TOC	6.84	2.99	3.85	6.84	7020.64	
DPPN-7.7 #2	15-Apr-03	NM	7024.47	7027.47	TOC	NM	3.00	NM	NM	NM	Transducer in well.
DPPN-7.7 #3	15-Apr-03	NM	7024.56	7027.34	TOC	NM	2.78	NM	NM	NM	Transducer in well.
DPW-7.9S	15-Apr-03	NM	7025.22	7028.26	TOC	NM	3.04	NM	NM	NM	DMLS sampler in well.
DPBN-8A #1	15-Apr-03	10:20	7025.06	7027.57	TOC	6.78	2.51	4.27	6.78	7020.79	
DPBN-8A #2	15-Apr-03	10:19	7025.06	7027.57	TOC	6.78	2.51	4.27	6.78	7020.79	
DPBN-8A #3	15-Apr-03	10:18	7025.06	7027.57	TOC	6.78	2.51	4.27	6.78	7020.79	
DPBN-8B #1	15-Apr-03	10:25	7024.34	7026.57	TOC	6.45	2.23	4.22	6.45	7020.12	
DPBN-8B #2	15-Apr-03	10:24	7024.34	7026.57	TOC	6.45	2.23	4.22	6.45	7020.12	
DPBN-8B #3	15-Apr-03	10:22	7024.34	7026.57	TOC	6.45	2.23	4.22	6.45	7020.12	
LAUZ-2	15-Apr-03	10:26	NA	NA	TOC	5.90	NA	NA	5.90	NA	

Measurement Method and Probe Type: Solinst water depth indicator, Ser. No. 18528
Comments:

[1] Use the appropriate measuring point
[2] TOC is Top of Casing
[3] NAPL (Non Aqueous Phase Liquid). If NAPL is encountered, the groundwater level must be corrected.

Los Alamos Environmental Restoration Project

WATER-LEVEL ELEVATION DATA SHEET

Date: 4/28/03 **Technical Area:** 21

ER SOP-07.02, R1
Field Unit: Canyons Focus Area

Measured by (print name) Jared Lyman **Signature:**

LOCATION	LOG		ELEVATION[1] (ft)		TAPE READING				DEPTH TO WATER (ft)	ELEVATION GROUNDWATER (ft)	Comments
	Date	Time	GL Datum	(TOC)[2]	Meas. Pt.	Water Level (ft)	TOC to Ground Surface	DTW BGS (ft)			
LAUZ-1	28-Apr-03	9:40	NA	NA	TOC	5.52	NA	NA	5.52	NA	
DPW-1S	28-Apr-03	9:42	7032.67	7035.67	TOC	5.99	3.00	2.99	5.99	7029.68	
DPBN-1A #1	28-Apr-03	9:45	7032.29	7035.29	TOC	5.73	3.00	2.73	5.73	7029.56	
DPBN-1A #2	28-Apr-03	9:45	7032.29	7035.29	TOC	5.74	3.00	2.74	5.74	7029.55	
DPBN-1A #3	28-Apr-03	9:43	7032.29	7035.29	TOC	5.75	3.00	2.75	5.75	7029.54	
DPBN-1B #1	28-Apr-03	9:46	7032.71	7035.63	TOC	6.12	2.92	3.20	6.12	7029.51	
DPBN-1B #2	28-Apr-03	9:46	7032.71	7035.63	TOC	6.12	2.92	3.20	6.12	7029.51	
DPBN-1B #3	28-Apr-03	9:45	7032.71	7035.63	TOC	dry	2.92	dry	dry	dry	
DPBN-1C #1	28-Apr-03	10:48	7032.48	7035.36	TOC	6.10	2.88	3.22	6.10	7029.26	
DPBN-1C #2	28-Apr-03	10:48	7032.48	7035.36	TOC	6.10	2.88	3.22	6.10	7029.26	
DPBN-1C #3	28-Apr-03	10:48	7032.48	7035.36	TOC	6.08	2.88	3.20	6.08	7029.28	
DPW-1N	28-Apr-03	10:46	7034.65	7037.62	TOC	8.46	2.97	5.49	8.46	7029.16	
DPW-1.1N	28-Apr-03	10:47	7033.84	7036.67	TOC	7.61	2.83	4.78	7.61	7029.06	
DPPN-1.1 #1	28-Apr-03	NM	7032.55	7035.55	TOC	NM	3.00	NM	NM	NM	Transducer in well.
DPPN-1.1 #2	28-Apr-03	NM	7032.27	7035.27	TOC	NM	3.00	NM	NM	NM	Transducer in well.
DPPN-1.1 #3	28-Apr-03	NM	7032.24	7035.24	TOC	NM	3.00	NM	NM	NM	Transducer in well.
DPBN-2A #1	28-Apr-03	9:48	7033.21	7036.11	TOC	6.69	2.90	3.79	6.69	7029.42	
DPBN-2A #2	28-Apr-03	9:47	7033.21	7036.11	TOC	6.69	2.90	3.79	6.69	7029.42	
DPBN-2A #3	28-Apr-03	9:47	7033.21	7036.11	TOC	dry	2.90	dry	dry	dry	
DPBN-2B #1	28-Apr-03	10:40	7032.02	7035.02	TOC	5.95	3.00	2.95	5.95	7029.07	
DPBN-2B #2	28-Apr-03	10:39	7032.02	7035.02	TOC	5.70	3.00	2.70	5.70	7029.32	
DPBN-2B #3	28-Apr-03	10:38	7032.02	7035.02	TOC	dry	3.00	dry	dry	dry	
DPBN-2C #1	28-Apr-03	10:45	7032.98	7035.86	TOC	6.82	2.88	3.94	6.82	7029.04	
DPBN-2C #2	28-Apr-03	10:44	7032.98	7035.86	TOC	6.82	2.88	3.94	6.82	7029.04	
DPBN-2C #3	28-Apr-03	10:43	7032.98	7035.86	TOC	6.81	2.88	3.93	6.81	7029.05	
DPBN-3A #1	28-Apr-03	9:52	7032.96	7035.96	TOC	7.17	3.00	4.17	7.17	7028.79	
DPBN-3A #2	28-Apr-03	9:51	7032.96	7035.96	TOC	7.20	3.00	4.20	7.20	7028.76	
DPBN-3A #3	28-Apr-03	9:49	7032.96	7035.96	TOC	7.19	3.00	4.19	7.19	7028.77	
DPBN-3B #1	28-Apr-03	9:54	7031.88	7034.82	TOC	6.25	2.94	3.31	6.25	7028.57	
DPBN-3B #2	28-Apr-03	9:53	7031.88	7034.82	TOC	6.25	2.94	3.31	6.25	7028.57	
DPBN-3B #3	28-Apr-03	9:52	7031.88	7034.82	TOC	dry	2.94	dry	dry	dry	
DPBN-3C #1	28-Apr-03	10:35	7031.96	7034.76	TOC	6.21	2.80	3.41	6.21	7028.55	
DPBN-3C #2	28-Apr-03	10:35	7031.96	7034.76	TOC	5.84	2.80	3.04	5.84	7028.92	
DPBN-3C #3	28-Apr-03	10:34	7031.96	7034.76	TOC	5.84	2.80	3.04	5.84	7028.92	
DPW-3.2N	28-Apr-03	10:33	7034.53	7037.57	TOC	9.36	3.04	6.32	9.36	7028.21	
DPW-3.5N	28-Apr-03	10:32	7031.44	7034.39	TOC	6.28	2.95	3.33	6.28	7028.11	
DPW-3.5S	28-Apr-03	9:54	7032.40	7035.40	TOC	7.17	3.00	4.17	7.17	7028.23	
DPBN-4A #1	28-Apr-03	9:56	7031.93	7034.47	TOC	6.23	2.54	3.69	6.23	7028.24	
DPBN-4A #2	28-Apr-03	9:56	7031.93	7034.47	TOC	6.23	2.54	3.69	6.23	7028.24	
DPBN-4A #3	28-Apr-03	9:55	7031.93	7034.47	TOC	6.23	2.54	3.69	6.23	7028.24	
DPBN-4B #1	28-Apr-03	10:30	7031.53	7034.34	TOC	6.41	2.81	3.60	6.41	7027.93	
DPBN-4B #2	28-Apr-03	10:30	7031.53	7034.34	TOC	6.41	2.81	3.60	6.41	7027.93	
DPBN-4B #3	28-Apr-03	10:29	7031.53	7034.34	TOC	6.40	2.81	3.59	6.40	7027.94	
DPBN-4C #1	28-Apr-03	10:32	7032.79	7035.29	TOC	7.58	2.50	5.08	7.58	7027.71	
DPBN-4C #2	28-Apr-03	10:31	7032.79	7035.28	TOC	7.57	2.49	5.08	7.57	7027.71	
DPBN-4C #3	28-Apr-03	10:31	7032.79	7035.28	TOC	7.57	2.49	5.08	7.57	7027.71	
DPW-4.6N	28-Apr-03	10:28	7032.55	7035.60	TOC	8.05	3.05	5.00	8.05	7027.55	
DPPN-4.5N #1	28-Apr-03	NM	7031.65	7034.65	TOC	NM	3.00	NM	NM	NM	Transducer in well.
DPPN-4.5N #2	28-Apr-03	NM	7031.92	7034.92	TOC	NM	3.00	NM	NM	NM	Transducer in well.
DPPN-4.5N #3	28-Apr-03	NM	7031.82	7034.82	TOC	NM	3.00	NM	NM	NM	Transducer in well.
DPW-4.4N	28-Apr-03	10:29	7031.09	7034.03	TOC	6.41	2.94	3.47	6.41	7027.62	
DPW-4.9S	28-Apr-03	9:59	7030.93	7033.78	TOC	6.55	2.85	3.70	6.55	7027.23	
DPBN-5A #1	28-Apr-03	10:00	7030.29	7032.41	TOC	5.18	2.12	3.06	5.18	7027.23	
DPBN-5A #2	28-Apr-03	10:00	7030.29	7032.41	TOC	5.17	2.12	3.05	5.17	7027.24	
DPBN-5A #3	28-Apr-03	9:59	7030.29	7032.41	TOC	5.13	2.12	3.01	5.13	7027.28	
DPBN-5B #1	28-Apr-03	10:28	7031.05	7033.62	TOC	6.30	2.57	3.73	6.30	7027.32	
DPBN-5B #2	28-Apr-03	10:27	7031.05	7033.62	TOC	6.31	2.57	3.74	6.31	7027.31	
DPBN-5B #3	28-Apr-03	10:27	7031.05	7033.62	TOC	6.30	2.57	3.73	6.30	7027.32	
DPBN-5C #1	28-Apr-03	10:27	7031.36	7034.30	TOC	7.06	2.94	4.12	7.06	7027.24	
DPBN-5C #2	28-Apr-03	10:26	7031.36	7034.30	TOC	7.04	2.94	4.10	7.04	7027.26	
DPBN-5C #3	28-Apr-03	10:26	7031.36	7034.30	TOC	7.03	2.94	4.09	7.03	7027.27	
DPW-5.8N	28-Apr-03	10:25	7032.32	7035.39	TOC	8.60	3.07	5.53	8.60	7026.79	
DPW-5.7N	28-Apr-03	10:25	7031.02	7033.93	TOC	7.09	2.91	4.18	7.09	7026.84	
DPPN-5.7 #1	28-Apr-03	10:24	7029.72	7032.72	TOC	6.27	3.00	3.27	6.27	7026.45	
DPPN-5.7 #2	28-Apr-03	10:24	7029.54	7032.54	TOC	6.27	3.00	3.27	6.27	7026.27	
DPPN-5.7 #3	28-Apr-03	10:23	7029.50	7032.50	TOC	dry	3.00	dry	dry	dry	
DPBN-6A #1	28-Apr-03	10:02	7030.73	7032.97	TOC	6.81	2.24	4.57	6.81	7026.16	
DPBN-6A #2	28-Apr-03	10:02	7030.73	7032.93	TOC	6.76	2.20	4.56	6.76	7026.17	
DPBN-6A #3	28-Apr-03	10:01	7030.73	7032.98	TOC	6.81	2.25	4.56	6.81	7026.17	
DPBN-6B #1	28-Apr-03	10:22	7028.88	7031.71	TOC	5.36	2.83	2.53	5.36	7026.35	
DPBN-6B #2	28-Apr-03	10:22	7028.88	7031.70	TOC	5.30	2.82	2.48	5.30	7026.40	
DPBN-6B #3	28-Apr-03	10:21	7028.88	7031.70	TOC	5.30	2.82	2.48	5.30	7026.40	
DPBN-6C #1	28-Apr-03	10:21	7029.83	7032.71	TOC	6.40	2.88	3.52	6.40	7026.31	

Los Alamos Environmental Restoration Project

WATER-LEVEL ELEVATION DATA SHEET

Date: 04/28/03 **Technical Area:** 21

ER SOP-07.02, R1
Field Unit: Canyons Focus Area

Measured by (print name) Jared Lyman **Signature:**

LOCATION	LOG		ELEVATION[1] (ft)		TAPE READING				DEPTH TO WATER (ft)	ELEVATION GROUNDWATER (ft)	Comments
	Date	Time	GL Datum	(TOC)[2]	Meas. Pt.	Water Level (ft)	TOC to Ground Surface	DTW BGS (ft)			
DPBN-6C #2	28-Apr-03	10:21	7029.83	7032.71	TOC	6.39	2.88	3.51	6.39	7026.32	
DPBN-6C #3	28-Apr-03	10:20	7029.83	7032.71	TOC	6.40	2.88	3.52	6.40	7026.31	
DPBN-6D #1	28-Apr-03	10:19	7030.42	7033.27	TOC	9.49	2.85	6.64	9.49	7023.78	
DPBN-6D #2	28-Apr-03	10:18	7030.42	7033.27	TOC	7.61	2.85	4.76	7.61	7025.66	
DPBN-6D #3	28-Apr-03	10:18	7030.42	7033.27	TOC	dry	2.85	dry	dry	dry	
DPW-6.2S	28-Apr-03	10:02	7028.90	7032.40	TOC	6.43	3.50	2.93	6.43	7025.97	
DPW-6.5N	28-Apr-03	10:18	7030.20	7033.20	TOC	7.57	3.00	4.57	7.57	7025.63	
DPBN-7A #1	28-Apr-03	10:04	7028.64	7031.31	TOC	6.68	2.67	4.01	6.68	7024.63	
DPBN-7A #2	28-Apr-03	10:03	7028.64	7031.31	TOC	6.81	2.67	4.14	6.81	7024.50	
DPBN-7A #3	28-Apr-03	10:03	7028.64	7031.31	TOC	6.69	2.67	4.02	6.69	7024.62	
DPBN-7B #1	28-Apr-03	10:15	7027.37	7030.27	TOC	5.11	2.90	2.21	5.11	7025.16	
DPBN-7B #2	28-Apr-03	10:14	7027.37	7030.27	TOC	5.11	2.90	2.21	5.11	7025.16	
DPBN-7B #3	28-Apr-03	10:13	7027.37	7030.27	TOC	5.11	2.90	2.21	5.11	7025.16	
DPBN-7C #1	28-Apr-03	10:17	7028.00	7030.85	TOC	5.73	2.85	2.88	5.73	7025.12	
DPBN-7C #2	28-Apr-03	10:17	7028.00	7030.84	TOC	5.73	2.84	2.89	5.73	7025.11	
DPBN-7C #3	28-Apr-03	10:16	7028.00	7030.83	TOC	5.72	2.83	2.89	5.72	7025.11	
DPW-7.1S	28-Apr-03	NM	7028.76	7031.67	TOC	NM	2.91	NM	NM	NM	Transducer in well.
DPW-7.4N	28-Apr-03	10:12	7028.10	7031.06	TOC	7.86	2.96	4.90	7.86	7023.20	
DPW-7.5S	28-Apr-03	10:05	7027.50	7030.60	TOC	8.01	3.10	4.91	8.01	7022.59	
DPPN-7.7 #1	28-Apr-03	10:06	7024.49	7027.48	TOC	6.79	2.99	3.80	6.79	7020.69	
DPPN-7.7 #2	28-Apr-03	NM	7024.47	7027.47	TOC	NM	3.00	NM	NM	NM	Transducer in well.
DPPN-7.7 #3	28-Apr-03	NM	7024.56	7027.34	TOC	NM	2.78	NM	NM	NM	Transducer in well.
DPW-7.9S	28-Apr-03	10:07	7025.22	7028.26	TOC	7.20	3.04	4.16	7.20	7021.06	
DPBN-8A #1	28-Apr-03	10:08	7025.06	7027.57	TOC	6.80	2.51	4.29	6.80	7020.77	
DPBN-8A #2	28-Apr-03	10:08	7025.06	7027.57	TOC	6.80	2.51	4.29	6.80	7020.77	
DPBN-8A #3	28-Apr-03	10:07	7025.06	7027.57	TOC	6.80	2.51	4.29	6.80	7020.77	
DPBN-8B #1	28-Apr-03	10:10	7024.34	7026.57	TOC	5.63	2.23	3.40	5.63	7020.94	
DPBN-8B #2	28-Apr-03	10:10	7024.34	7026.57	TOC	5.62	2.23	3.39	5.62	7020.95	
DPBN-8B #3	28-Apr-03	10:09	7024.34	7026.57	TOC	5.64	2.23	3.41	5.64	7020.93	
LAUZ-2	28-Apr-03	10:11	NA	NA	TOC	5.95	NA	NA	5.95	NA	

Measurement Method and Probe Type: Solinst water depth indicator, Ser. No. 18528
Comments:

[1] Use the appropriate measuring point
[2] TOC is Top of Casing
[3] NAPL (Non Aqueous Phase Liquid). If NAPL is encountered, the groundwater level must be corrected.

Los Alamos Environmental Restoration Project

WATER-LEVEL ELEVATION DATA SHEET

Date: 5/16/2003 **Technical Area: 21**

ER SOP-07.02, R1
Field Unit: Canyons Focus Area

Measured by (print name) Shannon Purdue **Signature:**

LOCATION	LOG		ELEVATION[1] (ft)		TAPE READING				DEPTH TO WATER (ft)	ELEVATION GROUNDWATER (ft)	Comments
	Date	Time	GL Datum	(TOC)[2]	Meas. Pt.	Water Level (ft)	TOC to Ground Surface	DTW BGS (ft)			
LAUZ-1	16-May-03	810	NA	NA	TOC	5.92	NA	NA	5.92	NA	
DPW-1S	16-May-03	812	7032.67	7035.67	TOC	6.42	3.00	3.42	6.42	7029.25	
DPBN-1A #1	16-May-03	813	7032.29	7035.29	TOC	6.25	3.00	3.25	6.25	7029.04	
DPBN-1A #2	16-May-03	813	7032.29	7035.29	TOC	6.26	3.00	3.26	6.26	7029.03	
DPBN-1A #3	16-May-03	813	7032.29	7035.29	TOC	6.26	3.00	3.26	6.26	7029.03	
DPBN-1B #1	16-May-03	814	7032.71	7035.63	TOC	6.63	2.92	3.71	6.63	7029.00	
DPBN-1B #2	16-May-03	814	7032.71	7035.63	TOC	6.62	2.92	3.70	6.62	7029.01	
DPBN-1B #3	16-May-03	814	7032.71	7035.63	TOC	dry	2.92	dry	dry	dry	
DPBN-1C #1	16-May-03	859	7032.48	7035.36	TOC	6.61	2.88	3.73	6.61	7028.75	
DPBN-1C #2	16-May-03	858	7032.48	7035.36	TOC	6.61	2.88	3.73	6.61	7028.75	
DPBN-1C #3	16-May-03	858	7032.48	7035.36	TOC	6.60	2.88	3.72	6.60	7028.76	
DPW-1N	16-May-03	857	7034.65	7037.62	TOC	dry	2.97	dry	dry	dry	
DPW-1.1N	16-May-03	858	7033.84	7036.67	TOC	8.12	2.83	5.29	8.12	7028.55	
DPPN-1.1 #1	16-May-03	815	7032.55	7035.55	TOC	6.62	3.00	3.62	6.62	7028.93	
DPPN-1.1 #2	16-May-03	815	7032.27	7035.27	TOC	6.62	3.00	3.62	6.62	7028.65	
DPPN-1.1 #3	16-May-03	816	7032.24	7035.24	TOC	dry	3.00	dry	dry	dry	
DPBN-2A #1	16-May-03	816	7033.21	7036.11	TOC	NM	2.90	NM	NM	NM	Bromide probe in well.
DPBN-2A #2	16-May-03	816	7033.21	7036.11	TOC	7.21	2.90	4.31	7.21	7028.90	
DPBN-2A #3	16-May-03	816	7033.21	7036.11	TOC	dry	2.90	dry	dry	dry	
DPBN-2B #1	16-May-03	855	7032.02	7035.02	TOC	NM	3.00	NM	NM	NM	Bromide probe in well.
DPBN-2B #2	16-May-03	855	7032.02	7035.02	TOC	NM	3.00	NM	NM	NM	Bromide probe in well.
DPBN-2B #3	16-May-03	855	7032.02	7035.02	TOC	dry	3.00	dry	dry	dry	
DPBN-2C #1	16-May-03	857	7032.98	7035.86	TOC	7.38	2.88	4.50	7.38	7028.48	
DPBN-2C #2	16-May-03	856	7032.98	7035.86	TOC	NM	2.88	NM	NM	NM	Bromide probe in well.
DPBN-2C #3	16-May-03	856	7032.98	7035.86	TOC	7.37	2.88	4.49	7.37	7028.49	
DPBN-3A #1	16-May-03	818	7032.96	7035.96	TOC	7.70	3.00	4.70	7.70	7028.26	
DPBN-3A #2	16-May-03	817	7032.96	7035.96	TOC	NM	3.00	NM	NM	NM	Bromide probe in well.
DPBN-3A #3	16-May-03	817	7032.96	7035.96	TOC	7.69	3.00	4.69	7.69	7028.27	
DPBN-3B #1	16-May-03	819	7031.88	7034.82	TOC	6.77	2.94	3.83	6.77	7028.05	
DPBN-3B #2	16-May-03	819	7031.88	7034.82	TOC	NM	2.94	NM	NM	NM	Bromide probe in well.
DPBN-3B #3	16-May-03	819	7031.88	7034.82	TOC	dry	2.94	dry	dry	dry	
DPBN-3C #1	16-May-03	854	7031.96	7034.76	TOC	6.77	2.80	3.97	6.77	7027.99	
DPBN-3C #2	16-May-03	854	7031.96	7034.76	TOC	NM	2.80	NM	NM	NM	Bromide probe in well.
DPBN-3C #3	16-May-03	854	7031.96	7034.76	TOC	6.48	2.80	3.68	6.48	7028.28	
DPW-3.2N	16-May-03	853	7034.53	7037.57	TOC	9.87	3.04	6.83	9.87	7027.70	
DPW-3.5N	16-May-03	852	7031.44	7034.39	TOC	6.87	2.95	3.92	6.87	7027.52	
DPW-3.5S	16-May-03	819	7032.40	7035.40	TOC	7.75	3.00	4.75	7.75	7027.65	
DPBN-4A #1	16-May-03	821	7031.93	7034.47	TOC	6.78	2.54	4.24	6.78	7027.69	
DPBN-4A #2	16-May-03	820	7031.93	7034.47	TOC	6.78	2.54	NM	6.78	NM	Bromide probe in well.
DPBN-4A #3	16-May-03	820	7031.93	7034.47	TOC	6.80	2.54	4.26	6.80	7027.67	
DPBN-4B #1	16-May-03	851	7031.53	7034.34	TOC	6.93	2.81	4.12	6.93	7027.41	
DPBN-4B #2	16-May-03	851	7031.53	7034.34	TOC	6.93	2.81	NM	6.93	NM	Bromide probe in well.
DPBN-4B #3	16-May-03	851	7031.53	7034.34	TOC	6.93	2.81	4.12	6.93	7027.41	
DPBN-4C #1	16-May-03	850	7032.79	7035.29	TOC	8.15	2.50	5.65	8.15	7027.14	
DPBN-4C #2	16-May-03	850	7032.79	7035.28	TOC	8.13	2.49	5.64	8.13	7027.15	
DPBN-4C #3	16-May-03	849	7032.79	7035.28	TOC	8.13	2.49	5.64	8.13	7027.15	
DPW-4.6N	16-May-03	849	7032.55	7035.60	TOC	8.63	3.05	5.58	8.63	7026.97	
DPPN-4.5N #1	16-May-03	847	7031.65	7034.65	TOC	7.72	3.00	4.72	7.72	7026.93	
DPPN-4.5N #2	16-May-03	848	7031.92	7034.92	TOC	7.70	3.00	4.70	7.70	7027.22	
DPPN-4.5N #3	16-May-03	843	7031.82	7034.82	TOC	dry	3.00	dry	dry	dry	
DPW-4.4N	16-May-03	852	7031.09	7034.03	TOC	6.98	2.94	4.04	6.98	7027.05	
DPW-4.9S	16-May-03	821	7030.93	7033.78	TOC	7.11	2.85	4.26	7.11	7026.67	
DPBN-5A #1	16-May-03	822	7030.29	7032.41	TOC	5.75	2.12	3.63	5.75	7026.66	
DPBN-5A #2	16-May-03	822	7030.29	7032.41	TOC	5.74	2.12	3.62	5.74	7026.67	
DPBN-5A #3	16-May-03	821	7030.29	7032.41	TOC	5.70	2.12	3.58	5.70	7026.71	
DPBN-5B #1	16-May-03	846	7031.05	7033.62	TOC	6.84	2.57	4.27	6.84	7026.78	
DPBN-5B #2	16-May-03	846	7031.05	7033.62	TOC	6.83	2.57	4.26	6.83	7026.79	
DPBN-5B #3	16-May-03	846	7031.05	7033.62	TOC	6.83	2.57	4.26	6.83	7026.79	
DPBN-5C #1	16-May-03	845	7031.36	7034.30	TOC	7.65	2.94	4.71	7.65	7026.65	
DPBN-5C #2	16-May-03	845	7031.36	7034.30	TOC	7.65	2.94	4.71	7.65	7026.65	
DPBN-5C #3	16-May-03	845	7031.36	7034.30	TOC	7.64	2.94	4.70	7.64	7026.66	
DPW-5.8N	16-May-03	844	7032.32	7035.39	TOC	9.10	3.07	6.03	9.10	7026.29	
DPW-5.7N	16-May-03	843	7031.02	7033.93	TOC	7.63	2.91	4.72	7.63	7026.30	
DPPN-5.7 #1	16-May-03	842	7029.72	7032.72	TOC	6.81	3.00	3.81	6.81	7025.91	
DPPN-5.7 #2	16-May-03	842	7029.54	7032.54	TOC	6.81	3.00	3.81	6.81	7025.73	
DPPN-5.7 #3	16-May-03	842	7029.50	7032.50	TOC	dry	3.00	dry	dry	dry	
DPBN-6A #1	16-May-03	824	7030.73	7032.97	TOC	7.40	2.24	5.16	7.40	7025.57	
DPBN-6A #2	16-May-03	823	7030.73	7032.93	TOC	7.36	2.20	5.16	7.36	7025.57	
DPBN-6A #3	16-May-03	823	7030.73	7032.98	TOC	7.40	2.25	5.15	7.40	7025.58	
DPBN-6B #1	16-May-03	842	7028.88	7031.71	TOC	5.90	2.83	3.07	5.90	7025.81	
DPBN-6B #2	16-May-03	841	7028.88	7031.70	TOC	5.85	2.82	3.03	5.85	7025.85	
DPBN-6B #3	16-May-03	840	7028.88	7031.70	TOC	5.87	2.82	3.05	5.87	7025.83	
DPBN-6C #1	16-May-03	840	7029.83	7032.71	TOC	6.93	2.88	4.05	6.93	7025.78	

Los Alamos Environmental Restoration Project

WATER-LEVEL ELEVATION DATA SHEET

Date: 05/16/03 **Technical Area:** 21

ER SOP-07.02, R1
Field Unit: Canyons Focus Area

Measured by (print name) Shannon Purdue **Signature:**

LOCATION	LOG		ELEVATION[1] (ft)		TAPE READING				DEPTH TO WATER (ft)	ELEVATION GROUNDWATER (ft)	Comments
	Date	Time	GL Datum	(TOC)[2]	Meas. Pt.	Water Level (ft)	TOC to Ground Surface	DTW BGS (ft)			
DPBN-6C #2	16-May-03	839	7029.83	7032.71	TOC	6.91	2.88	4.03	6.91	7025.80	
DPBN-6C #3	16-May-03	839	7029.83	7032.71	TOC	6.90	2.88	4.02	6.90	7025.81	
DPBN-6D #1	16-May-03	838	7030.42	7033.27	TOC	10.28	2.85	7.43	10.28	7022.99	
DPBN-6D #2	16-May-03	838	7030.42	7033.27	TOC	7.87	2.85	5.02	7.87	7025.40	
DPBN-6D #3	16-May-03	837	7030.42	7033.27	TOC	dry	2.85	dry	dry	dry	
DPW-6.2S	16-May-03	824	7028.90	7032.40	TOC	7.04	3.50	3.54	7.04	7025.36	
DPW-6.5N	16-May-03	837	7030.20	7033.20	TOC	8.10	3.00	5.10	8.10	7025.10	
DPBN-7A #1	16-May-03	825	7028.64	7031.31	TOC	7.20	2.67	4.53	7.20	7024.11	
DPBN-7A #2	16-May-03	825	7028.64	7031.31	TOC	NM	2.67	NM	NM	NM	Bromide probe in well.
DPBN-7A #3	16-May-03	825	7028.64	7031.31	TOC	7.20	2.67	4.53	7.20	7024.11	
DPBN-7B #1	16-May-03	835	7027.37	7030.27	TOC	5.63	2.90	2.73	5.63	7024.64	
DPBN-7B #2	16-May-03	834	7027.37	7030.27	TOC	NM	2.90	NM	NM	NM	Bromide probe in well.
DPBN-7B #3	16-May-03	834	7027.37	7030.27	TOC	5.64	2.90	2.74	5.64	7024.63	
DPBN-7C #1	16-May-03	836	7028.00	7030.85	TOC	6.27	2.85	3.42	6.27	7024.58	
DPBN-7C #2	16-May-03	836	7028.00	7030.84	TOC	6.26	2.84	3.42	6.26	7024.58	
DPBN-7C #3	16-May-03	835	7028.00	7030.83	TOC	6.26	2.83	3.43	6.26	7024.57	
DPW-7.1S	16-May-03	826	7028.76	7031.67	TOC	7.47	2.91	4.56	7.47	7024.20	
DPW-7.4N	16-May-03	833	7028.10	7031.06	TOC	8.24	2.96	5.28	8.24	7022.82	
DPW-7.5S	16-May-03	827	7027.50	7030.60	TOC	8.27	3.10	5.17	8.27	7022.33	
DPPN-7.7 #1	16-May-03	828	7024.49	7027.48	TOC	7.84	2.99	4.85	7.84	7019.64	
DPPN-7.7 #2	16-May-03	829	7024.47	7027.47	TOC	6.13	3.00	3.13	6.13	7021.34	
DPPN-7.7 #3	16-May-03	830	7024.56	7027.34	TOC	5.84	2.78	3.06	5.84	7021.50	
DPW-7.9S	16-May-03	830	7025.22	7028.26	TOC	7.56	3.04	4.52	7.56	7020.70	
DPBN-8A #1	16-May-03	831	7025.06	7027.57	TOC	7.16	2.51	4.65	7.16	7020.41	
DPBN-8A #2	16-May-03	831	7025.06	7027.57	TOC	7.16	2.51	4.65	7.16	7020.41	
DPBN-8A #3	16-May-03	831	7025.06	7027.57	TOC	7.16	2.51	4.65	7.16	7020.41	
DPBN-8B #1	16-May-03	832	7024.34	7026.57	TOC	5.87	2.23	3.64	5.87	7020.70	
DPBN-8B #2	16-May-03	832	7024.34	7026.57	TOC	5.87	2.23	3.64	5.87	7020.70	
DPBN-8B #3	16-May-03	831	7024.34	7026.57	TOC	5.87	2.23	3.64	5.87	7020.70	
LAUZ-2	16-May-03	832	NA	NA	TOC	6.18	NA	NA	6.18	NA	

Measurement Method and Probe Type: Solinst water depth indicator, Ser. No. 18528
Comments:

[1] Use the appropriate measuring point
[2] TOC is Top of Casing
[3] NAPL (Non Aqueous Phase Liquid). If NAPL is encountered, the groundwater level must be corrected.

Los Alamos Environmental Restoration Project

WATER-LEVEL ELEVATION DATA SHEET

Date: 5/27/2003 **Technical Area: 21**

ER SOP-07.02, R1
Field Unit: Cañons Focus Area

Measured by (print name) Shannon Purdue **Signature:**

LOCATION	LOG		ELEVATION[1] (ft)		TAPE READING				DEPTH TO WATER (ft)	ELEVATION GROUNDWATER (ft)	Comments
	Date	Time	GL Datum	(TOC)[2]	Meas. Pt.	Water Level (ft)	TOC to Ground Surface	DTW BGS (ft)			
LAUZ-1	27-May-03	1015	NA	NA	TOC	4.71	NA	NA	4.71	NA	
DPW-1S	27-May-03	1016	7032.67	7035.67	TOC	5.23	3.00	2.23	5.23	7030.44	
DPBN-1A #1	27-May-03	1017	7032.29	7035.29	TOC	5.25	3.00	2.25	5.25	7030.04	
DPBN-1A #2	27-May-03	1017	7032.29	7035.29	TOC	5.23	3.00	2.23	5.23	7030.06	
DPBN-1A #3	27-May-03	1017	7032.29	7035.29	TOC	5.22	3.00	2.22	5.22	7030.07	
DPBN-1B #1	27-May-03	1018	7032.71	7035.63	TOC	5.35	2.92	2.43	5.35	7030.28	
DPBN-1B #2	27-May-03	1018	7032.71	7035.63	TOC	5.35	2.92	2.43	5.35	7030.28	
DPBN-1B #3	27-May-03	1018	7032.71	7035.63	TOC	5.34	2.92	2.42	5.34	7030.29	
DPBN-1C #1	27-May-03	1059	7032.48	7035.36	TOC	5.32	2.88	2.44	5.32	7030.04	
DPBN-1C #2	27-May-03	1059	7032.48	7035.36	TOC	5.32	2.88	2.44	5.32	7030.04	
DPBN-1C #3	27-May-03	1100	7032.48	7035.36	TOC	5.32	2.88	2.44	5.32	7030.04	
DPW-1N	27-May-03	1058	7034.65	7037.62	TOC	6.88	2.97	3.91	6.88	7030.74	
DPW-1.1N	27-May-03	1058	7033.84	7036.67	TOC	7.75	2.83	4.92	7.75	7028.92	
DPPN-1.1 #1	27-May-03	1019	7032.55	7035.55	TOC	5.34	3.00	2.34	5.34	7030.21	
DPPN-1.1 #2	27-May-03	1020	7032.27	7035.27	TOC	5.34	3.00	2.34	5.34	7029.93	
DPPN-1.1 #3	27-May-03	1020	7032.24	7035.24	TOC	5.36	3.00	2.36	5.36	7029.88	
DPBN-2A #1	27-May-03	1021	7033.21	7036.11	TOC	NM	2.90	NM	NM	NM	Bromide probe in well.
DPBN-2A #2	27-May-03	1021	7033.21	7036.11	TOC	6.21	2.90	3.31	6.21	7029.90	
DPBN-2A #3	27-May-03	1021	7033.21	7036.11	TOC	6.20	2.90	3.30	6.20	7029.91	
DPBN-2B #1	27-May-03	1056	7032.02	7035.02	TOC	NM	3.00	NM	NM	NM	Bromide probe in well.
DPBN-2B #2	27-May-03	1056	7032.02	7035.02	TOC	NM	3.00	NM	NM	NM	Bromide probe in well.
DPBN-2B #3	27-May-03	1056	7032.02	7035.02	TOC	4.98	3.00	1.98	4.98	7030.04	
DPBN-2C #1	27-May-03	1057	7032.98	7035.86	TOC	6.14	2.88	3.26	6.14	7029.72	
DPBN-2C #2	27-May-03	1057	7032.98	7035.86	TOC	NM	2.88	NM	NM	NM	Bromide probe in well.
DPBN-2C #3	27-May-03	1057	7032.98	7035.86	TOC	6.12	2.88	3.24	6.12	7029.74	
DPBN-3A #1	27-May-03	1021	7032.96	7035.96	TOC	6.68	3.00	3.68	6.68	7029.28	
DPBN-3A #2	27-May-03	1021	7032.96	7035.96	TOC	NM	3.00	NM	NM	NM	Bromide probe in well.
DPBN-3A #3	27-May-03	1022	7032.96	7035.96	TOC	6.67	3.00	3.67	6.67	7029.29	
DPBN-3B #1	27-May-03	1022	7031.88	7034.82	TOC	NM	2.94	NM	NM	NM	Bromide probe in well.
DPBN-3B #2	27-May-03	1022	7031.88	7034.82	TOC	5.70	2.94	2.76	5.70	7029.12	
DPBN-3B #3	27-May-03	1022	7031.88	7034.82	TOC	5.70	2.94	2.76	5.70	7029.12	
DPBN-3C #1	27-May-03	1055	7031.96	7034.76	TOC	5.62	2.80	2.82	5.62	7029.14	
DPBN-3C #2	27-May-03	1055	7031.96	7034.76	TOC	NM	2.80	NM	NM	NM	Bromide probe in well.
DPBN-3C #3	27-May-03	1056	7031.96	7034.76	TOC	5.20	2.80	2.40	5.20	7029.56	
DPW-3.2N	27-May-03	2055	7034.53	7037.57	TOC	8.87	3.04	5.83	8.87	7028.70	
DPW-3.5N	27-May-03	1054	7031.44	7034.39	TOC	5.82	2.95	2.87	5.82	7028.57	
DPW-3.5S	27-May-03	1023	7032.40	7035.40	TOC	6.62	3.00	3.62	6.62	7028.78	
DPBN-4A #1	27-May-03	1023	7031.93	7034.47	TOC	5.72	2.54	3.18	5.72	7028.75	
DPBN-4A #2	27-May-03	1023	7031.93	7034.47	TOC	5.71	2.54	3.17	5.71	7028.76	
DPBN-4A #3	27-May-03	1024	7031.93	7034.47	TOC	5.72	2.54	3.18	5.72	7028.75	
DPBN-4B #1	27-May-03	1052	7031.53	7034.34	TOC	5.92	2.81	3.11	5.92	7028.42	
DPBN-4B #2	27-May-03	1052	7031.53	7034.34	TOC	5.91	2.81	3.10	5.91	7028.43	
DPBN-4B #3	27-May-03	1052	7031.53	7034.34	TOC	5.91	2.81	3.10	5.91	7028.43	
DPBN-4C #1	27-May-03	1053	7032.79	7035.29	TOC	7.11	2.50	4.61	7.11	7028.18	
DPBN-4C #2	27-May-03	1054	7032.79	7035.28	TOC	7.09	2.49	4.60	7.09	7028.19	
DPBN-4C #3	27-May-03	1054	7032.79	7035.28	TOC	7.08	2.49	4.59	7.08	7028.20	
DPW-4.6N	27-May-03	1051	7032.55	7035.60	TOC	7.63	3.05	4.58	7.63	7027.97	
DPPN-4.5N #1	27-May-03	1049	7031.65	7034.65	TOC	6.66	3.00	3.66	6.66	7027.99	
DPPN-4.5N #2	27-May-03	1049	7031.92	7034.92	TOC	6.65	3.00	3.65	6.65	7028.27	
DPPN-4.5N #3	27-May-03	1050	7031.82	7034.82	TOC	6.61	3.00	3.61	6.61	7028.21	
DPW-4.4N	27-May-03	1051	7031.09	7034.03	TOC	5.91	2.94	2.97	5.91	7028.12	
DPW-4.9S	27-May-03	1024	7030.93	7033.78	TOC	6.08	2.85	3.23	6.08	7027.70	
DPBN-5A #1	27-May-03	1025	7030.29	7032.41	TOC	4.68	2.12	2.56	4.68	7027.73	
DPBN-5A #2	27-May-03	1025	7030.29	7032.41	TOC	4.65	2.12	2.53	4.65	7027.76	
DPBN-5A #3	27-May-03	1025	7030.29	7032.41	TOC	4.62	2.12	2.50	4.62	7027.79	
DPBN-5B #1	27-May-03	1048	7031.05	7033.62	TOC	5.78	2.57	3.21	5.78	7027.84	
DPBN-5B #2	27-May-03	1048	7031.05	7033.62	TOC	5.78	2.57	3.21	5.78	7027.84	
DPBN-5B #3	27-May-03	1048	7031.05	7033.62	TOC	5.78	2.57	3.21	5.78	7027.84	
DPBN-5C #1	27-May-03	1047	7031.36	7034.30	TOC	6.62	2.94	3.68	6.62	7027.68	
DPBN-5C #2	27-May-03	1047	7031.36	7034.30	TOC	6.61	2.94	3.67	6.61	7027.69	
DPBN-5C #3	27-May-03	1047	7031.36	7034.30	TOC	6.59	2.94	3.65	6.59	7027.71	
DPW-5.8N	27-May-03	1046	7032.32	7035.39	TOC	8.63	3.07	5.56	8.63	7026.76	
DPW-5.7N	27-May-03	1045	7031.02	7033.93	TOC	6.72	2.91	3.81	6.72	7027.21	
DPPN-5.7 #1	27-May-03	1044	7029.72	7032.72	TOC	5.86	3.00	2.86	5.86	7026.86	
DPPN-5.7 #2	27-May-03	1044	7029.54	7032.54	TOC	5.88	3.00	2.88	5.88	7026.66	
DPPN-5.7 #3	27-May-03	1045	7029.50	7032.50	TOC	5.78	3.00	2.78	5.78	7026.72	
DPBN-6A #1	27-May-03	1026	7030.73	7032.97	TOC	6.41	2.24	4.17	6.41	7026.56	
DPBN-6A #2	27-May-03	1026	7030.73	7032.93	TOC	6.36	2.20	4.16	6.36	7026.57	
DPBN-6A #3	27-May-03	1027	7030.73	7032.98	TOC	6.40	2.25	4.15	6.40	7026.58	
DPBN-6B #1	27-May-03	1043	7028.88	7031.71	TOC	4.99	2.83	2.16	4.99	7026.72	
DPBN-6B #2	27-May-03	1043	7028.88	7031.70	TOC	4.89	2.82	2.07	4.89	7026.81	
DPBN-6B #3	27-May-03	1044	7028.88	7031.70	TOC	4.90	2.82	2.08	4.90	7026.80	
DPBN-6C #1	27-May-03	1042	7029.83	7032.71	TOC	6.05	2.88	3.17	6.05	7026.66	

Los Alamos Environmental Restoration Project

WATER-LEVEL ELEVATION DATA SHEET

Date: 05/27/03 **Technical Area:** 21

ER SOP-07.02, R1
Field Unit: Canyons Focus Area

Measured by (print name) Shannon Purdue **Signature:**

LOCATION	LOG		ELEVATION[1] (ft)		TAPE READING				DEPTH TO WATER (ft)	ELEVATION GROUNDWATER (ft)	Comments
	Date	Time	GL Datum	(TOC)[2]	Meas. Pt.	Water Level (ft)	TOC to Ground Surface	DTW BGS (ft)			
DPBN-6C #2	27-May-03	1043	7029.83	7032.71	TOC	6.03	2.88	3.15	6.03	7026.68	
DPBN-6C #3	27-May-03	1043	7029.83	7032.71	TOC	6.04	2.88	3.16	6.04	7026.67	
DPBN-6D #1	27-May-03	1041	7030.42	7033.27	TOC	8.78	2.85	5.93	8.78	7024.49	
DPBN-6D #2	27-May-03	1042	7030.42	7033.27	TOC	7.81	2.85	4.96	7.81	7025.46	
DPBN-6D #3	27-May-03	1042	7030.42	7033.27	TOC	dry	2.85	dry	dry	dry	
DPW-6.2S	27-May-03	1027	7028.90	7032.40	TOC	6.05	3.50	2.55	6.05	7026.35	
DPW-6.5N	27-May-03	1040	7030.20	7033.20	TOC	7.54	3.00	4.54	7.54	7025.66	
DPBN-7A #1	27-May-03	1028	7028.64	7031.31	TOC	6.38	2.67	3.71	6.38	7024.93	
DPBN-7A #2	27-May-03	1028	7028.64	7031.31	TOC	NM	2.67	NM	NM	NM	Bromide probe in well.
DPBN-7A #3	27-May-03	1028	7028.64	7031.31	TOC	6.40	2.67	3.73	6.40	7024.91	
DPBN-7B #1	27-May-03	1039	7027.37	7030.27	TOC	4.73	2.90	1.83	4.73	7025.54	
DPBN-7B #2	27-May-03	1039	7027.37	7030.27	TOC	NM	2.90	NM	NM	NM	Bromide probe in well.
DPBN-7B #3	27-May-03	1039	7027.37	7030.27	TOC	4.74	2.90	1.84	4.74	7025.53	
DPBN-7C #1	27-May-03	1037	7028.00	7030.85	TOC	5.34	2.85	2.49	5.34	7025.51	
DPBN-7C #2	27-May-03	1038	7028.00	7030.84	TOC	5.34	2.84	2.50	5.34	7025.50	
DPBN-7C #3	27-May-03	1038	7028.00	7030.83	TOC	5.33	2.83	2.50	5.33	7025.50	
DPW-7.1S	27-May-03	1029	7028.76	7031.67	TOC	6.50	2.91	3.59	6.50	7025.17	
DPW-7.4N	27-May-03	1036	7028.10	7031.06	TOC	7.34	2.96	4.38	7.34	7023.72	
DPW-7.5S	27-May-03	1030	7027.50	7030.60	TOC	7.77	3.10	4.67	7.77	7022.83	
DPPN-7.7 #1	27-May-03	1031	7024.49	7027.48	TOC	7.65	2.99	4.66	7.65	7019.83	
DPPN-7.7 #2	27-May-03	1031	7024.47	7027.47	TOC	5.28	3.00	2.28	5.28	7022.19	
DPPN-7.7 #3	27-May-03	1032	7024.56	7027.34	TOC	5.02	2.78	2.24	5.02	7022.32	
DPW-7.9S	27-May-03	1032	7025.22	7028.26	TOC	7.01	3.04	3.97	7.01	7021.25	
DPBN-8A #1	27-May-03	1033	7025.06	7027.57	TOC	6.59	2.51	4.08	6.59	7020.98	
DPBN-8A #2	27-May-03	1033	7025.06	7027.57	TOC	6.59	2.51	4.08	6.59	7020.98	
DPBN-8A #3	27-May-03	1033	7025.06	7027.57	TOC	6.59	2.51	4.08	6.59	7020.98	
DPBN-8B #1	27-May-03	1034	7024.34	7026.57	TOC	5.00	2.23	2.77	5.00	7021.57	
DPBN-8B #2	27-May-03	1034	7024.34	7026.57	TOC	5.00	2.23	2.77	5.00	7021.57	
DPBN-8B #3	27-May-03	1034	7024.34	7026.57	TOC	5.01	2.23	2.78	5.01	7021.56	
LAUZ-2	27-May-03	1035	NA	NA	TOC	5.82	NA	NA	5.82	NA	

Measurement Method and Probe Type: Solinst water depth indicator, Ser. No. 18528
Comments:

[1] Use the appropriate measuring point
[2] TOC is Top of Casing
[3] NAPL (Non Aqueous Phase Liquid). If NAPL is encountered, the groundwater level must be corrected.

Los Alamos Environmental Restoration Project

WATER-LEVEL ELEVATION DATA SHEET

Date: 6/5/2003 **Technical Area: 21**

ER SOP-07.02, R1
Field Unit: Canyons Focus Area

Measured by (print name) Shannon Purdue **Signature:**

LOCATION	LOG		ELEVATION[1] (ft)		TAPE READING				DEPTH TO WATER (ft)	ELEVATION GROUNDWATER (ft)	Comments
	Date	Time	GL Datum	(TOC)[2]	Meas. Pt.	Water Level (ft)	TOC to Ground Surface	DTW BGS (ft)			
LAUZ-1	5-Jun-03	910	NA	NA	TOC	5.18	NA	NA	5.18	NA	
DPW-1S	5-Jun-03	910	7032.67	7035.67	TOC	5.70	3.00	2.70	5.70	7029.97	
DPBN-1A #1	5-Jun-03	911	7032.29	7035.29	TOC	5.38	3.00	2.38	5.38	7029.91	
DPBN-1A #2	5-Jun-03	911	7032.29	7035.29	TOC	5.40	3.00	2.40	5.40	7029.89	
DPBN-1A #3	5-Jun-03	912	7032.29	7035.29	TOC	5.41	3.00	2.41	5.41	7029.88	
DPBN-1B #1	5-Jun-03	912	7032.71	7035.63	TOC	5.81	2.92	2.89	5.81	7029.82	
DPBN-1B #2	5-Jun-03	912	7032.71	7035.63	TOC	5.80	2.92	2.88	5.80	7029.83	
DPBN-1B #3	5-Jun-03	913	7032.71	7035.63	TOC	5.79	2.92	2.87	5.79	7029.84	
DPBN-1C #1	5-Jun-03	948	7032.48	7035.36	TOC	5.80	2.88	2.92	5.80	7029.56	
DPBN-1C #2	5-Jun-03	948	7032.48	7035.36	TOC	5.79	2.88	2.91	5.79	7029.57	
DPBN-1C #3	5-Jun-03	948	7032.48	7035.36	TOC	5.79	2.88	2.91	5.79	7029.57	
DPW-1N	5-Jun-03	947	7034.65	7037.62	TOC	8.14	2.97	5.17	8.14	7029.48	
DPW-1.1N	5-Jun-03	947	7033.84	7036.67	TOC	7.32	2.83	4.49	7.32	7029.35	
DPPN-1.1 #1	5-Jun-03	947	7032.55	7035.55	TOC	NM	3.00	NM	NM	NM	Transducer in well.
DPPN-1.1 #2	5-Jun-03	947	7032.27	7035.27	TOC	NM	3.00	NM	NM	NM	Transducer in well.
DPPN-1.1 #3	5-Jun-03	947	7032.24	7035.24	TOC	NM	3.00	NM	NM	NM	Transducer in well.
DPBN-2A #1	5-Jun-03	913	7033.21	7036.11	TOC	NM	2.90	NM	NM	NM	Bromide probe in well.
DPBN-2A #2	5-Jun-03	913	7033.21	7036.11	TOC	6.41	2.90	3.51	6.41	7029.70	
DPBN-2A #3	5-Jun-03	914	7033.21	7036.11	TOC	NM	2.90	NM	NM	NM	Bromide probe in well.
DPBN-2B #1	5-Jun-03	946	7032.02	7035.02	TOC	NM	3.00	NM	NM	NM	Bromide probe in well.
DPBN-2B #2	5-Jun-03	946	7032.02	7035.02	TOC	NM	3.00	NM	NM	NM	Bromide probe in well.
DPBN-2B #3	5-Jun-03	946	7032.02	7035.02	TOC	5.40	3.00	2.40	5.40	7029.62	
DPBN-2C #1	5-Jun-03	946	7032.98	7035.86	TOC	6.53	2.88	3.65	6.53	7029.33	
DPBN-2C #2	5-Jun-03	946	7032.98	7035.86	TOC	NM	2.88	NM	NM	NM	Bromide probe in well.
DPBN-2C #3	5-Jun-03	946	7032.98	7035.86	TOC	6.52	2.88	3.64	6.52	7029.34	
DPBN-3A #1	5-Jun-03	915	7032.96	7035.96	TOC	6.91	3.00	3.91	6.91	7029.05	
DPBN-3A #2	5-Jun-03	915	7032.96	7035.96	TOC	NM	3.00	NM	NM	NM	Bromide probe in well.
DPBN-3A #3	5-Jun-03	915	7032.96	7035.96	TOC	690.00	3.00	687.00	690.00	6345.96	
DPBN-3B #1	5-Jun-03	915	7031.88	7034.82	TOC	NM	2.94	NM	NM	NM	Bromide probe in well.
DPBN-3B #2	5-Jun-03	915	7031.88	7034.82	TOC	5.98	2.94	3.04	5.98	7028.84	
DPBN-3B #3	5-Jun-03	916	7031.88	7034.82	TOC	5.98	2.94	3.04	5.98	7028.84	
DPBN-3C #1	5-Jun-03	945	7031.96	7034.76	TOC	5.85	2.80	3.05	5.85	7028.91	
DPBN-3C #2	5-Jun-03	945	7031.96	7034.76	TOC	NM	2.80	NM	NM	NM	Bromide probe in well.
DPBN-3C #3	5-Jun-03	945	7031.96	7034.76	TOC	5.55	2.80	2.75	5.55	7029.21	
DPW-3.2N	5-Jun-03	944	7034.53	7037.57	TOC	9.00	3.04	5.96	9.00	7028.57	
DPW-3.5N	5-Jun-03	943	7031.44	7034.39	TOC	6.07	2.95	3.12	6.07	7028.32	
DPW-3.5S	5-Jun-03	916	7032.40	7035.40	TOC	6.87	3.00	3.87	6.87	7028.53	
DPBN-4A #1	5-Jun-03	917	7031.93	7034.47	TOC	5.95	2.54	3.41	5.95	7028.52	
DPBN-4A #2	5-Jun-03	917	7031.93	7034.47	TOC	5.94	2.54	3.40	5.94	7028.53	
DPBN-4A #3	5-Jun-03	917	7031.93	7034.47	TOC	5.98	2.54	3.44	5.98	7028.49	
DPBN-4B #1	5-Jun-03	941	7031.53	7034.34	TOC	6.13	2.81	3.32	6.13	7028.21	
DPBN-4B #2	5-Jun-03	942	7031.53	7034.34	TOC	6.12	2.81	3.31	6.12	7028.22	
DPBN-4B #3	5-Jun-03	943	7031.53	7034.34	TOC	6.11	2.81	3.30	6.11	7028.23	
DPBN-4C #1	5-Jun-03	943	7032.79	7035.29	TOC	7.28	2.50	4.78	7.28	7028.01	
DPBN-4C #2	5-Jun-03	943	7032.79	7035.28	TOC	7.26	2.49	4.77	7.26	7028.02	
DPBN-4C #3	5-Jun-03	943	7032.79	7035.28	TOC	7.26	2.49	4.77	7.26	7028.02	
DPW-4.6N	5-Jun-03	940	7032.55	7035.60	TOC	7.73	3.05	4.68	7.73	7027.87	
DPPN-4.5N #1	5-Jun-03	940	7031.65	7034.65	TOC	NM	3.00	NM	NM	NM	Transducer in well.
DPPN-4.5N #2	5-Jun-03	940	7031.92	7034.92	TOC	NM	3.00	NM	NM	NM	Transducer in well.
DPPN-4.5N #3	5-Jun-03	940	7031.82	7034.82	TOC	NM	3.00	NM	NM	NM	Transducer in well.
DPW-4.4N	5-Jun-03	941	7031.09	7034.03	TOC	6.09	2.94	3.15	6.09	7027.94	
DPW-4.9S	5-Jun-03	918	7030.93	7033.78	TOC	6.27	2.85	3.42	6.27	7027.51	
DPBN-5A #1	5-Jun-03	918	7030.29	7032.41	TOC	4.92	2.12	2.80	4.92	7027.49	
DPBN-5A #2	5-Jun-03	919	7030.29	7032.41	TOC	4.91	2.12	2.79	4.91	7027.50	
DPBN-5A #3	5-Jun-03	919	7030.29	7032.41	TOC	4.88	2.12	2.76	4.88	7027.53	
DPBN-5B #1	5-Jun-03	939	7031.05	7033.62	TOC	6.01	2.57	3.44	6.01	7027.61	
DPBN-5B #2	5-Jun-03	939	7031.05	7033.62	TOC	6.03	2.57	3.46	6.03	7027.59	
DPBN-5B #3	5-Jun-03	940	7031.05	7033.62	TOC	6.01	2.57	3.44	6.01	7027.61	
DPBN-5C #1	5-Jun-03	937	7031.36	7034.30	TOC	6.77	2.94	3.83	6.77	7027.53	
DPBN-5C #2	5-Jun-03	938	7031.36	7034.30	TOC	6.77	2.94	3.83	6.77	7027.53	
DPBN-5C #3	5-Jun-03	938	7031.36	7034.30	TOC	6.75	2.94	3.81	6.75	7027.55	
DPW-5.8N	5-Jun-03	936	7032.32	7035.39	TOC	8.38	3.07	5.31	8.38	7027.01	
DPW-5.7N	5-Jun-03	935	7031.02	7033.93	TOC	6.83	2.91	3.92	6.83	7027.10	
DPPN-5.7 #1	5-Jun-03	934	7029.72	7032.72	TOC	6.03	3.00	3.03	6.03	7026.69	
DPPN-5.7 #2	5-Jun-03	934	7029.54	7032.54	TOC	6.03	3.00	3.03	6.03	7026.51	
DPPN-5.7 #3	5-Jun-03	935	7029.50	7032.50	TOC	dry	3.00	NM	dry	NM	
DPBN-6A #1	5-Jun-03	920	7030.73	7032.97	TOC	6.59	2.24	4.35	6.59	7026.38	
DPBN-6A #2	5-Jun-03	920	7030.73	7032.93	TOC	6.55	2.20	4.35	6.55	7026.38	
DPBN-6A #3	5-Jun-03	920	7030.73	7032.98	TOC	6.59	2.25	4.34	6.59	7026.39	
DPBN-6B #1	5-Jun-03	934	7028.88	7031.71	TOC	5.14	2.83	2.31	5.14	7026.57	
DPBN-6B #2	5-Jun-03	934	7028.88	7031.70	TOC	5.07	2.82	2.25	5.07	7026.63	
DPBN-6B #3	5-Jun-03	934	7028.88	7031.70	TOC	5.08	2.82	2.26	5.08	7026.62	
DPBN-6C #1	5-Jun-03	933	7029.83	7032.71	TOC	6.19	2.88	3.31	6.19	7026.52	

WATER-LEVEL ELEVATION DATA SHEET

Date: 6/5/2003 **Technical Area:** 21

ER SOP-07.02, R1
Field Unit: Canyons Focus Area

Measured by (print name) Shannon Purdue **Signature:**

LOCATION	LOG		ELEVATION[1] (ft)		TAPE READING				DEPTH TO WATER (ft)	ELEVATION GROUNDWATER (ft)	Comments
	Date	Time	GL Datum	(TOC)[2]	Meas. Pt.	Water Level (ft)	TOC to Ground Surface	DTW BGS (ft)			
DPBN-6C #2	5-Jun-03	933	7029.83	7032.71	TOC	6.18	2.88	3.30	6.18	7026.53	
DPBN-6C #3	5-Jun-03	933	7029.83	7032.71	TOC	6.19	2.88	3.31	6.19	7026.52	
DPBN-6D #1	5-Jun-03	932	7030.42	7033.27	TOC	9.63	2.85	6.78	9.63	7023.64	
DPBN-6D #2	5-Jun-03	932	7030.42	7033.27	TOC	7.61	2.85	4.76	7.61	7025.66	
DPBN-6D #3	5-Jun-03	931	7030.42	7033.27	TOC	dry	2.85	dry	dry	dry	
DPW-6.2S	5-Jun-03	921	7028.90	7032.40	TOC	6.23	3.50	2.73	6.23	7026.17	
DPW-6.5N	5-Jun-03	931	7030.20	7033.20	TOC	7.53	3.00	4.53	7.53	7025.67	
DPBN-7A #1	5-Jun-03	922	7028.64	7031.31	TOC	6.52	2.67	3.85	6.52	7024.79	
DPBN-7A #2	5-Jun-03	922	7028.64	7031.31	TOC	NM	2.67	NM	NM	NM	Bromide probe in well.
DPBN-7A #3	5-Jun-03	922	7028.64	7031.31	TOC	6.51	2.67	3.84	6.51	7024.80	
DPBN-7B #1	5-Jun-03	930	7027.37	7030.27	TOC	4.95	2.90	2.05	4.95	7025.32	
DPBN-7B #2	5-Jun-03	930	7027.37	7030.27	TOC	NM	2.90	NM	NM	NM	Bromide probe in well.
DPBN-7B #3	5-Jun-03	930	7027.37	7030.27	TOC	4.95	2.90	2.05	4.95	7025.32	
DPBN-7C #1	5-Jun-03	928	7028.00	7030.85	TOC	5.57	2.85	2.72	5.57	7025.28	
DPBN-7C #2	5-Jun-03	928	7028.00	7030.84	TOC	5.56	2.84	2.72	5.56	7025.28	
DPBN-7C #3	5-Jun-03	928	7028.00	7030.83	TOC	5.55	2.83	2.72	5.55	7025.28	
DPW-7.1S	5-Jun-03	922	7028.76	7031.67	TOC	NM	2.91	NM	NM	NM	Transducer in well.
DPW-7.4N	5-Jun-03	927	7028.10	7031.06	TOC	7.75	2.96	4.79	7.75	7023.31	
DPW-7.5S	5-Jun-03	923	7027.50	7030.60	TOC	7.88	3.10	4.78	7.88	7022.72	
DPPN-7.7 #1	5-Jun-03	924	7024.49	7027.48	TOC	7.46	2.99	4.47	7.46	7020.02	
DPPN-7.7 #2	5-Jun-03	924	7024.47	7027.47	TOC	NM	3.00	NM	NM	NM	Transducer in well.
DPPN-7.7 #3	5-Jun-03	924	7024.56	7027.34	TOC	NM	2.78	NM	NM	NM	Transducer in well.
DPW-7.9S	5-Jun-03	924	7025.22	7028.26	TOC	7.21	3.04	4.17	7.21	7021.05	
DPBN-8A #1	5-Jun-03	925	7025.06	7027.57	TOC	6.82	2.51	4.31	6.82	7020.75	
DPBN-8A #2	5-Jun-03	925	7025.06	7027.57	TOC	6.82	2.51	4.31	6.82	7020.75	
DPBN-8A #3	5-Jun-03	925	7025.06	7027.57	TOC	6.82	2.51	4.31	6.82	7020.75	
DPBN-8B #1	5-Jun-03	926	7024.34	7026.57	TOC	5.60	2.23	3.37	5.60	7020.97	
DPBN-8B #2	5-Jun-03	926	7024.34	7026.57	TOC	5.60	2.23	3.37	5.60	7020.97	
DPBN-8B #3	5-Jun-03	926	7024.34	7026.57	TOC	5.61	2.23	3.38	5.61	7020.96	
LAUZ-2	5-Jun-03	926	NA	NA	TOC	5.92	NA	NA	5.92	NA	

Measurement Method and Probe Type: Solinst water depth indicator, Ser. No. 18528
Comments:

[1] Use the appropriate measuring point
[2] TOC is Top of Casing
[3] NAPL (Non Aqueous Phase Liquid). If NAPL is encountered, the groundwater level must be corrected.

Los Alamos Environmental Restoration Project

WATER-LEVEL ELEVATION DATA SHEET

Date: 6/12/2003 **Technical Area: 21**

ER SOP-07.02, R1
Field Unit: Canyons Focus Area

Measured by (print name) Shannon Purdue **Signature:**

LOCATION	LOG		ELEVATION[1] (ft)		TAPE READING				DEPTH TO WATER (ft)	ELEVATION GROUNDWATER (ft)	Comments
	Date	Time	GL Datum	(TOC)[2]	Meas. Pt.	Water Level (ft)	TOC to Ground Surface	DTW BGS (ft)			
LAUZ-1	12-Jun-03	836	NA	NA	TOC	5.78	NA	NA	5.78	NA	
DPW-1S	12-Jun-03	837	7032.67	7035.67	TOC	6.26	3.00	3.26	6.26	7029.41	
DPBN-1A #1	12-Jun-03	837	7032.29	7035.29	TOC	5.97	3.00	2.97	5.97	7029.32	
DPBN-1A #2	12-Jun-03	838	7032.29	7035.29	TOC	5.99	3.00	2.99	5.99	7029.30	
DPBN-1A #3	12-Jun-03	838	7032.29	7035.29	TOC	5.99	3.00	2.99	5.99	7029.30	
DPBN-1B #1	12-Jun-03	838	7032.71	7035.63	TOC	6.39	2.92	3.47	6.39	7029.24	
DPBN-1B #2	12-Jun-03	838	7032.71	7035.63	TOC	6.38	2.92	3.46	6.38	7029.25	
DPBN-1B #3	12-Jun-03	838	7032.71	7035.63	TOC	dry	2.92	dry	dry	dry	
DPBN-1C #1	12-Jun-03	916	7032.48	7035.36	TOC	6.34	2.88	3.46	6.34	7029.02	
DPBN-1C #2	12-Jun-03	916	7032.48	7035.36	TOC	6.33	2.88	3.45	6.33	7029.03	
DPBN-1C #3	12-Jun-03	916	7032.48	7035.36	TOC	6.32	2.88	3.44	6.32	7029.04	
DPW-1N	12-Jun-03	915	7034.65	7037.62	TOC	dry	2.97	dry	dry	dry	
DPW-1.1N	12-Jun-03	915	7033.84	7036.67	TOC	7.85	2.83	5.02	7.85	7028.82	
DPPN-1.1 #1	12-Jun-03	NM	7032.55	7035.55	TOC	NM	3.00	NM	NM	NM	Transducer in well.
DPPN-1.1 #2	12-Jun-03	NM	7032.27	7035.27	TOC	NM	3.00	NM	NM	NM	Transducer in well.
DPPN-1.1 #3	12-Jun-03	NM	7032.24	7035.24	TOC	NM	3.00	NM	NM	NM	Transducer in well.
DPBN-2A #1	12-Jun-03	NM	7033.21	7036.11	TOC	NM	2.90	NM	NM	NM	Bromide probe in well.
DPBN-2A #2	12-Jun-03	839	7033.21	7036.11	TOC	6.88	2.90	3.98	6.88	7029.23	
DPBN-2A #3	12-Jun-03	839	7033.21	7036.11	TOC	dry	2.90	dry	dry	dry	
DPBN-2B #1	12-Jun-03	NM	7032.02	7035.02	TOC	NM	3.00	NM	NM	NM	Bromide probe in well.
DPBN-2B #2	12-Jun-03	NM	7032.02	7035.02	TOC	NM	3.00	NM	NM	NM	Bromide probe in well.
DPBN-2B #3	12-Jun-03	914	7032.02	7035.02	TOC	dry	3.00	dry	dry	dry	
DPBN-2C #1	12-Jun-03	914	7032.98	7035.86	TOC	7.03	2.88	4.15	7.03	7028.83	
DPBN-2C #2	12-Jun-03	NM	7032.98	7035.86	TOC	NM	2.88	NM	NM	NM	Bromide probe in well.
DPBN-2C #3	12-Jun-03	914	7032.98	7035.86	TOC	7.03	2.88	4.15	7.03	7028.83	
DPBN-3A #1	12-Jun-03	840	7032.96	7035.96	TOC	7.35	3.00	4.35	7.35	7028.61	
DPBN-3A #2	12-Jun-03	NM	7032.96	7035.96	TOC	NM	3.00	NM	NM	NM	Bromide probe in well.
DPBN-3A #3	12-Jun-03	840	7032.96	7035.96	TOC	7.34	3.00	4.34	7.34	7028.62	
DPBN-3B #1	12-Jun-03	NM	7031.88	7034.82	TOC	NM	2.94	NM	NM	NM	Bromide probe in well.
DPBN-3B #2	12-Jun-03	840	7031.88	7034.82	TOC	6.42	2.94	3.48	6.42	7028.40	
DPBN-3B #3	12-Jun-03	841	7031.88	7034.82	TOC	dry	2.94	dry	dry	dry	
DPBN-3C #1	12-Jun-03	913	7031.96	7034.76	TOC	6.30	2.80	3.50	6.30	7028.46	
DPBN-3C #2	12-Jun-03	NM	7031.96	7034.76	TOC	NM	2.80	NM	NM	NM	Bromide probe in well.
DPBN-3C #3	12-Jun-03	913	7031.96	7034.76	TOC	6.03	2.80	3.23	6.03	7028.73	
DPW-3.2N	12-Jun-03	912	7034.53	7037.57	TOC	9.40	3.04	6.36	9.40	7028.17	
DPW-3.5N	12-Jun-03	912	7031.44	7034.39	TOC	6.45	2.95	3.50	6.45	7027.94	
DPW-3.5S	12-Jun-03	841	7032.40	7035.40	TOC	7.31	3.00	4.31	7.31	7028.09	
DPBN-4A #1	12-Jun-03	842	7031.93	7034.47	TOC	6.37	2.54	3.83	6.37	7028.10	
DPBN-4A #2	12-Jun-03	842	7031.93	7034.47	TOC	6.36	2.54	3.82	6.36	7028.11	
DPBN-4A #3	12-Jun-03	843	7031.93	7034.47	TOC	6.38	2.54	3.84	6.38	7028.09	
DPBN-4B #1	12-Jun-03	909	7031.53	7034.34	TOC	6.50	2.81	3.69	6.50	7027.84	
DPBN-4B #2	12-Jun-03	909	7031.53	7034.34	TOC	6.49	2.81	3.68	6.49	7027.85	
DPBN-4B #3	12-Jun-03	909	7031.53	7034.34	TOC	6.49	2.81	3.68	6.49	7027.85	
DPBN-4C #1	12-Jun-03	911	7032.79	7035.29	TOC	7.66	2.50	5.16	7.66	7027.63	
DPBN-4C #2	12-Jun-03	911	7032.79	7035.28	TOC	7.64	2.49	5.15	7.64	7027.64	
DPBN-4C #3	12-Jun-03	911	7032.79	7035.28	TOC	7.63	2.49	5.14	7.63	7027.65	
DPW-4.6N	12-Jun-03	908	7032.55	7035.60	TOC	8.13	3.05	5.08	8.13	7027.47	
DPPN-4.5N #1	12-Jun-03	NM	7031.65	7034.65	TOC	NM	3.00	NM	NM	NM	Transducer in well.
DPPN-4.5N #2	12-Jun-03	NM	7031.92	7034.92	TOC	NM	3.00	NM	NM	NM	Transducer in well.
DPPN-4.5N #3	12-Jun-03	NM	7031.82	7034.82	TOC	NM	3.00	NM	NM	NM	Transducer in well.
DPW-4.4N	12-Jun-03	909	7031.09	7034.03	TOC	6.49	2.94	3.55	6.49	7027.54	
DPW-4.9S	12-Jun-03	844	7030.93	7033.78	TOC	6.60	2.85	3.75	6.60	7027.18	
DPBN-5A #1	12-Jun-03	844	7030.29	7032.41	TOC	5.25	2.12	3.13	5.25	7027.16	
DPBN-5A #2	12-Jun-03	844	7030.29	7032.41	TOC	5.23	2.12	3.11	5.23	7027.18	
DPBN-5A #3	12-Jun-03	844	7030.29	7032.41	TOC	5.21	2.12	3.09	5.21	7027.20	
DPBN-5B #1	12-Jun-03	906	7031.05	7033.62	TOC	6.34	2.57	3.77	6.34	7027.28	
DPBN-5B #2	12-Jun-03	906	7031.05	7033.62	TOC	6.35	2.57	3.78	6.35	7027.27	
DPBN-5B #3	12-Jun-03	907	7031.05	7033.62	TOC	6.35	2.57	3.78	6.35	7027.27	
DPBN-5C #1	12-Jun-03	905	7031.36	7034.30	TOC	7.13	2.94	4.19	7.13	7027.17	
DPBN-5C #2	12-Jun-03	905	7031.36	7034.30	TOC	7.12	2.94	4.18	7.12	7027.18	
DPBN-5C #3	12-Jun-03	905	7031.36	7034.30	TOC	7.10	2.94	4.16	7.10	7027.20	
DPW-5.8N	12-Jun-03	904	7032.32	7035.39	TOC	8.65	3.07	5.58	8.65	7026.74	
DPW-5.7N	12-Jun-03	903	7031.02	7033.93	TOC	7.16	2.91	4.25	7.16	7026.77	
DPPN-5.7 #1	12-Jun-03	903	7029.72	7032.72	TOC	6.36	3.00	3.36	6.36	7026.36	
DPPN-5.7 #2	12-Jun-03	903	7029.54	7032.54	TOC	6.35	3.00	3.35	6.35	7026.19	
DPPN-5.7 #3	12-Jun-03	903	7029.50	7032.50	TOC	dry	3.00	dry	dry	dry	
DPBN-6A #1	12-Jun-03	845	7030.73	7032.97	TOC	6.91	2.24	4.67	6.91	7026.06	
DPBN-6A #2	12-Jun-03	845	7030.73	7032.93	TOC	6.89	2.20	4.69	6.89	7026.04	
DPBN-6A #3	12-Jun-03	845	7030.73	7032.98	TOC	6.93	2.25	4.68	6.93	7026.05	
DPBN-6B #1	12-Jun-03	902	7028.88	7031.71	TOC	5.46	2.83	2.63	5.46	7026.25	
DPBN-6B #2	12-Jun-03	902	7028.88	7031.70	TOC	5.40	2.82	2.58	5.40	7026.30	
DPBN-6B #3	12-Jun-03	902	7028.88	7031.70	TOC	5.40	2.82	2.58	5.40	7026.30	
DPBN-6C #1	12-Jun-03	901	7029.83	7032.71	TOC	6.49	2.88	3.61	6.49	7026.22	

Los Alamos Environmental Restoration Project

WATER-LEVEL ELEVATION DATA SHEET

Date: 6/12/2003 **Technical Area: 21**

ER SOP-07.02, R1
Field Unit: Canyons Focus Area

Measured by (print name) Shannon Purdue **Signature:**

LOCATION	LOG		ELEVATION[1] (ft)		TAPE READING				DEPTH TO WATER (ft)	ELEVATION GROUNDWATER (ft)	Comments
	Date	Time	GL Datum	(TOC)[2]	Meas. Pt.	Water Level (ft)	TOC to Ground Surface	DTW BGS (ft)			
DPBN-6C #2	12-Jun-03	901	7029.83	7032.71	TOC	6.49	2.88	3.61	6.49	7026.22	
DPBN-6C #3	12-Jun-03	901	7029.83	7032.71	TOC	6.49	2.88	3.61	6.49	7026.22	
DPBN-6D #1	12-Jun-03	859	7030.42	7033.27	TOC	9.72	2.85	6.87	9.72	7023.55	
DPBN-6D #2	12-Jun-03	900	7030.42	7033.27	TOC	7.48	2.85	4.63	7.48	7025.79	
DPBN-6D #3	12-Jun-03	900	7030.42	7033.27	TOC	dry	2.85	dry	dry	dry	
DPW-6.2S	12-Jun-03	847	7028.90	7032.40	TOC	6.56	3.50	3.06	6.56	7025.84	
DPW-6.5N	12-Jun-03	859	7030.20	7033.20	TOC	7.82	3.00	4.82	7.82	7025.38	
DPBN-7A #1	12-Jun-03	848	7028.64	7031.31	TOC	6.82	2.67	4.15	6.82	7024.49	
DPBN-7A #2	12-Jun-03	848	7028.64	7031.31	TOC	NM	2.67	NM	NM	NM	Bromide probe in well.
DPBN-7A #3	12-Jun-03	848	7028.64	7031.31	TOC	6.82	2.67	4.15	6.82	7024.49	
DPBN-7B #1	12-Jun-03	858	7027.37	7030.27	TOC	5.21	2.90	2.31	5.21	7025.06	
DPBN-7B #2	12-Jun-03	858	7027.37	7030.27	TOC	NM	2.90	NM	NM	NM	Bromide probe in well.
DPBN-7B #3	12-Jun-03	858	7027.37	7030.27	TOC	5.24	2.90	2.34	5.24	7025.03	
DPBN-7C #1	12-Jun-03	857	7028.00	7030.85	TOC	5.87	2.85	3.02	5.87	7024.98	
DPBN-7C #2	12-Jun-03	857	7028.00	7030.84	TOC	5.86	2.84	3.02	5.86	7024.98	
DPBN-7C #3	12-Jun-03	857	7028.00	7030.83	TOC	5.85	2.83	3.02	5.85	7024.98	
DPW-7.1S	12-Jun-03	850	7028.76	7031.67	TOC	NM	2.91	NM	NM	NM	Transducer in well.
DPW-7.4N	12-Jun-03	856	7028.10	7031.06	TOC	7.99	2.96	5.03	7.99	7023.07	
DPW-7.5S	12-Jun-03	850	7027.50	7030.60	TOC	8.06	3.10	4.96	8.06	7022.54	
DPPN-7.7 #1	12-Jun-03	850	7024.49	7027.48	TOC	8.97	2.99	5.98	8.97	7018.51	
DPPN-7.7 #2	12-Jun-03	NM	7024.47	7027.47	TOC	NM	3.00	NM	NM	NM	Transducer in well.
DPPN-7.7 #3	12-Jun-03	NM	7024.56	7027.34	TOC	NM	2.78	NM	NM	NM	Transducer in well.
DPW-7.9S	12-Jun-03	851	7025.22	7028.26	TOC	7.36	3.04	4.32	7.36	7020.90	
DPBN-8A #1	12-Jun-03	852	7025.06	7027.57	TOC	6.96	2.51	4.45	6.96	7020.61	
DPBN-8A #2	12-Jun-03	852	7025.06	7027.57	TOC	6.98	2.51	4.47	6.98	7020.59	
DPBN-8A #3	12-Jun-03	852	7025.06	7027.57	TOC	6.99	2.51	4.48	6.99	7020.58	
DPBN-8B #1	12-Jun-03	853	7024.34	7026.57	TOC	5.72	2.23	3.49	5.72	7020.85	
DPBN-8B #2	12-Jun-03	853	7024.34	7026.57	TOC	5.72	2.23	3.49	5.72	7020.85	
DPBN-8B #3	12-Jun-03	853	7024.34	7026.57	TOC	5.72	2.23	3.49	5.72	7020.85	
LAUZ-2	12-Jun-03	854	NA	NA	TOC	6.02	NA	NA	6.02	NA	

Measurement Method and Probe Type: Solinst water depth indicator, Ser. No. 18528
Comments:

[1] Use the appropriate measuring point
[2] TOC is Top of Casing
[3] NAPL (Non Aqueous Phase Liquid). If NAPL is encountered, the groundwater level must be corrected.

Los Alamos Environmental Restoration Project

WATER-LEVEL ELEVATION DATA SHEET

Date: 6/19/2003 **Technical Area: 21**

ER SOP-07.02, R1
Field Unit: Canyons Focus Area

Measured by (print name) Shannon Purdue **Signature:**

LOCATION	LOG		ELEVATION[1] (ft)		TAPE READING				DEPTH TO WATER (ft)	ELEVATION GROUNDWATER (ft)	Comments
	Date	Time	GL Datum	(TOC)[2]	Meas. Pt.	Water Level (ft)	TOC to Ground Surface	DTW BGS (ft)			
LAUZ-1	19-Jun-03	907	NA	NA	TOC	4.94	NA	NA	4.94	NA	
DPW-1S	19-Jun-03	907	7032.67	7035.67	TOC	5.44	3.00	2.44	5.44	7030.23	
DPBN-1A #1	19-Jun-03	908	7032.29	7035.29	TOC	5.31	3.00	2.31	5.31	7029.98	
DPBN-1A #2	19-Jun-03	908	7032.29	7035.29	TOC	5.32	3.00	2.32	5.32	7029.97	
DPBN-1A #3	19-Jun-03	908	7032.29	7035.29	TOC	5.32	3.00	2.32	5.32	7029.97	
DPBN-1B #1	19-Jun-03	908	7032.71	7035.63	TOC	5.58	2.92	2.66	5.58	7030.05	
DPBN-1B #2	19-Jun-03	908	7032.71	7035.63	TOC	5.60	2.92	2.68	5.60	7030.03	
DPBN-1B #3	19-Jun-03	909	7032.71	7035.63	TOC	5.60	2.92	2.68	5.60	7030.03	
DPBN-1C #1	19-Jun-03	943	7032.48	7035.36	TOC	5.62	2.88	2.74	5.62	7029.74	
DPBN-1C #2	19-Jun-03	943	7032.48	7035.36	TOC	5.61	2.88	2.73	5.61	7029.75	
DPBN-1C #3	19-Jun-03	943	7032.48	7035.36	TOC	5.61	2.88	2.73	5.61	7029.75	
DPW-1N	19-Jun-03	941	7034.65	7037.62	TOC	7.94	2.97	4.97	7.94	7029.68	
DPW-1.1N	19-Jun-03	942	7033.84	7036.67	TOC	7.15	2.83	4.32	7.15	7029.52	
DPPN-1.1 #1	19-Jun-03	909	7032.55	7035.55	TOC	5.61	3.00	2.61	5.61	7029.94	
DPPN-1.1 #2	19-Jun-03	909	7032.27	7035.27	TOC	5.62	3.00	2.62	5.62	7029.65	
DPPN-1.1 #3	19-Jun-03	910	7032.24	7035.24	TOC	5.61	3.00	2.61	5.61	7029.63	
DPBN-2A #1	19-Jun-03	910	7033.21	7036.11	TOC	NM	2.90	NM	NM	NM	Bromide probe in well.
DPBN-2A #2	19-Jun-03	910	7033.21	7036.11	TOC	6.33	2.90	3.43	6.33	7029.78	
DPBN-2A #3	19-Jun-03	940	7033.21	7036.11	TOC	dry*	2.90	dry	dry*	dry	*Sensor 0.27ft above end of probe
DPBN-2B #1	19-Jun-03	940	7032.02	7035.02	TOC	NM	3.00	NM	NM	NM	Bromide probe in well.
DPBN-2B #2	19-Jun-03	940	7032.02	7035.02	TOC	NM	3.00	NM	NM	NM	Bromide probe in well.
DPBN-2B #3	19-Jun-03	940	7032.02	7035.02	TOC	dry*	3.00	dry	dry*	dry	*Sensor 0.27ft above end of probe
DPBN-2C #1	19-Jun-03	941	7032.98	7035.86	TOC	6.39	2.88	3.51	6.39	7029.47	
DPBN-2C #2	19-Jun-03	941	7032.98	7035.86	TOC	NM	2.88	NM	NM	NM	Bromide probe in well.
DPBN-2C #3	19-Jun-03	941	7032.98	7035.86	TOC	6.38	2.88	3.50	6.38	7029.48	
DPBN-3A #1	19-Jun-03	911	7032.96	7035.96	TOC	6.81	3.00	3.81	6.81	7029.15	
DPBN-3A #2	19-Jun-03	911	7032.96	7035.96	TOC	NM	3.00	NM	NM	NM	Bromide probe in well.
DPBN-3A #3	19-Jun-03	911	7032.96	7035.96	TOC	6.80	3.00	3.80	6.80	7029.16	
DPBN-3B #1	19-Jun-03	912	7031.88	7034.82	TOC	NM	2.94	NM	NM	NM	Bromide probe in well.
DPBN-3B #2	19-Jun-03	912	7031.88	7034.82	TOC	5.87	2.94	2.93	5.87	7028.95	
DPBN-3B #3	19-Jun-03	912	7031.88	7034.82	TOC	5.87	2.94	2.93	5.87	7028.95	
DPBN-3C #1	19-Jun-03	939	7031.96	7034.76	TOC	5.73	2.80	2.93	5.73	7029.03	
DPBN-3C #2	19-Jun-03	940	7031.96	7034.76	TOC	NM	2.80	NM	NM	NM	Bromide probe in well.
DPBN-3C #3	19-Jun-03	940	7031.96	7034.76	TOC	5.45	2.80	2.65	5.45	7029.31	
DPW-3.2N	19-Jun-03	939	7034.53	7037.57	TOC	8.89	3.04	5.85	8.89	7028.68	
DPW-3.5N	19-Jun-03	938	7031.44	7034.39	TOC	5.94	2.95	2.99	5.94	7028.45	
DPW-3.5S	19-Jun-03	913	7032.40	7035.40	TOC	6.76	3.00	3.76	6.76	7028.64	
DPBN-4A #1	19-Jun-03	913	7031.93	7034.47	TOC	5.82	2.54	3.28	5.82	7028.65	
DPBN-4A #2	19-Jun-03	913	7031.93	7034.47	TOC	5.84	2.54	3.30	5.84	7028.63	
DPBN-4A #3	19-Jun-03	913	7031.93	7034.47	TOC	5.83	2.54	3.29	5.83	7028.64	
DPBN-4B #1	19-Jun-03	937	7031.53	7034.34	TOC	5.97	2.81	3.16	5.97	7028.37	
DPBN-4B #2	19-Jun-03	937	7031.53	7034.34	TOC	6.00	2.81	3.19	6.00	7028.34	
DPBN-4B #3	19-Jun-03	937	7031.53	7034.34	TOC	6.00	2.81	3.19	6.00	7028.34	
DPBN-4C #1	19-Jun-03	938	7032.79	7035.29	TOC	7.11	2.50	4.61	7.11	7028.18	
DPBN-4C #2	19-Jun-03	938	7032.79	7035.28	TOC	7.11	2.49	4.62	7.11	7028.17	
DPBN-4C #3	19-Jun-03	938	7032.79	7035.28	TOC	7.10	2.49	4.61	7.10	7028.18	
DPW-4.6N	19-Jun-03	936	7032.55	7035.60	TOC	7.63	3.05	4.58	7.63	7027.97	
DPPN-4.5N #1	19-Jun-03	934	7031.65	7034.65	TOC	6.71	3.00	3.71	6.71	7027.94	
DPPN-4.5N #2	19-Jun-03	934	7031.92	7034.92	TOC	6.70	3.00	3.70	6.70	7028.22	
DPPN-4.5N #3	19-Jun-03	934	7031.82	7034.82	TOC	6.66	3.00	3.66	6.66	7028.16	
DPW-4.4N	19-Jun-03	936	7031.09	7034.03	TOC	5.97	2.94	3.03	5.97	7028.06	
DPW-4.9S	19-Jun-03	914	7030.93	7033.78	TOC	6.13	2.85	3.28	6.13	7027.65	
DPBN-5A #1	19-Jun-03	915	7030.29	7032.41	TOC	4.78	2.12	2.66	4.78	7027.63	
DPBN-5A #2	19-Jun-03	915	7030.29	7032.41	TOC	4.77	2.12	2.65	4.77	7027.64	
DPBN-5A #3	19-Jun-03	915	7030.29	7032.41	TOC	4.73	2.12	2.61	4.73	7027.68	
DPBN-5B #1	19-Jun-03	933	7031.05	7033.62	TOC	5.84	2.57	3.27	5.84	7027.78	
DPBN-5B #2	19-Jun-03	933	7031.05	7033.62	TOC	5.86	2.57	3.29	5.86	7027.76	
DPBN-5B #3	19-Jun-03	933	7031.05	7033.62	TOC	5.89	2.57	3.32	5.89	7027.73	
DPBN-5C #1	19-Jun-03	932	7031.36	7034.30	TOC	6.65	2.94	3.71	6.65	7027.65	
DPBN-5C #2	19-Jun-03	932	7031.36	7034.30	TOC	6.63	2.94	3.69	6.63	7027.67	
DPBN-5C #3	19-Jun-03	933	7031.36	7034.30	TOC	6.62	2.94	3.68	6.62	7027.68	
DPW-5.8N	19-Jun-03	931	7032.32	7035.39	TOC	8.35	3.07	5.28	8.35	7027.04	
DPW-5.7N	19-Jun-03	931	7031.02	7033.93	TOC	6.71	2.91	3.80	6.71	7027.22	
DPPN-5.7 #1	19-Jun-03	930	7029.72	7032.72	TOC	5.86	3.00	2.86	5.86	7026.86	
DPPN-5.7 #2	19-Jun-03	930	7029.54	7032.54	TOC	5.86	3.00	2.86	5.86	7026.68	
DPPN-5.7 #3	19-Jun-03	930	7029.50	7032.50	TOC	5.77	3.00	2.77	5.77	7026.73	
DPBN-6A #1	19-Jun-03	916	7030.73	7032.97	TOC	6.38	2.24	4.14	6.38	7026.59	
DPBN-6A #2	19-Jun-03	916	7030.73	7032.93	TOC	6.36	2.20	4.16	6.36	7026.57	
DPBN-6A #3	19-Jun-03	916	7030.73	7032.98	TOC	6.41	2.25	4.16	6.41	7026.57	
DPBN-6B #1	19-Jun-03	929	7028.88	7031.71	TOC	4.93	2.83	2.10	4.93	7026.78	
DPBN-6B #2	19-Jun-03	930	7028.88	7031.70	TOC	4.86	2.82	2.04	4.86	7026.84	
DPBN-6B #3	19-Jun-03	930	7028.88	7031.70	TOC	4.89	2.82	2.07	4.89	7026.81	
DPBN-6C #1	19-Jun-03	929	7029.83	7032.71	TOC	6.03	2.88	3.15	6.03	7026.68	

Los Alamos Environmental Restoration Project

WATER-LEVEL ELEVATION DATA SHEET

Date: 6/19/2003 **Technical Area: 21**

ER SOP-07.02, R1
Field Unit: Canyons Focus Area

Measured by (print name) Shannon Purdue **Signature:**

LOCATION	LOG		ELEVATION[1] (ft)		TAPE READING				DEPTH TO WATER (ft)	ELEVATION GROUNDWATER (ft)	Comments
	Date	Time	GL Datum	(TOC)[2]	Meas. Pt.	Water Level (ft)	TOC to Ground Surface	DTW BGS (ft)			
DPBN-6C #2	19-Jun-03	929	7029.83	7032.71	TOC	6.03	2.88	3.15	6.03	7026.68	
DPBN-6C #3	19-Jun-03	929	7029.83	7032.71	TOC	6.04	2.88	3.16	6.04	7026.67	
DPBN-6D #1	19-Jun-03	928	7030.42	7033.27	TOC	9.65	2.85	6.80	9.65	7023.62	
DPBN-6D #2	19-Jun-03	928	7030.42	7033.27	TOC	7.43	2.85	4.58	7.43	7025.84	
DPBN-6D #3	19-Jun-03	928	7030.42	7033.27	TOC	dry*	2.85	dry	dry*	dry	*Sensor 0.27ft above end of probe
DPW-6.2S	19-Jun-03	917	7028.90	7032.40	TOC	6.06	3.50	2.56	6.06	7026.34	
DPW-6.5N	19-Jun-03	927	7030.20	7033.20	TOC	7.52	3.00	4.52	7.52	7025.68	
DPBN-7A #1	19-Jun-03	918	7028.64	7031.31	TOC	6.29	2.67	3.62	6.29	7025.02	
DPBN-7A #2	19-Jun-03	918	7028.64	7031.31	TOC	NM	2.67	NM	NM	NM	Bromide probe in well.
DPBN-7A #3	19-Jun-03	918	7028.64	7031.31	TOC	6.30	2.67	3.63	6.30	7025.01	
DPBN-7B #1	19-Jun-03	926	7027.37	7030.27	TOC	4.73	2.90	1.83	4.73	7025.54	
DPBN-7B #2	19-Jun-03	926	7027.37	7030.27	TOC	NM	2.90	NM	NM	NM	Bromide probe in well.
DPBN-7B #3	19-Jun-03	926	7027.37	7030.27	TOC	4.74	2.90	1.84	4.74	7025.53	
DPBN-7C #1	19-Jun-03	925	7028.00	7030.85	TOC	5.37	2.85	2.52	5.37	7025.48	
DPBN-7C #2	19-Jun-03	925	7028.00	7030.84	TOC	5.37	2.84	2.53	5.37	7025.47	
DPBN-7C #3	19-Jun-03	925	7028.00	7030.83	TOC	5.35	2.83	2.52	5.35	7025.48	
DPW-7.1S	19-Jun-03	920	7028.76	7031.67	TOC	NM	2.91	NM	NM	NM	Transducer in well.
DPW-7.4N	19-Jun-03	924	7028.10	7031.06	TOC	7.49	2.96	4.53	7.49	7023.57	
DPW-7.5S	19-Jun-03	918	7027.50	7030.60	TOC	7.73	3.10	4.63	7.73	7022.87	
DPPN-7.7 #1	19-Jun-03	919	7024.49	7027.48	TOC	8.63	2.99	5.64	8.63	7018.85	
DPPN-7.7 #2	19-Jun-03	920	7024.47	7027.47	TOC	5.46	3.00	2.46	5.46	7022.01	
DPPN-7.7 #3	19-Jun-03	920	7024.56	7027.34	TOC	5.19	2.78	2.41	5.19	7022.15	
DPW-7.9S	19-Jun-03	920	7025.22	7028.26	TOC	7.06	3.04	4.02	7.06	7021.20	
DPBN-8A #1	19-Jun-03	921	7025.06	7027.57	TOC	6.63	2.51	4.12	6.63	7020.94	
DPBN-8A #2	19-Jun-03	922	7025.06	7027.57	TOC	6.62	2.51	4.11	6.62	7020.95	
DPBN-8A #3	19-Jun-03	922	7025.06	7027.57	TOC	6.62	2.51	4.11	6.62	7020.95	
DPBN-8B #1	19-Jun-03	922	7024.34	7026.57	TOC	5.57	2.23	3.34	5.57	7021.00	
DPBN-8B #2	19-Jun-03	922	7024.34	7026.57	TOC	5.57	2.23	3.34	5.57	7021.00	
DPBN-8B #3	19-Jun-03	923	7024.34	7026.57	TOC	5.58	2.23	3.35	5.58	7020.99	
LAUZ-2	19-Jun-03	923	NA	NA	TOC	5.90	NA	NA	5.90	NA	

Measurement Method and Probe Type: Solinst water depth indicator, Ser. No. 31328
Comments:

[1] Use the appropriate measuring point
[2] TOC is Top of Casing
[3] NAPL (Non Aqueous Phase Liquid). If NAPL is encountered, the groundwater level must be corrected.

Los Alamos Environmental Restoration Project

WATER-LEVEL ELEVATION DATA SHEET

Date: 6/26/2003 **Technical Area: 21**

ER SOP-07.02, R1
Field Unit/Canyons Focus Area

Measured by (print name) Shannon Purdue **Signature:**

LOCATION	LOG		ELEVATION[1] (ft)		TAPE READING				DEPTH TO WATER (ft)	ELEVATION GROUNDWATER (ft)	Comments
	Date	Time	GL Datum	(TOC)[2]	Meas. Pt.	Water Level (ft)	TOC to Ground Surface	DTW BGS (ft)			
LAUZ-1	26-Jun-03	939	NA	NA	TOC	5.64	NA	NA	5.64	NA	
DPW-1S	26-Jun-03	940	7032.67	7035.67	TOC	6.12	3.00	3.12	6.12	7029.55	
DPBN-1A #1	26-Jun-03	941	7032.29	7035.29	TOC	5.82	3.00	2.82	5.82	7029.47	
DPBN-1A #2	26-Jun-03	941	7032.29	7035.29	TOC	5.85	3.00	2.85	5.85	7029.44	
DPBN-1A #3	26-Jun-03	942	7032.29	7035.29	TOC	5.86	3.00	2.86	5.86	7029.43	
DPBN-1B #1	26-Jun-03	942	7032.71	7035.63	TOC	6.22	2.92	3.30	6.22	7029.41	
DPBN-1B #2	26-Jun-03	942	7032.71	7035.63	TOC	6.24	2.92	3.32	6.24	7029.39	
DPBN-1B #3	26-Jun-03	943	7032.71	7035.63	TOC	dry*	2.92	dry	dry*	dry	*Sensor 0.27ft above end of probe
DPBN-1C #1	26-Jun-03	1023	7032.48	7035.36	TOC	6.22	2.88	3.34	6.22	7029.14	
DPBN-1C #2	26-Jun-03	1023	7032.48	7035.36	TOC	6.21	2.88	3.33	6.21	7029.15	
DPBN-1C #3	26-Jun-03	1023	7032.48	7035.36	TOC	6.20	2.88	3.32	6.20	7029.16	
DPW-1N	26-Jun-03	1022	7034.65	7037.62	TOC	dry*	2.97	dry	dry*	dry	*Sensor 0.27ft above end of probe
DPW-1.1N	26-Jun-03	1022	7033.84	7036.67	TOC	7.74	2.83	4.91	7.74	7028.93	
DPPN-1.1 #1	26-Jun-03	1024	7032.55	7035.55	TOC	6.23	3.00	3.23	6.23	7029.32	
DPPN-1.1 #2	26-Jun-03	1024	7032.27	7035.27	TOC	dry*	3.00	dry	dry*	dry	*Sensor 0.27ft above end of probe
DPPN-1.1 #3	26-Jun-03	1025	7032.24	7035.24	TOC	dry*	3.00	dry	dry*	dry	*Sensor 0.27ft above end of probe
DPBN-2A #1	26-Jun-03	947	7033.21	7036.11	TOC	NM	2.90	NM	NM	NM	Bromide probe in well.
DPBN-2A #2	26-Jun-03	947	7033.21	7036.11	TOC	6.74	2.90	3.84	6.74	7029.37	
DPBN-2A #3	26-Jun-03	947	7033.21	7036.11	TOC	dry	2.90	dry	dry	dry	*Sensor 0.27ft above end of probe
DPBN-2B #1	26-Jun-03	1021	7032.02	7035.02	TOC	NM	3.00	NM	NM	NM	Bromide probe in well.
DPBN-2B #2	26-Jun-03	1021	7032.02	7035.02	TOC	NM	3.00	NM	NM	NM	Bromide probe in well.
DPBN-2B #3	26-Jun-03	1021	7032.02	7035.02	TOC	dry*	3.00	dry	dry*	dry	*Sensor 0.27ft above end of probe
DPBN-2C #1	26-Jun-03	1021	7032.98	7035.86	TOC	6.93	2.88	4.05	6.93	7028.93	
DPBN-2C #2	26-Jun-03	1021	7032.98	7035.86	TOC	NM	2.88	NM	NM	NM	Bromide probe in well.
DPBN-2C #3	26-Jun-03	1021	7032.98	7035.86	TOC	6.91	2.88	4.03	6.91	7028.95	
DPBN-3A #1	26-Jun-03	948	7032.96	7035.96	TOC	7.24	3.00	4.24	7.24	7028.72	
DPBN-3A #2	26-Jun-03	948	7032.96	7035.96	TOC	NM	3.00	NM	NM	NM	Bromide probe in well.
DPBN-3A #3	26-Jun-03	948	7032.96	7035.96	TOC	7.26	3.00	4.26	7.26	7028.70	
DPBN-3B #1	26-Jun-03	948	7031.88	7034.82	TOC	NM	2.94	NM	NM	NM	Bromide probe in well.
DPBN-3B #2	26-Jun-03	948	7031.88	7034.82	TOC	6.30	2.94	3.36	6.30	7028.52	
DPBN-3B #3	26-Jun-03	949	7031.88	7034.82	TOC	dry*	2.94	dry	dry*	dry	*Sensor 0.27ft above end of probe
DPBN-3C #1	26-Jun-03	1020	7031.96	7034.76	TOC	6.23	2.80	3.43	6.23	7028.53	
DPBN-3C #2	26-Jun-03	1020	7031.96	7034.76	TOC	NM	2.80	NM	NM	NM	Bromide probe in well.
DPBN-3C #3	26-Jun-03	1020	7031.96	7034.76	TOC	5.95	2.80	3.15	5.95	7028.81	
DPW-3.2N	26-Jun-03	1019	7034.53	7037.57	TOC	9.34	3.04	6.30	9.34	7028.23	
DPW-3.5N	26-Jun-03	1018	7031.44	7034.39	TOC	6.40	2.95	3.45	6.40	7027.99	
DPW-3.5S	26-Jun-03	950	7032.40	7035.40	TOC	7.24	3.00	4.24	7.24	7028.16	
DPBN-4A #1	26-Jun-03	950	7031.93	7034.47	TOC	6.28	2.54	3.74	6.28	7028.19	
DPBN-4A #2	26-Jun-03	950	7031.93	7034.47	TOC	6.29	2.54	3.75	6.29	7028.18	
DPBN-4A #3	26-Jun-03	951	7031.93	7034.47	TOC	6.29	2.54	3.75	6.29	7028.18	
DPBN-4B #1	26-Jun-03	1016	7031.53	7034.34	TOC	6.41	2.81	3.60	6.41	7027.93	
DPBN-4B #2	26-Jun-03	1016	7031.53	7034.34	TOC	6.43	2.81	3.62	6.43	7027.91	
DPBN-4B #3	26-Jun-03	1017	7031.53	7034.34	TOC	6.43	2.81	3.62	6.43	7027.91	
DPBN-4C #1	26-Jun-03	1017	7032.79	7035.29	TOC	7.57	2.50	5.07	7.57	7027.72	
DPBN-4C #2	26-Jun-03	1017	7032.79	7035.28	TOC	7.56	2.49	5.07	7.56	7027.72	
DPBN-4C #3	26-Jun-03	1018	7032.79	7035.28	TOC	7.56	2.49	5.07	7.56	7027.72	
DPW-4.6N	26-Jun-03	1015	7032.55	7035.60	TOC	8.07	3.05	5.02	8.07	7027.53	
DPPN-4.5N #1	26-Jun-03	1014	7031.65	7034.65	TOC	7.15	3.00	4.15	7.15	7027.50	
DPPN-4.5N #2	26-Jun-03	1014	7031.92	7034.92	TOC	7.14	3.00	4.14	7.14	7027.78	
DPPN-4.5N #3	26-Jun-03	1015	7031.82	7034.82	TOC	7.12	3.00	4.12	7.12	7027.70	
DPW-4.4N	26-Jun-03	1016	7031.09	7034.03	TOC	6.42	2.94	3.48	6.42	7027.61	
DPW-4.9S	26-Jun-03	951	7030.93	7033.78	TOC	6.55	2.85	3.70	6.55	7027.23	
DPBN-5A #1	26-Jun-03	951	7030.29	7032.41	TOC	5.17	2.12	3.05	5.17	7027.24	
DPBN-5A #2	26-Jun-03	952	7030.29	7032.41	TOC	5.17	2.12	3.05	5.17	7027.24	
DPBN-5A #3	26-Jun-03	952	7030.29	7032.41	TOC	5.15	2.12	3.03	5.15	7027.26	
DPBN-5B #1	26-Jun-03	1013	7031.05	7033.62	TOC	6.27	2.57	3.70	6.27	7027.35	
DPBN-5B #2	26-Jun-03	1013	7031.05	7033.62	TOC	6.28	2.57	3.71	6.28	7027.34	
DPBN-5B #3	26-Jun-03	1013	7031.05	7033.62	TOC	6.30	2.57	3.73	6.30	7027.32	
DPBN-5C #1	26-Jun-03	1011	7031.36	7034.30	TOC	7.08	2.94	4.14	7.08	7027.22	
DPBN-5C #2	26-Jun-03	1011	7031.36	7034.30	TOC	7.07	2.94	4.13	7.07	7027.23	
DPBN-5C #3	26-Jun-03	1012	7031.36	7034.30	TOC	7.05	2.94	4.11	7.05	7027.25	
DPW-5.8N	26-Jun-03	1011	7032.32	7035.39	TOC	8.66	3.07	5.59	8.66	7026.73	
DPW-5.7N	26-Jun-03	1010	7031.02	7033.93	TOC	7.11	2.91	4.20	7.11	7026.82	
DPPN-5.7 #1	26-Jun-03	1009	7029.72	7032.72	TOC	6.30	3.00	3.30	6.30	7026.42	
DPPN-5.7 #2	26-Jun-03	1009	7029.54	7032.54	TOC	6.29	3.00	3.29	6.29	7026.25	
DPPN-5.7 #3	26-Jun-03	1010	7029.50	7032.50	TOC	dry*	3.00	dry	dry*	dry	*Sensor 0.27ft above end of probe
DPBN-6A #1	26-Jun-03	953	7030.73	7032.97	TOC	6.83	2.24	4.59	6.83	7026.14	
DPBN-6A #2	26-Jun-03	953	7030.73	7032.93	TOC	6.82	2.20	4.62	6.82	7026.11	
DPBN-6A #3	26-Jun-03	953	7030.73	7032.98	TOC	6.85	2.25	4.60	6.85	7026.13	
DPBN-6B #1	26-Jun-03	1008	7028.88	7031.71	TOC	5.35	2.83	2.52	5.35	7026.36	
DPBN-6B #2	26-Jun-03	1008	7028.88	7031.70	TOC	5.29	2.82	2.47	5.29	7026.41	
DPBN-6B #3	26-Jun-03	1009	7028.88	7031.70	TOC	5.31	2.82	2.49	5.31	7026.39	
DPBN-6C #1	26-Jun-03	1007	7029.83	7032.71	TOC	6.44	2.88	3.56	6.44	7026.27	

WATER-LEVEL ELEVATION DATA SHEET

Date: 6/26/2003 **Technical Area:** 21

ER SOP-07.02, R1
Field Unit: Canyons Focus Area

Measured by (print name) Shannon Purdue **Signature:**

LOCATION	LOG		ELEVATION[1] (ft)		TAPE READING				DEPTH TO WATER (ft)	ELEVATION GROUNDWATER (ft)	Comments
	Date	Time	GL Datum	(TOC)[2]	Meas. Pt.	Water Level (ft)	TOC to Ground Surface	DTW BGS (ft)			
DPBN-6C #2	26-Jun-03	1007	7029.83	7032.71	TOC	6.42	2.88	3.54	6.42	7026.29	
DPBN-6C #3	26-Jun-03	1007	7029.83	7032.71	TOC	6.42	2.88	3.54	6.42	7026.29	
DPBN-6D #1	26-Jun-03	1006	7030.42	7033.27	TOC	10.52	2.85	7.67	10.52	7022.75	
DPBN-6D #2	26-Jun-03	1006	7030.42	7033.27	TOC	7.40	2.85	4.55	7.40	7025.87	
DPBN-6D #3	26-Jun-03	1007	7030.42	7033.27	TOC	dry*	2.85	dry	dry*	dry	*Sensor 0.27ft above end of probe
DPW-6.2S	26-Jun-03	954	7028.90	7032.40	TOC	6.52	3.50	3.02	6.52	7025.88	
DPW-6.5N	26-Jun-03	1006	7030.20	7033.20	TOC	7.93	3.00	4.93	7.93	7025.27	
DPBN-7A #1	26-Jun-03	955	7028.64	7031.31	TOC	6.80	2.67	4.13	6.80	7024.51	
DPBN-7A #2	26-Jun-03	955	7028.64	7031.31	TOC	NM	2.67	NM	NM	NM	Bromide probe in well.
DPBN-7A #3	26-Jun-03	955	7028.64	7031.31	TOC	6.80	2.67	4.13	6.80	7024.51	
DPBN-7B #1	26-Jun-03	1005	7027.37	7030.27	TOC	5.18	2.90	2.28	5.18	7025.09	
DPBN-7B #2	26-Jun-03	1005	7027.37	7030.27	TOC	NM	2.90	NM	NM	NM	Bromide probe in well.
DPBN-7B #3	26-Jun-03	1005	7027.37	7030.27	TOC	5.19	2.90	2.29	5.19	7025.08	
DPBN-7C #1	26-Jun-03	1004	7028.00	7030.85	TOC	5.82	2.85	2.97	5.82	7025.03	
DPBN-7C #2	26-Jun-03	1004	7028.00	7030.84	TOC	5.80	2.84	2.96	5.80	7025.04	
DPBN-7C #3	26-Jun-03	1004	7028.00	7030.83	TOC	5.80	2.83	2.97	5.80	7025.03	
DPW-7.1S	26-Jun-03	955	7028.76	7031.67	TOC	7.05	2.91	NM	7.05	NM	Transducer in well.
DPW-7.4N	26-Jun-03	1003	7028.10	7031.06	TOC	7.94	2.96	4.98	7.94	7023.12	
DPW-7.5S	26-Jun-03	956	7027.50	7030.60	TOC	8.06	3.10	4.96	8.06	7022.54	
DPPN-7.7 #1	26-Jun-03	957	7024.49	7027.48	TOC	8.35	2.99	5.36	8.35	7019.13	
DPPN-7.7 #2	26-Jun-03	957	7024.47	7027.47	TOC	5.83	3.00	2.83	5.83	7021.64	
DPPN-7.7 #3	26-Jun-03	958	7024.56	7027.34	TOC	5.56	2.78	2.78	5.56	7021.78	
DPW-7.9S	26-Jun-03	958	7025.22	7028.26	TOC	7.35	3.04	4.31	7.35	7020.91	
DPBN-8A #1	26-Jun-03	959	7025.06	7027.57	TOC	6.97	2.51	4.46	6.97	7020.60	
DPBN-8A #2	26-Jun-03	959	7025.06	7027.57	TOC	6.93	2.51	4.42	6.93	7020.64	
DPBN-8A #3	26-Jun-03	959	7025.06	7027.57	TOC	6.95	2.51	4.44	6.95	7020.62	
DPBN-8B #1	26-Jun-03	1000	7024.34	7026.57	TOC	5.69	2.23	3.46	5.69	7020.88	
DPBN-8B #2	26-Jun-03	1000	7024.34	7026.57	TOC	5.69	2.23	3.46	5.69	7020.88	
DPBN-8B #3	26-Jun-03	1000	7024.34	7026.57	TOC	5.72	2.23	3.49	5.72	7020.85	
LAUZ-2	26-Jun-03	1001	NA	NA	TOC	6.03	NA	NA	6.03	NA	

Measurement Method and Probe Type: Solinst water depth indicator, Ser. No. 13128
Comments:

[1] Use the appropriate measuring point
[2] TOC is Top of Casing
[3] NAPL (Non Aqueous Phase Liquid). If NAPL is encountered, the groundwater level must be corrected.

Los Alamos Environmental Restoration Project

WATER-LEVEL ELEVATION DATA SHEET

Date: 6/30/2003 **Technical Area: 21**

ER SOP-07.02, R1
Field Unit: Canyons Focus Area

Measured by (print name) Shannon Purdue **Signature:**

LOCATION	LOG		ELEVATION[1] (ft)		TAPE READING				DEPTH TO WATER (ft)	ELEVATION GROUNDWATER (ft)	Comments
	Date	Time	GL Datum	(TOC)[2]	Meas. Pt.	Water Level (ft)	TOC to Ground Surface	DTW BGS (ft)			
LAUZ-1	30-Jun-03	1034	NA	NA	TOC	5.95	NA	NA	5.95	NA	
DPW-1S	30-Jun-03	1035	7032.67	7035.67	TOC	6.44	3.00	3.44	6.44	7029.23	
DPBN-1A #1	30-Jun-03	1036	7032.29	7035.29	TOC	6.16	3.00	3.16	6.16	7029.13	
DPBN-1A #2	30-Jun-03	1036	7032.29	7035.29	TOC	6.19	3.00	3.19	6.19	7029.10	
DPBN-1A #3	30-Jun-03	1036	7032.29	7035.29	TOC	6.18	3.00	3.18	6.18	7029.11	
DPBN-1B #1	30-Jun-03	1036	7032.71	7035.63	TOC	6.57	2.92	3.65	6.57	7029.06	
DPBN-1B #2	30-Jun-03	1037	7032.71	7035.63	TOC	6.58	2.92	3.66	6.58	7029.05	
DPBN-1B #3	30-Jun-03	1037	7032.71	7035.63	TOC	dry	2.92	dry	dry	dry	
DPBN-1C #1	30-Jun-03	1114	7032.48	7035.36	TOC	6.54	2.88	3.66	6.54	7028.82	
DPBN-1C #2	30-Jun-03	1114	7032.48	7035.36	TOC	6.54	2.88	3.66	6.54	7028.82	
DPBN-1C #3	30-Jun-03	1114	7032.48	7035.36	TOC	6.53	2.88	3.65	6.53	7028.83	
DPW-1N	30-Jun-03	1113	7034.65	7037.62	TOC	dry	2.97	dry	dry	dry	
DPW-1.1N	30-Jun-03	1113	7033.84	7036.67	TOC	8.05	2.83	5.22	8.05	7028.62	
DPPN-1.1 #1	30-Jun-03	1037	7032.55	7035.55	TOC	6.57	3.00	3.57	6.57	7028.98	
DPPN-1.1 #2	30-Jun-03	1038	7032.27	7035.27	TOC	dry	3.00	dry	dry	dry	
DPPN-1.1 #3	30-Jun-03	1038	7032.24	7035.24	TOC	dry	3.00	dry	dry	dry	
DPBN-2A #1	30-Jun-03	1039	7033.21	7036.11	TOC	NM	2.90	NM	NM	NM	Bromide probe in well.
DPBN-2A #2	30-Jun-03	1039	7033.21	7036.11	TOC	7.07	2.90	4.17	7.07	7029.04	
DPBN-2A #3	30-Jun-03	1039	7033.21	7036.11	TOC	dry	2.90	dry	dry	dry	
DPBN-2B #1	30-Jun-03	1112	7032.02	7035.02	TOC	NM	3.00	NM	NM	NM	Bromide probe in well.
DPBN-2B #2	30-Jun-03	1113	7032.02	7035.02	TOC	NM	3.00	NM	NM	NM	Bromide probe in well.
DPBN-2B #3	30-Jun-03	1113	7032.02	7035.02	TOC	dry	3.00	dry	dry	dry	
DPBN-2C #1	30-Jun-03	1112	7032.98	7035.86	TOC	7.26	2.88	4.38	7.26	7028.60	
DPBN-2C #2	30-Jun-03	1112	7032.98	7035.86	TOC	NM	2.88	NM	NM	NM	Bromide probe in well.
DPBN-2C #3	30-Jun-03	1112	7032.98	7035.86	TOC	7.25	2.88	4.37	7.25	7028.61	
DPBN-3A #1	30-Jun-03	1039	7032.96	7035.96	TOC	7.57	3.00	4.57	7.57	7028.39	
DPBN-3A #2	30-Jun-03	1039	7032.96	7035.96	TOC	NM	3.00	NM	NM	NM	Bromide probe in well.
DPBN-3A #3	30-Jun-03	1040	7032.96	7035.96	TOC	7.56	3.00	4.56	7.56	7028.40	
DPBN-3B #1	30-Jun-03	1040	7031.88	7034.82	TOC	NM	2.94	NM	NM	NM	Bromide probe in well.
DPBN-3B #2	30-Jun-03	1040	7031.88	7034.82	TOC	6.69	2.94	3.75	6.69	7028.13	
DPBN-3B #3	30-Jun-03	1041	7031.88	7034.82	TOC	dry	2.94	dry	dry	dry	
DPBN-3C #1	30-Jun-03	1111	7031.96	7034.76	TOC	6.54	2.80	3.74	6.54	7028.22	
DPBN-3C #2	30-Jun-03	1111	7031.96	7034.76	TOC	NM	2.80	NM	NM	NM	Bromide probe in well.
DPBN-3C #3	30-Jun-03	1111	7031.96	7034.76	TOC	6.28	2.80	3.48	6.28	7028.48	
DPW-3.2N	30-Jun-03	1110	7034.53	7037.57	TOC	9.62	3.04	6.58	9.62	7027.95	
DPW-3.5N	30-Jun-03	1109	7031.44	7034.39	TOC	6.64	2.95	3.69	6.64	7027.75	
DPW-3.5S	30-Jun-03	1041	7032.40	7035.40	TOC	7.53	3.00	4.53	7.53	7027.87	
DPBN-4A #1	30-Jun-03	1042	7031.93	7034.47	TOC	6.58	2.54	4.04	6.58	7027.89	
DPBN-4A #2	30-Jun-03	1042	7031.93	7034.47	TOC	6.59	2.54	4.05	6.59	7027.88	
DPBN-4A #3	30-Jun-03	1042	7031.93	7034.47	TOC	6.61	2.54	4.07	6.61	7027.86	
DPBN-4B #1	30-Jun-03	1108	7031.53	7034.34	TOC	6.70	2.81	3.89	6.70	7027.64	
DPBN-4B #2	30-Jun-03	1108	7031.53	7034.34	TOC	6.69	2.81	3.88	6.69	7027.65	
DPBN-4B #3	30-Jun-03	1108	7031.53	7034.34	TOC	6.69	2.81	3.88	6.69	7027.65	
DPBN-4C #1	30-Jun-03	1109	7032.79	7035.29	TOC	7.88	2.50	5.38	7.88	7027.41	
DPBN-4C #2	30-Jun-03	1109	7032.79	7035.28	TOC	7.86	2.49	5.37	7.86	7027.42	
DPBN-4C #3	30-Jun-03	1109	7032.79	7035.28	TOC	7.85	2.49	5.36	7.85	7027.43	
DPW-4.6N	30-Jun-03	1107	7032.55	7035.60	TOC	8.34	3.05	5.29	8.34	7027.26	
DPPN-4.5N #1	30-Jun-03	1105	7031.65	7034.65	TOC	7.43	3.00	4.43	7.43	7027.22	
DPPN-4.5N #2	30-Jun-03	1105	7031.92	7034.92	TOC	7.42	3.00	4.42	7.42	7027.50	
DPPN-4.5N #3	30-Jun-03	1106	7031.82	7034.82	TOC	7.39	3.00	4.39	7.39	7027.43	
DPW-4.4N	30-Jun-03	1107	7031.09	7034.03	TOC	6.70	2.94	3.76	6.70	7027.33	
DPW-4.9S	30-Jun-03	1043	7030.93	7033.78	TOC	6.82	2.85	3.97	6.82	7026.96	
DPBN-5A #1	30-Jun-03	1043	7030.29	7032.41	TOC	5.46	2.12	3.34	5.46	7026.95	
DPBN-5A #2	30-Jun-03	1044	7030.29	7032.41	TOC	5.44	2.12	3.32	5.44	7026.97	
DPBN-5A #3	30-Jun-03	1044	7030.29	7032.41	TOC	5.42	2.12	3.30	5.42	7026.99	
DPBN-5B #1	30-Jun-03	1104	7031.05	7033.62	TOC	6.56	2.57	3.99	6.56	7027.06	
DPBN-5B #2	30-Jun-03	1104	7031.05	7033.62	TOC	6.56	2.57	3.99	6.56	7027.06	
DPBN-5B #3	30-Jun-03	1104	7031.05	7033.62	TOC	6.56	2.57	3.99	6.56	7027.06	
DPBN-5C #1	30-Jun-03	1103	7031.36	7034.30	TOC	7.34	2.94	4.40	7.34	7026.96	
DPBN-5C #2	30-Jun-03	1103	7031.36	7034.30	TOC	7.33	2.94	4.39	7.33	7026.97	
DPBN-5C #3	30-Jun-03	1104	7031.36	7034.30	TOC	7.32	2.94	4.38	7.32	7026.98	
DPW-5.8N	30-Jun-03	1102	7032.32	7035.39	TOC	8.82	3.07	5.75	8.82	7026.57	
DPW-5.7N	30-Jun-03	1102	7031.02	7033.93	TOC	7.34	2.91	4.43	7.34	7026.59	
DPPN-5.7 #1	30-Jun-03	1101	7029.72	7032.72	TOC	6.52	3.00	3.52	6.52	7026.20	
DPPN-5.7 #2	30-Jun-03	1101	7029.54	7032.54	TOC	6.52	3.00	3.52	6.52	7026.02	
DPPN-5.7 #3	30-Jun-03	1101	7029.50	7032.50	TOC	dry	3.00	dry	dry	dry	
DPBN-6A #1	30-Jun-03	1045	7030.73	7032.97	TOC	7.12	2.24	4.88	7.12	7025.85	
DPBN-6A #2	30-Jun-03	1045	7030.73	7032.93	TOC	7.06	2.20	4.86	7.06	7025.87	
DPBN-6A #3	30-Jun-03	1045	7030.73	7032.98	TOC	7.12	2.25	4.87	7.12	7025.86	
DPBN-6B #1	30-Jun-03	1100	7028.88	7031.71	TOC	5.60	2.83	2.77	5.60	7026.11	
DPBN-6B #2	30-Jun-03	1100	7028.88	7031.70	TOC	5.57	2.82	2.75	5.57	7026.13	
DPBN-6B #3	30-Jun-03	1100	7028.88	7031.70	TOC	5.58	2.82	2.76	5.58	7026.12	
DPBN-6C #1	30-Jun-03	1059	7029.83	7032.71	TOC	6.62	2.88	3.74	6.62	7026.09	

Los Alamos Environmental Restoration Project

WATER-LEVEL ELEVATION DATA SHEET

Date: 6/30/2003 **Technical Area: 21**

ER SOP-07.02, R1
Field Unit: Canyons Focus Area

Measured by (print name) Shannon Purdue **Signature:**

LOCATION	LOG		ELEVATION[1] (ft)		TAPE READING				DEPTH TO WATER (ft)	ELEVATION GROUNDWATER (ft)	Comments
	Date	Time	GL Datum	(TOC)[2]	Meas. Pt.	Water Level (ft)	TOC to Ground Surface	DTW BGS (ft)			
DPBN-6C #2	30-Jun-03	1059	7029.83	7032.71	TOC	6.64	2.88	3.76	6.64	7026.07	
DPBN-6C #3	30-Jun-03	1059	7029.83	7032.71	TOC	6.64	2.88	3.76	6.64	7026.07	
DPBN-6D #1	30-Jun-03	1058	7030.42	7033.27	TOC	9.02	2.85	6.17	9.02	7024.25	
DPBN-6D #2	30-Jun-03	1058	7030.42	7033.27	TOC	7.33	2.85	4.48	7.33	7025.94	
DPBN-6D #3	30-Jun-03	1058	7030.42	7033.27	TOC	dry	2.85	dry	dry	dry	
DPW-6.2S	30-Jun-03	1046	7028.90	7032.40	TOC	6.75	3.50	3.25	6.75	7025.65	
DPW-6.5N	30-Jun-03	1057	7030.20	7033.20	TOC	8.09	3.00	5.09	8.09	7025.11	
DPBN-7A #1	30-Jun-03	1047	7028.64	7031.31	TOC	7.06	2.67	4.39	7.06	7024.25	
DPBN-7A #2	30-Jun-03	1047	7028.64	7031.31	TOC	NM	2.67	NM	NM	NM	Bromide probe in well.
DPBN-7A #3	30-Jun-03	1047	7028.64	7031.31	TOC	7.06	2.67	4.39	7.06	7024.25	
DPBN-7B #1	30-Jun-03	1056	7027.37	7030.27	TOC	5.40	2.90	2.50	5.40	7024.87	
DPBN-7B #2	30-Jun-03	1056	7027.37	7030.27	TOC	NM	2.90	NM	NM	NM	Bromide probe in well.
DPBN-7B #3	30-Jun-03	1056	7027.37	7030.27	TOC	5.41	2.90	2.51	5.41	7024.86	
DPBN-7C #1	30-Jun-03	1055	7028.00	7030.85	TOC	6.02	2.85	3.17	6.02	7024.83	
DPBN-7C #2	30-Jun-03	1055	7028.00	7030.84	TOC	6.02	2.84	3.18	6.02	7024.82	
DPBN-7C #3	30-Jun-03	1056	7028.00	7030.83	TOC	6.01	2.83	3.18	6.01	7024.82	
DPW-7.1S	30-Jun-03	1047	7028.76	7031.67	TOC	7.26	2.91	NM	7.26	NM	Transducer in well.
DPW-7.4N	30-Jun-03	1054	7028.10	7031.06	TOC	8.10	2.96	5.14	8.10	7022.96	
DPW-7.5S	30-Jun-03	1048	7027.50	7030.60	TOC	8.19	3.10	5.09	8.19	7022.41	
DPPN-7.7 #1	30-Jun-03	1049	7024.49	7027.48	TOC	8.37	2.99	5.38	8.37	7019.11	
DPPN-7.7 #2	30-Jun-03	1049	7024.47	7027.47	TOC	6.00	3.00	3.00	6.00	7021.47	
DPPN-7.7 #3	30-Jun-03	1050	7024.56	7027.34	TOC	5.73	2.78	2.95	5.73	7021.61	
DPW-7.9S	30-Jun-03	1050	7025.22	7028.26	TOC	7.50	3.04	4.46	7.50	7020.76	
DPBN-8A #1	30-Jun-03	1051	7025.06	7027.57	TOC	7.13	2.51	4.62	7.13	7020.44	
DPBN-8A #2	30-Jun-03	1051	7025.06	7027.57	TOC	7.12	2.51	4.61	7.12	7020.45	
DPBN-8A #3	30-Jun-03	1051	7025.06	7027.57	TOC	7.12	2.51	4.61	7.12	7020.45	
DPBN-8B #1	30-Jun-03	1052	7024.34	7026.57	TOC	5.84	2.23	3.61	5.84	7020.73	
DPBN-8B #2	30-Jun-03	1052	7024.34	7026.57	TOC	5.84	2.23	3.61	5.84	7020.73	
DPBN-8B #3	30-Jun-03	1052	7024.34	7026.57	TOC	5.85	2.23	3.62	5.85	7020.72	
LAUZ-2	30-Jun-03	1053	NA	NA	TOC	6.14	NA	NA	6.14	NA	

Measurement Method and Probe Type: Solinst water depth indicator, Ser. No. 18528
Comments:

[1] Use the appropriate measuring point
[2] TOC is Top of Casing
[3] NAPL (Non Aqueous Phase Liquid). If NAPL is encountered, the groundwater level must be corrected.

Los Alamos Environmental Restoration Project

WATER-LEVEL ELEVATION DATA SHEET

Date: 7/17/2003 **Technical Area: 21**

ER SOP-07.02, R1
Field Unit: Canyons Focus Area

Measured by (print name) Shannon Purdue **Signature:**

LOCATION	LOG		ELEVATION[1] (ft)		TAPE READING				DEPTH TO WATER (ft)	ELEVATION GROUNDWATER (ft)	Comments
	Date	Time	GL Datum	(TOC)[2]	Meas. Pt.	Water Level (ft)	TOC to Ground Surface	DTW BGS (ft)			
LAUZ-1	17-Jul-03	908	NA	NA	TOC	6.92	NA	NA	6.92	NA	
DPW-1S	17-Jul-03	NM	7032.67	7035.67	TOC	NM	3.00	NM	NM	NM	DMLS in well.
DPBN-1A #1	17-Jul-03	909	7032.29	7035.29	TOC	7.07	3.00	4.07	7.07	7028.22	
DPBN-1A #2	17-Jul-03	909	7032.29	7035.29	TOC	7.08	3.00	4.08	7.08	7028.21	
DPBN-1A #3	17-Jul-03	909	7032.29	7035.29	TOC	dry	3.00	dry	dry	dry	
DPBN-1B #1	17-Jul-03	910	7032.71	7035.63	TOC	7.62	2.92	4.70	7.62	7028.01	
DPBN-1B #2	17-Jul-03	910	7032.71	7035.63	TOC	dry	2.92	dry	dry	dry	
DPBN-1B #3	17-Jul-03	910	7032.71	7035.63	TOC	dry	2.92	dry	dry	dry	
DPBN-1C #1	17-Jul-03	956	7032.48	7035.36	TOC	7.64	2.88	4.76	7.64	7027.72	
DPBN-1C #2	17-Jul-03	956	7032.48	7035.36	TOC	dry	2.88	dry	dry	dry	
DPBN-1C #3	17-Jul-03	957	7032.48	7035.36	TOC	dry	2.88	dry	dry	dry	
DPW-1N	17-Jul-03	955	7034.65	7037.62	TOC	dry	2.97	dry	dry	dry	
DPW-1.1N	17-Jul-03	956	7033.84	7036.67	TOC	9.16	2.83	6.33	9.16	7027.51	
DPPN-1.1 #1	17-Jul-03	911	7032.55	7035.55	TOC	dry	3.00	dry	dry	dry	
DPPN-1.1 #2	17-Jul-03	911	7032.27	7035.27	TOC	dry	3.00	dry	dry	dry	
DPPN-1.1 #3	17-Jul-03	912	7032.24	7035.24	TOC	dry	3.00	dry	dry	dry	
DPBN-2A #1	17-Jul-03	914	7033.21	7036.11	TOC	NM	2.90	NM	NM	NM	Bromide probe in well.
DPBN-2A #2	17-Jul-03	914	7033.21	7036.11	TOC	dry	2.90	dry	dry	dry	
DPBN-2A #3	17-Jul-03	914	7033.21	7036.11	TOC	dry	2.90	dry	dry	dry	
DPBN-2B #1	17-Jul-03	955	7032.02	7035.02	TOC	NM	3.00	NM	NM	NM	Bromide probe in well.
DPBN-2B #2	17-Jul-03	955	7032.02	7035.02	TOC	NM	3.00	NM	NM	NM	Bromide probe in well.
DPBN-2B #3	17-Jul-03	955	7032.02	7035.02	TOC	dry	3.00	dry	dry	dry	
DPBN-2C #1	17-Jul-03	954	7032.98	7035.86	TOC	8.34	2.88	5.46	8.34	7027.52	
DPBN-2C #2	17-Jul-03	955	7032.98	7035.86	TOC	NM	2.88	NM	NM	NM	Bromide probe in well.
DPBN-2C #3	17-Jul-03	955	7032.98	7035.86	TOC	8.32	2.88	5.44	8.32	7027.54	
DPBN-3A #1	17-Jul-03	915	7032.96	7035.96	TOC	8.42	3.00	5.42	8.42	7027.54	
DPBN-3A #2	17-Jul-03	915	7032.96	7035.96	TOC	NM	3.00	NM	NM	NM	Bromide probe in well.
DPBN-3A #3	17-Jul-03	915	7032.96	7035.96	TOC	dry	3.00	dry	dry	dry	
DPBN-3B #1	17-Jul-03	916	7031.88	7034.82	TOC	NM	2.94	NM	NM	NM	Bromide probe in well.
DPBN-3B #2	17-Jul-03	916	7031.88	7034.82	TOC	dry	2.94	dry	dry	dry	
DPBN-3B #3	17-Jul-03	916	7031.88	7034.82	TOC	dry	2.94	dry	dry	dry	
DPBN-3C #1	17-Jul-03	953	7031.96	7034.76	TOC	7.65	2.80	4.85	7.65	7027.11	
DPBN-3C #2	17-Jul-03	954	7031.96	7034.76	TOC	NM	2.80	NM	NM	NM	Bromide probe in well.
DPBN-3C #3	17-Jul-03	954	7031.96	7034.76	TOC	dry	2.80	dry	dry	dry	
DPW-3.2N	17-Jul-03	953	7034.53	7037.57	TOC	10.65	3.04	7.61	10.65	7026.92	
DPW-3.5N	17-Jul-03	NM	7031.44	7034.39	TOC	NM	2.95	NM	NM	NM	DMLS in well.
DPW-3.5S	17-Jul-03	916	7032.40	7035.40	TOC	8.49	3.00	5.49	8.49	7026.91	
DPBN-4A #1	17-Jul-03	917	7031.93	7034.47	TOC	7.48	2.54	4.94	7.48	7026.99	
DPBN-4A #2	17-Jul-03	917	7031.93	7034.47	TOC	7.48	2.54	4.94	7.48	7026.99	
DPBN-4A #3	17-Jul-03	918	7031.93	7034.47	TOC	7.46	2.54	4.92	7.46	7027.01	
DPBN-4B #1	17-Jul-03	951	7031.53	7034.34	TOC	7.70	2.81	4.89	7.70	7026.64	
DPBN-4B #2	17-Jul-03	952	7031.53	7034.34	TOC	7.70	2.81	4.89	7.70	7026.64	
DPBN-4B #3	17-Jul-03	952	7031.53	7034.34	TOC	7.68	2.81	4.87	7.68	7026.66	
DPBN-4C #1	17-Jul-03	950	7032.79	7035.29	TOC	8.90	2.50	6.40	8.90	7026.39	
DPBN-4C #2	17-Jul-03	950	7032.79	7035.28	TOC	8.87	2.49	6.38	8.87	7026.41	
DPBN-4C #3	17-Jul-03	950	7032.79	7035.28	TOC	8.86	2.49	6.37	8.86	7026.42	
DPW-4.6N	17-Jul-03	950	7032.55	7035.60	TOC	9.35	3.05	6.30	9.35	7026.25	
DPPN-4.5N #1	17-Jul-03	949	7031.65	7034.65	TOC	8.48	3.00	5.48	8.48	7026.17	
DPPN-4.5N #2	17-Jul-03	949	7031.92	7034.92	TOC	dry	3.00	dry	dry	dry	
DPPN-4.5N #3	17-Jul-03	949	7031.82	7034.82	TOC	dry	3.00	dry	dry	dry	
DPW-4.4N	17-Jul-03	NM	7031.09	7034.03	TOC	NM	2.94	NM	NM	NM	DMLS in well.
DPW-4.9S	17-Jul-03	918	7030.93	7033.78	TOC	7.78	2.85	4.93	7.78	7026.00	
DPBN-5A #1	17-Jul-03	919	7030.29	7032.41	TOC	6.45	2.12	4.33	6.45	7025.96	
DPBN-5A #2	17-Jul-03	919	7030.29	7032.41	TOC	6.41	2.12	4.29	6.41	7026.00	
DPBN-5A #3	17-Jul-03	919	7030.29	7032.41	TOC	6.38	2.12	4.26	6.38	7026.03	
DPBN-5B #1	17-Jul-03	946	7031.05	7033.62	TOC	7.58	2.57	5.01	7.58	7026.04	
DPBN-5B #2	17-Jul-03	946	7031.05	7033.62	TOC	7.59	2.57	5.02	7.59	7026.03	
DPBN-5B #3	17-Jul-03	947	7031.05	7033.62	TOC	7.59	2.57	5.02	7.59	7026.03	
DPBN-5C #1	17-Jul-03	945	7031.36	7034.30	TOC	8.40	2.94	5.46	8.40	7025.90	
DPBN-5C #2	17-Jul-03	945	7031.36	7034.30	TOC	8.37	2.94	5.43	8.37	7025.93	
DPBN-5C #3	17-Jul-03	945	7031.36	7034.30	TOC	8.37	2.94	5.43	8.37	7025.93	
DPW-5.8N	17-Jul-03	943	7032.32	7035.39	TOC	9.62	3.07	6.55	9.62	7025.77	
DPW-5.7N	17-Jul-03	NM	7031.02	7033.93	TOC	NM	2.91	NM	NM	NM	DMLS in well.
DPPN-5.7 #1	17-Jul-03	940	7029.72	7032.72	TOC	7.48	3.00	4.48	7.48	7025.24	
DPPN-5.7 #2	17-Jul-03	941	7029.54	7032.54	TOC	7.48	3.00	4.48	7.48	7025.06	
DPPN-5.7 #3	17-Jul-03	941	7029.50	7032.50	TOC	dry	3.00	dry	dry	dry	
DPBN-6A #1	17-Jul-03	921	7030.73	7032.97	TOC	8.05	2.24	5.81	8.05	7024.92	
DPBN-6A #2	17-Jul-03	921	7030.73	7032.93	TOC	8.00	2.20	5.80	8.00	7024.93	
DPBN-6A #3	17-Jul-03	921	7030.73	7032.98	TOC	dry	2.25	dry	dry	dry	
DPBN-6B #1	17-Jul-03	939	7028.88	7031.71	TOC	6.52	2.83	3.69	6.52	7025.19	
DPBN-6B #2	17-Jul-03	939	7028.88	7031.70	TOC	6.48	2.82	3.66	6.48	7025.22	
DPBN-6B #3	17-Jul-03	939	7028.88	7031.70	TOC	6.50	2.82	3.68	6.50	7025.20	
DPBN-6C #1	17-Jul-03	937	7029.83	7032.71	TOC	7.51	2.88	4.63	7.51	7025.20	

WATER-LEVEL ELEVATION DATA SHEET

Date: 7/17/2003 **Technical Area:** 21

ER SOP-07.02, R1
Field Unit: Canyons Focus Area

Measured by (print name) Shannon Purdue Signature:

LOCATION	LOG		ELEVATION[1] (ft)		TAPE READING				DEPTH TO WATER (ft)	ELEVATION GROUNDWATER (ft)	Comments
	Date	Time	GL Datum	(TOC)[2]	Meas. Pt.	Water Level (ft)	TOC to Ground Surface	DTW BGS (ft)			
DPBN-6C #2	17-Jul-03	937	7029.83	7032.71	TOC	7.49	2.88	4.61	7.49	7025.22	
DPBN-6C #3	17-Jul-03	937	7029.83	7032.71	TOC	7.49	2.88	4.61	7.49	7025.22	
DPBN-6D #1	17-Jul-03	936	7030.42	7033.27	TOC	8.77	2.85	5.92	8.77	7024.50	
DPBN-6D #2	17-Jul-03	936	7030.42	7033.27	TOC	7.58	2.85	4.73	7.58	7025.69	
DPBN-6D #3	17-Jul-03	936	7030.42	7033.27	TOC	dry	2.85	dry	dry	dry	
DPW-6.2S	17-Jul-03	922	7028.90	7032.40	TOC	7.66	3.50	4.16	7.66	7024.74	
DPW-6.5N	17-Jul-03	935	7030.20	7033.20	TOC	8.70	3.00	5.70	8.70	7024.50	
DPBN-7A #1	17-Jul-03	923	7028.64	7031.31	TOC	7.83	2.67	5.16	7.83	7023.48	
DPBN-7A #2	17-Jul-03	NM	7028.64	7031.31	TOC	NM	2.67	NM	NM	NM	Bromide probe in well.
DPBN-7A #3	17-Jul-03	923	7028.64	7031.31	TOC	7.83	2.67	5.16	7.83	7023.48	
DPBN-7B #1	17-Jul-03	933	7027.37	7030.27	TOC	6.23	2.90	3.33	6.23	7024.04	
DPBN-7B #2	17-Jul-03	934	7027.37	7030.27	TOC	NM	2.90	NM	NM	NM	Bromide probe in well.
DPBN-7B #3	17-Jul-03	934	7027.37	7030.27	TOC	6.22	2.90	3.32	6.22	7024.05	
DPBN-7C #1	17-Jul-03	932	7028.00	7030.85	TOC	6.83	2.85	3.98	6.83	7024.02	
DPBN-7C #2	17-Jul-03	932	7028.00	7030.84	TOC	6.84	2.84	4.00	6.84	7024.00	
DPBN-7C #3	17-Jul-03	933	7028.00	7030.83	TOC	6.83	2.83	4.00	6.83	7024.00	
DPW-7.1S	17-Jul-03	NM	7028.76	7031.67	TOC	NM	2.91	NM	NM	NM	Transducer in well.
DPW-7.4N	17-Jul-03	931	7028.10	7031.06	TOC	8.65	2.96	5.69	8.65	7022.41	
DPW-7.5S	17-Jul-03	924	7027.50	7030.60	TOC	8.59	3.10	5.49	8.59	7022.01	
DPPN-7.7 #1	17-Jul-03	925	7024.49	7027.48	TOC	8.20	2.99	5.21	8.20	7019.28	
DPPN-7.7 #2	17-Jul-03	926	7024.47	7027.47	TOC	dry	3.00	dry	dry	dry	
DPPN-7.7 #3	17-Jul-03	927	7024.56	7027.34	TOC	6.25	2.78	3.47	6.25	7021.09	
DPW-7.9S	17-Jul-03	NM	7025.22	7028.26	TOC	NM	3.04	NM	NM	NM	DMLS in well.
DPBN-8A #1	17-Jul-03	927	7025.06	7027.57	TOC	7.75	2.51	5.24	7.75	7019.82	
DPBN-8A #2	17-Jul-03	928	7025.06	7027.57	TOC	7.75	2.51	5.24	7.75	7019.82	
DPBN-8A #3	17-Jul-03	928	7025.06	7027.57	TOC	7.75	2.51	5.24	7.75	7019.82	
DPBN-8B #1	17-Jul-03	928	7024.34	7026.57	TOC	6.25	2.23	4.02	6.25	7020.32	
DPBN-8B #2	17-Jul-03	928	7024.34	7026.57	TOC	6.23	2.23	4.00	6.23	7020.34	
DPBN-8B #3	17-Jul-03	929	7024.34	7026.57	TOC	6.25	2.23	4.02	6.25	7020.32	
LAUZ-2	17-Jul-03	929	NA	NA	TOC	6.53	NA	NA	6.53	NA	

Measurement Method and Probe Type: Solinst water depth indicator, Ser. No. 18528
Comments:

[1] Use the appropriate measuring point
[2] TOC is Top of Casing
[3] NAPL (Non Aqueous Phase Liquid). If NAPL is encountered, the groundwater level must be corrected.

Los Alamos Environmental Restoration Project

WATER-LEVEL ELEVATION DATA SHEET

Date: 8/26/2003 **Technical Area: 21**

ER SOP-07.02, R1
Field Unit: Canyons Focus Area

Measured by (print name) Shannon Purdue **Signature:**

LOCATION	LOG		ELEVATION[1] (ft)		TAPE READING				DEPTH TO WATER (ft)	ELEVATION GROUNDWATER (ft)	Comments
	Date	Time	GL Datum	(TOC)[2]	Meas. Pt.	Water Level (ft)	TOC to Ground Surface	DTW BGS (ft)			
LAUZ-1	26-Aug-03	954	NA	NA	TOC	4.33	NA	NA	4.33	NA	
DPW-1S	26-Aug-03	NM	7032.67	7035.67	TOC	NM	3.00	NM	NM	NM	DMLS in well.
DPBN-1A #1	26-Aug-03	953	7032.29	7035.29	TOC	4.48	3.00	1.48	4.48	7030.81	
DPBN-1A #2	26-Aug-03	952	7032.29	7035.29	TOC	4.50	3.00	1.50	4.50	7030.79	
DPBN-1A #3	26-Aug-03	952	7032.29	7035.29	TOC	4.49	3.00	1.49	4.49	7030.80	
DPBN-1B #1	26-Aug-03	954	7032.71	7035.63	TOC	4.86	2.92	1.94	4.86	7030.77	
DPBN-1B #2	26-Aug-03	953	7032.71	7035.63	TOC	4.85	2.92	1.93	4.85	7030.78	
DPBN-1B #3	26-Aug-03	953	7032.71	7035.63	TOC	4.84	2.92	1.92	4.84	7030.79	
DPBN-1C #1	26-Aug-03	957	7032.48	7035.36	TOC	4.94	2.88	2.06	4.94	7030.42	
DPBN-1C #2	26-Aug-03	956	7032.48	7035.36	TOC	4.94	2.88	2.06	4.94	7030.42	
DPBN-1C #3	26-Aug-03	955	7032.48	7035.36	TOC	4.94	2.88	2.06	4.94	7030.42	
DPW-1N	26-Aug-03	957	7034.65	7037.62	TOC	4.37	2.97	1.40	4.37	7033.25	
DPW-1.1N	26-Aug-03	956	7033.84	7036.67	TOC	6.51	2.83	3.68	6.51	7030.16	
DPPN-1.1 #1	26-Aug-03	NM	7032.55	7035.55	TOC	NM	3.00	NM	NM	NM	Transducer in well.
DPPN-1.1 #2	26-Aug-03	NM	7032.27	7035.27	TOC	NM	3.00	NM	NM	NM	Transducer in well.
DPPN-1.1 #3	26-Aug-03	NM	7032.24	7035.24	TOC	NM	3.00	NM	NM	NM	Transducer in well.
DPBN-2A #1	26-Aug-03	NM	7033.21	7036.11	TOC	NM	2.90	NM	NM	NM	Bromide probe in well.
DPBN-2A #2	26-Aug-03	1040	7033.21	7036.11	TOC	5.75	2.90	2.85	5.75	7030.36	
DPBN-2A #3	26-Aug-03	1039	7033.21	7036.11	TOC	5.74	2.90	2.84	5.74	7030.37	
DPBN-2B #1	26-Aug-03	NM	7032.02	7035.02	TOC	NM	3.00	NM	NM	NM	Bromide probe in well.
DPBN-2B #2	26-Aug-03	1000	7032.02	7035.02	TOC	4.80	3.00	1.80	4.80	7030.22	
DPBN-2B #3	26-Aug-03	959	7032.02	7035.02	TOC	4.79	3.00	1.79	4.79	7030.23	
DPBN-2C #1	26-Aug-03	NM	7032.98	7035.86	TOC	NM	2.88	NM	NM	NM	Bromide probe in well.
DPBN-2C #2	26-Aug-03	958	7032.98	7035.86	TOC	5.88	2.88	3.00	5.88	7029.98	
DPBN-2C #3	26-Aug-03	957	7032.98	7035.86	TOC	5.87	2.88	2.99	5.87	7029.99	
DPBN-3A #1	26-Aug-03	1035	7032.96	7035.96	TOC	6.45	3.00	3.45	6.45	7029.51	
DPBN-3A #2	26-Aug-03	NM	7032.96	7035.96	TOC	NM	3.00	NM	NM	NM	Bromide probe in well.
DPBN-3A #3	26-Aug-03	1035	7032.96	7035.96	TOC	6.44	3.00	3.44	6.44	7029.52	
DPBN-3B #1	26-Aug-03	NM	7031.88	7034.82	TOC	NM	2.94	NM	NM	NM	Bromide probe in well.
DPBN-3B #2	26-Aug-03	1036	7031.88	7034.82	TOC	5.50	2.94	2.56	5.50	7029.32	
DPBN-3B #3	26-Aug-03	1036	7031.88	7034.82	TOC	5.49	2.94	2.55	5.49	7029.33	
DPBN-3C #1	26-Aug-03	1001	7031.96	7034.76	TOC	5.44	2.80	2.64	5.44	7029.32	
DPBN-3C #2	26-Aug-03	NM	7031.96	7034.76	TOC	NM	2.80	NM	NM	NM	Bromide probe in well.
DPBN-3C #3	26-Aug-03	1000	7031.96	7034.76	TOC	5.05	2.80	2.25	5.05	7029.71	
DPW-3.2N	26-Aug-03	1002	7034.53	7037.57	TOC	8.51	3.04	5.47	8.51	7029.06	
DPW-3.5N	26-Aug-03	NM	7031.44	7034.39	TOC	NM	2.95	NM	NM	NM	DMLS in well.
DPW-3.5S	26-Aug-03	1035	7032.40	7035.40	TOC	6.45	3.00	3.45	6.45	7028.95	
DPBN-4A #1	26-Aug-03	1035	7031.93	7034.47	TOC	5.61	2.54	3.07	5.61	7028.86	
DPBN-4A #2	26-Aug-03	1034	7031.93	7034.47	TOC	5.61	2.54	3.07	5.61	7028.86	
DPBN-4A #3	26-Aug-03	1033	7031.93	7034.47	TOC	5.63	2.54	3.09	5.63	7028.84	
DPBN-4B #1	26-Aug-03	1003	7031.53	7034.34	TOC	5.78	2.81	2.97	5.78	7028.56	
DPBN-4B #2	26-Aug-03	1002	7031.53	7034.34	TOC	5.78	2.81	2.97	5.78	7028.56	
DPBN-4B #3	26-Aug-03	1002	7031.53	7034.34	TOC	5.78	2.81	2.97	5.78	7028.56	
DPBN-4C #1	26-Aug-03	1005	7032.79	7035.29	TOC	6.91	2.50	4.41	6.91	7028.38	
DPBN-4C #2	26-Aug-03	1005	7032.79	7035.28	TOC	6.90	2.49	4.41	6.90	7028.38	
DPBN-4C #3	26-Aug-03	1004	7032.79	7035.28	TOC	6.89	2.49	4.40	6.89	7028.39	
DPW-4.6N	26-Aug-03	1005	7032.55	7035.60	TOC	7.40	3.05	4.35	7.40	7028.20	
DPPN-4.5N #1	26-Aug-03	NM	7031.65	7034.65	TOC	NM	3.00	NM	NM	NM	Transducer in well.
DPPN-4.5N #2	26-Aug-03	NM	7031.92	7034.92	TOC	NM	3.00	NM	NM	NM	Transducer in well.
DPPN-4.5N #3	26-Aug-03	NM	7031.82	7034.82	TOC	NM	3.00	NM	NM	NM	Transducer in well.
DPW-4.4N	26-Aug-03	NM	7031.09	7034.03	TOC	NM	2.94	NM	NM	NM	DMLS in well.
DPW-4.9S	26-Aug-03	1033	7030.93	7033.78	TOC	5.92	2.85	3.07	5.92	7027.86	
DPBN-5A #1	26-Aug-03	1032	7030.29	7032.41	TOC	4.59	2.12	2.47	4.59	7027.82	
DPBN-5A #2	26-Aug-03	1032	7030.29	7032.41	TOC	4.56	2.12	2.44	4.56	7027.85	
DPBN-5A #3	26-Aug-03	1032	7030.29	7032.41	TOC	4.54	2.12	2.42	4.54	7027.87	
DPBN-5B #1	26-Aug-03	1007	7031.05	7033.62	TOC	5.70	2.57	3.13	5.70	7027.92	
DPBN-5B #2	26-Aug-03	1007	7031.05	7033.62	TOC	5.41	2.57	2.84	5.41	7028.21	
DPBN-5B #3	26-Aug-03	1006	7031.05	7033.62	TOC	5.41	2.57	2.84	5.41	7028.21	
DPBN-5C #1	26-Aug-03	1006	7031.36	7034.30	TOC	6.49	2.94	3.55	6.49	7027.81	
DPBN-5C #2	26-Aug-03	1005	7031.36	7034.30	TOC	6.47	2.94	3.53	6.47	7027.83	
DPBN-5C #3	26-Aug-03	1005	7031.36	7034.30	TOC	6.46	2.94	3.52	6.46	7027.84	
DPW-5.8N	26-Aug-03	1013	7032.32	7035.39	TOC	8.15	3.07	5.08	8.15	7027.24	
DPW-5.7N	26-Aug-03	NM	7031.02	7033.93	TOC	NM	2.91	NM	NM	NM	DMLS in well.
DPPN-5.7 #1	26-Aug-03	1017	7029.72	7032.72	TOC	5.69	3.00	2.69	5.69	7027.03	
DPPN-5.7 #2	26-Aug-03	1017	7029.54	7032.54	TOC	5.69	3.00	2.69	5.69	7026.85	
DPPN-5.7 #3	26-Aug-03	1016	7029.50	7032.50	TOC	5.56	3.00	2.56	5.56	7026.94	
DPBN-6A #1	26-Aug-03	1029	7030.73	7032.97	TOC	6.19	2.24	3.95	6.19	7026.78	
DPBN-6A #2	26-Aug-03	1029	7030.73	7032.93	TOC	6.14	2.20	3.94	6.14	7026.79	
DPBN-6A #3	26-Aug-03	1028	7030.73	7032.98	TOC	6.20	2.25	3.95	6.20	7026.78	
DPBN-6B #1	26-Aug-03	1017	7028.88	7031.71	TOC	4.72	2.83	1.89	4.72	7026.99	
DPBN-6B #2	26-Aug-03	1016	7028.88	7031.70	TOC	4.65	2.82	1.83	4.65	7027.05	
DPBN-6B #3	26-Aug-03	1015	7028.88	7031.70	TOC	4.65	2.82	1.83	4.65	7027.05	
DPBN-6C #1	26-Aug-03	1015	7029.83	7032.71	TOC	5.80	2.88	2.92	5.80	7026.91	

Los Alamos Environmental Restoration Project

WATER-LEVEL ELEVATION DATA SHEET

Date: 8/26/2003 **Technical Area: 21**

ER SOP-07.02, R1
Field Unit: Canyons Focus Area

Measured by (print name) Shannon Purdue **Signature:**

LOCATION	LOG		ELEVATION[1] (ft)		TAPE READING				DEPTH TO WATER (ft)	ELEVATION GROUNDWATER (ft)	Comments
	Date	Time	GL Datum	(TOC)[2]	Meas. Pt.	Water Level (ft)	TOC to Ground Surface	DTW BGS (ft)			
DPBN-6C #2	26-Aug-03	1015	7029.83	7032.71	TOC	5.80	2.88	2.92	5.80	7026.91	
DPBN-6C #3	26-Aug-03	1015	7029.83	7032.71	TOC	5.80	2.88	2.92	5.80	7026.91	
DPBN-6D #1	26-Aug-03	1015	7030.42	7033.27	TOC	6.78	2.85	3.93	6.78	7026.49	
DPBN-6D #2	26-Aug-03	1014	7030.42	7033.27	TOC	6.30	2.85	3.45	6.30	7026.97	
DPBN-6D #3	26-Aug-03	1014	7030.42	7033.27	TOC	6.30	2.85	3.45	6.30	7026.97	
DPW-6.2S	26-Aug-03	1028	7028.90	7032.40	TOC	5.78	3.50	2.28	5.78	7026.62	
DPW-6.5N	26-Aug-03	1018	7030.20	7033.20	TOC	7.41	3.00	4.41	7.41	7025.79	
DPBN-7A #1	26-Aug-03	1027	7028.64	7031.31	TOC	6.21	2.67	3.54	6.21	7025.10	
DPBN-7A #2	26-Aug-03	NM	7028.64	7031.31	TOC	NM	2.67	NM	NM	NM	Bromide probe in well.
DPBN-7A #3	26-Aug-03	1027	7028.64	7031.31	TOC	6.21	2.67	3.54	6.21	7025.10	
DPBN-7B #1	26-Aug-03	1021	7027.37	7030.27	TOC	4.64	2.90	1.74	4.64	7025.63	
DPBN-7B #2	26-Aug-03	NM	7027.37	7030.27	TOC	NM	2.90	NM	NM	NM	Bromide probe in well.
DPBN-7B #3	26-Aug-03	1021	7027.37	7030.27	TOC	4.64	2.90	1.74	4.64	7025.63	
DPBN-7C #1	26-Aug-03	1020	7028.00	7030.85	TOC	5.21	2.85	2.36	5.21	7025.64	
DPBN-7C #2	26-Aug-03	1020	7028.00	7030.84	TOC	5.21	2.84	2.37	5.21	7025.63	
DPBN-7C #3	26-Aug-03	1019	7028.00	7030.83	TOC	5.20	2.83	2.37	5.20	7025.63	
DPW-7.1S	26-Aug-03	NM	7028.76	7031.67	TOC	NM	2.91	NM	NM	NM	Transducer in well.
DPW-7.4N	26-Aug-03	1022	7028.10	7031.06	TOC	7.17	2.96	4.21	7.17	7023.89	
DPW-7.5S	26-Aug-03	1026	7027.50	7030.60	TOC	7.66	3.10	4.56	7.66	7022.94	
DPPN-7.7 #1	26-Aug-03	NM	7024.49	7027.48	TOC	NM	2.99	NM	NM	NM	Transducer in well.
DPPN-7.7 #2	26-Aug-03	NM	7024.47	7027.47	TOC	NM	3.00	NM	NM	NM	Transducer in well.
DPPN-7.7 #3	26-Aug-03	NM	7024.56	7027.34	TOC	NM	2.78	NM	NM	NM	Transducer in well.
DPW-7.9S	26-Aug-03	NM	7025.22	7028.26	TOC	NM	3.04	NM	NM	NM	DMLS in well.
DPBN-8A #1	26-Aug-03	1026	7025.06	7027.57	TOC	6.55	2.51	4.04	6.55	7021.02	
DPBN-8A #2	26-Aug-03	1025	7025.06	7027.57	TOC	6.55	2.51	4.04	6.55	7021.02	
DPBN-8A #3	26-Aug-03	1025	7025.06	7027.57	TOC	6.56	2.51	4.05	6.56	7021.01	
DPBN-8B #1	26-Aug-03	1024	7024.34	7026.57	TOC	5.58	2.23	3.35	5.58	7020.99	
DPBN-8B #2	26-Aug-03	1024	7024.34	7026.57	TOC	5.59	2.23	3.36	5.59	7020.98	
DPBN-8B #3	26-Aug-03	1023	7024.34	7026.57	TOC	5.60	2.23	3.37	5.60	7020.97	
LAUZ-2	26-Aug-03	1024	NA	NA	TOC	6.11	NA	NA	6.11	NA	

Measurement Method and Probe Type: Solinst water depth indicator, Ser. No. 18528
Comments:

[1] Use the appropriate measuring point
[2] TOC is Top of Casing
[3] NAPL (Non Aqueous Phase Liquid). If NAPL is encountered, the groundwater level must be corrected.

11/11/02

Water Level Form

0.041 1"
0.163 2"

Location DP Canyon
Project Phase Implementation of Br Tracer

Measured TD today

Well ID	Date	Time	Depth to Water (0.1 ft)	Total Depth (0.1 ft)	Well Diameter (0.1 ft)	3-Casing Volumes (gal)	Well Type
LAUZ-1	11/11/02	9:03	4.73		1" ~~0.75~~ 0.33		WQ well
DPW-1S	11/11/02	9:03	5.24	~~98~~ 8.53	2" 0.17	0.14	MLS well
DPBN-1A-~~a~~1		9:10	4.92	8.83	1" 0.08	0.48	Br nest
DPBN-1A-~~b~~2		9:11	4.99	7.81	1" 0.08	0.35	Br nest
DPBN-1A-~~c~~3		9:12	5.00	6.81	1" 0.08	0.22	Br nest
DPBN-1B-~~a~~1		9:067	5.36	8.60	1" 0.08	0.40	Br nest
DPBN-1B-~~b~~2		9:09	5.37	7.48	1" 0.08	0.26	Br nest
DPBN-1B-~~c~~3		9:06	5.36	6.36	1" 0.08	0.12	Br nest
DPBN-1C-a		1121	5.34	8.86	1" 0.08	0.43	Br nest
DPBN-1C-b		1122	5.34	7.64	1" 0.08	0.28	Br nest
DPBN-1C-c		1123	5.34	6.72	1" 0.08	0.17	Br nest
DPW-~~1N~~1.1N		1124	6.95	10.98	2" 0.17	1.97	Lateral Sat
DPW-1~~1~~N		1125	7.83	8.74	2" 0.17	0.44	Lateral Sat
DPPN-1.1-~~A~~1		9:15	5.31	9.14	2" 0.17	1.87	Z-Gradient
DPPN-1.1-~~B~~2		9:16	5.30	7.80	2" 0.17	1.22	Z-Gradient
DPPN-1.1-~~C~~3		9:17	5.29	6.30	2" 0.17	~~3.16~~ 0.49	Z-Gradient
DPBN-2A-a		9:18	6.13	8.42	1" 0.08		Br nest
DPBN-2A-b		9:19	6.14	7.40	1" 0.08		Br nest
DPBN-2A-c		9:20	6.12	6.42	1" 0.08		Br nest
DPBN-2B-a		1114	5.05	8.55	1" 0.08		Br nest
DPBN-2B-b		1115	5.12	7.31	1" 0.08		Br nest
DPBN-2B-c		1116	5.12	5.73	1" 0.08		Br nest
DPBN-2C-a		1118	6.24	11.36	1" 0.08		Br nest
DPBN-2C-b		1119	6.24	~~11.69~~ 9.61	1" 0.08		Br nest
DPBN-2C-c		1120	6.23	8.99	1" 0.08		Br nest
DPBN-3A-a		9:21	6.66	10.06	1" 0.08		Br nest
DPBN-3A-b		9:22	6.66	9.26	1" 0.08		Br nest
DPBN-3A-c		9:23	6.58	7.84	1" 0.08		Br nest
DPBN-3B-a		9:26	5.69	7.94	1" 0.08		Br nest
DPBN-3B-b		9:27	5.72	7.00	1" 0.08		Br nest
DPBN-3B-c		9:28	5.71	6.16	1" 0.08		Br nest
DPBN-3C-a		1109	5.69	9.49	1" 0.08		Br nest
DPBN-3C-b		1110	5.65	8.72	1" 0.08		Br nest

DPBN-1C A – 0.6 gallons pH

11/11/02

Well ID	Date	Time	Depth to Water (0.1 ft)	Total Depth (0.1 ft)	Well Diameter (0.1 ft)	3-Casing Volumes (gal)	Well Type
DPBN-3C-c	11/11/02	1111	5.31	7.38	1" 0.08		Br nest
DPW-3.2N	11/11/02	1112	7.81	12.07	2" 0.17		Lateral Sat
DPW-3.5N	11/11/02	1107	5.83	10.13	2" 0.17		MLS well
DPW-3.5S	11/11/02	0930	6.71	12.17	2" 0.17		Lateral Sat
DPBN-4A-a1		0932	6.28	9.60	1" 0.08		Br nest
DPBN-4A-b2		0933	5.71	8.50	1" 0.08		Br nest
DPBN-4A-c3		0934	5.77	7.34	1" 0.08		Br nest
DPBN-4B-a1		1100	5.95	10.11	1" 0.08		Br nest
DPBN-4B-b2		1101	5.94	9.00	1" 0.08		Br nest
DPBN-4B-c3		1102	5.94	7.76	1" 0.08		Br nest
DPBN-4C-a1		1105	7.06	11.05	1" 0.08		Br nest
DPBN-4C-b2		1106	7.04	10.06	1" 0.08		Br nest
DPBN-4C-c3		1107	7.04	9.04	1" 0.08		Br nest
DPW-4.6N		↓	↓	↓	↓		Lateral Sat
DPPN-4.5N-a1		1054	6.70	11.91	2" 0.17		Z-Gradient
DPPN-4.5N-b2		1055	6.69	10.78	2" 0.17		Z-Gradient
DPPN-4.5N-c3		1056	6.63	7.67	2" 0.17		Z-Gradient
~~DPPN-4.4N~~		1057	7.55	11.23	2" 0.17		MLS well
DPBN-5A-a		0938	4.89	8.31	1" 0.08		Br nest
DPBN-5A-b		0938	4.71	7.51	1" 0.08		Br nest
DPBN-5A-c		0940	4.68	6.88	1" 0.08		Br nest
DPBN-5B-a		1047	5.81	11.26	1" 0.08		Br nest
DPBN-5B-b		1048	5.82	9.56	1" 0.08		Br nest
DPBN-5B-c		1049	5.82	7.76	1" 0.08		Br nest
DPBN-5C-a		1050	6.62	11.76	1" 0.08		Br nest
DPBN-5C-b		1051	6.62	11.29	1" 0.08		Br nest
DPBN-5C-c		1052	6.52	8.94	1" 0.08		Br nest
DPW-5.8N		1036	8.32	11.96	2" 0.17		Lateral Sat
DPW-5.7N		1035	6.71	10.68	2" 0.17		MLS well
DPPN-5.7-a					~~1" 0.08~~		Z-Gradient
DPPN-5.7-b					~~1" 0.08~~		Z-Gradient
DPPN-5.7-c					~~1" 0.08~~		Z-Gradient
DPBN-6A-a		0944	6.42	10.28	1" 0.08		Br nest
DPBN-6A-b		0946	6.34	9.01	1" 0.08		Br nest
DPBN-6A-c		0946	6.40	7.65	1" 0.08		Br nest
DPBN-6B-a		1023	5.96	9.23	1" 0.08		Br nest
DPBN-6B-b		1024	4.85	8.38	1" 0.08		Br nest
DPBN-6B-c		1025	4.86	6.96	1" 0.08		Br nest
DPBN-6C-a		1026	6.02	11.56	1" 0.08		Br nest
DPBN-6C-b		1027	6.02	10.08	1" 0.08		Br nest
DPW-4.9S		0937	6.08	8.86	2" 0.17		
DPW-4.4N		1059	5.94	11.20	2" 0.17		

DPW-4.6N

11/18/02

Water Level Form

Location DP Canyon
Project Phase Implementation of Br Tracer

Well ID	Date	Time	Depth to Water (0.1 ft)	Total Depth (0.1 ft)	Well Diameter (0.1 ft)	3-Casing Volumes (gal)	Well Type
LAUZ-1	11/18/02	920	5.04	NA			WQ well
DPW-1S		921	5.52				MLS well
DPBN-1A-a1		924	5.17				Br nest
DPBN-1A-b2		925	5.19				Br nest
DPBN-1A-c3		925	5.21				Br nest
DPBN-1B-a1		926	5.66				Br nest
DPBN-1B-b2		926	5.64				Br nest
DPBN-1B-c3		927	5.63				Br nest
DPBN-1C-a1		929	5.60				Br nest
DPBN-1C-b2		929	5.59				Br nest
DPBN-1C-c3		930	5.60				Br nest
DPW-1N		932	8.00				Lateral Sat
DPW-1.1N		930	7.16				Lateral Sat
DPPN-1.1-A1		927	5.55	11/18/02			Z-Gradient
DPPN-1.1-B2		928	5.58				Z-Gradient
DPPN-1.1-C3		928	5.60				Z-Gradient
DPBN-2A-a1		935	6.30				Br nest
DPBN-2A-b2		936	6.30				Br nest
DPBN-2A-c3		936	6.30				Br nest
DPBN-2B-a1		934	5.28				Br nest
DPBN-2B-b2		935	5.29				Br nest
DPBN-2B-c3		935	5.30				Br nest
DPBN-2C-a1		932	6.43				Br nest
DPBN-2C-b2		933	6.43				Br nest
DPBN-2C-c3		934	6.41				Br nest
DPBN-3A-a1		936	6.83				Br nest
DPBN-3A-b2		936	6.82				Br nest
DPBN-3A-c3		937	6.82				Br nest
DPBN-3B-a1		938	5.86				Br nest
DPBN-3B-b2		938	5.86				Br nest
DPBN-3B-c3		939	5.87				Br nest
DPBN-3C-a1		940	5.89				Br nest
DPBN-3C-b2		940	5.42				Br nest

11/18/02

Well ID	Date	Time	Depth to Water (0.1 ft)	Total Depth (0.1 ft)	Well Diameter (0.1 ft)	3-Casing Volumes (gal)	Well Type
DPBN-3C-c	11/18/02	940	5.42	NA	NA		Br nest
DPW-3.2N		941	8.98				Lateral Sat
DPW-3.5N		942	5.98				MLS well
DPW-3.5S		943	6.82				Lateral Sat
DPBN-4A-a1		944	5.91				Br nest
DPBN-4A-b2		944	5.90				Br nest
DPBN-4A-c3		945	5.91				Br nest
DPBN-4B-a1		945	6.04				Br nest
DPBN-4B-b2		946	6.05				Br nest
DPBN-4B-c3		946	6.04				Br nest
DPBN-4C-a1		947	7.19				Br nest
DPBN-4C-b2		947	7.17				Br nest
DPBN-4C-c3		948	7.17				Br nest
DPW-4.6N		949	7.65				Lateral Sat
DPPN-4.5N-a1		950	6.76				Z-Gradient
DPPN-4.5N-b2		950	6.74				Z-Gradient
DPPN-4.5N-c3		950	6.70				Z-Gradient
DPW ~~DPPN~~-4.4N		948	6.01				MLS well
DPBN-5A-a1		952	4.81				Br nest
DPBN-5A-b2		952	4.77				Br nest
DPBN-5A-c3		952	4.75				Br nest
DPBN-5B-a1		953	5.88				Br nest
DPBN-5B-b2		953	5.88				Br nest
DPBN-5B-c3		954	5.89				Br nest
DPBN-5C-a1		955	6.68				Br nest
DPBN-5C-b2		955	6.67				Br nest
DPBN-5C-c3		956	6.62				Br nest
DPW-5.8N		958	8.39				Lateral Sat
DPW-5.7N		959	6.78				MLS well
DPPN-5.7-a1		1000	5.91				Z-Gradient
DPPN-5.7-b2		1000	5.91				Z-Gradient
DPPN-5.7-c3		1000	5.82				Z-Gradient
DPBN-6A-a1		1006	6.46				Br nest
DPBN-6A-b2		1006	6.42				Br nest
DPBN-6A-c3		1007	6.46				Br nest
DPBN-6B-a1		1005	5.26				Br nest
DPBN-6B-b2		1005	4.97				Br nest
DPBN-6B-c3		1005	4.96				Br nest
DPBN-6C-a1		1003	6.09				Br nest
DPBN-6C-b2		1003	6.08				Br nest

DPW 4.95 11/18/02 951 6.15

11/11/02

Well ID	Date	Time	Depth to Water (0.1 ft)	Total Depth (0.1 ft)	Well Diameter (0.1 ft)	3-Casing Volumes (gal)	Well Type
DPBN-6C-c	11/11/02	1028	6.03	7.69	1" 0.08		Br nest
DPBN-6D-a		1029	6.95	11.10	1" 0.08		Br nest
DPBN-6D-b		1030	6.64	9.11	1" 0.08		Br nest
DPBN-6D-c		1031	6.67	7.10	1" 0.08		Br nest
DPW-6.2S ~~1~~ Ø		0948	5.99	8.56	2" 0.17		Lateral Sat
DPW6.5N		1022	7.65	10.09	2" 0.17		Lateral Sat
DPPN-6.5S-~~a~~1		1032	5.84	9.07	2" 0.17		Z-Gradient
DPPN-6.5S-~~b~~2		1033	5.80	8.63	2" 0.17		Z-Gradient
DPPN-6.5S-~~c~~3		1034	5.75	6.07	2" 0.17		Z-Gradient
DPBN-7A-a		0951	6.33	10.83	1" 0.08		Br nest
DPBN-7A-b		0953	6.38	9.11	1" 0.08		Br nest
DPBN-7A-c		0954	6.36	7.32	1" 0.08		Br nest
DPBN-7B-a		1015	4.71	9.67	1" 0.08		Br nest
DPBN-7B-b		1016	4.73	8.73	1" 0.08		Br nest
DPBN-7B-c		1017	4.74	6.64	1" 0.08		Br nest
DPBN-7C-a		1019	5.31	10.29	1" 0.08		Br nest
DPBN-7C-b		1020	5.31	9.32	1" 0.08		Br nest
DPBN-7C-c		1021	5.33	7.83	1" 0.08		Br nest
DPW-7.1S		0956	6.45	10.86	2" 0.17		MLS well
DPW-7.4N		1014	7.35	9.29	2" 0.17		Lateral Sat
DPW-7.5S		0958	8.00	12.01	2" 0.17		Lateral Sat
DPPN ~~DPW~~-7.7-~~a~~ 1		1000	8.77	10.46	2" 0.17		Z-Gradient
~~DPW~~-7.7-~~b~~ 2		1000	5.08	8.71	2" 0.17		Z-Gradient
~~DPW~~-7.7-~~c~~ 3		1001	4.92	7.18	2" 0.17		Z-Gradient
DPW-7.9S		1006	6.96	10.76	2" 0.17		MLS well
DPBN-8A-a		1002	6.60	9.23	1" 0.08		Br nest
DPBN-8A-b		1003	6.59	8.72	1" 0.08		Br nest
DPBN-8A-c		1004	6.60	8.04	1" 0.08		Br nest
DPBN-8B-a		1007	5.51	8.46	1" 0.08		Br nest
DPBN-8B-b		1008	5.50	7.92	1" 0.08		Br nest
DPBN-8B-c		1009	5.49	7.37	1" 0.08		Br nest
LAUZ-2		1010	5.80	NA	4" 0.33		WQ well

11/18/02

Well ID	Date	Time	Depth to Water (0.1 ft)	Total Depth (0.1 ft)	Well Diameter (0.1 ft)	3-Casing Volumes (gal)	Well Type
DPBN-6C-c	11/19/02	1004	6.10	NM			Br nest
DPBN-6D-a1		1001	7.21				Br nest
DPBN-6D-b2		1001	6.79				Br nest
DPBN-6D-c3		1002	6.80				Br nest
DPW-6.2S		1007	6.05				Lateral Sat
DPW6.5N		1008	7.55				Lateral Sat
DPPN-6.5S-a							Z-Gradient
DPPN-6.5S-b							Z-Gradient
DPPN-6.5S-c							Z-Gradient
DPBN-7A-a1		1012	6.46				Br nest
DPBN-7A-b2		1013	6.47				Br nest
DPBN-7A-c3		1013	6.47				Br nest
DPBN-7B-a1		1010	4.77				Br nest
DPBN-7B-b2		1011	4.78				Br nest
DPBN-7B-c3		1011	4.81				Br nest
DPBN-7C-a1		1009	5.43				Br nest
DPBN-7C-b2		1009	5.43				Br nest
DPBN-7C-c3		1010	5.41				Br nest
DPW-7.1S		1014	6.67				MLS well
DPW-7.4N		1016	7.58				Lateral Sat
DPW-7.5S		1015	7.89				Lateral Sat
DPPN ~~DPW~~-7.7-a1		1017	10.12				Z-Gradient
DPPN ~~DPW~~-7.7-b2		1018	5.40				Z-Gradient
DPPN ~~DPW~~-7.7-c3		1019	5.20				Z-Gradient
DPW-7.9S		1020	7.13				MLS well
DPBN-8A-a1		1020	6.73				Br nest
DPBN-8A-b2		1021	6.73				Br nest
DPBN-8A-c3		1021	6.73				Br nest
DPBN-8B-a1		1022	5.54				Br nest
DPBN-8B-b2		1022	5.54				Br nest
DPBN-8B-c3		1023	5.56				Br nest
LAUZ-2		1024	5.87				WQ well

11/25/02

125 3 30 gal
1 55 gal
180 in (4) 55 gal drums
80 gallons in 2 55 gal. drums

Water Level Form

Location DP Canyon
Project Phase Implementation of Br Tracer

Well ID	Date	Time	Depth to Water (0.1 ft)	~~Total Depth (0.1 ft)~~ time	~~Well Diameter (0.1 ft)~~ D.O.	3-Casing Volumes (gal)	Well Type
LAUZ-1	11/25/02	836	5.35				WQ well
DPW-1S	Has	sampler					MLS well
DPBN-1A-a1		839	5.46	~~1025~~ 1027	~~0.95~~ 1.32		Br nest
DPBN-1A-b2		839	5.46	1026	1.22		Br nest
DPBN-1A-e3		840	5.49	1025	0.95		Br nest
DPBN-1B-a1		841	5.92	1031	0.65		Br nest
DPBN-1B-b2		841	5.92	1030	0.72		Br nest
DPBN-1B-e3		842	5.91	1029	1.39		Br nest
DPBN-1C-a1		941	~~7.58~~ 5.85	1124	0.72		Br nest
DPBN-1C-b2		942	5.85	1223	2.23		Br nest
DPBN-1C-e3		943	5.84	1222	2.52		Br nest
DPW-1N		939	8.23	1218	3.41		Lateral Sat
DPW-1.1N		940	7.38	1219	0.33		Lateral Sat
DPPN-1.1-A1	843	5.87	→	1032	1.77		Z-Gradient
DPPN-1.1-B2		843	5.84	1034	1.16		Z-Gradient
DPPN-1.1-E3		844	5.81	1035	2.25		Z-Gradient
DPBN-2A-a1		844	6.51	1037	0.71		Br nest
DPBN-2A-b2		845	6.51	1036	2.18		Br nest
DPBN-2A-e3		845	dry	1035	dry		Br nest
DPBN-2B-a1		936	5.48	1216	0.50		Br nest
DPBN-2B-b2		936	5.49	1215	0.45		Br nest
DPBN-2B-e3		937	5.49	1214	0.82		Br nest
DPBN-2C-a1		938	6.63	1212	0.50		Br nest
DPBN-2C-b2		938	6.63	1211	1.85		Br nest
DPBN-2C-e3		939	6.62	1210	2.43		Br nest
DPBN-3A-a1		846	6.99	1041	2.33		Br nest
DPBN-3A-b2		846	7.00	1040	2.35		Br nest
DPBN-3A-e3		847	6.98	1039	2.40		Br nest
DPBN-3B-a1		847	6.02	1044	0.98		Br nest
DPBN-3B-b2		847	6.03	1043	1.32		Br nest
DPBN-3B-e3		848	6.03	1042	3.24		Br nest
DPBN-3C-a1		935	6.03	1209	1.81		Br nest
DPBN-3C-b2		935	5.61	1208	1.98		Br nest

11/25/02

Well ID	Date	Time	Depth to Water (0.1 ft)	~~Total Depth (0.1 ft)~~ Time	~~Well Diameter (0.1 ft)~~ D.O.	3-Casing Volumes (gal)	Well Type
DPBN-3C-c		936	5.60	1206	1.90		Br nest
DPW-3.2N		933	9.14	1205	0.34		Lateral Sat
DPW-3.5N		Sampler					MLS well
DPW-3.5S		848	6.94	1045	2.09		Lateral Sat
DPBN-4A-a1		848	6.~~10~~01	1050	0.92		Br nest
DPBN-4A-b2		849	6.01	1048	0.62		Br nest
DPBN-4A-c3		849	6.02	1047	0.87		Br nest
DPBN-4B-a1		932	6.15	1204	0.48		Br nest
DPBN-4B-b2		932	6.15	1203	0.60		Br nest
DPBN-4B-c3		933	6.15	1202	0.51		Br nest
DPBN-4C-a1		930	7.30	1200	1.72		Br nest
DPBN-4C-b2		930	7.28	1200	0.63		Br nest
DPBN-4C-c3		931	7.28	1159	0.78		Br nest
DPW-4.6N		929	7.77	1155	4.23		Lateral Sat
DPPN-4.5N-a1		928	6.86	1159	2.19		Z-Gradient
DPPN-4.5N-b2		928	6.85	1158	1.95		Z-Gradient
DPPN-4.5N-c3		929	6.80	1157	1.98		Z-Gradient
DPW ~~DPPN~~-4.4N		Sampler					MLS well
DPBN-5A-a1		850	4.91	1054	0.78		Br nest
DPBN-5A-b2		850	4.87	1053	0.95		Br nest
DPBN-5A-c3		851	4.84	1052	2.12		Br nest
DPBN-5B-a1		926	6.01	1155	0.52		Br nest
DPBN-5B-b2		927	6.01	1155	0.49		Br nest
DPBN-5B-c3		927	6.00	1154	0.87		Br nest
DPBN-5C-a1		924	6.80	1148	1.01		Br nest
DPBN-5C-b2		925	6.79	1147	4.93		Br nest
DPBN-5C-c3		925	6.77	1146	3.74		Br nest
DPW-5.8N		923	8.45	1145	3.36		Lateral Sat
DPW-5.7N		Sampler					MLS well
DPPN-5.7-a1		921	6.03	1143	1.82		Z-Gradient
DPPN-5.7-b2		921	6.03	1142	0.56		Z-Gradient
DPPN-5.7-c3		922	5.94	1141	5.93 - dry?		Z-Gradient
DPBN-6A-a1		854	6.58	1058	0.70		Br nest
DPBN-6A-b2		854	6.52	1057	0.58		Br nest
DPBN-6A-c3		855	6.57	1056	1.08		Br nest
DPBN-6B-a		920	5.15	1139	0.41		Br nest
DPBN-6B-b		920	5.11	1138	0.35		Br nest
DPBN-6B-c		921	5.08	1137	0.39		Br nest
DPBN-6C-a1		919	6.19	1136	~~0.3~~ 0.27		Br nest
DPBN-6C-b2		919	6.19	1135	0.70		Br nest
DPW 4.95		851	6.23	1051	1.91		

11/25/02

Well ID	Date	Time	Depth to Water (0.1 ft)	Total Depth (0.1 ft)	Well Diameter (0.1 ft)	3-Casing Volumes (gal)	Well Type
DPBN-6C-~~c~~3		919	6.20	1133	0.72		Br nest
DPBN-6D-~~a~~1		918	7.58	1132	0.40		Br nest
DPBN-6D-~~b~~2		918	7.67	1131 1141a	0.53		Br nest
DPBN-6D-~~c~~3		919	~~7.58~~ dry	dry	dry		Br nest
DPW-6.2S		856	6.16	1101	2.46		Lateral Sat
DPW6.5N		915	7.53	1129	0.46		Lateral Sat
~~DPPN-6.5S-a~~							Z-Gradient
~~DPPN-6.5S-b~~							Z-Gradient
~~DPPN-6.5S-c~~							Z-Gradient
DPBN-7A-~~a~~1		858	6.58	1105	0.52		Br nest
DPBN-7A-~~b~~2		858	6.58	1104	0.63		Br nest
DPBN-7A-~~c~~3		859	6.58	1103	0.73		Br nest
DPBN-7B-~~a~~1		914	4.60	1128	0.33		Br nest
DPBN-7B-~~b~~2		914	4.91	1127	0.40		Br nest
DPBN-7B-~~c~~3		915	4.92	1126	0.55		Br nest
DPBN-7C-~~a~~1		912	5.51	1125	0.47		Br nest
DPBN-7C-~~b~~2		913	5.51	1124	0.44		Br nest
DPBN-7C-~~c~~3		913	5.50	1123	~~0.7~~0.62		Br nest
DPW-7.1S	sampler				8"11/25/02		MLS well
DPW-7.4N		910	7.67	1121	2.05		Lateral Sat
DPW-7.5S		901	7.91	1107	0.70		Lateral Sat
DPPN ~~DPW~~-7.7-~~a~~1		903	10.28	1109	Not enough H2O		Z-Gradient
DPPN ~~DPW~~-7.7-~~b~~2		903	5.51	1110	2.45		Z-Gradient
DPPN ~~DPW~~-7.7-~~c~~3		904	5.29	1111	2.35		Z-Gradient
DPW-7.9S	sampler						MLS well
DPBN-8A-~~a~~1		904	6.80	1114	0.55		Br nest
DPBN-8A-~~b~~2		905	6.80	1113	0.75		Br nest
DPBN-8A-~~c~~3		905	6.80	1112	0.81		Br nest
DPBN-8B-~~a~~1		906	5.55	1118	1.25		Br nest
DPBN-8B-~~b~~2		906	5.55	1117	1.35		Br nest
DPBN-8B-~~c~~3		907	5.55	1116	0.48		Br nest
LAUZ-2		909	5.90				WQ well

DP Canyon Water Level Form

Measurement Date: ~~11/25/02~~ 12/02/02

Well ID	Time	Depth to Water (ft btoc)	Well Type
LAUZ-1	0930	5.67	ER Observation Well
DPW-1S	NA	NA	MLS well
DPBN-1A #1	0932	5.80	Br nest
DPBN-1A #2	0932	5.80	Br nest
DPBN-1A #3	0932	5.83	Br nest
DPBN-1B #1	0933	6.24	Br nest
DPBN-1B #2	0933	6.22	Br nest
DPBN-1B #3	0933	6.22	Br nest
DPBN-1C #1	0935	6.13	Br nest
DPBN-1C #2	0935	6.13	Br nest
DPBN-1C #3	0935	6.13	Br nest
DPW-1N	0937	8.52	Lateral Saturation
DPW-1.1N	0936	7.66	Lateral Saturation
DPPN-1.1 #1	0934	6.18	Z-Gradient Piezometer
DPPN-1.1 #2	0934	6.17	Z-Gradient Piezometer
DPPN-1.1 #3	0934	6.16	Z-Gradient Piezometer
DPBN-2A #1	0940	6.78	Br nest
DPBN-2A #2	0940	6.78	Br nest
DPBN-2A #3	0940	dry	Br nest
DPBN-2B #1	0939	5.74	Br nest
DPBN-2B #2	0939	5.75	Br nest
DPBN-2B #3	0939	dry	Br nest
DPBN-2C #1	0938	6.90	Br nest
DPBN-2C #2	0938	6.90	Br nest
DPBN-2C #3	0938	6.88	Br nest
DPBN-3A #1	0941	7.21	Br nest
DPBN-3A #2	0941	7.23	Br nest
DPBN-3A #3	0941	7.20	Br nest
DPBN-3B #1	0942	6.26	Br nest
DPBN-3B #2	0942	6.30	Br nest
DPBN-3B #3	0942	dry	Br nest
DPBN-3C #1	0943	6.28	Br nest
DPBN-3C #2	0943	5.86	Br nest
DPBN-3C #3	0943	5.86	Br nest
DPW-3.2N	0944	9.35	Lateral Saturation
DPW-3.5N	NA	NA	MLS well
DPW-3.5S	0945	7.17	Lateral Saturation
DPBN-4A #1	0946	6.24	Br nest
DPBN-4A #2	0946	6.22	Br nest
DPBN-4A #3	0946	6.23	Br nest
DPBN-4B #1	0947	6.34	Br nest
DPBN-4B #2	0947	6.34	Br nest
DPBN-4B #3	0947	6.34	Br nest
DPBN-4C #1	0948	7.49	Br nest
DPBN-4C #2	0948	7.48	Br nest
DPBN-4C #3	0948	7.48	Br nest
DPW-4.6N	0949	7.97	Lateral Saturation
DPPN-4.5N #1	0950	7.06	Z-Gradient Piezometer
DPPN-4.5N #2	0950	7.04	Z-Gradient Piezometer
DPPN-4.5N #3	0950	7.01	Z-Gradient Piezometer
DPW-4.4N	NA	NA	MLS well

DP Canyon Water Level Form

Measurement Date: ~~11/25/02~~ 12/02/02 SH 12/2/02

Well ID	Time	Depth to Water (ft btoc)	Well Type
DPW 4.9S	0958	6.72	
DPBN-5A #1	0957	5.08	Br nest
DPBN-5A #2	0957	5.05	Br nest
DPBN-5A #3	0957	5.02	Br nest
DPBN-5B #1	0956	6.19	Br nest
DPBN-5B #2	0956	6.19	Br nest
DPBN-5B #3	0956	6.18	Br nest
DPBN-5C #1	0955	6.97	Br nest
DPBN-5C #2	0955	6.97	Br nest
DPBN-5C #3	0955	6.95	Br nest
DPW-5.8N	0959	8.57	Lateral Saturation
DPW-5.7N	NA	NA	MLS well
DPPN-5.7 #1	1000	6.18	Z-Gradient Piezometer
DPPN-5.7 #2	1000	6.17	Z-Gradient Piezometer
DPPN-5.7 #3	1000	dry	Z-Gradient Piezometer
DPBN-6A #1	1004	6.73	Br nest
DPBN-6A #2	1004	6.69	Br nest
DPBN-6A #3	1004	6.74	Br nest
DPBN-6B #1	1003	5.35	Br nest
DPBN-6B #2	1003	5.21	Br nest
DPBN-6B #3	1003	5.22	Br nest
DPBN-6C #1	1002	6.34	Br nest
DPBN-6C #2	1002	6.33	Br nest
DPBN-6C #3	1002	6.34	Br nest
DPBN-6D #1	1001	6.99	Br nest
DPBN-6D #2	1001	7.32	Br nest
DPBN-6D #3	1001	dry	Br nest
DPW-6.2S	1015	6.30	Lateral Saturation
DPW-6.5N	1016	7.58	Lateral Saturation
DPBN-7A #1	1019	6.65	Br nest
DPBN-7A #2	1019	6.65	Br nest
DPBN-7A #3	1019	6.66	Br nest
DPBN-7B #1	1018	5.01	Br nest
DPBN-7B #2	1018	5.01	Br nest
DPBN-7B #3	1018	5.04	Br nest
DPBN-7C #1	1017	5.63	Br nest
DPBN-7C #2	1017	5.63	Br nest
DPBN-7C #3	1017	5.62	Br nest
DPW-7.1S	NA	NA	MLS well
DPW-7.4N	1032	7.75	Lateral Saturation
DPW-7.5S	1024	7.93	Lateral Saturation
DPW-7.7 #1	1025	10.03	Z-Gradient Piezometer
DPW-7.7 #2	1025	5.56	Z-Gradient Piezometer
DPW-7.7 #3	1025	5.34	Z-Gradient Piezometer
DPW-7.9S	NA	NA	MLS well
DPBN-8A #1	1027	6.82	Br nest
DPBN-8A #2	1027	6.82	Br nest
DPBN-8A #3	1027	6.83	Br nest
DPBN-8B #1	1028	5.58	Br nest
DPBN-8B #2	1028	5.58	Br nest
DPBN-8B #3	1028	5.58	Br nest

DP Canyon Water Level Form

Measurement Date: ~~11/25/02~~ 12/02/02 SP 12/02/02

Well ID	Time	Depth to Water (ft btoc)	Well Type
LAUZ-2	1030	5.91	ER Observation Well

DP Canyon Water Level Form

ɜsurement Date: ~~11/18/02~~ 12/9/02

Well ID	Time	Depth to Water (ft btoc)	Well Type
LAUZ-1	845	4.84	ER Observation Well
DPW-1S	NA	NM	MLS well
DPBN-1A #1	846	5.~~11~~12	Br nest
DPBN-1A #2	846	5.12	Br nest
DPBN-1A #3	846	5.13	Br nest
DPBN-1B #1	848	5.48	Br nest
DPBN-1B #2	848	5.48	Br nest
DPBN-1B #3	848	5.47	Br nest
DPBN-1C #1	957 ~~849~~	~~5.43~~ 5.45	Br nest
DPBN-1C #2	957 ~~849~~	~~5.48~~ 5.46	Br nest
DPBN-1C #3	958	5.45	Br nest
DPW-1N	959	7.89	Lateral Saturation
DPW-1.1N	958	7.01	Lateral Saturation
DPPN-1.1 #1	849	5.43	Z-Gradient Piezometer
DPPN-1.1 #2	849	5.48	Z-Gradient Piezometer
DPPN-1.1 #3	850	5.42	Z-Gradient Piezometer
DPBN-2A #1	852	6.25	Br nest
DPBN-2A #2	852	6.26	Br nest
DPBN-2A #3	853	6.25	Br nest
DPBN-2B #1	954	5.18	Br nest
DPBN-2B #2	955	5.19	Br nest
DPBN-2B #3	955	5.19	Br nest
DPBN-2C #1	953	6.33	Br nest
DPBN-2C #2	954	6.33	Br nest
DPBN-2C #3	954	6.32	Br nest
DPBN-3A #1	900	6.77	Br nest
DPBN-3A #2	900	6.79	Br nest
DPBN-3A #3	901	6.77	Br nest
DPBN-3B #1	902	5.83	Br nest
DPBN-3B #2	902	5.83	Br nest
DPBN-3B #3	903	5.83	Br nest
DPBN-3C #1	950	5.35	Br nest
DPBN-3C #2	950	5.37	Br nest
DPBN-3C #3	951	5.38	Br nest
DPW-3.2N	952	8.94	Lateral Saturation
DPW-3.5N	NA	NM	MLS well
DPW-3.5S	903	6.74	Lateral Saturation
DPBN-4A #1	905	5.83	Br nest
DPBN-4A #2	905	5.82	Br nest
DPBN-4A #3	905	5.94	Br nest
DPBN-4B #1	948	6.~~10~~01	Br nest
DPBN-4B #2	948	6.01	Br nest
DPBN-4B #3	949	6.01	Br nest
DPBN-4C #1	947	7.15	Br nest
DPBN-4C #2	947	7.13	Br nest
DPBN-4C #3	947	7.14	Br nest
DPW-4.6N	946	7.63	Lateral Saturation
DPPN-4.5N #1	945	6.73	Z-Gradient Piezometer
DPPN-4.5N #2	945	6.72	Z-Gradient Piezometer
DPPN-4.5N #3	946	6.68	Z-Gradient Piezometer
DPW-4.4N	NA	NM	MLS well

DP Canyon Water Level Form

12/9/02

asurement Date: ~~11/18/02~~

Well ID	Time	Depth to Water (ft btoc)	Well Type
DPW 4.9S	906	6.11	
DPBN-5A #1	907	4.76	Br nest
DPBN-5A #2	907	4.74	Br nest
DPBN-5A #3	907	4.71	Br nest
DPBN-5B #1	943	5.85	Br nest
DPBN-5B #2	944	5.85	Br nest
DPBN-5B #3	944	5.85	Br nest
DPBN-5C #1	942	6.66	Br nest
DPBN-5C #2	942	6.64	Br nest
DPBN-5C #3	943	6.63	Br nest
DPW-5.8N	941	8.31	Lateral Saturation
DPW-5.7N	NA	NM	MLS well
DPPN-5.7 #1	938	5.87	Z-Gradient Piezometer
DPPN-5.7 #2	938	5.86	Z-Gradient Piezometer
DPPN-5.7 #3	939	5.77	Z-Gradient Piezometer
DPBN-6A #1	909	6.42	Br nest
DPBN-6A #2	909	6.36	Br nest
DPBN-6A #3	~~909~~910	6.41	Br nest
DPBN-6B #1	937	5.08	Br nest
DPBN-6B #2	938	4.90	Br nest
DPBN-6B #3	938	4.91	Br nest
DPBN-6C #1	936	6.05	Br nest
DPBN-6C #2	936	6.05	Br nest
DPBN-6C #3	937	6.06	Br nest
DPBN-6D #1	933	6.71	Br nest
DPBN-6D #2	933	7.06	Br nest
DPBN-6D #3	934	dry	Br nest
DPW-6.2S	911	6.04	Lateral Saturation
DPW-6.5N	932	7.35	Lateral Saturation
DPBN-7A #1	912	6.30	Br nest
DPBN-7A #2	912	6.31	Br nest
DPBN-7A #3	913	6.31	Br nest
DPBN-7B #1	929	4.71	Br nest
DPBN-7B #2	929	4.70	Br nest
DPBN-7B #3	930	4.72	Br nest
DPBN-7C #1	927	5.33	Br nest
DPBN-7C #2	~~927~~	5.33	Br nest
DPBN-7C #3	~~928~~	5.33	Br nest
DPW-7.1S	NA	NM	MLS well
DPW-7.4N	925	7.51	Lateral Saturation
DPW-7.5S	916	7.83	Lateral Saturation
DPPN ~~DPW~~-7.7 #1	918	~~7~~ 9.79	Z-Gradient Piezometer
DPPN ~~DPW~~-7.7 #2	918	5.31	Z-Gradient Piezometer
DPPN ~~DPW~~-7.7 #3	919	5.12	Z-Gradient Piezometer
DPW-7.9S	NA	NM	MLS well
DPBN-8A #1	920	6.67	Br nest
DPBN-8A #2	920	6.67	Br nest
DPBN-8A #3	921	6.67	Br nest
DPBN-8B #1	922	5.52	Br nest
DPBN-8B #2	922	5.51	Br nest
DPBN-8B #3	923	5.59	Br nest

DP Canyon Water Level Form

ısurement Date: ~~11/18/02~~ 12/9/02

Well ID	Time	Depth to Water (ft btoc)	Well Type
LAUZ-2	924	5.82	ER Observation Well

Measurement Date: 12/23/02

Well ID	Time	Dissolved Oxygen (mg/L)	Temperature (C)	Water ~~Col. Height~~ (ft) (ft TOC) level	Time for water level
LAUZ-1				5.48	825
DPW-1S				5.94	826
DPBN-1A #1				5.62	827
DPBN-1A #2				5.63	827
DPBN-1A #3				5.66	828
DPBN-1B #1				6.05	828
DPBN-1B #2				6.05	828
DPBN-1B #3				6.04	829
DPBN-1C #1				5.97	924
DPBN-1C #2				5.97	924
DPBN-1C #3				5.97	925
DPW-1N				8.37	922
DPW-1.1N				7.51	923
DPPN-1.1 #1	NA - Sampler transducer in well				NA
DPPN-1.1 #2	NA Transducer in well				
DPPN-1.1 #3	NA Transducer in well				
DPBN-2A #1				6.62	829
DPBN-2A #2				6.62	829
DPBN-2A #3				dry	830
DPBN-2B #1				5.61	921
DPBN-2B #2				5.60	921
DPBN-2B #3				5.60	922
DPBN-2C #1				6.74	919
DPBN-2C #2				6.74	919
DPBN-2C #3				6.73	920
DPBN-3A #1				7.06	830
DPBN-3A #2				7.07	830
DPBN-3A #3				7.05	831
DPBN-3B #1				6.11	831
DPBN-3B #2				6.12	831
DPBN-3B #3				6.11	832
DPBN-3C #1				6.15	917
DPBN-3C #2				5.71	917
DPBN-3C #3				5.72	918
DPW-3.2N				9.24	916
DPW-3.5N				6.18	915
DPW-3.5S				7.03	833
DPBN-4A #1				6.10	834
DPBN-4A #2				6.09	834
DPBN-4A #3				6.10	835
DPBN-4B #1				6.23	913
DPBN-4B #2				6.23	0913
DPBN-4B #3				6.23	914
DPBN-4C #1				7.40	911
DPBN-4C #2				7.38	911
DPBN-4C #3				7.36	912
DPW-4.6N				7.86	909
DPPN-4.5N #1	transducer				

12/23/02

DPPN-4.5N #2	transducer			—	
DPPN-4.5N #3	transducer			—	
DPW-4.4N				6.20	910
DPW 4.9S				6.32	835
DPBN-5A #1				4.98	836
DPBN-5A #2				4.95	837
DPBN-5A #3				4.93	837
DPBN-5B #1				6.10	907
DPBN-5B #2				6.09	907
DPBN-5B #3				6.08	907
DPBN-5C #1				6.88	906
DPBN-5C #2				6.86	906
DPBN-5C #3				6.85	907
DPW-5.8N				8.45	905
DPW-5.7N				6.94	904
DPPN-5.7 #1				6.12	903
DPPN-5.7 #2				6.11	902
DPPN-5.7 #3				5.98	902
DPBN-6A #1				6.67	838
DPBN-6A #2				6.61	838
DPBN-6A #3				6.66	839
DPBN-6B #1				5.21	901
DPBN-6B #2				5.17	901
DPBN-6B #3				5.17	902
DPBN-6C #1				6.28	859
DPBN-6C #2				6.26	900
DPBN-6C #3				6.28	900
DPBN-6D #1				6.70	856
DPBN-6D #2				6.83	856
DPBN-6D #3				6.84	857
DPW-6.2S				~~6.76~~	840
DPW-6.5N				7.46	855
DPBN-7A #1				6.54	841
DPBN-7A #2				6.55	841
DPBN-7A #3				6.54	842
DPBN-7B #1				4.95	854
DPBN-7B #2				4.96	854
DPBN-7B #3				4.97	855
DPBN-7C #1				5.58	852
DPBN-7C #2				5.58	852
DPBN-7C #3				5.56	853
DPW-7.1S				6.83	842
DPW-7.4N				7.70	851
DPW-7.5S				7.84	843
PPN ~~DPW~~-7.7 #1				8.87	843
PPN ~~DPW~~-7.7 #2				5.55	844
PPN ~~DPW~~-7.7 #3				5.34	844
DPW-7.9S				48 ~~6~~ 7.18	846
DPBN-8A #1				6.80	847
DPBN-8A #2				6.79	847
DPBN-8A #3				6.80	848
DPBN-8B #1				5.54	849

12/23/02

DPBN-8B #2				5.55	849
DPBN-8B #3				5.55	850
LAUZ-2				5.88	851

DP Canyon Dissolved Oxygen and Water Level Field Form

Measurement Date: 1/6/03

Well ID	Time	Dissolved Oxygen (mg/L)	Time	DTW (ft) TOC	Well Type	Temp °C
LAUZ-1	1159	0.81	1044	5.99	ER Observation Well	6.6
DPW-1S	1155	0.34	1045	6.44	MLS well	5.8
DPBN-1A #1	1157	0.39	1046	6.17	Br nest	7.8
DPBN-1A #2	1157	0.45	1046	6.18	Br nest	7.7
DPBN-1A #3	1158	0.23	1046	6.19	Br nest	7.5
DPBN-1B #1	1200	0.47	1047	6.57	Br nest	5.2
DPBN-1B #2	1159	0.35	1047	6.58	Br nest	5.0
DPBN-1B #3	—	—	1047	dry	Br nest	—
DPBN-1C #1	1336	1.70	1130	6.50	Br nest	3.9
DPBN-1C #2	1335	4.20	1130	6.50	Br nest	3.0
DPBN-1C #3	1335	3.81	1130	6.49	Br nest	2.9
DPW-1N	1332	—	~~1128~~ 1129	dry	Lateral Saturation	—
DPW-1.1N	1333	3.87	1129	8.00	Lateral Saturation	6.2
DPPN-1.1 #1	Transducer		—	—	Z-Gradient Piezometer	—
DPPN-1.1 #2	Transducer		—	—	Z-Gradient Piezometer	—
DPPN-1.1 #3	Transducer		—	—	Z-Gradient Piezometer	—
DPBN-2A #1	1203	0.44	1048	7.11	Br nest	7.6
DPBN-2A #2	1202	1.31	1048	7.11	Br nest	6.7
DPBN-2A #3	—	—	1048	dry	Br nest	—
DPBN-2B #1	1329	0.31	1127	6.07	Br nest	4.6
DPBN-2B #2	1328	0.42	1127	6.07	Br nest	3.8
DPBN-2B #3	—	—	1127	dry	Br nest	—
DPBN-2C #1	1332	0.32	1128	7.22	Br nest	5.4
DPBN-2C #2	1331	0.92	1128	7.22	Br nest	3.9
DPBN-2C #3	1329	1.55	1128	7.20	Br nest	3.6
DPBN-3A #1	1206	~~7.22~~ 1.08	1050	7.50	Br nest	~~5.7~~ 6.6
DPBN-3A #2	1205	1.16	1050	7.51	Br nest	6.1
DPBN-3A #3	1205	1.22	1050	7.50	Br nest	5.7
DPBN-3B #1	1207	0.61	1050	6.57	Br nest	4.9
DPBN-3B #2	1206	0.59	1051	6.57	Br nest	4.6
DPBN-3B #3	—	—	1051	dry	Br nest	—
DPBN-3C #1	1327	2.08	1125	6.60	Br nest	4.8
DPBN-3C #2	1326	0.72	1126	6.21	Br nest	4.2
DPBN-3C #3	1322	2.37	1126	6.21	Br nest	3.7
DPW-3.2N	1321	0.35	1125	9.68	Lateral Saturation	8.1
DPW-3.5N	~~1208~~ 1320	0.35	1124	6.58	MLS well	~~6.6~~ 5.1
DPW-3.5S	1208	2.04	1051	7.48	Lateral Saturation	6.6
DPBN-4A #1	1211	0.32	1051	6.54	Br nest	6.7
DPBN-4A #2	1210	0.91	1052	6.54	Br nest	5.9
DPBN-4A #3	1210	0.49	1052	6.54	Br nest	5.5
DPBN-4B #1	1317	0.23	1123	6.65	Br nest	5.3
DPBN-4B #2	1315	0.28	1123	6.64	Br nest	4.4
DPBN-4B #3	1314	0.48	1123	6.63	Br nest	3.6
DPBN-4C #1	1319	1.65	1122	7.81	Br nest	9.0
DPBN-4C #2	1318	0.36	1122	7.79	Br nest	8.5
DPBN-4C #3	1318	0.41	1122	7.78	Br nest	7.9
DPW-4.6N	1312	4.25	1121	8.27	Lateral Saturation	9.5
DPPN-4.5N #1	Transducer		—	—	Z-Gradient Piezometer	—
DPPN-4.5N #2	Transducer		—	—	Z-Gradient Piezometer	—
DPPN-4.5N #3	Transducer		—	—	Z-Gradient Piezometer	—
DPW-4.4N	1313	0.43	1123	6.64	MLS well	3.7
DPW 4.9S	1212	0.76	1053	6.71		6.2
DPBN-5A #1	1215	0.36	1054	5.38	Br nest	5.8
DPBN-5A #2	1214	0.75	1054	5.35	Br nest	5.5
DPBN-5A #3	1213	0.67	1054	5.30	Br nest	5.3
DPBN-5B #1	1311	0.32	1120	6.47	Br nest	5.6
DPBN-5B #2	1310	0.43	1120	6.47	Br nest	4.7
DPBN-5B #3	1310	0.61	1120	6.47	Br nest	3.9

DP Canyon Dissolved Oxygen and Water Level Field Form

Measurement Date: 1/6/08

Well ID	Time	Dissolved Oxygen (mg/L)	Time	DTW (ft) TOC	Well Type	Temp °C
DPBN-5C #1	1307	3.28	1118	7.27	Br nest	7.1
DPBN-5C #2	1307	5.39	1119	7.25	Br nest	6.3
DPBN-5C #3	1305	3.67	1119	7.25	Br nest	5.7
DPW-5.8N	1304	1.73	1118	8.76	Lateral Saturation	9.5
DPW-5.7N	1302	0.52	1117	7.27	MLS well	7.6
DPPN-5.7 #1	1259	0.30	1115	6.42	Z-Gradient Piezometer	4.2
DPPN-5.7 #2	1300	0.53	1116	6.42	Z-Gradient Piezometer	3.4
DPPN-5.7 #3	1301	*	1116	6.01	Z-Gradient Piezometer	3.1
DPBN-6A #1	1218	0.19	1055	6.96	Br nest	4.4
DPBN-6A #2	1218	0.42	1055	6.92	Br nest	3.6
DPBN-6A #3	1217	2.38	1055	6.97	Br nest	2.8
DPBN-6B #1	1257	0.24	1114	5.50	Br nest	6.7
DPBN-6B #2	1256	0.17	1115	5.46	Br nest	6.1
DPBN-6B #3	1255	0.26	1115	5.47	Br nest	5.6
DPBN-6C #1	1254	0.44	1114	6.57	Br nest	9.8
DPBN-6C #2	1253	0.35	1114	6.57	Br nest	9.5
DPBN-6C #3	1252	0.42	1114	6.57	Br nest	8.9
DPBN-6D #1	1251	0.26	1112	6.87	Br nest	9.3
DPBN-6D #2	1251	0.34	1113	6.88	Br nest	8.3
DPBN-6D #3	1250	2.48	1113	6.88	Br nest	7.2
DPW-6.2S	1220	1.86	1058	6.56	Lateral Saturation	4.5
DPW-6.5N	1249	1.57	1111	7.70	Lateral Saturation	8.0
DPBN-7A #1	1223	0.43	1059	6.75	Br nest	7.4
DPBN-7A #2	1223	0.30	1059	6.74	Br nest	6.5
DPBN-7A #3	1222	0.48	1100	6.74	Br nest	5.3
DPBN-7B #1	1248	0.93	1110	5.20	Br nest	6.2
DPBN-7B #2	1246	0.31	1111	5.20	Br nest	5.9
DPBN-7B #3	1245	0.37	1111	5.21	Br nest	5.1
DPBN-7C #1	1244	0.31	1110	5.82	Br nest	8.3
DPBN-7C #2	1244	0.35	1110	5.82	Br nest	7.3
DPBN-7C #3	1243	0.29	1110	5.82	Br nest	6.4
DPW-7.1S	1225	0.35	1100	7.04	MLS well	6.0
DPW-7.4N	1241	3.24	1108	7.82	Lateral Saturation	6.7
DPW-7.5S	1226	1.53	1101	7.94	Lateral Saturation	7.9
DPPN-7.7 #1	1229	5.46	1102	8.20	Z-Gradient Piezometer	4.8
DPPN-7.7 #2	1229	0.39	1103	5.65	Z-Gradient Piezometer	3.9
DPPN-7.7 #3	1227	1.13	1103	5.43	Z-Gradient Piezometer	2.7
DPW-7.9S	1231	0.33	1105	7.19	MLS well	6.8
DPBN-8A #1 B	A 1238	A 0.33	A 1105	A 6.78	Br nest	4.6
DPBN-8A #2 B	A 1237	A 0.70	A 1105	A 6.78	Br nest	4.1
DPBN-8A #3 B	A 1236	A 0.52	A 1106	A 6.78	Br nest	3.9
DPBN-8B #1 A	1234	0.39	B 1106	B 5.53	Br nest	4.5
DPBN-8B #2 A	1233	0.83	B 1106	B 5.53	Br nest	4.2
DPBN-8B #3 A	1232	1.44	B 1107	B 5.54	Br nest	4.0
LAUZ-2	1239	0.31	1107	5.88	ER Observation Well	5.2

DP Canyon Dissolved Oxygen and Water Level Field Form

Measurement Date: 2/17/03

Well ID	Time	Dissolved Oxygen (mg/L)	Temp. (C)	Time	DTW (ft) TOC	Well Type
LAUZ-1	9:58	10.04.3	5.04.3	8:52	5.78	ER Observation Well
DPW-1S	10:02	7.7	4.5	8:53	6.31	MLS well
DPBN-1A #1	Transducer			8:54	6.20	Br nest
DPBN-1A #2	10:07	5.7	4.3	8:54	6.31	Br nest
DPBN-1A #3	10:06	5.6	3.5	8:55	6.30	Br nest
DPBN-1B #1	10:03	9.9	3.9	8:55	6.52	Br nest
DPBN-1B #2	10:05	10.2	3.2	8:55	6.51	Br nest
DPBN-1B #3	10:05	dry	—	8:55	dry	Br nest
DPBN-1C #1	11:39	3.3	2.9	9:48	6.56	Br nest
DPBN-1C #2	11:38	4.6	2.1	9:48	6.56	Br nest
DPBN-1C #3	11:37	7.1	2.3	9:48	6.55	Br nest
DPW-1N	—	dry	—	9:50	dry	Lateral Saturation
DPW-1.1N	11:35	2.3	5.0	9:49	8.08	Lateral Saturation
DPPN-1.1 #1	1008	7.2	4.1	8:56	6.54	Z-Gradient Piezometer
DPPN-1.1 #2	1009	8.3	3.5	8:56	6.54	Z-Gradient Piezometer
DPPN-1.1 #3	—	dry	—	8:56	dry	Z-Gradient Piezometer
DPBN-2A #1	—	Probe	—	8:57 Probe		Br nest
DPBN-2A #2	10:12	7.4	4.5	8:57	7.23	Br nest
DPBN-2A #3	—	dry	—	8:57	dry	Br nest
DPBN-2B #1	—	Probe	—	9:47 Probe		Br nest
DPBN-2B #2	—	Probe	—	9:47 Probe		Br nest
DPBN-2B #3	—	dry	—	9:47	dry	Br nest
DPBN-2C #1	—	Probe	—	9:47 Probe		Br nest
DPBN-2C #2	—	Probe	—	9:47 Probe		Br nest
DPBN-2C #3	—	Probe	—	9:47 Probe		Br nest
DPBN-3A #1	10:15	8.1	4.8	8:58	7.67	Br nest
DPBN-3A #2	10:15	6.9	3.7	8:58	7.68	Br nest
DPBN-3A #3	10:14	3.8	4.1	8:58	7.67	Br nest
DPBN-3B #1	10:18	4.3	2.9	8:59	6.75	Br nest
DPBN-3B #2	10:17	4.6	2.6	8:59	6.76	Br nest
DPBN-3B #3	10:16	dry	—	8:59	dry	Br nest
DPBN-3C #1	11:33	9.7	3.4	9:47	6.84	Br nest
DPBN-3C #2	11:32	10.0	2.8	9:47	6.37	Br nest
DPBN-3C #3	11:31	11.3	2.8	9:47	6.37	Br nest
DPW-3.2N	11:30	3.1	6.3	9:47	9.95	Lateral Saturation
DPW-3.5N	11:29	4.2	3.8	9:44	6.92	MLS well
DPW-3.5S	10:23	11.0	5.2	9:00	7.75	Lateral Saturation
DPBN-4A #1	10:21	8.5	4.6	9:01	6.77	Br nest
DPBN-4A #2	10:20	8.6	3.6	9:01	6.77	Br nest
DPBN-4A #3	10:20	4.3	3.1	9:02	6.78	Br nest
DPBN-4B #1	11:28	3.9	4.2	9:42	6.96	Br nest
DPBN-4B #2	11:27	4.3	3.6	9:42	6.96	Br nest
DPBN-4B #3	11:25	4.3	3.3	9:42	6.95	Br nest
DPBN-4C #1	11:25	3.4	7.1	9:39	8.19	Br nest
DPBN-4C #2	11:24	3.8	6.6	9:40	8.18	Br nest
DPBN-4C #3	11:23	2.8	6.0	9:40	8.18	Br nest
DPW-4.6N	11:20	8.3	7.5	9:38	8.69	Lateral Saturation
DPPN-4.5N #1	11:19	5.4	3.8	9:35	7.78	Z-Gradient Piezometer
DPPN-4.5N #2	11:17	10.1	4.2	9:36	7.76	Z-Gradient Piezometer
DPPN-4.5N #3	—	dry	—	9:37	dry	Z-Gradient Piezometer
DPW-4.4N	11:21	9.0	2.6	9:40	7.03	MLS well
DPW 4.9S	10:24	12.6	4.4	9:02	7.93	
DPBN-5A #1	10:27	7.4	4.1	9:03	5.78	Br nest
DPBN-5A #2	10:26	8.7	3.8	9:04	5.76	Br nest
DPBN-5A #3	10:25	8.4	3.7	9:04	5.73	Br nest
DPBN-5B #1	11:16	4.9	3.6	9:33	6.89	Br nest
DPBN-5B #2	11:15	4.7	2.7	9:33	6.89	Br nest
DPBN-5B #3	11:14	4.8	2.6	9:34	6.89	Br nest

DP Canyon Dissolved Oxygen and Water Level Field Form

Measurement Date: 2/17/03

Well ID	Time	Dissolved Oxygen (mg/L)	Temp. (C)	Time	DTW (ft) TOC	Well Type
DPBN-5C #1	11:12	7.4	6.0	9:31	7.72	Br nest
DPBN-5C #2	11:11	9.9	5.6	9:32	7.70	Br nest
DPBN-5C #3	11:10	7.6	4.7	9:32	7.69	Br nest
DPW-5.8N	11:09	11.5	7.7	9:31	9.27	Lateral Saturation
DPW-5.7N	11:08	5.0	6.0	9:30	7.66	MLS well
DPPN-5.7 #1	11:06	6.5	3.2	9:28	6.78	Z-Gradient Piezometer
DPPN-5.7 #2	11:07	4.3	3.8	9:29	6.81	Z-Gradient Piezometer
DPPN-5.7 #3	—	dry	—	9:29	dry	Z-Gradient Piezometer
DPBN-6A #1	10:30	5.9	3.4	9:07	7.33	Br nest
DPBN-6A #2	10:29	7.5	2.6	9:07	7.29	Br nest
DPBN-6A #3	10:28	8.4	2.2	9:07	7.35	Br nest
DPBN-6B #1	11:06	4.3	5.9	9:26	5.88	Br nest
DPBN-6B #2	11:05	4.4	5.4	9:26	5.77	Br nest
DPBN-6B #3	11:04	2.4	4.5	9:26	5.78	Br nest
DPBN-6C #1	11:03	6.7	6.4	9:25	6.89	Br nest
DPBN-6C #2	11:02	10.6	6.0	9:25	6.87	Br nest
DPBN-6C #3	11:01	11.4	5.5	9:25	6.87	Br nest
DPBN-6D #1	11:00	3.5	7.6	9:23	7.31	Br nest
DPBN-6D #2	10:58	2.1	6.3	9:23	7.34	Br nest
DPBN-6D #3	—	dry	—	9:24	dry	Br nest
DPW-6.2S	10:31	2.4	3.1	9:08	6.91	Lateral Saturation
DPW-6.5N	10:57	5.0	6.2	9:23	7.94	Lateral Saturation
DPBN-7A #1	10:34	3.6	5.5	9:09	6.93	Br nest
DPBN-7A #2	10:34	2.5	4.6	9:09	6.93	Br nest
DPBN-7A #3	10:33	6.0	3.8	9:09	6.93	Br nest
DPBN-7B #1	10:56	5.1	5.0	9:21	5.45	Br nest
DPBN-7B #2	—	Probe	—	9:21 Probe		Br nest
DPBN-7B #3	1055	3.7	4.3	9:21	5.47	Br nest
DPBN-7C #1	1054	4.7	6.7	9:19	6.09	Br nest
DPBN-7C #2	—	Probe	—	9.19 Probe		Br nest
DPBN-7C #3	10:53	4.3	5.2	9:19	6.08	Br nest
DPW-7.1S	10:36	4.2	4.5	9:20	7.25	MLS well
DPW-7.4N	10:50	7.0	5.7	9:17	7.91	Lateral Saturation
DPW-7.5S	10:38	5.1	5.9	9:11	7.94	Lateral Saturation
DPPN-7.7 #1	10:38	4.8	4.0	9:12	7.45	Z-Gradient Piezometer
DPPN-7.7 #2	10:40	5.4	3.0	9:13	5.73	Z-Gradient Piezometer
DPPN-7.7 #3	10:41	6.4	2.1	9:13	5.51	Z-Gradient Piezometer
DPW-7.9S	10:42	4.2	5.2	9:14	7.25	MLS well
DPBN-8A #1	10:46	4.1	3.4	9:15	6.87	Br nest
DPBN-8A #2	10:46	5.7	3.1	9:15	6.87	Br nest
DPBN-8A #3	10:45	4.2	3.0	9:15	6.87	Br nest
DPBN-8B #1	10:48	4.8	3.7	9:16	5.58	Br nest
DPBN-8B #2	10:47	2.5	3.2	9:16	5.58	Br nest
DPBN-8B #3	10:46	1.9	2.9	9:16	5.59	Br nest
LAUZ-2	10:49	5.0	4.0	9:16	5.92	ER Observation Well

Date: 2/24/03 Personel: Jared Lyman

Location	(Military) time	Water Level	Comments
LA4Z 1	0950	4.87 (ft)	Top of casing/bottom of ring
DPBN-1A #1	0956	5.42	
DPBN-1A #2	0957	5.40	
DPBN-1A #3	0958	5.40	
DPW-15	1004	5.40	
DPBN-1B #1	1006	5.51	
DPBN 1B #2	1007	5.51	
DPBN 1B #3	1008	5.51	
DPPN 1.1 #1	1009	5.53	
DPPN 1.1 #2	1010	5.53	
DPPN 1.1 #3	1012	5.54	
DPBN-1C #1	1013	5.61	
DPBN-1C #2	1015	5.60	
DPBN-1C #3	1017	5.60	
DPW-1N	1018	8.00	
DPW-1.1N	1019	7.14	
DPBN-2B #3	1021	5.35	
DPBN-2A #2	1023	6.41	
DPBN-2A #3	1024	dry	
DPBN-3C #1	1025	6.11	
DPBN-3C #2	1026	5.48	
DPBN-3C #3	1028	5.48	
DPBN-3B #1	1030	6.01	
DPBN-3B #2	1031	6.01	
DPBN-3B #3	1032	6.01	

2/24/03

Jared Lyman

Location	time	water level	comments
DPBN-3A#1	1032	6.95	
DPBN-3A#2	1033	6.95	
DPBN-3A#3	1033	6.95	
DPW-3.2N	1035	9.24	
DPW-3.5N	1036	6.29	
DPW-3.5S	1037	7.00	
DPBN-4C#1	1038	7.55	
DPBN-4C#2	1039	7.54	
DPBN-4C#3	1040	7.54	
DPBN-4B#1	1041	6.36	
DPBN-4B#2	1042	6.35	
DPBN-4B#3	1043	6.35	
DPBN-4A#1	1044	6.08	
DPBN-4A#2	1045	6.08	
DPBN-4A#3	1046	6.09	
DPW-4.6N	1047	8.07	
DPW-4.4N	1048	6.41	
DPBN-5C#1	1049	7.11	
DPBN-5C#2	1050	7.09	
DPBN-5C#3	1050	7.08	
DPBN-5B#1	1051	6.28	
DPBN-5B#2	1051	6.32	
DPBN-5B#3	1052	6.31	
DPBN-5A#1	1053	5.19	
DPBN-5A#2	1053	5.15	
DPBN-5A#3	1054	5.13	

2/24/03 Jared Lyman

Location	time	water level	comments
DPW-4.95	1054	6.52	
DPW-5.8N	1055	8.76	
DPW-5.7N	1056	7.14	
DPPN-5.7N#1	1057	6.32	
DPPN-5.7N#2	1058	6.31	
DPPN-5.7N#3	1058	6.00 (dry)	Water level measuring at ~~depth of~~ well bottom
DPBN-6D #1	1100	7.08	
DPBN-6D #2	1101	7.20	
DPBN-6D #3	1101	dry	
DPBN-6C #1	1103	6.44	felt pen washed off
DPBN-6C #2	1104	6.44	
DPBN-6C #3	1104	6.44	
DPBN-6B #1	1105	5.43	
DPBN-6B #2	1106	5.36	
DPBN-6B #3	1107	5.35	
DPBN-6A #1	1108	6.88	
DPBN-6A #2	1109	6.87	
DPBN-6A #3	1109	6.88	
DPW-6.2(S)(B)	1111	6.46	
DPW-6.5N	1112	7.64	
DPBN-7C #2	1113	5.72	
DPBN-7C #3	1113	5.72	
DPBN-7B #2	1114	5.10	
DPBN-7B #3	1115	5.10	
DPBN-7A #1	1115	6.63	felt pen washed off
DPBN-7A #2	1116	6.63	

2/24/03 Jared Lyman

location	time	water depth	comments
DPBN-7A #3	1118	6.62	felt pen worked off
DPW-7.4 N	1119	7.76	
DPW-7.5 (S)	1121	7.85	
DPBN-7.7 #1	1122	7.35	
DPW-7.9 S	1123	7.20	
DPBN-8A #1	1124	6.82	
DPBN-8A #2	1125	6.82	
DPBN-8A #3	1126	6.82	
DPBN-8B #1	1127	5.56	
DPBN-8B #2	1128	5.55	
DPBN-8B #3	1128	5.55	
LAUZ-2	1130	5.88	bottom of casing/ base of ring

DP Canyon Dissolved Oxygen and Water Level Field Form

Measurement Date: 03/25/03

Well ID	Time	Dissolved Oxygen (mg/L)	Temp. (C)	Time	DTW (ft) bTOC	Well Type
LAUZ-1	~~0205~~			0205	4.83	ER Observation Well
DPW-1S				SAmpLER		MLS well
DPBN-1A #1				0206	5.11	Br nest
DPBN-1A #2				0206	5.11	Br nest
DPBN-1A #3				0207	5.11	Br nest
DPBN-1B #1				0207	5.46	Br nest
DPBN-1B #2				0207	5.45	Br nest
DPBN-1B #3				0207	5.44	Br nest
DPBN-1C #1				0847	5.47	Br nest
DPBN-1C #2				0847	5.47	Br nest
DPBN-1C #3				0847	5.47	Br nest
DPW-1N				0846	7.85	Lateral Saturation
DPW-1.1N				0846	7.01	Lateral Saturation
DPPN-1.1 #1				~~Transducer~~		Z-Gradient Piezometer → 0842 / 5.45
DPPN-1.1 #2				0847	5.45	Z-Gradient Piezometer
DPPN-1.1 #3				0847	5.45	Z-Gradient Piezometer
DPBN-2A #1				Probe		Br nest
DPBN-2A #2				0809	6.17	Br nest
DPBN-2A #3				0809	6.16	Br nest
DPBN-2B #1				Probe		Br nest
DPBN-2B #2				Probe		Br nest
DPBN-2B #3				0845	5.15	Br nest
DPBN-2C #1				0845	6.07	Br nest
DPBN-2C #2				Probe		Br nest
DPBN-2C #3				0845	6.77	Br nest
DPBN-3A #1				0810	6.69	Br nest
DPBN-3A #2				Probe		Br nest
DPBN-3A #3				0810	6.68	Br nest
DPBN-3B #1				0810	5.74	Br nest
DPBN-3B #2				Probe		Br nest
DPBN-3B #3				0811	5.75	Br nest
DPBN-3C #1				0844	5.75	Br nest
DPBN-3C #2				Probe		Br nest
DPBN-3C #3				0844	5.30	Br nest
DPW-3.2N				0843	8.97	Lateral Saturation
DPW-3.5N				SAmpLER		MLS well
DPW-3.5S				0811	6.64	Lateral Saturation
DPBN-4A #1				0812	5.75	Br nest
DPBN-4A #2				Probe		Br nest
DPBN-4A #3				0812	5.76	Br nest
DPBN-4B #1				0842	5.99	Br nest
DPBN-4B #2				Probe		Br nest
DPBN-4B #3				0842	5.98	Br nest
DPBN-4C #1				0841	7.13	Br nest
DPBN-4C #2				0841	7.11	Br nest
DPBN-4C #3				0841	7.11	Br nest
DPW-4.6N				0840	7.59	Lateral Saturation
DPPN-4.5N #1				0838	~~X~~ 6.70	Z-Gradient Piezometer
DPPN-4.5N #2				0839	6.68	Z-Gradient Piezometer
DPPN-4.5N #3				0839	6.64	Z-Gradient Piezometer
DPW-4.4N				SAmpLER		MLS well
DPW 4.9S				0813	6.03	
DPBN-5A #1				0813	4.66	Br nest
DPBN-5A #2				0814	4.64	Br nest
DPBN-5A #3				0814	4.63	Br nest
DPBN-5B #1				0837	5.78	Br nest
DPBN-5B #2				0837	5.78	Br nest
DPBN-5B #3				0837	5.78	Br nest

DP Canyon Dissolved Oxygen and Water Level Field Form

Measurement Date: 03/25/03

Well ID	Time	Dissolved Oxygen (mg/L)	Temp. (C)	Time	DTW (ft) bTOC	Well Type
DPBN-5C #1				0834	6.62	Br nest
DPBN-5C #2				0835	6.61	Br nest
DPBN-5C #3				0836	6.60	Br nest
DPW-5.8N				0833	8.24	Lateral Saturation
DPW-5.7N				5 AM	PLER	MLS well
DPPN-5.7 #1				0832	5.88	Z-Gradient Piezometer
DPPN-5.7 #2				0832	5.88	Z-Gradient Piezometer
DPPN-5.7 #3				0832	5.72	Z-Gradient Piezometer
DPBN-6A #1				0815	6.44	Br nest
DPBN-6A #2				0815	6.41	Br nest
DPBN-6A #3				0815	6.45	Br nest
DPBN-6B #1				0832	5.06	Br nest
DPBN-6B #2				0832	4.93	Br nest
DPBN-6B #3				0832	4.94	Br nest
DPBN-6C #1				0831	6.08	Br nest
DPBN-6C #2				0832	6.06	Br nest
DPBN-6C #3				0832	6.08	Br nest
DPBN-6D #1				0830	10.38	Br nest
DPBN-6D #2				0830	7.32	Br nest
DPBN-6D #3				DRY		Br nest
DPW-6.2S				0816	6.08	Lateral Saturation
DPW-6.5N				0829	7.29	Lateral Saturation
DPBN-7A #1				0816	6.27	Br nest
DPBN-7A #2				0817	6.27	Br nest
DPBN-7A #3				0817	6.26	Br nest
DPBN-7B #1				0838	4.79	Br nest
DPBN-7B #2				0838	4.77	Br nest
DPBN-7B #3				0838	4.78	Br nest
DPBN-7C #1				0837	5.38	Br nest
DPBN-7C #2				0837	5.32	Br nest
DPBN-7C #3				0837	5.36	Br nest
DPW-7.1S				0818	6.55	MLS well
DPW-7.4N				0825	7.44	Lateral Saturation
DPW-7.5S				0818	@ 7.65	Lateral Saturation
DPPN-7.7 #1				0819	6.98	Z-Gradient Piezometer
DPPN-7.7 #2				0820	@ 5.34	Z-Gradient Piezometer
DPPN-7.7 #3				0821	5.07	Z-Gradient Piezometer
DPW-7.9S				5 AM	LER	MLS well
DPBN-8A #1				0822	6.58	Br nest
DPBN-8A #2				0822	6.58	Br nest
DPBN-8A #3				0823	6.58	Br nest
DPBN-8B #1				0823	5.52	Br nest
DPBN-8B #2				0824	5.52	Br nest
DPBN-8B #3				0824	5.52	Br nest
LAUZ-2				0824	5.79	ER Observation Well

DP Canyon Dissolved Oxygen and Water Level Field Form

Measurement Date: 04/03/03

Well ID	Time	Dissolved Oxygen (mg/L)	Temp. (C)	Time	DTW (ft) bTOC		Well Type
LAUZ-1	0817	5.5	4.6				ER Observation Well
DPW-1S	DMLS	Sampler					MLS well
DPBN-1A #1	823	0.8	~~4.5~~ 4.6				Br nest
DPBN-1A #2	0821	0.8	4.5				Br nest
DPBN-1A #3	0819	1.1	4.5				Br nest
DPBN-1B #1	826	1.2	4.5				Br nest
DPBN-1B #2	825	1.2	4.7				Br nest
DPBN-1B #3	0824	2.0	4.8				Br nest
DPBN-1C #1	829	1.7	5.0				Br nest
DPBN-1C #2	828	2.5	5.3				Br nest
DPBN-1C #3	827	3.5	5.5				Br nest
DPW-1N	831	5.4	6.3				Lateral Saturation
DPW-1.1N	830	0.4	5.0				Lateral Saturation
DPPN-1.1 #1	transducer						Z-Gradient Piezometer
DPPN-1.1 #2	↓						Z-Gradient Piezometer
DPPN-1.1 #3	↓						Z-Gradient Piezometer
DPBN-2A #1	Probe						Br nest
DPBN-2A #2	↓						Br nest
DPBN-2A #3	↓						Br nest
DPBN-2B #1	↓						Br nest
DPBN-2B #2	↓						Br nest
DPBN-2B #3	↓						Br nest
DPBN-2C #1	↓						Br nest
DPBN-2C #2	↓						Br nest
DPBN-2C #3	↓						Br nest
DPBN-3A #1	↓						Br nest
DPBN-3A #2	↓						Br nest
DPBN-3A #3	↓						Br nest
DPBN-3B #1	↓						Br nest
DPBN-3B #2	↓						Br nest
DPBN-3B #3	↓						Br nest
DPBN-3C #1	↓						Br nest
DPBN-3C #2	↓						Br nest
DPBN-3C #3	↓						Br nest
DPW-3.2N	832	1.2	5.6				Lateral Saturation
DPW-3.5N	Sampler						MLS well
DPW-3.5S	835	4.1	4.8	838	1.5	4.5	Lateral Saturation
DPBN-4A #1	~~836~~	~~1.9~~	~~3.9~~	↓	↓	↓	Br nest
DPBN-4A #2	837	1.4	4.0				Br nest
DPBN-4A #3	836	1.9	3.9				Br nest
DPBN-4B #1	842	0.4	3.7				Br nest
DPBN-4B #2	840	0.4	3.3				Br nest
DPBN-4B #3	839	0.8	3.2				Br nest
DPBN-4C #1	845	0.4	6.4				Br nest
DPBN-4C #2	844	0.4	6.2				Br nest
DPBN-4C #3	843	0.7	6.0				Br nest
DPW-4.6N	847	5.7	7.3				Lateral Saturation
DPPN-4.5N #1	transducers						Z-Gradient Piezometer
DPPN-4.5N #2	↓						Z-Gradient Piezometer
DPPN-4.5N #3	↓						Z-Gradient Piezometer
DPW-4.4N	DMLS	Sampler					MLS well
DPW 4.9S	848	4.8	4.1				
DPBN-5A #1	852	2.9	3.8				Br nest
DPBN-5A #2	851	3.2	3.7				Br nest
DPBN-5A #3	850	5.3	3.7				Br nest
DPBN-5B #1	854	1.5	3.9				Br nest
DPBN-5B #2	853	2.1	3.6				Br nest
DPBN-5B #3	852	2.7	3.6				Br nest

DP Canyon Dissolved Oxygen and Water Level Field Form

Measurement Date: 4/3/03

Well ID	Time	Dissolved Oxygen (mg/L)	Temp. (C)	Time	DTW (ft) bTOC	Well Type
DPBN-5C #1	858	5.0	5.4			Br nest
DPBN-5C #2	857	7.0	5.4			Br nest
DPBN-5C #3	856	6.9	5.4			Br nest
DPW-5.8N	859	10.6	5.4	7.7		Lateral Saturation
DPW-5.7N	OMLS	Sampler				MLS well
DPPN-5.7 #1	900	0.5	3.4			Z-Gradient Piezometer
DPPN-5.7 #2	0901	0.7	3.1			Z-Gradient Piezometer
DPPN-5.7 #3	0902	3.5	3.2			Z-Gradient Piezometer
DPBN-6A #1	906	0.6	2.3			Br nest
DPBN-6A #2	905	0.3	2.3			Br nest
DPBN-6A #3	904	2.2	2.0			Br nest
DPBN-6B #1	910	0.4	4.6			Br nest
DPBN-6B #2	909	0.5	4.2			Br nest
DPBN-6B #3	908	0.7	3.7			Br nest
DPBN-6C #1	913	0.4	6.4			Br nest
DPBN-6C #2	912	1.8	6.2			Br nest
DPBN-6C #3	911	2.2	5.9			Br nest
DPBN-6D #1	915	6.1	6.9			Br nest
DPBN-6D #2	914	±0.5	6.4			Br nest
DPBN-6D #3	~~1405~~	dry				Lateral Saturation
DPW-6.2S	907	4.5	2.1			Lateral Saturation
DPW-6.5N	917	0.6	6.9			Br nest
DPBN-7A #1	Probe					Br nest
DPBN-7A #2						Br nest
DPBN-7A #3						Br nest
DPBN-7B #1						Br nest
DPBN-7B #2						Br nest
DPBN-7B #3						Br nest
DPBN-7C #1	921	0.3	6.2			Br nest
DPBN-7C #2	920	0.6	5.9			Br nest
DPBN-7C #3	919	0.3	5.7			MLS well
DPW-7.1S	Transducer					Lateral Saturation
DPW-7.4N	923	1.6	6.1			Lateral Saturation
DPW-7.5S	925	0.6	5.6			Z-Gradient Piezometer
DPPN-7.7 #1	926	0.4	4.7			Z-Gradient Piezometer
DPPN-7.7 #2	transducer					Z-Gradient Piezometer
DPPN-7.7 #3	transducer					MLS well
DPW-7.9S	OMLS	Sampler				Br nest
DPBN-8A #1	929	0.8	3.3			Br nest
DPBN-8A #2	928	1.0	3.2			Br nest
DPBN-8A #3	927	1.3	3.3			Br nest
DPBN-8B #1	932	0.3	4.6			Br nest
DPBN-8B #2	931	0.3	4.6			Br nest
DPBN-8B #3	930	0.5	4.5			ER Observation Well
LAUZ-2	935	6.4	4.8			

DP Canyon Dissolved Oxygen and Water Level Field Form

Measurement Date: 5/16/03

Well ID	Time	Dissolved Oxygen (mg/L)	Temp. (C)	Time	DTW (ft) bTOC	Well Type
LAUZ-1	~~811~~			810	5.92	ER Observation Well
DPW-1S				812	6.42	MLS well
DPBN-1A #1				813	6.25	Br nest
DPBN-1A #2				813	6.26	Br nest
DPBN-1A #3				813	6.26	Br nest
DPBN-1B #1				814	6.63	Br nest
DPBN-1B #2				814	6.62	Br nest
DPBN-1B #3				814	DRY	Br nest
DPBN-1C #1				859	6.61	Br nest
DPBN-1C #2				858	6.61	Br nest
DPBN-1C #3				858	6.60	Br nest
DPW-1N				857	DrY	Lateral Saturation
DPW-1.1N				858	8.12	Lateral Saturation
DPPN-1.1 #1				815	6.62	Z-Gradient Piezometer
DPPN-1.1 #2				815	6.62	Z-Gradient Piezometer
DPPN-1.1 #3				816	DRY	Z-Gradient Piezometer
DPBN-2A #1				816	Probe	Br nest
DPBN-2A #2				816	7.21	Br nest
DPBN-2A #3				816	DRY	Br nest
DPBN-2~~B~~ #1 C				857	7.38	Br nest
DPBN-2~~B~~ #2 C				856	Probe	Br nest
DPBN-2~~B~~ #3 C				856	7.37	Br nest
DPBN-2~~C~~ #1 B				855	Probe	Br nest
DPBN-2~~C~~ #2 B				855	Probe	Br nest
DPBN-2~~C~~ #3 B				855	DrY	Br nest
DPBN-3A #1				818	7.70	Br nest
DPBN-3A #2				817	Probe	Br nest
DPBN-3A #3				817	7.69	Br nest
DPBN-3B #1				819	6.77	Br nest
DPBN-3B #2				819	Probe	Br nest
DPBN-3B #3				819	DrY	Br nest
DPBN-3C #1				854	6.77	Br nest
DPBN-3C #2				854	Probe	Br nest
DPBN-3C #3				854	6.48	Br nest
DPW-3.2N				853	9.87	Lateral Saturation
DPW-3.5N				852	6.87	MLS well
DPW-3.5S				819	7.75	Lateral Saturation
DPBN-4A #1				821	6.78	Br nest
DPBN-4A #2				820	6.78	Br nest
DPBN-4A #3				820	6.80	Br nest
DPBN-4B #1				851	6.93	Br nest
DPBN-4B #2				851	6.93	Br nest
DPBN-4B #3				851	6.93	Br nest
DPBN-4C #1				850	8.15	Br nest
DPBN-4C #2				850	8.13	Br nest
DPBN-4C #3				849	8.13	Br nest
DPW-4.6N				849	8.63	Lateral Saturation
DPPN-4.5N #1				847	7.72	Z-Gradient Piezometer
DPPN-4.5N #2				848	7.70	Z-Gradient Piezometer
DPPN-4.5N #3				843	Dry	Z-Gradient Piezometer
DPW-4.4N				852	6.98	MLS well
DPW 4.9S				821	7.11	
DPBN-5A #1				822	5.75	Br nest
DPBN-5A #2				822	5.74	Br nest
DPBN-5A #3				821	5.70	Br nest
DPBN-5B #1				846	6.84	Br nest
DPBN-5B #2				846	6.83	Br nest

DP Canyon Dissolved Oxygen and Water Level Field Form

Measurement Date: 5/16/03

Well ID	Time	Dissolved Oxygen (mg/L)	Temp. (C)	Time	DTW (ft) bTOC	Well Type
DPBN-5B #3				846	6.83	Br nest
DPBN-5C #1				845	7.65	Br nest
DPBN-5C #2				845	7.65	Br nest
DPBN-5C #3				845	7.64	Br nest
DPW-5.8N				844	9.10	Lateral Saturation
DPW-5.7N				843	7.63	MLS well
DPPN-5.7 #1				842	6.81	Z-Gradient Piezometer
DPPN-5.7 #2				842	6.81	Z-Gradient Piezometer
DPPN-5.7 #3				842	DRY	Z-Gradient Piezometer
DPBN-6A #1				824	7.40	Br nest
DPBN-6A #2				823	7.36	Br nest
DPBN-6A #3				823	7.40	Br nest
DPBN-6B #1				842	5.90	Br nest
DPBN-6B #2				841	5.83	Br nest
DPBN-6B #3				840	5.87	Br nest
DPBN-6C #1				840	6.93	Br nest
DPBN-6C #2				839	6.91	Br nest
DPBN-6C #3				839	6.90	Br nest
DPBN-6D #1				838	10.28	Br nest
DPBN-6D #2				838	7.87	Br nest
DPBN-6D #3				837	DRY	Br nest
DPW-6.2S				824	7.04	Lateral Saturation
DPW-6.5N				837	8.10	Lateral Saturation
DPBN-7A #1				825	7.20	Br nest
DPBN-7A #2				825	Probe	Br nest
DPBN-7A #3				825	7.20	Br nest
DPBN-7B #1				835	5.63	Br nest
DPBN-7B #2				834	Probe	Br nest
DPBN-7B #3				834	5.64	Br nest
DPBN-7C #1				836	6.27	Br nest
DPBN-7C #2				836	6.26	Br nest
DPBN-7C #3				835	6.26	Br nest
DPW-7.1S				826	7.47	MLS well
DPW-7.4N				833	8.24	Lateral Saturation
DPW-7.5S				827	8.27	Lateral Saturation
DPPN-7.7 #1				828	7.84	Z-Gradient Piezometer
DPPN-7.7 #2				829	6.13	Z-Gradient Piezometer
DPPN-7.7 #3				830	5.84	Z-Gradient Piezometer
DPW-7.9S				830	7.56	MLS well
DPBN-8A #1				831	7.16	Br nest
DPBN-8A #2				831	7.16	Br nest
DPBN-8A #3				831	7.16	Br nest
DPBN-8B #1				832	5.87	Br nest
DPBN-8B #2				832	5.87	Br nest
DPBN-8B #3				831	5.87	Br nest
LAUZ-2				832	6.18	ER Observation Well

DP Canyon Dissolved Oxygen and Water Level Field Form

Measurement Date: 5/17/03

Well ID	Time	Dissolved Oxygen (mg/L)	Temp. (C)	Time	DTW (ft) bTOC	Well Type
LAUZ-1				1015	4.71	ER Observation Well
DPW-1S				1016	5.23	MLS well
DPBN-1A #1				1017	5.25	Br nest
DPBN-1A #2				1017	5.23	Br nest
DPBN-1A #3				1017	5.22	Br nest
DPBN-1B #1				1018	5.35	Br nest
DPBN-1B #2				1018	5.35	Br nest
DPBN-1B #3				1018	5.34	Br nest
DPBN-1C #1		1059	5.32	~~1019~~	~~5.34~~	Br nest
DPBN-1C #2		1059	5.32	~~1020~~	~~5.34~~	Br nest
DPBN-1C #3		1100	5.32	~~1020~~	—	Br nest
DPW-1N				1058	6.88	Lateral Saturation
DPW-1.1N				1058	7.75	Lateral Saturation
DPPN-1.1 #1				1019	5.34	Z-Gradient Piezometer
DPPN-1.1 #2				1020	5.34	Z-Gradient Piezometer
DPPN-1.1 #3				1020	5.36	Z-Gradient Piezometer
DPBN-2A #1				1021	Probe	Br nest
DPBN-2A #2				1021	6.21	Br nest
DPBN-2A #3				1021	6.20	Br nest
DPBN-2B #1				1056	Probe	Br nest
DPBN-2B #2				1056	Probe	Br nest
DPBN-2B #3				1056	4.98	Br nest
DPBN-2C #1				1057	6.14	Br nest
DPBN-2C #2				1057	Probe	Br nest
DPBN-2C #3				1057	6.12	Br nest
DPBN-3A #1				1021	6.68	Br nest
DPBN-3A #2				1021	Probe	Br nest
DPBN-3A #3				1022	6.67	Br nest
DPBN-3B #1				1022	Probe	Br nest
DPBN-3B #2				1022	5.70	Br nest
DPBN-3B #3				1022	5.70	Br nest
DPBN-3C #1				1055	5.62	Br nest
DPBN-3C #2				1055	Probe	Br nest
DPBN-3C #3				1056	5.20	Br nest
DPW-3.2N				1055	8.87	Lateral Saturation
DPW-3.5N				1054	5.82	MLS well
DPW-3.5S				1023	6.62	Lateral Saturation
DPBN-4A #1				1023	5.72	Br nest
DPBN-4A #2				1023	5.71	Br nest
DPBN-4A #3				1024	5.72	Br nest
DPBN-4B #1				1052	5.92	Br nest
DPBN-4B #2				1052	5.91	Br nest
DPBN-4B #3				1052	5.91	Br nest
DPBN-4C #1				1053	7.11	Br nest
DPBN-4C #2				1054	7.09	Br nest
DPBN-4C #3				1054	7.08	Br nest
DPW-4.6N				1051	7.63	Lateral Saturation
DPPN-4.5N #1				1049	6.66	Z-Gradient Piezometer
DPPN-4.5N #2				1049	6.65	Z-Gradient Piezometer
DPPN-4.5N #3				1050	6.61	Z-Gradient Piezometer
DPW-4.4N				1051	5.91	MLS well
DPW 4.9S				1024	6.08	
DPBN-5A #1				1025	4.68	Br nest
DPBN-5A #2				1025	4.65	Br nest
DPBN-5A #3				1025	4.62	Br nest
DPBN-5B #1				1048	5.78	Br nest
DPBN-5B #2				1048	5.78	Br nest

DP Canyon Dissolved Oxygen and Water Level Field Form

Measurement Date: 5/27/03

Well ID	Time	Dissolved Oxygen (mg/L)	Temp. (C)	Time	DTW (ft) bTOC	Well Type
DPBN-5B #3				1048	5.78	Br nest
DPBN-5C #1				1047	6.62	Br nest
DPBN-5C #2				1047	6.61	Br nest
DPBN-5C #3				1047	6.59	Br nest
DPW-5.8N				1046	8.63	Lateral Saturation
DPW-5.7N				1045	6.72	MLS well
DPPN-5.7 #1			1044	~~5.86~~	5.86	Z-Gradient Piezometer
DPPN-5.7 #2				1044	5.88	Z-Gradient Piezometer
DPPN-5.7 #3				1045	5.78	Z-Gradient Piezometer
DPBN-6A #1				1036	6.41	Br nest
DPBN-6A #2				1036	6.36	Br nest
DPBN-6A #3				1037	6.40	Br nest
DPBN-6B #1				1043	4.99	Br nest
DPBN-6B #2				1043	4.89	Br nest
DPBN-6B #3				1044	4.90	Br nest
DPBN-6C #1				1042	6.05	Br nest
DPBN-6C #2				1043	6.03	Br nest
DPBN-6C #3				1043	6.04	Br nest
DPBN-6D #1				1041	8.78	Br nest
DPBN-6D #2				1042	7.81	Br nest
DPBN-6D #3				1042	DRY	Br nest
DPW-6.2S				1037	6.05	Lateral Saturation
DPW-6.5N				1040	7.54	Lateral Saturation
DPBN-7A #1				1028	6.38	Br nest
DPBN-7A #2				1028	Probe	Br nest
DPBN-7A #3				1028	6.40	Br nest
DPBN-7B #1				1039	4.73	Br nest
DPBN-7B #2				1039	Probe	Br nest
DPBN-7B #3				1039	4.74	Br nest
DPBN-7C #1				1037	5.34	Br nest
DPBN-7C #2				1038	5.34	Br nest
DPBN-7C #3				1038	5.33	Br nest
DPW-7.1S				1039	6.50	MLS well
DPW-7.4N				1036	7.34	Lateral Saturation
DPW-7.5S				1030	7.77	Lateral Saturation
DPPN-7.7 #1				1031	7.65	Z-Gradient Piezometer
DPPN-7.7 #2				1031	5.28	Z-Gradient Piezometer
DPPN-7.7 #3				1032	5.02	Z-Gradient Piezometer
DPW-7.9S				1032	7.01	MLS well
DPBN-8A #1				1033	6.59	Br nest
DPBN-8A #2				1033	6.59	Br nest
DPBN-8A #3				1033	6.59	Br nest
DPBN-8B #1				1034	5.00	Br nest
DPBN-8B #2				1034	5.00	Br nest
DPBN-8B #3				1034	5.01	Br nest
LAUZ-2				1035	5.82	ER Observation Well

DP Canyon Dissolved Oxygen and Water Level Field Form

S. Purdue & R. Budd

Measurement Date: 6/5/03

Well ID	Time	Dissolved Oxygen (mg/L)	Temp. (C)	Time	DTW (ft) bTOC	Well Type
LAUZ-1				0910	5.18	ER Observation Well
DPW-1S				0910	5.70	MLS well
DPBN-1A #1				0911	5.38	Br nest
DPBN-1A #2				0911	5.40	Br nest
DPBN-1A #3				0912	5.41	Br nest
DPBN-1B #1				0912	5.81	Br nest
DPBN-1B #2				0912	5.80	Br nest
DPBN-1B #3				0913	5.79	Br nest
DPBN-1C #1				0948	5.80	Br nest
DPBN-1C #2				0948	5.79	Br nest
DPBN-1C #3				0948	5.79	Br nest
DPW-1N				0947	8.14	Lateral Saturation
DPW-1.1N				0947	7.32	Lateral Saturation
DPPN-1.1 #1				0947	Probe	Z-Gradient Piezometer
DPPN-1.1 #2				0947	Probe	Z-Gradient Piezometer
DPPN-1.1 #3				0947	Probe	Z-Gradient Piezometer
DPBN-2A #1				0913	P.ROBE	Br nest
DPBN-2A #2				0913	6.41	Br nest
DPBN-2A #3				0914	Dry	Br nest
DPBN-2B #1				0946	Probe	Br nest
DPBN-2B #2				0946	Probe	Br nest
DPBN-2B #3				0946	5.40	Br nest
DPBN-2C #1				0946	6.53	Br nest
DPBN-2C #2				0946	Probe	Br nest
DPBN-2C #3				0946	6.52	Br nest
DPBN-3A #1				0915	6.91	Br nest
DPBN-3A #2				0915	Probe	Br nest
DPBN-3A #3				0915	6.90	Br nest
DPBN-3B #1				0915	Probe	Br nest
DPBN-3B #2				0915	5.98	Br nest
DPBN-3B #3				0916	5.98	Br nest
DPBN-3C #1				0945	5.85	Br nest
DPBN-3C #2				0945	Probe	Br nest
DPBN-3C #3				0945	5.55	Br nest
DPW-3.2N				0944	9.00	Lateral Saturation
DPW-3.5N				0943	6.07	MLS well
DPW-3.5S				0916	6.87	Lateral Saturation
DPBN-4A #1				0917	5.985	Br nest
DPBN-4A #2				0917	5.94	Br nest
DPBN-4A #3				0917	5.98	Br nest
DPBN-4B #1				0941	6.13	Br nest
DPBN-4B #2				0942	6.12	Br nest
DPBN-4B #3				0943	6.11	Br nest
DPBN-4C #1				0943	7.28	Br nest
DPBN-4C #2				0943	7.26	Br nest
DPBN-4C #3				0943	7.26	Br nest
DPW-4.6N				0940	7.73	Lateral Saturation
DPPN-4.5N #1				0940	Probe	Z-Gradient Piezometer
DPPN-4.5N #2				0940	Probe	Z-Gradient Piezometer
DPPN-4.5N #3				0940	Probe	Z-Gradient Piezometer
DPW-4.4N				0941	6.09	MLS well
DPW 4.9S				0918	6.27	
DPBN-5A #1				0918	4.92	Br nest
DPBN-5A #2				0919	4.91	Br nest
DPBN-5A #3				0919	4.88	Br nest
DPBN-5B #1				0939	6.01	Br nest
DPBN-5B #2				0939	6.03	Br nest

DP Canyon Dissolved Oxygen and Water Level Field Form

S. Purdue + R. Budd

Measurement Date: 6/5/05

Well ID	Time	Dissolved Oxygen (mg/L)	Temp. (C)	Time	DTW (ft) bTOC	Well Type
DPBN-5B #3				0940	6.01	Br nest
DPBN-5C #1				0937	6.77	Br nest
DPBN-5C #2				0938	6.77	Br nest
DPBN-5C #3				0938	6.75	Br nest
DPW-5.8N				0936	8.38	Lateral Saturation
DPW-5.7N				0935	6.83	MLS well
DPPN-5.7 #1				0934	6.03	Z-Gradient Piezometer
DPPN-5.7 #2				0934	6.03	Z-Gradient Piezometer
DPPN-5.7 #3				0935	Dry	Z-Gradient Piezometer
DPBN-6A #1				0920	6.59	Br nest
DPBN-6A #2				0920	6.55	Br nest
DPBN-6A #3				0920	6.59	Br nest
DPBN-6B #1				0934	5.14	Br nest
DPBN-6B #2				0934	5.07	Br nest
DPBN-6B #3				0934	5.08	Br nest
DPBN-6C #1				0933	6.19	Br nest
DPBN-6C #2				0933	6.18	Br nest
DPBN-6C #3				0933	6.19	Br nest
DPBN-6D #1				0932	9.63	Br nest
DPBN-6D #2				0932	7.61	Br nest
DPBN-6D #3				0931	Dry	Br nest
DPW-6.2S				0921	6.23	Lateral Saturation
DPW-6.5N				0931	7.53	Lateral Saturation
DPBN-7A #1				0922	6.52	Br nest
DPBN-7A #2				0922	Probe	Br nest
DPBN-7A #3				0922	6.51	Br nest
DPBN-7B #1				0930	4.95	Br nest
DPBN-7B #2				0930	Probe	Br nest
DPBN-7B #3				0930	4.95	Br nest
DPBN-7C #1				0928	5.57	Br nest
DPBN-7C #2				0928	5.56	Br nest
DPBN-7C #3				0928	5.55	Br nest
DPW-7.1S				0927	Probe	MLS well
DPW-7.4N				0927	7.75	Lateral Saturation
DPW-7.5S				0923	7.88	Lateral Saturation
DPPN-7.7 #1				0924	7.46	Z-Gradient Piezometer
DPPN-7.7 #2				0924	Probe	Z-Gradient Piezometer
DPPN-7.7 #3				0924	Probe	Z-Gradient Piezometer
DPW-7.9S				0924	7.21	MLS well
DPBN-8A #1				0925	6.82	Br nest
DPBN-8A #2				0925	6.82	Br nest
DPBN-8A #3				0925	6.82	Br nest
DPBN-8B #1				0926	5.60	Br nest
DPBN-8B #2				0926	5.60	Br nest
DPBN-8B #3				0926	5.61	Br nest
LAUZ-2				0926	5.92	ER Observation Well

DP Canyon Dissolved Oxygen and Water Level Field Form

Measurement Date: 6/12/07

Well ID	Time	Dissolved Oxygen (mg/L)	Temp. (C)	Time	DTW (ft) bTOC	Well Type
LAUZ-1				0836	5.78	ER Observation Well
DPW-1S				0837	6.26	MLS well
DPBN-1A #1				0837	5.97	Br nest
DPBN-1A #2				0838	5.99	Br nest
DPBN-1A #3				0838	5.99	Br nest
DPBN-1B #1				0838	6.39	Br nest
DPBN-1B #2				0838	6.38	Br nest
DPBN-1B #3				0838	Dry	Br nest
DPBN-1C #1				0916	6.34	Br nest
DPBN-1C #2				0916	6.33	Br nest
DPBN-1C #3				0916	6.32	Br nest
DPW-1N				0915	Dry	Lateral Saturation
DPW-1.1N				0915	7.25	Lateral Saturation
DPPN-1.1 #1				0915	Probe	Z-Gradient Piezometer
DPPN-1.1 #2				0915	Probe	Z-Gradient Piezometer
DPPN-1.1 #3				0915	Probe	Z-Gradient Piezometer
DPBN-2A #1				0839	Probe	Br nest
DPBN-2A #2				0839	6.88	Br nest
DPBN-2A #3				0839	Dry	Br nest
DPBN-2B #1				0914	Probe.	Br nest
DPBN-2B #2				0914	Probe	Br nest
DPBN-2B #3				0914	Dry	Br nest
DPBN-2C #1				0914	7.03	Br nest
DPBN-2C #2				0914	Probe	Br nest
DPBN-2C #3				0914	7.03	Br nest
DPBN-3A #1				0840	7.35	Br nest
DPBN-3A #2				0840	Probe	Br nest
DPBN-3A #3				0840	7.34	Br nest
DPBN-3B #1				0840	Probe	Br nest
DPBN-3B #2				0840	6.42	Br nest
DPBN-3B #3				0841	Dry	Br nest
DPBN-3C #1				0913	6.30	Br nest
DPBN-3C #2				0913	Probe	Br nest
DPBN-3C #3				0913	6.03	Br nest
DPW-3.2N				0912	9.40	Lateral Saturation
DPW-3.5N				0912	6.45	MLS well
DPW-3.5S				0841	7.31	Lateral Saturation
DPBN-4A #1				0842	6.37	Br nest
DPBN-4A #2				0842	6.36	Br nest
DPBN-4A #3				0843	6.38	Br nest
DPBN-4B #1				0909	6.50	Br nest
DPBN-4B #2				0909	6.49	Br nest
DPBN-4B #3				0909	6.49	Br nest
DPBN-4C #1				0911	7.66	Br nest
DPBN-4C #2				0911	7.64	Br nest
DPBN-4C #3				0911	7.63	Br nest
DPW-4.6N				0908	8.13	Lateral Saturation
DPPN-4.5N #1				~~0909~~	~~Probe~~	Z-Gradient Piezometer
DPPN-4.5N #2						Z-Gradient Piezometer
DPPN-4.5N #3						Z-Gradient Piezometer
DPW-4.4N				0909	6.49	MLS well
DPW 4.9S				0844	6.60	
DPBN-5A #1				0844	5.25	Br nest
DPBN-5A #2				0844	5.23	Br nest
DPBN-5A #3				0844	5.21	Br nest
DPBN-5B #1				0906	6.34	Br nest
DPBN-5B #2				0906	6.35	Br nest

DP Canyon Dissolved Oxygen and Water Level Field Form

Measurement Date: 6/12/03

Well ID	Time	Dissolved Oxygen (mg/L)	Temp. (C)	Time	DTW (ft) bTOC	Well Type
DPBN-5B #3				0907	6.35	Br nest
DPBN-5C #1				0905	7.13	Br nest
DPBN-5C #2				0905	7.12	Br nest
DPBN-5C #3				0905	7.10	Br nest
DPW-5.8N				0904	8.65	Lateral Saturation
DPW-5.7N				0903	7.16	MLS well
DPPN-5.7 #1				0903	6.36	Z-Gradient Piezometer
DPPN-5.7 #2				0903	6.35	Z-Gradient Piezometer
DPPN-5.7 #3				0902	Dry	Z-Gradient Piezometer
DPBN-6A #1				0845	6.91	Br nest
DPBN-6A #2				0845	6.89	Br nest
DPBN-6A #3				0845	6.93	Br nest
DPBN-6B #1				0902	5.46	Br nest
DPBN-6B #2				0902	5.40	Br nest
DPBN-6B #3				0902	5.40	Br nest
DPBN-6C #1				0901	6.49	Br nest
DPBN-6C #2				0901	6.49	Br nest
DPBN-6C #3				0901	6.49	Br nest
DPBN-6D #1				0859	9.72	Br nest
DPBN-6D #2				0900	7.48	Br nest
DPBN-6D #3				0900	Dry	Br nest
DPW-6.2S				0847	6.56	Lateral Saturation
DPW-6.5N				0851	7.82	Lateral Saturation
DPBN-7A #1				0848	6.82	Br nest
DPBN-7A #2				0848	Probe	Br nest
DPBN-7A #3				0848	6.82	Br nest
DPBN-7B #1				0858	5.21	Br nest
DPBN-7B #2				0858	Probe	Br nest
DPBN-7B #3				0858	5.24	Br nest
DPBN-7C #1				0857	5.87	Br nest
DPBN-7C #2				0857	5.86	Br nest
DPBN-7C #3				0857	5.85	Br nest
DPW-7.1S				0850	Probe	MLS well
DPW-7.4N				0856	7.99	Lateral Saturation
DPW-7.5S				0850	8.06	Lateral Saturation
DPPN-7.7 #1				0850	8.97	Z-Gradient Piezometer
DPPN-7.7 #2					Probe	Z-Gradient Piezometer
DPPN-7.7 #3					Probe	Z-Gradient Piezometer
DPW-7.9S				0851	7.36	MLS well
DPBN-8A #1				0852	6.96	Br nest
DPBN-8A #2				0852	6.98	Br nest
DPBN-8A #3				0852	6.99	Br nest
DPBN-8B #1				0853	5.72	Br nest
DPBN-8B #2				0853	5.72	Br nest
DPBN-8B #3				0853	5.73	Br nest
LAUZ-2				0854	6.02	ER Observation Well

DP Canyon Dissolved Oxygen and Water Level Field Form

Measurement Date: 6/19/03

Well ID	Time	Dissolved Oxygen (mg/L)	Temp. (C)	Time	DTW (ft) bTOC	Well Type
LAUZ-1				0907	4.94	ER Observation Well
DPW-1S				0907	5.44	MLS well
DPBN-1A #1				0908	5.31	Br nest
DPBN-1A #2				0908	5.32	Br nest
DPBN-1A #3				0908	5.32	Br nest
DPBN-1B #1				0908	5.58	Br nest
DPBN-1B #2				0908	5.60	Br nest
DPBN-1B #3				0909	5.60	Br nest
DPBN-1C #1				0943	5.62	Br nest
DPBN-1C #2				0943	5.61	Br nest
DPBN-1C #3				0943	5.61	Br nest
DPW-1N				0941	7.94	Lateral Saturation
DPW-1.1N				0942	7.15	Lateral Saturation
DPPN-1.1 #1				0909	5.61	Z-Gradient Piezometer
DPPN-1.1 #2				0909	5.62	Z-Gradient Piezometer
DPPN-1.1 #3				0910	5.61	Z-Gradient Piezometer
DPBN-2A #1				0910	Probe	Br nest
DPBN-2A #2				0910	6.33	Br nest
DPBN-2A #3				0910	Dry	Br nest
DPBN-2B #1				0940	Probe	Br nest
DPBN-2B #2				0940	Probe	Br nest
DPBN-2B #3		0940	5.28	~~0940~~	~~Probe~~	Br nest
DPBN-2C #1		0941	6.39	~~0940~~	~~5.28~~	Br nest
DPBN-2C #2				0941	Probe	Br nest
DPBN-2C #3				0941	6.38	Br nest
DPBN-3A #1				0911	6.81	Br nest
DPBN-3A #2				0911	Probe	Br nest
DPBN-3A #3				0911	6.80	Br nest
DPBN-3B #1				0912	Probe	Br nest
DPBN-3B #2				0912	5.87	Br nest
DPBN-3B #3				0912	5.87	Br nest
DPBN-3C #1				0939	5.73	Br nest
DPBN-3C #2				0940	Probe	Br nest
DPBN-3C #3				0940	5.45	Br nest
DPW-3.2N				0939	8.89	Lateral Saturation
DPW-3.5N				0938	5.94	MLS well
DPW-3.5S				0913	6.76	Lateral Saturation
DPBN-4A #1				0913	5.82	Br nest
DPBN-4A #2				0913	5.84	Br nest
DPBN-4A #3				0913	5.83	Br nest
DPBN-4B #1				0937	5.97	Br nest
DPBN-4B #2				0937	6.00	Br nest
DPBN-4B #3				0937	6.00	Br nest
DPBN-4C #1				0938	7.11	Br nest
DPBN-4C #2				0938	7.11	Br nest
DPBN-4C #3				0938	7.10	Br nest
DPW-4.6N				0936	7.63	Lateral Saturation
DPPN-4.5N #1				0934	6.71	Z-Gradient Piezometer
DPPN-4.5N #2				0934	6.70	Z-Gradient Piezometer
DPPN-4.5N #3				0934	6.68	Z-Gradient Piezometer
DPW-4.4N			5.97	0936	~~7.67~~	MLS well
DPW 4.9S				0914	6.13	
DPBN-5A #1				0915	4.78	Br nest
DPBN-5A #2				0915	4.77	Br nest
DPBN-5A #3				0915	4.73	Br nest
DPBN-5B #1				0933	5.84	Br nest
DPBN-5B #2				0933	5.86	Br nest

DP Canyon Dissolved Oxygen and Water Level Field Form

Measurement Date: 6/19/03

Well ID	Time	Dissolved Oxygen (mg/L)	Temp. (C)	Time	DTW (ft) bTOC	Well Type
DPBN-5B #3				0933	5.89	Br nest
DPBN-5C #1				0933	6.65	Br nest
DPBN-5C #2				0932	6.63	Br nest
DPBN-5C #3				0933	6.62	Br nest
DPW-5.8N				0931	8.35	Lateral Saturation
DPW-5.7N				0931	6.71	MLS well
DPPN-5.7 #1				0930	5.86	Z-Gradient Piezometer
DPPN-5.7 #2				0930	5.86	Z-Gradient Piezometer
DPPN-5.7 #3				0930	5.77	Z-Gradient Piezometer
DPBN-6A #1				0916	6.38	Br nest
DPBN-6A #2				0916	6.36	Br nest
DPBN-6A #3				0916	6.41	Br nest
DPBN-6B #1				0929	4.93	Br nest
DPBN-6B #2				0930	4.86	Br nest
DPBN-6B #3				0930	4.89	Br nest
DPBN-6C #1				0929	6.03	Br nest
DPBN-6C #2				0929	6.03	Br nest
DPBN-6C #3				0929	6.04	Br nest
DPBN-6D #1				0928	9.65	Br nest
DPBN-6D #2				0928	7.43	Br nest
DPBN-6D #3				0928	Dry	Br nest
DPW-6.2S				0917	6.06	Lateral Saturation
DPW-6.5N				0927	7.52	Lateral Saturation
DPBN-7A #1				0918	6.29	Br nest
DPBN-7A #2				0918	Probe	Br nest
DPBN-7A #3				0918	6.30	Br nest
DPBN-7B #1				0926	4.73	Br nest
DPBN-7B #2				0926	Probe	Br nest
DPBN-7B #3				0926	4.74	Br nest
DPBN-7C #1				0925	5.37	Br nest
DPBN-7C #2				0925	5.37	Br nest
DPBN-7C #3				0925	5.35	Br nest
DPW-7.1S				0920	Probe	MLS well
DPW-7.4N				0924	7.49	Lateral Saturation
DPW-7.5S				0918	7.73	Lateral Saturation
DPPN-7.7 #1				0919	8.63	Z-Gradient Piezometer
DPPN-7.7 #2				0920	5.46	Z-Gradient Piezometer
DPPN-7.7 #3				0920	5.19	Z-Gradient Piezometer
DPW-7.9S				0920	7.06	MLS well
DPBN-8A #1				0921	6.63	Br nest
DPBN-8A #2				0922	6.62	Br nest
DPBN-8A #3				0922	6.62	Br nest
DPBN-8B #1				0922	5.57	Br nest
DPBN-8B #2				0922	5.57	Br nest
DPBN-8B #3				0923	5.58	Br nest
LAUZ-2				0923	5.90	ER Observation Well

Solinst 31328 tip = 0.27 ft

DP Canyon Dissolved Oxygen and Water Level Field Form

Measurement Date: 6/26/03

Well ID	Time	Dissolved Oxygen (mg/L)	Temp. (C)	Time	DTW (ft) bTOC	Well Type
LAUZ-1				939	5.64	ER Observation Well
DPW-1S				940	6.12	MLS well
DPBN-1A #1				941	5.82	Br nest
DPBN-1A #2				941	5.85	Br nest
DPBN-1A #3				942	~~5.82~~ 5.86	Br nest
DPBN-1B #1				942	6.22	Br nest
DPBN-1B #2				942	6.24	Br nest
DPBN-1B #3				943	dry	Br nest
DPBN-1C #1				1023	6.22	Br nest
DPBN-1C #2				1023	6.21	Br nest
DPBN-1C #3				1023	6.20	Br nest
DPW-1N				1022	Dry	Lateral Saturation
DPW-1.1N				1022	7.74	Lateral Saturation
DPPN-1.1 #1				1024	6.23	Z-Gradient Piezometer
DPPN-1.1 #2				1024	Dry	Z-Gradient Piezometer
DPPN-1.1 #3				1025	Dry	Z-Gradient Piezometer
DPBN-2A #1				947	Probe	Br nest
DPBN-2A #2				947	6.74	Br nest
DPBN-2A #3				947	Dry	Br nest
DPBN-2B #1				1021	Probe	Br nest
DPBN-2B #2				1021	Probe	Br nest
DPBN-2B #3				1021	Dry	Br nest
DPBN-2C #1				1021	6.93	Br nest
DPBN-2C #2				1021	Probe	Br nest
DPBN-2C #3				1021	6.91	Br nest
DPBN-3A #1				948	7.24	Br nest
DPBN-3A #2				948	Probe	Br nest
DPBN-3A #3				948	7.26	Br nest
DPBN-3B #1				948	Probe	Br nest
DPBN-3B #2				948	6.30	Br nest
DPBN-3B #3				949	Dry	Br nest
DPBN-3C #1				1020	6.23	Br nest
DPBN-3C #2				1020	Probe	Br nest
DPBN-3C #3				1020	5.95	Br nest
DPW-3.2N				1019	9.34	Lateral Saturation
DPW-3.5N				1018	6.40	MLS well
DPW-3.5S				950	7.24	Lateral Saturation
DPBN-4A #1				950	6.28	Br nest
DPBN-4A #2				950	6.29	Br nest
DPBN-4A #3				951	6.29	Br nest
DPBN-4B #1				1016	6.41	Br nest
DPBN-4B #2				1016	6.43	Br nest
DPBN-4B #3				1017	6.43	Br nest
DPBN-4C #1				1017	7.57	Br nest
DPBN-4C #2				1017	7.56	Br nest
DPBN-4C #3				1018	7.56	Br nest
DPW-4.6N				1015	8.07	Lateral Saturation
DPPN-4.5N #1				1014	7.15	Z-Gradient Piezometer
DPPN-4.5N #2				1014	7.14	Z-Gradient Piezometer
DPPN-4.5N #3				1015	7.12	Z-Gradient Piezometer
DPW-4.4N				1016	6.42	MLS well
DPW 4.9S				951	6.55	
DPBN-5A #1				951	5.17	Br nest
DPBN-5A #2				952	5.17	Br nest
DPBN-5A #3				952	5.15	Br nest
DPBN-5B #1				1013	6.27	Br nest
DPBN-5B #2				1013	6.28	Br nest

DP Canyon Dissolved Oxygen and Water Level Field Form

Measurement Date: 6/22/03

Well ID	Time	Dissolved Oxygen (mg/L)	Temp. (C)	Time	DTW (ft) bTOC	Well Type
DPBN-5B #3				1013	6.30	Br nest
DPBN-5C #1				1011	7.08	Br nest
DPBN-5C #2				1011	7.07	Br nest
DPBN-5C #3				1012	7.05	Br nest
DPW-5.8N				1011	8.66	Lateral Saturation
DPW-5.7N				1010	7.11	MLS well
DPPN-5.7 #1				1009	6.30	Z-Gradient Piezometer
DPPN-5.7 #2				1009	6.29	Z-Gradient Piezometer
DPPN-5.7 #3				1010	Dry	Z-Gradient Piezometer
DPBN-6A #1				953	6.83	Br nest
DPBN-6A #2				953	6.82	Br nest
DPBN-6A #3				953	6.85	Br nest
DPBN-6B #1				1008	5.35	Br nest
DPBN-6B #2				1008	5.29	Br nest
DPBN-6B #3				1009	5.31	Br nest
DPBN-6C #1				1007	6.44	Br nest
DPBN-6C #2				1007	6.42	Br nest
DPBN-6C #3				1007	6.42	Br nest
DPBN-6D #1				1006	10.52	Br nest
DPBN-6D #2				1006	7.40	Br nest
DPBN-6D #3				1007	Dry	Br nest
DPW-6.2S				954	86.52	Lateral Saturation
DPW-6.5N				1006	7.93	Lateral Saturation
DPBN-7A #1				955	6.80	Br nest
DPBN-7A #2				955	Probe	Br nest
DPBN-7A #3				955	6.80	Br nest
DPBN-7B #1				1005	5.18	Br nest
DPBN-7B #2				1005	Probe	Br nest
DPBN-7B #3				1005	5.19	Br nest
DPBN-7C #1				1004	5.82	Br nest
DPBN-7C #2				1004	5.80	Br nest
DPBN-7C #3				1004	5.80	Br nest
DPW-7.1S				955	7.05	MLS well
DPW-7.4N				1003	7.94	Lateral Saturation
DPW-7.5S				956	8.06	Lateral Saturation
DPPN-7.7 #1				957	8.35	Z-Gradient Piezometer
DPPN-7.7 #2				957	5.83	Z-Gradient Piezometer
DPPN-7.7 #3				958	5.56	Z-Gradient Piezometer
DPW-7.9S				958	7.35	MLS well
DPBN-8A #1				959	6.97	Br nest
DPBN-8A #2				959	6.93	Br nest
DPBN-8A #3				959	6.95	Br nest
DPBN-8B #1				1000	5.69	Br nest
DPBN-8B #2				1000	5.69	Br nest
DPBN-8B #3				1000	5.72	Br nest
LAUZ-2				1001	6.03	ER Observation Well

DP Canyon Dissolved Oxygen and Water Level Field Form

Measurement Date: 6/30/03

Well ID	Time	Dissolved Oxygen (mg/L)	Temp. (C)	Time	DTW (ft) bTOC	Well Type
LAUZ-1				1034	5.95	ER Observation Well
DPW-1S				1035	6.44	MLS well
DPBN-1A #1				1036	6.16	Br nest
DPBN-1A #2				1036	6.19	Br nest
DPBN-1A #3				1036	6.18	Br nest
DPBN-1B #1				1036	6.57	Br nest
DPBN-1B #2				1037	6.58	Br nest
DPBN-1B #3				1037	Dry	Br nest
DPBN-1C #1				1114	6.54	Br nest
DPBN-1C #2				1114	6.54	Br nest
DPBN-1C #3				1114	6.53	Br nest
DPW-1N				1113	Dry	Lateral Saturation
DPW-1.1N				1113	8.05	Lateral Saturation
DPPN-1.1 #1				1037	6.57	Z-Gradient Piezometer
DPPN-1.1 #2				1038	Dry	Z-Gradient Piezometer
DPPN-1.1 #3				1038	Dry	Z-Gradient Piezometer
DPBN-2A #1				1039	Probe	Br nest
DPBN-2A #2				1039	7.07	Br nest
DPBN-2A #3				1039	Dry	Br nest
DPBN-2B #1				1112	Probe	Br nest
DPBN-2B #2				1113	Probe	Br nest
DPBN-2B #3				1113	Dry	Br nest
DPBN-2C #1				1112	7.26	Br nest
DPBN-2C #2				1112	Probe	Br nest
DPBN-2C #3				1112	7.25	Br nest
DPBN-3A #1				1039	7.57	Br nest
DPBN-3A #2				1039	Probe	Br nest
DPBN-3A #3				1040	7.56	Br nest
DPBN-3B #1				1040	Probe	Br nest
DPBN-3B #2				1040	6.69	Br nest
DPBN-3B #3				1041	Dry	Br nest
DPBN-3C #1				1111	6.54	Br nest
DPBN-3C #2				1111	Probe	Br nest
DPBN-3C #3				1111	6.28	Br nest
DPW-3.2N				1110	9.62	Lateral Saturation
DPW-3.5N				1109	6.64	MLS well
DPW-3.5S				1041	7.53	Lateral Saturation
DPBN-4A #1				1042	6.58	Br nest
DPBN-4A #2				1042	6.59	Br nest
DPBN-4A #3				1042	6.61	Br nest
DPBN-4B #1				1108	6.70	Br nest
DPBN-4B #2				1108	6.69	Br nest
DPBN-4B #3				1108	6.69	Br nest
DPBN-4C #1				1109	7.88	Br nest
DPBN-4C #2				1109	7.86	Br nest
DPBN-4C #3				1109	7.85	Br nest
DPW-4.6N				1107	8.34	Lateral Saturation
DPPN-4.5N #1				1105	7.47	Z-Gradient Piezometer
DPPN-4.5N #2				1105	7.42	Z-Gradient Piezometer
DPPN-4.5N #3				1106	7.39	Z-Gradient Piezometer
DPW-4.4N				1107	6.70	MLS well
DPW 4.9S				1043	6.82	
DPBN-5A #1				1043	5.46	Br nest
DPBN-5A #2				1044	5.44	Br nest
DPBN-5A #3				1044	5.42	Br nest
DPBN-5B #1				1104	6.56	Br nest
DPBN-5B #2				1104	6.56	Br nest

DP Canyon Dissolved Oxygen and Water Level Field Form

Measurement Date: 6/30/03

Well ID	Time	Dissolved Oxygen (mg/L)	Temp. (C)	Time	DTW (ft) bTOC	Well Type
DPBN-5B #3				1104	6.56	Br nest
DPBN-5C #1				1103	7.34	Br nest
DPBN-5C #2				1103	7.33	Br nest
DPBN-5C #3				1104	7.32	Br nest
DPW-5.8N				1102	8.82	Lateral Saturation
DPW-5.7N				1102	7.34	MLS well
DPPN-5.7 #1				1101	6.52	Z-Gradient Piezometer
DPPN-5.7 #2				1101	6.52	Z-Gradient Piezometer
DPPN-5.7 #3				1101	Dry	Z-Gradient Piezometer
DPBN-6A #1				1045	7.12	Br nest
DPBN-6A #2				1045	7.06	Br nest
DPBN-6A #3				1045	7.12	Br nest
DPBN-6B #1				1100	5.60	Br nest
DPBN-6B #2				1100	5.57	Br nest
DPBN-6B #3				1100	5.58	Br nest
DPBN-6C #1				1059	6.62	Br nest
DPBN-6C #2				1059	6.64	Br nest
DPBN-6C #3				1059	6.64	Br nest
DPBN-6D #1				1058	9.02	Br nest
DPBN-6D #2				1058	7.33	Br nest
DPBN-6D #3				1058	Dry	Br nest
DPW-6.2S				1046	6.75	Lateral Saturation
DPW-6.5N				1057	8.09	Lateral Saturation
DPBN-7A #1				1047	7.06	Br nest
DPBN-7A #2				1047	Probe	Br nest
DPBN-7A #3				1047	7.06	Br nest
DPBN-7B #1				1056	5.40	Br nest
DPBN-7B #2				1056	Probe	Br nest
DPBN-7B #3				1056	5.41	Br nest
DPBN-7C #1				1055	6.02	Br nest
DPBN-7C #2				1055	6.02	Br nest
DPBN-7C #3				1056	6.01	Br nest
DPW-7.1S				1047	7.26	MLS well
DPW-7.4N				1054	8.10	Lateral Saturation
DPW-7.5S				1048	8.19	Lateral Saturation
DPPN-7.7 #1				1049	8.37	Z-Gradient Piezometer
DPPN-7.7 #2				1049	6.00	Z-Gradient Piezometer
DPPN-7.7 #3				1050	5.73	Z-Gradient Piezometer
DPW-7.9S				1050	7.50	MLS well
DPBN-8A #1				1051	7.13	Br nest
DPBN-8A #2				1051	7.12	Br nest
DPBN-8A #3				1051	7.12	Br nest
DPBN-8B #1				1052	5.84	Br nest
DPBN-8B #2				1052	5.84	Br nest
DPBN-8B #3				1052	5.85	Br nest
LAUZ-2				1053	6.14	ER Observation Well

DP Canyon Dissolved Oxygen and Water Level Field Form

Measurement Date: 7/17/05 S. Purdue / R. Budd

Well ID	Time	Dissolved Oxygen (mg/L)	Temp. (C)	Time	DTW (ft) bTOC	Well Type
LAUZ-1	1008	0.13	11.8	908	6.92	ER Observation Well
DPW-1S	1008	DMLS		908	Probe Dry	MLS well
DPBN-1A #1	1010	0.19	11.3	909	7.07	Br nest
DPBN-1A #2	1009	0.16	11.7	909	7.08	Br nest
DPBN-1A #3	1009	Dry	–	909	Dry	Br nest
DPBN-1B #1	1011	0.16	13.4	910	7.62	Br nest
DPBN-1B #2	1010	Dry	–	910	Dry	Br nest
DPBN-1B #3	1010	Dry	–	910	Dry	Br nest
DPBN-1C #1	1114	0.64	14.4	956	7.64	Br nest
DPBN-1C #2				956	Dry	Br nest
DPBN-1C #3				957	Dry	Br nest
DPW-1N		Dry		955	Dry	Lateral Saturation
DPW-1.1N 1111	0.09	13.4		956	9.16	Lateral Saturation
DPPN-1.1 #1				911	Dry	Z-Gradient Piezometer
DPPN-1.1 #2				911	Dry	Z-Gradient Piezometer
DPPN-1.1 #3				912	Dry	Z-Gradient Piezometer
DPBN-2A #1				914	Probe	Br nest
DPBN-2A #2				914	Dry	Br nest
DPBN-2A #3				914	Dry	Br nest
DPBN-2B #1				955	Probe	Br nest
DPBN-2B #2				955	Probe	Br nest
DPBN-2B #3				955	Dry	Br nest
DPBN-2C #1				954	8.34	Br nest
DPBN-2C #2				955	Probe	Br nest
DPBN-2C #3				955	8.32	Br nest
DPBN-3A #1				915	8.42	Br nest
DPBN-3A #2				915	Probe	Br nest
DPBN-3A #3				915	Dry	Br nest
DPBN-3B #1				916	Probe	Br nest
DPBN-3B #2				916	Dry	Br nest
DPBN-3B #3				916	Dry	Br nest
DPBN-3C #1				953	7.65	Br nest
DPBN-3C #2				954	Probe	Br nest
DPBN-3C #3				954	Dry	Br nest
DPW-3.2N	1109	0.83	13.3	953	10.65	Lateral Saturation
DPW-3.5N	~~1012~~	~~1.06~~	~~11.0~~	952	DMLS	MLS well
DPW-3.5S	1012	1.06	11.0	916	8.49	Lateral Saturation
DPBN-4A #1	1014	2.46	12.1	917	7.48	Br nest
DPBN-4A #2	1014	2.60	13.1	917	7.48	Br nest
DPBN-4A #3	1014	1.30	13.4	918	7.46	Br nest
DPBN-4B #1	1108	0.12	12.2	951	7.70	Br nest
DPBN-4B #2	1107	0.17	12.8	952	7.70	Br nest
DPBN-4B #3	1106	1.38	13.7	952	7.68	Br nest
DPBN-4C #1	1109	0.20	12.1	950	8.90	Br nest
DPBN-4C #2	1105	0.35	12.7	950	8.87	Br nest
DPBN-4C #3	1104	0.70	13.3	950	8.86	Br nest
DPW-4.6N	1102	1.44	12.6	950	9.35	Lateral Saturation
DPPN-4.5N #1				949	8.48	Z-Gradient Piezometer
DPPN-4.5N #2				949	Dry	Z-Gradient Piezometer
DPPN-4.5N #3				949	Dry	Z-Gradient Piezometer
DPW-4.4N				949	DMLS	MLS well
DPW 4.9S	1016	2.77	12.6	918	7.78	
DPBN-5A #1	1018	2.27	12.7	919	6.45	Br nest
DPBN-5A #2	1018	2.92	13.0	919	6.41	Br nest
DPBN-5A #3	1017	4.15	13.3	919	6.38	Br nest
DPBN-5B #1	1102	0.16	12.6	946	7.58	Br nest
DPBN-5B #2	1101	0.13	13.9	946	7.59	Br nest

Slope = 0.91

DP Canyon Dissolved Oxygen and Water Level Field Form

Measurement Date: 7/17/03 S. Purdue / R. Budd

Well ID	Time	Dissolved Oxygen (mg/L)	Temp. (C)	Time	DTW (ft) bTOC	Well Type
DPBN-5B #3	1100	1.38	14.8	947	7.59	Br nest
DPBN-5C #1	1058	0.39	12.4	945	8.40	Br nest
DPBN-5C #2	1057	0.12	13.0	945	8.37	Br nest
DPBN-5C #3	1056	0.55	13.6	945	8.37	Br nest
DPW-5.8N	1055	0.15	13.3	943	9.62	Lateral Saturation
DPW-5.7N		DMLS		943	DMLS	MLS well
DPPN-5.7 #1	1053	0.38	12.6	940	7.48	Z-Gradient Piezometer
DPPN-5.7 #2	1053	0.51	12.8	941	7.48	Z-Gradient Piezometer
DPPN-5.7 #3	1053	Dry		941	Dry	Z-Gradient Piezometer
DPBN-6A #1 330	~~1022~~	~~0.34~~	12.8	921	8.05	Br nest
DPBN-6A #2	1022	0.38	12.2	921	8.00	Br nest
DPBN-6A #3	1021	0.34	12.6	921	Dry	Br nest
DPBN-6B #1	1051	0.09	11.4	939	6.52	Br nest
DPBN-6B #2	1051	0.16	11.8	939	6.48	Br nest
DPBN-6B #3	1050	0.36	12.9	939	6.50	Br nest
DPBN-6C #1	1047	2.15	12.8	937	7.51	Br nest
DPBN-6C #2	1047	2.44	13.3	937	7.49	Br nest
DPBN-6C #3	1046	3.70	14.2	937	7.49	Br nest
DPBN-6D #1	1044	0.53	11.6	936	8.77	Br nest
DPBN-6D #2	1043	0.11	12.9	936	7.58	Br nest
DPBN-6D #3		Dry		936	Dry	Br nest
DPW-6.2S	1023	0.18	13.8	922	7.66	Lateral Saturation
DPW-6.5N	1042	0.16	13.8	935	8.70	Lateral Saturation
DPBN-7A #1	Probe	Probe		923	7.83	Br nest
DPBN-7A #2				923	Probe	Br nest
DPBN-7A #3				923	7.83	Br nest
DPBN-7B #1	~~1050~~	~~0~~		933	6.23	Br nest
DPBN-7B #2	~~1054~~			934	Probe	Br nest
DPBN-7B #3	~~1054~~	~~0.36~~	~~12.4~~	934	6.22	Br nest
DPBN-7C #1	1038	3.06	13.6	932	6.83	Br nest
DPBN-7C #2	1038	1.75	12.3	932	6.84	Br nest
DPBN-7C #3	1038	0.53	11.7	933	6.83	Br nest
DPW-7.1S					—	MLS well
DPW-7.4N	1036	1.32	13.2	931	8.65	Lateral Saturation
DPW-7.5S	1025	0.15	11.2	924	8.59	Lateral Saturation
DPPN-7.7 #1	1026	0.16	12.9	925	8.20	Z-Gradient Piezometer
DPPN-7.7 #2				926	Dry	Z-Gradient Piezometer
DPPN-7.7 #3				927	6.25	Z-Gradient Piezometer
DPW-7.9S				927	Probe DMLS	MLS well
DPBN-8A #1	1027	1.06	14.2	927	7.75	Br nest
DPBN-8A #2	1028	0.89	13.9	928	7.75	Br nest
DPBN-8A #3	1029	0.63	13.5	928	7.75	Br nest
DPBN-8B #1	1030	0.31	14.3	928	6.25	Br nest
DPBN-8B #2	1031	0.37	14.0	928	6.23	Br nest
DPBN-8B #3	1032	0.20	13.5	929	6.25	Br nest
LAUZ-2	1032	0.14	14.1	929	6.53	ER Observation Well

DP Canyon Dissolved Oxygen and Water Level Field Form

Measurement Date: 8/26/03

Well ID	Time	Dissolved Oxygen (mg/L)	Temp. (C)	Time	DTW (ft) bTOC	Well Type
LAUZ-1	818	2.3	17.8	954	4.33	ER Observation Well
DPW-1S	DMLS			DMLS		MLS well
DPBN-1A #1	823	0.3	14.0	953	4.48	Br nest
DPBN-1A #2	822	0.3	14.3	952	4.50	Br nest
DPBN-1A #3	821	0.6	15.1	952	4.49	Br nest
DPBN-1B #1	826	0.2	16.6	954	4.86	Br nest
DPBN-1B #2	825	0.2	17.2	953	4.85	Br nest
DPBN-1B #3	824	0.1	17.5	953	4.84	Br nest
DPBN-1C #1	0932	0.8	17.9	957	4.94	Br nest
DPBN-1C #2	0931	1.4	18.0	956	4.94	Br nest
DPBN-1C #3	0930	1.1	18.0	955	4.94	Br nest
DPW-1N	0927	0.4	17.4	957	4.37	Lateral Saturation
DPW-1.1N	0929	0.2	16.7	956	6.51	Lateral Saturation
DPPN-1.1 #1	transducer			transducer		Z-Gradient Piezometer
DPPN-1.1 #2	↓			↓		Z-Gradient Piezometer
DPPN-1.1 #3						Z-Gradient Piezometer
DPBN-2A #1	Probe			1040	Probe	Br nest
DPBN-2A #2				1040	5.75	Br nest
DPBN-2A #3				1039	5.74	Br nest
DPBN-2B #1				Probe		Br nest
DPBN-2B #2				1000	4.80	Br nest
DPBN-2B #3				959	4.79	Br nest
DPBN-2C #1				Probe		Br nest
DPBN-2C #2				958	5.88	Br nest
DPBN-2C #3	↓			957	5.87	Br nest
DPBN-3A #1	Probe			1035	6.45	Br nest
DPBN-3A #2				Probe		Br nest
DPBN-3A #3				1035	6.44	Br nest
DPBN-3B #1				Probe		Br nest
DPBN-3B #2				1036	5.50	Br nest
DPBN-3B #3				1036	5.49	Br nest
DPBN-3C #1				1001	5.44	Br nest
DPBN-3C #2				Probe		Br nest
DPBN-3C #3	↓			1000	~~4.55~~ 5.05	Br nest
DPW-3.2N	827	1.4	16.2	1002	8.51	Lateral Saturation
DPW-3.5N	DMLS			DMLS		MLS well
DPW-3.5S	826	2.7	14.0	1035	6.45	Lateral Saturation
DPBN-4A #1	829	0.7	15.0	1035	5.61	Br nest
DPBN-4A #2	828	1.2	15.8	1034	5.61	Br nest
DPBN-4A #3	827	1.4	16.0	1033	5.63	Br nest
DPBN-4B #1	0926	0.1	15.8	1003	5.78	Br nest
DPBN-4B #2	0925	1.0	16.6	1002	5.78	Br nest
DPBN-4B #3	0924	0.2	16.9	1002	5.78	Br nest
DPBN-4C #1	921	3.1	14.9	1005	6.91	Br nest
DPBN-4C #2	920	2.2	15.7	1005	6.90	Br nest
DPBN-4C #3	~~0831~~ 0911	~~7.3~~ 2.3	~~16.1~~	~~1004~~	6.89	Br nest
DPW-4.6N	0919	2.1	14.5	1005	7.40	Lateral Saturation
DPPN-4.5N #1	transducers			transducers		Z-Gradient Piezometer
DPPN-4.5N #2	↓			↓		Z-Gradient Piezometer
DPPN-4.5N #3						Z-Gradient Piezometer
DPW-4.4N	DMLS			DMLS		MLS well
DPW 4.9S	0830	7.4	15.7	1033	5.92	
DPBN-5A #1	0833	10.5	15.8	1032	4.59	Br nest
DPBN-5A #2	0832	6.6	15.6	1032	4.56	Br nest
DPBN-5A #3	0831	7.3	16.1	1032	4.54	Br nest
DPBN-5B #1	0912	0.4	~~16.9~~	1007	5.70	Br nest
DPBN-5B #2	0911	0.4	17.7	1007	5.41	Br nest

DP Canyon Dissolved Oxygen and Water Level Field Form

Measurement Date: 9/26/03

Well ID	Time	Dissolved Oxygen (mg/L)	Temp. (C)	Time	DTW (ft) bTOC	Well Type
DPBN-5B #3	0916	0.3	17.1	1006	5.41	Br nest
DPBN-5C #1	0915	2.2	16.9	1006	6.49	Br nest
DPBN-5C #2	0914	7.6	17.4	1005	6.47	Br nest
DPBN-5C #3	0913	8.1	17.7	1005	6.46	Br nest
DPW-5.8N	0911	0.2	15.6	1013	8.15	Lateral Saturation
DPW-5.7N	DMLS			DMLS		MLS well
DPPN-5.7 #1	0909	0.3	16.2	1017 ~~transducer~~	5.69	Z-Gradient Piezometer
DPPN-5.7 #2	0908	0.3	16.5	1017	5.69	Z-Gradient Piezometer
DPPN-5.7 #3	0907	1.2	16.8	1016	5.56	Z-Gradient Piezometer
DPBN-6A #1	0839	0.6	16.2	1029	6.19	Br nest
DPBN-6A #2	0838	1.1	16.8	1029	6.19	Br nest
DPBN-6A #3	0837	1.9	17.1	1028	6.20	Br nest
DPBN-6B #1	0906	0.1	14.7	1017	4.72	Br nest
DPBN-6B #2	0905	0.2	15.1	1016	4.65	Br nest
DPBN-6B #3	0904	0.5	15.6	1015	4.65	Br nest
DPBN-6C #1	0903	3.0	13.8	1015	5.80	Br nest
DPBN-6C #2	0902	2.7	13.9	1015	5.80	Br nest
DPBN-6C #3	0901	2.0	14.3	1015	5.80	Br nest
DPBN-6D #1	900	0.2	14.5	1015	6.78	Br nest
DPBN-6D #2	859	0.3	15.2	1014	6.30	Br nest
DPBN-6D #3	858	5.1	15.5	1014	6.30	Br nest
DPW-6.2S	840	5.3	16.7	1028	5.78	Lateral Saturation
DPW-6.5N	856	0.1	15.5	1018	7.41	Lateral Saturation
DPBN-7A #1	Probe			1027	6.21	Br nest
DPBN-7A #2	↓			Probe		Br nest
DPBN-7A #3	↓			1027	6.21	Br nest
DPBN-7B #1	↓			1021	4.64	Br nest
DPBN-7B #2	↓			Probe		Br nest
DPBN-7B #3	↓			1021	4.64	Br nest
DPBN-7C #1	0856	0.2	14.0	1020	5.21	Br nest
DPBN-7C #2	0855	0.2	14.7	1020	5.21	Br nest
DPBN-7C #3	0854	0.4	15.2	1019	5.20	Br nest
DPW-7.1S	transducer			transducer		MLS well
DPW-7.4N	851	1.3	15.5	1022	7.17	Lateral Saturation
DPW-7.5S	842	0.6	13.5	1026	7.66	Lateral Saturation
DPPN-7.7 #1	transducer			transducer		Z-Gradient Piezometer
DPPN-7.7 #2	↓			↓		Z-Gradient Piezometer
DPPN-7.7 #3	↓			↓		Z-Gradient Piezometer
DPW-7.9S	DMLS			DMLS		MLS well
DPBN-8A #1	0850	1.4	17.2	1026	6.55	Br nest
DPBN-8A #2	0849	1.9	17.3	1025	6.55	Br nest
DPBN-8A #3	0848	0.7	17.2	1025	6.56	Br nest
DPBN-8B #1	0847	0.5	16.7	1024	5.58	Br nest
DPBN-8B #2	0846	1.6	16.8	1024	5.59	Br nest
DPBN-8B #3	0845	2.5	16.7	1023	5.60	Br nest
LAUZ-2	NM	NM	NM	1024	6.11	ER Observation Well

CANYONS

LA Pueblo

Fall 550 Logbook

Ben Meadows

LEVEL BOOK

Oct 1999

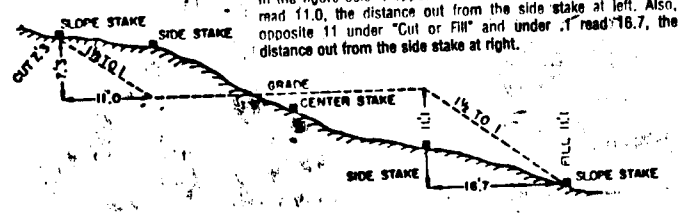
#461

Horas

DISTANCES FROM SIDE STAKES FOR CROSS-SECTIONING

Roadway of any Width. Side Slopes 1½ to 1.

In the figure below: opposite 7 under "Cut or Fill" and under .3 read 11.0, the distance out from the side stake at left. Also, opposite 11 under "Cut or Fill" and under .1 read 16.7, the distance out from the side stake at right.



Cut or Fill	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	Cut or Fill
	Distance out from Side or Shoulder Stake										
0	0.0	0.2	0.3	0.5	0.6	0.8	0.9	1.1	1.2	1.4	0
1	1.5	1.7	1.8	2.0	2.1	2.3	2.4	2.6	2.7	2.9	1
2	3.0	3.2	3.3	3.5	3.6	3.8	3.9	4.1	4.2	4.4	2
3	4.5	4.7	4.8	5.0	5.1	5.3	5.4	5.6	5.7	5.9	3
4	6.0	6.2	6.3	6.5	6.6	6.8	6.9	7.1	7.2	7.4	4
5	7.5	7.7	7.8	8.0	8.1	8.3	8.4	8.6	8.7	8.9	5
6	9.0	9.2	9.3	9.5	9.6	9.8	9.9	10.1	10.2	10.4	6
7	10.5	10.7	10.8	11.0	11.1	11.3	11.4	11.6	11.7	11.9	7
8	12.0	12.2	12.3	12.5	12.6	12.8	12.9	13.1	13.2	13.4	8
9	13.5	13.7	13.8	14.0	14.1	14.3	14.4	14.6	14.7	14.9	9
10	15.0	15.2	15.3	15.5	15.6	15.8	15.9	16.1	16.2	16.4	10
11	16.5	16.7	16.8	17.0	17.1	17.3	17.4	17.6	17.7	17.9	11
12	18.0	18.2	18.3	18.5	18.6	18.8	18.9	19.1	19.2	19.4	12
13	19.5	19.7	19.8	20.0	20.1	20.3	20.4	20.6	20.7	20.9	13
14	21.0	21.2	21.3	21.5	21.6	21.8	21.9	22.1	22.2	22.4	14
15	22.5	22.7	22.8	23.0	23.1	23.3	23.4	23.6	23.7	23.9	15
16	24.0	24.2	24.3	24.5	24.6	24.8	24.9	25.1	25.2	25.4	16
17	25.5	25.7	25.8	26.0	26.1	26.3	26.4	26.6	26.7	26.9	17
18	27.0	27.2	27.3	27.5	27.6	27.8	27.9	28.1	28.2	28.4	18
19	28.5	28.7	28.8	29.0	29.1	29.3	29.4	29.6	29.7	29.9	19
20	30.0	30.2	30.3	30.5	30.6	30.8	30.9	31.1	31.2	31.4	20
21	31.5	31.7	31.8	32.0	32.1	32.3	32.4	32.6	32.7	32.9	21
22	33.0	33.2	33.3	33.5	33.6	33.8	33.9	34.1	34.2	34.4	22
23	34.5	34.7	34.8	35.0	35.1	35.3	35.4	35.6	35.7	35.9	23
24	36.0	36.2	36.3	36.5	36.6	36.8	36.9	37.1	37.2	37.4	24
25	37.5	37.7	37.8	38.0	38.1	38.3	38.4	38.6	38.7	38.9	25
26	39.0	39.2	39.3	39.5	39.6	39.8	39.9	40.1	40.2	40.4	26
27	40.5	40.7	40.8	41.0	41.1	41.3	41.4	41.6	41.7	41.9	27
28	42.0	42.2	42.3	42.5	42.6	42.8	42.9	43.1	43.2	43.4	28
29	43.5	43.7	43.8	44.0	44.1	44.3	44.4	44.6	44.7	44.9	29
30	45.0	45.2	45.3	45.5	45.6	45.8	45.9	46.1	46.2	46.4	30
31	46.5	46.7	46.8	47.0	47.1	47.3	47.4	47.6	47.7	47.9	31
32	48.0	48.2	48.3	48.5	48.6	48.8	48.9	49.1	49.2	49.4	32
33	49.5	49.7	49.8	50.0	50.1	50.3	50.4	50.6	50.7	50.9	33
34	51.0	51.2	51.3	51.5	51.6	51.8	51.9	52.1	52.2	52.4	34
35	52.5	52.7	52.8	53.0	53.1	53.3	53.4	53.6	53.7	53.9	35
36	54.0	54.2	54.3	54.5	54.6	54.8	54.9	55.1	55.2	55.4	36
37	55.5	55.7	55.8	56.0	56.1	56.3	56.4	56.6	56.7	56.9	37
38	57.0	57.2	57.3	57.5	57.6	57.8	57.9	58.1	58.2	58.4	38
39	58.5	58.7	58.8	59.0	59.1	59.3	59.4	59.6	59.7	59.9	39
40	60.0	60.2	60.3	60.5	60.6	60.8	60.9	61.1	61.2	61.4	40

Estl. Pool
Larry Pacheco } 665-4926
Bob Dinwiddie

Robert Baran 104*-3943
7-2943

Richard Bjarke 966 699-1490 page
667-3659

Steve Renean 665-3151
699-1698

Danny Katzman - 667-0597, 699-1042
Mark VanEechaut 665-9805
Dale Counce - 667-1224
Deb Bergfeld - 667-1812
Dave Broxton - 667-2492
San I Env. 455-2273

The paper in this book is made of 50% high grade rag stock with a WATER RESISTING surface sizing.

CONTENTS

PAGE NO.	REFERENCE	DATE
1-13	Acid Canyon	10/26/99 → 11/19/99
14	P-1, walnut canyon	11/30/01
15	Sample Screening	12/1/99
16	3-010(a)	12/14/99
17-18	LA-2, LA-3	4/A-20/00
19-21	Surface water Observations	4/26/00-5/3/00
23-27	Well development PAO-1, PAO-2	6/13/00-6/15/00
28	Well development PAO-3	6/15/00
29-34	Collect Alluvial Water. Pueblo	6/17/00-6/20/00
35-42	Alluvial Water Sampling, LA Canyon	6/21/00 → 6/27/00
43-47	Alluvial Water Sampling, MO Canyon	7/7/00 → 7/11/00
48-54	Alluvial Water Sampling, LA Canyon	7/24/00 → 7/26/00
55-58	Alluvial Water Sampling, PU canyon	7/27/00-7/28/00
59	R-12 Water Quality	8/15/00
60-61	Alluvial Water Sampling, Pueblo Canyon	8/30-31/00
62-65	LA Canyon Alluvial Water Samp.	8/31/00-9/5/00
66-67	PU Canyon " " "	10/3/00-10/4/00
68-71	LA Canyon Alluvial Water Samp.	10/5/00-10/11/00
72	Pueblo, PAO-1	10/26/00
73	LA Canyon Surface water	11/2/00
74a-75a	LA Canyon water levels	11/3/00-12/2/00
74b-75b-76	LA Canyon Sediment Sampl.	2/6/01
77-86	LA Canyon Water Sampling	3/13/01-3/30/01
87-90	DP Canyon water Sampling	4/2/01
91-92	Acid Canyon Water "	4/3/01
93-96	PU Canyon water Sampling	4/4/01-4/5/01
97	DP Canyon Water Sampling	4/9/01
98	Ash sampling, Upper LA	6/1/01
99-100	Acid Canyon Sediment Sampling	6/15/01
101-104	LA/DP water sampling	6/18-19/01
105-106	Acid/DP Water Sampling	6/20/01
107-111	PU/DP water sampling	6/21-22/01
112-118	LA/PU Water Sampling	6/25-27/01

Table of Contents Continued on P. 151

Acid Canyon 10/26/99

11:00 J. Harris SSO. D. Steven, D. Katzman, + S. Reneau on-site at Aquatic Center above acid Canyon.

11:25 Tailgate Safety Briefing + SSHASP Briefing. Discuss MSDS for Paint used to spray stakes.

1145 Background Readings
B/G
141 dpm
144 dpm
141 dpm
119 dpm
127 dpm

1220 Begin to Stake AC3 South

1330 D. Katzman. S. Reneau off-site

1430 S. Reneau, on-site D. Steven off. Begin Staking ACE.

1545 D. Steven on-site.

1700 all personnel off-site

JH 10/26/99

10/27/99

945 J. Harris (SSO), D. Steven, S. Reneau meet SW surveyors in Acid Canyon.

1040 J. Harris, Steven, Reneau drive to Pueblo Canyon to begin staking

1230 Off-site

1240 Back at Aquatic Center

Note: Tailgate meeting is only required once a week. Given 10/26/99

JH 10/27/99

Acid Canyon 11/3/99

9:00 S. Reneau (SSO), D. Katzman beginning geomorphic mapping; tailgate safety briefing

11:30 M. Van Eeckhaut arrived to assist in mapping; tailgate briefed

4:30 PM Left field SR 11/3/99

Acid Canyon 11/4/99

8:55 S. Reneau (SSO), D. Katzman, J. Harris, D. Steven; geomorphic mapping, rad screening; tailgate safety briefing (for Steven)

9:15 M. Van Eeckhaut arrived

4:45 Left field. All personnel monitored with Eberline ESP-1 w/ Pancake GM, below CC. CC = 148.6 SR 11/4/99

Acid Canyon 11/5/99

1:25 J. Harris, D. Steven, S. Reneau; geomorphic mapping and rad screening

2:30 M. VanEeckhaut arrive

4:30 Leaving field. All personnel monitored with ESP-1 Pancake GM, below CC. CC= SR 11/5/99

DS 11/5/99

11/8/99 J. Harris SSO

8:40 Calibrated Radiation Instruments at MK office. Using Ludlum 2221 with 2x2 probe and Ludlum 2221 with alpha probe and ESP-1 w pancake probe shielded.

950 Background Readings:

B/G Shielded	Gamma 2x2	Alpha 43-1
227 cpm	21527 cpm	6 cpm
223 cpm	21379 cpm	7 cpm
255 cpm	21501 cpm	9 cpm
251 cpm	21255 cpm	13 cpm
198 cpm	20992 cpm	8 cpm

S. Renean, D. Steven, J. Harris, M. Van Eekhout on site in Acid Canyon.

(930) Tailgate Safety Meeting.

Background: Gamma 2x2 Shielded

7263 cpm
7285 cpm
7517 cpm
7399 cpm
7070 cpm

1000 D. Katzman on-site

1220 Lunch

1300 Lunch Break over. S. Renean off-site

1530 All workers screened out + off-site

J. Harris SSO 11/9/99.

930 J. Harris + D. Steven on-site in acid Canyon. D. Katzman, S. Renean + M. Van Eekhout already on-site.

9:35 Alpha Background

Ludlum 2221 43-1	Ludlum 137
18 cpm	1 cpm
0 cpm	0 cpm
7 cpm	1 cpm
2 cpm	2 cpm
10 cpm	1 cpm

945 Prepare to take Radiation measurement. See D. Steven's logbook for measurements.

1215 Break for Lunch

1300 Resume Work

(1030) Measured ACS3 - (High alpha with 2221 (1800 cpm)) with Ludlum 137 - result was 200 cpm.

1305: B/G Background

ESP-1 Shielded	ESP-1
514 dpm	587 dpm
650	526
597	526
535	544
552	610

1500 Katzman + Renean off-site

J. Harris

11/9/99 Acid Canyon
1530 Van Eckhout off-site
1600 J. Harris, D. Steven Screen Out. Results below background
1610 off site
(830) Source Checked all Rad Instruments. All passed

11/9/99

Acid Canyon J. Harris 11/10/99
830 Source Checked Rad Instruments. All passed.
930 J. Harris, D. Steven on-site in Acid Canyon.
955 Determine Background for:
ESP-1 (β/γ), + Ludlum 135 (γ)

495	dpm	0	cpm
552		0	
560		0	
364		1	
475		0	

Readings established in Parking area above Acid Canyon area
1030 D. Katzman, S. Reneau, M. Veckhout on-site
1215 Lunch Break
(1045) Contacted Larry Pacheco of ES&H 1 Regarding 200 cpm alpha in Acid Canyon. He noted the measurement and said he would have someone contact me.
Danny Katzman contacted Robert Tomar of ES&H-5 re: rad levels. He stated that it was okay for us to continue working. The field team implemented dust

Suppression controls by using spray bottles to mist areas we were working in

1530 M. Eckhoff off-site with D. Katzman.

1600 ACS-47 - high levels of alpha found. 1538 cpm with Ludlum 2221 43-1 detector. Will monitor with Ludlum 139 Friday (11/12/99) and contact ESH-[illegible]

1630 All personnel off site. All personnel screened below background.

JH 11/10/99

Acid Canyon 11/12/99

815 Source Checked Radiation Instruments All passed.

840 D. Steven, V. Harris on-site in Acid Canyon S. Reneau, M. Van Eckhoff on-site already.

900 Begin Rad Survey

1130 Alpha meters questionable. Back to office to perform a source check. D. Steven not feeling well so she will not be working this afternoon

1300 V. Harris back with more alpha. Other alpha failed source check.

1310 Begin Rad Survey (Continue)

1530 Mr. Van Eckhoff off-site

1630 V. Harris, S. Reneau off-site. All personnel screened out ok.

JH 11/12/99

11/15/95 Acid Canyon
815 Source Checked all Instrument
845 Tailgate, S. Reneau, J. Harris on site.
850 Begin Rad Survey in Acid Canyon
1200 Lunch Break
1245 Continue with Rad Survey
1310 Notice Beta/gamma meter is not working. Check against site #8. Results are considerably different so we will discontinue using the meter. Continue alpha measurements
1630 Finish measurements. Screen out. All personnel screened out ok.

JH 11/15/95

11/16/95 Acid Canyon
8:20 Source Checked Beta instrument. It failed.
10:00 Source Checked all new beta instrument and gamma 2x2. Both passed.
note: Several attempts have been made to contact ESH-1 representative Richard Bjarke 699-1490. He does not answer at this number.
1030 Was able to contact Richard Bjarke he will meet me in acid Canyon around 11:00.
11:00 J. Harris, M. Veechhart, S. Reneau on-site. Tailgate Safety Meeting conducted.
Background Readings:

Ludlum 139		ESD-4	
0	cpm	405	dpm
0		593	
0		532	
1		511	
0		520	

12:00 Rickman (LANL) and Monitor Photographer on-site. Brief them on hazards.
12:30 Rickman & Photographer off-site. Begin Rad Survey.
15:30 Mark & Harris off-site. Surveyed out ok.

11/18/99

1230 VanEeckhout, Reneau, Steven, Harris, Frank on-site. Tailgate given to Steven & Frank.

1300 D. Katzman on-site. Begin Sampling.

1600 Finish Sampling. All personell off-site and screened out ok.

JH 11/18/99

11/19/99

8:55 J. Harris, D. Steven on-site at Acid Canyon. S. Reneau, D. Katzman, R. Bohn on-site.

9:00 Give R. Bohn Tailgate Safety and SSHASP Briefing.

9:10 M. VanEeckhout on-site

9:30 Begin Sampling

12:00 Bill Somers & John Elliot on-site No problems with Rad

1315 Finish Sampling. All personel screened out ok. Eeckhout, Bohn off-site.

JH 11/19/99

11/30/95 J. Harris SSO Pueblo Canyon

830 Met at golf course above Pueblo Canyon. J. Harris, D. Stover S. Reneau, R. Bohn, P. Drakos, M. Van Eeckhout on-site.

835 Tailgate

900 Begin Sampling in P-1 and Walnut Canyon.
No Rad measurements are being taken since this area has no record of radioactive Contamination

12^{30} Samples collected + personel off-site.

JH 11/30/95

12/1/95

1120 Arrive at ARS to screen samples for Alpha, J. Harris, D. Stover. Alpha meter questionable.

1130 leave to take meter to ESH-4 for Calibration.

12/3/95

1300 Meter Calibrated. Back to ARS to screen samples. See LA/PU #458 Log Book for Results.

1630 Finish screening.

JH 12/3/95

12/14/99 3-010(a)

745 J. Harris gives SSHASP Briefing to D. Steven, J. Crocker, S. Calhoun for work at 3-010(a)

12/14/99

LA-2W 4/19/00

945 Tailgate Safety Meeting
S. Calhoun, J. Harris
LA3W-0
LA2 FE ~~985~~ 985 m
LA2 FE 970 m
LA2 FE 955 m
LA2 FE 930 m
LA2 FE 915 m.

920 D Steven on-site. Tailgate Taking over risks.
1130 Lunch
1200 Begin staking LA-3W
Weather 0 (windy, cool)
1320 Begin staking TA-53 D (drainage)
1345 Finish Staking.

4/19/00

LA-2/LA-3 4/20/00

10:00 Met Southwest Surveyors at LA Canyon gate to Survey in LA-2/LA-3 points. (Approx. 1500 m)

10:20 Surveyors located Control point above DP Canyon/LA Canyon confluence. Surveyors (Colin, Argon) Indicated it would take half a day to establish points.

Finished spraying stakes with orange paint.

11:00 Left gate key with Surveyors off-site.

J. Harris
4/20/00

Surface Water Observations 4/26/00

950 DP Spring: Spring is barely flowing. Flow stops 17.5 m short of last time 3/31/00 ~ 2 m

1030 No water LA-3/LA-2

11:00 Water is flowing from LA(-0.3 to East end of TA-41 past LA(-0.6 stopping before the pullout at TA-2. (Last observation 12/29/99 ice) flowing from pipe

1130 Water is flowing from Reservoir to culvert. Water is ponding in road before the culvert. Approx 120 m from last observation flag

1145-1245 Lunch

1400 Pueblo Canyon Reach P-2. No water. Flow from WWTP

1445 DP-2. No water from 21-011(k) to LAUZ-2. Water is in a pond 8 m from ~~LAUZ-2~~ 21-011(k) to ~~WW~~ 3/27/00 observation to below LAUZ-2 18 m long.

Ponds for 21 m from below LAUZ-2.

Another Pond. Several ponds through DP-3.

W end DP-3 dry

5/2/00 J. Harris LA Canyon
Surface Water Observations
1250 Checked water in Lower Los Alamos Canyon Near LLAO-2 - Dry.

JH 5/2/00

5/3/00 J. Harris
Surface Water Observations
11:00 DK, JH water in Los Alamos Canyon 20 m past LAO-0.8
5/4/00
Surface Water Observations
1330 Water flowing at San I. Gas Station. Water stops flowing about 100 m past gas station stream is moist about 10 m past end of flow.

JH 5/3/00

6/12/00

Calibrated pH meter Orion 290A
Slope 95.6
Calibrated Turb & Conductivity meters
0 & 20 NTU 147 µS

SA 6/12/00

6/13/00 Pueblo Canyon

10:00 Checked Road to Pueblo Canyon from golf course. Road is a little rocky but accessible.
10:30 Return to MK to get truck & SSHASP Briefing.
11:00 On-site at FSF to pick up equipment to develop PAO-1.
12:00 Lunch
12:35 Leave to go to PAO-1.
13:00 On-site at PAO-1. Begin setting up. Called EOC to check in.
1315 Tailgate Safety Meeting. B. Gran, J. Harris, J. Crocker
1320 Water level 7.91 ft ~~from~~ TOC
TD 16.61 ft TOC, 5 vol = 75 gal
1322 Verbal from Roy Bohn - okay to discharge to the ground.
1325 Begin pumping
1340 30 gallons purged
1350 40 gallons purged
1355 45 gal purged.
1405 65 gal. purged
1408 70 gal purged
1410 75 gal purged
Turbidity: 12.5 NTU. Water Clear.
1418 85 gallons purged. Water Cloudy light brown.

6/13/00

1122 90 gallons purged. Break to let well recharge.
1247 105 gallons purged. Dark Brown.
1451 120 gallons purged.
1500 140 gal purged
1505 145 gallons purged. Turbidity 17.8 NTU. Bob Gray made the decision to stop developing. May be some silt still at the top of the screen.
1510 Demob from PAO-1.
1526 On-site at PAO-2. Water level 12.47 ft. Decon Bailer.
1606 Purged 10 gallons. Break to let well recharge.
* 20 gallons - 5 well volumes. *
6.5 minutes - 1.1 ft rise
1610 Purged 2.5 gallons total 12.5 gal
1630 Off-site. Called EOC.

JN 6/13/00

PAO-2 Pueblo Canyon 6/14/00

1000 on-site at PAO-2. Picked up surge at FSF.
1005 Tailgate Safety Meeting S. Calhoun J. Harris J. Crocker
1020 Begin Surging
1040 Begin Bailing. Water Level 13.19 ft TD 16.92 ft.
1043 Bailed 2.5 gallons. Letting the well recharge.
1055 Purged 15 gallons.
1056 Well Recharging
1125 Purged 20 gallons.
* Well is recharging between purging 2-3 gallons.
1140 22.5 gallons Turbidity 16.6 NTU
1151 25 gallons.
1214 30 gallons. Turbidity 12.3 NTU
1215 Lunch Break
1240 Purge 35 gallons
1321 Water Level 13.15 ft.
1340 40 gallons, Turbidity 12.4 NTU
1351 42.5 gallons Turbidity 15.3 NTU
1410 45 gallons Turbidity 6.8 NTU
1422 47.5 gallons Turbidity 4.6 NTU
1440 & 50.0 gallons Turbidity 4.1 NTU
1445 Demob

PAO-1 Pueblo Canyon 6/14/00

1500 On-site at PAO-1. Decon Bailer. Water level 7.61 ft.

1510 Surge the well several times to clean the screen.

1518 Bail 15 gallons

1526 Purge 20 gallons. Water is dark brown. Off-scale NTU's

542 Purge 30 gallons. Water is dark brown.

1553 Purge 40 gallons. Water is dark brown. Well is recharging between ~ 13 gallons.

1605 Purge 50 gallons. Turbidity [illegible] NTU

1608 Purge 55 gallons.

1620 Purge 85 gallons Turbidity 63.9 NTU. Bailer was sitting on the bottom of the well while the well was recharging.

1630 Purge 95 gallons. Recharge

1636 Purge 100 gallons. Turbidity 34.6 NTU.

1645 Out of the Canyon. Called EOC.

JA 6/14/00

PAO-1 Pueblo Canyon 6/15/00

850 On-site at PAO-1.

855 Tailgate Safety Meeting. Called EOC.

900 Begin Purging with Bailer.

950 Purge 60 gallons. Water is cloudy.

1007 Purge 90 gallons Turbidity meter is not working. Waiting on a new meter. Water is cloudy.

1055 Purge 140 gal. Turbidity is 15.04 NTU

Calibrated ESD Turbidity Meter.

1105 160 gallons Turbidity - 4.65 NTU Water was taken from the bottom of screen. Well had not fully recovered.

1113 185 gallons Turbidity 6.60 NTU Well is not fully recovered

1115 190 gallons Turbidity 3.97 NTU

1120 10.45 ft - 7.89 ft 3m 20s Well recovers .10 ft ~ 10sec at bottom of screen.

JS 6/15/00

PAO-3 6/15/00 bgs

800 PAO-3 TD 13.47 ft (from notes)
Casing height 3.1 ft
0.873 ft²
0.7312 ft² × .30
1320 Water level 11.12 ft TOC
Total Depth 16.42 ft TOC
$\frac{d^2\pi}{4}(h_2-h_1) \times 7.48$

$\frac{(0.3)^2\pi}{4}(5.3) \times 7.48 = 2.79$ gal

$\frac{(1)^2\pi}{4}(5.3) \times 7.48 = 31.1$ gal
× .3 = 9.33

~~28 gal~~

12.12 gal × 5 = 60.6 gal
1350 after surging the well several times begin bailing
1357 After bailing 3 gallons well is dry. Let Recharge.
1457 Water level 16.48, Timing Recharge. 14.59 start, end 1537 to 16.38
1543 demob.

6/15/00

Pueblo Canyon PAO-1 PAO-2 6/17/00

740 Calibrated Orion 290 pH meter Slope 93.4. Hanna Conductivity meters calibrated 150 µS/cm
9:00 On-site at PAO-1. Set up to sample. Using a Submersible pump to purge + sample.
1020 Parameters stabilized. Began to sample. CAPU-00-0009 Non-filtered CAPU-00-0015 filtered. Parameters: pH, cond, turb, temp
Pump was set at 14 feet.
* 9:10 Tailgate Safety meeting. * called EOC. J. Norris, I. Benson, B. Gray, D. Steven, S. Purdie on-site.
D. Steven + S. Purdie collecting surface water samples 2 west of PAO-1, 1 at PAO-1, 1 at PAO-2.
1050 Demob.
1100 On-site at PAO-2
Dissolved oxygen meter is not available.
1120 Purge 1 gal. Well is dry. Let Recharge. 4 gallons required before sampling.
1150 Well has come up from 16.60 TD to 16.30.

Surface Water Samples 6/17/00

PAO-2 SW4

pH - 6.96
temp - 16.8°C
Cond - 200 µS/cm
turb - 3.27 NTU

SW1

pH - 7.01
temp - 12.3°C
Cond - 190 µS/cm
turb - 3.01 NTU

SW2

pH - 7.05
temp - 14.3 °C
Cond - 210 µS/cm
Turb - 3.60 NTU

SW3 PAO-1

pH - 6.96
temp - 17.6°C
Cond - 240 µS/cm
Turb - 1.75 NTU

1200 Bob Gray has made the decision not to sample PAO-2. Not enough water.

1230 Finish collecting Surface Water Samples.

Pueblo Canyon 6/17/00

1300 Head out of the Canyon.

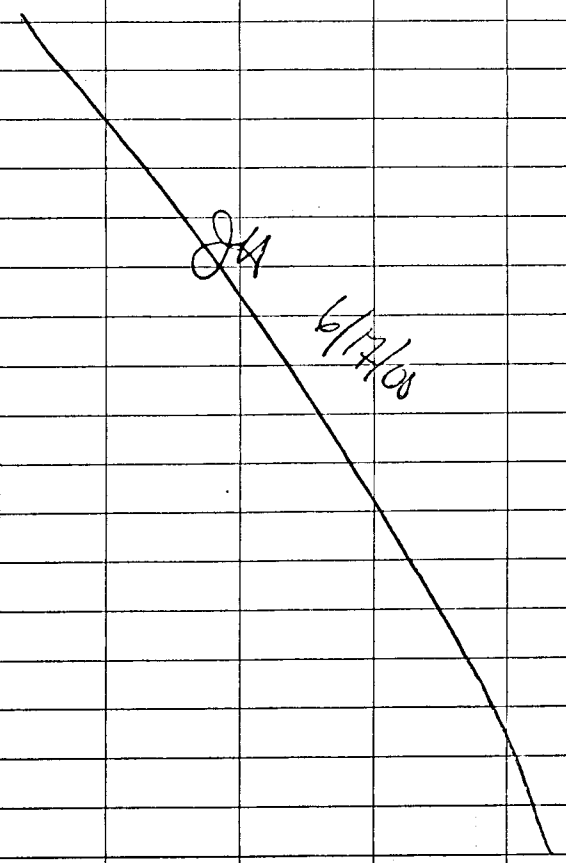
1330 Call EQC.

1400 Start filtering Surface Water Samples at Sample Trailer at SMO.

Preserving Samples also.

S. Purdue + B. Gray off-site.

1630 Turned Samples in.



Pueblo Canyon PAO-4 6/19/00
1115 Tailgate Safety Meeting
D. Steven, J. Harris at PAO-4.
x EOC called at 10:30 x
1150 After purging 20 gallon & parameters were stable collected filtered & non-filtered samples CAPV-00-0013, CAPV-00-0018.
1200 Off-site. Slightly Raining.
1220 PAO-5N, Lunch Break.
1300 Begin Sampling PAO-5N.
1330 Sample collected after 6/19/00 purging 20 gallons & parameters were stable. See the Water Quality Parameter Worksheet for values. CAPV-00-0014, CAPV-00-0020.
1440 Finish filtering.
1450 off-site, Call EOC.
1600 Check in Samples at SMF.
1630 Check in Samples at Rad Screening Facility.

JS
6/19/00

Tues. 6-20-00

Field Team: Hoss Potillo, Shannon Pendre, Bob Gray

- Arrived in field at PAO-1a at 1010
- Conducted tailgate safety mtg.
- set up to purge well and collected 1L filtered sample for gamma spec to be archived by NMED.
- measured WL @ PAO-1a @ 6.18 ft btoc.
- purged 20 gals - water = clear
- collected sample at 1045
- deconned pump & hose - packed up and departed PAO-1 site @ 1100
- Measured WL in PAO-2 @ 1105

WL = 16.29 btoc
- 2.69 stickup
WL = 13.60 ft bgs
- 11.06 bot. of casing
WL = 2.54 ft below bot. of screen

- Mobilized to PAO-4 - meas. WL = 5.18' btoc
- purged 20 gals - water = clear w/ lt. green-brn tint - collected filtered sample at 1230
- mobilize to PAO-5N

Meas. WL in PAO-5N = 10.58 ft btoc
purged 18 gals @ 1250 - 1310
collected filtered sample (1L) at
~~[illegible]~~ 1315.
Demob from PAO-5N @ 1320
Took to SMO trailer and acidified,
then placed in SMO cooler labeled
"OB" @ 1355 - Samples PAO-1a,
PAO-4, & PAO-5N - filtered and
acidified w/ HNO_3 to pH = 2.
Returned to MK office at 1400

Robert Gray
6/20/00

J. Navarro Los Alamos Canyon 6/21/00
Water 10.11 LAO-B
TD 29.51
940 Called EOC. Tailgate Safety Meeting.
J. Harris, S. Purdue on-site.
945 Begin setting up to sample
~~x~~815 calibrated pH meter. Slope 94.1
Calibrate conductivity 147 µS/cm,
Zeroed turbidity meter
See Water Quality Record for Cal
information + parameters.
955 Begin Purging well.
1140 B. Gray on site.
1200 Purged 10 gallons with
Bladder Pump. Switched to
Purgen Pump to purge at a
faster rate per Bob Gray's Instructions
1240 Sampled LAO-B after removing
40 gallons + parameters were stable
1315 off-site
1330 On-site at LAO-0.6
Water level 7.61
TD 15.77
1450 After purging 25 gallon Turbidity
is increasing 3.13 to 53.8. Decide
to use the bladder pump that was

6/21/00 Los Alamos Canyon-
Central reach in Teilla. The bladder
pump was covered with a brown
substance. Could be biological.
1530 Collected sample. Turbidity 32.2 NTU
Bob Gray (FTL) made the decision to sample
even though turbidity was >5 NTU.
Note: After emptying the purge
bucket there was a black/gray
substance that looked like ash.
1630 At sample trailer at the SMF
preserving samples. Called EOC.
1700 Turned samples in for LAO-B
& LAO-0.6
1730 Finish for the day

6/21/00

6/22/00 Los Alamos Canyon
8:00 Calibrated prior. 290 YSI meter
Slope 93.1. Conductivity 150 µS/cm.
Zeroed Turbidity. See Water
Quality Personal Log Instrument
Informa
857 On-
Satel
9:00 Col
from a
200 m
is Clear
pH - 6.
temp - 12
Cond - 3
Turb - 2
925 - Bear
Water level
TD
Purging w
to dell.
Purge Rate
10:00 decision t
1040 After
were Stabe
B. Gray (FTL) decided to collect the sample.

CALA-00-0023 &
CALA-00-0024
are LAO-0.3
not LAO-0.6.

SCL 2

6/22/00 LA Canyon

1140 Finished Collecting Sample Collected 1 L unfiltered To be filtered at the trailer.

1145 Demob.

1155 On-site at LAO-0.91. Removed dedicated bladder pump & used a purge pump to sample.

1230 Collected a filtered & non filtered sample after purging 15 gallons & parameters were stable. CALA-00-0035, 0036.

1245 off-site

1300 on-site at Sample Trailer at the SMF. Filtered Surface Sample & preserved samples

1400 Turned Samples in to SMF.

JG 6/22/00

LA Canyon 6/23/00

910 On-site at LAO-1.69(a). S. Fielding, J. Harris, B. Gray

~~830~~ Calibrated pH meter, Conductivity probe & Turbidity meter. See Water Quality Sampling Form for Calibration Information & Sample Parameters SOP-6.01 & 6.02. *

915 Called ECC & Tailgate Meeting

917 DTW = 15.65 ft

TD = 33.89 ft / 33.74 B. Gray

925 Begin Purging Well.

1020 After Purging 36 gallons & Parameters were stable a filtered and Non filtered Sample were Collected. plus a dup CALA-00-0039, 0040, 0047, 0048.

JG 6/23/00

6/26/00

830 Calibrated pH - Slope 94.7
Calibrated Cond 150 µS/cm
Calibrated Turbidity 0, 10 NTU
940 On-site at LAO-8.2. Called EOC. Gave tailgate Safety Briefing
J Harris (SSO/FTL) Shannan Fardue (Sampler)

* See Water Quality Sampling Record for Calibration Info + Sampling Parameters *

1005 After Purging 2 gallons well went dry. Water level 25.36 ft
TD 25.74 ft. Checking Recharge
1020 Water Level 25.36 ft - No Recharge
1110 Water Level 25.36 ft - No Recharge
1115 Leave Site.
1130 Check out with EOC.

JH 6/26/00

Los Alamos 6/27/00

840 On-site at LLAO-1. Tailgate Meeting
Field Team: J Harris, S. Perdue
925 On-site at Basalt Springs with Brian Gonzales (San Ildefonso)
930 Begin Sampling. Spring is flowing: 500 ml/5 sec
945 End Sampling
1000 On-site at LLAO-8. Water Level 22.14 ft
1020 5 gallon purged
water 24.06 ft TD: 26.63 ft
1030 10 gallons purged
water level: 25.27
Water fluctuates between dark brown & light brown. Turbidity off-scale
1045 Collected Surface Water Sample near LLAO-1 while waiting on well to recharge
1056 Water Level 22.39 ft.
1100 Water Level 25.61 ft. Let well Recharge. 15 gallons removed
1110 Water Level 23.0 ft
1115 Collected Sample
1130 Finished Collecting Sample.
1200 On-site at LLAO-8.
1205 Begin Purging
* 800 Calibrate Instruments *
See Water Quality Record SOP 6.01

6/27/00 LA Canyon

1215 Collect Sample

1220 Finish Sampling

1230 On-site at LCAO-5.

1313 Purged 15 gallons. Well needs to Recharge after 5 gallons.

Recharge Rate 5 gallons / 13 min.

1330 Collected Sample.

1336 Off-site

All Samples will be filtered at Sample Trailer

JH 6/27/00

Mortandad Canyon 7/7/00

800 Calibrated pH meter Orion 250A, Slope 94.3. Calibrated conductivity & turbidity meters. See Water Quality Parameter Form 6.01 for Calibration info and water parameters.

925 On-site at MCO-4.5. Called EOC. Tailgate Safety Meeting attempted to pump well. Well is dry. Max Maez Jonathan Hirchle Michael Bob Gray Jenny Harris

930 On site at MCO-5.

Water level - 27.80 ft. TD 46.95 ft

Total Volume to Purge 21.1 gal.

1029 Purged 5 gal

Purge Rate 1 L / 2 min

1300 Begin Collecting Sample.

1530 Turn Samples in to the SMO.

JH 7/7/00

7/10/00 Mortandad Canyon

845 Called EOC.

900 On-site at MCO-6. Tailgate Safety Meeting. S. Pandhe B. Gray M. Mais, J. Harris, Michael

*800 Calibrated Instruments. See Water Quality Sampling Record for Calibration Information and Water Parameters. *

915 Begin Pumping Well. Pump Rate 1 l/3 min.

926 40.27 ft Water level
- 40.23 ft Initial Water level

1047 40.20 ft Water level

1119 10 gallons purged Water Parameters Stable.

1125 Begin Sampling

1200 Begins to Rain

1300 Finish Sampling.

1308 Check MCO-7.2. Well is dry. ~~Sample~~ JA 7/10/00

1310 On-site at MCO-7
43.88 ft water level
50.74 ft TD
17 ft of sedimentation/ash? at the bottom of the well (TD 69 ft)

1320 Begin Purging at 1 l/2 min JA

1330 Rain Stopped

7/10/00 - Mortandad Canyon

Pump is buried in sediment

1423 44.75 ft - water level.

1450 Purged 6 gallons. Pump is not working well. B. Gray (FTL) decides not to collect 3 well volumes. Parameters are stable. Begin Collecting Sample.

1610 Finish Collecting Sample.

1620 Head out of Mortandad Canyon.

1630 Arrive at SMO to filter & preserve in sample trailer

1515 Leave SMO sample trailer.

7/10/00

Mortandad Canyon 7/11/00

750 Calibrated pH, Conductivity meters. See Water Quality Record (SOP 6.01) for Calibration Information & Water Parameters.

840 Turned in 7/10/00 Samples to SMO.

900 Meet Max Maes at MK/PMC.

920 Called EOC. Tailgate Safety Meeting. On-site at MCO 7.5 M. Maes, S. Padilla, J. Harris, Michael

935 Begin Purging Well.
Purge Rate 1.2/2 min.

1010 Water Level 52.00 ft
Initial Water Level 50.50 ft

1050 Water level 52.15 ft

1145 After purging 15 gallons and all parameters were stable a Sample was collected. Turbidity was ~16 NTU.

1237 Finish collecting Sample.

1307 On-site at M-2 below TA-50 to collect a Surface water Sample.

1340 Surv-Tek #25 Survey Marker M-2 (?) Flow ends & goes underground. Sample Taken from Stream ~~behind~~ before it ends.

Mortandad Canyon. 7/11/00

10 m before #25 Survey Marker.

pH - 6.87
Temp - 15.1 °C
Cond - 340 µS/cm
Turb - 8.31 NTU

1400 Finish Collecting Sample.

1430 Arrive at Sample trailer to filter & preserve.

1500 Finish Preserving & Filtering
Turn Samples in to SMO.

JA 7/11/00

7/24/00 LA Canyon
920 On-site at LAO-B. EOC
Called. J. Harris, S. Purdue, K. Green
On-site Tailgate Safety Meeting
1000 Purge 40 gal. Parameters
Stable, Turbidity <5 NTU.
Collect Sample Non-filtered.
Will filter samples at Sample trailer.
1015 Collect Surface Water at
LAO-B. Water flowing 250 ml/6 sec
Water is clear, odorless.
pH - 6.54
Cond - 210 µS/cm
Temp - 17.8 °C
Turb - 4.58 NTU
* 800 Meters Calibrated. See
Water Quality Record for Calibration
information & Water Parameters
for Wells.
1030 Off-site. Head to SMO to
Collect coolers & bottles.
1100 On-site at LAO-0.3
1110 Begin Purging.
1120 Water Level 10.69 ft
Initial Water Level 14.53 ft
1125 Collect Sample. Parameters and

7/24/00 LA Canyon
stable. Turbidity is 9.17 NTU. Collect
Sample even though turbidity is
>5 NTU since well does not recharge
fast.
1130 Off-site
1140 On-site at LAO-0.6
1215 Begin ~~Pu~~ JA 7/24/00 Purging LAO-0.6
S. Purdue noticed black flakes in
parameter bottle. Could be ash. Turbidity
is increasing.
Ash is in Purge Bucket
1245 Collect Sample.
1248 Finish Collecting
1300 Collect Surface Water Sample at
LAO-0.6.
T = 25.4 °C cond = 160 uS/cm
pH = 6.99 turb = 8.97 NTU
1310 Off-site. Heading to the SMO
Sample trailer to filter & preserve.
1400 Turn in Samples at SMO

JA 7/24/00

7/25/00 LA Canyon
800 Calibrated Instruments.
See Water Quality Sampling Recad for Calibration Information & Water Parameters.
830 Called EOC. Tailgate Safety Meeting.
840 On-site at LAO-2.91 S. Pundui K. Greene, J. Harris.
850 Water level 17.52 ft TD. 18.32 ft
854 Purged 25 gal. Pumped well dry.
Water level 17.62 ft.
Turbidity 156 NTU.
902 Water level 17.56 ft
Decided not to sample well. Will check water levels 7/27/00.
905 Clean up site.
Ash is in the bottom of the purge bucket.
915 On-site at LAO-1.2.
Water level - 7.97 ft
TD 25.75 ft
927 Water level 22.25 ft
947 Water Level 21.20 ft
20.7 ft

LA Canyon 7/25/00
1016 After purging 13 gallons well is drawn down to 19.62 ft. Cannot get pump down further than 19. ft. Feels like it is getting caught on the screen. Screen may be loose. Turbidity is increasing 55.6 NTU. Screen may be busted up or letting sand through.
1026 Made a phone call to B. Gray. Decided to move to LAO-1.6 to sample & come back this afternoon. Check on the water level.
1035 While trying to get pump out it caught on something (screen?) in the well & broke. We were able to get the pump out but will have to get a new one.
1100 Arrive at MK office to get a new pump
1200 Arrive at LAO-1.6
1230 After purging 55 gallons (3 vol - 30 gal) Turbidity was 5.8 NTU. Water is clear.
1235 Collect Sample
1250 LAO-1.2 Water level 12.26 ft
Collect Sample.

7/25/00 LA Canyon
T = 15.4 °C
pH - 6.58
Cond - 150 µS/cm
Turb - 9.36 NTU
1300 Off-site
1310 LAO-0.91 Water level 17.53 ft
1320 SMO Sample trailer to Cutler
preserve
1355 Turn in Samples to SMO.

7/25/00

7/26/00 Lower LA Canyon
830 J. Harris, K. Greene, S. Pandu meet
Naomi Archuleta at Gate to LLAO-1.
Drive Back into Canyon.
850 Hike to Basalt Spring
857 Arrive at Basalt Spring
900 Collect Sample
pH 6.09
Temp 7.4°C
Cond 290 µS/cm
Turb 1.8 NTU
Flow Rate - 1L/3 sec (Sample Collection 20 ft from source)
905 Finish Collecting. Hike back.
* 800 Calibrated meters - See Water Quality Record for calibration ~~Instrument~~ Information + Parameters for Wells.
820 - Called EOC, Tailgate Safety Meeting
920 Arrive at LLAO-1
930 Begin Purging
958 Water Level 19.55 ft
Bot. Water Level - 15.81 ft
1005 Collect Sample. All parameters Stable.
7/26/00 1010 Collect Surface Water Sample at LLAO-1. Flow Rate 1L/10sec.
1025 On-site at LLAO-4.

Lower Los Alamos Canyon 7/26/00

1051 Water Level - 8.14 ft
Total Depth: 19.17 ft
1055 Collect Sample + duplicate
1100 B. Gray On-site.
1110 On-site at LLAO-5.
1200 Collect Sample
1300 Filter + Preserve Samples.
1400 Turn Samples in to SMF
Check out of EOC.

Pueblo Canyon 7/27/00

830 Called EOC, Tailgate Safety Meeting
900 On-site in Pueblo Canyon.
913 Surface Water #1 under bridge in upper Pueblo Canyon
CAPU-00-0032/0033
pH : 6.47
Cond : 320 µS/cm
Turb : 15.9 NTU
Temp : 13.0°C
Flow Rate: 1L/10 sec
Water is slightly cloudy with a light grayish brown color.
920 Finish Collecting Sample.
932 On-site at Surface Water #2
CAPU-00-0034/0035
pH : 6.64
Cond : 320 µS/cm
Temp : 14.3°C
Turb : 26.8 NTU
Flow Rate: 1L/7 sec
Water is cloudy with a light grayish-brown color
941 Finish Collecting Sample.
950 Collect Surface Water near PAO-1(A).
CAPU-00-0036/37

J. Harris
S. Purdue
on-site

56

Pueblo Canyon 7/27/00

pH 7.01
Cond 170 µs/cm
turb 17.8 NTU
temp 17.1°C
955 Finish Collecting Sample
1005 Begin Purging
~~1100~~ 1012 Water level 11.0 ft
Original level 10.63 ft
1016 Water level 12.75 ft
1100 Collect Sample.
1110 Finish Collecting Sample.
1115 On-site at PAO-2
1118 Water level 16.28 ft
Total Depth 16.60 ft.
Sample will not be collected
1125 Collect Surface Water Near PAO-2.
CAPU-00-0038/0035
pH : 7.10
Cond : 230 µS/cm
temp : 16.2°C
turb : 13.5
flowrate : 1L/10 sec.
Water is clear, grayish brown
1130 Finish Collecting Sample.

57

Pueblo Canyon 7/28/00

1320 Filter & preserve samples at Sample Trailer.
1430 Turn Samples in to SMF. Check out from EOC.
* 800 Calibrated Instruments. See Water Quality Record for well PAO-4 for calibration info and water parameters. *

7/28/00

7/27/00

Pueblo Canyon 7/28/00

745 Calibrate pH, cond, turb meters
See Water Quality Sampling Record
for PAO-4 & PAO-5 for Calibration
information & Water Parameters.
830 Call EOC - Tailgate Safety
meeting w/ J. Harris S. Purdue on-site
at PAO-4.
920 Begin Purging
940 Collect Sample All Parameters
stable.
944 Finish Collecting Sample.
1000 On-site at PAO-5S. No water.
1005 On-site at PAO-5N.
1013 Begin Purging
1030 Collect Sample - all parameters
stable
1033 Finish Collecting Sample
1100 On-site at Sample Trailer to
preserve & filter.
1130 Turn in Samples
Check out of EOC

JH 7/28/00

R-12 8/15/00

1015 R-12 Parameters 470 ft
pH: 7.25
temp: 23.7°C
Cond: 300 µS/cm
1119 510 ft
pH: 9.01
temp: 22.7°C
Cond: 90 µS/cm
1210 812 ft
pH: 8.18
temp 24.6°C
Cond: 220 ft
collected a 125 ml sample from
each zone for Anions.

JH 8/15/00

Pueblo Canyon 8/30/00

12:00 calibrate pH meter, turbidity meter
see water Quality Sampling record for
PAO-1 for calibration information
and water parameters
12:30 call EMO and safety tailgate
S. Purdue and D. Stevens
on site
1310 SW1 collected
1345 SW2 collected
1410 PAO-1 SW collected
1426 Take water level of PAO-1
1500 Begin Purging
1510 Collect sample, all parameters
stable
1526 Finish sampling, remove
purge pump.
1545 Collect PAO-2 SW
1550 PAO-2 checked for water
level, DTW , TD
No sample taken
1610 S. Purdue & D. Steven offsite call EMO
1700 On-site at sample trailor to
filter and preserve
1810 Off-site, back to office

S. Purdue 8-31-00

Pueblo Canyon 8/31/00

8:00 calibrate pH meter, turbidity meter
See water quality Sampling record
for PAO-4 for calibration information.
and water parameters.
8:55 call EMO, enter Pueblo Canyon
9:00 on 8-31-00 S. Purdue and E. Bigio
on site at PAO-4. Safety tailgate.
9:05 Water level PAO-4 DTW 5.63 ft,
TD, 12.18 ft.
9:20 Began Purging well
9:45 Sample taken - Begin
9:50 Finish taking - sample
10:00 Remove purge pump from PAO-4
10 05 Offsite, on to PAO-5
10 20 Onsite at ~~10~~ 8-31-00 PAO-5N
Water level taken DTW 10.47 ft, TD 18.08 ft
1047 Begin taking sample
1055 Complete taking sample
Remove pump from PAO-5N
1145 Arrive at SMO trailor to
preserve and filter
1255 Turn in all samples for
Pueblo Canyon to SMO
1345 Onsite LAO 0.3

62

1455 Start purging LAO-0.61
Very dark and ashy,
then turns brown with
continued purging. Water clears
up significantly with letting well
recharge. S. Purdue decides to
take sample after allowing
well ~~se~~ pressure to settle. Turbidity increases
with time the pump is run, so
we will sample right away.
1535 Sample taken, parameters
taken at same time. Turbidity
was slightly high, 8.60 NTU, but
was taken right after sample bottles
were filled. Turbidity most
likely increased while sampling.
1600 Filter and Preserve,
1655 get ice to chill samples
until tommorow

S. Purdue 8-31-00

63 Lower Los Alamos-San I 9-1-00
800 Calibrate instruments for
water quality record for LLAO.1B.
830 Meet R. Gonzalos, hike to
Basalt springs
840 Sample taken at Basalt Springs
920 Begin Purging LLAO-1B
*943 Sample taken at LLAO-1B
1010 Arrive at gate to LLAO-4
1030 Begin Purging LLAO-4
1048 Sample taken at LLAO-4 and duplicate
1113 Begin Purging LLAO-5
*950 - LLAO-1 SU taken

well needs to recharge 5 gal/13 min
1215 Sample taken
1245 On site sample trailor to
filter and Preserve
1400 Samples to SMO to
turn in.

S. Purdue 9-5-00

Los Alamos Canyon 9-5-00

0745 Calibrate instruments, see water quality Record for cno 1.6g

0910 On site (S. purdue and E. Bigio) at LAO-1.2 safety tailgate, check water level, LAO 1.2 is dry, TD 25.71 while replacing cement lid, a small (1") peice of cement fell into well.

0926 On site LAO-1.6(g) DTW 18.47, TD 26.73

01200 Enter site at 0.91, R. Beebe gives S. Purdue + E. Bigio SSHASP breifing on activities present

1213 Water level taken DTW 17.58, TD 18.46 ft, Bottom of screen is 14.5 ft below ground surface. Casing is 3 ft above ground surface, water level is below bottom of screen. S. Purdue decides not to sample.

1215 E. Bigio backs tan rented Explorer into Stuart Brothers crew truck. No damage to SB truck. R. Beebe, D. Stevens, J. Crocker onsite. J. Rejoia, A. Funk, K. McFadden are notified. Accident procedures are followed.

1410 On site LAO-B

1423 Begin Purging LAO-B

1455 Sample Taken

No surface water present, not taken.

1530 On-site at Sample trailor to filter and preserve.

1615 Samples turned in to SMO.

S. Purdue 9-5-00

Pueblo Canyon 10/3/00

8:00 Calibrate instruments, see water quality record for PAO-1 for calibration information

1230 Call EMO, S. Purdue and K. Greene enter PU canyon, safety tailgate.

1250 Sample taken at west SW-1

1315 Sample taken at west SW-2

1330 Sample taken at PAO-1 SW

1440 Sample taken at PAO-1

1500 Sample taken at PAO-2 SW

1515 PAO-2 water level taken
15.91ft DTW 16.47ft TD
not enough water for sampling

1545 On-site at sample trailor for filtering and preserving samples.

1655 Samples turned in to SMO

S. Purdue 10/3/00

Lower Pueblo Canyon 10/4/00

0830 Calibrate instruments. See water quality record for PAO-4 for calibration information.
PH slope = 96.1

0945 S. Purdue and K. Greene on-site PAO-4. Call EMO, safety tailgate

1045 Sample at PAO-4 taken
Purged from 10:00 - 10:45

1130 Begin purging PAO-5N

1145 Sample taken

1215 On-site at sample trailor to filter and preserve.

1345 Samples submitted to SMO

S. Purdue 10/4/00

0800 Calibrate instruments, see water quality record for LAO-0.3 for calibration information. PH slope 94.4

0845 S. Purdue and K. Greene on-site at LAO 0.3. 0850 Begin purging

0915 Sample taken at LAO 03

0935 On-site at LAO-0.6

0941 Begin purging

1010 Surface water sample CALA-00-0167, CALA-00-0168 taken from stagnant pool near LAO-0.6

1030 LAO-0.6 Alluvial sample taken

1050 Water level of LAO 0.8 taken DTW 15.15 ft TD 15.49

1105 Water level of LAO-0.91 taken DTW 17.67 ft. TD 18.31 ft not enough to sample

1116 Water level of LAO-1.2 taken Well is dry, TD 25.76 ft No sample taken

1130 Begin purging LAO-1.6g

1145 Sample taken at LAO-1.6g

1215 On-site at sample trailor for filtering and preserving. (S. Purdue)

1400 Samples turned in to SMO

1540 Begin purging LAOB

1600 Sample taken at LAOB

1605 Surface water sample taken at creek near LAOB

1620 On-site at sample trailor for filtering and preserving LAOB and LAOB SW samples.

1650 Samples turned-in to SMO.

S. Purdue 10/5/00

10/6/00 Lower LA Canyon

0730 Calibrate instruments, see water quality record for LLAO-1 for calibration information. pH slope 94.3

0830 S. Purdue and J. Harris on-site at San. I. gate. Safety tailgate, meet R. Gonzales for escort.

0900 Collect surface water sample at Basalt spring.

0930 Begin purging LLAO-1

0945 Collect surface water sample near LLAO-1

1010 Collect sample from LLAO-1

1040 Begin purging LLAO-4

1050 Collect sample from LLAO-4

1108 Begin purging LLAO-5

1145 Collect sample from LLAO-5

1300 Arrive at sample trailer for filtering and preserving.

1350 Turn samples in to SMO.

S. Purdue 10/6/00

10/11/00 LA Canyon

0800 Calibrate instruments, see water quality record for LAO-3A for calibration information.

0830 S. Purdue and D. Stevens meet M. Maies at gate.

0830 Back to TA-59 to get air compressor and tubing.

0935 On-site LAO-2

0940 Begin purging LAO-2

1001 LAO-2 goes dry

1035 On-site LAO-3A

Unable to take water level due to 2" well, and inability to remove bladder pump. M. Maies supplies prior water level information, and recomands purging 3 gals. One bore volume approx. 1 gal. (due to ESH standards)

1050 Sample taken at LAO-3A

1110 Back on-site at LAO-2 Well has not recharged.

1150 On-site at SMO for filtering and preserving

1230 Samples turned in to SMO

S. Purdue 10/11/00

Pueblo Canyon 11/26/00

0940 S. Purdue and B. Gray on site at PAO-1 to get WL data off of transducer.

S. Purdue 11/26/00

LA Canyon 11/2/00

1510 S. Purdue and C. Shultz on-site at skating rink to collect surface water at gaging station

1520 Sample collected

1525 Mob to LA Canyon weir dam

1540 Sample collected above weir dam

1550 Sample collected below weir dam.

1605 Samples put in refridgerator in sample trailor.

S. Purdue 11/2/00

Los Alamos Canyon 11/3/00

0830 S. Purdue and C. Shultz on-site at LLAO-1 for water level measurement DTW 12.71 ft at 8:35

0847 LLAO-2 DTW - 22.88 ft

0855 LLAO-3 DTW 20.51 ft

0910 LLAO-4 DTW 6.15 ft

0916 LLAO-5 DTW 14.47 ft

0945 On-site sample trailor to filter and preserve. Storm water

1115 Mob to Pueblo Complex to get Rad Screening signature

1320 Turned samples CALA-00-0220 to CALA-00-0225 over to M. Clevenger at SMO.

S. Purdue 12/3/00

Los Alamos Canyon 12/8/00

800 S. Purdue and T. Benson on-site

803 LAO-0.6 DTW = 7.42 f from TOC

815 LAO-0.8 Dry, TD 15.48

825 LAO-1.2 DTW = 7.99' from TOC

905 LLAO-1 11.61 f from TOC

915 LLAO-2 23.37 f from TOC

925 LLAO-3 19.45 f. from TOC

935 LLAO-4 5.02 f. from TOC

945 LLAO-5 14.11 f from TOC

S. Purdue 12/8/00

Tuesday March 6, 2001
LA Canyon Sediment Sampling.

0845: Arrived at Totavi Phillips 66 Station.

Weather cloudy and cool (temp. ~40°). Slight breeze.

0900: Danny Katzman arrived followed closely by rest of contingency.

0920: Began walking up stream in canyon behind station. Stopped to examine ash layer w/ well established grass growing on it.

1050: Collected Sample CALA-01-0010
Location ID LA-10049
Depth 0-7 cm
Fine to Coarse sand w/ some ash.

1135: Collected Sample CALA-01-0009
Location ID LA-10048
Depth 2-5.5 cm
Med. sand w/ small grvl. & some ash.

Steve Callon 3/6/01

3/6/01 Continued LA Canyon

1210: Collected sample CALA-01-0011
Location ID LA-10047
Depth 0-9 cm
Fine to med. sand w/ some ash.

Also collected duplicate sample
CALA-01-0012
Location ID LA-10047
Depth 0-9 cm
Fine to med. sand w/ some ash.

1235: Collected sample CALA-01-0008
Location ID LA-10046
Depth 0-8 cm
Fine to med. sand w/ 2cm muck layer.

1250: Collected sample CALA-01-0007
Location ID LA-10045
Depth 0-5 cm
Muck (dk. brown)

1315: Collected sample CALA-01-0006
Location ID LA-10044
Depth 0-6 cm
Fine sandy silt w/ a 2 cm muck layer

Steve Callon 3/6/01

3/6/01 Continued LA Canyon

1340: Collected Sample CALA-01-0005
Location ID LA-10043
Depth 0-2 cm
Dk. brown silty muck.

1410: Collected Sample CALA-01-0004
Location ID LA-10042
Depth 0-6.5 cm
Med. sand w/1.5 cm of silty muck.

1515: Left site for office and SMO.

S Callum 3/6/01

Steve Callum 3/6/01

745 Calibrate PH and Conductivity sensors on deep Ground water's Orion model 1230 meter.
PH meter will not calibrate — freezes up after 2nd pH 7, will not turn off or anything.

850 On-site San. I, at gate to Basalt spring. S. Purdue, J. Crocker R. Gonzales

915 On-site Basalt Spring for surface water Sampling.
Turbidity = 0.45 NTU
pH strip = 6
Sample # CALA-01-0025 NF
and # CALA-01-0026 F
collected

945 On-site LLAO-1 SW site
Turbidity = 18.3 NTU
PH strip = 6
sample # CALA-01-0023 NF
CALA-01-0024 F collected
~5 cfs?

1010 On site at Graze/LA canyon Confluence ~5 cfs?
Pick sample site in LA canyon ~285 ft upstream of confluence
Location ID # LA-10057

3/15/01

#3 Turbidity = 32.8 NTU pH strip = 6
Collected sample # CALA-01-0027 NF
CALA-01-0028 F

1035 On-site Gugie Canyon stream ~ 125 ft upstream of LA/GU confluence.

#4 Turbidity = 1.05 NTU
pH strip = 7
~ 2 or 3 cfs?
Location ID # ~~LA-10~~ GU-10000 sp 3/15/01
Collect sample #s CAGU-01-0001 NF
CA GU-01-0002 F

1105 On-site LA Delta ~ 150 ft West of White air monitoring station

#5
Turbidity = 75.5 NTU
pH = 6.5 CALA-01-0029
Loc. ID # LA-10058 CALA-01-0030

1150 On-site at R-12 to use Conductivity meter.

Site	Ec (µS/cm)	Temp
Basalt Spring	527	5.9°c
LLAD-1 SW	460	6.7°c
LA Canyon Above Conf.	447	8.3°c
GUC. Above Conf.	451	12.6°c
LA Delta	443	13.0°c

3/15/01

1230 ~~At~~ Back to MK office to drop off J. Crocker.

1245 Mob to SMO sample Trailer to filter and preserve samples

1605 Turn in samples to Joylyne at SMO

1620 Mob to office to unload and finish paperwork.

S. Plume 3/15/01

(80) 3/26/01

1615 S. Purdue mob to ESH-18 to pick up water samples from Consuelo Montoya.

1630 Picked up 3 1 gallon containers from ESH-18. Water samples from
Los Alamos @ SR-4
Los Alamos @ Rio Grande
Los Alamos @ GS

1645 Drop samples off at calibration trailer to wait for paperwork.

S. Purdue 3/26/01

3/28/01 (81)

7:30 S. Purdue mob to SMO to turn in TC 99 samples from ESH-18.

8:00 Give samples to Joylene at SMO.
CALA-01-0035 Los A. @ SR-4
CALA-01-0036 LA @ Upper GS
CALA-01-0037 LA @ Rio Grande

810 mob to MK office.

1513 mob to Pueblo Complex to get Government Vehicle to transport samples.

1500 On-site SMO to get sample paperwork and bottles for Quarterly Sampling.

1615 ~~1630~~ Mob to ESH-18 to pick up 1 gallon TC 99 sample from DP Canyon.

SP 3/28/01

1625 Take sample from Consuelo Montoya, put in Government truck in cooler to store overnight

1630 mob to office

S. Purdue 3/28/01

3/29/01 LA Canyon

730 S. Purdue calibrating pH meter CEL = 5.12
Calibrate YSI 63 water quality meter with pH 4 and pH 7 buffer solution.
830 Mob to SMO to pre-preserve VOA's w/ HCL, pick up shovels and extra sample containers
900 Mob to LAOB
920 On-site at LAOB w/ Keith Greene
Safety tailgate
935 Begin Purging 41 gallons from LAOB
1005 Take Samples CALA-01-0049
CALA-01-0050
1035 Mob to LAO-0.3
1055 Begin Purging 15 gallons
1110 Take Samples CALA-01-0051
CALA-01-0052
Mob to LAO-1.6a
1245 On-site LAO-1.6a
Begin Purging 40 gallons
1325 Take Samples CALA-01-0053
CALA-01-0054
1355 Mob to SMO to filter and

preserve samples.
~~15~~ SP 3/29/01
1515 Relinquish samples to Joylene at SMO.
1525 Mob to Office

S. Purdue

3/30/01 Lower LA Canyon D. Steven, S. Purdy

8:30 On-site at gate to LLAO-1 for Quarterly sampling. Safety tailgate. Water Quality instruments calibrated at 0730. Mob to take 1 gallon sample at LA spring.

925 Give up trying to find LA Spring. Try to call Micheal Dale, but cell phone has no signal.

930 On-site LLAO-1 DTW = 10.54, TD = 26.95

940 Begin Purging 34 gallons.

1000 Parameters are stable, samples CALA-01-0055 CALA-01-0056 CALA-01-0065 - Duplicate of CALA-0055 taken.

1025 Samples CALA-01-0059 CALA-01-0066 CALA-01-0060 3/30/01 taken at LLAO-1 SW from running water near LLAO-1

Cond. = 314 ~~[illegible]~~ µS/cm 3/30/01

pH = 8.17 Turbidity = 52.5 NTU

Temp = 5.8°C

3/30/01 LA Canyon

1040 Mob to LLAO-2 for water level.

1050 LLAO-2 DTW = 23.35 ft TOC

1103 LLAO-3 DTW = 15.30 ft TOC

1115 LLAO-4 DTW = 4.26 ft TOC

Walk down to Rio Grande to try to get surface water from Otowi Spring.

1125 Otowi Spring is not flowing, some seep water is coming through, but not enough to take a 1 gallon sample. Call M. Dale and leave message about status of samples.

1135 On-site at LLAO-5 DTW = 12.49 Begin Purging 25 gallons

1200 Take samples CALA-01-0057 CALA-01-0058.

1215 Mob to gas station to put air in tires, eat lunch

1310 On-site at LAO-0.3 to take surface water sample.

1320 Take samples CALA-01-0061 CALA-01-0062

(86)

3/30/01 LA Canyon

1320 (LAO-0.3) surface water
Temp = 7.5° pH = 7.89
Cond. = 240 µS/cm Turb. 115 NTU
Mob to LAO-1

1330 On-site at LAO-1 to take surface water sample
Temp = 8.2°C pH = 7.9
Cond. = 243 µS/cm Turb. = 117 NTU
~~Mob~~ Take Samples
CALA-01-0063
CALA-01-0064
Mob to SMO to filter + preserve samples.

1630 Give samples to Augusta Garcia at SMO.
Mob to office.

S. Purdue 3/30/01

(87)

4/2/01 DP Canyon

Arrive @ Knights of Columbus
Met w/ D. Katzman, Randy Ryti, Mark Tardiff.
21-10929 = location Upper DP

0955 Conductivity 481 µS/cm
Temp 7.2 °C
pH 8.10
Turbidity 21.7 NTU

4/2/01 SRE

1005 Collect samples CA21-01-0008 and CA21-01-0009. Pool #1
SRE 4/2/01
Change in pH 8.97 Flow down channel

1150 Collect field parameters @ Pool #2. Location description: 21-11181 is 11 meters up stream drainage from pool #2.
Conductivity = 627 µS/cm
Temp = 4.4°C
pH = 6.92
Turb. = 6.24 NTU
Pool has hydrocarbon sheen and rust oxides on stream bed. Pool is isolated. no surface flow connecting to upper drainage. Smells like diesel or gas.

@ Assigned location 21-11226

(88)

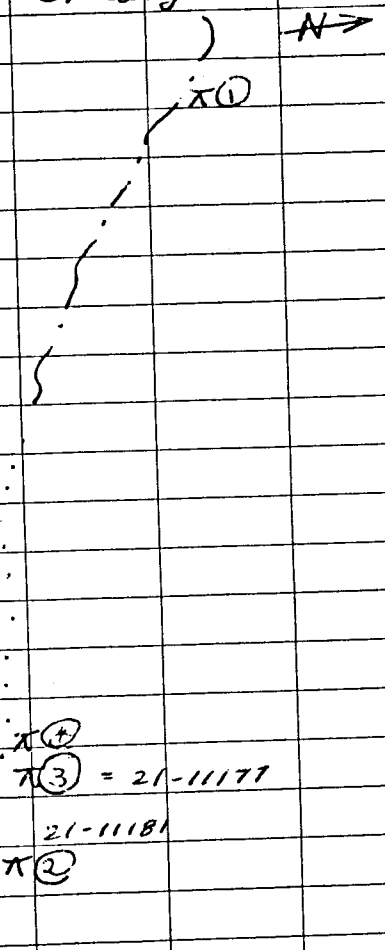
4/2/01 DP Canyon

1100 21-11177 = Site location pool #3.
isolated pools. Now moving up channel
Conductivity 613 µS/cm
Temp. 5.5°C
pH 6.93
Turbidity 5.09 NTU
Pool is murky. Less hydrocarbon
sheen visible than on pool #2
1107 pool #4 is located 10m above
pool #3.
Cond. 586 µS/cm
Temp. 5.3°C
pH 6.97
Turbidity 5.80 NTU
Description is same as pool #3.
1125 Sample at pool #2.
1130 Sample ID # CA21-01-0003 and
CA21-01-0004.
Hike samples out

Gene Evans
4/2/01

(89)

4/2/01 DP Canyon



4/2/01 DP Canyon

1240 S. Purdue and C. Shultz mob to LAUZ-1 to sample.

1250 On-site LAUZ-1, Safety tailgate

1305 Begin purging, we are putting purge water into barrel on-site for waste characterization.

1325 17 gallons purged, parameters are stable Take sample CA21-01-0001 and CA21-01-0002

1340 Mob to WBII office to drop off. C. Shultz and then mob to SMO.

1400 On-site at sample trailer at SMO to filter and preserve samples

1615 Deliver samples to Jaylene at SMO.

1630 Mob to office

4/2/01 S. Purdue

(*) pH meter calibrated at 7.30 Am by S. Purdue.

4/3/01 Acid Canyon

0900 Arrive South Fork Lower Pilung Pool (AC3S+276=Stake). Location is immediately above confluence of S. Fork w/ Acid Canyon.

Cond. 344 µS/cm

Temp 4.4°C

pH 6.35

Turb. 10.2 NTU

0910 Collect sample CAPU-01-0012

0930 Arrive near location CC-10241 in Acid Canyon. Upper Acid above S. Fork confluence.

Cond. 788 µS/cm

Temp 5.8 °C

pH 5.90

Turb 8.53 NTU

0940 Collect sample CAPU-01-0014

1025 On-site at Upper South Fork to collect sample CAPU-01-0010

1030 Sample collected CAPU-01-0010 5m upstream of location stake PU-10008 AC3+45m Parameters recorded on collection log.

SP 4/3/01

4/3/01 Acid Canyon

1045 Mob to vehicle, take R. Evans back to office. Break for lunch.

1130 S. Purdue on-site at sample Trailer to filter and preserve samples.

1330 Complete filtering and preserving. Take samples to SMO

1345 Turn over samples to Augusta Garcia at SMO.

1355 Mob to ESH-18 to give Max M. some sample containers.

1415 Return to office.

* pH meter calibrated at 730 AM by ~~Shannon Purdue~~

S. Purdue 4/3/01

4/4/01 Pueblo Canyon

730 Calibrate pH meter load truck

800 Depart for Pueblo Canyon w/ S. Purdue, R. Evans, D. Steven

830 On-site at PAO-1. Safety tailgate

845 Begin Purging. Small 2"x2" clean Kleenex piece was dropped in well. No evidence found while purging.

905 Sample taken CAPU-01-0001 F
CAPU-01-0002 NF

920 Mob to PAO-2

940 On-site at PAO-2 DTW = 13.95 ft TOC
Begin purging
Purge 2 gallons, well is dry - wait for recharge.

955 Take water level, DTW 15.95
Not enough to pump
Wait for more recharge.
Talk to D. Katzman, to collect 4L of water for filtered and non-filtered PU and SR90.

1020 Decide to come back later after well has re-charged

(94) 4/~~30~~4/01 Pueblo Canyon
BP 4/4/01

1045 Mob to office to drop off R. Evans. - Break for lunch
1200 Mob. to PAO-3 (S. Purdue and D. Steven)
1245 TD of PAO-3 (16.80 ft) 16.50 ft
correction for Blue water level indicator model 51453 ser. no 22245
DTW = (7.67 ft) 7.37 ft
1255 Purged 5 gallons, well was dry.
1300 Got 2 gallons after a few minutes of recharge. Dry again
1310 Purge 1 gallon, wait for re-charge.
1314 Purge 1 gallon, wait for recharge
1325 Purge 3 gallons wait for recharge
1335 Purge 3-4 gallons wait for recharge.
1355 Purge 1 gallon, Collect sample
1400 Sample taken

4/4/01 Pueblo Canyon (95)

1415 Mob to PAO-4
1435 Begin purging PAO-4
1480 Take samples CAPU-01-0007 F
CAPU-01-0008 NF
1500 Mob to SMO to filter and preserve samples. & sp
1650 Turn samples over to Sayline Valdez at SMO.
1700 mob to Office

S. Purdue 4/4/01

(96) 4/5/01 Pueblo Canyon

915 S. Purdue and D. Steven on-site at PAO-2, safety talk, prep for sampling.

920 PAO-2 DTW = 16.01 ft TOC
TD = 16.46 ft TOC
Not enough water in well to take a sample.

930 Mob to office.

S. Purdue 4/5/01

4/9/01 (97)

945 S. Purdue and C. Shultz on-site at upper DP pools - return sample water to site that was not used for analysis.

1025 Return to Office

1300 S. Purdue took all sampling waste from quarterly sampling to landfill. Have receipt to M. Sheppard.

S. Purdue 4/9/01

6/1/01 Upper LA Canyon
Camp May Rd.

1115 D. Katzman, S. Purdue and K. Greene on site at Camp May Rd. to collect sediment samples per SOP 6.09 Rev 1

1120 Collect CABL-01-0010 at BL-00042
1155 Collect CABL-01-0011 at BL-00042
(*) see Danny Katzman's notebook for exact locations
(*) see collection logs for location and depths
1215 Collect CABL-01-0012 at BL-00042
1255 Collect CABL-01-0013 at BL-00043
1315 Collect CABL-01-0014 at BL-00043
1335 Collect CABL-01-0016 BL-00044
1325 Collect CABL-01-0015 at BL-00043
1525 Collect CABL-01-0017 at BL-00045
1540 Collect CABL-01-0018 at BL-00045
1550 Collect CABL-01-0019 at BL-00045
1600 Return to PMC office in government vehicle
Store samples in cooler in vehicle for IL. weekend
SL

Purdue 6/1/01

6/15/01 Acid Canyon

7:30 Purdue, S. Crocker and S. Ferman FTW FTW SOP # 6.09 Rev 1
on site at swimming pool parking lot above Acid Canyon
S. Ferman gave safety Tailgate
8:45 Enter SP/Acid Canyon
9:10 Collect SOI sample #CAPU-01-0072 at location PU-10065
920 Collect # CAPU-01-0071 at PU-10063
945 Collect #CAPU-01-0073 at PU-0106
950 Collect #CAPU-01-0074 at PU-0106
1030 Collect #CAPU-01-0063 at PU-10218
1050 Collect #CAPU-01-0070 at PU-10004
1055 Collect #CAPU-01-0062 at PU-10219
1110 Collect #CAPU-01-0069 at PU-10220
1120 Collect #CAPU-01-0068 at PU-10220
1130 Collect #CAPU-01-0061 at PU-10221
1140 Collect #CAPU-01-0067 at PU-10006
1145 Collect #CAPU-01-0066 at PU-10007
1155 Collect #CAPU-01-0065 at PU-10222
1205 Collect #CAPU-01-0064 at PU-10009
1215 Collect #CAPU-01-0059 at PU-10223
1220 Collect #CAPU-01-0060 at PU-10223
1250 Meet Johnny Jameson (ESH-1) at truck in parking lot above

SL Purdue 6/15/01

6/15/01 Acid Canyon (cont.)

Acid Canyon for rad screening of samples prior to transport. Samples were determined to be < 0.2 mrem/hr.

1320 S. Reneau off-site. S. Purdue and J. Crocker dropped off Rad screening samples at ARS.

1347 Submitted remaining samples to Joyline Valdez at SMO. S. Purdue and J. Crocker Returned to PMC office.

S. Purdue 6/15/01

6/18/01 LA Canyon

8:00 Calibrate Hach Turbidity meter and YSI multiparameter meter. CEL = 5.12

8:30 S. Purdue and C. Shultz have safety tailgate meeting and discuss today's task of collecting water samples in LA Canyon using ER SOP # 6.13 & 6.03

940 Collect surface water sample from LA Reservoir CALA-01-0254 F, 0255 NF and QA Duplicate CALA-01-0256 Dup. F

1125 Collect Alluvial water sp from LA0B-CALA-01-0215 F, 0216 NF

1240 Collect Alluvial water from LA0-0.3-CALA-01-0217 F and CALA-01-0218 NF

1300 Collect Surface water in Creek near LA0-0.3 CALA-01-0244 - filtered CALA-01-0245 - Non-filtered

1345 On-site at Sample trailer to filter and preserve samples.

1700 Deliver Samples to SMO.

(*) See Collection Logs for field screening info.

6/19/01 LA/DP Canyons

730 S. Purdue calibrated YSI multiparameter meter in office. See water quality Rec. for calibration information

800 S. Purdue and C. Shultz have safety tailgate meeting and depart for LA Canyon to collect water samples using ER SOP #' and

15 On-site at LAO-1 to collect surface water sample.

~~830~~ 25 Collect sample # CALA-01-246 F and CALA-01-2467 NF

SP 6/19/01

Mob to LAO-1.bg.

940 On-site at LAO-1.bg Collect #CALA-01-219 Filtered and #CALA-01-220 Non-Filtered and Dupliate #CALA-01-0241

1000 On-site at Upper 6-5 to collect surface water, site is dry, do not collect. Walk to DP Spring DP Spring is a very slow

seep. Will try again later. Sampling at this flow rate would take an entire day.

1115 Mob to State pd 4 and LA Canyon to take surface water sample. Site is dry, do not collect sample.

1140 Mob to DP Canyon LAUZ-1

1200 On-site at LAUZ-1

1225 After purging a continuous 12 gallons, turbidity is up to 415 NTU. We decide to let well sit and settle out suspended silt

1235 Purge 3 gallons, turbidity is down to 41.6 NTU, we continue to purge 2 more gallons. NTU is now 44.7. Well is going Dry

1240 Allow well to recharge

1310 Purge 5 gallons turbidity is 59.6 NTU.

S. Purdue calls P. Longmire

6/19/01 DP Canyon

to ask for advice on sampling this water with such a high turbidity. Pat says to collect all samples anyway. We will let well recharge for a little while longer, and micro-purge samples for lowest possible turbidity.

1345 Collect CA21-01-0007 Non Filtered and CA21-01-0008 Filtered from LAUZ-1

1400 On-site at sample trailer at FSF to filter and preserve samples.

1630 Mob to SMO to drop off samples

1642 Give samples to Augusta Garcia for shipping.

See Page 6/19/01

6/20/01 Acid / DP Canyons

7:30 Calibrate water quality meters ~~See water quality record for calibration information~~ JP 6/20/01

CEL = 5.12

8:00 S. Purdue and C. Shultz on-site at swimming pool parking lot above acid canyon to collect surface ~~st~~ SP 6/21/01 At Acid Canyon

ER SOP #6.13

Safety tailgate, walk down to lower Plunge Pool, - Dry

Walk up to 030a continuous with Acid Canyon. Site is Dry

Walk up to Upper South Fork site - ACS+45m - collect Sample CAPU-01-0090 ~~Non~~ JP 6/20/01 Filtered and CHPU-01-0091 Non Filtered

Depart Acid Canyon

Drive to Knights of Columbus parking lot to collect surface water in DP Canyon.

Collect CA21-01-0011 Filtered and CA21-01-0012 Non-filtered Downstream of Culvert near Knights of Columbus parking lot.

6/20/01 DP Canyon

Hike to location 21-11181

1035 Stopped at SAIC / LATA work-site to sign in to their jobsite. ~1½ East of 21-11181

1055 Collect # CA21-01-0009 F and # CA21-01-0010 NF

1120 Sign out of SAIC / LATA job-site.

1135 Depart DP Canyon.

1300 On-site at FSF sample trailer to filter and preserve samples. Drive to Building 1516 to give vehicle trip log to Cathy Gomez. Submit samples to Joylne Valdez at SMO. Return to WGI/Pmc office to make sample kits for tomorrow -

SL Pace 6/20/01

6/21/01 Pueblo Canyon

730 Calibrate YSI multiparameter meter. ⊛ See water quality log for calibration information

CEL: 5.12

810 Safety tailgate with S. Purdue and C. Shultz. Depart for Pueblo Canyon.

830 On-site at PAD-1 to collect water samples ER SOP # 6.01, Rev. 2, surface 6.13

840 Begin purging

845 Download information from transducer (See Alluvial Probe field book) Wait for well to recharge getting ½ gallon every few minutes.

925 Collect CALA-01-0075 Filtered and CALA-01-0076 Non-filtered and colloid sample for Pat Longwire

940 Mob to Acid Weir. Acid Weir is dry

950 Mob to PAD-2 DTW = 14.07 ft TOC

TD = 16.48 ft TOC

We will collect here without purging in order to get a sample.

6/21/01 Pueblo Canyon

PAO-2 Parameters
Turbidity = 0.50 NTU
PH = 6.57
T = 20.9°C
Cond. = 482 uS/cm

1020 Collected 1 gallon, CAPU-01-0078 NF, will wait for recharge. DTW = 15.76 ft

1040 Check water level DTW = 15.73 ft
No change in 20 minutes
Decide to move on SP 6/21/01

1100 On-site at Pueblo 2 to take surface water - site is Dry

1110 On-site at PAO-3
TD ~~DTW~~ SP 6/21/01 = 16.53 ft TOC, ~~TD~~ SP 6/21/01 DTW = 13.61 ft TOC
Collect 1.5 gallons without purging. Take parameters CAPU-01-0079 CAPU-01-0080
(*) See water quality Record for info.

1126 DTW = 16.05 ft TOC, wait for recharge.

1200 DTW = 16.04 ft TOC, decide to move on, no recharge for 30+ minutes.

1230 On-site at PAO-4

1240 Begin purging

1315 Collect CAPU-01-0081 Filtered
and CAPU-01-0082 Non-filtered

6/21/01 Pueblo Canyon

1340 Mob to Pueblo 3 to collect surface water.

1400 Collect CAPU-01-0094 Filtered
and CAPU-01-0095 Non-Filtered

1430 On-site at FSF sampling trailer to filter and preserve samples.

1620 Deliver samples to Joyce ~~Vasquez~~ Valdez at SMO.

SP
Pace
6/21/01

6/22/01 Pueblo / DP Spring

730 S. Purdue calibrates YSI multiparameter meter. CEL= 5.12. Load truck to depart for DP Spring and Pueblo @ SR502. Safety Tailgate with S. Purdue and C. Shultz. Mob to DP Spring.

1015 Collect Sample CA21-01-0017 F.H. and CA21-01-0018 Non-Filtered at DP Spring #21-11271 Location. hike out of DP Canyon. See collection log for water parameters. Flow rate was approximately 1 Liter per minute.

1125 On-site back at vehicle. We received a call from J. Koford asking for assistance at R-22. mob to R-22

1220 On-site at Pueblo at SR502 to collect surface water - site is dry.

On-site at ST to filter and process samples

Submit samples to Joylene.

6/22/01 Pueblo, DP Spring

Valdez at SMO

S. Purdue and C. Shultz take colloid samples to P. Longmire from PAO-1, PAO-4, and Pueblo3.

S. Purdue 6/22/01

730 Calibrate YSI multiparameter meter. See Water Quality Record for calibration Information.

920 On-site at LAO-C. DTW = 4.30 ft S. Purdue and C. Shultz meet Max Maes and Nicky Martinez to begin water sampling.

955 DTW = 4.48 ft TOC

1055 We have been purging as slow as possible, and Turbidity will not drop below 5.88 NTU, decide to start collecting samples

1100 Collect Sample CALA-01-0240 NF and CALA-01-0239 F.

1200 Finish collecting sample, Turbidity 5.77 NTU.

1215 On-site at LAO-0.7 DTW = 13.32 pump rate = ~~2L~~ 1L per minute

1320 Turbidity = 4.72 NTU, begin taking Samples CALA-01-0225 F and CALA-01-0226 NF

1405 Sampling is complete

1425 On-site at LAO-1 DTW = 8.68 Pump rate = 2L/~~sec~~ min

~~Turbidity = NTU~~

1505 Pump rate = 1L/min

1540 Turbidity = 2.95 NTU, begin taking samples CALA-01-0228NF and CALA-01-0227 F

1625 Finish Sampling LAO-1 Mob to Sample trailer to filter and preserve samples

1800 Complete filtering and preserving. Put samples in refridgerator in trailer to store overnight. Mob to office.

6/26/01 LA Canyon

700 Calibrate YSI multimeter see Water Quality log for information.

745 S. Purdue and A. Funk on-site at Sample trailer to turn in samples from yesterday.

800 Relinquished samples to Joyce Valdez at SMO. Mob to LLAO-1. to collect water samples SOP 6.01, 6.02, 6.03, 6.13 Safety Tailgate given by S. Purdue.

815 S. Purdue and A Funk on-site at LLAO-1 to wait for R. Gonzales

(note) (C. Shultz is in LA Canyon with Max Maes to collect water samples)

830 R. Gonzales on-site at LLAO-1

850 Begin purging

905 after 17 gallons, parameters are stable, collect CALA-01-0221 F and CALA-01-0222 NF Check LLAO-1 SW site, site is dry, mob to LLAO-2, 3+4

6/26/01

for water level measurements.

(*) See water level field book for measurements.

1010 On-site at LLAO-5. after checking LA Canyon at Rio Grande SW site, site is dry. Did not collect.

1015 Begin purging LLAO-5

1042 Begin sampling after purging 22 gallons. Water was very muddy at beginning of purge, but cleared up to <5 NTU by ~8 gallons.

Collect Sample CALA-01-0223 F and CALA-01-0224 NF

1100 Mob to LAO-4.5c to pick up water samples from C. Shultz.

1130 Arrive at LAO-4.5c, help Curtis complete sampling.

1150 Collect CALA-01-0235 and CALA-01-0236 at LAO-4.5c

1215 Mob to Sample trailer at FSF to filter and preserve samples, including CALA-01-0229 to CALA-01-0232

(cont.)

6/26/01

From LAO-2 and LAO-3a

1530 Turn in samples to Augusta Garcia at SMO.

1545 Mob to office.

6/26/01

6/27/01

715 Calibrate both YSI meters for PH and Conductivity. See water quality Records for calibration information.

C. Shultz, Joe T., S. Purdue, and Andy Funk have safety tailgate meeting.

C. Shultz and Joe T. mob to LAO-4 and APCO-1 with Max Maes from ESH-18.

745 S. Purdue and A. Funk mob to SMO to pick up sample containers.

810 S. Purdue and A. Funk mob to LA Canyon.

We are stopped by a Pro-Force guard, and told we cannot enter LA Canyon today.

815 Mob to Acid Canyon to check for surface water.

830 Enter Acid Canyon. Hike to Lower Plunge Pool and Acid Canyon above 030g. No surface water present.

915 Exit Acid Canyon Mob to office.

(118) 6/27/01

945 Receive a call from C. Shultz at LA0-4. He reports no surface water in LA canyon.

1230 Meet C. Shultz and J. Toya at Sample trailer to filter and preserve samples from LA0-4 and APC0-1.

1340 Turn samples in to Augusta Garcia at SMO
CALA-01-0233, 0234 from LA0-4
and CAPA-01-0083, 0084 from APC0-1

1400 Mob to office

SL
6/27/01

6/28/01 (119)

745 Calibrate YSI multiparameter meter. See water Quality record for calibration Information.

910 Mob to DP Canyon. S. Purdue and C. Shultz have safety briefing

925 On-site at DP Canyon, downstream of 21-11181 SW site
T = 16.9°C
Turb = 8.6 NTU
pH = 6.60
Cond = 263 µS/cm
Collect VOAS and 500 ml poly to filter for TCN
CA21-01-0019 Filtered TCN
CA21-01-0020 NF VOAS

945 On-site Dp Canyon below culvert
T = 17.5°C
Turb. = 12.2 NTU
pH = 7.37
Cond = 372 µS/cm
Collect 1 500 ml poly for filtered TCN
CA21-01-0021 - Filtered TCN
Mob to Acid Canyon

SP 6/28/01

1025 On-site at Acid Canyon to recollect CAPU-01-0090 and CAPU-01-0091, organics
T = 16.3
Turb = 3.2
pH = 7.27
Cond = 317
collect samples CAPU-01-0103 NF and CAPU-01-0104 F
Site has flooded since we were here last, sample pool is much smaller.

1030 Depart Acid Canyon, Mob to LA Canyon.

1105 Begin Purging LAOB

1140 Collect CALA-01-0257 - re-sample for LAOB.

1145 Mob to LAO-0.3

1205 On-site LAO-0.3, begin purging

1220 Collect CALA-01-0258, re-sample for LAO-0.3

1340 Submit samples to Augusta Garcia at SMO.

* All resamples taken today are due to warm samples received at Paragon. Rejected by lab and Bill Hardesty

Field Team - D.S., J.T., R.G. 7/3/01

1000 Al Funk NCWI call from Al Pratl to sample PU Canyon due heavy flood from storm 7/2/01 evening.

~1045 Sample kits made for AC weir and PU + SO2 sampling.

1315 on site @ PU / Acid weir. Tailgate mtg. held.

1320 - weir buried by silt. Sample taken upstream 12m from weir, just below rock dam.

- measured field parameters @ 1325-1335
Turbidity = 78.8 NTU
pH = 7.29 @ 22.4°C
EC = 378.5 µS/cm
SC = 397.8 µS/cm (at 25°C ref. temp.)

1344 - Acid weir sampling complete

1440 on site @ PU and SO2

- measured field parameters 1445 - 1450:
turbidity = 914 NTU
pH = 7.48 @ 26.3°C
EC = 534 µS/cm
SC = 520 µS/cm (@ standard 25°C temp)

- Sampling Pueblo Can. @ SR502 complete @ 1455.

7-3-01

1530 - at SMO / Sample trailer
I.T + D.S filter and preserve
turn in samples @ 1700
Samples CAPU-01-0100, 0101, 0092, 93

7/3/01

7-5-01

0800 - 1100 - assemble paperwork, make up sample kit - trip to SMO for bottles and cooler - calibrate pH meter + assemble equipment for sampling surface water at sites Pueblo 1R and Pueblo 2 in Pueblo Canyon.

1120 - arrive on-site and Pueblo 1R conduct tailgate safety mtg.

1130 - begin sampling at Pueblo 1R
- Measured field parameters:
Turbidity = 6.43 NTU
pH = 6.83
Temp = 14.6 °C
EC = 449 µC/Sm

1200 - Finished sampling Pueblo 1R
- Reconned Pueblo 2 surface water sample site - streambed is dry - could not sample
- Downloaded transducer data at alluvial wells
- 1455 - arrived at SMO to process Pueblo 1R sample
- 1605 - turned in Pueblo 1R sample @ SMO

R Gray 7/5/01

Acid Canyon 7/9/01

9:30 On-site Acid Canyon Parking lot S. Purdue, A. Fin't, S. Reneau. S. R. gives safety tailgate meeting.

955 Begin Rad screenings sp 7/9/01

ACS-55 + 145m C2 ~~W~~ E

Depth	Count 1	Count 2	Count 3	~~Average Counts~~ sp 7/9/01
0-15	24	35	30	
15-30	26	26	17	
30-45	79	100	84	
45-60	338	266	488	
60-75	48	43	38	

ACS-56 + 141 m C2 E

Depth	Count 1	Count 2	Count 3
0-15	50	62	41
15-30	65	58	50
30-45	49	63	59
45-60	104	89	110
60-75	47	40	30
75-90	61	65	66

ACS-57 + 137m C2 E

Depth	Count 1	~~Count 2~~
0-15	22	
15-30	22	
30-45	36	
45-60	35	
60-75	54	
75-90	24	

Acid Canyon 7/9/01

~~75-90 24~~ sp 7/9/01

ACS-58 + 141 m C2 W

Depth	Count 1	Count 2	Count 3
0-15	33	31	47
15-30	25	25	37
30-45	146	~~5~~ + 140	215
45-60	61	51	53

ACS-59 + 139 m C2 W

0-15	9	8	18
15-30	24	29	40
30-45	155	127	151
45-60	92	297	100
60-75	99	96	122
75-90	220	239	238

ACS-60 + 137m C2 W

0-15	25
15-30	44
30-45	145
45-60	50
60-75	11
75-90	96

ACS-61 + 145m C2 W

0-15	58	82	69
15-30	46	58	52
30-45	143	154	119
45-60	84	104	79

Acid Canyon 7/9/01

60-75	48	46	49
75-90	257	230	256
90-105	72	57	60
ACS-62 + 146m C2 W			
0-15	57	46	44
15-30	97	95	109
30-45	31	46	43
45-60	41	40	46
60-75	69	59	87
75-90	250	216	207
ACS-63 + 152 m C2 W			
0-15	23		
15-30	13		
30-45	19		
45-60	22		
60-75	46		
75-90	38		
ACS-64 + 181m C2 E			
0-15	10		
15-30	12		
30-45	11		
45-60	11		
ACS-~~64~~ 65 + ~~8p~~ 8/7/9/01		ACS-65 + 186 m F1	
0-15	33	38	27
15-30	18	14	19

Acid Canyon 7/9/01

30-45	43	40	35
45-60	318	274	290
~~60-75~~ 8/7/9/01			
ACS-66 + 181m F1 W			
0-15	28	20	29
15-30	13	11	12
30-45	40	28	25
45-60	112	140	178
60-75	65	66	66
~~75-90~~ 8/7/9/01			
ACS-67 + 193 m F1 W			
0-15	39	35	38
15-30	117	127	131
30-45	22	64	25
45-60	13	7	11
ACS-68 + 218m C2 W			
0-15	9		
15-30	14		
30-45	19		
45-60	11		
ACS-69 + 230m			
0-15	53	62	60
15-30	144	196	190
30-45	99	83	92
45-60	16	24	18

Acid Canyon 7/9/01

ACS-70	+238m		C2	E
0-15	35			
15-30	32			
30-45	71			
ACS-71	+239		F1	W
0-15	81			
15-30	76			
30-45	23			
45-60	13			
60-75	28			
ACS-72	+	250m	F1	W
0-15	493	341	384	
15-30	1160	1216	1091	
30-45	159	102	130	
45-60	14	15	24	

1600 Field personnel screened themselves for Alpha contamination none found. Return to office

SL Perkins 7/9/01

LA Canyon 7/11/01

800 Calibrate YSI meter. see Water Quality Record for calibration information S. Purdue and H. Funk

925 Meet Max Maes and Nicolas at lower gate to LA Canyon for re-sampling ESH-18 wells.

9~~7~~40 On-site at LAO-2, safety tailgate - vehicular safety. Begin set-up. Max's air hose from well to TIMCO has kinks and the air will not pass through.

1010 Nicolas and Andy Funk mob to TA-59 to get another pigtail.

1250 TIMCO Bladder Pump regulator has a blown diaphram. Max Maes and Nicolas go to get another regulator.

1405 Max returned and attached new regulator.

1410 Begin pursing again - turbidity is up again to 10.7 NTU

1443 Turbidity is back down

LA Canyon 7/11/01

to 4.28 NTU, collect CALA-01-0264 CALA-01-0264 samples. Mob to LAO-3a

1500 begin purging LAO-3a

1509 Collect samples CALA-01-0265 and CALA-01-0266

Mob to LAO-4.5C

1525 Begin purging LAO-4.5C

1537 take samples CALA-01-0267 and CALA-01-0268

1600 On-site SMO to filter and preserve samples.

1650 Leave samples in locked sample trailer in cooler with lots of ice. We will return to turn in samples in the morning.

[illegible] 7/11/01

LA Canyon 7/12/01

7:30 Calibrate YSI multiparameter meter. See Water Quality Record for calibration information.

7:45 S. Purdue and A. Alexander have safety tailgate meeting and mob to SMO to turn in samples from yesterday.

8:02 Submit samples to K. Greene at SMO. Mob to San I. to meet Ryan Gonzales

8:40 On-site at LLAO-1

9:10 Collect CALA-01-0259 and CALA-01-0260. Mob to LLAO-5.

930 On-site at LLAO-5.

947 Well is dry, allow to re-charge

1000 re-charged - Purge 4 gallons allow to re-charge again

1025 Purge 3 more gallons,

1032 Take samples CALA-01-0261 and CALA-01-0262. Mob to Sample trailer

1100 On-site Sample trailer to filter and preserve samples

1140 Submit samples to K. Greene at SMO.

[illegible] 7/12/01

Acid Canyon 7/16/01

830 S. Purdue, P. Drakos, S. Renaud, J. Hall and J. Toya on-site at Aquatic Center to collect sediment samples in Acid Canyon. S. Renaud gives safety tailgate. Collect sediment samples CAPH-01-0105 through CAPH-01-0187.

1400 Meet Johnny Jameson from ESH-1 in Aquatic center parking lot. He screens out samples and gives us a Health Physics Radioactive Materials Survey Tag.

1445 S. Purdue and J. Toya transport Rad Van samples to ARS.

1510 Mob to SMO.

1520 On-site at SMO.

1540 Turn samples in to Keith Greene at SMO. They will wait for ARS results for shipping.

1545 Mob to office

S. Purdue 7/16/01

DP Canyon 7/23/01

8:30 Calibrate YSI multiparameter meter. CEL = 5.09.
Safety Tailgate with S. Purdue and J. Toya.
Mob to DP Canyon to resample NF TCN from DP Canyon below culvert and DP Canyon below Tank farm
EP S.O.P # 6.13

925 On-site at DP Canyon 11m from 21-
Turb = ~~253~~ 31 NTU 7.47 NTU
T = 17.3 °C
pH = 6.72
Cond = 253 µS/cm

920 Take 1 500 ml NF TCN sample #

940 On-site at DP Canyon Below KOC Culvert.
Turb = 7.72
T = 18.4
pH = 7.65
cond = 349

945 Take sample # CA21-01
Mob to office to Drop off Joe Toya.

(134) Acid Canyon/DP 7/23/01

1000 S. Purdue mob to ARS to pick up Acid Canyon Samples from 7/16/01

1010 Pick up CAPU-01-0105 through CAPU-01-0146 except for CAPU-01-0139 and CAPU-01-0136 because they are above 2 nc/g.

1020 mob to SMO to get DP Canyon paperwork and screen ARS samples

1035 DP Canyon paperwork is not complete. Augusta is not here. Preserve samples with NaOH and place in sample refrigerator

1045 Set up to do triplicate screening of Acid Canyon RVbrossA samples from ARS. One minute cpm

Sample ID	1st cpma	2nd cpm a	3rd cpm a
CAPU-01-0105	38	33	32
CAPU-01-0106	53	62	84
S m CAPU-01-0107	25	28	26
CAPU-01-0108	54	50	64
CAPU-01-0109	86	66	87
CAPU-01-0110	45	46	48
CAPU-01-0111	40	44	38

S = sieved m = moisture

7/23/01 Acid Canyon (135)

Samples are being screened with 2 Ludlum model 43-1 alpha meters rented from ERG in Albuquerque. Serial # 139988 probe, 117357 box and # 140039 probe, 108870 box

Sample ID (cont.)	cpm alpha 1st	2nd	3rd
S CAPU-01-0112	~~99~~ 99	192	206
CAPU-01-0113	41	48	40
CAPU-01-0114	77	94	71
S m CAPU-01-0115	101	137	128
S CAPU-01-0116	23	50	24
S? CAPU-01-0117	98	128	106
m CAPU-01-0118	18	14	20
m CAPU-01-0119	26	21	19
m CAPU-01-0120	105	95	131
~~CAPU-01-0121~~	not	collected	
CAPU-01-0122	20	17	29
S CAPU-01-0123	9	23	22
CAPU-01-0124	56	67	72
m CAPU-01-0125	44	32	35
S m CAPU-01-0126	10	6	8
CAPU-01-0127	46	38	45
CAPU-01-0128	113	116	127
S CAPU-01-0129	73	68	64

S = sieved m = moisture

(136) 7/23/01 Acid Canyon

1100 Background readings - Sample Trailer

serial #140039 1: 1 2: 0 3: 0

serial #139988 1: 2 2: 3 3: 0

Sample ID	cpm alpha 1	2	3
s CAPCU-01-0130	90	112	80
CAPCU-01-0131	23	34	33
s CAPCU-01-0132	54	51	57
CAPCU-01-0133	25	26	35
s CAPCU-01-0134	33	41	36
CAPCU-01-0137	51	32	60
s CAPCU-01-0138	16	15	13
s CAPCU-01-0140	18	13	18
s CAPCU-01-0141	34	48	35
CAPCU-01-0142	60	61	80
s CAPCU-01-0143	109	122	105
s CAPCU-01-0144	61	66	112
s CAPCU-01-0145	80	73	59
s CAPCU-01-0146	41	33	35

1445 Mob back to office. ALS sample returns will be stored in Sample Trailer until I have a chance to return them to the Canyon.

[illegible] 7/23/01

7/23/01 Acid Canyon

1100 Background readings - Sample Trailer

serial # 140039	1: 1	2: 0	3: 0
serial # 139988	1: 2	2: 3	3: 0

Sample ID	cpm alpha 1	2	3
s CAPK -01- 0130	90	112	80
CAPU -01-0131	23	34	33
s CAPU -01-0132	54	51	57
CAPU -01-0133	25	26	35
6 CAPU -01-0134	33	41	36
CAPU -01-0137	51	32	60
s CAPU -01-0138	16	15	13
s CAPU -01-0140	18	13	18
s CAPU -01-0141	34	48	35
CAPU -01-0142	60	61	80
s CAPU -01-0143	109	122	105
s CAPU -01-0144	61	66	112
s CAPU -01-0145	80	73	59
s CAPU -01-0146	41	33	35

1445 Mob back to office. ARS sample returns will be stored in Sample Trailer until I have a chance to return them to the Canyon.

[signature] 7/23/01

7/27/01 LA Canyon

800 Calibrate YSI multiparameter meter CEL = 5.09

8:30-940 S. Pendine and J. Kotoed attend safety meeting

945 Safety Tailgate and mob to San. I. to collect surface water from Basalt Spring. ER SOP 6.13

1000 Meet R. Gonzales from San I Env. Dept. and hike to Basalt Spring. It appears that a sizeable flood came through this area last night. My guess is approx. 1500 cfs? 4-6 ft above normal flow elevation.

1100 Collect sample from Basalt Spring. See Collection log for CALA-01-0248 and CALA-01-0249 for information.

1140 Return to FSF to filter & preserve samples.

1240 Turn in samples to K. Greene at SMO.

[signature] 7/27/01

(138) Acid Canyon 8/1/01

S. Purdue, K. Tucker, S. Renean on-site at Aquatic Center to collect VOA's and semis in Acid Canyon at previously sampled locations.

ER SOP # 6.26

Collect Samples CAPU-01-0185 through CAPU-01-0195

See collection logs for times and locations.

S. Purdue 8/1/01

(139)

8/3/01 Acid Canyon Mortandad Canyon.

915 S. Purdue and J. Gofoed mob to ARS to pick up rad var samples and return to site.

920 Pick up ~~Acid~~ Mortandad Canyon SP samples CAMO-01-0025 through CAMO-01-0064. CAMO-01-0067, 68, 70 through CAMO-01-0076. We did not pick up CAMO-01-0069 due to rad levels above DOT. >2 mc/g CAMO-01-0097 through CAMO-01-0136 were picked up also.

940 Mob to SMO to pick up Acid Canyon ARS samples from sample trailer. Speak to K. Greene about CAMO-01-0069. Sample has already been shipped. Call S. Renean to fill him in.

1000 mob to Mortandad (MZW) to deposit samples.

8/3/01

1030 Drop samples at 496 N M2W at highest rad location.

1100 mob to Acid Canyon.

1120 Drop CAPH-01-0145 through CAPH-01-0146 at ACS 77, PH-10244. Highest Rad location

X. Pace 8/3/01

8/30/01

1030 C. Shultz and A. Toya have Safety tailgate at WGT office.

1035 Mob to LA Canyon to collect surface water from upper gaging station above skating rink.

1100 Samples CALA-01-0019 and CALA-01-0020 F, are collected using EP SOP 6.13, Rev. 0

Parameters:

pH = 8.54, Cond. = 237, T = 14.3°C

Turbidity meter is reading error message E3, not enough light to read. Water is too turbid for a reading.

1200 Samples are put in refridgerator at Sample Trailer.

8/31/01

830 S. Purdue on-site at Sample trailer to filter & preserve samples CALA-01-0019 and CALA-01-0020.

970 Samples submitted to at SMO

9/13/01

730 Calibrate YSI multiparameter meter with pH 7.00 + 4.00 solution CEL = 5.19

830 S. Purdue + C. Johannesen have safety Tailgate

835 On-site at CA-10004 to collect surface water, ER SOP #6.13

pH 7.05

Cond. 245 ms/cm

Turb. = 2.60 NTU

Temp = 16.1

Collect CAGU-01-0022 - Non filtered and CA GU-01-0023 - filtered

855 On-site at CA-10057

pH - 7.48

cond. 131 ms/cm

Turb. 5.15

Temp. 17.7 °C

Collect CALA-01-0469 - Non filtered, and CALA-01-0470 - filtered

Mob to LLAO-1 for water levels, SOP #7.02 w.l

930 LLAO-1 DTW = 22.56 ft TOC

940 LLAO-2 DTW = 26.36 ft TOC

955 LLAO-3 DTW = 20.60 ft TOC

1005 LLAO-4 DTW = 7.37 ft TOC

1015 LLAO-5 DTW = 14.10 ft TOC

Mob to upper Gage Canyon to collect one surface water

(144) 9/13/01

Sample above Pendija confluence.

1145 On-site Gage canyon above Pendija confluence.
No surface water present
Mob back to WBI/PMC office for lunch

1230 Mob to sample trailer to filter and preserve samples

1330 Submit samples to Augusta Garcia at SMO.

Steve Pardue 9/13/01

(145) 9/14/01

745 Calibrate YSE multiparameter meter with pH 7.00 and 4.00 buffer solution. CEL = 5.19
S. Pardue and D. Steven have Safety tailgate and discuss collecting surface water from Gage Canyon following ER SOP #6.13.

815 Mob to Gage Canyon

815 No water in Gage canyon.

900 Mob back to office.

Steve Pardue 9/14/01

10/02/01

1200 S. Purdue calibrates HACH 2100P Turbidimeter with <0.1 NTU, 20 NTU, 100 NTU, and 800 NTU Stablcal Solutions.
<0.1 NTU Lot no. A0203 Exp 07/02
20 NTU lot no. A0335 Exp 12/02
100 NTU lot no. A1008 Exp. 01/03
800 NTU lot no A0341 Exp. 12/02
Calibration accepted by meter.
This calibration will be sufficient for 3 months from today per manufacturer's instructions.

1230 Calibrate YSI 63 pH, conductivity and Temperature meter with pH 4.00 buffer solution lot no. 000847-24, exp 02/2002 and pH 7.00 buffer solution lot no. 013140-24, exp date 07/2003
Meter reads 7.02 in 7.00 solution
Meter reads 4.00 in 4.00 solution
Calibrate conductivity with YSI 3161 cond. calibrator 1000 µS/cm ± 0.50% at 25°C Lot # 01A0461, Exp. 01/02

1250 S. Purdue and S. Calhoun mob

10/02/01

to SMO to pick up coolers, bottles and ice for collection of surface water (ER SOP 6.13) Rev. 0 from DP Canyon, behind Knights of Columbus.

1330 On-site at DP Canyon behind Knights of Columbus. Surface water is present below Culvert.

1345 S. Purdue receives a call from Steve Reneau, he and Danny Katzman will need help this afternoon at LA weir.
Mission aborted.

1400 Mob to SMO & WBI office

1500 Mob to LA weir to meet Danny Katzman and Steve Reneau to collect sediment samples upstream of weir. ER SOP 6.09
Tailgate safety breifing from Danny Katzman.
S. Purdue, S. Calhoun, D. Katzman, and S. Reneau collect samples CALA-01-0207 through CALA-01-0212
CALA-01-0214 was collected at LA-10125
(cont.)

10/02/01

as 0588 QA duplicate of CALA-01-0525
CALA-01-0526 through CALA-01-0528
See Sample Collection logs
for times, location IDs, depths
etc.

1820 Mob to WGI office
Samples are stored on ice
in PMC truck overnight.

S. Purdue
10/2/01

10/03/01

1005 S. Purdue and S. Calhoun
are on-site at SMO.
Submit samples CALA-01-0207
through CALA-01-0212
CALA-01-0214 Last page copied
CALA-01-0526 through CALA-01-0528
to Jayne Valdez at SMO.

1030 Mob back to office.

S. Purdue
Charlotte Calhoun
10/3/01
10/3/01

This page intentionally left blank –
SP 1/9/02

Table of Contents (Cont.)

Page No.	Reference	Date
119	DP Canyon Water	6/28/01
120	Acid Canyon Water	6/28/01
121-122 -123	PU surface water - flood	7/3/01
124-128	Acid Canyon Red Screening - sediment	7/9/01
129-13	LA Canyon Water Sampling	7/11/01 → 7/12/01
132	Acid Canyon ~~Water~~ SP 1/2/2 Sediment Sampling	7/16/01
133	DP Canyon Water	7/23/01
134-136	Acid Canyon Sediment Screening	7/23/01
137	Basalt Spring	7/27/01
138	Acid Canyon, VOA sed. Samples	8/1/01
139-140	MO, Acid Canyon sediment sample returns	8/3/01
141-142	LA surface water	8/30/01 – 8/31/01
143-144	LA/GU surface water	9/12/01
145	Guaje Canyon	9/14/01
146	HACH Turbidimeter Calibration	10/2/01
147-148	LA weir sediment Samples	10/2/01
150	Blank Page	
151	Table of Contents (cont.)	

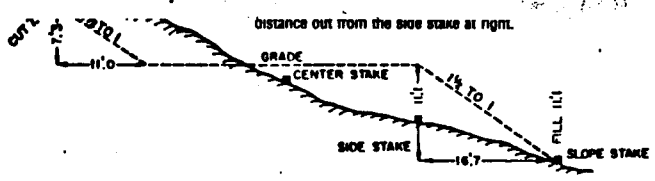
Sh Rue 4/9/02

Charles Amarolo 4/9/02

Ala Fark 4/10/02

4840 18.950 Environmental Field Logbook

Field Logbook for Surface and Alluvial Sampling in Los Alamos, DP & Pueblo Canyon 0



Cut or Fill	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	Cut or Fill
	Distance out from Side or Shoulder Stake										
0	0.0	0.2	0.3	0.5	0.6	0.8	0.9	1.1	1.2	1.4	0
1	1.5	1.7	1.8	2.0	2.1	2.3	2.4	2.6	2.7	2.9	1
2	3.0	3.2	3.3	3.5	3.6	3.8	3.9	4.1	4.2	4.4	2
3	4.5	4.7	4.8	5.0	5.1	5.3	5.4	5.6	5.7	5.9	3
4	6.0	6.2	6.3	6.5	6.6	6.8	6.9	7.1	7.2	7.4	4
5	7.5	7.7	7.8	8.0	8.1	8.3	8.4	8.6	8.7	8.9	5
6	9.0	9.2	9.3	9.5	9.6	9.8	9.9	10.1	10.2	10.4	6
7	10.5	10.7	10.8	11.0	11.1	11.3	11.4	11.6	11.7	11.9	7
8	12.0	12.2	12.3	12.5	12.6	12.8	12.9	13.1	13.2	13.4	8
9	13.5	13.7	13.8	14.0	14.1	14.3	14.4	14.6	14.7	14.9	9
10	15.0	15.2	15.3	15.5	15.6	15.8	15.9	16.1	16.2	16.4	10
11	16.5	16.7	16.8	17.0	17.1	17.3	17.4	17.6	17.7	17.9	11
12	18.0	18.2	18.3	18.5	18.6	18.8	18.9	19.1	19.2	19.4	12
13	19.5	19.7	19.8	20.0	20.1	20.3	20.4	20.6	20.7	20.9	13
14	21.0	21.2	21.3	21.5	21.6	21.8	21.9	22.1	22.2	22.4	14
15	22.5	22.7	22.8	23.0	23.1	23.3	23.4	23.6	23.7	23.9	15
16	24.0	24.2	24.3	24.5	24.6	24.8	24.9	25.1	25.2	25.4	16
17	25.5	25.7	25.8	26.0	26.1	26.3	26.4	26.6	26.7	26.9	17
18	27.0	27.2	27.3	27.5	27.6	27.8	27.9	28.1	28.2	28.4	18
19	28.5	28.7	28.8	29.0	29.1	29.3	29.4	29.6	29.7	29.9	19
20	30.0	30.2	30.3	30.5	30.6	30.8	30.9	31.1	31.2	31.4	20
21	31.5	31.7	31.8	32.0	32.1	32.3	32.4	32.6	32.7	32.9	21
22	33.0	33.2	33.3	33.5	33.6	33.8	33.9	34.1	34.2	34.4	22
23	34.5	34.7	34.8	35.0	35.1	35.3	35.4	35.6	35.7	35.9	23
24	36.0	36.2	36.3	36.5	36.6	36.8	36.9	37.1	37.2	37.4	24
25	37.5	37.7	37.8	38.0	38.1	38.3	38.4	38.6	38.7	38.9	25
26	39.0	39.2	39.3	39.5	39.6	39.8	39.9	40.1	40.2	40.4	26
27	40.5	40.7	40.8	41.0	41.1	41.3	41.4	41.6	41.7	41.9	27
28	42.0	42.2	42.3	42.5	42.6	42.8	42.9	43.1	43.2	43.4	28
29	43.5	43.7	43.8	44.0	44.1	44.3	44.4	44.6	44.7	44.9	29
30	45.0	45.2	45.3	45.5	45.6	45.8	45.9	46.1	46.2	46.4	30
31	46.5	46.7	46.8	47.0	47.1	47.3	47.4	47.6	47.7	47.9	31
32	48.0	48.2	48.3	48.5	48.6	48.8	48.9	49.1	49.2	49.4	32
33	49.5	49.7	49.8	50.0	50.1	50.3	50.4	50.6	50.7	50.9	33
34	51.0	51.2	51.3	51.5	51.6	51.8	51.9	52.1	52.2	52.4	34
35	52.5	52.7	52.8	53.0	53.1	53.3	53.4	53.6	53.7	53.9	35
36	54.0	54.2	54.3	54.5	54.6	54.8	54.9	55.1	55.2	55.4	36
37	55.5	55.7	55.8	56.0	56.1	56.3	56.4	56.6	56.7	56.9	37
38	57.0	57.2	57.3	57.5	57.6	57.8	57.9	58.1	58.2	58.4	38
39	58.5	58.7	58.8	59.0	59.1	59.3	59.4	59.6	59.7	59.9	39
40	60.0	60.2	60.3	60.5	60.6	60.8	60.9	61.1	61.2	61.4	40

10/29/01 (A)

This fieldbook is used to record daily activities pertaining to Surface and Alluvial water sampling in Los Alamos and Pueblo Canyon watersheds.

Alluvial water Samples are Collected per S.O.P 6.01 "Purging and Sampling Methods for single Completion wells". Surface water Samples are collected per S.O.P. 6.13, "Surface Water Sampling".

This fieldbook is assigned to Shannon Purdue, 662-1305, and may be used by other field team members.

Deviations form SOP's are documented in ER2001-0880.

The paper in this book is made of 50% high grade rag stock with a WATER RESISTING surface sizing.

CONTENTS

PAGE NO.	REFERENCE	DATE
1-	3rd Quarter 2001 Surface and Alluvial Samples.	10/29/01 - 11/14/01

(c)

(D)

(1)

10/29/01

730 S. Purdue Calibrates YSI 63 SN 01C0004 AA According to manufacturers instructions.
Calibrate with pH 7.00 ± 0.01 @ 25°C Buffer Solution. Meter reads 7.02
Calibrate with pH 4.00 ± 0.01 @ 25°C Buffer Solution. Meter reads 4.00
(*) See below ~~See water Quality record for more information.~~ Cond. calibrated in 1000 uS/cm
SP 10/29/01

745 S. Purdue FTL and C. Shultz (FTM) Prepare for Alluvial and Surface water sampling in Pueblo Canyon.

815 Danny Katzman calls, and says to wait until tomorrow to begin sampling.

1300 S. Purdue and C. Shultz deliver drum pallet to LAO-03.

added 10/29/01 SP (*) Conductivity calibrated with YSI 3161 calibrator, lot No. 01A161 Exp. 01/02
PH calibrated with Fispher Solution 7.00 lot no. 013140-24
4.00 lot no. 012970-24
10/29/01

10/30/01 Pueblo Canyon

730 S. Purdue calibrates YSI 63 meter according to manufacturers instructions. See Water Quality Record for PAO-1 for calibration information.

800 S. Purdue (FTL) and C. Shultz (FTM) have safety tailgate meeting and discuss sampling plans for Pueblo Canyon. We will be collecting Alluvial and surface water from Pueblo Canyon. Alluvial water will be collected per SOP 6.01 Rev. 2, and surface water will be collected per SOP 6.13 rev. 1. Mob to SMO to pick up paperwork.

845 Mob to Pueblo Canyon

903 On-site at PAO-1

950 After purging 5.5 gallons, ~~well~~ water level is below pump, wait for recharge. See Water Quality Stabilization record for more information 10/30/01

954 Purge approx. 2 gallons, ~~well~~ water level is below pump, wait for recharge. 10/30/01

10/30/01 Pueblo Canyon (cont.)

1040 Well has purged 11 + recharged gallons, parameters are stable.

1045 Collect VOAs with 4" stainless steel bailer.

1050 Begin collecting all other containers of samples CAPU-01-0200 (NF), and CAPU-01-0199 (F) - will be filtered later. Also collect a Duplicate sample here. Duplicate Sample ID# is CAPU-01-0209.

1110 Complete collecting samples. De-con pump and bailer with DI water, collect rinse water for rinse blank sample.

1125 DTW PAO1 = 12.35 ft TOC after sampling

1130 Pueblo-1R site is dry, we will not collect surface water at Pueblo-1R. Mob to Acid Weir.

1135 Acid weir site is Dry. We will not collect surface water at Acid weir. Mob to PAO-2

1137 On-site at PAO-2 Check for Water

10/30/01 Pueblo Canyon

1140 DTW PAO2 = 14.06 ft. TOC
TD = 16.47 ft TOC
1145 Break for lunch
1215 Back on-site at PAO-2
set-up for sampling
1240 Begin Purging PAO-2
Collect 1.5 gallons, well
is now dry. Wait for recharge
1245 DTW = 16.11 ft TOC we
will continue to wait for
recharge. Water was collected
in Cubitainers.
1305 DTW = 16.11 ft. TOC well does
not historically recharge within
a reasonable amount of time.
We will deviate from SOP 6.01, rev2
by not purging 3 bore volumes
prior to sampling. We will
turn in the 1½ gallons as
a ~~a~~ 10/30/01 non-filtered sample as
we have been instructed to do
by Danny Katzman. See
sample collection log for CAPU-01-
0202 for more information.
1310 Decon pump and collect

10/30/01 Pueblo Canyon

rinse for equipment rinse sample.
1330 Mob to Pueblo 2
1345 On-site at Pueblo 2, site
is dry. We will not collect
a sample here.
Mob to FSF to filter and
preserve samples.
1410 On-site at sample trailer
Begin ~~sampling~~ filtering and preserving
10/30/01 ~~of filters~~ samples with 0.45µm filter.
1510 Parameters taken on
filtered samples from PAO-1
CAPU-01-0209 and CAPU-01-0199
Specific Conductance = 609 µS/cm
Temp = 18.3°C
pH = 6.95
Turbidity = 0.08 NTU
1530 Complete filtering and preserving
1545 Submit samples to Joylene Valdez
at SMO.
1600 Mob to WGI/PMC office.

SL Pence 10/30/01

10/31/01 Pueblo Canyon

7:30 S. Purdue Calibrates YSI 63 meter. See Water Quality Record for PAO-4 for calibration information. S. Purdue and A. Banar have safety tailgate meeting and Mob to PAO-3 to continue sampling.

8:30 On-site PAO-3
DTW = 13.61 ft TOC
TD = 16.55 ft TOC

8:50 Begin purging
Collect 1.5 gallons, ~~well~~ sp 10/31/01
~~15 min~~ sp 10/31/01 water level is below pump
(* See note p. 3)

855 DTW = 15.99 ft TOC
907 DTW = 15.99 ft TOC
920 DTW = 15.99 ft TOC

Decon pump and collect equipment rinse. Mob to PAO-4

1000 On-site at PAO-4,
1005 Begin purging
1040 Complete purging 16 gallons from PAO-4
1045 Collect VOAs with stainless steel bailer, Bailer is deconned after use, and equip rinse is collected sp 10/31/01
1050 Begin collecting CAPU-01-0205

10/31/01 Pueblo Canyon

and CAPU-01-0206.
CAPU-01-0205 will be filtered at Sample trailer at a later time.

1105 Complete sampling with DI water sp 10/31/01
Decon pump and collect equipment rinse.
1125 Mob to Pueblo 3 to collect surface water
1145 Collect CAPU-01-0220 and CAPU-01-0221 from Pueblo 3.
See SCL for water parameter measurements.
1300 On-site at Pueblo at State Rd. 502. Water is present.
1335 Collect CAPU-01-0218 and CAPU-01-0219. See SCL for parameter measurements.
1400 Mob to SMO to filter and preserve samples.
1415 On-site sample trailer. sp 10/31/01
We are deviating ~~from~~ from S.O.P. 6.01 by turning in

10/31/01 Pueblo Canyon

sample # CAPU-01-0204 without first purging three bore volumes. This was not possible due to no ~~limited~~ recharge in the well. SP 10/31/01 We are turning in a non-filtered sample for rads and metal. We were instructed to do so by Danny Kateman.

~~1~~1630 Submit samples to Keith Greene at SMO. SP 10/31/01

We are also submitting an ~~rr~~ equipment rinse sample #CAPU-01-0326 and a trip blank, sample # CAPU-01-0229.

⊕ Note: Samples at PAO-3 were collected without purging 3 bore volumes or to obtain 4 stable parameter readings prior to sampling. Note deviation to 6.01, rev. 2. SP 10/31/01

10/31/01

11/1/01 LA Canyon

730 S. Purdue calibrates YSI 63. See Water Quality Record for for Calibration Information.

LLAO-1 SP 11/1/01 S. Purdue (FTL) and A. Banar (FTM) Discuss plans and have safety tailgate briefing. SP 11/1/01

~~8~~ 750 Mob to SMO to pick up coolers and paperwork.

810 Mob to San. I. to meet R. Gonzales and collect Quarterly samples from San. I land.

830 Meet R. Gonzales (San. I. escort) and mob to Basalt Spring to collect surface water.

900 Collect CALA-01-0506 and CALA-01-0507 from Basalt Spring. Flow rate of Basalt Spring is approximately 2-3 cfs. See SCL for more info. Sample collected by grab method.

920 Mob to LLAO-1.

1035 Collect CALA-01-0477 and CALA-01-0478 from alluvial well LLAO-1. See Water

(cont.)

LA Canyon 11/1/01

Quality Record and SCL's for more information.
Samples CALA-01-0508 and CALA-01-0509 were collected at 10:25 by A. Banar, at LLAO-1 Surface Water site. Location ID # LA-00218. Grab Method

1110 Mob to LLAO-5. (Pump was decomed and an equip. rinse was collected at LLAO-1)

1115 On-site at LLAO-5 to collect ground water.

1210 Collect CALA-01-0479 and CALA-01-0480 from LLAO-5, location ID # LA-00002. De-con pump and bailer, with DI water & collect equipment rinse.

1230 Mob to FSF/SMO to filter and preserve samples. (VOA's at LLAO-1 and LLAO-5 were collected with a stainless steel bailer).

1600 Submit Samples to Joylene Valdez at SMO.

Shawn Purdue 11/1/01

LA Canyon 11/2/01

7:30 S. Purdue calibrates YSI 63 meter #SN 01C0004 AA with pH 7.00 buffer solution, Lot no. 013140-24 exp. 7/03. meter is reading 7.02. with 4.00 buffer solution, reading 4.00 Lot no. 012970-24 exp. 6/03 EC was calibrated on 10/29/01, with YSI standard solution 1000 µS/cm, lot no. 01A0461 exp. 01/02 meter reads 1000 µS/cm. Turbidity meter, HACH 2100P, was calibrated on 10/02/01.

8:00 S. Purdue and A. Banar have Safety Tailgate breifing, and discuss today's goals of sampling at LA canyon at Rio Grande, and LA Canyon reservoir.

8:30 S. Purdue and A. Banar meet R. Gonzales (San. I. escort) at Otowi Bridge.

900 Samples CALA-01-0518 and CALA-01-0519 are taken at Los Alamos Canyon at the

(12)

11/2/01 LA Canyon

Rio Grande River at a spring otherwise known as "Otowi Spring" Location ID LA-10179 ~~LA-10063~~. This is an established ESH-18 sampling location. See SCL's for more information.

SP 11/15/01 new location ID

945 Mob to LA Reservoir to collect surface water

1030 On-site at Reservoir. Reservoir is being dredged, and water is being piped around reservoir. We decide to collect from just upstream of the ~~sc~~ reservoir, ~10m upstream ~~away~~ from the previous edge of the reservoir. We assign this location a new location ID #10126.

SP 11/21/01

1050 Collect samples CALA-01-0520 and CALA-01-0521. We also are collecting a Duplicate Sample, CALA-01-0522. See SCL's for more information

1130 Mob to FSF/SMO to filter and preserve samples.

(13)

11/2/01 LA Canyon.

1145 On-site at sample trailer, begin filtering and preserving.

1300 Submit samples to Keith Greene at SMO. Pick-up sample containers for sampling next monday.

1330 Mob to Office.

(*) All samples today were collected using S.O.P 6.13 rev. 1 using grab method.

SP 11/15/01

SP 11/15/01

Sam Pack 11/2/01

11/5/01 LA Canyon

730 S. Purdue calibrates YSI 63 water quality meter with pH 7.00 and pH 4.00 buffer solution. See Water Quality Records for calibration - LAO-C information and meter ID. or other SP 11/15/01

830. S. Purdue, C. Shultz and L. Massen on-site at WGI parking lot to discuss plans for the day.

845 On-site at LAO-0.3 to collect a surface water sample. Safety tailgate is given by S. Purdue.

850 C. Shultz collects water quality readings and records onto Sample Collection Logs.

900 Collect Samples CALA-01-0511 and CALA-01-0510, from LA Canyon stream next to Alluvial well LAO-0.3 Water is very turbid -> 1000 NTU

930 Complete sampling at LAO-0.3 SW Mob to meet Max Maes (ESH-18) at LAO-C. Larry Massen off-site

(A) Water samples taken from ESH-18 wells will be collected using EE SOP 6.01 rev 2 surface water will be collected using EE SOP 6.13 rev 1 SP 11/15/01

11/5/01 LA Canyon

1015 Max Maes and Joe Sena (ESH-18) meet S. Purdue and C. Shultz at LAO-C.

1030 Begin Purging SP 11/15/01 LAO-C with air compressor and bladder pump supplied by Max Maes.

1106 Complete purging 3 bore volumes, parameters are stable.

1110 Begin collecting CALA-01-0482 and CALA-01-0481. CALA-01-0481 is SP 11/15/01 filtered in the field using ~~a teflon~~ SP 11/15/01 an in-line filter, teflon bladder pump

1130 Sampling is complete. Mob to LAO-0.7.

1135 On-site at LAO-0.7

1150 Begin Purging LAO-0.7 Flow rate is approximately 1 gallon every 4 or 5 minutes.

12:13 Complete Purging 3 bore volumes.

1218 Collect CALA-01-0483 and CALA-01-0484.

11/5/01 LA Canyon.

CALA-01-0483 is filtred in the field using an in-line filter. ⊕ Note deviation to SOP 6.01, rev. 2 ie 11/5/01 A turbidity of < 5 NTU was not obtained.

1239 Complete Sampling LAO-0.7
Mob to LAO-1

1300 Begin purging LAO-1
Flow rate is 0.5 gallons/minute

1306 we have purged 6.5 gallons, and the turbidity is rising.

1313 Turbidity is 23.4 NTU, we will turn down the flow rate to 0.25 gallons per minute

1324 Turbidity is still rising, we will check depth to water DTW = 20.10 ft, we will give the well a chance to re-charge, it is down ~10 ft.

1400 Re-start purging. DTW = 15.40 ft. Flow rate 1 Liter / 30 seconds. Water is clearing up.

1419 We have purged 16 gallons, and turbidity is stable around 6 NTU. We decide to take samples. CALA-01-0486 and CALA-01-0485. ⊕ Note deviation to SOP 6.01, rev. 2
A turbidity of < 5 NTU was not obtained prior to sampling. ie 11/5/01

11/5/01 LA Canyon

CALA-01-0485 is filtered in the field using an in-line filter.
CALA-01-0485 is collected after a short recharge of the well.

1435 S. Purdue and C. Shultz collect a surface water sample from the stream next to LAO-1.
This is sample # CALA-01-0512 and CALA-01-0513. See sample collection logs for water parameters. This sample will be taken to the sample trailer at the SMO to be filtered and preserved.

1510 Max Maes and Joe Sena return to ESH-18.
S. Purdue and C. Shultz mob to sample trailer to filter and preserve samples.

1525 On-site at sample trailer.

1655 Submit all samples taken today to Keith Greene at SMO
S. Purdue 11/5/01

11/6/01 LA Canyon

730 S. Purdue calibrates YSI 63 SN 01C 0004 ~~AD~~ AA 11/6/01
See water quality ~~tool~~ log 11/6/01 for LAO-4. for calibration information
S. Purdue and P. Drakos have safety tailgate breifing and review WVI S.O.P 6.01 rev. 2
Mob to LA Canyon to meet Max Maes (ESH-18)
905 On-site at LAO-6a, water is above top of pump. We will not sample LAO-6a
Mob to LAO-4.5c
915 On-site LAO-4.5c
930 Begin purging
935 We have pumped well dry, we will let it recharge
942 Begin purging again
1000 3 bore volumes have been purged, parameters are stable. Begin collecting samples CALA-01-~~0488~~ 0493 11/6/01 and CALA-01-0494. CALA-01-0493 was filtered

in the field using an in-line filter. Complete sampling at 10:15.
1030 On-site at LAO-4
1039 Begin purging LAO-4
1050 We have recovered 4 gallons, and we are having trouble getting bladder pump to work
1100 Max Maes goes to ESH-18 (TA-53) to get another control ~~regulator~~ box 11/6/01 for the bladder pump.
1145 Max returns with new control box
1155 Begin purging again
1245 Collect Sample CALA-01-0491 and CALA-01-0492
CALA-01-0491 was filtered in the field with an in-line filter.
1315 On-site at LAO-3a. Depth to water is below top of pump. Max says we cannot sample.
1330 On site at LA at upper GS. Site is dry.

11/6/01 LA Canyon

1332 On-site DPS-4, site is dry.

1355 On-site DP Spring. Site is dry.

1420 Mob to FSF to ~~filter and~~ SP 11/6/01 preserve samples. (Samples filtered at time of collection.)

1545 Submit samples to Augusta Garcia at SMA

Mob to WGI IPMC office

S. Purdue 11/6/01

11/7/01 LA/PM Canyons

730 S. Purdue calibrates YSI 63 meter #SN 01C0004 AA See Water Quality Sampling Record for ~~LAO-2~~ APCO-1 SP 11/7/01 for calibration information.

800 S. Purdue and A. Banar meet Max Maes and Joe Sena (ESH-18) at the gate to LA Canyon. Safety Tailgate breifing is held.

Mob to LAO-2 to collect Alluvial ~~surface~~ SP 11/7/01 water sample

815 On-site at LAO 2

DTW = 30.34 ft TOC TD = 30.41 ft TOC

There is not enough water in the well to collect a sample.

830 Mob to APCO-1.

850 Begin purging APCO-1.

904 Turbidity is high. Flow rate is 2 liters / minute. We will turn down flow rate to 1 liter per minute.

922 Turbidity is 3.80 NTU, we

will begin collecting a sample.

945 Sampling complete. We have collected samples CAPM-01-0207 and CAPM-01-0208 CAPM-01-0207 has been ~~collected~~ filtered at the time of collection with an in-line disposable 0.45 µm filter.

1000 Mob to WGI/PMC office to get PMU-80-5 key and wrench for alluvial wells.

1020 Mob to LAO-B.

1030 On-site at LAO-B

1100 Begin purging LAO-B. Water is very clear and cold with no odor.

1130 40 gallons have been purged, parameters are stable. Collect Samples CALA-01-0471 and CALA-01-0472 along with duplicate sample CALA-01-0497. Sample number CALA-01-0471 will be and CALA-01-0497

filtered at the sample trailer.

1140 Complete sampling LAO-B VOAs have been collected using a stainless steel bailer.

1145 De-con bailer and submersible pump with DI water. Collect a rinse blank ~~sample~~ aliquot into 5 gallon water jug. 11/7/01

1200 Lunch break.

1300 On-site at sample trailer to filter and preserve samples.

1445 Submit samples collected today to Mike Clevenger at SMO. Load sampling supplies from SMO into truck. Pre-preserve 40 ml Amber septums for VOA collection.

1600 Mob to WGI/PMC office.

Stan Pierce 11/7/01

11/8/01 LA Canyon

730 S. Purdue Calibrates YSI 63 multi-parameter meter. See Water Quality Sampling Record for Alluvial well LAO-0.3 for meter ID and calibration information.

800 S. Purdue (PTL) and J. Hull (WGI) have safety tailgate breifing and discuss today's goals of collecting alluvial water samples from LAO-0.3 and LAO-1.6g using WGI SOP 6.01, rev. 2.

845 Mob to LAO-0.3

853 On-site at LAO-0.3

915 Begin purging LAO-0.3. Purge water will be collected in a 30 gallon poly-drum.

930 We have purged 10 gallons, turbidity is holding steady around 8.9 NTUs.

933 We have purged 13 gallons, turbidity is stable at 9 NTUs, ~~we will purge 23 more gallons and collect~~ SP 11/8/01

⊗ See Note p. 27

11/8/01 LA Canyon

~~a sample.~~ SP 11/8/01 Not necessary

940 Collect Samples CALA-01-0473 and CALA-01-0474. CALA-01-0473 will be filtered at the sample trailer.

1000 Complete collecting samples from LAO-0.3. Secure and label purge water drum, decon bailer used ~~for~~ SP 11/8/01 to collect VOAs, and ES 60 pump used to collect all other samples. An ~~rinse~~ SP 11/8/01 equipment rinse aliquot is collected into 5 gallon water jug for equipment rinse ~~blank~~ SP 11/8/01 sample.

1030 Mob to WGI/PMC office to get more paper towels.

1045 Mob to LAO-1.6g.

1100 On-site at LAO-1.6g. Outside temperature has dropped ~15°F and it is lightly raining.

~~1110 On~~ SP 11/8/01

1115 Begin purging LAO-1.6g.

11/8/01 LA Canyon

1125 We have purged 12 gallons at a flow rate of about 1 gallon every 30 seconds. Turbidity has gone up to 29.0 NTU. We will slow down the purge flow rate by pumping one gallon every 10 minutes.

1152 We have purged 15 gallons. Turbidity is 16.6 NTU.

1157 We have purged 17 gallons. Turbidity is 13.8 NTUs, we will collect sample since this is the lowest turbidity we have seen for 40 minutes. See Note ⊛ pg 27

1200 Collect samples CALA01-0475 and CALA-01-0476. CALA-01-0475 will be filtered at the sample trailer at the FSF.

1210 Sampling is complete. Decon Stainless Steel bailer and ES 60 pump. VOAs were collected using stainless steel bailer. An equipment rinse aliquot was collected for

11/8/01 LA Canyon

LA Canyon equipment rinse sample.

1240 Mob to Sample trailer to filter and preserve samples.

1400 On-site at Sample trailer.

1435 ~~R 11/8/01~~ LA Canyon ~~rinse blank~~ ~~SR 11/8/01~~ ~~Sa~~ equipment rinse sample is collected from 5 gallon water jug containing equipment rinse aliquots from CLAO-1, LLAO-5, LAO-13, LAO-0.3, and LAO-1.6g. This equipment rinse sample number is CALA-01-0546.

1600 Submit samples collected today, along with trip blank number CALA-01-0499 to Joylene Valdez at SMO. This trip blank has followed samples

1620 Mob to WCI / PMC office.

⊛ Note: Samples at LAO-0.3 and LAO-1.6g were collected 11/8/01 without obtaining a <5 NTU reading. Note deviation to SOP 6.01, rev. 2

SL Pace

11/12/01 DP Canyon

800 S. Purdue calibrates YSI 63 meter. See water quality sampling record for 11/12/01 at LAUZ-1 for calibration information.

830 S. Purdue (FTL) and Jason Hall (Frm) discuss today's goals of taking surface and alluvial well samples in DP Canyon. We have to borrow 1 Liter Amber bottles from A. Banar.

845 Mob to R-5 to get 1 Liter Amber bottles.

910 On-site at R-5. A. Banar has given us the wrong key.

915 Mob to WGI office to get Westbay Sampling trailer key.

930 On-site WGI office. get appropriate key.

950 On-site at R-5. Pick-up 15 one-liter Amber bottles. Mob to DP Canyon to collect Surface water.

1000 On-site at DP Canyon, Downstream of Culvert near Knights of

11/12/01 DP Canyon

Columbus, location #21-10929.

1005 Collect Samples # CA21-01-0029 and CA21-01-0030. CA21-01-0029 will be filtered back at the sample trailer.

1040 On-site at 11m East of Location stake #21-11181 to collect surface water Sample. Location #21-11226.

1045 Collect samples CA21-01-0027 and CA21-01-0028. CA21-01-0027 will be filtered at Sample Trailer.

1130 Mob to WGI office to pick up paper towels and key for alluvial well LAUZ-1.

1220 On-site at LAUZ-1, location #21-01811.

1227 Begin purging

1238 As soon as one bore volume was purged (3.5 gallons) turbidity began to rise.

1240 7 gallons have been purged, and well is going dry. We will break for lunch and

allow it to re-charge.

1323 Purge 1.5 gallons, turbidity is > 1000 NTU, DTW = 12.06 ft, TD = 12.84 ft. We will allow well to recharge again.

1343 DTW = 11.85 ft ~~we will~~ SP 11/12/01 ~~purge 2 gallons~~ SP 11/12/01 take parameters, then S. Purdue decides to return tomorrow morning to allow for significant recharge. Mob to SMO/Sample trailer

1400 On-site at Sample trailer. to filter and preserve samples.

1545 Complete filtering and preserving. Store preserved samples in Sample trailer refridgerator for the night. The SMO is closed today (veterans day). I will turn them in Tuesday morning.

1555 Mob to WCI/PMC office.

S. Purdue
11/12/01

800 S. Purdue Calibrates YSI 63 See Water quality sampling record for LAUZ-1 for 11/13/01 for Calibration Information and meter ID.

820 S. Purdue and J. Hall are on-site at SMO to turn in samples collected yesterday.

845 Submit samples CAZ1-01-0027 through CAZ1-01-0030 to Joylene Valdez at SMO

900 S. Purdue and J. Hall have safety tailgate and mob to LAUZ-1 to collect alluvial water sample. This well was purged yesterday

910 On-site at LAUZ-1 DTW = 7.81 ft TOC S. Purdue decides to collect

926 sample after ~~collecting~~ SP 11/13/01 purging 0.5 gallon and taking parameters. pH and conductivity are stable from yesterday, turbidity is unstable, but

we decide to collect based on the character of the well. The well does not recharge fast enough to purge more water and collect the sample. The more we purge, the higher the turbidity. See Water Quality Stabilization Record for Parameter Measurements before and after sampling. Note a deviation from SOP 6.01, r2, turbidity is not below 5 NTU. This is not likely to happen, and we have had no readings below 5 NTU. The minimum volume of water has been removed from the well, and pH, conductivity and Temperature are stable.

945 Collect VOAs from LAUZ-1 using a stainless steel bailer. Excess water is collected in a 30 gallon poly drum. Bailer is de-comed with DI

water, and rinse water is collected into 30 gallon poly drum. All purge water from this well has been collected in a 30 gallon poly drum, which is labelled and stored at well site. De-con pump with Fantastik and DI water. All rinse water used in de-con process has been colleted in 30 gallon poly drum, stored on-site.

1000 Measure depth to water in LAUZ-1, DTW = 11.05 ft.

1005 Mob to Acid Canyon to check surface water collection sites for water.

1015 On-site Acid Canyon. Drive to Location # 00-10241, Upper Acid above S. Fork Confluence (upstream of 0-30g)

1020 Location # 00-10241 is dry. No moisture is present in upper Acid Canyon.

1025 In speaking to Tom Benson,

FTL of Acid Canyon clean-up project. Sample location PU-10176 is currently within his work-site. He states that water was released from the swimming pool a few days prior to today, but there is not enough water in the lower plunge pool to collect a sample. We will not attempt to collect a sample from the lower plunge pool.

1030 Mob to Upper South Fork AC3+45m surface water sampling site. Location number PU-10175.

1038 On-site PU-10175. Site is moist, but there is no water present to sample.
Mob to Sample Trailer at FSF to filter and preserve samples from LAUZ-1.

1050 On-site at Sample trailer
3.Hall offsite 11/13/01 Sample # CAZ1-01-0024 was filtered using a 0.45 µm disposable filter cartridge

and a geopump ~~par~~ peristaltic pump. I attached the disposable filter to the geopump with a geopump tube, part #87050000. I filtered water that had been collected in 1 gallon cubitainers into labelled sample bottles. Sample bottles are preserved after water is filtered and collected into bottles. Parameters are taken from filtered water sample that is collected in a 1 liter poly container. This 1 liter of water will be returned to the 30 gallon poly drum at LAUZ-1 at a later time. The disposible filter is only used once, then disposed of as contact waste. The pump tubing is deconned in-between samples by running 500 ml of DI water through the tubing with no filter attached.

11/13/01 Sample Trailer

Water for Humic acid samples are collected from the source of the sample into a 1 Liter Amber glass container. This water is then filtered using a 0.45 µm silver membrane filter. This silver membrane filter is disposed of as contact waste, and filter tubing, filter holder are de-conned by running 500ml of DI water through them and then wiping with a paper towel. Silver membrane filters are used with an in-line holder, 47mm, polypropylene. Our holders are from the Poretics Corporation, Catalog number 91250.

1350 Samples # CA21-01-0024 and CA21-01-0025 are submitted to Augusta Garcia at SMO. CA21-01-0026, a trip blank sample for DP Canyon, is also submitted at this time.

11/13/01

1405 Mob to WCI / PMC office to unload truck.

1710 S. Purdue receives a call from P. Drakos and J. Hall, no surface water is present at sample location LA-10061, Los Alamos @ SR4. No sample will be collected at this site this quarter.

(*) Note - the filtering process described on pages 34-36 has been used by Shannon Purdue on all ER water samples she has collected, except for samples taken from ESH-18 run wells. Those samples are filtered in the field using an in-line disposable 0.45µm filter. 11/13/01 SP 11/15/01

11/14/01

735 S. Purdue mobs to sample Trailer to prepare trip blanks per SOP 1.05.

750 Remove DI water in Amber glass container from 85°C oven, where water has been heating ~~since~~ since 11/14/01 1330 on 11/13/01

810 Fill 40 ml Amber septums with DI water that has been cooled by bubbling Nitrogen for 20 minutes. Septums were pre-preserved with HCL.

1815 Trip blank septums are placed into Pat Longmire's refridgerator at the SMO where they will be stored until next samples are collected. I intend to use this trip blank for LA Spring.

SC Rey
11/14/01

11/20/01

745 Calibrate YSI 63 meter # SN 01C0004 AA with ph 7.00 buffer solution Lot No. 013140-24 Exp. 07/03 Meter reads 7.02
pH 4.00 buffer solution Lot No. 012970-24 Exp. 06/03 Meter reads 4.00

755 Meter is calibrated.
Conductivity was calibrated on 10/29/01 at 7:30 with 1000 uS/cm YSI 3161 Conductivity Calibrator Lot No. 01A0461 Exp. 01/02
Turbidity meter (HACH 2100P SN 0102000279 32) was calibrated on 10/02/01 at 12:00.
C. Shultz and A. Toya mob to Totavi to meet the state and collect a surface water sample from LA Spring.

830 At Totavi Gas Station, meet up w/ Dan Katzman, Randy Ryti Bob Gray, Mark Tardiff, Kim Granzow, Mike Dale; and ~~Ryan~~ Martinez.
Nick 11/20/01

11/20/01

0900 At parking site, perform tailgate safety meeting, pack up for hike to spring.

0925 At source of spring, collect sample for parameters
Temp = 9.6°C SpecCond = 339.5
Turb = 0.13 NTU pH = 7.38

0940 Flow rate = ~.1 gal/min
Begin collecting samples
Note: Samples taken from lateral pipe (~3/4" I.D.) on south side hill along Los Alamos creek. Site is called Los Alamos Spring.

1100 Back at vehicles w/ samples.

1130 Leave Potrero for SMO

1215 Parameters for filtered samples
Temp = 12.6°C SpecCond = 339.2
Turb = 0.13 NTU pH = 7.36

1240 Samples to SMO
Note: Samples CALA-01-0517-07, 08, 17, 18, 19, 20, 21, 22 not collected per Dan Katzman

11/20/01

⊗ Filtered samples were filtered at sample trailer with method described on pages 35 & 36 sp 11/20/01

1/22/02

8:15 S. Purdue and A. Bancar on-site at Sample Trailer to pick up waste from surface and Alluvial sampling.

9:15 meet R. Evans at WGT office - Mob to TA-60. Speak with Mike Roybal and get a pass for the landfill. An email must first be sent to Camile Bustamante. She will send a reply email giving the o.k. to bring waste to TA-60 for inspection and possible recycling. Materials not recycled will be taken to the landfill with a pass.

10:20 On-site landfill to drop off contact waste

10:30 Check out of Landfill.

1/22/02

(42) 1/25/02

830 S. Purdue and A. Banar on-site at SMO to pick up sample returns to return to site per ER SOP 1.06.

The following samples were picked up and returned to orginal site.

CAPU-01-0199 05
CALA-01-0516 05
CALA-01-0471 05
CAPU-01-0205 05
CAPU-01-0218 05
CALA-01-0477 05
CALA-01-0508 05

S. Purdue 1/25/02

(43) 3/22/02

930 S. Purdue and Mark Shepard Mob to FSF to pick up empty 30 gallon poly drum.

1000 Mob to LAO-0.3 to inspect drums and labels.

1030 Drums at lao-0.3 appear to be fine, ~~we~~ ~~attempted~~. There is one empty drum available for the next round of sampling. Mob to LAUZ-1 SP 3/22/02

1100 On-site at LAUZ-1, place drum locks on drums with purge water in them. Labels appear to be fine.

1115 Mob to Storage for plastic drum cover.

1145 Place plastic drum cover on 55-gallon drum at LAUZ-1.

Mark Shepard and S. Purdue both have a key for locks at LAUZ-1.

S. Purdue 3/22/02

(44) 3/25/02

830 S. Purdue Calibrates HACH Turbidimeter 2100P SN 010200027932 according to Calibration Instructions listed in the HACH Company Portable Turbidimeter Model 2100P Instrument and Procedure Manual, Cat. No. 46500-88.
Meter was calibrated using StablCal Stabilized Formazin Turbidity Solutions.
The following Solutions were used.
HACH StablCal Solution, <0.1 NTU
Lot A0203, exp. date Jul-02
HACH StablCal Solution, 20 NTU
Lot A0335, exp. date Dec-02
HACH StablCal Solution, 100 NTU
Lot A1008, exp. date Jan-03
HACH StablCal Solution, 800 NTU
Lot A0341, exp. date Dec-02
This calibration is good for three months. Meter should be re-calibrated on 6/25/02, or thereafter if not currently in use.
SP 3/25/02

3/26/02 LA Canyon (45)

745 S. Purdue calibrates YSI 63 SN . See Water Quality Sampling Record for LAO-3 3/26/02 for calibration information.
900 ~~Meet~~ 3/26/02 S. Purdue and D. Steven meet Max Maes and Lorenzo Martinez at gate to LA Canyon to Sample LAO-3a.
915 On-site at LAO-3a. Begin Purging well according to ER SOP 6.01 r3. We are using ESH-18 provided equipment to purge the well (Bladder pump and air compressor)
940 we have purged approximately 1.5 gallons, and we are no longer getting any water out of the well.
we will let well re-charge and then attempt to take a sample.
1000 Collect about 500 ml. of
(cont)

water before well drives up again at ~10:10.
Max Maes does not have time to wait for further recharge.
S. Purdue is unable to contact Danny Katzman for further instructions.
We will contact Max Maes when Katzman has decided what he would like us to do about this sample.

1030 Mob to LAO-B, Max Maes and Lorenzo off-site.

1058 S. Purdue and D. Steven begin purging LAOB per ER SOP 6.01 rev. 3.

1128 Collect samples CALA-02-~~0~~45277 (3/26/02) CALA-02-45278 and Field Duplicate # CALA-02-45281
Filtered Samples were collected using an in-line filter with pump assembly.

1250 Mob to WGI office for lunch after de-conning pump and sampling equipment.

1300 Mob to FSF to preserve samples.

1400 Submit samples to Mike Clevenger at SMO.

1420 On-site at LAUZ-1
DTW = 7.11 ft TOC
TD = 12.83 ft TOC

1440 Begin Purging LAUZ-1
Purge water is going into waste drum on-site at the well.

1500 ~~well~~ (3/26/02) Water level has dropped below pump
Wait for recharge

1505 Turn back on at flow rate of 3:20 minutes/gallon

1511 Flow rate 8:00 minutes/gallon

1537 Parameters are stable

1540 Attempt to collect samples.

1541 Water level dropped below pump.
DTW = 10.91 ft. TOC
Wait for recharge.

1559 DTW = 10.55 ft TOC
turn pump back on, collect

(48) 3/26/02

samples CA21-02-45301

1610 Water level dropped below pump - wait for recharge

1620 collect Filtered samples SP3Ku1a # CA21-02-45300 (Filtered w/in-line filter)

1628 DTW = 10.72 ft TOC after sampling is complete

1640 De-con pump and sampling equipment. De-con water is placed into waste drum along with purge water.

1655 Mob to WGI office. Samples will be stored in sample cooler in locked Company vehicle until morning.

SL Purdue 3/26/02

(49) 3/27/02

805 S. Purdue mobs to FSF with CA21-02-45300 and CA21-02-45301 to preserve samples and submit to SMO.

855 Submit Samples CA21-02-45300 and CA21-02-45301 to Mike Clevenger at SMO.

905 Mob to WGI office.

SL Purdue 3/27/02

Charles E. Lucadello 3/27/02

(50) 5/20/02

10:40 S. Purdue On-site at Sample trailer at SMO to put DI water into Oven at 85°C. 10:50 off-site

15:10 S. Purdue back on-site at sample trailer.

15:11 Begin bubbling Nitrogen through DI water from oven.

15:50 Prepare 40 ml trip blanks preserved with HCL.

16:05 Put trip blanks into Pat Longmire's Refridgerator inside SMO.

16:10 Off-site.

S. Purdue 5/20/02

5/21/02 (51)

10:45 S. Purdue Calibrates YSI 63 SN 01C0004 AA, with pH 7.00 Lot #013452-24 exp. 9/03 pH 4.00 Lot #012838-24 exp 4/03 (Fisher Scientific NIST Traceable) Meter is reading 7.01 in 7.00 solution, 3.99 in 4.00 solution. Calibrate Conductivity using YSI 3161 Conductivity Calibrator 1000 uS/cm ±.50% at 25°C Lot no. 02A0608 exp. 1/03.

11:20 Load vehicle and have safety tailgate discussion. Today's goals are to begin 4th round surface and alluvial sampling.

11:35 Mob to SMO to pick up Ice.

11:50 On-site at Oasis/Kilgore Aquatic Center to hike into Acid Canyon.

11:57 On-site at AC3 + 45m. No surface water present.

12:03 On-site at Lower Plunge Pool. No surface water present.

12:10 On-site Upper South Fork above O30(g). No surface water present.

13:25 On-site at DP Spring. Spring is completely dry. No sample taken

13:55 On-site DPS-4. No water present. No sample taken.

14:00 On-site at Los Alamos @ Upper GS. No water present. 8⁴⁹ 5/21/02 No Sample taken.

1500 On-site at DP Canyon, 1/4 mi East of location stake #21-1181
Begin collecting CA21-02-45266 CA21-02-45267

1515 Turb: 49.4 NTU Temp: 12.8°C
SpecCond: 582 µS/cm pH: 6.96

1530 AS 5/21/02 Carry samples back to vehicle and store on ice.

1545 At vehicle. Collect more sample bottles.

1555 On site downstream of Knights of Colombus
Begin collecting CA21-02-45264 and CA21-02-45265

1610 Turb: 12.8 NTU Temp: 16.3°C
SpecCond: 531 µS/cm pH: 9.19

1630 On-site at sample trailer at SMO. Samples are preserved and filtered and stored in sample refridgerator for the night.
Trip Blanks CA21-02-45274 are stored with samples collected today, and will be submitted to SMO in the morning.

1810 Mob to WGI office.

5/21/02

5/22/02

800 S. Purdue calibrates water quality instrument YSI 63 SN 01C0004 AA with 7.00 buffer solution Lot. No. 013452-24 exp. 9/03 and 4.00 Lot No. 012838-24 exp. 4/03 Meter reads 7.00 in 7.00 Meter reads 3.99 in 4.00

8:30 On-site at Sample trailer at SMO to pick up samples for submittal to SMO.

8:50 Submit samples CA21-02-45264 through CA21-02-45267 and CA21-02-45274 to Jaylene Valdez at SMO.

9:30 On-site road to PAO-1. Unable to access well due to culvert construction. We will try again another day. Mob to LAUZ-1, stop by SMO to pick up battery, no vehicle access to LAUZ-1 due to fire hazard.

10:15 On-site LAUZ-1 with battery. No key to well. Call Ryan

Channel, key is at SMO.

1017 Mob to SMO for key

1045 On-site LAUZ-1 with key.

1047 LAUZ DTW = 7.30 ft TD = 12.83 ft

1130 Begin purging, flow rate = 1 L/min.

1250 Begin collecting non-filtered sample CA21-02-45090 ~~and~~ ~~filtered sample CA21-02-45091~~ SP 5/22/02

1400 Begin collecting filtered sample # CA21-02-45091.

1445 Mob to SMO after De-conning equipment and collecting VOA samples with a stainless steel bailer.

1500 On-site at sample trailer at SMO. Preserve samples and filter Humic Acid sample with a 0.45 µm silver membrane filter.

1555 Submit samples to Augusta Padilla at SMO.

1605 Mob to WWI office.

Shane Purdue

5/22/02

5/23/02

0800 S. Purdue calibrates water quality instruments YSI 63 SN 01C0004 AA with 7.00pH buffer solution Lot # 013452-24 exp 9/03 and 4.00pH Lot # 012838-24 exp 4/03. Meter reads 7.00/7.00, 3.99/4.00. Mob to SMO for supplies.

0839 At PAO-3, depth to water ~~to~~ 13.65 ft. TOC
total depth 16.54 ft. TOC
Set up for purging.

9:05 Begin purging PAO-3.

9:06 ~~Well is~~ 5/23/02 Water is below pump after @ 1 gallon of purging.

9:08 DTW = 15.38 ft TOC
Wait for recharge.

9:30 DTW = 15.38 ft TOC
No recharge / water level below screen.
Begin packing up to mob to PAO-4.

9:50 On-site at PAO-4
DTW = 6.36 ft TOC
TD = 12.31 ft TOC

1120 A.B off site, D. Steven on site.

1121 Begin Sampling non Filtered CAPU-02-45066

1145 Begin Sampling Filtered CAPU-02-45065

1148 Complete sampling.

5/23/02

1250 Collect from Pueblo 3 Location # PU-10230, sample ID's CAPU-02-45081 (F), CAPU-02-45082 (UF). Field Parameters:
pH 7.44 Ec 576
Temp. 19.2°C Turb. 10.7

1305 walk back to truck at PAO-4. Place samples into coolers with ice.

1320 Mob to Pueblo @ SR 502

1340 Collect at Pueblo + SR 502
Field parameters: pH 6.70 Ec 596
Temp. 17.4°C Turb. 3.46 NTU
Location ID # PU-10229, sample ID # CAPU-02-45083 (F) and CAPU-02-45084 (UF).

1400 Mob to SMO sample trailer to filter and preserve samples.

1420 On-site at sample trailer.

1630 Submit samples to Joylene Valdez at SMO. all filtered samples ~~cut~~ 5/23/02 filtered with 0.45 um filter.

1645 Mob to WWI office.

5/23/02

5/28/02

7:45 S. Purdue calibrates YSI 63. See Water Quality Record for PAO-1 for calibration Information.

945 Mob to SMO for Ice + bottles after meeting w/ [illegible]

1020 On-site at PAO-1. We have been in telephone contact with Mike for access to PAO-1 through RMCI work-site.

1025 DTW = 12.38 ft TOC
TD = 16.65 ft TOC
Set up for sampling.

1050 Begin purging PAO-1. Speed controller is not working properly, we are purging about 3-4 liters per recharge.

1120 Begin collecting UF samples CAPU-02-45062.

1145 Begin collecting F samples CAPU-02-45061. Filtered samples are collected using an in-line 0.45 µm filter (Disposable filter cartridge).

1200 Mob to PAO-2

5/28/02

S. Purdue 5/28/02

1208 On-site at PAO-2.
DTW = 16.01 ft TOC
TD = 16.61 ft. TOC
Not enough water to collect a sample.

1211 Mob to office for FM-80 keys.

1300 On-site at gate to LA Reservoir, no access to area because of fire danger.
S. Purdue calls Danny Katzman to discuss access issues for collecting samples at LA Reservoir and LAO-B. Katzman will call S.F. National forest to discuss access permission. Mob to LAO-0.3

13:34 LAO-0.3 DTW = 10.68 ft. TOC
TD = ~~[illegible]~~ 13.50 ft TOC

1400 Begin purging LAO-0.3 after carrying equipment across channel. Speed controller is still not functioning properly, so we are purging ~1 gallon

(60) 5/28/02

then turning off the pump for a few minutes to keep the turbidity down.

1445 Turbidity is <5 NTU and parameters are stable. Begin collecting UF samples #CALA-02-45028.

1510 Begin collecting F samples #CALA-02-45027.

1520 Begin packing equipment back to the truck! Decon-pump with DI water and collect rinse water into a 5 gallon container for the LA Rinse blank.

1550 Mob to SMO to preserve samples.

1600 On-site at SMO. Sample trailer "Collect" PU rinse blank sample out of 5 gallon container. CAPU-02-45059. This sample contains rinse water from post decon at wells PAO-4, PAO-1.

1700 On-site at SMO to submit

5/28/02

samples to Joylene Valdez.

1730 Load bottles and supplies for tomorrow's round of sampling.

1745 Mob to WGI office.

5/28/02

5/29/02

715 S. Purdue calibrates YSI 63. See Water Quality Record for LLAO-1 for calibration information. Conduct Safety tailgate with Alethea Baner

8:30 On-site at LLAO-1 w/San. I. escorts.
DTW = 22.91 ft TOC
TD = 26.93 ft TOC

8:40 Begin Purging LLAO-1
~~10:22 DTW 24.50~~ 5/29/02

8:47 Water level in LLAO-1 has dropped below pump, lower pump rate

855 Begin collecting LLAO-1 SW while we wait for recharge of LLAO-1. Parameters in stream: pH 7.60 Ec 358 us/cm Temp 12.7°C Turb. 2.06 NTU

samples CALA-02-45010 CALA-02-45011

900 Continue purging LLAO-1

935 Begin Sampling for UF Samples. Sample #CALA-02-45036. LLAO-1.

1000 Begin sampling for F samples from LLAO-1. Sample ID # CALA-02-45035.

10:15 Complete sampling at LLAO-1

5/29/02

10:22 LLAO-1 DTW = 24.50 ft TOC Post sampling
Decon pump with DI water and collect rinse blank ~~SC~~ 5/29/02 into 5 gallon DI container.

1035 Mob to Basalt Spring in San I. Vehicle

1100 Collect Basalt Spring
pH: 7.01 EC: 310 µS/cm
Temp: 10.5°C Turb: 1.12 NTU
Parameters taken directly from spring. Samples collected: CALA-02-45012(F), CALA-02-45013 (UF)

1200 On-site at LLAO-5.
DTW = 13.96 ft. TOC
TD = 23.72 ft. TOC

1210 Begin purging LLAO-5. Well is running clear and consistent.

1240 Collect UF samples # CALA-02-45034 and filtered samples CALA-02-45033.

1245 Sampling at LLAO-5 is complete.

1250 Decon pump with DI water and collect rinse water

5/29/02.

for rinse blank sample into a 5 gallon container.

1255 LLAO-5 DTW = 14.45 ft TOC.

1305 Mob to SMO sample trailer to put coolers + ice into locked trailer.

1330 S. Purdue and A. Banar on-site at ER Conference room for required fire awareness training given by U.S. forest service.

1530 On-site Sample trailer to preserve samples.

1730 On-site SMO to turn in samples.

1755 Relinquish samples collected today to Mike Clevenger at SMO.
Trip blank sample # CALA-02-45008 also turned in at this time.
This trip blank was carried with samples collected today.

1810 Mob to WGI office.

[signature] Pure 5/29/02

5/30/02

7:45 S. Purdue calibrates YSI 63. See Water Quality Record for LAO-B for calibration information.

8:00 Safety tailgate with Alethea Banar. Load supplies for today's sampling in LA Canyon.

8:20 Mob to SMO for ice.

9:10 On-site at LA Reservoir. We will collect below the reservoir. Location ID# LA-02-19969. ~150m downstream of res. (GF)

420 Collect samples CALA-02-45014 and CALA-02-45015 (UF) from location below ~~LA~~ 5/30/02 (downstream) of LA Reservoir.

940 Mob to WGI office to get more filters.

1000 On-site at Sample trailer. Filter, preserve, and place reservoir samples in refrigerator at sample trailer.

5/30/02

1215 On-site at LAO-B
DTW = 9.48 ft TOC
TD = 29.52 ft. TOC

1227 Begin purging LAO-B.
Run ES-60 pump at
pump rate of ~.4L/minute

1300-1320 Collect samples
CALA-02-45029 Filtered with and an in-line filter
CALA-02-45030 from LAO-B Onsite
Location #41-01045. Also Duplicate Sample # CALA-02-45041

1330 De-con pump by running
DI water through pump, and
Collect rinse water into
5 gallon composite container
to be used for LA Canyon
rinse blank sample.

1400 Mob to SMO.

1415 On-site at sample trailer
at FSF to preserve samples.

1530 Submit samples to Keith
Greene at SMO.

1600 Mob to WGI office.

S. Purdue
5/30/02

5/31/02

8:00 S. Purdue calibrates
YSI 63. See Water Quality
Record for LAO 1.6g for
calibration information.
Safety tailgate briefing
with S. Purdue & A. Banar.
Discuss todays goals
of sampling LAO-1.6g.
Load truck, mob to
LAO-1.6g.

8:25 On site at LAO-1.6G
DTW = 28.08 ft. TOC
TD = 33.64 ft. TOC
According to well completion
report, there is 0.3 ft
of water within the screened
interval. We will attempt
to collect a sample

8:49 Begin Purging LAO-1.6g.
Purge 1.5 gallons.
Stop pump & take water
level measurement.

851 DTW = 30.23 ft toc,
27.35 ft bgs
Water level is below

5/31/02

Bottom of screen = 25.47 ft bgs screen. We will monitor the water level to see if there is any recharge.

8:58 DTW = 30.23 ft TOC. No change.

9:10 DTW = 30.23 ft TOC. No change

9:26 DTW = 30.23 ft TOC. No recharge.

No sample will be taken.

Begin packing up equipment.

9:50 Mob to FSF.

SR
5/31/02

6/4/02

715 S. Purdue calibrates YSI 63. See Water quality record for LAO-C for calibration information.

730 Safety tailgate with S. Purdue and A. Banar Mob to SMO for ice.

800 Meet Eric Richsonmer and Nick Martinez at LAO-C to collect samples. Wait for ESH-18 to set up hydrolab. 8:20 DTW = 4.64 ft TOC

845 Begin Purging Purge rate of approx. 1½ min.

1035 Collect sample CALA-02-45038 (UF).

1100 Collect sample CALA-02-45037 (F) with an-in-line filter. ESH-18 bladder pumps and hose are all teflon. VOA's were collected directly from out-line.

1130 Mob to LAO-0.7 DTW = 14.39 ft TOC

1230 Begin Purging LAO-0.7

6/4/02

1400 Collect (begin collecting) sample CALA-02-45046 (UF).
1440 Complete collecting UF sample.
1445 Begin collecting CALA-02-45045 (F) sample.
1505 Complete collecting samples
1515 DTW of LAO 0.7 15.07 ft TOC.
1525 Mob to SMO Sample trailer to preserve samples.
1555 Submit samples to Joylene Valdez at SMO.
1605 Mob to WGI office.
⊛ 1500 Nicholas Martinez on-site at LAO-1 to check water level. LAO-1 is dry. No sample taken. - SP 6/4/02

6/4/02

6/5/02

SP 6/5/02

0715 S. Purdue calibrates water quality instrument. See Water Quality Sampling record for LAO-3a for calibration information.
730 S. Purdue + A. Banar have safety tailgate + Mob to SMO for ice then LA Canyon to meet ESH
817 LAO-2 TD = 30.45 ft BTOC. Well is dry. No sample taken.
825 Meet Eric Reibsommer and Nicholas Martinez (ESH-18) at LAO-3a. DTW = 10.06 ft TOC
835 S. ~~Purd~~ SP 6/5/02 S. Purdue and N. Martinez off-site to pick up another air hose from TA-59.
920 S. Purdue and N. Martinez back on-site at LAO-3a.
928 Begin purging LAO-3a. Eric Reibsommer needs to collect 3.25 Liters of water every bore-volume for samples. We will

6/5/02

Collect one liter Gr parameters between ESH-18's sampling intervals.
Because of the limited amount of purge water that is available, we will only be able to take 1 parameter reading for each bore volume.
This is a deviation from WGI S.O.P 6.01 rev.3. This is a one time event and does not require a procedure revision.

1110 Begin collecting sample # CALA-02-45044, unfiltered set.
1148 A. Banar and E. Riebsomer mobilize to well #4.
1156 On site at well LAO #4. Dry. TD = 24.4 ft TOC
1202 Off site. Mobilize to next well.
1206 On site at well LAO #4.5c Dry. TD = 19.19 ft TOC
Possible meter is resting on top of bladder pump
1210 Off site. Mobilize to next well.
1215 On site at LAO 6a. Dry. TD = 16.51 ft TOC
LAO-6 is dry. TD = 11.25 ft TOC

6/5/02

1215 cont. Meter may be resting on top of bladder pump.
1222 Off site. Return to LAO-3a.
1232 A. Banar and E. Riebsomer on site at LAO-3a.
1235 Begin collecting F samples CALA-02-45043
1317 Complete sampling. Load truck & mob to sample trailer to preserve samples.
1330 DTW LAO-3A 10.09 ft TOC
1340 Mob to sample trailer.
1400 On-site at sample trailer to preserve samples.
1450 Submit samples to Augusta Padilla at SMO.
1305 Mob to WGI office.

SC Pene
6/5/02

6/11/02 6/11/02

730 S. Purdue calibrates water quality meter. See Water Quality Sampling Record for PAO-5N for calibration information.

7:45 Conduct safety Tailgate briefing with Aletha Bernor. Todays topics, fire danger, slips trips falls.

8:00 Mob to SMO to pick up ice, batteries, and laptop computer.

8:15 On-site at SMO.

8:45 Mob to PAO-5N.

[signature] 6/11/02

900 On-site at PAO-5N

0910 At PAO-5N DTW = 11.63 ft btoc
TD = 18.46 ft btoc

Set-up for sampling/purging

938 Begin ~~sampling~~ purging PAO-5N.

1015 Begin collecting UF Sample # CAPH-02-45070. Also collect sample #.

(cont.)

6/11/02

CAPH-02-45069 (F).
CAPH-02-45069 was filtered on-site with an in-line disposable 0.45 µm filter.

1100 Mob to Sample trailer at FSF.

1120 On-site at Sample trailer. to preserve samples.

1300 Submit samples CAPH-02-45070 and CAPH-02-45069 to Augusta Padilla at SMO.

1320 Mob to WI office.

[signature] 6/11/02

[signature] 6/13/02

(76) 7/30/02

7:00 S. Purdue Calibrates Portable Turbidimeter model 2100P S/N 0102000277932 with HACH StablCal Standards:

800 NTU, Lot No. A0341
Exp. date: 12/02

100 NTU, Lot No: A1008
Exp. date: 12/03

20 NTU, Lot No: A1200
Exp. date: 07/03

<1.0 NTU, Lot No: A0203
Exp. 07/03

Calibration was excepted by Turbidimeter.

7/30/02

End of Entries

02/06/03 2/6/03

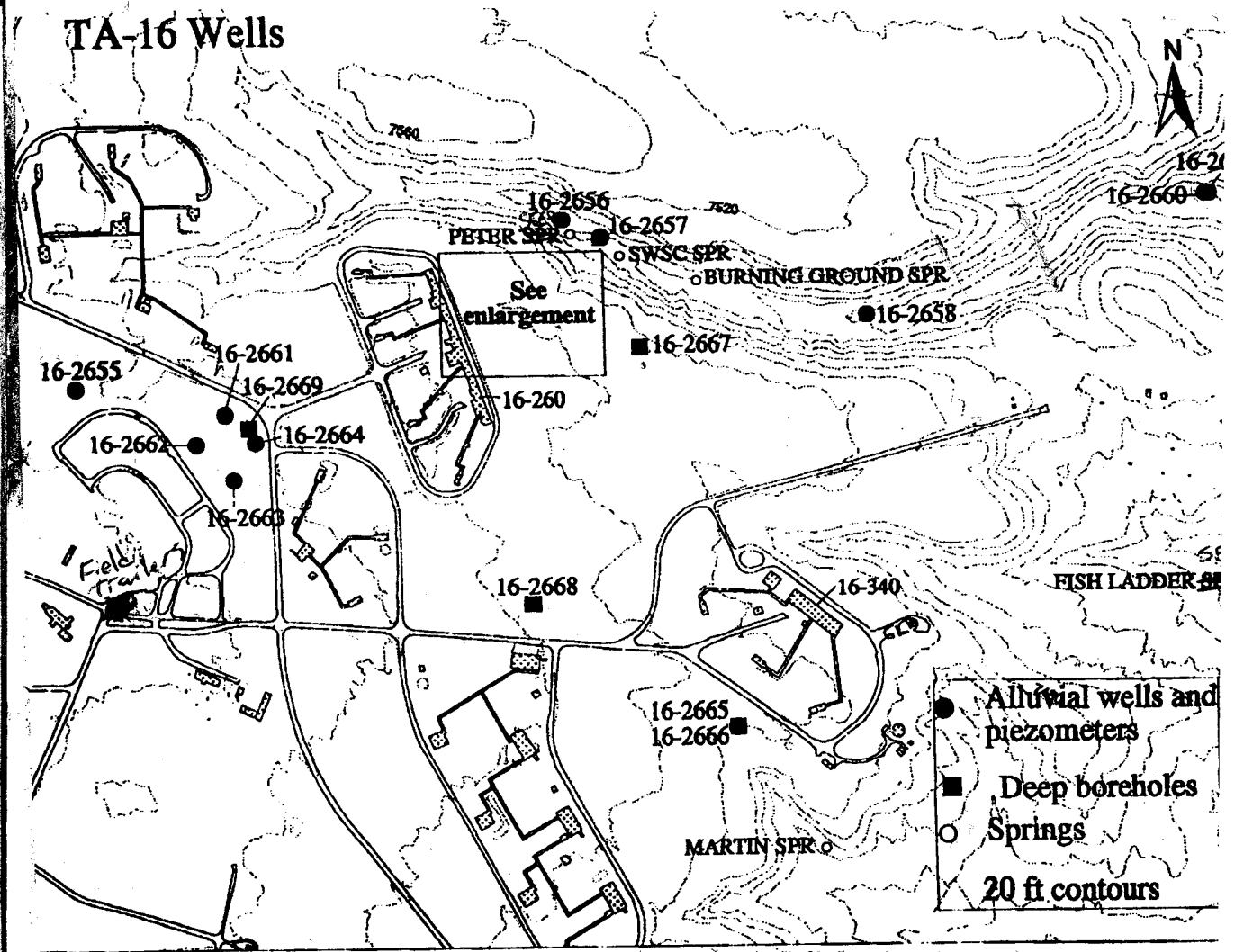
Charles E. Smoldello

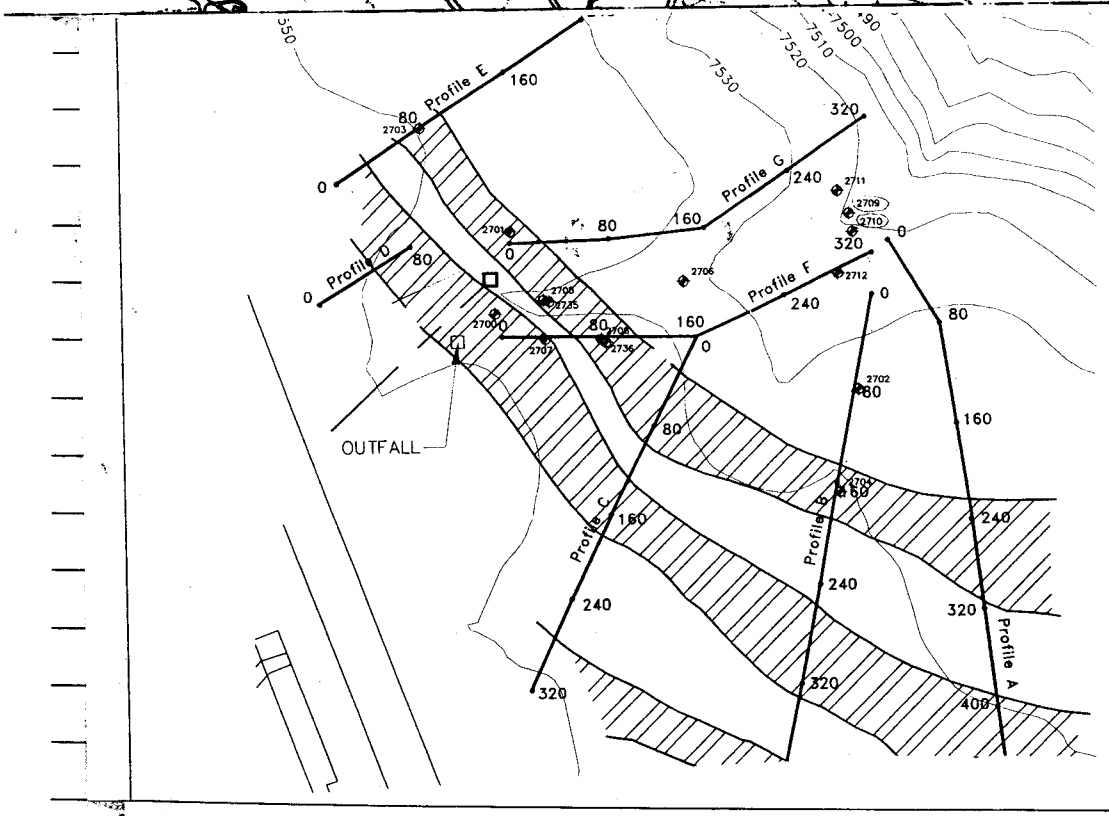
2/7/03

ER2002-0320 LOG BOOK VOLUME 1
Hydrogeologic and CMS
Investigations at TA-16
PRS 16-021(c)-99
IT Corp. 661-5200

LOG BOOK

TA-16 Wells





2712

5/15/98 RANDY JOHNSON AND LAURAINE MALVESS CHECK THE TAILS MONITORING WELLS INCLUDING THE ALLUVIAL WELLS WITHIN CDV.

MONITORING WELL SUMMARY:

	MW ID	DEPTH TO WATER*	BOTTOM OF WELL*	DEPTH FROM GRADE
ALLUVIAL	16-2655	5.38'	10.1'	7.83
	16-2656	5.28'	10.6'	8.33
	16-2657	2.75'	5.45'	7.00'
	16-2658	5.46'	10.15'	7.83'
	16-2659	7.9'	10.1'	7.00'
	16-2660	7.5'	10.1'	7.00'
PRESILOZ(E)	16-2700	LR 5/30/02 ~~DRY~~ NO SOUNDING 2" WATER	18.75'	17.0'
	16-2709	DRY	14.9'	15.0'
	16-2712	90.53'	94.9'	94.625'
	16-2736	DRY	71.3'	71.0'
	16-2665	DRY		
	16-2666	DRY		
	16-2668	DRY		
	16-2669	DRY		
	16-2661	DRY		
	16-2662	DRY		
	16-2663	DRY		
	16-2664	DRY		

1220 SAMPLE RE16-98-3025 IS COLLECTED FROM MONITORING WELL 16-2712. THIS SAMPLE WILL BE SUBMITTED FOR TRITIUM (H_3) ANALYSIS.

R Johnson 5/30/2002

5-22-98

Today's activities: Transfer core from SWO to TA-16, Sample TA-16 springs, possibly transport golf carts & ATV to TA-16, also crew will take water levels at monitoring wells.

0900 Crew (Edkar - JCFKG), Louie Romero (JCFKG) & Seth McMillan (EES-1) depart office for SWO

1130 Martin Spring sampled

Summary of water levels

Time	ID	depth to water	
1154	16-2665	Dry	
1157	16-2664	Dry	
1215	16-2659	7.15'	TOC
1216	16-2660	7.11'	TOC
1230	16-2658	5.5'	TOC
1240	16-2657	2.9'	TOC
1245	16-2656	5.3'	TOC
1317	16-2668	Dry	TOC
1330	16-2665	~~Dry~~ 7.53' 5/13/02	TOC
1331	16-2661	Dry	~~TOC~~
1332	16-2662	Dry	
1333	16-2663	Dry	
1334	16-2664	Dry	
1334	16-2669	Dry	

1345 Crew departs site (TA-16), we sampled SWSC springs, Burning Ground Spg., Peter Spring, & Big Rock. Crew was unable to check wells behind building 260 due HE machining activities.

signature

5/27/98

1145 RANDY JOHNSON AND ELMER ALCON WILL CHECK MONITORING WELL 16-2712 AND COLLECT A SAMPLE FOR HEXP AND VOACLMS ANALYSIS (FILTERED).

1150 THE WATER LEVEL IN MW 16-2712 IS AT 91.01', COLLECTING SAMPLE RE16-98-3026.

1200 THE WELL WAS BAILED DRY, APPROXIMATELY 450ml WAS COLLECTED, THIS WILL BE FILTERED AND SUBMITTED FOR HEXP AND VOACLMS ANALYSIS. MW 16-2709 IS DRY.

1540 SAMPLE SUBMITTED TO SMO, COC# 1082-98-0207. SAMPLE # RE16-98-3026.

R Sutherland 5/30/02

5-29-98

Today activities: Spring sampling & water levels

900 Crew: E. Alcon (IcF Ke) & L. Romero (IcF KE) arrive at TA-16, Field Trailer, decon sounder for today activities

1000 BH 16-2712 sounded @ 92.25

Summary of water levels

BH ID	Depth to water	
16-2712	92.25	TOC
16-2709	Dry	TOC
16-2667	Dry	* well needs 2" cap
16-2656	5.4	TOC
16-2657	3.05	TOC
16-2658	5.55	TOC
16-2659	7.29	TOC
16-2660	7.27	TOC
16-2736	Dry	TOC
16-2700	.20	TOC
16-2655	9.16	TOC
16-2661	Dry	TOC
16-2662	Dry	TOC
16-2663	Dry	TOC
16-2669	Dry	TOC
16-2665	Dry	TOC
16-2664	Dry	TOC
16-2668	Dry	TOC

Samples collected @ Mortandad springs, Burning ground spring, SWSC Sp, peter's seep & Big Rock. Peter's seep is approx 100 ft up drainage from 16-~~[illegible]~~ TA 2656.

1300 Crew departs TA-16

Stookey

6-9-98

Todays activities: Spring sampling and water levels
weather: slightly overcast, breeze from South, ~70° F

9:30 crew: Elmer Akan (ICPKE), Lovie Romero (ICFKE)
Arrive at TA-54, get sample bottles and batteries.

10:00 Arrive @ TA-16 Field trailers

Summary of water levels

BH ID	Depth to water	
16-2712	92.17'	TOC
16-2709	DRY	
16-2667	+200 deep for sounder	
16-2656	6.00	TOC
16-2657	did not measure	
16-2658	5.62	TOC
16-2659	7.45	TOC
16-2660	7.45	TOC
16-2736	DRY	TOC
16-2700	0.20'	TOC
16-2655	9.92'	TOC
16-2661	DRY	TOC
16-2662	DRY	TOC
16-2663	DRY	TOC
16-2669	DRY	TOC
16-2665	DRY	TOC
16-2666	DRY	
~~16-2670~~ 6-9-98		
16-2664	DRY	TOC
16-2668	DRY	TOC

Peter's seep is approx. 75 ft. from 16-2656 and is labeled as (P2)

1530 Field team departs for office.

5/30/02

6-19-98

Today's Activities: ~~Quar~~ Spring sampling and water levels. Weather: ~ 80° ~~clear sky~~ The sky is filled with smoke from controlled burning at ~~Bernallilo~~ Bandelier. Overcast.

10:30 crew: Louie Romero (ICF KE), Randy Johnson (ICF KE), Seth McMillan (EES-1). Arrive at site (TA16 Field Trai

Summary of Water Levels

BH ID	Depth to Water	
16-2712	NM	
2709		
2667		
2656		
2657		
2658	NM	
2659	7.55'	TOC
2660	7.57'	
2736	NM	
2700	NM	
2655	9.61'	TOC
2661	NM	
2662		
2663		
2669		
2665		
2666		
16-2668	NM	

NM = not measured

16:00 Crew depart field trailers.

LOUIE ROMERO 5/30/02

7-1-98

Todays Activities: Spring (martin only) sampling and water levels
weather ~86° partly cloudy.

11:15 crew: Louie Romero (ICF KE), Bunnie Kelly (EES-1)
Today we are not allowed to enter CDV.

Sumary of water depths

BH ID	
~~16 2655~~	
16- 2712	NM
2709	NM
2667	NM
2656	NM
2657	NM
2658	NM
2659	NM
2660	NM
2736	NM
2700	NM
2655	DRY
2661	DRY
2662	DRY
2663	DRY
2664	DRY
2665	DRY
2666	DRY
2668	DRY
2664	DRY

NM = Not Measured

A sinkhole is forming east of BH 2668
The sampler at martin Spring was knocked down. ~~No S~~ All samples spilled 5/30/02 LR
12:45 Crew leaves the site

Louie Romero 5/30/02

7-2-98

9:45 Crew arives at field trailers. Crew consists of Louie Romero (ICF KE) and Bonnie Kelly (EES-1). Todays activities will consist of collecting water samples from the SWSC sampler and the ~~[illegible]~~ BG spring. Also, we will check the ~~[illegible]~~ wells we could not get to yesterday.

Summary of water depths

BH-1D (16)	depth	
2712	94.05'	TOC
2709	NM	
2667	DRY	
2656	8.4'	TOC
2657	4.55'	TOC
2658	5.45'	TOC
2659	7.65'	TOC
2660	7.65'	TOC
2736	DRY	
2700	DRY	
2655	NM	
2661		
2662		
2663		
2669		
2665		
2666		
2668	NM	

NM = Not Measured

12:00 Crew departs field trailer

Louie Romero 5/30/2002

7-15-98

2:30 p.m. Crew of Bonnie Kelly (EES-1) and Louie Romero (ICF KE) arrive at field trailers. Today we are not allowed in CDV or behind 260 due to special activities being conducted in Bldg. 260. Therefore today's activities will include collecting samples from Martin Spring and checking the wells around the 90's line pond

BH-ID	depth
16-2655	DRY
2661	DRY
2662	DRY
2663	DRY
2669	DRY
2665	DRY
2666	DRY
2668	DRY
2664	DRY

The 90's Line pond had some water in it due to the rainfall we have had.

1600 The crew departs the field trailer.

Louie Romero 5/30/2002

Friday July 17, 1998

1445 Crew arrives at field trailers. Crew consists of Louie Romero (1
and Bonnie Kelly (EES-1). Todays activities include collecting
samples from SWSC spring, ~~and~~ LR 5/30/02 Burning Ground spring,
peter seep and Big Rock. LR 5/30/02 ~~I~~ Also, we will check
the depths of the wells in CDV and behind bldg 26E

16-2709	DRY	
2712	94.28	TOC
2736	DRY	
2700	DRY	
2656	6.24"	TOC
2657	2'86"	TOC
2658	5.40	TOC
2659	7.47	TOC
2660	7.49	TOC

12 samples successfully collected from BG Spring.
12 samples collected from SWSC spring 1-5 full 6-11 empty
day 12 full.
1 sample successfully collected from BR and Peter seep

1630 Crew leaves field trailers

Louie Romero 5/30/2002

July 31, 1998 Friday

E) 1040 Crew arrives at field trailers. Crew consists of Louie Romero (ICFK) and Seth McMillan (EES-1). Todays activities will be collection of water samples from automatic samplers at Burning Ground spring, SWSC spring and martin spring. Also we will be sounding ~~wells~~ all the wells in CDV.

16-2668	DRY	
16-2666	DRY	
16-2712	94.20	TOC
16-2736	DRY	~~TOC~~ 5/30/02 LR
16-2700	DRY	
16-2656 (~~2751.77~~ 5/30/02)	5'4"	~~Sum~~ 5/30/02 TOC Sum
16-2657	1'2.2"	TOC
16-2709	DRY	
16-2658	5.40'	TOC
16-2659	7'4.3"	TOC
16-2660	7'4.0"	TOC
16-2865	DRY	

SWSC samples 7/18, 19, 20, 21, 22/98 empty 7/29/98 empty
Sampler ~~seals~~ is telling to replace sample hose.

BG Spring 12 samples collected.

Martin Spring 11 samples collected, It was missing bottle R.

1315 ~~Cro~~ I payed Bill McCormick. he called and will be here to give me a permit to take 105 samples out of the Hot Corridor. The samples will be taken to EES-1 for analysis.

1325 Crew departs field trailer.

Louie Romero 5/30/2002

8-5-98 Wednesday

1115 Crew: Louie Romero (ICF KE), Seth McMillan (EES-1)
Todays activities: Check on SWSC Sampler since it has been having problems. Also we will replace the battery on BG Sampler since I used the same battery on Frida

SWSC cut sampler had not collected any samples, we cleared out the tube casing functions on the sampler, we forced the sampler to manually collect one sample. We left it in sampling mode.

We placed a fresh & fully charged battery on BG Sampler. The old battery had not gone dead yet so it had collected 5 samples successfully. We left it on sample mode to start on bottle 6.

1220 Crew departs field trailers.

LOUIE ROMERO 5/30/2002

8-7-98 Friday

1400 Crew arrives at field trailers. Crew consists of Louie Romero (LR) and Bonni Kelly (E-ES-1). Todays activities include collecting water samples and sounding well depths.

16-2700	DRY		
2709	DRY		surface water level higher than TOC
2712	14.01	TOC	
2736	DRY		
2656	5.98	TOC	
2657	1.87	TOC	surface water level higher than TOC

BG Spring 8/1, 3 Samples ~~are~~ LR 5/30/2002 were not collected. 5 were collected

2658	5.49	TOC
2660	7.55	TOC
2659	7.53	TOC
2655	5.28	TOC
2661	DRY	
2662	DRY	
2663	DRY	
2669	DRY	
2664	DRY	
2666	DRY	
2665	DRY	5/30/02 LR Mud present @ bottom of well
2668	DRY	

- MS Spring 8-6-98 sample was not collected due to dead battery

Louie Romero 5/30/2002

8-14-98

1030 Crew arives at field trailer. Louie Romero (ICF KE) and Seth McMillan (EES-1). Todays activities are to collect water samples from Martin, BG, SWSC springs. And sound all wells.

Martin Spring - 7 samples collected (1 manual)

SWSC Sampler - 6 samples collected; bottle 6 - no liquid detecte

BG Sampler - 7 Samples Collected (1 manual)

Peter seep has risen about 15'

16-2665	DRY	
16-2666	DRY	
16-2668	DRY	
16-2709	DRY	
16-2712	94.34'	toc
16-2738	DRY	
16-2657	1.32'	toc
16-2656	5.61'	toc
16-2658	5.31'	toc
16-2659	7.42'	toc
16-2660	1.47'	toc
16-2655	4.93'	toc
16-2661	DRY	
16-2662	DRY	
16-2700	DRY	
16-2669	DRY	
16-2664	DRY	
16-2663	DRY	

1330 Crew departs field trailers.

NOT USED

5/30/2002

8-21-98 Friday

9:30 Crew of Louie Romero (xFRE) and Seth Mullinam (FES-1) arrive at the field trailers. Todays activities will include the collection of H_2O samples samplers at BG, SWSC, and Martin Spring. We will also sound all wells.

man)

16-2665	DRY
16-2666	DRY
16-2668	DRY
16-2655	5.74' toc
16-2661	DRY
16-2662	DRY
16-2663	DRY
16-2669	DRY
16-2664	DRY
16-2700	DRY (visual water, no sound)
16-2736	DRY
16-2712	94.48' toc
16-2709	DRY
16-2656	6.34' toc
16-2657	2.0' toc
16-2658	5.45' toc
16-2660	not measured due to caution tape put up by construction workers who are working at what seems to be MDA-P.
16-2659	

Martin Spring - 7 samples collected
BG Spring - 7 samples collected
SWSC spring - 6 samples collected (bottle 6 - no liquid detected)
BR, PS - 1 sample collected each

1400 Crew departs field trailers.

not used

Louie Romero 5/30/2002

8.28.98 - Friday

9:00 Crew of Louie Romero (ICF Kaiser) and Seth C. McMillan (EES) arrive at field trailers. Today's activities include sampling 3 springs, sounding all wells and performing minor repairs to SWSC spring.

16-2656	5.70
16-2657	1.41
16-2658	5.41
2736	dry
2712	94.68
2700	dry
2655	8.0
2661	dry
2662	dry
2663	dry
2664	dry
2669	dry
2665	dry
2668	dry
2666	dry
2660	not measured due to construction
2659	near MDA-P

SWSC spring - as per Ryan Romero. I shoveled mud ~~to get~~ divert the flow of water where the sampling tube is. 7 samples were collected 5/30/2002

BC Spring - 7 samples were collected.

MS -- 7 samples were collected

PS and BR - one sample collected each.

1210 Crew departs field trailer.

Louie Romero

5/30/2002

9-1-98 Monday

930 Crew arrives at field trailers. Crew consists of Louie Romero (ICF K) and Seth McMillan (EES-1). Todays activities include sounding the 2 wells we did not do on friday.

16-2659 7.71
16-2660 7.76

1030 Crew departs field trailers.

Louie Romero 5/30/2002

9-4-98 Friday

10:00 Crew (consisting of Louie Romero of ICF Kaiser ~~affiliation~~ and Seth C. McMillan, currently a LANL UGS student employed by EES-1), arrives at field trailers. All are in good spirits and the weather is lovely. Today's activities include sounding all wells and ~~samples~~ scm collecting samples from Burning Ground and SWSC springs, as well as drawing samples from Peter Seep and "Big Rock" (both of which are located in Cañon de Valle).

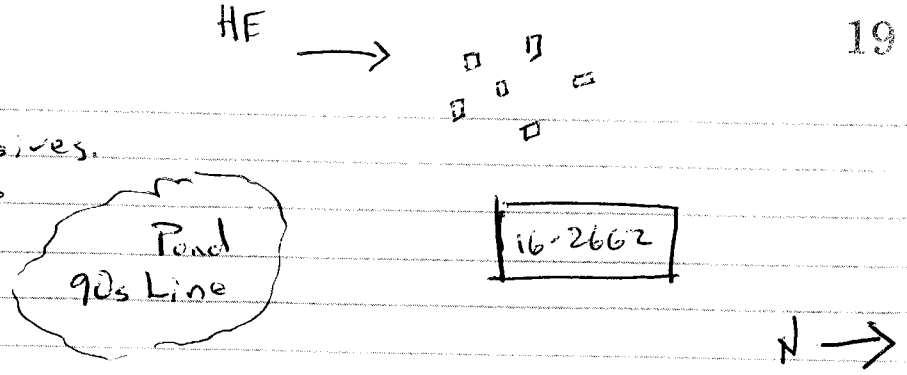
	16-2659	7.75	toc
	16-2660	7.81	toc
	16-2665	DRY	(wet mud 1" deep)
	16-2666	DRY	(moist mud ½" deep)
	16-2668	DRY	
16-2655	~~162655~~	8.93	toc
	16-2661	dry	
	16-2662	dry	~~toc~~ scm
	16-2663	dry	
	16-2664	dry	
	16-2669	dry	
	16-2709	dry	
16-2712	16-~~2710~~	94.66	toc
	16-2736	dry	
	16-2658	5.55	toc
	16-2656	6.15	toc
	16-2657	1.88	toc

1100 Discovered suspicious looking rocks south east of 16-2662. We cont Bill McCormick. ~~After~~ He ran a test that resulted in a positive identification of TNT and RDX. McCormicks instructions are to approach 16-2662 from the North side to avoid being around

Louie Romero 5/30/2002

Cont. next pa

9-4-98 cont.
the High Explosives.
McCormick and TA-16
personell will clean
it up.



drawing not to scale

BG - 7 samples collected
1 SWSC - 7 samples collected
PS
BG
1 sample collected (each)
MS - no work performed. We will collect 12 samples on tuesday Sept. 8, 1998

Louie Romero 5/30/2002

9-8-98 Tuesday

Todays activities include the collection of samples from Martin Spring. Also, preperation work for soil sampling.

915 Louie Romero (ICFKE) and Elmer Alcon (ICFKE) arrive at field trailers.

Martin Spring - 10 samples collected.

1000 Crew departs field trailers.

Louie Romero 5/30/2002

9-16-98 Wednesday

11:00 Crew of Seth McMillan (Butler) and Louie Romero (LWF RF) arrive at field trailers. Temp ~80°. clear skies. Todays activities include collection of samples fro ISCO samplers and sounding all wells.

16-2665	DRY	1/4" mud
16-2666	DRY	1/4" mud
16-2668	DRY	

12:00 The gate did not open behind bldg. 260 thus we could not go down the canyon to collect samples.
Crew departs trailers for lunch
Unable to complete all tasks due to a change of our priorities.

Louie Romero 5/30/2002

[redacted]

9-18-97 Friday

1300 Crew of Seth McMillan (Butler/EES-1) and Louie Romero (ICF arrive at field trailers. Today's activities include collecting sa from CDV and sounding wells in CDV and behind bldg. 260

	top of H2O			
16-2712	94.79 5/30/2002	toc	total well depth	95.6 LR 5/30/2002
16-2709	dry			
16-2700	dry		1" wet at tip. no sound	
16-2736	dry			
16-2656	6.56	toc		
16-2657	3.20	toc		
16-2658	5.56	toc		
16-2659	7.84	toc		
16-2660	7.98	toc		
16-2655	9.62	toc		
16-2661	dry			
16-2669	dry			
16-2664	dry			
16-2663	dry			
16-2662	dry			

LR 5/30/02
SWSC spring - 13 samples collected
BC Spring - 13 samples collected
BR / PS - 1 sample collected each

LOUIE ROMERO 5/30/2002

9-25-98 Friday

1030 Crew of Louie Romero (ICFKE), Kristi Beguin (ICFKE) and Seth McMillan (CCS) arrive at field trailers. Today's activities include collection of samples from BG, SWSC, Martin Spring and sounding of wells.

16-2656	6.63	toc
16-2658	5.62	toc
16-2660	8.01	toc
16-2659	7.98	toc
16-2665	dry	
16-2666	dry	
16-2668	dry	
~~16-2665 dry~~		KB 5/30/2002
16-2655	dry	
16-2736	dry	
16-2712	94.82	
16-2709	dry	
16-2657	3.62	toc
16-2663	dry	
16-2664	dry	
16-2669	dry	
16-2661	dry	
16-2662	dry	

MS, SWSC, BG Springs - all samples collected.
PS, BR - 1 sample collected successfully (each.)

1525 Crew departs field trailers.

Louie Romero 5/30/2002

October 1, 1998

1103 Crew of D Sharp, L. Romero, P. Gram (KFKa
arrive at Well 16-2659. Today we will
measuring water levels in wells.
Quarterly sampling also being collected. see

	TOC depth	Well bottom depth	
16-2659	7.71'	10.10'	app. 1.6 g
16-2660	7.79'	10.10'	
16-2658	5.39'	10.19'	app. 3.1 g

5/30/2002
LRomero

10-02-98

420 Crew of Louie Romero (ICF KE), Donna Sharp (ICF KE), Peter Gram (ICF KE) and Seth McMillan (EES-1/Butler) arrive at field trailer. Todays activities will be the collection of samples from autosamplers at Martin Spring, SWSC spring, and BG spring. We will also be collecting the quarterly samples from the wells. In addition, we will sound all wells.

16-2657	3.01	toc before bailing	5.5 total depth of well
16-2658	6.26'	toc	10.61' total depth of well
16-2655	9.64	toc	10.12 total depth
16-2661	dry		15.69 td
16-2662	dry		13.09 td
16-2664	dry		13.82 td
16-2663	dry		13.20 td
16-2669	dry		164.50 td
16-2736	dry		71.30 td
16-2712	94.86		
16-2709	dry		14.91 td
16-2700	dry		18.77 td
16-2668	dry		185.83 td
16-2666	dry		93.81 td
16-2665	dry		127.87 td

Peter Seep - 1 sample collected
Big Rock - 1 sample collected
SWSC spring - 7 samples collected
BG spring - 7 samples collected
Martin spring - no samples collected due to sampler failure (1 sample manually collected)

NOT USED
5/30/2002

10-09-98 Friday

900 Crew arrives at field trailer. Lona Romero (ICF), Peter Gram (ICF), Debbie Risberg (ICF), Seth McMillan (EES-1/Butler) will sound all wells and collect samples from PS, BR, and iso samplers.

16-2736	dry		
16-2712	94.92	toc	
16-2700	dry	toc	
16-2709	dry		
16-2656	6.56	toc	
16-2657	5.05	toc	
16-2655	9.62	toc	10.10 td
16-2661	dry		15.68 td
16-2662			13.11 td
16-2663			13.19 td
16-2664			13.62 td
16-2669			166.5 td ~~13.62~~ LR 5/30/2002 ~~167.70~~ LR 5/30 ~~166.3~~ LR 5-13
16-2658	5.43	toc	
16-2659	7.84	toc	
16-2660	7.90	toc	
16-2665	dry		
16-2666	dry		
16-2668	dry		

Martin Spring - 7 samples collected

SWSC Spring - 7 samples ~~500~~ ~~successfully~~ LR 5/30/02 LR collected

BG Spring - 7 samples collected

BR - 1 sample collected

PS - 1 sample collected

1100 Crew departs field trailers.

Lona Romero 5/30/2002

10-16-98 Friday

900 Crew of Louie Romero (ICF) and Debbie Risberg (ICF) arrive at field trailers. Todays activities include collection of H_2O samples from ISCO samplers, and sounding of all wells.

2665 dry
2666 dry
2668 dry
2655 9.65 toc
2659 7.81 toc
2660 7.88 toc
2736 dry
2712 94.92 toc
2709 dry
2657 5.5 toc
2656 6.64 toc
2658 5.51 toc
2661 dry
2662 dry
2663 dry
2664 dry
2669 dry

MS - 7 samples collected
BG - 7 samples collected
SWSC - 7 samples collected
PS - 1 sample collected
BR - 1 sample collected

1250 Crew has completed tasks.

Louie Romero 5/30/2002

10-26-98 Monday

1030 Crew of Louie Romero (ICFKE) and Debbie Risberg (ICFRE) arrive at field trailer. Todays activities include collection of samples from isco samplers and sounding ~~we~~ WR all well levels.

16-2655	9.84	toc
16-2661	dry	
16-2662	dry	
16-2663	dry	
16-2664	dry	
16-2669	dry	
16-2665	dry	
16-~~2~~660	dry	
16-2660	7.71	toc
16-2659	7.63	toc

Martin Spring - 10 samples collected

We were unable to go behind building 260 and upper CDV due to the fact that in bldg 260 Large charge HE was being machined.

230 Crew departs the field trailers.

Louie Romero 5/30/2002

10-27-98 Tuesday

1100 Crew of Elmer Alcon (ICF IRE) and Louie Romero (ICF IRE) arrive at field trailers. Todays activities will be to collect samples from BG, SWSC isco samplers, and sounding well depths in upper CDV. Weather conditions are raining (hard rain) and temperature is ~58°F. ~~The rain~~ It has been raining for 2-3 days.

16-2756 5.5 toc
16-2757 1.4 toc (H2O may have filled into the well from the surface)
16-2758 5.17 toc
16-2712 94.96 toc

BG spring - 12 samples collected
SWSC Spring - 12 samples collected
PS - 1 sample collected
BR - 1 sample collected

The diversion PVC piping is active. Seems to be working effectively.

1230 Crew departs field trailers.

Louie Romero 5/30/2002

11-6-98 Friday

8:20 Crew of Louie Romero (ICF) and Debbie Risberg (ICF) arrive at field trailers. Sky is clear, no wind, ~60°F. Today we will sound all wells and collect samples from iso samplers.

Martin Spring - 11 samples collected.
SWSC Spring - 10 samples collected
BG Spring - 10 samples collected.
PS " 1 sample collected.
BR - 1 sample collected.

16-2665 dry
16-2666 dry
16-2659 6.88
16-2660 6.90
16-2655 7.93
16-2709 dry TD = 14.92
16-2712 93.83 TD = 95.2
16-2736 dry TD = 71.32
16-2700 dry TD = 18.76
16-2657 1.42
16-2656 4.95
16-2658 5.38
16-2668 dry
16-2661 dry
16-2662 dry
16-2663 dry
16-2664 dry
16-2669 dry

Collected 20 1 liter amber samples from ~~dry~~ stream channel. Area is about 10 feet wide. Area is below SWSC. Samples collected below large ~~pi~~ spruce tree.

1230 Crew departs field trailers

Louie Romero 5/30/2002

11-20-98 Friday

1000 Crew of Louie Romero, Deb Risberg, Elmer Acon (all of ICF/KF) arrive at field trailers. Todays activities will be the collection of samples from isco samplers and sounding of wells. A stream profile will be done in COV and will be detailed in another log book

Martin Spring - 11 samples collected; bottle 4 no liquid detected; 1 sample day missed (0.41') RP

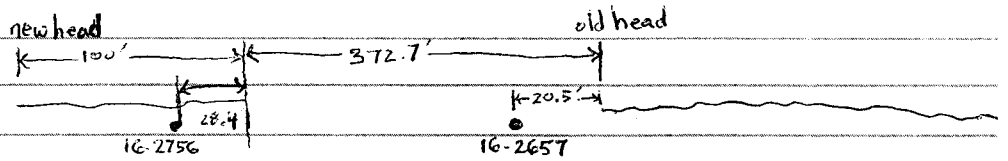
SWSE Spring - 12 samples collected (0.91') RP 1 sample day missed

BG Spring - 12 samples collected (0.82') RP 1 sample day missed

BR - 1 sample collected

PS - 1 sample collected from new head

Peter Seep:



16-2659	7.34'	toc
16-2660	7.44'	toc
16-2658	5.43'	toc
16-2756	28.4'	toc
16-2656	5.4'	toc
16-2657	1.8'	toc
16-2712	93.53	toc

1630 Crew departs field trailers.

5/30/2002

12-3-98 Thursday

1130 Crew of Louie Romero (ICF KE) and Seth McMillan (EES-1) arrive at field trailers. Today we will collect one sample from each spring (SWSC, BG, MS) to avoid missing one sample since all 12 1 Liter bottles filled yesterday. Tomorrow (Friday) I will switch out 12 1 Liter bottles in each sampler.

SWSC Spring - 1 sample collected
BG Spring - 1 sample collected
MS Spring - 1 sample collected.

1230 Crew departs field trailers.

Louie Romero 5/30/2002

12-4-98 FRIDAY

0930 Crew of Debbie Risberg (UCF) and Louie Romero (UCF) arrive at field trailer. Todays activities include collection of samples from the iscosamplers (3) and sounding of wells. Weather conditions: ~60° F, clear skies, no wind.

16-2660	7.68 toc
16-2659	7.61 toc
16-2656	6.05 toc
16-2657	6.38 toc
16-2658	5.42 toc
16-2712	94.94 toc
	SWSC Spring RP = 0.945'
	BG Spring RP = 0.86'
	MS Spring RP = 0.415'
16-2659	4.59 toc

SWSC spring - 11 samples ~~cotted~~ collected 4/30/2002 (no bottle 12 to collect sample)
BG Spring - 11 samples collected (no bottle 12 to collect sample)
M Spring - 12 samples collected

Louie Romero 5/30/2002

This page was not used

Louie Romero 5/30/2002

12-16-98

1010 Crew consisting of D Sharp (ICF KE) & D. Risberg (ICF KE) meet B. Newman (LANL, EES-15) at TA-16 badge office. Today we will install the precip collector at the trailers, a surface run-off collector in CDV below MDAR drainage & collect quarterly water samples. Weather: Clear, crisp & sunny, slight breeze, app. 45° F in the canyon.

1015 D. Sharp calibrates the pH meter. Good calibration.

1100 D Risberg conducts tailgate safety meeting.

1125 Crew heads into Cañon de Valle by the Silver Seep

1155 Peter Seep is completely frozen, no sample collected. B. Newman departs crew.

1200 Sample RE16-98-3072 is collected as well as samples for NMED. Flow is low (app. 1 gpm) & a little turbid. Photos (Roll 7, frames 12 & 13) were taken by D. Risberg looking W & South respectively. - SLOSC spring.

1255 Crew departs for lunch.

1400 Crew returns.

1425 Crew heads into CDV by the silver outfall.

1501 Sample RE16-98-3073 is collected as well as samples for NMED. Burning Ground Spring. Flow is high - app. 5 gpm. Photos (Roll 7, frames 14 & 15 taken by D Risberg looking South. Note: The thermal blanket over the instrumentation was blocking the probe for flow measurements. This will result in incorrect readings for app. 3 weeks. The problem was corrected

1600 Crew departs canyon. 12/16/98 [illegible]

1620 pH meter checked for calibration. Loo good.

1650 Crew departs site.

5/30/2002

12-18-98 Friday

1400 Crew of Louie Romero (ICF) and Elmer Alan (ICF) arrive at field trailers. Today's activities will be to collect samples from the iswo samplers.

RP=0.415 Martin Spring - 12 samples collected (2 days missed) start sampling today

RP= 0.88 BG Spring - 12 samples collected (2 days missed) start sampling tomorrow

RP: 0.95 SWSC Spring - 12 samples collected (2 days missed) start sampling tomorrow

Peter Seep is frozen: unable to collect Peter Seep or Big Rock.

1530 Crew departs field trailer.

Louie Romero 5/30/2002

12-24-98 Thursday

1000 Crew of Louie Romero (ICF) and Debie Risberg (ICF) arrive at field trailer today we will collect the samples from the isco samplers located at the 3 springs.

SWSC spring - 9 samples collected
bottle 4, 5, 6 - no liquid detected
RP = 0.97 feet

BG spring - 12 samples collected
RP = 0.89'

Martin Spring - 12 samples collected
RP = 0.415'

1200 Crew departs field trailer

5/30/2002

01-06-~~98~~ 99 LR

1000 Crew: Louie Romero (LR) and Debbie Risberg (DR) arrive at field trailer. Today we will sound all wells and collect samples from springs (1500).

Martin Spring - 12 samples collected
BG Spring - 12 samples collected
SWSC Spring - no samples taken due to dead battery
PS - no sample taken due to frozen stream
Big Rock - no sample taken due to frozen stream

16-2665 dry
16-2666 dry
16-2668 dry
16-2661 dry
16-2662 dry
16-2663 dry
16-2664 dry
16-2669 dry
16-2655 7.24 feet toc
16-2656 6.32 feet toc
16-2657 casing cap is packed in frozen bentonite ~~casing it~~ preventing it from being opened LR 5/30/02
16-2658 5.64 feet toc
16-2659 6.93 feet toc
16-2660 6.84 feet toc

1330 Crew departs field trailer

Lou Ro 5/30/2002

05/13/1999

PRESSLER CLOTH SAMPLING -

1030 1st SAMPLE APPROX 30' UPSTREAM OF UPPER CROSSING PART DRAINAGE

N 35° 48' 51.2" ALT ~~5050~~ 6600' (?) (GPS LOCATION
W 106° 21' 39.2"

1110 2ND SAMPLE - ~~FC~~ FC-2 ~ 1mi DN DRAINAGE FROM UPPER
CROSSING - FC-1 + 1mi = FC-2

GPS LOCATION N 35 48 33.5 ALT. ~7000
W 106° 21' 00.3"

1140 3RD SAMPLE - FC-3 - ~ 3/4 + 1mi DN DRAINAGE F
FC-2 AT JUNCTION OF A SMALL CANYON - OPEN WATER -
INTERSECTS DN DRAINAGE FROM FC -
FC-2 + ~1mi = FC-3
N 35° 48' 19.8" ALT. (?) 6900'
W 106° 20' 10.2"

1150 4TH SAMPLE - FC-4 - COLLECTED DN PRESENT CHANNEL
PART INTERSECTS FC AT PRIOR FC-3 SAMPLE LOCATION -
COLLECTED FROM PRIOR CROSSING PRIOR TO PRIOR SOIL CHANNEL
~ 200' ABOVE FC - FLOWING AT 1L/MIN MAX

1223 5TH SAMPLE - FC-5 - COLLECTED AT INTERSECTION OF
DRY, ABANDONED FC - W/ ACTIVE FC CHANNEL
W/ TRIBUTARY - NO GPS SIGNAL - ~ 1mi
DN DRAINAGE FROM FC-3 AND FC-4
FC-3/4 + 1mi = FC-5

N 35° 48' 18.1" } ??
W 106° 19' 56.0"

1320 6TH SAMPLE – FC-6 – COLLECTED AT CONTINENTAL CONT
BREAKS – ~ 1.5 MI. ON BEARING FROM PC-5
PC-5 + 1.5 MI = FC-6.

N 35° 47' 18.9" ALT 5300.
W 106° 17' 08.9"

1345 7TH SAMPLE – FC-7 – COLLECTED ON UPSTREAM SIDE
OF VISTA CONTL BREAKS – ~ 1 MILE ON ~~[illegible]~~
BEARING FROM PC-6 – FC-6 + 1 MI. = FC-7

N 35° 46' 45.8" ALT. 5790.
W 106° 16' 16.0"

5/30/2002 Louie Romero

01-27-99

1030 Seth McMillan (EMER) and Louie Romero (ICF) arrive at field trailers. Today we will sound wells and collect isco sampler samples. Temp approx 45°F no wind, clear sky

Martin 12 samples collected RP 0.42'
SWSC 12 samples collected RP 0.93'
DG 12 samples collected 0.87
PS No sample, frozen
BR No sample, frozen
16-2665 dry
2666 dry
2668 dry
2660 6.38 toc
2659 6.10 toc
2655 9.56 toc
2661 dry
2662 dry
2663 dry
2669 dry
2664 dry
2656 6.37 toc
2657 packed in frozen bentonite, unable to open
2658 5.5 toc
2712 dry

1230 Crew departs field trailers.

5/30/2002

020899 Monday

0945 Lou Romero (IC&Kinsch) and Debbie Risberg (IC&KE). Today we will collect isco samplers and sound all wells.

MARTIN SPRING - 12 samples collected; 0.41 feet RP
SWSE - 12 samples collected RP = 0.18
BG - 12 samples collected RP = 0.89
PS - no sample taken because it is frozen
BR - no sample taken because it is frozen

16 2665 dry
16 2666 dry
16 2668 dry
16 2655 9.61 toc
16-2660 6.66 toc
16 2659 6.80 toc
16 2656 6.41 toc
16-2658 5.59 toc
16-2657 is packed in frozen bentonite unable to check water level
16-2661 dry
16-2662 dry
16-2663 dry
16-2664 dry
16-2669 dry

1245 Crew departs field trailers.

Lou Romero 5/30/2000

02/19/99 Friday

Crew of Louis Romero (ICF) and Debbie Rickery (ICF) arrive at field trailers. Today we will sound wells and collect the samples from the isco samplers.

16-2655	9.61 toc
2661	DRY
2662	DRY
2663	DRY
2664	DRY
2669	DRY
2659	6.86 toc
2660	6.73 toc
2666	DRY
2665	DRY
2668	DRY
2656	6.20 toc
2658	5.62 toc
2657	frozen in bentonite
2712	dry

Peter Seep is located 21 feet east of 16-2657

one sample taken in a 125 ml

Big Rock - one 125 ml sample taken

MS - 11 samples collected ~~0.45 = RP~~ LR 5/30/02 0.41 = RP

BG Spring - 11 samples collected ~~0.88 = RP~~ LR 5/30/02 0.86 = R

SWSC Spring - 11 samples collected ~~0.88 = RP~~ LR ~~0.45 = RP~~ LR 5/30/02 0.94 = R

Louis Romero 5/30/02

022699 Friday

930 Crew of Donna Sharp and Louis Romero Arrive at field trailers.
Today we will sound wells, collect isco samples, and flagging the stream profile locations for surveying.

16-2665	dry
2666	dry
2668	dry
2660	6.70 toc
2659	6.82 toc
2655	9.62 toc
2656	6.40 toc
2657	frozen in bentonite
2658	5.01 toc

PS is still at the same location as last week; one 125 ml sample collected
MS no samples collected due to lose connection on isco sampler which caused a power failure
BG no samples collected due to lose connection on isco sampler which cause a power failure
SWSC 8 samples collected

1400 Crew heads to head waters of PS. Flag is placed ~~in~~ near sample location LR 5/30/02

1530 Crew leaves field trailers.

LRomero 5/30/02

030598 Friday

1000 Crew of Louie Romero (ICF) and Debbie Risberg (ICF) arrive at field trailers

Today we will sound all wells, replace broken isco samplers.

Martin Spring - replaced broken isco sampler, set it to sample every 4 hours starting today. RP = 0.41 feet

BG Spring - replaced broken isco sampler, set it to sample every 48 hours starting today RP = 0.89 feet

SWSC - nothing done RP = 0.95 feet

PS - took one 125 mL sample. The current head of PS is approximately 21 feet east of well 16-2657

BR - no sample taken since head of PS is below outfall.

16-2659	6.94 ft	toc
16-2660	6.86 ft	toc
16-2655	9.62 ft	toc
16-2656	6.39 ft	toc
16-2658	5.58 ft	toc

1200 Crew departs field trailers

Louie Romero 5/30/02

031299 Friday

1000 Crew of Lucie Rompre (ICF) and Debbie Risberg (ICF) arrive at field trailers. Activities will include sounding of all wells and collection of 1520 samples.

SWSC Spring - collect 7 samples RP: 0.95 programmed to start 3/13 every 48 hours
BCa Spring - collect 4 samples RP: 0.87 programmed to start 3/13 every 48 hours
MSpring - collect 4 samples RP: 0.4 programmed to start 3/13 every 48 hours
Peter Seep (PS) collect one sample
Big Rock (BR) no sample collected because PS is below outfall
~~16-2665~~ LR
16-2655 6.62 toc
16-2656 6.38 toc
16-2658 5.52 toc
16-2665 dry
16-2666 dry
16-2668 dry
16-2661 dry
16-2662 dry
16-2663 dry
16-2664 dry
16-2669 dry
16-2709 dry
16-2712 dry 16-2700 dry
16-2736 dry
1400 crew departs field trailer.

Lucie Rompre 5/30/02

031999 Friday

1000 Crew of Irene Romero (ICF) and Debbie Risberg (ICF) arrive at field trailer
Today we will sound wells.
16-2655 9.63 toc
16-2656 6.33 toc
16-2658 5.48 toc
16-2659 6.59 toc
16-2660 6.29 toc
PS - one 125 mL sample collected
1230 crew departs trailer.

5/30/02

3-22-99

Today activities: Quarterly Sampling of CDV springs, CDV Alluvial wells & Martin springs.
weather: clear, windy from N. 60°F.
SOP crew will be operating under. 6.01 Purging of wells for Rep Sampling of ground water, 6.11 Surface water Sampling., 7.02 Fluid level measurements

800 crew arrive at office and organize sampling actions.
~~830~~ Today crew will consist of E. Alcon, D. Bazzell, D. Sharp & D. Lyons (ICF Kaiser).
830 D. Bazzell & E. Alcon depart office for field trailers, and to inform TA-8 staff of access from TA-15.
900 arrive at TA-8, speak with Manny Lopez. Crew needs to receive TA-15 training & establish an ES&H Hazard screening paperwork for 1999 calendar year. Crew begins paper work needed and required signatures from facility manager, contact people and signature are: Mike Demaria, Manny Lopez, Tom Robinson, & Ernie Vigil.
945 D. Sharp & D. Lyons arrive on-site field trailers
946 crew will not be able to collect CDV & Fishladder confluence Due to TA-8 & TA-15 hold ups.
1016 crew conduct Tail gate safty meeting and calibrate Temp, cond & ph meter
1030 crew ~~mobilize~~ 3-22-99 mobs equipment & supplies for sampling.
D. Bazzell will remain at field trailer as support.
1035 crew departs for Alluvial well 16-2659 below MDA-P.
1059 crew arrive at 16-2659, the last alluvial well in CDV.
1100 DTW = 6.40', TD 10.15', SW 3.7' ft.
7.2 gallons of water will be purged and sample will then be taken. Roll 1 photo 1 & 2 action shots
1110 Sample RE16-99-3008 & 09 collected: field analysis = Conductivity 150 pH = 7.0 & Temp = 4°C. Water is clear to slightly turbid. photo # 3, Roll 1.
1130 Crew secure location and depart canyon bottom.
1135 Crew arrive back at field trailers and break for lunch.

5/30/02

3-22-99 con't

1300 crew back from lunch. afternoon sampling will consist sampling Martin spring, 90's line pond, & 16-2655

1305 D. Lyons & D. Sharp will collect sample from 16-2655, & Silver Silver seep outfall dry no running water.

1315 crew will hike down in Martin canyon to collect Martin sp

1335 Sample RE16-99-3010 & 3011 collected. Field analysis: Temp 10°C, pH 6.9, & Cond. 310, clear and no odor detected. water flow is low. Roll 1 & pho

1406 Sample RE16-99-3026 & 3027 collected from 90's line po field analysis: Temp. 23°C, pH 7.6, & Cond. 50. Water = and no odor detected. Roll 1, photo 6 & 7.

1415 Recharge from Alluvial well is slow. (16-2655) unal to collect a sample. crew will let well recharge over then collect sample.

1430 Crew will prep ~~sa~~ collected samples and ready for shipping on 3/23/99, labels & COC will be called in and ready for tomorrow

1600 Crew completes packaging of samples.

1605 Crew Secure field trailer and depart for o

5/30/2002

3/23/99
Today's activities: Continued Quarterly Sampling of CDU springs, CDV alluvial wells, & sample packaging.
Weather: Clear to slight over cast 50-55°F
SOP's for today will be. SOP 6.01, 6.11, & 7.02
830 Crew: E. Alcon, D. Sharp, L. Romero, D. Lyons & D. Bazzell (ICF Kaiser) arrive on site. Earlier E. Alcon & D. Bazzell pick up signed ES&H Hazard screening from TA-8
Crew is now ready to proceed down into canyon from TA-15.
845 D. Sharp Calibrates Temp, pH, & Cond. meter and are ready.
930 Samples RE16-99-3008, 3009, 3010, 3011, 3026 & 3027, submitted to SMO, D. Sharp & D. Lyon pick up COC's & Electronic follower from CDM. at Pueblo bldg.
950 Crew Mobs equipment & supplies, check with building 16-200
1040 Crew pro form trail gate safety meeting,
1041 Crew departs for CDU bottom to be accessed from R-25 drilling operations.
1110 Crew arrive at Alluvial well 16-2656
1111 16-2656 = TD 10.6', DTW 6.35', & SW 4.25'
2.07 gallons of water will be purged.
1119 Sample RE16-99-3002 & 3003 collected from 16-2656
field analysis: Temp 5°C, pH 6.5, & Cond. 150.
Roll 1, photo 8.
1140 Crew moves to Alluvial well 16-2657, crew clears out excess bentonite, from well.
1143 Alluvial well 16-2657 = TD 5.45', DTW 3.65', & SW 1.8'
3.53 gallon will be purged.
1155 Crew has purged well and is slow to recharge. Crew will let sit over lunch and check later for recharge
Crew will move over to SWSC spring for sampling.
1156 Sample RE16-99-3013 & 3012 collected from SWSC spring
field analysis: Temp 10°C, pH 7.2, & Cond 150. Water is clear, low flow. Roll 1 Frame 10.
1215 Crew is out of CDU bottom and will break for lunch.

5/30/2002

3/23/99 cont'd

1300 Crew will continue to Sample CDU springs & Allu wells.

1310 Crew has just been pulled off Quarterly Sampling to collect 24 liter amber from CDU stream flow.

1330 crew mob for new sample collection.

1340 Crew departs field trailer for CDU. E. Alan & L. R prep Quarterly samples RE16-99-3002 & 3003, RE16-99-3

1400 Crew hikes down into CDU bottom from R-25 drill operation.

1430 Crew collects 24 liters of stream flow.

1450 Crew back at field trailers and begin to prep and wrap 24 liters.

1510 Crew completes prepping samples

1515 D. Sharp & D. Lyons depart site for office. they will call in COC's to CDM for sample submittal of RE16-99-3002, 3003, 3012, & 3013 tomor

1530 Remainder of Crew will clean up site get HE release slip.

1545 HE slip aquired from TA-16 rep. (Leonard Mares)

1550 Crew departs field trailer for office, there crew will secure 24 liter sample for shipping tomorrow

1610 Crew arrives at office

5/30/2000

3-24-99
Today's activities: Continued Quarterly Sampling of CDV springs & Alluvial wells
SOP's in use: 6.01, 6.11, & 7.02.
Crew: E. Alan, D. Sharp, D. Lyons, L. Romero, & D. Bazzell
900 weather clear, no wind 60°F, crew arrive at field trailer
905 Crew mob's equipment and supplies for continued sampling
930 D. Bazzell will deliver samples RE 16-99-3002, 3003, 3012, 3013 to SMO, crew has verified paper work and containers
945 Crew Calibrate Temp, pH, & cond. meters.
950 Crew conduct tail gate safety briefing.
1000 D. Bazzell departs field trailer, remainder of crew will hike down into canyon bottom from R-25 drilling operations.
1020 Crew arrive at Alluvial well 16-2657, resounded well and well has not recharged sufficiently to sample. Crew will leave bottle sets down next to well and check and possibly sample next monday on the 3-29-99
1030 Crew collected sample RE16-99-3016 & 3017 from Peter seep. current location of seep is 21' from 16-2657 down gradient very low flow from seep. field analysis: Temp 6°, pH 7.8, & Condu 150. Roll 1, photo 11, water clear, no odor detected
1036 Crew collected sample RE16-99-3014 & 3015 from Burning ground spring. flow currently @ approx. 10 gpm. Temp 9°, pH 7.8, & cond. 160. Roll 1, photo 12, water clear.
1100 Crew begins sampling at Alluvial well 16-2658. well sounded at 5.5', TD= 10.15, SW= 4.65, 9.12 gallons to purge
1110 After purging 5 gallon, recharge has slowed down, crew will collect samples after 5 gallon.
Sample RE16-99-3006 & 3007, collected, Field analysis:

pH	7.4	7.4	7.4
cond.	110	110	130
Temp	4	4	3

Roll 1, Frame 13
water: clear to slighty turbid, grayish in color.
1115 crew will begin to hike out of canyon bottom for field trailer.

5/30/2002

3-24-99 cont.

1130 Crew arrive at field trailers and secure sa

1135 Crew depart for Company noon meeting.

1315 D. Bazzell & E. Alcon will return to field trailer - prep collected Samples for submittal. L. Romero & D. Dhart will remain at office to process C & Electronic follower from CDM. L. Romero will met us at SMO with paper work.

1330 D. Bazzell & E. Alcon arrive at field trailers, and begin to prep samples.

1530 Samples RE16-99-3000, 3001, 3006, 3007, 3014, 3015, 3016 will be submitted to SMO.

1539 Crew departs for SMO with Samples.

1600 Samples delivered to SMO.

1615 Crew departs SMO. for office.

5/30/99

03 26 99 Friday

1000 Crew arrives at field trailer. Today Louie Romero (ICF) and Elmer Alcon will sound wells, and collect a Peter Seep Sample.

Peter Seep (PS) - One 125 mL sample collected.

PS head is still located ~21 feet east of 16-2657

~~6.38~~ LR 5/30/02

16-2656 6.38 toc

16-2657 5.31 toc sounded after quarterly sampling, not up to static

16-2658 5.40 toc

16-2655 4.70 toc

16-2659 6.40 toc

16-2660 6.29 toc

1200 Crew departs field trailers.

Louie Romero 5/30/02

3-31-99

Today's activities: continued Quarterly sampling of CDU wat
Sample locations to be collected are Confluence of Fish
Canyon and CDU. Also the headwaters location. SOP's
which will be used today are: 6.11- Surface water
sampling. Today's crew will consist of D. Bazzell, E
& L. Romero (ECF). Weather Partly cloudy, wind from N.E. 20-30,

815 Crew depart office for TA-16 & TA-8

830 Crew arrive at TA-8 to sign in and notify Facil
of our sampling activities down in CDU.

905 ~~840~~ 3.31.99 Crew arrive at TA-16 field trailers.

920 Crew mob equipment and supplies need to sample co

945 Crew conduct Tail gate safty meeting. D. Bazzell will
remain at field trailer in support mode.

1000 Field team members will hike down into canyon bottom
from TA-15

1040 Field Team arrive at Canyon bottom and hike up
drainage channel to confluence.

1050 Crew arrive at Confluence. Both Fishladder & C
Stream drainages are dry. No sample will be colle
Roll 1 Photos 15-19 were taken to show no flow, c
vegitation (shrubs & trees) are extreamly dry, field team
was able to easily remove pine needles from trees.

1100 Field team begin hike out of Canyon bottom.

1150 Field team arrive back at truck and will wait for
RCT Screening for TA 3-31-99 and released from site.

1215 Field Team arrive back at field trailers and break for lu

1300 Field team depart for headwater.

1410 Field team arrive at Headwaters sample location.

1415 Sample R5116-99-30~~23~~22 & 30~~24~~23 TA 3-31-99 collected, Clear, continous flow, no odor.
Conductivity 20, pH 9.0, 1°C. Roll 1, Frame 20 & 21. In addition
to collecting the sample, the field team also marked the loca
with wooden lathe and flagging.

:25 Field Team depart for field trailer to prep samples for submitt
Crew back at trailers, to be prep of sample containers.
Crew submitt Sample to SMO, Promblems with COC & labels.
:50 Crew depart for Office.

5/30/02

04 06 ~~98~~ 99 ~~Friday~~ LR Tuesday

1000 Crew of Louie Romero (ICF) and Debbie Risberg (ICF) arrive at field trailers.
Today's activities are the collection of samples from the autosamplers located at the springs, and sounding of wells.

16-2665	122.40	toc	td = ~129.8
16-2666		dry	td = ~95.15
16-2668		dry	td = 198.60
16-2660	6.02	toc	
16-2659	6.30	toc	
16-2658	5.31	toc	
16-2656	6.16	toc	
16-2657	4.51	toc	
16-2655	3.69		
16-2669		dry	
16-2664		dry	
16-2661		dry	
16-2662		dry	
16-2663		dry	

Martin Spring - 12 samples collected, sampler programed to begin today RP = 0.41
SWSE spring - 6 samples collected, sampler began on 3/23 due to low power supply RP = 0.95
BG Spring - 8 samples collected, low power supply (3/29 lost power) RP = 0.8
Peter Seep - One 125 mL sample collected. PS is still 21 feet east of 2757.

1200 LR ~~200~~ Crew departs field trailers.

Louie Romero 5/30/02

4-8-99

Today's activities: Field Team will sample well 16-26665. a water sample; well 16-26665 is located just west of building 16-344 accessable by a dirt road leading right to the well. weather is cold 30°-40°F with wind from the West @ approx. 25-35 mph.

SOP's to be used today are 6.01 - Purging of wells for Representative Sampling of Ground water & 6.02 Field Analytical measurements of Ground water Samples. SSHasp 153.

800 Crew assembles at ICF Offices, and discuss options on analysis and sampling methods.

830 Crew: E. Alcon & L. Romero (ICF Leader) depart office to pick up collection logs and then head out to TA-16 field trailers.

930 Crew arrive at field Trailers.

935 E. Alcon conduct tail gate briefing.

940 Crew moves equipment and supplies.

950 Crew arrive at 16-26665, and sound well. water level is curr at 112.51'. Crew begins bailing well with a stainless steel bo

1000 crew begin taking sample. AnWQ, Bicarb, DZHT018016, Hexgf Hexp, Metals tB, Tuicpms, Voagcms will be sent off to the la Field analysis will include; BA, BR, D Tech - RDK & TNT, Electric Conductivity, pH, & Temp.

1010 Crew deviated from SOP 6.01 due unknown characteristics of and did not bail the required 3 bore volumes.

1012 well sounded at 124.51' just after sampling.

1022 well sounded again at 120.32', good recharge.

1025 Sample RG 16-99-3028 will be submitted as an analytical sample, water clear to slightly turbid, BA-16ppm, RDX+ TNT <5 ppb, Cond.-370, pH-8.0, Temp-9°C.

1035 Crew will call Leonard Maes for Sample Release from TA-16

1050 Crew on stand by ~~wit~~ 4-8-99 waiting on HB Sample release.

1130 depart site for SMO, and secure trailers

1330 Samples turned over SMO.

1400 Crew depart for office.

5/30/02

04 09 99 FRIDAY

1000 Crew of Louie Romero (ICF) and Elmer Hixon (ICF) arrive at field trailers. Today's activities are sounding of all wells, check run-off sampler below MDA-R, and collect a sample from Peter Seep.

Temp ~ 55°F, wind ~ 10-20 mph from the west, no clouds

16-2659	6.31	toc
16-2660	6.00	toc
16-2665	110.6	toc
16-2666		DRY
16-2668		DRY
16-2655	3.57	toc
16-2669		DRY
16-2661		DRY
16-2662		DRY
16-2663		DRY
16-2664		DRY
16-2700		DRY
16-2736		DRY
16-2712		DRY
16-2709		DRY
16-2756	6.05	
16-2757	4.91	
16-2758	5.35	

Peter Seep one 125 mL sample collected at 1100 04/09/99

PS head is still approx 21 ft ~~west~~ east of 16-2757

Run Off sampler had a sample, so collected 50 mL of RO sample

Louie Romero 5/30/02

4/16/99

0915 Crew is Debbie Risberg (IT) and Dale Lyons (IT). Today's activities include sounding wells and collecting water samples from Peter's Seep and RO, bailer MDA-R
Temp ~30°, light breeze, few clouds

16-2666 DRY
16-2665 DRY
16-2659 6.72' TOC
16-2660 6.55' TOC
16-2668 DRY
16-2655 4.15' TOC
16-2661 DRY
16-2663 DRY
16-2662 DRY
16-2664 DRY
SWSC 16-2700 DRY
16-2709 DRY
16-2736 DRY
16-~~2656~~ 2756 DR 4/16/99 6.22' TOC
16-~~2657~~ 2757 DR 4.75' TOC
16-~~2658~~ 2758 DR 5.50' TOC
Seeps 16-~~2757~~ 2712 dry
16-2669 DRY

Battery at SWSC was dead.
Peter Seep began 21' EAST of 16-2757.
No sample in ~~2-25~~ RO
MDA-R DS 5/17/99

Debbie Risberg

4/16/99 ~~SOP's Applicable to Sampling Activities~~

This page was not used LR 5/30/02

4/16/99

1145 Sampling Crew Consisting of Randy Johnson, Dale Lyons And Russ Johnson Arrive A Site

1220 Russ Conducts Tail Gate Safety Meeting.

1230 Crew Departs Site to Pick up Key

1250 Crew Back on Site Loading Equipment.

1308 Crew Enters CR2.

1320 Crew Begins Filling Drums With 2600 Pond Soils And Collecting Waste Characterization Samples From The Drums. Samples Are Composits From one Foot lifts Within Each Drum. There Are visible Red And Tan (HE?) Horizons in the Collection Area Approximatly 15' East of MW16-2700. Each Drum is Filled With Soil From An Area 4' x 4' x 12" Deep

1355 Filling of Drums is Complete, Crew Heads Down Drainage to Find Site ID 16-1392 And Collect REIG 99-4000.

1420 Sample Has Been collected, Crew Heads to CR2.

1450 Crew Exits CR2.

1500 HE Spot Test of ~~SPA~~ RS Samples is Positive, Also our Gloves And Dale's And Russ's Boots Are HE Positive. The items will Be Left on Site.

1530 Crew Departs Site Headed For Office.

R Johnson 5/30/02

4/16/99

1030 Randy Johnson and Delwright Bazzel arrive at TAIC to prepare samples and run DTECH screening. SOP's applicable to todays activities are listed on pg 61.

1055 Randy leaves site to pickup Russ Johnson

1355 Samples have been package, DTECH analysis completed. Russ Johnson has arrived on site (1115) to help

1400 Randy and Russ head to SMO

1440 Randy and Russ have delivered samples RE16-99-4000, -4001, -4002, -4003, and -4004 to the SMO under COC# 1082-99-5000 for a 5 day turn around.

Summary of samples collected from PRS 16-021(c) on Friday 4-16-99:

Sample #	Site ID	Time	RDX	TNT
RE16-99-4000	16-1392	1412	185.64	64.61
-4001	NA Drum #1	1330	282.10	352.17
-4002	NA - Drum #2	1335	273.00	309.4
-4003	NA - Drum #3	1340	251.16	339.43
-4004	NA Drum #4	1350	256.62	297.57

Samples RE16-99-4001, -4002, -4003 and -4004 were collected from drums containing soil from the 260 pond.

1525 Randy escorts Russ off site.

1540 Randy and Delwright depart site head to IT office.

R Johnson 5/30/02

4/21/99

1545 Randy Johnson and Russ Johnson arrive at tailgate to collect encore samples from drums containing 2600 lb pond soil. SOP's for todays activities are listed on page 60.

R3 1615 Russ completes tailgate safety

~~1630~~ 1430 Crew enters CRZ.

1645 ~~1445~~ Crew opens drums, allowing the drums to vent for five minutes, PID is not operating. Weather: overcast, light drizzle cool 60°F, light S breeze

R3 1655 ~~1455~~ Collection samples from drums

1730 ~~1530~~ Sampling completed, drums are sealed.

1800 Crew exits CRZ.

Sample Summary

Sample #	Site ID	Date	Time
REIC-99-4005	Drum #1	4/21/99	1700
-4006	Drum #2	4/21/99	1710
-4007	Drum #3	4/21/99	1715
-4008	Drum #4	4/21/99	1720

1825 Samples have custody seals and are placed in freezer.

1630 Crew exits site. Headed for IT office.

R Johnson 5/30/02

4/22/99

RANDY JOHNSON SUBMITTED SAMPLES
REIG-99-4005, -4006, -4007, AND -4008
TO THE SMO UNDER COC# 1082-99-5001
FOR VOCENCORE ANALYSIS - 5 DAY
TURN AROUND.

R Johnson 5/30/02

4/23/99

10:00 Crew of Debbie Rasberg (LIT) and Dale Lyons (LIT).
Today's activities involve sounding all wells, changing all batteries; check run-off samples below MDA-R, and collect a water sample from Peter Seep.
Temp = ~45°, windy, overcast

16-2663 dry
16-2660 6.85' TOC
16-2659 6.95' TOC
16-2665 dry
16-2666 dry
16-2668 dry
16-2736 dry
16-2700 didn't sound - area is HE-contaminated
~~16-2700 dry~~ DR 4/30/99
16-2735 dry
16-2656 5.25' TOC
16-2657 4.60' TOC
16-2658 5.50' TOC
16-2655 4.88' TOC
16-2669 dry
16-2664 dry
16-2661 dry
16-2662 dry

Martin Springs: RP = .39'; changed battery
SWSC Springs: RP = .89'; changed battery (collected
BLE Springs: RP = .87'; changed battery
TOK sample at Peter Seep, which begins 21' east of

Debbie Rasberg

5/30/02

4/30/99

9:50 Crew of Debbie Risberg (IT) and Dale Lyons (IT). Today's activities are sounding all wells, switch out Isco water samples, take a water sample at Peter Seep, and check run-off sampler below MDA-R.
Weather is completely overcast, drizzly, foggy!
Temp = 60°F Wind = none

16-2659 6.5' TOC
16-2660 6.35' TOC
16-2665 126.1' TOC
16-2664 dry
16-2663 dry
16-2736 dry
16-2709 dry
16-2712 dry
16-2656 6.1' TOC
16-2657 4.45' TOC
16-2658 5.05' TOC
16-2655 3.15' TOC
16-2661 dry
16-2662 dry
16-2663 dry
16-2664 dry
16-2669 dry
16-2700 didn't sound - contaminado

Martin Springs: RP=0.38'; took out samples; set program to start 4/
SWSC Springs: RP=0.94'; took out samples; set program to begin 4/3
BG Springs RP=0.87'; took out samples; set program to begin 4/
Took Peter Seep Sample.
Peter Seep begins 21' east of 2657.

DRS

5/30/02

~~Sweet for SOR List~~ 5/30/02 LR

This page was not used.
Louie Romero 5/30/02

5/7/99

0900 D Sharp & D Risberg (IT group) arrive at TA-1 trailers. Todays activities include returning soil from drums 1, 2 & 3 back onto ponded area at IL-~~260~~-021(c). DS 5/7/99 We will also take discharge measurements (stream profile) in Canon de Valle. We will follow SHASP 59 for the soil return and SHASP 153 for the stream Profile work.

0921 D. Risberg conducts tailgate safety meetings for work at PRS IL-021(c). We will conduct another after we return.

0950 ~~Crew enters CRZ.~~ DS 5/7/99

0957 Golf cart has dead battery. Crew needs to find a new one. Skalski has one.

1020 Crew departs site for search of new battery

1215 No battery for golf cart found. Crew decides to take all decon equipment in back of pick up and dress out there.

1225 Crew breaks for lunch –

1320 Crew arrives back on site. Todays weather is breezy, partly cloudy, app. 63° F.

1415 Crew signs access control log, enters exclusion zone (IL-021(c)). D Sharp is Level 1 SSC, D Risberg is FTL. Proceed to return soil to pond.

1440 D Barrel arrives outside of exclusion zone to give wrench to crew.

1530 Crew departs EZ.

1600 Crew departs site.

Roman M Sharp 5/7/99

[redacted]

~~Saved for SOPs~~ LR 5/30/02

This page was not used
Louis Romero
5/30/02

5/10/99

Today's activities: D. Sharp & D Risberg (ITGroup) will collect discharge measurements for stream profile in Martin Spring Canyon (six locations
Todays weather: Breezy, partly cloudy, app. 60° F. We will be working under SHASP 153
1015 Tailgate Safety meeting conducted by D Sharp FTC.
1045 D Sharp callibrates pH & conductivity instruments. Everything looks good.
1100 Crew takes lunch before entering canyon.
1155 Crew enters canyon.
1234 Station 6, location ID , No flow but water is present. Lots of green algae. turbid. No measurement taken.
Location description: At the bottom end of K-site wetland, lot of cattails & grass. There is a defined stream channel.
pH = , cond = , temp =
1245 Station 5 , location ID = , Again water is present but still, no discha measurement taken. Water is turbid no algae. This station is located at the upper end of the K-Site wet Defined stream channel.
pH = , cond = , temp =
1300 Station 4, location ID , Water pre but no flow. No measurement made Algae is present again, but brown in color and not as much of it as the algae at Station 6. Location: upstrea app. 1500' from Station 5 out of wetland, defined stream channel.
pH = , cond = Temp =
1302 Call from P. Gram to come back to office. Will finish this profile later
1330 Crew departs site. — Donna H Sha 5/30/02

~~Saved for SDP list~~ - WR 5/30/02

This page was not used.

Luis Romero
5/30/02

5/11/99

Todays Activities: Crew consisting of D Sha SSO, Dale Lyons, FTL, D Risberg, & L. Ro ~~[illegible]~~ DS 5/11/99 (IT Group) will collect 3 55 gal. drums of soil at PPS 16-021(c) for feasability study. These drums of soil will be collected below the "pond" and rock dam. We will do this during the lunch hour when there is no machining at Bldg. 16-260. Soil collected should have few rocks. We will follow SHASP 59, mod 05 for this task. This is a HAZWOPER Site. Todays Weather: Breezy, cool, cloudy w/ light rain, app. 57° F.

1100 Crew arrives on Site. D. Barrel will stay outside EZ. Prepare for soil collecti

1115 Tailgate safety meeting conducted by D Sha SSO. Special Hazards topic, HE & slips trips & fa

1130 Crew enters CRZ.

1145 Crew arrives at 16-021(c). Drum 1: soil collected app. 15-25 ft ~~from~~ DS 5/11/99 down drainage from rock dam. Drum 2: soil collected app. 20' down from Drum 1. & Drum 3 soil collected app. 30' down from Drum 2.

1220 Crew finished collecting soil. Loads drum liner bags full of soil from pipe dope spill back in early fall onto golf cart trailer per the request of P. Gram.

1230 Crew arrives back at trailer. PPE decon. D Sharp and D Risberg will be back at 1700 to collect three samples (one from each barrel).

1255 Crew departs site.

1608 D Sharp & D Risberg arrive at trailers to collect samples from drums. We will

Louie Romero 5/31/02

5/11/99 (cont.)

use shelby tubes to take representati
Samples from the drums.

1710 Crew enters CRZ.

1745 Sample RE16-99-4009 collected from
Drum 1 (closest to rock dam) Sample wil
be analyzed for HEXP, ISOU, METT
METTCLP, SEMI, & VOCs & Gross A, B
Soil is sandy w/ intermediate silts & cla
organic rich (pine cones) & tuff gre
dark brown in color & moist. 2 al
of clean sand are collected for a R
blank because we are using the o
Samplers. This does not have a sam
yet, but it will be a 2000 #.

1802 Sample RE16-99-4010 collected from F
#2 app. 20' down drainage from Drum
See Sample RE16-99-4009 for sample i

1810 Sample RE16-99-4011 collected from
Drum #3 app. 30' down drainage f
Drum #2. See 4009 for sample info

1840 Crew signs out of CRZ. Everyth
is deconed (bottles, bowls, PPE.)
the wooden handle of the show
& the shelby tube samplers.

1845 Crew departs site.

Donald Sharp 5/30/02

5/12/99

Today's activities: to package, screen & deliver samples to SMO & TA-21. (REF: 99-400
Today's weather: slight breeze, clear & sunny, ax
app 58° F.

0900 D Risberg & D Sharp arrive at trailer to package samples. D Bazzel is screening samples using D-Tech RDX & TNT Kits. All samples (4009, 4010, & 4011) are HE Spot test positive.

1145 Samples delivered to SMO.

1200 Three samples taken to TA-21 for rad analysis.

1430 Blanks delivered to SMO.

DRS 5/30/02

5/14/99

10:40 Debbie Risberg and Dale Lyons (IT) to sound wells, ~~and~~ or to check batteries, to take a sample from Peter Seep, and to check run-off sampler below MDA R.

Temp = 65° F, 15-20 mph, ~~from~~ to NW DR 5/14/99

14-2659 6.25 ft TOC
16-2660 dry
16-2665 dry
16-2666 dry
16-2668 dry
16-2700 contaminated area
behind 260 { 16-2736 dry
16-2709 dry
16-2712 dry }
16-2656 5.2 ft TOC
16-2657 3.9 ft TOC
16-2658 5.5 ft TOC
16-2655 3.95 ft TOC
16-2661 dry
16-2662 dry
16-2663 dry
16-2664 dry
16-2669 dry

BG and SWSC batteries running; 8 samples in
MS battery dead; 8 samples in sampler. RP = 5
Will change out MS battery early next week
No sample in MDA-R runoff sampler.
Collected a sample (125 mL) from PS, which still begins 21' east of 2657.

Debbie Risberg 5/14/99

5/18/99
Today's Activities: Take Discharge Measurements in MSC.
1250 Crew arrives at TA-16.
1305 D Lyons calibrates pH & Conductivity meters.
1310 D Sharp Conducts tailgate safety meeting. Crew will follow SHASP 153. Crew consists of DSharp, DRisberg, DLyons, and LRomero ~~(HF Group)~~ (IT Corp).
Temp ≅ 68°, 10-15 mph winds from
1333 Station Six dry.
1337 Station Five dry.
1343 Station 4 dry. 0.11 ft = 0.035 cfs
1350 Station 3 temp 12°C, 7.3 pH, 230 µS, 0.11 ft, turbid, little algae
1359 Station 2 water is slightly turbid, little ~~yellow~~ amount of yellow green algae temp: 12°C, pH: 6.9, µS = 260, ~~flow = <0~~
flow < 0.01 ft = < 0.0008 cfs
1410 station 1 pH: 8.3, µS = 310, temp = 20°C, flow: 0.05 ft = 0.010 cfs
water is clear, no algae
Martin Spring Canyon is drier than one week ago. See page 71 for descriptions of Stations 6-4. Also, the water in the canyon is very intermittent. There are large pools then dry narrow stream channels 5' up or down drainage from those pools. The discharge measurements may be misleading. For example: Station 3 has a relatively large CFS compared to Station 1 however, Station 3 is a large pool of very slow moving water and station 1 is a fast moving shallow part of the stream channel.
1500 Crew departs site. We will take discharge measurements in Cañon de Valle tomorrow.

Donald Sharp 5/30/2002

5/19/99

Todays Activities: Collect Discharge measu
and field parameters in Cañon de Valle
Crew consists of D Sharp (FTL), L Romero, D.
Risberg & D Lyons (IT corporation) We wi
split into two groups: Sharp & Romero wil
take measurements in lower CDV (below M
while Risberg & Lyons will collect measu
above MDA-P. We cannot go above M
SWSC cut until 11:45 Laura and I wi
catch up to Debbie and Dale at that

0900 Crew arrives at TA-16. Today's weat
Sunny, winds 0-15 mph, clear. app. 68°

0910 D Lyons calibrates pH & conductivit
meters. Calibration good.

0930 D Sharp conducts tailgate safety meeting.

0955 Crew checks in at MDA-P, then split

1014 16-5997, CDV station 9, moderate flow, shallo
narrow stream channel, clear water,
pH = 8.2, Cond = 170 µS, Temp = 19°C, Gauge
ht = 0.125 = 0.040 cfs

1021 16-5996, CDV Station 8, moderate flow, narro
stream, clear water, pH = 8.1, Cond. = 180 µS
Temp = 18°C, Gauge ht = 0.14 = 0.051 cfs
16-6002, CDV Station 17, Dry, no water n

1030 16-5927, CDV station 7, moderate flow, shallo
narrow channel, clear water, pH = 7.8
Cond. = 170 µS, Temp = 16°C, Gauge Ht = 0.14
0.051 cfs

1033 16-6001, CDV station 16, deep slow moving pon
clear water, pH = 7.8, Cond. = 140 µS, Temp = 9
Gauge ht. = 0.17 = 0.069 cfs

1037 16-5926 CDV Station 6, shallow moderate
grass, few pebbles, clear water. pH = 7.6,
Cond = 160 µS, Temp = 10°C

1041 16-5930 CDV station 15, Clear, slow movin
pond, no algae, narrow deep stream ch

Laura Romero 5/30/02

5/19/99
pH = 7.9, Cond = 140 µs, Temp = 9°C, Gauge ht = 0.14 = 0.051 cfs
1045 16-5923 CDV station 5, moderate flow, shallow narrow channel, clear water, pH = 7.7, EC = 160 µs, Temp = 14°C Gauge ht = 0.12 = 0.040 cfs
1051 16-6000, CDV station 14, Deep narrow slow moving stream channel, clear water, no algae. pH = 7.9, Cond = 150 µs, Temp = 9°C. Gauge ht = 0.17 = 0.0069 cfs,
1101 16-5929 CDV station 13, Deep, moving water, relatively wide channel, lots of yellow/green algae. pH = 7.4, EC = 130 µs, Temp = 6°C Gauge ht = 0.1 = 0.030 cfs.
1107 16-5928 CDV station 12, water is too diffuse to measure, however it is moving, algae present, pH = 8.1, Cond = 160 µs, Temp = 12°C
1113 16-5999 CDV station 11, moderate flow, narrow channel, clear water, no algae present, pH = 8.4, Cond = 160 µs, Temp = 11°C Gauge ht = 0.02 = 0.0024 cfs
1122 16-5998 CDV station 10, fast moving, medium sized channel clear water, no algae present pH = 8.0, Cond = 160 µs, Temp = 12°C
1202 Crews join up 16-5995 CDV station 4 low flow, shallow & narrow channel, very little water movement clear water. pH = 7.7, EC = 230 µs, T = 15°C Gauge ht = 0.05 = 0.010 cfs
1209 16-5994 - CDV station 3 - Dry
1212 16-5993 - CDV station 2 - Dry
1220 16-5992 - CDV station 1 - Dry
1245 Crew departs site

Donna M Mann 5/30/02

6/4/99 Friday

1035 Temperature: clear sky, wind approx. 10-20 mph from South, ~75°F
Today we will stand wells and collect samples from isco samplers located at 3 springs and 1 sample from peter seep.

16-2655 4.72 ft toc
16-2669 DRY
16-2664 DRY
16-2663 DRY
16-2662 DRY
16-2661 DRY
Martin Spring - one sample collected. missed other samples due to power
RP = 0.39 ft, programed isco to take ~~sam~~ bottle 1 on ~~6/4~~ 6/5
* 16-2665 115.37 ft toc
16-2666 DRY
16-2660 6.50 ft from toc
16-2659 6.75 ft from toc
16-2668 DRY
16-2736 DRY
16-2712 95.03 ft from toc (very unusual reading)
seems like water is not present, but moisture is
16-2709 DRY
16-2656 5.86 ft from toc
16-2657 1.65 ft from toc
Burning Grounds - two samples collected; programmed to Bottle 1 on 6/5. RP = 0.83'
SWSC Spring - no samples; installed battery; took n sample (Bottle 1) today, Bottle 2 to be taken o
RP = 0.93'
16-2658 5.68 ft from toc
Peter Seep (PS) - one 125 mL sample collected.
PS head is still in previously recorded area.

Louis Romero 5/30/2002

6/8/99
Today's Objective: Walk Cañon de Valle to begin geomorphic mapping. All non-intrusive work
0900 Steve Reneau (EES-1) & D. Sharp arrive at TA-16 badge office. We cannot go behind 16-260 in the canyon due to large change machining, or downstream from 260 due to a burn at the burning ground. So we will start at the head of lower cañon de Valle near Building 16-220.
Today's Weather: Warm, breezy, clear, app. 70°F
0930 D Sharp conducts a tailgate safety briefing under SSHASP 16C.
1000 Crew arrives at Bldg 16-222 and heads into canyon
1015 Steve sets up 1st hundred meter line at location 16- . We will continue working downstream until we hit the confluence at the upstream end of MDA-R
1350 We have completed 400 meters of surface mapping.
1610 Crew departs site

Donna M Sharp
5/30/2002

[redacted]

6/9/99

DS 6/9/99 Today's objective: Surface sediment mapping of
~~0900~~ Cañon de Valle from MDA-P bounda
downstream. All non-intrusive work
Today's weather: Clear, Sunny, breezy,
75° F.

0900 Steve Reneau (EES-1) & D. Sharp (IT)
at TA-16 trailers.

0920 D Sharp conducts tailgate safety brief
unders SSHASP 160.

0945 Crew checks in w/ MDA-P.

1010 Crew enters Cañon de Valle. We
will start our tape at 16-2768
just above the old weir box.

1019 Begin mapping.

1342 We mapped 240 Meters down stre
from 16-2768. We will finish for th
day.

1605 Crew departs site.

5/30/2002
Donna M Sharp

6/10/99
Today's objective: surface sediment mapping of Cañon de Valle from MDA-P boundary downstream. All non-intrusive work.
Weather: clear, sunny, breezy, about 75° F.
0900 Steve Reneau (EES-1) and D Risberg (IT) at check-in Office
0915 Crew checks in at MDA-P.
0920 Begin mapping at 16-2785.
1400 Finished mapping for the day. Completed half of secure area behind MDA-P and finished up the rest of the area that Steve and Donna had begun downstream of MDA-P.
1415 Crew departs site.

Debbie Risberg
5/30/2002

6.11.99 Friday

900 Crew of Louie Romero (IT) and Dale Lyons (IT) arrive at field trailer
Activities will include sounding wells and PS sample.

16-2668 DRY
16-2665 DRY
16-2666 DRY
16-2656 0.05 ft from top
16-2657 1.85 ft from top
16-2658 5.68 ft
16-2712 DRY
16-2709 DRY
16-2736 DRY
16-2655 6.15 ft from top
16-2669 DRY
16-2661 DRY
16-2662 DRY
16-2663 DRY
16-2664 DRY
16-2659 7.30 ft from top
16-2660 7.20

Peter Sump - one 125 ml sample taken, head of PS is ~21 feet east of 16-2657.

1200

Louie Romero 5/30/02

6-11-99

0825 Crew of D. Disberg (IT) and Steve Reneau (EES-1) arrive at TA-16's Bldg. 260 to continue with surficial geomorphology.

0900 Begin mapping about 500m downstream of Silver Springs Outfall

1535 Finish mapping for the day; ended at SWSC Outfall.

DRB 5/20/02

6.14.99

0840 Crew of D. Risberg (IT) and S. Reneau (EES-1) arrive at TA-16 to continue with surficial geomorphology mapping.

1530 We mapped from 50 m below 260 outfall to 260 m below outfall.

1600 Crew departs site.

5/30/02

6·15·92

1030 Crew of D Rudberg (IT), S. Reneau (EES-1), and Mark (EES-1) arrive at TA-16's secure-area check-in office (Holli's and Kathy's).

1100 Crew begins mapping 370 m downstream of 260 outfall.

1522 Crew stops mapping for the day at MDA-P's eastern boundary and departs.

5/30/02

6-18-99

0945 Crew of D. Risberg (IT) and D. Lyons (IT) arrive at the trailers to prepare for well sounding, Isco sampler check, and water sampling at Peter Seep.

16-2660 7 ft toc
16-2659 7.03 ft toc
MS: RP = 5"; collected 7 bottles; will program to begin sampling today

16-2665 - dry
16-2664 dry
16-2655 7.33 ft TOC
16-2736 dry
16-2712 dry
16-2709 dry
SWSC springs: RP = 11.5"; collected 7 bottles; programme to begin sampling today
16-2657 2.3 ft TOC
16-2656 6.13 ft TOC
Burning Ground: RP = 10"; collected 7 bottles; programmed to begin sampling today
16-2658 5.5' TOC
16-2669 dry
16-2661 dry
16-2662 dry
16-2663 dry
16-2664 dry
Took water sample at Peter Seep. Head of seep is 21 ft east of 16-2657.

DRisb 5/20/02

6/23/99
1015 Randy Johnson, Dale Lyons and Louie Romero arrive at TA16. We will collect quarterly water samples from the alluvial wells springs and 90's Lure Pond. We have recieved verbal approval through Peter Graham to discharge our bailed water onto the ground.

1020 Louie conducts tailgate safety meeting. We are operating under SSHASP #160.

1040 Water level in MW 16-26055 is at 8.1' there is approx 1.306 gal in the MW. We will bail 3.9 gal then sample.

1056 We have bailed one volume, recharge is slow. We will return to this well later today.

1122 Collecting samples from Martin Springs site ID 16-26050

1130 Silver Seep is dry - no samples

1200 Collecting samples from 90's Lure Pond.

1240 Crew breaks for lunch.

1330 Crew back from lunch. Recieved release for backhoe. Randy will drive backhoe to drill yard. Dale and Louie will pick up acid from Jose Archuleta.

Todays sample summary - 6/23/99

RE16-99-3040	16-26050	1122
RE16-99-3041	16-26050	1129
RE16-99-3056	16-58260	1155
RE16-99-3057	16-58260	1200

[signature] 5/30/02

6/24/99

0900 Randy Johnson, Desiulit Bazzel, Louie Romero and Dale Lewis arrive at site. Today we will submit samples collected on Weds and collect/submit additional samples
Weather clear, warm 75°F No wind

0925 Dale takes samples REIG-99-3040, 3054 -3056 and -3057 to SMO.

0930 Louie conducts tailgate safety briefing

0940 Randy and Louie head into CDN.

1005 Collecting samples from Skisc Spring.

1026 Collecting samples from Brenton Crowd Spring

1115 Back at trailers preserving samples

1200 Crew heads to CDN & SMO.

1225 Samples REIG-99-3042, -3043, 3044 and -3045 to SMO under COC# 1082-99-0306

Todays sample summary of collected samples

REIG-99-3042	IG-2651	6/24/99	1010
REIG-99-3043	IG-2651	6/24/99	1015
REIG-99-3044	IG-2652	6/24/99	1030
REIG-99-3045	IG-2652	6/24/99	1035

1300 Crew returns to IT office.

R Johnson 5/30/02

6/25/99 Friday

9:00 no wind, scattered clouds, ~80°F. Dale Lyons (IT) and Louie Romero (IT) arrive at site. Today we will sound all wells and collect one sample from Peter Seep

Martin Spring RP = 0.40 ft

16-2666 dry

16-~~2667~~ 2665 dry

16-2659 7.40 feet from toc

16-2660 7.40 feet from toc

16-2668 dry

16-2655 10.00 ft from toc

16-2657 2.30 ft from toc

16-2656 6.16 ft from toc

Peter seep - one 125 mL sample collected

11:00 crew departs site

Louie Romero
5/30/02

6/28/99

0930 Randy Johnson, Dale Lyons And Lance Rothero Arrive At TAIG. Due to An Unknown Vapor Detected At MDAP We Are Unable to Enter CDV. Also We Are Required to Have An 'Q' Cleared Person to Enter TAIS And Sample CDV/ Fish And Confluence. We Will Sample CDV Headwaters.
Weather Clear Warm 80°F, Light North Breeze.

1000 Lance Conducts Tailgate Safety Brief.
1005 Crew Heads to CDV.
1015 Crew Begins Hike up CDV
1104 Sampling CDV Headwater.
1242 Back At TAIG Preserving Samples.
1330 Crew Heads to TAIG.

5/30/02

6/29/99

0930 Randy Johnson, Dale Lyons and Dellwitt Barrel arrive at TAIG to prepare to enter lower CDV. We have checked in through DX and received approval to enter through Gate #9. We will swing by the IT office and pick up Peter Gram who will be our escort.
Weather: Clear warm 80°F light breeze.

1030 Dale and Randy head to IT office to pick up Peter Gram.

1200 The crew needs to head to TAIG to assist in an inspection of the trailers

1330 Crew heads to TA39 Gate ~~3~~ RS 9 to sample fish ladder and CDV confluence.

1350 Crew enters through CDV. We have tried to contact DX access control to inform them we are entering the site.

1414 Crew is at confluence, Randy conducts tailgate safety meeting.

1420 Crew starts hiking up CDV.

1430 Crew has encountered an owl that we feel is a Mexican spotted owl. Due to the presence of the owls we have ~~requested~~ RS decided not to continue up CDV. This decision is supported by the fact that there is no water in the stream bed and that no sample was collected from the confluence in March.

1435 Owls were spotted up from site ID 16-2769.

1453 Crew begins driving out of CDV. We still have not been able to contact DX access control.

Robinson 5/30/02

6/29/99

1530 CREW ~~ENTERS~~ RS EXITS THROUGH ~~GATE #6~~ RS GATE #9 WE HAVE BEEN UNABLE TO CONTACT DX ACCESS CONTROL.

1555 CREW ARRIVES AT DX ACCESS CONTROL WE HAVE BEEN SCREENED BY TOM ROBERTSON AND SIGNED OUT BY JEANETT.

1610 CREW UNLOADS EQUIPMENT AT TAIL.

1630 CREW HEADS TO IT OFFICE.

R Johnson 5/30/02

6/30/01
0915 Dale Lyons, Randy Johnson and Louie Romero arrive at tailgate. We plan to sample the alluvial wells within CDU. We are restricted to access above SHSC cut to 1145 to 1230. Also, we have been advised that due to the holidays today, possibly pertaining at noon is the sample ship deadline
Weather: Clear, warm 80°F, No winds
0925 Dale conducts tailgate safety meeting.
1003 Water level in MW 16-2659 is at 7.71'. We will bail 4.0 gal
1st 12°C, 130 uS, 7.0 pH
2nd 10°C, 130 uS, 7.0 pH
1009 Collection sample from ~~16-5~~ RT 16-2659.
1102 collecting sample from ~~16-66~~ LR 16-2658.
11:15 pH: 7.5, EC 130, 13°C
11:20 2° 6.9, 120, 12°C
1121 3° 6.7 120, 11°C
11:55 Collecting samples from 16-2656, water level at 6.25'.
1° 11°C, 100 µS/cm, 7.2 pH
2° 11°C, 120 µS/cm, 7.2 pH
3° 11°C, 120 µS/cm, 7.2 pH
1214 The MW 16-2657 has historically been very slow to recharge, because of this we will sample the standing well volume. Water level in MW 16-2657 is at 2.45'.
12:25 Before Sample 17°C, 180 µS/cm, 7.5 pH
12:28 16-2657 15, 210 µS/cm, 7.5 pH
1230 Crew heads out of CDU
1300 Crew back at trailers unloading equip and samples
1400 Crew heads to MW 16-2655, Elmer takes sample to SMO
Louie Romero 5/30/02

6/30/99

1405 Randy and Lance at MW 10-2655. He bailed on volume from this well on 6/23/99. Due to the historic and current slow recharge of this well he will sample the standing well volume. Water level in MW 10-2655 is at approx. 10.1' this is the total depth of the well. There is approx. 2.5" in the well. No sample will be collected.

1420 Crew is preservation samples.

1500 Crew heads to CDM.

1557 Crew submits samples to SMO under COC# 1082-99-0308

1700 Randy and Lance collect LH_3 and Thiopts aliquots for Peter Seep. These were missed during collection of RB16-99-3046

1715 Crew heads to IT.

Rutzo 5/30/02

7/01/99
1108

Randy Johnson submits sample # REIC-99-3059 to SMO under COC# 1082-99-0309.

Sample summary for this week:

REIC-99	IC-	CDV HEAD	6/28/99	
~~REIC-99-3032~~	~~IC-2656~~	"	"	" — RJ 7/01/99
REIC-99	IC	CDV HEAD		
REIC-99-3032	IC-2656	2nd MW	6/30/99	1200
REIC-99-3033	IC-2656	"	"	1210
REIC-99-3034	IC-2657	3rd MW	"	1215
REIC-99-3035	"	"	"	1220
REIC-99-3036	IC-2658	4th MW	"	1102
REIC-99-3037	IC-2658	"	"	1110
REIC-99-3038	IC-2659	5th MW	"	1009
REIC-99-3039	"	"	"	1015
REIC-99-3046	IC-2653	Peter Sleep	"	1225
REIC-99-3047	"	"	"	1227
REIC-99-3059	"	"	"	1700
REIC-99-3048	IC-2654	Fish Ladder	Not Collected	
REIC-99-3049	IC-2654	"	Not Collected	
REIC-99-		CDV/Fish Ladder	Not Collected	
REIC-99-	"	"	Not Collected	
REIC-99-3030	IC-2655	1st MW	Not Collected	
REIC-99-3031	"	"	Not Collected	

This completes the June '99 quarterly sampling.

RJohnson 5/30/02

7/07/99

0900 CREW OF RANDY Johnson, DALE Lyons, LONNIE ROMERO AND ELMER ALCON ARRIVE FIELD TRAILER.
POD: WE WILL PERFORM STREAM PROFILING IN CDV AND MARTIN SPRING CANYON.
WEATHER: PARTLY CLOUDY, 80°F, NO WIND CHANCE FOR RAIN.

0935 RANDY CONDUCTS TAILGATE SAFETY MEETING

1000 CREW HEADS TO CANYONS, LONNIE AND ELMER WILL BE DROPPED OFF AT CDV AND WORK DOWN FROM MDA-P, DALE AND RANDY WILL GO TO MARTIN SPRING CANYON.

1015 ENTERING MARTIN CANYON

1025 NO FLOW AT MARTIN SPRING CANYON (MSC) STATION #6

1035 NO FLOW OR STANDING WATER AT MSC #5

1045 NO FLOW OR STANDING WATER AT MSC #4

1056 STANDING WATER AT MSC #3 - 2.0" DEEP

1109 NO FLOW OR STANDING WATER AT MSC #2

1127 FLOWING WATER, 0.25" DEEP, AT MSC #1

1147 DALE AND RANDY ARE OUT OF MSC HEADED TO MDA-P

1200 PICKING LONNIE AND ELMER.

SUMMARY OF CDV PROFILE STATIONS BELOW MDA-P

1027	#10	.05'	FLOW - .010
1047	#11	.05'	.010
1051	#12	NO FLOW	
1105	#13	.04'	FLOW - .0070
1136	#14	NO FLOW	
1116	#15	NO FLOW	
1122	#16	NO FLOW	
1127	#17	NO FLOW	

1215 CREW BREAKS FOR LUNCH.

R Sellers 5/30/02

7/07/57

1245 CREW BACK FROM LUNCH. STORM CLOUDS ARE OVERHEAD, BEGINNING TO RAIN AND THUNDER. CREW WILL WAIT FOR RAIN TO STOP.

1330 CREW HEADS TO CDU, RAIN HAS STOPPED CLOUDS OVER HEAD NO THUNDER.

1345 CDU # 8 1.2" IN GAGE

1346 CDU # 9 .09" IN GAGE .025 FLOW

1356 CDU # 7 .75" IN GAGE

1359 CDU # 6 .03" IN GAGE .0045 FLOW

1416 CDU # 5 0.06" IN GAGE

1420 CREW HEADS OUT OF CDU.

1445 CREW HEADS TO IT OFFICE.

5/30/02

7/08/95

0900 Randy Johnson, Dale Lyons, Lance Romero and Elmer Allen arrive at TA16. We will do additional housekeeping: place wastes in NMSWSA #1959 (spill absorbent and PVC primer-soil), place used PCB test kit bottles and empty unused bottles in a non-haz storage drum, and label all bottles of solutions/chemicals on site per Peter Grams instructions. We will then complete stream profiling behind TA16-2600 and repair BMP (pipe) behind 2600

Weather: Partly cloudy, 80°F no wind

0930 Elmer and Lance transport materials to drill yard and SMO. Dale and Randy place wastes in storage areas.

1130 Crew prepares to head to 2600

1140 Elmer conducts tailgate safety meeting.

1145 2600 gates are opened, crew goes behind 2600

1225 Crew exits from behind 2600: The pipe breaks at the pond and above water fall have been repaired, CDU station #4 had standing water, stations above are dry

1235 Crew breaks for lunch.

1300 Back from lunch.

1310 Elmer, Lance and Dale head to Martin Springs Canyon to complete installation of pressure transducer. They will then go to the MU below MDAP and work on the pressure transducer at MU 10-2659. Randy will label chemical bottles

1515 Crew out of CDU, it has begun to rain hard.

R Johnson 5/30/02

~~7/09/99~~ 7/9/99 Friday

1015 Louie Romero, Elmer Alon, Dale Lyons, Randy Johnson (all of it) will install data loggers, sound wells, and collect iso samples, inspect hmp (pvc pipe) from 260 outfall to canyon bottom

Martin Spring - 12 samples collected, programed to start 7/11/99 @ 12:00

MS RP: 0.41 ft

SWSC Spring - 6 samples collected, power failure at bottle 7, manual sample taken 7/9

SWSC RP = 0.95 ft programed to begin 7/11/99 @ 12:00

1117 Randy Johnson Conducts Tailgate Safety Meeting

1120 Monitoring Well Water Levels

16-2659 - 7.25'

16-2660 - 7.22'

16 2656 - 6.30'

BG Spring - 12 samples collected, programed to start 7/11/99, manual sample (7/9), RP = 0.88'

Peter Seep - one 125 mL sample collected, PS head ~21 ft east of 16-2657

16-2658 - 5.5'

5/30/02 LR ~~16-2656~~ 16-2655 - 10.1 (All wells not recorded are dry)

Data loggers installed and programed at 16-2659, 16-2656

Data logger casings installed at 16-2658, BG spring

Run off (stable isotope) sample collected from RO sampler

PVC pipe repaired at lower end, and at the outfall.

4:15 Crew departs site

Louie Romero 5/30/02

7/12/98

1400 RANDY JOHNSON, FLAVER ALCOW AND DALE LYOSS ARRIVE AT TAKO.
POD: INSTALL AND PROGRAM DATALOGGERS AND INSTRUMENTATION AT BURNING GROUND SPRING AND MLL 16-26658. HITTING CDV.
WEATHER: PARTLY CLOUDY WARM 80°F LIGHT SOUTHERN BREEZE

1415 RANDY CONDUCTS TAILGATE SAFTEY MEETING

1420 CREW HEADS TO R25 AND INTO CDV.

1600 THE INSTRUMENTATION AT MLL 16-26658 AND BURNING GROUND SPRING IS COMPLETE. THE DATALOGGERS ARE COLLECTING DATA.

1630 CREW LEAVES SITE HEADED FOR IT.

R. Johnson 5/30/02

7/13/99

1000 Randy Johnson, Dale Lyons, Louie Romero and Elmer Alcon arrive at Take.
POD: Perform low flow stream profile sampling in Martin and CDU. And install datalogger box at SEISC.
Weather: Partly cloudy, warm 80°F, no wind.
Three sample locations were proposed for MSC however as water was present at only two locations these will be the only sample locations.
Six sample locations are proposed for CDU, these will be biased to the up and down stream extreme locations, the two lowest and highest flows. And to CDU stream contributors.

St#5	16-5923	Upstream limit / SEISC
St#6	16-56026	Lowest flow / Burn Spring
St#8	16-5996	Highest flow
St#9	16-5998	Highest flow / MDA-P
St#10	16-5998	Lowest flow
St#13	16-5929	Downstream limit

1015 Louie conducts tailgate safety meeting.
1020 Crew heads to CDU and Martin, Elmer and Louie are dropped off below MDA-P. Dale and Randy head to Martin.
1035 Peter calls to change sample locations within CDU. After noting the increase in flow both St#7 and St#8 it raises concerns where the increased flow can be attributed to, Burning Ground Spring is between St#6 and St#7. Flow decreases from St#5 to #6, increases slightly from St#6 to #7, but increase dramatically from #7 to #8.

R Johnson 5/30/02

7/13/99

1035 BASED UPON THE CHANGE IN FLOW PETER AND DON HAS DECIDED TO CHANGE THE SAMPLES TO THE FOLLOWING LOCATIONS:

ST #5	16-5923	UPSTREAM EXTENT
ST #6	16-5626	LOWEST FLOW
ST #7	16-5927	BURNING GRD CONTRIBU
ST #8	16-5996	HIGHEST FLOW
ST #10	16-5998	MDAP CONTRIBUTION
ST #13	16-5926	DOWNSTREAM EXTENT

1140 DALE AND RANDY HEAD OUT OF MARTIN

1155 PICK UP LONIE AND ELMER AT MDAP.

1200 DROP SAMPLES AT TRAILER W/ SEALS, LOCK TRAILER. HEAD TO LUNCH

1230 CREW BACK FROM LUNCH.

1250 CREW HEADS INTO CDV FROM R25 TO SAMPLE LOCATIONS BTWN SWSL AND MDAP

1400 CREW BACK AT TRAILERS PRESERVING AND SEALING SAMPLES. SAMPLE SUMMARY:

REI6-99-3060	16-5920	1115	ST CDV#
-3061	16-5920	1116	MARTIN #
-3062	16-5988	1129	MARTIN #
-3063	16-5988	1130	"
-3064	16-5626	1340	CDV # 6
-3065	16-5626	1340	"
-3066	16-5923	1325	CDV # 5
-3067	16-5923	1329	"
-3068	16-5998	1105	CDV # 10
-3069	16-5998	1105	"
-3070	16-5996	1300	CDV # 8
-3071	16-5996	1305	"
-3072	16-5927	1313	CDV # 7
-3073	16-5927	1315	"
-3074	16-5929	1130	CDV # 13
-3075	16-5929	1130	"

1513 CREW HEADS TO DRILL YARD. R. Hoso 5/30/02

7/14/99

Randy Johnson and Lance Romero arrive at tailo to prepare stream profile samples for submittal to SMO.
Weather partly cloudy, 75°F, light breeze.

1045 Crew heads to SMO with samples.

1100 Stream profile samples RE16-99-3060 through -3075 are submitted to SMO under COC# 1082-99-0310.

1120 Crew back at tailo. We plan to check BMPs behind 2600 and install datalogger box behind 2600 at SWSC spring. However it has begun to rain.

1140 Lance performs tailgate safety meeting for installation of datalogger box at tailo-2600, SWSC spring.

1150 Lance performs inspection ~~AFP~~ RS of PRS 16-021c BMPs on way to SWSC spring.

1200 Randy and Lance install box at SWSC.

1220 Crew heads out of canyon.

1230 Back at trailers inventorying acids and other chemicals.

1400 Head to ~~TRT~~ RS drill yard to clean up back here.

1430 Back at IT office.

R. Johnson
5/30/02

7-19-99 monday

1045 overcast, no wind, ~62° F. Louie Romero (IT), Dale Lyons (IT)
Randy Johnson (IT). todays activities: Relocation of met station,
installation of data loggers, measurement of monitoring well water level
1050 Conduction of tailgate safety meeting by ~~RR~~ RJ
1100 met station is loaded and moved to 16-2655 area.
~~1150~~ 16-2655 dry
1150 16-2656 6.325 ft from toc
16-2657 1.46 ft from toc
1200 Peter Seep one 125 mL sample taken, current head no change
SWSC Spring 0.950' RP, 5 samples collected. programed to sample both
BC Spring, RP = 0.88', 5 samples collected, programed to sample both
1229 16-2658 5.60 ft from toc
16-2659 7.02 ft from toc
16-2660 6.93 ft from toc
16-2666 Dry } 2:10 pm
16-2665 1.13 ft from top
MS Spring RP: 0.41', 5 samples collected, programed to sample both
1425 16-2668 dry
1450 Crew departs site.

Louie Romero 5/30/02

7 21 99 wednesday ~~over~~ LR heavy rain clouds present, ~65°F

1115 Crew of Louie Ramirez, Dale Lyons, Randy Johnson (all 1 Corps)
will install ~~use~~ Sigma auto samplers at BC, SWSC, and Martin Spring.

1120 Conduct tailgate safety meeting.

1125 Program sampler, test sampler

1230 Crew breaks for lunch

1315 crew arrives at 344 area and enter MS spring canyon

1447 sampler up & running @ Martin Spring programed every 48 hour, start today

1514 sampler up & running @ BC Spring programed every 48 hr, start today

1545 Crew departs site

Louie Ramirez 5/30/02

7/22/99

0930 Randy Johnson, Dale Lyons and Elmer Allow Airline at Tailg.
POD: Check Water Level in 16-2665 (344)
Sample this well if water is present
Turn on Datalogger at 16-26
Install Datalogger and Sampler at SWSC.

1000 Elmer Conducts Safety Briefing SHASP #160
Weather: Partly Cloudy, 80°F Light SE Breeze, Chance for Thunderstorm

1010 Water Level in MW 16-2665 is at 119.15' Bottom of Well is at 126.8'.

1015 Bottom of MW 16-2655 is tagged at 10.25' Water Level is at 10.1'.

1035 The Datalogger at MW 16-2655 is collecting data. Well is Dry

1200 Collection of full suite samples from 16-2665
pH 6.4 EC 260 µS/cm Req. 99-3076 & 3077

1337 Water Level in MW 16-2655 is at 124.77

1340 The Field Team has cleaned the Western Ref's Storage Trailer.

R. Johnson 5/30/02

7/23/99 Friday clouds present in the west no wind. temp ~72°F

0945 Dale Lyons (IT) and Louie Romero (IT) will sound wells, change batteries on isco samplers, check dataloggers, install datalogger at SWSC spring.

0950 Louie Romero conducts safety meeting: 10664 Louie Romero 7/23/99

Dale Lyons attended

Randall Johnson attended,

1030 SWSC Spring datalogger is wired, program is calibrated, up & running

Peter Sesp one 125 mL sample collected, PS head in same location

Sampler not installed at SWSC Spring due to sampler malfunction

BG Isco new battery installed

16-2665	125.95 ft from toc
16-2666	DRY
16-2712	DRY
16-2709	DRY
16-2736	DRY
16-2661	DRY
16-2669	DRY
16-2662	DRY
16-2663	DRY
16-2664	DRY
16-2668	DRY

1230 Crew departs site

Louie Romero 5/30/02

7/26/99

1015 Randy Johnson Arrive At Tale Trailer to Prepare Samples RE16-99-3076 & -3076 For Submittal to SMO And to Meet With Trunk W For A Health And Safety Review.
Weather: Partly Cloudy, Warm 85F Light North Breeze

1040 Trunk Arrive At Tale Trailers For H&S Review.

1135 Trunk Leaves Site. He Has Reviewed Paper Work For Quarterly Sampling Activities, SHASP 160. Training Records Site Notices And MSDSs. The Records Are All in order. He Was Very Pleased With the Documentation. Would like For Me to check on Another Mod to 160 That Has His Signature.

1150 Samples RE16-99-3076 & -3077 Are Submitted to the SMO under COC# 1082-99-0311.

R Sollman 5/30/02

7-28-99 Tail Gate

7:00 AM Bob Mansalva Jones discussed the HASP & SSHASP plans with the H&H personnel before going to work at TA-16. Those in attendance were Steve Funk, Ron Horn, Jim Mackeck, L.D. Bazzell, Louie Romero.

9:01 AM All personnel were at TA-16 and then proceeded to 224 to ready the work activities.

1230 Work activities begun with the mixing equipment.

1630 All work activities went well and quitting for the day at 1630

L.D. Bazzell 7-28-99

7-29-99

7:30 AM Tail gate

Bob Mansalva Jone conducted a Tail gate. Patrick Shea was a new person with the team and read all needed documents. Jim Phelan was arrived at about 0801.

Attendents at the tailgate were:

Steve Fundo, Ronald Horn, Thomas Machacek, LD Burrell, Patrick Shea, Louie Romero, Jim Phelan.

0900 Arrived at TA-16 to continue work. We are still contacting people to get the acedic acid. The acedic acid was delivered by Louie Romero at 1330. Lunch break was taken before starting to work with the acid operation. Jim Phelan left the site at Approximately 1430. ~~Truong had a discussion with Peter Gram, Bob Mansalva Jones, and Ron Horn concerning the incident and corrective measures.~~ MB 7-30-99

An acedic acid spill happened at approximately 1545, there was no injuries, the building was evacuated and allowed to vent for a little over an hour. As soon as everyone left the building, all of the appropiate people were called to report the incidents.

At Approximately 1545, while transferring Acetic Acid with a hand pump, Approximately 250 ml of Acid was spilled when the hose of the hand pump popped off discharging the Acid onto the floor. The Acid began to fume and the field team evacuated from the facility. Approximately 10 min after the spill, a fan was placed in the facility hallway to aid in the dispersal of the fumes. I informed the field team not to enter the facility. Louie Romero was sent to the HEPS trailer to retrieve an Acid Spill Kit. At Approx 1605, I went to the HEPS trailer to use the phone.

7/29/99

My first call was to the Los Alamos Health and Safety Manager: Scott Wimer. I informed Scott of the situation, we discussed a strategy for responding to the spill. I then called Lynn Hidinger of it, informing him of the situation. Lynn said he would make a few calls and call me back. Lynn called back within a few minutes and told me to contact the facility personnel, the TA16 spill coordinator and Bill McCormick. I then called Al Stadelmaier, the TA16 spill coordinator and left a voice mail informing him of the spill. I then paged Bill McCormick with our a response. I then called Leonard Maez, the facility manager for TA16-224 and informed him of the spill and told him I had contacted Al Stadelmaier. Leonard said he would contact the site personnel responsible for spills. I told Leonard that we would clean up the spill.

After making these calls, I returned to TA16-224 and informed the team of whom I had called and our spill response plan. Our response plan was to allow the fumes to further dissipate then neutralize the acid with water (as specified on the acetic acid MSDS), clean up the residue and secure the site for the day.

Within a few minutes Ron Herrera and I entered the facility to access the fumes. The fumes were down to prespill conditions in the area of operations. We secured the pump and acid carboy, then flushed the acid with approx 2L of water, and moved the pump and acid outside the facility. Patrick Sitza and I reentered the facility and tested the pH of the spill residue, it was at pH 4. We wiped the residue up with Terri wipes, bagged and drummed the waste. The facility was secured and the field team left TA16 at approx 1830.

R Doffner 5/30/2002

7-30-99

H & H personnel arrived at the IT office at 0800. D. Bazzell and the H & H crew arrived at TA 16 at 0912.
Peter Gram and Trueng Nyguen are due here very shortly to discuss the operation relative to the acid spill that happened on 7-29- at approximately 1600.
H & H personnel consisted of Ron Horn, Steve Funk, Patrick Shea & Tom Machacek,
Peter and Louie & Bob Monsalve Jones arrived at The Bldg 27 Trailers at 0943.
Trueng arrived at the trailers at 0945.
Trueng had a discussion with Peter Gram, Bob Monsal Jones and Ron Horn concerning the incident and the corrective actions to be taken for future jobs.
At 1100 Trueng spoke with Warren Neff and got approval to continue work after the Tailgate meeting, Bob Monsalve Jones will midify SSHASP 251 (Mod #1) to address the changes defined in the meeting.
At 1102 Trueng said that if Julie Knepa does not agree then work will be stopped.
Peter Gram addressed the incident problems and the short comings of the SSHASP relative to the acedic acid. Peter also conducted the tailgate meeting for the days activities at 1107. People in attendance were D. Bazzell, Ron Horn, Tim Machacek Patrick Shea Louie Ramer Steve Funk, Bob Monsalve Jones and Trueng Nyguen
1125 The whole crew arrived at Bldg 224, Trueng, Pe Ron and Steve inspected work bay and discussed t work effort.
1145 A lunch break was taken at the field trailers.
1230 Returned to Bldg 224 from lunch area, Trung, Pet Bob Monsalve Jones had left the site at 1155 with Lou

D. Bazzell 7-30-99

7-30-99

1232 Trueng stated that an Incident Report and a Lessons Learned Report should be written. He also suggested that the work table used with the mixing machine be put on a pad of HDP material to help catch debis. This was done by the H&H crew, work resumed at 1235.

1331 Dale Lyons came to Bldg 224 to pick up the spill can that had the spill clean up absorbant from the accidental acedic acid spill that occurred at approximately 1545 on 7-29-99. He left the building at 1334.

1400 Randy Johnson came to Bldg 224 to coordinate with H&H personnel & provide SSO oversight.

1417 Elmer Velazquez, the waste coordinator for ESA, FM came to the building to pick up the waste in the satellite storage area, I was wrong, he didn't pick anything up, He just checked it. He left at 1423.

1444 H&H operations were completed and all crew members returned to the field trailers to do the moisture analytical work.

1511 Randy Johnson went back to Bldg 224 to put the appropiate signs in the building and will leave the site from there.

1550 H&H personnel completed the moisture analytical work in the chem trailer.
All personnel are leaving the area.

R.D. Randall 7-30-99

8/04/97

0915 Randy Johnson Dale Lyons And Elmer Allen Arrive At Title We Will Perform A Mock Microfractionation At Tank-224 And Photograph the operation And Test Soils
Weather: Raining, Cloudy, Cool 65°F, No Wind.

0918 Dale And Elmer Review SSHASP 251

0950 Randy Conducts Tailgate Safety Meeting. Dale And Elmer Have Signed the SSHASP Acknowledgement Form

1030 Photos of Mock up And Treatment Tubs is Complete

1125 Crew Has Prepared the H&H To Samples For Shipment, Waiting For Release.

1230 The H&H samples For H&H Were Submitted To FEDX For Shipment to H&H.

5/30/02

08/04/99

During the photographing of the samples at Bldg 224, water was added to the ~~ters~~ tubs per the instructions faxed by Tom Machacek to Randy Johnson on 8/03/99:

TRT #2	1.0 Liters
TRT #3	2.0 Liter
TRT #5	1.0 Liters
TRT #6	2.0 Liters

The water was applied with the sprinkler can. And per the fax TRT #7 was the closest tub to the heater.

The thermometer in the restroom/tub storage area read 82°F.

R. Johnson 5/30/02

08/06/99 Friday

1057 Louie Romero and Dale Lyons will collect isco samples, sound all wells, and collect the Ronoff samples.

1103 Martin Spring - 3 samples collected due sampler failure, programmed to take first sample (bottle one) on 8/8/99

1118 16-2665 = 114.68 feet from top of casing (toc) using 200'

16-2666 = dry

1126 16-2659 = 6.74' ft from toc using flash light sounder (f/s)

16-2660 = 6.67 ft from toc using f/s

1137 16-2668 = dry

1144 16-~~26~~ 2736 = dry (LR)

1146 16-2712 = dry

1148 16-2709 = dry

1153 16-~~2751~~ 2658 LR 6.40 ft from toc f/s

12:03 16-2657 1.307 from top using f/s

1204 SWSC spring, 2 samples collected, samples skipped because the isco was tipped over earlier this week, programed to take bt#1 8/8/99

Peter Seep head is approx. 21 feet east of 16-2657

1211 16-2656 = 5.40 ft from toc using f/s

BC Spring - 10 samples collected, programed to take bt# 1 on 8/8/99

1240 16-~~2666~~ 2655 LR has approx. 1 inch of water using f/s

1244 16-2669 dry

1246 16-2664 dry

16-2663 dry

16-2662 dry

16-2661 dry

Louie Romero 5/30/02

8/9/94 Monday

~~1057 Louie Romero~~ LR

1339 Louie Romero (IT) and Dale Lyons (IT) will collect samples from the tubs of soil in bldg. 224

1355 arrive at bldg. 224

1358 open trt # 6 and begin collecting sample
sample collected from 4 quadrants of the tub

1400 smo sample collected (TRT #6) RE-16-94-0075

1409 smo sample collected along with quadrant samples (TRT # 5) RE-16-94-0076

1418 H&H samples and smo sample collected from TRT #4 RE16-94-0077

1431 H&H samples and smo sample called from TRT # 3 RE16-94-0078

1442 H&H samples and smo sample collected from TRT # 2 RE16-94-0079

1451 H&H samples and smo sample collected from TRT # 1 RE16-94-0080

1502 H&H samples and smo sample collected from TRT #7 RE16-94-0081

1512 tubs are moved back into controled temperature room.
crew leaves 224 to 27.
smo sample times are called into Jodie for label production
smo samples are stored in the refridgerator. (to be submitted tomorrow)
H&H samples are stored in the freezer. to be mailed wed.

1548 Crew departs site

Louie Romero 5/30/02

8/13/99 Friday

temp ~80°F, clear sky, no clouds, no wind

915 Louie Romero and Elmer Atkins will check levels at all wells, check on isco to ensure their sample collection, and sample Peter Seep.

940 Hariba instrument is calibrated w/autocal solution per manufacture ins pH 4.13, cond , turb -7, Temp 21°c calibrated by Elmer Atk

955 Martin Spring is running. RP: 0.83', Ph 5.20, cond. .230 , temp. 11.5 HARIB

1003 16-2665 119.89 feet from toc (all wells will be sounded w/200 ft sounder)

1005 16-2666 is dry

1009 16-2668 is dry

1102 16-~~2665~~ 2655 is dry

1112 16-2669 is dry

1114 16-2661 is dry

1116 16-2662 is dry

1119 16-2663 is dry

1123 16-2664 is dry

1153 16-2660 7.46'

1155 16-2659 7.45 pH 5.35 cond .211 Temp 18°c

1212 16-2658 5.68' pH 9.83?, cond .215 , temp 20.7°C

1340 16-2656 5.75', pH 9.6?, cond .171, temp ~~16~~ 15.8

1347 16-2657 1.75

Peter Seep one 125ml sample collected

PS head is ~21' east of 16-2657

1355 16-2712 is dry

16-2709 is dry

16-2736 is dry

1415 Crew departs the site

Louie Romero 5/30/02

8/17/99 Tuesday ~~Geomo~~ DS 8/17/99 Stream-Profile

Today's Objective: Measure discharge in CDV and MSC streams, collect field parameters pH, cond, temp at each location. We will also collect one 250 ml poly at each location for Ba, Br and RDX analyses. Crew can only access the section below the 260 outfall from 12:00 to 12:45. Today's Weather: Hot, app. 80°F, clear sky, slight breeze from west.

0925 Crew consisting of D Sharp, E Alcon, L Romero and D. Lyons (IT) arrive at TA-16.

0930 D. Lyons and E Alcon calibrate the Horiba and the Orion probes. Good calibration.

0940 D Sharp conducts tailgate Safety Briefing. Crew will work under SSHASP 160. Today's plan is to split up. D Sharp & E Alcon will start at the bottom of Cañon de Valle (station 17) and work upstream, while L Romero & D Lyons start at K-Site (station 6 in MSC). We have two cameras, two flumes, & two instruments for field parameters.

1000 D Sharp & E Alcon check in at MDA-P & head into Cañon de Valle (downstream).

1005 L. Romero & D Lyons enter Martin Spring Canyon.

~~1015 RE DS 8/23/99 16~~ DS 8/23/99

1015 Station 17 CDV, loc. 16-5602, Dry. RE16-99-1016 not collected. Frame 1 taken.

1016 Station 16 CDV, loc 16-5601 Dry. RE16-99-1015 Not collected, Frame 2 taken.

1017 Station 6 MSC, loc. 16-5991, Water present, RE16-99-1022 collected. pH = 6.7, Cond. = 0.124 mS, temp = 15.9°C Second Camera, Frame 3 taken. Water is turbid. Gauge ht =

1020 Station 15 CDV, loc. 16-5930, Dry. RE16-99-1014 Not Collected, 1st camera Frame 3 taken

1027 Station 5 MSC, loc. 16-5990, Dry, RE16-99-1020 Not collected, no photo. Romero & Sharp 8/23/99

8/17/99 Stream - Profile.

1030 Station 14 CDV, 16-5600, Water present.
RE16-99-1013 collected. pH = 7.7, Cond = 170 µS
Temp = 16°C, Water is clean, channel bottom
has fine sediments & pea-size gravel bottom.
1st camera, Frame 4, This location is downstrea
from MDA-P, located at 16-2777. Gauge ht =

1031 Station 4 MSC, loc. 16-5988, DRY RE16-99-10
Not collected. No photo taken.

1046 Station 3 MSC, loc 16-5988, RE16-99-1019
collected, Water is turbid, pH = 7.51, Cond = 0.21
temp = 16.7°C, 2nd Camera, Frame 5 Gauge ht =

1046 Station 13 CDV, loc. 16-5929, Water Present, RE16-9
Collected. water is clear, good flow, channel bot
has fine seds, gravel, some algae present (
pH = 7.2, Cond = 150 µS, Temp = 12°C. 1st Camera
Frame 5 taken. Gauge ht = 0.05 located
app. 50 yds below well 16-2659, downstre
from bajump.

1050 Station 12 CDV, loc 16-5928, Dry. RE16-99-
Not collected. Located below well pair. 1st Came
Frame 6 taken.

1055 Station 2 MSC, loc 16-5921, Dry, RE16-99
Not collected. No photo taken.

1105 Station 11 CDV, loc. 16-5999, Water present.
RE16-99-1010 Collected, water clear, good f
no algae, fine sed, gravel channel bottom
pH = 7.8, Cond = 180 µS, Temp = 17°C. Gauge ht
1st Camera, Frame 7 taken, located above well pa
at 16-2771.

1107 Station 1 MSC, loc 16-5920, Water Present,
RE16-99-1017 collected, Water not turbid, pH = 8
Cond = 246 µS, Temp = 15.2°C., Gauge ht =
2nd Camera, frame taken.

1120 Station 10 CDV, loc. 16-5998, Water present.
RE16-99-1009, Water is clear, good flow, channel
has sediment large gravel/rocks, no algae.

Donna M Sharp 8/23/99

8/17/99 Stream Profile
pH = 7.6, Cond = 180 µs, Temp = 15°C, Gauge ht = 0.06,
1st camera, Frame 8 taken, located just below
old weir box at MDA-P.
1130 Station 9 CDV, loc. 16-5997, RE16-99-1008 collected
Water is clear, good flow, fine sediment, little
gravel, wide channel. pH = 7.9, Cond = 150 µs,
Temp = 16°C, Gauge ht = 0.08, located upstream
from MDA-P. 1st camera, frame 9 taken.
1140 Station 8 CDV, Loc 16 5996, RE16-99-1007 collected.
Water is clear, good flow, no algae, gravelly bottom.
pH = 7.9, cond = 150 µs, Temp = 16°C, Gauge ht = 0.09
located app. 100 yds upstream from well, narrow
channel. 1st camera, Frames 10 & 11 taken.
1153 Station 7 CDV, location 16-5927, RE16-99-1006 collected
Water is clear, good flow, no algae, gravelly bottom,
pH = 8.1, Cond = 130 µs, Temp = 15°C, Gauge ht = 0.08, 1st camera
Frame 12 taken. D. Lyons & L Romero join us, they will share a ride
1205 Station 6 CDV, loc. 16-5926, RE16-99-1005 collected, water is
clear, slow flow, mostly fine seds, large gravels. pH = 8.1,
Cond. = 140 µs, Temp = 17°C, located above BG spring,
Gauge ht = 0.01, 1st camera, Frame 13 taken
1207 Station 1 CDV, loc. 16-5992, Dry RE16-99-1000 Not collected
No photo, located above Peter Seep.
1209 Station 2 CDV. loc. 16-5993, DRY, RE16-99-1001 Not collected
No photo, located within Peter Seep range.
1210 Station 3 CDV loc. 16-5994, DRY RE16-99-1002 Not Collected
No photo, located above SWSC Spring.
1210 Station 4 CDV, loc. 16-5995, Water present, RE16-99-1003 Collected
Water not flowing?, pH = 7.7, Cond. = 223 µs, Temp = 19.7°C,
Gauge ht = , located below SWSC Spring, 2nd Camera,
Frame .
1215 Station 5 CDV, loc. 16-5923, Water present, RE16-99-1004 collected.
Water is turbid, algae present, fine seds, broad channel,
below SWSC cut, disturbed area, pH = 7.47, Cond = 157 µs,
Temp = 16.6°C. Gauge ht = , 1st camera, Frame 14 taken
1245 Crew drops sandersoff at Chen trailer, departs site.
Donna M Stamp 8/23/99

8/19/99 thursday

1415 Crew of Dale Lyons and Louie Romero (both of IT) arrive at TA-16 field trailers. A tailgate safty meeting is conducted to cover todays activities which include samples collected from the 7 tubs of NE soil located in 16-224. H&H samples will be collected and SMO samples (HEXP)

14:45 TRT #6 sampled DL; TRT #6 appeared to have white salt accumulation on upper surface of soil. RE16-99-0

14:55 TRT #5 sampled RE16-99-0083

15:05 TRT #4 sampled RE16-99-0084

15:15 TRT #3 sampled RE16-99-0085

15:25 TRT #2 sampled RE16-99-0086

15:35 TRT #1 sampled RE16-99-0087

15:45 TRT #7 sampled RE16-99-0088

1555 Crew returns to field trailers. SMO samples are deconed, then stored in refridgerator. They will be delivered on monday to SMO. H&H samples are stored in the freezer. They will be mailed off on monday.

1620 Crew departs the site.

Louie Romero 5/30/02

8/20/99 Friday

945 Dale Lyons and Louie Romero arrive at field trailers. Todays activitie are collecting depth to water data at wells, collection of isco samples at springs, and collection of Peter Seep (PS) sample.

16-2659 7.67 ft depth to water from top of casing (toc)
16-2660 7.66 ft depth to water from toc
16-2730 dry
16-2712 dry
16-2709 dry
16-2656 6.57 ft dtw toc
16-2658 5.67 ft dtw toc
16-2657 1.55 ft dtw toc
16-2668 dry
16-2666 dry
16-2665 dry
16-2664 dry
16-2663 dry
16-2662 dry
16-2661 dry
16-2669 dry
16-2655 dry

Swa Spring - no samples collected, no liquid detected, the tube was sticking out of the water RP = 0.97

BG Spring - 8 samples collected. sampler programmed to begin at 1300 on 8/23 RP = 0.88

MS Spring - 9 samples collected. programmed to begin at 1330 on 8/23 RP NM

1300 Crew depart the site

Louie Romero 5/30/02

8/27/99

1006 Dale Lyons (IT) and Lonne Romero (IT) will download data from dataloggers located at wells, collect a Peter Sap sample and log its location (Hoad).

16-2659 conductivity probe verification: solution is 13916 uS/cm, probe = 1430 us/cm

~~16-2660~~ temp. on data logger 11.38, horiba is ~~13.6~~ 12.8 °C, pH ~~7.02~~ 6.97.

conductivity. 0.184

16-2656 no data

1045 Crew departs because Laptop computer has no power

crew unable to sound wells because sounder is being used by EES-15

1100 Crew departs site

Also. Crew was unable to get charged batteries from Dave Shaull

He no longer supports us.

Lonne Romero 5/30/02

8/3/99 Tuesday

1145 Lorie Romero and Dale Lyons will round wells and download dataloggers.

1203 16-2700 dry

1205 16-2736 dry

16-2712 dry

16-2709 dry

1225 16-2656 cond. check standard 1.4 ms/cm, datalogger sensor 1.46 ms/cm

~~temp 22.29°C~~ 6.63 ft depth to water

Horiba of boiled water: pH 6.66, cond .167, DO , temp 13.7°C

1230 16-2657 2.49 ft depth to water

Peter Seep (PS) - one 125 ml sample collected, PS head ~21' west 16-2657

1239 16-2658 data logger cond. 0.26, temp. 12.13

cond. check standard 1.4 ms/cm, datalogger sensor 1.44 ms/cm

Horiba of boiled water: pH 6.64, cond .183, temp 15.7°C

1310 16-~~2655~~ 2655 dry

1324 16-2666 dry

1326 16-2665 dry

16-2668 dry

16-2669 dry

16-2664 dry

16-2663 dry

16-2662 dry

16-2661 dry 16-2655 dry

1345 Crew departs site

Lorie Romero 5/30/02

9/3/99 FRIDAY

1130 Dale Lyons and Louie Romero arrive at field trailers.
pH meter is calibrated. Today we will sound all wells and collect a Peter Seep Sample. Temp is ~60°F, no wind, early morning rain occured, rain clouds are still present.

1200 16-2659 7.70 feet depth to water pH 6.8
1202 16-2660 7.60
1215 16-2665 DRY
1217 16-2666 DRY
1222 16-2668 DRY
1229 16-2656 6.60 feet depth to H_2O pH 6.7
1231 Peter Seep - one 125 mL sample collected. 8 S Lead ~21' west of 16-2657
~~1240~~ 1232 16-2657 not measured
1240 16-2658 5.65 feet depth to H_2O pH 6.7
1250 16-2709 DRY
1252 16-2736 DRY
1254 16-2712 DRY
1255 16-2700 DRY
1259 16-2655 DRY
1303 16-2669 DRY
1305 16-2661 DRY
1308 16-2662 DRY
1311 16-2663 DRY
1315 16-2664 DRY
1325 Crew departs the site. TA-16

Louie Romero 5/30/02

09/08/1999

1045 PETER GRAM, LOUIS ROMERO, AND DALE LYONS (ALL OF IT CORP) ARRIVED AT C. P. CROW WHO WILL CONDUCT SAMPLING IN SUPPORT OF THE H AND H MRUO OPERATIONAL/EVE HG SOIL BENCH-AND PILOT STUDY.

CROW WILL COLLECT SCREENING SAMPLES ONLY - NO LAB SAMPLES. THE SCREENING SAMPLES ARE THE T=40 DAYS SAMPLE AND WILL BE SUBMITTED TO THE UNIVERSITY OF NEBRASKA FOR ANALYSIS. ONE SAMPLE FROM EACH EQUIPMENT OF EACH OF THE SEVEN TEST PLOTS WILL BE COLLECTED. SAMPLING WILL FOLLOW THE PROTOCOLS OUTLINED IN THE FAX FROM TONY HOLM (OF H AND H BIO SYSTEMS) SUBMITTED TO LYNN KIRMAN (OF IT CORP.) ON 08/05/1999.

NOTE: ALL SAMPLING ACTIVITIES WILL BE CONDUCTED IN ACCORDANCE W/ SSHSP NO 257.

1050 DALE CONVENES HIS ON-GOING SAFETY MEETING.

1055 CROW DEPARTS C.P. FOR BLDG 224.

1200 CROW ARRIVES AT BLDG 224. WE START SETTING UP TO COLLECT THE SCREENING SAMPLES. IN ACCORDANCE WITH THE ESTABLISHED PROTOCOL WE WILL START SAMPLING TREATMENT PLOT 6 FIRST.

1205 TRT #6 QUAD 1 SAMPLE COLLECTED. TRT #6 TEMP. = 72°F

1208 TRT #6 QUAD 2 COLLECTED

1110 TRT #6 QUAD 3 COLLECTED.

1112 TRT #6 QUAD 4 COLLECTED.

1114 TRT #5 QUAD 1 COLLECTED -

NOTE: TRT PLOT 5 HAS CARGO TRUCKED INTO HAND-PACKED MATERIAL - TRT #5 TEMP = 62°F

Peter Gram 5/30/02

09/28/1999

1116 TRT #5 QUAD #2 SAMPLE COLLECTED
1118 TRT #5 QUAD #3 COLLECTED
1119 TRT #5 QUAD #4 COLLECTED
~~1120 TRT #5 Q~~
1120 TRT #4 QUAD #1 COLLECTED -
NOTE: TRT #4 IS SOFT AND MALLEABLE SIMILAR TO TRT #6 - TRT #4 TEMP = 67°F
1121 TRT #4 QUAD #2 COLLECTED
1122 TRT #4 QUAD #3 COLLECTED
1124 TRT #4 QUAD #4 COLLECTED
1126 TRT #3 QUAD #1 SAMPLE COLLECTED
NOTE: TRT #3 IS LOOSE AND MOIST MALLEABLE - LESS MALLEABLE THAN TRT #4 AND TRT #6 (AND LESS COHESIVE). TRT #3 TEMP = 68°F
1127 TRT #3 QUAD #2 COLLECTED
1128 TRT #3 QUAD #3 COLLECTED
1129 TRT #3 QUAD #4 COLLECTED
1131 TRT #2 QUAD #1 SAMPLE COLLECTED
NOTE: TRT #2 IS MOIST AND MALLEABLE/COHESIVE (LOOS MOIST THAN TRT #4 AND #6, AND #3 HOWEVER) - AND HAS SOME SMALL PATCHES OF WHITE FUNGUS GROWING ON IT - TRT #2 TEMP 26
1133 TRT #2 QUAD #2 COLLECTED
1134 TRT #2 QUAD #3 COLLECTED
1135 TRT #2 QUAD #4 COLLECTED
1136 TRT #1 QUAD #1 SAMPLE COLLECTED
NOTE: TRT #1 IS VERY MOIST, SOFT, AND COHESIVE/MALL
1137 TRT #1 QUAD #2 COLLECTED
1138 TRT #1 QUAD #3 COLLECTED
1139 TRT #1 QUAD #4 COLLECTED - TRT #1 TEMP = 68°
1140 TRT #7 QUAD #1 SAMPLE COLLECTED
NOTE: TRT #7 IS DRY AND GRANULAR TRT #7 TEM
1141 TRT #7 QUAD #2 COLLECTED

Peter Gram 5/30/02

08/08/1999

1142 PIT #7 QUAD #3 COLLECTED
1143 PIT #7 QUAD #4 COLLECTED.— THIS COMPLETES THE T40 HAND N SCROOPING SAMPLING.

CREW WILL DECON EQUIPMENT AND SAMPLES, GO THROUGH THE HATCHES AND RETURN BACK AT THE C.P. AND PREPARE THE SAMPLES FOR SHIPMENT TO THE UNIVERSITY OF NEBRASKA.
NOTE: PIT #7 WAS REPLACED TO THE EQUIPMENT ROOM (CREWS BATHROOM) AT A LOCATION NEAREST THE HOTTEST.— THE CURRENT ROOM TEMP. IS 76°F (DUE TO OUR HAVING THE DOOR OPEN): I EXPECT THE TEMP. WILL QUICKLY GO BACK UP TO 85°F.
1145 CREW DEPARTS RUDG 224 FOR THE C.P.
1158 DECON WORK COMPLETE.— CREW DEPARTS SRB TO SHIP SAMPLES

Peter T. McGrath 5/30/02

9/10/99 Friday

923 clouds present, no wind, temp ~58°F. Crew of Louie Romero (
and Dale Lyons (IT) will sound wells, collect a Peter Seep sample, and
download data from data loggers.

950 16-2659 7.94 depth to water pH 7.9
16-2660 7.99 ft depth to water
16-2655 dry
16-2669 dry
16-2661 dry
16-2662 dry
16-2663 dry
16-2664 dry
1039 16-2656 not measured pH 7.0
1055 16-2658 5.66 pH 6.7
16-2657 not measured
16-~~2659~~ 2665 dry
16-2666 dry
16-2668 dry
Peter Seep - one 125ml Sample collected, Head ~21' west of 2657.

Lou Romero 5/30/02

9/17/99 FRIDAY

0935 Dale Lyons (IT) and Louie Romero (IT) arrive at field trailers. Todays activities are sounding of all wells, and bailing out Water for a pH reading.

940 pH meter is calibrated.

16-2666	DRY	
16-2665	DRY	
16-2668	DRY	
16-2660	6.8	pH 6.9
16-2659	6.85	
16-2736	DRY	
16-2712	DRY	
16-2709	DRY	
16-2656	5.45	pH 6.8
16-2657	not measured	
16-2658	5.48	pH 7.1
16-2700	DRY	
16-2709	DRY	
16-2712	DRY	
16-2709	DRY	
16-2669	DRY	
16-2661	DRY	
16-2662	DRY	
16-2663	DRY	
16-2664	DRY	
~~16-2~~ LR		
16-2665	DRY	

Louie Romero 5/30/02

9/21/99 September 99 Quarterly sampling.

Todays Objectives: To collect Quarterly water samples from Springs, Seeps, Wells surface water at TA-16 (Cañon de Vall Martin spring canyon). Analyses incl Anions, bicarb, Oxygen & hydrogen isotopes, HE (extended suite) Tritium, inorganics, Nitrogen isotopes, semivolatiles, volatiles Total Uranium. We will collect field parameters: cond., pH & temp. using Horiba & hand held instruments (Orion Ba, Bromide & RDX will be analyzed well at the TA-16 Chem. trailer (IT
Todays Weather: Cool, good chance of rai cloudy, App. 60° F, winds calm.

0920 Crew consisting of D Sharp (FTL), E Alc D Lyons, & L. Romero, IT corp. arr at TA-16 trailer. Crew preps for se

0930 E Alcon calibrates both Horiba & hand held meters w/ pH 4 & 7, sta for cond. = 84 microsiemen. All cali OK. DS 9/21/99

0945 D Sharp gives tailgate safety briefing. Crew will use SSHSP 16-01. Crew will spl into two teams. D Sharp/D Lyons will sample well E Alcon, L Romero will sample springs.

1020 D Sharp & D Lyons head into Cañon de Valle, L Romero, E Alc will start in Martin Spring Canyon.

1030 16-2659, creek is dry. WL=6.8', TD=10.25, 1 well vol=2.

		pH	temp (°C)	Cond (ms)
1033	1st vol	6.7	12	250
1036	2nd vol	6.9	11	270
1039	3rd vol.	6.9	11	280

3 well volumes bailed and discharged on ground next well according to NDI & email by Steve Veeris. I will follow this guidance. Irene Romero 5/30/02

9/21/99 Sep 99 Quarterly Sampling.

1042 RE16-99-3191 collected & 3192. Water is slightly turbid, Good, Fast recharge. Roll 1, Frame 2 D Lyons sampling well 16-2659, Frame 3 - All sample bottles. (Note the time is incorrect on the white board should be 1042 not 0942)

1100 DS 9/21/99 16-2658, creek is flowing, WL = 5.65', TD = 10.2', 1 well vol = 3.4 gal.

		pH	Temp (°C)	cond (us	
1108	1st vol.	6.8	12	250	recharge slowing
1112	2nd vol.	7.2	12	290	on 3rd vol.
1119	3rd vol.	6.9	10	290	

1122 RE16-99-3189 & 3190 collected. Water is slightly turbid, Roll 1, Frame 4 - D Lyons sampling 16-2658, Frame 5 - All bottles, taken by D Sharp.

1140 16-2656, (Crew was only allowed beginning 1260 during lunch) No water in creek. WL = 6.27', TD = 10.5', 1 well vol = .69'

		pH	temp (°C)	Cond (us)
1148	1st vol.	7.2	11	160
1150	2nd vol.	7.2	11	170
1152	3rd vol.	7.2	11	190

1156 RE16-99-3185, 3186 collected, slightly turbid, Fast recha Roll 1, Frames 6 & 7 D Lyons collecting from 16-2656. Frame 8 - All bottles collected, taken by D Sharp

1220 16-2657, Bad well, water is likely to be rainwater. sand & bentonite pushing up ~~out~~ DS 9/21/99 from around well. RE16-99-3187 & 3188 not collected. Crews meet again. The following are events documented by L Romero & E Alcon

1035 Martin Spring (16-2650) RE16-99-3193 collected. Water is cloudy, flow app. less than 1 gal/min. pH = 7.3, Temp = 11.3°C. Cond. = 266 us

1045 RE16-99-3194 collected, Roll 2, Frame 1 - All bottles.

1050 E Alcon & L Romero depart Martin Spring Canyon, arrive at R-25, hike into CDV.

1130 Burning Ground Spring (16-2652) RE16-99-3197 collected. Water is slightly cloudy, no debris, flow ~ 5 gpm. pH = 7.81. Temp. = 11°C, Cond = 151 us

1140 RE16-99-3198 collected. Roll 2, Frame 2 - All bottles.

leave Romero 5/30 loc

9/21/99 September 99 Quarterly Sampling

1152 SWSC Spring, 16-2651, RE16-99-3195 coll
Water is slightly cloudy, flow ~ .125 gpm.
~~pH~~ temp = 11.1, 9/21/99 pH = 7.67, Cond = 152 uS.
1201 RE16-99-3196 collected. Roll 2, Frame 3 - All bo
1208 Peter Seep, 16-2653, RE16-99-3199 collecte
located app. 21' east of 16-2657, stagnant
pH = 7.65, temp = 11.8, Cond = 201 uS.
1215 RE16-99-3200 collected, Roll 2 Frame 4 - All b
1230 Crew drops samples off at trailer, departs
lunch.
1340 Crew return from lunch. D. Lyons & D
will collect headwaters of CDV sample, L R
& E Alcon will collect 90's line pond sample &
check 16-2655.
1405 16-2655, Dry (steam plant drainage well), RE16-
& RE16-99-3184 not collected.
1413 90's line pond, 16-5826, RE16-99-3211 collected
Water is turbid, pH = 8.43, Temp = 23°C, Cond:
Roll 2, Frame : All bottles.
1420 RE16-99-3212 collected.
1425 L. Romer & E Alcon head back to trailer
preserve & filter samples.
1452 Headwaters of CDV location, 16-5968.
RE16-99-3203 collected, no turbidity, fast mov
water. pH = 7.8, temp = 8°C, cond = 60 uS
RE16-99-3204 collected, Roll 1, Frame 9 = All
collected, taken by D Sharp.
1530 D Sharp & D Lyons return to TA-16 trailer.
1545 Crew preserves samples.
1715 Crew departs TA-16.

Donna M Sharp 5/30/02

9/22/99 Hydrogeology/Geomorphology Sampling

Todays Objective: To finish packaging & send off Stable Isotope samples & Hydrogeology Samples. After that we will coordinate geomorphology sampling and begin sampling below MDA-P (CDV-2E's). Todays weather: Clear, slight breeze, app. 65°.

1045 Crew (D Sharp, E Alcon, D. Lyons, L Romero, D Bazzel) arrive at TA-16 trailer.

1058 D Sharp conducts tailgate safety meeting.

1110 Crew prepares samples for SMO submittal. D Bazzel leaves stable Isotope samples at SMO. There are 86 samples for analysis.

1150 L. Romero departs site to drop off all ~~tuesdays~~ DS 9/22/99 quarterly water samples at SMO.

1215 Crew departs site for lunch. L Romero will meet crew at cafeteria.

1310 Crew arrives back at trailer, prepares to begin geomorphic sampling. All sample locations have been picked by S. Reneau & Kathy Campbell.

1340 RE16-99-0111 collected, 16-6136 or CDV-2E-11 is located ~ 1058 M downstream from the 260 outfall. Sample depth = 10-26 cm. Sample is located in a C2, fine to very fine sand, light brown in color. Roll 1, Frame 10 taken of ~~soil~~ DS 9/22/99 sediment. All geomorph samples consist of 125 ml glass for HE VP, 125 ml poly for Metals+B, and 500 ml poly for particle size. Field screening consists of XRF for Ba, HE spot test, & some detech analysis for RDX.

1350 RE16-99-0112 collected, 16-6137 or CDV-2E-27 is located ~ 1194 M downstream from the 260 Outfall. Sample is located in a C2 from a depth of 0-12 cm, sediment consists of fine and very fine sand. Roll 1, Frame 11, sediment taken by D Sharp.

Donna M Sharp 5/30/02

9/22/99 Geomorph sampling

1358 REIle-99-0113 collected, 116-6138 or CDV-2E-28 is lo
~1194M downstream from the 260 outfall. Samp
is located in a C3 from a depth of 0-17cm.
Sediment is mostly fine sands to very fine fine
sands. Roll 1, Frame 12 taken of sed. by
D. Sharp.

1410 REIle-99-0114 collected, 116-6139 or CDV-2E-19 is
located app 1221 M from the 260 outfall. Samp
is located in an F1 unit. Sed is mostl
fine sands + very fine sands w/ soil at top from a
depth of 9-15 cm. Roll 1, Frame 13 taken
9/23/99 DS D Sharp of sediment.

1415 ~~1420~~ REIle-99-0116 collected, 116-6140 or CDV-2E-14 is l
~1244M from 260 Outfall. Sample is located in a
C3? (C2?) at a depth of 10-26 cm. This sample was th
highest BA screening from 2E. Sediment consists of fin
sands + very fine sands. Roll 1, Frame 14 taken by
D Sharp of sediment.

1420 REIle-99-0015 collected, 116-6140 or CDV-2E-14
located ~1244M downstream from 260 Outfa
Sample is located in a C3? (C2?) at a depth of 0-1
Thin Sediment consists of fine sands. Roll 1, Fr
15 - sediment taken by D Sharp & both horizon
Frame 16.

1440 Crew departs CDV, checks out of MDA-P.

1500 Crew departs site.

Lamar Mero 5/30/02

9/23/99 Geomorph Sampling

Today's objectives: Complete the geomorph sampling in Cañon de Valle. Crew must finish CDV-2E and complete CDV-2W (Above MDA-P). There are 24 samples remaining to be collected. The crew will split into two groups and "leapfrog" for collection. Today's weather, cloudy, rain in the Alt. app. 65°F.

0840 Crew arrives at SMO to sign COC for Stable Isotopes. Paperwork not ready. CDM has been called.

0945 Crew consisting of D Sharp (FTL) L Romero, D. Lyons & E. Alcon arrive at TA-16. Bill McCormick gives permission to use stainless steel bowls & spoons for sediment collection, not enough Aluminum.

1000 D. Lyons conducts tailgate safety meeting.

1015 Crew checks into MDA-P trailers.

1031 RE16-99-0117 collected by E Alcon & L Romero, 16-6141 or CDV2E-16, highest of all HE screening. sample is in a C3? (F1?), Sediment is mostly fine sand + very fine sands w/ a developed soil at base, collected at a depth of 0-9 cm. Roll 1, Frame

1032 RE16-99-0118 collected by D Sharp & D Lyons, 16-6142 or CDV-2E-18, located ~1319 M downstream from 260 Outfall at a depth of 24-31 cm. This is the farthest sample downstream. Sample is located in a C2 unit consisting of fine sands + very fine sands. Roll 2, Frame 10 sediment taken by D Sharp.

1048 RE16-99-0110 collected by L Romero & E Alcon, 16-6135 or CDV2E-5 located app 894M downstream from the 260 Outfall. Sample is taken from an F1 unit from a depth of 0-17 cm, sediment consists of dark fine sands + very fine sands, pre lab? soil? Roll 1, Frame

1057 RE16-99-0109 collected, CDV2E-3 or 16-6134 ~799M downstream from 260 Outfall. Sample collected from a C2 unit collected by D. Sharp & D. Lyons. Depth = 7-15 cm, Sediment fine sands to medium sands Roll 2, Frame 11 take by D Sharp

Pu ~ actual 5/30/02

9/23/99 Geomorph Sampling

1057 RE16-99-0108 collected by D Sharp & D Lyons. 16-6134 or C
3 ~ 799 M downstream from 260 outfall. Sample is lo
in a C2 unit, sediment consisting of fine + very
sands, light brown color, depth = 0-7 cm.
Roll 2, Frame 12 - Sediment taken by D Sharp.

1110 RE16-99-0106 collected by D Sharp & D Lyons, 16-6133 or CD
~ 778 M below 260 outfall. Sample is located in a
(near MDA-P weir) Sediments consists of fine to very fin
sands. Depth 2-13 cm, Roll 2, Frame 14 "sed" taken
D Sharp

1105 RE16-99-0107 collected by D Sharp & D Lyons, 16-6133 or CDV2E
~ 778 M downstream from 260 outfall at a depth o
24-33 cm, sample located in a low C3 unit (near MDA-P
Sediment consists of very fine sands. Roll 2, Frame 13 t
by D Sharp.

1205 RE16-99-0090 collected by D Sharp & D Lyons, 16-6122 or CDV-DE
~ 72 m above 260 outfall. Depth = ~~0~~ 9 DS 9/23/99 = 16 cm, Seds = ~~light brown~~ fine sand
medium sands, darker ~~0-16 cm~~
~~+ very fine sands~~, located in a C3? Roll 2, Frame 15 "seds"

1210 RE16-99-0091 collected by E Alcon & L Romero, 16-6123 or CDV-2W
~ 25 m downstream from 260 outfall. Depth = 0-7 cm, locate
a C2, sed = fine sands - very fine sands. Roll 1, Frame 19, "sed

1212 RE16-99-0089 collected by D Sharp & D Lyons, 16-6122, CDV
~ 72 M up drainage from 260 outfall. Depth = 0-9 cm, C3?
sed = light brown fine - v fine sands, Roll 2, Frame 16 "sed

1218 RE16-99-0093 collected by D Sharp & D Lyons, 16-6125
CDV 2W-11 ~ 170 M downstream from the 260 Outfa
depth = 0-13 cm, sed = fine, medium & very fine sands, bro
Roll 2, Frame 17. "sediments". D Sharp.

1220 RE16-99-0092 collected by E Alcon & L Romero, 16-6124 or
2W-12 ~ 165 M downstream from the 260 Outfa
E1 unit, depth = 0-20 cm, seds = light brown fine - ve
fine sands. Roll 1, Frame 20.

1223 RE16-99-0094 collected by D Sharp & D Lyons, 16-61
or CDV2W-11 ~ 170 M downstream from 260 Outfall
unit, depth = 13-25 cm, seds = Laminated very fi
sands, brown to dark gray. Roll 2, Frame 18 DSh

Donna M Sharp 5/30/02

9/23/99 Geomorph sampling in CDV.

RE16-99-0097 collected by D Sharp & D Lyons, 16-6127 CDV 2W-24 ~296M downstream from 260 Outfall, F1 unit, depth = 12-22cm, seds = fine-very fine sands. previously had the highest Ba screening value (47960) Roll 2, Frame 19, "Sediment" taken by D Sharp

1230 RE16-99-0095 collected by E Alcon & L Ponero, 16-6126, CDV 2W-9 ~287M downstream from 260 Outfall, depth = 13-22cm sed = laminated lt brown to dk gray very fine sands, F1 unit Roll 1, Frame 21.

1233 RE16-99-0096 collected by D Sharp & D Lyons, 16-6127, CDV 2W-24 ~296M downstream from 260 Outfall, 16-6127, F1 unit, Depth = 0-6 cm, seds = fine-very fine sands (Davis grass site) Roll 2, Frame 20. D Sharp

1244 RE16-99-0098 collected by E Alcon & L. Ponero, 16-6128 CDV 2W-10 ~300M downstream from 260 Outfall, C2 unit, depth = 0-18cm, Seds = lt. brown fine-very fine sands Roll 1, Frame 22

1245 RE16-99-0100 collected by D Sharp & D Lyons, 16-6129, CDV 2W-26, ~368M downstream from 260 Outfall, C3 unit, seds = fine-very fine sands (Davis grass site), depth = 0-23cm. Roll 2, Frame 21.

1255 RE16-99-0099 collected by E Alcon & L Ponero, 16-6128 CDV 2W-10, ~300M downstream from 260 Outfall, C2 unit, depth = 18-30cm, Seds = fine-medium sands, light gray w/ orange bands, thin lines in middle. Roll 1, Frame 23.

1251 RE16-99-0103 collected by D Sharp & D Lyons, 16-6130, CDV 2W-6 ~400M from 260 Outfall, C3 unit, (3 samples in this hole) depth = 38-49cm, Seds = lt gray fine-very fine sands, Roll 2, Frame 22.

1255 RE16-99-0102 collected by D Sharp & D Lyons, 16-6130, CDV 2W-6, ~400M downstream from 260 Outfall, C3 unit, Depth = 22-34 cm, Seds = lt gray fine-very fine sands. Roll 2, Frame 23

1258 RE16-99-0101 collected by D Sharp & D Lyons, 16-6130 CDV 2W-6, (top sample), ~400M down from 260 outfall

Dana on SR and 5/30/02

9/23/99 Geomorph sampling in CDV
C3 unit, Depth = 0-22 cm, Seds = lt brown fine-very fine sands (2nd highest Ba screening (2716.0 ppm)). Roll 2, Frame 24.

1310 RE16-99-0104 collected by E Alcon & L Romero, 16-
CDV 2W-5 ~400M downstream from 260 Out
C3? (C2?) unit, Depth = 0-17 cm, Seds = br
fine-very fine sands, Roll 1, Frame 24.

1310 RE16-99-0105 collected ~~from~~ by DSH 9/23/99, by D Sharp &
D Lyons, 16-6132 or CDV 2W-3 ~429M
down from 260 Outfall (last sample taken ~~to~~ def
MDA-P area) C3 unit, depth = 0-19 cm,
Seds = lt brow fine-very fine sands.
Roll 1, Frame 25.

1315 Crew departs canyon (sampling complete).

1330 Crew departs TA-16 for lunch.

1500 Crew returns, will decon samples & lab
D Bazzel found 2 sample w/ positive HE
Spot test hits, RE16-99-0104 & RE16-99-011
He is running DTech analysis on these f
RDX & TNT.

1615 Crew departs site, will return tomorrow
COCs & EF and deliver to SMO.

Donna M Sharp 5/30/02

9/24/99 FRIDAY (IT)

0930 Crew of Dale Lyons and Louie Romero (IT corp) will sound wells and collect a peter seep sample.

0941 16-2655 DRY

31 0945 16-2669 DRY

11 0948 16-2664 DRY

0951 16-2663 DRY

0954 16-2662 DRY

0958 16-2661 DRY

1005 16-2665 121.49 ft from TOC

1010 16-2666 DRY

1020 16-2668 DRY

16-2700 DRY

16-2736 DRY

16-2712 DRY

16-2709 DRY

1113 16-2656 6.46 ft from TOC pH = 6.3

1120 16-2658 5.60 ft from TOC pH = 6.6

16-2657 not measured ~~2.5 ft~~ DRY

1139 16-2660 6.97 ft from TOC

1140 16-2659 6.82 ft from TOC pH = 6.9

one 125 mh sample collected from Peter Seep.

PShad is ~ 21 ft west of 16-2667

1245 Crew departs site

Louie Romero 5/30/02

9/28/99

945 Tailgate is conducted. Today Lorie Romero (IT) and Dale Lyons (IT) will sample the tubs in bldg. 224

1019 water is added to Tubs 1-6 as per fax from H&H.

1031 TRT #2 has a layer of mold or fungus on the top surface of the soil. The mold or fungus is white in color

1033 TRT #3 is beginning to get some mold fungus, or salt accumulation on the top surface of the soil.

1039 TRT #6 has salt accumulation on top surface of soil. all other TRTs were in good condition

1041 Sampling begins

10:48	TRT 6	88°F	Note:
10:53	TRT 5	Sampled	no further temps were recorded
11:00	TRT 4	Sampled	due to added H_2O changing temp and because meat guage not being accurate.
11:05	TRT 3	sampled	
11:15	TRT 2	Sampled	
11:20	TRT 1	Sampled	
11:27	TRT 7	Sampled	

11:45 Crew departs site.

TRT #6	10:48	RE16-99-0178
TRT #5	10:53	RE16-99-0179
TRT #4	11:00	RE16-99-0180
TRT #3	1105	RE16-99-0181
TRT #2	1115	RE16-99-0182
TRT #1	1120	RE16-99-0183
TRT #7	1127	RE16-99-0184

Lorie Romero 5/30/02

9/29/99

Dale Lyons and Louie Romero arrive at TA-16 field trailers.
Today we will sample the tubs (treatment) located in bldg. 16-224
for HEXP and the will go through the SMC.
tailgate meeting is conducted to cover todays activities.

1048	TRT # 6 is sampled	RE16-99-0178
1053	TRT #5 is sampled	RE16-99-0179
1100	TRT #4 is sampled	RE16-99-0180
1105	TRT # 3 is sampled	RE16-99-0181
1115	TRT # 2 is sampled	RE16-99-0182
1120	TRT # 1 is sampled	RE16-99-0183
1127	TRT # 7 is sampled	RE16-99-0184
1135	Crew departs the site.	

5/30/02

10-08-99

14:00 Crew of Louie Romero (LT) and Dwight Bazell (CT) arrive at the site. Todays activities are checking the depth to water of the wells, and collecting a peter seep sample.

14:41 16-2656 6.61 ft depth to water pH = 4.4

14:50 16-2657 2.35 ft depth to water pH = 8.4

1501 16-2658 5.68 ft depth to water pH = 7.2

1515 16-2659 7.7 ft depth to water pH = 7.9

1530 16-2665 DRY

1545 Crew departs the site.

Louie Romero 5/30/03

10/15/99 Friday

1015 Crew of Kristi Bagwin (IT) and Louis Romero (IT) arrive at field trailers. Today we will install solar panels at BG and SWSC spring, Sound wells, install tipping bucket and wind guage at Met Station, collect a Peter Seep sample.

1030 Tailgate is conducted by Kristi.

1141 16-2655 well is dry; downloaded data logger data

16-2669 DRY

16-2664 DRY

16-2663 DRY

16-2662 DRY

16-2661 DRY

16-2668 DRY

06-2666 DRY

16-2665 DRY

1321 Martin Spring ISCO samples collected (8/23/99-9/12/99) 11 samples 48hr interval ISCO programed to take sample 1 on 10/17/99 @12:00

1433 BG Spring ISCO samples collected (8/23/99-8/27/99) 3 samples 48hr interval ISCO programed to take sample 1 on 10/17/99 @ 12:00

1457 16-2659 6.75'; pH=7.5

16-2660 ~~2.50'~~ ~~WKS~~ 10-15-99 pH -

16-~~2658~~ 2658; 5.68'; pH = 7.9

1525 16-2657 2.50'; pH = 7.2

1540 16-2656 PH = 7.2 5.63 ft. dtw toc

~~1530 Peter Seep is completely dry. There is no indication of moisture anywhere along the channel~~ ~~WKS~~ 10-15-99

1545 Sample collected from Peter Seep.

Peter Seep head is ~21' east of 16-2657

16-2712 DRY

16-2709 DRY

16-2736 DRY

SWSC spring ISCO samples collected (8/23/99-9/8/99) 11 samples ISCO programed to collect sample 1 on 10/17/99 @12:00

5/30/02

10/19/94

1010 Crew of Louie Romero (IT), Elmer Alcon (IT), and Dwight Bazzell (IT) arrive at trailers. Today we will sample 7 tubs of Treatability Study soil located in bldg. 224

1015 Tailgate is conducted.

1025 Arrived at ~~Bldg~~ 224

1037 TRT #6 Sampled, Soil Temp. 70°F, Soil moist

1042 TRT #5 Sampled, Soil Temp 64°F, Soil moist

1046 TRT #4 Sampled, Soil Temp 66°F, fungus looking sub developing on Top surface of soil. Soil is moist to d

1050 TRT #3 Sampled, soil Temp 68°F, soil dry to slight mois

1055 TRT #2 Sampled, soil Temp 66°F, soil moist to dry wit fungus on the Top surface.

1101 TRT #1 Sampled, soil Temp 62°F, soil is very moist

1105 TRT #7 Sampled, soil Temp 70°F, soil is dry to sligh moist.

1110 Sampling operation complete.

1120 Crew arrives at Field trailers where samples are stored in the freezer. They will be shipped to University of Nebraska

1130 Crew departs the site.

Louie Romero 5/30/02

10/22/99

CREW AT MATTEW SPRINGS.-

CALCULATIONS FOR FLOW-RATE DISCHARGED SAMPLES AT MS:

CURRENT FLOW RATE (DISCHARGE) $\cong$ 4.5 l/m = .0045 m^3/MIN

= 45360 l/WK. $\neq$ (10800 MIN/WEEK)

Lorne Romero 5/30/02

10-22-99

Today activities: water levels at Natural wells down in CDU along with pH readings. crew will also program Data flow logger at swsc, martin, and burning ground springs collect a water sample from Peter seep and run off sample at a location above Peter seep. S.O.P in effect 6.02, 6.11, 7.02 and SSHASP in effect is 160. Today crew will consist of Peter Brown Louie Romero, Kristo Bequin, & Elmer Alcon all of IT. D. Bazzell will remain in field Trailer in support. Crew will also use atv.

1150 Well 16-2659 DTW 7.55' pH 7.1
1200 Well 16-2658 DTW 5.65 ph 7.2
1215 water sample at upper location is dry, no water accumulated in container.
1218 well 16-21656 DTW 6.65 pH 8.0
1220 well 16-2657 DTW 2.57 pH 8.3
1221 Isotope water sample collected from Peter seep. 21' downst
1225 well 16-2712, Dry but tip of sounder was moist, indi lower end has had a recent ~~water~~ event. 10-22-99
1231 well 16-2665, Dry.
16-2655 DRY

Louie Romero
5/20/02

10/29/99 FRIDAY

1120 Crew of Louie Romero, Dale Lyons, Elmer Alcon (all of IT corp), will complete the installation of the flow rate data logger at SWSC, sound all wells, collect a Peters Seep sample

16-2669 DRY

16-2661 DRY

16-2662 DRY

16-2663 DRY

16-2664 DRY

16-2665 DRY

16-2666 DRY

16-2668 DRY

16-2736 DRY

16-2712 DRY

16-2709 DRY

1253 16-2656 6.68' depth to water pH: 7.1

16-2657 2.88' depth to water pH = 7.1

pH meter was calibrated at approx. 12-30

1313 16 ~~2658~~ 2658 10/27/99 5.68' depth to water pH: 6.6

16-~~10~~ 2660 7.82' depth to water

1326 16-2659 7.78' depth to water pH = 6.9

1345 PS seep sample is collected (125 mL). PS head is approx. 21 ft east of 16-2657

1405 16-2655 DRY

1415 Crew departs the site

Louie Romero 5/30/02

This page was not used

Louie Romero
5/30/02

This page was not used

Louie Romero
5/30/02

This page was not used

Lorne Romano
5/30/02

This page was not used

Louis Romero
5/30/02

This page was not used

5/30/02
Louis Romano

9/22/99

12-15-96 16-2655 5.13' toc

4" PVC 0.653

10.1 td

10.1 - 5.13 = 4.97 (0.653) = 3.25 (3)

9.75 g

16-2658 total depth 10.00 ft depth to water 5.7

10 - 5.3 = 4.3 standing water

4" diameter PVC = 0.653

(0.653 × 4.3) 3 = 8.42

BG distance from pole to ~~gat~~ isco 75 ft

Louis Rosales

5/30/02

TA-16 Hydrogeo - Geomorph

Sample ID: RE16-99-011 ~~#~~

Location ID: 16-61 ~~[illegible]~~ 4

Photo: 13

Date: 9/22/99 TIME: ~~1350~~ 1410

9/22/99

Louis Romero 5/30

TA-16 Hydrogeo-Geomorph

Sample ID: RE16-99-0115

Location ID: 16-6140

Photo: #15

Date: 9/22/99 TIME: 1420

ER2002-0320 LOG BOOK volume 2
Hydrogeologic and CMS
investigations at TA-16
PRS 16-021(c)-99
IT Corp. 661-5200

IT Corp - 6061-5200

TAILS HYDROGEO LOG BOOK

CONTROL # ER2002-0320

NOV. 01, 1999

The FTL must ensure that the following information is in the notebook:

- Date
- On-site field team personnel and their responsibilities
- Objectives for the day
- Weather
- Occurrence of the tailgate safety meeting
- Daily sampling events, including: time of sample collection, sample id, location id, field parametets if applicable, sample description, location description, well level, etc.
- Deviations from plans or SOPs and supporting reasons
- Photograph descriptions
- Instrument calibration information and times

Augusta - 5-9969
at SMO

National® Brand ACCOUNT BOOKS 10 3/8 x 8 3/8"

Black Texhide with Maroon Corners and Spine.		
Item No.	Numbered Pages	Ruling
Item No. 56-211	150	Record
Item No. 56-212	"	Journal
Item No. 56-213	"	Double Entry Ledger
Item No. 56-214	"	Single Entry Ledger
Item No. 56-231	300	Record

Item No. 58-702	150	2 Columns, Single Page Form
Item No. 58-703	"	3 Columns, " " "
Item No. 58-704	"	4 Columns, " " "
Item No. 58-706	"	6 Columns, " " "

RFI Report for TA-16, PRS 16-021(c)

- Site-Specific Health and Safety Plan
- OU 1082 Waste Management Plan
- OU 1082 Quality Assurance Plan
- LANL LP 116-1.0, Stop Work and Restart
- LANL ER-SOP-1.01, General Instructions for Field Investigations
- LANL ER-SOP-1.02, Sample Containers and Preservation
- LANL ER-SOP-1.03, Handling, Packaging, and Shipping Samples
- LANL ER-SOP-1.04, Sample Control and Field Documentation
- LANL ER-SOP-1.05, Field Quality Control Samples
- LANL ER-SOP-1-06, Management of RFI-Generated Waste
- LANL ER-SOP-1.07, Operational Guidelines for Taking Soil and Water Samples in Explosive Areas
- LANL ER-SOP-1.08, Field Decontamination of Drilling and Sampling Equipment
- LANL ER-SOP-4.01, Drilling Methods and Drill Site Management
- LANL ER-SOP-4.04, General Borehole Logging
- LANL ER-SOP-5.01, Monitor Well Construction
- LANL ER-SOP-5.02, Well Development
- LANL ER-SOP-5.03, Management of ER Program Wastes
- LANL ER-SOP-6.09, Spade and Scoop Method for Collection of Soil Samples
- LANL ER-SOP-6.10, Hand Auger and Thin-Wall Tube Sampler
- LANL ER-SOP-6.24, Sample Collection from Split-Spoon Samplers and Shelby Tube Samplers
- LANL ER-SOP 10.06, High Explosives spot test
- LANL ER-SOP-12.01, Field Logging, Handling, and Documentation of Borehole Samples
- LANL ER-SOP-12.02, Transportation, Receipt, and Admittance of Borehole Samples for the Sample Management Facility
- LANL ER-SOP-12.03, Acceptance of Non-Borehole Samples by the Sample Management Facility
- LANL Administrative Requirement 8-2, Hearing Conservation
- LANL Administrative Requirement 12-1, Personal Protective Equipment
- LANL Administrative Requirement 15-1, Field Work
- LANL ER-QAPjP-06, Sampling Procedures
- LANL ER-QAPjP-07, Sample Custody
- LANL ER-QAPjP-08, Calibration Procedures and Frequency

This page was not used.
LOUIE ROMERO

This page was not used
Louie Romero

This page was not used.
Louie Romero

This page was not used.
Laurie Renfrew.

ER2002-0320
Hydrogeologic and CMS Investigations at TA-16 VOLUME 2
PRS 16-021(c)

Responsible for this Log Book PETER GRAM 661-5207
Entries made by Kevin Reid 661-5706
LOUIE Romero 661-5732
Elmer Alcon 661-5216

The hydrogeologic and CMS investigations at TA-16 is a project driven by the CMS of PRS 16-021(c) and the RFI report for TA-16 PRS 16-021 (c). This investigation deals with high-explosive contamination in a shallow alluvial aquafer.

Louie Romero

ER2002-0320

TABLE OF CONTENTS

zero valent iron bench & pilot study	9
weekly sampling and field data management	13
zero valent iron sampling	19
flow integrated sampling	20
weekly sampling and field data management	21
quarterly water sampling december 1999	23
flow integrated sampling	32
weekly sampling and field data management	34
zero valent iron sampling	43
flow integrated sampling	47
Martin Spring Canyon well installation	50
weekly sampling and field data management	72
quarterly water sampling March 2000	92
weekly sampling and field data management	100
quarterly water sampling ~~and field data man~~ LR June 2000	117
weekly sampling and field data management	130
Q/A of sampling event and resampling	132
LR ~~geomorphilogical~~ sampling	134
↳ geomorphic	
weekly sampling and field data management	137
Q/A Post cerro grande fire sampling	140
weekly sampling and field data management	144
Q/A Post Cerro Grande Fire Sampling	156
Stream Profile	160
weekly sampling and field data management	161
Quarter water sampling September 2000	168
geomorphic Sampling	173
weekly sampling and field data management	177
stream profile measurements	190
weekly sampling and field data management	194

cont. on pg. 7 ⟶

stream profile	197
weekly sampling and field data management	HR ~~200~~ 200
quarterly ~~sampling~~ HR water sampling January 2001	215
weekly sampling and field data management	222
Sampling of springs	224
Weekly sampling and field data management	228
soil sampling	231
weekly sampling and field data management	234
stream profile	240
phytoremediation bench & pilot study	255
Quarterly sampling April 2001	258
Stream profile	272
phytoremediation bench & pilot study	284
quarterly water sampling	288
survey of geophysics & ecotoxicology locations	300
last page of this log book	304

project documentation is continued in Vol 3

Louie Romero

This page was not used.
Louis Romero 5/17/2002

11/01/99 0900 RB ~~0930~~ RANDY JOHNSON, DENIGHT BARRER AND STEVE FUNIL OF H&H ARRIVE AT TAILO TRAILERS:
POD: RUN MICROFRACTIONATION PROCESS ON NEW SOILS AND RUN ADDITIONAL TREATMENT ON CONTROL SOIL.
AMENDMENTS WILL INCLUDE WATER
930 RB $Al_2(SO_4)_3$ AND Fe.
~~1030~~ RANDY CONDUCTS TAILGATE UNDER SSHASP #251.
1000 RB ~~1057~~ RANDY AND STEVE ARRIVE / ENTER TREATMENT AREA
1200 TREATMENT OF TUBS 8, 9, 6 & 7 IS COMPLETE:

6 - Fe & $Al_2(SO_4)_3$ W/ 1L WATER
7 - Fe W/ 5.5L WATER
8 - Fe & $Al_2(SO_4)_3$ W/ 5.5L WATER
9 - Fe W/ 5.5L WATER

RANDY AND STEVE LEAVE THE ZONE
TUBS WERE SAMPLED AND PLACED IN BATHROOM W/ HEATER.
1215 RANDY AND STEVE DEPART SITE, DENIGHT HAD LEFT AROUND 1100 TO HELP DALE LYONS
SOPS USED TODAY INCLUDE:
LANL ER SOP 6.09 - SPADE & SCOOP METHOD FOR COLLECTION OF SOIL SAMPLES
LANL ER SOP 1.07 - SAMPLING IN THE AREA
" " " 1.01 - GENERAL INSTRUCTIONS FOR FIELD INVESTIGATIONS.

R Johnson 5/17/2002

11/03/99

0900 RANDY JOHNSON AND STEVE FUNK ARRIVE AT HEPS FIELD TRAILER IN PREPARATION TO HEAD TO TA16-224
POD: MICROINFRATIONATE AND AMEND TUBS 6, 7, 8 & 9 W/ Fe AND $Al_2(SO_4)_3$
TUB 6 - Fe & $Al_2(SO_4)_3$
TUB 7 - Fe
TUB 8 - Fe & $Al_2(SO_4)_3$
TUB 9 - Fe

0910 RANDY CONDUCTS TAILGATE FOR SSHASP 251. DEWATER WILL BE BREPED.

0917 RANDY AND STEVE HEAD TO 224.

1129 TREATMENT IS COMPLETE, WATER HAS ALSO BEEN ADDED TO THE FOLLOWING TUBS:
2 - 4.0L
3 - 2.1L
4 - 2.3L
5 - 3.0L
NO WATER WAS ADDED TO #1 AS THERE WAS STANDING WATER ON THE SOIL
TUB #4 HAS MOLD.

1145 CREW LEAVES SITE HEADED TO IT OFFICE. TUBS WERE SAMPLED AND PLACED IN THE HEATED BATHROOM.
THE SOPS APPLICABLE TO TODAYS ACTIVITIES ARE THE SAME AS USED ON 11/01/99.

R Johnson 5/17/2002

11/05/99

0800 Randy Johnson, Steve Funk, and Delight Bazzel arrive at HEPS field trailers.

POD: Microinfrationation and amendment of TUBS 6, 7, 8 & 9, as on 11/01/ and 11/03/99.

Randy conducts tailgate safety meeting under SSHAST #251

0941 Treatment of TUBS is complete, samples have been collected.

0949 TUBS have been placed in the bathroom. Steve and Randy head to PRS16-021(c) Delight heat to PRS16-021(c) around 0915.

1030 Steve and Randy leave site headed to IT office. Samples have been placed in HEPS analytical trailer freezer. SOP's for today are the same as listed for 11/01/99.

R. Johnson 5/17/2002

11-08-99 Monday

1300 Tailgate Safety Meeting is conducted. Crew of Louie Romero, Elmer Alvan, and Dale Lyons will collect samples from Treatment Bins of Soil in bldg. 16-224. Also, we will install the wind guage and tipping bucket on the Met Station.

1342 Team will commence sampling at soil bins.

1345 TRT # 6 sampled.

1350 TRT #7 sampled.

1356 TRT #8 Sampled.

1405 TRT # 9 Sampled.

1411 TRT #1 Sampled.

1415 TRT #2 Sampled.

1421 TRT #3 Sampled.

1426 TRT #4 Sampled

1430 TRT #5 Sampled

Samples will be stored ~~the~~ in the freezer. They will be mailed to the University of NE Tomorrow

1450 Crew departs the site.

Louie Romero 5/17/2002

11-09-99 Tuesday

1200 Crew of Dale Lyons (IT) and Louie Romero (IT) arrive at field trailers

Tailgate is conducted. Today we will sound all wells, collect samples from Springs. Seep for Bromide analysis. pH meter is calibrated.

1315 Martin Spring one sample collected.

1325 16-2666 DRY

1327 16-2665 DRY

16-2668 DRY

1359 16-2658 5.66' depth to H_2O pH = 6.7

1400 Pressure transducer was pulled out of 16-2658 and placed in a 5 gallon bucket containing ~10" of standing H_2O. This is to verify that the transducer is collecting an accurate measurement

1416 16-2657 3.18' depth to H_2O pH = 7.3

1418 Peter Seep head is ~21' east of 16-2657. One Bromide sample collected.

1429 16-2656 → 6.82' depth to H_2O pH = 7.2

1440 16-2659 7.81 depth to H_2O pH = 6.9

1442 16-2660 7.84 depth to H_2O pH = Not measured

16-2665 DRY

16-2669 DRY

16-2661 DRY

16-2662 DRY

16-2663 DRY

16-2664 DRY

SWSC one Bromide sample collected

Louie Romero 5/17/2002

11 12 99 Friday

1030 Crew of Louie Romero (IT), and Randy Johnson (IT) arrive at field trailers. Tailgate is conducted and pH meters is calibrated. Today we will monitor data flow loggers, manual well measurements of wells and pH measurements, collect bromide samples from springs.

1103 Martin Spring - Bromide sample collected.

16-2666 DRY

16-2665 DRY

16-2668 DRY

16-2661 DRY

16-2662 DRY

16-2663 DRY

16-2664 DRY

16-2669 DRY

5/17/2002 16-~~2665~~ 2655 DRY

16-~~2712~~ DRY

2736 DRY

2709 DRY

1235 16-~~2756~~ 2656 6.65 depth to H_2O, pH = 8.0

1251 16-2657 3.34 depth to H_2O pH = 7.8

1307 16-2658 5.65' Depth to Water pH = 7.4

1329 16-2659 7.87 depth to Water pH = 7.7

16-2660 7.83 depth to water

Peter Seep one bromide sample was collected. PS head is ~21' east of 16-2657.

SWSC Spring 1 bromide sample was collected.

BG Spring one bromide sample was collected

Martin Spring Bromide auto sampler was programmed to collect 48hour samples starting on 11-11-99.

Louie Romero 5/17/2002

11/15/99 Monday

945 Dale Lyons (IT) and Louie Romero (IT) arrive at field trailers. Tailgate safty meeting is conducted. Today we will monitor the flow integrated sampler at Martin Spring, BG, and SWSC.

1002 Crew arrive at MS. Computer is not functioning therefore we are unable to do anything here with the flow intigrated sampler. The bromide sampler seems to be working properly

1025 Arrive at BG Spring, we found out the lockdown code for the Sigma (Bromide) Sampler. we program the Sigma to collect the 48 hour sample starting today.

1030 Just got a call from Randy Johnson. Louie Romero will be part of the 200 pond area sampling crew. we will enter the zone at ~11:45 am. Louie will meet the crew at the field trailer at ~11:30 am.

1035 After entering the code we are getting a "distributor arm error" on SIGMA and a "bottle advance error"

1040 Dale contacts the company to find out what the problem is. The problem was it was programmed for 8 bottle in carrasoul, we changed it to 23. programmed to collect 1st sample today at 12:00

1049 ~~BG LR~~ we arrive at SWSC spring. program had started 11-05-99 at 16:00 The sampling was just about complete (45 of 47). we poured the collected samples (1 L) into the 5 gallon water sampling container. The sample filled the 5 G ~ 1/2 full. Flow ISCO was modified to shoot the sample into 5 Gallon container already containing the previous sample collected. Bromide isco is programmed to collect sample 1 today at 12:00 this (SWSC) bromide sampler has 12 bottles in the carosel, the others (BG, MS) have 24 bottles

1115 Crew departs site, Louie Romero will stay at the field trailers to wait for Randy Johnson to perform other field duties.

Louie Romero 5/17/2002

11/19/99 Friday

0930 Crew of Louie Romero (IT), Donna Sharp (IT), and Kristi Begoin (IT), arrive at HEPS Trailers. Today we will check well levels and pH, stream profile CDV and Martin Spring, collect a screening sample at each station and field parameters. Tailgate is conducted ~~at~~ 5/17/2002 and pH meter is calibrated

0950 Crew goes to SWO to get 125 mL bottles for field parameters.

1030 Crew arrives back at site and gets the gear together for today's activities.

1059 16-2655 is ~~DRY~~ LR 5/17/2002 DRY

16-2669 is DRY

16-2661 is DRY

16-2662 is DRY

16-2663 is DRY

16-2664 is DRY

1117 Crew arrives at MS station 1, sample is collected for screening. Conductivity 440 µs, 7.8 pH, 4°C, ~~as river~~ LR 5/17/2002 the flow is too very slow, too slow to get a ~~accurate~~ measurement w/ the ~~flow~~ LR 5/17/2002 (MARSHAL) flume, it is flowing, not standing RE16-99-3230 SC Log is filled out by Donna Sharp

1133 Crew arrives at MS station 2. There is no water present at this location. ~~the stream is frozen upstream~~ LR 5/17/2002 There is ice present between St 1 and St. 2. No sample or field parameters is collected.

1146 Station 3 Martin Spring. standing water is present (no flow). RE16-99-3232 is collected conductivity 370 µs, 3.9°C pH 7.4 There is a layer of oily material present on surface of water

1156 Station 4 Martin Spring is DRY.

1205 MS St. 5 is DRY

1210 MS St 6 is DRY

16-~~2669~~ 2665 is DRY

16-2666 is DRY

16-2668 is DRY

1300 ~~1230~~ LR 5/17/2002 Crew breaks for LUNCH. We will go to the S site cafeteria

1404 Station 17 CDV is DRY

1410 CDV Station 16 is DRY 5/17/2002

continued on the next ~~page~~ LR page

Louie Romero 5/17/2002

11/19/99 Friday continued

1420 CDV station 15 is DRY

1428 CDV Station 14

1435 CDV station 13 ; standing water, no flow (~1" deep)

RE16-99-3225 Field analysis sample collected; 250µS, 7°C, 7.2 pH

1443 CDV Station 12 is DRY

1445 16-2659 is 7.83' depth to H_2O; pH is 6.9

~~1445 16-2659~~ LR 5/17/2002

~~1445 16~~ LR 5/17/2002

1455 CDV Station 11 is DRY

1500 CDV Station 10 very low flow, unable to take a flume reading

RE16-99-3222 Field analysis sample collected, 220µS, 8.0 ph, 3°C

1512 CDV Station 9 good flow ; flume has good seal and position

measurement 1 gauge height = 0.08 ; RE16-99-3221 field analysis sample collected; measurement 2 gauge height = 0.07 ; 230µS, 2°C, ph 8.2

pH meter seems to not be working properly

1533 16-2658 is 5.70' depth to H_2O pH is 7.8

1535 CDV station 8 good flow ; flume has good seal and position

measurement 1 gauge height is 0.05

RE-16-99-3220 field analysis sample is collected; 240µS, 8.2 pH, 4°C

1550 CDV station 7 good flow ; flume has good seal and position

measurement 1 gauge height is

RE16-99-3219 field analysis sample is collected; 250µS, 8.3 pH, 5°C

1557 CDV Station 6 very little flow ~1" ~~deep~~ deep, no flume measurement will not be taken; RE99-16-3218 field analysis sample 230µS, 1°C, pH 8.1 5/17/2002 LR

pH meter may be malfunctioning

1606 CDV station 5 flow good ; flume has good seal and position

measurement 1 gauge height is 0.05; 2nd is 0.07

RE16-99-3217 field analysis is collected; 2°C, 220 µS, pH 7?

1615 CDV Station 4 standing water ; flume measurement will not be taken

RE16-99-3216 field analysis is collected; 290µS; 3°C, pH 6.9

Cont. on next page

LR 5/17/2002

11/10/99 FRIDAY Cont.

1620 ~~to take~~ Peter Zapp Bromide analysis sample is collected

PS head is approx. ~21' east of 16-2657

1621 16-2657 is 3.48 ft to H_2O pH = 6.7

1626 16-2656 is 6.60 to H_2O pH = 6.3

1618 Station 3 is dry

1619 station 2 is dry

1622 Station 1 is dry

1630 Crew arrives back at HEPS trailers.

field analysis samples are stored in Chem trailer refridarator.

Bazz will run the analysis starting tomorrow.

1645 Crew departs the site.

Louie Romero 5/11/2002

11/29/99 Monday

1400 Crew of Louie Romero (IT) and Elmer Alcon (IT) will check water levels of wells, collect a Peter Seep Sample, and sample the trt tubs of soil in bldg. 16-224

pH meter is callibrated and a tailgate safety meeting is conducted.

1410 Bdays TRT sample is T= 122 days (the last scheduled sampling event)

1415 TRT #6 Sampled

1422 TRT #7 Sampled

1429 TRT #8 Sampled

1434 TRT #9 Sampled

1438 TRT #1 Sampled

1442 TRT #2 Sampled

1446 TRT #3 Sampled

1450 TRT #4 Sampled

1454 TRT #5 Sampled

1500 16-2655 is DRY

1503 16-2669 is DRY

1510 16-2661 is DRY

16-2662 is DRY

16-2663 is DRY

16-2664 DRY

1515 16-2658 DTW 5.67' pH 6.9, cond. 170, Temp. 45°F

1520 16-2656 DTW 6.60' pH 7.2, cond. 220, Temp 45°F

1527 16-2657 DTW 3.60', pH 7.5, cond. 230, Temp 44°F

1529 Peter seep sample collected from channel 5' down drainage from 16-2657, Head ~~15~~ 21' east of 16-2657

1545 16-2659 DTW 7.86' pH, cond 240, Temp 46°F

1553 16-2666 is DRY

1554 16-2665 is DRY

16-2668 is DRY

1400 Crew departs the site.

Louie D Romero
5/17/2002

11/30/99 tuesday LOUIE 5/17/2002 LR

0945 Crew of Dale Lyons (IT), ~~Louie~~ Romero (IT), and Elmer Alan arrive at field trailers.

tailgate safety meeting is conducted

1000 Crew arrives at BC Springs. BC flow integrated sampler is programmed to ~~begin~~ begin sampler recieve pulses at 12:00. Laptop is hooked up and the dataloggar is interrogated. 30 pulses/sample (20mL) 1 pulse = 1000 Liters. 45 samples/bottle
LR 5/17/2002
Also data is downloaded from flow logger and temp & conductivity data logger

1017 Crew arrives at SWSC spring. Sampler is programmed to recieve pulses today at 12:00. Flow data logger is interrogated. 10 pulses/sample; 400 samples/bottle; data is downloaded from flow logger and campbell data logger (temp & cond.)

1042 Crew ~~of~~ arrives at Martin Spring. Flow sampler is programmed to begin receiving pulses at 12:00 today. Dataloggar is interrogated. ~~10~~ 15 pulses/sample (20mL); 45 samples/bottle.
LR 5/17/2002
data is downloaded from flow logger and campbell datalogger

1100 Crew departs the Site.

Louie Romero 5/17/2002

12/1/99 Wednesday

0845 Crew of Louie Romero (LT) and Dale Lyons (LT) arrive at HEPS trailer.
Today we will download data at wells. Tailgate is conducted. SSHASP (264)

0909 Crew arrives at 16-2659. Measurement is made to verify that Pressure transducer is 10' from top of casing to bottom on transducer. Data is downloaded from Campbell data logger (conductivity & temp, water level)

0927 16-2658, measurement of cable length of pressure transducer is 9.95 ft from pressure transducer unit to cable location at top of well casing. Campbell datalogger data is downloaded.

0941 16-2656, measurement of cable length from pressure transducter to toc location is 10.45 ft. Campbell data logger data is downloaded.

1000 16-2655, data is downloaded from data logger. This datalogger also has Meteorlogical data.

1015 Crew departs the site.

LS 5/17/2002

12/3/99 Friday

0900 Crew of Louie Romero (LT), Dale Lyons (LT), Elmer Allen (IT), and Santiago Romero (LT) arrive at field trailers. Tailgate Meeting is conducted and pH meter is calibrated. Louie and Dale will check water levels and pH of wells, and collect a Peter Sump sample for Bromide analysis. Santiago and Elmer will survey in geomorph sample locations.

16-2666 is dry

16-2665 is dry mud present at bottom

16-2660 7.65 ft from toc

1050 16-~~2660~~ 2659 7.65 ft from toc pH is 6.3

5/17/2002

16-2736 is DRY

16-2712 is DRY

16-2709 is DRY

1109 16-2656 6.55 ft from toc pH is 6.6

1120 16-2658 5.67 ft from toc pH is 6.7

16-2657 is frozen shut with bentonite

1148 PS cap head is ~21 ft east of 16-2657.

One 125 mL sample is collected for Bromide analysis

16-2669 is dry

16-2661 is dry

16-2662 is dry

16-2663 is dry

16-2664 is dry

16-2655 is dry

16-2668 is dry

1245 Crew departs the site.

L Romero 5/17/2002 LR

12/7/99 Tuesday

9:25 Crew of Dana Sharp, Louie Romero, + Dale Lyons (all it) arrive @ field trailers. Tailgate safety is conducted for quarterly sampling by D Lyons. Today's objective: Quarterly sampling in CDV & Martin Spring (Canyon). 2 samples will be collected at each location, one filtered / one unfiltered. The filtered sample will be sent off for metal + B analysis only. Unfiltered analyses are ANWQ, BICARB, D2H + O18O16, HENGPETN, HEXP, LH3, METTAL+B, N15N14, TUICPMS, VOAGCMS.

0936 The HORIBA is calibrated by D Lyons.

1040 team arrives @ BCr Spring
pH 7.63, cond. .278 mS/cm, turb 90, DO .14 mg/L
temp 9.4 °C, Sal .01%

1045 Sample RE16-99-3250 (unfiltered) collected
~~extra 500 ml poly collected~~ DL 6/17/2002 Photo 1, Roll 1

11:00 Team arrives @ 16-2658. Depth to water 5.61 ft, total depth 10.14 ≈ 7 gal purge
parameters: 1° pH 8.10, cond .279 ms/cm, temp 4.7 °C
2° pH 7.3, cond .280 " , temp 4.9 °C
3° pH 6.88, cond .280 " , temp 5.0 °C
Several of the initial bailer volumes appeared orange

11:20 RE16-99-3242(3) collected

11:50 Team arrives at 16-2659. Depth to H_2O 7.65 ft, total depth 10.0 ft. 2.35 ft x .653 x 3 ≈ 4 gal

11:55 Parameters: 1° pH 7.06, cond. .279 ms/cm, temp 6.1 °C
12:00 2° 6.72 .280 ms/cm, 6.2 °C
12:08 3° 7.2 .279 ms/cm 6.3
12:08 RE16-99-3244(5) collected
~~1425 team arrives~~ DL 6/17/2002

14:20 team arrives at 90s line pond. Pond Frozen, no sample taken. Photo #4, Roll 1

3746 LR 3/17/2002

1425 Team arrives at Martin Spring
1428 RE16-99-~~3846(7)~~ collected
Parameters: pH 7.54, 1.05 mS/cm, 9.3 °C
Roll 1, Photo #5, water is clear, low flow rate
1500 Crew filters & preserves sample bottle
1615 Crew departs site.

Donna M Sharp 5/17/2002

12/8/99 Quarterly sampling & flow rate integrated sampling
Today's objective: To conduct Quarterly sampling & weekly flow rate integrated.

0845 Crews will consist of Team I, D Sharp, E Alcon, & K Beguin. Team II, D Lyons, L Romero. Team I will package & label & submit 8 samples from yesterday to SMO. Team II will collect the headwaters & Water canyon samples. Team 1 is also collecting the Weekly flow rate integrated samples. LR 5/17/2002

0917 Team II conducts tailgate safety meeting, proceeds to headwaters of CDV. SSHASP 264 will be following

1005 Team II conducts tailgate safety meeting. Labels & packages RE16-99-3242, 3243, 3244, 3245, 3246, 3247, 3250 & 3251 have been submitted to SMO - COC 1082-99-5008.

1030 Team II collects headwaters of CDV sample RE16-99-3256(U), 3257(F). No parameters taken. 16-5968, Surface water, low flow, very clear. Roll 2, Frames 7, 8 taken facing South.

1105 Team I reaches Martin Spring to collect the weekly flow rate integrated sample. The sampler has been collecting for 8 days. 9 of 45 samples collected, not enough water in bottles for full suite consisting of ANWQ HEXP, HENGPETN, TUICPMS, Bicarb, Metal+B (filtered & unfiltered). All bottles frozen, we will take them and thaw them out in chem trailer. 5/17/2002 LR

1145 Team II arrives at trailer, Crew departs for lunch.

1245 Crew returns from lunch. Team II heads to Water canyon w/ D Bazzel as escort. Team I goes to CDV to collect weekly flow-rate integrated samples at BG & SWSC Spring.

1345 Burning Ground Spring. 27 of 47 samples collecte
app. 1/3 of each 1 liter bottle full. All water
frozen bottles must be taken to chem trailer
to thaw before sampling.
1420 Peter Seep frozen, no sample collected. Pete
Seep is still located app. 12' up from the
big rock.
1435 SWSC Spring. Sampler tried to collect 30 of 4
samples, at sample 17, the pump jammed
due to ice freezing in the tube. Samp
is not set to collect enough water
Water in bottom of carboy is frozen.
1500 Crew arrives back at trailer RE116-99-3
3257 is filtered & preserved.
1540 Crew departs site. A Decision was made
not submit the weekly flowrate integr
samples until next week. Tomorrow the
crew will go out and reset the sample
to collect more water.

Donna M Sharp 5/17/2002

12/9/99 Program samples & Quarterly cont.
Todays objective: To submit yesterdays sample from the headwaters of CDV. Reprogram the flow rate integrated samplers, & move satellite storage area to clam shell from the storage trailer. Todays weather, Cold, clear, app. 35°F
0945 Crew arrives at TA-16 trailer, D Sharp, E Alcon L Romero & K Begum (IT).
1000 Tailgate safety meeting conducted by D Sharp. We will follow SSI19SP 264.
1025 D Bazzel will take samples RE16-99-3656 & 3657, to the SMO. COC 1082-99-5010.
1030 Martin Spring. Water was returned to the site, the sampler is now set to sample every 5 pulses, 20 mls, 1000 gals per pulse. Sampler will start at 12:00 12/9/99
1015 Peter Seep frozen Roll 1, Frame 4
SWSC Spring, water is returned to site. Sampler is set for 5 pulses, 50 mls in 12 bottles (1 carboy), 1000 gals per pulse. line is frozen again, this may be a problem. Sampler will start 12:00 12/9/99
1135 Burning Ground Spring. Water was returned to the site from yesterday. Sampler is reset to collect sample after 20 pulses, 1000 gals per pulse, 20 ml in each bottle. This should push the sample over ½ liter per bottle per week. This sampler is working well. All samplers need to be checked tomorrow, especially SWSC spring.
1205 Crew moves the satellite storage area from the storage trailer to the white clam shell. It is posted appropriately

Louie Romero 5/17/2002

and locked using 4 locks (EMER 18).
1240 Crew departs site. Quarterly sampling
be continued on Monday. SWSC spring
& Water canyon still need to be collected

Donald M Shand 5/11/2002

12/10/99 Friday

1300 Crew of Elmer Alcon (IT) and Louie Romero (IT) arrive at HEPS trailers.
Today we will hand auger to determine alluvium depth at potential borehole locations in Martin Spring Canyon. Tailgate (SSHASP 26 H) is conducted

1315 MS Alluvial well location #2. Hand augering by Elmer Alcon begins.
0-3 ft topsoil dry to slightly moist
3ft-4ft sandy material begins (dry to slightly moist)
4ft LR 5/17/2002 ~~Qbt~~ QBT formation encountered
location is ~5 ft south of MS drainage channell (no water flowing in channell)

1320 ~~loc~~ next location is ~8 ft down gradient from previous location.
Hand augering begins by Elmer Alcon.
0-10 in top soil sandy clay ~~lome~~ loam material w/minor organics. Soil is moist 5/17/2002 LR
10 in encountered QBT

1325 next location in ~125 ft down gradient from 1st location. Upper edge of wetlands ~15' North of Stream channel
0-6 in soil is moist clay to minor organics.
6 in - 20 in sand is present moist clay (minor) 5/17/2002 LR
20 in. meet refusal
the mentioned location are upgradient west of access road

1332 Arrive at location #3. Hand augering begins by Elmer Alcon. location is ~6 ft North of stream profile location #6
0-10 in alluvium material (top soil) dry to slightly moist w/minor organics
10 in meet refusal
This location is at lower end of wetlands.

LR 5/17/2002

12/13/99 Monday

1000 Crew of Louis Romero (IT) and Dale Lyons (IT) arrive at HERS field
5/11/2000 NR today we will sample (QUARTERLY) SWSC spring and 16-2656. Donna Sharp
Elmer Alcon (IT) and Dwight Bizzell (IT) have gone Gate 9 (off of SR4) to
sample in water canyon. There is no sounder available, so we are unab
to check any well levels. Tailgate safety meeting conducted a

1115 RE16-99-3218 collected at SWSC spring
pH 7.9, cond. 0.278 mS/cm Roll 2, Frame

11th 16-2656 RE-16-99-3238, 3239 sample
pH 7.8; cond 1.1 mS; temp 4°C Roll 2, Frame
We are using SSHASP 264 Weather: C
clear, app. 32°F.

1118 RE16-99-3262 (3263) collected at 16-16121 (Wate
This is a new location app. 200 yds
drainage from the Water/Cañon de Va
confluence (up Water canyon) at
ESH-18 sampling station. This location
to be surveyed or coordinates gotten
FSH-18. pH = 7.6, Cond = 150 µS/cm, Temp =
Water is partially frozen & murky. R
Frames 7, 8 & 9.

1345 Crew meets up again at TA-16 trailer.
are being preserved & filtered. D B
will conduct screening.

1430 D Lyons & L Romero depart site.

1600 D Sharp & E Alcon transport samples
including the TU sample from the
week. COC 1082-99-5011.

1630 D Sharp & E Alcon arrive at office.
Note: The TU samples were not sent off w/ ORS
sample IDs. The new ones will be linked in F
New Sample IDs for TU are: RE16-99-3275 thru

Donna

12/17/99 Friday.

0835 Crew of Louie Romero (IT) and Dale Lyons (IT) ~~with~~ LR 5/17/2002 arrive at field trailers. Today we will manually check water levels and pH from wells.

0845 Crew will break from today's tasks to help Randy Johnson (IT) with his task of filling a 55 gallon with soil from the 260 pond area.

1115 Crew is done with the task of helping Randy Johnson.
Tailgate is conducted and HARIBA is calibrated.

1159 ~~GW~~ 16-2656 6.59 ft depth to H_2O pH = 7.12
16-2657 is frozen in bentonite, thus inaccessable.
PS head is ~ 21ft east of 16-2657, and is frozen ∴ unable to collect a bromide sample.

1216 16-2658 5.54 ft ~~K~~ LR 5/17/2002 depth to H_2O pH = 6.64
SWSC spring Bromide (48 hour) sampler were not collected. Auto Sampler was programmed incorrectly. Reprogrammed to collect samples every 48 hours starting today at 1230. Flow integreted ~~sam~~ auto sample was reprogrammed to start receiving pulses today at 1230.
5 pulses/sample into large 5 gallon sample bottle.
BG spring flow integrated sampler reprogrammed to ~~st~~ start receiving pulses today at 1230. 30 pulses/sample
MS pring was reprogrammed ~~to st~~ LR 5/17/2002 yesterday to start receiving pulses today at 12:00 5 pulses/sample

1259 16-2659 7.90 ft depth to H_2O pH = 7.43
16-2660 7.94 ft depth to H_2O

1315 Crew departs the site.

L Romero 5/17/2002

12/23/99 Thursday

1330 Crew of ~~Irene~~ Romero (IT) and Dale Lyons (IT) arrive at HEPS field trailers. Today we will collect ~~and~~ LR 5/17/2002 samples from the flow integrated Samplers, and the Bromide 48 hour samples located at the 3 springs of study

1347 Crew arrives at SWSC spring. Flow integrated sample complete. program started 1158 on 12/~~19~~ LR 17/99 LR 5/17/2002, pump jammed on sample ~~6 of 40~~ LR 5/17 ~~7~~ LR 6, 7, 8/~~23~~ LR 40, 23/40 no liquid detected, 37/40 no liquid detected 38/40 no liquid detected. sample complete 18:36 on 12/22/99. Bromide samples (48 hour), 4 samples collected. 12/17, 19, 21, 23/99. Programed to begin sampling 12/24/98. ~~note~~ This sampler (Bromide) was an ISCO w/12 bottles and was replaced with a SIGMA w/24 bottles.

1432 BG Spring. Flow integrated sampler, no sample collected. The tubing is frozen. Reprogrammed to begin sampling (receiving pulses for sampling) 12/24/99 at 1200. (same as SWSC flow integrated). Bromide 48 hour samples: bottle 1 and 2 collected. error is: Bottle advance fault. sampler was programmed for 8 bottles instead of 24. Sample collected is no good. Also gives a message of Low Battery. Snow was cleaned from the solar panel. Sampler may not have enough power to properly function, which would effect both sampler at this location.

1529 Martin Spring. Flow integrated sampler collected NO sample. Error is: Fatal Error distributor jammed. Sampler unit is replaced with properly functioning isco, and is reprogrammed to begin receiving pulses 12/24/99 at 1200. SIGMA Bromide 48 hour sampler has no power. Seems as if SIGMA sampler requires more power than ISCO. In addition, SIGMA has only 23 bottles instead of 24 ~~no control~~ LR 5/17/2002 causing sampler to miss some bottles. No samples will be collected due to no control of sampler distributor arm due to space between bottles. Bottom carousel has ~5in of frozen solid ice. Bottom carosel will be placed in a location to ~~thaw~~ LR thaw.

LHowara 5/17/2002

01/03/00 Monday

1010 Crew of Louie Romero, Elmer Alcon, and Dale Lyons arrive at HEPS field trailers, activities for today will be to check on flow samplers in Martin Canyon & CDU. SOP in effect are 264, weather: over cast, 10°F slight breeze from West.
Lane conducts tailgate safty briefing.

1040 Crew hikes down into Martin Canyon

1040 Crew checks status of flow samplers, 17 of 47 samples displayed on Isco. in review no samples were collected due to "no liquid detected". Crew will reset sampler and tested it, Sampler seems to be working corrected. ~~Current~~ 1-3-00 Currently Sampler is activited every 8 pulses, crew will reset sampler to 4 pulses due decreased flow.

1052 48 hr sampler was down and crew will reset and program to collect samples starting at 1200 today. Flow sampler programed to start at 1200 today

1056 power source to 48 hr sampler has a break on the line, Crew will repair break and set programing. it appears that rabbits or squirrels ~~might~~ have bitten through cable.

1100 crew will down load data from flow logger,

1105 Flow logger data collected.

1117 repairs to cable completed, and programing to 48 hr sampler done.

1140 Crew depart Martin Spgs.

1205 16-2656 LR 5/17/2002 6.70 ft depth to H_2O pH = 6.80

1210 Crew arrive at SWSC spring. One flow ~~p~~ LR 5/17/2002 proportional sample collected. ~~Status is~~ LR 5/17/2002 status was 40 of 47. program stoped and sample was collected (12/24/99 - 1/3/00). LR 5/17/2002 Reprogrammed to begin receiving pulses today at . Programing will be the same as on 12/23/99.
Bromide 48 hour sampler is properly functioning from 12/23/99 and has collected 6 of 24 30 ml samples.

continued on next page

/ Louie Romero 5/17/2002

01/03/00 continued

1225 16-2657 well cover is frozen in bentonite unable to collect data

1226 FSweep is frozen solid unable to collect data. PS head is ~21 ft east of 16-2657.

1228 New battery is installed in Campbell data logger (cond. & temp.)

1305 16-2658 ~~5.70~~ 5.70 ft depth to H_2O pH: 8.2 5/17/2002

1315 BG Spring Flow proportional sample collected (12/24/99 - 01/01/00). Inside 48 hour SIGMA is in need of repairs. It did not collect any sample. It is pulled out for repair. BG Flow proportional Sampler is reprogrammed (same as 12/22/99. 5/17/2002

1335 16-2666 is DRY

16-2665 is DRY

16-2660 7.60 ft depth to H_2O pH: not measured

16-2659 7.58 ft depth to H_2O pH: 6.2

16-2655 is dry

16-2664 is dry

16-2661 is dry

16-2662 is dry

16-2663 is dry

16-2664 is dry

1445 Crew departs the site.

L Romero 5/17/2002

01/04/00 Tuesday

1345 Crew of Laure Romero, Dale Lyons, and Elmer Alcon, arrive at HCPS field trailers. Tailgate meeting (safety) is conducted. Today we will move the bromide 48hour sampler from Martin Spring to Burning Ground. The one from BG Spring was sent to the manufacturer for repairs. We will also monitor the flow ~~integrat~~ 5/17/2002 or proportional samplers at the springs.

1407 Crew arrives at Martin Spring. Sigma sampler is ~~stop and~~ 5/17/2002 or stopped and disconnected. Flowrate sampler has already collected 4 samples.

1451 Crew arrives at BG Spring with SIGMA sampler. Sigma sampler is connected to power supply and program is resumed for 300ml sample every 48 hours starting tomorrow at 12:00.
Flow integrated sampler has collected sample, but is frozen. Crew thaws oil frozen tubing, and program is resumed.

1515 Crew arrives at SWSL. Bromide sampler has collected 6 samples out of 24. Flow sampler has collected sample as per programming.
The sample that was collected in the Bromide sampler at Martin Spring is from 1/3/99

Laure Romero 5/17/2002

this page was not used

L Romano 1/7/99

1/7/~~99~~ 00 LR 5/17/2002 Friday

830 Crew of Louie Romero and Dale Lyons arrive at field trailers.
Today we will sound wells and pH measurement of water.
Also Encore the flow proportional samplers are properly running.

1000 16-2659 ~~7.5~~ LR 7.75 5/17/2002 pH: ~~HARIBA malfunction~~ LR 7.4

16-2660

1030 16-2736 dry

16-2712 dry

16-2709 dry

1057 16-2656 6.59 ft depth to water pH: not avaible, HARIBA malfunction

16-2657 frozen in bentonite

1119 16-2658 5.81 ft depth to H_2O

16-2660 is dry

16-2665 is dry

Second ISCO installed at Martin Spring for Bromide ~~analysis~~ LR 5/17/2002 sample collection. ISCO is programed to collect the first sample at 12:00 today

Louie Romero 5/17/2002

1/10/99 Monday

1100 Crew of Louie Romero and Dale Lyons arrive at HEPS field trailer.
Today we will collect Flow proportional samples and check
on Bromide 48 hour samplers. 5/17/2002 LR

1112 Crew arrive at Martin Spring. Bromide 12 bottle ice is on bottle 3.
Flow proportional 22 of 47. each bottle is ~ 3/4 full. 1 pulse =
500mL. 5 pulses per sample. 47 samples.

1139 Crew arrives at BL Spring. 1:26 1/3 started, ~~2~~ LR 5/17/2002
sample 2, 3, 4 no liquid 17, 18 pump jammed
39 of 47 collected. 1 liter bottle are ~ 3/4 full
1 pulse = 1000 mL, 1 sample = 10 pulses (changed from 15)
47 samples 20mL. Bromide sampler is on bottle 5 of 24

1150 Crew arrives at SWSC. Done 40/40
program 1/3/99 500mL sample 1 pulse = 1000 mL, 5 pulse / sample
sample # 1, 2, 6 missed 1/4/00 23:06 completed 5/17/2002 LR
sample bottle has ~ 4 gallons
All samplers were programed to begin today at 1200.
Bromide 48 hour sampler status: Now on bottle 7 of 24

Louie Romero 5/17/2002

1/12/00

1:15 Dale Lyons arrives TA-16 field trailers. in
Flow proportional samples from MS, BG, + SR25C
filtered and acidified for subsequent submission
of prepared samples for analysis.
Louie Romero 5/11/2002

1/13/00

9:00 Dale Lyons arrives at TA-16 field trailers to pick up samples; then to SMO.
Sample RE16-00-3000 Dates on Sample Col. log and on Sample sticker reads: 1/10/1920. Date corrected on Sample collection log and on labels
Sample RE16-00-3001 same problem; corrected. 5/17/2002 LR
Sample RE16-00-3002 same problem; corrected.
Sample RE16-00-3003 same problem; corrected.
Sample RE16-00-3004 SCL + labels dated 00/00/00; corrected + initialled
Sample RE16-00-3005 SCL + labels dated 1/10/1920; corrected.
9:30 Flow proportional samples submitted at SMO
Lowe Romero 5/17/2002

1/14/99

9:15 Crew of Louie Romero and Dale Lyons arrive at HEPS field trailers.
Today we will check on all auto samplers and sound wells and pH of well water. pH meter is calibrated and tailgate safety meeting is conducted.

9:45 Crew arrives at Martin Spring. Bromide sampler is running well.
Flow proportional sampler is at 25 of 47 and is running well.

0957 16-2660
16-2659 7.76 pH: 6.4
16-2665 dry
16-2666 dry
16-2668 dry
16-2736 dry
16-2712 dry
16-2709 dry

1045 We are unable to enter Cañon de Valle due to remote excavation being conducted at MDA-P area
16-2655 dry
16-2669 dry
16-2661 dry
16-2662 dry
16-2663 dry
16-2664 dry

1130 Crew departs the site.

L Romero 5/17/2002

1/18/2000 Tuesday

1000 Crew of Louie Romero and Dale Lyons arrive at HEPS field trailers. Today we will collect flowproportional samples from Martin Spring, Burning Ground spring, and SWSC spring. ~~the ...~~ 5/17/2002 LR this is under SSHASP 264. We will also perform work under SSHASP 251 which includes SIMO sampling of the 9 soil treatment studies tubs located in bldg. 16-224.

1010 Tailgate safety meeting (SSHASP. 264 & 251) is conducted to cover todays activities.

1023 Crew arrives at Martin Spring. Bromide sampler is on bottle 7 of 12 and is sampling every 48 hours. Flowproportional sampler is on 47 of 47 samples after 3 pulses. All 12 2 Liter bottles are full and a sample is collected. sample interval is 1/10/2000 - 1/18/2000.
Sample collection is changed to sample five every 6 pulses instead of 5 to compensate for to much water collected per event.
Sampler is programed to begin a sample at 10:30, and will sample every 6 pulses after that. ~~50 mL~~ 500 mL = 1 pulse. 5/17/2002 LR 47 samples total

1052 Crew arrives at SWSC spring. Flowproportional sample is complete 40/40 500 mL each samples program was complete on 1/16/2000 at 5:50
Sample interval is 1/10 — 1/16/2000. sample is collected.
will sample every 7 pulses (instead of 5). ~~5 ga~~ LR 5/17/2002
1 pulse = 1000 L. 5 gal carboy contains ~4 gallons of sample
Bromide sampler is on bottle 11 of 24.

1110 Crew arrives at BC-Spring. Flowproportional sampler is complete. 47 of 47 collected. sampling complete on sat. 1/15/2000. Sample is collected and sample interval is 1/10 - 1/15/2000. Sampler will be programmed to sample every 11 pulses (from 10) and will begin at 1115 today.

1130 Crew breaks for lunch

1230 Crew returns from lunch to HEPS field trailers. Equipment is gathered to sample the treatment tubs in bldg. 16-224.

1236 Crew arrives at 16-224. The samples will be composite of the bin. There at 9 trt bins. Today is T = 173 days total. Treatment

Cont. on next page

Louie Romero 5/17/2002

1/18/2000 cont.

1040 #7, 8, & 9 are new treatments, that were compiled on 11/05/99 and are at T = 75 of treatment.

1246 TRT # 6 is collected 5/17/2002 LR RE16-00-0001

1248 TRT # 7 is collected (top of soil has white fungus) RE16-00-0002

1252 TRT # 8 is collected RE16-00-0003

1253 TRT # 9 is collected RE16-00-0004

1254 TRT # 1 is collected RE16-00-0005

1256 TRT # 2 is collected RE16-00-0006

1259 TRT # 3 is collected RE16-00-0007

1302 TRT # 4 is collected RE16-00-0008

1305 TRT # 5 is collected RE16-00-0009

1318 Crew departs 224 and heads to HEPS field trailers. Samples will be stored in the refrigerator until tomorrow when they will be submitted to SMO. I have already contacted CDM for SC Logs.

1325 I have contacted Augusta Garcia (CDM) with the sample collection times. I will ~~or~~ pick up paper work (sc log, labels, COC) tomorrow for submittal to SMO

1330 Regarding the flow proportional sample: the approx volume of water remaining after the submission of samples is 5 Liters ~~for~~ from each spring. This volume of water is stored in the field ~~storage~~ LR 5/17/2002 storage trailer.

1345 Crew departs the site.

LR Sanchez

8/19/2000

This page was not used

Luis Romero

5/17/2011

8/20/2000

1015 Crew of Louie Romero (IT) and Dale Lyons (IT) arrive at the HEPS field trailers. Today we will download data from data loggers at springs and wells.

1035 Crew arrives at 16-2655. data is downloaded from the Campbell Scientific data logger. This data logger has the meteorological station attached in addition to the pressure transducer and conductivity, temp.

1056 data is downloaded from 16-2658. The battery is in need of replacement

1108 data is downloaded from BG Spring campbell datalogger. The flow rate data logger ~~is~~ LVR 5/17/2002 data is downloaded also.

1120 Crew arrives at SWSE spring. data is downloaded from the Campbell Scientific data logger and the flow rate data logger

1135 crew arrives at 16-2656. data is downloaded from the Campbell data logger and the pressure transducer is recalibrated. depth to water is 6.55. 10.4 is the length of cable from toc to pressure transducer. total depth of well is measured at 10.50

1140 Crew departs the site.

LRomero 5/17/2002

1/21/2000

1330 Crew of Louie Romero and Elmer Alon arrive at the site. Today we will check water well levels and pH.

1350 Crew arrives at Martin Spring. Data is downloaded from the flow data logger. An attempt was made to download data from the Campbell datalogger, but for some reason, the connection between the laptop and the datalogger is disconnecting whenever I select the option collect now. An error message come up saying 'there are no arrays to collect'

1400 Crew is unable to enter Cañon de Valle due to remote operations being conducted at MDA-P

1410 16-2665 is dry

1412 16-2666 is dry

1415 16-2668 is dry

16-2669 is dry

16-2661 is dry

16-2662 is dry

16-2663 is dry

16-2664 is dry

16-2736 is dry

16-2712 is dry

16-2709 is dry

16-2655 is dry

1530 Crew departs the site.

LR 5/17/2002

1/24/00

0840 Crew of D Sharp & D Lyons leave for TA-16. Today we will collect the weekly flow proportional samples at the three springs. We will also download data from the Campbell & Flow loggers.

0940 Tailgate Safety briefing is conducted by D Sharp

1000 Martin Spring 16-2650. The isco has collected 32 of 47 samples at 6 pulses, 20 mls per sample, we will leave it. The samples started collecting DS 1/24/00 at 12:00 on 1/18/00. We collected 12 bottles.

DS 1/24/00

1036 16-2658. Put in new battery. 5.75' DTW, 10.2 TD. 10.2 - 5.75 length of cable 9.975'. Amt of water above of 4.45 transducer = 4.225' entered into program. There appears to be a problem w/ the PC2000 program. We are getting the same message as crew did on 1/21/00

1050 Burning Glass DS 1/24/00 SHOSC Spring, 16-2652, weekly flow rate integrated samples collected. Work started 1/18/00. Crew tried to download the data from the flow logger and successfully did this. We will re install the PC 2000 program, hopefully this will work. Crew collected 12 bottles. The Isco collected 46 of 47 samples ~~and~~ every 11 DS 1/24/00 pulses. 20 mls per sample.

1115 SHOSC Spring, 16-2651. Flow is extremely low at SHOSC. The Isco collected only 11 of 40 samples. It should collect 500 ml per every 1 pulse. There may not be enough water for a monthly contribution. The conveyance has app. less than 1/4 full of water.

1150 Crew departs site.

1/24/00

Dana M Sharp

This page was not used

5/17/2002

this page was not used

5/17/2002

1-24-00

~~0830 E. Alc~~ EA 1-24-00

Today's activities; conduct kick off meeting for Stewart drillers and mob to TA-16, secure rig & truck permits a if possible drive CME750 drill rig down into Martin Canyon with TA-11 to boreholes 16-6293, 16-6294, & 16-6295

0830 Crew will consist of E. Alcon, L. Romero (IT Corp), S. Johnson, & Tommy Castillo (Stewart Bros).
E. Alcon Conduct kick-off meeting at Drill yard, Item covered are, FIP, SSHASP#266, Location of boreholes, Training reco, sampling plan, supplies need for wells, escort papers (1812 form). L. Ro has training during Am today, He will join Crew at noon.

0930 Kick-off meeting completed. E. Alcon will return to IT office for additional paper work. S. Johnson & T. Castillo will mob supp

1000 E. Alcon returns to drill yard and assist crew with mobing.

1015 Crew departs drill yard for TA-15, CME750 is current parked there from a previous Job. Crew will also pick up augers and tranport to TA-16.

1030 Crew arrive at TA-15 for drill rig.

1045 Crew depart TA-15 for TA-16.

1125 Crew arrive at TA-16, very slow drive.

1130 Crew secures required permits from Bill McCormick.

1145 Crew at field trailers, and check for additional supplies (First aid kits, eet, refuel

1210 Crew depart for lunch,

1245 Crew back from lunch, Inspection sheet on rig is conduc

1300 E. Alcon Conducts tail gate safty briefing, L. Romero joins cre

1315 Crew will utilize ATV for today's excavations. Crew departs for TA-

1330 Crew arrive at TA-11,

5/17/2002

01-24-01

1335 Crew will start at location 16-6294 (second borehole) above the wetlands on the South bank of Channel

1340 CME begin to slow drive down into canyon, photos. 11, 12, 13, & 14

1440 CME 750 is at borehole location 16-6294. photo 15

1450 Drill rig is position at location, photo 16

1500 HES pot test is done on surface to determine if positive test or negative test. photo 17 negative results.

1505 Crew begins to rig up-

1510 augers and drill bit in place.

1520 Crew is ready to begin drilling and will begin tomorrow

1530 Crew is shown borehole 16-6295 (third borehole) below wetlands and also crew walk location of access to reach third borehole.

1610 ~~1410~~ Crew complete hike and will depart canyon bottom.

1620 ~~1420~~ Crew back at truck and TA-11, crew depart for Field trailers.

1635 ~~1435~~ Crew will leave supply trailer at field trailers.

1635 ~~1445~~ Trung Ni ESH-5 is called and inform of status of project up to this point, P. Gran is also call and updated.

1654 Crew depart field trailers

5/17/2002

0-25-00

Today activities: Drill at location 16-6294 and collect soil samples at Soil/Tuff interface and at bottom of hole. Crew will consist of E. Alcon, L (IT (corp), S. Johnson & F. Castillo. (Stewart Bro) S. Johnson will be driller and T. Castillo helper.

1230 Crew got a late start due to training and writing training records for Stewart Bros. ESH-5 rep Tracy was called and informed of status. Crew will be under SSHASP 216 with all applicable SOP's for Soil Sampling Drilling and also QP's.

1300 Crew arrive at field trailers and E. Alcon conducts tail gate safety briefing, crew transfers Quikrete to ATV trailer, load sampling supplies and depart for Martin Canyon via TA-11

1330 Crew arrive down at drill site (16-6294) inspection is done on rig and is started to let warm up. Weather condition are Cloudy, light snow flurries, 40°F.

1350 Crew will begin drilling with the following parameters 8 1/4" OD and 4 1/4" In with 3 1/2" ID., 5' auger sections.

1355 Crew begin drilling 0-2.5'

1359 0-2.5' reached, will recover split spoon with first run

1405 ~~0-2.5 SA 1405~~ 75% recovery 0-2.5', photos 19 & 20 Take Sample description: minor organics 0-6' with soil makin up most of material. Dry to slightly moist, Color using Munsell chart. 5YR 5/3, reddish brown. Soil is mainly Clays with fine tuff granular 2-5 m

1414 Run #2 collected 2.5' to 3.2', refusal met crew will change out bit and continue to drill, crew will log run #2, photo 21

1415 Crew will go and secure drill bit from field trailers and then return with bit, L. Romero & S. Johnson will depart for trailers T. Castillo & E. Alcon will remain and log core.

Elt

01-25-08

1420 crew depart for trailers,

1445 Crew back from trailers,

1447 crew trips out augers and will replace bit with a bit of a different configuration using bullet cutters.

1500 Crew resumes drilling, note: Location on photo board for photos #19 & 20 should have read 16-6294 not 16-6293.

1510 Drilling continues very slowly, it appear we have encountered Qbt.

1515 Drilling continues, current setting on rig are 1000 PSI pull down and running at 48 rpm.

1519 Run #3 completed - photo 22 taken, soil/tuff interface encountered at a depth of 4.6', sample RE16-00-0012 will be collected from interface. Run description alluvium 3.2' to 4.6', 4.6 to 5.3' Qbt,

1520 Sample description: for RE16-00-0012 is Homogenous soil/tuff interface dry to slightly moist, no organic, Qbt has minor pumice with phenocryst, non-welded to slightly welded. 2.5YR reddish-gray dry to slightly moist.

1530 Run #4 completed photo 23 taken, 5.3 to 7.5' Qbt same as above

1545 Run #5 completed both runs #4 & #5 were crushed from drilling Run #5 7.5' to 10.0' photo 24, Qbt, crushed from drilling, same as above. TD = 10.0', no water encounter

1555 Sample RE16-00-0013 collected bottom of borehole, photo 1 Roll 2,

1600 Crew will backfill with 3/4 bentonite plug up to 7.4, then 5.2 screen with a 4" sump will be placed. Crew will begin with bentonite.

1634 crew continues with bentonite plug currently at 5.5'.

1640 Crew will add 2 gallons of water to bentonite, depth at 7.4'

1645 well construction continues, crew will add 20/40 sand to pre pack screen.

1700 Prepack placed in borehole, crew will fill annulus with 20/40 sand.

1705 Crew will need more 20/40 sand.

5/17/2002

01-25-00

1706 Crew will clean up site and finish well completion.
1715 well completion continues.
1720 well construction is as follows; TD = 10.0'
Bentonite 3/8 size from 10.0' to 7.6' (2 bags)
Swamp 7.6' to 7.3'
Screen 7.3' to 2.5 with 20/40 sand. prepack (1 bag prepack)
Sand 30/70 2.5 to 1.8, 4" PVC case 2.5 to surface with
Bentonite ±0 1.8 to 1.3 (1 bag)
Quikrete 1.3 to 0' ± pad (4 bags)
1725 Concrete pad will be complete tomorrow and set in place with 24" X 24" box-frame.
1735 Crew depart site for office.

5/17/2002

1-26-00

Todays activities: Continue well construction at Martin Canyon well # 16-6294. then relocate rig to upper borehole location 16-6293. SSHASP 26 6

0835 Crew members are L. Romero, E. Alcon (IT corp), S. Johnson, & T. Castillo, (Stewart Bros). Crew depart IT offices to meet Drillers at drill yard.

0845 Crew will get material for Box frame on Concrete pad.

0930 Crew departs drill yard for TA-16 Trailers and Check in with TA-16 & TA-11 managers.

0950 Crew arrive at TA16 field trailers.

1000 Tail gate safty briefing conducted by E. Alcon

1005 Crew mob sampling for sample and other misc. material.

1010 Crew depart for location 16-6294.

1030 Crew arrive at well 16-6294 to complete construction.

1035 Box form construction begins, and excess PVC stick is cut off.

1045 Drill rig is started and will rig down and drive forward to place form around PVC casing, crew will dig level for center placement.

1100 digging continues.

1115 Concrete mix begins

1125 Concrete in place, crew smoothing out concrete, photo 2, roll 2 taken.

1140 1 1/2 bag of # 8 bentonite was used to fill in space inside Vault and PVC.

1150 site clean and move rig - Monitoring Well 16-6294 completed.

1155 TD of well to TOC = 11.1', depth from surface 7.4'.

1200 Crew depart for location upper Canyon ID 16-6293.

5/17/2000

01-26-00

1230 Crew still in Transit with drill rig.

1300 Crew still in Transit. with drill rig.

1310 Crew still in Transit, There is an access road that runs along the ridge top of Canyon on the South side between TA-11 & Build TA 16-306, 307, a secondary road branch off from top road, Crew will use secondary road to reach Location 16-6293. A Call was placed to Bill McCormick about access from building 306 & he said "it was ok". We will leave Stewart Bros Tr. & Supply trailer on the pave road near building 306. note: earlier Today Crew reach a Call from John Hopkins and asked about the CME 750 noise levels, He will be doing some work with areas of endangered species concern He refered us to a ESH-20 rep Cathy Bennett who wants to conduct some noise monitoring. Crew Info her of where we are at, She will try to come out Tomorrow, P. Gram was called and informed about ESH and John Hopkins.

1315 Crew will take a short break and go to field trailers.

1345 Crew back from break. Crew will now drive drill rig down secondary road into Martin Canyon bottom.

1420 Crew & rig still in transit.

1445 Crew at location 16-6293, area where borehole is located is approximately 25 yard up-up drainage from Stream profile #2 16-5921. drill rig in place on south bank of channel.

1450 HE spot done where drilling will take place, and it was negative Crew rigs-up and will start to drill.

1455 Drill started used 8 1/4" OD and 4 1/4" ID drill bit.

1511 Run #1 completed.

5/17/2002

01-26-00

1511 Run #1 Completed photo 7, Roll 2 taken, 0-2.5' 90% recovery, 0-0.6' surface organics, pine needles, grasses, leaves, and loamy material. 0.6' to 2.5 Alluvium soil with sands, minor clay, minor organics, minor tuff granular 2-5 mm in diam 5YR 4/3 reddish brown, dry to slightly moist.

1520 Run #2 Completed photo 8, Roll 2 taken 0-2.5' 100% recovery, 2.5' to 4.4' Alluvium same as above, Soil/tuff interface at 4.4'. Sample RE16-00-0010 will be collected. photo 9, roll 2, 4.4' to 5.0' Qbt, minor pumice, phenocryst. 5YR 6/1 gray slightly moist, minor clay layer at 4.8'.

1530 Drill resumes, weather condition have change from partly cloudy, 40°F to Current overcast light rain 35°F.

1535 Run 3 completed. photo 10, roll 2 5.0 to 7.5' Qbt same as above with welding increased to slightly welded, 100% recovery. No water encountered during drilling

1545 Run 4 completed, photo 11, roll 2 100% recovery, 7.5 to 10.0' Qbt, description same as above. Sample RE16-00-0011 will be collected from 9.6' to 10.0'. photo 12, roll 2

1550 Crew will secure site, more rain has started, a breeze from west at 0-10 mph. Crew will depart site and finish well construction tomorrow. TD of borehole = 10.0'

1600 site secure Crew depart for field trailers.

1650 Crew depart field trailer for Office.

5/17/2002

01-27-00

Today activities: Continue Well construction at 16-6
then proceed to lower canyon to three location just bel
TA-11 and Wetlands area, SSHASP 266, and SOPs.

830 Crew depart IT office for drill yard.

845 Crew will consist of S. Johnson, T. Castillo, (Stuart Bio
E. Alcon, Lio Romero, (IT). Today crew will have visitors fo
ESH-20, Cathy Bennett, Ann Showard, David Keller, Steve K
Crew will meet ESH-20 personnel at Access Control office, th
proceed to field Trailers.

905 A permit for noise monitoring secured from Leonard Maes, TA
Manager.

915 Tail gate safety briefing conducted by E. Alcon and signed by
all of the above.

920 Crew mob supplies and depart for borehole 16-6293. there crew
will load additional supplies on ATV for transfer to Canyon
bottom.

940 Crew depart for canyon bottom with visitors.

950 Crew arrive at canyon bottom. unload materials for
well construction.

1000 ESH-20 will conduct noise levels at 50' and 100' from drill ri
at idle, Low, medium and high range settings.

1005 Crew will continue with well construction.

1010 Crew will began with 38/70 sand into prepack and place a four inc
sump at bottom of prepack.

1015 Visitors depart site, well construction continues.

1016 Bentonite will be used to plug bottom of hole up to 7.6' 3/8 bentonite
will be used, ~~water was~~ 1 gallon of water was used to
hydrate the bentonite. prepack screen w/ sump will be placed on
bentonite seal.

5/17/2002

01-27-00

3. 1020 20/40 sand will poured down annulus around prepack.
1035 bentonite seal in place with Blault at 3.2' from surface.
1045 Concrete pad with forms set in place. Below is complete well construction.
10' to ~~7.6~~ 1.3' bentonite plug (1 bag 3/8)
~~7.6~~ 1.3' to 7.0' 4" sump
4 7.0' to 2.0' prepack screen (1 bag sand 30/70)
7.6' to 2.5' 20/40 sand (1/4 bag)
2.5' to 1.8' 30/70 sand (1/4 bag)
1.8' to 1.3' #8 bentonite (1/4 bag)
1.3 to 0.0' concrete.
0.0 to .8' concrete pad (3 bags total)
-2.0' to 3.2' stick-up 4" PVC
1109 Crew finish-up smoothing out concrete pad.
1115 Crew cleaning up site and loading materials on trailer and ATV. Alluvial well 16-6293 Completed
1130 Crew rigging down ~~01-27-00~~
1135 Drill rig ~~will be to~~ drive out of Canyon bottom to access road then to building 306, then drive to TA-11 to location 16-6295.
1157 access road reached. Crew will break for lunch.
1245 crew back from lunch drilling rig in transit, to location 16-6295
1345 Drill rig at bottom of wetland in Martin Canyon.
1350 Crew will drive drill rig across bottom of Canyon on access road to north side then approach location directly South back to canyon bottom.
1415 moving drill rig to location by turning drill rig around and drive in reverse.
1420 Drill rig in place.

5/17/2000

01-27-00

1420 rig up drill rig begins, pads for Jacks in place. mast is up, setting up drill bit. 8¼" OD, 4¼ ID. Driller set-up the stiff arm attachment because of the angle of the Drill rig. Hydralic Jack were fully extended.

1453 still rig up. Location is on north bank of drainage channel

1500 Drilling begins, split-spoon sampler in place, an HE spot test was done and it was negative.

1502 encounter bedrock after 0.5' not a good location for well, well rig down and move drill rig closer to channel, currently 5' on north bank from channel. drill rig will be moved closer by 1-2', rigging down.

1520 rigging down complete, Driller will move

1522 rigging back up, HE spot test conducted, negative, stiff arm attachments in place.

1530 setting up drill bit.

1540 Drill begins, drill string drifting away from center

1550 Run #1 completed 0-2.5'. 50% recovery, Alluvium with clay, minor sands, silts, and minor organic 0-0.6" moist.

1605 Drill string has drift to much to continue, Drill rig will have to be repositioned and hope this will solve problem of augers drifting off center. Rigging down to begin and move rig over.

1615 rigging up. Crew will abandon previous location, drill rig not in a stable location, drill rig will drive directly south of channel, Drilling resumes. Run #1 completed 100% recovery minor silts and sand, saturated, minor clay minor organics limited to 0-.6' 2.5YR 3/1 dark reddish brown

1620 Drilling resumes.

1638 Drilling continues.

5/17/2002

01-27-00

1648 Run #2 Completed. 100% recovery, 2.5' to 5.0' Soil/tuff interface. @ 3.1' 2.5 to 3.1 saturated, ~~sands~~ are silts, minor clay, 3.1 to 5.0' Qbt weathered, moist, 20-30% phenocrysts, <5% Lithics, minor pumice, non-welded to slightly welded. Sample RE16-00-0014 collected. Color: Alluvium 2.5YR 3/1 dark reddish brown, Qbt 2.5YR 7/2 pale red.

1655 drill resumes, Target depth is 5' below soil/tuff interface.

1710 Drilling continues.

1718 Sampler stuck in drill string, split spoon sample may have swelled up, driller will trip out one flight auger, and that may expose split spoon sampler.

1730 Sampler is pulled out along latch assembly. Sampler is recovered.

1735 Run #3 collected. 5.0' to 7.5' 100% recovery, heavily saturated. 5.0' to 6.9' cuttings crushed by drilling. 6.9 to 7.5. Qbt weathered, but not crushed by drilling photo 22

1740 RE16-00-0015 collected.

1741 It's getting to dark to continue work.

1745 Crew depart for field trailers.

1759 Crew depart TA-16.

5/17/2002

01-28-00

Today's activities: well construction at 16-6295, located at TA 11, north of drop tower. SSHASP 2006, weather overcast slight breeze from west, 30°F. Crew will consist of L. Romero, E. Alcon (IT) S. Johnson, T. Castillo (Stewart Bros.).

0815 Crew discuss status of borehole at IT office.

0830 Crew depart office for Drill yard.

0840 Crew load well construction supplies then will depart for TA-16

0937 Tail gate safty meeting conducted by E. Alcon.

0945 Crew depart for location 16-6295.

1000 Crew arrive at site.

1001 upon inspection of borehole there is visible water at approx. 14" from ground surface., based on conversation with P. Gram, and yesterday activities, there appears that the saturation conditions of the borehole from 5.0' to 7.5' maybe of a different horizon based on core sample. Crew will construct with a screen to capture the upper Alluvium from 3.1' to 0.0' and the questionable low-impermeable zone below 5.0'.

1015 Drill rig is not operating smoothly on idle it seems water may have entered fuel system. S. Johnson & L. Romero depart site for drill yard to pick up a new filter.

1020 E. Alcon & T. Castillo remain at site.

1030 ESH-5 reps Trung N. & Dang B. arrive on site. they inspected rig and removed strap harness from service and pointed out that tires on rig should be blocked.

1050 ESH-5 reps depart site.

1115 Crew on standby, rig down.

1130 L. Romero & S. Johnston back from drill yard.

1132 Crew begin to switch filters.

1155 replacement filters continues.

1201 replacement complete, rig is started.

5/17/2002

01-28-00

1205 Crew will use center drill bit to clean out borehole to 8.0' depth. then begin with well construction.
1205 Drill string set-up continues.
1220 Drilling begin to clear out mud in borehole.
1230 Depth of 8.0', a bentonite plug will be placed from 8.0' to 6.9'.
1235 Borehole will be reamed out with 8¼" ID auger to a depth of 6.9' then sump and screen will be placed on to ~~seat~~ bentonite.
1301 well construction continues with 8¼ ID augers.
1320 8.0' reached, crew breaks for lunch.
1345 Crew back from lunch. Bill McCormick inform crew we must stop work by 430 pm
1400 Crew back to location 16.6295.
1405 crew begin to add prepack with 30/70 sand.
1420 prepack completed, ready to lower down into hole.
1430 20/40 sand will be pour into borehole as auger are tripped out.
1434 sand pouring continues 20/40 sand.
1545 20/40 sand currently at 3' below surface need to be at 1.6'
1551 last auger flight is pull out, well construction continues with final sand being added. #3 bentonite is add up to 1.3'.
1555 excess PVC stick-up is sawed off.
1640 A concrete/bentonite mix will make up the 1.3' to surface.
1550 Concrete/bentonite still mixing.
1559 Mix is poured in to borehole!
1600 Crew has also started clean-up site and decon, augers.
1605 Earlier today Bill McCormick inform us to stop work by 430 p.m because of daylight conditions, he said as day get longer we can work longer in canyons.

5/17/2002

01-28-00

1610 Mix is in place to surface. Vault will be put in pl
Concrete forms will be completed on Monday. due to
cement/bentonite mix. Most of Concrete will sink into
mix and displace mix. Vault will be secure in place
by rig. Complete well construction is a follows.
TD = 8.0' 8 1/4 ID and 12 1/4" OD.
80' to 6.9' 3/8 bentonite plug. 1 1/2 bag 3/8 bentonit
6.9' to 6.5 4" sump
6.5 to 1.5 4" prepack screen with 30/70 sand.
6.9 to 1.6 20/40 sand 5 bags.
1.6 to 1.3 #8 bentonite 1/2 bag.
1.3 to surface cement/bentonite mix.
surface to .7' concrete pad.
1.5 to 3.5 stick up 4" PVC.
1640 Crew cleaning up site, crew depart for field trailers,
1700 Crew depart TA-16,

5/17/2002

ORPORATION
ıber of The IT Group

Date 5/17/2002 Subject Second Borehole Sheet No. ____ of ____

d. By ____ Date Borehole 16-6294 Martin Canyon Proj. No. Hydrogeo

.25 in. X .25 in.

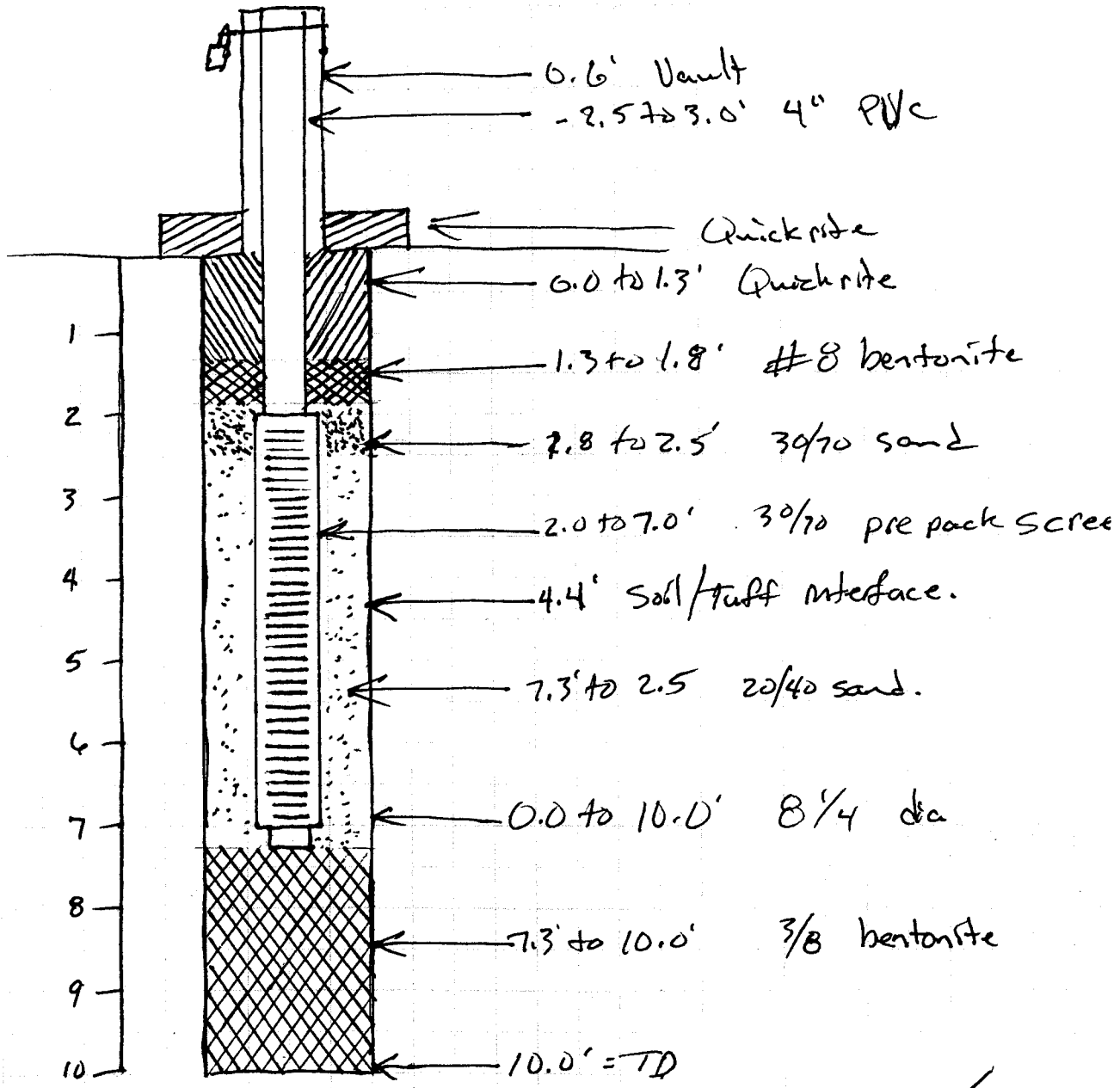
ın	Description	Lithology	Photo	Comments
	75% recovery 0-2.5' Alluvium, with minor organics, minor clays with fine tuff granules 2-5 mm dia. 5YR reddish brown, dry to slightly moist.		photo #19 & 20	
	100% recovery, same as above. 2.5 to 3.2'		#21	
	75% recovery 3.2 to 5.3, soil/tuff encounter at 4.6 Qbt. Alluvium same as above / Qbt non-welded to slightly welded, see comment		#22	Run 3 - 2.5YR reddish-gray dry to slightly moist, Qbt weathered at interface
	75% recovery 5.3 to 7.5', Qbt. Same as above. Crushed from drilling		#23	
	90% recovery, Qbt, same as above, crushed from drilling		#24	
	TD. 10.0'			

Louie Romero
5/17/2002

IT CORPORATION
A Member of The IT Group

By LA Date _____ Subject Alluvial Well 16-6293 Sheet No. _____ of _____

Chkd. By _____ Date First well in Martin Canyon. Proj. No. Hydrogeo



Louie Romero
5/17/2002

IT CORPORATION
A Member of The IT Group

By LL Date 01-26-00 Subject Borehole 16-6293 Sheet No. 1 of

Chkd. By Date upper location, near Martin Springs Proj. No. Hydrogeo

.25 in. X .25 in.

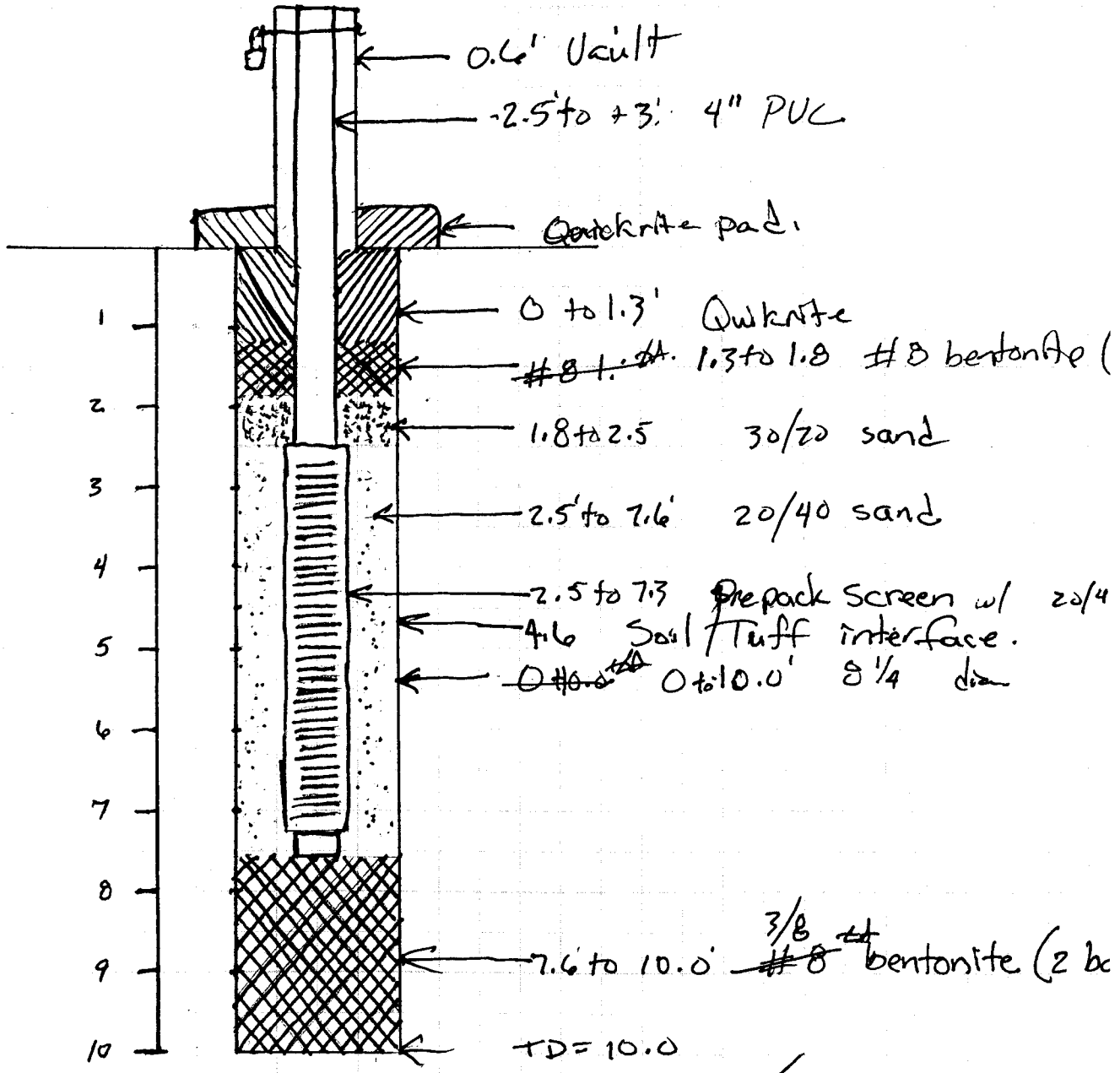
Run	Description	Lithology	Photo	Comments
1	90% recovery, 0.0-2.5. 0-0.6 surface organics, pine needles grasses, leaves, 0.6-2.5 Alluvium Soil with Sands, minor clay, minor organics, minor tuff granular		photo 7 Roll 2	2-5 mm. dia, 5YR 4/3 reddish brown, dry to slightly moist.
2	100% recovery 2.5 to 4.4 Alluvium same as above. Soil/tuff @ 4.4' Qbt 4.4 to 5.0 minor pumice, 10-20% phenocryst, 5YR 6/1 gray, slightly Moist, minor clay layer @ 4.8',		photo 8 roll 2	
3	100% recovery, 5.0 to 7.5', Qbt, same as above, non welded to slightly welded.		photo 10 roll 2	
4	100% recovery, Qbt same as above.		photo 11 roll 2	
	TD = 10.0'			

Louie Romero
5/17/2002

IT CORPORATION
A Member of The IT Group

By LA Date _____ Subject Alluvial Well 16-6294 Sheet No. _____ of

Chkd. By _____ Date Second well in Martin Canyon Proj. No. Hydro geo .25



Louis Romero
5/11/2002

IT CORPORATION
A Member of The IT Group

By [illegible] Date _____ Subject Borehole 16-6295 Sheet No. _____ of _____

Chkd. By _____ ~~Date~~ lower most location below Wetlands - Martin Canyon Proj. No. Hydrogeo

.25 in. X .25 in.

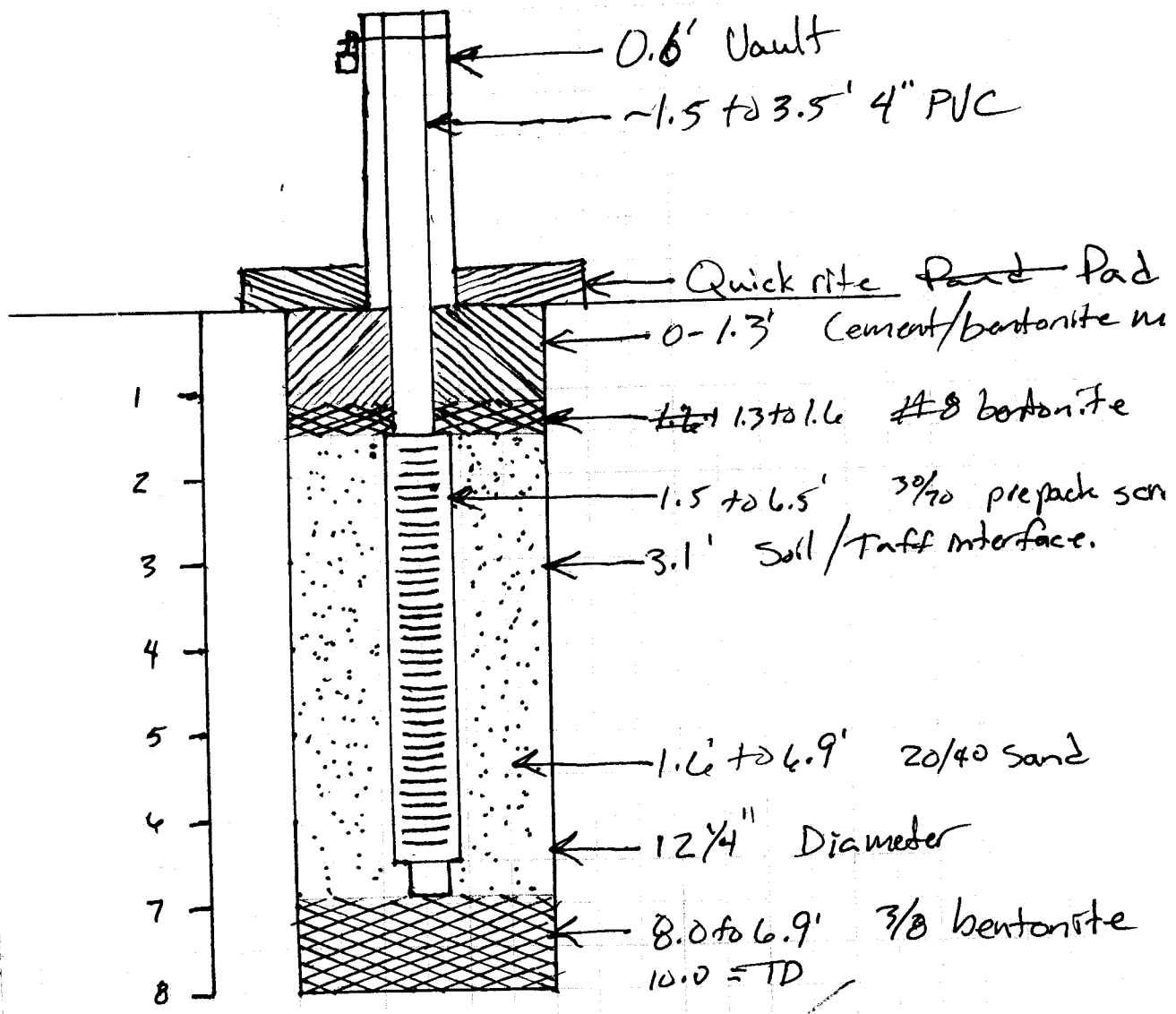
Run	Description	Lithology	Photo	Comments
	100% recovery, 0-0.6' minor organics, 0.6-2.5 minor silts & sands saturated, minor Clay, Alluvium, 2.5YR 3/1 dark reddish brown,		photo 18 rd 1-2	
	100% recovery 2.5 to 3.1 Same as above, soil/tuff interface @ 3.1, 3.1 to 5.0, Qbt weathered, 20-30% phenocrysts, <5% lithic, minor pumice, → ~~Qbt~~ 100% recovery heavily saturated, core cutting crushed from drilling, Qbt - same as above.			non-welded to slightly welded Alluvium-2.5YR 3/1 dark reddish brown Qbt - 2.5YR 7/2 pale red.
	TD = 8.0'			

Lois Lonsea
5/11/2002

IT CORPORATION
A Member of The IT Group

By LA Date _____ Subject Alluvial Well 16-6295 Sheet No. ____ of ____

Chkd. By _____ Date Third well in Martin Canyon Proj. No. Hydro geo .25



Louis Romero 5/17/2002

01-31-00
Today's activities: Submit samples to SMO that were collected from the Alluvial drilling in Martin Canyon. A total of six samples were collected TWO samples from each borehole, Each sample will be analyzed for Hexpetn, metals TB, Semin, ~~HEXP~~, HEXP LB 5/12/02 Tricpins, & Rad Vam for ~~ABS~~, An ammended analysis for HEXP was included to submittal, originally HEXP was not included on the COC's and SMO was called with the ammended HEXP.

Samples submitted;

Sample #	ID	depth	field screening
RE16-00-0010	16-6293	4.4 to 5.0'	HE-neg, RDX-<0.5 ppm
RE16-00-0011	16-6293	9.6 to 10.0'	neg, <0.5 ppm
RE16-00-0012	16-6294	4.4 to 4.8'	neg, <0.5 ppm
RE16-00-0013	16-6294	9.6 to 10.0'	neg, 1.74 ppm
RE16-00-0014	16-6295	2.7 to 3.3'	neg <0.5 ppm
RE16-00.0015	16-6295	7.6' to 8.0'	neg <0.5 ppm

This concludes activities for the Alluvial wells installation in Martin Canyon.

Repairs to well 16-2657 will not be done, due to condition on SWSC Slope. both Tool pusher & Driller did not feel comfortable driving the drill rig down the slope. this activity will be done at a later date.

5/12/2002

1/28/00 Hydrogeologic Activities at TA-16
Today's objectives: Download all data loggers (springs, all wells) collect pH measurements at springs and alluvial wells., Manually check water levels at non-instrumented wells, & collec the low level anion samples from the springs
Crew consists of K Beguin & D Sharp (IT).

0920 Tailgate Safety briefing conducted by D Sharp (SSHASP 264).

0945 pH instrument calibrated (Horiba) using std: pH 4 & 7.

1000 16-2650, Martin Spring, flow logger & Campb Scientific data logger are downloaded. Campbell Scientific logger file name is "MS128 plan to put all the files in the C drive.

1020 MS low level anion samples collected, The collect every 48 hrs, collected 11 bottles, 300 ml per bottle. Sampling started 1-7-00.

1055 16-~~2655~~ 2665 DS 1/28/00 - Dry. Depth to bottom - 127.1', f in bottom. ~~(Crew checked in w/Weston at 104~~

16-~~2666~~ 2656 5/17/2002 LKC - Dry, Depth to bottom - 92.9' fine bottom. (Crew checked in w/Weston at 1110).

1118 16-2659 - Depth to water 7', pH = 6.88. Campbell Scientific downloaded - file name = "2659128"

1130 16-2655 - Dry, Met station downloaded = File name misdiarell "2655128"

1150 Crew breaks for lunch.

1300 Crew heads in CDV from ~~R-25 x 1/28/00~~ SWSC cut

1335 16-2658 - Depth to water = 5.92', pH = 6.17. Downloaded data, file name "2658128."

1355 16-2652, Burning Ground Spring, pH = 7.01, Data downloaded from both loggers, file name = "BS128."

1/28/00 Hinchogo continued.
We did not collect LLA samples. There are 11 bottles out of 24 empty. We will collect these next week.

1410 Peter Seep located a just above "Big rock". It is frozen no sample.

1415 16-26556 Depth to water 6.5', pH = 6.99, Data downloaded. File name "2656128".

1430 16-2651, SWSC Spring, pH = 7.92. Data downloaded from both data loggers. file name = SS128. We did not collect LLA samples. 7 of 24 bottles empty. We will collect next these next week.

1450 Run-off collector was dry. (This is located in CDV channel bottom down gradient from the MDA-R main drainage.

1520 Crew departs site.

Sam M Clark 1/28/00

1/31/00 Hydrogeology Activities at TA-16.
Todays Objectives: Collect Weekly flow rate integrated s
1350 Crew consisting of D Sharp & D Lyons arrive
TA-16 trailers. We will collect the weekly fl
rate integrated samples from Martin, SWSC
Burning Ground springs.
1400 D Sharp conducts tailgate safety briefing.
SSI/ASP 264 will be used. Facility approval
been given to enter CDV through R-25.
Weather: Cold, cloudy, scattered snow show
Approximately 38° F.
1420 16-2650, Martin Spring. 12 bottles are ful
There is a problem w/ the calibration
this ISCO and needs to be adjusted.
29 of 47 samples collected. The instrum
was sampling 20 ml/s every 6 pulses, 500 L/p
The flow is very low currently. This u
sample ranges from 1/24/00 — 1/31/00. We
now have enough sample to make up a
monthly composite sample. This sampler wa
1/31/00 DS turned of f until Friday, 2/4/00.
1445 16-2652, Burning Ground Spring. Week 1/24/
collected. 46 of 47 samples collected. 12 bott
full. ~~Sam~~ DS 1/31/00 20 ml of sample collected every 11 p
1 pulse = 1000 L. This also needs to be adj
Because this is low flow condition all of the sample
really need to sample at the minimu
to make up a weekly flow rate integrated sa
1457 16-2651, SWSC Spring week 1/24/00 - 1/31/
collected. 7 of 42 samples collected. 50 ml/samp
samples every 1 pulse, 1 pulse = 1000 L
The carboy is less than 1/4 full. (5 gal).
This ISCO has been turned off until 2/4/00

1/31/00 Hydrogeo cont'd.

1520 Crew arrives back at trailers, moves the past 4 weekly flow-rate integrated samples into the CR2 w/a quartz heater to thaw the frozen water. After removing the same amt. of water from each week to make up a "weekly analytical" 1/31/00 sample" from the past three weeks, water from each spring will be combined to make a monthly composite sample. This sample will be sent off for laboratory analysis. All ISCO samplers have been turned off until Friday so that we will be able to collect these samples at the same time as downloading the instruments. Also, the ISCO's need to be recalibrated to better reflect these low flow conditions.

1540 Crew departs site.

Donna M Rapp 5/17/2002

2/4/00 Hydrogeology Activities at TA-16.
Today's Objectives: To download all data fro
the instruments. To collect LLA samples fro
BG & SWSC springs. To resume the
flow rate integrated samples & modify the
program. To collect pH measurements fo
all springs & applicable wells. To man
measure intermediate wells at TA-16
Weather: Cold, spitting snow, cloudy
~ 30°F.

1000 Tailgate Safety Briefing conducted by Ku
Begun. (SSI/ASP 264) Crew of D. Shoop, K
1020 Horiba calibrated by K Begun.
1040 Martin Springs 16-2650, Flow & cond, tem
data downloaded "MS2400", pH = 7.13
LLA sampler on bottle 4.
Note: L. Romero is compositing the 1st
monthly composite sample from the
weekly flow rate integrated samples.
These will cover 1/3/00 - 1/31/00. They wi
be submitted for ANWQ, HEXP, HENGPET
BICARB, METTAL+B, & TUICPMS.
1120 16-2665 - Dry, Depth to bottom 127.1, muddy
16-2666 - Dry Depth to bottom 93.85, muc
1145 16-2659 - Depth to water = 7.5', pH = 7.2
16-2660 - Depth to water = 7.5'
1200 Crew helps Lorie Romero prep monthly
composite samples.
RE16-00-3006, 3007 (filtered metals) - 16-2650, Martin
1-3-00 - 1/31/00.
RE16-00-3008, 3009, 16-2651, SWSC Spring 1/3/00 - 1
RE16-00-3010, 3011, 16-2652, Burning Ground Spri
1/3/00 - 1/31/00. A weekly sample was removed from eac
week before compositing these for a monthly.

1400 Samples RFI6-00-3006 thru 3011 submitted to SMO.

1405 Crew departs for lunch.

1500 Crew will set up ISCO autosamplers to collect weekly flow rate integrated samples. All three will be set to start at 1700 on 2/4/00.

1520 16-2652, Burning Ground Spring. ISCO was loaded w/ 12 bottles, Program was changed to collect less water because of low flow conditions. 1 pulse = 1000 L, sample 20 mls/bottle every 20 pulses, 47 samples possible. Hopefully this set up will give app. 500 mls per bottle by the end of one week. Weekly starts at 1700 2/4/00.

1545 16-2651, SWSC Spring. Carboy was returned. Program - 1 pulse = 1000 L, sample 500 ml every 8 pulses, 42 samples possible. Weekly starts 1700 2/4/00

1605 16-2650, Martin Spring. 12 bottles loaded. Program now: 1 pulse = 1000 L?, sample 20 mls per bottle every 12 pulses, 47 samples possible. Weekly starts 1700 2/4/00

1615 Crew departs site

Donna M Shaw 5/17/2002

2/7/2000

1030 Crew of Lorie Romero and Bob Mechel arrive at HEPS field trailer
Today we will check well levels and pH. Tag wells (new) located
in Martin Spring canyon

1119 16-2659 water level not measured pH = 7.45
16-2660 7.41 ft depth to water
1144 16-2658 7.50 ft pH = 7.49
1200 Burning ground spring. Flow proportional sampler is
operational. LLA samples are collected. carosel of
24 bottles will be carried ~~out~~ in out to thaw samples.
1229 16-2657 not measured (frozen bentonite)
1231 16-2656 6.60' pH = 7.59
1300 Crew breaks for lunch
1330 Crew returns to site
1345 16-2665 DRY
16-2666 DRY
16-2668 DRY
16-2664 DRY
16-2663 DRY
16-2662 DRY
16-2661 DRY
16-2669 DRY
1430 Crew departs the site.

L Romero 5/17/2002

2/11/00 Hydrogeology activities at TA-16.
0935 Tailgate Safety briefing conducted by D Sharp. SSHASP 264. Crew consists of D Sharp & K Begun (FT). Todays Objectives: Collect weekly flow rate integrated samples from 3 springs. Download data at Springs & wells. Collect LLA samples from SWSC Spring & replace the carousel at BG spring.
DS 2/11/00 Weather: Windy, Cold, ~ 40°F., partly cloudy.
0950 K Begun calibrates the pH meter
1000 Check in at Weston Field trailer. We need to be out of the area in one hour due to remote operations.
1010 16-2659 - 7.5' DTW, 6.6 pH, Unable to download data, cable is missing
1015 16-2660 7.5' DTW pH = 6.9
1045 16-2650 Martin Spring, weekly flow collected 2/4/00 - 2/11/00, 12 bottles ~ 1/3 full. 15 of 47 samples collected, samples every 12 pulses, pH = 7.2
1115 Crew breaks for lunch.
1215 Crew returns to trailer. Pours LLA samples collected by L. Romero into 250 ml polys. These samples started on 12/24/99 and collected every other day until program was stopped on 2/7/00. We will start program again today.
1306 16-2651, SWSC, weekly flow rate integrated collected 2/4/00 - 2/11/00. 21 of 40 samples collected. Carboy is more than 1/2 full. Sampling was changed from 8 pulses to 10 pulses. This week will not be able to be submitted for a monthly. The LLA sampler was halted and will be shamed in the trailer over the weekend. It will be resumed on tuesday. This carousel began sampling every 48 hrs on ~~Dec~~ DS 2/11/00 1/3/00.
Danger on Fuel

pH = 8.6.

1400 16-22652, BG spring, Weekly flow rate integra
Samples collected. 2/4/00 - 2/11/00. 25 of 4
samples collected, 12 bottles, 2/3 full, This
is still collecting too much water for so l
flow. The sampling was changed from
20-24 pulses. pH = 8.1. The carousel
LLA sampling was returned and started
again. LLA sampling should start 2/
and collect every 48 hrs.
Note: Tuesday crew will return to start
returning samples to site and bring
the carousel to SWSC spring to resume
LLA samples.

1425 Crew set up new "warm space" in stor
trailer for thawing out Water.

1458 Crew departs site.

Donna M Sharp 5/17/02

2/18/00 Hydrogeology Activities at TA-16.

0930 Crew consisting of D Sharp (IT) & K. Beguin (IT) arrives at TA-16 trailer.

Today's Objectives: Download data from all instruments, check well levels, collect all weekly flowrate integrated samples, collect LLA samples from Martin Springs. Also, we will collect 2/250 ml polys from each spring for geochemical analysis w/ Dale Counce.

Today's Weather: Breezy, slightly cloudy, approx. 36°F.

0930 Tailgate Safety Briefing conducted by D Sharp. SSHASP 264.

0940 pH is calibrated ~~with~~ 2/18/00 as on HORIBA by D Sharp.

1005 16-2650, Martin Spring, Data is downloaded both flow & pH, cond.

Weekly flowrate integrated samples: 14 of 47 samples collected, week 2/11/00 - 2/18/00, 20 ml samples collected.

LLA samples transferred to 250 ml polys starting 1/29/00 - 2/16/00 every other day 10 bottles total.

2 polys collected for Dale Counce (geochem)

pH = 7.2

1055 16-2665, 16-2666 Wells were checked for waterlevels. 16-2665 had a depth of 127.1', No water present. 16-2666 was a depth of 92.7', No water present.

1115 Checked in with MDA-P crew. No remote operations are being conducted today. Head down to the twin wells.

1120 Well depth of 16-2659 is 7'4". pH = 6.71.

Well depth of 16-2660 is 57'4". pH = 6.7.

Computer is malfunctioning. We cannot download data. We will take computer to trailer to see what's wrong.

Louie Romero 5/12/02

1210 16-2669 Well depth is 164.5' No water present.
16-2662 Easternmost 90's Line Pond well is 13.8' and is dry.
1215 16-2663 Southern 90's Line Pond well is 13.34' and is dry.
1217 16-2664 Western 90's Line Pond well is 13.28' and is dry.
1220 16-2661 Northern Well 90's Line Pond. 15.85' and is dry
1225 16-2655 DTW = 10.1', Depth of well 10
1245 Crew departs for lunch
1345 Crew returns.
1400 16-2652, BG Spring, Computer down, Weekly flow rate integrated samples collected 2/11/00 - 2/18/00, 23 of 47 bottles ~~collecte~~ ps sampled. Samples (20 ml) collected after 24 pu bottles ~ ½ full. pH = 7.57. LLA sampler c good. 2/250 ml poly collected for Dale Counce
1420 16-2658, DTW = 5.65', Total Depth 10.25' pH = 6.76
1445 16-2651, SWSC Spring, Computer down, 2/200 m Weekly flow rate integrated samples collecte 2/11/00 - 2/18/00. 9 of 40 samples, 500 ml sample after 10 pulses, changed to 6 pulses Not enough water currently. pH = 7.39
1500 16-2656, DTW = 6.7', Total Depth = 10.65' pH = 7.0' ps 2/18/00.
1502 Peter Seep Frozen.
1510 All wells behind 260 are in Exclusion not checked.
1615 Crew departs site.

Donna M. Gilcrest 5/17/2002

2/24/2000 Thursday

Crew of Dale Lyons and Louie Romero arrive at HEPS field trailers.

Today we will download data from data loggers located at 3 springs.

Tailgate meeting is conducted

1415 Crew arrives at Martin Spring. Site is recognized by flow link.

Data is downloaded from flowlogger. earliest data is 01/25/2000.

1445 Crew arrives at BG Spring. data is downloaded from flow data logger.

earliest data is 01/25/2000

1455 SWSC spring. data is downloaded from flow datalogger. (30 days of data) 01/25/2000 earliest.

crew departs the site.

L. Romero 5/17/2002

2/25/00

Todays objective: Collect weekly spring samples, measure

0915 Tailgate Safety meeting conducted by D Sharp. Todays weather: cold, windy cloudy, ~ 42°F.

0930 pH meter calibrated by D Sharp

1000 16-2650, Martin Spring, Weekly flowrate integrated samples collected 2/18/00 - 2/25/00. 15 of 47 samples collected, 12 bottles ~ 1/3 full of low flow conditions. pH = 6.2, cond = .470 mS/cm DO = 5.8, temp = 8°C

1030 16-2665 - 127.1 dry.

16-2660 - 92.9, dry.

1045 16-2659 DTW 7.4', pH = 6.4, cond = .250 mS/cm DO = 8.7, temp = 3.5°C

16-2660 DTW = 7.2'

1110 16-2668 Dry DT bottom 185.8'

1130 Crew back at trailer, pick up D. Bazzel, M. for lunch

1300 Crew back at site

1320 Eastern well at pond, 13.4' Dry

1325 16-2669, Dry, Total Depth = 168.7'

1327 16-2663, Southwest at pond, Dry TD = 13.35

1330 16-2664, West well at pond, Dry TD = 13.1

1332 16-2661 KR 7/2000, Northwest well at pond, Dry TD = 15.7'

1340 16-2655, Dry 2/25/00 DTW = 10.1, TD = 10.3

1350 16-2656 DTW = 6.5', TD = 16.75'

pH - 6.7; Cond. - .235; DO - 5.7; Temp. 4.8°C

Norman Sharp 5/17/2002 KR

1405 16-2651, SWSC spring, weekly flow rate integrated sample collected. 2/18/00 - 2/25/00, 12 of 40 samples collected. very low flow. 1/5 of carboy was water. 8 hrs after to pulse, not enough water but will have to is. LL4 sampler good. No download.
pH = 6.8, cond = .22 ms/cm, DO = 6.24, Temp 6.2°C.
1410 Peter Seep frozen again.
1415 16-2658 DTW = 5.75', TD = 10.25', pH = 6.20
cond. = .22, DO = 1.46, Temp = 2.2°C
1425 16-2652, Boring roadspring, Weekly flow rate integrated samples collected, 2/18/00 - 2/25/00. 12 bottles ~1/3 full, 22 of 47 samples collected, after 24 pulses (20 ml).
pH = 6.7, cond = .225 ms/cm, DO = 6.04, Temp = 9.4°C
1510 Crew departs site.

Lonnie M. Thomas 5/17/2002

3/3/00

0800 Kristi Beguin and Louie Rorero (both IT) are onsite at TA-16. Today we will collect the weekly flow-integrated samples from the auto samplers installed at each spring. Because we are short handed today, and Louie is only available for a short time, we will only collect the weekly samples and we will not download data or collect H_2O parameters.

Today's Weather: Clear, slightly breezy - winds from SW 0-10 mph, and cool - 42°F.

0815 Kristi conducts a tailgate safety meeting, and Louie signs off on tailgate briefing.

0830 Arrive at Burning Ground Spring. 2/25 - 3/3/00 Autosampler says 21 of 47 samples collected. All samples look good - approx. 1/2 full.

0840 Arrive at SWSC Spring - 32 of 40 samples collected. The carboy is about 3/4 of the way full. 2/25 - 3

0845 A Peter Seep sample was collected. Head of Peter Seep is 21 ft. E. of 2657.

0905 Arrive at Martin Spring. 18 of 47 samples collected. 2/25/00 - 3/3/00 weekly samples.

0925 Leave Martin Spring.

0930 Back at field trailers. We put all water in locked storage area.

0940 Depart Site.

5/17/2002 WB

3/8/00

Todays objectives: label & package & submit stable isotope samples from the springs.

1000 D Sharp arrives on site w/ labels, COC & EF. Must package samples RE16-00-3012 to 3037 (Martin Spring), RE16-00-3038 to 3059 (SWSC Spring), RE16-00-3060-3112 (Bunny Groundspring), and three blanks from TA-53, RE16-00-2000 to 2002. These samples were collected by the Isco/sigma autosamplers at the springs, then refrigerated. B Newman picked what samples he wanted submitted based on previous data. These range generally from April 1999 to September 1999.

1215 Donna breaks for lunch.

1310 HE Release slip is given for samples, take to the SMO. All of these samples are under COC 1082-00-5002.

1350 D Sharp leaves TA-16.

Donna M Sharp 5/17/2000

3/10/00

Today's Objectives: Download instrument data at springs, collect weekly flowrate integrated samples, measure water levels at wells.

Todays Weather: sunny, windy w/10 mph gu ~ 42°F

0900 Tailgate safety briefing conducted by DSh Crew consists of D Sharp, K Beguin (IT).

0910 K Beguin calibrates pH on Horiba.

0940 16-2650. Mantra Spring, clear flow, higher than last Weekly FRI samples: 15 of 47 samples collected PS 12 pulsed, 12 bottles ~ ½ full. 20 mls/sample. pH = 7.21, cond. = 0.46 uS/cm, temp = 9.2°C. Campbell scientific downloaded, Flowlink dow Next week - need to change out LLA sample

1020 Check in w/ Weston at MDA-P trailer.

1030 16-2659 - DTW = 7.3', pH = 7.2, cond = .24, temp = 4.7°C, Downloaded Campbell Scientific data.

1035 16-2660, DTW = 7.35'

1048 16-2655, DTW = 10.18', TD = 10.3'. No t enough to test pH. Campbell Scientific Data downloaded.

11:00 Break for lunch. Krish has an appmt. and Don is going to notify the state about quarterly sampl and submit a sample collection log Request for to CDM, from IT office.

13:10 Left IT office to return to field.

13:30 Heading down into CDM to collect water from BG spring, SWSC spring, and download data

1340 16-2658. Downloading data to file 2658310. depth to water 5.6½' pH 6.84 cond. = .224, turb - 10, DO = 11.26, temp = 3.8°C

Louie Romero 5/17/2002

1410 16-2652, Burney Ground Spring, clear flow, heavy.
Weekly FRI samples collected: 12 of 47, collected
after, 24 pulses, 12 bottles ~ ½ full, 20 mls/sample
pH = 7.4, cond. = .23, temp = 9.1°C
Campbell Scientific downloaded, Flowlink downloaded
LLA sampler - 9 bottles left
1440 16-2656, DTW = 6.5', pH - 7.08, cond = .223 as/cm,
temp = 4.0°C, Downloaded Campbell Scientific Data
1450 16-~~2654~~, SWSC spring clear, low flow, not in unplugged
2651 5/17/2002 Weekly FRI samples collected: 24 of 40, Carboy < ½ full.
tube may be blocked collects 500 ml after 6 pulses.
pH = 7.3, cond = ~~.28~~ DS 3/16/00 .27, Temp = 6.3
Campbell Scientific data downloaded, Flowlink data
downloaded. LLA Sampler - 9 bottles left.
1510 Peter Seep is at some location, LLA sample collect
1600 16-6295, 3rd well at MSC, DTW = 3.9',
TD = 9.5'
1635 Crew departs site.

Donna M Shoop 5/17/2002

3/17/00

Todays Objectives: Crew consisting of D S
& K Beguin (IT) will collect Weekly FRI sam
from springs, download data from instruments, chang
LLA samples from Martin spring & check water levels.
Todays Weather: Breezy, clean & sunny, hi of
0945 Tailgate Safety Briefing conducted by D Stump.
1000 pH calibrated by K Beguin. (Horiba)
1045 Martin Spring, 16-2650, Weekly FRI samples co
12 bottles collected, 20 mls/sample, sample after
12 pulses, bottles ~ 1/3 full. 3/10 - 3/17/00 collec
pH = 6.91, cond = 0.464, temp = 8.6°C,
Downloaded Flow & temp, cond data.
Collected LLA samples. 2/18 - 3/11 every
48 hours, started a new round.
1105 16-2665, 2666 - Dry.
1115 16-2669 - Dry
1122 16-2661 North of 90's slime pond - Dry
1123 16-2662 East Dry
1124 16-2663 South Dry
1125 16-2664 West Dry
1150 Crew breaks for lunch
1315 16-2658 DTW = 5.5', pH = 6.7, Temp = 8
Cond = .193 ms/cm, Crew is unable to check 16-
& 16-2660 due to robotic operations at MDA-F
1330 16-2652, Burning Ground Spring, Collect Weekly
FRI samples 33 of 47 samples 3/10 - 3/17/00,
20 mls per sample, sample after 24 pulses, bottle are
~ 3/4 full. pH = 7.47, cond = 0.226, temp = 9.
1345 16-2651, SWSC spring, ~~130~~ Collect Weekly FRI
Samples: 3/10 - 3/17/00, 13 of 40, sample 800 mls every 6
temp = 9.7°C, pH = 7.85, cond = .227 us/cm
Changed the program to collect 800 mls every 10 pul

Louie Romero 5/11/2002

only 2 liters were collected, flow conditions are very low. I don't understand why so much water was collected 2 weeks ago.

1355 16-26556, DTW = 6.66', pH = 7.20, cond. = 2.22 mS/cm
temp. 6.3°C

1403 Peter Seep, 16-2653, LLA sample collected. location has not changed.

1430 D Sharp & K Bogren transfer the LLA samples to the Stable Isotope bottles.

1600 Crew departs site.

Dana M Sharp 5/17/2002

3/21/00 Quarterly Water Sampling.

8/21/00 Todays Objectives: Begin Quarterly Wate
Sampling. We (D Sharp & K Beguin, IT) w
start with SWSC, Burning Ground, & Ma
Spring. Analysis requested includes: BICA
D2H+O18O16, EPA300, HENGPETN, HEXP, LH3, ME
N15N14, ND2ND3, TVICPMS, VOAGCMS (Unfilt
and METTALTB (Filtered) for each sampl
Today's Weather: Cold, Heavy snow a
times, cloudy ~340° F.

0955 Tailgate Safety briefing conducted by
D Sharp.

1015 pH calibrated on Horiba by D Sharp
K Beguin preserved VOA vials w/ HCl

1111 16-2650, Martin Spring. RE16-00-3125, 312
collected, low flow, clear, no debris
pH = 7.01, Cond = .464 uS/cm, DO = 4.2
Temp = 8.6°C, FRAME = 1

1155 16-5826, 90's Line Pond, RE16-00-3143 ~~3144~~ 3/2
collected, water in pond is very low, samples c
very muddy. Only 2/1 ltr polys collected due to mu
pH = 8.3 cond = 0.25 uS/cm, DO = 9.0, Temp = 1°C
Samples are difficult to take. No photo.

1235 Crew breaks for lunch

1305 Crew picks up 250 ml polys at SMO.

1315 Crew arrives back at site, they will
sample SWSC, BG & Peter Leep.

1400 16-2652 Cond = .225, DO = 4.47, Temp = 9.2°C,
pH = 7.58 RE16-00-3129/3131 collected
Burning Ground Spring, Clear, good flow, no deb
photo #2

1420 Low Flow at SWSC spring little debris
Clear water. Donna is collecting the samp

Louie Romero 5/17/2000

and Kristi doing H_2O parameters.
pH = 7.16, Cond = ~~.152 MOB~~ .228, DO = 6.10,
5/17/2002
Temp = 4.7°C.
16-2650, SWSC Spring REIL-00-3127/3128
collected. Roll1, Photo 3
A25 16-2653, Peter Seep, frozen right below
Peter Seep, location is at lowest point
just above the big rock. REIL-00-3131/3132
collected. Roll1, photo 4.
Cond. = .281, DO = 7.15, Temp = 3.1°C, pH = 7.14
Water slightly turbid, much debris - leaves,
sticks.
1455 Crew preserves & filters samples that need it
1630 Crew departs site. Tomorrow crew will sample
all wells & submit samples to SMO.

Donna M Sharp 5/17/2002

3/23/00 Continuation of Quarterly Water Sampling
Today's Objectives: Collect Quarterly samples at TA-16 wells. Crew consists of D Sharp, K Beg P. Gram (IT). Weather: Cool, very slushy, clear, ~4
0950 Crew arrived on site.
0955 Tailgate Safety briefing conducted by D Shar SSHASP 264.
1010 D Sharp Calibrated pH on HORIBA.
1108 16-2658, 4th monitoring well in CDV. DTW=5. 3 well volumes = ~10.5 gallons, Roll 1, photo 5

	pH	Cond.	Temp.	DO	
1st Vol.	6.58	.287	4.4°C	9.1	
2nd Vol.	6.57	.223	4.2°C	1.15	these appear wrong
3rd Vol.	6.55	.22	4.0°C	~~0.99~~ 1.21 3/23/00	

1120 Sample RE16-00-3119/3120 collected. Water is slightly turbid, yellowish red in color. pH=6.54, Cond.=0.222, Temp=4.1, DO=7.14
1153 16-2657, 3rd monitoring well in CDV. Well level 3.88', we will sample this immediately because of history of slow recharge RE16-00-3117/31 collected. Water is slightly turbid, light br in color. Well was dry after sampling. No parameters taken, Roll 1, photo 6.
1215 MDA-R drainage, a lot of snow melt re at this drainage, very clear water. Decide to collect 1/1 liter glass for HE analysis, 2/25 ml polys for Metals analysis (filtered/unfiltered) & 1/125 ml poly for field screening. Need to call Don to see if he want these analyzed.
1250 Crew leaves site for lunch.
1355 Crew arrives back at site, Mark Taylor is being escorted by K Beguin.

Louis Romero 5/18/2001

Kristi will filter & preserve samples and stay w/ mark (and label and fill out COC) P. Gran & D Sharp will move to 16-2656, 16-2659 & 16-6295.

1452 16-2656, DTW = 6.52, TD = 10.65, 3 well volume = ~1.8 gal.

	pH	Temp	Cond	DO
1st Vol	6.95	5.6°C	.224	3.75
2nd Vol	6.99	6.3	.212	3.04
3rd Vol	6.98	5.2	.222	2.93

1457 REL6-00-3115 collected (REL6-00-3116), water is clear, Roll 1, photo 7

1602 16-6295, DTW = 3.62', TD = 7.0', 3 well vol. = 6.6 gal

DS ~~1st vol~~	pH	cond	DO	temp
1st vol	6.41	.118 ms/cm	6.98 mg/L	3.4°C
2nd vol	5.95	.124 ms/cm	6.00 mg/L Flaky	2.4°C DS 3/29/00
3rd vol	~~6.38~~ 6.00 DS 3/29/00	.125 ms/cm	5.84 mg/L	~~5.5°C~~ 2.3°C

Alluvial well water, turbid (moderate), muddy brown, odor - sulfery smell

1630 REL6-00-3123, 3124 collected pH = 5.87, cond = 0.125 DO = NM, temp = 2.3°C, Roll 1, photo 8

Forgot 2/500ml polys, we will make up a TOICPM sample from the other samples & not send off the LH3 sample. ~~Roll 1, photo~~ DS 3/23/00

1700 Crew departs site.

Donald Sharp 3/17/2002

3/24/00 Quarterly and Weekly Sampling

08:30 Kristi Baglin arrives on site. Prepares a tailgat safety meeting. Today I will complete packagi preserving, and labeling all the quarterly samples collected this week, and deliver t to the SMO for shipment. Then I will hope be able to get Louie to help me with the weekly hydro sampling this afternoon. I will wait to download data until next week. Weather: Clear, breezy - winds from SW 0-10 m Cool - 40°F, sunny.

1115 Kristi has finished labeling and processing samples. Louie and I will deliver them to SMO.

1230 Completed checking the samples in to SMO. W will break for lunch and then continue with the weekly sampling.

1315 Louie and Kristi head out to sound all the wells and collect the weekly samples. We will head to CDV first.

1430 Exit CDV, we retrieved all the weekly sampl Heading to Martin Springs Canyon to collect week samples.

Louie Romero 5/17/2002

3/28/00 Quarterly sampling at TA-16
Todays Objectives: Collect quarterly water samples from 16-2659 & 16-6121 (if possible). Todays weather: Warm, sunny ~ 60°F.

1000 Crew arrives at TA-16. Crew consists K Begin (IT) & D Sharp (IT).

1020 Tailgate safety meeting conducted by K Begin.

1025 D Sharp calibrates Horiba for pH measurement.

1045 Check in at Weston trailer (MDA-P)

1105 16-2659, DTW = 7.1', TD = 10.4', 3 well vol = 6 gallons.

	pH	Cond (ms/cm)	Temp (°C)	DO (mg/L)
1st vol.	6.79	0.224	5.6	6.42
2nd vol	6.80	0.220	5.1	6.68
3rd vol.	6.75	0.217	5.2	5.04

1125 RE16-00-3121/3122 collected. water is fairly clear, Roll 2, photo 1

1150 Crew departs site.

Donna M Sharp 5/17/2002

3/29/00 Quarterly sampling - TA-16
Today's Objectives: To collect quarterly samples a
the confluence of Cañonde Valle & Water Can
& the ESH-18 Water Canyon location, and submit these
samples (and yesterdays) to the SMO. Crew D Sharp, K Beg
0920 Tailgate safety meeting conducted by D Sharp, SS
0930 pH calibrated by K Beguin (Horiba).
0945 Crew checks in w/ TA-8.
0955 Crew checks in w/ TA-15, DX-access control.
Today's weather: Cool, partly cloudy, ~ 50° F.
1055 16-6121, Water Canyon above confluence
at ESH-18 station. Water is moderately
turbid, flow is moderately fast, light br
in color, ~ 5-10 gpm flow. pH = 7.4
Cond = 0.15 ms/cm DO = ~~4.15~~ 4.15 mg/L 5/17/2002 DS Temp = 7.2°C
RE16-00-3141 / 3142 collected. Roll 2, photos
& 43 DS - Sampling activities. Roll 2, photo 45 DS - Sa
bottles.
1113 No water in Cañonde Valle, samples RE16-00-
3140 not collected. Crew departs Water Can
1240 Crew departs for office, drop Lynn off.
1400 Crew of D Sharp & K Beguin arrive back at si
prepare & label samples.
1545 Samples RE16-00-3121, 3122 (~~Headwaters~~ DS 3/29/0
(16-2659) & RE16-00-3141, 3142 (Water Canyon ESH-
Submitted to the SMO as COC 1082-00-5
1600 Crew heads for office.

5/17/2002
Donald Sharp

3/30/00 Quarterly sampling continued.
Today's Objectives: Collect quarterly samples from Headwaters of CDV & Fishladder Seep. (16-5968 & 16-2654)
Todays weather: cloudy, rain & snow, ~42°F.
0950 K Beeguin (IT) & D. Sharp (IT) arrive at TA-16.
0955 D Sharp calibrates the pH on the Horiba.
1000 Tailgate safety briefing conducted by D Sharp. SSHASP 264.
1007 Crew prepares bottle sets.
1020 Crew starts up Cañon de Valle.
1118 16-5968, water is slightly turbid, vegetation is moderate (grass), there is still a lot of snow above and below this location. pH=6.95, Cond=0.100, temp=4.3°C.
1130 RE16-00-3135/3136 collected. Roll 2, photo 5.
1230 Crew breaks for lunch.
1335 Crew arrives at TA-16 trailer, prepares bottle sets for the fishladder seep.
1400 16-2654, Fishladder Seep. No water in wetland above 16-2654, water at seep is vegetation rich, grasses & algae, lot of debris, low turbidity, very low flow. Roll 2, photo 6 & 7 Seep, photo 8 = dry wetland. pH=5.37, cond=0.150, temp=8°C.
RE16-00-3133/3134 collected. Roll 2, photo 9 - Samples.
1447 Crew departs site.

Donna M Sharp 5/11/2002

3/31/00

Todays Objectives: Collect weekly flow rate integrated samples at BG, SWSC, & Martin Spring. Todays Weather: Cool, cloudy, chance of sno
Crew consists of D Sharp (IT) & L Fluk (IT)

1005 Tailgate safety briefing conducted. SSHASP 26

1045 16-2652, BG Spring flow is clear & wel
little debris. FRI (weekly) collected. 25 of 47
samples, every 24 pulses, 20mls/sample, 100
per pulse. Checked the LLA sampler.
it reads low battery, will need
to be collected next Friday. Sa
23 samples collected, 5/17/2002 1 more empt
Needs to be collected on Monday not Frid
Program was started on 2/13/00.

1110 16-2651, SWSC Spring. flow is very low
samples are turbid. Weekly FRI colle
3/24-3/31/00. 8 of 40 samples collected. 500
after 10 pulses. This is not correct, only 2 ½
collected out of the carboy. D Sharp change
to collect after 5 pulses. LLA sampler c
Program started on 2/17/00 - currently 22 s
collected. Needs to be changed on Mon

1150 16-2650, Martin Spring, 34 of 47 samples coll
20 mls per sample, sample after 12 pulses. There is
too much sample, all 12 bottles are comp
full (overflowed). I cant see anythin
different in the set up. Dont know wh
wrong. the flow does not appear to h
any greater, but will look at the Mon
data. FRI sample collected 3/24-3/31/00. W
is clear, low flow.

1220 Crew departs site. These samples will be submitted
5/17/2002 Donna Wharf

4/3/00

Today's objectives: ~~Cotte~~ DS 4/3/00 Submit the last H00 quarterly samples collected on 3/30/00.

Today's weather: Cold, partly cloudy ~ 47°F.

0945 Crew consisting of D Sharp (IT) & L. Romero (IT) arrive at TA-16.

1000 Tailgate safety briefing conducted by D Sharp SSHASP 264.

1010 Crew begins preparing & labeling samples. RE16-00-3133, 3134 (Fishladder Seep) RE16-00-3135, 3136 (Headwaters of CDV).

1200 Samples submitted to SMO using COC 1082-00-500

1210 Crew heads back to IT.

Dave M Sharp 5/17/2002

4/4/00

Today's objectives: To prepare & submit th
weekly flow rate integrated samples from
week 3/24/00 - 3/31/00. SWSC spring d
not collect enough water for the full suit
of analyses. Analyses for SWSC include:
BICARB, D2H, EPA300, HEXP, METTAL+B & ND2NO3,
filtered sample collected. Burning Ground & Ma
Springs will be submitted for those abo
plus HENGPETN, TUICPMS & a filtered
METTAL+B sample.
We will not submit a Peter Seep sa
with this round. Week 3/24/00 - 3/
is being submitted for 2 reasons: One
to correlate w/ the quarterly sampli
session to see if there is much differe
in concentration, the second is because th
has been some precipitation in this we
after a very dry winter.
This makes 2/15 weekly flow rate
integrated samples submitted to the
SMO, ~~The Sa~~ 4/4/00 DS for this year starting in
January. We should submit next wee
sample w/a Peter Seep sample due to
a big precipitation event on 4/1/00.
Todays Weather: Warm, Sunny, slight breeze
~70°F.

1335 Crew consisting of D Sharp & L. Fluk (IT) a
at TA-16.

1342 Tailgate Safety meeting conducted by D Sha
SSI#ASP264. Crew begins prepaing & labeli
weekly fri samples (3/24-3/31/00).

Louie Romero 5/17/2002

1545 Samples RE16-00-3145, 3146 (Martin Spring), RE16-00-3147 (SWSC Spring) & RE16-00-3148, 3149 (Burning Ground Spring) submitted to the JMO under COC 1082-00-5008.

1550 Crew heads for office.

Lance M Sharp 5/17/2002

104
4/7/00

Todays objectives: To collect the weekly fri samples from SWSC, Burning Ground & Martin Springs. These will be submitted for labora analysis next week along with a Peter Seen Sample (collected today). These weekly samples bracket the snow event on 4/1/00. All low level anion samplers will als be collected from the autosamplers. Well wa levels will be measured & instrument downloaded.

Todays Weather: Clear, breezy, ~ 60°F.

0910 Crew consisting of D Sharp (IT) K Beguin (IT) an at TA-16 trailers.

0920 D Sharp conducts tailgate safety briefing.

0925 D Sharp calibrates pH, cond. & turb. On HOR D.O. did not calibrate.

1015 16-2650, Martin Spring. pH = 6.84, temp = 9.8°C, cond = 0.510 ms/cm. turb - Not measuring correctly. Flow is clear, higher than last week.

Weekly FRI samples collected 3/31/00 - 4/7/00. 17 of 47 samples collected, 20 mls per bottle sample. 121 ~ 1/3 to 1/2 full. Sampling after 12 pulses, LLA samples collected. Sampling started on 3/17/ collected every other day until 4/6/00. 11 k

1110 Arrive at twin wells to collect data and pH an well depth.

Depth to water 7.15 ft. - 16-2659

pH - 6.8, Cond. = .280, DO = 8.7, temp 7.6°C

Downloaded data to fl6 2659407

1145 16-2665 dry

16-2666 dry

1150 16-2669 dry

5/17/2002 LR

1201 16-2662 East of 90's line pond: Dry
1202 16-2663 South " Dry
1203 16-2664 West " Dry
1204 16-2661 North " Dry
1210 16-2655 Dry, not even 1-3 inches

1235 Crew breaks for lunch.
1337 Crew arrives back at TA-16 trailers.
1410 16-2652, Burning Ground Spring. ~~to~~ DS 5/17/2002 Water is clear, moderate flow. Weekly FRI samples collected. 3/31/00 - 4/7/00. 25 of 47 samples. < 1/2 full, 12 bottles. 20 ml/sample sample every 24 pulses. These will be submitted for analysis on Monday. LLA samples collected 2/13/00 - 3/28/00, every 48 hours
Water quality parameters collected:
pH = 7.18, Cond. = .289, DO = 7.98, Temp = 11.9°C
1500 16-2651.5 WSC spring, water is slightly turbid, low flow, leaf blocking weir notch. pH = 7.48, cond = 0.309 mS/cm, turbidity = 5 NTU, temp = 13.8°C
Weekly FRI collected 3/31-4/7/00, 9 of 40 samples collected, 500 mls per sample, sample every 5 pulses. 3 liters total collected still not enough sample.
LLA samples collected 2/17/00 - 4/3/00, 4/7/00
DS 5/17 collected today. Sampler started - collects 1st sample 4/9/00.
1520 16-2653, Peter Seep. A sample is collected to correspond to the weekly FRI.
pH = 7.16, Cond = 0.356, turb. = 10, ~~DO~~ 10.43, Temp = 9.9°C
RE16-00-3150/3151 collected. No photo.
Water is clean, very low flow location is at lowest point ~15' up drainage from Big Rock.
1545 Crew departs site. Note: Crew checked Run-off sampler It was dry.

Donna M Phan
5/17/2002

106
4/10/00

Todays Objectives: Submit weekly FRI samples to SMO for Springs & the Peter Seep sample collected on 4/7/00. Decant water from LLA samples collected last Fri to Stable Isotope bottles. Download da from Springs & wells. measure water levels & field parameters from wells.
Todays Weather: High clouds, windy w/gusts ~ 60° F.

1000 Crew consisting of D Sharp (IT) & L Ram (IT) arrive at TA-16 trailers.
1010 D Sharp conducts tailgate safety meeting SSHASP 264.
1015 D Sharp filters samples, L Romero preserves samples.
1100 B McCormick gives release slip for samples. Waiting on paperwork from CD
1120 Crew departs site, goes to office.
1340 SMO calls, paperwork is ready.
1400 Crew arrives back at TA-16, labels bottle
1500 Weekly FRI samples submitted to the SMO. Samples RE16-00-3150, 3151 (Peter Seep) under COC 1082-00-
Samples RE16-00-3152, 3153 (Martin Spring), 3154 (su Spring), and RE16-00-3155, 3156 (Burning Ground Spring) under COC-1082-00-5015, Order Codes submitted were for Bicarb, D2H, EPA300, HENGPETN, HF METTAL+B, NO2NO3 & TUICPMS. SWSC spring did no have enough water so HENGPETN & TUICPMS were omitted, as well as the Filtered mettal + B sample.
1525 Crew arrives back at TA-16 trailer, Decants all LLA samples into their preaspective Stable Isotope con
1705 Crew departs site

Diana M Sharp 5/17/200

4/13/00

Today's Objectives: Download instrument data from all data loggers. Perform manual water level measurements from wells, measure field parameters.
Today's Weather: high thin clouds, little breeze ~55°F.

0935 D Sharp conducts tailgate safety meeting SSHASP 264.
0940 K Beguin calibrates the HORIBA.
1000 Arrive at well 16-2658 DTW=5.9', temp=7.0°C pH=6.46, cond=0.313 mS/cm PC200W data downloaded File "26580414".
1025 16-2652, BG Spring, pH=7.01, temp=10.1°C, cond.=0.312 mS/cm. turbidity=1NTU, checked the Sigma autosampler. It did not start on 4/7/00. It should start collecting today 4/13/00. Flowlink data downloaded, PC200W data downloaded. File "BGS0413"
1038 16-2651, SWSC Spring ~~16-DS~~ 5/17/2002, pH=7.42, temp=11.2°C Cond.=0.312 mS/cm. The Flow Rate Integrated sampler did not start on 4/7/00. We will start it again on 4/14/00. Flow link data downloaded, PC200W data download to File "SS0413"
1100 16-2656, DTW=6.56', pH=7.0, Cond.=0.289 mS/cm temp=6.96°C. PC200W data downloaded File "26560310"
1120 16-2665 - Dry
16-2666 - Dry
1130 16-2668 - Dry
1155 Crew departs for office.

5/17/2002 Donna M Sharp

This page was not used

5/17/2002
Donna M Grant

4/14/00

Todays Objectives: Start the weekly FRI's again
SWSC Spring did not collect 4/7/00 - 4/14/00.
So, we will not collect samples from that week at
any of the springs. We will finish downloading
data & measure water levels. Crew consists of
D Sharp (IT) & K Begin (IT).
Today's Weather: Sunny, clear, breezy, ~60°F.

0925 Tailgate safety briefing conducted by D Sharp
SSI/ASP 264.

0930 K Begin calibrates HORIBA.

1005 Crew checks in at MDA-P.

1015 16-2659 - DTW = 7.6', pH = 7, temp = 8.9°C
Cond. 0.302 ms/cm. Data downloaded to file
"2659 0414".

1020 16-2660 - DTW = 7.65'

1100 Martin Spring. pH = 7.17, cond = .60, temp = 10.4°C
Attempted to download data from ISCO datalogger.
When computer booted up it gave an error
message stating that Windows was damaged. Computer
entered Safe Mode. Kristi attempted to download
anyway with safe mode, but an error message
said port connection was faulty. We did not
want to crash the computer, so we stopped attempts.
Weekly sampler started.

1130 16-2655 - Dry (1" of water in bottom)

1145 16-2669 - Dry

1150 16-2661 (SA 4/24/00) North Side of 90's lin pond - Dry
16-2663 South Dry
16-2662 East Dry
16-2664 West Dry

1215 Crew departs for lunch

1320 Crew arrives back on site.
/ Louis Romero 5/12/2002

1340 16-2650, Martin Spring. Downloading data both flow & ~~pH~~ DS cond. & Temp. File for Campbell Scientific "MSD414".

1410 16-2667 - Dry

1417 16-2652, Burning Ground Spring - Started we FR1 samples for week 4/14/00 - 4/21/00. Che the LLA sampler - Collected one sample on 4/1

1429 16-2650, SWSC Spring, Started FR1 samp for week 4/14/00 - 4/21/00. Checked the L

1430 16-2653, Peter Seep - at Big Rock, collected LLAs

~~1545~~ DS 1445 16-6295, 3rd MS canyon well. DTW = 7. pH = 6.26, Cond. = 0.173 ms/cm, temp = 1

~~1555~~ DS 1455 16-6294, 2nd MS Canyon well. Dry.

1540 Crew departs site.

5/17/2002
Donald M. Mayo

4/20/00

Today's Objectives: Perform well level measurements (by hand) Download dataloggers at 16-2659. Collect Field parameters at 16-2659. Crew consisting of D Sharp (IT) & K Beguin (IT) will perform ~~sampling~~ DS 4/20/00 Fieldwork.
Today's weather: Warm, sunny, breezy, ~68°F.

1350 Crew arrives on site.
1415 K Beguin calibrates the Horiba w/auto cal solution.
D Sharp conducts tailgate safety briefing.
1430 Sign in at MDA-P trailers.
1440 16-2659, no DTW measurement, pH = 6.64, Cond. - .319, Temp = 9.2°C. Download data file "26590420".
1500 Sign out of MDA-P.
1515 16-6295, DTW = 4.82', pH = 6.6, cond = 0.183 Temp = 9.4°C
1520 16-6294 Dry
1540 16-2655 Dry (1" of water in bottom)
1550 16-2669 Dry
16-2661 Dry
16-2662 Dry
16-2663 Dry
16-2664 Dry
Note: 90's line pond is very close to drying out completely.
1615 16-2665 Dry
16-2666 Dry
1630 Crew departs site.

5/17/2002 Donna M Sharp

4/21/00

Today's Objectives: Collect weekly FRI sample
Download data from springs & wells. Perfo
hand well level measurements from wells in
Canon de Valle. Collect field parameters fro
Springs & wells.
Today's Weather: Partly cloudy, breezy ~ 60
0850 Crew arrives on site. D Sharp (IT) K Begum (
0930 K Begum conducts tailgate safety briefing.
0935 D Sharp calibrates the Horiba using auto ca
solution. DO sensor does not calibrate.
1000 16-2658, DTW = 5.9', pH = 6.3, cond = 0.309
temp = 7.2°C Data downloaded to file "26580
1020 16-2652, Burning Ground Spring. pH = 7.09, Cond
0.313, temp = 10.6°C, Turbidity - 2.0. 4/14-
Weekly FRI samples collected, 37 of 47 samples.
20 mls collected every 24 pulses. Flow appears higher
than last week. 12 bottles collected. ~ 3/4 full
LLA sampler checked, 5 samples collected so far, 19
Data downloaded to file "bgs0421".
1055 16-2651, SWSC Spring, pH = 7.4, cond = 0.304,
temp = 10.4°C. 4/14-4/21/00 Weekly FRI samples collected, 12 of
samples, 500 mls per sample, sample after 5 pulses
~ 4 liters of water. Flow still seems low.
LLA sampler checked - 6 samples have been coll
18 samples to go. Data downloaded to file "ss
1115 ~~1040~~ DS 16-2653, Peter Seep, LLA sample collected - locat
at same (lowest) location.
1140 16-2656, DTW = 6.6', pH = 6.72, temp = 7.6°C
cond = 0.306, turbidity: 4.
1230 Crew departs site for lunch.
1330 Crew arrives back on site.
1400 16-2650, Martin Spring. pH = 7.07, Cond = 0.5
/ Louie Romero 5/17/2002

4/21/00 temp = 10.6°C, 4/14-4/21/00 Weekly FRI samples were not collected. The distributor arm broke on the ISCO sampler. Fortunately the ISCO for LLA samples is being replaced today with a 24 bottle Sigma sampler, so the FRI ISCO can be replaced now. The ISCO was reprogrammed to collect flow paced samples. It will collect a 20ml sample every 12 pulses. 1000 liters/pulse 47 samples total per bottle.
LLA samples were collected from the ISCO sampler. Sampling started on 4/9/00 every other day to 4/21/00.
New Sigma 24 bottle sampler started. will collect 1st sample 4/23/00, then collect every 48 hrs.
Data Downloaded to file "MS0421". ISCO w/broken distributor arm will be taken back to trailer for repair. Now there are 2 ISCOs for back up use.
1450 ILe-6293 - Dry.
1540 Crew departs Site.

5/17/2002
Donna M Sharp

114
4/28/00

Todays Objectives: Download data, collect w
FRI Samples, measure waterlevels in wells.
LR

LR 5/

0907 Crew consisting of D Sharp, K Beguin, Toby Wa
(IT) arrive on site. Toolgate Safety Briefing cond
0915 HORIBA Calibrated by K Beguin.
1000 16-2658, DTW = 5.8', pH = 6.72, Cond = .35,
Temp = 8.4°C Turb = 1, Data downloaded File "2658042
1020 16-2652, Burning Ground Spring, Weekly FRI
samples collected. 32 of 47 samples collected, ~ 3/4
liter full, 20 mls collected after 24 pulses. May need t
switch to Carbay soon. Data downloaded.
File "BS~~2652~~ DS 0428". LLA sampler checked. 8 of 24
samples collected. pH = 7.44, Cond = 0.315 mS/cm, Temp
1100 16-2651, SWSC spring. pH = 7.96, Cond = 0.289 m
Temp = 12.4°C. Weekly FRI samples collected. 17 of 4
samples collected. Data Downloaded File "~~2652~~
LLA Samples checked 9 collected 24 left.
1110 Peter Seep collected (LLA sample) location
at it slowest pt. ~ Big rock.
1115 16-2657 DTW = 4.9'
1120 16-2656, DTW = 6.6', pH = 7.33, temp 8.9°
Cond = .292 mS/cm. Data downloaded File "2656
1135 16-2655, DTW - Dry (1" water)
1145 16-2669 Dry
16-2661 Dry
16-2662 Dry
16-2663 Dry
16-2664 Dry
1215 Crew departs site for lunch. T. Walters (
for day.

/ Louis Romero 5/17/2002

1315 Crew returns to TA-16.

1345 16-2650, Mortar Spring. pH = 7.47, Cond. = 0.601 mS/cm, temp = 11.9°C. Weekly flow rate integrated samples collected. Only 10 of 47 samples collected. Not enough sample - only ~100 mls in each bottle (12). Changed the sampling to collect after 10 pulses instead of 12. LLA sampler checked. The Sigma did not collect properly, put all samples in one bottle. Sampler was restarted & one LLA sample was collected by hand MS 4/28/00. Sampling should start on 4/30/00. Data downloaded "MS0428".

1430 Arrive at K-Site Well 16-6295 depth to water 5.5'. Surface water that was just West of well has dried up. Cond. = 0.194, temp = 9.9°C, pH = 6.64

1447 16-6294 Dry.

1515 Crew departs site.

Donna M. Kemp 5/17/2002

05/05/00

Today's Objectives: Collect weekly FRI samples, check well level measurements, & collect field parameters at wells & springs. Today's weat warm, windy, no clouds ~ 82°F.

1045 Crew consisting of D Sharp, K Beguin & Mark Taylor (1 on site. Horiba calibrated by K Beguin.

1100 Tailgate safety briefing conducted (SSHASP 264) by Donna S

1115 16-2650, Mortandad Spring. Weekly Flow rate inte collected 4/28/00 - 5/05/00. 18 of 47 samples collected not enough sample in bottle. 12 bottles collected ~ 1/4 pH - 6.95, cond - .596, temp = 12.3°C, Low flo The sampler was set to collect 20 mL after fewer pul The low level anion sampler (Sigma) is not collecting pr It was started again today.

1150 16-6295, 3rd well in MSC. DTW = 5.75', pH = 6 Cond. = 0.195 mS/cm, Temp 10.2°C.

1220 Crew departs site for lunch.

1315 Crew returns to TA-16.

1330 16-2652, Burning Ground spring. Weekly FRI sam collected 4/28/00 - 5/5/00. 27 of 47 samples collected flow is low for BG. 12 bottles app. 1/2 full. pH = 7.3, cond = .300, temp = 15.3°C. LLA sampl checked. 12 of 24 samples collected.

1400 16-2651, SWSC Spring. Weekly FRI collected. 4/28/00 - 5/5/00, too much water collected. 30 of samples collected ~ 3/4 carboy is full. Very lo flow at SWSC. pH = 7.7, temp = 17.2°C, Cond = mS/cm. LLA sampler checked: 13 of 24 collected.

1405 16-2653, Pueblo Seep = same location, LLA sample collected.

1456 Crew departs site.

Donna M Sharp 5/17/2002

6/15/00 Hydrogeo Quarterly Sampling
Todays Objectives: Beginning Round of quarterly sampling. We will begin in Cañon de Valle to sample the alluvial wells. We are starting the alluvial well sampling in the canyon because of the threat of flood due to the recent Cerro Grande Fire.
(Refer to page 123-124 for a report about the Fire)
10:30 Crew consisting of K. Begin, E. Alcon, and P. Gram arrive onsite to begin alluvial well quarterly sampling. Kristi and Elmer get the bottle sets together
1050 Peter conducts the daily tailgate meeting. All crew members sign off.
1110 Head to 260 so peter can talk to Randy.
1210 Arrive at 2656. Depth to water is 6.7'.
We did not bring the Horiba. We will use the other water quality parameters meters, and then test with the Horiba when we filter.
1st Temp = 7.7°, Cond. = 140 pH = 7.17
2nd. Temp = 7.7°C Cond - 150 pH = 7.17
3rd Temp = 7.7C Cond = 150 pH = 7.02
3rd well volume parameters same as sampled water. Water is slightly turbid.
Elmer bailed the well and Peter is collecting the samples.
1215 Samples ~~[illegible]~~ KAS 6/15/00 RE16-00-3191 & 3192 collected
Photo # 1 & 2 of the samples.
1230 Arrive at 16-2657. Depth to water 4.33'.
We will not bail this well due to it's low recharge history. Water is moderately turbid
We will collect HE, Metals, SVOCs, VOCs first and see if we have enough sample to collect a full suite.
Cond = 290 pH = 7.8 Temp KAS 6/15/00 10 9.0°C
1235 Collecting Sample RE16-00-3193, 3194

5/17/2002 // LOUIS POINTERO

photo # 3 taken of sample RE16-00-3193.

1300 Arrive at 16-2658. Depth to water 5.91'

1st Volume	110 us-cond.	7.9 pH	8.5°
2nd Volume	cond = 130	7.3 pH	8.4°
3rd Volume	cond = 130	7.3 pH	8.4°

Water is slightly turbid to moderately turbi
There is a gold-colored algae present in the
bailed water. Turbidity is goldish-tinted.

1308 Sample RE16-00-3195 and 3196 collected after
3rd Well volume bailed. Water began to clearup
Parameters for Third volume same as sampl

1330 Leave Cañon de Valle and break for lunch.

1410 Arrive back on site. Kristi and Elmer ar
filtering and preserving the samples.

1610 Kristi and Elmer leave site. Tomorrow we
will package, label, and submit the samples to
the SMO.

Kristi Hogan

5/17/2002

6/16/00 Hydrogeo Quarterly Sampling
0915 Elmer and Kristi arrive on site. Today we are going to package and label samples and get them submitted to the SMO.
Kristi is going through the paperwork, ensuring that it is correct. Elmer is labeling the samples.
1100 Elmer and Kristi depart TA-16 to deliver samples to the SMO for shipping.

Kristi Log 5/17/2002

June 20, 2000 Continue Hydrogeologic Sampling

0940 Sampling team of E. Alcon, K. Beguin, Allen Dunc
and Joseph Abeyta (of Tesuque Pueblo) arrive on
We will continue with our quarterly samplin
activities and Stream Profile activities this w
Weather: Partly cloudy, cool - 70°F, breez f
SW 10-15 mph. We will go to Cañon de Valle fi
and sample 16-2659.

0950 Kristi is getting sample bottles together a
Elmer is briefing Joseph and Allen on th
SSHASP.

1010 Elmer conducts the tailgate safety briefin
and all members sign off.

1110 Arrive at Well 16-2659 in CdV. Depth to H_2O 7

1st Volume	pH = 6.5	cond = .357	temp = 11.6°	turb = N/M
2nd	pH 6.24	cond = .310	temp = 10.2°	turb = N/M
3rd	pH 6.27	cond = .321	temp = 9.9	turb = N/M

1120 Sample RE16-00-3197 and 3198 collected.
Final well volume parameters are the samp
parameters. Water clear to slightly turbid.

1140 Exit CdeV and drop samples off at trailer.
for lunch. Allen and Joseph depart site.

1330 Arrive at K-Site well 16-6295, PSCampos DTW = 6.0
pH = 5.84, cond = .105, turb = N/M temp = 20.2
pH = cond = turb = N/M temp =
pH = cond = turb = N/M temp =
Water is heavily sediemented. Dark brown in c
Has distinctive odor. Smells very "boggy."
This well is not recharging. We will come back
tomorrow and sample without bailing
if the well has recharged enough to do so.
We did not take photos at the site because
we didn't have any film. We will take photo

//Louis Romero 5/07/2002

tomorrow, of all the samples.

1420 Arrive at 16-2655 There is only 2-inches of water at well bottom. We will not collect this sample. Checked 90's-Line pond, it is dry. No samples.

1435 Arrive back at field trailers. Kristi will filter the sample 3198 and Elizer will preserve all the samples.

1500 Putting COC tape on all the samples.

1530 Leave site to get film and put gas in the van.

5/17/2002

6-21-00 Continue Quarterly HydroGeo Sampling

1050 Arrive at Field Trailers. Kristi Beguin and Cathleen Bi
will conduct the sampling today. Cathleen is reviewing
HASP and SSHASP 164. Kristi is calibrating the two ha
held instruments and gathering the bottle sets to
Weather: Pty cloudy, hot 80°f, Winds from SE 5-10mp
1115 Kristi conducts the daily tailgate safety meeting
1130 Arrive at Burning Ground Spring. Water is cle
Water flow is moderate. 7/18/00 KR 3206 7/18/00 KR
1138 Sample RE16-00-~~3197~~ 3205 and ~~3198~~ Collected.
TDS - 150 pH = 9.1 Temp = 18°C
Cathleen is documenting and preparing the
samples for a picture.
Photos 1 & 2, Roll 2
1159 Arrive at SWSC Spring. Sample RE16-00-3203
and 3204 Collected. Water is moderately tu
Extremely low flow.
pH = 8.4 TDS = 200 Temp = 19°C
Photo 3 taken of the sample. (Roll 2)
1205 Peter Seep sampling being conducted. Sampl
collected at 1214 _ sample # RE16-00-3207 and
3208. Water at Peter Seep is not flowing.
Head is approximately 20 feet West of Big Ra
Water is slightly turbid. Has distinct fetid o
Many plants/organics in water.
pH = 8.3 TDS 240 Temp = 20°C
Photo #4 of the sample.
1230 Drop samples off at refrigerator at the field
trailers, and break for lunch
1330 Back on site. Headed to the fishladder seep
1345 Fishladder seep area is completely dry. The
area was burned and little ground-vegetati
Remains.

// Louie Romero 5/17/2002

~~Reserved~~ LR

~~Cerro Grande Fire Damage Report~~ LR

This page was not used

Lowe Romero 5/17/2002

~~Reserved~~ LR

124

This page was not used.

Louis Romero 5/17/2002

6-21-00 Continued

1420 Sampled the Martin Spring. Sample ID RE16-00-3201/3202. Water is clear, warm, there is large-particle ash present at floor of spring ½-1¼" sized.
pH = 8.2 temp = 65°F* tds = 280
Photo # 5, Roll 2.

1450 Back at the field trailers. We place all samples in the fridge. Tomorrow we will label and filter and preserve all samples collected. We will submit them to the SMU tomorrow.

1515 Depart Site.

*65°F = 18.3°C
7-18-00 KR

Kirtley 5/17/2002

6/27/2000 TUESDAY

10:00 Crew of Louie Romero and Kevin Reid arrive at HEPS field trailers. Kevin is briefed on the SSHASP 264 ~~con~~ he conducted by Kristi Beguin whose BMP crew was also present for briefing. All other training requirem are fullfilled and placed in a folder for Kevin Reid.

12:00 Crew breaks for lunch

13:00 Crew arrives at trailer. Training requirements are finalized for all crews.

1330 Tailgate safety meeting is conducted

1345 40 mL amber are preped (with HCl)

Equipment for sampling and paper work are preped.

pH meter is calibrated, conductivity probe is ready, there is no probe available for temperature.

1510 Crew arrives at well ID 16-~~3199~~ 6295 ~~7-20-00~~ no water level measurment will be taken because we do not have a sounder available, previos crew had bailed this well and recharge was slow. water is present (~3 ft of standing water) so a sample will be collected. RE16-00-3199,

1524 pH = 6.0 ; cond 190 ; temp = not measured, full suite collected

1535 Station 6 MS is dry, stake is burnt 16-5991

1545 MS station 5 is dry (16-5990) stake is burnt photo 7 taken of channel

1558 MS station 4 is dry. This location ID is 16-5989. no sample collected photo 8 is taken of stake and channel. stake is 80% burnt and location ID is identifable.

1630 Crew returns to HEPS field trailers. sample RE16-00-3199, 3200 are preservared. They will be labeled and submitted tomorrow

1700 Crew departs the site.

L Romero 5/17/2002

6/28/2000

0945 Crew of Louie Romero, Kevin Reid, and Debbie Risberg arrive at HEPS field trailers

0950 Tailgate is conducted (264) by Louie Romero. Today's activities include stream profile continued in Martin Spring, and Cañon de Valle. Also we will sample at any location with water.

1000 HARIBA is calibrated

1030 Equipment is gathered and paper work is sorted

1045 Crew arrive at 16-344 bldg. and drop into canyon

1100 MS station 1, flow <.5 cfs, flume will not be used. Sample will be collected

1105 RE-16-00-3180 is collected, 1108 RE16-00-3181 is collected photo 9 is of debbie Risberg and Kevin Reid performing field activities estimated discharge is 200 mL/minute using a 250 mL sample bottle and a stop watch.

1120 Station 2 of Martin Spring is dry. Roll 2, photo 11 taken.

1130 MS station 3 is dry Roll 2, photo 13 is taken.

11:34 Donna Sharp paged me to get out of the canyon due to incoming storm. We are already on our way out due to incoming storm.

11:45 Crew is at HEPS field trailers seeking shelter from the storm.

1200 Crew breaks for lunch and is heading to the office.

1300 Crew not able to return to site due to road closures from flooding

Louie Romero

Louie Romero 5/17/2002

6/29/2000 Thursday

915 Crew of Louie Romero and Kevin Reid arrive at trailers.
Tailgate Safety Meeting is conducted. Hanriba is calibrated.
Today we will attemp to take stream measurements and samples at stations in CDV.

937 Debbie Risberg and Lynn Kidman arrive at sight. They will help the TA-16 BMP crew

953 Louie Romero and Kevin Reid arrive at 222 bldg. we will drop in the canyon here near Silver outfall. ~~BMP at~~ we 1st BMP under 222 bridge area is washed out, 6 ~~X~~ straw bails are scattered in area.

1019 photo 18, 19 is of Dam @ MDA-R

1025 Photo 20 normal head of Peter Seep before flood

1030 At area near station SCDV, no sign of station markings

1045 Channel Survey: 6/28/00 ≈12mm rainfall caused runoff event. First large rain storm since fire. Channelized flow backed up at culvert + road crossings. Flow in channel downstream of silver outfall stayed within channel. Stage height about 2-3' above bottom of channel. Not much scour observed, grasses still lined channel bottom. ~~No~~ small flow observed in channel above Burning Ground springs other than seepage from dam below MDAR. Dam was filled to ~~capacity~~ capacity and overflowed, causing incision on downstream side of earthen dam. Estimated depth of water in dam 2-3 ft. Photos taken looking downstream + upstream of dam. Likely dam will fail with more runoff. Sample location stakes not found.

1130 Crew ~~breaks for lu~~ returns to HEPS field trailers and will break for lunch.

1230 Crew returns from lunch.

1245 Crew enters the canyon from SWSC cut.
We will take a flow rate measurement below BG Spring. This will be

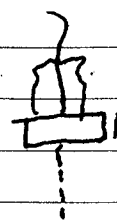
Continued on next page 129 →

Louie Romero 5/17/2002

~~Sampling plates still remaining in place after the flood~~ LR
~~16-2170~~ LR 5/17/2002
~~16-2168~~ LR 5/17/2002
New CDV station below BG. DS 7/18/00
established as ~~station 2 (CDV)~~. the plum is not going to work since there is not enough water, we will use a sample bottle and a timer ~ 1/2 L in 3 sec.

1309 Sample is collected pH: 8.0; 0.259 ms/cm; turb: 17, DO: 7.59; temp = 18.2 °C sal 0.0 ‰ RE16-00-3161

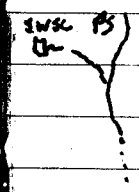
1313 filtered sample is collected RE16-00-3162



New CDV station below BG
DS ~~Station 2~~ was established 30 ft ~~down~~ up down stream from 7/18/00 metal stake 16-

1330 Crew exits canyon due to incoming storm.

1340 Crew arrives at trailers. samples will be preped for submission to SMO



1354 LOUIE ROMERO receives a page from ~~YA-16~~ ACO Bldg. 202 to exit the canyon due to incoming storm.

14:45 Cañon de Valle stream flow: walking downstream from silver outfall, no flow was observed until earthen dam below MDAR. Water in dam was backed up about 30 ft. Depth of water estimated 2-3 ft at center point. Seepage flow observed downstream of dam for about 30 ft, then flow went subsurface. Surface flow picks up again at Peter seep and junction with SWSC spring, flow is slight, mostly standing water was observed in the section at SWSC spring, peter seep and 20-30 ft downstream, at which point water again goes subsurface. Burning Ground spring had a steady discharge and streamflow resumed at junction of main channel + BG spring. Samples were taken & Streamflow conditions below BG spring are not known at this time.

Louie Romero
5/17/2002

6/30/2000

10:45 Crew arrives at Site. Today Louie Romero and Kevin Reid arrive at site
Today we will sound wells, collect a bromide sample from 3 springs, and possibly collect a stream profile sample from well pair area.

10:30 Horiba is calibrated, Tailgate safety meeting is conducted.

11:00 16-2656 5.25' ft from toc

11:05 Peter Sep head will be staked and labeled station 1
parameter pH: 7.33; cond. 0.731 ms/cm; turb 3; DO 11.24; temp 14°C
Sal 0.03%

11:10 SWSC bromide sample is collected

11:15 ~~RG~~ Spring Sample is collected

11:20 16-2658 5.75' from toc

11:30 ~~2659~~ 2660 5/17/2002 8.20

11:31 2659 8.10

~~11:40 Crew arrives at a spot ~20 ft below old wooden plum~~ HR

11:40 16-2770 stake will be the location of a flowrate measurement and a sample. This area is ~200 ft upstream from the well pair.
RE16-3163 and RE16-00-3164 will be colected
parameters: pH 7.71; cond 0.489; turb 10, temp. ~~6.83~~ 16.0°C;

11:51 RE16-00-3163 is collected

11:53 RE16-00-3164 is collected

11:55 Flow is measured as 250 mL/18 sec using a 250mL beaker
photo 23 of Roll 2 is taken of sample

12:30 Crew returns to HEPS field trailers, samples are preserved and stored in the cooler.

13:15 Crew departs for lunch after calling Augusta Garcia (IT @ SMO) with sample times for COC production.

14:15 Crew back from lunch. Samples are labeled. Acken slip is attained from Jim Nuttal (ESA) for removal of samples from site

1445 Crew departs site to SMO.

16:00 Site 16-2770 was selected for measurement because (running) it was the closest site to the 'well pair' which also had surf

// Louie Romero 5/17/2002

The stream flow went subsurface about 20ft downstream from location 16-2770. Samples were preserved with the appropriate method then submitted at 15:30, 6/30/00.

KR
5/17/2002

7-10-2000 QA of Quarterly sample + Stream profile Kev
During week of June 26 → June 30, 2000 quarterly sampling and stream profile sampling was completed. Many locations were not sampled because ~~of~~ there was no flow LR 5/17 at sampling locations. Other locations had very low flow, ~~but~~ and LR 5/17/2002 were sampled. There was a precipitation event of ≈ 0.5" 6/28/00 ≈ 13:00. Cañon de Valle had lots of runoff with stage levels approximately 2'-3' above channel bottom. Martin Springs canyon had little runoff; stage levels did not ~~exceed~~ exceed 5/17/2002 LR 1'-2' based on debris on channel side

Martin Spring Canyon:

Samples collected at station 1 and at the 3rd monito well. All other sample locations dry. Monitoring well had high turbidity and was not bailed before sampling. This was because of the known low flow at well. Holding time for HEXP and HENGPETN exceeded; samples will need to be retaken for both station 1 and at 3rd mon

Cañon de Valle:

Samples collected downstream of Burning Ground Spring at two locations: station 2, station 3*. Both samples collecte following 0.5" rainstorm. Station 2 was re-established ≈ 30 downstream of Burning Ground Spring. This was necessary because high flows had washed away the previous marker. A full suite of samples was collected. *Station 3 sampling was conducted at stake 16-2770, approximately 200 Ft upstream from the "well pair". This location was chosen because it was the closest location to the well pair where flow was still above surface. Holding times for HEXP and HENG were exceeded for station 2. Station 2 will need to be resamp Station 3 samples are fine. 7-10-00 [illegible]

7/11/2000 Resampling of Martin Spring Canyon Well, Martin spring station 1, Cañon de Valle station 2.

Kevin Reid, Kristi Beguin sampling crew

11:00 Calibration of Horiba, Field safety review (tailgate)

11:25 Arrival to MSC well.

Depth to water surface = 5.9'

Top of water column clear, water lower in well more turbid.

11:30 Two 1-liter samples collected, sample # 16-00-3213 pH: 6.00, cond: 0.248 ms, T: 18.9°C

11:35 Return to truck

12:05 Arrival to Martin Springs Canyon, station 1

Low flow conditions, high flow indicators of ≈ 1' from rainstorm 6/28/00

Water clear.

Samples collected: 2 1-liter bottles, sample # 16-00-3215

12:12 Return to car KR pH: 8.30, Cond: 0.543 ms/cm, T: 23.2°C

12:35 Arrival to CDV, station 2

pH 8.3

Cond 0.316 ms/cm

Temp 21.4°

Samples collected: 2 1-liter amber bottles sample # 16-00-3214

water clear

12:39 return to car, break for lunch

Flow regimes for this sampling event were basically the same as the flow regime from 6/26-6/30/00, ~~although~~ KR 5/17/2002 There has been a couple of rain storms, but streamflow conditions (i.e. discharge) are basically the same.

KR 5/17/2002

14:30 ~~14:30~~ Samples labelled, clean slip obtained.

15:00 Samples submitted for analyses to SMO, TA-3

7-11-00 Kevin Reid

7-13-00 Soil Sampling, Cañon de Valle
Resampling 7 sites for Ba analysis for Don Hickm
Sampling Crew: Kevin Reid, Elmer Alcon

1045 Arrival to trailer. Prep sampling equipment, conduct tailgate safety review.
Todays activities include soil sampling of 7 locatio
Two gallons of soil will be sampled at each location.
Soil will be returned to trailers + stored in refridgerat
Working under SSHASP 266f,

1100 Crew hikes down on to CDU to search for first Sample location.

1120 Crew find location: CDUZW-16 on the north side of canyon drainage. ~~16-06123 KR~~ RE 16-00-0117 5/17/20 KR

1130 Crew will conduct sampling starting at east sd of original sampling location, crew will sample c of material for a total of 2 gallons.
Crew has sample an approximate area of 2' sq f
Soil description: soil horizon 0-7cm consist of organic material, mostly roots, sand and silts, sli

1140 photo Taken Roll photo 24, crew departs for second location.

1150 crew locate CDUZW-12, crew will begin with re of ash and surface debris that had accumulated at sa location. Crew will collect sample from 0-20 cm horizon. Soil description: 0-2 KR cm has been burned no organic material, sample will not be collected from this, 2-20, fine loamy, sand, minor organics. crew will c sample down drainage (east) from original sample dry to slightly moist. It also appears the storm event ever did not affect location. approximate area of recoc is one sq.ft. photo: Roll Frame 1 ~~16-06124~~ KR 5/
RE 16-00-0118 KR

7-13-00

1205 Crew departs for location CDUZW-9. RE16-00-0119

1210 crew locates sample location. area has been wash over by storm event and has filled sample location with fine silty ash, crew will remove the 0-13 cm layer. crew will sample from 13-22 cm. approximately one ~~sq~~ ft. down drainage (east) of original sample location. Soil description. fine sand, minor clay silts, minor organics, ~~dry~~ 7-13-00 slightly moist to moist.

1220 photo taken, Roll Frame 2

1225 location CDUZW-24 is located on the north bank of RE16-00-0120 channel approx. 30' ~~from~~ EA 7-13-00 down drainage. sample will be collected from the 0-6 cm horizon. Sample description, organics (mostly pine needles), top 2 cm has been burned, fine sands, sample taken east of orginal sample location. approx. area sampled 1 sq. ft. photo, Roll, Frame

1235 Sample location CDUZW-10 is approximately 15' down RE16-00-0 drainage from previous location on the north side of channel. sample area has been completely wash over by storm event. crew will remove sediment, then proceed to collect sample from a depth of 0-18 cm, sample description minor organics, mostly roots, corse sands, minor clay, minor gravels, very moist. photo taken Roll Frame 4

1245 ~~crew will break for~~ SLW 7-13-00 AR crew will ~~hike back out up to~~ AR 7-13-00 SLW cut and take samples back to field trailers.

1305 Crew break for lunch.

1330 Crew back from lunch.

1339 Crew will access CDU from MPA-P.

1345 Crew checks in with MDA-P managers Bill McCormick is there and he refuse us access into CDU. We can finish up at a later date.

7-14-00

Today's activities: continued sampling for Ba at Geomorphic locations, crew will consist of G. Alcon, K. Adams, K. Reid (IT corp) SSHASP 264,

808 crew will perform early work of checking on power supply cables for sampling equipment th was damaged during fire.

900 crew depart office for SMO to pick up sampling paper work.

945 Crew arrives at TA-16 field Trailers.

1015 Crew conduct Tailgate safty meeting.

1020 crew depart for Sample location down in CDU canyon.

1045 Crew arrive at location CDU2W-3 RE16-00-0123

1046 crew samples location. Sample description: There wa sediment that filled up sample location from storm event, sample collected from 0-19 cm. minor organ minor clays & sands, dry to slightly moist. sample collect from a 1/2 sq. ft. area. photo 5

1059 Crew arrive at CDU2W-6. Sample description; Samp will be collected from a depth of 22-34 cm on the east side of previous or original sample location. area was wash over by storm event. minor organics (moth 0-22 cm of soil removed. minor sand, minor clay, sl moist to moist. Frame 6 RE16-00-0122

1115 crew depart canyon bottom for field trailers.

1130 Crew Back at field trailers, to begin prepping samples for submit

Louie Romero

5/17/2002

7-13-00 Download of Data from TA-16 Wells & Springs
10:15 Karl Adams and Kristi Beguin arrive on site. Todays activities for the sampling team of K. Beguin and K. Adams will be to download data from all data loggers within Martin Springs Canyon and Cañon de Valle.
1030 Kristi Prepares a daily tailgate meeting, and Karl signs off on it.
1045 Arrive at Martin Spring. Kristi downloads the Campbell Scientific data logger, but forgets to rename the file. It was downloaded to the same file name as the last batch of downloaded data - we can check the Exported data by date.
11:00 Karl and Kristi check in with MDA-P team and head down to to 16-2659 and 16-2660, the well pair.
11:10 Karl sounds 16-2659. Depth to water is 9.1'. Kristi downloads Campbell Scientific data to file 26590713. Download is successful.
11:20 Karl sounds well 16-2660. Depth to water is 9.6'. This is unusual. The channel bottom at the well pair has changed pretty obviously due to the flooding occurring in CdV.
1130 Sign out with MDA-P folks.
1145 Karl and Kristi head down to CdV from R-25 parking area. The skies are looking increasingly threatening so we will try to get the CdV wells and Springs done before it starts raining.
1200 Arrive at 16-2658. Karl sounds the well. Depth to water is 5.8'. The flood water is undermining the cement well mount. Debris is beginning to pile up under the mount at the

Louie Romero // 5/17/2002

7-13-00 Continued

base of the PVC piping. Data was downloaded
file 26570713.

1225 Arrive at Burning ground spring. Downlo
the flow-logger data and the Campbell Scien
data to file BGS0713.

1240 Arrive at 16-2656. Downloaded data to file
26560713. Depth to water 6.6'.

1300 Arrive at ~~Burning Ground~~ SWSC Spring. We hiked
canyon towards MDA-R in order to see if t
stormwater Run-off sampler had water in it.
The sample bottle is gone. The canyon bo
has been scoured out about 2-3 vertical
down. JCI has also installed an earth
berm immediately upstream from the ori
Peter Seep head location up to where t
Run-off sampler was located. There is
evidence that there are some large boul
moving during the flood events. We are do
data from the data loggers. Campbell Sci
logger downloaded to file SWSC0713. Flo
logger downloaded successfully.

1320 Exited the canyon due to Thunder and Rai

1340 Arrive at 16-2655. ~~Depth~~ Not enough w
to sound the sounder.

1400 Depart Site. We will sound all other wells wh
it's not raining. We conducted no H_2O param
testing today.

5/17/2002

7-21-00 Hydrogeo WORK

1000 Kevin Reed and Kristi Begun arrive on site at TA-16. Todays activities include: swapping the cables newly installed at Martin for SWSC, so we have a longer cable, downloading data from the data loggers and sounding all our wells.

10:15 Randy Johnson has agreed to drive the ISCO samplers down SWSC cut for us so we don't have to hike them.

10:20 Kevin prepares tailgate meeting form. Kristi presents it and we both sign off.

10:30 Randy and Kevin leave to take ISCO's into CdV. Kristi is escorting Randy's crew while they steam-clean their front-end loader.

10:45 Kevin and Randy are back. Kristi and Kevin head to Martin Springs.

10:55 Arrive at Martin. The samplers still are not receiving power from the battery. It is either not re-charging or the battery is dead. We will swap the cables and see if it charges over the weekend.
Kristi is downloading data to file MS0721 from the Campbell Scientific data logger.

11:33 Arrival to well pair, CDV

11:35 Depth to water at well 16-2659 : 8.85 ft KR 7-21-00

11:37 Depth to water at well 16-2660 : 8.15 ft

11:40 Download well data to file : 26590721

Louis Romero
5/17/2002

7/25/00 Water Sampling: Cañon de Valle Monitoring Wells, Springs and Martin Spring
9:00 This sampling is to have additional water quality parameters in response to runoff generated following the fire. We plan to sample wells 2655-2660, Burning Ground Spring, SWSC spring; Martin Spring Canyon well, Martin Springs. Nine locations total.
Personnel: Kevin Reid, Kristi Beguin, Karl Adams.
0920 Arrive at TA-16. Weather is warm, slightly breezy fr 5-10mph. Clear. Kevin and Karl get the bottle set together. Kristi prepares tailgate form.
~~0945~~ All team members Read and sign off on the
10:05 tailgate form.
1030 Arrive at 16-2659. Depth to water was 8.19' depth of well is 10.08'. Well volume amount i gallons to be bailed for sampling.
1st Volume - TDS = 200, pH = 6.9, Temp = 19° C
2nd Volume - TDS = ~~190~~ 200, pH = 6.7, Temp = 11° C
3rd Volume - TDS = 210 pH = 6.9, Temp = 11° C
1050 Sample RE16-00-3224 and 3225 being collected. bale volume parameters are sample parameters
1125 Arrive at well 16-2658. Depth to water 5.92', T A total of 2.7 gallons will be bailed per volume.
1st Volume - TDS = 190 pH = 6.8 Temp = 15°
2nd Volume - TDS = 210 pH = 6.7 Temp = 13°
3rd Volume - TDS = 220 pH = 6.7 Temp = 13°
1st Volume is moderately turbid - gold - brown w
11:45 Sample RE16-00-3222 and 3223 Collected. Wate slightly turbid, light brown color.
1205 Arrive at 16-2657. We will not bail this c due to it's poor recharge history. H_2O para tds = .400, pH = 7.3, temp = 16°C. Water is black in color. Extremely turbid. There is evide that flood-waters have been flowing over

Lorenz Romero 5/17/2002 ///

RE16-00-3220 and 3221 - 16-2657

Samples RE16-00-3230 and 3231 Collected. SWSC well mount. Flood water is present inside the mount casing. I am unsure if flood water managed to flow inside the well piping, since the cap was fairly well secured in place.

1210 Sampling SWSC Spring. H_2O parameters are tds = .218, pH = 7.9, temp = 17° C. RE16-00-3230 & 3231 Collected

1220 Photo # 14 of SWSC samples, Photo # 15 of 16-2657 samples. We did not collect a 1L. poly bottle from 16-2657 as there was not enough water. Photo #13 was of 16-2658, 1 L. bottle not in photo although it was collected.

1230 Exit CPV to take bottles to fridge.

1240 Break for lunch.

1350 Arrive at 16-6295, Martin Spring Canyon 3rd. well. We will not bail this well due to poor Recharge history. H_2O parameters tds = .190, pH = 6.8, Temp = 15°C Water is slightly to moderately turbid. Sample RE16-00-3226 & 3227 collected.

14:35 Arrival to Martin Spring. Full suite of samples collected. Samples RE16-00-3228, RE16-00-3229 collected

TDS = 340 pH = 7.0 Temp = 12.0

Battery for CR10X replaced today.

1445 Depart Canyon for field trailers. We will package and preserve and filter all the samples collected today.

1610 Depart Site.

[signature]

5/17/2002

7/26/00 Hydrogeological sampling for Canyons Focus Are
0900 Kevin Reid, Karl Adams, and Kristi Begnin ar
at TA-16. Today we need to submit the sam
collected yesterday to the SMO, collect the
two samples from Cañon de Valle Well 26
and Burning Ground Springs. We will al
take the marine battery down to Martin Sp
canyon in order to hook up the power su
the auto samplers.

10:10 Depart site for SMO sample delivery.

10:40 Back on site. Karl prepared a tailgate saf
meeting and all team members sign off

10:45 Head to CdV for sampling activities.

11:10 Sample RE16-00-3232 and 3233 Collected
Burning Ground Spring.
pH = cond. = temp =
Photo 18, Roll A of the samples.
Water is clear. Spring is flowing quite Rapi

1125: Arrive at 16-2656. Water is clear to slightly turb
1st Vol. tds = 270, pH = 7.0, temp = 13°C
2nd Vol. tds = 250, pH = N/A temp = 13°C
3rd Vol. (instrument battery died)
Depth to water is 6.61', TD = 10.58'.

11:20 Samples RE16-00-3218 and 3219 Collected. We
volume was decreasing rapidly with bailing.
decided to sample the well after bailing 1
volume. The 2nd volume Reading is sampl
Reading for H_2O parameters.

1140 Exit Canyon.

1215 Break for lunch.

1300 Back on site. We are going to filter and prese
the samples, label and package and deliver
them to the SMO.

// Louie Romero 5/17/2002

1336 Bill McCormick arrives to give us a Release slip so we can transport the samples off-site.

1400 Left Site to deliver samples to the SMO

3/17/2002

7/28/00 Weekly Hydro Activities

0915 Field crew, consisting of K. Begnin, E. Alcon Karl Adams, and Kevin Reid, arrive onsite a TA-16. Today's activities will include weekl download of data from the data loggers and getting the autosamplers up and running. Weather: Sunny, hot. 87°F, Slight breeze fro SW 0-5mph, good chance for thunderstorms later in the day.

0930 Kevin and Karl get the backpacks ready and Kristi and Elmer are going to aerate and ri the compost test study.

1050 Crew heads out to Canyon de Valle to sour wells and go springs and download dai

1110 Arrive at 16-2658. Depth to water 5.8'. No measurements taken as we forgot the meter Data downloaded to file 26580728.

1125 Arrive at BG Spring. Elmer and Kevin are col the stable isotope samples. Kristi and Karl a downloading data to file: BGS0728.

1155 Arrive at 16-2656. Depth to water 6.5' at 16-2656 Downloading data to file 26560727.

1208 Arrive at SWSC Spring. Kevin and Elmer ar programming the samplers, Kristi and Karl a downloading. Campbell Scientific data is downloaded to file SWSC0728.

1225 Exit canyon and head back to field trailer

1235 Break for lunch.

1345 Arrive at Martin Spring Canyon. Kevin downloading data.

tds=310 pH=8.1 temp=11°C

Louie Romero 5/17/2002

The battery which is brand new is still not activating the samplers. Either the battery cables are bad, or something else is going on. We will try using another cable.

1410 Back to Martin. The cable from the solar panel to the battery is not working. We got the battery connected directly to the samplers and we will get the cable fixed on Monday. We got the samplers up and running in the interim and all autosamplers are set to collect at 1700 today 7/28.

1425 Arrive at 90s line pond area. We just sounded 16-2665, 16-2666 were both sounded, they are both dry.

16-2669 dry
16-2661 dry
16-2662 dry
16-2663 dry
16-2664 dry
16-2659 - 8.19 ft. depth to water
16-2660 - 8.75 ft. depth to water
16-2655 - <2" water in hole.

1500 Depart site.

Kristy Gn 5/17/2002

8-4-00 Weekly hydro sampling TA-16
0930 K. Bruin, K. Reid, and K. Adams arrive at TA
Today we will collect the weekly samples from the a
samples, sound the alluvial wells and resa-top w
and download data from all data logger instee
0945 Karl, Kevin, and Kristi sign off on daily tailgate fo
1000 Arrive at K-Site lower well. Depth to water is
5.59'. WEATHER: Pty cloudy, warm -88°, humid, c
pH=5.83 turb. = N/M cond. = .236 temp = 16.1°C
1008 Arrive at 16-6294 well is dry.
1020 Arrive at the well pair in CNS.
16-2659 depth to water is 8.30'
pH = 6.7 cond. = .311 turb. = N/M temp = 12.5°C
Data downloaded to file 26590804
1025 16-2660, depth to water is 8.27'
1040 Arrive at SWSC Spring
Bottle 94 after 3 pulses
Sampler collected too much water. The 1 L.
contain approximately 700 ml of water.
We are going to change the setting
to be consistent with what we had s
up previously. Sampler changed to 8 f
instead of 5. Changed suction head to
2 ft. instead of 9. We will calibrate
sample volume as well. Calibrated samp
volume and it looks good.
Data downloaded to file SWSC 0804. Isco
also downloaded.
pH = 8.2 cond. = .295 turb. = N/M temp =
1055 Peta seep sample collected
1105 Arrive at 16-2656
Depth to water 6.75'
pH = 6.77 cond. = .344 turb. = N/M temp = 14.1°C
// Louis Romero 5/17/2002

Data downloaded to file 26560804

1125 Arrive at Burning Ground Spring.
Sampler says 8 of 47 bt/s after 5 pulses.
Sampler collected approx. 125ml. in each bottle.
Samples dumped, started sampling today 1700.
temp = 12°C cond = .314 ph = 7.39
Data downloaded to file BG0804

1145 Arrive at 16-2658 depth to water 5.89'.
Downloaded data to file 26580804.
pH = 7.12. cond. = .146 temp = 20.7

1210 Break for lunch.

1300 Arrive at Martin Spring. The flow-integrated sampler had not been started so there were no samples collected. The stable isotope sampler had not been started and thus no samples were collected.
pH = 6.68, cond = .509, temp = 12.2°C
Data downloaded to file MS0804.
ISCO data logger data downloaded.

1337 Measure wells 16-2665, 16-2666 both dry.
16-2661, -2662, 2663, and 2664 All dry.

1400 16-2655 has < 2" water in hole.

1415 Depart Site.

Kirkland 5/17/2002

8-11-00 Weekly Hydro Field Activities at TA-16

0915 Kevin Reid, Karl Adams, and Kristi Begnin all arrive at TA-16 to conduct the weekly hydrog activities. WEATHER: Sunny, warm, breezy Wind East 5-15mph. Some thunderclouds already building the Jemez mountains.

0935 Review the daily tailgate safety briefing. All crew sig

1005 Arrive at 16-6294 at K-Site.
Depth to water 6.08' Water is slightly turbid.
pH = 6.05 temp = 18.2°C cond = .295 US

1025 Arrive at 16- at K-Site. Well is dry.

1050 Arrive at 16-2659; is at 8.51' depth to water
Downloaded data to file 26590811.
We are setting the data logger clock to the com time. This is to address issues of daylight sa time. Length of cable for pressure transducer 9.9' from cylinder to end of probe.
Temp = 13.4, pH = 6.89, cond. = .334

1100 Measure 16-2660. Depth to water is 8.46'

1125 Sample bottle 4 after 1 pulse. Change param to collection vol. 20ml. Change pulse to 50L.
Sample 20ml. every pulse.
pH = 8.38 cond = .329 temp = 20.9°C
Fired 135 sec. 1L. 10L.
Change pulse int'l to was 30 L.
Sample volume to 100ml, sample every pul
Sample will collect 100ml. every pulse and pulse equals 10L. of flow through the weir.
We also set the clock to the logger and c to be precise. Data for the CR10 is gon Error "No arrays to collect" The battery died. We need to bring a new battery dow or hook it to the truck battery.

//Louis Romero 5/17/2002

12:00 Arrive at 16-2656. Length of cable 10.4'
Depth to water 6.69'
pH = 6.92 cond = .363 temp = 17.5°C
Data downloaded to fil 26560811. Clocks were set together.

1215 Arrive at BG Spring. 39 of 47 Bt/sec after 8 pulses.
pH = 7.31 cond. = .329 temp = 12.4°C
Data downloaded to fil BG0811. ISCO data and Bubbler data downloaded. The battery for the CR10X also appears to be near dead. We will bring new batteries down next Monday

1235 Arrive at 2658. Depth to water is 6.98'.
pH = 6.77 cond = .328 temp = 18.0°C
Downloading data to fil 26580811
11.7' is length of transducer probe cable.

1315 Break for lunch

1400 Arrive at Martin Spring
7.14 = pH, cond = .537, temp = 16.6°C
No samples were collected from the flow-integrated sampler. I think that <enter> had not been pressed after <start sampling> was pressed. This FIS sampler has different prompts than all the other samplers and unless <enter> is hit after <start sampling> the sampler appears to be on standby. It seems fine now.
66 L./pulse sampling every pulse w/ 20 ml. per sample

1430 Arrive at 16-2665 and 16-2666, both dry.

1438 16-2661, 2662, 2663, 2664 All dry.

1449 16-2655 <2" in well.

1520 Depart Site.

Kristin Olson 5/17/2002

150

8-16-00 Update of Spring Samplers

I Martin

A. Anion + Isotope Sampler : Sigma

- 8-9-00 Kevin Reid + Louie Romero aligned bottles so the sampler would discharge sample directly into sample bottle. For sample #1, ~~the~~ part of the sample spilled into chamber because of misalignment. Sampler collecting sample every other day, working fine

This line was not used LR 5/17/2002

B. Flow integrated Sampler: ISCO

- 8-9-00 Kevin Reid, Louie Romero replace ultrasonic flow reader. Old ultrasonic was not delivering pulses to ISCO. Sampler tested, working fine.
- 8-11-00 Kevin Reid, Kristi Beguin, Karl Adams. Revise sampler no samples collected. Multiplexing function set to 'no'. Pulse rate set at 66L. Sampler Tested, working Fi
- 8-14-00 Kevin Reid, Karl Adams, Lou Romero. Revise sampler, no samples collected. Sample pull volume increased to 100 ml. Sampler appears to only work when connected to laptop
- 8-15-00 Kevin Reid, Karl Adams, Kristi Beguin Revise Sampler. no samples collected. Datalogger replaced Program updated. Sampler Tested working fine

5/17/2002

8:00 Weekly Hydro Activities
10:30 K. Adams, K. Bagwin, K. Reid arrive on site.

Louis Romero 5/17/2002

1055 Martin Spring
pH = 6.98, cond = .608, temp = 12° C
Flow integrated sampler working. Changed to multiplexing with 9 samples / bottle and 100ml / sample. Samples emptied, sampler set to start at 17:00 8/18/00

1100 SWSC Spring
pH = 7.4 cond = .336 temp = 11° C
BG
pH = 8.26 cond = .345 temp = 15.1°C
This line was not used 5/17/2002 LR

BG Spring Flow Integrated sampler
- working. Sampling 20ml per pulse. 12 bottles filled almost to capacity, Samples collected, bottles changed out. Could be problem w/ noise associated with the ultrasonic flowmeter. Program set to start sampling at 17:00 8/18/00

SWSC Spring Flow Integrated Sampler
Warning message displayed "Fatal Error; Distributor hose damaged!" Sampler turned off to reset warning message. All 24 bottles emptied into 5 gallon carboy. Additional overflow water also poured into 5 gal carboy. Carboy brought back to trailer. Bottles emptied, set to start sampling at 17:00 8/18/00 Sampler tested under manual mode. Appears to be working.

Louis Romero 5/17/2002

8-21-00 Continuation of Weekly Hydro work
Kevin Reid, Dale Lyons

11:00 Arrival to Trailers. Todays activities include well measurements, spring monitoring.

This line was not used 5/17/2002 KR

12:00 Arrival to Martin Spring. Flow integrated sampler worked. Increased flow of spring caused sampler to fill all bottles over weekend. Sampler began at 17:00, Aug 18 and finished 21:30, Aug 19. Bottles were removed, and empty bottles were replaced. Sampler restarted again at 12:30 with same parameters. ~~First Sam~~ KR Flow count started at 13:31.

This line was not used 5/17/2002 KR

13:00 Arrival to well pair

Well	ht	cond ms/cm	temp °C	pH
2659	8.00'	0.406	14.0	6.68
2660	8.05'			

Datalogger downloaded to laptop

13:34 Arrival to 2658

	ht	cond ms/cm	temp °C	pH
2658	5.84'	0.310	16.1	6.69

Datalogger battery replaced

This line was not used KR 5/17/2002

Arrival to 2656

		cond ms/cm	Temp °C	pH
14:37 2656	5.71'	0.375	16.0	6.76

Datalogger battery replaced

This line was not used KR 5/17/2002

SWSC spring Flow integrated Sampler. Apparent problem with sample volume. Sampler was pulling about 200ml when it ~~thought~~ KR was programmed to pull 100ml vol. Sampler was reprogrammed to only set 5 samples per bottle. Water emptied into carboy, bottles set to go. Sampler Sample from ~~0:14~~ KR 17:14, 18 Aug to 03:59, 19 Aug then sampler stopped because distrib arm was clogged.
// Louis Romero 5/17/2002

program resumed at 15:16 Aug 21. to sample remainder of week. Bottles emptied

These lines were not used LR 5/17/2002

	Arrival to	wt 6295	K site cond mS/cm	Temp °C	pH
15:07	6295	4.65'	0.216	18.1	5.98

This line was not used LR 5/17/2002

15:15 Arrival to , upstream of 6295. Well dry

15:30 Return to Field trailers

5/17/2002

8-25-00 Weekly Hydro Field Activities at TA-16

Crew: Kevin Reid, Louie Romero

Todays activities include; measuring well elevations, collecting weekly flow rate integrated samples from MS, BG, SWSC springs. Connecting bubbler flow meter to Flow ~~rate~~ IR integrated sampler at BG spring. Also we will adjust the sampling volume and pulse rate for SWSC and Martin Spring

This line was not used LR 5/17/2002

9:45 Arrival to TA-16 field trailers. Preparation of tailgate safety plan, calibration of Horiba, and gathering of field supplies.

10:30 Tailgate conducted

11:00 Arrival to Martin spring

pH	cond ms/cm	Temp °C
6.78	0.576	15.3

Flow logger data downloaded to laptop

Datalogger data downloaded to MS08.25.dat on laptop

* Integrated Flow Sampler settings changed *

pulse every 168 L

Sample volume 40 ml, 20 samples / bottle.

Flow integrated samples collected

11:30 Arrival to well 16-6295, K site

Depth to water	pH	cond ms/cm	Temp °C
5.35'	6.15	0.230	18.5

1305 16-2656; 6.62 ft dtw to toc; pH=6.75; cond=0.374 ms/cm; temp=16.0°C

13:20 SWSC

pH	cond ms/cm	Temp °C	Discharge L/min
8.25	0.325	18.4	1.5

Flow logger data downloaded to laptop

Data logger data downloaded to SWSC082500.dat

* Integrated flow sampler settings changed *

pulse every 50 L

sample vol 20 mL

Flow integrated samples collected

Louie Romero 5/17/2002

sample vol calibrated to 20 mL / sample
* Hose length switched from 9 ft to 8 ft b/c
sampler was pulling water during purge cycle
Also suction Head set at 1 ft instead of 2 ft

13:50 Burning Ground Spring

pH	Cond ms/cm	Temp °C	Discharge from Bubbler
7.30	0.313	14.5	0.38 L/s

* Integrated Flow sampler run by bubbler *
pulse every 766 L
sample vol = 20 ml
Flow integrated samples collected ≈ 12 L

This line was not used 5/17/2002 HR

15:10 Arrival to 16-2659 Datalogger downloaded to 2659082500.Dat

Depth to Water	pH	Cond ms/cm	Temp °C
7.88'	6.87	0.344	14.0

15:13 Well 16-2660
Depth to Water
7.92'

15:25 Well 16-2658 Datalogger downloaded to 2658082500.Dat

Depth to Water	pH	Cond ms/cm	Temp °C
5.87'	6.63	0.318	16.2

15:40 Flow Integrated Samples mixed and sampled at field trailers. For each of the three springs sampled, a suite of analytes will be examined. Water from each spring was mixed in either a 5 gallon carboy for BG or a 20 gallon drum as was the case for SWSC and Martin. Then grab samples were collected from the weekly flow integrated mixture. Bottles were labelled 8-25-00 and stored in refridgerator over weekend.

5/17/2002

8-28-00 Psuedo Quarterly Sampling

Crew Kevin Reid, Elmer Alcon, Joe Vargas, Leenie Binale

Todays activities include: sampling Martin Spring, Well 6295 K site, and CDV wells.

This line was not used LR 5/17/2002

10:35 Tail gate meeting conducted.

10:40 Horiba calibrated, bottle sets collected.

11:00 Arrival to 6295, K site. Samples 16-00-3244, 3245 collected

Temp °C	pH	Conductivity mS/cm
17.8	5.98	0.278

Samples collected. water very turbid. Well bailed dry.

photo 21, crew sampling

22 samples

23 post fire wetland

well not purged before sampling because of known slow recharge sample from old water in casing.

11:30 Arrival to Martin Springs. Sample 16-00-3246 collected, 3247 coll

T = 14.3 pH = 7.12 Conductivity: 0.497 Discharge: 8sec/300 m

photo 24

Flow Integrated sampler revised. 3L sampled. Program stopped, bottles ~~cot~~ KR emptied, stored in middle of sampler. Program restarted. Begin sampling at Bottle 1, at 11:30 am.

12:00 crew breaks for lunch

13:20 Arrive to 2659. Sample 16-00-3242 collected, 3243 colle

Depth to water 7.99'

Depth to ~~star~~ KR bottom of well: 10.10'

2.11' of water

X 2.47111 Liters of water per foot of 4" PVC

5.214 Liters of water per well volume

15 Liters of water purged before samples collected

Temp °C = Not Measured pH = 7.07 cond. mS/cm = 0.339

14:30 Return to Field trailers. Filter, acidify, Refridgerate samples

8-28-00 Kevin Reid LR 5/30/2002

8-29-00 Continued psuedo Quarterly Sampling

crew Kevin Reid, Elmer Alcon, Allen Bird, Lennie Binale,

This line was not used 5/17/2002

10:10 Todays activities will include sampling 2658, 2657, 2656, BG, SWSC, Peter Seep, and possibly Fishladder, 90's line pond, and 2655 if water is present.

10:12 Tailgate meeting conducted

10:15 Bottles collected, Horiba calibrated, Equipment gathered

10:33 Arrival to well 2658 Sample # 16-00-3240, 3241

Depth Total = 10.15'

Depth to water = 5.88'

4.27' ft x 2.47111 Liters/ft = 10.55 L of standing water

	T °C	pH	Conductivity ms/cm
Initial	15.4	6.68	0.395
10L purged	14.6	6.79	0.344
20L purged	14.4	6.79	0.330
30L purged	14.1	6.77	0.327

Samples collected, photo 4 taken

11:20 Arrival to Burning Ground Spring Sample #16-00-3250, 3251

	T °C	pH	Conductivity ms/cm	Q
BG	12.4	7.21	0.323	3 sec/Liter

Samples collected, photo 5. BG auto sampler started.

11:40 Arrival to SWSC Sample # 16-00-3248, 3249

Temp	pH	Cond. ms/cm	Q
16.5	8.47	0.319	15.5 sec/250 ml

samples collected, photo 6

Solar cable buried at SWSC + BG locations

12:10 Depart for lunch

13:10 Filter, acidify, + label samples

15:15 Samples stored in cooler with ice packs

16:00 crew departs

Kevin Reid 8-29-00

9-1-00 Weekly Hydro Field Measurements

Crew Kevin Reid, Louie Romero

Todays activities include revising auto samplers at Martin; Burning Ground, + SWSC spring. Also we will download data from the data loggers at wells 2655, 2656, 2658, + 2659. Well heights will be measured at ~~meas~~ KR CDV wells, MS wells, + intermediate wel

8:15 Tailgate meeting conducted

8:20 Calibration of Horbiba

10:10 Arrival to Martin Spring. Flow integrated samples collected ≈ 8L
Datalogger, Flow logger downloaded to laptop File MS090100.dat
Autosampler set to start sampling at 17:00 9-1-00
13 samples collected for low level cations. 11 samples remain
Discharge of Spring. Other parameters pH, Temp, Cond not recorded.
0.5L/12sec Conductivity probe cleaned

11:05 16-2656 data from Campbell Scientific data logger is collected into a file named 2656-090100; → truncates to 2656-090
depth to water from toc = 6.76'; temp = 15.1°C; pH = 6.77; cond 0.41°

11:20 SWSC
Autosampler revised. Sample vol changed to 30ml from 20ml.
Temp °C = 16.6 Cond ms/cm = 0.322 pH = 8.29 Q = 0.5L/34sec
Flow Integrated samples collected ≈ 4L
Datalogger downloaded to swsc0901.dat
Flologger downloaded. Conductivity probe cleaned
Large dump truck may have broken solar panel power supply ca today.

11.50 Burning Ground Spring
Autosampler revised. Sample vol changed to 30ml, 30 samples/bottle
Flow Integrated sample collected ≈ 3L
Temp = 12.0°C Cond ≈ 0.294 ms/cm pH: 7.30 Q = 0.336 L/s from
Datalogger downloaded to BG0901.dat Flowlogger downloaded
conductivity Probe cleaned. Autosampler set to start at 17.00

12:30 Return to trailers.

// Louie Romero 05/17/2002

9/6/00 Completion of pseudo Quarterly-(Fire Recovery) Sampling

Crew Kevin Reid, Tim Motah, Ryan DeVore

Todays activities include sampling of Peter Seep, alluvial well 2656, and 2657.

10:20 Tailgate safety meeting conducted.

11:05 Arrival to well 2657

Depth to water	Total Depth	T°C	pH	Cond ms/cm
4.6'	5.47'	16.3	5.40	0.714

Samples 16-00-3238, 3239 collected

well not purged prior to sampling because of low recharge at well

Only 2.7L of water collected, photo 8 taken

11:20 Peter Seep dry no samples collected

11:25 Arrival to 2656

Depth to Water 6.84' Total Depth 10.59' 3.75 ft of water = 2.316L of water = 6.9L to purge 3 well volumes

	T	pH	conductivity ms/cm
Intial	14.3	5.80	0.392
2.3L	14.2	5.86	0.387
4.3L	13.8	5.93	0.388
6.3L	13.7	5.85	0.388

well purged prior to sampling

photo #7 taken

12:05 Return to trailers, break for lunch

13:30 Samples filtered, acidified, preserved on ice

15:30 Samples submitted to SMO.

9-6-00

9-7-00 Stream profile Measurements

crew Kevin Reid, Jacinto Garduño, Ryan DeVore, Nick Enders

Todays activities include stream profile measurements at Cañon de Valle and Martin Springs Canyon.

9:10 Tailgate safety meeting conducted

9:15 Horiba calibrated

9:40 Arrival to Martin Spring Canyon, Station #1

T °C = 15.0 pH = 4.89 cond = 0.590 ms/cm Discharge = 200m

stream flows subsurface ≈ 30m below station #1, ≈ 310m b

10:00 Arrival to Peter Seep, CDV. Location dry.

10:05 CDV main channel. Stream flows subsurface ≈ 100m below SWSC spring

10:20 CDV main channel. Location 16-2760 (aluminum stake), profile #7, 16-5927 (wood stake). About 3m downstream of Burning Ground Spring

T°C = 14.2 pH = 8.02 cond = 0.330 ms/cm Discharge = 400 mL/

10:45 CDV main channel above well pair.

Flow goes subsurface ≈ 10m upstream of marker 16-2769. Stream profile parameters measured at stake 16-2768, just upstream of flume. ~~Lowes~~ KR Furthest downstream location where there is still flow in CDV.

T = 15.8°C pH = 8.01 cond = 0.406 ms/cm Discharge = 150

Louie Romero
5/17/2002

Louie Romero
5/30/02

9-8-00 Stream profile Sampling and Weekly Hydrogeo measurements
crew Kevin Reid, Jacinto Garduño, Ryan DeVore, Nick Enders
Todays activities include sampling 3 stream profile locations; collection of flow rate integrated samples at Martin Spring, Burning Ground, and SWSC spring; Well measurements; and downloading of data from dataloggers.

8:10 Tailgate safety meeting conducted
8:15 Horiba calibrated, bottle sets gathered, & field equipment prepared
8:20 Weather; partly cloudy ≈ 75° slight chance of rain
9:00 Arrival to well 2659
Depth to water: 2659 = 8.57'
" " 2660 = 8.51'
Data downloaded to '2659090800.dat'
T = 12.8°C pH = 6.67 cond = 0.391 ms/cm
9:20 Arrival to 16-02768 : COV above old flume
T = 14.5°C pH = 7.67 cond = 0.407 ms/cm
samples 16-00-3268, 3269 collected
photo 12, 13 taken
This location is the furthest downstream COV water is flowing.
Water goes subsurface at stake 16-02769 (10 m upstream)
9:35 Arrival to well 2658
Depth to water 2658 = 5.90'
T°C = 15.2 pH = 6.71 cond = 0.311 ms/cm
Data downloaded to '2658090800.dat'
10:00 Arrival to streamprofile location #7, 16-05927
3m downstream of BG inlet to main COV channel
T = 13.7°C pH = 8.12 cond = 0.310 ms/cm
samples 16-00-3266, 3267 collected
KR ~~5th~~ photo 14 taken
~~10:15~~ 10:10 Arrival to Burning Ground Spring
T = 12.1°C pH = 7.36 cond = 0.316 ms/cm Q = 0.29 L/s
Flow rate integrated sample collected ≈ 7.5L
Datalogger downloaded to 'BG090800.dat'
Flowlink: Bubbler downloaded.

BG continued

* Low level anion sampler needs to be emptied before next Friday, 9-15-00, by 9-13-00 for sure
- Flowrate Int. sampler started at 17:00 9-8-00

10:37 Arrival to SWSC
Low flow conditions, Solar panel still disconnected
T = 15.8°C pH = 8.59 Cond = 0.310 ms/cm Discharge = 5.70
Flow rate sampler collected 2L
* Flow rate integrated sampler switched*
to 19 L / pulse from 50 L / pulse
Data downloaded to SWSC 090800.dat
Flowlink ~~Flow rate integrated~~ ultrasonic sampler downloaded KR 5/11/02 KR 5/11/02 KR 5/17/2002
Auto sampler set to start at 17:00 9/8/00
Low level Anion sampler need to be emptied before 9-1
11:00 Arrival to well 2656
Depth to water = 6.86' T = 14.6 °C pH = ~~7.50~~ 6.86 KR Cond = 0.371 ms/
data logger downloaded to '2656 090800.dat'
11:50 Arrival to Martin Spring
T = 14.4°C pH = 7.18 Cond = 0.514 ms/cm
Flow integrated sampler collected ≈ 5.5 L water
Samples collected, sampler set to start at 17:00
Data downloaded to 'MS090800.dat'
Flow link ultrasonic flow meter data downloaded.
Low level anion has 6 bottles remaining
12:05 Arrival to Martin Spring Canyon, stream profile station 1
T = 16.8°C pH = 8.36 Cond = 0.515 ms/cm
sample 16-00-3264 collected, Location 16-05920
12:30 Break for lunch
13:40 Arrival to well 6295, K site
Depth to Water 6.2' T°C = 17.8 pH = 6.21 Cond = 0.239 ms/cm
15:10 Samples filtered & Preserved

Kevin Reid 5/17/2002

091500

0845 Crew of Louie Romero, Ryan DeVore, and Jacinto Garduño arrive at field trailers. Tailgate meeting is conducted by Ryan DeVore. Horiba is calibrated by Jacinto Garduño. Today 16-2660 is in operation, so we will access Cañon de Valle from R-25 site.

0930 16-2656 6.91 depth to water from toc; temp 14.3°C; pH=6.46; cond.= 0.398 ms/cm

1000 SWSC spring. bromide (48 hour) sampler is complete (24 samples collected) samples are from 7/28/00 → 9/10/2000. sampler is re programmed to sample every 48 hours starting today 091500 at 12:00 noon.

Flow paced sampler: samples are dumped and isco is ~~re-calib~~ 5/17/2002 LR re-programmed to begin today at 12:00 noon. previous programming is duplicated. The lap top battery is dead so we are unable to calibrate flow rate or download any data

1030 BG Spring: Seems the battery is dead. ~~I think LR it is trying to power on LR~~ 5/17/2002 LR. It may be dead because it is powering the bubbler flow machine in addition to 2 auto samplers. The bromide (Sigma) sampler is 23/24 done but I am unable to review the dates of sampling so I will not collect (transfer) samples. There is no power to the flow rate sampler (ISCO). The last print out on the bubbler print out is 9/9/00 at 21:28 hours.

1042 16-2658 5.91' depth to water from toc; temp. 15.1°C; pH 6.63; 0.31 ms/cm

1057 16-2659 8.58' depth to water from toc; 13.2°C; pH 6.89; 0.331 ms/cm cond.

1100 16-~~2658~~ 2660 KR 9-18-00 8.60' depth to water from toc;

1115 16-2661 dry

16-2662 dry

16-2663 dry

16-2664 dry

16-2669 dry

1145 16-2655 (weather machine) well is dry

1148 16-2668 is dry

1215 Crew breaks for lunch

1315 Crew returns to site

1330 16-6295 7.11 depth to H2O from toc 17.5°C; pH=6.08; cond 0.261 ms/cm

Next page // Louie Romero 5/17/2002 Cont. next page

0915 00 continued

1340 2nd well MS canyon DRY

1350 1st well MS canyon DRY

1410 16-2665 dry

1415 16-2666 dry

1426 Martin Spring Canyon: bromide samples will be collected 8/6/00 → 9/15/00 Flow rates samples will be dumped. program need to be changed to sample more often so a friday start goes to a friday (program complete should be on friday. We do not have any power to the laptop so I will reprogram w/ the same program. (7 bottles had ~3/4 full) program needs to sample more often.)

1500 Crew departs the site.

5/17/2002

9-18-00 Hydrogeo Maintenance and Data collection

crew Kevin Reed, Ryan DaVore, Iran Vigil - escorted

10:45 Arrival to field trailers. Todays activities include trouble shooting power source at Burning Ground spring, + down loading data loggers at canyon wells

10:50 Tailgate safety meeting conducted. Field equipment gathered

11:10 Arrival to Burning Ground Spring. Problem with power source. Connector + wiring removed.

12:00 Break for lunch

13:25 Return to field trailers, new connectors soldered on wire leads to solar panel.

14:30 Wiring reinstalled, seems to be working. Problem with autosamplers, not enough voltage coming from battery to start autosamplers. Autosamplers not connected, Power only flowing to battery and cr10x. Autosamplers will be connected next visit to canyon, after battery has charged again.

15:20 Return to trailers.

Kevin Reed 5/17/2002

9-19-00 Maintenance of Field Equipment.

crew Kevin Reid, Ryan DaVore, Bill ~~Sauer~~ 5/17/2001 JLR Sarver - the escort.

Todays activities: troubleshoot BG autosampler. Revise SWSC and MS autosamplers.

11:40 Tailgate safety meeting conducted.

12:15 Arrival to Burning Ground Spring

Power cable connected. Battery voltage at 7.6V, not enough to start autosamplers. Will leave solar panel cable connected to battery to charge battery.

12:40 Arrival to SWSC spring

* Flow integrated auto sampler changed.

New Pulse vol = 15 L,

old Pulse vol = 19 L

Battery cable to solar panel reconnected

Q of SWSC = 0.250 L/20 sec

* Flow intergrated sampler changed to 40 samples/bottle (20m) used to be 50 samples/bottle. Bottles were overflowing.

13:10 Break for lunch

13:45 Return to trailers

14:00-16:30 Run Field screening for bromide

16:30 Depart from site

Kevin Reid 5/17/2002

9-20-00 Maintenance of Field Equipment, Collection of Low level Anion, Isotope Samples
Crew Kevin Reid, Ryan DaVore, Bill Sauer - Escort
Todays activities; revise battery at BG spring, collect low level anion samples from BG spring.
10:10 Tailgate safety meeting conducted
10:35 Arrival to Burning Ground spring
Battery does not hold charge. Disconnected, removed from site.
Low level anion samples alloquated to 125 ml poly bottles; 23 total
Isotope samples alloquated to 40 ml glass bottles; 23 total
Bottles were labelled sequentially 1 → 23. Assumed that BG low level Isotope sampler started 8/9/00, same day as SWSC, bottles labelled starting at 8/9/00.
11:15 Return to trailers. Samples stored in fridge.
11:40 Depart from site

Kevin Reid 5/17/2002

9/22/00 Weekly Hydrogeo + Beginning of Quarterly Sampling

crew Kevin Reid, Ryan DaVore, Derrick Jones, Bill Sawyer

Activities Weekly hydro measurements, revise Flow integrated autosamplers, Quarterly sampling of Martin Spring, 6295 Ksite.

This line was not used 5/17/2002 LR

10:35 Tailgate safety meeting conducted

10:38 Horiba calibrated

10:55 Arrival to Martin Spring

Flowlink data downloaded

CR10x data downloaded to 'MS092200.dat'

pH=6.65 Temp=14.2°C conductivity: 0.599 ms/cm Q=125mL/5s

Sample 16-00-3282, 3283 collected

Flow integrated sampler collected 2.5 L. Not enough to submit. Will reprogram sampler.

$Q = 125 mL/5sec = 1.5 L/min = 15120 L/week \times \frac{L}{300} = 50.4 L/pulse$

* Flow integrated sample changed to 50 L/pulse, used to be 168L/puls adjust so we will have ≈ 6-7 L to sample.

Set to start sampling at 17:00 9-22-00 20mL/sample, 45 samp

photo 23 taken of samples

→ Low level Anion restarted at 11:23, 9/22/00

Started at bottle #1, 250mL/sample. Week of 9-17 → 9/22/00

missed for low level anion samples

11:55 Arrival to Ksite - 6295

Depth to water 9.07' pH=6.78 Temp=18.5°C cond=0.355 m

Well is very low, not enough water to sample a full suite.

Water is very, very turbid. Only 0.5 L collected.

Sample 16-00-3280, 3281 collected. No field sample collected.

Will only submit a subset of 3280, 3281; only METALS+B (unfil and EPA 300 submitted, thus 3281 not submitted

12:15 Sample preserved

12:30 clean slip obtained from Bill McCormick

13:05 Submit samples to SMO.

Louie Romero 5/17/2002

15:30 Arrival to Burning Ground Spring
T = 13.5°c pH = 7.33 cond = 0.325 ms/cm Q = 0.29 L/s from bubbler
Battery reconnected. Autosamplers running
Low level anion sampler: every 2880 minutes
started 10:41, Jul 28, 00, first sample should ~~be~~ have been Jul 30, 1041
↳ for last batch of samples
→ Low level Anion sampler restarted at 14:28, 22 sep, 2000, Bottle 1
Flow rate integrated sampler started at 17:00 9/22/00, Bottle 1
sample pulse rate not changed: 30 ml samples 30 samples/bottle
1605 Arrived @ SWSC.
Temp = 15.0° pH = 8.10 cond. = .319 - Q ≈ 600 mL/min
Flowlink data download. CR10x downloaded to SWSC092200.dat
Low level Anion sampler started 10:09, 9/15/00, on bottle 5. Flow rate integrated sample started. 17:00 9-22-00
1610 arrived @ 16-2656. download data.
Depth to water = 6.99 FT Temp = 14.1° pH = 6.81 COND = .31
16:30 Return to trailer
Omissions in weekly hydro:
- wells 2659, 2660 not revised. Datalogger at 2659 not downloaded.
- Intermediate wells: steamplant drainage, 90's line pond not revised
- 2655 not revised

9/22/2000 KR

092500 monday

1000 Crew of Louie Romero, Annette Dietz, Tim Wolfe, and Ryan Devore arrive at HE field trailers. Today we will continue quarterly water sampling of TA-16 monitoring wells. Tailgate meeting is conducted and Hanna is calibrated. Equipment is gathered.

1050 Crew arrives at 16-2659. 10:53 RE16-00-3278 and 10:55 RE16-00-3279

depth to water 8.70 ft from toc; 11.5°C; 6.29 pH; 0.379 ms/cm

16-2660 8.65 ft from toc

computer was failing to communicate w/ dial

11:30 16-2658 5.90 ft from toc; 13.2°C; pH 6.93; cond. 0.295 ms/cm

~~1156~~ RE16-00-3276; 3277 is collected
5/17/02

1156 Burning Ground Spring 10.7°C; pH = 7.5; cond 0.303 ms/cm; RE16-00-3286;

1230 Crew breaks for lunch

1330 Crew back at HEPS field trailers. we will acidify samples collected this morning. Labels are affixed. release slip is attained from Bill McCormick

1530 Samples are relinquished at SMO.

1545 Crew arrives back at HEPS field trailers. we will prep for tomorrows round of sampling

Louie Romero 5/17/2002

092600

0900 Crew of Louie Romero, Esther Witherow, Derrick Jones, Tim Kotsch, Annette Dietz, Bill and Ryan Devore arrive at HEPS field trailers. Tim, Esther, and Bill will stay at trailers to process randys samples; rest of crew will continue quarterly sampling.

1009 16-2656 7.00' ft from toc; pH 5.66; cond 0.440 ms/cm; temp. 12.2 °C

1015 samples RE16-00-3272; RE16-00-3273 are collected from 16-2656

1033 Crew arrives at SWSC temp: 10.5 °C; pH: 7.74; cond. 0.311 ms/cm

1053 16-2657 not enough water to sample; temp. 13.1 °C; pH 7.64, cond 0.360 ms/cm

1115 Crew back at HEPS field trailers. Samples will be preserved. paper work will be sorted and labels affixed.

1215 Crew will break for lunch. Clean slip obtained from Bill McCormick.

1315 Crew submits samples to SMO. Equipment will be collected for Annette's field work.

1415 Crew arrives at fish ladder seep. It is dry no water present.

Louie Romero 5/17/2002

9/29/00 Collection of Flow Rate Integrated Samples, weekly Hydrogeo
Crew: Kevin Reid, Ryan Davore, Del Serrano (escort), Annette Diegl
Todays activities will include collection of Flow rate integrated samples from Martin Spring and Burning Ground Spring
Weather, Sunny, warm, slight wind.

9:15 Tailgate Safety meeting conducted.

9:43 Arrival to Martin Spring, samples 16-00-3288, 3289 collected
Flow rate Integrated sampler collected ≈ 7L Started 11:09, 22 sep Finish KR ~~8:59~~ 9:29, 29 Sep

Low level Anion: 12:18, 24 sept started, 3 samples collected.
pH = 6.80 Temp = 13.8 °C conductivity = 0.572 ms/cm Q = 600
Datalogger not downloaded. Battery dead on laptop
Flow rate sampler set to start 17:00 9/29/00
sampling parameters not changed. Cable (solar panel) buried.

10:16 Arrival to Burning Ground Spring, samples 16-00-3292, 3293 collected
Flow rated integrated sampler collected ≈ 7.5 L Started: 1553 22 sept Finish 932 29 sept
Flow rater sampler set to start at 17:00 9/29/00
pH = 7.04 Temp = 12.2° C conductivity = .302 ms/cm Q = 11

11:00 Filter, preserve, label samples 16-00-3288 → 16-00-3291

Post Sample Collection Data Entry Follows:

9-28-00 Collection of Flow Rate Integrated sample from SWSC spring
9:00 Tailgate Safetymeeting conducted
Crew Louie Romero, Kevin Reid
Sample needed to be collected after 1700 because of danger associated with work activities at building 260

17:47 Arrival to SWSC spring, samples 16-00-3290, 3291 collected
Flow rate Integrated sampler collected ≈ 5L Started 16:05 9/22/00 Finish 17:29 9/28/00
set to start at 17:00, 9/29/00
Field parameters not measured, data loggers not downloaded.

18:00 Exit canyon, return to trailers.

Kevin Reid 10-2-00

Post Sample Collection Entry:

9/28/00 Collection of Soil Samples for Geomorphic Study of Martin Spring Canyon

see) Crew: Kevin Reid, Louie Romero

Todays activities include collecting soil samples at 20 locations in Martin Spring Canyon.

Weather, Sunny, warm

9:00 Tailgate safety meeting conducted.

9:10 Sample bottles collected

10:07 Arrival to location 16-6593, the furthest down drainage sample location. Location MSC 224m, F1, S; FS+VFS. Depth 0-8cm

see Brown, ~2% roots, sticks present; Very fine sand, dry

Lt brown, grey, loam, 0-3% roots, 0-2% pumice fragments 3-10mm in diameter, dry

Sample RE16-00-0351 collected - Full Suite

10:15 Arrival to location 16-6594, up drainage from 6593.

Location MSC 214m, C2, S; ~~F~~ KR FS+VFS. Depth 0-9cm

Dark brown, loam + coarse gravels, 10% roots, dry

Sample RE16-00-0352 collected, SEMIN, TUICPMS not collected.

see 10:31 Arrival to location ~~RE16-00-0353~~ KR 5/17/02 16-6595, up drainage from 6594

Location MSC 196, C2, C3, S; FS. Depth 0-10cm.

Light brown, very fine sandy loam, 0-5% roots, dry

Sample RE16-00-0353 collected. SEMIN, TUICPMS not collected.

10:43 Arrival to location 16-6596, up drainage from 6595.

Location MSC 180m, C2, N; FS. Depth 0-21cm.

Brown, sandy loam, ~5% coarse gravels, ~5% roots, slightly moist.

Sample RE16-00-0354 collected - Full Suite

10:55 Arrival to location 16-6597, just downstream of Martin spring confluence

Location MSC 171m, C2, N; VFS. Depth 0-19cm.

Dark brown, sandy loam, ~5% pumice fragments, ~5% root content, moist

Sample RE16-00-0355 collected. SEMIN, TUICPMS not collected.

11:14 Arrival to location 16-6598. Lowermost point, on Martin Spring Canyon Southern Trib

Location MSCS 89m, C2+F1, S; VFS. Depth 0-12 cm.

Light brown, loam, 5-10% roots, dry.

Sample RE16-00-0356 collected. SEMIN, TUICPMS not sampled.

Louie Romero 5/17/02

9/28/00 con't

11:24 Arrival to location 16-6599, upstream from 6598, MSCS tributary
Location MSCS 85m, C2+F1, S; VFS. Depth 0-9cm.
Light brown, grey, loam, 5-10% roots, dry.
Sample RE16-00-0357 collected. SEMIN, TUICPMS not sampled.

11:39 Arrival to location 16-6600, upstream from 6599, MSCS tributa
Location MSCS 68m, C2+F1, S; VFS. Depth 0-12cm.
Light brown, loam, <5% pumice, <5% roots+wood debris, dry.
Sample RE16-00-0358 collected. SEMIN, TUICPMS not sampled.

11:52 Arrival to location 16-6601, upstream from 6600, MSCS tributary
Location MSCS 49m, C2, N; VFS. Depth 0-7cm.
Brown, fine sandy loam, 5-10% roots, 0-3% pumice fragments, slightly
Sample RE16-00-0359 collected. SEMIN, TUICPMS not sampled

12:05 Arrival to location 16-6602, upstream from 6601, MSCS tributary
Location MSCS 24m, C2+F1, N; VFS. Depth 0-15cm.
Light brown, fine sandy loam, 0-5% pumice+lithics, <5% roots, dry
Uppermost sample location on Martin Spring Canyon Southern Tributar
Sample RE16-00-0360 collected. SEMIN, TUICPMS not sampled.

12:20 Break for lunch.

15:04 Arrival to location 16-6603. Just upstream from confluence, on Martin Spring C
Location MSC 142, C2, W; VFS. Depth 0-16cm.
Light brown, grey, clay loam, ~5% roots, ~3% pumice fragments, slightly mo
Sample 16-00-0361 collected, Full suite.

15:16 Arrival to location 16-6604. Accross chanel from 6603, Martin Spring C
Location MSC 141, F1, E; VFS. Depth 0-4cm.
Grey, clay loam, 5% root fragments, 3% pumice, dry.
Sample 16-00-0362 collected. SEMIN, TUICPMS not sampled

15:37 Arrival to location 16-6605. Upstream of 6603, MSC. Two soil horizons sa
Location MSC 127, C2, W; VFS, silt. Depth 0-10cm
Light brown, clay loam, ~5% roots, ~3% rock fragments (5-15mm), slightly
Sample 16-00-0363 collected. SEMIN, TUICPMS not sampled.

Continued next page

Louie Romero 5/17/02

9/28/00 con't

15:41 Location 16-6605, lower horizon, MSC.
Location MSC 127, C2, W; VFS, clay. Depth 10-23 cm.
Brown, clay loam, 3-5% roots, 5% pumice (3-15mm), very moist.
Sample RE16-00-0364 collected, full suite.

15:57 Arrival to location 16-6606, closest downstream point to Martin Spring outlet. KR 5/17/02
Location MSC 114, C2, W; VFS, silt. Depth 0-21 cm.
light brown, clay loam, 5% roots, ~3% pumice (3-10mm), slightly moist.
Sample 16-00-0365 collected, full suite.

16:09 Arrival to location 16-6607, closest upstream point to Martin Spring outlet.
Location MSC 94m, C2, N; VFS. Depth 0-19 cm.
light brown, clay loam, ~3% roots, ~3% rock fragments (3-7mm), dry
sample 16-00-0366 collected. SEMIN, TUICPMS not sampled.

16:25 Arrival to location 16-6608, upstream of 6607, MSC.
Location MSC 72m, C2, S; VFS. Depth 0-12 cm.
Light grey, ~3% roots, clay loam, ~3% pumice (3-8mm), ~1% charcoal, dry
Sample RE 16-00-0367 collected. SEMIN, TUICPMS not sampled.

16:35 Arrival to location 16-6609, upstream of 6608, MSC.
Location MSC 54m, F1, S; VFS. Depth 0-10 cm.
Light grey, clay loam, ~3% roots, ~3% rock fragments (3-7mm), dry
Sample RE 16-00-0368 collected. SEMIN, TUICPMS not sampled

16:46 Arrival to location 16-6610, upstream of 6609, MSC
Location MSC 39m, C2 (C3?), N; FS+VFS. Depth 0-13 cm
Light brown, loam, ~3% roots, ~5% pumice + rock fragments (3-20 mm), dry
sample RE 16-00-0369 collected. SEMIN, TUICPMS not sampled.

16:56 Arrival to location 16-6611, furthest upstream location on Martin Spring Canyon.
Location MSC 19m, C2 F1, SW; VFS. Depth 0-10 cm.
Light brown, clay loam, ~3% roots, ~3% pumice (3-8mm) dry.
Sample RE 16-00-0370 collected. SEMIN, TUICPMS not sampled.

17:10 Return to trailers

Kenneth D 5/17/02 KR

Post Sample Collection Entry

176

9-29-00 Resampling of Location 16-6593 for a duplicate, (split) sample.

crew Kevin Reid, Ryan DaVore, Del Serrano (escort)

Todays activities include resampling location 16-6593 for a duplicate sample.

9:15 Tailgate safety meeting conducted.

15:44 Arrival to Location 16-6593, furthest downstream sampling location in Martin Spring Canyon.

sample # RE16-00-0351 not submitted, in place a duplicate sample was submitted:

RE16-00-0371

RE16-00-0372

Location 224m, fl, s depth 0-8cm

Lt brown, grey, loam, 0-3% roots, 0-2% pumice (3-10mm), dry

16:00 Return to trailers, samples stored in refridgerator.

5/17/02

10-6-00 Weekly hydrogeo measurements
crew Kevin Reid, Louie Romero
Todays activities include collection of flow integrated samples from Martin, SWSC, + Burning Ground springs.
Download dataloggers at wells and measure water quality parameters at springs and wells.
Field activities conducted under SSHASP 264.
14:00 Tailgate meeting conducted
14:05 Horiba multisensor probe calibrated w/ auto cal solution following manufacturers instructions. pH = 3.95 cond = 0.458 ms/cm.
Probe within operating error.
14:32 Arrival to well 16-2656

Depth to Water	pH	Cond ms/cm	T °C
7.20'	6.64	0.373	12.9

Data downloaded to '2656100600.dat'
1446 Arrival to SWSC spring
• Flow rate integrated sampler filled to capacity >24L
Started 17:45 28-Sep-00 8 of 28 bottle 15
Finish 0:45 2-oct-00
Sampler emptied to carboy. Set to start at 17:00 10-06-00
• Low level alarm on bottle 12
Started 10:09 15-Sep-00
bottle 11 12:00 5-oct-00
Data downloaded to 'SWSC100600.dat'
Flowlink data downloaded. Parameters (pH, T, Cond) not measured
1505 Arrival to Burning Ground Spring
• Flow rate integrated sampler collected 6L
Emptied to carboy. Set to start at 17:00 10/06/00
pH = 7.21 cond = 0.290 ms/cm T = 10.7°C
Data downloaded to 'BG100600.dat'
Flowlink data downloaded
1518 Arrival to 2658
|| continued on next page Louie Romero 5/17/2002

2658 con't
Depth to water = 5.93' pH = 6.78 cond = 0.280 ms/cm T = 13.0°C
Data download to '2658100600.dat'
15:47 Arrival to 6295, K site
Depth to water = 9.42
Not enough water to measure parameters < 2".
16:07 Arrival to Martin Spring
• Flow rate sampler collected ~ 6L
Emptied to carboy. Set to start at 17:00 10/06/00
pH = 6.96 cond = 0.494 ms/cm T = 12.6°C
Data downloaded to 'ms 100600.dat'
Flowlink data downloaded
16:40 Return to trailers
Omissions: the well pair 16-2659, 2660 was not revised. Also all above canyon - intermediate wells not revised. Parameters at SWSC omitted.

5/17/2002

10-13-00 Weekly Hydrogeo Measurements

Crew Kevin Reid, Louie Romero, Ryan Davore

Todays activities include measuring parameters + water elevations, spring discharges in MS canyon + COV. Hydro will be especially exciting this week following precipitation events on 10/7/00, 10/11/00, 10/12/00.

10:15 Tailgate safety meeting conducted. Today we will be working under shasp 264.

10:17 Horiba calibrated, within accuracy as recommended by the manufacturer.

10:35 Arrival to Martin Spring

Flow Rate integrate sampler: Started 16:13 10/6/00, Finish 18:29 10/11/00 collected ≈ 10L. Samples emptied to carboy. Mixed w/last weeks samples for monthly.

pH = 6.79 cond = 0.550 ms/cm Temp = 10.6 °C Discharge = 500mL/11sec

Flow Rate Integrated sampler set to start at 17:00 10/13/00

CR10X data downloaded to 'ms101300.dat'

Flowlink datalogger interrogated

11:08 Arrival to well 16-6293 - uppermost monitoring well MS canyon

Dry - total depth of well 10.5'

11:19 Arrival to well 16-6294 - middle monitoring well MS canyon

Dry - total depth of well 11.9'

Water observed in MSC channel, in low areas. Surprising no water in wells.

11:28 Arrival to well 16-6295 - Lower most monitoring well MS canyon

Depth to water	pH	cond ms/cm	Temp °C
3.85'	6.31	0.295	11.9

11:47 Arrival to 16-2655, met station

Total Depth 10.15' - Well dry

Data downloaded to '2655101300.dat'

13:08 Arrival to SWSC spring

Flow Integrated sampler started 14:45 10/6/00 Finish ~~6/8/6~~ KR 10/12/00 10/8/00 5:28

power lost on auto sampler 5:27, 10/8/00. Collected 13L total

KR 5/17/02

SWSC continued
pH 7.67 Cond 0.308 ms/cm T = 12.3°C Discharge: 300 mL/10
Data downloaded to 'SWSC101300.dat'
Flowlink data downloaded
Auto sampler set to run at 17:00 10/13/00
Auto sampler tested, seems to be working, can't
explain why sampler stopped working. Apparent power
failure, but Data logger reports voltage of 12.4
13:24 Peter Seep - location dry
13:31 Arrival to well 16-2656
Depth to water = 6.40' pH = 6.92 cond = 0.354 mS/cm T = 11.5°C
Data downloaded to '2656 101300.dat'
13:39 Arrival to Burning Ground Spring
Flow rate integrated sampler start 10/6/00 15:10 finish 10/13/00 13:22
Set to ~~started~~ KR 10-13-00 at 17:00 10/13/00
pH = 7.17 cond = .302 ms/cm T = 10.3°C Discharge = 725 mL/2se
Flow rate sampler collected 5L, emptied to carboy,
combined with sample collected last week
13:53 Arrival to well 16-2658
Depth to water = 6.05' pH = 6.95 cond = 0.280 mS/cm T = 11.6°C
Data downloaded to '2658 101300.dat'
14:04 High input of suspended clays, sediment in runoff water
from MDAP. Downstream of MDAP water in channel, cloudy,
upstream from MDAP water clear
14:10 Arrival to 16-2659, 16-2660 well pair
new battery installed at well 16-2659 datalogger
16-2659 Depth to water: 7.90' pH = 7.25 cond = 0.307 mS/cm T = 11.3°C
16-2660 Depth to water: 7.98'
~~Water in channel observed. Flowing past water canyon confluence~~
Data downloaded to ~~16~~ KR 10-13-00 '2659 101300.dat'
water flows subsurface ~ 16m downstream of 16-2775.

KR 5/17/02

1450 16-2661 dry
16-2662 dry
16-2663 dry
16-2664 dry
16-2669 dry
standing water in 70's line pond. All wells dry.
1502 162665 } well pair by 344, martin spring access
162666? } both wells dry
1518 Weekly hydro measurements complete. Return to office

KR
Intor

5/12/02

10-20-00 Weekly hydrogeo measurements

Crew Kevin Reid, Louie Romero, Ryan DaVore

Todays activities include measuring well levels, spring discharge, and water quality parameters at wells and springs located in Martin Spring Canyon and Cañon de Valle. Work will be conducted under SSHASP 264.

9:00 Tailgate safety meeting conducted

9:10 Horiba calibrated to manufacturers specifications

9:28 Arrival to well 2656

Depth to water = 6.71' T = 11.3°C pH = 6.60 cond = 0.426 ms/cm

Data logger downloaded to file '2656102000.dat'

9:36 Arrival to SWSC spring

T = 9.1°C pH = 7.20 cond = 0.347 ms/cm Discharge

Flow integrated sampler collected ≈ 4 L. Low power source possible failure of battery. Need to check power supply cable sampler emptied to carboy. Sampler not responding, no power

9:45 Low level anion sampler also low on power, not responding. 17 samples collected so far. Doubtful if sampler will continue to work, unless power supply is repaired

9:50 Peter seep dry.

9:52 SWSC Files downloaded to 'SWSC1020.dat'

Flow logger downloaded. Recorded voltage = 7.4 volts

10:01 Arrival to Burning Ground Spring

T = 10.2°C pH = 7.47 cond = 0.324 ms/cm Discharge = 325 mL/sec

Flow rate Integrated. Started 1343 10/19/00 Discharge = 0.1864 L/sec

Flow rate Integrated Finish 915 10/20/00

collected 4.5 L. Emptied to carboy. Set to start at 17:00 10/20/00

Datalogger download to 'BG102000.dat'

Flowlink interrogated

Low Level anion collected 13 samples

10:21 Arrival to 2658

Depth to Water = 6.16' T = 10.6°C pH = 6.88 Cond = 0.305 ms/cm

Data downloaded to '26581020.dat'

10:37 Arrival to 16-2659
Depth to water = 7.90' T = 10.5°C pH = 7.33 cond = 0.341 ms/cm
Data downloaded to '2659/030.dat'
10:41 Depth to water = 7.91' well 16-2660
11:18 Arrival to 16-6295 K-site
Depth to water: 4.73' T = 11.9°C pH = 7.40 cond = 0.241 ms/cm
13:06 Arrival to Martin Spring
T = 11.8°C pH = 7.24 cond = 0.502 ms/cm Discharge = 550 mL/10 sec
Flow rate Integrated started 10:34 10/13/00
Finish 20:59 10/16/00
≈ 10 Liters sampled, stored in carboy. Sampler set to start at 17:00, 10/20/00
Low Level Anion 12 samples collected
Data logger downloaded to 'ms102000.dat'
Flowlink software interrogated.
14:40 Arrival to 16-2665 - Dry total depth 130'
16-2666 - Dry total depth 96'
14:45 Well 16-2668 Dry total depth 196'
14:47 Done for the day

5/17/02

10/26/00 Weekly Hydrogeology measurements

crew Kevin Reid, Ryan DaVore, Louie Romero

Todays activities include measuring well levels, downloading dataloggers, measuring field screening parameters (pH, temp, cond) at springs and wells. Since last weekly measurements were made, 44mm of precipitation occurred on 10/22, 10/23 + 10/2

8:55 Tail gate safety meeting conducted. Today we will be working under SSHASP 264

9:00 Calibration of Horiba multisensor probe.

9:23 Arrival to well 2658

Depth to water = 5.98 pH = 6.52 Temp = 8.7 °C Cond = 0.345 ms/cm

9:33 Arrival to Burning ground spring

pH = 7.21 T = 9.8 Cond = 0.334 ms/cm

Flow rate integrated sampler collected 4.5 L: Emptied to carboy.

Started 10:10 10/20/00 Finish 9:01 10/26/00

Low level anion collected 16 samples

Flow Integrated sampler set to start at 17:00 10/26/00

9:43 Arrival to SWSC spring

pH = 7.57 T = 6.7 °C cond = 0.362 ms/cm

Power source still down at SWSC spring.

Flow Integrated did not run this past week

Low level anion sample did not run.

9:49 Manna Low level anion sample collected in 250 ml bottle, stored in ISCO auto sampler

9:50 Low level anion sample collected from Peter seep

Standing water observed at Peter seep. No flow of water

9:56 Arrival to well 2657

Depth to water: 4.20' pH = 7.35 T = 10.1 °C cond = 0.676 mS/cm

9:58 Flow indicators: 1) Duff + pine needles indicate flow of (max fl. ≈ 1ft. 2) Continued flow of ~~other~~ KR 10/26/00 surface water between SWSC + BG springs. 3) Runoff most likely occurred following 44mm rain 10/22-10/24/00. 4) Seepage observed from lower slope of 260 outfall. // Louie Romero 5/17

10:01 Arrival to well 2656
Depth to water: 5.78' pH = 7.02 T = 8.7 °C cond = 0.351 ms/cm
10:21 Arrival to Martin Spring
pH = 7.28 T = 10.7 °C cond = 0.514 ms/cm Discharge = 200 mL/sec
Flow rate integrated sample collected 9 L
Started 13:04 10/20/00 Finish: 6:44 10/29/00
Emptied to carboy. Set to start at 17:00 10/26/00
Datalogger downloaded to 'ms102600.dat'
Flowlink interrogated
* Pine needles + duff indicate small flow in MS channel
10:34 Arrival to 16-2666 dry
10:35 Arrival to 16-2665 depth to water 112.08'
total depth 131'
10:50 Crew departs site since Kevin Reid has to leave for the day. Louie Romero needs to do paperwork in the office for some time.
14:20 Louie Romero and Ryan deVere return to site.
14:30 16-6295 (TA-11) depth to water 3.73'; temp. 10.3°C; pH 7.04; cond. 0.252 ms/cm
16-2661 dry
16-2662 dry
16-2663 dry
16-2664 dry
16-2669 dry
16-2668 dry
15:23 16-~~22~~ 2665 113.59 depth to water; 127.1 total depth; temp 11.1°C; pH 7.10; cond 0.390 ms/cm
one 250 mL sample was collected.
15:40 Crew departs the site.

L Romero 5/17/02

11/1/00 Hydrogeo Sampling of Well 16-2665

Todays activities include sampling well 16-2665, located just north of Martin Spring Canyon. A full suite of quarterly analytes will be sampled.

Crew Louie Romero, Kevin Reid

14:20 Tailgate safety meeting conducted. We will be working under SSHASP 264.

14:23 Horiba multiprobe calibrated

14:28 Arrival to well 2665

Depth to water = 108.56' Final depth to water = 115.0'

Total depth = 127.1'

18.54' x 0.61777 = 11.4 L per well volume

	T °C	pH	cond mS/cm
Initial	11.6	6.62	0.455
Final	9.9	6.75	0.392

Sample collected from well. Well not purged prior to sample collection

15:20 Sample RE-16-00-3296, 16-00-3297 collected

15:35 Return to trailers. Samples stored in refridgerator.

15:45 Crew departs site. Samples will be acidified, filtered, + submitted 11/2/00

Kevin Reid 5/17/02

11/3/00 Weekly Hydrogeology Field Work

crew Kevin Reid, Louie Romero

Todays activities include downloading dataloggers, making well measurements, and revising the autosamplers at the springs. Since the last weekly hydro, it has rained approximately 21 mm. Rain event occurred 10/27-10/28/00. Todays weather is snow. Large flakes. It has been snowing since about 0730 this morning.

9:30 Tailgate safety meeting conducted. Today we will be working under SSHASP 264.

9:35 Calibration of Horiba Multisensor. Calibration is within specs as dictated by the manufacturer

9:40 Prep of field equipment and work on cables for SWSC spring.

16-2665 107.95 ft

16-2666 dry

16-2668 dry

16-2669 dry

16-2661 dry

16-2662 dry

16-2663 dry

16 2664 dry

standing water in 90's line pond

11:12 Well ~~16-266~~ KR 11/3/00 16-2655 met station

depth to water = 7.60' Total depth = 10.18'

11:30 Revision of Fish ladder seep - Dry

11:40 Crew departs site. Field work completed for the day. Because of the snowy weather, field crew was restricted access to the canyons. This resulted in several deviations from the normal weekly hydrogeo. Deviations included:

1) Wells 2656, 2657, 2658, 2659, 2660, 6295, 6294, 6293 not revised

2) Martin Spring, Burning Ground Spring, SWSC spring not revised

3) Dataloggers not downloaded

Work is intended to be completed 11/6/00 (monday)

Kevin Reid 5/17/02

11/06/00 Continued Weekly Hydrogeologic Activities

crew Louie Romero, Kevin Reid, Ryan DaVore

Todays activities include downloading dataloggers, checking well levels, and measuring spring discharge in Martin Spring Canyon and Cañon de Valle. We will be working under SSHASP 264 and following SOPs for general field work, well measurements, and measuring of water quality parameters.

10:30 Tailgate safety meeting conducted

10:32 Calibration of Horiba multisensor probe

11:10 Arrival to Martin Spring

pH = 6.78 cond = 0.447 ms/cm T = 10.3 °C Discharge = 350 m

Flow integrated sampler started 10:15 26 Oct 2000

Finish 17:14 27 Oct 2000

Sampler collected ≈ 4L.

Sampler tubing frozen. Prevented sample collection from 10/27/00 → 11/6/00. Samples emptied to carboy

Insulation reset on tubing. Sampler tested. Set to start at 12:30 11/6/00.

Auto sampler set to daylight savings time

· 2 samples remain for LL anim sampler: Need to empty this wee

Data logger down loaded to 'MS110600.dat'

Flowlink downloaded

11:45 Arrival to 16-6295

Channel Flow in MS Canyon ≈ 1 Liter/sec

Depth to water = 3.65' pH = 7.46 cond = 0.253 ms/cm T = 6.1

11:58 Arrival to 6294

Depth to Water = 5.25' Total Depth = 10.85'

pH = 6.30 cond = 0.290 ms/cm T = 9.2 °C

12:13 Arrival to 6293

Depth to water = 9.60' Total Depth = 10.0'

WQ parameters not measured b/c no bailer

Louie Romero
5/17/02

1350 Arrival to 2659 2660
Well 2660 depth to water = 6.89'
Well 2659 depth to water = 6.89' T=8.3 °C pH = 7.18 cond = 0.407 ms/cm
Data downloaded to '26591106.dat'
14:08 Arrival to 16-2658
14:08 Depth to water = 5.80' pH = 7.06 T = 8.1 °C KR 11-6-a pH cond = 0.450 mS/cm
Data downloaded to 26581106.dat
14:18 Arrival to BG spring
Battery Dead. 11/2/00
Datalogger not downloaded
see pH = 7.21 cond = 0.339 mS/cm T = 9.9 °C Discharge = 500 ml/sec
Flow Integrated Sampler collected 12L, Emptied, 8 bottles replaced
Low Level Anion sample taken today, stored in autosampler.
4 bottles remain
Need to return to troubleshoot power source
14:35 SWSC spring pH 7.38, 0.339 ms/cm, 7.4°C Discharge = 75 ml/sec
power cable reconnected, unsure if working b/c it is cloudy
low level anion sample collected, stored in sampler
14:52 Well 2657
Depth to water = 3.29 ft pH = 7.39 cond = 0.522 ms/cm T = 8.2 °C
14:54 Sample collected from Peter Seep.
- Seepage observed at 260 outfall, lower slope
- No channel flow upstream of ~~peter~~ KR 11/6/00 SWSC spring

15:00 Arrival to 2656 KR 11/6/00
Depth to water = 5.67 pH = ~~7.~~ 6.86 cond = 0.395 ms/cm T = 8.0 °C
Data downloaded to '26561106.dat'
- High Flow indicators show evidence of channel flows overbank, flowing on F1 surface as defined by S. Reneau.

Deviations / Problems
1) Power source at BG and Possibly SWSC not working

5/17/02

11/8/00 Stream Profile Measurements: late fall, post monsoon

crew Kevin Reid, Louie Romero, Ryan DaVore

Todays activities include measurement of discharge, pH, conductivity, and temp at the six stream profile locations in Martin Spring Canyon.

Weather Cold ≈ 30°F, partly cloudy

We will be working under SSHASP 264 and following LANL SOP 1.01 General Instructions for Field Investigation

9:10 Horiba calibrated following manufactures instructions

9:12 Tailgate safety meeting conducted.

9:13 Message left on Trung Nguyen 7-7905 voice mail regarding todays field activities

0945 Martin Spring. Kevin Reid will download data from the 2 dataloggers at this location. A flow measurement and parameters will be taken at the weir

temp: 10.1°C; pH 6.96; cond. 0.444 ms/cm; flow @ weir = 350 mL / 2 sec

~~TES~~ LRS 11/7/02

1000 Martin Spring Station 1 16-5920

pH: 7.62; cond. 0.551; temp. 6.2; flow 400 mL / 3 sec

1020 MS station 2 16-5921

pH 7.14; cond. 0.551 ms/cm; temp 4.2°C; flow 130 mL / sec

1030 MS station 3 16-5988

pH 6.95; cond. 0.529 ms/cm; temp 3.4 °C; flow 120 mL / 1 sec

1040 MS station 4? 16-5989

pH 6.89; cond 0.416 ms/cm; temp 4.1°C; flow 210 mL / 1 sec

1045 ms station? burnt stake located 3' North on 2nd monitoring well 16-6294

pH 6.54; cond 0.314 mS/cm; temp. 3.2°C; flow 220 mL / 1 sec.

1055 ms Station 6 16-5991

pH 6.24; cond. 0.324 ms/cm; temp. 3.0°C; flow 280 mL / 0.75 sec

Crew heads up the canyon to return to the vehicle. Crew departs the site for lunch

1330 Crew enters Cañon de Valle.

Crew will take a measurement near well 16-2615? at stake ID 16-2763

cont. on next page // Louie Romero station 2

11/08/00 cont.

1335 pH 7.69; cond 0.381; temp 4.4°C; flow 900 mL/2 sec

1340 next location will be at stake ID 16-2761

pH 7.68; cond. 0.379; temp 5.1; flow 850 mL/1 sec.

1345 next location is at stake ID 16-2760 which is 20 ft downstream of BG spring confluence

pH 7.46; cond. 0.378; temp 6.0; flow 800 mL/1 sec.

1350 BG Spring at weir; flow 900 mL/1 sec; pH 7.51; cond. 0.365 ms/cm; temp 9.5

1355 16-2758

pH 7.68; cond 0.400; temp 4.0; flow 300 mL/2 sec.

1400 16-2757; pH 7.28; cond. 0.400 ms/cm; temp 7.7 °C; flow 500+100 mL/2 sec.

1403 SWSC spring at weir = flow 230 mL/2 sec; pH 7.59; cond. 0.372 ms/cm; temp 7.6 °C

LLA sample collected

1407 Peter Seep = pH 7.33; cond. 0.378 ms/cm; temp 5.0 °C; flow = no measurement

Trouble shooting at SWSC spring equipment shows that all cables are good, but the battery is dead, wires left connected to battery only in hopes of a recharge.

Trouble shooting at BG Spring shows that the campbell scientific data logger is draining the power from the 12 volt battery. Wires will be connected battery only in hopes of a recharge. Also one LLA sample was collected.

- No flow observed upstream of Peter Seep

1430 End of day

Kendall 5/17/02

11/9/02 Continued Stream Profile Measurements

crew Louie Romero, Kevin Reid, Ryan DeVore

Todays activities include measuring discharge, temperature pH, and conductivity in Cañon de Valle. We will work the section downstream of well 16-2658 to well pair 2659, 2660.

weather Cold, clear, temp ≈ 35° F, sunny

We will be working under SSHASP 264 and following LANL SOP 1.01 General Instructions for Field Investigations

9:14 Tail gate safety meeting conducted.

9:15 Trung Nguyen notified of Hydrogeo field activities

9:17 Horiba calibrated according to instructions defined by manufacture

9:42 16-2764 stake ID

pH 7.15; cond. 0.407; temp 2.2°C; flow 400 mL/sec.

New battery was placed in Cambbell CR10X datalogger

9:50 16-2766 pH 7.40; cond 0.401; temp 1.6°C; flow 900 mL/1 sec

This location was downstream of MDA-P road culvert. Also below a pond area upstream of the culvert

10:05 16-2768 ~30 ft below; pH 7.47; cond. 0.430; temp 0.8; 400 mL/s

1015 16-5999 st. 11 10 ft below 16-2771

pH 7.87; cond 0.443 (5/17/02 LR); temp 0.6°C (St 12); flow 200 mL/s

1020 16-2772 or 16-~~2659~~ 5928 pH 7.56, 0.475; temp. 1.9°C

No discharge measurements were recorded because the water was frozen

1022 16-2773 stake ID pH 7.05; cond. 0.413; temp. 6.7°C; flow 300 mL/1 sec

Seep is discovered in stream channel ~25 ft above 16-2773

temp 7.6 pH 6.91 cond. 0.423

~~Reading~~ LR 5/17/02

- Just up (10m) channel from well pair. channel is frozen, ~~no~~ negligable surface flow 5/17/02 LR
- At well pair, almost no flow.
- ≈ 35m down channel from well pair, flow picks up again
- Contributing reach ≈ 20m in length. No ice in channel. observed flow (6.7°C) coming from channel bank. Location marked with a stake // Louie Romero 5/17/02

1050 16-5600 st. 14 pH 7.87; cond. 0.374 ms/cm; temp 0.4°C; flow 50 mL/1 sec.

1115 measurements below burnt stake ~~10 m down from 16-18~~ ~10 m down 5/17/02

pH 7.89; cond. 0.445 ms/cm; temp 2.2°C

- location believed to be SP 15, 16, or 17 unknown
- Flow in this reach is intermitent, with water collected in pools and dry at reaches between pools
- no observed contribution from streambanks

1125 measurements at ~~stake 17~~ 16-2778 pH 7.29, cond. 0.393 ms/cm; temp 4.3°C

flow 100 mL/4 sec. This is the last observed surface flow in C de V

5/17/02

11/13/00 Weekly Hydrogeology Measurements

crew Louie Romero, Kevin Reid, Ryan DaVore.

Today's Activities: Today we will measure water levels in wells, discharge of springs, and water quality parameters (pH, T, cond at each location.

Weather: Today weather clear, cold ≈ 20°F.

Today we will be working under SSHASP 264 following LANL SOP 1.01 General Instructions for Field Investigations.

9:15 Trung Nguyen 7-7905 notified of today's field activities

9:45 Tailgate safety meeting conducted

9:47 Horiba Multiprobe calibrated according to manufacturers specs.

10:08 Arrival to well 16-6295

pH = 5.70 cond = 0.446 mS/cm T = 3.8 °C Depth to water 3.76'

water flowing in channel <1L/sec

10:17 Arrival to well 16-6294

Depth to Water = 5.51' pH = 5.99 cond = 0.319 mS/cm T = 7.9 °C

10:42 Arrival to Martin Spring

pH = 7.0 Cond = 0.514 T = 9.2°C Discharge = 100mL/sec

Flow rate integrated sampler tubing frozen. No samples collected

Low Level amin has two remaining bottles

started 12:18 9/24/00, done sampling. program complete

22 samples collected, 2 missed

1 LL amin sample collected today

- Data logger downloaded to 'ms111300.dat'
- Flowlink data logger interrogated. Stored in 4110

need to fix label of Flowlink.

Flow Integrated sampler set to start at 17:00 11/13/00

11:13 Arrival to well 16-6293

Depth to water = 8.81'; temp 9.5°C; pH 6.89; cond. 0.615 mS/cm

11:39 Arrival to 16-2665 depth to water = 125.20'

11:40 well 16-2666 - dry

11:44 well 16-2668 - dry

Louie Romero 5/17/00

12:00 16-2661 dry
16-2662 dry
16-2663 dry
16-2664 dry
16-2669 dry
Standing water in 90's line pond
12:05 Arrival to well 16-2655
Depth to water = 7.35' pH = 6.92; cond 0.707 mS/cm; temp. 10.6°C
14:54 Arrival to well 16-2659
Depth to water = 6.75' pH = 7.12 cond = 0.462 mS/cm T = 7.0 °C
Data downloaded to '26591113.dat'
1455 Arrival to well 16-2660 depth to water = 6.69'
1519 Arrival to well 16-2658
Depth to Water = 5.85' pH = 6.64 cond = 0.481 mS/cm T = 7.0 °C
Data downloaded to '2658 1113.dat'
1532 Arrival to Burning Ground
pH = 7.23 cond = 0.379 mS/cm T = 9.8 °C Discharge = 60 mL/s
Data logger downloaded to 'BG 111300.dat'
LL anion sample collected. Still no power at battery
1544 Arrival to SWSC
pH = 7.14 cond = 0.371 mS/cm T = 6.6 °C Discharge = 100 mL/s
Datalogger downloaded to 'SWSC 1113.dat'
LL anion sample collected Power still down
1550 Peter Seep Low Level Anion sample collected
1551 Well 16-2657 frozen. Unable to measure
1554 Well 16-2656
Depth to water = 6.30' pH = 7.11 cond = 0.424 mS/cm T = 6.9 °C
Data downloaded to '26561113.dat'
16:30 crew departs site

Kenbrd 5/17/02

11/14/00 Sampling of Martin Spring Canyon Wells : Intra Quarterly

Crew Kevin Reid, Louie Romero, Ryan DeVore

Todays Activities Today we plan to sample wells 16-6293, 16-6294, 16-6295, 16-2665. Well 16-2665 will only be sampled for Isotopic analysis. Wells 16-6293, 16-6294, 16-6295 will be sampled for the 'quarterly' suite.

Weather Sunny, clear, cold ≈ 40°

10:38 Trang Nguyen 7-7905 notified of todays activities.

10:40 Tailgate safety meeting conducted. Today we will be working under SSHASP 2.64, Following LANL ERSOP 1.01, 1.02, 1.03, 1.04, 1.07 ; and LANL ER-QAP;P-08.

10:45 Horiba Multisensor probe calibrated according to manufacturers specifications

13:53 Arrival to well 16-6293 : photo 1, roll 1

Depth to water = 8.78' pH = 6.36 cond = 0.891 mS/cm T = 9.8 °C

Samples RE16-00-3301, RE16-00-3302 collected

water slightly turbid, weather partly cloudy, cool ≈ 35°F

1429 Arrival to well 16-6294

Depth to water = 5.51' pH = 6.02 cond = 0.412 mS/cm T = 8.6 °C

Samples RE16-00-3303, RE16-00-3304 collected

water slightly turbid, weather partly cloudy, cool ≈ 35°F

photo 2, roll 1 taken

14:56 Arrival to well 16-6295

Depth to water = 3.75' pH = 6.03 cond = 0.412 mS/cm T = 4.5°C

Samples RE16-00-3305, RE16-00-3306 collected

Water slightly turbid, weather partly cloudy, cool ≈ 30°F

photo 3, roll 1 taken

15:19 Arrival to well 16-2665

depth to water = 126.47' ~~pH = ___ cond = ___ mS/cm, temp ___ °C~~

~~turbidity ___~~ Relinlor not enough water to take parameters

weather is partly cloudy, 5 mph wind from North, temp ~ ~~35~~ 42°F

1535 1 - 40 mL amber collected

16:00 Crew Finishes filtering, acidifying, crew departs site

5/10.2

11/15/00 Stream Profile Sampling - Martin Spring Canyon, Intra Quarterly

Crew: Kevin Reid, Louie Romero, Ryan DaVone

Activities: Today we will sample 3 stream profile locations in Martin Spring Canyon and 1 well location 16-2655. Well 16-2655 will be sampled according to the quarterly suite of analysis. The 3 stream profile locations will be analized for HE, METTALS.

Weather: Clear, windy ≈ 40°F

13:35 Trung Nguyen 7-7905 notified of todays activities

13:40 Tailgate safety meeting conducted, we will be working under SSHASP 264, Following SOP LANL ER SOP 1.01, 1.02, 1.03, 1.04, 1.07; and LANL ER-QAP; P-08

13:42 Horiba multisensor probe calibrated

14.05 Arrival to Martin Spring Canyon Station #6, 16-5991
pH = 6.10 cond = 0.440 ms/cm T = 3.9°C Discharge = 100mL/s
Samples RE16-00-3307, RE16-00-3308 collected
photo 4, roll 1 taken. Weather, clear, windy, cool ≈ 40°F

1434 Arrival to Martin Spring Canyon station #2, 16-5921
pH = 6.50 cond = 0.774 ms/cm T = 4.2°C Discharge = 10mL/sec
Samples RE16-00-3309, RE16-00-3310 collected
photo 5, roll 1 taken. Weather clear, wind(slight), cool ≈ 40°F

1450 Arrival to Martin Spring Canyon station # 1, 16-5920
pH = 7.51 cond = 0.752 ms/cm T = 5.3°C Discharge = 50mL/sec
photo 6, roll 1 taken. Weather clear, slight wind, cool ≈ 40°F
Samples RE16-00-3311, RE16-00-3312 collected

1516 Arrival to well 16-2655
Depth to water = 7.41' pH = 7.33 cond = 0.916 mS/cm T = 8.8 °C
Samples RE16-00-3299, RE16-00-3300 collected
photo 7, roll 1 taken. weather clear, slight wind. cool ≈ 40°F

1630 Filtering + acidifying + labelling of samples complete
Depart site, submit samples to SMO

Kevin Reid 5/17/02

11/16/00
~~11/17/00~~ LR

0900 Crew of Louie Romero and Ryan DeVore will perform stream profiling sampling today. There will be six locations sampled.

LR ~~0900~~ 09:15 Crew arrives at HEPS field trailers. HARIBA is calibrated and equipment is gathered.

0930 Tailgate safety meeting is conducted by Ryan Devore.
Crew will enter the cañon from R-25 area.
Arrival to first location. Stream Profile Location #3 Cañon de Valle 16-5994 will be sample IDs RE16-00-3313 and RE16-00-3314

10:43 Sample is collected. parameters: Conductivity 0.557 ms/cm; pH 6.58; temperature 3.8°C, flow ~ 250 mL/sec photo #8 was taken of samples.

11:00 Arrival to next sampling location. Stream Profile location # 8 CDV 16-5996. sample IDs will be RE16-00-3317, RE16-00-3318

11:05 Sample is collected. parameters: Conductivity 0.512 ms/cm; pH = 6.99; temp = 4.7°C; flow ~ 400 mL/s photo 9 is of samples

11:45 Sample RE16-00-3315, and RE16-00-3316 is collected form Stream Profile Location # 4 CDV 16-5995
field parameters: Conductivity 0.551 ms/cm; pH = 6.81; Temp = 6.1°C
Flow is approx. 150 mL/s photo 10 is of samples

11:30 Elmer Alcon enters the Canyon driving the ATV. He brought down more sample containers, and will replace Louie Romero for the rest of the sampling. Louie will run HPLC at chem trailer
Elmer Alcon and Ryan Devore arrive at next site

1230 RE16-00-3327 ~~is LR~~ station and RE16-00-3328 is collected from 16-5930 stream profile location 15 of CDV. field parameters: pH = 7.07; cond. = 0.544 mS/cm; temp. = 4.3°C; flow ~ 200 mL/s
photo 11 is of the samples

12:45 Crew arrives at the next site.

12:45 RE16-00-3321 and RE16-00-3322 is collected from 16-5929 stream profile location 13 CDV. Field parameters: Conductivity = 0.576 mS/cm; pH = 7.22; temperature = 4.2°C; flow ~ 500 mL/s
photo 12 is of samples. // Louie Romero 5/17/02

Cont.

11/16/00 cont.

13:10 Crew arrives at the next site

13:10 RE16-00-3319; RE16-00-3320 is collected from 16-5998 stream profile location 10 CdV. Field parameters Conductivity 0.559; pH = 7.29; temperature = 0.7°C; ~~flow~~ LR 5/17/02 no flow measurement taken, no photo taken.

1330 Crew arrives at HEPS field trailers with all samples that were collected today. Elmer leaves the site. L. Romero and R. Devore preserve samples and fillout paperwork. Clean slip is obtained from Bill McCormick. Crew ~~departs~~ LR 5/17/02 departs trailers to SMO.

15:45 Crew arrives at SMO and samples are reliquished from Louie Romero to Jaylene Valdez of SMO. Crew departs SMO to IT office. Done for the day.

OMZ&W 5/17/02

11/20/00 Weekly Hydrogeology Measurements and Monthly Flow Integrated Sam

Crew Kevin Reid, Louie Romero

Todays Activities Measuring of well levels, spring discharge and water quality parameters at locations in Martin Spring Canyon and Canon de Valles. We will also be sampling the monthly Flow Integrated samples from Martin Spring and Burning ground spring

weather Clear Sunny ≈ 45°F

10:00 Filtering and acidifying of MS + BG samples

11:00 Tailgate safety meeting conducted. Working under SSHASP 268

11:15 Truing notified of Todays activities

14:00 ~~Tailgate~~ KR 11/20/00 Horiba calibrated

14:20 Arrival to well 16-6294

Depth to water = 5.52' pH = 5.68 cond = 0.562 ms/cm T = 8.4 °C

14:26 Arrival to well 16-6295

Depth to water = 3.72' pH = / cond = / ms/cm T = / °C

Well water frozen at surface (3.72') Unable to measure water quality parameters

14:47 Arrival to well 16-6293

Depth to water = 8.70' pH = 6.42 cond = 0.975 ms/cm T = 9.5 °C

14:56 Arrival to Martin Spring

Discharge ≈ 45mL/sec pH = 6.63 cond = 0.778 ms/cm T = 9.9 °C

Datalogger Downloaded to "ms112000.dat"

Flowlink interrogated

Flow Rate Integrated sampler did not work. Will troubleshoot

Low level Anion Sampler down.

Manual Low Level Anion sample collected

* Flow rate Integrated Sampler set to sample 40 mL every ~~18~~ 16

Flow rate sampling will begin at 17:00 11/20/00

0.04 mL/s * 604800 = 24,192 L/week

$\frac{24,192 L}{150 \text{ samples/week}} = \cancel{161}$ 161 L/pulse (estimate)

161 L/pulse

5/17/02 KR

11/20/00 cont.

15:28 16-2665 dry (1.75" of mud present @ bottom of well)

16-2666 dry

16:00 Arrival to well 16-2659

16: ~~Depth to water~~ = 7.13' pH = 6.64 cond = 0.590 ms/cm T = 7.0 °C

Well 16-2660 Depth to water = 7.19'

16:25 16-2658 dtw 5.82' from toc ; pH 6.33 ; cond. ~~0.625~~ 0.618 KR ms/cm ; temp 6.5 °C '2658.dat'

16:36 Burning Ground Spring

Discharge = 700 mL/s pH = 6.71 cond = 0.506 ms/cm T = 9.2 °C

Datalogger downloaded "BG112000.dat", LLA Sample collected

Battery reconnected

LL Anion Sampler: started 9/22/00 2:28pm sample every 2880 min

collected 21 samples

Flow Int Sampler started 10/26/00 9.34am

(power fail 14:32 11/04/00) Finish 11/02/00 12:13

Bubbler flow meter reconnected, not enough power to fully run.

17:02 SWSC Spring

Discharge = 45 mL/s pH = 6.95 cond = 0.527 ms/cm T = 6.0 °C

Battery reconnected

KR 11/20/00 ~~LL Anion~~ Flow Int Sampler started 10/13/00 13:14

LL Anion not responding

LLA sample collected

17:15 Peter Seep LLA sample collected

crew returns to trailers

17:35 crew departs site

5/17/02

11/21/00 Weekly Hydrogeology

crew Kevin Reid, Louie Romero

Today we will sample well 16-2655

weather Partly Cloudy, cool ≈ 45°F

16:00 Tailgate safety meeting. Today we will be working under SSHASP 264

16:09 well 16-2655

Depth to water = 7.41' pH = ~~5.55~~ 6.28 KR 11/21/00 Cond = ~~0.988~~ 0.563 mS/cm KR 11/21/00 T = 10.1 °C

Datalogger Downloaded water very turbid

16:20 Return to trailers

KRR 5/17/02

11/22/00 Weekly Hydrogeology
crew Kevin Reid, Louie Romero
Today we will check well levels of 2656, 2657. Also we will drop into Martin Spring canyon to get LLA sampler running again
weather Partly cloudy, cool ≈ 50°F
1400 Tail gate safety meeting conducted. We will be working under SSHASP 264
15:30 Horiba calibrated
15:50 Martin Spring LLA sampler back on line. Manual LLA sample collected, stored in sampler. Bottle #1 will be sampled 11/24/00
16:11 Arrival to well 16-2657
Depth to water = 3.36' pH = 6.15 cond = 0.854 mS/cm T = 8.1
16:13 LLA sample collected at SWSC
1615 Arrival to well 16-2656
DTW = 6.61' pH = 6.68 cond = 0.595 mS/cm T = 8.3
Datalogger downloaded to '26561122.dat'
16:21 LLA sample collected at Burning Ground Spring
16:45 Depart site

Kevin Reid 5/17/02

11/27/00 Weekly Hydrogeology Measurements

Crew Kevin Reid, Louie Romero

Todays activities include measuring well levels, spring discharge, and water quality parameters in Martin Spring Canyon and cañon de Valle.

Weather Sunny, cool ≈ 45° F. Approximately 1 ft of snow fell on 11/23/00.

10:25 Tailgate safety meeting conducted. We will be working under SSHASP 264 and following LANL SOP 1.01 General Instructions for Field Investigations

10:27 Horiba multisensor probe calibrated according to manufacturer instructions

11:14 Well 16-6294

Depth to water = 5.57' pH = 6.71 cond = 0.521 mS/cm T = 7.1 °C

11:23 Well 16 6295

Depth to Water = 3.51' Water surface frozen. Water Quality Parameters not measured

11:42 Well 16-~~2665~~ KR 11/27/00 16-2655

Depth to water = 7.46' pH = 7.73 cond = 0.486 mS/cm T = 9.4 °C

Datalogger not download. Laptop battery down.

Water very turbid, muddy.

13:51 Martin Spring

Discharge = 45 mL/sec pH = 7.85 cond = 0.850 mS/cm T = 9.9 °C

Flow Integrated Sampler started 15:11 11/20/00

KR 11/27/00 Finish 22:35 11/25/00 because pump jamm

Approximately 2 ~~3~~ L collected. From 11/25 → 11/27/00 no samples collected because of mechanical error: pH = 9.3 cond = 0.869

Low Level Anion sampler started: 5:50 pm 11/24/00

collected 2 samples, now on bottle 3

* Time changed on LLA sampler was 15:51 changed to 13:51

Flow Integrated samples capped, stored in sampler.

Sampler set to start at 17:00 11/27/00

14:29 Well 16-6293

Depth to water = 9.10' pH = 7.22 cond = 0.470 mS/cm T = 8.5 °C

// Louie R.

15:17 Burning Ground Spring
Discharge = 300 mL/s pH = 7.72 cond = 0.502 mS/cm T = 9.8 °C
LOW Level Anion Sample collected
Power Supply down
1548 Well 16-2660: DTW = 7.21'
1549 Well 16-2659
DTW = 7.18' pH = 6.64 cond = 0.607 mS/cm T = 6.4 °C
16:10 Well 16-2658
DTW = 5.84' pH = 6.91 cond = 0.596 mS/cm T = 5.7 °C
16:25 SWSC spring
Discharge = 20 mL/s pH = 8.24 cond = 0.537 mS/cm T = 5.5 °C
16:30 16-2657 dtw = 3.61; pH = 7.90; cond. 0.865 mS/cm; temp 5.1 °C
LLA sample collected from SWSC spring and Peter Seep
16:35 16-2656 dtw = 6.70; pH 7.20; cond. 0.598 mS/cm; temp 6.3 °C
16:50 crew departs site

5/17/02

12-4-00 Weekly Hydrogeology Measurements

crew Kevin Reid, Louie Romero

Todays activities include weekly measurements of wells and springs in Martin Spring Canyon and Cañon de Valle.

Weather Sunny Cool, ≈ 45°F

10:30 Tailgate safety meeting conducted. Today we will be working under SSHASP 264.

11:13 Well 16-6295

DTW = 3.75' Well water Frozen. 3.75' = depth to Ice

11:20 Well 16-6294 ~~Dry~~ KR 12-4-00 Total depth = 17.80

DTW = 5.61 pH = 6.90 cond = 0.665 mS/cm T = 6.3 °C

13:46 Burning Cocoite spring

Blank shirlor LR

Discharge = 450 mL/s pH = 9.17 cond = 0.599 mS/cm T = 9.9 °C

Battery replaced. Datalogger & Flowlogger Downloaded 'BG120400..

Flow Integrated sampler set to sample at 17:00 12/4/00

Bubbler level set at 40 mm. Tube secured to weir

Manual LLA sample collected

13:58 SWSC spring

Discharge = 25 mL/s pH = 9.59 cond = 0.593 mS/cm T = 6.4 °C

Datalogger downloaded to 'SWSC1204.dat'

Manual LLA sample collected

Temperature Conductivity probe cleaned.

14:09 16-2657 dtw 4.81' from toc; pH 9.19; cond. 0.710 mS/cm; temp. 5.4 °C

14:15 16-2656 dtw 6.70' from toc, pH 8.22; cond. 0.685 mS/cm; temp. 6.4 °C

Datalogger downloaded to '26561204.dat'

14:34 16-2658

DTW = 5.83' pH = 8.44 cond = 0.656 mS/cm T = 5.4 °C

Datalogger Downloaded to '26581204.dat'

LR 5/12/02

14:53 Well 2659
DTW = 7.37' pH = 8.62 cond = 0.671 mS/cm T = 6.1 °C
Datalogger Downloaded to '26591204.dat'
14:55 Well 2660 DTW = 7.42'
16:00 Martin Spring
Discharge = 180 mL/5 sec pH = 8.99 cond = ~~0.486~~ 0.453 KR 12/04/00 mS/cm T = 8.8 °C
Flow Integrated Sampler collected 4 L pH = 9.73 cond = 0.475
set to sample at 17:00 12-04-00
Low Level Arsenic collected 6 samples, started on 11/24/00.
Flowlogger downloaded, Datalogger downloaded to 'MS120400.dat'
Flow Integrated Sampler started at 11/27/00 14:17
~~16:15 16- dtw 9.12~~ LR 5/17/02 Finish 12/04/00 15:35
16:15 16-6293 dtw 9.12 from toc; pH 8.73 ; cond. 0.538 mS/cm ; temp 7.1 °C
16:45 crew departs site

Kevin Reid
5/17/02

12/8/00 Hydrogeology Maintenance

crew Kevin Reid, Elmer Alcon, Louie Romero

Weather Clear, cool 45°. snow possible in the afternoon

Today's activities include returning water to SWSC + Burning ground springs. Also we will replace the battery at SWSC spring

Today we will be working under SSHASP 269

14:30 Water samples loaded into truck. Elmer will go to spring on the ATV.

14:35 Water returned to SWSC spring

Battery reinstalled.

→ problems with low level Anion sampler. Keypad frozen. Tech support called. Only trouble shoot is to check voltage or to lift faceplate and look for damaged parts.

→ Flow rate integrated sampler is reprogrammed to sample the LLA samples 300 mL every 48 hours. One sample collected at 12/8/00. Next sample will be 12/10/00 at 17:00 (bottle #1).

14:50 samples returned to Burning ground spring.

15:30 crew departs site

Kevin Reid

5/17/02

12/11/00 Weekly Hydrogeology Measurements
crew Kevin Reed, Louie Romero
weather Breezy, cold, clear to partly cloudy
Todays activities include measurements of wells
and springs in Martin Spring Canyon and Canyon de Valle.
10:10 Tailgate safety meeting conducted. We will be working
under sshasp 264.
10:12 Trung Nguyen 7-7905 notified of Todays activities
11:08 Arrival to well 16-2659
DTW = 7.54' pH = 7.5 cond = 0.690 ms/cm Temp = 5.5 °C
11:10 Well 16-2660 DTW = 7.61'
11:23 Well 16-2658 DTW = 5.81' pH = 7.95 cond = 0.424 ms/cm T = 4.2 °C
11:33 Burning Ground Spring pH 8.77; cond. 0.542 ms/cm; temp. 10.0°C
parameters of flow sample pH 9.59; cond. 0.561 ms/cm
Flow Integrated sampler collected 7L start 12/4/00 14:30 Finish 12/11/00 12:30
set to start at 17:00 12/11/00
manual LLA collected
11:53 SWSC Spring pH = 9.34 cond = 0.545 ms/cm T = 5.9°C Discharge ≈ 30 mL/sec
LLA Sampler on Bottle #3. ~~Sam~~ KR 12/11/00 Bottle #1 skipped for some reason,
but sample taken in Bottle #2. Flow Integrated sampler still down.
11:58 Peter Seep Dry, no LLA sample collected
11:59 Well 16-2657 DTW = 4.13' pH = 8.49 cond = 0.715 ms/cm T = 4.7°C
12:04 Well 16-2656 DTW = 6.61' pH = 8.12 cond = 0.590 ms/cm T = 5.7°C
13:41 Well 16-2655 DTW = 7.69' pH = 8.23 cond = 0.471 ms/cm T = 7.4°C
Data logger downloaded to '2655 1211.dat'
14:08 Well 16-62~~95~~93 KR 12-11-00 DTW = 6.31 pH = 8.03 cond = 0.999 ms/cm T = 7.2 °C
14:29 Martin Spring
Flow Integrated sampler collected 4L pH = 9.37 cond = 0.902 ms/cm
Discharge ≈ 40 mL/sec pH = 8.57 cond = 0.885 T = 9.0°C
Sampler set to start at 17:00 12/11/00
LLA sampler collected 9 samples
1450 16-2665 DRY
16-2666 DRY

// Louie Romero 5/17/02

15:06 Well 16-6294 DTW = 5.84 pH = 6.37 cond = 0.507 mS/cm T = 6.0 °C
15:17 Well 16-6295 DTW = 3.54' well frozen. 3.54' = depth to ice
15:35 Crew departs site

5/17/02

12/15/00 Weekly Hydrogeology Measurements

crew Louie Romero, Kevin Reid

Todays activities include measuring well heights, spring discharges and water quality parameters at wells and springs. Today we are switching back to Friday rotations of the weekly measurements

Weather overcast, cold ~31° F

9:10 Tailgate safety meeting conducted. Working under SSHASP 264

9:12 Truing notified of todays activities. His advise is to be safe and to stay warm.

10:05 SWSC spring

Datalogger + Flowlogger downloaded

Discharge ≈ 25 mL/s pH = 7.91 cond = 0.612 ms/cm T = 4.5°C

LLA sampler revised. sample collected 12/15/00. Next sample at 17:00 12/17/00.

10:08 Well 16 2657 DTW = 4.25' pH = ~~9.19~~ 8.57 KR 12/15/00 cond = 0.515 ms/cm T = 3.9°C

10:13 Well 16-2656 DTW = 6.67' pH = 8.38 cond = 0.625 ms/cm T = 5.1°C

BG Spring pH: 9.24; cond. 0.546; temp. 10.0 °C; flow 350 mL / 1 sec

manual LLA taken today, sampler back on line

parameters of flow proportional water: pH = 9.8; cond. .680; ~~temp~~ 5/10/02 LR

measurements taken with 3.5 L. Sampler turned off for the week to conserve batteries

11:38 Martin spring

Flow proportional sampler collected 1.5 L. Water frozen in tubing

parameters not taken on water because it is frozen.

Flow proportional sampler shut down.

LLA start 11/24/00 collected 11 samples now on bottle 12

Discharge = 40 mL/s pH = 8.93 cond = ~~0.926~~ 0.459 ms/cm KR 12/15/00 T = 8.3°C

Datalogger + Flow logger downloaded

Louie Romero
5/9/02

11:55 16-6293 dtw ~~to~~ ice 9.00' ; pH 7.81 ; temp 6.5°C ; cond. .536 ms/cm
12:10 16-6294 dtw = 5.69' pH 7.04 temp 5.4°C cond = 0.577 mS/cm
12:18 16-6295 deep to ice = 3.55'. Well still frozen
12:30 crew departs site

5/17/02

12/22/00 Weekly Hydrogeology Measurements
crew Joe Vargas, Kevin Reid
Todays Activities Measure, downloaded data loggers, at Martin Spring Canyon and Canon de Valle. Measure well levels, spring discharge, temp, pH, and conductivity at wells and springs.
1010 Tailgate safety meeting conducted. Today we will work under SSHASP 2CH
1015 Message left with Trung 7-7905 notifying of todays activities.
1020 Horiba multi probe calibrated according to manufacturers specifications
1040 16-6294: DTW 5.85', pH = 6.39 cond = 0.720 ms/cm T = 5.1°C
Horiba recalibrated, new measurement of cond = 0.745 ms/cm
1049 16-6295 Depth to Ice = 3.75' well frozen
1120 16-6293 DTW = 9.27' pH = 7.65 cond = 0.484 ms/cm T = 6.0°C
1134 Martin Spring
Discharge = 50 mL/s pH = 8.10 cond = 0.435 ms/cm T = 8.2°C
Flowlogger downloaded, Data logger downloaded
Low Level Anion 14 samples collected, 10 Bottles remain
11:58 well 16-2665, dry ; well 16-2666 dry
1411 well 16-2656 dtw = 6.69' pH = 7.66 cond = 0.692 ms/cm T = 6.4 °C
datalogger downloaded
1420 Well 162657 DTW = 4.32' pH = 8.54 cond = 0.449 ms/cm T = 5.4 °C
1426 SWSC
Discharge = 20 mL/s pH = 7.83 cond = 0.599 ms/cm T = 5.4 °C

- Low Level Anion sampler missed samples on 12/17, 12/19 because of frozen tubing. Sampler repositioned closer to spring, tubing length decreased to 4'. Sample collected 12/22/00. Set to take next sample on 12/24/00 at 17:00
- Ice formed in spring, below ultrasonic flow logger ≈ 0.5" above water surface. Ice sheet broken up. Now flow logger can measure level of liquid water. Expect break in discharge data on 12/22/00. Should be a large decrease in measured discharge.
- Data logger + Flow logger downloaded.

11 Lance Romero 5/17/02

1458 Peter Seep dry

1504 Burning Ground Spring

Discharge = 350 ml/s pH = 8.37 conductivity = 0.620 mS/cm T = 9.0 °C

LLA sampler on bottle #4. Flow Integrated Sampler disconnected.

Datalogger + Flowlogger downloaded

1517 Well 16-2658 DTW = 5.73' pH = 7.24 cond = 0.663 mS/cm T = 3.6 °C

Datalogger downloaded

1533 Well 16-2659 DTW = 7.81' pH = 7.98 cond = 0.678 mS/cm T = 4.8 °C

Datalogger downloaded

Well 16-2660 DTW = 7.91'

1557 Well 16-2655 DTW = 7.32' pH = 8.20 cond = 0.530 mS/cm T = 7.0

Datalogger downloaded

1615 crew departs site

5/17/02

1/4/01 January Quarterly Sampling
crew Kevin Reid, Louie Romero
Today we will begin quarterly sampling at Cañon de Valle, and Martin Spring canyon.
Weather Sunny, cool ≈40°F
920 Tailgate safety meeting conducted. We will be working under SSHASP 264, also following procedures: LANL ER SOP 1.01, 1.02, 1.03, 1.04, 1.07, LANL ER-QAP; P-07
935 Horiba multiprobe calibrated.
10:03 Well 16-2655
DTW = 7.45 pH = 8.13 cond = 0.512 mS/cm T = 5.7 °C
Well not purged before sample was collected because of known low recharge rates at this location.
Samples RE16-01-3001, 3002 collected
Water very turbid. Photo 7 taken
10:20 90's line pond is frozen solid. Samples not collected
10:28 Samples filtered, labelled & preserved.
10:35 Clean slip obtained from Bill McCormick
11:45 Samples submitted to SMO.

KRO
5/17/02

1/5/01 Flow rate sampler Maintenance

Todays activities include turning on Martin Spring sampler, replacing the ISCO sampler head at SWSC spring, and turning on Burning Ground sampler.

crew Kevin Reid, Louie Romero

900 Tailgate safety meeting conducted

9:35 Arrival to Martin Spring

- Auto sampler calibrated to sample 40 mL/pulse
  Auto sampler set to start sampling at 17:00 1/5/01
- Low Level anion sampler only has 2 bottles remaining.
  Low Level anion samples pulled, set in trailer to thaw over the weekend. Sample tray will be replaced monday.
  Martin Spring Discharge = 30mL/sec

13:15 Burning Ground Spring

Discharge = 350 mL/sec * 604800 = 211680L/week

Sample vol = 30mL, need to sample 8L 8L/0.03 = 266 pulses

211680/266 = 795 = pulse vol

old pace = 766L/pulse

→ new pace = 795L/pulse changed. Set to start at 17:00 1/5/01

1420 SWSC spring

Discharge = 10 mL/sec * 604800 = 6048 L/week

Sample vol = 30 mL, need to sample 8L 8L/0.03 = 266 pulses/w

6048L/266 = 22L/pulse

old pace = 19L/pulse

→ new pace = 22L/pulse changed. Set to start at 17:00 1/5/01

- Low Level Anion Sampler disfunctional. Last sample collected 12/24/00. Water frozen in collection tube, near distributor arm. Also problem with power supply. Recharged battery installed.
- New head piece installed to the ISCO flow integrated sampler. Head piece was the original one from SWSC spring which was damaged by the fire.
- Manual LLA sample collected. Next sample will be 1/7/01.

Kevin Reid 5/17/02

1-8-01 January Quarterly Sampling

crew Kevin Reid, Louie Romero

Today we will continue to conduct quarterly sampling of springs and wells in Martin Canyon and Cañon de Valle

weather Sunny, cool ≈ 40°F

1030 Tailgate safety meeting conducted. We will be working under SSHASP 264, also following procedures: LANL ER SOP 1.01, 1.02, 1.03, 1.04, 1.07, + LANL ER-QAP; P-07

10:37 Horiba multiprobe calibrated

1144 Well 16-2656

DTW = 6.71' pH = 7.85 cond = 0.761 mS/cm T = 4.5°C

cond value seems high. Probe recalibrated, still gives same reading

Samples RE16-01-3003, 3004 collected. Photo 8 taken

1155 SWSC

Discharge = 15mL/s pH = 8.18 cond = 0.699 T = 4.5°C

samples RE16-01-3035, 3036 collected photo 9 taken

- LLA sampler clogged. no sample collected over weekend. Manual LLA sample collected. sampler set to start at 17:00 1/10/01
- Flow Integrated sampler was not connected to flow logger did not run over weekend. Cable connected. sampler set to start at 17:00 1/8/01

1340 Samples labelled + preserved.

14:30 Samples submitted to SMO.

1-8-01

→ work continues →

1-8-01 continuation of Quarterly sampling

1535 well 16-2659

DTW = 7.81' pH = 7.80 cond = 0.743 T = 5.0°

Total well depth = 7.18' Water column = 0.63' = 1.55 L

4.65 L of water purged before sample is taken.

RE 16-01-3009, RE16-01-3010 collected, photo 10 taken

1605 samples stored in CRZ

1610 crew departs site

5/17/02

1-9-01 Quarterly Sampling
Todays activities include sampling well 16-2657, peter seep, Burning Ground spring, and well 16-2658
crew Louie Romero, Kevin Reid
weather Overcast, cool ≈ 35°F
1100 Tailgate safety meeting conducted. We will be working under SSHASP 264, also following procedures LANLER SOP 1.01, 1.02, 1.03, 1.04, 1.07 + LANL ER QAP; P-07
1110 Horiba multiprobe calibrated
1112 Trung 7-7905 notified of Todays field activities
1135 Martin Spring
Calibration + maintenance of Isco autosampler
Small volume of water remains in tubing at the distributor arm, this water freezes. Machine set to retry three times if no liquid is detected
• set to start at 17:00 1-9-01
1327 Well 16-2658
DTW = 5.84' Total Depth = 10.20 Height of water = 4.31' × 2.47 l/l = 10.65 L per well vol

	pH	cond	T
Initial	7.38	0.281	4.5
15L	7.52	0.676	2.4
~~30L~~ KR 1-9-01	~~7.51~~ KR 1-9-01	~~3.7~~ KR 1/9/01	
30L	7.54	0.695	4.1

Samples collected after 32 L of water bailed from well
RE16-01-3007, 3008 collected; photo 11 taken
slight snowfall during sampling
1400 BG: Burning Ground Spring
Discharge = 250 ml/s pH = 8.52 cond = 0.662 T = 9.8
Samples RE16-01-3021, 3022
photo ~~#12~~ 12 taken. slight snow during sampling
1500 Samples filtered, preserved, labelled
1715 Samples submitted to SMO

Reviewed 5/17/02

1-10-01 Quarterly Sampling

Crew Kevin Reid, Louie Romero

Today we plan to sample Martin Spring, 16-6295, and 16-2657.

Weather partly cloudy, cool. 3" of snow fell yesterday

930 Tailgate safety meeting conducted

935 Trung Notified of todays activities. We will be working under SSHASP 264, following LANL ER SOP 1.01, 1.02, 1.03, 1.0 1.07 and LANL QAP 1.07.

11:01 Well 16-2657

DTW = 4.45' pH = 7.45 cond = 0.518 ms/cm T = 3.9 °C

Horiba calibrated

Samples RE16-01-3005, 3006 sampled

photo 13 taken

1424 Martin Spring

Discharge = 30mL/s pH = 7.99 cond = 0.408 ms/cm T = 8.3 °C

Samples RE16-01-3033, 3034 collected. Photo 14 taken

LLA sampler back on line. Manual sample collected

first automated sample will be collected 1-12-01 at 14:

1446 Well 16-6293

DTW = 10.28' Total Depth = 10.70 pH = 8.11 cond = 0.443 ms/cm T = 5.6

Only METTAL+B (UF) and Isotope sample collected

RE16-01-3011 collected; photo 15 taken

1515 Samples labelled, filtered, preserved

1640 Samples submitted to SMO

5/17/02

1-11-01 Quarterly Sampling

crew Kevin Reid, Louie Romero

Today we will sample well 16-6294, 16-6295

Weather clear, Sunny ≈ 45°F

9:10 Tailgate safety meeting conducted. We will be working under SSHASP 264; also follow LANL ER SOP 1.01, 1.02, 1.03, 1.04, 1.07 LANL QAG P07

9:30 Trung Notified of Todays activities

940 Well 16-6294

DTW = 6.03' Total Depth = 11.07' pH = 6.45 cond = 0.874 mS/cm T = 3.5°C

water parameters after ~~be~~ KR sampling pH = 6.83 cond = 0.563 T = 3.4°C

well not purged three times before sampling because of suspected low flow conditions

Samples RE 16-01-3013, 3014 collected; photo 16 taken

water clear

951 Well 16-6295

DT Ice 3.77' Ice surface attempted to be broken.

Unsuccessful, well casing completely frozen

Location not sampled.

Louie Romero 1/17/02

1-12-01 Weekly Hydro

crew Kevin Reid, Lonnie Romero

Today we will download dataloggers, install bubbler flow meter at SWSC, and reset the flow integrated samplers.

Weather clear cool ≈ 40 F

9:50 Tailgate safety meeting conducted. Under SSI HASP 264

1345 Bubbler flow meter installed at SWSC

Flow Integrated sampler set to sample at 17:00 1/12/01

Datalogger downloaded 'SWSC0112.dat' ↳ 20L sample Interval. 30mL samp

1353 Burning Ground

Datalogger + Flowlink downloaded 'BG0112.dat'

Flow Integrated sampler collected 2.5L. Set to start sampling at 17:00. 765 L sample interval, 30ml sample vol.

1410 Well 16-2656

datalogger download '26560112.dat

1428 Well 16-2658

datalogger downloaded to '26580112.dat'

1443 Well 16-2659

datalogger downloaded to '26590112.dat'

1458 Martin Spring

Datalogger downloaded 'MS0112.dat'

Flow Integrated sampler set to start at 17:00 1/12/01

KR 1/12/01 ≈ 1L collected from last series.

15:04 Well 16-2655

Datalogger downloaded '26550112.dat'

12v battery replaced for dataloggers

15:20 Fish ladder seep - dry

15:40 crew departs site

5/17/02

1-18-01 Hydrogeo Maintenance

crew Lonie Romero, Kevin Reid

Today we will replace batteries for the CR10X dataloggers located at wells 16-2656 + 16-2658.
Also we will revise the flow integrated samplers at BG + SWSC springs. 12"-24" snowfall 1-16-01, 1-17-01.

14:00 Tailgate safety meeting conducted

1415 Arrival to MOAP. We will access COV from R 25

1435 Battery replaced at 16-2658. Datalogger downloaded to '26580118.dat' and '2658118a.dat'

1445 Burning Ground Spring
Flow integrated sampler collected ≈5.3L
Sampler emptied. Set to restart at 1700, 1-18-01

1500 SWSC Spring
Flow integrated sampler tubbing frozen solid, only one sample collected. Sampler shut off to conserve power. Flowlogger downloaded
·Manual LLA sample collected in 125ml bottle

1510 Well 16-2656
Battery replaced.

1555 Crew departs site

5/17/02

1-22-01 Sampling of Springs

crew Kevin Reid, Louie Romero

Today we will sample two liters of water from Burning Ground, SWSC, and Martin Springs

Weather Overcast, cool ≈ 45°F

1430 Tailgate safety meeting conducted. We will be working under SSHASP 264.

1500 Burning Ground Spring
Discharge = 250 mL/s 2 L of water collected

1510 SWSC spring
Discharge = 15 mL/s 2 L of water collected
Manual LLA sample collected

1545 Martin Spring
Discharge = 120 mL/s 2 L of water collected

1600 Samples stored in CRZ

1605 Crew departs site

Kevin Reid
5/17/02

1-23-01 Sampling of Spring + Sample of soil from 260 outfall

crew Kevin Reid, Louie Romero

Today we will collect 2x 1-Liter samples from Martin, BG + SWSC springs. Also we will collect a soil sample from a drum located behind building 260.

Weather Overcast, cool ≈ 45°F. Approximately 2" snowfall last night.

1130 Tailgate safety meeting conducted. We will be following SSHASP 264 for Hydrogeologic activities, and SSHASP 267 for soil sampling. Additionally LANL ER SOP 1.07, 6.09 were followed for soil sampling

1150 Arrival to building 260

Soil sample collected from 55-Gallon drum labelled 'lower drainage plunge - for composting study.' Sample collected into 125mL clear glass container. Sample will be submitted to OX for hplc

1205 SWSC spring

Discharge = 17 mL/s 2 liters collected

1210 Burning Ground Spring

Discharge = 250 mL/s 2 liters collected

1238 Martin Spring

Discharge = 110 mL/s 2 liters collected

1255 Crew departs site

5/17/02

1-24-01 Sampling of Springs

Crew Kevin Reid, Lonie Romero

Today we will collect 2L of water from Burning Ground, SWSC, and Martin Springs.

Weather Partly cloudy ≈ 45°F

1430 Tailgate safety meeting conducted. We will be working under SSHASP 26H, following ERSOP 6.13

1455 Burning Ground Spring
Discharge = 300 mL/s ; 2L collected

1505 SWSC spring
Discharge = 10 mL/s ; 2L collected; LLA sample collec

1530 Martin Spring
Discharge = 100 mL/s ; 2L collected

1555 Samples stored in CRZ, crew departs site

5/17/02

1-25-01 Sampling of Springs

crew Kevin Reid, Louie Romero

Today we will collected 2L of water from Burning Ground, SWSC, and Martin Springs

Weather Sunny, cool ≈ 45°F 6" of snow fell earlier today.

1415 Tailgate safety meeting conducted. We will be following SSI/ASP 264 and ER SOP 6.13

1450 Burning Ground Spring
Discharge = 300 mL/s ; 2L collected

1455 SWSC
Discharge = 10 mL/s ; 2L collected

1525 Martin Spring
Discharge = 70 mL/s ; 2L collected

1550 Samples stored in CR2. crew departs site

5/17/02

1-26-01 Weekly Hydrogeology + Spring Sampling

crew Kevin Reid, Louie Romero

Todays activities include making weekly measurements of Temp, pH, conductivity and well levels and spring discharges at wells and springs in Martin Spring canyon and cañon de Valle and taking 2L samples at Martin, SWSC, + Burning Ground springs

Weather Sunny, cool ≈ 40°F

1000 Tailgate safety meeting conducted. We will be working under site Hasp 264 and ER SOP 6.13.

1005 Trung notified of todays activities.

1108 Well 16-6294
DTW = 6.03' pH = 5.20 cond = 0.448 ms/cm T = 2.5°C

1143 Well 16-6293
DTW = 10.65' Total Depth = 10.70' : not enough water to take screening parameters

1156 Martin Spring
Discharge = 70 mL/s pH = 7.29 cond = 0.351 ms/cm T = 9.0
2x 1L samples collected for Flow Integrated sample

1342 Wells behind Building 260
16-2636 dry
16-2712 dry

1418 Well 16-2659
DTW = 7.93' pH = 7.23 cond = 0.503 ms/cm T = 3.9°C
Horiba re calibrated ; datalogger downloaded

1446 Well 16-2658 ; datalogger downloaded
DTW = 5.87' pH = 7.43 cond = 0.335 ms/cm T = 2.2°C

1456 Burning Ground Spring
Discharge = 250 mL/s pH = 8.11 cond = 0.355 T = 8.7°C
Flowlogger + datalogger downloaded
2 L of water collected for Flow Integrated Sampler

Louie Romero
5/17/02

1512 SWSC spring
Discharge = 10 m2/s pH = 9.14 cond = 0.346 mS/cm T = 3.7°C
Horiba recalibrated
Data logger, Flow logger downloaded
2L of water collected for Flow Integrated sample, LLA sample collected
1523 16-2657
DTW = 4.31' pH = 7.06 cond = 0.760 mS/cm T = 3.3°C
water turbid
1533 Well 16-2656
DTW = 6.78' pH = 7.45 cond = 0.393 mS/cm T = 3.6°C
Datalogger downloaded
1603 Well 16-2655
DTW = 7.6' pH = 8.27 cond = 0.516 mS/cm T = 2.2°C
1615 samples stored in CRZ
1625 crew departs site

5/17/02

230 KR 1-29-01

~~1-29-01~~ 1-30-1 Weekly Flow Integrated Samples

crew Kevin Reid, Louie Romero

Today we will filter, preserve, and submit flow rate integrated samples from Martin Spring, Burning Ground Spring, and SWSC spring

930 Samples are combined in a carboy for each location

Samples were collected from ~~1/19~~ KR 1/26/01 1/22/01 → 1/26/01

2 liters of water were collected each day of the week.

Discharge was measured at time of collection.

SWSC and Burning ground springs had constant discharge over the 5 day period. Martin spring discharge varied over the 5 day period.

Discharge records from Martin Spring:

	L	% of weekly	fraction of 2L sample
1/21/01 → 1/22/01	6115.0	18	1.40 L
1/22/01 → 1/23/01	7975.1	23	1.83 L
1/23/01 → 1/24/01	8118.1	23	1.86 L
1/29/01 → 1/25/01	7071.8	20	1.62 L
1/25/01 → 1/26/01	5660.7	16	1.30 L
Total	34740.7 L	100	8.0 sample for flow

- An 8L sample of martin spring water was prepared according to the flow proportions listed above
- For SWSC + Burning Ground springs, all 10L of sample were combined, then sample bottles were filled from the 10L integrated mixture

Samples filtered, Preserved, + labelled

1230 Samples

RE16-01-3017	Martin Spring unfiltered suite
RE16-01-3018	Martin Spring filtered suite
RE16-01-3019	SWSC unfiltered suite
RE16-01-3020	SWSC filtered suite
RE16-01-3037	Burning Ground unfiltered
RE16-01-3038	Burning Ground filtered suite

Submitted to SMO — Kevin Reid 1/31/02

2-2-01 260 Soil Sample + Return of Sample Carriage to Burning Ground

crew Kevin Reid, Louie Pomero

Today we will collect a soil sample from the spoils pile behind building 260. Also we will return autosampler sample carriage to Burning Ground spring and collect a ~~SW~~ KR 2/2/01 LLA sample from SWSC spring

Weather Sunny, cool ≈ 35°F

1400 Tailgate safety meeting conducted. Soil collection work conducted under SSHASP 267. Hydrogeology work conducted under SSHASP 264.

1410 Materials prepared

1448 Sample collected behind building 260. Sample location is spoils pile in exclusion zone. Spoils pile is a non RCRA waste. Soil sample collected from surface of pile, beneath tarp.

1503 LLA sample collected from SWSC spring.

1510 Sample carriage returned to Burning Ground Springs.
Power failure at Burning Ground springs.
Flow meter, Flow Sampler, + LLA sampler all down.
Manual LLA sample collected

1535 Crew Departs site

5/17/02

2-5-01
232
~~2-16-01~~ 5
KR 25-01

Hydrogeology Maintenance

Crew: Kevin Reid, Konie Romero

Today we will replace the battery at Burning Ground Spring + take LLA samples at SWSC + BG springs.

1330 Tail gate safety meeting. We will be working under SSHASP 264

1410 Battery replaced at BG spring
Manual LLA sample collected
LLA autosampler set to start. First sample will be 2-7-01 at ≈ 14:00
Flow Integrated sampler shut down

1420 Manual LLA sample collected at SWSC spring

1425 Serial number of dataloggers at 16-2656, 16-2658 recorded

1500 Crew leaves canyon

1520 Crew departs site

5/17/02

2/13/01 Soil Collection Behind Building 260

crew Kevin Reid, Louie Romero

Today we will sample soil located behind building 260. We will collect two 5-gallon buckets of soil for shipment to North Dakota.

Weather Clear, Sunny ≈ 40°F

1100 Kevin Reid briefed of SSHASP 267

1135 Tailgate safety meeting conducted. We will be working under SSHASP 267

1140 Sample materials prepared

1150 access granted behind building 260

Louie Romero

5/17/02

2-23-01 Weekly Field Work : LLA Sample Collection

crew Louie Romero, Kevin Reed

Today we will empty LLA samplers at all springs + start Flow Integrated sampler at BG Spring

weather Cool, overcast.

925 Tailgate safety meeting conducted. JSHASP 264

955 Martin Spring

LLA samples collected

Discharge ≈ 250 mL/s

Water cloudy

1/10/01 – 2/23/01 LLA samples collected

1005 BG

4 LLA samples collected : 2-2-1, 2-5-1, 2-7-1, 2-23-1

Discharge = 550 mL/s

Power Supply reconnected : Off from 2-7-01 → 2-23-

Flow Integrated sampler started at 1700, 2-23-

new Flow pac = 1600 L

old Flow Pac = 795 L

1030 SWSC

Full try LLA Samples collected

LLA 12/8/01 → 2/7/01

Discharge 50 mL/sec

5/10/02

3-1-01 Weekly Field work

crew Lorie Romero, Kevin Reid, Rich Urie, Peter Geram

Activities Today we will download dataloggers and measure water quality parameters at springs and wells in cañon de valle and martin spring canyon

Weather clear, sunny ≈ 45°F

Tailgate safety meeting conducted. We will be working under SSHASP 264

1245 Horiba calibrated

1250 Martin Spring
Low Level anion sampler back on line. Sample collected 3-1-01, next sample collected 3-3-01
Datalogger + Flowlogger downloaded
Discharge = 325 mL/s pH = 6.68 cond = 0.400 ms/cm T = 10.0 °C
Flow Integrated sampler set to sample every 10 pulses
Pulse volume equals 160 L
Spring visibly cloudy

1538 Well 16-6295 depth to Ice = 3.80' well frozen

1550 Well 16-6294
DTW = 5.61' pH = 5.48 cond 0.680 ms/cm T = 3.8 °C

1609 Well 16-6293
DTW = 9.26' pH = 6.03 cond = 0.542 ms/cm T = 4.8 °C

1625 Well 16-2665 DTW = 104.73'

1627 Well 16-2666 DTW = dry

1640 crew departs

5/17/02

3-2-01 Monthly Hydrogeology Measurements

crew Louie Romero, Kevin Reid

Activities Today we will take well + water quality measurements at the mesa top wells and wells and springs in Cañon de Valle

Weather Sunny, clear ≈ 45°F

925 Tailgate meeting conducted. Working under SSHP 264

955 Well 16-~~2655~~ 2655 KR 5/17/02 dtw from top: 5.38; pH: 7.62; cond. 0.467 ms/cm; temp = 3.9°C

Problem with met station datalogger. No data collected since 1/12/01 when battery was replaced.

Program redownloaded to datalogger. Missing data from 1/12/01 → 3/2/01 because of datalogger problem.

1005 90's line pond. Starting to thaw on north side

16-2661 - dry

16-2662 - dry

16-2663 - dry

16-2669 - dry

16-2664 - dry

1015 well 16-2668 unable to locate, buried in snow drift

1450 Well 16-2659 pH = 7.55 0.735 ms/cm T = 4.7°C

DTW = 5.77' Datalogger downloaded to '26590302.dat'

1452 Well 16-2660 DTW = 5.33'

1513 Well 16-2658 DTW 5.72' pH = 7.46 cond = 0.723 mS/cm T = 3.2°C

1530 Burning Ground Spring

Flow Integrated Sampler collected 6.5 L cond = 0.707 mS/cm pH = 8.6

Sample stored in carboy at site

Spring water pH = 7.96 cond = 0.698 mS/cm T = 9.5°C Discharge

Flow Integrated sampler set to start at 17:00 3-2-01

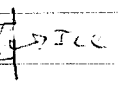
Datalogger + Flow logger downloaded

1548 SWSC

Discharge = 100 mL/s pH = 8.64 cond = 0.702 mS/cm T = 8.3°C

Data logger + Flow logger downloaded

no LLA or Flow Int samples collected // Louie Romero 5/17/02

1600 Well 16-2657 6.20
DTW = 1.4' pH = ~~8.30~~ KR 5/17/02 cond = 0.~~389~~ 545 KR 5/17/02 T = 3.5°C
Water frozen in annulus above top of casing 
Horiba re calibrated.
1605 LLA sample collected from Peter Seep.
Standing water at Peter Seep but almost no observable flow
1609 Well 16-2656
DTW = 4.99' pH = 7.55 cond = 0.385 ms/cm T = 2.5 °C
Horiba recalibrated
1630 crew departs site

KRW
5/17/02

3-9-01 Weekly Hydrogeology Field Maintenance

crew Kevin Reid, Louie Romero

Activities Today we will collect flow integrated samples from Martin Spring and Burning Ground Spring. Also we will change batteries at Martin Spring, SWSC and well 16-2659 + revise datalogger at well 16-2655

1245 Tailgate safety meeting conducted. We will be working under SSHASP 264.

1320 Martin Spring

Auto sampler malfunction. Distributor arm jammed. no samples collected. Unit removed to take apart and determine source of problem

- Channel flow observed upstream of Martin Spring outlet. Also channel flow observed in Martin spring canyon south
- Low Level anion sampler not operating. Manual LLA sample collected 3 samples missed 3-3-01, 3-5-01, 3-7-01
- Battery replaced for CR10X
- Need to replace marine battery

1414 New Battery installed at well 16-2659

1455 Burning ground spring: Flow Integrated sampler shut off. Will restart on next week.

1510 SWSC

Flow Integrated sampler turned on.

Pulse volume = 1500 L

Spring Discharge = 200 mL/sec

0.2 L/s x 604800 = 120960 L/week

~~80 pulse/week x 1/120960 L/week~~ KR 3-9-01

$$120960\ L/week \times \frac{1\ week}{80\ pulse} = 1512\ L/pulse$$

Flow Integrated Sampler set to 1500 L/pulse; sample vol equals 100 ml/pulse, 80 pulses/week, 8 L should be collected

Louie Romero 3/9/01

SWSC (cont)

- new battery installed at CR10X at SWSC
  program re downloaded to data logger.
  Data lost when battery was disconnected. Missing
  data from 3/2/1 → 3/9/1
- Bubbler flow meter re calibrated. Previous height 2mm low;
  new height + 2mm.

1625 crew departs site

5/17/02

3-12-01 Stream Profile Sampling

crew Louie Romero, Kevin Reed

Activities Today we will sample well 16-2665, Martin Spring; and stream profile location #1 as part of the spring runoff sampling. Also we will conduct maintenance of Martin Spring Field station including replacing the marine battery and installing a different Isco autosampler at the site.

Weather partly cloudy, cool ≈ 45°F

1000 Tailgate safety meeting conducted. We will be working under SSHASP 264. Following SOP: LANL-ER-SOP 1.01, 1.02, 1.03, 1.04, 1.07 + LANL QAP; P-07

1345 Burning Ground Spring
Low level anion sampler collected 8 samples.
Flow Integrated sampler collected 8 Liters. samples returned to spring
- Auto sampler set to start sampling at 17:00 3-12-01

1400 SWSC
Flow Integrated sampler collected ≈3L liters since 3-9-01. Samples returned to spring.
- Auto sampler set to start sampling at 1700 3-12-01

1500 Martin Spring
Auto sampler from SWSC spring installed.
Flow Integrated sampler set to sample every 10 pulses
Sample vol = 40mL
Recharged Battery installed. LLA sampler back on line
Sample collected (LLA), next sample in 48 hrs
Stream profile sample collected RE16-01-3041, RE16-01-3042
photo 1 taken.
Discharge = 400 mL/s pH = 6.22 cond = 0.580 ms/cm T = 10.5°C
Horiba calibrated prior to measurement
- Flow observed in channel upstream of Martin Spring outlet
- Spring water visibly cloudy // Louie Romero 5/14/02

1535 Well 16-2665
DTW 103.81' initial parameters pH 6.16; cond. 0.626; temp 10.2°C
parameters after 6 liters of water was bailed from well
pH 6.37 cond 0.616; temp. 9.9°C
1555 parameter after sampling pH 6.22; cond. 0.617; temp. 10.0°C
1555 sample was collected. Sample # RE16-01-3043, RE16-01-3044
1610 16 26.6 depth to water = 92.45; 94.5 is the approx. total depth
1630 Samples filtered, preserved. Samples stored in cooler w/ ice. Coolers stored in CRZ.
1705 crew departs site

KLO
5/17/02

3-13-01 Stream profile sampling + Well 16-2666 sampling

crew Louie Romero, Kevin Reid

activities Today we will conduct stream profile measurements of Martin Spring Canyon and sample well 16-2666.

weather Sunny, warm ≈ 50°F

1100 Tailgate safety meeting conducted. We will be working under SSHASP 264. Following LANL-ER-SOP 1.01, 1.02, 1.03, 1.04, 1.07, + LANL QAPj P-07.

1105 Trung notified of Field activities

1115 Well 16-2666

DTW = 92.5' RE16-01-3063 collected

0.5 Liters of water collected. Will submit for D2H + O18O16 and HE analysis. Not enough sample for HE. METTAL+B submitted instead

Photo 3 taken

1330 Stream profile MSC

Water observed flowing from mesa top at head cut of Martin Spring Canyon. Water flow subsurface about 10m from initial head cut. Flow estimated to be ≈ 5L/sec. All flow goes subsurface. Horiba calibrated.

- Channel dry between initial head cut area and area approximately 20m up channel from Martin Spring
- Initial Parameters 20m up channel from Martin Spring:

Q = <10mL/sec pH = 6.78 cond = 0.367 mS/cm T = 11.5°C

1335 Martin Spring Q =

Q = 375 mL/s pH = 7.32 cond = 0.660 mS/cm T = 10.3 °C

1342 MSC stream profile #1

Q = 200 mL/s pH = 7.78 cond = 0.654 mS/cm T = 10.0 °C

1351 well 16-6293

DTW = 9.17' pH = 7.74 cond = 0.542 mS/cm T ≈ 5.8 °C

1352 MSC stream profile #2 16-5921

Q = 700 mL/s pH = 7.49 cond. 0.780 temp. 4.2°C

1400 MSC stream profile #3

Q = 1600 mL/s pH = 7.70 cond = 0.776 mS/cm T = 4.9 °C

// Louie Romero 3/27/01

1408 MSC stream profile #4 16-5989
Q = 1800 mL/s pH = 7.65 cond = 0.689 ms/cm T = 5.4°C
1420 Well 16-6294 ~~KC~~ 3/13/01
DTW = 5.38' pH = ~~7.1~~ 6.70 cond = 0.520 ms/cm T = 3.7 °C
1424 MSC stream profile #5
Q = 4000 mL/s pH = 7.35 cond = 0.505 ms/cm T = 5.9 °C
1433 ~~MSC stream~~ KC 3/13/01 MSC stream profile #6
Q = 6000 mL/s pH = 7.19 cond = 0.397 ms/cm T = 7.0 °C
1438 Well 16-6295 well thawed. Ice floating
DTW = 3.50 pH = 7.02 cond = 0.254 ms/cm T = 2.1 °C
1620 Samples submitted to SMO

5/17/02

3-14-01 Stream Profile Sampling

crew Louie Romero, Kevin Reid

activities Today we will sample stream profile locations #1, #3, + #5 in Martin Spring Canyon. Also we will sample wells 16-6293, 16-6294, + 16-6295 in support of the stream profile sampling. Location #1 was selected because it was the only losing reach of the stream profile, additionally it is the ~~closest~~ closest to Martin Spring Out. KR 3/14/01 Locations #3 + #5 were selected because both locations recorded large increases in stream discharge.

weather: Sunny, clear ≈ 50°F

1005 Tailgate safety meeting conducted. We will be working under SSHASP 2.64, following LANL-ER-SOP 1.01, 1.02, 1.03, 1.04 1.07 + LANL QAPj P-07.

1042 Horiba calibrated

1043 MSC stream profile location #1
Discharge = 300 mL/s pH = 8.12 cond = 0.675 ms/cm T = 8.4 °C
Sample RE16-01-3051, RE16-01-3052 collected
photo #4, Roll 1 taken

11:01 Arrival to 1st monitoring well in Martin Spring 16-6293
dtw = 9.20' td = 10.7' pH = 7.76 cond = 0.502 ms/cm T = 5.6°C
Sample RE16-01-3045, RE16-01-3046 collected
photo #5, roll 1 taken
well not purged prior to sampling because of low well volume and known low recharge rates

1326 MSC stream profile location #3
Discharge = not measured pH = 8.19 cond = 0.750 ms/cm T = 6.0
Samples RE16-01-3055, RE16-01-3056 collected
photo #6, roll 1 taken

1355 Well 16-6294
DTW = 5.20' pH = 6.81 cond = 0.539 ms/cm T = 4.8 °C
10 liters of water bailed prior to sampling. Well water parameters n
pH = 6.88 cond = 0.528 ms/cm T = 3.8 °C

Louie Romero 5/17/01

Well 16-6294 continued
Samples RE16-01-3047 RE16-01-3048 collected.
photo # 7 taken
1403 Stream profile location #5, MSC
Discharge = not measured pH = 7.60 cond = 0.500 ms/cm T = 6.0 °C
Samples RE16-01-3059 RE16-01-3060 collected
photo # 8 taken
1440 Well 16-6295
DTW = 3.48' pH = 7.16 cond = 0.276 ms/cm T = 2.7 °C
after 10L pH = 7.38 cond = 0.282 ms/cm T = 2.3 °C
after 20L pH = 7.06 cond = 0.282 ms/cm T = 2.3 °C
well sampled after 20L water bailed
Samples RE16-01-3049, RE16-01-3050 collected
photo # 12, Roll 1 taken
1635 Samples Filtered, acidified, labelled. Packed in coolers

5/17/2002

3-20-01 Collection of Flow Integrated Samples

Crew Kevin Reid, Louie Romero

Activities Today we will collect flow Integrated samples from Martin, Burning Ground, + SWSC spring. Flow integrated samples represent high flow regime from the spring snowmelt.

Weather Sunny, clear, warm ≈ 50°F

1040 Tailgate safety meeting conducted. We will be working under SSHASP 264, following last ER-SOP 1.01, 1.02, 1.03, 1.04, 1.07 + LANL QAP; P-07.

1120 Burning Ground Spring
Flow Integrated Sampler collected 12 Liters; pH = 6.95 cond = 0.39
Start 3/12/01 17:16 Finish 3/20/01 1152. (clock 1 hr ahead of c
sample stored in carboy.
Sample RE16-01-3094, RE16-01-3095 collected
Sample represents high flow during spring snowmelt runoff.
• Carboy containing flow integrated sample from 2/26/01 → 3/2/01 removed from site. This sample will also be submitted today. This sample has been stored on ice in shade. Sample represents rising limb of spring snowmelt runoff. pH = 8.40 ; cond = 0.818 ms/c
Sample RE16-01-3096, RE16-01-3097 collected

1132 SWSC spring
Flow Integrated sampler collected ≈ 12 liters. On bottle #14.
Some bottles had missed samples; pH = 8.42 cond = 0.776 ms/cm
Start 3/12/01 19:37, Finish 3/20/01 1020. Sample stored in carboy
Sample RE16-01-3092, RE16-01-3093 collected
Sample represents high flow of spring snowmelt runoff.

1200 Martin Spring
Flow Integrated sampler collected 6 Liters; pH = 8.24 cond = 0.7
Start 3/12/01 1805, Finish 3/19/01 2305.
Sample RE16-01-3090, RE16-01-3091 collected
Sample represents high flow of spring snowmelt runoff

\\LouieRomero 5/17/01

1610 crew finished filtering, acidifying, + labelling samples
1625 samples submitted to SMO

5/11/02

3-21-01 Stream Profile Sample Collection, Springs, Wells, Cañon de Valle

crew Lonie Romero, Kevin Reid

Activities Today we will sample springs ~~and~~ wells in Cañon de Valle as part of stream profile sampling of the Peak runoff for snow melt.

Weather Sunny, warm @ 50°F

1040 Tailgate safety meeting conducted. We will be working under SSHASP 264 following LANL ER SOP 1.01, 1.02, 1.03, 1.04, 1.07, + LANL QAP, P-07

1055 Bottle sets + sampling equipment organized

1130 Horiba calibrated

1132 Well 16-2659

DTW = 5.63' Total Depth = 10.2' ~~11.3~~ KR 5/17/02 Height of Water = 4.57'

4.57' x ~~0.7865791~~ 2.47111 KR 5/17/02 L/ft = ~~3.6~~ 11.3 KR 5/17/02 L of water in well casing

11.3 ~~3.6~~ KR L x 3 = ~~10.8~~ 33.9 KR 5/17/02 L water to be purged before sampling

	pH	cond (ms/cm)	T °C
Initial Parameters	7.41	0.345	4.1
5 L	7.69	0.754	4.0
17 L	7.64	0.757	3.2
33 L	7.75	0.766	3.2

Sample RE16-01-3070, RE16-01-3071 collected

photo #14 taken, roll #1

1403 Well 16-2658

DTW 5.50' ~~Total Depth 10.37~~ KR Total Depth = 10.37' Height of Water = 4.8

4.87 ft x 2.47111 L/ft = 12.0 L/well volume

12.0 x 3 = 36 L to be purged before sampling

	pH	cond ms/cm	T °C
Initial Parameters	7.30	0.762	4.7
18 ~~12 L~~ KR	7.20	0.789	3.8
24 L	7.22	0.789	3.7
36 L	7.26	0.790	3.8

Sample RE16-01-3068, RE16-01-3069 collected

photo # 15, roll #1. Water ~~slightly~~ KR 5/17/02 Moderately turbid

Lonie Romero 5/17/02

1447 Well 16-2657

DTW = 0.70' Total Depth = 5.55' Height of Water = 4.84

4.84 ft x 2.47 1114/ft = 11.96 L per well volume

	pH	cond ms/cm	T °C
Initial Parameters	7.77	0.655	5.7
3L bailed	7.65	0.665	4.7

Well not recharging - Well sampled after 3L bailed.

sample collected	pH	cond ms/cm	T °C
8L bailed (sampling complete)	7.65	0.714	4.8

Sample RE16-01-3066, RE16-01-3067 collected

Photo #18, Roll #1 taken

1507 Surface runoff observed from 260 outfall. ≈ 2L/sec

1511 Well 16-2656

DTW = 4.51' Total Depth = 10.52 Height of water = 6.01'

6.01' x 0.61777 L/ft = 3.7 L per well volume

	pH	cond ms/cm	T °C
Initial parameters	7.75	0.857	5.2
6L	7.64	0.830	5.0
12L	7.80	0.874	5.1

Sample RE16-01-3064, RE16-01-3065 collected

Photo #20, Roll #1 taken

1615 samples stored in coolers

1620 crew departs site

5/17/02

3-22-01 Stream Profile Sampling Cañon de Valle

crew Kevin Reed, Louie Romero

Activities Today we will sample Peter Seep, Burning Ground Spring, and SWSC springs as part of stream profile sampling.

Weather Partly cloudy, ≈ 50 °F

1040 Tailgate safety meeting conducted. We will be working under SSHASP 264, following LANL ER SOP 1.01, 1.02, 1.03, 1.04, 1.07 + LANL QAP; P-07

1050 Samples from 3-21-01 are labelled, filtered, + preserved

1215 Samples submitted to SMO

5/17/02

3-26-01 Stream Profile Sampling: CDV springs + seeps

crew Kevin Reid, Louie Romero

Activities Today we will begin stream profile measurements in Cañon de Valle. Also we will sample Burning Ground, SWSC, and Peter Seep. Sampling of the springs and seep did not occur 3-22-01 as planned.

Weather High Clouds, moderate temp ≈ 50°F

1350 Tailgate safety meeting conducted. We will be working under SSHASP 264, following LANL ER SOP 1.01, 1.02, 1.03, 1.04, 1.07, + LANL QAPjP-07.

1355 Trung notified of activities.

1400 Bottle sets + field gear gathered

1438 Horiba calibrated according to manufacturers specs.

1440 Arrival to Head of Peter Seep.

Discharge = 100 mL/s pH = 7.23 cond = 0.376 mS/cm T = 9.5 °C

Sample RE16-01-3072, RE16-01-3073 collected

Sample collected from Head of Peter Seep

Flow in channel begins ≈ 10 m upstream from Head of Peter Seep

Photo #21, roll #1 taken

1500 SWSC spring

Discharge = 400 mL/s pH = 7.70 cond = 0.653 mS/cm T = 9.7 °C

sample RE16-01-3074, RE16-01-3075 collected

Photo #22, roll #1 taken

Flow Integrated sampler shut down.

1520 Burning Ground Spring

Discharge = 1.5 L/s pH = 7.60 cond = 0.675 mS/cm T = 10.5 °C

sample RE16-01-3076, RE16-01-3077 collected

photo #23, roll #1 taken

Flow Integrated sampler shut down

1620 Samples Filtered, preserved, acidified

1700 Samples submitted to SMO

5/01/02

5-27-01	Stream Profile Measurements: Cañon de Valle
crew	Kevin Reid, Louie Romero
Activities	Today we will make stream profile measurements in Cañon de Valle. We will measure discharge, pH, conductivity, and Temperature at several locations beginning at Peter Seep.
Weather	Overcast, cool ≈ 45°F
945	KR 5-27-01 Tailgate Safety meeting conducted. We will be working under SSHASP 264.
1017	Horiba calibrated according to Manufacturers specifications
1019	Head of Peter Seep. Location ID 16-2653. Stream profile loc #1 (station
	Discharge = 150 mL/s pH = 7.31 cond = 0.910 ms/cm T = 7.2°C
1021	Horiba calibrated again. Conductivity measurement appears to be consistent.
1034	Peter Seep, ≈ 3m downstream of well 16-2657 (station 4)
	Discharge = 600 mL/s pH = 7.65 cond = 0.793 ms/cm T = 6.8°C
1038	SWSC spring
	Power is down. Power worked yesterday
	Discharge = 330 mL/s pH = 7.70 cond = 0.653 ms/cm T = 9.5 °C
1042	Downstream of SWSC spring, at SWSC out, SP #3?
	Dscharge = 2.8 L/s pH = 7.65 cond = 0.751 ms/cm T = 7.0 °C
1049	16-5923 SP 5 renotation SP #6 (old notation) (station 5)
	Discharge = 3.5 L/s pH = 7.31 cond = 0.750 ms/cm T = 6.8°C
1058	16-5926 upstream of BG confluence SP #4? old notation: 16-2759
1058	Discharge = 3.3 L/s pH = 7.30 cond = 0.732 ms/cm T = 5.4°C (stat
1103	BG Spring
	Discharge = 22 L/s pH = 7.71 cond = 0.681 T = 9.5°C
1240	Donna Sharp joins Field crew
1310	Drop into canyon. Identify stream profile locations 1-16
1545	Exit canyon.
1605	Depart site

5/17/02

3-28-01 Stream profile Measurements, Stream Profile Sampling: Cañon de Valle
crew Kevin Reid, Louie Romero
Activities Today we will conduct stream profile measurements and sample 6 stream profile locations in Cañon de Valle.
Weather Overcast, cool ≈ 40°F
930 Tailgate safety meeting conducted. We will be working under SSHASP 264, following LANL ER SOP 1.01, 1.02, 1.03, 1.04, 1.07 + LANL QAP, P-07
935 Trung notified of todays field work.
1023 Horiba calibrated according to manufacturers specs
1025 Stream profile location #16, 16-5601
Discharge = 3.1 L/s pH = 9.20 cond = 0.815 ms/cm T = 3.6 °C
Sample RE16-01-3078, RE16-01-3079 collected
photo #24, roll #1 taken
1042 Stream profile location #15
Discharge = 4.9 L/s pH = 9.50 cond = 0.813 ms/cm T = 3.7°C
1051 Stream profile location #14
Discharge = 5.3 L/s pH = 9.45 cond = 0.800 ms/cm T = 3.7°C
1100 Stream profile location #13
Discharge = 5.3 L/s pH = 9.31 cond = 0.799 ms/cm T = 4.0 °C
Samples RE16-01-3080, RE16-01-3081 collected
photo 1, roll #2 taken
1108 Horiba recalibrated
1113 Stream profile location #12
Discharge = 4.8 L/s pH = 8.59 cond = 0.832 ms/cm T = 4.3°C
1118 Stream Profile location #11
Discharge = ~~8.~~ KR 3.3 L/s pH = 8.76 cond = 0.837 ms/cm T = 4.6 °C
1122 Stream Profile location #10
Discharge = 4.0 L/s pH = 8.86 cond = 0.822 ms/cm T = 5.1 °C
Samples RE16-01-3082, RE16-01-3083 collected
photo 2, roll #2 taken
1338 Horiba recalibrated

Louie Romero 5/12/02

1340 Stream profile location #7
Discharge = 5.0 L/s pH = 7.97 cond = 0.748 mS/cm T = 7.8 °C
1347 Stream profile location #8
Discharge = 2.7 L/s pH = 8.40 cond = 0.752 mS/cm T = 8.1 °C
1350 Stream profile location #9
Discharge = 3.3 L/s pH = 8.58 cond = 0.754 mS/cm T = 7.9 °C
1412 Stream profile location #8 sample collection
Samples RE16-01-3084, RE16-01-3085 collected
photo #3, roll #2 taken
Same sampling parameters as at 1347
1421 Stream profile location #7 sample collection
Samples RE16-01-3086, RE16-01-3087 collected
photo #4, roll #2 taken
Same sampling parameters as at 1340
1433 Stream profile location #4 sample collection
Discharge = 0.65 L/s pH = 8.01 cond = 0.835 mS/cm T = 8.7 °C
Samples RE16-01-3088, RE16-01-3089 collected
photo #5, roll #2 taken
1442 Stream profile location #3
Discharge = 1.0 L/s pH = 8.05 cond = 0.937 mS/cm T = 8.2 °C
1445 Runoff from 260 outfall ≈ 200 mL/s
1450 Battery replaced at SWSC spring. Power supply, not the problem. Instead a fuse in power supply cable has been blown. Need to replace fuse.
1615 Samples filtered, labelled, preserved.
1645 Samples submitted to SMO

5/17/02

04/02/2001 Monday
Phytoremediation Study of BG spring area
12:30 Annette Dietz (University of Tennessee) and Louie Romero arrive at WEPS field trailers. Annette Dietz is briefed on SSHASP 264 by Louie Romero. Tailgate meeting is conducted to cover todays activities which includes collecting 24 water samples and 26 soil samples ~~from~~ LR and 9 plant samples from BG Spring area.
13:15 Crew arrives at BG Spring. HORIBA water quality instrument is calibrated.
LR ~~1329~~ 1320 Sample RE16-01-3098, RE16-01-3099 is collected from the effluent of BG spring. pH 9.20; Cond. 0.636 ms/cm; temp. 12.4°C
the lab analysis for this sample are: ALKT; D24+018016; EPA 300; HEXP (3 bottles); LH3; METTAL+B; N15N14; NO2NO3; METTAL+B filtered.
13:37 Sediment sample is collected from between E1 and E2
sediment is dark brown-black clay with 20% sands ~~with~~ LR sized 3mm
13:42 1 collection point ~~LR~~ is just before the junction with the stream
sample collected 1 Liter Amber of water, (1) 4oz. amber jar of sediment
13:46 2 collected between B12 & A13
13:50 3 collected from between B10 & A11
13:56 4 collected from between B9 & A9
13:59 5 collected from between B7 & A8
14:01 ~~02~~ LR 6 collected from between B6 & C6
14:31 7 collected from between A7 & C5
14:28 8 collected from between A7 & C6
9 collected from between B5 & C7
10 collected from between C5 & A6
1337 11 collected from between A5 & C4
12 between C8 & B4
13 between B3 & C9
1414 14 between B2 & C10
15 next to C3
16 between A4 & A5
1444 17 next to C2

Louie Romero 5/17/02 cont. →

04/02/2001 monday continued

1419 ~~Colle~~ 18 LR 5/17/02 sample collected from between B1 & C1

bryophyte? / watercress

1451 19 sample collected from between C1 & A2

1455 20 sample collected from between A1 & B1

1500 I1 & I2 water collected from inside weir

sediment sample collected from new location flagged DS-01

sediment sample collected from new location flagged DS-02

sediment sample collected from new location flagged DS-I

~~15:10 Labelled, filtered, preserved sample and the delivered to~~

~~SMO~~ LR 5/17/02

5/17/2002

Louis Romero

04/03/01 Phytoremediation continued

11:00 Louise Romero and Annette Dietz arrive at HEPS field trailers.
tailgate meeting is conducted

1130 sample RE16-01-3098, RE16-01-3099 is filtered, preserved, labeled, then submitted to SMO

1300 Arrival at BG Spring. Redox reading are taken
1st reading at location B16-A17: -201.5 mV surface water
-162.9 mV sediment surface 2" from surface water
-34.7 mV 2" in sediment 4" from Surface water

1343 2nd location B4: -23.5 mV surface water
-46.0 mV sediment surface; 1" below surface water
-306.8 mV sediment 4" from surface water

3rd location is A7: -130.3 mV surface water
-139.8 mV 1" below surface water; sediment surface
3" into sediment
-408.7 4" below ~~to~~ surface surface water

4th location above weir: -185.4 mV surface water
-202.8 mV surface water
-494.1 mV 6" below surface water

plant samples will be collected

14:15 water cress? from area P1 (B2-C10)
grass long leaf greenish/yellow
monkey grass

14:30 area P3 (A9-B8)
grass long leaf
monkey grass
monkey like clover type
P3 3 plant samples collected
samples will be packed, then shipped to tennessee tomorrow
by L. Romero

L Romero 5/17/02

258

4/10/01 Quarterly Sampling CDV

crew Kevin Reid, Louie Romero

Activities Today we will begin quarterly sampling. We will sample well 16-2655, 90's line pond

weather Clear, windy ≈ 45°F

1015 Tailgate safety meeting conducted. We will be working under SSIIASP 264, Following LANL ER SOP 1.01, 1.02, 1.03, 1.04, 1.07 + LANL QAP, Irving notified of todays activities.

1057 Horiba calibrated

11:00 Well 16-2655

DTW = 3.98'

Total Depth = 10.2' 6.22

Height of Water = ~~6.24'~~ 6.22' X 2.47111 = 15.4 Liters per well volume

	pH	cond ms/cm	T °C
Initial	7.5	0.710	8
18 L bailed	8.0	0.740	6
30 L bailed	8.2	0.798	6
45 L bailed	8.3	0.803	6

Water very turbid

Samples RE16-01-3100, RE16-01-3101 collected

Photo 1, Roll #3 taken

1210 90's line Pond

pH = 10.57 cond = 0.403 ms/cm T = 16.7°C

Water very turbid.

Sample RE16-01-3128, RE16-01-3129 collected

photo 2, Roll #3 taken of crew sampling

photo 3, Roll #3 taken of samples

1400 Samples preserved, filtered, labelled

1415 Restricted access to canyons because of high gusty winds. Bill McCormick says it is dangerous to enter canyon

1515 Samples submitted to SMO

Kreid 5/17/02

4/11/01 Quarterly Sampling CDV
crew Kevin Reid, Louie Romero
Activities Today we will continue quarterly sampling. We will sample headwaters of Cañon de Valle and other locations according to access permission.
weather Partly cloudy, windy ≈ 40° F
915 Tailgate safety meeting conducted. We will be working under SSI HASP 264, following LANL ERSOP 1.01, 1.02, 1.03, 1.04, 1.07 and LANL QMP, P-07.
1025 Horiba Calibrated according to manufacturers instructions
1030 Arrival to Head waters of Cañon de Valle Sampling Station 16-5768
Discharge estimated to be 10 L/s pH = 7.90 Temp = 2.5 °C cond = 0.155 ms/cm
Water clear
Samples RE16-01-3130, RE16-01-3131 collected
Photo #5, roll #3 taken of samples.
1135 crew returns to vehicle, breaks for lunch
1450 SWSC spring
repairs made to power cable. Power supply back on line.
Power down from 3/27/01 → 4/11/01. no discharge record during this time.
Discharge = 600 mL/s pH = 9.11 cond = 0.828 ms/cm T = 9.4 °C
Samples RE16-01-3120, RE16-01-3121 collected.
Photo #6, roll #3 taken of samples
1515 Well 16-2657 bailed completely, left to recharge before sampling
1530 Well 16-2656
Depth to water = 4.75 Ft Total Depth = 10.4 Ft
5.65 ft of water * 0.61777 = 3.5 L per well volume

	pH	cond ms/cm	T °C
Initial Parameters	8.18	0.727	7.6
10 L bailed	8.17	0.733	7.6

Samples RE16-01-3102, RE16-01-3103 collected
Photo #7, roll #3 taken of samples

Louie Romero 5/12/02

1540 Peter Seep, Head
Discharge ≈ 0.5 L/s pH = 7.91 cond = 0.676 mS/cm T = 9.5 °C
Samples RE16-01-3124, RE16-01-3125 collected
photo # 8, roll # 3 taken of samples
Sample collected from Head of Peter Seep

1555 Well 16-2657
well bailed at 1515, now completely recharged
DTW = 0.65 ft Total Depth = 5.45 ft 4.8 ft × 2.4711 = 11.9 L

	pH	cond mS/cm	T °C
Initial Parameters	7.44	0.671	7.6
12 L bailed	8.44	0.734	6.4

Samples RE16-01-3104, RE16-01-3105 collected
Photo 9, roll 3 taken

1615 Burning Ground Spring
Discharge ≈ 2 L/s pH = 7.70 cond = 0.575 mS/cm T = 10.4°
Samples RE16-01-3122, RE16-01-3123 collected
photo 10, roll # 3 taken of samples

1650 Samples stored in coolers

1655 crew departs site

5/17/2002

4/17/01 Quarterly Sampling COV well 2658, 2659

crew Kevin Reid, Louie Romero

Activities Today we will sample wells 16-2658, 16-2659 and other locations in COV as time permit

weather clear, sunny ~ 60°F

1340 Tailgate safety meeting conducted. We will be working under SSHASP 264, following EANL ER SOP 1.01, 1.02, 1.03, 1.04, 1.07 + LANL QAP, P-07

1345 Trung notified of todays activities

1350 Bottle sets and sampling equipment assembled

1415 well 16-2658

DTW = 5.66 Total Depth = 10.24 4.58 ft of Water * 2.47111 = 11.3 L/well volume

	pH	cond ms/cm	T °C
Initial Parameters	6.60	0.809	6.9
Midpoint ~~Final~~ KR 5/17/2002 Parameters (20 L bailed)	7.07	0.737	5.7
Sampling Parameters (30 L bailed)	7.12	0.728	5.4

Samples RE16-01-3106, RE16-01-3107 collected

Water slightly turbid

photo 13, roll #3 taken of sampler

1520 Well 16-2659

DTW = 5.96' Total Depth = 10.2' 4.24 ft of water * 2.47111 = 10.5 L/well vol

	pH	cond ms/cm	T °C
Initial	7.63	0.711	6.7
10 L	7.75	0.717	6.1
20 L	7.77	0.718	6.1
30 L	7.80	0.720	6.1

Samples RE16-01-3108, RE16-01-3109 collected

photo 14, roll #3 taken of samples

Water very clear

1632 ~~EC~~ KR 4/17/01 Fish ladder SEEP

pH = 7.03 cond = 0.337 ms/cm T = 10.4 °C

location sampled approximately 100 m downstream from old flume.

Samples RE16-01-3126, RE16-01-3127 sampled. Louie Romero 5/17/2002

Fish ladder seep con't
photo # 15, roll #3 taken.
White, powdery film observed in channel upstream of (≈ 200m)
sample location. Unsure of origin.

1703 Samples stored in coolers
1710 Crew departs site

5/17/2002

4/18/01 Quarterly Sampling, Martin Spring Canyon

crew Kevin Reid, Louie Romero

Activities Today we will sample Martin Spring, well 16-6293, 16-6294, + 16-6295. and other locations if time permits

weather Sunny, clear ~ 55°F

1245 Tailgate safety meeting conducted. We will be working under SSHASP 264, following LANL ER SOP 1.01, 1.02, 1.03, 1.04, 1.07 and LANL QAP; P-07, and LANL ER SOP 6.01, 6.02, 6.03, 6.13.

~~1345 Tailgate safety~~ KR 4/18/01

1320 Earlier activities today included filtering, acidifying, & labelling samples collected 4/17/01. These samples were submitted to SMO at 1130.

1325 Horiba calibrated according to manufactures specification

1330 Well 16-6294

DTW = 5.67 ft Total Depth = 11.57 5.90 ft of water x 2.47111 = 14.6 L/well vol

	pH	cond ms/cm	T°C
Initial Parameters	6.69	0.596	7.7
14 L bailed	7.04	0.407	6.9
28 L bailed	7.03	0.406	6.8

~~42 L bailed~~ KR 4/18/01 samples collected after 28 L bailed. Parameters have stabilized. Samples RE16-01-3114, RE16-01-3115 collected

Water slightly-moderately turbid

photo 17, roll 3 taken of sample

1428 Well 16-6295

DTW = 2.97 ft Total Depth = 9.7 ft 16 L per well volume

	pH	cond	T°
Initial Parameters	7.31	0.423	11.3
16 L bailed	7.13	0.476	10.2
32 L bailed	7.17	0.483	10.1
38 L bailed	7.22	0.482	10.1

Parameters stabilized.

Sample RE16-01-3116, RE16-01-3117 collected

photo 19, roll 3 taken. water moderately turbid

Louie Romero 5/17/02

1522 Martin Spring

Discharge = 60ml/s pH = 7.75 cond = 0.880 ms/cm T = 11.0 °C

Samples RE16-01-3118, RE16-01-3119, Photo 20, roll 3 taken

1545 Well 16-6293

DTW = 10.05 ft Total Depth = 10.17 ft

pH = 7.85 cond = 0.412 ms/cm T = 9.0 °C

not enough water to collect samples.

Field screening 125 ml collected

no photo, no samples collected

1610 Well 16-2665 - dry

1612 Well 16-2666 - dry

1625 Samples stored in coolers

1640 crew departs site

5/17/2002

4-19-01 Quarterly Sampling: Sample prep & submittal to SMO

crew Kevin Reid, Lonie Romero

Activities Today we will ~~filtered~~ KR Filter, label, acidify, and submit samples collected 4-18-01.

945 Tailgate safety meeting conducted. We will be working under SSHASP 269, following LANL ER SOP 1.01, 1.02, 1.03, 1.04, 1.07, 6.01, 6.02, 6.03, and LANL QAP; P-07.

Weather Gusty winds, partly cloudy ≈ 60°F

1015 Work in chemical trailer begins: filtering, preserving, and labelling

1130 Samples submitted to SMO.

5/17/2002

4/23/01	Field Screening with RDX Dtech Kits
Crew	Kevin Reid, Lonie Romero
Activities	Today we will continue screening for RDX with the Dtech Kits. Also we will organize field trailer in preparation of inspection
Weather	Partly cloudy ≈ 55°F
945	Tailgate safety meeting conducted. We will be working under SSI/HASP 264.
1010	John Tymkowich on site. John advises crew of inspection and provides information regarding waste characterization.
1030	General Housekeeping and organization work performed
1245	crew breaks for lunch
1315	Field screening work for RDX ~~st~~ begins
1710	crew departs site

KRD
5/17/2002

4/24/01 Downloading of Dataloggers
crew Kevin Reid, Louie Romero
Activities today we will download dataloggers in Canon de Valle and Martin Spring canyon. Also we will collect LLA samples as time allows.
1000 Tailgate safety meeting conducted. We will be working under SSHASP 264
Weather Sunny, clear ≈ 60° F
1026 Well 2659 datalogger downloaded to '26590424.dat'
1100 Martin Spring
Damage to LLA autosampler + Flow Integrated sampler.
Both samplers have been overturned. Cause of distrubance unknown. Possible explanations could be strong winds or wildlife disturbance. Entire tray of LLA samples has been lost. Missing LLA period from 3-11-01 → 4/22/01.
Samplers reestablished. Datalogger downloaded to 'MS0424.dat'. Flowlogger downloaded
LLA back on line manual sample collected
First LLA sample will be 4/26/01. Bottle 22 on 4/25/01

- QA of conductivity + Temp probe

MS water	T °C	cond ms/cm	pH
Horiba	10.4	0.460	7.3
Automated	9.72	0.35	—

Automated probe placed in autocal solution. Conductivity measurement = 0.451 ms/cm. Conductivity probe reliable, accurate. Know solution conductivity value = 0.449 ms/cm.

- LLA samples collected: 3-1-01, 3-9-01, 4-24-01

1200 samples stored in CRZ
1215 crew departs site

Kevin R
5/17/2002

4/25/01 Quarterly Sampling Lower CdV locations

crew Keven Reid, Louie Romero

Activities Today we will sample three locations: 1) Fishladder confluence w/ CdV 2) CdV confluence w/ water canyon + 3). Water canyon

Weather Sunny, clear ≈ 65°F

900 Tailgate safety meeting conducted. We will be working under SSHASP Following LANL ER SOP 1.01, 1.02, 1.03, 1.04, 1.07, LANL QAPj P-07 + LANL ER SOP 6.01,6

1001 Arrival to confluence of CDV and Fishladder Canyon

1003 Horiba calibrated according to manufacturer specs

1007 Sample RE16-01-3140, RE16-01-3141 collected
Water very cloudy = very turbid
Discharge ≈ 200ml/sec at waterfall above sampling pool
water infiltrates into alluvium ≈ ~~3m~~ 1m past sample pool
pH = ~~7.5~~ 8.68 cond = 0.447 ms/cm T = 5.8 °C
photo ~~21~~ 22, roll 3 taken of samples

1055 Arrival to Confluence of CDV and Water Canyon
Samples collected at weir ≈ 20m upstream from water canyon confluence. Flow in canyon intermittent. Flow went subsurface ≈ 100m upstream of 'big bend' in canyon. Flow resumed ≈ 1000m upstream of water canyon confluence
Water clear
Discharge = 100mL/s pH = 8.26 cond = 0.545 ms/cm T = 7.0
Samples RE16-01-3132, RE16-01-3133 collected
photo 24, roll 3 taken

1130 Arrival to Water canyon ES14-18 station
Station is located ≈ 50m upstream from CDV confluence
Water clear. Staff gage water height = 0.84 ft?
Discharge ≈ 5L/sec pH = 9.23 cond = 0.582 ms/cm T = 12.1
Sample RE16-01-3142, RE16-01-3143 collected
photo 25, roll 3 taken

1400 Return to vehicle. Approximately 2 hour travel time from Water canyon confluence to the well pair.

Louie Romero 5/1/01

1500 Samples filtered, preserved, + labelled
1640 Samples submitted to SMAO.

5/17/2002

4/27/01 Download of Data + Surveying

crew Kevin Reid, Louie Romero, Elmer Alva

Activities Today we will download dataloggers in CdV and survey sample locations in MOAR

Weather clear, sunny ~ 60°F

945 Tailgate safety meeting conducted. We will working under SSHASP 264

1000 arrival to 16-~~2656~~ 2658 (LR); current battery voltage 10.15 (newer 1/18/01)
all data is downloaded to file '26580427'

1025 arrival to BG spring
campbell scientific ~~data~~ ~~is~~ all data is downloaded to file 'BG 0427'
battery was installed on ~~4/19/00~~ 11/9/00 and its current voltage is ~~10.71~~ LR 9.90
Flow data logger is downloaded; current batt. voltage is 11.9
BG LLA samples are collected ~~2/25~~ 2/25/01 → 4/
missed sample on 3/11. LLA sample is collected today and the program is restarted for 48 hour samples

1115 arrival to 16-2656; ~~batt~~ voltage before dowlord 10.46
all data is downloaded to file '26560427'
battery voltage after download 10.23

1430 survey work complete at MOAR. survey equipment returned to storage trailer at MOAP

1440 Crew departs site

Kevin

4/30/01 Downloading of Dataloggers + Field maintenance

crew Kevin Reid, Louie Romero

Activities Today we will download dataloggers at 16-2655 + SWSC spring.
Also we will restart the LLA sampler at Martin and start Flow Integrated Samplers

weather sunny, breezy ≈ 65°F

Tailgate 1500, tailgate safety meeting conducted we will be working under SSHASP 264

1507 Well 16-2655
Datalogger down loaded to "26550430.dat"

1609 Martin Spring
- LLA sampler displaced again. Samples lost.
Sampler restarted. Bottle #1 will sample 5-2-01. Manual LLA sample collected stored in sample carosel
- Flow Integrated sampler set to start at 1700 4/30/01
MS discharge = 0.05 L/s * 604800 s/week = 30240 L/week

need 8L/week, 100 mL per sample volume → 80 pulses per week
$\frac{30240}{80}$ = 378L/pulse : set to flow logger
- Flow logger down loaded

1641 Burning Ground Spring
Discharge = 1L/s
- Flow Integrated Sampler set to start at 1700 4/30/01
pulse interval = 7560 Liters : 100 mL sample vol : 80 samples/week
previous pace volume = 1600 Liters, new vol = 7560
- Conductivity probe elevated above muddy substrate of spring pool. May affect readings

1655 SWSC spring
data logger downloaded

1715 Precipitation sample collected for Isotope analysis

1720 crew departs site

Kevin

5/1/01 Stream Profile measurements + 260 HouseKeeping

crew Kevin Reid, Louie Romero, Peter Gram

Activities Today we will conduct stream profile measurements in Martin Springcanyon. Also we will cover spoils ~~piles~~ piles behind 260. KR 5/17/02

weather Clear, sunny ~63°F

1010 Tailgate safety meeting conducted. We will be working under SSHASP 264, + following LANLERSOP: 1.01, 1.02, 1.03, 1.04, 1.07, 6.01, 6.02, 60.3.

1020 sampling equipment gathered, Horiba calibrated according to manufacturers

1040 Arrival to MSpring
at weir flow = 50mL/sec; pH = 7.44; cond. = 0.378 ms/cm; temp = 10.7°

1050 station 1 16-5920
F = 17 mL/s; pH = 8.24; cond. = 0.449; temp. = 15.3°C

1110 station 2 16-5921 no water present; standing water pools exist 1 meter downstream, and ~6 meters above parameters of downstream pool => pH = 7.86; cond = .362; temp = ~~12~~ 11 LR 5/17

1422 streamprofile location #1
Sample RE16-01-3134, RE16-01-~~3135~~ 3135 collected
Same screening parameters as 1056.
photo 28, roll 3 taken of samples

1440 Stream profile location #6 - dry

1448 Stream profile location #5 - dry, no flow observed
Low flow conditions: ponded water in depressions, no flow observed in channel between station #1 => Station #6

1515 sample filtered, acidified, and stored in coolers w/ blue Ice

1600 crew departs site

5/17/2002

5-2-01 Stream Profile Measurements Cañon de Valle

crew Kevin Reid, Louie Romero

Activities Today we will submit sample collected 5-1-01 and conduct stream profile sampling in Cañon de Valle.

weather clear, sunny ≈ 70°F

1040 Tailgate safety meeting conducted. Special topic of the day is PPE. We will be working under SSI/ASP 264 + following LANL ER SOP: 1.01, 1.02, 1.03, 1.04, 1.07, 6.01, 6.02, 6.03 + LANL QAP, P-07.

1100 Sample from 5-1-01 is labelled + submitted to SMO

1210 Equipment gathered for field operations

1220 Crew signs in at Weston Trailers

1250 Stream profile location #16
Discharge = 1 L/s
Horiba calibrated according to manufacturers specs
pH = 7.76 cond = 0.637 ms/cm T = 13.6 °C
Samples RE16-01-3144, RE16-01-3145 collected
water clear. Photo 29, roll 3 taken of samples

1310 Stream Profile location #15
Discharge = 1.3 L/s pH = 8.35 cond = 0.626 ms/cm T = 12.7 °C

1320 Stream Profile location #14
Discharge = 1.5 L/s pH = 8.10 cond = 0.634 ms/cm T = 12.8 °C

1327 Stream Profile location #13
Discharge = 1.8 L/s pH = 7.75 cond 0.616 ms/cm T = 12.2 °C
samples RE16-01-3146, RE16-01-3147 collected
water clear. Photo 30, roll 3 taken of samples

1355 Stream profile location #12
Discharge: 0.8 L/s pH = 8.88 cond = 0.611 ms/cm T = 16.3 °C

1400 Stream Profile location #11
Discharge = 1.1 L/s pH = 9.10 cond = 0.607 ms/cm T = 16.7 °C

1406 Stream Profile location #10
Discharge = 1.5 L/s pH = 8.50 cond = 0.601 ms/cm T = 16.4 °C

Louie Romero 5/17/02

1415 Stream Profile Location # 9
Discharge = 1.3 L/s pH = 8.36 cond = 0.573 ms/cm T = 16.4 °C

1420 Stream Profile Location # 8 16-5996
Discharge = 2.0 L/s pH = 8.56 cond = 0.582 ms/cm T = 15.3 °C

1426 Stream Profile Location # 7 16-5927
Discharge = 2.5 L/s pH = 8.01 cond. = 0.580 ms/cm T = 13.5 °C

1439 Stream Profile Location ~~#6~~ 5 16-
Discharge 2.8 L/s pH = 7.68 cond = 6.23 ms/cm T = 13.5 °C

time

1433 Burning Ground Spring ~~16-~~ LR
Discharge = 2.1 L/s pH = 7.49 ; cond. = 525 ms/cm ; temp = 11.1 °C

1443 ~~Stream Profile Location # 5~~ LR 5/17/02 LR SWSC spring
Discharge = ~~2.1~~ LR 500 mL/s pH = 7.92 Cond. = 5.65 ms/cm T = 10.6 °C

1457 Stream Profile Location # 4 PS foot
Discharge = ~~500~~ LR 100m mL/s pH = 7.61 Cond. = 6.23 ms/cm T = 13.4 °C

1502 Stream Profile Location # 3
Discharge 700 mL/s pH = 8.06 Cond = 6.34 T = 12.5

1506 Stream Profile Location # 2 (PS head)
Discharge = 20 mL/s pH = 7.90 Cond = 6.05 T = 12.3

15h Stream Profile Location # 1 is dry

Stream Profile Location #6
1519 discharge = 2.1 L/s pH = 7.75 Cond = 0.630 T = 12.5

1600 Samples filtered, acidified, labelled.

1635 Clean slip obtained

1648 Samples submitted to SMO

5/17/2002

5-3-01 Stream Profile Sampling: Cañon de Valle

crew Kevin Reid, Louie Romero

Activities Today we will collect stream profile samples at four locations in Cañon de Valle

weather Overcast, cool ~ 45°F

900 Tailgate safety meeting conducted. Special topic of the day is 'Walking on uneven terrain, and carrying heavy loads'. We will be working under SSHASP 264, following LANL ER Sop's 1.01, 1.02, 1.03, 1.04, 1.07, 6.01, 6.02, 6.03 and LANL QAPj-P07.

905 Sample bottles + field equipment gathered

Clean slip obtained at 8:30

939 Horiba calibrated according to manufacturers specs

940 Stream Profile location #10

pH = 8.65 cond = 0.625 ms/cm T = 8.6 °C

Samples RE16-01-3148, RE16-01-3149 collected

photo 31, roll 3 taken, water clear

1003 Stream Profile location #7 16-5927

pH = 8.38 cond = 0.602 ms/cm T = 9.4 °C

Samples RE16-01-3150, RE16-01-3151 collected

photo 32, roll 3 taken, water clear

1029 Stream Profile location #2 16-2653 Peter Seep Head

pH = 7.74 cond = 0.599 ms/cm T = 11.2 °C

Samples RE16-01-3152, RE16-01-3153 collected

photo 34, roll 3 taken, water has some algae in it.

1040 Stream Profile location #4 16-5995 Peter Seep Foot

pH = 7.95 cond = 0.635 ms/cm T = 10.2 °C

Samples RE16-01-3154, RE16-01-3155 collected

photo 35, roll 3 taken, water clear

1055 SWSC spring

Flow Int sampler kicked off 3780 L/pulse

Discharge = 0.5 L/s set to start at 1200 5-3-01

Louie Romero 5/17/01

1057 Burning Ground Spring
Flow Integrated Sampler set to start at 12:00 5-3-01
1110 Martin Spring
Flow Integrated Sampler set to start at 1200 5-3-01
1120 Samples Filtered, acidified, labelled
1245 Samples submitted to SMO

5/17/2002

5/4/01 Field Screening

Crew Kevin Reed, Louie Romero

Activities Today we will conduct Field screening for RDX, B+B- of stream profile samples and Quarterly samples

Weather Rain; sleet ≈ 33°F

Tailgate safety meeting conducted. We will be working under SSHASP 264. Special topic of the day is Laboratory and office ergonomics.

Louie Romero 5/17/2002

5/9/01 Collection of Flow Integrated Samples

Crew Kevin Reid, Louie Romero

weather overcast, wind gusts, ≈65°F

Activity Today we will collected flow integrated samples from Burning Ground, Martin, and SWSC springs. Also we will adjust flow loggers to record data for 80-day intervals

1400 Tailgate safety meeting conducted. We will be working under SSHASP 269.

1438 Burning ground Spring
Flow Logger data down loaded. Data interval set to 80 days. Horiba calibrated
Flow Integrated = pH = 7.2 cond = 0.709 ms/cm T = NA
6.5 liters Flow Integrated sample collected
Sample RE16-01-3158, RE16-01-3159 collected
Photo 1, roll 4 taken of samples
Weekly Flow Integrated sample 5/3/01 → 5/9/01
this line was not used LR 5/11/01

1505 SWSC Spring
Flowlogger downloaded. Data Partition set to 80 days
Flow Integrated Sampler collected 4.2 L
pH = 7.89 cond = 0.650 ms/cm
Samples RE16-01-3136, RE16-01-3137 collected
photo 2, roll 4 taken of samples
weekly Flow Integrated Sample

1542 Martin Spring
Flowlogger downloaded. Data partition set to 80 days
Flow Integrated Sampler collected 7.3 L
pH = 8.90 cond = 0.383 ms/cm
Samples RE16-01-3156, RE16-01-3157 collected
photo 3, roll 4 taken of samples
weekly Flow Integrated Samples

Louie Romero 5/11/01

1605 samples Filtered, preserved, labelled
1645 samples submitted to SMO

5/17/02

6/14/01 Collection of LLA samples in Martin Spring Canyon

crew Kevin Reid, Louie Romero

Activities Today we will collect LLA samples from MS canyon

weather Sunny ≈ 80°F

0915 Tailgate safety meeting conducted

1000 Samples collected from autosampler
24 samples collected beginning 4/30/01 and
ending 6/13/01.
Auto sampler restarted. First sample (bottle #1) will
be collected 6/16/01. Thereafter, every other day.

1145 Samples stored at TA-16 field trailer
crew departs site

5/17/2002

6/19/01: Download Data from Dataloggers, Collection of LLA samples

Crew: Louie Romero, Kevin Reed

Activities: Today we will download data loggers and collect LLA samples from Burning Ground Spring

weather: Sunny, warm ≈ 85°F

1345: Tailgate safety meeting conducted

1415: Burning Ground Spring

Flow logger Interrogated

CR10X downloaded to 'BG0619.dat'; Logger-clock set ahead 1hr

LLA Samples collected, Autosampler restarted

LLA samples start 5/1/01 → 6/12/01

Flow Int Sampler

Discharge ≈ 0.5 L/s x 604800 = 302400 L/week x $\frac{1}{100 \text{ pulse}}$ = 3024 L/pulse

to collect 10 L in one week

Pacing reset to 3024 on flow logger

Flow Int sampler set to start at 1700 6/19/01

Flow measurements adjusted.

Bubbler Flow meter recalibrated. Bottom air hose had moved. Repositioned.

Previously recorded ≈ 47 mm, actual measurement = 38 mm

recalibrated

1450: SWSC spring

Discharge ≈ 25 ml/s x 604800 = 15120 L/w x $\frac{1}{100 \text{ pulse}}$ = 151 L/pulse

CR10X downloaded to 'swsc0619.dat'

Flow logger interrogated. Flow Int set to start at 1700 06/19/01

Maintenance

1) Conductivity probe repositioned in water. previously it had been 1/2 out of water

2) weir reservoir cleaned ≈ 2 gallons of sediment was removed from weir reservoir. sediment had just about filled up to V-notch

3) Cond probe cleaned w/ wire brush + repositioned in water

Louie Romero 5/17/2002

1512 well 2656
Datalogger downloaded to '2656 0619.dat'
Datalogger clock reset : previously it was
1 day + 2 hrs slow.
Time corrected

1527 well 16-2658
Datalogger downloaded to '26580619.dat'
Datalogger clock reset ; previously it was 5 hrs slow
Time corrected

1608 Martin Spring
Discharge ≈ 0.025 L/s Flow Pacing set to 150L/pulse
Datalogger downloaded to 'ms0619.dat'
Flow logger interrogated
Flow int sampler set to start at 1700 6/19/01

1630 crew departs site
LouiERonEGO 5/17/2002

06/21/2001

10:00 Crew of Lorne Romero and Elmer Alcon will download data from 16-2659 and 16-2655

10:15 Tailgate meeting is conducted

10:30 16-2659 data is downloaded into '26590621.dat'

12:09 16-2655 data is downloaded into '26550621.dat'

12:30 Crew departs the site.

Romero 5/17/2002

6/26/2001 Tuesday

Phyto Remediation study continued.

9:45 Crew of Lovie Romero and Annette Dietz arrive at KFPS field trailers

Normal Phytoremediation activities will occur. Water, sediment, and plant samples will be collected.

1000 Tailgate Safety meeting is conducted. Work will be under SSHASP 264

10:47 arrive at BG spring after shuting off auto samplers at Martin Spring, SWSC spring and BG spring. The auto sampler was collecting ~~FR~~ flow integrated samples.

10:58 Sampling of flagged location will begin at this time

~~Samples collected location~~ LR 5/17/2002

LR ~~1104 1104 E1, S1 between A17 & B16~~ LR 5/17/02

~~E1 one liter water, 4oz sediment~~ LR 5/17/02

	sample collected	description	location
1104	E1	effluent 1L H_2O, 4oz sediment	between A17, B16
1104	E2	effluent 1L H_2O, 4oz sediment	between A17, B16
1109	1	1L H_2O ; 4oz sediment	between B14, A15
1117	2	1L water; 4oz sediment	between B12, A13
1119	3	1L water; 4oz sediment	between B10, A11
totals	5 samples	5L water 5 (4oz) sediment	5 locations

Crew evacuates the canyon due to ~~rain~~ incoming rain storm.

Lovie Romero

5/27/01 Wednesday
Crew of Louie Romero, Annette Dietz, and Kevin Reid arrive at the HEPS field trailers. Today we will continue the phytoremediation sampling. Collect and submit the flow integrated samples.
Tailgate meeting is conducted
4:50 Arrivat to Burning Ground Springs

	sample collected	description	location
1008	4	1 L water; 4 oz sediment	between A9, B8
1011	5	1 L water; 4 oz sediment	between B7, A8
1016	6	1 L water; 4 oz sediment	between B6, C7
1025	7	1 L water; 4 oz sediment	between A7, C6
1024	8	1 liter water; 4 oz sediment	between C6, A8
1032	9	1 Liter water; 4 oz sediment	between B5, C7
1028	10	1 L water; 4 oz sediment	between A6, C5
1038	11	1 L water; 4 oz sediment	between A5, C4
1045	12	1 L water, 4 oz sediment	between B4, C8
1049	13	1 L water, 4 oz sediment	between B3, C9
1054	14	1 L water, 4 oz dir sediment	between B2, C10
1101	15	1 L water; 4 oz sediment	between C3, island
1106	16	1 L water; 4 oz. sediment	btween A4, A5, island
1111	17	1 L water, 4 oz sediment	between A3, C2
1120	18	1 L water, 4 oz sediment	between B1, C1
1115	19	1 L water, 4 oz sediment	~~between~~ LR next to C1 towards A
1123	20	1 L water, 4 oz sediment	between A1, B1
1127	I 1	1 L water, 4 oz	at weir
1129	I 2	1 L water 4 oz sediment	at weir
1130	DS-I	collected from island between C-4 C-8	~~plant sample~~ 4 oz soil LR 5/17/02
	DS-02	Collected at flag	~~plant sample~~ LR 5/17/02 4 oz soil
	DS 01	collected at flag	~~plant sample~~ LR 5/17/02 4 oz soil
1140	P1	T= torreyochloa	plant sample
	P1	B= bryophyte	plant sample
	P1	M= mimmlus	plant sample

Continued →

LR Louie Romero 5/17/02

6/27/2001 wednesday continued

1150 P3 plant sample T= torreyochloa
P3 plant sample m= mimulus
P3 plant sample S= sidalcea ??

1205 P2 A = agnostis plant sample
P2 Y= yellow flower plant sample
P3 R= berry bush? plant sample

total samples collected:
(24) 1 Liter amber bottle water sample
(27) 4 oz amber jar Sediment sample
(9) ziplock bag plant samples
60 total samples Collected

1220 Redox readings
weir surface water -14.1 mV
soil surface -40.3 mV ~3in below surface water
below soil surface -476.1 mV
A7 surface water ~~+0.7mV~~ LR -50.1 mV
sediment surface ~~+9.1mV~~ LR -52.3 mV
below sediment surface -108.1 mV
B4 surface water +0.7 mV
Sediment surface +9.1 mV
below sediment surface -24.2 mV
B16 A17 surface water +3.2 mV
Sediment surface +14.9 mV
below sediment surface +51.6

Flow integrated samples were collected today also.

10:30 SWSC spring RE16-01-3202; RE16-01-3203 sample collected
~~Flow = 10L~~ 5/7/02 Total volume collected 10L; cond= 0.696; pH 6.65

11:00 BCG Spring RE16-01-3204; RE16-01-3205 Collected
total volume= 8L; Cond= 0.514 ms/cm; pH= 8.18

11:30 Martin Spring RE16-01-3200; RE16-01-3201 collected
volume= 12.5L; Cond= 0.429 ms/cm; pH=8.61

~~LONE PINE~~ 5/10/2002

Continued →

6/27/2001 Wednesday Continued

1320 Arrival to SMO after filtering, preserving and labeling of sample bottles.

Samples are relinquished to Daylene Valdez.

Louie Romero 5/17/2002

7-16-01 Quarterly Sampling

crew Kevin Reid, Louie Romero

Activities Today we will begin quarterly sampling. We plan to sample: Fish ladder Seep, 16-6295, 16-6294, 16-6293, + Martin Spring

Weather Partly cloudy ≈ 85°F

1100 Tailgate safety meeting conducted. We will be working under SSHASP 264, following LANL-ER SOP's 1.01, 1.02, 1.03, 1.04, 1.07, 6.01, 6.02, 6.03, LANL QAP; ~P07

1135 Fish ladder Seep ~ location dry

1525 Headwaters Cdk RE16-01-3196; RE16-01-3197

Discharge ≈ 0.2 L/s pH = 6.58 cond = 0.317 ms/cm T = 18.6°C

Samples RE16-01-3196 + RE16-01-3197 collected

photo 1, roll 1 taken

water clear

1640 crew returns to trailers

samples stored in refridgerator

1645 crew departs site

5/17/2002

7/18/01 Wednesday

Quarterly sampling continued. Crew of Louie Romero and Elmer Alcon arrive at HEPS field trailers. Today we will sample 16-2659, 16-2658, and Burning Ground spring.

Tailgate meeting is conducted

All equipment and bottles are loaded into the bed of the ATV.

1034 Arrival to 16-2659 24" of standing water is present in well (DTW = 7.7)

HORIBA is calibrated pH 8.06; cond. 0.938 ms/cm; temp. 13.9°C

~~1034~~ 3 well volumes are purged

1034 RE16-01-3168; RE16-01-3169 is collected

11:30 Arrival to 16-2658 depth to water is measured ~~at~~ to be 6.0'

3 well volumes are purged cond. 0.734 ms/cm; pH 8.05; temp 14.3°C

cond. 0.723 ms/cm; pH 7.51; temp 13.7°C

cond. 0.720 ms/cm; pH 7.39; temp 13.4°C

11:46 RE16-01-3166; RE16-01-3167 is collected

12:10 arrival to BG-Spring pH 8.26; cond. 0.551 ms/cm; temp. 12.7°C

12:15 RE16-01-3186; RE16-01-3187 is collected

12:30 crew exits the canyon. Samples will be submitted tomorrow since we are waiting an update to the COCs associated with the springs since 2 additional liter of water are required for the HEXPMODQC order code.

Louie Romero 5/17/2002

7/19/01 thursday

11:00 Crew of Louie Romero and Elmer Alcon arrive at HEPS field trailers.
Karen Schultz-Paige notified Louie Romero that we do not need to submit the 2 additional liters of water for HEXPMODQC, so original COCs will be used.
All samples collected yesterday are labeled.

13:00 Samples are submitted to SMO

Louie Romero 5/17/2002

6.51
10.6

7/23/01 Quarterly Sampling

crew Kevin Reid + Louie Romero

Activities Today we will conduct quarterly sampling of well 16-2656, 16-2657, Peter Seep, SWSC spring, and Burning Ground spring effluent.

1030 Tailgate safety meeting conducted. We will be working under SSHASP 264, following ~~SOP~~ KR LANL-ER-SOP 1.01, 1.02, 1.03, 1.04, 1.07, 6.01, 6.02, 6.03, + LANL QAPj-P-07

1045 Bottle sets and sampling equipment gathered. Horiba calibrated.

1313 Well 16-2656

DTW = 6.51 TD = 10.6 Height of water = 4.09

1L of water bailed pH = 6.62 cond = 0.610 ms/cm T = 14.8 °C

2.2L of water bailed pH = 6.33 cond = 0.590 ms/cm T = 19.6 °C

Samples RE16-01-3162 RE16-01-3163 collected

photo 5 taken

weather, partly cloudy, warm ≈ 85°F

1350 Peter Seep - location does not have enough water to sample. ≈ 0.5 cm deep pool at sample location

1355 Well 16-2657 DTW = 4.65'

Well not purged prior to sampling because of low water conditions

pH = 6.76 cond = 0.718 ms/cm T = 17.6 °C

Samples RE-16-01-3164 collected ✓, ~~RE16-01-31~~ KR 5/17/02 ~~collected~~ KR 5/17/02 RE16-01-3165 not collected

6L of water in casing; HEXP, HEXPMOD, EPA300, ALKT, METALS+B (UFD), NO_2NO_3, Field collected

photo 7 taken

1408 SWSC spring

Discharge = 0.010 L/s pH = 8.19 cond = 0.501 ms/cm T = 17.3 °C

Samples RE16-01-3184, RE16-01-3185

photo 6 taken

1445 BG Spring Discharge ≈ 0.5 L/s Battery replaced for CR10X datalogger

1447 BG Effluent. Horiba calibrated

pH = 8.20 cond = 0.697 ms/cm T = 17.5°C

Sample RE16-01-3188, RE16-01-3189 collected

photo 8 taken

Louie Romero 5/17/2002

1515 Samples preserved, filtered, labelled
1705 Samples stored in refrigerator
1715 Crew Departs site

5/17/02

7/24/01 Quarterly Sampling

crew Kevin Reid, Louie Romero

Activities Today we will conduct quarterly sampling of Martin spring, Martin spring storm water filters, and wells located in Martin Spring canyon

weather Partly cloudy, ≈ 85°F

1300 Tailgate safety meeting conducted. We will be working under SSHASP 264. We will be following LANL-ER-SOP 1.01, 1.02, 1.03, 1.04, 1.07, 6.01, 6.02, 6.03 + LANL QAPj-P07

1425 Horiba calibrated

1428 Martin spring
Discharge ≈ 20 mL/s pH = 7.07 cond = 0.494 ms/cm T = 16.7°C
samples RE16-01-3178, RE16-01-3179 collected
photo 9 taken

1443 Martin Spring Upper Storm Water Filter
pH = 8.58 cond = 0.437 ms/cm T = 15.9°C
samples RE16-01-3180, RE16-01-3181 collected
photo 10 taken

1503 Martin Spring Lower Storm Water Filter
pH = 7.69 cond = 0.431 ms/cm T = ~~17.0~~ 16.6°C KR 7/24/01
samples RE16-01-3182, RE16-01-3183 collected
photo 11 taken
Horiba calibrated again prior to measurements
moth parts observed in sample water

1530 Well 16-6293
DTW = 10.25' TD = 10.5' not enough water to sample

1605 Samples filtered, preserved, labelled

1650 Samples submitted to SWO

5/17/2002

294

7/25/01 Quarterly Sampling

crew Kevin Reid, Louie Romero, Doug Barney & Eloy Trujillo (ESH-5)

Activities Today we will sample wells 16-6294, 16-6295, + 16-2655.

Weather Partly cloudy ≈ 80°F

0900 Tailgate safety meeting conducted. We will be working under SSHASP 264. We will be following LANL-ER-SOP 1.01, 1.02, 1.03, 1.04, 1.07, 6.01 6.02, 6.03, + LANL QAPj - P07

0944 Well 16-6294

DTW = 10.41 TD = 10.85

pH = Na cond = Na T = Na °C

Sample RE16-01-3174 collected D_2H O_{18} O_{16}

Only AIKT, EPA300, METTALS+B, collected

Not enough water to sample RE16-01-3175 or HEXP, LHB, VOAGCMS, HEXPMOD, Field screening

Photo 12 taken

1005 Well 16-6295

DTW = 8.25 TD = 9.5

pH = Na cond = Na T = Na

Water Turbid

Sample RE16-01-3176 collected

Only AIKT, EPA300, NO_2 NO_3, METTALS+B, HEXP(2L), VOAGCMS, D2HO18O16

Not enough water to sample RE16-01-3175, LHB, HEXPMOD, Field screening Photo 13 taken

1047 Well 16-2655

DTW = 7.56 TD = 10.2

pH = Na cond = Na T = Na

Water slightly turbid

Samples RE16-01-3160, RE16-01-3161 collected

photo 14 taken

5/17/02

7/25/01 continued

1055 Crew stores samples in cooler and departs site for lunch. meeting at IT corp. office.

1330 Louie Romero and Elmer Alcon return to site. Samples are preserved, filtered, and labeled.
Louie Romero gets a clean slip from Bill McCormick.

1530 Samples are submitted to SMO. Samples are relinquished to Jaylene Valdez.

Louie Romero 5/17/02

08/06/01 Monday

Today Louie Romero will transfer from the 125ml LLA samples to 40ml stable isotope samples. This work will be performed in the TA-16 HEPS analytical field trailer.

1100 Arrival at the field trailers.

work begins

1200 break for lunch

1230 return to fluid transfer.

1630 transfer complete. For a list of sample dates, see the TA-16 stable isotope log book pg. 87

Louie Romero 5/10/02

8/7/01 Installation of Ultrasonic Flowloggers at BG & SWSC

crew Kevin Reid, Louie Romero

Activities Today we will install Ultrasonic flowloggers at Burning Ground and SWSC springs. We will also pull LLA samples from MS & BG if time permits

1415 Tailgate safety meeting conducted. We will be working under SSHASP 264.

weather Partly cloudy ≈ 75°F

1530 Burning Ground Spring Discharge ≈ 500 mL/s
LLA samples collected 6/23/01 → 8/7/01
Flow logger installed. Set to record level measurements every 15 min. Will over write database every 90 days. Mud cleared from weir

1600 SWSC Spring
Power supply reconnected to ultra sonic flowlogger. Datalogger downloaded
Flow logger set to recorded every 15 min, overwrite every 90 days
Weeds cleared from weir.
Discharge ≈ 30 mL/sec

1620 Martin Spring Discharge ≈ 100 mL/s
Low level anion samples collected 6/16/01 → 8/3/01
High Flow runoff event flowed through MS canyon
Weir adapter box filled with sediment. Slow infiltration into stormwater filters because of sediment clogging inlet. Overflow outlet partially clogged with debris. All sediment, debris removed from weir adaptor, normal flow into stormwater filter resumes. Appeared flow was backed up into weir because of clogging. High flow indicators show flow was approx 2" below top of weir. Definite flow over weir adaptor box.

1650 crew departs site / Kevin Reid 5/17/02

8/20/01 Field Screening of Quarterly Samples

crew Kevin Reid, Louie Romero

Activities Today we will conduct RDX field screening of samples collected for quarterly sampling

weather Clear, Warm ≈ 85°F

1430 Tailgate safety meeting conducted.

1500 Sample screening

Sample ID	Location ID	Date	DTechtor	ppb
RE16-01-3182	MSLSWF	7-24-01	LO LO LO	
RE16-01-3186	BG		10 9 10	⇒ 7.99
RE16-01-3184	SWSC	7-23-01	12 12 14	⇒ 9.02
	CdV Headwaters	7-16-01	LO LO LO	
RE16-01-3188	BG effluent	7-23-01	6 7 7	⇒ 6.95
RE16-01-3168	16-2659		33 35 34	
RE16-01-3162	16-2656	7-23-01	LO LO LO	
RE16-01-3164	16-2657	7-23-01	51 32 34	⇒ 19.5
RE16-01-3166	16-2658		LO 12 27	⇒ 11.38
RE16-01-3168		JR	30 24 27	⇒ 13.5
RE16-01-~~3074~~ JR 3074	SWSC	3/26/01	53 57 55	⇒ 28.3
RE16-01-~~3078~~ JR 3178	MS	7/24/01	57 54 54	⇒ 28.3
RE16-01-3180	MSUSW	7-24-01	LO LO LO	
RE16-01-3160	16-2655	7-25-01	LO LO LO	sample filtered prior to field a

1615 Field Screening concluded

Kevin Reid
5/17/2002

8/21/01 Field Screening of Quarterly samples

crew Kevin Reid, Louie Romero

Activity Today we will conduct Barium and Bromide field screening

weather Partly Cloudy ~ 80°F

0930 Tailgate safety meeting conducted

0945 Prep for field screening

1000 Bromide field screening 1.0 ppm = 106.2 mV
100.0 ppm = 68.2 mV

Sample ID	Location ID	Date	Br (mV), Y/N	Ba (mg/L)
	Cdr Headwaters	7-16-01	135, N	1
RE16-01-3188	BG Effluent	7-23-01	155, N	1
RE16-01-3186	BG		151, N	1
RE16-01-3184	SWSC	7-23-01	146, N	2
RE16-01-3182	MSLSWF	7-24-01	143, N	2
RE16-01-3180	MSUSWF	7-24-01	156, N	1
RE16-01-3178	MS	7-24-01	160, N	1
~~RE16-01-3177~~ KR 5/17/02				
5/17/02 KR ~~3174~~ 3074				
RE16-00-~~3074~~ KR 5/17/02 KR	SWSC	3-26-01	157, N	3
RE16-01-3168	16-2659		154, N	5
RE16-01-3166	16-2658		165, N	11
RE16-01-3164	16-2657	7-23-01	163, N	9
RE16-01-3162	16-2656	7-23-01	178, N	4
RE16-01-3160	16-2655	7-25-01	142, N	54 (filtered)

RE16-01-3160 was filtered due to high turbidity level.

5/17/2002

300

8/31/01 Site Survey for Geophysics and Eco-toxicology

crew Kevin Reid, Kristi Beguin,

· Activities Today we will identify locations for Eco-toxicology testing, and geophysical survey transects.

Weather Overcast, ≈ 75°F

Tailgate safety meeting conducted.

0930 Checkin at MDAP

0940 Crew splits up, Eco - upstream, geo - downstream

0945 Cowflow goes subsurface ≈ 60 m upstream from stream profile location #11

1000 Well Pair HRR profile Identified

· install piezometer on colluvial slope at "Bird seep"

· Gravimetric soil moisture if seep is present again. "Dry" sample + "wet" sample [3 location/transect]

· Tare bottles

1020 Stream Profile loc #16

potential site for HRR profile

similiar geomorphology to well pair profile location.

1045 Piezometer location identified. Just up channel from QSt 3/2 contact. In an alluvial wedge, close to channel.

LOUIE ROMERO 5/17/02

8/31/01 Eco Team Notes

This line was not used 5/17/02 LR

0950 Crew consisting of Don Hickrott, Ralph Ford-Schmidt and Eliza (both NMED), and Keish Bergin walk upstream in Cañon de Valle to the first daylighting surface-water, which happens to be Peter Seep.

XRF Location #1 is placed within Peter Seep above SWSC cut.

XRF Location #2 is placed adjacent to Location ID 16-2757 within SWSC cut (located in center of ponded area where there are plenty of sediments)

Ralph Ford Schmidt (RFS) Eco/Invertebrate location #1 is identified. This location needs to be surveyed. ~~Location 16-2760 is just down-gradient from this location.~~ 8/31/01

XRF Location #3 down-gradient of location 16-2760.

RFS #2 This sample location needs to be surveyed. This was a quantitative invertebrate location.

XRF #4 - downgradient of RFS #2.

XRF #5 - Near 16-2762. Intermediate Ba levels.

RFS #3 - Just below 16-2762. Needs to be surveyed.

XRF #6 - Just downgradient from RFS #3.

XRF #7 - Near 16-2763. This was a High Ba location (Stream profile)

RFS #4 - Qualitative "Pool below MDA-P" Located upstream of New ESH-18 weir and down stream from MDA-P. Large ponded area. Needs to be surveyed. Fish & Game dept. also have data for this location.

Lorine Romero 5/17/2002

XRF #8. Located in same pool as RFS#4
down gradient of MDA-P, above New Wei
RFS#5 Just down gradient and around t
(Needs to be surveyed) corner from New weir. Qualitative & quantitiv
samples were collected. Also was sampled in
1997. Saul Cross also sampled this location
NRED. Good Riffle area, but dries up periodic
XRF#9 Just upstream from 16-2769, downgrad
from RFS#5.
XRF#10 Down gradient from well pair by 16-2
considered low barium area.

this line was not used 5/17/02 WR

1100 All RFS locations need to be surveyed
Once screening samples are collected - then
also need to be surveyed. Depending u
sediment quantities needed for analytical
sampling field crew can collect sedimen
from along channel or banks to fulfill
amounts needed. Sample locations wi
be selected based upon screening results.

Louis Romero 5/17/2002

9/4/01 Collection of Ba screening samples in CdV

crew Kevin Reid, Kristi Begwin

Activities Today we will collect Ba screening samples in Cañon de Valle.

weather Partly cloudy & 80°F

1445 Tailgate safety meeting conducted. We will be working under SSHASP 264.

1500 Drop into canyon at MDA O

1515 Peter Seep, XRF #1. Sample collected from stream sediment

1517 Downstream (XRF #2) of SWSC spring in big area

1522 Downstream of BG confluence: XRF #3, near 16-2760

1525 Downstream of XRF #3, XRF #4 collected

1530 XRF #5 collected, downstream of 16-2762

1532 XRF #6 collected, upstream of 16-2658

1535 XRF #7 collected, slightly downstream of 16-2658

1540 XRF #8, collected, just down from MDA-P

1545 XRF #9, downgradient from weir at MDA-P

1600 XRF #10 downstream of well pair

Louie Romero 5/17/02

This page was not used.
Louie Romero 5/17/2002

Weed
Smr

110

ER2002-0320 LOG BOOK VOLUME 3
Hydrogeologic and CMS
Investigations at TA-16
PRS 16-021(c)-99
Shaw Environmental and Infrastructure
(formerly IT Corp.) 661-5200

Hydrogeology Field log Book
IT Corporation, Los Alamos, NM 661-5200

The Boorum & Pease® Quality Guarantee

The materials and craftsmanship that went into this product are of the finest quality. The pages are thread sewn, meaning they're bound to stay bound. The inks are moisture resistant and will not smear. And the uniform quality of the paper assures consistent rulings, excellent writing surface and erasability. If, at any time during normal use, this product does not perform to your expectations, we will replace it free of charge. Simply write to us:

Boorum & Pease Company
71 Clinton Road, Garden City, NY 11530
Attn: Marketing Services

Any correspondence should include the book title stamped at the bottom of the spine.

One Good Book Deserves Many Others.

Look for the complete line of Boorum & Pease® Columnar, Journal, and Record books. Custom-designed books also available by special order. For more information about our Customized Book Program, contact your office products dealer. See back cover for other books in this series.

Made in Canada

Contents

Page

ER 2002-0320

Hydrogeologic and CMS Investigations at TA-16 Volume 3

PRS 16-021(c)-99

ER Project worker responsible for this notebook Peter Gram 661-~~5706~~ LR 5207

ER Project workers who make enteries Kevin Reid 661-5706

Louie Romero 661-5732

Elmer Alcon 661-5216

The hydrogeologic and CMS investigations at TA-16 is a project driven by the CMS of PRS 16-021(c)-~~94~~ LR and the RFI Report for TA-16 PRS 16-021(c). This investigation deals with high-explosive contamination in a shallow alluvial ~~aquifer~~ LR aquifer.

5/17/02 LR

Additional personnel who will be authorized to make entries in log book

Name (Print)	Signature	Initial
Elmer Alcon		
David Lawler		
Alicia Nuttall	Alicia Nuttall	AN
Kate Herrell		KH
Kevin Reid	Kevin Reid	KR
Douglas Hopinkah		DH
Carrie Ancell	Carrie Ancell	CA

ER2002-0320

Table of Contents

Contents

	Page		Page
Initial Entry....	I	4-12-04 to 4-28-04	255-265
Table of Contents 5-22-03	II	5-7-04 to 5-17-04	266-271
Geophysics of Survey of CDV ~~Hydrogeophysics survey~~ 5-22-03	1	5-18-04 to 5-26-04	271-288
Quarterly sampling ~~/stream profile~~	16		
Photo Sampling & Collection of Flow			
~~Phytoremediation~~ ~~cutthroat~~ Samples	23		
~~Piezometer installation~~ of Canon de Valle			
~~Piezometer/stilling well installation~~	25		
Hydrogeophysics Cont.	28		
Quarterly sampling	47		
~~Isotope Bombs~~ QA of March spring			
~~QA/QC of equipment~~ 5-22-03	66		
March			
Quarterly sampling ~~/stream profile~~ 5-22-03	75		
QA of pressure transducers			
~~QA/QC of Equipment~~	85		
9-22-02 to 07-08-02	86-96		
07-10-02 to 08-07-02	97-107		
09-16-02 to 09-26-02	108-118		
10-3-02 to 10-23-02	119-129		
10-30-02 to 12-12-02	130-140		
12-12-02 to 12-19-02	141-150		
12-19-02 to 2-4-03	151-160		
3-10-03 to 3-18-03	161-170		
3-18-03 to 3-25-03	171-180		
3-26-03 to 04-03-03	181-190		
04-07-03 to 5-22-03	191-200		
6-18-03 to 09-4-03	201-210		
09-04-03 to 10-08-03	211-220		
10-10-03 to 12-04-03	221-230		
12-04-03 to 12-10-03	231-235		
12-17-03 Technical Review	236-237		
3-2-04 to 3-31-04	238-244		
4-2-04 to 4-7-04	245-252		

9/5/01 Geophysics Survey of CdV

crew K. Reid, M. Mason, M. Levitt (hydrogeophysics Inc)

Activities Today we will conduct Field preparatory work and site survey of geophysics transect locations

1100 Safety work permit obtained for hydroGeophysics truck and geophysic instruments from Eric Holmes ESA.

1130 TLD badges obtained for M. Mason + M. Levitt from Linda Chapman IT.

1400 K. Reid conducts review of SSHASP 01-001. All crew members sign off.

1440 Tailgate safety meeting conducted

1455 crew leaves site because of heavy rain + lightning

1515 Crew picks up slide hammer from Scott Baldridge.

1530 Hydrogeophysics crew returns to QA equipment.

KRR

5/17/02

9/6/01 Geophysics Transect Marking

crew K. Reid - IT Corp, M. Levitt, M. Mason - hydrogeophysics

Activities Today we will walk through transect locations in Cdv

Weather clear, ≈ 75°F

0810 Meeting with Eloy Trujillo to discuss work activities and safety concerns

0845 Tailgate safety meeting conducted. We will be working under SSHASP 01-001

0915 checkin with Weston trailers

0925 Marking of transect at well 2658 at 5' increments

1020 Burning Ground Spring: Longitudinal profile will begin approx. 30' up canyon of solar panels. Will cross BG wetland.

1220 complete 1300' of BG transect, to West end of MOAP: BG Line

1330 HERS meeting

1450 Drop in to CdV at well pair

1530 Marking of HRR + seismic lines at stream profile location #16. Transect marked is 300 ft long, perpendicular to channel. Channel midpoint at approx 160 ft from south end point. SP#16 Line

1555 Marking of HRR Line at Well 16-2659: Line 2659 Total Length = 290 ft. 0 point on south side of canyon.

1620 crew departs site

Kenneth

5/17/2002

9/7/01 Geophysics

crew K. Reid, Mark Lewis, Marc Mason

Activities: Today ~~we~~ I will run a trial line of the seismic equipment at line 2658

weather cool, sunny ≈ 70°F

0845 Tailgate safety meeting conducted. We will be working under SSHASP 264

0945 Drop into canyon from MDAP. Sign in with Weston

0950 Placement of geophones, recording equipment at line 2658

1330 Completion of seismic survey on line 2658

1420 Crew departs site

5/17/2002

4

9/10/01 Geophysics Survey

Crew K. Reid - IT, Mark Mason, Marc Levitt - Hydrogeophysics

Activities Today we will conduct seismic surveys of lines SP#6 and line 2659.

Weather Clear ~ 75°F

0915 Tailgate safety meeting conducted. We will be working under SSHASP 01-001.

1000 Check in with Weston at MOAP

1020 Set up line SP#6.

1415 Completion of seismic line SP#6. Three set-ups. Zero ~~begins~~ KR 1/2 point on Southside of canyon.

1420 Set up seismic line 2659

1700 Completion of seismic line 2659

1710 crew departs site

Kevin Reid

5/17/2002

9/11/01

Crew K. Reid - IT, Mark Mason, Marc Levitt - Hydrogeophysics

Activities Today we will string 'infinity' wire out accross Mesa top from a location between BG Spring and Well 16-2658 to a location SE of Building 344.

Weather Clear ≈ 75°F

0905 Tailgate Safety meeting conducted. We will be working under SSHASP 01-001. We are under a heightened sense of security in wake of today's tragedy in New York city.

1020 Will string wire under culvert at SWSA road access.

1115 crew advised to leave site in response to ER program stop work policy and Lab closure

1120 crew departs site

Kreid
8/17/2002

9/12/01 Geophysics

Crew K. Reid - IT, M. Mason & McLevitt - Hydrogeophysics

Activities Today we will finish laying out infinite wire and begin HRR survey as time permits

Weather clear, ≈ 75°F

0905 Tailgate safety meeting conducted. We will be working under SSI/ASP 01-001.

0930 Field equipment assembled

1030 Completed set up of infinite end of wire. Location is in Martin Spring canyon downslope from the water treatment tanks near Bldg 344. Seven electrodes were installed. Electrode locations were salted and wetted with tap water to improve conductivity.

10 40 Installation of Northern half of infinity wire. Wire will run from culvert to bottom of CdV between BG spring and well 16-2659.

1120 Check in at MDAP w/ Weston 5/17/2002 KR

1150 Arrival to line SP#16. Will string out wire from here. 5/17/2002 KR

1310 Completion of reference electrode at east end of line. Location is ≈ 20m downstream from the Qbt3/2 contact.

1320 Will run line up canyon ≈ 400 ft from SP#16

1610 Completion of wire layout

1650 crew departs site

5/17/2002

9/13/01 Geophysics

crew K. Reid - IT, M. Mason, M. Levitt - Hydrogeophysics

Activities Today we will begin HRR survey at Line 2658. Also we will test survey equipment.

Weather Partly cloudy ≈ 70°F

1000 Tailgate safety meeting. We will be working under SSHASP 01-001.

1130 Check in at MDAP, drop into canyon

1310 Begin HRR Readings at line 2658

1515 Complete HRR readings, Equipment pack up.

1550 crew departs site

5/17/2002

9/14/01 Geophysics

crew K. Reid, - IT, M. Mason, M. Levitt - Hydrogeophysics

Activities Today we will begin HRR survey on logitudinal profile, beginning at west end, near Burning Ground Spring. Also we will collect gravimetric soil moisture samples.

Weather Partly cloudy ≈ 70°F

0910 Tailgate safety meeting conducted. We will be working under SS/HASP ~~264~~ KR 7/14/01 01-001.

0940 Checkin with Weston crew at MOAP.

1005 Set up of HRR line at BG longitudinal profile.

1100 Soil moisture sampling at line 2658. First set of samples will be collected at 37.5 ft from the south end of the line. KR ~~B~~ 5/17/2002 LR

ID	Depth bl surface	Texture
2658 1-1	1.0 ft	silty loam
2658 1-2	3.0 ft	silty loam
2658 1-3	4.0 ft	clay loam

refusal at 4.0 ft. Unsurse if auger encountered a colluvial boulder or if reached bed rock. Sample location is at the lower section of the southern colluvial slope.

1130 Soil Moisture sampling, Line 2658, Location #2 ≈ 137.5 ft from the southern end of transect. At break in slope between floodplain and the channel overbank.

ID	Depth	Texture
2658 2-1	1.0 ft	silty loam
2658 2-2	1.8 ft	sandy silt
2658 2-3	2.1 ft	sandy silt

Bed rock approximately 2.1 ft below surface. Soil moisture profile very dry.

1145 soil Moisture Sampling, Line 2658, Location #3 ≈ 157.5 ft from southern end of transect. Between well 16-2658 and stream channel.

2658 3-1	0.25 ft	silty clay, v. high root content
2658 3-2	0.8 ft	KR 7-19-01 ~~silty et~~ sandy clay
2658 3-3	1.1 ft	clayey sand

LOUIE ROMERO 5/17/2002

1210 continued HRR Survey
1530 Completion of first run of HRR
1540 Crew leaves canyon
1610 crew departs site

5/17/2002

9/17/01 Geophysics

crew K. Reid - IT, M. Mason, M. Levitt - Hydrogeophysics

Activities Today we will continue the longitudinal HRR survey, as well as redo the 2658 survey. We will also work on installing the piezometers - time permiting.

Weather clear ≈ 75°F

0830 Tailgate safety meeting conducted. We will be working under SSHASP 01-001.

0840 ATV use and Safety driving review

0910 Watering of Infinite end near Bldg 344

0930 checkin w/ Weston at MOAP

0940 Set up of HRR line at 2658

1150 Installation of Piezometer at Qbt 3/2 contact
Piezometer installed on south side of stream channel.
End of piezometer is 2.0ft below ground surface.
Refusal at 2.0 ft, contact with weathered tuff

1220 Installation of Piezometer near the Stream Profile location #16
Installed on south side of ~~the~~ KR 9/17/01 streambed. Total Depth of 2.0 ft below ground surface.

1445 Trouble shooting of HRR Equipment.

1455 Installation of Piezometer pair at well 16-2658
Piezometers installed on south side of streambed. One set at 1.0 ft below ground surface. The other at 2.0 ft below ground surface.

1640 crew departs site

Kelly

5/17/2002

9/18/01 Geophysics

Crew K. Reid - II, M. Mason + M. Levitt - Hydrogeophysics INC

Activities Today we will survey geophone + electrode locations in Cuyamaca Valle

Weather Partly cloudy ≈ 80°F

1240 Tailgate safety meeting conducted. We will be working under SSI/ASP 01-001.

1255 Checkin w/ Weston at MDAP

1300 Set up of survey equipment + marking on longitudinal line. Longitudinal line will continue East, past MDAP to the Flume. Total length will be 1800 ft.

1705 Survey complete for the day. Survey notes recorded in M. Mason Field book. Will be copied into this log book, survey will be QA w/ B. Kopp tomorrow

1710 Crew departs site

5/17/2002

9-19-01 Geophysics

crew K. Reed, IT, M. Mason + M. Levitt Hydrogeophysics

Activities Today we will continue surveying transect locations for geophysical study

weather Partly cloudy & 85°F

1230 Tailgate safety meeting conducted. We will be working under SSHASP 01-001.

1300 Check in w/ weston at MOAP

1315 Set up of survey equipment

1330 Survey longitudinal transect + 2658 transect

1710 crew departs canyon

Kerhp

~~5/17~~ KR

5/17/2002

9-20-01 Geophysics - Surveying

crew K. Reid - IT, M. Mason + M. Levitt - Hydrogeophysicist

Activities Today we will continue surveying transect locations in cañon de Valle.

weather Partly cloudy ≈ 75°F

0845 Tailgate safety meeting conducted. We will be working under SSHASP 01-001

0900 check in w/ wester at MOAP

0910 Set up equipment, survey western end on longitudinal line near Burning Ground Spring

1220 Traverse canyon down to Stream Profile location #16, survey 2659 line

1650 crew leaves canyon

KLD

5/17/2002

9/21/01 Ecotoxicology Sampling

crew K. Begnin, K. Reid - IT Corporation, O Hickmott - LANL, M. Tardiff - Neptune, + E. Frank - NMED.

Activities Today we will collect soil and water samples as part of the Ecotoxicology testing in Cañon de Valle.

0845 Tailgate safety meeting conducted. We will be working under SSHASP 01-001.

1000 check in w Weston at MDAP

1040 Sample collection at XRF #2. Sample location is approximately 40 ft downstream of Peter Seep. Location ID for XRF #2 is 16-06709
Water samples collected. RE16-01-3274 + RE16-01-3284

1050 Sediment samples collected at XRF #2.
Sediment split taken by the state
Sample RE16-01-3275 collected + RE16-01-3283

1130 XRF location #5, Location ID 16-06710, upstream from 16-2
Water sample, RE16-01-3276 collected + RE16-01-3284

1140 XRF location #5, Sediment sample collected.
sediment split taken by the state
sediment collected from top 2" above stream cobbles
sample RE16-01-3277 collected + RE16-01-3285

1210 XRF location #9, Location ID 16-06711, downstream from MDAP. Water sample RE16-01-3278 collected + RE1

1220 XRF location #9, sediment sample collected. + RE16-01-3
Split taken by the state. Sample RE16-01-3279 collecte

1400 crew enters starmer canyon.

1435 SC #1 location approximately 30 ft down canyon from location of first water in channel. Location ID 16-0
Water sample RE16-01-3280 collected + RE16-01-3288

1440 SC #1 location. Sediment sample collected.
split taken by the state. sample RE16-01-3281 collected. + RE16-01-3289

1510 samples stored in refridgerator over the weekend.

1630 crew departs site

5/17/2002

9/24/01

crew K. Reid

Activities Labelling, ~~E/te~~ KR 9/24/01, preserving and submitting of Eco tox samples

1000 clean slip obtained for removing samples from site

1030 Samples labelled + preserved

1200 samples submitted to sms

KR

5/17/2002

3286

2

9/25/01 Quarterly sampling

Crew K. Reid, K. Beguin, R. Schaffel

Activities Today we will sample springs and wells in Martin Spring canyon.

Weather Partly cloudy & 75°F

1030 Tailgate safety meeting conducted. We will be working under SSHASP 01-001, and following LANL ER SOPs: 1.01, 1.02, 1.03, 1.04, 1.07, 6.01, 6.02, 6.03

1040 Crew gathers sampling supplies

1225 Martin Spring
pH = 7.50 cond = 0.518 ms/cm T = 13.3 °C
Horiba calibrated
Samples RE16-01-3217, RE16-01-3218 collected, Photo 6, roll 1

1232 Martin Spring Upper Storm Water Filter
pH = 7.95 cond = 0.556 ms/cm T = 14.2 °C
Samples RE16-01-3219, RE16-01-3220 collected
photo 7, roll 1 taken

1250 Martin Spring ~~At~~ 5/17/2002 Lower Storm Water Filter
pH = 7.71 cond = 0.482 ms/cm T = 19.9 °C
Samples RE16-01-3221, RE16-01-3222 collected
photo 8, roll 1 taken

1305 Well 16-6293
DTW = 10.3', Total depth = 10.5' not enough water to sample.

1400 Well 16-6295
DTW = 9.3', TD = 9.5' not enough water to sample
pH = 6.03 cond = 0.01 ms/cm? T = 22.2°C

1420 Well 16-6294
DTW = 10.6', TD = 10.8' not enough water to sample
pH = 6.19 cond = 0.811 ms/cm T = 15.8°C

1450 Fish Ladder Seep
Location Dry. No sample collected

1500 Samples Filtered, labelled, preserved.

1610 Samples submitted to SMO

Kreid 5/17/2002

9/26/01 Quarterly Sampling

crew K. Reed, K. Beguin, R. Shattel

Activities Today we will collect water samples from springs and wells located in Cañon de Valle.

weather Clear ≈ 80°F

0930 Tailgate safety meeting conducted. We will be working under SSHASP 01-001 & following LANL-ER SOP's 1.01, 1.02, 1.03, 1.04, 1.07, 6.01, 6.02, 6.03

0940 Equipment gathered, Horiba calibrated

1025 Well 16-2656

DTW = 6.67' TD = 10.3' Hold Water = 3.63 × 0.6177 = 2.25 L/well volume

	pH	cond ms/cm	T °C
Initial	7.13	0.761	13.6
4.5 L bailed	7.00	0.689	12.8
Final after sampling	6.77	0.638	12.7

Samples RE16-01-3229, RE16-01-3230 collected

Photo 9, roll 1 taken. Water slightly turbid

Samples collected after 4.5L (2 well vol.) bailed rather than 3 well vol because of low flow conditions.

1045 Peter Seep

pH = 5.18 cond = 0.72 ms/cm T = 11.7 °C

slight sheen on water surface

Samples RE16-01-3231, RE16-01-3232 collected

photo 10, roll 1 taken

1055 Well 16-2657

DTW = 4.5' TD = 5.5'

pH = 5.38 cond = 0.450 ms/cm T = 13.9°C

Not enough water to collected a full suite, METTAL+B filtered, HEXP mod & HEXP + HEXPUV ommitted. KR 9/26/01

Samples RE16-01-3233, ~~RE16-01-3234~~ collected

photo 11, roll 1 taken

1112 SWSC spring

pH = 7.85 cond = 0.545 ms/cm T = 14.1 Discharge ≈ ~~30~~ 10 mL/s

Samples slightly murky. Mud was cleared from behind weir to enable sampling. Mud stayed suspended during sampling.

Lorie Romero 5/17/2002

9-26-01
SWSC sampling continued
Samples RE16-01-3235, RE16-01-3236 collected
photo 12, roll 1 taken
1130 Sampling at burning ground spring.
Samples RE16-01-3237 and 3238 collected.
phot 13, Roll 1 taken
pH = 7.88 cond = 0.558 ms/cm T = 11.1 °C Discharge ≈ 700:
1150 Well 16-2658 DTW = 6.50' TD = 10.1' 1 well vol = 8.9L

	pH	cond ms/cm	T °C
Initial	7.27	0.699	14.3
9L	7.26	0.705	13.2
12L	7.20	0.711	12.9

Samples collected after 12L of water bailed
WQ parameters stabilized
Samples RE16-01-3239, RE16-01-3240 collect
photo 14, Roll 1 taken

1430 Samples filtered, preserved, labelled

5/17/2002

9/27/01 Quarterly Sampling
crew K. Read, K. Begnin, J Heyser
Activities Today we will sample Water canyon, Cañon de Valle confluence, CdV headwaters, 2655 + 2659.
weather Partly cloudy ≈ 80°F
0930 Tailgate safety meeting conducted. We will be working under SSHASP 01-001, Following LANL ER SOP's 1.01, 1.02, 1.03, 1.04, 1.07, 6.01, 6.02, 6.03
0940 Equipment gathered
1005 checkin at TA-8
1010 checkin at TA-15
1015 checkin at Ox access control.
1110 Arrival to Water Canyon, CdV confluence
all locations dry
1145 Rad screening conducted by Will-Ox.
No Rad detected
1430 Arrive at headwaters of Cañon de Valle. Water is flowing. A large pool has developed within channel at sample location.
1610 Arrive at 16-2659, the well pair
pH = 7.33
cond = .745
temp = 13.9
Second Parameters
pH = 7.20
cond = .745
temp = 12.9
Depth to water was 8.5 feet. TD 10.4
We did not bail this well prior to sampling.
1645 Well 16-2655
DTW = 9.7' TD = 10.2
pH = 7.74 cond = .762 T = 16.1
RE16-01-3245 collected. Only enough water to collect D2H+O18O16.
1435 Headwaters Cañon de Valle
pH = 7.40 cond = 0.240 ms/cm T = 12.5°C
Samples RE16-01-3241, RE16-01-3242 collected, photo 15, roll 1

Louie Romero 5/01/2002

10/1/01 Monthly

crew K. Reed, R. Shattel

Weather Clear, ≈ 80°F

Activities Download data loggers & troubleshoot Equipment

1330 Tailgate safety meeting conducted. We will be working under SSHASP 01-001

1350 Drop into CDV

1400 BG Spring. Discharge = 250 mL/s

151200 L/week = 0.250 L/s * 604800

8L/100mL = 80 pulse/week

1800 L/pulse

Flow Integrated sampler set to sample 100mL/pulse and to pulse every 1800 L.

Flow logger downloaded

Data logger downloaded to 'BG1001.dat'

1430 SWSC spring

Discharge = 0.01 L/s

Problem w/ Flowlogger. Not recording data.

Contacted tech support. Suggested to send in for repair.

Datalogger downloaded to 'SWSC1001.dat'

1450 16-2656

Battery down, unable to download data

1520 16-2658

Datalogger downloaded to '26581001.dat'

1550 Martin Spring

Discharge ≈ 30 mL/s. Pulse volume ≈ 170 L at 100 mL/pulse

Flow Integrated sampler set to sample beginning at 1700

1630 Crew departs site

5/17/2002

10/3/01
~~10/11/01~~ KR Stream Profile Measurements
crew K. Reid, R. Schaftel
Activities Today we will conduct stream profile measurements in Cañon de Valle
weather Partly cloudy ≈ 80°F
1430 Tail gate safety meeting conducted. We will be working under SSIIASP 01-001
1450 cdv station 13 16-5929 - location dry
1452 cdv station 12 16-5928 - location dry
1453 cdv station 11 16-5999 - location dry
1454 Surface water - Slight flow at 16-2769 ≈ 0.01 L/s
1455 cdv station 10, 16-5998, Flume level = <0.05"
surface flow goes subsurface ≈ 100 ft down canyon from this location
1459 Horiba calibrated

Time	Location	Q L/s	pH 5-17-02	cond (ms/cm)	T °C
1507	cdv-10	0.150/5sec	~~8.25~~ 8.70 KR	~~0.820~~	~~14.9~~ KR
	cdv-10	0.030 L/s	8.70	0.820	14.9
1515	MDAP Bridge ~~cdv~~ - ~~8.25~~ 5-17-02	0.160 L/s	8.74	0.654	13.1
1519	cdv-9	0.090 L/s	8.90	0.562	12.6
1529	cdv-8	0.100 L/s	8.89	0.571	12.3
1540	cdv-7	0.175 L/s	8.42	0.580	11.6
1545	BG effluent	0.225 L/s	8.67	0.588	~~12.0~~ KR 11.8 5-17-02
1547	cdv-6	location dry		—	—
1550	BG spring	0.500 L/s	7.82	0.578	11.1
1559	cdv-5	0.030 L/s	8.01	0.653	12.7
1603	SWSC spring	0.012 L/s	8.10	0.562	12.0
1605	cdv-4	ponded water	7.85	0.812	13.8
1607	cdv-3	location dry			
1615	crew departs site				

5/17/2002

10/4/01 Stream Profile Sampling

Crew K. Reed, R Schattel

Activities Today we will collect stream profile ~~samplings~~ samples from Canon de Valle. KR 5-17-02

Weather Clear, ≈ 75°F

0940 Tailgate safety meeting conducted. We will be working under SSHASP 01-001 + following LANL ER SOP's 1.01, 1.02, 1.03, 1.04, 1.07, 6.01, 6.02, 6.03

1015 cdV 10, 16-5998
pH = 8.83, cond = 0.702 ms/cm T = 9.4°C
Samples RE16-01-3247, RE16-01-3248 collected
photo 18, roll 1 taken. Water clear

1030 cdv-8, 16-5996
pH = 7.90 cond = 0.577 ms/cm T = 9.4 °C
Samples RE16-01-3249, RE16-01-3250 collected
photo 19, roll 1 taken, water clear

1050 cdv-5
pH = 7.43 cond = 0.657 ms/cm T = 9.7°C
Samples RE16-01-3251, RE16-01-3252 collected
photo 20, roll 1 taken: Sample # mislabelled on white board

1125 Barning Ground spring Effluent
pH = 6.93 cond = 0.604 ms/cm T = 10.1°C
Samples RE16-01-3253, RE16-01-3254 collected
photo 21, roll 1 taken

1140 Sample Filtered, preserved, labelled

1330 Samples submitted to SMO

5/17/2002

10/8/01 Phyto Sampling + Collection of Flow Integrated Samples
crew K. Reid, A. Dietz
Activities Today we will collect soil and water samples from Burning Ground spring.
weather clear ≈ 70°F
0920 Tailgate safety meeting conducted. We will be working under SSHASP 01-001. Also we will be following LANL-ER SOP's 1.01, 1.02, 1.03, 1.04, 1.07, 6.01, 6.02, 6.03, 6.13
1000 BG Ground Spring
Flow Integrated Sample collected. 1 week flow from 10/1/01 → 10/8/01. Total of 9L collected in sampler. Sample RE16-01-3255, RE16-01-3256 collected photo 23 taken. No screening parameters measured because Horiba is out of service
1015 Phyto sampling of water + sediment.
1250 Break for Lunch
1415 Martin Spring
Flow Integrated Sample collected. 1 week flow from 10/1/01 → 10/8/01 Total of 12L collected in sampler Sample RE16-01-3257, RE16-01-3258 collected photo 10 taken. No screening parameters measured
1500 Phyto sampling: plant samples collected, redox measurements recorded
1720 Crew departs site

KRD
5/17/2002

10-9-01 Submit Flow Integrated Samples & Collect LLA samples

Crew K. Reid, A. Dietz, R. Schaltel

Activities Today we will filter, label, preserve & submit Flow Integrated Samples. Also we will package Phyto samples & prepare for shipment. In the afternoon we will service the LLA samplers in Martin & Burning Ground Spring

0820 Tailgate safety meeting conducted we will be working under SSHASP 01-001

0830 Sample prep, labelling, preserving

1120 Samples submitted to SMO

1310 Drop into Burning Ground spring
LLA samples transfered to 125mL poly & 40mL polyseal containers. LLA sampler began ~~KR~~ 8-11-01 and ran through 9-25-01. 23 samples collected Sampler restarted. First sample will be collected 10-11-01.

1505 Martin Spring
LLA samples transfered to 125mL poly & 40mL polyseal container. LLA sampler began 8-11-01. and ran through 9-27-01. 24 samples collected Sampler restarted. First sample will be collected 10-11-01

1600 Crew departs site

5/17/2002

10/10/1 Piezometer installation at Cañon de Valle

crew K. Reid, R. Schattel

Activities Today we will complete installation of piezometers in Cañon de Valle

1020 Tailgate safety meeting conducted. We will be working under SSI/ASP 01-001

1040 Drop into canyon from MDAP

1050 Piezometer at Geophysics transect SP#16.
Installed to a depth of 2 ft below ground surface.

1120 Well pair 16-2659
- Piezometer installed to 4 ft below ground surface } near well pair
- Piezometer installed to 2 ft below ground surface
- Piezometer installed to 4.5 ft below ground surface at "blind seep" location - south side of canyon approximately mid slope

1330 Well 16-2658
- Piezometer installed to ±2.9 ft below ground surface
- Piezometer installed to 2.0 ft below ground surface

1540 crew departs site

5/17/2002

10/11/01 Installation of stilling well

Crew K. Reid, R. Schattel

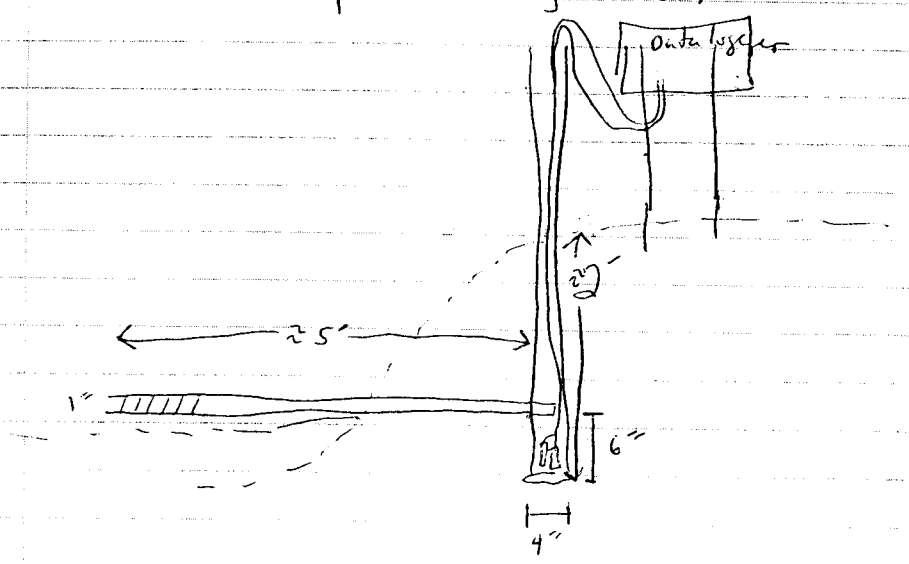
Activities Today we will install a stilling well in Cañada de Valle. Stilling well will be to measure surface flow at the well pair. Stilling well will be instrumented with a temperature, conductivity, and pressure transducer probe.

weather Clear cool ≈ 60°F

1320 Tailgate safety meeting conducted we will be working under SSHASP 01-001. + following LANL ER SOP's

1400 Download of data logger Well 16-2659. Battery replaced. Data downloaded to 26591011.dat

1410 Installation of stilling well.



1600 Program WP.Set set to collect data every Hour. Downloaded to data logger Will measure Batt volt, cond, Temp, Level, offset

1625 crew departs site

5/7/2002

10/16/01 Equipment Maintenance

crew K. Reed, R. Schattel

Activities Today we will replace batteries and down load datalogger

Weather clear ≈ 65°F

1100 Tailgate safety meeting conducted. We will be working under SSITASP 01-001

1115 Well 16-2655

Battery Replaced. Data downloaded to '2655 10/16.dat'

1130 Martin Spring

Battery Replaced. Data downloaded to 'MS 10/16.dat'

1205 Well 16-2656

Data downloaded to '2656 10/16.dat'

1240 crew departs site

KLR

5/17/2002

10/22/01 Hydrogeology - Geophysics cont

crew K Reid, M Levitt, C. Baldyga

Activities Today we will restart the HRR lines in CdV

0920 Tailgate safety meeting conducted. We will be working under SS/HASP 01-001. C. Baldyga signs off on SS/HASP 01-001.

Weather Partly cloudy, cool ≈ 50°F

0940 Drop into CdV from MOAP. Inspection of infinite wires. Installation of stainless steel electrodes at line 16-2658.

1420 Safety work permits renewed. Also work permit signed to use the laptop in CdV. AFS form

1500 Deployment of cables.

1630 completion of dipole - dipole test on line 2658

1650 crew departs site

Kuhl

5/17/2002

10/23/01 Geophysics

crew K-Reid-IT, M. Levitt, C. Baldyga, J. Fink - Hydrogeophysics

Activities Today we will collect HRR data from Line 2658.

0820 Tailgate safety meeting conducted. J. Fink signs off on SSHASP 01-001. We will be working under SSHASP 01-001.

Weather clear, slight wind ≈ 40°F

0850 Drop into canyon, conduct field inspections of sites, diagnose equipment

1000 Depart canyon for meeting

1430 Return to canyon, begin HRR survey of line 2658

1640 Depart canyon

5/17/2002

10/26/01 Geophysics

Crew K. Reid - IT, M. Levitt, C. Baldyga - Hydrogeophysics, S. Cash - Hydrogeophysics sub - AGI.

Activities Today we will trouble shoot equipment and possibly continue HRR survey time permitting

Weather clear @ 60°F

1420 Safety work permit obtained for electronic equipment from E. Holmes

1440 Tail gate safety meeting conducted. S. Cash reads and signs off SSHASP 01-001.

1450 drop into canyon, begin trouble shooting

1730 crew departs site

5/17/2002

10-27-01 Saturday

0815 Crew of Louie Romero, Mark Levitt, Chris Baldyga, and Shannon Cash arrive at the HEPS field trailers. Today we will continue running line 2 (BG line) gathering data.

0830 Tailgate meeting is conducted

Crew heads into Cañon de valle

Run of BG Line continued. Equipment is working well

1200 Crew leaves Canyon to HEPS field trailers.

1230 Crew departs HEPS field trailers. Shannon Cash need to catch a flight out of Santa Fe at 2:00 p.m.

Louie Romero
5/17/2002

10/28/01 Geophysic

Activities Today we will continue HRR longitudinal survey

Crew K. Reed, M. ~~Matt~~ Levitt, E. Baldyga

Weather Partly cloudy ≈ 55°F

1000 Tailgate safety meeting conducted we will be working under SSHASP 01-001

1200 Begin survey

1215 Collection of Gravimetric soil moisture samples along line 2658.

1220 Line 2658, 22.5 Ft from south end of line. Mid slope, on south side of canyon.

ID	Depth below Surface	Texture
2658 4-1	1.0 ft	silty loam
2658 4-2		
2658 4-3		

Refusal at 2.0 ft. unsure if reached bed rock or colluvial boulder

1230 Line 2658; 15 ft from south end of line Upper-mid slope on south side of canyon. Refusal at 2.0 Ft. Soil dry, silty loam texture. No samples collected. Confirmation of shallow ~~slope~~ KR 5/17/02 soil horizon on hillslope ≈ 2 ft to ~~be~~ ice refusal.

1440 crew departs site

Kreed

5/17/2002

10-29-01 monday

High resistivity study is continued.

1030 Tailgate safety meeting is continued. Crew of Louie Romero, Mark Levitt, and Chris Baldyga will continue with the BG line.

Equipment will be run ~~in~~ in manual mode since automated mode has been malfunctioning. SSHASP 01-001 will be used

BG Line is continued.

1200 Crew breaks for lunch

1245 Crew returns to site BG line is continued

data is collected

1700 Crew departs the site for the day

Louie Romero

Louie 5/17/2002

10-30-01 Tuesday HYDROGEOPHYSICS

8:00 Crew of Louie Romero, Mark Lovitt, Rob McGill will continue with the BG Line.

830 Tailgate meeting is conducted. Rob McGill is briefed on SSHASP 01-001. He also signs the SSHASP acknowledgement form. Crew enters canyon to continue to run BG Line. manual mode will be used.

1215 Crew departs from Canyon to break for lunch.

1300 Crew returns to site to continue with BG line

1445 Kevin Reid arrives at site to take over escorting, since Louie Romero has to leave for the day.

1700 crew departs site 5/17/2002 LR

5/17/2002

10-31-01 Wednesday
HYDROGEOPHYSICS + Sampling of SHB-3
0715 Crew of Louie Romero, Mark Levitt and Rob McGill will continue with BG Line. We are now at 1350' out of 1500'.
weather is overcast with medium gray clouds, winds from west at ~ 5mph, outside temperature is ~ 55°F.
~~the cables for automated mode are packed up since LR before any~~ LR
~~rain occurs~~ LR

0730 Tailgate meeting is conducted.
0745 Crew enter Cañon de Valle at ~~BG~~ LR Burning Ground
The cables for automated mode are packed up before any rain occurs. Today we will continue in ~~automatic~~ LR manual mode.
Manual mode is running smoothly

10/31/01 Sampling of SHB-3
crew K. Reid, Elmer Alcon - IT, Lorenzo - LANL, Wally O'Rear - Tech Law, Inc EPA, Mark Coffman - NMED, Joe Sena ESH-18
Activities Today we will be collecting samples from well SHB-3
weather Partly cloudy, breezy ≈ 45°F
0905 Tailgate safety meeting conducted we will be working under SSHASP01-001. Reid, Alcon + Lorenzo will be sampling following LANL ER-SOP's: 1.01, 1.02, 1.03, 1.04, 1.07, 6.01, 6.02, 6.03 and LANL QAPj-P07.
0950 Set up operations. Truck-wireline set up above well Wellhead protection casing removed.
1000 Depth to water measured. Obstacle encountered at 566' unable to pass well sounder beyond 566'. No water encountered.
1020 crew hesitant on putting anything other than the sounder.
1100 Dave Rodgers, Micheal Dale contacted. Both informed of obstacle. Sampling will not be conducted because of obstruction in well casing
1130 crew departs site

5/17/2002

11-01-01 Thursday
HYDROGEOPHYSICS

0900 Crew of Louie Romero, Mark Levitt, and Rob McGill arrive at HEPS field trailers. Tailgate meeting is conducted. SSHASP 01-001 will be used P.O.D. Today we will continue troubleshooting the HRR Survey equipment, then possibly continue gathering data.

1000 Equipment is running smoothly in manual mode.

1230 Crew breaks for lunch (S-Site Cafeteria)

1315 Crew back at site. BG line is continued in manual mode. Data is gathered.

1730 Crew departs the site for the day.

Louie Romero 5/17/2002
5/17
LR

11/2/01 Geophysics

crew K. Reid - IT, M. Levitt, R. McGill - Hydrogeophysics

Activities Today we will mark off the 2nd portion of the longitudinal line, extending from MOAP to east of the well pair

0810 Tailgate safety meeting conducted. We will be working under SSI/ASP 01-001.

Weather clear ≈ 55°F

0830 Drop into canyon at MOAP.

0835 Mark off the 1200 ft line. Line begins on north side of canyon at access road. Line ends ≈ 100m east of the well pair

1120 crew departs site

1310 E. Alcon takes over escorting responsibilities. Crew removes equipment from canyon

1520 crew departs site

5/17/2002

11/4/01 Geophysics - Soil Moisture Sampling

Crew K. Reid - IT, M. Lewitt, R. McGill Hydrogeophysics

Activities Today we will start longitudinal HRR survey from MDAP to Well pair

09 40 Tailgate safety meeting conducted. We will be working under SSHASP 01-001

10 20 Line set up.

11 40 Soil Moisture Sampling Line SP#16

Location 1 - 27.5 ft on transect. Midslope on steep south side of canyon. Refusal at 3.0 ft. Soil dry throughout profile. 0-1.0 ft silty loam, 1.0-3.0 ft silty sand, minor gravels, colluvial clasts.

ID	Depth	Texture
SP 16 1-1	1.0 ft	Silty loam
SP 16 1-2	1.5 ft	Silty sand.
SP 16 1-3	3.0 ft	Silty sand

Refusal likely from colluvial boulder rather than bedrock contact

11 55 Location SP16-2; 127.5 ft on transect. Lower section of colluvial slope, upper edge of floodplain. Soil dry throughout profile. Minor gravels ≈ 8cm diameter encountered from 1.5-2.5 ft. Refusal at 2.5 ft, again from colluvial boulder rather than bedrock contact.

ID	Depth	Texture
SP 16 2-1	1.0 ft	Silty loam
SP 16 2-2	2.0 ft	Sandy silt
SP 16 2-3	2.5 ft	Sandy silt

1210 Location SP16-3; 197.5 ft on transect. North side of channel, at lower end of colluvial slope. KMR 11/4/01

Soil profile dry throughout. Refusal at 2.5 ft. Silty-Sand texture throughout, minor gravels

ID	Depth	Texture
SP 16 3-1	1.0 ft	Sandy silt
SP 16 3-2	1.5 ft	Sandy silt
SP 16 3-3	2.5 ft	Sandy silt

Louie Romero
5/17/2002

11/4/01

1235 Well Pair Transect: Line 2659

Location 1; 75 ft on transect; mid slope of southern canyon slope. Also ≈ 2ft downslope of Piezometer location. Auger reached 6.0ft without refusal. Will need auger extension to complete profile. Profile dry - slightly moist. Texture - silty sand - loam. Some weathered Qbt gravels encountered.

ID	Depth	Texture
2659 1-1	1.0 ft	Silt loam
2659 1-2	2.0 ft	Silty sand
2659 1-3	6.0 ft	Silty sand

1255 Location 2; Intersection of longitudinal + perpendicular transects. 167.5 ft on transect. Refusal at 1.5 ft. Two separate locations tried, max depth reach was 1.5 ft. Appear to be in an old channel. Encountered rounded Tschicama dacite gravels in holes. Only 1 soil moisture sample collected. Also attempted augering at 175 ft on transect, encountered gravels + refusal at 1.0 ft

ID	Depth	Texture
2659 ~~2-1~~ KR 11/4/01 2-1	1.0 ft	Silty sand

2-2, 2-3 not collected because of refusal at 1.5 ft.

1310 Location 3; 210 ft on transect, between well 2659 + 2660 On flood plain ≈ 10 ft south of channel. Refusal at 2.0 ft. Dry throughout profile. Silty loam. Lots of Tschicama dacite gravels.

ID	Depth	Texture
2659 3-1	1.0 ft	Silty loam
2659 3-2	1.5 ft	Silty sand
2659 3-3	2.0 ft	Silty sand

1640 crew exits canyon

1710 crew departs site

5/17/2002

11/05/01 - Geophysics

Crew: Alan Brenner, IT Corp; Mark Levitt, Rob McGill, Hydrogeophysics.

Activities:

~~0630~~ 0730 (AB) Tailgate safety meeting conducted. We will be working under SSHASP 01-001.

11-05-01 0800 Crew enters Cañon de Valle at Burning Ground. The weather is overcast. Wind from the west, ~5 mph. Temperature ~55°.

0835 Crew continues work with the BG Line, Longitudinal #2, Manual Mode, starting at 420 ft.

1155 Crew stops at 710 ft and exits canyon for lunch.

1205 Crew reenters canyon, resumes work with the BG Line.

1620 Crew stops at 950 ft and exits canyon. The equipment functioned normally, and the work progressed well.

1640 Crew exits S-site.

AGB Alan Brenner

5/17/2002

11/06/01 - Geophysics

Crew: Alan Brenner, IT Corp; Mark Levitt, Rob McGill, Hydrogeophysics

Activities:

0720 Tailgate safety meeting conducted. We will be working under SSHASP 01-001.

0745 Crew enters Cañon de Valle at Burning Ground. The weather is clear and sunny. Calm. Temperature ~50°.

0805 Crew continues work with the BG Line, Longitudinal #2, Manual Mode, starting at 950 ft.

1120 Crew finishes work on the BG Line, Longitudinal #2, ending at 1200 ft. Crew disassembles equipment.

1205 Crew exits canyon.

1220 Crew exits S-site for lunch.

1305 Crew reenters S-site. Weather is cloudy. Brief rain shower. Wind from the south, variable to ~10 mph, then calm. Temperature ~65°.

1335 Crew reenters canyon. Crew deploys High Resolution Transverse Stream Profile Line #16.

1400 Crew begins survey.

1605 Crew finishes the Transverse Stream Profile Line #16 at 270 ft. Beyond this point, the ground on the north slope of the canyon proved too resistive to pass a signal. The signal in the last 40 ft had been weak. With completion of the Transverse Stream Profile Line #16, the crew is now 1/2 day ahead of schedule. Crew disassembles equipment.

1640 Crew exits canyon.

1700 Crew exits S-site

AGB Alan Brenner
5/17/2002

11/7/01 Geophysics + Surveying

crew K. Reid - IT corp, R. McGill, M. Levitt - Hydrogeophysics

Activities Today we will survey HRR Longitudinal Profile #2 and pack up equipment

weather Partly cloudy ≈ 50°F

1000 Tailgate safety meeting conducted. We will be working under SSHASP 01-001

1025 Drop into canyon, Set up survey equipment. We will also survey geomorph + XRF locations.

1330 Survey complete, crew exits canyon. Survey notes, point ID, Rod Ht, Station Ht all recorded in K. Reid's log book.

K. Reid

5/17/2002

11/6/01 Surveying Martin Spring Canyon

crew K. Reid, E. Alcon - IT

Activities: Today we will survey geomorphic soil sample points in Martin Spring canyon

weather Partly cloudy ≈ 50°F

0830 Tail gate safety meeting is conducted

0915 crew drops into canyon to survey. The following geomorph locations were surveyed.

16-6611, 16-6610; 16-6609, 16-6608, 16-6607, 16-6606, 16-6605
16-0606, 16-6604, 16-6603, 16-6602, 16-6601, 16-6600,
16-6599, 16-6598; 16-6597; 16-6596, 16-6594, 16-6595
16-6593.

Storm water filter box locations and sampling ports were also surveyed.

1150 crew departs site

5/17/2002

12-3-01

Today's activities; establish moisture content of Hydrogeophysics sample collected by R. Reid. SHASSP 01-001 lab work. E. Alan will run controls at ~~lab~~ Chemtrad

1245 arrive on site, and gather samples. Oven start to
~~1300~~ establish temp of 220°F

1310 Calibrate Scale using 10, 50, & 100 g weights.
Scale to be used is Triple beam balance

1315 wet weight begins.

1410 wet weight completed.

1411 Container placed in oven. 24 hr cycle.

1415 secure site

1420 depart for office.

5/17/2002

12-10-01 monday Quarterly sampling SSHASP 01 01

This round of quarterly sampling will use SOPs:

LANL ER - SOP - 1.01, General Instructions for Field Investigations

1.02, Sample containers and Preservation

1.03, Handling, Packing, and Shiping samples

1.04, Sample control and field documentation

1.05, Field Quality control samples

1.07, Operational Guidlines for taking soil/water samples in the HE area

6.01, Purging and sampling methods

6.02, Field analytical Measurements of Groundwater

6.03, Sampling for Volatiles Organic Compounds in Groundwater

6.13, Surface Water Sampling

10.06, High Explosives spot test

QP - 5.2, Control of measureing and testing Equipment

5.7, Notebook Documentation for ER Technical Activities

10.3; Stop Work and Restart

LANL ER QMP, Quality Management Plan for the ER Project

1000 Louie Romero arrives at HEPS field trailers.

The Plan of the Day is to start quarterly sampling. The wells we will start are the 5 monitoring wells in Cañon de Valle. Louie Romero preps bottle sets, packs equipment on the ATV.

1200 Louie Romero breaks for lunch. Elmer Alcon meets louie at the site cafeteria.

1230 Crew proceeds into Cañon de Valle. Well 16-2656 is our 1st location.

1317 16-2656 is sampled. RE16-01-3292, RE16-01-3293.

Cond. 0.821, pH 6.12, temp. 7.8°C (Horiba was calibrated prior to checking these parameters. 3 well volumes were bailed prior to sampling.

1358 16-2658 sample is collected RE16-01-3297, RE16-01-3296

Cond. 0.644, pH 7.09, temp. 6.3°C

1445 16-2659 RE16-01-3298, RE16-01-3299 are collected after purging 3 well volumes, Conductivity 0.632, pH 7.64, temp. 7.3°C

1530 Return to field trailers

Samples ~~are~~ 5-17-02 are preserved, and filtered. They will be labeled, then submitted tomorrow morning.

1555 Crew departs site.

Louie Romero 5/17/2002

12-11-01 tuesday Quarterly Water Sampling

The driving documents for quarterly sampling are the CMS of PRS 16-021(c) and ~~the~~ LR the RFI Report for TA-16, PRS 16-021(c) SSHASP 01-001

The following SOP will be used for this sampling event.

LANL-ER-SOP 1.01, General Instructions for field investigations; 1.02 Sample containers and ~~field~~ LR preservation; 1.03 handling, packing, and shipping samples; 1.04 Sample Control and field documentation; 1.05 field quality control samples; 1.07 Operational guidelines for taking soil/water samples in the HE areas; 6.01 Purging and sampling methods; 6.02 Field analytical measurements of ground water; 6.03 Sampling for VOC in ground water; 6.13 Surface water sampling; QOU HE Spot Test; QP 5.2 Control of measuring and testing equipment; 5.7 Notebook documentation for ER Technical Activities; 10.3 stop work and restart.

LANL ER QMP Quality Management plan for the ER Project

12:30 Tailgate meeting is conducted to cover today's activities which include continuation of sampling in Cañon de Valle, and kick off the flow integrated samplers at Martin Spring and Burning Ground Spring.

ATV is packed up with sampling equipment and gear.

Crew of Louie Romero and Elmer Alcon enter Martin spring canyon

Flow integrated sampler is started at 1330. Station is covered with a tarp to prevent freezing of equipment and samples.

Crew moves to Burning Ground Spring. Flow integrated sampler is started at 1385. Tarp is used to cover the ISCO to prevent freezing of equipment and samples.

1410 16-2657 sample is collected. no purging prior to sampling due to low recharge

RE16-01-3294

depth to water 4.7 ~~1.5~~ 5.17 LR 2.5 liter is collected

Cond. 9.4; pH 8.15; Temp. 5.2°C

Analysis collected were: HEXP 2 Liters

METTAL+B 250 mL

1420 SWSC spring has ~~no~~ LR little to no flow.

A sample will not be collected.

1433 Burning Ground Spring

RE16-01-3316; RE16-01-3317; RE16-01-3338 (Gamma spect 1SOPU + SR90); 3316 and 3317 were the standard suite.

~~ttw~~ LR Cond. 0.694 ~~ms/cm~~ LR us/cm; pH 7.74; temp. 8.2°C

Crew ~~leaves~~ LR leaves the canyon

Samples are preserved at the HEPS field trailer.

Continued on pg. 49

Louie Romero 5/17/2002

12-11-01 tuesday

1530 Samples will be labeled and submitted tomorrow morning.
they will be submitted to TA-3-270 (SMO).
Crew departs the site.

LOUIE ROMERO
5/17/2002

12-12-01 Wednesday Quarterly Water Sampling

The driving documents for this quarterly water sampling event are the RFI report for TA-16, PRS 16-021(c) and the Corrective Measures Study (CMS) of PRS 16-021(c). SSHASP 01-001 will be used.

The following SOPs will be used: LANL-ER-SOP 1.01, 1.02, 1.03, 1.04, 1.05, 1.07, 6.01, 6.02, 6.03, 6.13, 10.06; QP-5.2, 5.7, 10.3, LANLERQMP.

Today we will continue with quarterly sampling. Martin Spring area will be targeted.

Tailgate meeting is conducted and HORIBA is calibrated

Equipment and supplies are loaded onto the All Terrain Vehicle (ATV)

Crew enters Martin Spring Canyon

Martin Spring SWF lower sample port is collected

RE16-01-3312; RE16-01-3313

Cond. 0.586 µS/cm; pH 5.85; temp. 4.5°C
LR 5-17-02

Martin Spring SWF Upper port is collected

RE16-01-3310; RE16-01-3311

Cond. 0.628 µS/cm; pH 7.34; temp. 5.5°C
LR 5-17-02

14:40 Martin Spring is collected

RE16-01-3308; RE16-01-3309, RE16-01-3336 (Gamma Spec + ISOPU + SR90)

Cond. 0.54 µS/cm; pH 7.33 Temp. 6.8°C
LR 5-17-02

Samples are preserved and stored at the HERS field trailer.

They will be submitted tomorrow morning to SMO (TA-3-220)

15:30 Crew departs the site.

Louie Romero

5/17/2002

12-12-01 wed
This page was not used. Louie Romero

Louie Romero
5/17/2002

12-13-01 thursday Quarterly Sampling

The driving documents for this sampling event are the RFI report for TA-16, PRS 16-021(c); and the corrective measure Study (CMS) of PRS 16-021(c). The following SOPs will be used: LANL-ER-SOP 1.01, 1.02, 1.03, 1.04, 1.05, 1.07, 6.01, 6.02, 6.03, 6.13, 10.06; QP 5.2, 5.7, 10.3, LANL-ERQMP. Today we will continue with quarterly sampling of Martin spring wells. SSHASP 01-001 will be used

Samples are submitted to SMO after the tailgate safety meeting

Fish ladder seep has no water

1st monitoring well MSC is dry

2nd monitoring well MSC is dry

3rd monitoring well MSC is dry

Peter Seep is dry

TO's Linepond is dry

Confluence of CDV and Water Canyon is dry

Crew departs the site.

Lino Romero 5/17/2002

12-13-01 thursday

I HAVE REVIEWED THE ENTRIES ON PAGES 1 - 52 AND THEY MEET THE REQUIREMENTS DESCRIBED IN QP 5.7, NOTEBOOK DOCUMENTATION FOR ENVIRONMENTAL INTERVENTIONS. ALL REVIEW COMMENTS ~~HAVE BEEN~~ 12/13/2001 NEEDED HAVE BEEN CORRECTED AND/OR RESOLVED.

PETER G. M. GRAM 12/13/2001

12-17-01 monday

Todays activities: Continued Quarterly sampling of Ground & Surface water for the continuing Hydrogeologic investigations ~~for~~ for the TA-16 area, today, the collection of headwaters of CDV. crew will hike up canyon and check for flowing water and collect ~~water~~ sample as outlined in the following SOPs 1.01, 1.02, 1.03, 1.04, 1.05, 6.02, 6.03, 6.13 and QP 5.2, 5.7, 10.3; SHASP in effect is

900 Assemble necessary paper work SCL, COC. logbook, depart office

1000 arrive at TA-16 field trailer to prep sample bottles

1030 begin hike up CDV headwater,

1130 arrive at CDV headwater location, Area has been washed out by flooding. There is no water flowing, several inches of snow, range from 2" to 6", begin hike back down to vehicle

1215 back at vehicle. Peter gram called and informed of conditions at sample location.

1230 Back at field trailer to unload back pack.

5/17/2002

12-18-01 tuesday Quarterly sampling

The driving document for todays activitis are the RFI report for TA-16 PRS 16-021(c) and the CMS of prs 16-021(c). The following SOPs will be used: 1.01, 1.02, 1.03, 1.04, 1.05, 1.07, 6.01, 6.02, 6.03, 6.13, 10.06; QP 5.2, 5.7, 10.3; LANL ERQMP.

Today we will collect and submit the flow integrated samples from Burning Ground Spring and Martin Spring.

930 Tailgate meeting is conducted, and HORIBA is calibrated.

1000 RE16-01-3328, RE16-01-3329 is collected from 16-2650 Martin Spring-

sample fluid is frozen and will be thawed at the field trailers.

cond. 0.54, pH 7.33, temp. na

1030 RE16-01-3330, RE16-01-3331 is collected from 16-2652 Burning Ground Spring

sample is frozen and will be thawed at the field trailers.

Cond. 0.694; pH 7.74; temp. na

samples are thawed, then put into bottles. acid is added as necessary

1400 Crew submits samples to SMO

5/17/2002

Louis Romero

12-19-01

Today activities: run field analysis for RDX, Br, & Ba
Sop's to be used 1.01, 1.02, 1.03, 1.04, 1.05, 6.0A, 6.0
& 6.13. Qp's 5.2, 5.7, 10.7 SHASP in effect 264
General Field work:

830 arrive on site and prep samples for analysis
RDX kits will be analyzed with D-Tech kits for RDX
Barium will be done with the Hach DR200, &
Bromide will be done for Mn using the Orion Model 290A
results are listed below. Ba standard solution done
as outlined in ~~lab~~ procedures pg 68, results 1.00mg/l = 100ppm

Sample	RDX (ppm)	Ba (mg/l)	Br (mv)
Martin Spring	17	5	124.8
Martin Spring (Flow)	19	6	123.5
MS (upper)	LO	1	131.8
MS (lower)	LO	1	133.9
16-2656	LO	7	150.6
16-2658	LO	15	147.5
16-2659	7.07	8	151.7
Burning Grd.	11.9	1	152.5
Burning Grd (Flow)	13.28	1	149.0

Standard for Br were 1.0 ppm 100.9
100.0 ppm 45.5

1430 work completed

5/07/2002

1-3-02 Stream Profile
LRW K. Reid, L. Rivera
Activities Today we will conduct stream profile measurements, download dataloggers & collect LLA samples
Weather clear, wind ≈ 30°F
0845 Tailgate Safety meeting conducted. We will be working under SSHASP 01-001
0920 Well 16-2467 sitting well
5.80 ft total depth - well dry
datalogger downloaded to '2467 0103.dat
0922 Well 16-2660 DTW = NA, well frozen, unable to open
0925 Well 16-2659 DTW = 8.28 pH = 6.70 cond = 0.711 ms/cm T = 1.5°C
Datalogger downloaded to '2659 0103.dat'
0930 water in channel frozen, no surface flow at well point
no water observed at seep area
0937 Piezometer 16-2464 TD = 5.20' - dry Depth to ground surface = 3.05'
Piezometer 16-2465 TD = 5.15' - dry Depth to ground = 0.9'
Piezometer 16-2466 TD = 5.20 - dry Depth to ground 0.7'
0954 Well 16-2658 DTW = 6.11' pH = 7.50 cond = 0.580 ms/cm T = 2.6 °C
Datalogger downloaded to '2658 0103.dat'
Piezometer 16-2459 TD = 5.22' Depth to ground = 2.27'
16-2460 TD = 5.37' - dry Depth to ground = 3.1'
16-2459 DTW = 4.90'

1008 Stream profile location # 8
Discharge = 110 mL/sec pH = 8.2 cond = 0.564 T = 0.2°C
first sign of flowing water at surface
at well 16-2658, water is flowing, but not measurable discharge. Channel freezes up above MOTA
1010 Stream profile location #7
Discharge = 260 mL/sec pH = 7.68 cond = 0.544 ms/cm T = 2.1 °C
1021 Burning Ground Spring
Discharge = 0.350 L/s pH = 8.03 cond = 0.548 ms/cm T = 8.7 °C
Datalogger downloaded to 'BG 0103.dat'
Flowlogger downloaded
LLA samples collected 10-11-01 → 11/24/01
1053 Stream profile # 6 - frozen, no flow
Paul Rowe 5/17/2001

1-3-02

1055 Stream profile for #5 - Frozen, trace amount of surface flow. unable to measure parameters b/c of frozen conditions

1057 SWSC spring - no flow over weir. Ultrasonic measuring height of snow bank. Although there is no flow at spring, there is ponded water in channel directly north of spring in the channel. Possible evidence of groundwater seepage from different location

1107 Well 16-2656 DTW = 7.61 pH = 7.38 cond = 0.558 ms/cm T = 4.2°C
datalogger downloaded to '2656 0103.dat'

1120 SWSC spring
Battery for CR10X dead
Flowlogger downloaded to SWSC Flowlogger

1140 Martin Spring
LLA samples collected 10/11/01 → 11/26/01
Datalogger downloaded to 'ms 0103.dat'
Flowlogger ~~Intermittent~~ 5-17-02 power failure, Battery removed
Discharge = 0.035 L/s pH = 7.50 cond = 0.392 ms/cm T = 7.0°C

1207 Well 16-2655 DTW = dry pH = 8.26 cond = 0.488 ms/cm T = 3.6°C
only <2cm of water in well, not enough to turn on sampler
Datalogger downloaded to '2655 0103.dat'

1220 samples (LLA) set out to thaw

1223 crew departs site

KLD
5/17/2002

Field Maintenance

1/8/02 Today we will perform Field maintenance of automated datalogger equipment.

crew K. Reed, L. Romero

weather Sunny, 45°F

0950 Tailgate safety meeting conducted. We will be working under SSI/ASP 01-001

1000 Transfer of Isotope samples to 40 ml ~~ate~~ glass bottles

1140 Drop into canyon to replace batteries

1205 Martin Spring

- 12 volt marine battery replaced
- Isotope / LLA sampler back on line. Sample collected 1/8/02 next sample will be 1/10/02
- Flowlogger data logger downloaded

1235 SWSC spring

12 volt lantern replaced for datalogger

SWSC.dld program downloaded to datalogger.

Apparent loss of data stored on datalogger since

Current level on Flow logger = 0.137 ft, 0.02 cfs.

no visible flow observed. Flowlogger is measuring height of snow, Unable to properly calibrate instrument because there is no flow.

Flowlogger reads 124 mm, Reset to 0mm

Flowlogger datalogger downloaded

Current CR10X readings: Batt volt = 12.67 cond = 0.22, T = 3.03°C

1308 BG Spring

- LLA / Isotope sample bottles replaced.
- Isotope sample collected. Program started. Next sample at 1-10-2.
- Lantern Battery replaced for CR10X. Datalogger downloaded to 'BG0108.dat'

1320 2658

Datalogger downloaded. to '26580108.dat'

Battery replaced

1334 16-2655

Datalogger downloaded to '26550108.dat

Battery replaced. Problem with communication with Datalogger. Called Tech Support.

Louie Romero 5/17/2002

1-8-02

Spoke w/ Kurt at Campbell Scientific
1-435-750-9523 direct
1-435-753-2342 office
need keypad to reset datalogger.

1500 crew departs site

Kevin Rd
5/17/2002

1/17/02 Gravimetric soil moisture sampling

Crew K. Reid - IT, Brent Newman, ~~Johnny Salazar~~ KR 1/17/02, Leo Martinez - LANL

Activities Today we will collect soil samples in Cañon de Valle for gravimetric soil moisture analysis.

Weather Clear, cool ≈ 35°F

0815 Tailgate safety meeting conducted. Soil sampling will be performed under SSWASP 01-001.

0900 Drop in canyon, set up equipment on line 26B

1140 Samples collected:

Location	Depth	
22.5 ft	7.5" - 11.5"	tuff & soil
22.5	13.5" - 16.5"	dry soil + tuff
162 ft	0 - 4"	black frozen soil
162 ft	8 - 12"	hard tuff
162 ft	12 - 14"	hard tuff, wet
162 ft	15 - 17"	hard tuff, wet
162 ft	20"	hard tuff, wet
192.5 ft	3" - 5"	tuff fragments, dry

Soil Moisture Analysis

ID	Sample location	Sample Depth (~~ft~~ in)	Tare Mass (g)	Wet Mass (g)	Dry Mass (g)	Gravimetric θ
	22.5	7.5"-11.5"	117.18	232.9	225.3	7
	22.5	13.5"-16.5"	112.06	239.4	229.9	8
	162.5	0-4	112.06	~~170~~ 193.7	167.6	47
	162.5	8-12	117.39	227.6	216.3	11
	162.5	12-14	112.06	197.8	190.4	9
	162.5	15-17	112.99	200.8	194.8	7
	162.5	20	116.58	206.8	198.2	11
	192.5	3-5	112.51	187.0	184.5	3

KR 1/25-02

KR 5/17/2002

2/5/2 Monthly Database Downloading

crew K. Reed, L. Romero IT Corp

Activities Today we will download data loggers and conduct manual water quality measurements at springs + wells in Cañon de Valle and Martin Spring canyon.

Weather overcast cool ≈ 35°F

1400 Tailgate safety meeting conducted

1437 Martin Spring

Flowlogger downloaded

CR10x downloaded to 'MS205.dat'

Discharge = 20mL/s pH = 6.97 cond = 0.372 ms/cm T = 7.3 °C

Isotope sampler revised: collected 10 samples missed 4. Now in bottle ~~15, 14~~ KR 2/5/2 10 remain.

will need to be serviced prior to end of the month

1456 Well 16-6293

DTW = 10.30 TD = 10.50 pH = 7.31 cond = 0.373 ms/cm T = 4.2 °C

1533 Well 16-6294

DTW = 10.32 TD = 10.91

not enough water to take parameters

1540 Well 16-6295

DTW = 9.45 TD = 9.51

not enough water to take parameters

1559 Well 16-2655

DTW = Dry

Datalogger downloaded to '~~1205~~ KR 2/5/2 '26550205.dat'

1605 Crew departs site

5/17/2002

Monthly Download + Equipment check

2/6/2

crew K. Reid, L. Romero

Activities Today we will download dataloggers, check wells + springs, + conduct water quality measurements in Cañon de Valle.

Weather clear, sunny ≈ 45°F

1400 Tailgate safety meeting conducted. We will be working under SSHASP 01-00P. Horiba calibrated according to manufacturers instructions.

1445 Well 16-2656
DTW = 6.78' TD = 10.80' pH = 6.61 cond = 0.630 ms/cm T = 5.8 °C
Datalogger downloaded to '26560206.dat'

1500 Well 16-2657
DTW = 4.96' TD = 5.55' pH = 7.79 cond = 0.356 ms/cm T = 4.5 °C

1509 SWSC Spring
CR10X datalogger downloaded. Logger date corrected. Previously logger date was one day ahead i.e. logger listed today as 2/7/2.
Date + time ~~synchronized~~ KR 2/6/2 synchronized to PC date + time
Flowlogger database downloaded
Now flow in spring. Snow collected in pond area behind weir. Flowlogger measuring ~618mm ≈ 0.0 L/s

1521 Burning Ground Spring
Discharge ≈ 350 mL/s pH = 7.66 cond = 0.562 ms/cm T = 9.2 °C
Flowlogger reports 33mm ≈ 0.3 L/s
CR10X datalogger downloaded to 'BG0206.dat'
Flowlogger database downloaded

1538 Well 16-2658
DTW = 6.15' pH = 6.98 cond = 0.481 ms/cm T = 2.9 °C
Datalogger downloaded to '26580206.dat'
Piezometer 16-2460 Dry
Piez 16-2459 DTW = 5.00' TD = 5.50'

1557 Well 16-2659 Datalogger downloaded to '26590206.dat'
DTW = 8.08' pH = 7.20 cond = 0.593 ms/cm T = 4.8 °C
piezometer 16-2465 DTW = dry TD = 5.35'
piezometer 16-2464 DTW = dry TD = 5.45'
piezometer 16-2466 DTW = dry TD = 5.40'

1604 Stilling well TD = 6.0' unsure if it is frozen at bottom appears to be a trace of water in Bottom
Datalogger downloaded to '24670206.dat'
Louie Romero 5/17/2002

2-6-02

1607 Well 16-2660 DTW = 8.11 TD = 10.1

1635 crew departs site

5/17/2002

Monthly Hydrogeo Maintenance

2/11/2

Crew K. Reed, L. Romero

Activities Today we will replace batteries + collect Isotope Samples from Martin and Burning Ground springs

Weather Clear, sunny @ 45°F Snow melt begining.

1400 Tailgate safety meeting conducted. We will be working under SSHASP 01-001

1420 Drop into canyon

1423 Battery at well 16-2656 replaced

1435 Isotope samples pulled from BG spring 1/8/2 → 2/11/2, Samples will be stored in trailers

1450 Battery replaced at staff gage at the well pair

1510 Martin Spring Canyon. Battery replaced at CR10X Isotope samples pulled: 1/8/2 → 2/11/2

1530 Well 16-2655, Datalogger downloaded. Still problems Datalogger removed. Will trouble shoot at the office.

1600 Crew departs site

5/17/2002

2/13/2 Isotope transfer + QA at Martin spring

Crew K. Reed, L. Romero

Activities Today we will transfer Isotope samples to 40 mL glass bottles and performance check instruments.

1330 Tailgate safety meeting conducted. We will be working under SSINASP UI-001 + Following LANL ER SOPs: 5.2, 7.

Weather clear cool ≈ 50°F

1400 Martin Spring

Datalogger downloaded to 'm30213.dat'

conductivity probe reading in autocal solution = 5.106 ms/cm

conductivity probe in spring water = 0.387 ms/cm

Horiba in spring water = 0.493

Flowlogger datalogger pulled.

Isotope auto sampler back on line. Sample collected today. Sampler set to begin at 2/15/02.

1540 Burning ground spring

Isotope sampler back on line. Sample collected today

First sample for auto sampler will be 2/15/2

1600 crew departs site

5/17/2002

2/22/2 Performance check of Instruments

Crew K. Reid, L. Romero

Activity Today we will performance check instruments at springs + wells located in MS canyon + CdV

Weather Clear, cool ≈ 45°F

0930 Tailgate safety meeting conducted. We will be working under SSI/MSP 01-001 + Following LANL ER SOPs: 8.1, 7.01, 5.2

1040 Martin Spring

Flow logger datalogger replaced. Site Name 'Martin Temp'

CR10x datalogger downloaded to 'MS0222.dat'

Performance check of conductivity probe

standard sol of ~~4.15~~ KR 2-22-2 4.49 mS/cm

reading of cond probe = 4.495 (Autocal solution)

Reading of cond probe in MS water = 0.600; 0.517; 0.435 (after cleaning)

Horiba autocal sol cond 4.58

Horiba pH 4.57

Horiba reading of MS water = 0.478 ms/cm

" 6.96 pH

" 7.7 °C T

Temp / cond probe 247W-L #8105

LT #417936 10'

S/N 2631 cal 1.418

1058 Martin Spring Stormwater filter maintenance. South side of stormwater filter closed off. Tech consultation w/ Matt at Stormwater filter. Low flow conditions, difficult

1140 Well 16-2655

DTW = 10.17' TD = 10.28' pH = ~~0.893~~ 9.02 KR 2-22-2 cond = 0.893 ms/cm T = 6.7 °C

1145 90's line pond dry

1313 SWSC spring Dry

1315 Well 16-2656

Datalogger downloaded to '26560222.dat'

Horiba calibrated DTW = 6.78' TD = 10.30' = length of PT from TOC

	Volt Loc 1	Loc 2	PT Loc 3	offset Loc 4	cond Loc 5	Temp Loc 6
Initial conditions:	11.665	0	3.820	0.252	0.214	5.194

Horiba Initial Water Quality Parameters: pH = 5.85 cond = 0.750 ms/cm T = 5.5 °C

Cond probe in auto cal solution = 4.343; 4.858 (after cleaning)

Water column of 1.25 ft; PT reading = 1.471 ft

0.75 ft 0.950 ft

2-22-02

0 ft = 1.222
-0.5 ft = 1.737
0.5 ft 0.515 = difference

1349 Burning Ground Spring
Data downloaded to 'BG0222.dat'

Initial Conditions	Volt Loc 1	Loc 2	Cond Loc 3	Temp Loc 4
	10.976	0	0.229	9.950

Horiba calibrated
BG Spring water w/ Horiba: pH = 6.4 cond = 0.713 ms/cm T = 9.6 °C
Conductivity probe in autocal solution = 4.674
Flowlogger data downloaded
Water height measured by flowlogger = 30 mm
water height actual = 30 mm

1406 Piez 2460 DTW = dry TD = 5.71'
Piez 2459 DTW = ~~5.2~~ KR 2-27-2 5.02' TD = 5.55'
1409 Well 2658 DTW = 6.18' TD = 9.7'
Datalogger downloaded to '26580222.dat'

Initial Conditions	Loc 1	Loc 2	Loc 3	Loc 4	Loc 5	Loc 6
	11.057	0	4.226	0.534	0.193	4.271

Horiba calibrated
2658 water w/ Horiba: pH = 5.70 cond = 0.734 ms/cm T = 3.7 °C
Conductivity probe in autocal solution = 4.260; 4.792 after clea
pressure transducer: KR 2-22-2
0 ft = ~~1.816 ft~~ 1.192
+0.5 ft = 1.705
0.5 ft 0.513

1455 crew departs site

5/17/2002

Performance check instruments at Well Pair

5/17/02

crew K. Reid, L. Romero

Activities Today we will performance check instruments at the well pair

weather clear, windy @ 45° F

1430 Tailgate safety meeting conducted. We will be working under ssshasp01-001 & following LANL ER SOP's

1445 Well 16-2659 Datalogger downloaded to '26590225.dat'

DTW = 7.81

Piezo 2464 - dry

Piezo 2465 - ~~dry~~ KR 2-25-2 KR 2-25-2 DTW = 5.41 ft = piez 2465

Stilling well 2467 - ~~dry~~, but trace of water in bottom = 5.99 ft DTW TOC = 6.00 ft

Well 16-2660 DTW = 7.85

Well 16-2659 Initial conditions:

Loc 1	Loc 2	Level Loc 3	offset Loc 4	cond Loc 5	Temp Loc 6
10.24	0	1.457	-0.881	0.246	4.952

Conductivity probe reading in autocal solution = 4.201 ms/cm

Horiba calibrated

Horiba measurements of well water: pH = 6.32 cond = 0.806 ms/cm T = 6.2 °C

Pressure Trans cable length = 9.92 ft from top of casing

Pt at 0 ft = ~~1.~~ KR 2-25-2 0.991 ft

0.5 ft = 1.479 ft

Logger clock synchronized to laptop clock

1506 Stilling well 16-2467

Data downloaded to '24670225.dat'

Initial conditions

Conductivity probe in autocal solution = 2.862 ms/cm

Pressure trans cable length = ~~24.444~~ KR 2-25-2 from Top of casing

pt at 0 ft = 24.444 cm? 5.62 ft

0.5 ft = 49.141

1520 Pressure trans + conductivity probe from well 16-2659 will be placed in column of water over night to test environmental affects on instruments

Initial conditions

Loc 1	Loc 2	Loc 3	Loc 4	Loc 5	Loc 6
10.301	0	1.450	-1.229	0.263	5.278

Lorie Romero 5/17/2002

2-25-02

1527 Piez 2466 - dry TD = 5.35 ft

1540 crew departs site

5/17/2002

3/15/02

Crew K. Reed, P. Gram, L. Romero

Activities Today we will trouble shoot storm water filters at Martin Spring and record serial numbers from Equipment in MS + CdV.

Weather Clear, warm ≈ 60°F

1010 Tailgate safety meeting conducted. We will be working under SSHASP 01-001.

1020 Martin Spring. Trouble shooting on storm water filters

Serial # of Equipment

CR10X S/N: X18031

Conduct/Temp Probe S/N ~~SC~~ KR 2631

cal: 1.418

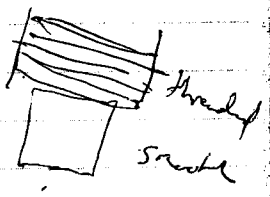
Flowlogger Datalogger: 199F01476

Desc : 603114003 4110

Flowlogger Ultrasonic: 200G01009

Desc: 603114012 4110

Problem with Ba (lower) unit. Either float is not making a tight seal or fitting allows leakage. Fitting is a a threaded ~~tr~~ KR S-7702 Female on the filter needs to connect to the unthreaded male on the exit plumbing



1243 16-2656 CR10X S/N: X18029

Cond/temp S/N 2627

Druck S/N: 179514

1251 ~~CR10X~~ S/N: 16481 CR10WP SWSC

temp/cond: 2628 S/N

Flowlogger ISCO 4110 *199F01477*

ISCO Ultrasonic S/N *199G01694*

1257 CR10 S/N: 18032 Burning ground

temp/cond: S/N 2630

ISCO 4110 Flowlogger: *199A00774*

ultrasonic *199H00385*

1310 Well 16-2658

CR10X S/N: X 18034

Cond/T probe : 247 W-L #8105

LF #417936 15'

S/N 2632 cal 1.366

PT probe PDCR 1830-8517 / S/N: 179516 / 5 Psi g 10 volts / Druck

Louis Romero 3/17/2002

3-5-02

1340 Well 16-02659

CR10X : S/N : X18033

cond/T probe : #8105 247 W-L

LT# 417936 10'

S/N 2629 cal 1.400

Pressure Trans : POCR 1830-8517

S/N 1179513

5 psi g 10 volts

1400 Stilling Well 16-2467

CR10X : S/N: X 23117

cond/T probe : #8105 247 W-L

LT # 417936 15'

S/N 2626 cal 1.383

PT prob : POCR 1830-8517

S/N 1179515

5 psi g 10 volts

1420 crew departs site

5/17/2012

5-16-2 Field Maintenance

Crew K. Reid, L. Romero

Activities Today we will install data logger at well 16-2655 and conduct performance checking of instruments

Weather clear, warm ≈ 55°F

1330 Tailgate safety meeting conducted. We will be working under SSHASP 01-001.

1345 Well 16-02655

Data logger installed, wiring completed

Wind direction, wind speed, ambient temp + extra tipping bucket sensors removed.

Instrumentation at site consists of: Data logger, pressure trans, temp + conductivity probe, and a tipping bucket.

Serial #'s:

CR10X: S/N: X 18030

Temp/cond Probe: 247 W-L #8105

Lt # 417936 15'

S/N 2633 Cal 1.412

Pressure Transducer: PDCR 1830-8517

S/N 1179517

5psi g 10 volt

druck

Tipping bucket: S/N 1163

1420 Conductivity probe test:

In autocal solution reading = 3.068 ms/cm

In autocal solution after cleaning = 3.326 ms/cm

1445 Pressure Transducer test

Level 0 = 0.001 ft

Level +0.5 ft = 0.491 ft

1515 Tipping bucket tested several times. Will need to erase datacom this date.

1610 Crew departs site

5/17/2002

3-11-2 March Quarterly Sampling

Crew K. Reid, L. Romero

Activities Today we will begin quarterly sampling. We will collect samples from CdV headwaters and other locations as time permits.

Weather Clear, warm ≈ 50°F

1015 Tailgate safety meeting conducted. We will be working under SSHASP 01-001. We will be following LANL-ER-SOPs: 1.01, 1.02, 1.03, 1.04, 1.05, 1.07, 6.01, 6.02, 6.03, 6.13, 10.06, QP 5.2, 5.7, 10.3, + LANL-ER-QMP.

1025 crew gathers sampling equipment

1057 Well 16-2655 DTW = dry TD = 10.17

1109 90's line pond - dry

Well 16-2661 - dry

Well 16-2662 - dry

Well 16-2663 - dry

Well 16-2664 - dry

Well 16-2669 - dry

1116 Well 16-2665 - dry

Well 16-2666 - dry

1137 Fishladder seep - dry

1432 Headwaters CdV location ID 16-5968

Horiba calibrated. Orion conductivity probe calibrated.

Discharge ≈ 0.2 L/s

Horiba pH = 5.80 cond = 0.334 ms/cm T = 3.8 °C

Orion cond = 0.078 ms/cm T = 2.1 °C

Sample RE16-02-45201 + RE16-02-45200 collected

photo #2 taken of samples

photo #3 view east upcanyon

photo #1 stream, field operations

1600 Samples preserved + stored overnight in field trailer

1605 crew departs site

5/17/2002

March Quarterly Sampling

3-12-2

crew K. Reid, L. Romero

Activities Today we will sample wells + springs in Cañon de Valle.

Weather clear, warm ≈ 45°F

1000 Tailgate safety meeting conducted. We will be working under SSHASP 01-001. We will follow LANL ER SOPs: 1.01, 1.02, 1.03, 1.04, 1.05, 1.07, 6.01, 6.02, 6.03, 6.13, 10.06, QP 5.2, 5.7, 10.3, + LANL-ER-QMP while conducting Sampling.

1010 crew gathers equipment + sorts out sample collection logs.

1104 piezometer 16-2466 - dry.
piezometer 16-2465 - dry
piezometer 16 2464 - dry
well 16-2660 - DTW = 7.89'
spilling well 16-2467 - dry

1108 Well 16-2659 Horiba calibrated. Orion meter calibrated (4.54 ms/cm in ambient sol)
DTW = 7.87' TD = 10.3' Height water = 2.43' * 2.47 = 6 Liter/well volume

In:	pH	Cond ms/cm	T °C
Initial parameters	5.69	0.244	5.1
6L purged	7.17	0.248	4.9
12L purged	7.28	0.247	4.8
18L purged	7.35	0.248	5.0

Samples RE16-02-44984, RE16-02-44985 collected
photo #4 taken of sample bottles

1208 Burning Ground Spring
pH = 7.84 cond = 0.226 ms/cm T = 9.9 °C
Discharge ≈ 0.2 L/s
Samples RE16-02-44256, RE16-02-44257 collected
photo 7 Taken

1210 Burning Ground Spring - QA duplicate Sampling
samples RE16-02-45260, RE16-02-45261 collected
photo 8 taken

1410 Samples preserved

1545 Samples submitted to SMO

1610 Martin Spring flow Integrated sampler set to sample at 1700.

1622 crew Departs site

KR 5/17/2002

3-13-2 March Quarterly Sampling
crew K. Reid, L. Romero
Activities Today we will sample Martin Spring and wells and stormwater filters in martin spring canyon.
weather Warm, clear ≈ 55 °F
1002 Tailgate safety meeting conducted. We will be working under SSHASP 01-001. We will be following LANL-ER-SOP's: 1.01, 1.02, 1.03, 1.04, 1.05, 1.07, 6.01, 6.02, 6.03, 6.13, 10.06, QP 5.2, 5.7, 10.3 + LANL-ER-QMP.
1030 Martin spring. Horiba calibrated
horiba pH = 7.07 cond = 0.430 ms/cm T = 8.5 °C
orion cond = 0.431 ms/cm T = 8.0 °C
Sample RE16-02-45252, RE16-02-45253 collected
photo 9, roll #1 taken
Discharge ≈ 0.020 L/s
1043 Martin Spring Upper Storm water filter
horiba pH = 7.49 cond = 0.407 ms/cm T = 8.1 °C
orion cond = 0.430 ms/cm T = 7.2 °C
Sample RE16-02-45246, RE16-02-45247 collected
photo 10, roll #1 taken
1055 Martin Spring Lower Stormwater filter
horiba pH = 7.54 cond = 0.404 ms/cm T = 7.6 °C
orion cond = 0.429 ms/cm T = 7.0 °C
Sample RE16-02-45248, RE16-02-45249 collected
photo 11, roll #1 taken
1120 Well 16-6293 DTW = 10.4' TD = 10.5' not enough water to sample or to take screening parameters
1400 Samples filtered, labelled, preserved
1540 Samples submitted to SMO
1600 crew returns to office

KR 5/17/2002

3-14-2 Quarterly Sampling

crew L. Romero, K. Reed

Activity Today we will sample wells 16-2656, 16-2657, 16-2658 and wells 16-6294, 16-6295.

Weather clear, high winds ≈ 45°F

0930 Tailgate safety meeting conducted. We will be working under SSI/ASP 01-001. We will be following LANL ER-SOPs: 1.01, 1.02, 1.03, 1.04, 1.05, 1.07, 6.01, 6.02, 6.03, 6.12, 10.06; QP 5.2, 5.7, 10.3 + LANL-ER-QMP

1010 Martin Spring. Flow integrated sampler reset to sample 150 mL every 225 L of discharge beginning at 12:00 3-14-2

1019 Well 16-6294 DTW = 10.84' TD = 10.9' not enough water to sample

1028 Well 16-6295 DTW = 9.4' TD = 9.48' not enough water to sample

1049 Well 16-2657 Horiba calibrated

DTW = 4.78 ft TD = 5.55 ft Only 1.8 L of water collected

Horiba pH = 6.99 cond = 0.485 ms/cm T = ~~5.1°C~~ KR 3-14-2 4.9°C

Orion cond = 0.423 ms/cm T = 4.6°C

Samples RE16-02-44980, RE16-02-44981 collected photo 13, roll 1

however low volume of water in well precluded sampling

for: AIKT, EPA300, Hexmod, VOAGCMS, D2H + O18O16, metals + Dgel, NO_2NO_3. Only 2L for HEXP sampled

1105 Well 16-2656

DTW = 6.74 ft TD = 10.52 3.78 ft × 0.617 = 2.33 L/well vol

	pH	cond ms/cm	T °C
Initial condition	7.56	0.220	5.8
4.0 ~~2.33~~ KR 3-14-2	7.45	0.220	4.8
~~4.66~~ KR 3-14-2			
7.00	7.55	0.220	4.5

Samples RE16-02-44978, RE16-02-44979 collected

photo 12, roll 1 taken

1120 SWSC spring - dry

1122 Peter seep - dry

1140 Water samples filtered, labelled, preserved.

1330 Samples submitted to SMO

5/17/2002

3-18-02 MONDAY

1045 QUARTERLY water sampling continued.
Crew of Louis Romero and Kevin Reid arrive at HFPS field trailer.
temp ~60°F with 10mph winds from west scattered clouds present
Plan of the day is to collect a sample and a duplicate sample from
the 4th monitoring well in CDV (16-2658). The sample will be preserved
then submitted to SMO. If time permits, stream profile will be ~~start~~ started
started. we will perform this work under SSHASP 01-001 and will follow
LANL SOP 1.01, 1.02, 1.03, 1.04, 1.05, 1.07, 6.01, 6.02, 6.03, 6.13, 10.06,
LANL ER-QAP. Tailgate meeting is conducted, special topic is sun
protection.

1120 ~~RE16 02-45250~~ LR 5/17/2002 16-2460 piezometer
~~Volitak sample is collected 1st~~ LR 5/17/2002 piezo 2459 dtw 5.07
~~16 2658 dtw td~~ LR 5/17/2002 16-2658 dtw 6.20 td 10.20
10.20
- 6.20
(4.00 feet of H_2O) (2.47111) = 9.88 is 1 well volume
1 liter Horiba 0.845 ms/cm; 5.2°C; pH 6.05
Orion 0.246 ms/cm; 6.7°C;
10 Liters Horiba 0.605 ms/cm; 3.9°C
Orion 0.205 ms/cm; 4.4°C
20 Liters Horiba 0.559 5.8 ; pH 7.21
Orion 0.207 ; 3.1°C

11:50 22 liters sampling begins
~~RE16 02-45250 and RE16 02-45251~~ LR 5/17/2002
photo 15 was taken
RE16-44982 and RE16-02-44983
Cond 0.207 ms/cm; temp 3.1°C; pH 7.21
5/17/2002 LR ~~1350~~ 1250 Crew exits canyon and breaks for lunch
1330 Crew returns to trailers
Samples are preped for submission to SMO
1400 Crew departs site to SMO
Duplicate sample was not collected today due to slow recharge rate.
Louis Romero
5/17/2002

3-19-02 tuesday

1000 Quarterly sampling continued. Louie Romero and Kevin Reid arrive at the HEPS field trailers. Today we will collect samples from the confluence of CDV and Water Canyon and confluence of CDV and fish ladder canyon. Temperature is apx 56°F, no wind, and few scattered clouds are present. We will perform our work under SOP 01-001 and SOPs 1.01, 1.02, 1.03, 1.04, 1.05, 1.07, ~~1.08~~ LR, 6.01, 6.02, 6.03, 6.13, 10.06, and ~~LANLERQMP~~ 5/17/2002 LANLERQMP. Tailgate meeting is conducted.

1100 crew drops in CdV from MOAP

1130 Confluence of Fish ladder + CdV. location dry
Two photos taken of sample sites

1250 Confluence of CdV and Water canyon. location dry
One photo taken of sample site

1307 Water canyon at ESH-18 weir
Horiba calibrated

Horiba pH = 7.73 cond = 0.418 ms/cm T = 2.9 °C
cond = 0.141 ms/cm T = 2.1 °C

Flow ≈ 0.1 L/s
Samples RE16-02-45202, RE16-02-45203 collected
photo 19 taken of samples

1500 sample acidified, stored on ice

1520 crew departs site

Kevin Reid
5/17/2002

3-20-2 Quarterly Sampling + Stream profiling
Crew K. Reed, L. Romero
Activities Today we will conduct stream profile screening and quarterly sampling of well 16-2658
Tailgate safety meeting conducted. We will be working under SSHMSP 01-001. We will be following LANL-ER-SOP's 1.01, 1.02, 1.03, 1.04, 1.05, 1.07, 6.01, 6.02, 6.03, 6.13, 10.06, + LANL ER QMP
Weather clear, warm ~ 55°F
1105 Horiba calibrated

	station	Q(L/s)	pH	cond(mS/cm)	Temp(°C)	photo
11:10	cdv-2	0				21
11:17	cdv-3	0				22
11:20	cdv-4	0				23
11:22	SWSC spring	0				24
11:25	cdv-5	0 Frozen				25
11:30	cdv-6	0 dry				26
11:35	BG spring	0.4	7.60	0.230	10.3	27
~~1142~~	~~cdv-7~~	~~8.41~~	~~0.12~~	~~0.222~~	~~7.1~~	
11:42	cdv-7	0.12	8.41	0.222	7.1	28
11:49	cdv-8	~~0.12~~ 0.09	8.61	0.20	4.3	29
1157	cdv-9	0.05	8.50	0.216	3.6	30
1205	MDA-P bridge	0.30	8.31	0.218	2.2	31
~~1211~~	~~cdv-10 (weir)~~					
1211	cdv-10 (above plume)	0.020	8.50	0.218	1.6	32
1218	cdv-11	0 dry				33
1220	cdv-12	0 dry				34
1223	cdv-13	standing water	8.06	0.236	5.6	35

1335 Sample collection at cdv-10
Sample RG16-02-45224 + RG16-02-45225 collected
photo ~~36~~ 37 taken
• cdv 14 location dry, photo 36 taken
all locations down canyon from cdv 14 dry. Locations inspected 3-19-2 during sampling trip to cdv, water canyon confluence
1350 ~~1330~~ Sample collection at cdv-9
Sample RG16-02-45222 + RG16-02-45223 collected
Photo 1, roll 2 taken

3-20-02

1358 Sample collection at cdV-7
Samples RE16-02-45192 & RE16-02-45193 collected
photo 2, roll 2 taken

1426 Well 16-2658
DTW = 6.19 ft TD = 10.20 9.88 L/well volume

	pH	cond (ms/cm)	T °C
Initial	7.85	0.198	3.8
10 L	7.77	0.196	3.6

well not recharging. Sample collected after 10L bailed.
Sample RE16-02-45250, RE16-02-45251 collected
photo 3, roll 2 taken
This sample will be a duplicate sample of well 16-2658 for QA purposes.
Final screening parameters after sample was collected
pH = 7.65 cond = 0.193 mS/cm T = 3.6 °C

1440 Samples preserved, stored in coolers
1500 crew departs site

Kevin Red
5/17/2002

3-21-2 Quarterly Sampling

Crew K. Reid, L. Romero

Activities Today we will collect flow integrated samples from Burning Ground and Martin Springs.

Weather Clear, warm ≈ 55°F

0800 Visit by Don Hicknott + Tom Crespin (LANL) to conduct walk through of the administration trailer and sites grounds. Better housekeeping of CRZ in admin trailer is called to attention.

0830 Tailgate safety meeting conducted. We will be working under SSHASP 01-001. We will be following LANL-ER-SOPs: 1.01, 1.02, 1.03, 1.04, 1.05, 1.07, 6.01, 6.02, 6.03, 6.13, 10.06, + LANL ER QM

0900 Burning Ground Spring
collection of flow integrated sample. 12 L collected by autos.
pH = 7.95, cond = 0.220 ms/cm T = 13°C
Samples RE16-02-45258, RE16-02-45259 collected
photo 4, roll 2 taken

0920 Martin spring
collection of flow integrated sample. 12 L collected in autosample
pH = 8.29, cond = 0.431 ms/cm, T = 4.5°C
samples RE16-02-45254 ; RE16-02-45255 collected
photo 5, roll 2 taken.

0950 Samples labelled, acidified, filtered, stored in coolers.

1150 Sample taken to SMO (TA-3-271).

1215 Samples relinquished to Jaylene Valdez
Crew returns to IT for lunch

1310 Crew back at Trailers. massive house keeping (cleaning) is conducted ~~40~~ 5-17-02 LR due to inspection earlier this morning.
CRZ is cleaned, laundry is stored appropriatly until arrangements are made for laundering. Trash is taken to the Los Alamos landfill.

~~15~~ LR ~~1615~~ LR 5-17-02

1715 Crew returns to IT building.

Louie Romero 5/17/2002

4/3/2 Monthly download of dataloggers

Crew K. Read, L. Romero

Activities Today we will download data from the data loggers in Martin Spring canyon + Cañon de Valle

1350 Tailgate safety meeting conducted. We will be working under SSHASP 01-001.

Weather Partly cloudy, slight wind ≈ 50°F

1416 Well 16-2659 data downloaded to '26590403.dat' clock -12 hrs on datalogger, clock set to correct time

1422 Stilling Well 16-2467 data downloaded to '24670403.dat' clock -12 hrs on datalogger, clock set to correct time

1438 Well 16-2658 data downloaded to '26580403.dat' clock +1 hrs on datalogger, clock set to correct time

1450 Burning ground spring, data downloaded to 'bg0403.dat' clock +12 hrs on datalogger, clock set to correct time

1455 SWSC spring, data downloaded to 'swsc0403.dat'. Flow set to 0 clock -12 hrs on datalogger, clock set to correct time

1506 Well 16-2656, data downloaded to '26560403.dat' clock +12 hrs on data logger, clock set to correct time.

1529 Martin Spring, data downloaded to 'ms0403.dat' Flow logger interogated, clock -12 hrs, set to correct time

1543 Well 16-2655, data downloaded to '26550403.dat'

1550 crew conducts field screening of quarterly samples

1630 crew departs site

5/17/2002

4/17/2 Field Maintenance

crew K. Reid, L. Romero

activities Today we will remove pressure transducers from wells 16-2655 + 16-2659 for maintenance

weather Clear, gusts of wind ≈ 60°F

1340 Tailgate safety meeting conducted. We will be working under SSHAP 01-001

1408 Well 16-2659
pt removed. Stilling well 16-2467 cap removed from pt vent tube

1440 Well 16-2655
pressure transducer removed.

1500 Pressure transducers placed in oven in chem trailer to dry overnight at ≈ 100°F

1520 Crew departs site

Kevin Reid
5/17/2002

4/19/2 QA of pressure Transducers

crew K. Reed, L. Romero

activities today we reinstalled pressure transducers and desiccants at well 16-2655 and well 16-2659

Weather clear, breezy ~ 65°F

1100 Tailgate safety meeting conducted. We will be working under SSHASP 01-001

1140 Well 16-2659

pt reinstalled

Batt Volt	Cond	Temp	Level	offset
9.444	1.443	0.976	0.234	6.082

KR 4/16/03

Level at 0 = 1.443 Diff = .0513

Level at +0.5 ft = 1.956

Datalogger downloaded to '26590419.dat'

1228 Well 16-2655

pt reinstalled

0.382 = level.

problems with connection. Datalogger keeps timing out. Need to replace battery.

datalogger downloaded to '26550419.dat'

1305 crew departs site

Kevin Reed
5/17/2002

04/22/2002

I HAVE REVIEWED THE ENTRIES ON PAGES 54 THROUGH 85 AND THEY MEET THE REQUIREMENTS DESCRIBED IN QP-5.7, NOTEBOOK DOCUMENTATION FOR ENVIRONMENTAL RESTORATION ACTIVITIES. ALL REVIEW COMMENTS NOTED HAVE BEEN CORRECTED OR RESOLVED.

PETER G. M. GRAM Peter G. M. Gram 04/22/20

05/28/2002

I HAVE REVIEWED THE ENTRIES IN VOLUME 1, PAGES 1 THROUGH 160, VOLUME ~~2~~ 2, PAGES 1 THROUGH 304 AND VOLUME 3, PAGES 1 THROUGH 86 AND THEY MEET THE REQUIREMENTS DESCRIBED IN QP-5.7, REVISIONS 0, 1 AND 2, NOTEBOOK DOCUMENTATION FOR ENVIRONMENTAL RESTORATION TECHNICAL ACTIVITIES. ALL REVIEW COMMENTS NOTED HAVE BEEN CORRECTED AND/OR RESOLVED.

QUALITY LIAISON ANDREW E. GALLEGOS 5/31/02

05/28/2002

6/7/2002 Friday Distribution Coefficient

Distribution coefficient samples will be collected from Cañon de Valle at a non-contaminated site. This soil will come from 2 areas as determined by the Steve Romero map. Sample will be collected from f.1 and C2 regions near stake ID 16-2752. f1 region exists at stake ID 16-2752, and the C2 region is located North West of this region. ~ 1000g of sample will be collected from each site.

11:00 Crew of Louie Romero and Elmer Alcon arrive at HEPS field trailer. Tailgate meeting is conducted, and equipment is prepared.

11:15 f1 region sample is collected. Several photos are taken showing location and sample.

11:30 C2 region sample is collected. photos are taken of region and sample.

Samples stored in field trailer refridgerator.

Sample will be taken to Maureen McGraw next week.

Sample will be spiked with Rb for a tracer/modeling study.

11:50 Crew departs the site.

Louie Romero ~~6/2~~ LR 6/7/2002

LR 6/7/2002

6/24/2002
Quarterly water sampling
LANL ER SOP 1.01, General Instructions for field ~~work~~ LR 62402 investigations
1.02 Sample containers & preservation
1.03 Handling, packing, & shipping samples
1.04 Sample control and field documentation
1.05 Field quality control samples
1.07 operational guidlines for...
6.01 purging and sampling methods
6.02 field analytical measurements of groundwater
6.03 sampling for volatiles
6.13 Surface water sampling; 10.06 HE Spot test; QP 5.2 Control..
QP 5.7 Notebook..; 10.03 Stop / restart work LANL ER QMP
Tailgatemeeting is conducted / SSHASP 01-001; temp. ~80°F, overcast

14:00	16-2655	dtw 9.5	not enough water to sample
	16-2669	dry	16-2651 spring is dry
	16-2661	dry	16-2653 Peter seep is dry
	16-2662	dry	16-2654 Fish ladder Seep
	16-2663	dry	
	16-2664	dry	
	16-2668	dry	
	16-6293	dry	
	16-6294	dry	
	16-6295	dry	
	16-2665	dry	
	16-2666	dry	

16:00 Crew departs the site

6/24/2002

6/25/2002 Tuesday QUARTERLY SAMPLING
Quarterly sampling continued. Crew of Louis Romero and ~~Charlie~~ Leon will start weekly flow samplers at MS & EC, 6/25/02
~~then start sampling cell monitoring~~ LR 6/25/02
Today we will sample 90's line pond and Martin Spring.
We will work under SSHASP 01-001 and LANL ER SOP 1.01; 1.02; 1.03; 1.04; 1.05; 1.07; 6.01; 6.02; 6.03; 6.13; QP 5.7; 10.03; LANL ER QMP; Temperature is approx. 85°F, overcast of smoke from Arizona fire.
11:00 Crew arrives at HERS field trailers, after gather sampling containers from SMO. Tailgate meeting is conducted. Horiba and rented piece of equipment are calibrated.
Crew arrives at 90's line pond
1235 RE16-02-45913; RE16-02-45917 are collected by L Romero; Leon documents SOC and measures parameters
Cond. 0.17 ms/cm; pH 6.29; temp. 29°C;
turb 422; DO 0.02 photo 8 is of collection in progress
photo 9 is of samples collected; photo 10 is of samples collected. There was not a white board available, so a photo (9) was snaped of the SCC. The COC ID: 15912 (Event 492)
~~but the metal unfiltered an~~ 6/25/02 LR did not have the desired METTALUE analysis printed on it, so it was not submitted ~~at~~ 6/25/02 LR with this sample/coc at this time. But the rest of the standard suite was submitted.
1300 Crew arrives at Martin Spring 16-2650
1306 RE16-02-45914; RE16-02-45910 are collected
Cond. 0.43 ms/cm; pH 7.01; temp. 11.4°C
turb. -10; DO -0.03 (approx.)
photo 11 and 12 are taken (white board).
crew returns to site.
Samples are labeled, filtered, preserved, we have a clean slip from Jim Nuttal for this sampling event.
1630 Sample are relinquished to Augusta Garcia (SMO).

[signature] 6/25/02

6-26-02 wend. Quarterly Sampling of CDV & Martin Canyon
Todays activities; Continue to Quarterly Sample wells
and Spring with Canyon de Valle & Martin canyon.
Crew will consist of E. Alcon & L. Romero (Shaw Environmental)
SSHO Spin effect 01-001 and Laml ER SOP's 1.01, 1.02
1.03, 1.04, 1.05, 1.07, 6.01, 6.02, 6.03, 6.13, QP's 5.7,
10.03. Temperature at 10:00 is approx 80°F
with smoke haze overcast. Crew will concentrate
on Canyon de Valle locations, and replace battery at
Martin Springs ~~Bato~~ samplers.
0930 Crew depart office for field, first a stop at Storage
locker.
1000 Crew arrive at TA-16 Field Trailer and Tailgate
brief conducted.
1005 Crew depart for Martin springs to replace battery.
1045 battery replacement complete. Crew has been
informed by fire Mgt that a scheduled burn
will be in effect at the "Burning Grounds" facility
~~There! eff~~ from 1030 to 11:00. therefore access
6-26-02
to lower wells and spring is not possible until
after burn.
12:15 Crew arrives at 16-2656
12:25 RE16-02-45923; RE16-02-45932 is collected
temp. 14.3°C; Cond 0.29 ms/cm; pH 7.6
dtw 6.9 ft; td 13.58 due to low recharge rate, sampling
started after 1 well volume (not 3)
phot 13 is taken of samples collected
13:50 16-2657 RE16-02-45924 is collected
due to low well volume and slow recharge rate, well was sampled
without bailing 3 well volumes
2 Liter bailed; temp. 16.3°C; cond 0.37 ms/cm; pH 7.7
1 Liter HEXP (1 Liter Amber); 1 Liter poly (filled with 500 mL) ~~and~~ or 6 liter
ALKT; 1 Liter poly (filled w/ 500 mL) METAL + B GEL
photo 14 is taken of samples collected
Continued on next page
Louie Romero 6/26/02

6/26/2002 wednesday Quarterly Sampling
Continued from previous page (91)
13:30 16-2652 Burning Ground
Flow rate intigrated sample started
1330 RE16-02-45896; RE16-02-45903 is collected
flow = ~250 mL/sec; temp. 11.9°C; cond 0.24 ms/cm; pH 8.01
~~crew~~ 16/26/02 photo 15 is of samples collected.
Crew returns to NEPS field trailers.
Samples are preped for submittal to SMO
1630 Samples are relinquished to Augusta Garcia (SMO)
Crew departs SMO for office.
Sampling will continue tomorrow.

Louie Ramirez
6/26/02

6/27/2002 QUARTERLY WATER Sampling

900 Quarterly water sampling continues. Louie Romero and Elmer Acon will sample wells 16-2658 and 16-2659. If time permits, the Martin Spring sample ports will be sampled. Tailgate meeting is conducted for ssksp01-001; SOP's 1.01, 1.02, 1.03, 1.04, 1.05, 1.07, 6.01, 6.02, 6.03, 6.13, QP's 5.7; 10.03 and LANL ER QMP will be followed. outside temp is ~85°F, no winds are present, light smoke from the AZ fires is present.

Equipment (ORION) on Horiba are calibrated.

Arrival to 16-2658

16-2460 piezometer is dry

16-2459 piezometer has ~2.5' of water

16-2658 well dtw = 6.4 ; td = 10.24

Temp 13.4°C ; Cond. 0.31 ms/cm ; pH 7.61

1020 RE16-02-45925 uF ; RE16-02-45935 f are collected from 16-2658 well was sampled after discharging 1 well volume due to slow recharge rate

1104 16-2659

dtw = 8.28. well will be sample immediately (no well volumes will be baiked) due to low volume and slow recharge rate.

temp. 13.5°C ; Cond. 0.24 ms/cm ; pH 7.83

1110 RE16-02-45926 ; RE16-02-45936 is collected from 16-2659

temp. 13.5°C ; Cond 0.24 ms/cm ; pH 7.83

sampling began immediately due to low volume and slow recharge rate. photo 17 is taken of samples collected.

1140 Crew departs the Canyon samples are stored in coolers. Crew breaks for lunch.

1215 Crew returns to site Martin Spring sampling ports will be sampled.

1230 ~~16-2~~ LA6127662 Martin Spring Lower Stormwater filter 16-6707

1300 RE16-02-45900 ; RE16-02-45907 is collected from 16-6707

temp. 16.5°C ; Cond. 0.42 ms/cm ; pH 7.94 photo 18

1330 RE16-02-45899 ; RE16-02-45906 is collected from 16-6706

temp. 16.5°C ; cond. 0.42 ms/cm ; pH 7.94 ; photo 19

1400 Crew heads to HEPS field trailers to prep samples for submission

1600 Samples are relinquished to Augusta Padilla (SMO) by Louie Romero

Louie Romero 6/27/2002

6/28/2002 Friday Quarterly Water Sampling
Quarterly sampling continues.
SOP 1.01; 1.02; 1.03; 1.04; 1.05; 1.07, ~~1.08~~ 6/28/02 LR, 6.01; 6.02; 6.03; 6.13; QP 5.7; 10.03; LANL ERQMP. SSHASP 01-001
General field work.
Today we will collect a sample from Location ID 16-5968 headwaters of Cañon de Valle.
10:00 Tailgate meeting is conducted under SSHASP 01-001. Equipment (HIRIBA, ORION) is calibrated.
10:30 Crew arrives at canyon entrance off SR501.
Currently, this area is closed due to extreme fire conditions. We have a permit from the Santa Fe National Forest (permit # 12/LA) allowing us access.
12:00 16-5968 is dry.
The area has been ~~dam~~ LR 6/28/02 somewhat damaged from flooding that may have occured during a series of storms ~~result~~ LR 6/28 occuring 6/20-6/22 resulting in ~1.62 ~~mm~~ LR 6/28 in in a short amount of time. photo documention of area has been documented.
1400 Crew back at NEPS field trailers.
Crew departs the site.

Louie Romero
6/28/02

7-2-02
Today's activities: preform field analysis for RDX & Barium using Field test kits. SOP's to be used are QP 5.7 & manufactures instructions. A total of nine sample will be analyzed. D-Tech kits will be used to check RDX & Hach/AccuVac barium kits will be used.

Location	RDX (~~%~~-ppb)		Barium (mg/L)	Turbidity
90's line pond	Low		44	clear to slightly turb.
16-2656	Low		5	clear
16-2657	Low		6	clear
16-2658	6%	6.72 ppb	95	clear to slightly turb.
16-2659	3%	5.69	10	clear
Marton spg.	49%	24.50	6	clear
MS Filter (L)	Low		0	clear
MS Filter (u)	Low		0	clear
Burning Grd.	7%	7.07	0	clear.

D-Tech lot # used: 0c1112R & 0c1112RR expiration 12/2
Hach/AccuVac Lot # A0196 no expiration date found.
a Barium standard solution was mixed and checked and the reading for solution was 110 µg/L. The solution was mix for 100 mg/L, so ther may be a ± error of 10 mg/L.

7-2-02

7-8-02
Today's activities, preform barium field analysis for two samples. The samples that will be rerun are the 90's line, & 16-2658. The Hach/accuvac system will be used per manufacturers instructions, sample will be conducted by E. Alcon. The two sample that will be rerun are the two that show elevated reading for barium. were unfiltered, therefore a new filter test will be conducted. results are as follows

90's line	filtered	4 mg/l
16-2658	filtered	7 mg/l
Sample Standard		102 mg/l ± 2 mg/l

Sample was filtered using the Norwell filters with 20 cm screen. as listed on packaging.
WAP

7/8/02

7-10-02
Today's activities; Collection of Eco Samples from Cañon de Valle & Starmer Canyon, Eco Samples will consist of ~~Water~~ Surface Water & Sediment from previously established locations; Crew will consist of Mark Tardiff (neptune) & E. Alcon (Shaw Environmental). SHasp in effect is 01-001 General field work.

0800 mob at Shaw office and depart for TA-16 Field Trailers.
0815 Arrive at TA-16, E. Alcon will drop off Mark at S-site Cafeteria while E. goes in and check with access control and secure signature for 1012 escort papers.
0845 paper work complete.
0900 crew at field trailers
0905 ATV will be used on CDU, Dave Kellar, ~~ERE~~ ESH-20 ~~the~~ Ecology group and Eric Holmes TA-16 Facility mgr. cleared the use of the ATV. The battery for ATV was left to charge over night and was installed on ATV.
0913 Tailgate brief conducted.
0920 Equipment loaded onto atv and Pickup crew will access CDU thru MDA-P road.
0950 Crew arrive at SWSC spring (spring is dry) sample will be collected from standing pool approx 25' down gradient from spring
1005 Sample RE16-02-45984 collected, water sample
1015 Sample RE16-02-45988 & RE16-02-45990
1042 Sample RE16-02-45985 collected - water sample, sediment
1305 Sample RE16-02-45987 Collected, Starmer Canyon
1310 Sample RE16-02-45991 collected, Starmer Canyon

7/10/02

7-10-02 Con't

1335 Sample will taken back to field trailer and prep for shipment to SMO.

1400 Samples prepped and ready for Transport.

1415 Samples delivered to ~~SMO~~ JAN 7-10-02 SMO.

1430 crew back at Shaw office //

7/10/02

07/16/2002 Flow Integrated Samplers

As part of quarterly sampling, the flow integrated samplers will be trouble shot, the leaked off.
We will work under the following SOPs: 1.01; 1.02; 1.03; 1.04; 1.05; 1.07; 6.01; 6.02; 6.03; 6.13; QPs 5.7; 10.03 and LANL ER Omp will be followed. Work will be conducted LR 7/16/2002 under SWAS P01-001
0830 Crew of Lou Romero and Elmer Allcon arrive at the HEPS field trailers.
Tailgate meeting is conducted to cover today's activities. In addition to starting the Flow Integrated samplers, the stable isotope samples (48 hour) from Martin and Burning Ground Spring. KR 1/27/13
Crew arrives at Martin Spring (16:2650); data is downloaded from the campbell scientific datalogger into file 'MS0716'; data is downloaded from the flow ligger also; Flow logger is recalibrated and pulse rate is set for 90L/pulse to sample 125mL/pulse. (current flow is ~ 10mL/sec)
Crew is unable to enter Cañon de Valle due to a burn being conducted at Burning Ground. The burn is scheduled through the lunch hour. Crew will return after the burn is complete.
13:30 Crew returns to site. Arrival to Burning Ground Spring. Flow sampler is calibrated and flow rate is calculated. Flow is ~125mL/s pulse is changed from 1800L ⇒ 630L/pulse to sample 90mL/sample for 10 samples ~~to~~ 7/16 LR per bottle.
Also the stable isotope samples are collected from the 48 hour sampler. Samples (stable isotope) are stored in the refridgerator.

Louie Romero 7/16/2002

7-23-02

Today activities, collect sample from flow integrated samplers from Martin Canyon Spring & Canon de la samplers were reset and collections will be done.
SSHASP 01-0011 SOP 1.01, 1.02, 1.03, 1.04, 1.05, 1.07
6.01, 6.02, 6.03 6.13, QP 5.7, 10.3

900 crew arrive at TA-16 Field Trailers, during access control contact they Informed me that a burn was being conducted until 1200. I will work on Martin Canyon while the burn is conducte

930 Tailgate printed and signed

1000 I will hike down into Martin Canyon via near building 344.

1015 arrive at TA-16.

1040 check on sampler

1137 sample collected, RE16-02-45908 & RE16-02-45901
sample description spring water, clear no order present

1200 back at TA-16 field trailers, burning grounds is now open a burn will be started @ 1300

1215 arrive at burning grounds springs, check sampler no sample was collected, problem with the program. sampler reviewed and restarted. will check tomorrow.

1230 depart CDV for field trailer to submit sample from Martin Canyon

1330 Prepping Sample.

1500 sample prep complete and submitted to SMO.

7-23-02

7-24-02
Today's activities: collect Sediment Samples from nine locations, also check integrated flow sampler at burning grounds. SSHASP 01-001, SOPs 1.01, 1.02, 1.03, 1.04, 1.05, 1.07, 6.01, 6.02, 6.03, 6.13, QP 5.7, 10.3,

800 depart for TA-16 field trailers.

830 arrive at access control, they inform me of burn being conducted at burning grounds until 1030.

900 arrive at field trailers, will mobilize equipment needed prep fuel up ATV, and fill other duties until area is opened up.

1030 depart for burning ground access road. Sampler will start at the lower end of locations starting at 16-2777.

1100 arrive at 16-2777,

1116 Sample RE16-02-46404 collected, sample description minor sand & silts with 1-3 cm angular gravels, moist to slightly saturated, minor organics, some clay, Sample was collected from stream channel, no flowing water present. photo 29, Roll 1

1125 arrive at location 16-2775.

1130 Sample RE16-02-46403 collected, sample description silts & sand with 1-3 cm angular gravels moist to slightly saturated, sample collected from bottom of stream channel, photo 30, roll 1

1200 Sample RE16-02-46401 collected, sample description silts & sands, with 1-3 cm gravels, saturated minor organics, Sample taken from stream channel photo 31, roll 1

1230 Sample RE16-02-46400 collected, sample description; saturated mostly fine sands minor organics sample collected from center of stream, just above culvert, water flowing, photo 32. Roll 1

7-24-02

7-24-02 cont.

1245 depart CDU bottom, there will be a burn at 1300 to 1400, will return after burn to collect one more location.

1310 back at field trailers. will prep collected samples and wait for burn to conclude;

1450 4 samples ready for ~~[illegible]~~ 7-24-02 submittal to SMO. Sample will be iced and secured in locked field trailer.

1445 Sample RE16-02-46399 collected; sample description saturated organic rich (roots) with silts & sands with minor 1-3 cm gravels. photo 32. Roll 1

1500 depart for burning grounds spring to check on integrated sampler. It appear that some volume of water was collected indicating that sampler is working

1530 complete prep. on last sample collected.

1600 sample submitted to SMO.

1610 depart for office

7-24-02

7-25-02
Todays activities. check on CDV integrated Sampler, will check with access control.

1200 Arrive at field trailer, I will not collect the remaining sediment sample due to afternoon burns. will check in tomorrow, There is only a small window of time to go in and check the integrated sampler.
1215 Sampler is working but the sampler interval is to great and is only sampling one every 24.1036 hrs.
1230 depart CDV for field trailer, I will have to adjust sampler with computer program. will check it Tomorrow

7-25-02

~~7-29-02~~ 7.30.02

Today activities: continue to collect sediments in upper CDU area. SSHASP 01-001, SOP, 1.01, 1.02, 1.03, 1.04, 1.05, 1.07, 6.01, 6.02, 6.03, 6.13, QP 5.7, 10.3

800 depart Shaw office for TA-16

845 arrive at field trailers, control office informed me that there will be a burn until 930.

945 depart for CDU via burning grounds access road. (KR 6/10/03)

1000 Sample RE16-02-46402, silts and sands minor organics, slightly moist, sample taken from center of stream channel photo 33, roll 1

1031 Sample RE16-02-46405, silts and sands slightly moist some 1-3 cm gravels photo 35. Roll 1
Sample RE16-02-46398 duplicate of above sample.

1042 Sample RE16-02-46397 silts and sands, minor organics slightly moist. sample taken from center of drainage channel, photo 34, Roll 1

1115 Sample RE16-02-46394, silts & sands dry to slightly moist, sample taken from center of channel photo 36, Roll 1

1130 depart ~~site~~ CDU. bottom after check sampler made adjustment to increase sampling interval. will check again on friday

1145 arrive at field trailer to begin prep work to submittal to SWO.

1200 break for lunch

1300 back from lunch

1500 Samples submitted to SWO.

7/30/2002

8/2/2002 Stream Profile

Todays activities include stream profiling of surface water present in Cañon de Valle and Martin Spring Canyon; SSHASP 01-001; SOP: 1.01; 1.02; 1.03; 1.04; 1.05; 1.07; 6.01; 6.02; 6.03; 6.13; QP 5.7; 10.03; LANL FRQMP will be followed

Todays weather no wind; overcast; some precipitation occuring; temp ~ 60°F

12:00 Arr. Crew arrives at HEPS field trailer; Tailgate meeting is conducted and HORIBA is calibrated.

12:15 Martin Spring station 1 water present, but no flow in 8/2/02 parameters: 8.6 pH; do .12; 8.1 temp; ~~cond. 0.97~~ HORIBA
orion 18°C; 0.42;

Martin Spring station 2 dry
Martin Spring station 3 dry
Martin Spring station 4 dry
Martin Spring station 5 dry
Martin Spring station 6 dry
Martin Spring Flow: 10 mL/sec, cond. 0.43 mS/cm; pH 7.01; temp. 11.4°C
Cañon de Valle station 2 is dry
Cañon de Valle station 3 is dry
SWSC spring is dry
Peter Seep is ~~dry~~ 8/2/02 dry. standing water present slightly above wetland area
station 4 is dry
Station 5 is dry
station 6 is dry
BG; temp 18.9°C; cond 0.24 ms/cm; pH 8.01; flow 125 mL/s
Station 7; temp 14.1°C; cond 0.23 ms/cm; pH 8.00; flow 250 mL/s
station 8; temp 14.3°C; cond 0.23 ms/cm; pH 7.64; flow 520 mL/s
station 9; temp. 15.8°C; Cond 0.23 ms/cm; 7.68; flow 250 m2/s
ESHAB station 10; temp. 16.3°C; cond 0.32 ms/cm; 8.07; flow to slow to measure
@ weir
station 11 dry
station 12 dry
station 13 dry
station 14 dry

Continued on next page

8/2/2002 [illegible]

8/2/2002 continued Stream Profile

1445 ~~1315~~ station 15 is dry

station 16 is dry

station 17 is not staked but area is dry

8/2/2002

8-7-02
Today's activities: collect water samples from flow integrator sampler and from stream profile location that were measured on 8/2/02, SOP's 1.01, 1.02, 1.03, 1.04 1.05, 1.07, 6.01, 6.02, 6.03, 6.13, GP 5.7, 10.3, SSHSP 01-001
930 Depart office for field trailer.
1000 arrive at field trailers and print tail gate brief.
1015 arrive at BG spring to collect integrated sample.
1020 collect. sample # RE16-02-45909 & RE16-02-45911
sample description clear, no odor, photo 1 - Roll 2
1050 Sample RE16-02-45971 & RE16-02-45948 collected from profile location #7 approximate 250' below or down gradient from Burning Grounds spring.
sample discrip. Clear, water flowing, photo 2, Roll 2.
1115 Sample RE16-02-45959 & RE16-02-45975 collected from profile location #8, water clear and flowing
photo #3, Roll 2
1140 Sample RE16-02-45960 & RE16-02-45976 collected from sample location profile #9 water clear and flowing
photo 4, Roll 2
1210 Sample RE16-02-45961 & RE16-02-45981 collected from stream profile #10, water clear with very low flow.
photo 5, Roll 2,
1230 Stream profile location #1 thru 6 were dry and also below #10
1245 back at field trailers, to prep samples for delivery to SMO
1300 Sample prep begins.
1400 Sample prep continues
1530 Sample prep completed,
1605 Samples delivered to SMO
1630 Back to Shaw office

8-7-02

9-16-02

Today's activities; Geophysics work utilizing Zonge Engineering. work will include setting up equipment predetermined and selected by the HEPS Team. areas will include locations on both SF National forest and LANL property. SSHASP #01-001

830 Zonge personnel arrive at office and Kevin Rietz will proform SSHASP orientation.

950 Zonge crew will consist of a four person team comprising of two teams. they are Jeff Ball Jerry Finney, Brad Bishop, & Jesus Apodaca.

1100 Safety brief complete, a plan on approach of which site or location will be accessed.

1200 Crew of Zonge will be escorted by E. Olson/Shaw to crew depart for pipeline road.

1230 crew arrive at pipeline road, Jeff and Elmer walk area.

1400 after walk area Jeff is concerned with the pipelines in area. continue to scout area.

1500 Jeff is not comfortable with location. he believes that pipes may affect reading and results will be questioned.

1530 Crew depart for office and will try alternate site located south of Hwy 16.

1600 crew arrive back at office, speak with Kevin.

9-16-02

9-17-02

Today's activities; Geophysics work with Zonge engineering. due to failure to establish a good location on the northern extent, crew will move to southern extent at alternate 2 which is located on SF national property off of forest Rd 289. approximately 5½ miles south of TA-16. crew will consist of same members.

0700 crew arrive at office.
0710 crew depart office for target area.
0745 crew at Turn off on Forest Rd. 289.
0830 crew arrive at Target location. and begin to survey area for equipment and lines.
0930 crew begins setup equipment
1230 set up continues
1330 set up continues
1400 weather conditions have change from light winds to much harder gust of winds, area consist of burn trees and several burned trees are heard to be toppling over. One 20 in dia. tree has fallen across the road blocking our exit. crew will move tree by dragging with 4x4 pick up.
1415 tree move from road.
1430 set up continues
1500 crew depart for office
1545 crew arrive at office.

9-17-02

9-18-02

Today's activities, Geo physics work and begin to start collecting data. Crew will consist of Jeff Ball, Jerry Finney, Brad Bishop, Jesus Apodaca (Zonge Engineering) and E. Acton (Shaw E.). Based on yesterday activities; Brad will man the transmitting end located of SF national forest property and the remaining crew will go on site to TA-16. SSHASP in effect is 01-001

0700 crew arrive at Shaw office.

0705 crew depart office for locations.

0715 crew has brief tail gate meeting discussing hazards and conditions.

0800 crew arrives at TA-16 and are signed into area. crew 3 again brief on site restrictions.

0830 Based on predetermined locations crew begin set up of equipment and lines. first location will be near the gate entrance to TA-35, just South on the ~~mesa~~ 9-18-02 mesa top running the lines for 1000 ft East to West with a center located at 600 ft. the reciever will be set up to pick the frequency transmitted from the forest location

0930 Set up continues

1000 Zonge will start Data frequency transmission.

1010 problems with reciever clear data, Zonge will trouble shoot to resolve problems.

1030 adjustment made to reciever and still not recieving clear signal..

1045 Determination made that Transmitter is too far away approximately 6.5 miles, optimum range is between 3. to 5 range base on amount of power being used.

1100 Readings are not within acceptible range.

1105 Crew will try to place transmitting wires close if possible.

1130 Crew depart TA-16 for Office to consult with Kevin. and take a lunch break

9/18/02

9-18-02 cont.

1200 back from lunch, crew will depart for
D.F. forest location and demob equipment,
1230 arrive at current location, crew begin demobing
1340 demob complete, crew will travel other dirt
road and try to get within 3-5 mile range
using a GPS unit to establish distances.
1420 scouting continues.
1500 Scouting continues, Kevin called about
locked gates at Sawyer Rd. on SF.
1505 crew will depart for office.
1600 crew arrive at office, Kevin & Jeff will
go up Ski Hill road and check for locations
1630 Kevin & Jeff are back and conclude that
Ski Hill road will be within required distance.
Crew will set up tomorrow.

9-18-02

9-19-02

Today's activities: Cantrine Geophysics work crew will consist J. Dall, J. Finney, B. Birks & Apolaca (Range Eng.), & E. Alcon (Shaw) SHASP 01-001.

0700 Crew arrive at office and depart for Sk: hill road to set up transmitter portion of equipment.

0800 equipment set up continues

0900 equipment set up continues

0930 equipment set up complete, crew will goto TA-16 to recieve location and test equipment

1000 Crew arrive at predetermined location and begin to set up equipment.

1030 equipment set up complete.

1035 reciever seems to be working to collect usable data at station 1 which is 1000 feet at a time.

1145 break down at station 1, equipment moved to Station 2. 1000 ft. to the west.

1330 Station 2 equipment set continues

1500 Station 2 readings begin

1600 Station 2 readings complete.

1630 Crew depart TA-16 for office.

9-19-02

9-20-02
Today's activities, continue Geophysics work continues, crew will consist of Zonge personnel list on previous page. SSHASP in effect D1-001,
0700 Crew depart office for HA-16
0730 Crew arrive on site, Station 2 completed move equipment 1080 ft. west to station 3
0900 equipment moved, station 3 readings begin
1100 station 3 completed, crew will move equipment to Station 4.
1200 Station 4 set up completed, readings begin
1300 readings continue.
1535 Quarterly prep, Monthly maintenance
Martin Spring
Evidence for surface flow in channel upstream of spring outlet. Debris in weir box adapter. Flow steady, into filter units. Discharge ≈ 30 mL/s Datalogger downloaded to 'MS0920.dat' Weir box adapter cleaned out. V-notch weir cleared of pine needles. Battery for CR10x low, 9.81 volts needs replacing. Flowlogger battery dead, unable to download data.
1610 Well 16-2656
data downloaded to '26560920a.dat'
1615 SWSC spring dry
1630 Burning Ground Spring
CR10X Battery Dead
Flowlogger downloaded.
Isotope sampler full, shut down.
Flow Integrated sampler knocked over, restored to original condition
Q ≈ 200 L/s
1700 crew departs site

Kevin [illegible] 9-20-2

Quarterly sampling

9/23/2 Today we will begin quarterly sampling. We will sample Martin Spring & martin Spring storm water filter.

crew Elmer Alcin, Kevin Reid

weather Partly Cloudy & 70°F

1400 Tailgate safety meeting conducted. Horiba, Orion probes calibrated

1425 Martin Spring 16-2650

pH = 6.93 Temp = 12.7°C Conductivity = 0.371 ms/cm Discharge = 30

Samples RE16-02-49382, RE16-02-49383 collected

Photo 6 taken of samples

1442 Martin Spring Upper Storm water Filter 16-6706

pH = 6.45 Temp = 12.0 °C cond = 0.375 ms/cm

samples RE16-02-49392, RE16-02-49393 collected

photo 7 taken of samples

1450 Martin Spring Lower Storm water Filter 16-6707

pH = 6.63 Temp = 11.9 °C Cond = 0.373 ms/cm

samples RE16-02-49394, RE16-02-49395 collected

photo 8 taken of samples

1530 samples labelled, preserved, stored in refridgerator overnight

1600 crew departs site

Kevin Reid
9/23/2002

9/24/2 Quarterly Sampling

Today we will sample wells & springs in Cañada Valle:
locations ID's 16-2656, 16-2657, 16-2652.
crew Elmer Alcon, Kevin Reid
weather Partly cloudy ~ 75°F
9:45 Tailgate safety meeting conducted.
9:50 Equipment loaded in ATV
1008 Well 16-2656
DTW = 6.9' TD = 10.58' Height of Water = 3.68 ft × 0.6177 = 2.27 L
KR 2/4/13

	T °C	pH	cond ms/cm
Initial	13.4	6.54	0.260
4L bailed	12.5	6.50	0.259
Final (10L bailed)	12.8	6.11	0.275

well sampled after 4L bailed because of low recharge rate.
Samples RE16-02-49452, RE16-02-49453 collected
photo #9 taken of samples.
1040 Well 16-2657
DTW = 4.72' TD = 5.55'
only an abreviated suite of samples will be collected.
1 Liter collected for HEXP analysis + 1 liter collected for METTALS+B analysis
Initial parameters T = 13.7 °C pH = 6.91 cond = 0.410 ms/cm
Sample RE16-02-49454 collected photo 10 taken of samples
Sample RE16-02-49455 not collected. not enough water. SWSC spring Dry, not sampled. Peter Seep dry, not sampled.
1135 Burning Ground Spring
T = 10.3 °C cond = 0.234 ms/cm PH = 7.28 Discharge = 0.2 L/s
Samples RE16-02-49386, RE16-02-49387 collected
photo 11 taken of samples
Solar panel power supply cord disconnected.
New Battery installed for CR10x
Data downloaded to 'BG0924.dat'
appears to be gaps in data record
1430 Martin Spring
12-volt marine battery replaced at site. Flowlogger downloaded
Solar panel does not work, need to send in for repairs
1450 Samples labelled, preserved, stored on ice.
1610 Samples submitted to SMO.

Kevin Reid 9/24/2

9/25/12 Quarterly Sampling

Activities Today we will continue Quarterly Sampling. We will sample well 16-2658, 16-2659.
We will be following LANL ER SOP's: 1.01, 1.02, 1.03, 1.04 1.05, 1.07, 6.01, 6.02, 6.03, 6.13, 10.06; QP 5.2, 5.7, 10.3 and LANL-ER-QMP. Crew: Kevin Reid, Elmer Alcon

1030 Tailgate Safety meeting conducted

1045 Horiba and Orion probes calibrated.

1228 Well 16-2658

DTW = 6.55 TD =

Piezometer 2460 = Dry

piezo 2459 = DTW = 6.25 ft

Datalogger downloaded to '2656 0925.dat'

Battery for CRWX replaced

Staff gage 2458 DTW = 1.44'

	T	cond	pH
Initial	13.5	0.285	7.40
6L Bailer	13.8	0.289	6.50

Samples collected after 6L bailed. Uncertain of recharge.
Water slightly turbid; 'Rust' colored
Samples RE16-02-49456, RE16-02-49457 collected
photo 12, taken of samples.

1312 Well Pair

Well 16-2659 DTW = 8.00 TD =

	T	cond	pH
Initial	12.5	0.288	6.85

KR 2/1/13

Samples collected without purging well because of low flow conditions
Samples RE16-02-49458, RE16-02-49459 collected
photo 13 taken of samples
Well 16-2660 DTW = 8.00
Stilling Well 16-2467 DTW 5.21 Datalogger downloaded to '24670925.da
Piezo 2465 Dry
Piezo 2464 Dry
Battery Replaced at 16-2467 CRWX

Kevin Reid 9/25/12

9/25/2 continued
1400 Samples labelled, filtered, preserved, stored in coolers.
1420 Samples turned in to SMO

9/25/2

9/26/02 Quarterly Sampling

Today we will sample CdV headwaters, and check remaining locations

crew Kevin Reid, Elmer Alcon

weather Partly cloudy ≈ 75°F

1030 Tailgate safety meeting conducted. We will be working under SSHASP 01-001 and following LANL-ER-SOPs: 1.01, 1.02, 1.03, 1.04, 1.05, 1.07, 4.01, 6.02, 6.13, 10.06; QP 5.2, 5.3, 10.3 and LANL-ER-QMP

1045 Hike up to Cañon de Valle Headwaters

1150 Arrive to location 16-5968, marker. Location is dry.

1215 Alternate location selected. Water is flowing in stream channel ≈ 200m downstream from location marker 16-5968. Sample will be collected from this location.

pH = 7.09 T = 9.1 °C cond = 0.122 mS/cm Discharge ≈ 50 mL/

Samples RE16-02-49402, RE16-02-49403 collected.

Photo 14 taken of E. Alcon sampling

Photo 15 taken of samples

1320 Samples labelled, filtered, preserved

1425 Samples submitted to SMO.

1500 Well 16-2655

DTW = 9.6' TD = 10.2'

Datalogger downloaded to '26550926.dat'

Well will be sampled tomorrow

1600 Burning Ground Spring

Flow logger data logger replaced.

New Station 'BG Flowlogger' established

Flow level will be recorded every 15 min; reset every 90 days

Flow Rate will be recorded every 15 min; reset every 180 days

Flow rate integrated sampler set to sample 150 mL every 1000 L.

1630 Crew departs site

Kevin Reid 9/26/2

10/3/02 Collection of Flow Integrated Samples
Today we will collect flow integrated samples from Martin spring ~~comp.~~ KR 10/3/2 and Burning Ground spring. We will also collect isotope samples from Martin + Burning ground springs. We will sample well 16-2655 if water is present.
Weather Partly cloudy, 50°F
1250 Tailgate safety meeting conducted
1310 Equipment gathered
1350 Martin Spring
12 L sampled by auto sampler. Sample collected from blend of the 12L. Flowlogger downloaded
Flow Integrated flow from 9/24/2 – 10/1/2
cond = ~~0.114~~ 0.383 mS/cm KR 10/3/2 pH = 8.66 temp = 11.4 °C
Samples RE16-02-49396, RE16-02-49397 collected
photo 16 taken of samples
Isotope samples collected 25 total
7/17/02 → 9/2/02, 10/3/02
Isotope sampler reset. First sample will be collected 10/5/02
1428 Burning Ground Spring
Flow integrated sampler collected 12 L from 9/26/02 – 10/1/02. Flowlogger interegated
Samples RE16-02-49398, RE16-02-49399 collected
photo 17 taken of samples
Isotope samples collected 7/17/02 – 8/28/2
samples missed because auto sampler found mispositioned on 9/20/2, possible spillage occurred.
cond = 0.292 mS/cm pH = 8.10 for Flow Integrated samples
Isotope sampler reset. First sample will be collected 10/5/02
1503 Well 16-2655
0.3 ft of water in well. Will collect 1 sample
Sample 16-02-49450 collected
photo 18 taken. Only 0.4 L collected, will be submitted for metals + B
1530 Samples labelled, preserved, filtered.
1600 Samples submitted to SMO

Kevin Kent 10/3/2

10/4/2 Collection of Nitrate Isotope Samples
Today we will collect nitrogen isotope samples for Jeff Heikoop.

crew Kevin Reid, Elmer Alan

weather clear ≈ 65°F

1330 Tailgate safety meeting conducted. We will be following LANL ER SOP's 1.01, 1.02, 1.03, 1.04, 1.05, 1.07 6.01, 6.02, 6.13, 10.06, QP 5.2, 5.3, 10.3, LANL ER QMP. We will be working under SSHASP 01-001

1340 Martin Spring
- One gallon collected from weir outlet
- one gallon collected from sample port below lower stormwater filter. This water has been filtered by GAC (upper filter) and Ba resin (lower filter)

Datalogger downloaded. Level at weir = 15mm, ≈ 40mL/s checked, compared to flowlogger output. Data agree. V-notch cleared of algae + pine needles

1353 Well 16-6295 DTW = 5.5 TD = 9.5

1358 Well 16-6294 DTW = 8.01 TD = 10.85

1424 Well 16-6293 DTW = 10.26 TD = 10.50

1455 Burning Ground Spring
- one gallon collected from weir outlet
- one gallon collected approximately 5ft above main cdv channel

Discharge at weir ≈ 0.2 L/s

1515 Sample filtered with 0.45 m filter, stored in cooler

1540 Samples deposited in fridge at Dale Counce's lab

1610 Isotope samples dropped off at Brent Newmans office

Kevin Reid 10-4-2

KR 10/8/02

10/8/02 ~~Quotetly~~ Quarterly Sampling

Today we will collect samples from wells in Martin Spring Canyon

CRW Kevin Reid Elmer Alcon

0925 Tailgate safety meeting conducted. We will be working under SSI/ASP 01-001 and following LANL ER SOPs 1.01, 1.02, 1.03, 1.04, 1.05, 1.07, 6.01, 6.02, 6.13, 10.06, APS.2, S.3.10.3

1000 Well 16-6295

DTW = 5.79 TD = 9.50

T = 13.7°C cond = 0.224 ms/cm pH = 6.96

Water very turbid. Dark grey in color, off smell, possible sulfur or bacteria smell

Well not purged prior to sample collection because of low recharge rate

Final parameters T = 13.1°C cond = 0.232 ms/cm pH = 6.56

photo 19, roll 2 taken of samples

samples RE16-02-49468, RE16-02-49469 collected

1035 4x 1L samples collected from marsh area upchannel from well 16-6295. Water has visible algae growth, mosquito larvae, elk droppings. Water collected for J. H. Koop nitrogen isotope analysis

1042 DTW = 9.65 TD = 10.85 Well 16-6294

T = 14.0 cond = 0.207 ms/cm pH = 7.18

water very turbid, Well not purged prior to sampling because of known low recharge rates

Final parameters T = 13.5°C cond = 0.215 ms/cm pH = 6.83

Samples RE16-02-49466, ~~RE16-02-49467~~ KR 10/8/02 collected

only 1.50 liters collected. Not enough for a full suite

RE16-02-49467 will be sampled because of highly turbid water

1330 Samples filtered, labelled, preserved, stored in coolers

1445 Well 16-2665 Dry, TD = 121.3'

Well 16-2666 Dry, TD = 96'

1501 90's line pond: has water

90's line pond wells	16-2661	dry
	16-2662	dry
	16-2663	dry
	16-2664	dry
	16-2669	dry

Kevin Reid 10/8/02

10/8/02 continued

1505 HE clean slip obtained from Erin Holmes

1545 samples turned into SMO

1600 1 gallon filtered sample from Martin Spring canyon marsh area turned into Duke Cornice's lab

Kevin Rad
10-8-2

10-9-2 Quarterly Sampling
Today we will sample 90's line pond and conduct stream profile if access to Cañon de Valle is allowed
Crew Kevin Reid, Elmer Alcon
1110 Tailgate safety meeting conducted. We will be working under SSHASP 01-001 and following LANL-ER-SOPs 1.01, 1.02, 1.03, 1.04, 1.05, 1.07, 6.01, 6.02, 6.13, 10.06; QPS.2, 5.3, 10.3 and LANL ER QMP.
1115 Horiba + Orion water quality instruments calibrated according to manufacturers specifications
1120 90's Line pond
T = 15.4 Cond = 0.135 ms/cm pH = 6.75
Water in pond ≈ 1.5 ft deep.
Water very turbid.
Samples RE16-02-49400, RE16-02-49401 collected
photo 26 taken of samples
Following acidification of samples, it was observed that the solids?, organics? settled to the bottom of container
1200 Samples filtered labelled preserved
1310 Samples turned into SMO

Kevin Reid 10-9-2

10/14/02

Stream Profile Measurements

Today we will measure stream profile parameters including discharge, cond, Temp, + pH at all flowing locations in Cañon de Valle.

crew E. Alan, K. Reid

weather clear ~ 65°F

1100 Tailgate safety meeting conducted. We will be working under SSHASP01-001 and following LANL ER SOPs AR15-1, 101.01, 1.07, 6.13,

1137 CdV 10 at weir below MOAP. Flow goes subsurface approximately 15 m downchannel of weir.

1140 Orion + Horiba instruments calibrated according to manufacturers specs

	Location	Discharge L/s	T °C	Cond ms/cm	pH
1145	CdV 10	0.060	9.4	0.279	8.00
1147	MOAP Bridge	0.200	7.6	0.260	7.88
1204	CdV 9 (near 2658)	0.200	6.1	0.242	8.39
1222	CdV 8	0.100	6.8	0.243	8.15
1230	CdV 7 BG confluence	0.175	9.1	0.244	8.37
1237	BG spring	0.500	10.1	0.245	7.85

KR 1/27/3

no flow in channel observed upstream of BG confluence

Temp + cond. probe cleaned out, set above muck in flowing water (Burning Ground spring)

Some ponded water at big rock area at SWSC out.

1240 Channel measurements

Loc ID	Ft	Notes
16-2753	0	Sed Sampling Stake,
	159	Peter Seep Head
16-2755	431	Sed Samp
16-2456	437	Staff gage at well 16-2656
16-2756	631	~~Not~~ sed samp
	646	260 outfall confluence
16-2457	669	Staff gage at well 16-2657
	690	Peter Seep Foot, CdV 4
	767	SWSC outlet
	796	SWSC confluence, Eco 1
16-2757	830	Sed Sample

Kevin Reid 11/7/2

1/02 continued

Loc ID	Ft	notes
16-5923	945	CdV5
16-2758	1019	Sed sample
	1345	BG outlet
16-2759	1366	Sed sample, CdV6
	1517	BG confluence
	1533	CdV 7
16-2760	1538	Sed sample
16-2761	1776	Sed sample
	1943	CdV 8
16-2762	1950	Sed Sample
	1970	Eco #2
16-2458	2186	Staff gage at well 16-2658, + Piezo
16-2763	2200	sed sample
	2402	CdV #9
16-2438	2436	Geophysics monument
16-2766	2868	Sed sample, upstream side of MOAP culvert
	2908	downstream side of MOAP culvert
16-2767	3045	Sed sample
16-2444	3109	Geophysics control pt
	3206	RF Schmidt sample pt RFS #4
	3335	New Flume
	3358	CdV 10
	3486	Eco sample #3
16-2769	3550	Sed Sample
16-5999	3953	cdv #11
16-2771	3942	Sed sample
16-2467	4146	stilling well gage
16-2660	4164	Well
16-2772	4186	Sed sample 10
16-2463	4182	CdV12/16 Staff gage at well 16-2659, piezo
	4376	Seep standing water
16-5929, 16-2773	4412	cdv 13
16-2774	4630	sed sample, standing water
	4667	standing water
16-2775	4863	sed sample

Ken Rod 11/7/2

10/14/02 continued

Location	ft	Notes
	4944	Standing water
16-2776	5142	Sed sample
	5315	CDV 14 16-5600
16-2777	5316	Sed sample
16-5930	5592	CDV 15
16-2778	5600	Sed sample
16-5601	6373	CDV 16
Piezo 16-2461	6426	HRR line SP 16; piezometer
	↓ Ka. 127/3	

1430 crew departs site

10/14/02

10/17/2 Field Screening

Today Field screening of the quarterly samples will be conducted.

Crew Elmer Alcon

0930 Tailgate safety meeting conducted

1140 Results of Barium screening using the HACH meter
KA 1/27/3

Location	Results ppm
Standard	98
Burning Ground	7.00
Martin Spring	2.00
Martin Spring Upper Filter	0.00
Martin Spring Lower Filter	10.00
16-2656	16
16-2658	19
16-5826 - 90's Line Pond	15
16-5968 CdV headwaters	8
16-2659	17
Stream Profile #7	12
#8	12
#9	11
#10.	10
Martin Spring Canyon Well #3 16-6295	10

10-17-02

10/18/2 Stormwater Filter Inspection

Today we will inspect stormwater filters in Martin Spring Canyon

Crew Kevin Reid, Brendan Fitzpatrick - stormwater management

weather Cloudy, damp ~ 55°F

0920 Tailgate safety meeting conducted.

0940 Drop in to canyon

1000 Large accumulation of algae in Martin Spring. Algae appears to be interfering with normal flow of water out of weir. Appears stage is elevated in weir, but flow is steady. Algae is cleared from reservoir area, stage drops. Algae was restricting flow.

1045 Summary of Stormwater Filter inspection.

- Upper filter, GAC, appears to be functioning correctly.
- Lower filter has water level marks which indicate filter is not cycling as designed.
- Filter chamber does not securely connect to outgoing PVC. Leakage occurs at this point
- packing of filter media could also affect flow through cartridges
- possible solutions would be to install a threaded connection so filters lose less water at connection point.
- could also swap filters to upper filter box to see if the tighter connection makes the units cycle water

1130 crew departs site

Kevin Reid 10/18/2

10/23/2 CdV, Water Canyon confluence sampling
Today we will sample CdV-Water canyon, Fishladder seep, - CdV confluence
Crew Elmer Alcon, Peter Gram, Kevin Reid
Weather cloudy, slight rain ≈45°F
0940 Tailgate safety meeting conducted. We will be working under SSHASP 01-001 + following LANL-ER SOPs 1.01, 1.02, 1.03, 1.04, 1.05, 1.07, 6.01, 6.02, 6.13, 10.06; QPS 2, 5.3, 10.3 and LANL ER QMP
1005 Check in with DX access control. Two way radio and gate 9 key obtained. Access control notified we will be sampling at CdV-water canyon confluence.
1120 Arrival to CdV-water canyon confluence. No water at CdV weir.
Water Canyon at ESH-18 weir - location dry.
V-notch weir no longer at site. No water present.
Fishladder Canyon - CdV confluence dry
1215 Rad tech meets crew at gate 9. Crew + vehicle are screened for Rad. Radio + gate 9 key given to Rad tech to return to DX Access control. No Rad present.
1235 Crew returns to office

Kevin Reid 10/23/2

10-30-02
Todays activities; Run D-Tech RDX samples on samples collected from previous Quarter. Andrew Gallegos with IRRS QA/QC will be observing procedures.
E. Alcon (straw group) SSHASP 02-001

1030 crew arrive at access control office at TA-16
1045 crew arrive field trailers,
1055 crew prep samples for analysis

sample location	Br	results	%/ppb	Lot # (D-Tech)
16-2659	148.5	43%	21.5	ZH1149
16-6295	112.4	Low		expired Aug 2002
CDU-7	149.3	36%	16.00	
CDU-8	151.7	27	13.97	
CDU-9	145.1	Low		
CDU-10	161.2	Low		
~~BGUF~~ BUF	132.4	Low		
BG	160.1	19%	11.21	
~~BGLF~~ BSLF	135.7	Low		
MS	120.2	Low		
16-2656	145.6	Low		
16-2658	142.5	4%	6.03	
16-5968	~~146.5~~ 120.4	Low		
16-5826	115.9	Low		

Standard for Br. were 1.0 ppm = 100.8
100.0 ppm = 47.2

1200 Bronc is taken back to Pueblo blvd
1600 work completed, back to office

10-30-02

11-1-02 Surveying Martin Spring Canyon Wells

Today we will survey Martin Spring Canyon Wells:

Crew: Kevin Reid, Elmer Alan, Kate Herrell

weather: grey + cloudy - slight breeze ~45° F

11:10 tailgate safety meeting

11:55 - set-up of Instrument + Control points:

KR 1/27/3

1) CP-7000 - IH = 5.43'

2) CP-7001 - IH = 5.45'

Rod height = 4.25'

pt		RDHT	
1	BS to CP7001	5.45'	not included in survey
2	FS well 16-6294 TOC	4.25'	
3	FS well 16-6294 Ground Surface	4.25'	
4	BS station 7001	Occupy CP-7000	survey begin
* 5	FS well 16-6295 TOC	4.25'	
* 6	FS well 16-6295 GS	4.25'	
* 7	FS wetland surface H_2O sample location	4.25'	

KR 1/27/3

(* Rod height not entered in instrument)

* 8	FS well 16-6294 TOC	4.25'	
* 9	FS well 16-6294 GS	4.25'	
* 10	BS to CP-7001	5.45'	

KR 1/27/3

12:10 Set up for survey of well 16-6293:

3) CP 7002 - IH = 5.22'

4) CP-7003 - IH = 5.13'

pt		RDHT	
11	BS to CP-7002	5.22'	
* 12	FS to well 16-6293 TOC	4.25'	
* 13	FS to well 16-6293 GS	4.25'	
* 14	FS Stream pr. #2 16-5921	4.25'	
* 15	BS to CP-7002	5.22'	

1400 crew departs site.

Kevin Reid 11-1-2

11/13/02 Fall 2002 Stream Profile Sampling

crew Elmer Alcon, Kevin Rust

Activities Today we will conduct stream profile sampling in response to the precipitation event which occurred on 11/9/2 – 11/10/2. Approximately 1 inch of rain and snow fell over the weekend. We will sample surface locations based on screening parameters. The allavial wells will not be sampled. Screening samples will be collected at all flowing locations.

1350 Tailgate safety meeting conducted. We will be working under SSHASP 01-001 and following LANL ER SOP's: 1.01, 1.02, 1.03, 1.04, 1.05, 1.07, 6.01, 6.02, 6.03, 6.13, 10.06 + LANL ER QAP.

Weather Clear, cool ≈ 45°F

1415 Horiba + orion water quality instruments calibrated to manufacturers specs.

	location	Q (L/s)	pH	Temp °C	Cond (mS/cm)	
1420	SP #16	dry	NA	NA	NA	labelled w/ stake, R
1432	SP 15	dry				labelled w stake, T
1437	SP 14	dry				labelled w/ stake
1446	SP 13	0.070 L/s	8.21	8.4 °C	0.286 mS/cm	

Samples RE16-03-49768 unfiltered + RE16-03-49783 filtered collected. Photo # 28 taken of samples

1452	SP 12	dry				
1509	SP 11	dry				
1520	SP 10	0.200 L/s	8.83	5.1 °C	0.269 mS/cm	

Samples RE16-03-49775 unfiltered + RE16-03-49790 filtered collected. Photo #30 taken of samples

Flow goes subsurface ≈ 20 m down channel.

1534	Burning Ground	0.500 L/s	8.40	10.0 °C	0.248 mS/cm	95 KR 11/13/2

Samples RE16-03-49~~72~~ 93 KR 11/13/2 uf, 16-03-49~~74~~ f collected. Photo #31 taken of samples

1542	~~SP 7~~ SP6 KR 11/13/2	dry				
1545	SP 7 BG confluence	0.150	8.46	6.8 °C	0.250 mS/cm	

Samples RE16-03-49766, RE16-03-49781 collected

photo 31 taken of samples

1603	SP 8	0.175 L/s	8.52	5.5 °C	0.251 mS/cm

Kevin Rust 11/13/2

		Discharge	pH	T	Cond
11/13/2					
1609	SP 9	0.200 l/s	8.36	3.8°C	0.251 ms/cm

Samples RE16-03-49774, RE16-03-49789 collected
photo 32 taken of samples
1620 Samples stored in coolers w/ blue ice in chem trailer.
~~1635~~ crew departs site
1635

Kurt 11/13/2

11/14/2 Sample Submit from Stream Profile

crew Kevin Reid, Elmer Alcon

Activities Today we will submit stream profile samples collected on 11/13/02

weather clear, cool ≈ 40°F

1130 Tailgate safety meeting conducted. We will be working under SS/HASP 01-001 + following LANL ER SOP's: 1.01, 1.02, 1.03, 1.04, 1.05, 1.07, 6.01, 6.02, 6.13, 10.06 QP 5.2, 5.3, 10.3 and LANL ER QMP

1140 Samples filtered, labelled, preserved. Stored in coolers.

1250 clean slip obtain from Eric Holmes

1340 samples turned in to SMO

Kevin Reid 11/14/2

11/15/2 Monthly Maintenance

Crew Kevin Reid, Kate Herrell (visiting)

Activities Today we will preform maintenance and download data from wells & springs.

Weather clear, slight wind ≈ 45°F

1130 Tailgate safety meeting conducted. We will be working under SSHASP 01-001

1208 Martin Spring

Flowlogger downloaded. Time fixed to daylight savings

CR10X downloaded to 'MS 1115.dat'

Weir clogged with algae. Photo taken.

Apparent discharge recorded by flow logger = 0.2 L/s, height = 28mm

Actual discharge measured = 50 ml/s height = 13 mm

Weir cleaned of algae.

48 hr sampler 3 remaining bottles.

Marine battery voltage = 12.38 volts

Cleaned temp/conductivity probe of algae buildup

Cleaned out weir box adapter of algae buildup

Horiba & Orion probes calibrated according to manufacturers spec

T = 10.5 °C Cond = 0.382 mS/cm pH = 7.30

Flowlogger corrected to 13mm. Previously measurement was 8mm. Difference of 5mm.

Upper stormwater filter stickup = 2 ft 7 inch

Lower stormwater filter stickup = 3 ft 6 inch

Isotope samples transferred to 40ml septum bottles

Dates range from 10/5/2 → 11/15/2. Sampler reset, first sample 11/17/2

Slip fittings removed from lower stormwater filter

1414 Well 16-2658:

DTW = 6.31 ft

pH = 7.09 T = 7.5 °C Cond = 0.282 mS/cm

Datalogger downloaded to '26581115.dat'

Time on Datalogger set to daylight savings

1424 Piezometer 16-2460 dry

Piezometer 16-2459 DTW = 5.19 ft

1450 Burning Ground Spring

Data logger downloaded to 'BG1115.dat'

Kevin Reid 11/15/2 continued ↓

11/15/2 con't.

Burning Ground Spring Continued.

Power problems: 12v marine battery is down.
No voltage coming from solar panel.
Cannot connect to Flowlogger.
48 hr sampler emptied. Dates 10/5/2 → 10/17/2, 11/15/2
samples transfered to 40 mL sample bottles
Discharge = 0.502 L/s pH = 7.40 T = 9.7 °C cond = 0.243 mS/cm

1500 Crew departs site

Kevin Rand 11/15/2

12-6-02
Today's activities: Collection of ECO samples at Canyon de Valle & Starmers Canyon. Crew will consist of Kate Hemell, & E. Alcon (shaw), & M. Tartiff (neptune) Crew will be work under SSHASP 01-004. SOPs 1.01, 1.02, 1.03, 1.04, 1.05, 1.07. 6.81, 602, 613, 10.06. QPs 5.2, 5.3, 10.7. Event ID 1752

0800 crew mob at shaw office, depart for SWD to pick up sample containers. crew will have to generate additional paper work (1812's) for access to Starmers Canyon location at TA-8.
0925 Tail gate conducted.
1000 mob equipment and supplies on ATV and depart for CDV via Burning grounds access Rd.
1015 Enter Canyon bottom and will start at location 16-06709 near SWSC spg.
1030 arrive at sample location for ECO sampling.
1035 Set up site and prep for sample collection
1039 samples RE16-03-49879, RE16-03-49883, & RE-03-49885 collected. Sample collected at location 16-6709 within CDV channel 50 ft. downgradient from SWSC spring, underneath Douglas fir tree. Water sample ~~Sett~~ collected. Sediment sample collected 9 ms from water sample sediment was collected. field parameters. Cond 309 us/cm, pH = 8.69, Temp 2.6°C Instruments used are the Horiba & Orion meter and were calibrated prior to field activities.
1130 Sampling completed at location 16-6709. Crew will hob to new location at 16-6710.
1135 Crew at sample location 16-6710 and have set up sampling equipment.
1145 Samples RE16-03-49880 & RE16-03-49884 were collected sample desc. for water Clear, slightly turbid, Thin ice, low flow, Sample desc. for sediment dark, fine grained w/herbaceous plants roots, heavily saturated ~~water~~ temp 0.1°C cond. 239, pH 8.99

12-6-02

12-6-02 cont.

1230 Crew completes Sampling at 16-0770 and will begin hike out of canyon bottom.

1245 Crew back at field trailers.

1300 Crew depart field trailer for Starmer Canyon located on DA-8 property, but before hand an 1812 escort paper work will require a DA-8 facility manager's signature. Alcon will secure signature while Herrell & Tardiff remain at S-site Cafeteria.

1315 1812 escort paper complete and full crew ~~[illegible]~~ on to Starmer Canyon.

1320 Access Road to Sample location is under construction and will require engaging 4X4 system on truck.

1330 Crew mob equipment & Supplies into back packs and begin hike down into canyon bottom.

1340 Crew arrive at Sample location 16-6712

1343 Crew collect samples RE16-03-49882 & Sediment Sample RE16-03-49882. Sample desc. Water: Clear, Thin Ice film. Sediment, Coarse Sandy sediment, low organics mostly roots. PH 8.52 Cond. 298 and temp 1.7°C.

1359 Sampling completed. ~~Crew~~ 12-6-02

1410 Crew depart Starmer's for DA-11a field trailers, to prep Samples for SMO delivery.

1430 Crew back at field trailers.

1455 Sampling prep completed. Crew depart Site for SMO.

1515 Crew arrive at SMO and transfer Samples.

1535 Sample activities for Event 1752, Eco Samples have been Successfully completed. Crew depart for Shaw Office.

12-6-02

12-12-02
Today's activities; Quarterly Sampling for Event 1732
CDU Springs & Seeps. Also review of SSHASP 01-001.
SOP's 1.01, 1.02, 1.03, 1.04, 1.05, 1.07 6.01, 6.02, 6.13, 10.06.
QP 5.2, 5.3, 10.3.. Shaw field team review and trained
to all applicable SOP's so new and increase documentation
~~will be~~ followed. Today crew will consist of Margie Polly
Jacinto, Gardenio, & Elmer Alcon. Crew has a new
piece of equipment that will be used to take
and record field parameters. The instrument is an
YSI 650 model. It has been assembled and will be
calibrated at a later time.
800 Crew mob at Shaw office to review SSHASP 01-001
and also to conduct a Tail gate briefing
830 Kate Hernell & Kevin Reid will also be in attendance
for the SSHASP overview. E. Alcon will conduct overview.
845 Over view completed for General field work
0900 Jacinto Gardenio will conduct Tail gate brief for today's
activities. ~~Crew A~~ 12-12-02
0915 Crew depart office for field Trailer at TA-16.
0930 Crew arrive at access control and secure a work
safety permit # 18717 which is good thru 12-31-03.
1000 Crew arrive at field trailer and begin preping sampling
supplies for event. Crew will sample only Burning Grounds
spring today due to the new crew and additional
paper work required. Crew will also clean out Trailers.
1030 Crew will begin to calibrate new instrument probe for
sampling of Burn grounds. Sampling equip is prepped and
ready to go. Weather approx 40°F clear with light breeze.
1045 Calibration begins.
1100 Calibration continues. with complete operation instructions.
1130 Continuing YSI 650 Calibration.
Calibration procedure to verify probe. Three Test
runs were conducted using Horiba Orion, YSI 650.
All test were run to stablize all reading of all
three instruments. This method was used because

12-12-02

12-12-02

this method allow for side by side comparison of both types of instruments.

1223 Calibration completed. crew will begin to hike down into CDD via Burning ground access road.

1230 Hike begins.

1245 Crew arrive at Burning ground Spg. Weather condition in Canyon bottom. 10-12 inches of snow cover. Temp 11°C.

1310 Sample RE16-03-49870 (UF) & RE16-03-49863 (F) collected by J. Gardunio & M. Polly. water flow at Spg is 4.5 ~~per~~ 12-12-02 sec. per 1 L.

	pH	Cond.	Temp.	DO	
1	8.96	.104	9.78	58.6	YSI 650
2	7.74	.249	8.9		Comb
3	9.00	.105	9.76	53.9	YSI 650
4	7.70	.248	8.9		comb

comb consist of the Horiba pH and Orion (cond + temp) KR 6/16/03

1353 Sampling completed, crew will hike out of Canyon, and prep sample for SMO.

1410 crew back at field trailers

1415 Crew demob equipment & supplies. begin prepping samples for shipment.

1430 Crew call Em for HE sample release.

1445 Samples delivered to SMO.

1510 Sampling activities completed for today. objective of collecting from burning grds spg. was successful.

12-12-02

12/12/2002

I HAVE REVIEWED THE ENTRIES ON PAGES 88 THROUGH 140 AND THEY MEET THE REQUIREMENTS DESCRIBED IN QP-5.7, NOTEBOOK DOCUMENTATION FOR ENVIRONMENTAL ~~ACTIVITIES~~ 12/12/2002 RESTORATIONS ACTIVITIES. ALL REVIEW COMMENTS NOTED HAVE BEEN CORRECTED OR RESOLVED.

PETER E. M. GRAM Peter E. M. Gram 12/12/2002

12/13/2002

I HAVE REVIEWED THE ENTRIES ON PAGES 88 THROUGH 146, AND THEY MEET THE REQUIREMENTS OF QP-5.7, NOTEBOOK DOCUMENTATION FOR ENVIRONMENTAL RESTORATION TECHNICAL ACTIVITIES

12/13/02 ALL COMMENTS NOTED HAVE BEEN CORRECTED AND RESOLVED. QUALITY LIAISON ANDREW E. GALLEGOS

12/13/2002

12/13/02

12-16-02
Today's activities: Hike and check on CDU headwaters location and check on Mesa Top Wells. for Sampling Event 1742, 1Q FY03. SOPs to be used are 101, 1.02, 1.03, 1.04 1.05, 1.07, 6.01, 6.02, 6.13, 10.06. QPs 5.2, 5.3, 1.03. The Sheow Team will consist of M. Polly & E. Alan (Shaw). the plan is for the Team to hike up to Canyon De Vaulle head waters location check on flow and is water is present Collect a water sample. Crew will collect sample in accordance to outline preestablished sample analysis. SOPs in effect is SSHASP01-001, "General Field Work."
0830 Crew depart office for field trailer.
0900 Crew arrive at field trailers and begin mobbing equipment for Hike.
0930 Crew complete mob equipment setup.
0945 Tail gate conducted.
1000 Crew depart for 16-5968 (CDU - Headwaters).
1015 Crew begin to hike up CDU headwater.
1149 Crew arrive at CDU headwater location 16-5968 location is saturated but not enough for sample. Crew will photo document location. digital photo 12 crew did observe a spring approximately 300 meters down gradient from location 16-5968.
1200 crew depart location 16-5968
1215 Crew collect samples RE16-03-49848 & RE16-03-49923. photo 13 taken. field parameter are as follows.

pH	Cond.	Temp	DO	
8.5	0.043	4.45	62.1	YSI 650
7.74				Horiba
	.101	4.2		Orion

1230 Sampling concluded at location approximate 200 meters down gradient from 16-5968. There was intermittent flow. location selected yielded 150 ml per second.
1240 Crew pack up samples and depart site. for pick up.

12-16-02

12-16-02

1340 Crew arrive at pick-up

1350 crew depart for TA-16 Trailer to prep samples for SMO

1405 Crew arrive at TA 16 Trailer

1406 Crew unpack and demob supplies and equipment

1410 crew begin prep of Sample collected

1430 crew continues sample prep.

1445 crew completes sample prep and depart field Trailer for SMO.

1500 Crew at SMO.

1530 Samples relinquished to SMO personnel.

1600 Objective for today were completed with the exception of Mesa Top well checked. the Hike up CDV head water took a bit longer than expected due to weather condition and snow packs. Crew will continue tomorrow with sampling of CDV wells or Martin Canyon Spg.

12-16-02

12-17-02
Today's activities; Continue with Quarterly Sampling at TA-16, ~~SOW crew will continue with allowed wells.~~ #12702 ~~crew will~~. Crew will sample Martin springs, MS upper filter and MS lower filter. Crew will use atv to remove collected samples. SOP in effect for todays sampling will be 1.01, 1.02, 1.03, 1.04, 1.05, 1.07, 6.01, 6.02, 6.13 10.06, QPs 5.2, 5.3, 1.07. The Shaw crew will consist of J. Gardner, & E. Atom. SHASP in effect is 01-001 General Field work, Sampling Event #1732. Weather conditions will drive amount of Samples collected. Current Condition are Snowing, 20-30 mph Gusts, 20-30° F.

0900 Crew depart office of SMO to pickup additional sample containers.
0930 crew arrive at TA-16 field trailers.
0945 crew mob supplies & equipment with extra container mostly amber bottles in case they might freeze.
1015 mob completed
1030 Tailgate conducted with extra emphasis on cold stress
1045 crew depart for Martin springs.
1115 crew will access Otra Mdi 308/307
1150 crew arrive at Martin springs
1210 Crew prep sampling equipment.
1215 crew check filters and spring, water flow discharging from spring is low.
1220 flow discharge is approx. 40 ml per 4 sec.
1250 Sample RE16-03-49968 & RE16-03-49861 (Filtered) sample desc. Clear, no odor, & algae growth present. sample collected directly from spring. pH=8.84, Temp=7.42, Cond .169, & DO=50.4, Digital photo 1
1310 Sample RE16-03-49873 & RE16-03-49873 (Filtered). sample desc. Clear, no odor, sample collected from outlet compartments of upper filter. Temp=5.41, pH=9.27, Cond.=.147 & DO 26.2.
1315 Weather conditions change with blowing snow.

12-17-02

12-17-02 cont

1326 Sample RE16-03-49874 & RE16-03-49867 (filtered)
Sample desc; Clear, no odor, Sample collected
from outlet section of lower filter, Temp = 4.44
pH = 9.53, Cond .154, & DO = 11.7.
1330 Crew secure sample on ATV.
1335 Crew depart for Sample prep at field trailers
1410 Crew arrive at field trailer to begin sample prep
1420 Sample prep begins
1445 Sample prep continues
1500 Sample prep continue
1530 Sample prep continues
1545 Sample prep completed will transport to SDHD
1600 Samples delivered to SHD.
1610 Objective for today's quarterly sampling
achieved. Three samples collected.
1620 Crew arrive back at office

12-17-02

12-18-02
Today activities: Continue with Quarterly samples
Event 1762. Crew will sample wells within
Canon de Valle, starting with 16-2655, SOP in
use 1.01, 1.02, 1.03, 1.04, 1.05, 1.07, 6.01, 6.02, 6.13, 10.06.
QP 5.2, 5.3, 1.03. The Shaw Crew will consist of
J. Gardenno, & E. Acon. SHASP in effect is DI-001
General field work, crew will sample full suite with
includes VOCs, HE, metal, and alkanity.
0900 Crew depart office for TA-16.
0920 crew arrive at access control office
0930 crew arrive at TA-16 field Trailer, current weather
conditions overcast, snowing, 27°F.
0931 crew begin mob of equipment & supplies.
1000 crew conduct tailgate safty brief.
1015 crew depart for well 16-2655.
1020 crew arrive at well 16-2655,
1030 crew tag well and there is no water for sample.
well is dry.
1040 crew depart well for other CDU well
1050 crew back at field trailer and take ATV, loaded
with supplies & equipment.
1100 crew arrive at Burning ground access road
1120 crew arrive at well 16-2656.
1130 crew tag well. DTW = 6.9, TD = 10.5.
10.5-6.9 = 3.6. 3.6x.163 = .5868x3 = 1.7 gallon to purge.
first few bailers of water have high turbidity. recharge
is slow. required volume needed to purge will not be done.
sample will be collected when field parameter are stable.
1202 Samples RE16-03-49938 & RE16-03-49948 (filters) sample
desc. clear, no odor, pH = 8.61, Temp = 5.81, Cond, .115 mS/cm
DO = 34.7, digital photo)
1230 sampling complete at well 16-2655.

12-18-02

12-18-02 con't

1240 Crew tag well 16-2657, TD=6.8, DTW=5.8. Crew will not sample due to insufficient water volume. Crew secure well 16-2657. depart for well 16-2658.

1255 Crew arrive at well 16-2658,

1256 Well Tag at DTW=6.3 TD= ~~2.5~~ 10.24 12-18-02

10.24-6.3 = 3.94. 3.94x.653=2.57 x3 = 7.71

7.71. gallon of water will be purged.

Well has good recharge characteristics & will be sampled as soon as field parameter stabilize.

1301 Samples RE16-03-49940 & RE16-03-49950 (Filtered) sample desc. Clear, Temp = 9.82, Cond = .110 mS/cm, pH = 8.43, & DO = 35.9. digital photo 2

1315 Sampling completed at well 16-2658. depart for well 16-2659,

1325 Crew arrive at well 16-2659.

1326 Well Tagged at TD = 8.1, DTW 10.1

10.1 - 8.1 = 2.0 x .653 = 1.3 x 3 = 3.9 gallon

3.9 gallons of water will be purged.

Well has good recharge characteristics & will sampled as soon as field parameter stabize.

1334 Samples RE16-03 49941 & RE16-03 49951 (Filtered) collected. Sample desc. Clear to slightly turbid. no odor. Temp = 5.56, Cond = .117 mS/cm, pH = 8.74 DO = 56.2, digital photo 3

1345 Sampling Completed at well 16-2659, crew depart for field Trailers to prep samples for SMO submittal.

1400 Crew arrive at field trailers.

1405 Sample prep begins

1430 Sample prep continue

1500 Sample prep continues

12-18-02

12-18-02 con't

1530 Sample prep continues

1550 Sample prep complete

1600 Crew depart TA-16 for SMO to deliver samples.

1630 Crew complete sample deliver depart for Shaw office.

1645 crew complete the Alluvial well within CDO for quarterly sampling with the exception of wells 16-2655 & 16-2657. 16-2655 was dry and 16-2657 did not have enough water to sample. objective for today were completed.

12-18-02

12-19-02

Today's activities: continue Quarterly Sampling of Hydrogeologic investigation, Event ID 1762 and check on mesa intermediate wells. Crew will consist of J. Gardner & E. Alcon.. SOPs 1.01, 1.02, 1.03, 1.04, 1.05 1.07, 6.01, 6.02, 6.13, 10.06 QP, 5.2, 5.3, 1.03, SSHASP #D1-001 General field work. Crew will Tag/sounde mesa top wells and check if any have water for sampling. then crew will check on Martin Springs Alluvial wells. There are Three wells that are with the Martin Spgs Canyon.

0830 Crew depart for TA-16 field trailers.
0900 Crew arrive at TA-16, field trailers.
0905 Crew conduct Tailgate safty brief.
0930 crew arrive at well location 16-2669, (90's line pond location) and tag well as dry.
1000 crew arrive at well 16-2665 & 16-2666.
1005 crew sound well 16-2665 and it is dry
1015 Crew sounde well 16-2666 and it is dry.
1025 crew depart 16-2665 & 16-2666 for well 16-2668
1045 crew at 16-2668 and sound well as dry.
1055 crew depart well 16-2668 and will head back to field Trailers for Martin spgs alluvial well mob.
1100 check in with TA-11 personnell about accessing down in to canyon ~~Vipe~~ TA-11. TA-11 is current active and access has been limited because of activities. Crew has to check in with TA11 managers. Crew will check fish ladder Seep prior to attempting TA-11 access.
1130 Crew arrive at fishladder Seep. Seep is dry. Seep was accessed thru Burning ground ~~Spgs~~ area. 12-20-02
1200 Crew back at field trailers, mob equipment on to ATV.
1215 Crew depart for TA-11
1225 crew arrive at TA-11 and check in with TA-11 managers.

12-19-02

12-19-02 cont

1230 There was a temporary delay while managers check out activities and clear way for crew to access down into canyon.

1235 access granted.

1300 Crew arrive at well location 16-6294.

1305 Crew tag/sound well at 6.1 DTW. Total Depth is 10.8

10.8 - 6.1 = 4.7 x .653 = 3.06 x 3 = 9 gallons of water to purge. Crew will begin sampling as soon as well parameters stablize.. unsure of recharge characteristics.

1310 parameter have stablized and sample RE16-03-49955 and RE16-03-~~49955~~ 49946 collected. Sample desc. clear to slightly turbid, no odor. sample collected with bailer. field parameter = Temp = 5.58°C, Cond. = .088 mS/cm pH = 8.19, & DO = 32.9.

1320 sampling completed at well 16-6294.

1325 crew arrive at well 16-~~2694~~ 6293,

1326 well sounded and DTW = 5.0, TD = 10.00

10.0 - 5.0 = 5.00 x .653 = 3.26 x 3 = 9.7 gallon needed to be purged. crew will collect sample as soon as field parameter stablize. unsure of recharge characteristics.

1329 parameters stable. Samples RE16-03-49956 collected as well as RE16-03-49945. Sample desc. clear to slightly turbid, no odor. Sample collected with bailer.

Temp = ~~5.58~~ 3°C

Cond = .048 mS/cm

pH = 7.88

DO = 33.9

1335 Sampling completed

1340 Crew depart for well 16-6293 to check on well.

1357 Crew arrive at well 16-6293. well is sounded out it is dry.

12-19-02

12-19-02 con't

1400 ~~12-19-02~~ Crew depart well 16-6293 for field trailer to prep samples for SMO.

1438 Crew arrive back at field trailers and demob Samples, Supplies, & equipment.
note: The new YSI 650 probe was used to establish field parameter and to establish stabilization for Sampling.

1435 Sample prep begins

1445 Sample prep continues

1500 Sample prep continue

1530 Sample prep continue,

1545 Sample prep continues

1400 Sample prep completed. Crew will Transpor Sample to SMO.

1405 Crew depart TA-16- for SMO.

1415 Crew arrive at SMO.

1430 Crew complete objectives of Sampling well in Martin Spring Canyon and checking well on Mesa Top.

1438 Crew depart for Shaw office

12-19-02

12-20-02
Today's activities: Collect an additional sample from CDV headwaters. HEPS Team has identified a spring approximately 500 meters down gradient from CDV headwaters location 16-5968. this will be the first time ~~Samp~~ 12-20-02 Spring will be sampled. Spring is located north of main stream channel approximately 25 ft. on the slope of Mountain. The area of the spring starts approximately 100 ft above stream channel then it disappears only to reappear ~~95 ft~~ lower. Sample will be collected from the lower section because it is in a good area for collection. it is much steeper and could cause a much higher hazard.
A new ~~Sample~~ Location ID has been issued and it is 16-03-21703. AD 12-20-02 SOP's in effect for today 1.01, 1.02, ~~0830 Crew depart~~ 1.03, 1.04, 1.05, 1.07, 6.01, 6.13, 10.06, QP.5.2, 5.3, 1.03. SSHASP 01-001 General field work.
Today crew will consist of K. Horrell & E. Alan.

0830 Crew depart for field trailer for supplies and equipment.
~~0900~~ Crew conduct tail gate brief at office.
0980 crew arrive at Table Mesa Trailers for supplies.
0930 crew depart for parking area at CDV headwaters.
0940 crew begin hike up Canyon.
1000 hiking continues
1020 hiking continues
1045 hiking continue
1050 Crew arrive at New spring, 16-03-21703,
1100 Crew collect samples RE16-03-50305 & RE16-03-50306, Sample desc. Clear flowing at 150 ml per sec. Sample collected 500m down gradient from CDV head water location 16-5968. Temp- 3.11 C°, Cond=.042 mS/cm, pH=~~6.6~~ 9.54 DO= 66.8,
1105 upon close examination, spring begin at a area

12-20-02 cont

1105 of mass wasting. E. Alcon hiked up to wasting area and discover old timber burned by Grand grande fire. The timber are arranged in a manner that would have supported some sort of "Cistern" on top of Timber, 4 pillar timbers are still visible coming up from the ground.

1115 Sample of new spring is complete. Crew depart for pick-up.

1130 hike down continues

1145 hiking down continues

1205 Crew arrive at Tower and depart for TA-16 field trailer to prep samples for SMO.

1209 crew arrive at field Trailers

1211 Sample prep begins.

1215 Sample prep continues

1225 Sample prep completed.

1230 Crew depart field Trailer for SMO.

1240 Crew arrive at SMO and transfer Samples.

1245 Sampling activities and objectives complete for today. Crew departs for shaw office

12-20-02

12-23-02

Summary of 1st Quarter FY03 Sampling activities.
The objectives for Quarterly Sampling were completed and ran from 12-6-02 to 12-20-02. A Total of 25 samples were collected from Cañon de Valle and Martin Canyon. 6 spring samples were collected. 7 eco samples consisting of water and sediment samples, & 12 Alluvial well samples. Sample location not collected were as follows:

KR 5/22/03

SWSC spring – no flowing water (16-2651)
Peter Seep – no flowing water (16-2653)
Fishladder Seep no flowing water (16-2654)
Alluvial wells 16-2655, 16-2657, 16-2665, 16-2666, 16-6293 were not collected due to no water or not enough water wells 16-2657 ~~Was~~ had water but not enough.
Stream profile locations were not sampled because HPS team had enough information on low flow conditions from 4 Quarter sampling activities
Confluence of CDV and Water canyon was not check because again historically there is no flow occuring during Low flow period of 4th & 1st quarter sampling activities.
One addition location was collected and that was the new spring at CDV headwaters.

12-23-02

1/22/03 Monthly Measurements + Field Screening

Activities Today we will download data loggers, conduct manual field measurements, and complete field screening of Dec 02 quarterly samples.

Crew Elmer Alan, Gary Garcia, Kevin Reed

Weather clear, cool ≈ 45°F

0930 Tailgate safety meeting conducted. We will be working under SSI/ASP 01-001.

0935 Site access was granted by Eric Holmes at access control at approximately 0900. Holmes stated we should have a standing work order and should notify approximately 1 week prior to conducting any work in the HE area.

0940 YSI water quality instrument calibrated according to manufacturers instructions. Conductivity calibrated with 1000 ms/cm solution. pH calibrated with 2 point method: pH 7 and pH 10.

0947 Equipment gathered and loaded into ATV and field truck.

1015 Well 16-02656
DTW = 7.00 ft pH = 7.40 DO = 0.0% cond = 188.8 ms/cm T = 5.82°C
Battery replaced. Data logger downloaded to '26560122.dat'

1032 Well 16-02657
DTW = 4.67 ft pH = 7.33 cond = 522.4 ms/cm T = 5.11°C

1035 Peter Seep Foot, SWSC spring dry.

1050 Burning Ground Spring
Discharge ≈ 0.2 L/s pH = 7.44 cond = 173.0 ms/cm T = 9.42°C
12 volt marine battery replaced.
48-hr sampler online. One sample collected, next sample 1/24/03
Bottle 1 will be sampled on 1/24/03
Flow logger downloaded
CR10X downloaded, Battery Replaced

1110 Well 16-2658
DTW = 6.40 pH = 6.90 cond = 175.0 ms/cm T = 3.32°C
CR10X downloaded to '26580122.dat'
Piezo 2460 = dry Piezo 2459 DTW = 5.21'

1-22-03

1130 Well 16-2660 DTW = 8.17 ft

1133 Well 16-2659 DTW = 8.17 ft

pH = 6.93 cond = 228 ms/cm T = 5.47 °C

Datalogger downloaded to '26590122.dat'

Battery Replaced, Logger clock set to laptop clock (-1 hr)

1140 Still Well 16-2467

DTW = 5.30

Datalogger downloaded to '24670122.dat'

logger clock set to laptop clock (-1 hr)

1144 Piezo 16-2464 - dry

Piezo 16-2465 - dry

1215 Well 16-2655

DTW = 7.48 pH = 6.78 cond = 392.5 ms/cm T = 6.01 deg C

Datalogger downloaded to '26550122.dat'

Battery replaced. Logger clock set to laptop clock (-1 hr)

1300 Field parameter for 1st Q 2003 were completed today and are listed below. replacement part for the Hach spectometer arrived and fixed. below are results:

Location	RDX (% / ppb)	Barium(mg/l)	Bromide mg/l
16-2652 BG Spring	33	3	135.5
16-5996	43	8	143.6
16-5929	30/14.66	5	147.1
16-5997	45	2	145.1
16-5998	low	2	149.6
16-5927	26/13.62	2	128
16-21703	low	0	189.5
16-6295	low	5	173
16-6707	low	2	134.1
16-2659	low	4	144.8
16-2658	low	7	143
16-2650	10/8.1	0	136.8
16-2652 BG Spring	low	0	144.8
16-5968	low	0	175
16-6706	low	2	142
16-2656	low	1	151.5
16-6294	low	12	166.8
Bromide standard 1 mg/l			81
Bromide standard 100 mg/l			58.6
Barium standard 100 mg/l # 1		95	
Barium standard 100 mg/l #2		93	
Lot #s	2H1149	A1075/M7038	

strong probe 5-22-03

1330 Field activities completed [signature] 1-22-03

1-30-03

Today's activities; check water levels at intermediate wells 16-26665 & 16-26666. SSHASP 01-001 will be followed and no Tail gate will be preformed due to the ~~only~~ one person will be at the site, the Team member is myself E. Atcon and I have periodically reviewed SSHASP. SOP's ineffect are 1.01, 1.02, 1.03, 1.04, 1.05, 1.07, 6.01, 6.13, 10.06, QP 5.2, 5.3, 1.03

1300 I arrive at field Trailers, and mob Sounder.

1304 arrive at well pair 16-26665 & 16-26666

1310 check on 16-26665 and it is dry.

1325 check on 16-26666 and it is dry.

1330 back at field Trailers

1335 depart TA-16 for office.

1-30-03

1-31-02
Today's activities; download data from Martin Springs loggers. SSHASP 01-001, SOPs in effect 1.01, 1.02, 1.03 1.04, 1.05, 1.07, QP5.2, 5.3, 1.23.
KR 5/22/03

1210 Arrive at JA-16 field trailer, start ATV load computer and YSI instrument.
1230 arrive at Martin springs, connect computer to logger and up load begins
1235 up load of information complete.
1240 field parameter are taken directly from Spring and they are as follows
Temp. 10.01, Conductivity Ms/cm, 234.8
DO 1.9, pH 7.88, Flow = 250 ml per sec.
1310 Depart Martin Spring and CDV for field trailers.
1330 arrive at field trailers and demob instruments.
1340 check on what need Safety Work permits
1400 depart site for office

1-31-02

2-4-03

Today's activities, upload Data from Data loggers at Martin Springs and Inspection extinguishers, & eye wash stations at [illegible]. Crew will consist of E Alec & Mo Polley (Slaw E&I) SSHASP 01-001, SOPs in effect are 1.01, 1.02, 1.03, 1.04, 1.05, 1.07, WP 5.2, 5.3, 1.03

1000 Arrive at TA 14 field Trailers.

1004 Tailgate briefing

1020 arrive at Martin Spring, Area appears in good condition, Spring is at a low flow. Computer is connected and dep load of data begins.

YSI multimeter for field parameters, is used, results are as Temp = 6.26°C, Cond. = .536 ms/cm, DO = 3.0, pH = 7.09, flow is recorded at 20ml per sec.

1035 uploading complete.

1036 Depart Martin spring for field Trailers.

1100 arrive at field Trailers, upon arrive crew notice the heavy traffic from B&D activities at 200 line area, access road near trailers has been damaged by heavy equipment mainly dump trucks. ~~that~~ asphalt is broken up and there is dust film on everything around trailers. There is also some dust within Storage trailers.

1115 Fire extinguishers have been inspected and all are within the "green" or charged zone nessesary for good operation of extinguishers, additional monthly tags were added for continued monthly inspection.

1130 Eye wash station was replaced with new solution.

1200 Crew depart site for office.

3-10-03
Today's activities; upload data from flow loggers, deal with Hazardous waste in storage area, show new employee areas of CDV & Martin Canyon. collate paper
Crew will consist of D. Lawler & E. Alcon (Shaw)
SSHASP 01-001 in effect. SOPs followed are 1.02, 1.03 1.04, 1.05, 1.07, QP. 5.2, 5.3, 1.03
0830 Crew depart Shaw office.
0840 Crew arrive at SMO for reviewed Sample collection logs, paperwork will begin being printed and ready ~~for~~ by this afternoon.
0850 Crew arrive at TA-16, E. Alcon will get 1812's signed and proceed to Show D. Lawler site.
0900 problems with 1812's PTLA guards will not allow existing paperwork to be used, crew will have to get new paper work generated back at Shaw Office.
0915 back at shaw office, new paper work (1812) completed will have to have new signature in place.
0930 now a problem with E. Alcon badge, it is not being allowed access by reader at guard station. Crew will have to get issue resolved at Badge Office
1030 Badge issue resolved.
1045 Crew back at TA-16, E. Alcon will try once more to secure a facility manager.
1115 1812 signed.
1130 Crew arrive at field trailers.
1145 Tour of field trailers completed, SAA#1421 will be checked and waste issues addressed.
1200 crew depart for Martin springs.
1215 crew arrive at Martin Springs.
1220 upon arrive the battery for the data logger used for Conductivity & temp was on the ground disconnected or removed.
AS 10-03
3/10/03

3-10-03 cont

1221 battery is checked with Volt meter and is charged. battery is placed back into cabinet and wired in again

1225 Data flow logger is checked and data is downloaded to laptop.

1230 Down load complete.

1232 an additional observation, approximately 5 meter up gradient from discharge line there appears to be a seep. The water from the spring goes directly into the filters and there should not be any water in the channel between the spring and the discharge line. the possibilities are as follows. There could be a leak from the plumbing of the filters or it could in fact be a seep. an If was never observed before due to constant water flow thru the area from the spring. the seep is located at marks 16 and 122m down from a marker identified by Geomorph sampling.

1240 crew depart Martin springs for CDU and Burning Ground.

1330 Crew arrive and Burning grounds spring. and upon arrival the battery is again been removed ~~by~~ from the data box and was found laying on the ground.

1335 Battery check and placed back in box.

1336 Down load of data flow logger began.

1338 Download complete, down load of Cond, & Temp S

1339 Down load complete

1342 Crew depart CDU for field Areas.

1359 crew back at truck and depart TA-16, for office

1410 crew back at office

3-10-03

3-11-03

Today's activities; Tag wells within CDU & Mortandad Canyon as well as monitoring wells on Mesa Top. of TA-16.
Today's crew will consist of D. Lawler. & E. Alcon.
SSHASP 01-001 will be followed. and SOPs in effect.
are 1.01, 1.02, 1.03, 1.04, 1.05, 1.07, QP. 5.2, 5.3, 1.03

0930 Crew depart office for field trailer at TA-16
0945 crew arrive at access control office sign in
1000 crew at field trailers
1017 Tail gate Safty brief conducted by crew
1030 crew begin hike down into CDU
1057 Crew arrive at wellpair 16-2659 & 16-2660 to begin sounding DTW,
1058 16-2467 = 5.26 DTW from TOC
1100 16-2659 = 7.48 DTW from TOC, begin data download
1111 download complete, depart 16-2659.
1125 crew at well 16-2658
1126 16-2658 = 8.24 DTW from TOC., begin data download
1129 download complete.
1140 crew arrive at 16-2656
16-2656 = 6.65 DTW from TOC, down of data started
1145 download complete
1147 16-2657 = 4.57 DTW from TOC.
1148 Crew will remove data logger from Sucse spring and place down at Burning grounds spring
Sucse has been dry for month and should continue until replacement loggers can be purchase or serviced.
1155 Crew at Burning Ground spring.

3-11-03

Intentionally left Blank

3-11-03

Intentionally left blank

3-11-03

3-11-03 con't

1200 Flowlink software started and will check current condition on logger before switching out other dism logger. In flowlink there are eight tabs with different heading crew will go through each tab and record setting and then program new logger to those settings.

Tab 1 - Basic Info
Inst # 3243828524

Tab 2 - Measurement
level 25 mm
Flow rate .1 l/s
volume 654800 l

Tab 3 - site set up
site: BG flow logger 3
Varible blank = 559 mm

Tab 4 - Data Storage = NA

Tab 5 - flow conversition
conversetion Type = Wier
max level = 305 mm
Type = V notch 90° deg

Tab 6 - sampler (ontrol)
. alway enable sampler
~~flow~~
Sample pacing - flow paced

Tab 7 - units
level = mm
flow rate = l/s
volume = liters

Tab 8 - Dial out alarms
N/A

3/1/03

3-11-02 cont

1220 setup of replacement data logger complete.
with setting taken from old data logger.
~~Stand~~ logger was check and discharge volume
match volume reading vs manual reading
current discharge rate was at .5 ft/s
1240 crew depart CDV for truck.
1300 crew back at Field Trailer
1305 crew break for lunch
1335 crew back from lunch
1340 crew will check paper work for sample request
1345 at SMO, changes made to paperwork
1350 crew back at TA-16
1359 well 16-26666 - dry
1410 well 16-2665 - dry
1415 well 16-26668 - dry
1420 well 16-26669 - dry
1430 well 16-26655 - 7.47
1431 data downloaded
1435 crew will head back to Field trailer and
box malfunctioning data collector for for shipment.
1450 crew depart TA-16 for Office.

3-11-02

3-17-03

Today's activities: Quarterly sampling of Surface Water locations; Sampling Event 2172; Crew will consist of E. Alcon & D. Lawler. SHHasp 01-001 General fieldwork. SOP's 1.01, 1.02, 1.03, 1.04 1.05, 1.06, 6.02, 6.09, 6.01, 6.03, 6.13, 7.01, 7.02 QP 10.3, 5.7, 4.4.

1000 Crew depart office for TA-16 field trailers, but first crew will stop by SMO to pick up sample containers needed for sampling event.

1030 Crew arrive at field Trailers, crew will grab supplies need to collect a sample from 90's line pond. This will be a good training location for D. Lawler. It is the first time collecting surface water samples at LANL. Crew review SOP 6.13 and QP 10.3. Surface water sampling & Stop and Restart work. Crew will also fill out Job Safety Analysis work sheets

1100 Tailgate brief conducted by E. Alcon.

1105 Crew will calibrate YSI 650 instrument with pre establish standards, pH 7.00 & pH 10.00 used conductivity standard = 1000 µS/cm. used

1145 calibration sequence completed

1150 supplies and equipment ready for sampling

1200 Crew break for lunch

1250 Crew back from lunch

1300 final checklist completed and supplies load on to pick up.

1305 Crew arrive at 90's line pond.

1306 E. Alcon will collect sample by donning mud boots and walking out to a moderate location on the eastern side of pond.

1330 Sample RE16-03-50749 & RE16-03-50750 collected. digital photos 1 & 2 Taken, pH 7.43, Temp 12.58°C Cond. 65.57 µS/cm and DO = 0.1%.

1707

3-17-03 cont

1345 sample collection completed, crew will take sample containers back to field trailer for prep to SMO.

1400 Sample prep begins.

1430 sample prep continues

1500 Sample prep complete.

1515 crew secure trailer and ready for departure

1530 crew depart TA-16 for SMO.

1550 crew complete sample deposit at SMO.

1600 crew depart for office.

3-17-03

3-18-03

Today's activities; Continue Quarterly Sampling of Event 2182, monitoring wells, crew will consist of D. Lawler, M. Polley, & E. Alvin. David Paulson will be conducting a site visit Paulson is shaw's new H & S manager. SHASP 01-001, General Field Work. SOP's 1.01, 1.02, 1.03, 1.04, 1.05, 1.06, 6.02, 6.09 6.01, 6.03, 6.13, 7.01, 7.02. QP. 10.3, 5.7, 4.4.

0830 crew depart office for 16, D. Paulson will meet crew there to be escorted.

0900 crew arrive at access control office and sign in.

0915 crew at field trailers

0930 site tour for David Paulson, he is shown field trailer

0935 crew will mob equipment and ready for departure.

1000 crew arrive at monitoring well 16-2655.

1005 crew sounding DTW = 7.66., 16-2655 is a poor recharging well, crew will evaluate the need for 3 bore volumes.

1045 well is not recharging to finish up sample.

1100 crew waiting for a recharge volume for continued sampling.

1115 not enough water to continue.

1130 crew will break for lunch and let well recharge

1230 crew back from lunch. crew check on well 16-2655, not enough water to finish up sampling. crew will continue at well 16-2659 down in CDV.

1245 crew back at field trailer and mob supplies for well 16-2659.

1300 crew depart for well 16-2659 down in CDV.

1320 crew arrive down in CDV well 16-2659,

1321 DTW = 7.66

Crew will bail the required 3 bore volume

1325 crew begin bailing approximately 2.5 gallons of water

1330 sample REK-03-50805 & 50806 collected. Temp = 4.53 pH = 6.90, cond = 128.8, DO = 48.6%

3/18/03

3-19-03 cont.

1375 crew secure location 16-2659 and depart for Truck.

1340 crew back at truck, off to field trailers to prep samples for SMO delivery. first crew will try to ~~secure~~ 3-18-03 collect one liter from 16-2655 to complete sample collection

1400 Sample RE16-03-50299 & RE16-03-50300 collected

1405 crew secure well 16-2655 and will prep sample for SMO delivery

1420 crew back at field trailer prepping samples.

1500 sample prep continues

1530 sample prep continues

1545 Sample prep complete, crew will depart FAK for SMO

1600 crew at SMO, sample delivery complete

1615 crew depart for office.

3-18-03

3-19-03

Today's activities; Continue Quarterly Sampling Event 2182 monitoring well, today crew will sample well in Martin springs canyon. Crew was granted permission only today for accessing lower two well by TA-11 (K-site) managers. Crew will consist of D. Lawler & E. Atom. SHASP 01-001, SOPs 1.01, 1.02, 1.03, 1.04, 1.05, 1.06, 6.02, 6.09, 6.01, 6.03, 6.13, 7.01, 7.02, QP 10.3, 5.7, 4.4

0830 crew depart office for TA-16 field trailers

0900 crew arrive at field trailers.

0905 crew mob equipment & supplies.

0930 Tailgate brief conducted.

0945 crew depart for TA-11, crew will access Martin Canyon via TA-11, access fire road down into canyon bottom. Crew will start sampling at ~~sampling~~ 3-19-03 16-6294 second monitoring

1030 crew arrive monitoring well 16-6294.

1035 crew set up field parameter instrument YSI 650. instrument was calibrated prior to sampling events.

1057 Sample RE16-03-50817 & 50818 collected, sample desc. Clear to slightly turbid, no odor, moderate recharge. field parameters: DTW = 5.17, bore volume purged = 3 gallons due to moderate recharge. Temp - 3.74 c, Cond. 201 ms pH = 6.35, DO = 26.3%.

1100 Sampling at 16-6294 completed. crew departs for location 16-6295.

1110 crew arrive at 16-6295, sampling ~~equipment~~ 3-19-03 instrument set up

1115 Sample RE16-03-50819 & 50820 collected. sample desc. Clear, no odor, good recharge, Temp = 4.25 c, Cond 1.57 pH = 6.99, DO = 39.9%, DTW = 3.75, bore volume purged = 5 gal. Sampling completed for the two lower MSC monitoring wells crew will check and sample well 16-6293 Tomorrow 3-20-03.

3-19-03

3-19-03 3-19-03 con't

1120 Crew depart for field trailers to prep samples for SMO delivery.

1145 Crew back field trailers, to begin sample prep.

1300 sample prep continues,

1330 Samples delivered to SMO.

1345 Crew will attend SOP training dealing with SOP 1.04 at Project office.

3-20-03

3-20-03

Today activities: Sample stream profile locations within Martin Spring Canyon Event 2172 and Sample monitoring well 16-6293. Today's crew D. Lauer & E. Alcon. SHHASP 01-001, SOPs 1.01, 1.02, 1.03, 1.04, 1.05, 1.06, 6.02, 6.09, 6.01, 6.03, 6.13, 7.01, 7.02, WP 10.3, 5.7, 4.4

0830 crew depart for TA-16.

0915 crew arrive at TA-16

0940 Crew mob equipment & supplies on ATV for sampling activities. crew will sample 3 locations in Martin canyon. A Total of 7 locations will be checked and field parameter will be taken.

1010 Tail gate brief conducted by D. Lauer. Special Topic is ATV safety.

1020 Crew depart for Martin Spring canyon by access area near building 307.

1045 Crew arrive at Martin Springs, profile location 16-5920

1050 Sample RE16-03-50751 & 50752 collected, Sample desc. low turbidity, aquatic life, low flow, Flow = 70 ml/s, Temp = 4.40°C, Cond. 3116 mS/cm, pH = 7.13 DO = 21.9%

1115 crew depart for profile location #2 16-5921.

1130 location 16-5921 will not be collected but field parameters flow measured 10m down gradient from profile marker flow is 4 ml/s, Temp = 4.99°C, Cond. 275.5 mS/cm pH = 7.04, DO = 24.4%.

1131 Crew will now depart for #6 location 16-5991

1139 Crew arrive at location 16-5991

1200 Samples RE16-03-50780 & 50779 collected, sample desc. low turbidity, mosquito larve, good flow, flow = 200 ml/s Temp = 3.90°C, Cond = 122.3 mS/cm pH = 5.98, DO = 18.6%

1215 crew arrive at location 16-5990, Sample will not be collected, but field parameters are; flow = 100 ml/s Temp = 7.71°C, Cond 177.1 mS/cm, pH = 6.77, and DO = 27.3%

3-20-03

3-20-03

1230 Reading completed at location 16-5990, crew depart for location 16-5989.

1240 Crew arrive at 16-5989 sample will be collected at location.

1245 Sample REI6-03-50775 & 50776 collected, Sample desc. very low flow, Turbid, few algae, flow = 32 ml/L Temp: 5.25°C, Cond 223.4 mS/cm, pH = 6.50 DO: 25.0%

1250 Sampling completed at location 16-5989, crew depart for location 16-5988 sample will not be collected.

1300 crew arrive at location 16-5988, field parameters flow = 75 ml/s, Temp 6.05°C, Cond = 142.1 mS/cm DO = 21.5%, pH = 6.77.

1305 ~~Team~~ 3-20-03 location 16-5988 completed. This concludes stream profile in Martin Springs Canyon and selected sampling, crew will prep collected samples for submittal to SMO.

1310 crew depart for field trailers.

1335 crew begin sample prep

1400 sample prep continues

1500 Sample prep continues

1550 Sample prep completed, crew will transport to SMO.

1615 Samples delivered to SMO, crew departs for office.

3-20-03

3-20-03
Today activities: Stream profile location within CDV. Crew will perform field parameter readings, no samples will be collected today. Crew will consist of D. Lawler & EA Com. SHHASP 01-00, SOPs 1.01, 1.02, 1.03, 1.04, 1.05, 1.06, 6.02, 6.09, 6.01, 6.03, 6.13, 7.01, 7.02, QP 10.3, 5.7, 4.4.

0900 crew depart for TA-16 field trailers.
0915 crew arrive at field trailers
0920 crew Mob equipment & supplies.
0935 Tailgate conducted.
1000 crew depart for CDV.

KR 5/22/03

	location	pH	Temp	cond	DO	flow
1031	16-5601 #16	Dry				
1049	16-5930 #15	7.00	3.66	255.3 µs/cm	12.4%	Baffle - standing
1055	16-5600 #14	6.97	3.35	251.2	13.1	standing pool
1103	16-5929 #13	7.00	4.59	239.4	15.1	200 ml/s
1109	16-5928 #12	Dry				
1111	16-5999 #11	Dry				
1115	16-5998 #10	7.74	4.66	222.1	14.9	750 ml/s
1124	16-5997 #9	7.54	4.31	218.4	13.9	550 ml/s
1139	16-5956 #8	7.41	7.26	205.9	17.0	550 ml/s
1147	16-5927 #7	7.33	8.00	222.9	17.3	600 ml/s
1157	16-5926 #6	Dry				
1159	16-5923 #5	Dry				
1201	16-5995 #4	Dry				
1205	16-5994 #3	Dry				
1209	16-5993 #2	Dry				
1212	16-5	Dry				
1230	MS					450 ml/s

1245 crew depart canyon bottom for field trailer
1300 crew back at field trailers
1330 crew depart for office.

3-21-03

3-24-03

Today activities; Sample Stream profile location with in CDU based on 3-21-03 measurements. Crew will collected four sample from preselected locations. Crew will consist of D. Lawler & E. Alcon. SHHASP 01-001 SOPS 1.01, 1.02, 1.03, 1.04, 1.05, 1.06, 6.02, 6.09, 6.01, 6.03 6.13, 7.01, 7.02, QP 10.3, 5.7, 4.4.

0930 Crew depart office for SMO to pickup sample containers.

0945 Crew depart SMO for field trailers.

1000 Crew recieve phone call from John Tymchowych informing us that he will be collecting or removing waste from ~~Satellite~~ 3-24-03 Satelite storage area.

1030 Crew arrive at TA 46 field trailers.

1031 Safety paper work started

1100 Tailgate conducted by D. Lawler.

1101 Crew will move equipment and supplies onto ATV.

1115 Crew depart for CDU accessing via Burning Grounds

1125 Crew arrive at stream profile location 16 5930. 16 5930 is the second to last location down in CDU, indentified as SP# 15.

1132 Sample RE16-03-50765 & RE16-03-50766 collected. Sample desc. Clear, no odor, some aquatic life, Sample collected just below ID marker., Flow = 75 ml/s, Temp = 4.77, Cond = 263.5 mS/cm, DO = 4.9 %, pH = 7.04

1140 sampling completed at SP# 15 (16-5930) crew depart for 16-5929 or SP# 13.

1142 crew arrive at SP# 13, seep below well pair 16-2659 & 16-2660

1150 Sample RE16-03-50763 & RE16-03-50764 collected. Sample desc. Clear, no odor, sample collected at marker ID. Flow = 300 ml/s, pH = 7.10, Temp = 5.81, Cond. = 246.4 mS/cm, DO = 6.3 %.

1159 Sampling Completed at SP# 13, crew depart for SP# 10. located at ~~first~~ 3-24-03 point just below Burning Grounds or MDA-P

3-24-03

3-24-03 cont

1210 Crew arrive at 16-5998 or SP# 10.

1215 Sample #RE16-03-50791 & RE16-03-50792. Sample desc. Flow=750 ml/s, 10.63 = Temp. Cond: 222.5 mS/cm DO=8.8% & pH=7.84, samples clear. Crew will also place new marker ID with Brass tag.

1220 Sampling completed. Crew depart for 16-5927 SP#7 located at Burning Ground Spring confluence with CDV main channel.

1230 SP# ~~8~~ 9 3-24-03 retagged

1240 SP#8 retagged.

1250 Crew arrive at SP#7, 16-5927.

1255 Sample RE16-03-50759 & RE16-03-50760 collected Sample desc. Clear, no odor, Flow = 600 ml/s, Temp = [illegible] cond. 205.4 mS/cm, DO = 7.9, pH = 7.69 Sample taken at ID marker. 16-5927.

1300 This complete Sampling of Stream profile locations with CDV. Crew will depart CDV bottom for field Trailers to prep samples.

1315 Crew arrive at field Trailers.

1320 Sample prep begins.

1330 Sample prep continues

1400 Sample prep continues.

1415 John Tymkowych arrives on site for waste removal.

1430 Sample prep continues.

1445 Sample prep continues

1500. Crew prep completed, Crew depart for SMO.

1530 Crew complete sample delivery and depart for Office.

3-24-03

3-25-03

Today's activities: continued Quarterly Sampling event 2182 & 2162. within CDU which will consist of monitoring wells and spring. Crew will consist of M. Polley, D. Lawler & E. Alcon. SHASP 01-001. SOPs 1.01, 1.02, 1.03, 1.04, 1.05 1.06, 6.02, 6.09, 6.01, 6.03, 6.13, 7.01, 7.02, QP 10.3, 5.7, 4.4

0900 Crew depart for field Trailer at TA-16. crew will have to pick up additional sampling supplies at SMO.

0925 Crew arrive at TA-16 field trailers.

0930 crew prep paper work for daily activities.

0945 Tailgate conducted.

1000 crew depart for CDU, via burning grounds

1030 crew arrive at 16-2657, crew will set up the peristaltic pump at well then will go sample other up well 16-2656 while pump runs water into 5 gallon car boy.

1045 crew arrive at well 16-2656.

1050 DTW = 6.51, TD = 10.58 (TOC), standing water = 4.07
~~SW x~~ 3-25-03 4.07 (SW) X .163 (2") = .663 x 3 (bore volume) = 1.99 gallons to purge from well, However well 16-2656 has historically been a slow recharging well and crew will purge only one gallon then begin sampling.

1100 one gallon purged. sample collection begins
Sample RE16-03-50801 & RE16-03-50802 being collected

NK Sampling continued

1130 Sampling completed at 16-2656 sample desc. clear to slightly turbid, clearing up as bailing progressed
Temp = 4.82°C, Cond. 4.129, DO = 2.98%, pH = 7.64

1135 crew will also restake stream profile location at SP2, SP3, SP4, SP5, & SP6.

1145 well 16-2657 not recharging. crew will let well try to recharge and then return.

1200 crew will continue on to burning grounds spring

1205 Sampling begins, crew will also collect iso tope samples at spring.

3-25-03

3-25-03

1210 Temp 10.17°C, pH = 7.21, Cond = 2[illegible]1.6
DO = 4.2%, Flow = 600 ml/s

1215 Sample RE16-03-50731 & RE16-03-50732
Collected

~~1245~~ 1300 Isotope completed, crew will mob down back to 16-2658

1250 crew arrive at 16-2658, well sounded at DTW = 6.51
TD = 10.15. SW = 3.64 x .653 = 2.37 x 3 =
7.13 gallons to purge

1300 Sample collection begins. Samples
RE16-03-50795, 50796, & dups 50797, 50798.
Sample desc. Clear, Temp 3.14°C, Cond 131.3,
DO = 2.00 pH = 6.57

1320 due to the amount of water purged.
and amount of Sample taken,
well has gone dry. Crew will wait for
15 minutes before continuing to collect sample.

1340 Well has not recharged as expected.
Amount needed to complete Sampling is
2 liters.

1415 still not enough, water recharged

1450 Still not enough water to continue.

1500 Crew will continue tomorrow at 16-2658
and let well stand overnight for complete
recharge. crew will prep other Samples
Collected today for Smd Submittal.

1530 Sample submitted

1545 Crew depart for office

3-25-03

3-26-03
Todays activities: continue with Quarterly sampling of CDU & Martin Spring's canyon. crew will finish up with monitoring well 16-2658. crew will check well and begin sampling of well, there should be enough water for sampling, SSHASP 01-001.
Sop: 1.01, 1.02, 1.03, 1.04, 1.05, 1.06, 6.02, 6.09, 6.01 6.03, 6.13, 7.01, 7.02 QP 10.3, 5.7, 4.4.
1115 crew depart for field Trailer at TA-16.
additional sampling supplies pick-up at SWO.
1130 crew arrive at TA-16.
1210 Tailgate conducted.
1215 crew depart for monitoring well 16-2658 to collecte recharge well sample.
1230 crew arrive at monitoring well 16-2658.
1245 sample collection of RE16-03-50795, 50796, 50797 (dup), & 50798 (dup) started sample desc. clear to slightly turbid, Temp = 3.94, Cond = 135.3, DO = 2.4, pH = 7.20.
1315 sampling completed at monitoring well 16-2658
1330 crew depart 16-2658 for ~~Burning grounds~~ ~~Spring~~ 3-26-03 Martin Spring
1345 Crew arrive at ~~BGS~~ 3-26-03 MSC
~~1420 Crew~~ collect samples ~~RE16-03-50723~~ & RE16-03-50723 3-26-03
~~Sample desc. clear, good~~ low flow, ~~Temp = 8.84, Cond. = 382.8~~ ~~DO = 2.4%, pH = 7.01, flow = 20 ml/s. Sample taken~~
1330 Sample RE16-03-50743 & RE16-03-50744 collected. Sample desc. clear, sample taken from discharge port, Temp = 6.54 Cond 391.0, DO = 0.8%, pH = 7.6.
1410 Sample RE16-03-50741 & RE16-03-50742 collected, Sample desc. clear, sample taken from discharge port, Temp = 7.65 Cond = 308.0, DO = 2.5%, pH = 7.36.
1420 Martin Spring sample will consist of a regular suite and a duplicate sample to be collected. samples RE16-03-50723, RE16-03-50724, RE16-03-50727, & RE16-03-50728.
Sample desc. clear, sample taken from V notch, Temp = 8.84, Cond = 382.8 mS/cm, DO = 2.4%, pH = 7.01, Flow = 20 ml/s

3-26-03

3-26-03 cont

1445 crew also collected sediment sample from auto samplers.

1450 crew depart MSC for field trailer to prep samples for SMO deliver.

1500 crew back at field trailers.

1510 Sample prep begins

1530 Sample prep continues

1600 Sample prep

1630 Sample prep

1645 Samples delivered to SMO

3-26-03

3-27-03
Today's activities, continued quarterly sampling.
Today crew will hike up to Headwater area to
collect two samples, SHHRSP 01-002, SOPs 1.01, 1.02, 1.03, 1.04
3/27/03
0815 1.05, 1.06, 6.02, 6.09, 6.07, 6.03, 6.13, 7.01, 7.02
RP 10.3, 5.7, 4.4; crew will consist of D. Lawler &
E. Alan.
0815 crew depart for JA-Ne field trailers for supplies
and equipment, crew also will remove fire
extinguishers for yearly maintance...
0830 Crew begin hike up CDV canyon.
0930 hike continues
1015 crew arrive at location 16-5968.
1030 Sample RE16-03-50767 & 50768 collected. sample
desc. Clear, good flow, Sample taken from Marker 16-5968
Temp = 1.82, Cond. = 72.7, DO = 1.0%, pH = 7.86, Flow =
2 L/s.
1045 crew will hike down to Headwater spring
1055 Sample RE16-03-50739 & 50740 collected. sample desc.
Clear, Sample taken midway down spring discharge
Temp = 7.63°C, cond. = 183.7, DO = 1.9%, pH = 7.82
Flow 150 ml/s.
1100 sampling completed at headwater area. crew
begin hike down to pick-up.
1230 crew arrive at Trade. crew will prep samples
collected then check fishladder seep for flowing
water
1300 sample prep begins
1330 Sample prep completed.
1345 crew depart for fishladder seep.
1400 fishladder seep has water and sample was collected.
sample desc.. cloudy, turbid, with algae growth
throughout, Sample taken at lower end of wet land area.
Temp = 5.77, DO = 2.0%, Cond = 123.7, pH = 5.98.
1405 crew will prep sample for SAS delivery
3-27-03

3-27-03
1415 Sample prep completed.
1430 Sample delivered to SEM.

3-27-03

3-28-03

Todays activities: Continued Quarterly Sampling
Today crew will check on CDV & water Canyon Area
for flowing water. SHHASP 01-001, SOPs 1.01, 1.02, 1.03, 1.04
1.05, 1.06, 6.02, 6.09, 6.01, 6.03, 6.13, 7.07, 7.02, QP 10.3, 5.7, 4.4,
crew will consist of P. Gram, D. Lawler, & E. Alcon.

0950 crew depart office for field Trailers.
1030 crew arrive at TA-8 for access control to water canyon and DX-15.
1100 crew check in at DX-15 and pickup radio.
1115 crew depart for Gate 9 off of highway 4.
1230 crew arrive at confluence of water and CDV.
confluence is dry, water canyon has flowing.
1240 crew arrive at weir-18 water flowing at estimated 3L/s.
1245 sample collected at weir station, Sample desc. clear
Temp = 4.56, second 126.0 ms/cm, DO = 10.4%, pH = 7.71
1250 crew will take a few photos of area
1300 crew depart site for gate 9.
1330 crew arrive at gate 9, and will await RCT.
1410 RCT arrive and frisks crew and truck for release.
crew will take sample back to TA-16 field trailer
1444 Crew arrive at field trailers.
1500 Crew will submit sample on monday
1520 Crew depart field trailer for office

3-28-03

4-2-03
Today's activities: Field screening for Bromide on Samples collected for 2Q FY03 & follow-up on Survey point down in Martin Spring Canyon.
Crew will consist of D. Lawlar, M. Polley, E. Alcon (Shaw) and Daniel Towles (Plus Group) as an escort.
SSHASP 01-001, SOPs 1.01, 1.02, 1.03, 1.04, 1.05 1.06, 6.02, 6.09, 6.01, 6.03, 6.13, 7.07, 7.02, QP 10.3, 5.7, 4.4
0830 crew will depart office for field Trailers at TA-16 but first crew will pick up survey equipment from Project office.
0915 Survey equipment loaded
0930 crew will also have to secure signatures on new 1812 escort form ~~for 2003~~ to include Daniel.
1030 ~~to~~ facility managers around to sign 1812. Therefore crew will go into area on existing 1812 and establish a plan and conduct tail gate for today.
1100 Tailgate conducted.
1105 Crew will calibrate bromide meter and also instruct Margie on use of instrument, she will proform bromide reading and record results. crew proform a step by step procedure as outline in the instruction page.
1125 after several reading and proforming one Test, Margie is comfortable with doing the remaing test on her own.

4-2-03

4-2-03 Con't

1130 crew will break for lunch and seek out a TA-16 facility manager for signature.

1135 signature secured, crew will break for lunch and ~~pro~~ then proceed with activities.

1230 crew back from lunch M. Polley & Randall will remain at field trailers, E. Acon & D. Lawton will hike down into Martin springs canyon and survey locations below TA-11. Items to be surveyed include control points & Three monitoring wells.

1245 crew checks in with TA-11 facility manager

1300 crew will begin survey at control points 7001 & 7002 Kevin & Elmer establish control point using the total station. back on 11-1-02.

1330 location or control point 7001 surveyed N. 1760823.121, E. 1618241.370, Elev. 7309.253

1405 location 7000 surveyed N. 1761068.209, E. 1617136.726, Elev. 7313.581,

1420 crew will try to survey well 16-6294 & 16-6295. surveyed info will be check with previous survey from 11-1-02.

1440 location or monitoring well 16-6294 (2nd monitoring well in MSC) surveyed, N. 1761298.914, E. 1617840.745, Elev. 7292.805

1515 location 16-6295 (3rd monitoring well in MSC) surveyed N. 1761009.019, E. 1618630.210, Elev. 7198.353

1530 crew hike out of canyon and will check on Margie Then crew will hike down to first monitoring well in MSC.

1545 crew begin hike down into MSC access through area near bldg 307.

1600 crew arrive at area of well, (crew will try to survey in control points first.

4-2-03

4-2-07 con't

1605 Control point 7002 surveyed. N. 1761227.490, E. 1615561.857, Elev. 7397.60

1610 Control point 7003 surveyed. N. 1761243.246, E. 1615666, Elev. 7392.938.

1630 GPS can't lock in to signal strength for 1st monitoring well.

1635 Crew will have to verify with previous survey.

1640 Crew hike out of canyon

1659 crew back at field trailers.

1705 Crew depart for office

4-2-07

4-3-03 04-3-03

Today's activities: Down load data from loggers within CDU & MSC. Crew will consist of M. Polley, D. Lawler, & EAkon (shaw). Daniel Tonkes (Plus group) as Escort. SSHASP 01-001, SOPs 1.01, 1.02, 1.03, 1.04, 1.05, 1.06, 6.02, 6.09, 6.01, 6.03, 6.13
Lawler & Akon will hike down into canyon bottom to collect data loggers and assess equipment needs

0900 Crew depart office for TA-16 field trailers.
0935 crew arrive at field trailers.
Margie and escort will remain at field trailers and start cleaning and updating the MSDS files.
1035 Tailgate conducted
1040 Lawler & Akon depart for Martin Springs.
1059 crew arrive at martin springs. forty-eight samplers working correctly. flowlogger data started
1110 flow logger data complete
1112 pH & Conductivity datalogger started
1115 datalogger upload complete.
1120 crew will hike out of canyon bottom back to field trailers
1135 crew back at field trailers.
1140 crew will break for lunch.
1215 crew back from lunch.
1230 crew depart for CDU.
1235 crew arrive at canyon bottom. Crew will begin at well 16-2659. the lowest ~~Alluvial~~ well.
1250 Crew arrive at 16-2659.
1251 data logging started.
1256 data upload complete.
1300 crew depart 16-2659. for 16-2658.
1320 crew arrive at 16-2658
1321 upload begins
1326 data upload completed.

4-3-03

4-3-03 cont 4-3-03 4-3-03

1326 crew depart 16-2658 for ~~meeting~~ burning ground spring.
1335 crew arrive at Burning ground spring.
1337 flow logger data upload started.
1347 upload completed.
1348 forty-eight hour sampler not working correctly
1349 problem will try to be resolved by preforming a complete maintainace check
1357 crew depart Burning grounds spring for 16-2656 The second allowed well in COV.
1420 crew arrive at 16-2656
1422 data upload begins.
1426 data upload completed.
1430 crew depart 16-2656
1455 crew out of COV bottom and will complete data upload at well 16-2655.
1510 crew arrive at 16-2655
1511 data upload begins
1516 data upload completed.
1520 crew depart for field trailers.
1525 Crew back at field trailers
1600 Crew depart field trailers for office.

4-3-03

4-7-03

Today's activities: prep TCLP samples for submittal to SWMU. Samples were transferred to Shawn Crew from Maureen McGraw. Maureen works for EES-6 under Don Hickmott direction. Don asked that the following samples be submitted for TCLP analysis - barium only. There are Twenty samples that will be submitted. SSHASP 01-001 will be in effect. SOPs 1.01, 1.02, 1.03, 1.04, 1.05, 1.06, 6.02, 6.04, 6.01, 6.03, 6.13, 7.07, 7.02, QP 10.3, 5.7, 4.4. Crew will consist of D. Lawler & E. Alcon.

0830 Crew depart office for field trailers.

0850 Crew arrive at field trailer located at TA-16.

Below are the list samples submitted.

Time	Sample #	Location	Reference
910	RE16-03-51095	16-06123	CDV-2W-16-NT
912	51096	16-06123	CDV-2W-16-0.01-1-10:1
915	51097	16-06123	CDV-2W-16-0.01-24-10:1
920	51098	16-06123	CDV-2W-16-0.01-1-20:1
930	51099	16-06123	CDV-2W-16-0.01-24-20:1
937	RE16-03-51100	16-06124	CDV-2W-12-NT
941	51101	16-06124	CDV-2W-12-0.01-1-10:1
945	51102	16-06124	CDV-12-0.01-24-10:1
948	51103	16-06124	CDV-2W-12-0.01-1-20:1
952	51104	16-06124	CDV-12-0.01-24-20:1
956	51105	16-06126	CDV-2W-9-NT
1000	51106	16-06126	CDV-2W-9-0.01-1-10:1
1004	51107	16-06126	CDV-2W-9-0.01-24-10:1
1010	51108	16-06126	CDV-2W-9-0.01-1-20:1
1013	51109	16-06126	CDV-2W-9-0.01-24-20:1
1016	51110	16-06128	CDV-2W-10-NT
1019	51111	16-06128	CDV-10-0.01-1-10:1
1021	51112	16-06128	CDV-2W-10-0.01-24-10:1
1025	51113	16-06128	CDV-2W-10-0.01-1-20:1
1030	51114	16-06128	CDV-2W-10-0.01-24-20:1

1100 Crew depart TA-16 for SMR

4-7-02 cont

1115 Sample submittal complete.

1120 Crew departed for office.

4-7-02

4-22-03
Today's activities; monthly water measurements of Monitoring Wells in CDU & Martin springs Canyon.
SSHASP in effect will be 01-001, Sapic to be used
core 1.01, 1.02, 1.03, 1.04, 1.05, 1.06, 1.07, 6.02, 6.09, 6.13, 6.03
7.07, 7.02, DP 10.3, 5.7, 4.4. Crew will consist of D. Lawler, A. Nuttall, & E. Alcon.
0845 Crew depart office for field Trailers, This is the first time that Alicia will be out with crew. E. Alcon will give a quick orientation on site and procedures associated with Hydrogeo activities.
0905 Crew arrive at TA-16 Access Control office.
0920 Crew arrive at TA-16 field trailers
David will calibrate YSI 650, ~~ton~~ calibration standards. Conductivity Lot# 02L1023 1000 ms/cm Turbidity Lot# K072402 120 NTU, pH buffers pH 10 - lot# 02J613077, pH 7 lot# 02J613075.
0935 Tailgate conducted by E. Alcon.
0950 Equipment mob & ready to go to Martin springs.
1000 Crew depart for TA-11 to access Martin Spring Canyon
1015 Crew arrive and check in with facility Manager.
1025 Crew arrive at Alluvial well 16-6295,
DTW = 4.85', Temp = 7.49°C, Cond 111.6 ms/cm,
DO = ~~[illegible]~~ 91.2%, pH = 6.22, Turbidity = 66.8 NTU
1035 Crew complete water measurements at 16-6295.
1037 Crew depart for 16-6294.
1050 Crew arrive at well 16-6294, DTW = 5.68', Temp = 5.99°C
Cond. = 207.9, DO = NA, pH = 6.27, Turbidity = 61.0 NTU
1100 Crew depart for pick-up.
1115 Crew back at pick-up crew will drive to TA-16 building 307 and hike down to well 16-6293
1125 Crew at well 16-6293, DTW = 10.31', ~~Temp =~~ not enough water to check with instrument.
1138 Crew depart 16-6293 for field trailers

4-22-03

4-22-03 cont

1145 crew back at field trailer. A. Nuttall has QP training at Pueblo Complex with Andy Gallegos. Crew will take her back to office and D. Lawler & E. Algo will return to field trailer to conduct barium - Hach water analysis. D-Tech kits will also be performed.

1200 crew break for lunch

1230 crew back from lunch

1300 crew start barium and D-Tech

1400 field analysis continues

1500 field analysis continues

1600 field analysis continues.

1630 field analysis for barium complete. Crew will dedicate a page for complete analytical results.

1645 crew depart for office

4-22-03

4-23-03
Today's activities: monthly water measurements monitoring wells in CDV. SSHASP in effect 01-001 SOP 1.01, 1.02, 1.03, 1.04, 1.05, 1.06, 1.07, 6.02, 6.09, 6.13 6.03, 7.01, 7.02, QP 10.1, 5.2, 4.4. Crew will consist of D. Lawler, A. Nuttall, & B. Alcorn.
0900 Crew depart office, crew will gas up pickup
0945 crew arrive at field trailers
0950 crew conducts tailgate, special topic was cold stress. current weather conditions are breeze with snow flurries
1000 crew depart for CDV access via burning grounds
1020 crew arrive at well 16-2659,
1021 DTW = 7.99, Temp = 5.39°C, Cond = 254.4 ms/cm, pH = 7.00, Turbidity = 27.2 ntu,
1030 field reading complete. crew depart for well 16-2658
1042 crew arrive at 16-2658
1044 DTW = 6.41', Temp = 4.96°C, Cond = 228.7 ms/cm, pH = 6.74 Turbidity = 16.9 ntu
1050 field reading complete at 16-2658, crew depart for well 16-2656.
1100 crew arrive at well 16-2656.
1105 DTW = 6.67', Temp = 5.52°C, Cond = 241.3 ms/cm, pH = 6.90 Turbidity = 46.2 NTU
1107 well reading complete at 16-2656, crew depart for burning ground spring to check on flow logger instruments
1118 crew at BG, Flow = 600ml/s, Temp = 9.78°C, Cond = 200. ms/cm pH = 7.43, Turbidity = 17.6 NTU. Crew will recalibrate flow sensor and data logger.
1130 system reset. crew depart for field trailers.
1142 crew back at field trailers,
1155 crew break for lunch

4-23-03

4-23-03 cont.

1230 crew back from Lunch.

1235 crew will finish up with well 16-2655.

1245 OTW = 4-23-03 9.6 not enough water to conduct field parameters.

1300 crew depart TA-16 for Office.

4-23-03

5/2/03 Weekly Maintenance
CREW Kevin Reed, Dave Lowder
Activities Today ~~we~~ will trouble shoot equipment at Burning Ground spring.
1030 Tailgate safety meeting conducted. We will be working under SSHASP 01-001.
1115 Drop into canyon from MDAP
1130 Burning Ground Spring
c/8 hr auto sampler unit replaced. Sampler set to collect samples every 48 hours.
1st Sample will be collected 5/4/2003
- Flowlogger. major problems with measurements. Called Tech support. They recommend replacing unit with a bubbler flow logger. Alternatively we could cover the instrument to help prevent noise from weather. Also we could install a 5" PVC tube to assist in sound wave recovery.
- discharge at spring = 500 mL/sec. Flowlogger data downloaded
1150 Stilling well at well pair
Inlet pipe cleared of sediment.
1230 crew departs canyon
1250 crew checks out of access control

Kevin Reed
5-2-03

5-21-03

Todays activities: monthly monitoring of wells & maintenance check at Burning Ground spring. ~~[illegible]~~ 5-21-03
All work will be conducted within CDV. In addition to monitoring crew will also conduct H&S inspection on fire extinguishers, eye wash station, first aid kits.
Crew today will consist of D. Lawler, A. Nuttal, & E. Alcon.

0915 Crew depart office for TA-16.
0925 crew arrive at TA-16 field trailers.
0930 Tail gate conducted
0945 crew mob equipment and depart for Access road into CDV.
1010 crew arrive at alluvial well 16-2659
1015 DTW = 9.47, Temp ~~7.46~~ 7.02°C, Cond = .242 ms/cm
pH = 7.05, Turb. = 16.0
1020 crew depart for 16-2656.
1050 Crew arrive at 16-2656
1055 DTW = 6.8', Temp = 8.50, Cond = .227 ms/cm, pH = 6.8, Turb = 29.0
1105 crew depart for Burning ground spring.
1115 crew arrive at BGS. Flow = 400 ml/s, Temp = 10.25°C
Cond = 184 ms/cm, pH = 7.28, Turb. = 8.0
crew set up computer to check Flowlogger,
crew set-up a direct reading from sensor by installing a 4 inch PVC from sensor to ponding of spring
PVC is in a vertical position. Reading from sensor = 3[illegible] l/s, crew will check on data next week.
1130 crew depart for well 16-2658.
1135 DTW = 8.84', Temp = 7.23', Cond .228 ms/cm pH = 6.95
Turb. = 12.5.
1145 monitoring completed, crew depart for trailers.
1205 crew depart for lunch

5-21-03

5-21-03 con't

1235 crew back from lunch, back at field trailers.
crew will ~~prepare~~ LA 5-21-03 clean up areas of concerns,
organize trailers, throw Adam trash away. todays
activities were conducted under SSHASP 01-001
and SOP's 1.01, 1.02, 1.03, 1.04, 1.05, 1.06, 1.07, 6.02
6.09, 6.13, 6.03, 7.07, 7.02, QP 10.3, 5.7, 4.4, in
addition, 650 YSI was calibrated with the following
standards, prior to take measurements.
pH buffer standard 7.00 lot # 02613075,
10.00 = lot = 02613077, Conductivity = lot #0211023
turbidity = lot # R072402.

1400 crew depart for office

5-21-03

5/22/2003

I have reviewed the entries on pages 192 through 199 and they meet the requirements described in QP-5.7, Notebook Documentation for Environmental Restoration Technical Activities. All review comments noted have been corrected and/or resolved.

Kevin Reid Kevin Reid 5/22/2003

Kevin Reid 5/22/2003

6-18-03
Todays activities; program isotope samplers
with CdV & martin springs to collect event
Triggered sample to capture high flow events.
Today Crew D. Paulson, D. Lawler, & E. Alcon
SSHASP 01-001, S.O.P. in effect were 1.01, 1.02, 1.03, 1.04
1.05, 1.06, 1.07, 6.02, 6.09, 6.13, 6.03, 7.02, 7.07. QP 10.3
5.7, 11, 4,
0915 Crew depart office for field trailer,
0945 delay at TA-16 access control, office.
0955 Crew arrive at field trailers.
1000 Tail gate safety brief conducted special topic
of day is insects and storm watch. D. Paulson
will also conduct. Quarterly safety inspection
on field activities.
1005 Crew depart for CdV.
1020 crew arrive at Burning Ground spring. check on
flow at 400 m/s per second. crew will program
Sampler to collect event samples.
1045 Event sampler programed.
1050 crew depart CdV for field trailers.
1115 crew back at field trailer, Paulson continues
site safety walk.
1135 Site Safety walk complete
1140 Site secure. crew departs site for office
1200 Crew back at Office

6-18-03

7

DBR 7-17-03 6-17-03

Today's activities: check battery voltage levels in CDV, repair elk damage to equipment at Burning Ground Spring.

Today's crew: David Lawler, Joe Allen Bird, Linda Chapman, Kate Herrell. Activities will be conducted under SSHASP 01-001. SOPs in effect are 1.01, 1.02, 1.03, 1.04, 1.05, 1.06 1.07, 6.02, 6.09, 6.13, 6.03, 7.02, 7.07, QPs 10.3, 5.7, 4.4

1000 DBR 7-17-03 ~~1000~~ Crew departs Shaw officies for TA-16

1015 DBR 7-17-03 ~~1015~~ Crew signs in at ACO

1020 DBR 7-17-03 ~~1020~~ Crew arrives at field trailers

1025 DBR 7-17-03 ~~1025~~ Tailgate safety meeting, specific hazards include extrem fire conditions

1030 Crew arrives at CDV

1045 Crew arrives at Burning Ground Spring metal post on weir is reattached, a new ultrasonic flowlogger is installed, and the marine battery is replaced. Current flow at the spring is 300 mL/s

1100 Crew finishes at Burning ground Springs and walks the Cañon to check the batteries at the wells

16- 2659 => 10.83V

16- ~~2656~~ 2653 DBR 10-9-03 => 0.734 V

16- ~~2655~~ 2656 DBR 10-10-03 => 10.87 V

Stilling well => 9.73 V

1130 Crew arrives back at the truck and leaves the cañon

1140 Crew arrives at field trailers

1145 Crew departs for office

1200 Crew arrives back at office and breaks for lunch.

1400 Crew reconvenes and departs for TA16

David Lawler
7-17-03

7-17-03 Cont.

1420 Crew arrives at TA-16
1430 Crew arrives at field trailers
1440 Crew arrives at CDV cañon bottom
1445 Crew walks canyon and replaces batteries
16-~~2656~~ 2658 DSL 10 ... => battery replaced, data downloaded
16-~~2655~~ 2656 DSL 10 ... => battery not replaced, data downloaded
16-2655 => battery not replaced, data downloaded
Stilling well => battery replaced, data not downloaded
1315 Crew arrives back at truck
1320 Crew arrives at field trailer
1325 Crew departs for office
1345 Crew arrives back at office

7/17/03

7/29/03

Today we will replace batteries and download data from data loggers located at springs & wells at TA-16

crew K. Reid, D. Lawler

09:30 Tailgate safety meeting conducted we will be working under SSHASP 01-001

0942 Precipitation sample collected

1005 Martin Spring location dry. Battery voltage of datalogger at 11.0 volts. No maintenance preformed

1111 Burning Ground Spring
Data logger Battery replaced
Flowlogger downloaded, but no data recorded since 7/3/03. Called tech support, repartitioned memory. Hopefully data problem is resolved.

1120 Well 16-02656 Battery replaced

1137 Well 16-02659 Battery replaced
low water level in well. Conductivity probe not submerged. Pressure transducer still in water. No flow or standing water observed at the seep area

1150 MDA-P. Flow at Bridge, no flow at Flume below MDA-P. Surface flow from BG confluence to Midway at MDA-P. Very dry conditions.

1210 crew departs site

Kevin Reid
7/29/03

8/28/03 Quarterly Event Based Sampling
Today we will begin Quarterly-Event Based Sampling of
Canon de Valle and Martin Spring canyon

Crew K. Reid, D. Lawler

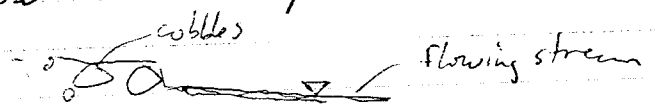
10:45 Tailgate safety meeting conducted. We will be working
under SSHASP 01-001 + following LANL ER SOPS: 1.01, 1.02
1.03, 1.04, 1.05, 1.07, 6.01, 6.02, 6.03, 6.09, 6.13, 10.06, + LANL OPS 5.2, 5.7, 10.3

1110 Drop into canyon from MDA-P

1115 SP # 14 → SP # 16 locations dry.

1140 Fish ladder, CdV confluence. Location dry.
Small drips of water from Cliff above sample
point. No ponded water no sample collected.

1145 Stream channel at location approximately 1000 m
up canyon from Water canyon confluence.
Nick point in channel, stream flow at surface
flow ≈ 200 mL/sec.



Flow at surface for ≈ 500 m.

1205 CdV and Water canyon confluence. Location dry

1212 Water canyon at ESH weir. Location dry

1250 Some ponded water observed in channel just
down stream from the Qbt 3/2 contact.

1255 Piezometer at 3/2 contact dry
Piezometer at SP #16 dry
Piezometer at south hillslope near well pair dry
No surface flow at SP # 12, SP # 13, SP # 14, SP # 15, SP # 16

1330 Crew exits canyon

1345 Crew departs site

Kevin Reid
8/28/03

9/2/03 Quarterly Sampling
Today we will walk the length of Martin Spring Canyon to sample field locations
Crew E. Alcon, D. Lawler
1330 Crew arrives at field trailers.
1345 Tailgate safety meeting. We will be working under SSHASP 01-001 and following LANL SOP's: 1.01, 1.02, 1.04, 1.03, 1.05, 1.06, 1.07, 6.01, 6.02, 6.03, 6.09, 6.13, 10.06, and QP's 5.2, 5.7, 10.3.
1400 Crew arrives at Martin Spring Canyon and drops down into the canyon.
1405 Crew arrives at Martin Spring. The spring is beginning to recharge from being dry over the summer. The water is not flowing over the weir. The water was not sampled at this time
1410 The crew begins to hike down the canyon.
1410 Stormwater points not sampled
1411 SP 1, 16-05920 not sampled, location dry
1415 Well 1, 16-06293 not sampled, bailer recovered about 3 inches from the well SP2, 16-05921 not sampled, location dry
1417 SP3, 16-05988 not sampled, location dry
1421 SP4, 16-05989 not sampled, location dry
1425 Well 2, 06294 not sampled, bailer recovered about 5 inches from the well. SP5 not sampled, location dry
1430 SP6, 16-05991 not sampled, location dry
Well 3, 16-06295 was sampled, initial bailer recovered full. Water was not purged from the well because of slow recharge.
1440 Crew begins hike out of canyon
1510 Crew arrives back at field trailers and begins to prep samples for delivery to SMO.
1535 Crew departs TA-16 for SMO and office.

[signature]
9-3-03

9/3/03 Quarterly Sampling
Today we will check the water levels in the intermediate wells and walk CDV to Check sites for sampling
Crew D. Lawler, JA Bird, R. Medina (escort)
9:15 Crew arrives at field trailers
9:20 Tailgate safety meeting. We will be working under SSHASP 01-001 and following LANL SOP's 1.01, 1.02, 1.03, 1.04, 1.05, 107, 6.01, 6.02, 6.03, 6.09, 6.13, 10.06 and QP's 5.2, 5.7, 10.3
9:30 Crew departs trailers for wells
9:32 Crew arrives at 90's Line Pond. The pond is dry, but the soil is dry
9:34 Well 16-02669 is dry
9:36 Well 16-02664 is dry
939 Well 16-02663 is dry
942 Well 16-02662 is dry
945 Well 16-02661 is dry
952 Crew arrives at well 16-02668, the well is dry
1000 Crew arrives at Martin Canyon entrance near building 344
1010 Crew arrives at Martin Spring. The spring is still mostly dry with shallow standing water. There is not enough water to sample. Crew begins to hike out of the Canyon.
1020 Crew arrives at wells 16-02665 and 16-02666. Both wells are dry.
1035 Crew arrives at top of Fishladder Canyon and begins to hike down the Canyon.
1045 The Crew arrives at Fishladder Seep, location ID 16-02654. The seep is dry as is the entire channel. Crew departs the Canyon.

9-3-03

9/3/03 continued

1110 Crew arrives back at the field trailers

1115 Crew departs for the office for the monthly meeting

1345 Crew departs for TA-16

1405 Crew arrives back at field trailers to pick up well sounder.

1415 Crew arrives at bottom of Canyon de Valle and begins to walk downstream

1420 Arrive at well pair. Well 16-02660 is dry. Well 16-02659 has a depth to water of 10.07 feet.

1423 Walk upstream examining stream ~~trof~~ DEK 9-3-03 profile sites

Location ID	Sp #	Flow
16-05601	16	dry
16-05930	15	dry
16-05600	14	dry
16-05929	13	dry
16-05928	12	dry
16-05999	11	dry
16-05998	10	no flow, standing water
16-05997	9	≈ 100 mL/s
16-5996	8	≈ 150 mL/s
16-05927	7	≈ 150 mL/s

Stream profiles 2 to 6 are all dry

1435 Arrive at Burning Ground Spring. Discharge is about 400 to 500 mL/s

1442 Arrive at well 16-02657. Depth to water is 4.8 feet.

1446 Arrive at well 16-02656. Depth to water is 6.8 feet.

1456 Arrive at well 16-02658. Depth to water is 8.8 feet.

1505 Crew departs CDV

1515 Crew Arrives at Martin Canyon by building 3 [illegible]

[signature] 9-3-03

9/3/2003 Continued

1516 Crew hikes down Martin Canyon

1522 Crew arrives at Martin Spring. The water level may have dropped slightly since this morning.

1531 Crew arrives back at truck

1536 Crew arrives at field trailers

1540 A precipitation sample is collected and entered into the log book.

1555 Crew departs for office.

0'
4'
8'

9-4-03 Quarterly Sampling
Today we will sample locations in CDV
Crew E. Alcon and O. Lawler
915 Crew departs for TA-16
930 Crew arrives at field trailers and preps for today's activities.
935 Tailgate safety meeting. Crew will be working under SSHASP 01-001 and LANL SOP's 1.01, 1.02, 1.03, 1.04, 1.05, 1.07, 6.01, 6.02, 6.03, 6.09, 6.13, 10.06, and QP's 3.2, 3.7, 10.3
940 Crew departs trailers for CDV
945 Crew arrives at CDV and begins to walk down stream.
950 Crew arrives at location 16-05998, stream profile # 10. A sample is collected at this location. Measured flow at this site is about 75 mL/s. No photo taken
957 Crew hikes upstream
1005 Crew arrives at location 16-05997, stream profile # 9. A sample is collected at this location. Measured flow is about 250 mL/s. No photo is taken. No field screening is taken.
1020 Crew arrives at location 16-05996, stream profile # 8. A sample is collected at this location. No photo is taken, no field screening. Measured flow is 250 mL/s
1030 Crew arrives at location 16-05927, stream profile location # 7. A sample is collected at this location. No photo, no field screening. Measured flow is 250 mL/s.
1040 Crew departs for trailers
1055 Crew arrives at trailers and preps samples for delivery.
1130 Crew departs for SWO and office.

9-4-03

9.4.03 Continued
1400 A new crew departs for TA-16.
New crew is S.A. Bird, L. Chapman, and
O. Lawler
1420 Crew arrives at field trailers and preps
to collect samples from wells and a spring
1440 Crew arrives back at CDV
1455 Crew arrives at location 16-02656,
well #2. A sample is collected.
Depth to water is 6.8 feet. The well
has good recharge, however it is not
purged in order to conserve water for
sampling. No photo, no screening.
1510 Crew arrives at burning ground spring,
location 16-02652. A sample and
a dup are collected at this location.
Discharge is 500 mL/s. No photo
or screening
1525 Arrive at location 16-02653, well #4.
A sample is collected. Although recharge
is good, no water was purged because
of potential for poor recharge at this
well. No photo or screening
1540 Crew arrives back at trailers to
prep samples for delivery
1630 Crew departs for SWO to deliver
samples.

9-5-03 Quarterly Sampling
Today's activity will be a hike up Cañon de Valle to the headwater and the headwater's spring to collect a sample

Crew M. Polley, K. Reid, D. Lawler

900 Depart office for TA-16

920 Arrive at field trailers

925 The batteries in the YSI probe are replaced ~~at~~ DGH 9-5-03 and the probe is calibrated using a conductivity standard and two pH buffer solutions

935 Prep for sampling and pack bottles.

940 Tailgate safety meeting regarding slips, trips, and falls and general hiker safety. We will be opperating under SSHASP 01-001 and LANL SOP's 1.01, 1.02, 1.03, 1.04, 1.05, 1.07, 6.01, 6.02, 6.03, 6.09, 6.13, 10.06 and QP's 5.2, 5.7, and 10.3

950 Depart trailers for trailhead

1000 Arrive at trailhead and part from K. Reid who will head back to the office. M. Polley and D. Lawler begin hiking up the canyon.

1055 Arrive at the headwaters sampling point, location 16-05968. Current conditions: temp - 13.70°C, pH - 8.64, SpCond - 85.53 mS/cm, estimated flow - 75 mL/s. A sample was collected at this location. A small spring on the left bank is entering the channel at this point. The sample was collected just downstream of the spring. Much vegetation is present, very green. The water flows downstream about ½ a mile.

1120 Crew heads downstream to the headwaters spring

1130 Arrive at headwater spring, location 16-03-21703

9-9-03

9.5.03 Continued

1132 Begin sampling the spring, estimated discharge is 50 mL/s. Current conditions temp - 13.59°C, SpCond - 115.3 mS/cm, pH - 7.47 Samples are collected and a photo is taken

1145 Begin hike out of canyon

1215 Arrive at truck and depart for office

1230 Arrive at office to pick up K. Reid and head back out to TA-16.

1250 Arrive back at field trailers to prep samples for delivery to SMO.

1325 Depart TA-16 for SMO and office.

9.5.03

9-10-03

Today's activities: site visit by Don Hickmott, Shaw personnell, Kate Herrel, & Elmer Atcan. SHHASP 01-001 will be in effect, no SOP will be included in today's activities with the exception of SOP 1.01 and QP 5.7.

1015 Crew depart Shaw office for TA-16

1030 Crew depart ~~office~~ 9-10-03 access control office for field trailers.

1045 Crew arrive at field trailers to met with Don

1100 Copies of CMS & RFI reports at Field Trailers SSHASP, SOP updates, fire extinguishers up to date observation, wire hanging off of line behind Chem Trailer. leak Test on XRF, return samples, labeling, secondary containment. Tidy up, recycle chemicals, check with Jim Nuttall on Rodent problem in one of our storage trailers. Shaw will coordinate with Jim Nuttall to resolve problem. Don pointed out several things that need to be addressed and Shaw will schedule work over the next few weeks.

1215 Crew depart field trailers for Shaw Office.

9-10-03

9-23-03

Todays activities - prep for geophysical survey with Zonge Engineering crew.

Todays personel - D. Lowe (Shaw), R. Medina (Plus group), T. Nordstrom (Zonge), M. Yanez (Zonge), J. Swartz (Zonge) and J. Mason (Zonge). We will be working under SSHASP 01-001, mod 2. No SOP's will be in effect today except 1.01 and QP 5.7

800 Crew meets at Shaw office to discuss the week's activities.

930 Depart office to begin mobilization. R. Medina and D. Lowe depart for TA-16 to obtain a signature for the 1812 and to obtain ER badges for the Zonge crew

1000 Meet up with Zonge crew on the ski hill road. Zonge crew is setting up the transmitter

1145 Zonge crew finishes setting up the transmitter and we break for lunch.

1245 Reconvene with crew and depart for TA-16. J. Swartz remains behind to run the transmitter.

1300 Arrive at ACO on TA-16

1310 Arrive at field trailers and conduct tailgate safety meeting about working at TA-16

1340 Depart for site

1410 Return to ACO to obtain key for the gate leading to Nacimiento ruins.

1430 Arrive back at gate to forest service road

1450 Arrive at first point of survey. Zonge crew begins to set up the receiver

1530 Crew finishes setting up the receiver. We locate ourselves on the map

1545 As there is not enough time to run a segment we decide to depart and leave the equipment in place.

1630 Arrive back at office

9-23-03

9-24-03

Today's activities will be performing a geophysical survey at TA-16. Today's crew will consist of D. Lawler (Shaw), R. Medina (Plus Group), T. Nordstrom (Zonge), J. Morgan (Zonge), J. Swartz (Zonge), and M. Yanez (Zonge). We will operate under SSHASP 01-001 mod 2. We will work under SOP 1.01 and QP 5.7

700 Crew meets at Shaw office and departs for TA-16 and ski hill. J. Swartz will remain at the ski hill to run the transmitter

720 Remaining crew arrives at TA-16

745 Arrive at field trailers and conduct tailgate safety meeting.

800 Arrive back at staged equipment and begin survey with natural source

900 Meet K. Reid at Nicomm gate to obtain new cell phones

915 Begin CSAMT survey

1045 Crew moves receiver 400 ft. and begins new survey

1230 Crew moves receiver 400 ft. and begins new segment

1430 Crew moves receiver 400 ft and begins new segment

1600 Crew moves receiver 400 ft. and runs CSAMT at the new segment. The CSAMT will be run in the morning

1630 Leave TA-16 for office.

9-24-03

9-25-03

Today's activity will be a continuation of the geophysical survey. The crew will be D. Lanier (DSL 9-25-03 ~~Zon~~ Show), R. Medina (Plus Group), T Nordstrom (Zonge), J. Morgan (Zonge), J. Swartz (Zonge), M. Yanez (Zonge). SSHASP 01-001 Mod. 2 is in effect. We will operate under SOP 1.01 and GP 57

700 Crew meets at office and departs for TA-16. DSL 9-25-03 ~~T~~ DSL 9-25-03 ~~T~~ J. Swartz departs for Ski hill to run the transmitter.

730 Arrive at field trailer to conduct safety meeting.

745 Arrive at field site and begin to run CSAMT survey.

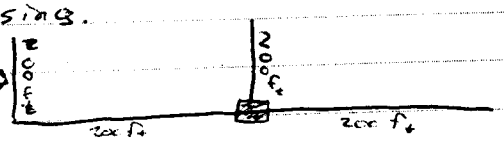
830 Finish survey and move receiver 400 ft west and begin new segment.

1000 Finish current segment and move 400 ft west and begin next segment

1130 Finished with segment. Move receiver 400 ft down the road and begin running next segment

1245 Finished Current line. Move west 400 ft down the road and begin next Segment

1400 ~~400~~ DSL 9-25-03 Finished with current line. Move line 400 ft west and begin running next segment. On the line run from 1245 to 1400 a wire was not connected to the array and the data will be missing.



1500 Finished running current line. Moved line 400 ft down road to run natural source only

1615 Depart TA-16 for office.

[illegible] 9-25-03

9-26-03

Todays activity will be a continuation of the geophysical survey by Zonge Engineering. Todays crew will be D. Lauder (Shaw), R. Medina (Plus Group), T. Nordstrom (Zonge), M. Yanez (Zonge), S. Morgan (Zonge), and J. Swartz (Zonge). We will be operating under OSHASP 01-001 and SOP 1.01 and QP 5.7

715 Crew meets at S-Site cafeteria

745 Crew enters secured area and J. Swartz departs for the transmitter on the sk. hill

830 Tailgate safety meeting at field trailers

845 Arrive at field site and begin survey

945 Finish running current segment. Move line 400 ft west and continue

1100 Finish current line. Move 400 ft. west on road an continue line.

1215 Finish current line and move 400 ft west.

1330 Line was finished but a problem with the setup was noticed. The line was not moved and it will be run again to replace the missing data.

1430 Finished rerunning 4th line. Move line 400 ft. ~~out~~ USE GPS and set up for next run

1445 Depart site to return gate key to Eric Holmes at ACO.

1515 Meet Elmer Alcon at S-Site cafeteria to dump memory into the laptop

1600 Return to site and begin running 5th line

1715 Finish running line and move 400 ft. west and begin running 6th line.

1830 Finish 6th ~~line~~ OR GPS line and leave wires out for tomorrow. Crew departs for office.

9-26-03

9-27-03

Todays activity will be finishing running the geophysical line with Zonge Engineering. Today's crew will be D. Lowe (Shaw), R. Medina (Plus Group), T. Nolastein (Zonge), M. Yance (Zonge), J. Morgan (Zonge), J. Swartz (Zonge). Crew is operating under SSHASP 01-001 mod 2 Sp 1.01 and QP 5.7 will be used

700 Meet crew at LA Inn. Crew departs for TA-16, J. Swartz departs for ski hill

730 Arrive at field trailers and conduct safety meeting

750 Arrive on site and begin to move wire to start first run of the day.

910 Finish running current segment. Move 400 ft west and begin 2nd line of the day

1025 Finish current line. Move 400 ft to the west and begin 3rd line today bearing is 310°

1140 Finish ~~4~~ 3rd line of day. Move 400 ft west at 310° and start 4th line.

1245 Finish 4th ~~line~~ line and move 400 ft at 310°. Begin last line, the 5th of today

1345 Finish last line and begin demobing the site

1415 Depart TA-16 for trailers

9-27-03

10-8-03

Today's activities will be downloading automated data from wells and springs in CDV and Martin Canyon. Today's ~~Crew~~ crew will be E. Alcen and D. Lauter. We will be operating under SSHASP 01-001 and SOPs 1.01, 1.02, 1.03, 1.04, 1.05, 1.07, 6.01, 6.02, 6.03, 6.09, 6.13, 10.06, and QP's 5.2, 5.7, and 10.3

1330 Crew departs office for field trailers

1350 Arrive at entrance to Burning Ground access. Crew parks the truck on top of the mesa and walks into the Canyon. A crew is performing road work with heavy machinery.

1410 Arrive downstream at well 16-02659 and download data. Battery is fine.

1430 Arrive at well 16-02658 and download data. Battery is fine. A crew is drilling a well near this location

1445 Arrive at Burning Ground Spring. Discharge is about 500 mL/s. Begin to download data. Temp and Cond. download fine. Flow data does not download. There is a problem with the datalogger. The logger is reading flow accurately but not recording it.

1515 ~~1315~~ Arrive at well 16-02656 and download data. Battery is fine

1530 ~~1330~~ Arrive back at truck

1540 Arrive at well 16-02655 and download data. Battery is fine.

1555 Arrive at entrance to Martin Spring Canyon.

1605 Arrive at Martin Spring. Data is downloaded sucessfully. The 12V battery needs replacing. The Spring is still dry.

1625 Arrive back at truck and depart site.

10-8-03

10-10-03
Today's activities will be a site visit with Don Hickmott. We will also visit some sites in CDV and MSC. Crew will be E. Alcon, D. Lawler, A. Ortell, and D Hickmott. We will be opperating under SSHASP 01.001, SOPs 1.01, 1.02, 1.03, 1.04, 1.05, 1.07, 6.01, 6.02, 6.03, 6.05, 6.13, 10.06, and QPs 5.2, 5.7, and 10.3

930 Crew departs office for TA-16

1010 Arrive at TA-16 field trailers. Trailers are organized prior to visit by D. Hickmott

1100 D. Hickmott arrives and inspects the field trailers. Suggestions are made for cleaning and prepping for an audit

1120 Arrive at CDV with D. Hickmott and walk to drilling site. D. Hickmott remains behind and remaining crew walks to Burning Ground Spring.

1130 Arrive at Burning Ground Spring. Data is downloaded from the flow logger. It now appears to be working and storing data properly. Isotope samples are collected from the autosampler

1210 Depart CDV for MSC

1225 Arrive at Martin Spring and replace the 12V lantern battery

1250 Depart for office.

10-10-03

10-14-03
~~10-9-03~~ USC 10-14-03

Today's activities will be a visit to the field ~~trailer~~ trailers for administrative work. Crew consists of L. Chapman and D. Linker. We will do no field work but still operate under SSHASP 01-001.

1315 Depart office of TA-16

1340 Arrive at Shaw field trailers. Crew begins by cleaning the trailers. All trash is emptied and the floors are cleaned in the admin and chem trailers.

1420 Crew begins to consolidate old water samples. Water to be returned to CDV is emptied into one container, and water to be returned to MSC is emptied into another trailer.

USC 10-14-03 ~~13~~ 1530 Crew departs field trailers.

1535 Crew empties trash and cardboard into dumpsters by ACC.

10-14-03

10-16-03

Today's activities will be more administrative work at the Shaw trailer. The crew will be L. Chapman, H. Vass, and D. Lawler. We will do no field work but will operate under our USHASP 01-001.

1330 Crew departs office for FA-16

1350 Arrive at field trailer

1410 Crew arrives at CDV to return to consolidated water samples

1430 Crew arrives at MSC to return the consolidated water samples

~~1300~~ 1330 Return to trailers to consolidate more samples

DSL 10-16-03

1600 Depart for office

10-16-03

10-20-03
Today's activities will be consolidating more samples. Crew is L. Chapman and D. Lanier. We will opperate under SSHASP 01-01

1330 Depart office for TA-16

1350 Arrive ~~at~~ 10-20-03 at field trailers and begin to consolidate old water samples into separate jugs.

1445 Finish consolidating samples and leave for CDV to return samples

1455 Arrive at CDV and return water

1515 Arrive at 90's Lane Pond and return samples

1535 Depart for office

10-20-03

10-22-03

Today's activity will be more administrative work at the Shaw field trailers. Crew will be E [illegible] H. Voss, and D Lawler. We will be opperating under GSH HSP 01-001.

1000 Leave office of TA-16

1020 Arrive at Shaw field trailers. Begin by inspecting the satelite storage area and making sure it is in order. Crew inspects Chem trailer to make sure there are no hazardous chemicals improperly stored

1045 Depart for office. Crew takes MSDS binder back to office so it can be updated

10-22-03

10.23.03

Todays activity will be more administrative work at ~~at~~ PAC 10.23.03 the Shaw field trailers, and a site visit by Jerr. Rodriguez. Crew will be E. Alcon, H. Voss, and D. Lauler. We are working under SSHASP 01-001

900 Depart office for TA-16

920 Arrive at field trailers

930 Jerr. Rodriguez arrives to inspect the satelite storage area. She gave no comments and stated everything was in order. D. Lauler and H. Voss begin updating the MSDS and inventoring all chemicals in all the field trailers.

1045 Depart for office XRF battery is left plugged in for charging so the unit can be tested.

10.23.03

11-5-03

Today's activities will b aintenence on dataloggers and other equ, t in CDV and MSC. Crew is J.A. Bird, J. Garduño, D. Lawler, and R. Medina (Plus GronP). We will be opperating under SSHASP 01-001, and SOP's 1.01, 1.02, 1.03, 1.04, 1.05, 1.07, 6.01, 6.02, 6.03, 6.07, 6.13, 10.06 and QP 5.2, 5.7, and 10.3.

9:45 Arrive at Shaw field trailers and conduct tailgate safety meeting. Gather supplies for activities in the canyons.

955 Depart trailers for CDV 2659 2-19-04

1010 Arrive at well 16-0~~2656~~ Begin downloading data battery at 11.03 V. Well probe data:

temp prope - IEI, inmtm.com

transducer - Druck, 1830, SN ⇒ 1179513

Appears to be no water in the well

1030 Arrive at 16-02656. About 1½ ft of water in the well. Begin to download data.

Probe info: temp - IEI

transducer - SN ⇒ 1179510, PDCR-1830-8517

1040 Arrive at Burning Ground Spring. Discharge is about 400 mL/s. Data is downloaded. Solar panel is removed for replacement. Battery is at 11.18 V. Unable to connect to Flow logger. Data not downloaded.

1100 Arrive at 16-2656 Download data. Battery at 10.9 V

1110 Depart CDV for MSC

1125 Arrive at Martin Spring and remove broken solar panel for repair. The spring is still dry. No data is downloaded

1135 Depart TA-16 for office.

11-5-03

12-3-03

Today's activities will be the beginning of 1st Quarter sampling. We will walk Martin Canyon and Cañon de Valle and mark sites to be sampled. We will opperate under SSHASP 01-001 and SOP's 1.01, 1.02, 1.03, 1.04, 1.05, 1.07, 6.01, 6.02, 6.03, 6.09, 6.13, and 10.06 and QP's 5.2, 5.7 and 10.3

850 Crew arrives at Shaw field trailers. Crew is D. Lauter, J.A. Bird, and R. Medina. Tailgate topic is Saftey during sampling

900 Depart for Martin Spring Canyon.

905 Tag well 16-2668. Well is dry.

910 Arrive at Martin Spring Canyon. Tag wells 16-2669 and 16-2666. Wells dry

929 Arrive at Martin Spring. Spring is still dry and will not be sampled. Data is downloaded. Crew continues down canyon No flow data was downloaded 12-3-03 DAL

1030 Return to truck. All stream ~~f~~ profiles are dry. Only well 16-06295 has water. Depth to water is 6.2 feet. Not sampled yet. Will return to sample.

1045 Tag well 16-2655. Well has about 3 inches of water. It will not be sampled. The battery on the data logger needs to be replaced.

1055 Tag wells around 90's Line Pond. All the wells are dry. 90's Line Pond is also dry.

1110 Hike to Fishladder Seep. There is no water.

1125 Depart for office and monthly meeting.

12-3-03

12-3-03 cont.

1305 Depart for TA-16 to continue field work.

1340 Arrive at well 16-02655. Replace the battery and download the data.

1355 Arrive at CDV and walk downstream to well 16-02659.

1405 Arrive at well 2659. Depth to water is 8.25 ft. Depth to water in well 2660 is 8.20 ft. Data is downloaded from 2659. All stream profiles from 11 to 16 are dry.

1410 Stream profile 10 is slightly frozen but there is water under the ice.

1425 Well 16-02658 depth to water is 6.2 feet. Data is downloaded. Stream profiles 8 and 9 are frozen with very low flow under the ice. Profile 7 is also frozen

1435 Reach Burning Ground Spring. Discharge is about 300 mL/s. The marine battery is dead and will need to be replaced. The temp. and cond. data are downloaded. Discharge data cannot be downloaded due to the dead battery

1450 Well 16-02657 has a depth of water of about 8 inches (4.65 ft. to bottom). There is some frozen water in the channel near the well.

1500 Well 16-02656 has depth to water of 7.75 feet. No ice in the channel.

1520 Crew reaches truck and departs TA-16 for office.

12-3-03

12-4-03 DSK

~~9-4-03~~ 12-4-03

Today's activities will be a continuation of quarterly sampling at TA-16. Today's crew will be D. Lauder, S.A. Bird, and R. Medina. We will be working under SSHASP 01-001 and SOP's 1.01, 1.02, 1.03, 1.04, 1.05, 1.07, 6.01, 6.02, 6.03, 6.09, and 6.13, and 10.06 and QP 5.2, 5.7, and 10.3.

840 Crew arrives at ACO to get permission to access Martin Spring Canyon through TA-11.

915 Arrive at field trailers and conduct tailgate safety meeting on cold stress. Collect bottels for well sampling

935 Arrive at TA-11 and unlock the gate with the Nacamu key and drive to the bottom of the canyon.

945 Arrive at well 16-06295 and begin collecting a sample. The water is murky and the well has low recharge. Because the recharge is low we cannot collect a full suite of samples. We decided not to collect samples ~~3,~~ 12-4-03 DSK 4, 7, and 11 on the sample collection log.

1005 Arrive back at the field trailers and begin prepping the sample.

1035 Depart trailers for Burning Ground Spring. Due to the drilling project we can now drive almost all the way to the spring.

1045 Arrive at the spring and begin collecting a sample. Discharge from the spring is about 300 mL/s. All samples are collected including a field duplicate. The marine battery is also replaced at the site. Crew departs for trailers.

12-4-03

12-4-03 Cont.

1115 Crew arrives back at field trailers and locks the samples in a trailer. We depart for lunch because the Nacamu key needs to be returned by 11:30 am.

1250 Crew arrives back at trailers and begins to prep samples from Burning Ground Spring.

DSL 1305 12-4-03 ~~1300~~ Depart for CDV to sample wells.

1315 Arrive at well 16-02659 and begin sampling. Because of slow recharge no water is purged from the well. Samples number 4 and 7 on the collection log is not collected. Recharge in the well is slow and the water is clear.

DSL 1330 12-4-03 ~~1400~~ Arrive at well 16-02656 and begin sampling. No water is purged due to low recharge. The water is slighty murky. Samples # 4 and 7 on the collection log are not collected.

1400 Arrive at well 16-02658. 5 liters of water is purged from the well before sampling. A sample plus a field duplicate is collected from the well. Samples # 4 and 7 are not collected for each. The well has good recharge and the water is clear.

1430 Arrive back at field trailers and begin prepping samples. Samples are labeled, filtered, and acidified.

1605 Another crew arrives and swaps escort R. Medina for L. Chapman.

1610 Due to time constraints samples will not be submitted today. All samples are locked in a trailer in coolers. Crew departs.

12-4-03

12-5-03

Today's activity will be submitting samples collected on 12-4-03 to SMO. Today's crew will be D. Lawler, C. Ancell, J.A. Bird, and E. Alcon. We will be opperating under SSHASP 01.001 and using SOP's 1.01, 1.02, 1.03, 1.04, and 1.05.

1000 Crew arrives at Shaw field trailers and loads collected samples into the truck. Check for precip sample but there is none.

1010 Crew departs for SMO

1020 Arrive at SMO and begin processing samples.

1045 Samples have been submitted and the crew returns to the office.

Dave Lawler
12-5-03

12-8-03

Today's activity will be a continuation of quarterly sampling at TA-16. Today's crew is D. Lawler, J.A. Bird, and R. Medina. We will be opperating under SSHASP 01-002 and SOP's 1.01, 1.02, 1.03, 1.04, 1.05, 1.07, 6.01, 6.02, 6.03, 6.09, and 6.13, 10.06 and 12-8-03 ~~QP~~ QP's 5.2, 5.7, and 10.3

930 Crew departs office for TA-16

1000 Arrive at field trailers and prep for sampling. Tailgate safety topic is cold stress and working in the snow

1020 Arrive in CDV

1030 Arrive at SP# ~~10~~ 9 12-8-03 and take a sample. Sample is taken from the mouth of the culvert because it provides an easier access point. The water is near freezing. Flow out of the culvert is about 400 ml/s.

1045 Arrive at SP # 10 and take a sample. The water is no longer frozen and it was easy to obtain a sample.

1100 Depart CDV for trailers

1105 Arrive back at trailers. Samples are prepped by drying them and adding labels. Samples are not filtered or acidified yet. Samples are looked in the chem trailer.

1130 Crew departs TA-16 for office

1330 Crew departs back for TA-16

1350 Arrive at field trailers. Sample prep is completed by filtering and adding acid.

1430 Samples are delivered to SMO.

12-8-03

12-9-03

Today's activities will be a continuation of Quarterly Sampling at TA-16. Today's crew will be D. Lawler, J.A. Bird, R. Medina. We will be opperating under SSHASP 01-001 and SOP 1.01, 1.02, 1.03, 1.04, 1.05, 1.07, 6.01, 6.02, 6.03, 6.09, 6.13 and 10.06 and QP 5.2, 5.7, and 10.3.

900 Crew departs for TA-16

945 Arrive at Shaw field trailers. Weather is sunny but clouds are moving in. Temp is about 30°. Prepare bottles for sampling. Tailgate safety topic is cold stress and working in the snow.

1015 Arrive in CDV at stream profile #8. Stream is no longer frozen and samples are easily collected. Flow is about 250 ml/s. Collect a field dup

1030 Collect a sample at stream profile location #7. Stream is not frozen and a sample is taken. Flow ≈ 250 ml/s

1050 Arrive back at field trailers and begin prepping samples for delivery.

1145 Samples are delivered to SMO and crew returns to office.

12.9.03

12-10-03

Today's activities will be a continuation of Quarterly Sampling with a ~~AI~~ 12-10-03 DSY hike to the headwaters of CDV. Today's crew will be D. Lawler, J.A. Bird, L. Chapman, and E. Alcon. We will opperate under GSHASP 01-001 and use SOPs 1.01, 1.02, 1.03, 1.04, 1.05, 1.07, 6.01, 6.02, 6.03, 6.04, 6.13, and 10.06 and QPs 5.2, 5.7, and 10.3

1020 L. Chapman and escorts D. Lawler and J.A. Bird to TA-16

1040 Arrive at Shaw field trailers and collect bottles for sampling at the headwaters.

1055 Arrive at SMO to obtain a box of 1L amber glass bottles

1105 Arrive back at office

1300 D. Lawler and J.A. Bird leave office for trailhead

1315 Arrive at trailhead and begin hike to headwaters.

1400 Arrive at headwater stream sampling point. Channel is ~~no~~ 12-10-03 DSY frozen and there is no place to sample. Crew decides to sample about 250 yards downstream where there is a small drip and a frozen ~~pott~~ 12-10-03 DSY pool. Ice is broken and water is sampled.

1420 Arrive at headwater spring. Discharge from spring is about ≈ 100 ml/s. All samples are collected. Water is about at 32°C

1430 Crew begins walk back to truck

1510 Arrive back at truck and drive to office to pick up E. Alcon.

1545 Arrive back at trailers with E. Alcon and begin prepping bottles for delivery

1620 Deliver bottles to SMO.

12-10-03

12-17-03
Technical Review
I have reviewed the entries on pages 201 - 235 and they meet the requirements described in QP-5.7, Note book Documentation for Environmental Restoration activities. All review comments noted have been corrected and/or resolved.
Elmer Alcon 12-17-03

02/10/04

QUALITY ASSURANCE REVIEW

I HAVE REVIEWED THE ENTRIES ON PAGES 143 THROUGH 236, AND HAVE REVIEW DEFICIENCIES ADDRESSED IN NDCR NO. ER2003-0375, AND THEY MEET THE REQUIREMENTS OF QP-5.7, NOTEBOOK DOCUMENTATION FOR ENVIRONMENTAL RESTORATION TECHNICAL ACTIVITIES. ALL REVIEW & NDCR COMMENTS AND DEFICIENCIES NOTED HAVE BEEN CORRECTED AND/OR RESOLVED. QUALTY LIAISON ANDREW E. GALLEGOS

A E Gallegos 02/10/04

A E Gallegos 02/10/04

3-26-04
Today's activities: 2Q FY04 sampling event. for event #'s 3112, 3122, & 3132. today crew will check on water levels at Mesa Top wells or Intermediate wells. Today's crew will consist of C. Ancell, J. Bird & E. Alcon (Shaw). SSHASP in effect 01-001 (R1) and IWD for Task 11 expires 12-15-04 SOp's 1.01, 1.02, 1.03, 1.04, 1.05, 1.07, 6.01, 6.02, 6.03, 6.04, 6.13 & 10.3 and QP. 5.7, 5.2, & 10.3.

0915 crew depart Shaw office for field trailers
0945 crew arrive at field trailer after pickup sampling supplies.
0958 crew conduct tailgate brief of todays activities
1020 arrived at Well 16-02655
depth to water (DTW) 6.72 ft
total depth 10.1 ft
1027 arrived at Well 16-02669
DTW
total depth > dry
90's Line Pond has water → will be sampled
1040 arrived at Well 16-02668
dry
1105 due to D&D activities at Building 340, unable to access Wells 16-02666 and 16-02665. Contact Marty Peifer 665-4342
1115 Departing TA-16 field trailers for office.
NOTE:
J. Garduño checked Martin Spring yesterday. It is flowing again.

Carrie Ancell 03-26-04

03-29-04
Today's activities: 2QFY04 sampling event for event #'s 3112, 3122, 3132. Today's crew will conduct monitoring and sampling activities at Martin Spring Canyon (Martin Spring, Upper Filter, and Lower Filter), 90's Line Pond, and Well 16-02655. Today's crew will consist of E. Alcon, D. Hopinkah, and C. Ancell (Shaw). In effect, SSHASP 01-001(R1) and IWD for Task 11 expiring 12-15-04, SOP's 1.01, 1.02, 1.03, 1.04, 1.05, 1.07, 6.01, 6.02, 6.03, 6.09, 6.13, + 10.3 and QP's 5.7, 5.2, & 10.3.

0810 Crew departs Shaw office for field trailers.

0830 Crew arrives at field trailers and begins preparing for field activities. Gathered sampling supplies and calibrated equipment.

0845 Crew conducted tailgate brief of today's activities.

0923 Arrived at Martin Spring (16-02650), 16-06706, and 16-06707.

0935 Began collecting samples at Location ID 16-02650. Water is clear. There is algal growth throughout the spring. Flow is 100 mL/s. This is the first sample collection since the spring went dry in July 2003. The following parameters were measured: temp. = 9.38°C, conductivity = 284.8 mS/cm, DO = 103%, pH = 8.06, and turbidity = 16.1 NTU.

1001 Began collecting samples at Location ID 16-06706. Water is clear. The filter appears to be operating correctly. Flow is at 100 mL/s. The following parameters were measured: temp. = 8.80°C, conductivity = 139.0 mS/cm, DO = 130.3%, pH = 7.81, and turbidity = 18.6 NTU.

1017 Began collecting samples at Location ID 16-06707. Water is clear. Filter appears to be operating correctly. Flow is at 100 mL/s. The following parameters were measured: temp. = 8.70°C, conductivity = 253.4 mS/cm, DO = 135.0%, pH = 7.75, and turbidity = 18.8 NTU.
NOTE: Crew attempted to download data from Martin Spring but battery needs to be replaced. Current battery = 2.3V.

1035 Secured the site and headed back to the field trailers.

1100 Broke for lunch.

Carrie Ancell 03-29-04

03-29-04 continued

1230 - crew back from lunch,

1235 crew will begin to prep samples for SMO delivery.

1330 sample prep continues

1430 sample prep continues

1530 sample prep continues

1600 sample prep complete, crew will depart field trailers and deliver samples to new SMO location at Pueblo Complex, note: calibrated equipment was the YSI 650 and solution used was pH buffer solution 7.00 and 10.00 lots # 02J613OTT & 02J613 07S, also used was conductivity Calibrator solution lot # 02L1023.

~~1600~~ ~~STD~~ 3-29-04

1630 samples delivered to SMO.

3-29-04

3-30-04

Today activities; continue with 2 Quarter sampling, today crew will attempt to collect samples from headwaters area. Crew will consist of C. Ancell, D. Hopinkah, & E. Alcorn

SSHASP 01-001(R1) and IWD for task 11 expires 12-15-04

SOP's 1.01, 1.02, 1.03, 1.04, 1.05, 1.07, 6.01, 6.02, 6.03 6.07, 6.13 & 10.3, and QPs 5.7, 5.2 & 1.03.

0830 Crew depart office for TA-16 field Trailers.

0850 Crew arrive at TA-16 field Trailers

0930 Crew member E. Alcorn recieved a phone call from his daughters school, He had to pick her up from school. crew will head back to office until this afternoon and then crew will modify sampling to 90's line pond and Alluvial well 16-02655.

0945 crew depart for office.

1300 crew back at field trailer and mob supplies for pond & well.

1345 Tailgate conducted.

1400 crew arrive at 90's line pond.

1401 crew begin sampling pond

1415 Sampling Completed.

1420 crew depart 90's line pond for Alluvial well 16-2655.

1427 Crew arrives at alluvial well 16-2655.

1430 Begin tagging well DTW = 7.08' TD = 10.1'

TD - DTW = 10.1 - 7.08 = 3.02' volume

3.02 x .653 = 1.97 casing = .653

1.97 x 3 = 5.91 gallons to purge Bore volume = 3

Historically, alluvial well 16-2655 has had poor recharge characteristics, and the volume amount of 5.91 gallons to purge will be modified to begin sampling immediately. Parameters will be collected at conclusion of sampling effort.

[signature] 3/30/04

3/30/04 Continued

1440 Sample collection begins.

1458 Water volume has decreased significantly from 1 full bailer (1L) to approximately 100 mL.

1513 Sample collection is complete.
Total volume not collected was 1 liter. Insufficient amount of water left in well. Therefore field parameters were not collected as well.

1516 Crew leaving well site, heading to field trailers.

1520 Arrive to field trailers. Crew preparing samples for delivery to SMO.

1530 Continue to prep samples.

1540 Continue to prep samples.

1550 Continue to prep samples.

1555 Sample prep complete. Crew packs samples in coolers and cleans up area.

1605 Trailers are locked and crew leaves for SMO to deliver the samples.

1625 Delivered samples to SMO.

3/30/04

3/31/04
Today's Activities: Continue 2QFY04 sampling. Crew is going to collect samples at CdV headwaters area and will consist of members D. Hopinkah, C. Ancell, K. Herrell and E. Alcon. SSHASP 01-001(R1) and IWD for task 11 expires 12-15-04. SOP's are 1.01, 1.02, 1.03, 1.04, 1.05, 1.07, 6.01, 6.02, 6.03, 6.07, 6.13 & 10.3; QP's are 5.7 5.2 & Site History 1.03.

0905 Crew departs office for TA-16 field trailers.

0925 Crew arrives at TA-16 field trailers. Begin collecting sample containers and loading truck.

0952 Arrive to bottom of canyon below headwaters. Preparing to depart to sample locations.

0958 Tailgate safety meeting conducted by E. Alcon.

1002 Depart to sample locations.

1108 Arrive to sample location 16-05968. Prepare to collect samples.

1119 Elias setting up YSI to collect field parameters. Flow rate ≈ 1500 mL/s.

1124 Sample collection begins

1140 Sample collection complete. Digital photo taken. Samples are packed and crew heading to next location. Coordinates at sample location are 35°51'42.320" N and 106° 23' 08.190" W.
Field Parameters are: Temp = 5.68°C Sp Cn = 64.73 mS/cm
D.O. = 125.8%, pH = 7.61 Turbidity = 17.6 NTU

1154 Arrive at location 16-03-21703. Prepare to collect field parameters. Prepare to collect samples. Turbidity on YSI is not working properly, therefore need to clean optics.

1200 Sample collection begins.

1212 Sample collection complete. Digital photo taken. Field parameters continued to be collected with YSI. Sample location coordinates are 35° 51' 32.106" N and 106° 22' 49.909" W. Elevation 8360'.

1225 Field parameters collection complete: Temp = 11.30°C Sp Cn = 125.9 mS/cm
D.O. = 116.1% pH = 8.01 Turbidity = 17.0 NTU

1226 Packing up and preparing to leave site. Flow rate approximately 500 mL/s.

1228 Crew leaves site to load for truck. [illegible] 3/31/04

3/31/04 Continued

1321 Crew arrives back to truck. Taking K. Harrell back to office so that she can go renew her badge ~~with~~ 3/31/04 which expires today.

1356 Crew arrives back to TA-16 field trailer to prep samples for shipment to SMO.

1405 Continue to prep samples.

1415 Continue to prep samples.

1430 Continue to prep samples.

1450 Sample prep complete. Loading samples into cooler. Cleaning up area before we depart.

1510 Trailers are locked up and crew leaving for SMO to deliver the samples.

1527 Delivered samples to SMO.

3/31/04

04/02/04
Today's activities: Continue 2Q FY04 sampling by tagging wells behind Building 16-260. Crew consists of E. Alcon, D. Hopinkah, and C. Ancell (Shaw). SSHASP 01-001 (RI) and IWD for Task 11 expiring 12/15/04, SOP's 1.01, 1.02, 1.03, 1.04, 1.05, 1.06, 6.01, 6.02, 6.03, 6.09, 6.13, 7.02, & 10.3 and QP's 5.7, 5.2, + 10.3 are in effect.

0905 Crew departs from Shaw office for field trailers.
0925 Crew arrives at field trailers.
0930 Tailgate safety meeting conducted.
0943 Crew arrived at Building TA-16-260 outfall area. Crew detected damage to concrete curb directly behind Building 260.
0947 Tagged Well 16-02736. Well is dry.
0950 Tagged Well 16-02712. DTW=94.9' and TD=95.52'.
1000 Crew returned to field trailers.
1005 Site secured. Crew returning to Shaw office. NOTE: Weather conditions are overcast with light rain showers.

Carrie Ancell 04/02/04

04/05/04
Today's activities: Continue 2Q FY04 sampling. Crew will tag wells above Martin Spring Canyon and attempt to collect samples from Fishladder Seep. Crew consists of E. Alcon and C. Ancell (Shaw). SSHASP 01-001 (R1) and IWD for Task 11 expiring 12/15/04, SOP's 1.01, 1.02, 1.03, 1.04, 1.05, 1.06, 6.01, 6.02, 6.03, 6.09, 6.13, 7.02, + 10.3 and QP's 5.1, 5.2, + 10.3 are in effect.

1110 Crew departs Shaw office for field trailers.
1130 ~~111~~ CAA 09-05-04 Crew arrives at field trailers.
1140 Tailgate safety meeting conducted.
1145 Departed for sample locations.
1157 Arrived at Wells 16-02665 and 16-02666 and tagged them. Well 16-02665 DTW = 126.0' and Well 16-02666 is dry. There is not enough water at 16-02665 to sample.
1210 Departed for Fishladder Seep.
1218 Arrived at Fishladder Seep. There is enough water for sampling. CAA 04/05/04 Crew will return to field trailers to mobilize for sampling.
1227 Arrived back at field trailers. Mobilize for sampling.
1240 Depart for Fishladder Seep.
1247 Arrive at Burning Grounds.
1258 Arrive at Location ID 16-02654. Prepare to collect samples.
1308 Completed sample collection. Flow is ~ 1L/s. Field parameters are: T = 7.55°C sp. cond. = 112.2 mS/cm DO = 147.2% pH = 6.41 turbidity = 53.2 NTU. Digital photos taken and site secured.
1330 Arrive back at field trailers and begin preparing samples for SMO delivery.
1345 Sample preparations continue.
1400 Sample preparations complete. Crew departs for SMO.
1427 Crew arrives at SMO.
1450 Samples transferred to SMO.

Carrie Ancell
04/05/04

04/06/04
Today's activities: Continue 2Q FY04 sampling for event #'s 3112, 3122, & 3132. Today's crew will collect samples from wells and stream profile locations in CDV. Crew consists of E. Alcon, D. Hopinkah, C. Ancell, and J.A. Bird (Shaw). SSHASP 01-001 (R1) and IWD for Task 11 expiring 12/15/04, SOP's 1.01, 1.02, 1.03, 1.04, 1.05, 1.06, 6.01, 6.02, 6.09, 6.13, 7.02, + 10.3 and QP's 5.7, 5.2, & 10.3 are in effect.

0940 Crew departs Shaw office for TA-16 field trailers.
1000 Crew arrives at field trailers. Crew mobilized for sampling.
1030 Crew attempts to service ATV but something is stuck in the ignition.
1040 Tailgate safety conducted.
1100 Crew departs for CDV.
1115 Crew arrives at CDV sample locations 16-02659 and 16-02660. E. Alcon checked downstream stream profile locations for water. All are flowing and will be sampled.
1117 Tagged Well 16-02659. DTW = 5.6' and TD = 10.1'
TD - DTW = 10.1' - 5.6' = 4.5' volume
4.5ft × 0.653 gal/ft = 2.93 gal × 3(bore V) = 8.79 gal. to purge
where casing = 0.653 and bore volume = 3
Well 16-02659 recharges well so entire 8.79 gallons will be purged before collecting samples.
1120 J.A. Bird begins purging well.
1125 D. Hopinkah downloads parameters to laptop.
1133 Well purging completed and sample collection begins.
1155 Collection of samples from 16-02659 completed. Includes a field duplicate for quality control. Field parameters measured: T = 5.05°C Sp. cond. = 131.8 mS/cm DO = 136.5% pH = 7.34 turbidity = 14.6 NTU. Digital photos taken.
1205 Crew secures site and returns to field trailers. Weather is cool and overcast with rain and hail.
1215 Crew breaks for lunch. Samples are secured in storage trailer and will be prepped for SMO shortly.

Carrie Ancell 04-06-04

04/06/04 Continued

1305 Crew departs Shaw office to return to field trailers.

1323 Arrives at field trailer. Mobilizes to continue 2Q FY04 sampling at CDV.

1340 Crew leaves for CDV.

1350 Crew arrives at CDV.

1352 Crew tags Well 16-02658. DTW = 6.06' TD = 10'
TD - DTW = 10 ft - 6.06 ft = 3.94 ft volume
3.94 ft × 0.653 gal/ft = 2.57 gal × 3 = 7.71 gal. to purge
Well 16-02658 recharges well so entire vol. will be purged.

1355 J.A. Bird begins purging well.

1359 D. Hopinka attempts to download data but the battery charge is too low (7.17 V). Need to replace battery.

1404 Sample collection for Well 16-02658 begins.

1410 Recharge has slowed. Will move onto next location while well recharges.

1416 Crew begins sampling SP 8 CDV (16-05996).

1420 16-02658 sampling resumes.

1422 16-05996 sampling concludes. Field parameters are:
T = 9.49°C sp.cond. = 211.3 mS/cm DO = 125.0% pH = 7.70
turbidity = 15.4 NTU Digital photo taken. Flow ~ 950 mL/s.

1427 Sampling at 16-02658 concludes. Field parameters are: T = 4.96°C sp.cond. = 143.9 mS/cm DO = 135.9 %
pH = 6.64 turbidity = 139.8 NTU. Digital photo taken.

1435 Site secured. Moderate rain showers again. Decision is made to return to field trailers.

1444 Crew arrives back at field trailers. Rain is heavier. Hail is falling. J.A. Bird is in truck watching for lightning

1445 Sample preparation begins.

1512 J. Garduño and R. Medina arrive at field trailers.

1515 Found one bottle broken. ID 16-02659 ~~#14~~ from 08-24 4-6-04
Sample ID RE16-04-53146.

1545 Sample preparation continues.

1600 Sample preparation complete. Site secured. Crew leaving for SMO.

Annie Ancell 04/06/04

04/06/04 continued
The following samples were collected

sample ID	location	Time	
RE16-04-53190	16-05996	1422	
RE16-04-53191	16-05996	1422	
RE16-04-53136	16-02659	1427	
RE16-04-53137	16-02658	1428	
RE16-04-53138	16-02659	1155	
RE16-04-53139	16-02659	1155	
RE16-04-53146	16-02659	1155	Dup
RE16-04-53147	16-02659	1155	Dup

1641 Arrived at SMD and delivered samples.
1655 Left SMD to return to Shaw office.

Carne Ancell 04/06/04

4-7-04

Today's activities: continued Quarterly sampling at MSC & CDV. Crew will consist of J. Garduno, J. Bird, C. Ancell, D. Hopenkah & E. Alcon. SSHASP 01-001 (R1) IWD for Task 11 expiring 12/15/04 SOPs 1.01, 1.02, 1.03, 1.04 1.25, 1.26, 6.01, 6.03, 6.09, 6.13, 7.02 & 10.3, and QPs 5.7, 5.2 & 10.3 are effect. Crew will ~~start~~ at Martin Springs Canyon below TA-11 drop tower.

0810 crew depart office for field trailers

0830 crew mob supplies & equipment for 10 locations

0853 ~~0840~~ TA 04-204 Tailgate conducted.

0905 crew arrive at TA-11

0930 crew arrive at location 16-06295. crew sound well and DTW = 3.75 ft. TD = 9.5 ft.

9.5 - 3.75 = 5.75 x .653 = 3.75 x 3 = 11.24 gallons

crew will purge a total of 11.24 gallons

0948 crew continue to bail out well

0950 RE16-04-53144 & 53145 sampling started.

1000 Sampling ~~continued~~ 4-7-04 TA complete.

Temp = 7.18°C, SPCond = 120.9 mS/cm.

DO = 123.7%, pH = 7.21, 84.4 Turbid.

1005 Sample RE16-04-53182, 53183, 53198, & 53199 started at location MSC profile #6 16-5991

1009 Samples completed. Field parameters; Temp 8.53°C Sp cond = 126.3 mS/cm, DO = 135.3%, pH = 7.27, Turbid = 59.2 NTU. flow @ 1200 mL/sec

1015 crew secure area of stream profile #6 and hike up to Alluvial Well 16-06294.

1030 crew arrive 16-06294

1031 Crew sound well at 4.9 ft = DTW, TD = 10.88 ft.

10.88 - 4.9 = 5.98 x .653 = 3.9 x 3 = 11.71 gallons to purge

1035 crew begin to purge well.

1040 purging continues 5 gallons purged. recharge is slowing up

4-7-04

4-7-04

crew will let Alluvial well some time to recharge before sampling. crew will continue to collect sample at stream profile location 16-05990 #5 located above wetlands area.

1050 Crew collect sample RE16-04-53180 & 53181, water is flowing at 650 mL/sec. field parameters, Temp = 5.92°C Sp Cond = 138.0 ms/cm, DO = 134.5 %, PH = 6.55, Turb. = 172.3 water slightly turbid, no odor.

1100 Crew collect sample RE16-04-53142 & 53143 at location 16-06294, 11.75 gallon purged.

1110 Crew secure area around MSC Alluvial well #2 and 6-17-04 LA. MSC stream profile #5.

1112 Crew depart for stream profile #4 approximately 1000 ft up gradient from stream profile #5.

1130 Crew arrive at stream profile location #4, 16-05989

1133 Sample RE16-04-53178 & 53179 collected, water flow is approx. 250 mL/sec, slightly turbid, no odor. field parameters Temp = 9.78°C, Sp Cond = 188.1 mS/cm, DO = 115.8, pH = 6.84, Turbid = 41.2 ntu.

1140 Site secured, crew depart for field trailers. crew will meet Don Hickmott for a site visit, before state auditors arrive.

1205 crew arrive at field trailers, Don is already there and have a few comments on labeling, he asks that all containers must have some type of label, empty, used in use, or product.. crew will secure sample in field trailer and break for lunch.

1240 Don depart field trailer and crew will break for lunch

1250 crew arrive at S-site lunch area.

1330 crew back from lunch, begin sample prep for SMO delivery. Doug Hopinkah will depart for crew office.

1430 Sample prep continues

4-7-04

4-7-04 cont

1530 Sample prep continues

1600 Sample prep completed, field trailer secured

1610 crew depart S-site for SMO

1620 crew arrive at SMO. transfer sample to SMO.

1645 crew departs SMO for field office.

4-7-04

04-12-04
Today's activities: Continue quarterly sampling at MSC & CDV. Crew consists of E. Alcon, C. Ancell, J. Garduño, and J.A. Bird. SSHASP 01-001 (R1), IWD for Task 11 expiring 12-15-04, SOP's 1.01, 1.02, 1.03, 1.04, 1.05, 1.06, 6.01, 6.03, 6.09, 6.13, 7.02, + 10.3 and QP's 5.7, 5.2, + 10.3 are in effect. Crew will begin at upper end of Martin Spring Canyon.

0850 Crew departs Shaw office.

0904 Crew arrives at Pueblo Complex to deliver CD of geophysics files to D. Hickmott.

0920 Crew arrives at field trailers and mobs for sampling.

0930 Tailgate safety conducted.

0937 Crew secures trailers and departs for MSC.

0940 Crew arrives at MSC. There is ~1-2" of snow.

0953 Crew arrives at Well 16-06293. Burned treetop has fallen onto well. Digital photos taken. Crew moves fallen tree and tags the well. DTW = 8.03' TD = 10.5' 1.61291 CA 04-12-04

TD - DTW = 10.5 ft - 8.03 ft = 2.47 ft × 0.653 gal./ft = ~~3.9494~~ gal. 04-12-04

~~3.94~~ 1.61 gal. × 3 = 4.84 gal. to purge CA 04-12-04 where casing = 0.653 gal./ft
bore vol. = 3

Based on known characteristics of this well, the well will not be purged and sampling will begin immediately.

1000 Sample ID's RE16-04-53140 and -53141 for Well 16-06293 began.

1020 Crew decides to collect from 16-05921 while well recharges. Field parameters for 16-06293: T = 5.66°C sp. cond. = 481.5 mS/cm DO = 157.7% pH = 7.65 turbidity 170.9 NTU.

1028 Sample ID's RE16-04-53156 and -53157 for SP2 (MSC) Location ID 16-05921 begins.

1034 Sample collection at 16-05921 concludes. Field parameters: T = 4.60°C sp. cond. = 113.8 mS/cm DO = 152.9% pH = 7.29 turbidity = 41.5 NTU Flow ~0.5 L/s. Digital photos taken.

1045 Crew decides to collect at SP3 while well continues to recharge.

Carrie Ancell 04-12-04

04-12-04 continued

1048 Crew arrives at SP3 Location ID 16-05988. E. Alcon sets up sonde to record field parameters.

1051 Crew begins collecting for Sample IDs 16-04-53176 and RE16-04-53177 for Location ID 16-05988.

1059 Sampling at 16-05988 concludes. Field parameters: T=5.05°C, sp.cond.=187.2 mS/cm, DO=144.8%, pH=7.30, turbidity=41.0 NTU, flow ~1.15 L/s. Photo taken.

1109 Crew returns to Well 16-06293 to continue collecting samples.

1119 Due to poor recharge, crew is unable to collect all samples at Well 16-06293. Could not collect the following #'s: 1, 6, + 7 from 53140 and 1 from 53141.

1133 Crew returns to truck to get more sample containers.

1138 C. Ancell sets up sonde at SP1 (MSC) 16-05920.

1149 Collection of Sample ID's RE16-04-53154 and -53155 for Location ID 16-05920 begins.

1157 Collection for 16-05920 concludes. Field parameters: T=6.86°C, sp.cond.=209.2 mS/cm, DO=150.9%, pH=7.38, turbidity=31.9 NTU, flow ~150 mL/s.

1200 Old MSC samples returned to MSC.

1205 Battery and dessicant replaced at Martin Spring.

1211 Crew returns to truck and heads back to trailers.

1214 Crew arrives at trailers and unloads everything.

1217 Samples secured in field trailers. Crew breaks for lunch.

1313 Crew returns to trailers and begins prepping samples.

1343 Sampling prep continues.

1413 Sample prep continues.

1442 Sample prep concludes. Trailers secured and crew leaves to deliver samples to SMO.

1510 crew arrive at SMO, Two amber containers from sample RE16-04-53156 were broken during transport. They were for Hexpand and 8270 c, each has an other container, remaining containers were deconed and submitted

1535 depart SMO for Shaw office.

4-12-04

04-13-04

Today's activities: Continue 2Q FY04 sampling at CDV. Crew consists of E. Alcon, C. Ancell, and K. Herrell. SSHASP 01-001 (R1), IWD for Task 11 expiring 12/15/04, SOP's 1.01, 1.02, 1.03, 1.04, 1.05, 1.06, 6.01, 6.03, 6.09, 6.13, 7.02, + 10.3 and QPs 5.7, 5.2, + 10.3 are in effect. Crew will sample upper CDV accessing through Burning Ground.

0805 Crew departs Straw office.

0815 Crew arrives at SMO to pick up sample containers.

0820 Crew departs SMO for field trailers.

0830 Crew arrives at Badge Office. K. Herrell must renew her badge before we can go to TA-16.

0840 Crew departs Badge Office.

0850 Crew meets Duratek at gate.

0855 Crew meets Duratek at field trailers. Duratek picks up unused empty barrels.

0913 Tailgate safety meeting conducted.

0930 Crew mobilizes for sample collection.

1000 Still mobilizing.

1011 Crew departs field trailers for CDV.

1016 Crew arrives at CDV.

1031 Crew arrives at SWSC Spring. There was very little flow. Not enough water to sample.

1035 Crew arrives at Well 16-02656. Well tagged. DTW=4.9 ft

TD-DTW = 10.3 ft - 4.9 ft = 5.4 ft TD=10.3 ft

5.4 ft × 0.163 gal./ft = 0.8802 gal. 2" casing = 0.163 gal./ft

0.8802 × 3 bore volumes = 2.64 gal. to purge 3 bore volumes

E. Alcon will purge the entire volume before sampling begins.

1048 Sampling of Well 16-02656 (Sample IDs RE16-04-53132 and -53133) begins.

1051 SP2 (16-05993) and SP3 (05994) are moist but there is no flowing water. Samples will not be collected.

1057 Collection for ~~16-02656~~ 16-02656 concludes. NOTE: Well has good recharge characteristics. Field parameters: T=6.29°C sp.cond.=138.3 mS/cm DO=115.9% pH=7.33 turbidity=28.6 NTU

Carrie Ancell 04-13-04

04-13-04 continued

1101 Battery at 16-02656 at 5.3V. Battery replaced and data downloaded to laptop.

1122 Crew arrived at Peter Seep ~~and~~ CH 04-13-04 and Well 16-02657. Both have water and will be sampled.

1129 Sonde set up to record field parameters for Well 16-02657.
DTW = 0.9 ft TD = 5.5 ft 4" casing = 0.653 gal./ft
TD - DTW = 5.5 ft - 0.9 ft = 4.6 ft × 0.653 gal./ft = 3.0038 gal.
3.0038 gal. × 3 bore volumes = 9.0114 gal. to purge

1132 Crew stops logging at Well 16-02657 because there is no baler. Peter Seep (16-02653) will be sampled instead.

1141 Collection for 16-02653 (Sample ID's RE16-04-53118 and -53119) begins.

1146 Sample collection concludes. Digital photo taken. Field parameters: T = 7.00°C sp. cond. = 228.0 mS/cm DO = 132.4%
pH = 7.08 turbidity = 18.7 NTU Flow ~ 200 mL/s.

1152 Crew packs up and returns to truck.

1210 Crew arrives at trailers, secures samples, and breaks for lunch.

1316 Crew returns to trailers and mobs for more sampling.

1326 Crew returns to GDN.

1341 Crew arrives at Well 16-02657. NOTE: Due to the close proximity of SP4 (16-05995) to Peter Seep (16-02653), no sample will be collected for 16-05995.

1348 Collection for 16-02657 (Sample ID's RE16-04-53134 and -53135) begins. Due to historically poor recharge, sampling will begin without purging.

1402 Sample collection for 16-02657 concludes. Field parameters: T = 8.39°C, sp. cond. = 144.3 mS/cm, DO = 126.7%, pH = 7.47, turbidity = 188.9 NTU. Digital photo taken.

1421 Began sampling for SP5 16-05923 (Sample ID's RE16-04-53158 and RE16-04-53159).

1428 Sampling concludes. Field parameters: T = 10.68°C, DO = 125.8%
sp. cond. = 200.6 mS/cm, pH = 7.44, turb. = 16.3 NTU, Flow ~ 1.3 L/s

1445 ~~1435~~ CH 04-13-04 Marine battery replaced at Burnining Ground Spring.

1507 Crew returns to field trailers and begins prepping samples.

Carrie Ancell 04-13-04

04-13-04 continued
1530 Sample prep continues.
1600 Sample prep continues.
1626 Sample prep finished. Site secured. Leave for SMO.
1641 Arrived at SMO to deliver samples.
1700 Samples have been delivered. Crew departing SMO to return to Shaw office.

Carne Ancell 04-13-04

04/14/04
Todays Activities: Continue Quarterly Sampling for 2Q FY04 @ CDV. Field Team members: K. Herrell, C. Arnell, E. Alcon. SSHASP 01-001(R1); IWD for task 11 expiring 12/15/04; SOPs 1.01, 1.03, 1.04, 1.05, 1.06, 6.01, 6.03, 6.09, 6.13, 7.02, + 10.3 QPs 5.7, 5.2, + 10.3 are in effect. Team will sample upper section of CDV w/ access through burning ground.

0800 Team departs Shaw Office
0820 Fueled Vehicle @ Metzgers Mobil
0850 Returned to Shaw Office to obtain E. Alcon's badge
0925 Arrived at TA-16 access control + signed in
0950 Tailgate Safety meeting conducted
0955 Crew mobilizes for sample collection.
1005 Depart Field trailers for CDV.
1010 Arrive @ CDV
1020 Arrive @ Burning ground Spring Flow is strong + steady, Water Clear. Field Parameters: T = 10.29°C, Sp. Cond. = 127.3 mS/cm, DO = 97.7%, pH = 7.97, turbidity = 21.7 NTU Flow measured @ 1.4 L/sec.
1025 Begin Sampling. Collect Sample IDs: RE16-04-53127, RE16-04-53128. Collected Sample IDs: RE16-04-53128 + RE16-04-53129 as duplica
1026 Set up computer to download well data from data loggers
1035 Sample collection concludes
1039 Digital Photos taken of samples collected.
1045 Site secured. Begin Hike back to truck to deliver samples to truck and retri additional sampling equipment
1050 Team arrives at truck
1055 Team Hikes to SP6 (16-05926)

Kate Herrell
04-14-04

04/14/04: Continued.

1105 Team arrives @ SP6 (location ID 16-05926)
1120 Sonde set up to measure field parameters.
T = 6.33°C Sp. Cond = 206.9 mS/cm DO = 111.2%
pH = 7.24 turbidity = 15.3 NTU. Flow is measured @ 850 ml/sec.
1125 Sample collection begins for RE16-04-53160 + RE16-04-53161.
1130 Sample collection concludes.
1133 Digital Photo taken of samples RE16-04-53160 + RE16-04-53161. NOTE: checked status of SWSC spring. No flow yet over weir; however water is pooling behind V-notch weir.
1138 Team leaves location SP6 + Hikes to SP location 7 (16-05927).
1141 Arrive at SP7 (16-05927) + sets up Sonde to record field parameters: T = 9.90°C sp.Cond = 24.7 mS/sec. DO = 137.4% pH = 7.54 turbidity = 21.9 NTU. Stream Flow measured @ ~2.8 L/sec.
1146 Sample collection for RE16-04-53162 + -53163 begins.
1152 Sample collection concludes. Digital Photo taken of samples. NOTE: stream has good flow, mostly clear w/ silt accumulation @ bottom. Lots of watercress noted to main stream channel.
1202 Depart SP location 7 to return to truck.
1204 Arrive @ Shaw truck. Transfer samples to packaging boxes to return to field trailers.
1213 Team arrives at Field trailers to unload samples.
1215 Team departs Field trailers after securing site to return to Shaw office for lunch
KH 4/14/04
1345 Team returns to field trailer to retreive sample collection material. D. Hopinkah has joined team. Reviewed Tailgate safety topics.
1401 Arrive at SP location 9 (16-05997)
1403 Sonde set up to measure field parameters.

Kate Hewell 4/14/04

04/14/04: Continued

1405 Sample collection activities for the following sample IDs begin: RE16-04-53192 + RE16-04-53193. NOTE: water is clear + consistent flow.

1410 Sample collection concludes. Digital photo is take of samples.

1412 Stream flow is measured @ ~ 1.65 L/sec

1417 Sonde field parameters: T = 10.23°C, Sp. Cond. 210 mS/sec DO = 105% pH = 7.85, turb ~ 16.0 NTU.

1418 Teams leaves SP location 9.

1421 Setup to gauge water flow @ culvert on way to SP location 10 (16-05998)

1425 Stream flow measured ~ 2.2 L/sec.

1427 Team arrives @ SP location 10. Sonde is setup to measure field parameters. NOTE: H_2O is slightly silty. Consistent flow.

1429 Sample collection for Samples RE16-04-53194 + RE16-04-53195. + RE16-04-53200 (FD) + RE16-04-53201. begins.

1437 Sampling @ SP 10 (16-05998) concludes. Digital photo taken of samples.

1440 Stream flow measured + estimated at 1.6 L/sec Sonde Field Parameters: T = 11.7°C, Sp. Cond = 218.6 mS/sec DO = 111.4%, pH = 8.0, turb. = 13.8 NTU.

1446 Team secures site + Departs CDV for field trailers for sample prep.

1452 Team arrives @ Field trailers. Begin Sample prep activities.

1552 Sample prep activities continue

1628 Sample prep activities conclude

1634 Secured trailers. Leave site to deliver samples to SMO.

1651 Arrive at SMO to drop off samples.

1710 Leave SMO to return to Shaw office

NOTE: Timed interval sampler @ Burning ground spring was started yesterday, 4-13-04.

Kate Kemell 4/14/04

04-15-04

Today's activities: Continue 2Q FY04 sampling at CDV. Crew consists of E. Alcon, K. Herrell, and C. Ancell. SSHASP 01-001 (R1), IWD for Task 11 expiring 12/15/04, SOPs 1.01, 1.02, 1.03, 1.04, 1.05, 1.06, 6.01, 6.03, 6.09, 6.13, 7.02 & 10.3, and QP's 5.7, 5.24 & 10.3 are in effect. Crew will sample lower CDV accessing through Burning Ground.

0807 Crew departs Shaw office.

0835 Crew arrives at Access Control.

0845 Crew arrives at field trailers and mobilizes for sampling.

0855 Tailgate safety meeting conducted.

0906 Crew departs trailers for Burning Ground.

0912 Crew arrives at Burning Ground and prepares to hike to sample locations.

0941 Crew arrives at SP16. All locations are flowing. Crew will hike further downstream to see how far there is flow.

1005 Crew returns to SP16. Surface flows estimated to continue downstream for approximately 2000 ft.

1008 Sampling at 16-05601 (Sample ID's RE16-04-53150 & -53151) begins.

1012 Sampling for 16-05601 concludes. Field parameters: T=5.71°C, sp. cond. = 227.1 mS/cm, 108.8% = DO, pH = 7.73, flow ~ 1.2 L/s, turbidity = 6.9 NTU. No digital photo taken.

1015 Crew secures site and heads to SP15.

1021 Crew arrives at SP15 (16-05930).

1025 Begin 16-05930 sampling. Sample ID's RE16-04-53168 & -53169.

1030 Conclude 16-05930 sampling. Field parameters: T = 6.37°C, sp. cond. = 227.4 mS/cm, DO = 134.0%, pH = 7.83, flow ~ 1.15 L/s, turbidity = 15.9 NTU. No digital photo taken.

1035 Site secured. Crew heads to SP14.

1041 Crew arrives at SP14 (16-05600) and sets up sonde.

1048 Begin 16-05600 sampling. Sample ID's RE16-04-53148 & -53149.

1053 Conclude 16-05600 sampling. Field parameters: T = 6.61°C, sp. cond. = 226.9 mS/cm, DO = 130.2%, pH = 7.67, flow ~ 1.5 L/s, turbidity = 14.8 NTU. No digital photo taken.

1058 Site secured. Crew heads to SP13.

Carrie Ancell 04-15-04

04-15-04 Continued

1104 Crew arrives at SP13 (16-05929) and sets up sonde.

1112 Begin 16-05929 sampling. Sample IDs RE16-04-53166 & -53167.

1119 Conclude 16-05929 sampling. Field parameters: T = 5.88°C, sp.cond. = 222.7 mS/cm, DO 125.5%, pH = 7.34, flow ~ 1.4 L/s, turbidity = ~~30.5~~ 15.8 NTU. No digital photo taken. CAA 04-15-04

1126 Crew secures site and heads to SP12.

1131 Crew arrives at SP12 (16-05928) and sets up sonde.

1140 Begin 16-05928 sampling. Sample IDs RE16-04-53164 & -53165.

1144 CAA 04-15-04 ~~1140~~ Conclude 16-05928 sampling. Field parameters: T = 7.70°C, sp.cond. = 203.4 mS/cm, DO = 114.1%, pH = 7.58, flow ~ 1 L/s, turbidity = 16.0 NTU. No digital photo taken.

1154 Crew secures site and heads to SP11.

1156 Crew arrives at SP11 (16-05999) and sets up sonde.

1159 Begin 16-05999 sampling. Sample IDs RE16-04-53196 & -53197.

1205 Conclude 16-05999 sampling. Field parameters: T = 7.69°C, sp.cond. = 223.4 mS/cm, DO = 115.4%, pH = 7.62, flow ~ 1.2 L/s, turbidity = 17.3 NTU. No digital photo taken.

1215 Crew secures site and departs for truck.

1219 Crew arrives at truck and departs for field trailers.

1229 Crew arrives at field trailers, secures samples, & breaks for lunch.

1418 Crew returns to field trailers to begin prepping samples.

1448 Continue to prep samples.

1518 Continuing to prep samples.

1548 Continuing to prep samples.

1618 Sample prep concludes. Crew secures site & leaves to deliver samples to SMO.

1636 Arrived at SMO.

1659 Samples have been delivered to SMO. Crew leaves to return to Shaw office.

Carrie Ancell 04-15-04

04-16-04

Today's activities: Conclude 2Q FY04 sampling at confluence of CDV + Water Canyon. Crew consists of E. Alcon, K. Herrell, D. Hopinkah, + C. Ancell (Shaw) and R. Medina (Plus). SSHASP 01-001 (R1), IWD for Task 11 expiring 12/15/04, SOP's 1.01, 1.02, 1.03, 1.04, 1.05, 1.06, 6.01, 6.03, 6.09, 6.13, 7.02 + 10.3, and QP's 5.7, 5.2, + 10.3 are in effect. Crew will sample 2 locations accessing TA-15 via Gate 9.

0810 Crew departs Shaw office.
0825 Arrives at TA-16 Access Control.
0830 Crew arrives at field trailers and mobilizes for sampling.
0845 Tailgate safety meeting conducted.
0852 Crew secures trailers and leaves to begin DX check-in.
0900 Crew arrives at TA-08 / DX Area Access Control.
0910 Departs TA-08/DX Area Access Control.
0915 Crew arrives at DX Access Control to check-in.
0922 Departs DX Access Control. Picked up radio and key.
0951 Crew enters through Gate 9. Radioed Access Control.
1012 Crew arrives at confluence.
1026 Crew arrives at 16-05970 and sets up sonde.
1027 Begin 16-05970 sampling. Sample IDs RE16-04-53174 + -53175.
1030 Conclude 16-05970 sampling. Field parameters: T = 7.86°C, sp.cond. = 166.6 mS/cm, DO = probe malfunctioned, pH = 8.64, turbidity = 17.4 NTU, Flow ~ 1.6 cfs. No photo taken. CA 04-16-04
1042 Crew secures location and leaves for next location.
1057 Crew arrives at 16-05969 and sets up sonde.
1058 Begin 16-05969 sampling. Sample ID's RE16-04-53172 + -53173.
1101 Conclude 16-05969 sampling. Field parameters: T = 8.76°C, sp. cond. = 165.7 mS/cm, DO = 78.5% but probe malfunctioned, pH = 8.20 CA 04-16-04, turbidity = 17.9 NTU. No photo taken. Flow ~ 1.6 cfs.
1114 Crew secures location and returns to truck.
1123 Crew returns to truck and calls DX for RCT to meet group at gate.

Carrie Ancell 04-16-04

04-16-04 continued

1145 Crew arrives at Gate 9 and waits for RCT.

1149 RCT arrives and scans boots, samples, and trucks & cat 04-16-04

1155 No rad detected. Crew leaves to secure samples & break for lunch.

1345 Crew returns to field trailers and begins sample prep.

1410 Sample prep continues.

1431 Sample prep concludes. Crew secures site and leaves to check out at DX and deliver samples to SMO.

1448 Signed out at TA-08/DX Area Access Control.

1459 Arrive at SMO.

1508 Crew leaves SMO after delivering samples. This concludes 2QFY04 sampling activities.

Connie Snell 04-16-04

4/28/04
Today's Activities will include downloading data from the flowloggers within TA-16. The locations will include 16-02650 (Martin Spring) and 16-02655 (1st monitoring on mesa top). The crew involved is Doug Hopinkah, Jacinto Cardona, Mike White (Albuquerque office) and Ray Medina (escort).

1340 Crew departs Shaw office for TA-16.
1400 Crew arrives at TA-16 access control. D. Hopinkah needs to sign in as visitor. The other crew members have previously been to TA-16 today.
1415 Arrive to building 344 where we will access Martin Spring.
1422 Arrive to Martin Spring. Setup laptop to begin download process.
1425 Noticed that the spring flow has receeded dramatically from one month ago during quarterly sampling. There is a trickle to almost no flow over the "V-notch" of the spring. Flow approximately 1-6/s.
1435 Download is complete. Unhooking laptop and prepare to depart site.
1437 Crew hikes back to truck.
1448 Arrive to truck and head to 16-02655.
1500 Crew arrives to well 16-02655 and prepares to download data.
1520 Downloading is complete. Crew packs up to depart for field trailers. Need to drop off updated map of sample locations, within TA-16, and the YSI also.
1527 Arrive to field trailers.
1535 Depart field trailers back to Shaw office.

D. C. Hill 4/28/04

5-7-04
Today's activities, check water levels at Alluvial well with CDU and check on data loggers.
SSHAP 01.001 (R1) EWD for Task 11 (expires 12-15-04)
SOP's QP 10.3, QP 2.2, 5.7 SOP. 01.01, 6.13, 6.01 & 7.02
crew will consist of E. Alcon & C. Ancell.

0945 crew depart show office for badge office to rebadge E. Alcon.
1000 crew arrive at badge office
1030 depart badge office for T&E field trailer
1045 Arrive at field trailers. and conduct Tailgate brief
1055 Crew collects precip sample # P105 from storm events 3-26-04 to 5-7-04.
1100 crew mob for CDU
1115 crew arrive at canyon bottom
1118 Crew arrives at Well 16-02659. Battery 10.35V. DTW=6.05ft
Piezometer 16-02464 dry, 16-2465 DTW=3.65 ft.
Staff gage 16-02463 is dry location.
1121 Seep below well pair has some slow discharge, is wet.
1129 Crew checks 16-2467. Battery <3V. DTW=4.8ft TD=5.8ft.
1144 Crew arrives at Burning Ground Spring (16-02652).
Discharge estimated at 1100-1200 mL/s. Battery at 11.5V.
1200 Crew arrives at Well 16-02656. Battery at 11.6V.
DTW=5.3ft. Staff gage 16-2456 location dry.
1205 Crew arrives at Well 16-02657. DTW=1.4ft. Staff gage 16-2457 location is dry.
1210 Crew returns to Burning Ground Spring & checks battery again.
Readings of 1.7V & 8.9V. Need to replace battery. Also checked marine battery. 12.13V
1234 Crew arrives at Well 16-02658. Battery at 12.07V. DTW=6.16ft
NOTE: SWSC Spring is discharging over weir. Sample next week
Piezometer 16-~~2640~~ dry, 16-2459 DTW=5.2ft. Staff gage 16-2458 is 2460 CAA 05-07-04 flowing.
1244 Returned to field trailers
1247 Secured site and returned to office.

Caine Ancell 05-07-04

5-10-04

Today's activities: crew will sample SWSC spring due to discharge from spring. This will be the first sample collected at SWSC since June 2001. Crew will consist of L. Alcon & K. Ancell, SSHASP 04-001 (IWD for Task 11 expires 12-15-04, SOPs in effect for special event sampling of SWSC are 1.01, 1.02, 1.03, 1.04, 1.05, 1.06, 6.01, 6.03, 6.09, 6.13, 7.02 & 10.3, QPs 5.7, 5.2.

1000 crew depart office for SMO for sample containers.

1030 crew depart SMO for TA-16 field trailer.

1100 crew arrive at field trailers.

1150 crew mob supplies and equipment.

1145 crew conduct tailgate brief.

1145 crew depart for SWSC spring via access road from burning grounds area.

1212 crew arrive at SWSC spring location ID 16-02651, upon arrive crew observes that discharge flow is still going over V-notch. 5-10-04 There are two area that are contributing to the pool behind the V-notch. The main or greater flow is emerging from the southwest area from V-notch approximately 3 meters up slope. The second area is from the southeast approximately 2 meter from V-notch. A pool behind V-notch is approximately 1 m^2 with a depth of 1" to 6". the flow over the V-notch is approximately 50 mL/s. the flow continues for appox. 1 meter before it disappears into ground. the surface flow never reaches the main CDV channel.

1220 crew begins sampling

1225 crew completes sampling with field parameters, Temp = 10.49°C SpCond = 115.7, DO = 118% pH = 8.20, Turb. = 17.6

1230 crew load samples and equipment.

1235 crew depart SWSC spring for Truck and then field Trailers. Several digital photos were taken of site conditions.

5-10-04

5-10-4 cont.

1235 Special event sampling of SWSL spring. Crew will take coll sample back field trailer and prep sample for SMO delivery on 5-11-04. E. Alcon had called Don Hickmott earlier in the day and explained SWSL spg. conditions. Don approved the special event sampling. The paper work will have to be requested from SMO. and sample will remain at field trailer under lock in a ~~refrigerator~~ refrigerator. Crew can then hold sample for one day while paper work is generated.

1245 Crew back at truck and depart for field trailers.

1300 Crew at field trailers

1320 Crew secure samples in transportainer ~~and~~ fridge and lock up with custody seal over lock.

1330 Crew depart for office ~~and~~ will have to submit pap work for sample. Crew will return tomorrow (5-11-04) and submit samples to SMO.

1345 Crew back office.

5-10-04

5-11-04
Today's activities; submit collected sample from SWSC spring. crew will consist of C. Ancell, M. White & E. Alcon, SSHASP 01-001(R1), IWD for Task II expires 12-15-04 SOPs in effect are 6.13, QP 5.7, SOP 1.01, 1.02, 1.03 1.04

1030 crew depart office for field trailer.
1100 crew arrive at field trailers,
1115 crew begin sample prep ~~of~~ sample ID RE16-04 53336 and RE16-04-53337.
1150 sample prep completed
1145 M. White is given tour of field trailers.
1159 earlier at access control office a safety work permit was issued on vehicle rental SWP ~~#~~ 19637.
Tailgate brief also was complete at this time.
1220 crew depart for SMO
1255 crew arrive at SMO and submit samples.
1305 crew complete sample submittal for location 16-02651
1315 crew depart for shaw office.

5-11-04

5/17/04
Today's Activities will include returning water samples to sample locations in Cañon de Valle, and to tag wells on mesa top. Samples also being returned to Martin Spring. QP's and SOP's associated with todays activities are 10.3 and 5.7 (QPs) and 1.1, 6.2 and 7.2 (SOPs). Team members are Douglas Hopinkah, Jacinto Gardunio and Ray Molina (escort).

0900 Leave office for TA-16.
0920 Check in at office at TA-16.
0929 Arrive to field trailers.
0937 Verbal Tailgate Safety meeting conducted by Doug Hopinkah.
0945 Load water samples into truck and head out to CdV.
0958 Arrive to CdV and prepare to return water samples to their respective locations within CdV.
1013 Continue to return samples
1028 Continue to return samples. Two large troughs full of samples.
1043 Last of samples being emptied within CdV.
1058 Heading back to truck.
1110 Arrive back to field trailers. Unload empty containers which need to be decomned and then disposed.
1133 Prepare to leave field trailers to break for lunch. Decomning will continue after lunch. ~~if~~ 5/17/04
1135 Crew heades for lunch
1330 Crew arrives to TA-16 field trailers after checking on another project. Crew to begin sounding wells. Decomning of empty sample containers will be completed tomorrow.
1336 Leave field trailers for wells.
1343 Arrive to well 16-02655. DTW = 7.50' TD = 10.1'; 4" casing
1345 Locking well and heading to different location.
1349 Arrive to well 16-02669. TD = 170.5' well is dry; 2" casing visual look at 90's Line Pond: Approximate diameter 15', almost dry
1353 Arrive to well 16-02664. TD = 13.65' well is dry; 2" casing
Double checking well locations.

5/17/04

5/17/04 Continued

1400 Arrive to well 16-02661. TD = 15.70'. well is dry. 2" casing. Lock well, Head to next well.

1405 Arrive to well 16-02662. TD = 13.16'. Well is dry. 2" casing. Lock well, head to next location.

1412 Arrive to well 16-02663. TD = 13.20'. Well is dry. 2" casing. Lock well, head to next location.

1420 Arrive to well 16-02664. TD = 192.52'. Well is dry. 2" casing. Close well, head to next location.

1430 Arrive to well 16-02665. TD = 132.25'. Well is dry. 2" casing. closing well and begin on next well.

1435 Well 16-02666 is located right next to well 16-02665. TD = 96.14'. Well is dry. 2" casing. Locking well and heading back to field trailers.

1443 Arrive to field trailers. Return sounder and lock trailers.

1450 Crew heads back to Shaw office.

5/17/04

5/18/04
Today's Activities will involve returning water samples to their respective locations and tagging wells. The crew involves Doug Hopenkat, Jacinto Cardona and Jay Medina (escort). The QC's and SOP's followed are 5.7 and 10.3 (QC) and 1.1, 6.2 and 7.2 (SOPs).

1020 Crew arrives to field trailers. Load water samples in truck and also the sounder.
1027 Leave trailers for Martin Spring Canyon.
1036 Verbal Tailgate Safety meeting conducted by Doug Hopenkat
1045 Arrive to Martin Spring. Begin returning water samples in Martin Spring Canyon. The spring itself is not flowing. Standing water behind V-notch. While Jacinto is returning samples Doug will ~~behind~~ DHA 5/18/04 begin to tag upper stormwater filter.
1050 Sounding upper stormwater filter 16-06706. DTW = 4.82' TD = 5.21'. 4" Casing. Didn't need to sound this well. Moving on to monitoring well down stream.
1055 Noticed that Jacinto is finished with emptying samples. Packing empty containers.
1108 Arrive at 1st Monitoring well 16-06293 in MSC. DTW = 10.29' TD = 10.55'. 4" Casing. closing well and walking to next location.
1122 Arrive to 2nd Monitoring Well 16-06294 in MSC. DTW = 6.25' TD = 10.85'. 4" casing. closing well and walking to next location
1132 Arrive to 3rd Monitoring Well 16-06295 in MSC. DTW = 5.80' TD = 9.55'. 4" Casing. closing well and hiking back to truck.
1158 Arrive to truck. Heading to field trailers.
1203 Drop off empty containers. Crew breaks for lunch. Heading back to Shaw office.
1400 Crew arrives at TA-16 field trailers. Ignition switch to the ATV has arrived. Try to replace ignition switch.
1423 The ignition switch is the wrong one. Begin to replace the parts we removed to get to the ignition switch.
1433 To decontaminate the empty containers we need to get water. New location is building 16-.

5/18/04

5/18/04 Continued.

1455 Return to field trailers with two large tubs of water. Mixed in some Alconox. Each container is dipped into the decon water and swished around.

1510 Continue deconning containers.

1530 We will finish deconning tomorrow. Clean up area and prepare to depart field trailers.

1540 Trailers are locked up. Heading back to Shaw office.

5/18/04

5/24/04
Todays activities involve house keeping. Doug Hopinkah, Jocinto Cardaro, Joseph Bird and, escort, Ray Medina are involved in todays activities.

0950 Arrive to Access Control Office in TA-16 area.
1005 Arrive to field trailers.
1015 Verbal safety tailgate meeting conducted by Doug Hopinkah. Moving stockpiles of PVC pipe and plastic tubing, therefore, biological hazards are of high concern. Lifting objects heavier than 50 lbs is not expected.
1021 Crew begins pulling pipe and tubing from the piles.
1035 Continue pulling pipe and tubing.
1045 Continue pulling pipe and tubing.
1100 Most of the pile is complete.
1110 Head to access control office to contact Eric Holmes who will certify that all piping and tubing are clean by performing HE spot tests. Eric Holmes agrees to meet us.
1128 Arrive back to field trailers to lock up the trailers and prepare to break for lunch.
1145 Heading to Shaw office for lunch.
1310 Arrive to access control office to let Eric know we will be at the field trailers. He decides to follow us.
1321 Arrive to field trailers. Eric prepares to conduct his HE Spot test swipes. First he will swipe the PVC piping to confirm no contamination exists based on historical info. No contamination is expect because the only purpose the PVC piping had was to be used ~~for berms~~ for berms. There are approximately 35 PVC pipes at various lengths and dimensions.
1340 Continues swiping PVC pipes.
1353 Swiping last PVC pipe. All pipes have no detectable contamination. Therefore, we will load them onto a flatbed trailer and haul them to the LA County landfill. In the meantime, Eric Holmes will now swipe the plastic tubing (hoses). [signature] 5/24/04

5/24/04 Continued

1358 Loading PVC pipe.
1410 Loading PVC pipe. Eric swiping plastic hoses.
1421 Bird and Dog strap down the PVC piping to prevent losing any on the road during transport.
1435 Eric is finishing his spot testing on the plastic hoses. There are also some metal items (aluminum) that also requires HE Spot Testing for release to the recycling facility. After that there is some plastic sheets rolled up which will also require HE Spot Testing.
1459 Eric has finished with the plastic hoses and has confirmed that the hoses have no detectable contamination. Therefore, the hoses will go to the LA County Landfill.
1448 Eric prepares to swipe the metal items.
1459 Eric completes swipes on the metal items and has confirmed no detectable contamination. Therefore, the items will be transferred to a recycling bin.
1510 Eric prepares to conduct HE Spot Testing on the plastic sheet rolls.
1520 Eric has completed the HE Spot testing and has confirmed ~~that~~ no detectable contamination. Therefore, the plastic sheet rolls will be taken to the LA County Landfill.
1530 Eric leaves field trailers.
1540 Trailer are locked up, flat bed is ~~loaded~~ loaded DAT 6/17/04 and crew is ready to depart for the LA County fill.
1605 Arrive to LA County Landfill.
1625 Depart LA County Landfill back to TA-16 to drop off flatbed trailer.
1640 Arrive to TA-16 fuel trailers and unhook flatbed.
1645 Crew departs for Shaw office.

5/24/04

5/25/04
Today's activities will continue with the housekeeping of debris around TA-16 field trailers. The crew will consist of Doug Hopinkah, Jocinto Cardona, Allen Bird and Ray Medina (Escort).

1000 Arrive to Access Control Office (ACO) at TA-16 to sign in.
1010 Arrive to field trailers. Verbal tailgate conducted by Doug Hopinkah.
1020 Hooking up flatbed trailers to continue hauling items to the LA County landfill.
1030 Begin loading plastic hoses onto flatbed. Hoses are of various lengths.
1045 Continue loading flatbed.
1055 Hoses are loaded. Strapping down the hoses.
1110 Crew preparing to depart for the LA County Landfill.
1135 Arrive to the landfill.
1148 Depart the landfill back to TA-16.
1210 Arrive to TA-16. Unhook trailer and crew will break for lunch. Depart for Shaw office.
1330 Arrive to field trailers and hook up flatbed.
1336 Begin loading up the plastic rolls. These rolls are heavy and will require three of us to load it up.
1350 Plastic is loaded onto flatbed. Crew preparing to depart for LA County landfill.
1358 Crew leaves field trailers.
1428 Arrive to the landfill.
1440 Depart landfill for TA-16.
1500 Arrive to field trailers. Unhook trailer & Crew prepares to depart for Shaw office.
1515 Crew leaves trailers for Shaw office.

5/25/04

5/26/04

Today's activities will conclude housekeeping for the week. The crew involved is Doug Hopinkah, Jacinto Barduao, Allen Bird and Ray Medina (Escort). The activities will take place at TA-16 field trailers.

1000 Arrive to Access Control Office (ACO) and sign in. Inquire about access to Martin Spring Canyon via building 344. OK to enter the canyon.

1015 Arrive to field trailers. Verbal tailgate safety briefing conducted by Doug Hopinkah.

1022 Begin loading up old bags of mulch and trash into the truck. Collecting cardboard boxes and breaking them for recycle. Collecting trash from all field trailers.

1035 Decided to place trash bag and other debris on the ground for now because we are leaving TA-16 for a short period of time. Our escort, Ray Medina, is requested by other Shaw employees for his escort services into a cleared TA. They are performing BMP site inspections. We will return in approximately an hour.

1152 Met Elmer Alcon and Carrie Ancell at the TA-16 gate. Checking in at ACO.

1104 Arrive to field trailers and discuss the plan for this afternoon. We will be checking the stormwater filters in Martin Spring Canyon. Elmer is going to show us how to work with the filters.

1115 Arrive to building 344 and begin hike down to the spring.

1128 Arrive to the stormwater filters. Take off cover and unscrew filter. Elmer gives an explanation of the function of the filter a cartridge. There is an upper and lower stormwater filter. We checked both filter and decided that we will need to change the inner filter medium. Also the lower stormwater filter will need to be screwed down by replacing the non-threaded coupling with the threaded coupling.

Data Entry 5/26/04

5/26/04 Continued

1150 Depart the spring and hike back to trucks.
1210 Arrive back to trucks. Break for lunch.
1330 Arrive back to field trailers. Have to load up debris in the truck from this morning.
1345 All or most debris is loaded in the truck and we are preparing to leave for the LA County Land Fill.
1410 Arrive to the land fill.
1425 Depart land fill.
1445 Arrive to Shaw office. Activities at TA-16 are complete for the day.

5/26/04

page left intentionally blank

6-16-04
Technical Review
I have reviewed the entries on pages 238-278 and They meet the requirements described in QP-5.7 notebook Documentation for Environmental Restoration activities. All review comments noted have been corrected and addressed.
Elmer Alcon 6-16-04

6-16-04

06/16/04

QUALITY ASSURANCE REVIEW

I HAVE REVIEWED THE ENTRIES ON PAGES 238 THROUGH 280 AND THEY MEET THE REQUIREMENTS DESCRIBED IN 98-5.7, R2, NOTEBOOK DOCUMENTATION FOR ER RESTORATION TECHNICAL ACTIVITIES. ALL REVIEW COMMENTS NOTED HAVE BEEN CORRECTED AND/OR RESOLVED

ANDREW E. GALLEGOS 06/16/04

06/16/04

6/28/04
Todays Activities: 3QFY04 Sampling Event will begin today, for Events 3252, 3262 and 3272. Crew consists of Doug Hopinkah, Carrie Ansell and Jacinto Gardunio (All 3 from Shaw) and Ray Medina (Escort from Plus Group). Crew will begin with Intermediate Well on mesa top and then 90's Line Pad. In effect for this event is SSHASP 01-001 (R1) and IWD for Task II expiring on 12/15/04. SOPs in effect are 1.01, 1.02, 1.03, 1.04, 1.05, 1.07, 6.01, 6.02, 6.03, 6.09 & 6.13, 10.3. QPs in effect are 5.2, 5.7 and 10.3. Access to Canyon de Valle and Martin Spring Canyon is prohibited today due to D&D activities occuring at 16-340 Complex.

0930 Crew departs for TA-16.
0945 Crew arrives to access control office. Met up with Allen Boyd and Heather Voss. They are here to pick up the ATV stationed at the trailers. Heather and Carrie wait for us at the S. Site cafeteria because the escort is only allowed to have 4 individuals at a time. The rest of us check in.
1005 Arrive to field trailers and begin loading up ATV. In the mean time, Doug going through checklist to prepare for sampling. Gathering sample containers and realize that the Nitric Acid must be picked up at SM30. The sprinkler is also back at the office.
1110 ATV is loaded and crew is heading to gate.
1115 Arrive to access control gate. Waiting for a HE rep. to come sample the ATV for HE. Need release slip to take the ATV out of area TA-16.
1130 Still waiting.
1135 Manny T. arrives to perform the HE Spot Test on the ATV.
1140 No detections. ATV is free released. Leaving TA-16.
1146 Met Heather and Carrie at S-Site Cafeteria.
1150 Break for lunch.

6/28/04

6/25/04 (cont'd)

1330 Crew departs Show office for TA-16. First stop will be at SM30 to check on the Nitric Acid.

1343 Arrive to SM30. Nitric Acid is not in today. Depart to TA-16.

1400 Arrive to TA-16 and check in.

1410 Arrive to field trailers. Ready to sample.

1415 Doug Hypinkah conducts Tailgate Safety Meeting.

1420 Depart to first location.

1425 Arrive to well 16-02655. Jacinto begins to tag well. DTW = 7.75 ft TD = 10.1 ft

1428 Connie downloading data.

Calculation on the amount of water to purge:

10.1 ft − 7.75 ft = 2.35 ft

2.35 ft × .653 = 1.53 casing = .653

1.53 × 3 = 4.59 gallons to purge bore vol. = 3

1436 11.59 volts checked on battery.

Historically, alluvial well 16-02655 has had poor recharge characteristics and 4.59 gallons of water need to be purged. Last quarter's sampling event, we purged 5.91 gallons and still did not collect ~~of~~ enough a full sample set. Sample collection will be determined based on historical characteristics of whether or not a partial sample set will be collected.

1440 Heading to next location.

1443 Arrive to alluvials around 90's Line Pond. Being that access is restricted we will only tag wells. Note: 90's Line Pond is dry.

Begin tagging well 16-02669. DTW = dry ~~DTW~~ TD = 172.9 ft

1448 Tagging well 16-02664: DTW = dry TD = 13.65 ft.

Head to next well.

1452 Arrive to well 16-02661: DTW = dry TD = 15.70 ft.

Head to next location.

1455 Arrive to well 16-02667: DTW = dry TD = 13.11 ft.

Head to next well.

1459 Arrive to well 16-02663: DTW = dry TD = 13.20 ft

Dal Hyth 6/25/04

6/29/04
Today's Activities: Continue with 3QFY04 sampling. Crew involves Doug Hopinkah, Carrie Ancell, Jacinto Cardona, and Ray Medina (Escort). Crew will hike to CdV Headwaters today. In effect for this event is SSHASP 01-001(R1) and FWD for Task U expiring on 12/15/04. SOP's followed are 1.01, 1.02, 1.03, 1.04, 1.05, 1.07, 6.01, 6.02, 6.03, 6.09, 6.13 and 10.3. QP's followed are 5.2, 5.7, and 10.3.

0830 Crew departs Shaw office.
0845 Crew heads back to office to get the key to the chemical trailer.
0900 Arrive back to TA-16, access control to check in.
0910 Arrive to field trailers and pack bags with sample containers. Also calibrate the YSI 650. Solution used were pH 7.0 and pH 10.0 in buffer solutions. Lot #'s are 0256130TT and 0256130TS. Also used was conductivity calibrate solution lot # 0241023.
0930 Crew leaves for Headwaters.
0940 Arrive to trailhead. Waiting for us is Michael Dale from NMED. He states that his purpose for hiking today is to confirm the Headwater Spring location with their location.
0945 Doug Hopinkah conducts Tailgate Safety Meeting.
0950 Begin hike up the canyon.
1020 Continue hiking.
1040 Continue hiking.
1052 Arrive to Headwater Spring. Mr. Dale collects parameters from the spring for their data. His readings are as follows: Sp. Cond = 112.9 uS/cm, TDS = 52.9 mg/L, Temp = 10.1°C.
1103 Mike Dale has to depart for the day.
1105 Crew hikes to Headwater Spring stream profile to collect samples.
1120 Arrive to location 16-05968.
1122 Collecting field parameters: Flow rate = 70 mL/s, Temp = 10.05°C, Sp. Cond = 95.41 uS/cm, DO = 115.6%, pH = 6.01, Turbidity = 14.7 NTU

6/29/04 (cont'd)

1126 Begin collecting water samples. Stream flow is very low and will try to collect all samples. Fine sediment ~~at~~ in stream bed. OH 6/29/04

1138 Samples collected. Photo Taken. Packing up.

1156 Crew departs for Location 16-03-21703.

1210 Crew arrives to location 16-03-~~X~~21703. OH 6/29/04

1212 Collecting field parameters: It is set to read for a total of 15 minutes.

1215 Crew begins collecting water samples.

1225 Sample collection complete. Photo Taken.

1227 Field Parameters: F/Q = 100 ml/s Temp = 11.48°C, Sp. Cond. = 5768 µS/cm DO = 113.770, pH = 6.9 Turbidity = 15.3 NTU

1230 Crew begins hike down the canyon.

1300 Continue hiking

1326 Arrive to truck and head to field trailers.

1335 Arrive to field trailers and drop off samples. Take a break.

1420 Return to field trailers and begin preparing samples for delivery to SMO (sample management office). This entails filtering appropriate sample containers, preserving appropriate sample containers, labeling, paperwork and packaging.

1450 Continue preparing samples.

6/29/04 OH ~~1450~~ 1520 Continue preparing samples.

1540 Sample preparation is complete. Crew begins packaging the samples and general housekeeping.

1600 Leave field trailers for SMO.

1617 Arrive to SMO. Drop off samples.

1640 Leave SMO for Shaw office. Activities for the day have concluded.

6/29/04

6/30/04
Today's Activities: Continue with 3QFY04 sampling events 3252, 3262 and 3272. Crew will consist of Doug Hopinkah, Jacinto Gardunio and Ray Medina (Escort). Today's locations will be in Martin Spring Canyon and they will be the 2nd and 3rd monitoring wells and the 5th and 6th stream profiles. Confirmation to access was confirmed this morning through access control (via phone call) at TA-16. SSHASP 01-00-01(R1) and TWD for Task 11, expiring on 12/15/04, are in effect for this sampling event. Also in effect are SOP's 1.01, 1.02, 1.03, 1.04, 1.05, 1.07, 6.01, 6.02, 6.03, 6.09, 6.13 and 10.3. QP's are 5.2, 5.7 and 10.3.

0930 Crew leaves office and heads to TA-16.
0947 Arrive to TA-16 Access Control office. We have now been advised NOT to attempt accessing the monitoring wells and stream profiles (mentioned above), via TA-11, because of explosion activities associated with D&D activities at the TA-16-340 Complex. Although access through TA-11 is not in the immediate vicinity of the explosion activities, flying particles/debris is not a determination that can be made of where they may end up. So for our own safety, will not enter the canyon. We can still utilize the escort for access into TA-16 to our field trailers.
1004 Arrive to field trailers. What we will now do is prepare for the next sampling activity. For example, supply inventory and paperwork.
1020 We will need to go to SMO to pick up some containers: Box of 500 mL poly containers and a couple of boxes of 1L amber glass containers. We are still waiting for the Nitric Acid to be delivered.
1045 General housekeeping.
1115 Beginning to rain. Closing up trailers and preparing to leave the site.
1128 Leaving site to SMO.
1200 Arrive to SMO and pickup supplies. Conclude for the day.

[signature] 6/30/04

7/6/04
Today's Activities will be to continue the 3Q FY04 sampling activities for events 3252, 3262, and 3272. The crew will consist of Doug Hopinkah, Jacinto Gardino, Ray Medina (Escort) and possibly Carrie Anrell. Proposed sampling will be at locations 16-02651 (SWSC Spring) and 16-02655 (1st MW in CDV). For 16-02655 a partial sample collection will occur and it involves sample collection for HE, Metals and possibly Total Cyanide. ~~SHSP~~ 01-001 (R1) and IWD for Task 11, expiring on 12/15/04, are in effect for this sampling event. SOP's involved are 1.01, 1.02, 1.03, 1.04, 1.05, 1.07, 6.01, 6.02, 6.03, 6.09, 6.13 and 10.3. QPs are 5.2, 5.7 and 10.3.

1045 Doug and Ray head to TA-16 field trailers.
1105 Arrive to access control office and check in.
1115 Arrive to field trailers.
1120 Collecting sample containers, charging battery to the pump so that we can sample SWSC Spring, if it has water, printing out tailgate safety form and packing backpacks.
1150 Locking up trailers and prepare to depart.
1200 Lunch break
1311 Leave Sigma office for TA-16.
1325 Arrive to field trailers.
1330 Doug Hopinkah conducts tailgate safety meeting.
1337 Leave trailers for SWSC Spring. No explosion activities going on today, therefore, we are able to enter Canyon de Valle to SWSC Spring.
1355 Arrive to SWSC Spring and it is dry.
1400 Photo taken. Depart back to truck.
1427 Arrive to well 16-02655. Being that this well has had poor recharge, historically, we will begin to sample immediately. A partial suite determination has been made based on the well's historical characteristics. We will collect for HE, Metals and TCN (Total Cyanide). The YSI has been set up and field parameters are being read.

Douglas C. Hopkins 7/6/04

7/6/04 Continued

1435 Jacinto begins to purge the well. First two bails were almost full. Already the recharge is slow to none.
1450 Continue bailing, the last container is almost full.
1500 Sampling complete. Pack up and head back to field trailers.
1510 Arrive to trailers. Begin to prep samples for SMO. Entail is filtering, field chain of custody forms, sample collection logs, preservation of samples, labeling, applying custody seals to each container and packaging
1530 Continue preparing samples.
1550 Packaging samples. Preparing to leave for SMO.
1600 Depart TA-16 for SMO.
1618 Arrive to SMO and sign in.
1640 Depart SMO for Shaw office. Conclude for the day.

Note: Field Parameters for well 16-026655.
Temp = 17.01°C Sp Cond = 8.10 mS/cm D.O. = 25.7%
pH = 6.97 Turbidity = 649.3 NTU

7/6/04

7/10/04
Today's Activities will involve the continuation of 3Q FY04 Quarterly Sampling. The crew consists of Doug Hopinkah, Carrie Ancell, Elmer Alcon and escort, Ray Medina. We will begin with Martin Spring Canyon and then finish up in Canyon de Valle. Due to on-going, daily, explosion activities at TA-16-340 Complex, today Saturday is the only time we can access the canyons. SSHASP 01-001 (R1) and IWD for Task 11, which expires on 12/15/04, are in effect for these events: 3252, 3262 and 3272. Also in effect are SOPs 1.01, 1.02, 1.03, 1.04, 1.05, 1.07, 6.01, 6.02, 6.03, 6.09, 6.13 and 10.3 and QPs 5.2, 5.7 and 10.3.

0730 Crew arrives to shaw office. Packing trucks, get badges and safety shoes.
0800 Arrive to gate 431 at DX to access to TA-16.
0830 Arrive to Building 193 to sign in.
0835 Arrive to field trailers. Pack sampling equipment. Tailgate safety meeting also conducted by Doug Hopinkah.
0900 Preparing to leave trailers.
0935 Arrive to TA-71 K-Site entrance to access Martin Spring Canyon in order to get to the 3rd Monitoring Well and work our way up from there.
0942 Arrive to 3rd MW in Martin Spring Canyon (MSC).
DTW = 7.35" TD = 9.55
9.55' − 7.35' = 2.2' casing = .653
2.2' × .653 = 1.44 bore vol = 3
1.44 × 3 = 4.31 gallons to purge
Based on the characteristics of this well, the recharge has historically been poor. It has been determined that no purging of 4.31 gallons will not occur and sample collection will begin immediately.
0952 Sample collection begins.
1015 Sample collection complete. No photo taken here. Moving on to next location. [signature] 7/10/04

7/10/04 Continued

1017 Arrive to Stream Profile (SP) #6. Dry. No sample collected and no photo taken here. Continue upstream.

1021 Arrive to 2nd MW in MSC. DTW = 10.45' TD = 10.87'. There is not enough water to collect a sample and this well has poor recharge.

1025 SP#5 is located next to this well. The stream is dry. No sample collected.

1029 Heading back to truck.

1040 Arrive to truck. Heading back to field trailers.

1045 change of plan. Head to 1st MW & Martin Spring to check locations.

1050 Arrive to MSC and conduct walk through. All locations from the Spring itself down to SP#4 are dry. No sample collected. Heading back to truck

1120 Arrive to truck and go back to field trailers to dry off MSC samples and paper work.

1125 Dropped off supplies, picking up more for CdV sample collection. The first place we will start is Burning Ground Spring.

1135 Arrive to Burning Ground Spring.

1138 Sample collection begins. When we arrived the ISCO sampler was toppled over. Elk tracks indicate that it was probable toppled over by an elk.
Field parameters are being collected. The flow rate was measured to be approximately 375 mL/s. This sample collection is a duplicate.

1155 Temp = 10.46°C Sp Cond = 121.4 uS/cm D.O. = 85.6%
pH = 8.78 Turbidity = 15.4 NTU.

1157 Heading to 2nd MW in CdV (upstream). 3rd MW is also on the way as well as SP#2, 3, & 4, & Peter Sap.

1206 Arrive to MW #2 DTW = 5.9' TD = 10.05'. 2" casing.
10.05' − 5.9' (static) = 4.15' casing = .163
4.15' × .163 = .676 bore vol = 3
.676 × 3 = 2.03 gallons to purge

1209 Sample collection begins. Recharge at this well has been historically.

1221 Sample collection complete.

[illegible] 7/10/04

7/10/04 Continued

1222 Field parameters are being collected. On our way up to MW#2, Stream Profiles #2, 3 and 4 were dry, as well as Peter Seep.
Temp = 12.61°C Sp Cond = 4.39 mS/cm D.O. = 92.6% pH = 6.57
Turbidity = 201.9 NTU

1235 Heading back to truck.

1240 ~~Peter Seep is NOT dry.~~ DH 7/10/04 We will try to collect a sample after lunch, at MW#3.

1248 Arrive back to truck. Taking lunch break. Back to field trailers.

1306 Arrive to field trailers.

1405 Arrive back to ~~Peter Seep~~ MW#3 DH 7/10/04. DTW = 3.2' TD = 5.8'.
4" Casing. 5.8' - 3.2' = 2.6'
2.6 x .653 = 1.69 ~~gallon~~ DH 7/10/04 casing = 4"
1.69 x 3 = 5.09 gallons to purge based = 3
Poor recharge at this 3rd MW in CdU. There may even be a partial suite here. We will collect for HE first. No collection of field screening parameters collected.

1408 Sample collection begins. No purging of 5.09 gallons. On our walk to MW#3 we noticed that there was no flow at SP#s 5 and 6 (DRY). Also SP#4 is dry.

1422 Sample collection complete. Packing up.

1425 Heading downstream to SP#7 in CdU (16-05927).

1432 Arrive to SP#7. YSI is set up to collect field screening parameters.

1438 Sample collection begins. Water is clear in color.

1446 Sample collection complete. Packing up and heading down stream. Will check on YSI.
Temp = 14.66°C Sp Cond = 96.38 mS/cm D.O. = 61.2%
pH = 7.97 Turbidity = 16.0 NTU Flow = 150 mL/s

1452 Arrive to SP#8 (16-05996). Setting up YSI.

1456 Sample collection begins.

1506 Sample collection complete.
Temp = 17.16 Sp Cond = 178.8 mS/cm D.O. = 52.0%
pH = 7.38 Turbidity = 15.2 NTU
Flow = 350 mL/s.

7/10/04 [signature]

7/10/04 Continued

1518 Arrive to MW #4 (16-02658). DTW = 9.1' TD = 10.5'
Poor recharge, no purging, sample collection will begin immediately. Temp = 10.75°C, Sp Cond = 226.9 mS/cm, D.O. = 90.6%, pH = 5.66, Turbidity = 30.

1520 Sample collection begins.
10.5' - 9.1' = 1.4' casing = 4"
1.4 x .653 = .914 bore vol = 3
.914 x 3 = 2.74 gallons to purge. Will NOT purge this well
Water is clear to slightly turbid in appearance. ~~Only~~ DH 7/10/04

1535 Sample collection complete. Only a partial suite was collected here. No recharge (a very slow).

1538 Departing back to trailers.

1545 Arrive to trailers and put samples in refrigerator.

DH 7/10/04 ~~1400~~ 1600 Departing back to Shaw office. Concluding for the day

7/10/04

7/11/04
Today's Activities will involve the continuation of 3QFY04 Quarterly Sampling for events 3252, 3262 and 3272. The crew consists of Doug Hopinkah, Carrie Ancell, Elmer Alcon and, escort, Ray Medina. The only canyon we will be accessing is Canyon de Valle. In effect are SSHASP 04-001(R1) and FWO for Task 11, which expires on 12/15/04. Also in effect are SOPs 1.01, 1.02, 1.03, 1.04, 1.05, 1.07, 6.01, 6.02, 6.03, 6.09, 6.13 and 10.3 and QPs 5.2, 5.7 and 10.3.

0730 Crew meets at Shaw office. Getting badges, camera and safety shoes.
0802 Crew departs for Gate 431 at DX to access TA-16. Then we sign in at Building 193 at TA-16.
0833 Arrive to TA-16 field trailers. Preparing samples. It has been decided that the crew will break into two. Doug and Elmer will finish collecting samples down in CdV and Carrie and Ray will be stationed at the field trailers and begin preparing samples.
0915 Doug and Elmer depart for Canyon de Valle.
0936 Arrive to SP#9 (16-05997).
0932 YSI is set up to collect field Parameters.
0938 Sample collection begins. Water is clear in appearance.
0948 Sample collection complete. Parameters for this one is follows: Flow = 400 mL/s, Temp = 13.39°C, Sp Cond = 177.2 mS/cm, D.O. = 107.5%, pH = 6.68, Turbidity = 14.1 NTU. Photo Taken.
0950 Moving on to SP#10.
0953 SP#10 in CdV is dry. Continue on to SP#11.
0958 SP#11 is dry. Continue on to SP#12.
DT 7/11/04 ~~0[illegible]~~ 1002 SP#12 is dry. There is water in MW#5 (16-02659).
1004 Tapping well: DTW = 8.74 ft TD = 10.11 ft.
1006 Sample collection begins. YSI also is set up.

10.11' - 8.74' = 1.37' casing = 4"
1.37 x .653 = .895 bore vol. = 3
.895 x 3 = 2.68 gallons to purge.

Doug Hopinkah 7/11/04

7/11/04 Continued

Recharge at MW#5 (16-02459) has historically been slow. It has been determined that no purging of 2.68 gallons will occu

1015 Continue sampling.

1035 Continue Sampling.

1040 last container being filled. This was a Duplicate designat sample location.

1043 Sample collection complete. Photo Taken.

1048 Moving on down stream. We are almost certain that the remaining stream profile locations will be dry.

1054 Arrive to SP #13 and it is dry. Continue on downstream.

1102 Arrive to SP #14 and it is dry.

1104 Arrive to SP #15 and it is dry.

1112 Arrive to SP #16 and it is dry. Heading back to truck then back to field trailers.

1132 Arrive to truck and heading to field trailers.

1143 Arrive to field trailers and take a short lunch break.

1215 Begin or continue preparing sample for shipment to SMO. Carrie has been preparing yesterday's samples all morning. Now will continue the process and finalize the paperwork.

1245 Continue preparing samples.

1315 Finalizing the preparation. General housekeeping from the sampling event such as breaking down corrugated medium, bagging filters, tubes and containers, admin trash and loading it into truck.

1342 All samples are packaged and all trash is loaded into the truck.

1350 Depart Shaw field trailers for SMO.

1410 Arrive to SMO where Keith Greene has offered to meet us to accept the samples. Keith is a supervisor at SMO. Unload all sampling coolers.

1435 Relinquish samples to Keith Greene

1445 Depart SMO for Shaw Office.

1500 Arrive to office and conclude for the day.

7/11/04

7/13/04
Today's Activities will include the continuation of 3QFY04 sampling for Events 3252, 3262 and 3272. The locations are at the Confluence of CdV and Water Canyon. This will conclude 3QFY04 sampling. Today's crew will consist of Doug Hopinkah, Jacinto Gaudino, possibly Carrie Ancell and escort, Ray Medina. In effect for this sampling event is SSHASP 01-001 (R1) and FWI) for Task 11, which expires on 12/05/04. SOP's followed are 1.01, 1.02, 1.03, 1.04, 1.05, 1.07, 6.01, 6.02, 6.03, 6.09, 6.13 and 10.3. QPs followed are 5.2, 5.7 and 10.3.

1200 Crew departs from Shaw office
1220 Arrive to Access Control and check in at TA-16.
1230 Arrive to field trailers and begin packing for the collection of the last two samples.
1235 Doug Hopinkah conducts tailgate safety meeting.
1245 Depart field trailers for DX access to TA-8.
1250 Heading back to office to get camera and the YSI.
1259 Arrive back to office and pickup the camera and the YSI.
1315 Camera is full and pics need to be downloaded. Pics are from a different project.
1330 Departing office for TA-8.
1345 Arrive to TA-8 and check in. Now we need to go to DX Access Control to sign in, check out a two-way radio and a key for Gate #9.
1400 Arrive to DX Access Control. Fortunately explosion activities are concluded for the day and we are allowed to access the canyons.
1409 Departing for Gate #9 accessing through the town of White Rock.
1433 Arrive to Gate #9 and report to DX Access Control that we have entered the area.
1448 Arrive to locations. We noticed that upon our arrival the stream has remained constantly dry.

DSL Ogle 7/13/04

7/13/04 Continued

1455 Arrive to location 16-05969 and take a photo of the dry stream bed. Departing for next location.

1513 Arrive to location 16-5970 (ESH-18 Weir) and take a photo of the dry stream bed. Hike back to truck.

1524 Arrive to truck and depart for Gate #9.

1530 Report to DV Access Control and request for a RCT to survey us out of the area.

1540 Continue to wait.

1543 RCT arrives and survey's us and the vehicle. Everything is clean. No defects. The RCT is willing to take the two-way radio and the key for us.

1556 Depart Gate #9 for Shaw office.

1620 Arrive to Shaw office. Concludes for the day.

7/13/04

7/14/04
The last two final Sample Collection bags have been submitted today to Sample Management Office. The locations are from yesterday's sampling event. This concludes the 3QFY04 Sampling Event for Events 3252, 3262 and 3272. The quarterly Field Summary Report will be created within the limits of this 3QFY04 sampling.

7/14/04

8/24/04 Hydro Geo Activities
Today's activities will include downloading data from the Springs and continuous monitoring wells within Mar Spring Canyon and Canyon de Valle. Crew involves Doug Hardigan and Ray Medina (Plus Group).
Working in accordance with SSHASP 01-001 (R1)

0940 Arrive to Access Control Office and sign in.
0950 Arrive to well 19-02655 (1st MW). Tailgate Conduct.
0952 Begin to download data.
1015 Download complete. Heading to MSC.
1020 Arrive to Building 344, accessing MSC.
1028 Arrive to MS. Begin download.
1040 Having trouble with Floodlink database. Unable to access program.
Note: The Spring is flowing over the V-Notch at approxi 100 mL/s. There is also water coming from the grave approximately 2-4' North of the actual Spring.
Heading to next location.
1055 Arrive to MW 19-02658 (4th MW).
1100 Begin download.
Note: stream is flowing near the MW #4, ≈ 100 mL/
1107 Download complete. Heading upstream to BGS.
1115 Arrive to Burning Ground Spring. Begin down load.
Note: Spring is flowing at approximately 350-375 mL/s.
1128 Download complete. Heading up stream.
1135 Arrive to SWSE Spring. Begin download.
Note: There is flow coming from the spring, flowing down to the V-notch and ponding. No flow over V-notch.
1142 Master says "Cannot Communicate." "There are no Array to be collected." Heading to next location.
1148 Arrive to MW #2 (19-02656). Begin download.
Note: On my way upstream BGS there was no flow in the stream. From MW#4 to BGS the flow was intermittent.
1200 Download complete, heading to next location.

8/24/04

8/24/04 Continued.

1215 Arrive to MW#5 (19-02659). Begin download.
1228 Download complete. Heading back to truck.
1242 Arrive to Shop field trailers to bags off USI. Conclude for the day.

8/24/04

9/28/04 Quarterly Sampling: TA-16
Today's Activities: 4Q FY04 Sampling will begin today. The sampling Events are: 1) 3362: Springs and Seeps, 2) 3372: Surface Water and 3) 3392: Wells. The crew will consist of Douglas Hopinkah, Jacinto Gardunio, Jeff Sandu and Ray Medina, escort from Plus Group. Today's location will be at the Headwater Spring and Stream Profiles. In effect for this event is SSHASP 01-001(R1) and IWL for Tank II, which expires on 12/15/04. Also, SOP's in effect are 1.01, 1.02, 1.03, 1.04, 1.05, 1.07, 6.01, 6.02, 6.03, 6.09, 6.13 and 10.3. QP's in effect are 5.2, 5.7, and 10.3.

1000 Crew departs Shaw office.
1030 Signed in at Access Control Office (ACO).
1040 Called J. Bird to bring us the other back pack from the storage trailer. We will meet him at the S-Site Cafeteria parking lot.
1048 Arrives with back pack. Heading to field trailers.
1100 Tailgate Safety Meeting conducted.
1115 Collecting Sampling supplies.
1129 Cannot find YSI handheld instrument. It is at the Shaw Office. Heading to Shaw office. Also need to go to SMO to pick up some 40ml vials.
1142 Arrive to SMO. Picked up a case (36 count) of 40ml. Heading to Shaw office. Also picked up 48 2-liter amber glass jars.
1150 Arrive to Shaw Office. No YSI at Office. Head back to Shaw field trailers.
1215 Arrive to field trailers.
1220 Found YSI. Begin Calibration: pH 7.0 and pH 10.0 as buffer solutions with Lot #s: 0256130 75 & 0256130 7T respectively. Also used was conductivity calibration solution Lot #: 0261023. Also used was Turbidity standard item # 607400.
1245 Calibration complete.
1300 Heading for trailhead to Headwaters.
1310 Arrive to trailhead. Begin hike.
1340 Continue hiking
1355 Continue hiking

9/28/04

9/28/04 Continued

1400 Arrive to Headwater Stream (16-05968). Stream is dry, no flow.
1403 Photo taken of dry stream bed.
1410 Heading down to Headwater Spring.
1420 Continue hiking.
1425 Arrive to Headwater Spring (16-03-21703).
1428 Sample collection begins. Photo taken.
1430 YSI is set up to collect field parameters.
1438 Sample collection continues.
1443 Sample collection complete. Waiting for YSI to finish collecting field parameters.
1445 YSI complete. Flow = 30 mL/s, Temp = 11.08°C, SpCond = 60.2 mS/cm, D.O. = 173.0%, pH = 8.62, Turbidity = 286 NTU
1513 Walking back to truck.
1520 Continue walking.
1535 Continue walking.
1540 Arrive to truck. Heading to TA-16 field trailers.
1550 Arrive to field trailers. Begin to prep samples for delivery to SMO. We were getting a negative reading for Turbidity so we are going to calibrate the machine/YSI and try another reading from extra water we collected.
1610 Sonde YSI calibrated and another run is complete.
1620 Sample prep complete. Heading to SMO.
1625 Trailers locked.
1632 Arrive to SMO.
1640 Leave SMO. Heading to Shaw Office. Conclude for the day.

9/28/04

10-13-04

Technical Review

I have reviewed the entries on pages 282-301 and they meet the requirements described in QP Notebook Documentation for Environmental Restoration Activities. All reviewed comments noted have been corrected and addressed.

Elmer Alcon 10-13-04

10-13-04

11/09/04
Quality Assurance Review

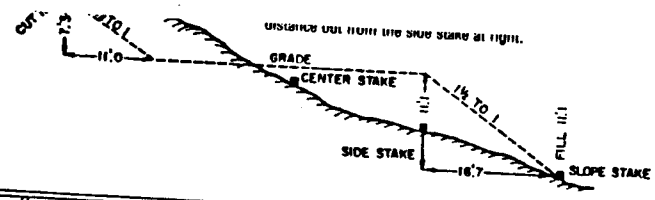
I have reviewed the entries from page 282 through page 302 and they meet the requirements described in QP-5.7, Notebook Documentation for ER Technical Activities. All review comments are corrected and addressed.

E Jeanne Hamilton
11/09/2004

EJH 11-09-2004

E. Jerome Hamilton 11-09-2004

4866 18.950 Environmental Field Logbook
DP Canyon Tracer Study 0



Cut or Fill	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	Cut or Fill
	Distance out from Side or Shoulder Stake										
0	0.0	0.2	0.3	0.5	0.6	0.8	0.9	1.1	1.2	1.4	0
1	1.5	1.7	1.8	2.0	2.1	2.3	2.4	2.6	2.7	2.9	1
2	3.0	3.2	3.3	3.5	3.6	3.8	3.9	4.1	4.2	4.4	2
3	4.5	4.7	4.8	5.0	5.1	5.3	5.4	5.6	5.7	5.9	3
4	6.0	6.2	6.3	6.5	6.6	6.8	6.9	7.1	7.2	7.4	4
5	7.5	7.7	7.8	8.0	8.1	8.3	8.4	8.6	8.7	8.9	5
6	9.0	9.2	9.3	9.5	9.6	9.8	9.9	10.1	10.2	10.4	6
7	10.5	10.7	10.8	11.0	11.1	11.3	11.4	11.6	11.7	11.9	7
8	12.0	12.2	12.3	12.5	12.6	12.8	12.9	13.1	13.2	13.4	8
9	13.5	13.7	13.8	14.0	14.1	14.3	14.4	14.6	14.7	14.9	9
10	15.0	15.2	15.3	15.5	15.6	15.8	15.9	16.1	16.2	16.4	10
11	16.5	16.7	16.8	17.0	17.1	17.3	17.4	17.6	17.7	17.9	11
12	18.0	18.2	18.3	18.5	18.6	18.8	18.9	19.1	19.2	19.4	12
13	19.5	19.7	19.8	20.0	20.1	20.3	20.4	20.6	20.7	20.9	13
14	21.0	21.2	21.3	21.5	21.6	21.8	21.9	22.1	22.2	22.4	14
15	22.5	22.7	22.8	23.0	23.1	23.3	23.4	23.6	23.7	23.9	15
16	24.0	24.2	24.3	24.5	24.6	24.8	24.9	25.1	25.2	25.4	16
17	25.5	25.7	25.8	26.0	26.1	26.3	26.4	26.6	26.7	26.9	17
18	27.0	27.2	27.3	27.5	27.6	27.8	27.9	28.1	28.2	28.4	18
19	28.5	28.7	28.8	29.0	29.1	29.3	29.4	29.6	29.7	29.9	19
20	30.0	30.2	30.3	30.5	30.6	30.8	30.9	31.1	31.2	31.4	20
21	31.5	31.7	31.8	32.0	32.1	32.3	32.4	32.6	32.7	32.9	21
22	33.0	33.2	33.3	33.5	33.6	33.8	33.9	34.1	34.2	34.4	22
23	34.5	34.7	34.8	35.0	35.1	35.3	35.4	35.6	35.7	35.9	23
24	36.0	36.2	36.3	36.5	36.6	36.8	36.9	37.1	37.2	37.4	24
25	37.5	37.7	37.8	38.0	38.1	38.3	38.4	38.6	38.7	38.9	25
26	39.0	39.2	39.3	39.5	39.6	39.8	39.9	40.1	40.2	40.4	26
27	40.5	40.7	40.8	41.0	41.1	41.3	41.4	41.6	41.7	41.9	27
28	42.0	42.2	42.3	42.5	42.6	42.8	42.9	43.1	43.2	43.4	28
29	43.5	43.7	43.8	44.0	44.1	44.3	44.4	44.6	44.7	44.9	29
30	45.0	45.2	45.3	45.5	45.6	45.8	45.9	46.1	46.2	46.4	30
31	46.5	46.7	46.8	47.0	47.1	47.3	47.4	47.6	47.7	47.9	31
32	48.0	48.2	48.3	48.5	48.6	48.8	48.9	49.1	49.2	49.4	32
33	49.5	49.7	49.8	50.0	50.1	50.3	50.4	50.6	50.7	50.9	33
34	51.0	51.2	51.3	51.5	51.6	51.8	51.9	52.1	52.2	52.4	34
35	52.5	52.7	52.8	53.0	53.1	53.3	53.4	53.6	53.7	53.9	35
36	54.0	54.2	54.3	54.5	54.6	54.8	54.9	55.1	55.2	55.4	36
37	55.5	55.7	55.8	56.0	56.1	56.3	56.4	56.6	56.7	56.9	37
38	57.0	57.2	57.3	57.5	57.6	57.8	57.9	58.1	58.2	58.4	38
39	58.5	58.7	58.8	59.0	59.1	59.3	59.4	59.6	59.7	59.9	39
40	60.0	60.2	60.3	60.5	60.6	60.8	60.9	61.1	61.2	61.4	40

09/17/02 - 1/15/03

This fieldbook will be used to record daily activities during the DP Canyon Tracer Study Project.

Work will be performed according to the "DP Canyon Tracer Study Drilling Plan", Rev. 0, Sept. 9, 2002. Document Number DPCTS.0.

This fieldbook is assigned to Robert Gray, (505) 379-1732, and may be used by other field team members: Shannon Purdue, Ryan Channell, Armand Groffman.

DP Vol. I

Drilling / Well Install.

Development / Pre-Tracer sampling water levels and transducer info.

The paper in this book is made of 50% high grade rag stock with a WATER RESISTING surface sizing.

(1)

CONTENTS

PAGE NO.	REFERENCE	DATE
1-74	Drilling activities and well designs	9/18/02-10/2/02

(A)

① 9/18/02

900 S. Purdue and K. Gillespie on-site at FSF for Pre-Job ESH-1 swipe. Swipe performed by Leonard Manzanares.

10:15 S. Purdue (FTL), Jeff Geise (ER) (SSO), Armand Groffman (ER), Ryan Channell (ER), Rob Helton (lead driller), Chad Szpunar (driller), Doug Barney (ESH-5) and Jim Jones (driller) on-site at DP Canyon. Safety Tailgate & Safety Inspection done.

10:30 Rob Helton, Chad Szpunar, Doug Barney on DP Road. Mob Drill rig onto site.

10:45 Doug Barney off-site. Everything was fine with Rig Inspection.

Armand Groffman off-site to meet pipe delivery at FSF.

10:47 Jeff Geise off-site.

10:50 Background B/G measurements done. 3 taken on North side of Channel on QC surface. 3 taken on South side on QC surface.

9/18/02

② 9/18/02

Background B/G with ESP-1 #5932
Cal. done on 2/12/02 cal. due 2/12/03

N. side:
Count 1 586 dpm B/G 1 minute
Count 2 659 dpm B/G 1 minute
Count 3 620 dpm B/G 1 minute

S. side:
Count 4 463 dpm B/G 1 minute
Count 5 514 dpm B/G 1 minute
Count 6 535 dpm B/G 1 minute

Average Background 563 dpm per 1 minute.

Drillers unload supplies.

1130 Break for lunch

1200 Armand Groffman on-site

Mob to first drill site.

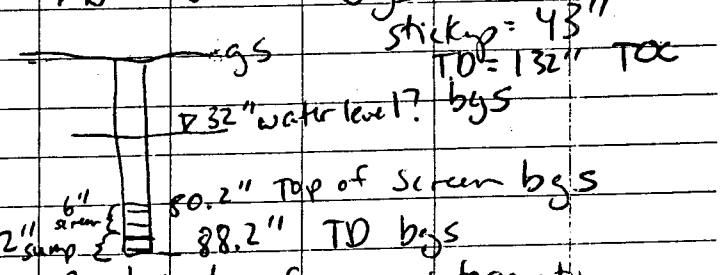
Unload pipe onto pallets.

We will start with DPPN 7.7.

1300 Begin Drilling at DPPN 7.7 #1

1400 Install DPPN 7.7 #1

TD = 88.2" bgs

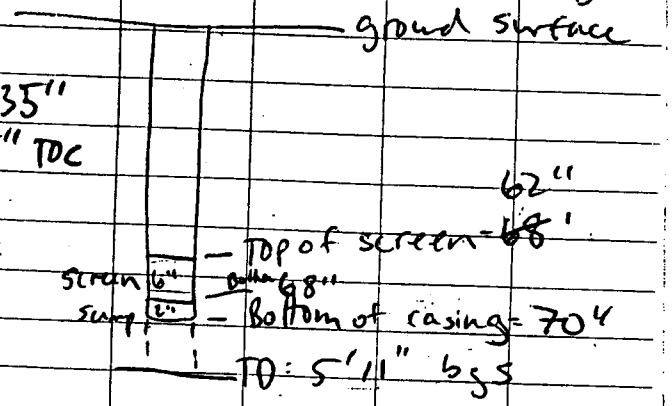


See Borehole log for more information.

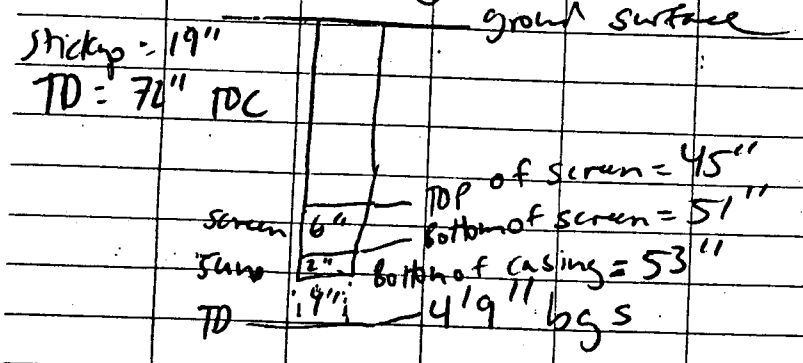
1420 Begin drilling DPPN 7.7 #2

③ 9/18/02

1435 DPPN-7.7 #2 TD = 68.2" bgs



1450 Begin Drilling DPPN-7.7 #3

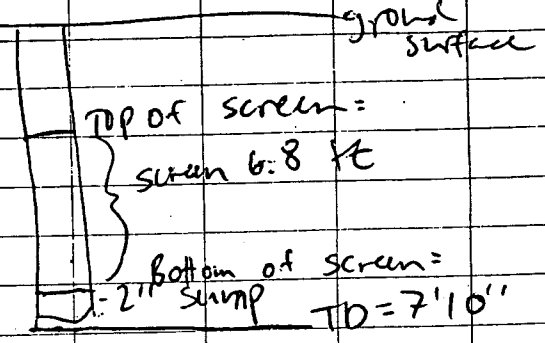


1515 Mob to DPW-7.9 S.
1600 Begin Drilling DPW-7.9S.
screen is 6.8 ft
TD = 7'10"

(*) ~~1550 R. Channel off-site~~
SP 9/18/02

9/18/02 ④

1645 Install 7.9 S



1647 DTW = 6.40 ft bgs in annulus of DPW-7.9S.

1655 Clean-up site for the night.

1720 S. Purdue, A. Wroffmang, R. Helton, and C. Szpunar off-site.

S. Purdue
9/18/02

9/19/02

7:00 S. Purdue (FTL), S. ~~Groise~~ Geise (SSO) on-site at WWII conference room for Safety tailgate meeting. Jim Jones (driller)

7:10 Ryan Channell (FTM), Rob Helton (Lead Driller), and Chad Szpunar (Driller's helper) on-site in conference room for safety tailgate meeting. Discuss today's plan of continuing drilling.

7:30 Mob to site.

7:45 S. Purdue, R. Channell, C. Szpunar, and R. Helton on-site in DP Canyon. Set-up to Begin Drilling at DPBN-8A.

7:55 ~~DTW~~ DPW-7.9S DTW = 4.10 ft bgs
GS to bcasing is 7.65 ft

8:00 DPPN 7.7 #1 - dry

8:01 DPPN 7.7 #2 - DTW = 4.46 ft bgs

8:02 DPPN 7.7 #3 - DTW = 3.52 ft bgs

8:10 LAUZ-2 DTW = 3.41 ft bgs

8:10 Begin Drilling DPBN-8A

8:20 S. Purdue performs background B/γ survey with ESP-1 PN-592

9/19/02

cal due on 2/12/02, cal. due on 2/12/03.

It has been raining most of the night, so the surface that background measurements are taken from is damp.

count 1	472 dpm	B/γ
count 2	357 dpm	B/γ
3	416 dpm	B/γ
4	540 dpm	B/γ
5	382 dpm	B/γ

Measurements taken on S. side of surface.

825 Jeff Geise (SSO) on-site to perform noise monitoring off-site 8:50

900 Install DPBN-8A

910 Mob Rig to DPBN-8B

920 Begin drilling DPBN-8B

1000 Install DPBN-8B

(940) Kevin Sager on-site 10:15 off-site

1015 Discuss plan to mob to DPW-7.5S.

1020 Mob Rig to DPW 7.5S.

1037 DPBN-8B TD_2 = 5.41 ft bgs
TD_3 = 4.91 ft bgs
TD_1 = 5.90 ft bgs

9/19/02

1100 Begin drilling DPW 7.5 S(A)
1130 Break for lunch while allowing DPW 7.5 S(A) to fill with water and stabilize. DTW = 7.9 ft bgs.
1200 Armand Groffman on-site. DTW = 7.2 ft bgs. We will move the rig South 26 feet and drill another hole for exploration of lateral extent. We cannot go 20 feet because that would be in the road. DPW-7.5 S(B) will be on the South edge of the road.
1220 Begin drilling DPW-7.5 S(B)
1240 Ryan and Armand have determined that there is no water in 7.5 S(B). We will back the rig up about 13 ft, which is equidistant between 7.5 S(A) and 7.5 S(B)
1250 Mob rig to 7.5 S(C).

9/19/02

1255 DPW 7.5 S(A) DTW = 6.55 ft bgs
1325 DPW 7.5 S(A) DTW = 6.30 ft bgs
1320 DPW 7.5 S(C) DTW = None - dry
1340 We will use borehole DPW-7.5 S(A) for well installation.
1350 Install well ~~AP~~ SP 9/19/02 DPW 7.5 S(A).
1400 Mob to ~~AP~~ SP 9/19/02 DPW-7.1S
1410 On-site at DPW-7.1 S
1418 Begin drilling DPW-7.1 S. Armand took a water level measurement at the ~~DPW 7.1 S~~ SP 9/19/02 site SP 9/19/02 DPBN-7A prior to drilling DPW-7.1S, and DTW = 4.4 ft bgs at approximately (1400) We will base our groundwater level here based on that measurement 1440 Install well
1500 Drill Rig set-up at DPBN-7A. Begin drilling at DPBN-7A
1540 Install well DPBN-7A.
1550 Mob to DPW-6.2 S.
Ryan channell off-site.
1600 Discuss plans with A. Groffman

9/19/02

and R. Helton

1610 R. Helton (Lead Driller) has informed us that he needs to go get coolant for the rig.
Clean-up for end of the day.
Rob will get coolant tonight and we will start-up at 7:00 in the morning tomorrow

1620 Off-site. (all personel)

S. Pu
9/19/02

9/20/02

710 S. Purdue (FTL), R. Helton (Lead Driller), C. Szpunar (driller), ~~J. Jones (driller), and~~ cp 9/20/02 ~~R. Channell (FTM)~~ sp 9/20/02 On-site at DP Canyon.
Safety Tailgate Meeting held. Given by S. Purdue

725 Background B/γ readings taken with ESP-1 # 5932.
Calibration done on 2/12/02.
Cal. due on 2/13/02.
Readings taken on South side of Channel on a Qc ~~GA~~ sp 9/20/02 surface.

Count 1	576	dpm B/γ
Count 2	591	dpm B/γ
Count 3	433	dpm B/γ
Count 4	544	dpm B/γ
Count 5	535	dpm B/γ

730 Drillers perform some maintenance on the rig.

755 S. Purdue calls A. Goffman to see if he can get down to the site to help with logging. He will

be right down.
800 Begin drilling DPW-6.2 S (A)
820 Borehole is dry, we will move ~15 ft towards the channel. (845) A. Groffman on-site
830 Mob rig to DPW-6.2 S (B)
900 We have drilled into a very nice paleo channel so we decided to install a well. We will continue with a third hole to explore lateral extent.
930 Install well DPW-6.2 S (B)
Mob to 7 feet in-between DPW-6.2 S(A) and DPW-6.2 S(B) to drill a third lateral extent borehole, DPW-6.2 S (C)
950 Begin drilling DPW-6.2 S(C)
1015 DPW-6.2 S(C) complete
(1005-1010) K. Sagez on-site
1015 DPW-6.2 S(C) is dry, fill hole and mob to DPBN-6A.
1045 Auger is in DPBN-6A

1100 Break for lunch and allow water to infiltrate hole
1130 DPBN-6A dry, TD = 8.3 ft bgs
This well is located in the upper terrace, lower terrace associated with to on site grasses has water.
50" bgs is water table in channel.
1200 Install well DPBN-6A
#1 Screen length 15"
#2 Screen length 15"
#3 Screen length 28"

Note: (ARG) Course sands appear to be following stream bed at this location. Sands are at similar level as stream and may represent a paleo channel. They sit on clay layer which is on top of weathered tuff.
Also - We are finding a thin clay zone associated with the weathered tuff - pods within rotten zone & clays at interface.
Q. ① Vertical transport from above?
② In situ weathering.

9/20/02

▽ (ARG)

12:25 DPW-6.25-B 2.55 ft. bgs

12:40 DPBN-6A shallow - ~~7~~ 6.45 ARG

multiple screens medium - 6.0'

Deep 9.4' (casing)

Measured from casing.

DPBN-3B - old well - 3.0' bgs

DPBN3A old well - 4.9' bgs

DPBN 5A

multiple screen well.

Screen length:

Deep - 9"

Med - 9"

Shallow - 9" + 12" = 21"

1' above the ▽.

Set 4" casing around Next.

9/20/02

12:50 Start Drilling at DPBN 5A (transect well)

Drilling in lower terrace associated with town site veg.

1345 Install well ~~5~~ DPBN 5A 9/20/02

1400 MOB NOT to DPBN-~~4~~5 4B 9/20/02

1405 Decide NOT to MOB to DPBN-4A

1421 Balance rig (set) and prepare to turn bits. Site situated on edge of stream/wash (approx 3').

1610 Drilled to 140" TD.

Logged entire section. Determined screen interval to be 15" in sat. coarse sands.

Built multilevel well & tried to install down hollow stem auger. Because we had filled (back filled) hollow stem with approx. 40" of material we had trouble pushing

9/20/02

the well to TD.
Drillers attempted to push material past end of auger but the hole collapsed & material stuck in auger. We finally pulled out. Monday we will redrill and set well.
Lessons learned - Do not back fill interior of auger flight without first pulling out.

ARG

1630 All personnel off-site

09/20/02

9/23/02

800 S. Purdue and B. Gray (FTC) on-site at DP Canyon.
815 R. Channell on-site, Chad Szpanar (lead driller), Jim Jones (driller), and Armand Croffman on-site. Safety Tailgate given. Daily Drill Rig Inspection performed.
850 Begin re-drilling DPBN-4A.
900 Background readings taken with ESP-1 #5932, Cal. date on 2/12/02, Calibration due 2/12/03. Readings taken on South side of Channel on QCC surface. (surface is slightly damp) sp 9/23/02

Count 1	404	dpm B/γ
Count 2	463	dpm B/γ
Count 3	476	dpm B/γ
Count 4	404	dpm B/γ
Count 5	540	dpm B/γ

912 DPBN-5A #1 TD 8.47 ft TOC
DPBN-5A ~~#2~~ #1 ~~TD~~ DTW = 5.21 ft TOC sp 9/23/02
DPBN-5A #3 TD: 6.96 ft TOC
DPBN-5A #3 DTW = 5.06 ft TOC

(17)

9/23/02

917 DPBN-5A #~~3~~2 DTW = 4.95 ft TOC
DPBN-5A #~~3~~2 TD = 7.71 ft TOC
9/23/02

925 Install DPBN-4A.

931 DPBN-3A dry TD = 2.90 ft bgs
Saturated zone has collapsed since last Friday.

935 DPBN-3B DTW = ~~3.~~ 4.06 ft TOC
DPBN-3B DTW = ~~3.98~~ 3.28 ft bgs 9/23/02

940 Installed well nest in
DPBN-4A
Stickup = 2.42 ft ags
TD = 9.98 ft btoc #1
8.73 ft btoc #2
7.51 ft btoc #3

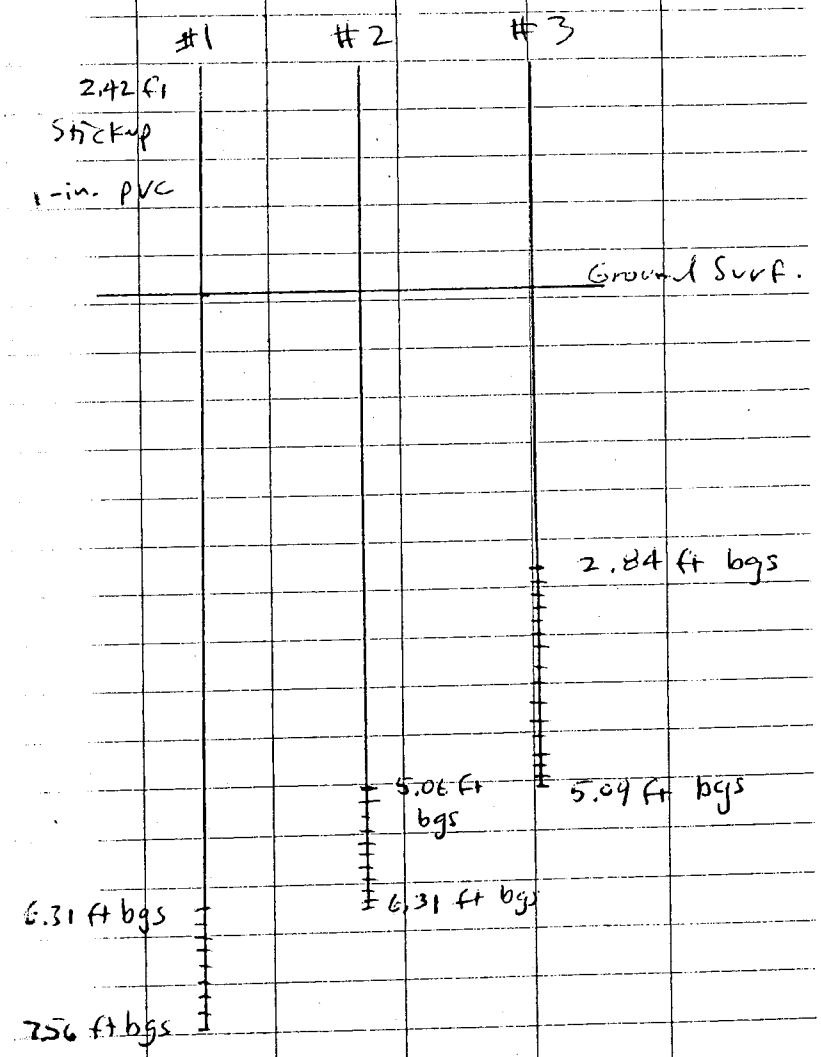
955 - Rig moved onto DPBN-3B
1007 - measured initial WLs in DPBN-4A

#1 = 7.43 ft btoc
#2 = 7.43 ft btoc
#3 = 6.41 ft btoc

Armand Goffman departed Grid at 1000
Jeff Giese on site 930 - 1000

(18)

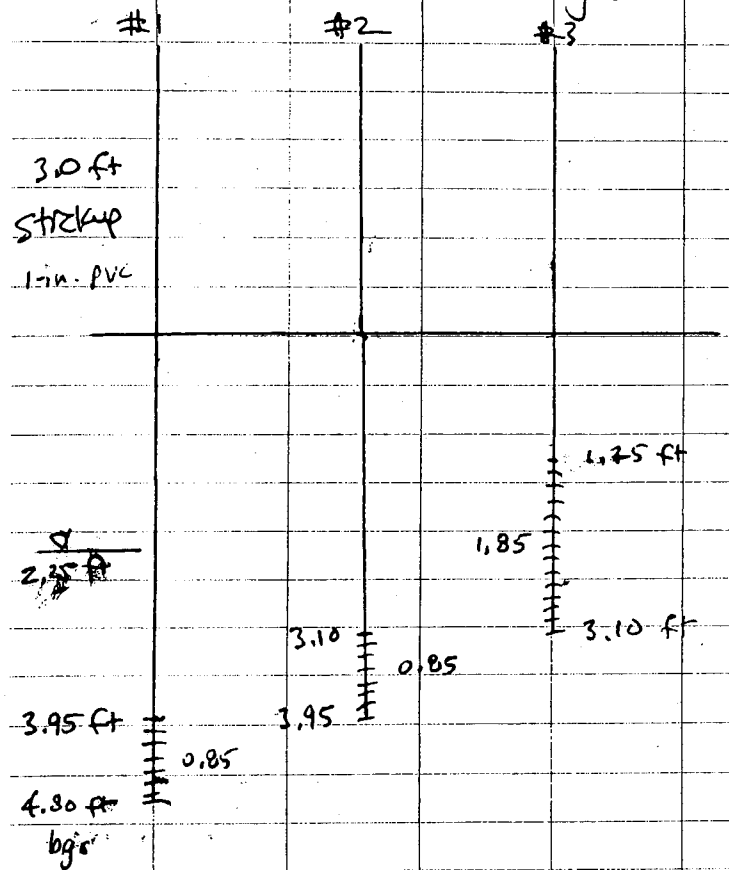
9/23/02
DPBN-4A Design



9/23/02

1010 - start drilling DPBN-3B

DPBN-3B Design



1035 - TD'd at 6.17 ft (tuff at 4.80')

1100 - built well and installed.

1110 - finished installing DPBN-3B
moved rig to DPBN-3A

9/23/02

1124 - start drilling DPBN-3A

Measured wls in DPBN-3B:
#1 = 5.98 ft btoc
#2 = 5.70 ft btoc
#3 = 5.23 ft btoc

1145 - TD'd at 7.75 ft bgs

1150 C. Szpunar and J. Jones off-site for lunch break.
R. Channell on-site

1153 J. Weise on-site.

1220 C. Szpunar and J. Jones on-site.

1245 Install well ~~DPBN3A~~ DPBN-3A 9/23/02

1305 Move rig onto DPW-3.5S site.

1319 Start drilling DPW-3.5S (A)

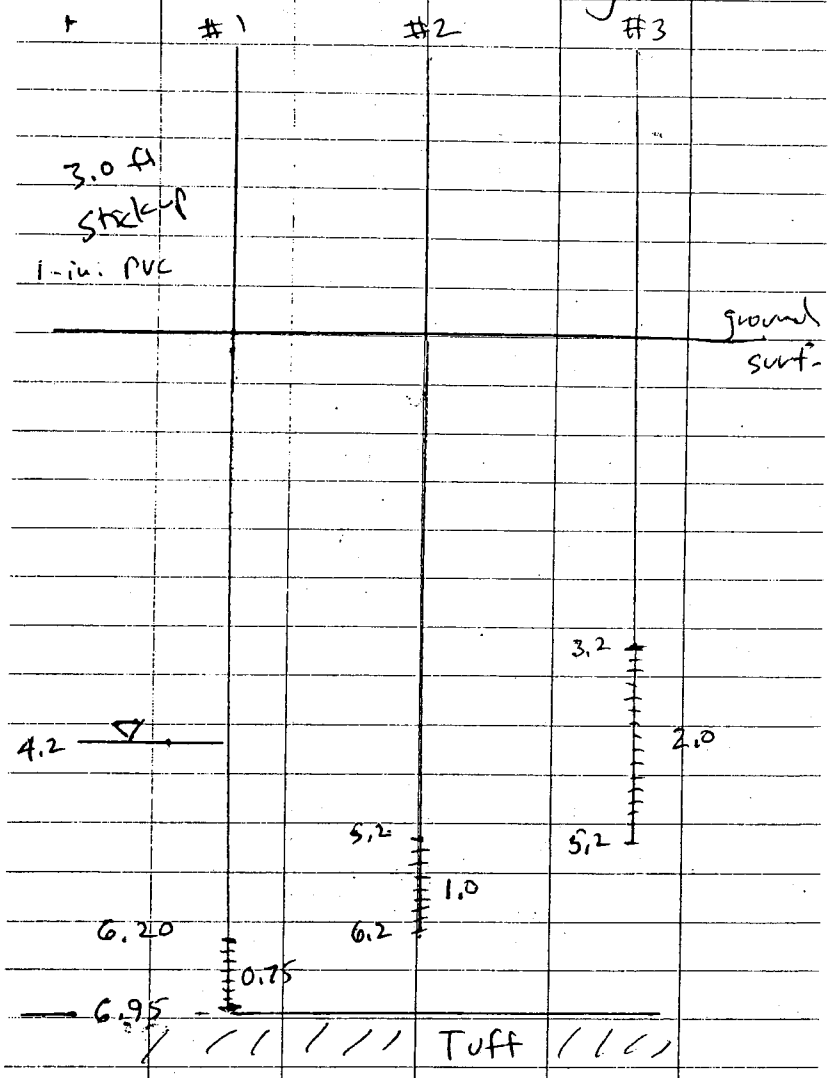
1340 DPW-3.5S (A) is dry.
Back fill and mob rig to DPW-3.5S(B).

1355 Begin drilling DPW-3.5S(B)
DPW-3.5(S)(B) is 20.4 ft North of DPW-3.5S (A)

1430 Inside of auger is filled with sediment. Drillers attempt to clean out auger.

(21) 9/23/02

DPBN-3A Design



9/23/02 (22)

1515 - Td DPW-3.5S(B) at 11.2 ft
- note - bottom of auger is plugged with weathered tuff

1525 - move rig to DPW-3.5S(C) which is 11 ft south of B.

1540 Drillers need to change bit.

1600 Drillers are having trouble getting the bit onto a new auger. We will quit for the day, and C. Sapuner will work on getting problem fixed in the morning.

1630 All personnel off-site.

S. Pinnie

9/24/02

815 S. Purdue (FM) and Bob Gray (FTL), C. Szpunar (Cloud driller) on-site on DP Canyon.
Safety tailgate given by S Purdue. Daily Rig Safety Inspection performed

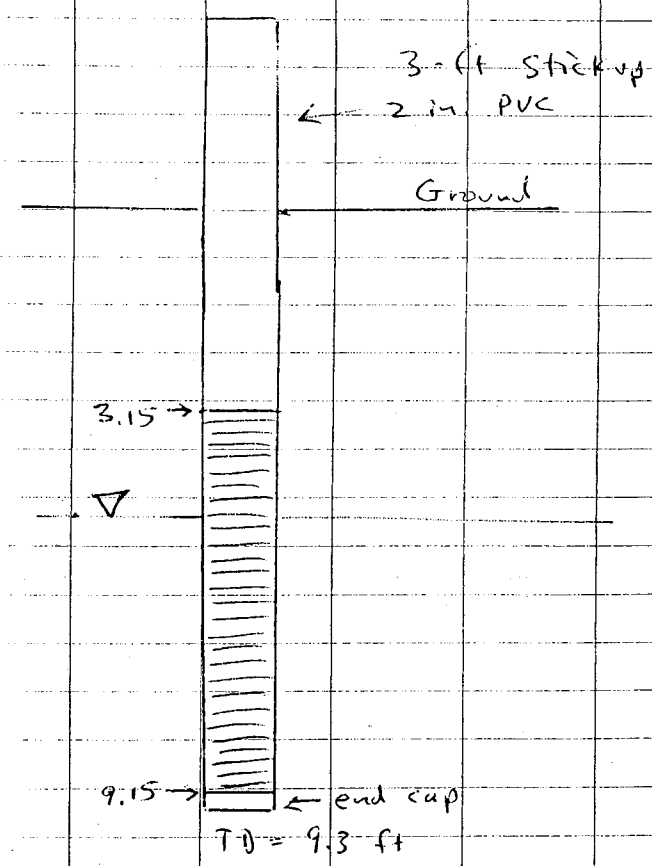
830 S Purdue takes background B/γ readings with ESP-1 #5932, cal done on 2/12/02, Cal due on 2/12/03.
SP 9/24/02 Readings for background taken on S. side of channel on Qc surface

Count 1	489	dpm B/γ
Count 2	429	dpm B/γ
Count 3	387	dpm B/γ
Count 4	489	dpm B/γ
Count 5	574	dpm B/γ

835 Begin drilling DPW-3.5S(C)
Saturated zone in DPW-3.5S(C) is in a clay-rich formation
We will install SP 9/24/02 DPW-3.5S (B) with a well.

9/24/02

DPW-3.5S (B) design.



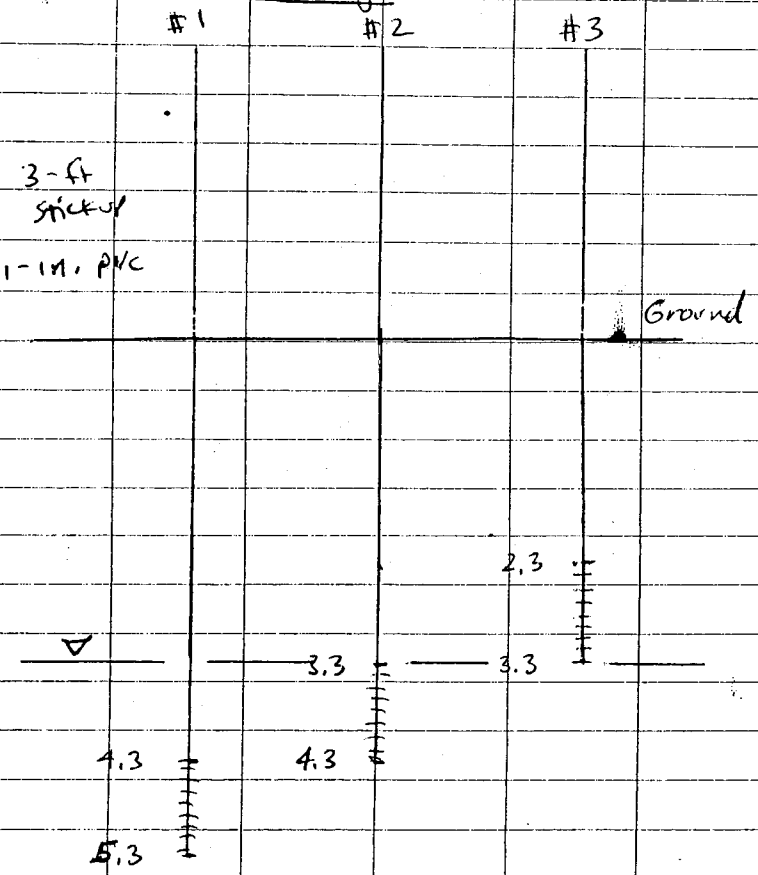
930 A. Goffman on-site
945 R. Channell on-site
945 Complete DPW-3.5S(B).

9/24/02

10.00 Measured WL in DPW-3.55
= 10.13 ft btoc

10.10 measured wl in DPBN-1A
= 2.61 ft BGS
measured wl in DPBN-1B
= 2.92 ft BGS

DPBN-2A Design

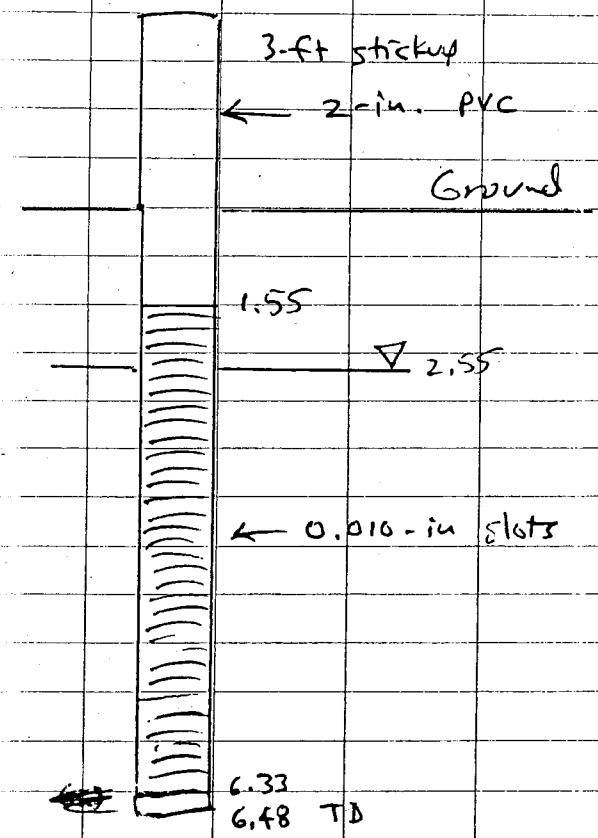


1200 fob Helton on-site

9/24/02

1230 - 1300 build and install well at DPBN-2A
1305 - move rig to DPW-1S
1310 - measured WL in DPW-3.55
= 9.75 ft btoc
TD = 12.17 ft btoc

DPW-1S Design



9/24/02

~~1300~~ - ~~RS~~ R/R 9/24/02 -

1315 - 1345 build and install well at DPW-1S

1350 - 1422 visitors on site for H&S inspection: John Dejoia, Al Pratt, Al Funk, Chris Kilb, Jared Lyman.

1425 - Jeff Giese on site

1430 - Jeff broke out the rear window in the cab of the rig (first aid kit fell back from seat)
- Rig and crew on standby to clean up mess & arrange repair

Measured WL in DPW-1S = 7.75 ft btoc

1500 - Resumed drilling - begin DPBN-1B borehole.

1510 TD'd at 6.75 ft

1510 - 1545 build and install well at DPBN-1B

1545 - move rig onto DPBN-1A

15:57 measured DPW-1S WL = 5.97 ft TOC

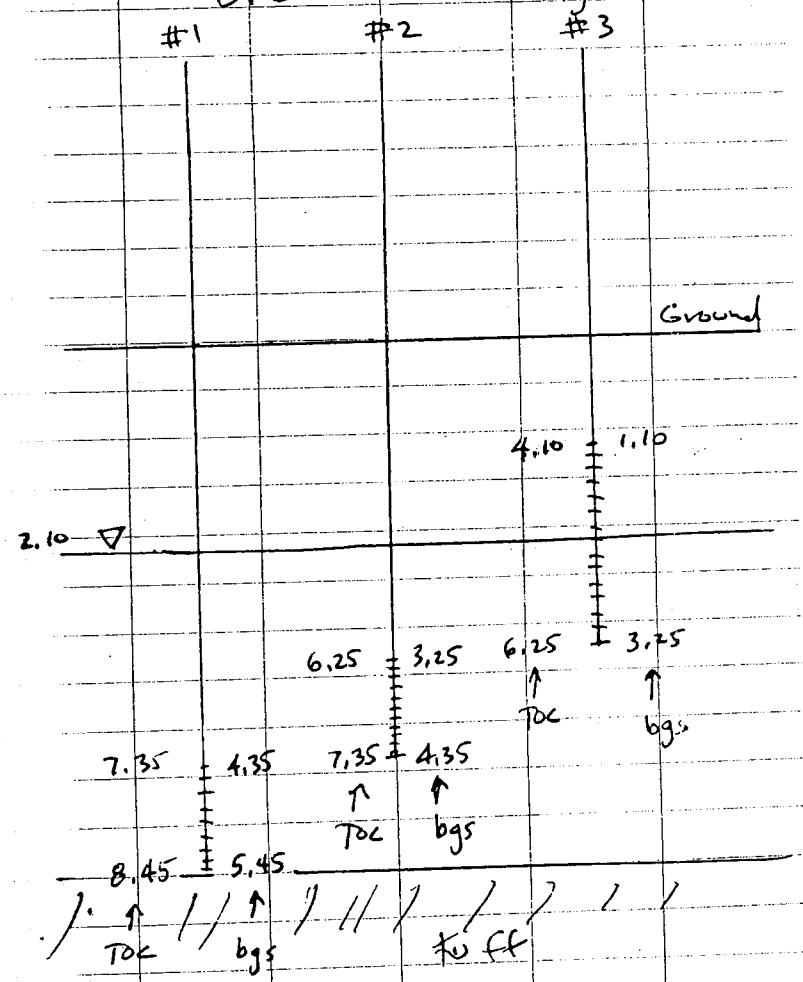
16:07 start drilling DPBN-1A

1610 R. Channell off-site.

1625 finished DPBN-1A - TD = 6.0 ft

9/24/02

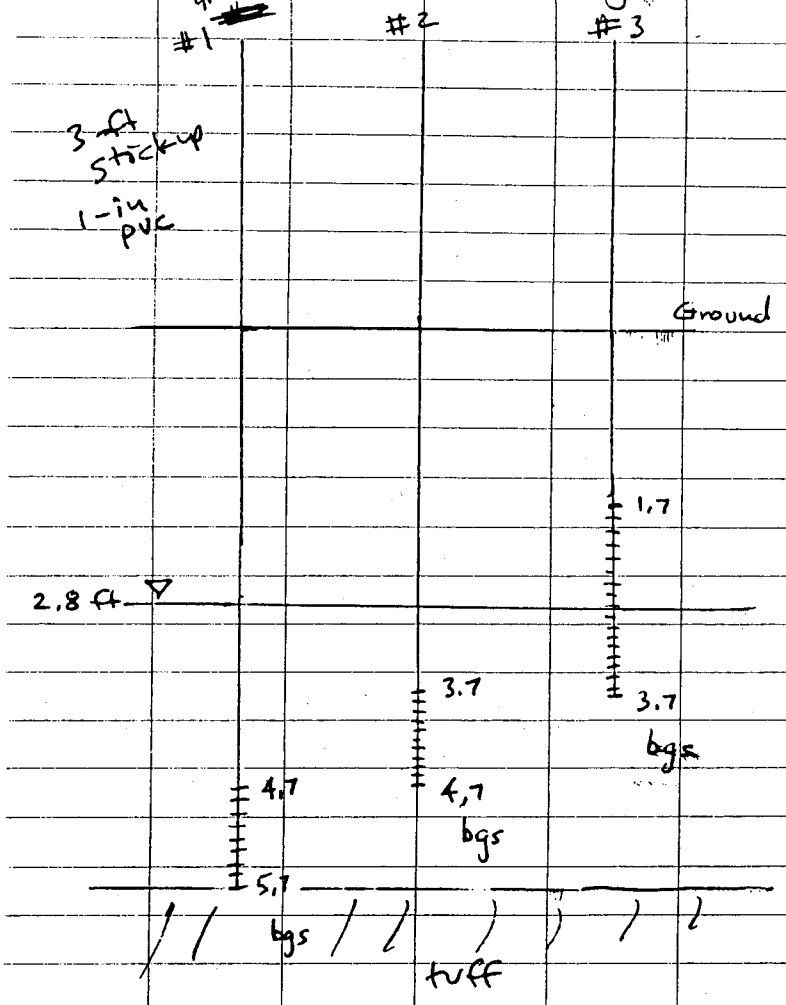
DPBN-1B Design



1625 - 1645 build and install well at ~~DPBN-1B~~ R/R 9/24/02 DPBN-1A.

9/24/02

DPBN-1A Design



1650 Prep to mob drill rig across the channel.

1710 Mob across channel.

9/24/02

1715 - measured wls in DPBN-1B

7.74'

#1 = ~~4.44~~ btoc

#2 = 6.12' btoc 9/24/02

#3 = 6.13' btoc

1720 - measured wls in DPBN-1A

#1 = 5.62' btoc

#2 = 5.59' btoc

#3 = 5.33' btoc

1745 All personnel off-site

S. Pam

(31) 09/25/02

720 S. Purdue at top of road to DP Canyon. T. Benson has asked us to wait until we are all here to drive down road together.

730 B. Gray (FTL) on-site. He will check to see when ACE hardware ~~[illegible]~~ opens.

740 Bob Gray (FTL), Ryan Channell (FTL), S. Purdue (FTM), Chad Szpunar (lead driller), Jim Jones (driller) On-site DP Canyon. Safety Tailgate given by S. Purdue. Drill Rig Inspection performed by Jim Jones.

810 C. Szpunar and J. Jones begin to mob Drill Rig to East end of the reach.

815 S. Purdue collects background readings with ESP-1 #5932 cal. done on 2/12/02, cal. due on 2/12/03

9/25/02 (32)

Readings taken on N. side of channel on a Qc surface. Dry Surface

Count 1	637	dpm B/γ
Count 2	616	dpm B/γ
Count 3	569	dpm B/γ
Count 4	535	dpm B/γ
Count 5	552	dpm B/γ

835 DPW-1 DTW = 6.01 ft TOC

837 DPBN-1A #1 DTW = 5.62 ft TOC
#2 DTW = 5.70 ft TOC
#3 DTW = 5.70 ft TOC

840 DPBN-1B #1 DTW = 6.55 ft TOC
#2 DTW = 6.14 ft TOC
#3 DTW = 6.14 ft TOC

844 DPBN-2A #1 DTW = 6.73 ft TOC
#2 DTW = 6.71 ft TOC
#3 DTW = 6.31 (sump) ft TOC

848 DPBN-3A #1 DTW = 7.20 ft TOC
#2 DTW = 7.19 ft TOC
#3 DTW = 6.83 ft TOC

850 DPBN-3B #1 DTW = 6.24 ft TOC
#2 DTW = 6.23 ft TOC
#3 DTW = 5.93 ft TOC

852 Begin moving equipment to DPW-7.4N

930 R. Channell off-site

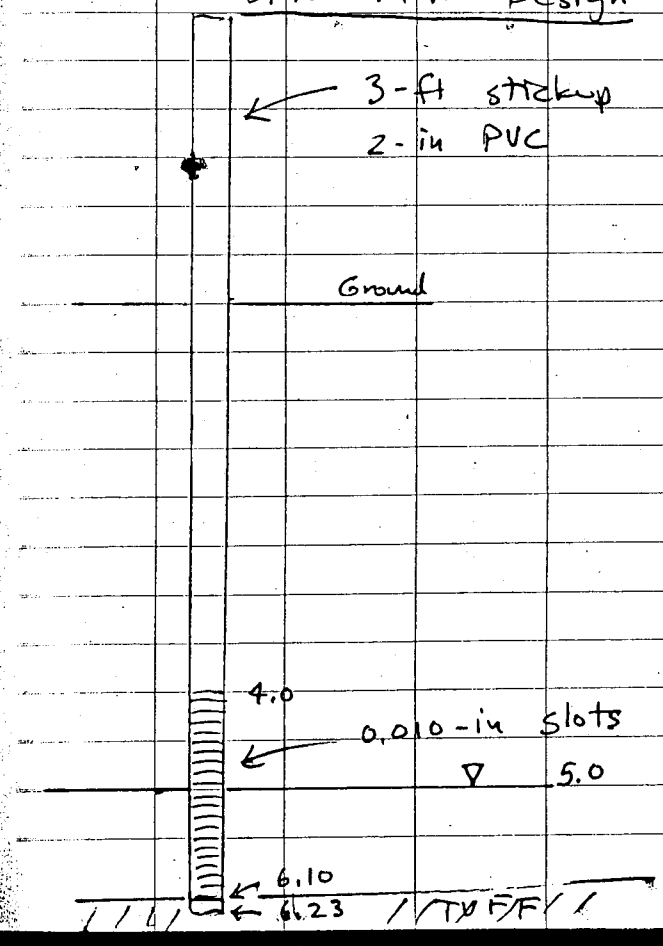
9/25/02

950 On-site at DPW-7.4N.
955 Begin Drilling DPW-7.4N (A)
~~955~~ 9/25/02 encountered saturation at 5.0 - 6.1 ft bgs
1025 Finish DPW-7.4N (A)
TD at 6.8 ft
Move north 10 ft to (B)
1040 Start drilling DPW-7.4N (B)
1100 Move north 10 ft to (C)
1115 Begin drilling DPW-7.4N (C)
1140 No Saturation in DPW-7.4NC
1130-1140 Kevin Sogez on-site.
1145 Move rig back to DPW-7.4N ~~(B)~~ (A) to ~~drill another hole~~ 9/25/02 to pull auger.
1156 Move rig to DPW-7.4(B) to drill another hole DPW-7.4(D). This hole ~~with~~ will be a few feet away from DPW-7.4(B).
1205 Begin drilling DPW-7.4N(D)
1230 DPW-7.4N(D) is not very saturated.
1235 Break for lunch.
1310 Move drill rig to the south

9/25/02

about 5 ft.
1325 Begin Drilling DPW-7.4N(E)
1345 TD'd DPW-7.4N(E) at 5.4 ft
No saturation!
Decided to build well in DPW-7.4N (A)
1355 - redrilling 7.4N (A)

DPN-7.4 N Design



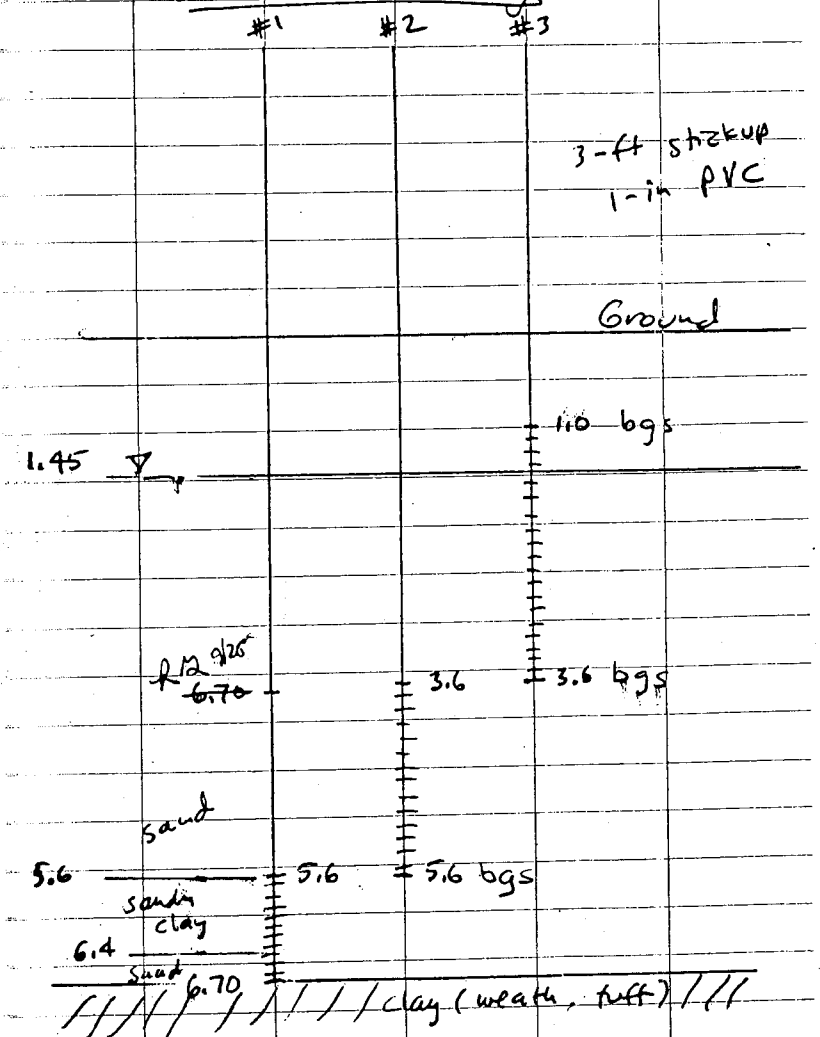
9/25/02

1405 Dave Hill on-site
1408 TD'd 7.4 N(A) at 6.25 ft
1430 Install ~~7.8~~ 9/25/02 DPW-7.4N in 7.4 N (A).
1445 Mob Rig to DPBN-7B.
1530 Begin Drilling DPBN-7B.
(1430) Dave Hill off site
1500 Armand Groffman on-site
1550 TD'd DPBN-7B at 6.80 ft
Logging core and drawing well design
1620 - 1640 build and install well
Move rig to DPBN-7C site
1705 Rig set-up at DPBN-7C.
We will clean-up for today and resume drilling with DPBN-7C tomorrow.

S. P
9/25/02

9/25/02

DPBN-7B Design



SP
~~7/~~ SP 9/25/02

9/26/02

710 S. Purdue response checks ESP-1 #5932. It is reading within acceptable range.

730 S. Purdue (FTM), Bob Gray (FTL), Chad Szpunar (lead driller), Jim Jones (driller) on-site DP Canyon.
Safety Tailgate given by S. Purdue.
Drill Rig Inspection ~~given~~ performed by Jim Jones. SP 9/26/02
Jim Jones needs to make a small repair on the engine.
Chad Szpunar tries to order plastic core catchers. None available. SP 9/26/02

815 S. Purdue and B. Gray cut some ~~sticking~~ ~~on~~ previously installed wells to adjust stickup.
DPW-7.1(S) stickup now 3 ft.
DPW-7.5(S) stickup now 3 ft.
DPW-7.9(S) stickup now 3 ft.

822 DPW-7.9S DTW = 7.31 ft TOC
~~HS 9/26/02~~ DPPN-7.7 #1 stickup now 3 ft.

9/26/02

830 DPPN 7.7 #1 DTW = 10.10 ft TOC
su = 3 ft TD = 10.32 ft TOC
DPPN #2 DTW = 6.07 ft TOC
SP 9/26/02 su = 3 ft TD = 8.60 ft TOC
DPPN 7.7 #3 DTW = 5.52 ft TOC
su = 2.8 ft TD = ~~4.05~~ ft TOC
7.05 SP 9/26/02

840 Begin Drilling DPPN-7C with metal core catcher.

845 Trip out first run. Core catcher is destroyed, and we have 0 recovery. We will continue drilling without a catcher.

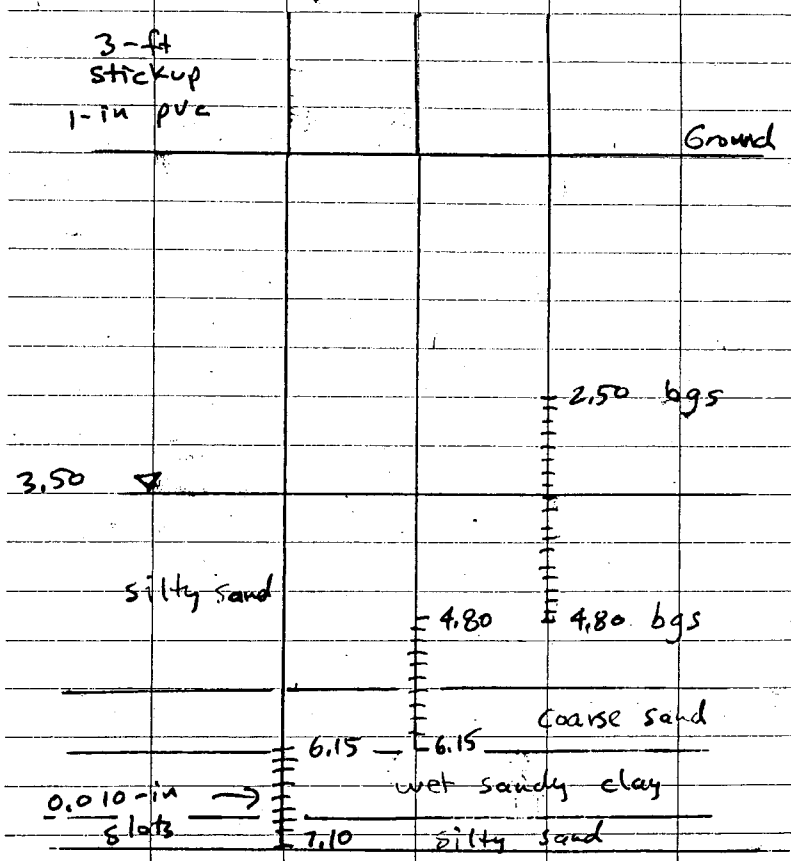
845 Background B/γ readings taken by S. Purdue with ESP-1 #5932, cal done on 2/12/02 cal. due 2/12/03. Readings done on N. Qc surface

Count 1	574	dpm	B/γ
Count 2	608	dpm	B/γ
Count 3	535	dpm	B/γ
Count 4	642	dpm	B/γ
Count 5	595	dpm	B/γ

Background reading taken on dry surface.

9/26/02

DPBN-7C Design

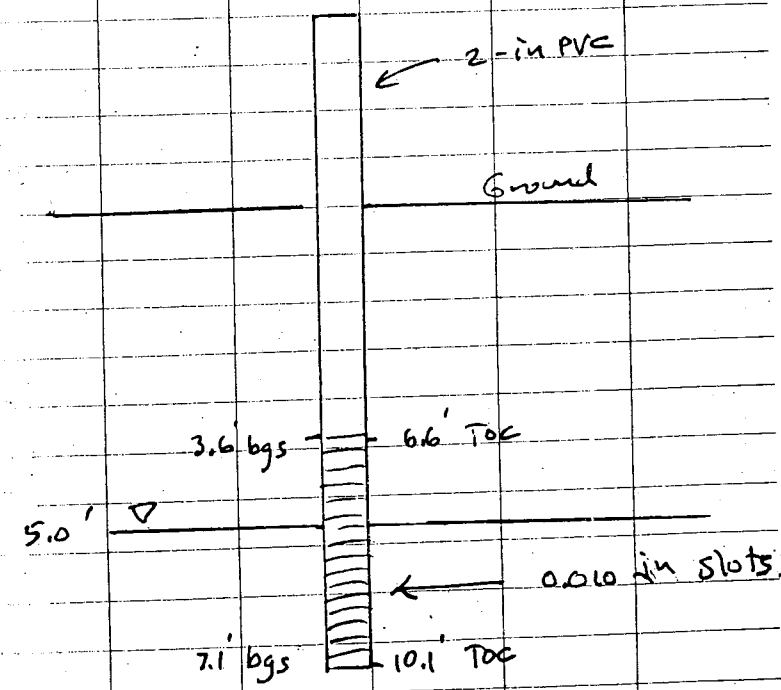


945 mob rig to DPW-6.5N
1010 Begin drilling DPW-6.5N (A)
1030 TD'd DPW-6.5N (A) at 6.1 ft
Poor recovery, but wetness on barrel suggests that there

9/26/02

may be ~ 4 ft of saturation at this site. will move 10 ft north to drill DPW-6.5N (B)
1035 - 1050 move rig to DPW-6.5N (B)
1050 - 1115 drilling hole
1115 - 1135 logging core and designing well
1135 - build and install well till 1205

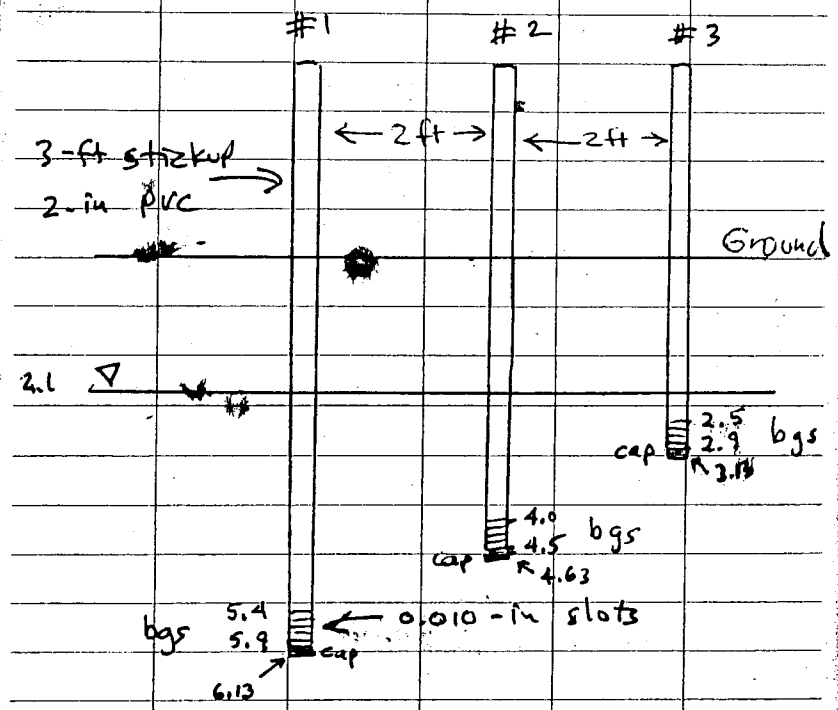
DPW-6.5N Design



(41) 9/26/02

1205 Begin drilling DPW-6.5N(c)
1220 TD'd at 5.5 ft; dry hole - backfilled hole with cuttings
1230 Break for lunch
1300 Mob drill rig to DPPN-5.7
1345 Begin drilling DPPN-5.7
1400 TD'd at 6.3 ft
1410 - 1530 Design and build wells in DPPN-5.7 #1, #2, #3

DPPN-5.7 design

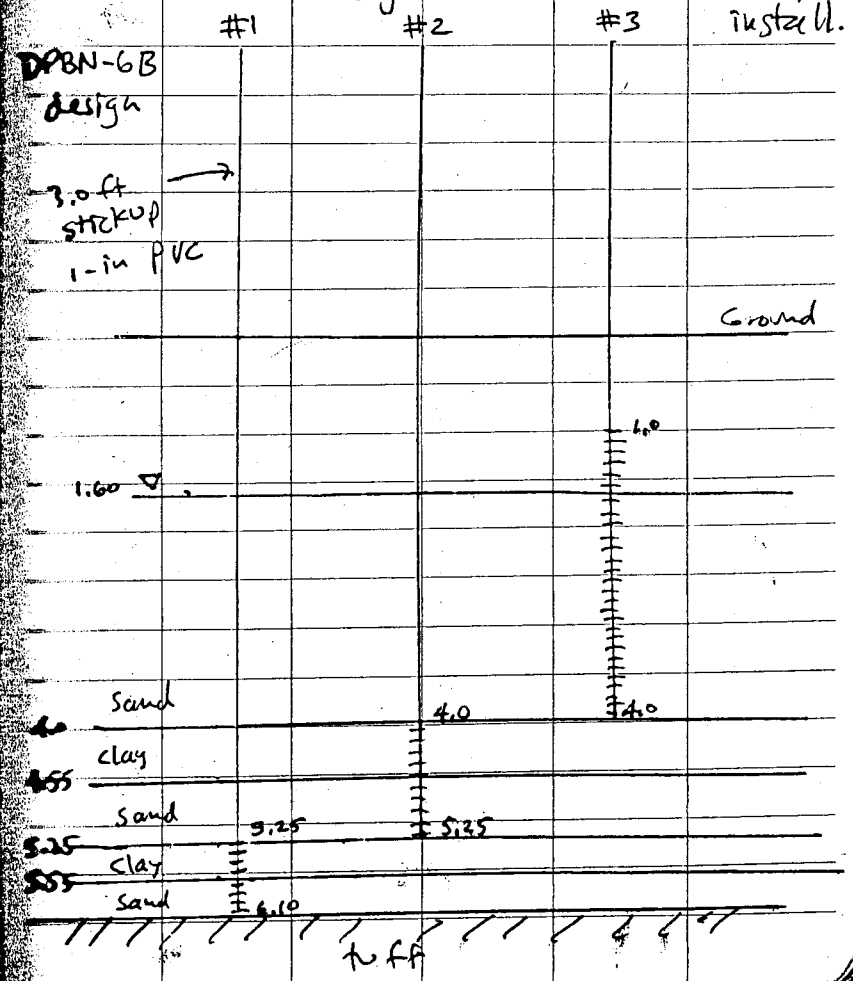


9/26/02 (42)

1530 - 1550 Move rig onto DPBN-6B site

1555 Begin drilling DPBN-6B
1615 TD'd at 6.1 ft
1620 - 1710 Design and build wells & install.

DPBN-6B design



(43)

9/26/02

1710 - Drill Crew off-site cleaning up site and packing up equipment.

1715 - Bob Gray and Shannon Purdue off site

R Gray 9/26/02

9/27/02

(44)

730 Bob Gray (FTL), Shannon Purdue (FTM), Chad Szpunar (lead driller), Jim Jones (driller) on-site OP Canyon. S. Purdue performs safety tailgate meeting. J. Jones performs drill rig inspection.

745 S. Purdue takes background B/G readings on N. side of channel on Qc surface. ESP-1 S/N P/N 5932 was performance checked at 710 by S. Purdue.

Calibration done on 2/12/02

Calibration due on 2/12/03

Count 1	450	dpm	B/G
Count 2	552	dpm	B/G
Count 3	463	dpm	B/G
Count 4	599	dpm	B/G
Count 5	493	dpm	B/G

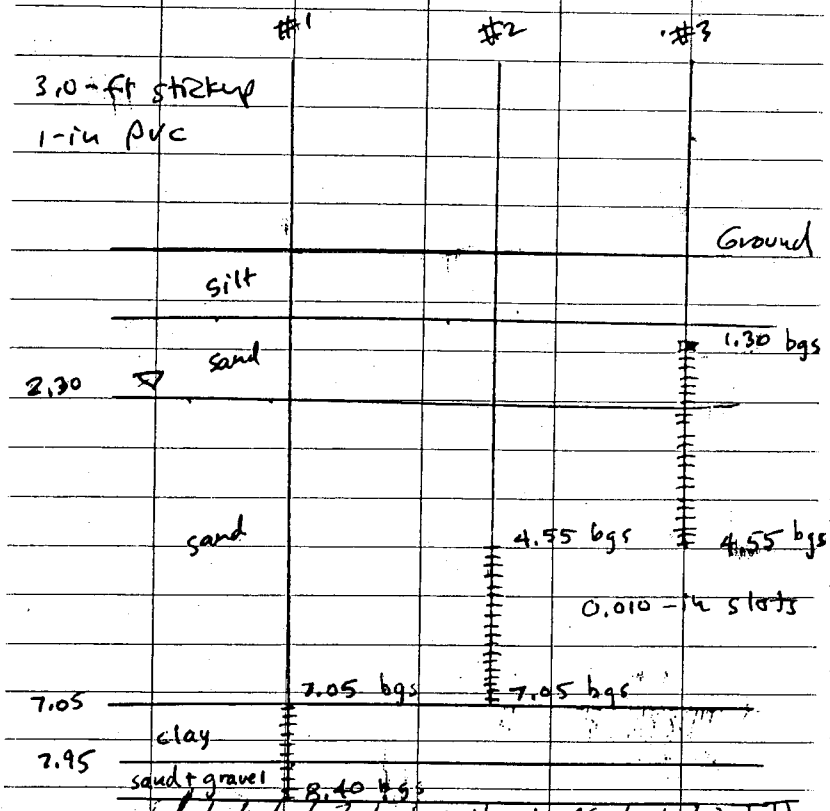
Background readings taken on a dry surface.

745 Drillers warm up rig and mob to DPBN-6C

9/27/02

810 Begin drilling DPBN-6C
830 TD'd at 8.75 ft
840 - 911 design, build and install well at DPBN-6C

DPBN-6C Design

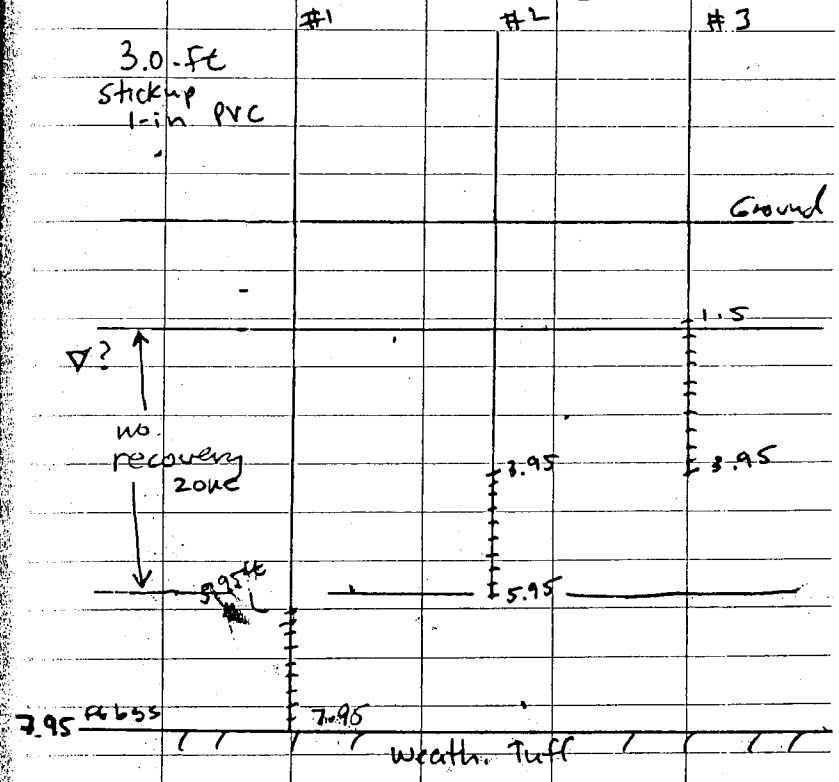


913 - move rig onto DPBN-6D site

9/27/02

922 Start drilling ~~DPBN~~ DPBN-6D 9/27/02
945 TD'd at 8.75 ft
very poor recovery (< 50% above the tuff)

DPBN-6D design

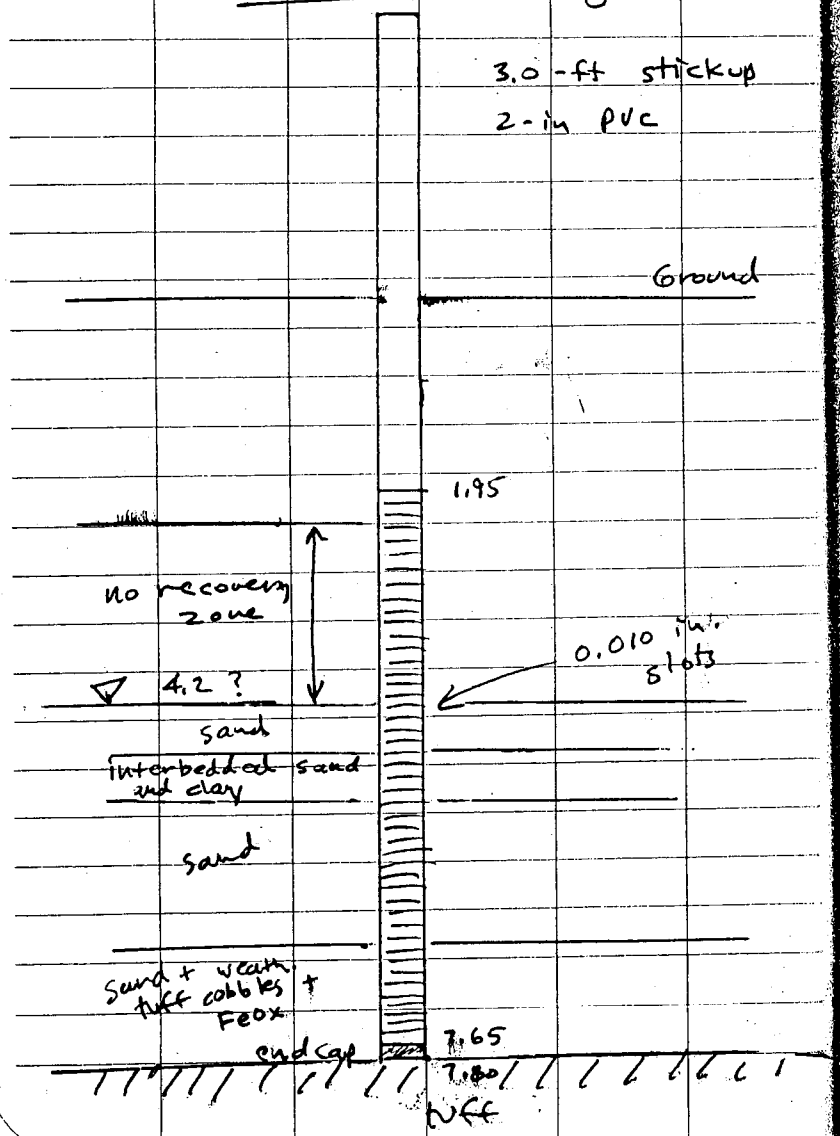


945 - 1025 design, build & install wells
1025 move rig onto DPW-~~4.5N~~ 5.7N (DMLS)
1035 - start drilling DPW-~~4.5N~~ 5.7N RK 9/27/02

9/27/02

1050 TD'd DPW-~~4.5N~~ 5.7N at 7.8 ft

DPW-~~4.5N~~ 5.7N Design



9/27/02

1050 - 1125 design, build & install well

1130 - rig moved to DPW-5.8N(A)

1135 - started drilling DPW-5.8N(A)

1200 - TD'd at 9.4 ft

1210 - break for lunch

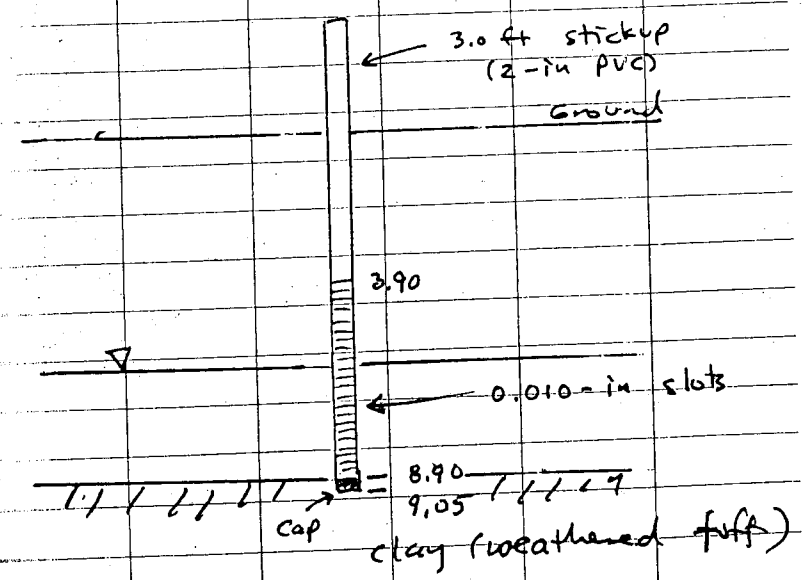
~~1240~~ 1230 - Move drill rig to DPW-5.8N(B), 15 ft North of (A).

1245 Begin Drilling DPW-5.8N (B)

1302 TD'd at 6.80 ft.

Backfill bore hole with cuttings and move back onto DPW-5.8N(A) to build well.

DPW-5.8N design



9/27/02

1305 - 1325 - build and install well at DPW-5.8N

measure wc in DPBN-5B (orig.) = 3.62 ft bgs

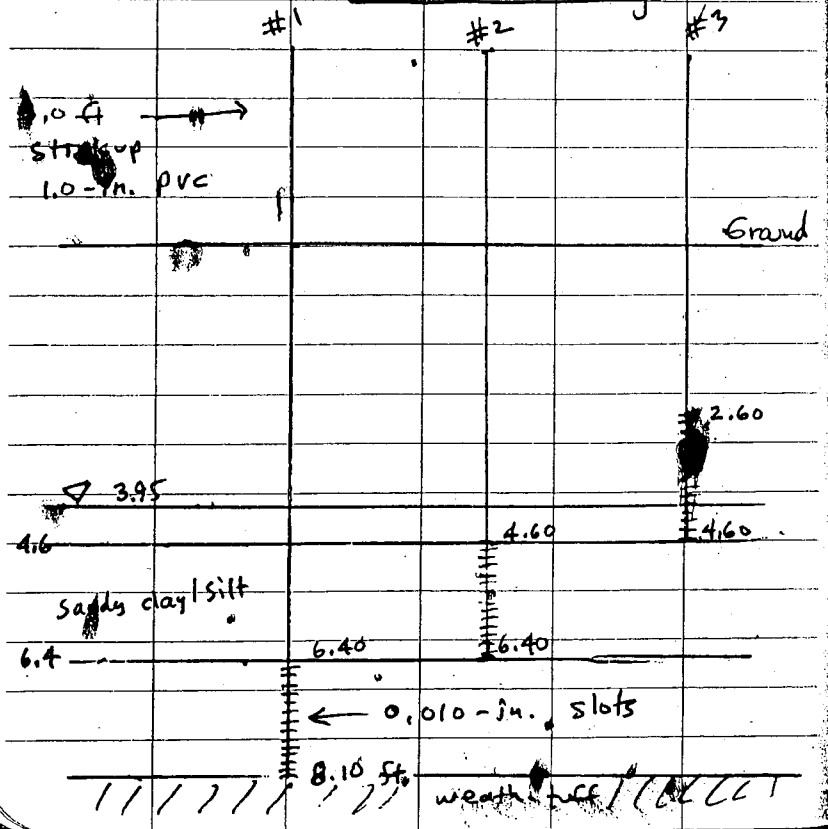
measure wc in DPBN-5C (orig.) = 4.07 ft bgs

Move rig onto DPBN-5B

1338 start drilling DPBN-5B

1355 TD'd at 8.10 ft

DPBN-5B design



9/27/02

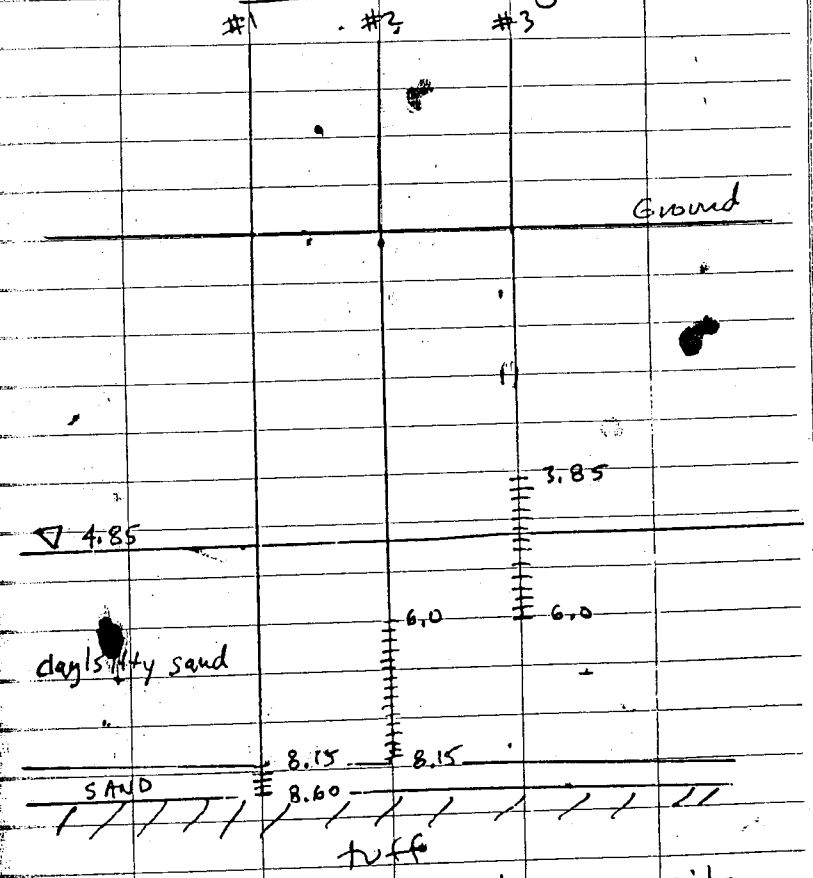
1355 logging core, build and install wells till 1430

1430 Move rig onto DPBN-5C

1455 TD'd at 8.90 ft

1505 - 1530 Build and install wells

DPBN-5C design



1545 Move to DPPN-4.5N - clean up site

1600 Drill crew & Field team off-site.

(51) 9/30/02

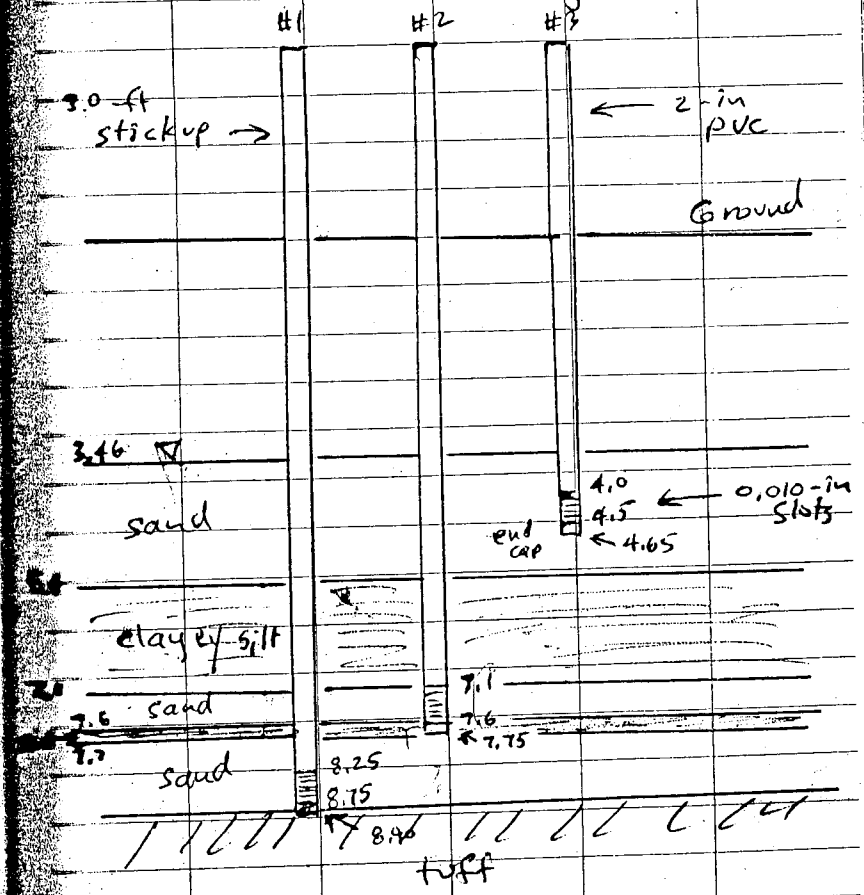
800 S. Purdue (FTM), Chad Szpunar (lead driller), Jim Jones (driller), and Bob Gray (FTL) on-site DP Canyon. Safety tailgate given by S. Purdue. Daily Rig inspection performed. Discuss today's goals of continuing drilling activities. S. Purdue takes background B/γ readings with ESP-1 S/N 5932. Calibration done on 2/12/02. Calibration due 2/12/03. Background readings done on South side of the channel on Qc surface.

Count 1 501 dpm B/γ
Count 2 506 dpm B/γ
Count 3 586 dpm B/γ
Count 4 501 dpm B/γ
Count 5 501 dpm B/γ

830 - start drilling DPPN-4.5N (#1)
850 - TD'd at 8.90 ft
900 - build and install well
920 - move to DPPN-4.5N (#2)

9/30/02 (52)

DPPN-4.5N Design

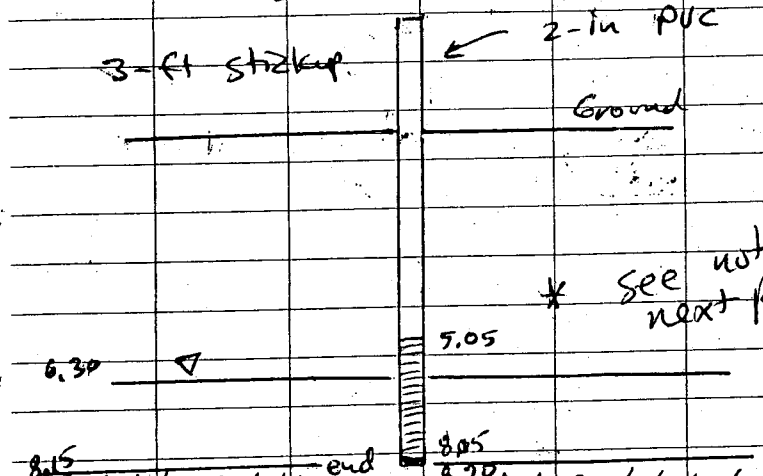


925 - 935 - drill DPPN-4.5N #2
935 - 945 - install well in #2
945 - 950 - move to DPPN-4.5N #3
950 - 1020 - Drill DPPN-4.5N #3
1020 - 1025 - install well in #3

9/30/02

1025 - Move to DPW-4.6N
1031 - start Drilling DPW-4.6N (A)
1050 - hole abandoned because core fell out of barrel and could not be redrilled. Moved 2 ft to north to drill new hole
1059 - Start drilling DPW-4.6N (B)
1120 - TD'd at 8.20 ft
(Drill Crew breaks for lunch
1120 - 1133 logging core
1133 - 1212 design, build, + install well in DPW-4.6N (B)

DPW-4.6N Design



9/30/02

*note - hole filled in so that the well was set 0.15 ft higher than the design depth.

1215 - move onto DPW-4.6N (C)
1220 - 1245 - drilling DPW-4.6N (C) (located 15 ft. N. of DPW-4.6N (B))
1245 - move onto DPW-4.6N (D) located 10 ft north of DPW-4.6N (C) (minor saturation observed in DPW-4.6N (C).
1308 Td'd hole at 6.7 ft (hole was dry)
1310 Move rig to DPBN-4B
1325 Start drilling DPBN-4B
1335 Td'd at 7.75 ft
1335 logging core, design well, install well to 1430

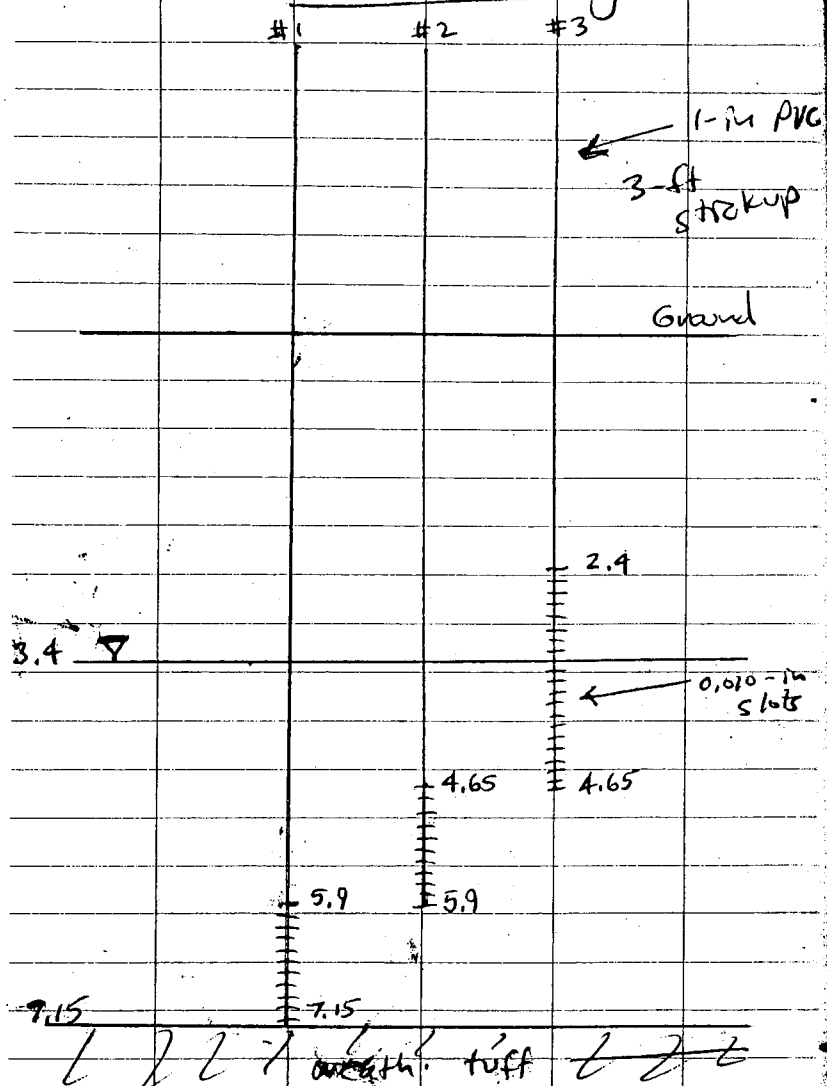
note - Danny Kautzman and Kent Rich on-site at 1320-1400

9/30/02

(55)

9/30/02

DPBN-4B Design

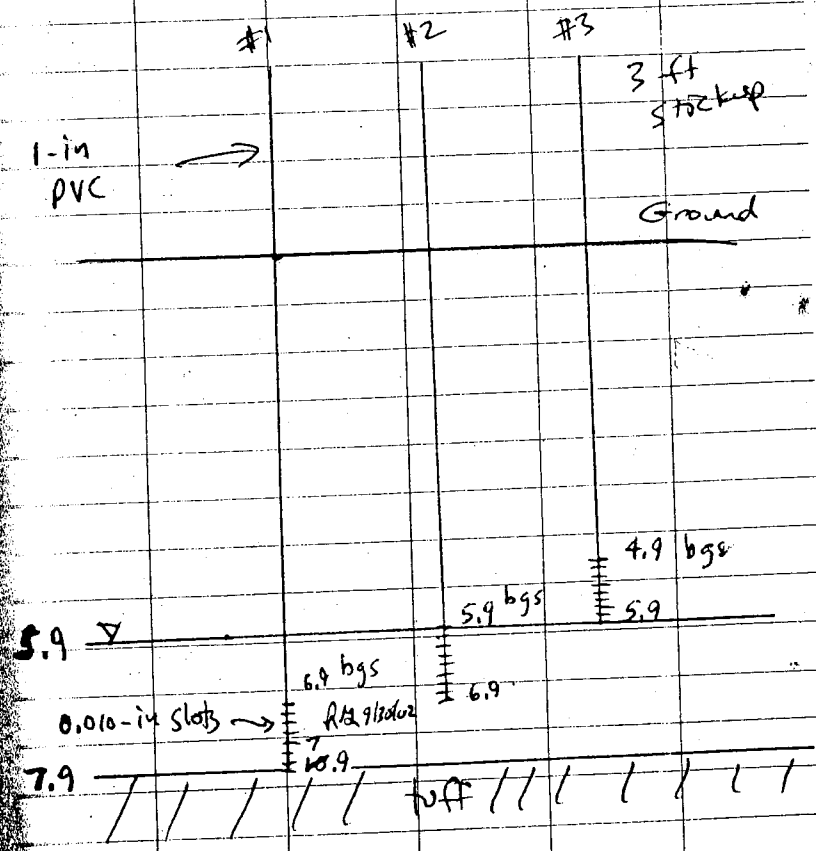


(56)

9/30/02

1430 - move rig onto DPBN-4C site
1440 - start drilling "
1452 - TD'd at 8.1 ft
1452 - 1500 logging core
1500 - 1540 design, build, & install well

DPBN-4C Design



(57)

9/30/02

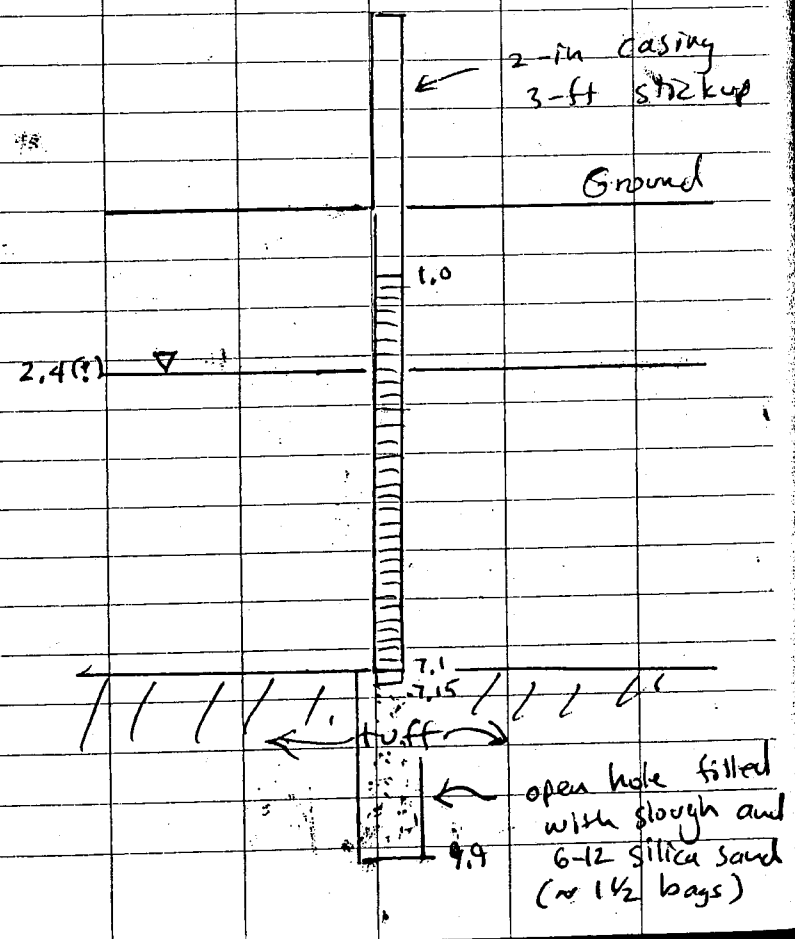
1540 Move rig to DPW-3.5N

1550 Start drilling "

1625 Td'd at 9.9 ft (cored 2.8 ft of tuff)

Design, build, install well

DPW-3.5N Design



(58)

9/30/02

1700 - finish well installation at DPW-3.5N

1715 All field crew off-site

9/30/02

10/1/02

730 S. Purdue (FTM), Bob Gray (FTL), Chad Szpunar (lead driller), Jim Jones (driller) on-site at DP Canyon. S. Purdue gives safety tailgate meeting. Chad S. and Jim J. perform daily Rig inspection.

740 Bob Gray off-site to get badge re-newed.

745 S. Purdue collects background B/γ readings with ESP-1 P/N 5932, Cal. done on 2/12/02, cal. due 2/12/03. Readings taken on South side of channel on a QC surface. (one minute counts.)

Count 1 646 dpm B/γ
Count 2 476 dpm B/γ
Count 3 480 dpm B/γ
Count 4 489 dpm B/γ
Count 5 565 dpm B/γ

750 Mob drill rig to DPBN-~~3C~~ 1C.

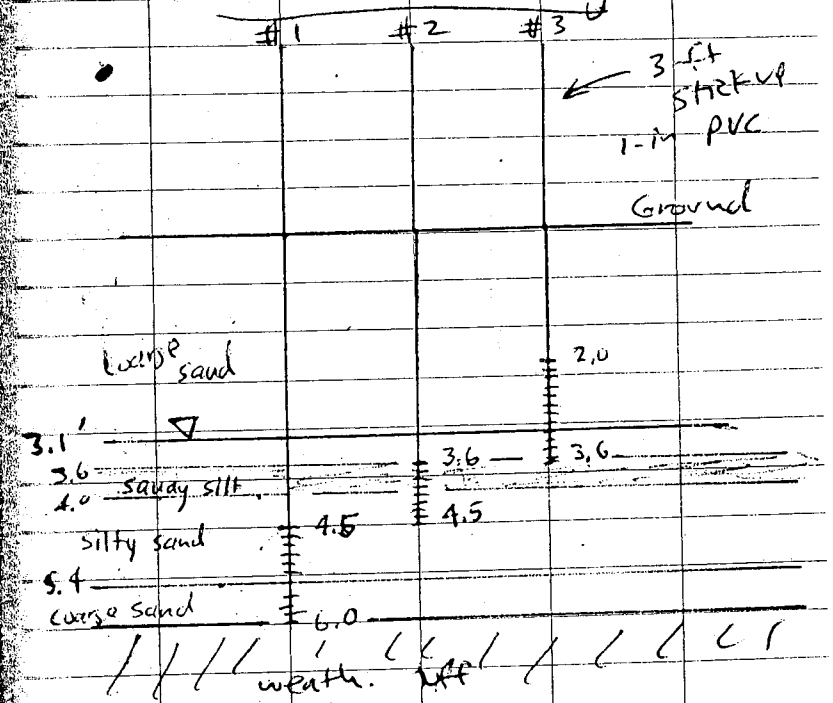
810 Begin drilling DPBN-1C

10/1/02 935 Mob to DPBN-2B

10/1/02

955 Begin drilling DPBN-2B. Bob Gray on-site.

DPBN-1C design



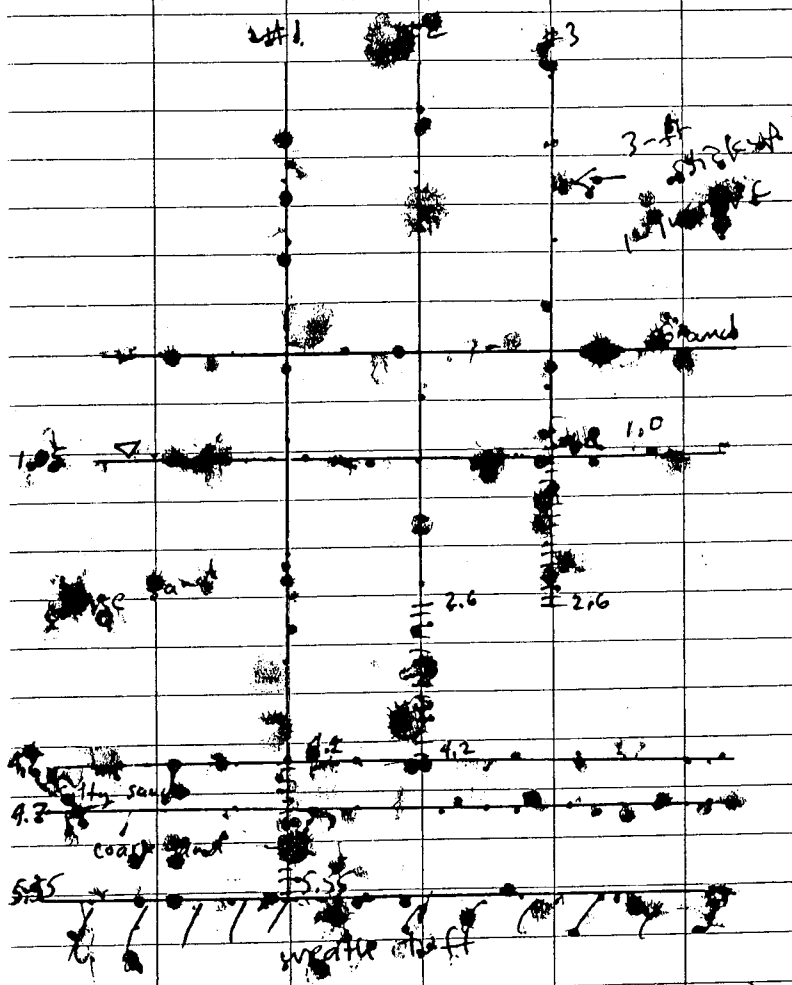
Measured wls in DPBN-1C at 10:05 -
#1 = 6.13 ft btoc
#2 = 6.12 ft btoc
#3 = 6.12 ft btoc

(61)

10/1/02

1010 - Td'd DPBN-2B at 6.75'

DPBN-2B Design



1010 - 1050 design, build, install wells

10/1/02

(62)

1055 Move to DPW - IN

1115 Start drilling "

1145 ~~At~~ Drill rig at standby - need to rep air mast bolt.

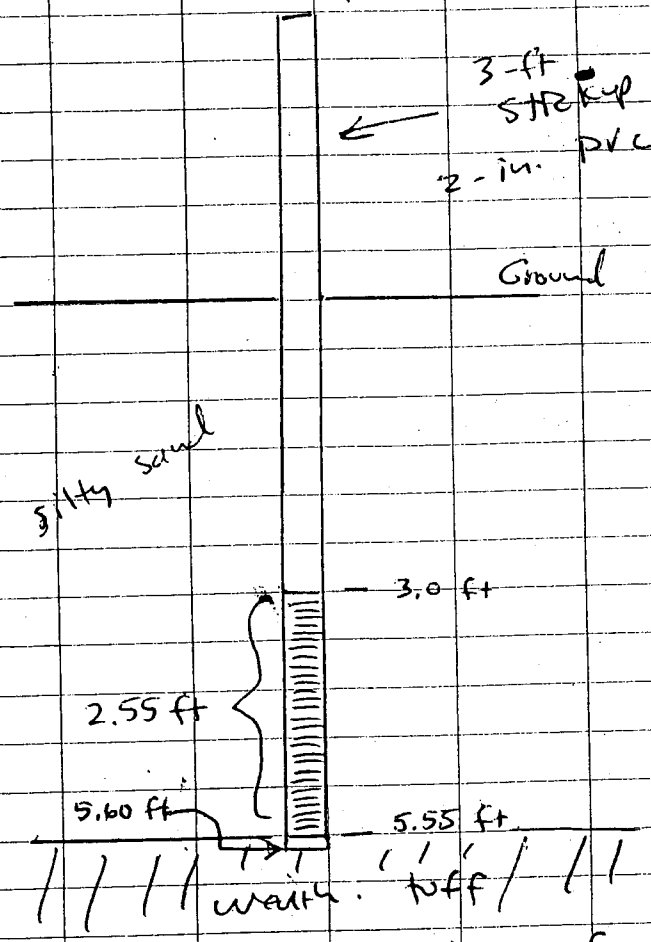
• DPW - IN Td'd at 6.25 ft

10/1/02

(63)

10/1/02

DPW - 1N Design



1155 - Crew went to town for parts to repair rig.

1250 - Drill crew back on site - repairing rig

10/1/02

(64)

1305 - 1315 Build and install well at DPW - 1N

1315 - Mob to DPW - 3.2 N (A)

1335 - Rig shut down because mast bolt stripped out again

1450 New bolt installed. Resume drilling DPW-3.2 N (A)

1510 Td'd at 8.30 ft
no saturation - move rig 15 ft to south to drill DPW-3.2N (B)

1530 Start drilling DPW-3.2N (B)

1550 Td'd at 9.1 ft
build and install well

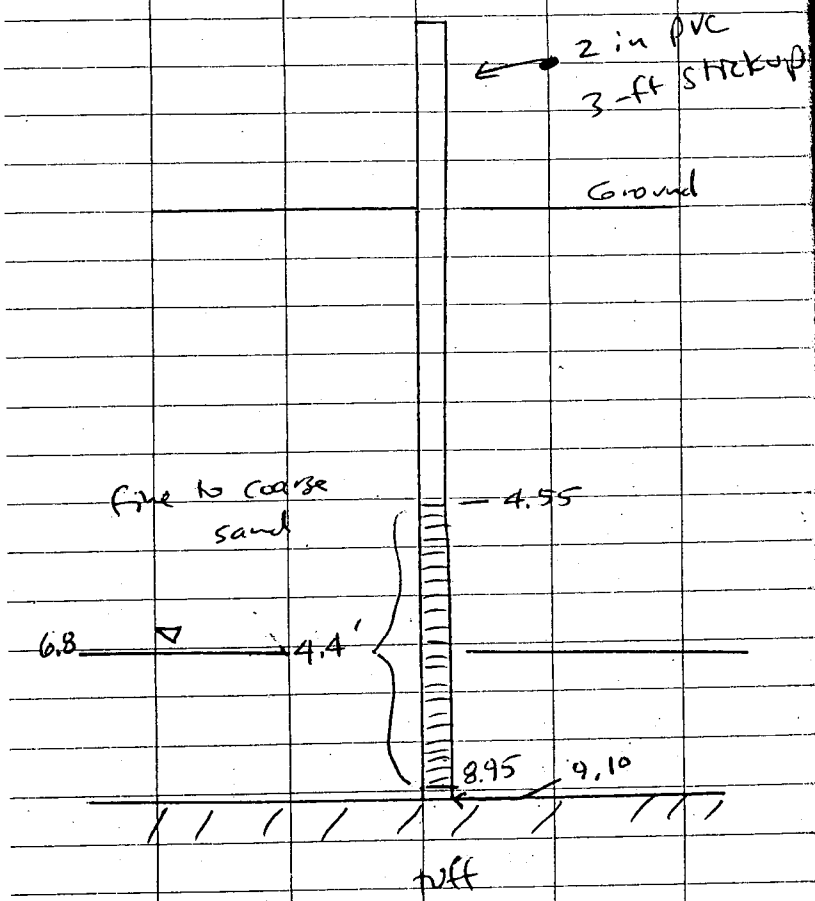
1615 Move rig to DPW-1.1N

10/1/02

(65)

10/1/02

DPW - 3.2N (B) design

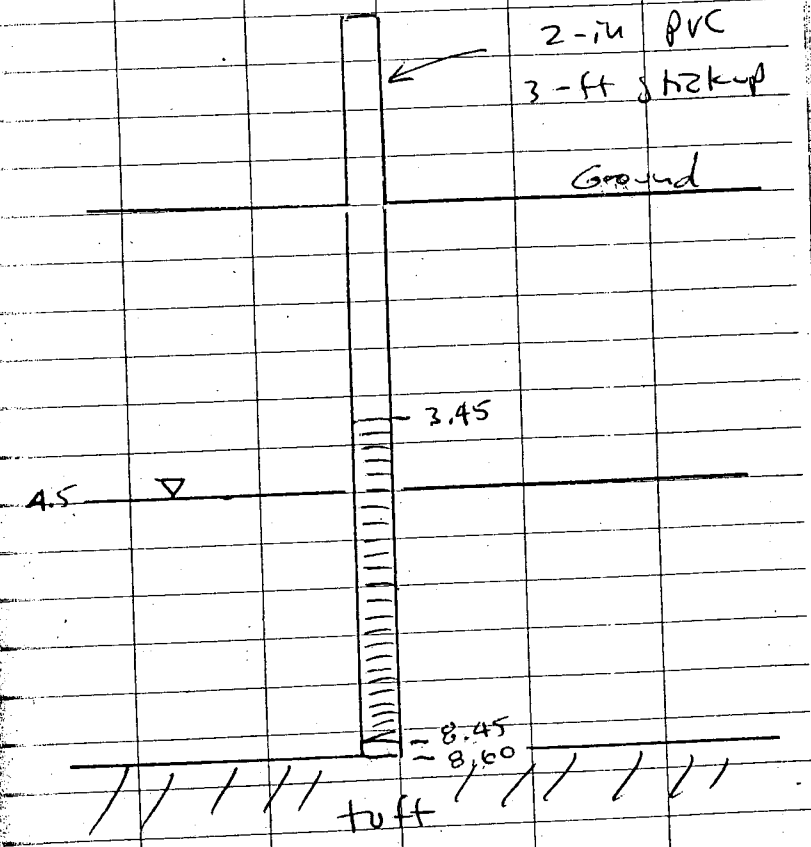


1630 - start drilling DPW - 1.1N
1650 TD'd at 9.0 ft
- build and install well

(66)

10/1/02

DPW - 1.1N Design



1715 all crew off-site.

S. Pude
10/1/02

(67) 10/2/02

730 S. Purdue, B. Gray (FTR), Chad Szpunar (bed driller), Jim Jones (driller) on-site DP Canyon.
Safety tailgate briefing by S. Purdue. Daily rig inspection performed.

745 Background readings collected by S. Purdue. ESP-1 PIN 5932. Cal. on 2/12/02 Cal. due 2/12/03. Background readings taken on South side of channel on QC surface. (One minute long)

Count 1 523 dpm B/γ
Count 2 459 dpm B/γ
Count 3 446 dpm B/γ
Count 4 480 dpm B/γ
Count 5 446 dpm B/γ

Background readings taken on damp surface due to rains last night.

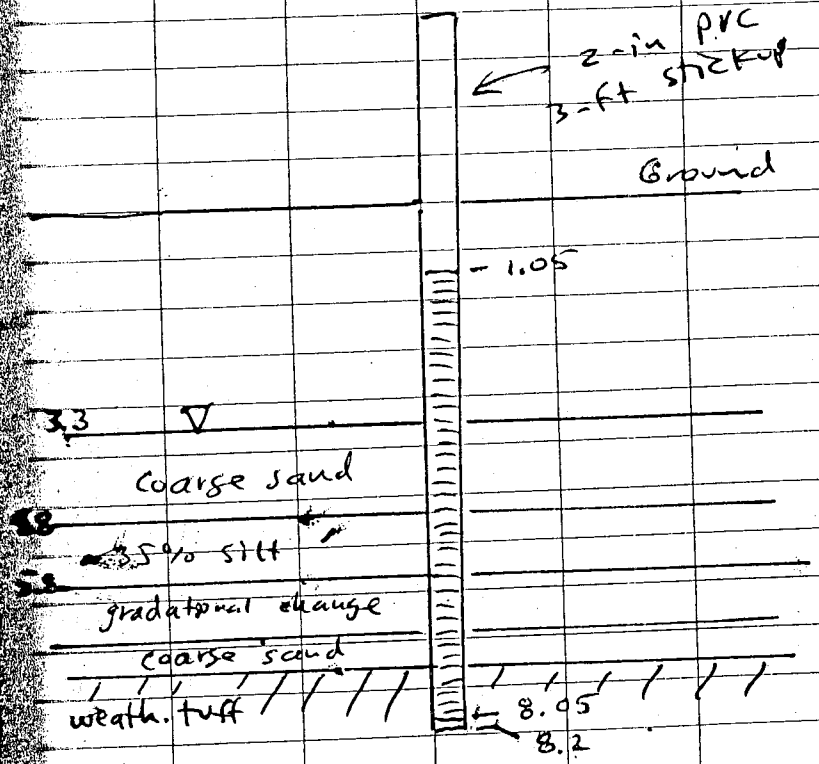
755 Move rig to 4.4N

805 Start Drilling DPW-4.4N

(68) 10/2/02

825 TD'd at 8.2 ft
Build and install well

DPW-4.4N Design

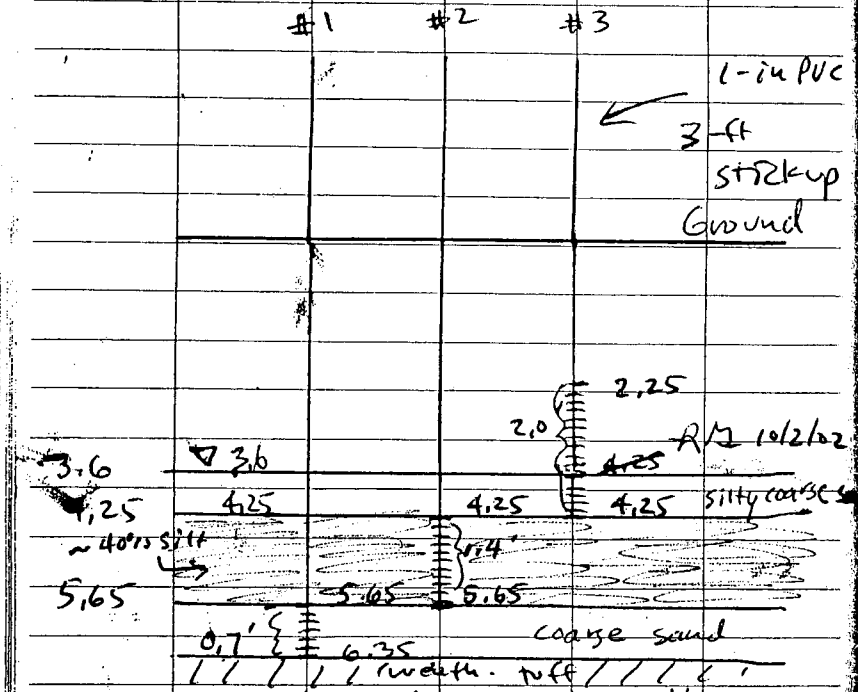


850 Move rig to DPB N-3C
859 Start drilling "
915 TD'd at 6.7 ft

(69)

10/2/02

DPBN - 3C design



935 Build and install wells

955 Move rig to DPBN-2C
Drill crew putting RR ties into stream channel to bridge it.

1035 Start drilling DPBN-2C

1055 Td at 8.70 ft
Build and install wells RJ

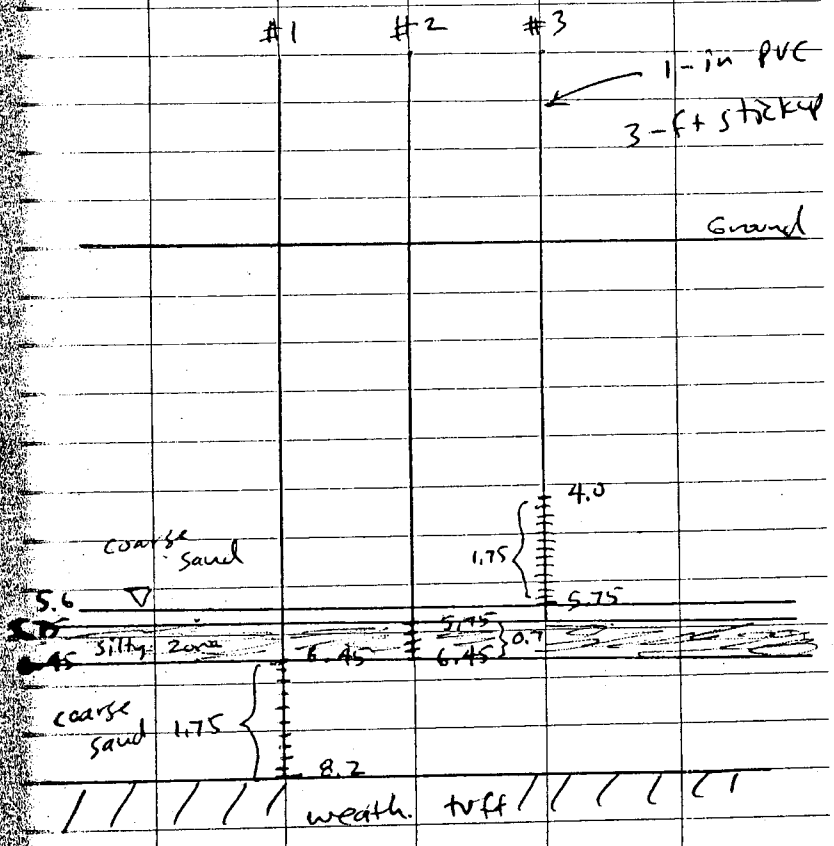
1120 Move rig to DPPN-~~1.5~~ 1.1

1130 Field team and crew to town for lunch

(70)

10/2/02

DPBN - 2C design



1300 Field team and crew back on-site

1314 Start Drilling DPPN-~~1.5~~ #1
1.1 RJ 10/2/01

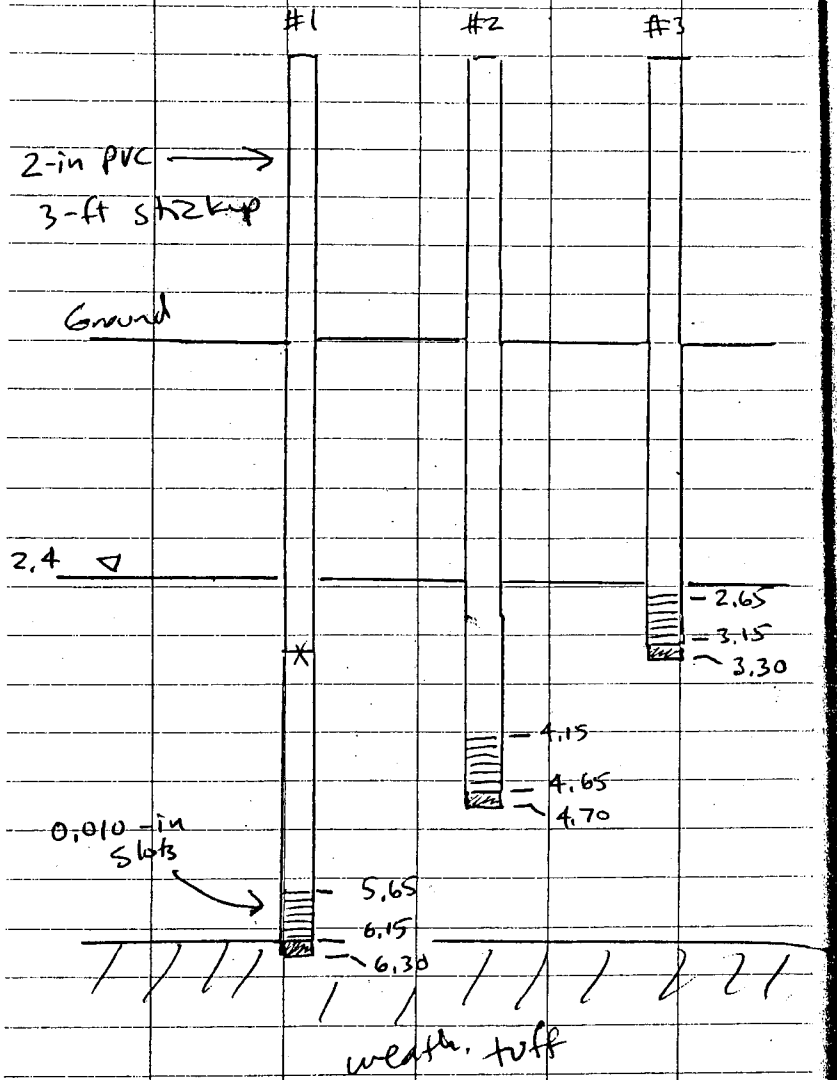
1330 Td'd at 6.7 ft

Build and install well

(71)

10/2/02

DPPN - 1.1 Design



10/2/02 (72)

1335 - Move rig 2 ft south to DPPN-1.1 #2

1340 - start drilling #2 hole

1355 - TD'd at 4.7 ft

1400 - Move rig 2 ft south to #3

1410 - start drilling #3 hole

- TD'd at ~~3 ft 4~~ 3.3 ft

build & install well

1420 move rig to DPW-4.95(A)

1445 Start drilling "

1505 TD'd at 8.25

only 0.4' of saturation in silt

1510 Move 6 ft north to drill DPW-4.95(B)

1517 start drilling DPW-4.95(B)

1531 TD'd at 6.9 ft

1535 Build and install well

1545 Leonard Manzanares (ESH-1) and Christopher Lovato (ESH-1) on-site to screen out waste and swipe drill rig.

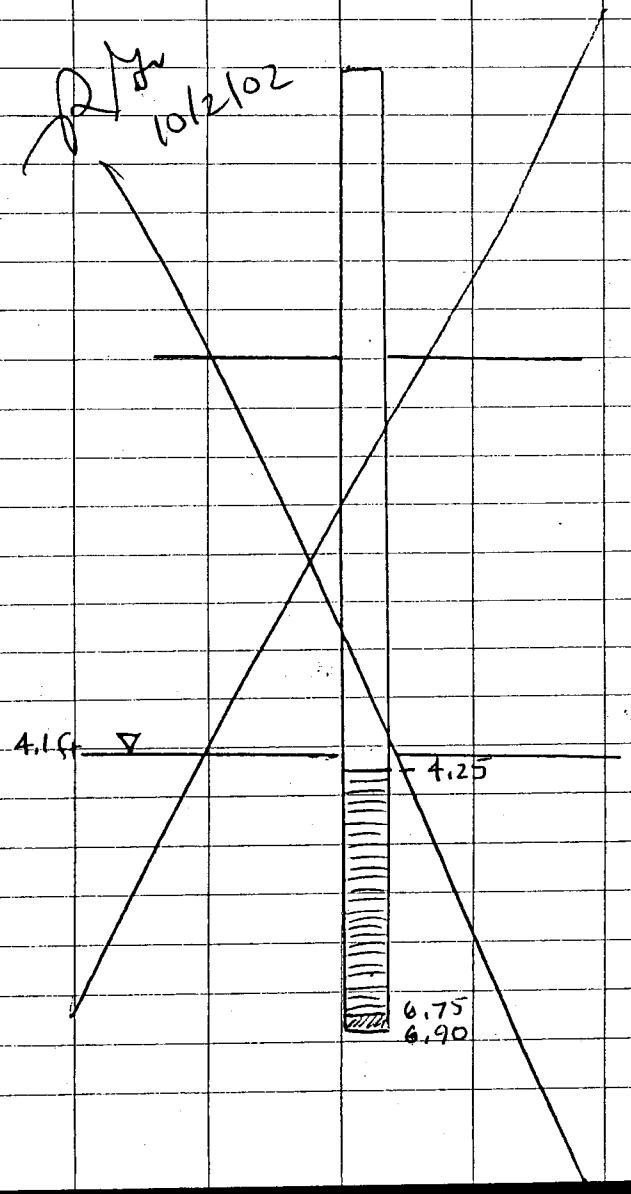
1620 L. Manzanares & C. Lovato off-site

1645 S. Purdue, C. Spzunar, Bob Gray off-site, Jim Jones off-site

S. P 10/2/02

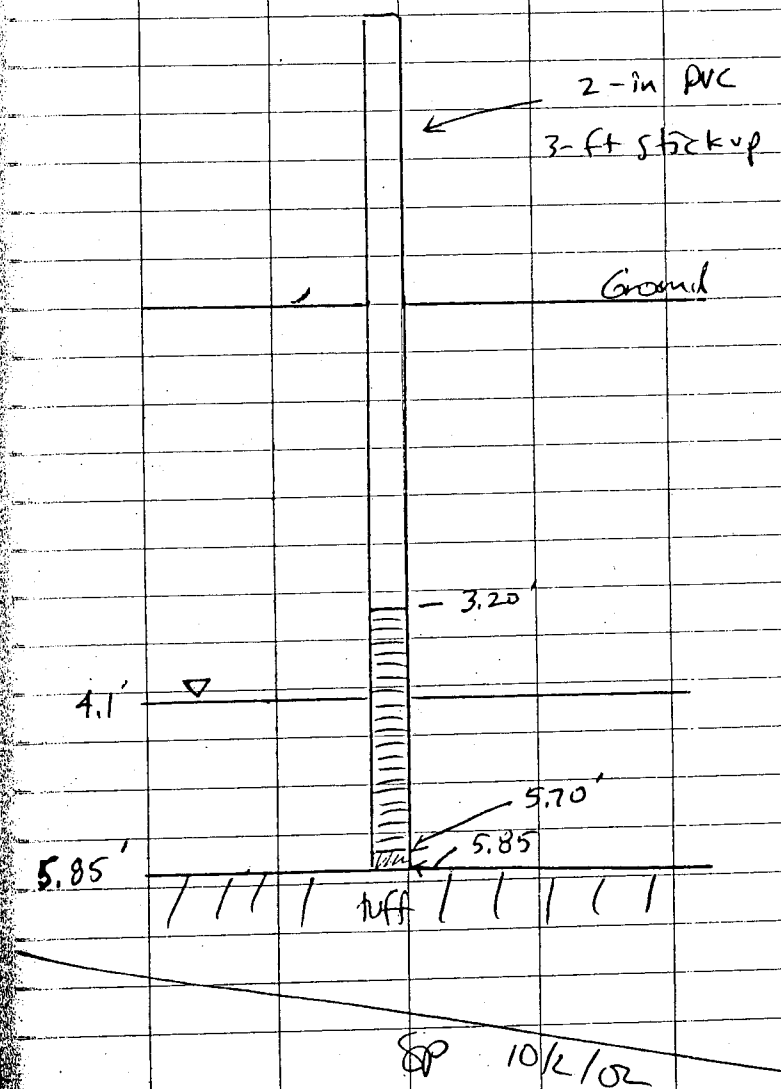
(73) 10/2/02

DPW - 4.9S design



10/2/02 (74)

DPW - 4.9S design



10/2/02

10/3/02

1000 S. Purdue (FSM), ~~A. Groffman (FDM)~~ SP 10/3/02, Chad Szpunar (lead driller), and Jim Jones (driller) on-site. DP Canyon to clean up site. Safety tailgate given by S. Purdue.

1100 Mob drill rig and extra casing to FSF. Drill Rig is on standby to wait for swipe results from ESH-1.

1400 S. Purdue hears from A. Groffman. Swipes have been completed, and Drill Rig is free to go.

Charles Unsell 10/3/02

(75) 10/3/02

1000 S. Purdue (FSM), ~~A. Groffman (EDR)~~ SP 10/3/02, Chad Szpuner (lead driller), and Jim Jones (driller) on-site DP Canyon to cleaning site. Safety tailgate given by S. Purdue.

1100 Mob drill rig and extra casing to FSF. Drill Rig is on standby to wait for swipe results from ESH-1.

1400 S. Purdue hears from A. Groffman. Swipes have been completed and Drill Rig is free to go.

Charles Trujillo 10/3/02

(76) 10/7/02

1130 S. Purdue and A. Baner on-site DP Canyon to take site and do site remediation. Safety tailgate given by S. Purdue.

1545 Mob to WGI office.

S. Purdue 10/7/02

(77)

10/8/02

815 S. Purdue and A. Banar on-site at DP Canyon for site Restoration.

Safety tailgate briefing given by S. Purdue.

827 Jared Lyman on-site. Jared briefed on safety tailgate.

930 Jared Lyman off-site.

1100 S. Purdue and A. Banar take loads to FSF and WGII storage.

S. P. 10/8/02

(78)

10/17/02

1335 - Jared Lyman & Bob Gray on site in DP Canyon to measure water levels and stickups.

1337 - download transducer in LAUE-1

1343 DPW-1S stickup = 3.00 ft
WL = 6.97 ft btoc; TD = 9.52' btoc

1346 DPBN-1A WL's:
#1 = 6.62' btoc; TD = 8.81' btoc
#2 = 6.69' btoc; TD = 7.82' btoc
#3 = 6.44' btoc; TD = 6.83' btoc
stickup = 3.00 ft

1355 DPBN-1B WL's
#1 = 7.25' btoc TD = 8.54' btoc
#2 = 7.18' btoc TD = 7.46 "
#3 = wet on bot TD = 6.35 ↓
stickup = 2.92 ft

1401 DPPN-1.1 WL = 7.19 all meas. = ft. btoc
#1 TD = 9.12
stickup = 3.0
#2 WL = 7.17
stickup *
TD = 7.90
#3 WL = dry
TD = 6.30

* - GLs vary - all 3 set level w/ #1

R. Gray 10/17/02

10/17/02

14:09 DPBN-2A
#1 WL = 7.66 TD = 8.39
#2 WL = 7.22 TD = 7.39
#3 WL = 6.31 TD = 6.40
Stickup = 2.9'

14:15 DPBN-3A
#1 WL = 8.13, TD = 10.06
#2 WL = 8.13, TD = 9.32
#3 WL = 7.49, TD = 8.30
(note - #3 full of mud)
stickup = 3.0'

14:25 DPBN-3B
#1 WL = 7.21 TD = 7.93
#2 WL = 6.64 TD = 7.07
#3 WL = 5.97 TD = 6.19
Stickup = 2.94 ft

14:35 DPW-3.5S
WL = 8.19
TD = ~~12.27~~ RA 10/17/02
12.26
Stickup = 3.0 ft

14:35 DPBN-4A
#1 WL = 7.12 TD = 9.96
#2 WL = 7.02 TD = 8.78
#3 WL = 6.77 TD = 7.51
Stickup = 2.54 RA 10/17/02

10/17/02

14:44 DPW-4.9S
TD = 8.85
stickup = 2.85
WL = 7.43

14:45 DPBN-5A
#1 WL = 6.20, TD = 8.56
#2 WL = 6.05, TD = 7.76
#3 WL = 6.02, TD = 7.0[illegible]
Stickup = 2.12

14:51 DPBN-6A
#1 WL = 7.81, TD = 10.29
#2 WL = 7.69, TD = 9.00
#3 WL = 7.58, TD = 7.78
#1 Stickup = 2.38 - 0.14
#2 Stickup = 2.38 - 0.18
#3 Stickup = 2.38 - 0.13
* note - all measurement on N. side

14:59 DPW-6.2S
WL = ~~dry~~ 1.27 10/17/02 7.34
TD = 8.66
Stickup = 3.50

15:03 DPBN-7A
#1 WL = 7.67 TD = 10.90
#2 WL = 7.70 TD = 9.41
#3 WL = 7.05 TD = 7.89
Stickup = 2.67 RA 10/17/02

(81) 10/17/02

15:08 DPW-7.15
TD = 11.30
stickup = 7.73
WL = 2.91

15:10 DPW-7.95
TD = 12.14
WL = 8.43
stickup = 3.10

15:12 DPPN-7.7
#1 WL = 9.46, TD = 10.45
stickup = 2.99
#2 WL = 6.12, TD = 8.71
stickup = 3.00
#3 WL = 5.90, TD = 7.17
stickup = 2.78
* note - GL varies - check later

15:16 DPW-7.95
TD = 10.73 stickup = 3.04
WL = 7.63

1518 DPBN-8A
#1 WL = 7.28, TD = 9.21
#2 WL = 7.29, TD = 8.10
#3 WL = ~~9~~7.29, TD = 8.02
A 10/17

stickup = 2.51
R [illegible] 10/17/02

10/17/02 (82)

#1 & #2 heights = Same
#3 height = +0.01'

15:22 DPBN-8B
#1 WL = 5.99, TD = 8.43
#2 WL = 5.94, TD = 7.90
#3 WL = 5.94, TD = 7.36
stickup = 2.23

15:29 DPW-7.4N
WL = 8.33
TD = 9.25
stickup = 2.96

15:32 DPBN-7B
#1 WL = 5.94, TD = 9.70
#2 WL = 5.96, TD = 8.69
#3 WL = 5.99, TD = 6.70
stickup = 2.90

15:43 DPBN-7C
#1 WL = 6.53, TD = 10.27
#2 WL = 6.53, TD = 9.30
#3 WL = 6.52, TD = 7.91
#1 stickup = 2.85
* note height of #1 = +0.01' from #2 and #2 = +0.01 from #3.

15:49 DPW-6.5N WL = 8.32
TD = 10.21, stickup = 3.00
R [illegible] 10/17/02

10/17/02

15:51 DPBN-6B
note weight #1 = +0.01 from #3
and #3 = +0.005 from #2
#1 WL = 6.86, TD = 9.21
#2 WL = 6.14, TD = 8.36
#3 WL = 6.16, TD = 7.12

15:55 DPBN-6C
#1 WL = 7.24, TD = 11.54
#2 WL = 7.20, TD = 10.17
#3 WL = 7.19, TD = 7.68
stickup = 2.88

15:59 DPBN-6D
#1 WL = 7.50, TD = 11.09
#2 WL = 7.57, TD = 9.09
#3 WL = dry, TD = 7.09
stickup = 2.85

16:03 DPBN-5.7N
#1 TD = 9.06, WL = 7.18
stickup = 3.00
#2 TD = 7.67, WL = 7.12
#3 TD = 6.07, WL = dry

16:06 DPW-5.7N TD = 10.81
WL = 7.99 stickup = 2.91

16:08 DPW-5.8N TD = 12.07
WL = 9.40 stickup = 3.07

R. Drury 10/17/02

10/17/02

16:11 DPBN-5B
#1 WL = 7.22, TD = 11.24
#2 WL = 7.18, TD = 9.53
#3 WL = 7.18, TD = 7.75
stickup = 2.88 - .31 = 2.57

16:15 DPBN-5C
#1 WL = 8.01, TD = 11.73
#2 WL = 8.00, TD = 11.25
#3 WL = 7.98, TD = 9.10
stickup = 2.94

16:19 DPPN-4.5N
#1 WL = 8.09 TD = 11.91
stickup = 3.00
#2 WL = 8.08 TD = 10.77
#3 WL = 7.57 TD = 7.66

16:21 DPW-4.6N
TD = 11.21 stickup = 3.05
WL = 8.99

16:24 DPW-4.4N
WL = 7.33 TD = 11.17
stickup = 2.94

16:26 DPBN-4B
#1 WL = 7.31, TD = 10.28
#2 WL = 7.30, TD = 9.01
#3 WL = 7.30, TD = 7.76
stickup = 2.81

R. Drury 10/17/02

(85) 10/17/02

16:30 DPBN-4C
#1 TD = 11.02, WL = 8.49
#2 TD = 10.04, WL = 8.48
#3 TD = 9.02, WL = 8.48
stickup = 2.50 for #1
2.49 for #2 & #3

16:33 DPW-3.5N
TD = 10.27
WL = 7.28
stickup = 2.95

16:35 DPW-3.2N
TD = 10.34, stickup = 3.04
WL = 12.05

16:37 DPBN-3C
#1 WL = 7.31, TD = 9.46
#2 WL = 7.31, TD = 8.77
#3 WL = 7.16, TD = 7.37
stickup = 2.80

16:40 DPBN-2B
#1 WL = 6.74, TD = 8.68
#2 WL = 6.72, TD = 7.33
#3 WL = 5.66, TD = 5.77
stickup = ~~2.50~~ 10/17 3.00

R Gross
10/17/02

10/17/02 (86)

16:44 DPBN-2C
#1 WL = 7.95 TD = 11.33
#2 WL = 7.95, TD = 9.59
#3 WL = 7.92, TD = 8.96
stickup = 2.88

16:46 DPBN-1C
#1 WL = 7.18, TD = 9.13
#2 WL = 7.18, TD = 7.63
#3 WL = 6.61, TD = 6.71
stickup = 2.86

16:48 DPW-1.1N
TD = 11.57
stickup = 2.97
WL = 8.70

16:50 DPW-1N
TD = 8.73
SU = 2.83
dry

16:55 - Depart field

R Gross
10/17/02

11/11/02

820 S. Purdue calibrates YSI 63 SN01C0004 AD.
pH calibrated with pH 4.00 buffer solution Lot. No. 011795-24 Exp. date 12/03, and pH 7.00 buffer solution Lot. No. 024523-24 Exp. date 03/04.
Specific conductance checked with YSI 3161 Conductivity Calibrator 1000 µS/cm, Lot. No. 02A0608, Exp. 01/03.
Meter reads 1000 µS/cm in 1000 µS/cm solution.
Meter reads pH 7.00 in pH 7.00 solution, pH 4.00 in pH 4.00 solution.

850 S. Purdue (PMC) and Clancy Pigman (OBSI) on-site DPCanyon
Safety tailgate meeting held.
Today's goals: take water level readings and begin development.

1130 Complete taking water levels.

1145 Lunch Break - off site.

11/11/02

1230 S. Purdue + C. Pigman on-site.
Prepare to develope wells.
Prepare to develope DPBN-1A.

1300 Begin Well Development.

1640 Complete purging 3 casing volumes from:
DPW-1S
DPBN-1A #1
DPBN-1A #2
DPBN-1A #3
DPBN-1B #1
DPBN-1B #2
DPBN-1B #3
DPBN-1C #1
DPPN-1.1 #1
DPPN-1.1 #2
DPPN-1.1 #3
DPBN-2A #1.
Pack-up equipment and mob to WCI office.

1650 Off-site.

S. Purdue
11/11/02

11/12/02

740 S. Purdue and C. Pigman calibrate YSI 63 SN01C0004AD. pH calibrated with pH-4.00 buffer solution, pH 4.00 Lot No. 011795-24, exp. date 12/03. pH 7.00 buffer solution, lot No. 024523-24 Exp. date 03/04. Meter reading 7.02 in 7.00 solution, 4.00 in 4.00 solution.

815 S. Purdue and C. Pigman on-site DP Canyon. Today's goals: continue purging 3 casing volumes from each piezometer and take parameters. Safety tailgate held.

1145 Off-site for lunch.

1230 Mob to FSF for secondary containments for drums.

1300 S. Purdue, C. Pigman, A. Groffman on-site. A. Groffman is briefed on safety tailgate meeting.

1320 C. Pigman off-site to pick-up drums at FSF.

1415 C. Pigman on-site.

1430 A. Groffman off-site.

1615 Pack-up / Clean-up for the day

1625 S. Purdue and C. Pigman off-site.

Today we purged 3 casing volumes from the following wells.

DPBN-2A #2	DPBN-4A #1
DPBN-2A #3	DPBN-4B #2 sp 11/12/02
DPBN-2B #1	DPBN-4A #3
DPBN-2B #2	
DPBN-2B #3	
DPBN-2C #1	
DPBN-2C #2	
DPBN-2C #3	
DPBN-3A #1	
DPBN-3A #2	
DPBN-3A #3	SP
DPBN-3B #1	11/12/02
DPBN-3B #2	
DPBN-3B #3	
DPW-3.2 N	
DPW-3.5N	
DPW-3.5S	

(91) 11/13/02

720 C. Pigman calibrates YSI 63 SN 01C0004 AD with pH 4.00 buffer solution, Lot. No. 011795-24 Exp. date 12/03, pH 7.00 buffer solution, Lot No. 024523-24, Exp. date 03/04.

SP 11/13/02 ~~Specific Cond. checked with YSI 3161 Conductivity Calibrator~~

800 S. Purdue and C. Pigman on-site DP Canyon. Safety tailgate meeting held. Today's goals: Continue purging 3 casing volumes and take parameters.

1140 A. Groffman on-site

1200 S. Purdue + C. Pigman off-site for lunch.

1245 S. Purdue + C. Pigman on-site.

1640 All field personnel off-site. See Well Development forms for daily activities.

S. Purdue 11/13/02

11/14/02 (92)

730 C. Pigman calibrates YSI 63 S/N 01C0004 AD with pH 4.00 buffer solution, Lot No. 011795-24, exp. date 12/03, pH 7.00 buffer solution, Lot. No. 024523-24, Exp. date 03/04. Meter reads 7.01 / in 7.00 solution, 4.00 in 4.00 solution.

745 Mob to site.

755 S. Purdue and C. Pigman on-site DP Canyon. Safety tailgate meeting held. Today's goals: continue bailing piezometers and taking parameters.

1145 S. Purdue and C. Pigman off-site.

1300 C. PIGMAN BACK ON SITE

1315 A. GROFFMAN ON SITE

1710 ALL FIELD PERSONEL OFF SITE

Clarence Pigman 11/14/02

11/15/02

945 S. Purdue calibrates YSI 63 SN 01C0004AD with pH 4.00 buffer solution Lot. No. 011795-24 Exp. date 12/03. pH 7.00 buffer solution Lot No. 024523-24 Exp. date 03/04. Meter reads 7.00 in 7.00 solution and 4.00 in 4.00 solution.

1045 S. Purdue, C. Pigman on-site DP Canyon. Safety tailgate meeting held. Today's goals, continue bailing/purging piezometers and collecting parameters.

1100 Armand Groffman on-site. Discuss plans for next week.

1110 A. Groffman off-site.

1615 S. Purdue and C. Pigman off-site.

SP.

11/15/02

11/18/02

800 S. Purdue calibrates YSI 63 SN 01C0004AD and YSI 63 SN 01C0004AA with Orion pH buffer solutions. pH 7.00 lot No. 910760, Exp. date 04/03, pH 4.00 lot. No. 910460, exp. date 06/03. YSI 63 SN 01C0004AD reads 4.00 in 4.00, 7.00 in 7.00. YSI 63 SN 01C0004AA reads 3.99 in 4.00 and 7.00 in 7.00. Conductivity calibrated on both meters with YSI 3161 Conductivity Calibrator 1000 us/cm. Lot No. 02A0608 Exp. date 01/2003. Both meters reading 1000 us/cm in 1000 us/cm solution.

S. Purdue and C. Pigman load up vehicle and mob to FSF for supplies.

900 S. Purdue and C. Pigman on-site DP Canyon. Safety tailgate meeting held. Perform water level measurements.

SP. 11/18/02

(95) 11/18/02

1040 S. Purdue calibrates Oxi 330i Ser. Num. 01340040 with OxiCal-SL calibration vessel. Slope = 0.80
S. Purdue and C. Pigman take D.O. measurements with Oxi 330i.

1110 Bob Gray and Armand Groffman on-site.
Safety tailgate briefing.

1150 S. Purdue and C. Pigman off-site.

1240 Bob Gray off-site

1310 S. Purdue and C. Pigman on-site.

1330 Armand Groffman off-site.

1645 S. Purdue and C. Pigman off-site.

S. Purdue
11/18/02

11/19/02 (96)

730 C. Pigman calibrates YSI 63 SN ~~01340040~~ 01C0004AD and YSI 63 SN 01C0004AA with Orion pH buffer solutions pH 7.00 Lot. No. ~~024523-24~~ 910760 Exp. date 04/03 and pH 4.00 Lot No 910460 Exp date 06/03.
Both meters reading 4.00 in 4.00 solution, 7.00 in 7.00 solution.
Conductivity was calibrated yesterday, and does not need to be done on a daily basis.

815 S. Purdue and C. Pigman on-site DP Canyon.
Safety tailgate meeting held.
Today's goals: continue pumping piezometers and taking parameters.

1140 S. Purdue and C. Pigman off-site.

1245 S. Purdue and C. Pigman on-site.

(97) 11/19/02

1330 A. Groffman on-site.
1340 Jared Lyman and Robert Budd on-site. Safety tailgate briefing held.
A. Groffman briefs Jared Lyman and Robert Budd on SSHASP 280, and current project activities.
1640 S. Purdue, C. Pigman, A. Groffman, R. Budd, and Jared Lyman off-site.

S. Purdue 11/19/02

C. PIGMAN 11/20/02 (98)

0750 CALIBRATE pH/E.C. METERS YSI 63 SN016000 4AD & YSI 63 SN01C000 4AA WITH FISHER BUFFER SOLUTIONS
pH 7.00 LOT 026464-24 EX DATE 4/2004
pH 4.00 LOT 624520-24 EX DATE 3/2004
pH 10.0 LOT 011794-24 EX DATE 12/2003
CONDUCTIVITY CALIBRATED ON BOTH METERS W/ YSI 3161 CONDUCTIVITY CALIBRATOR 1000 µs/cm LOT 00 02A0608 EX DATE 01/2003 BOTH METERS READ 1000 µs/cm ON 11/19/02
S. PURDUE & C. PIGMAN LOADED VEHICLE AND MOVE TO FSF FOR CHARGED BATTERY
0820 C. PIGMAN ON SITE IN DP CRYN W/ EQUIPMENT
0930 ROBERT BUDD ON SITE
1200 C. PIGMAN & R. BUDD OFF SITE
1300 C. PIGMAN ON SITE
1320 ROBERT BUDD ON SITE

(99) 11/20/02 C. PIGMAN

1415 Armand Groffman on site

1522 Loaded 10 cells into DLMS rod and inserted into DPW-5.7N with two extentions. ▽ at 6.71 ft btoc, H_2O column is 4.03 ft.

1541 Deployed a 12-cell DMLS rod at DPW 4.4N, H_2O column measured at 5.23 Ft (11/11/02 data).

1610 Deployed a 11-cell DMLS rod at DPW 3.5N, H_2O column in the well is 4.29 Ft (11/17/02 data-▽).

1620 C. PIGMAN, R. BUDD, & A. GROFFMAN OFF SITE

1655 CHK pH METERS AGAINST 8.00 CAL SOL, SN 01C0004AA READS 8.08, SN 01C0004AD READS 7.91 @ 15.0°C
8.00 CAL SOL LOT NO. 024664-18
EXP. DATE 10/2003

Chris Pigman

C. PIGMAN 11/21/02 (100)

0730 CALIBRATE pH METER
YSI 63 SN 01600 04AD &
YSI 63 SN 01C000 4AA
FISHER BUFFER SOLUTIONS
pH 7.00 LOT 026464-24
EX DATE 4/2004
pH 4.00 LOT 024520-24
EX DATE 3/2004
pH 10.00 LOT 011794-24
EX DATE 12/2003
CONDUCTIVITY ON BOTH METERS CALIBRATED ON MON 11/19/02 USING YSI CONDUCTIVITY CALIBRATOR 1000 µs/cm LOT NO 0CAD608
EX DATE 01/2003

0805 C. PIGMAN ON SITE

0835 R. BUDD ON SITE

1135 R. BUDD OFF SITE

1150 C. PIGMAN OFF SITE

1300 C. PIGMAN BACK ON SITE

1340 A. GROFFMAN & R. BUDD ON SITE

1415 Deployed a 9-cell DMLS rod in well DPW-7.9S H_2O column is 3.60 ft as of 11/18/02. All cells filled with DI H_2O.

11/21/02

1448 Deployed a 11-cell DMLS rod at DPW 7.1S. H_2O column at this time is 4.63 ft, measured on 11/18/02.

1558 Deployed a 10-cell rod at DPW-1S. H_2O levels recorded 11/18/02 were 5.52 ft btoc, H_2O column at 4.00 ft.

1600 R. Budd, C. Pigman, and A. Groffman off site.

ARG
11/21/02

11/25/02

745 S. Purdue calibrates YSI 63 SN 01C0004 AD with Fisher 7.00 & 4.00 buffer solutions.
pH 7.00 Lot No. 026464-24
Exp. date 07/04
pH 4.00 Lot No. 074520-24
Exp. date 03/04
Calibrate Oxi 330i D.O. meter with OxiCal-SL calibration vessel.
Slope = 0.78.

810 S. Purdue and C. Schultz load truck & mob to DP Canyon.

830 On-site DP Canyon. Safety tailgate meeting given by S. Purdue.
Today's goals: take water level measurements and D.O. readings on all piezometers, and pump/develop DPBN-2B.

1340 Today's goals have been met. S. Purdue & C. Schultz off-site.
S. P. 11/25/02

(103) 12/2/02

830 S. Purdue calibrates Oxi 330i D.O. meter with ~~Oxi-Cal~~ ~~Dx.Cas~~ OxiCal-SL Calibration vessel.
Slope = 0.80.

915 S. Purdue and A. Banar on-site DP Canyon.
Safety tailgate meeting held.
Today's goals: take water levels and D.O. readings.

1250 S. Purdue and A. Banar off-site.

S. Purdue
12/02/02

12/9/02 (104)

800 S. Purdue calibrates Oxi 330i D.O. meter with OxiCal-SL Calibration vessel.
Slope = 0.90

830 S. Purdue and C. Schultz on-site DP Canyon.
Safety tailgate meeting held.
Today's goals: take water level measurments and D.O. readings.

1210 S. Purdue and C. Schultz off-site.

S. Purdue
12/9/02

745 S. Purdue calibrates Orion 250 A S/N 014869 with Fisher pH 4.00 Buffer Solution Lot. No. 024520-24 Exp. date 03/04 and Fisher pH 7.00 Buffer Solution Lot. No. 026464-24, Exp. date 07/04. Meter reads 4.00 in 4.00 solution. Meter reads 7.00 in 7.00 solution. Slope 101.5. Load vehicle and mob to SMO for cooler, ice, and preservatives.

930 S. Purdue on-site DP Canyon.

940 A. Groffman (FTC) and Robert Budd on-site. Safety tailgate meeting given by S. Purdue.

1010 Begin Sampling DPW-7.9S.

1110 Complete Sampling DPW-7.9S

1115 Begin Sampling DPW-7.1S.

1210 Complete Sampling ~~DD~~ 12/18/02 DPW-7.1S.

1220 S. Purdue, A. Groffman and R. Budd off-site for lunch / getting supplies.

1300 S. Purdue, A. Groffman on-site.

1330 R. Budd on-site.

(1315) Begin Sampling DPW-5.7N

1415 Complete Sampling DPW-5.7N

1420 Begin Sampling DPW-4.4N

1454 Complete Sampling DPW-4.4N

1515 S. Purdue and A. Groffman mob to SMO to preserve samples and submit to SMO. R. Budd off-site.

1630 Submit samples to Joylene Valdez at SMO.

1640 A. Groffman off-site.

1655 S. Purdue mobs to WGI office to unload truck.

S. Purdue 12/18/02

12/19/02

715 S. Purdue Calibrates Orion 250 A SN 014869 with Fisher pH buffer solutions:

pH 4.00 Lot No. 024520-24 Exp. 03/04

pH 7.00 Lot No. 026964-24 Exp. 07/04

pH 10.00 Lot No. 011794-24 Exp. 12/03

Meter reads 4.00 in 4.00, (slope 99.1) 7.01 in 7.00, 10.01 in 10.00.

S. Purdue loads truck and mobs to DP Canyon.

800 S. Purdue and A. Groffman on-site. Safety Tailgate meeting held.

810 Begin Sampling DPW-3.5N, we will fill syringes and take to trailer for processing due to very cold weather.

825 Complete collecting from DPW-3.5N. A. Groffman off-site.

12/19/02

S. Purdue wait in truck for R. Budd to be on-site. Fill out sample paperwork.

845 R. Budd on-site - Briefed on S.T. Begin collecting DPW-1S.

900 Complete collecting DPW-1S. Mob to SMO.

920 On-site at SMO Sample Prep trailer to filtr, preserve samples, and fill out paperwork + take pH readings.

1125 Submit Samples to Soylene Valdez at SMO.

1130 Pick up yesterday's METALS and Anions samples to deliver to Dale Counce at EES-6.

1145 Dale Counce is not in her office. Relinquish Samples to Steve Chipera. He will relinquish samples to Dale Counce.

1155 Mob back to SMO to meet Bob Gray. Rob off-site.

12/19/02 (1320 S. Purdue & B. Gray on-site) DPCampbell

13:42 Measured WL's in DPPN-4.5N

#3 = 6.82 ft btoc

TD = 7.68

1430 Install mini troll # 8901 in DPPN-4.5N #3

~~Start test~~ @ 12/19/02

Set level reference to 6.82 ft TOC

Start test DP4.5N #3 @ 121902

Install Minitroll #5615 in DPPN-4.5N #2

Set level reference to 6.87 = ft TOC

Start test DP4.5N #2 @ 121902

Install Minitroll # 8866 in DPPN-4.5N #1

Set level reference to 6.88 ft TOC

Start test DP4.5 #1 @ 121902

15:10 Installed miniTrolls in DPPN-1.1

Connect to #8935 in DPPN-1.1 #3

meas. WL = 5.85' btoc

Set level reference

Start test ~~DP1.1~~ DPPN1.1 #3 @ 121902 @ 12/19/02

12/19/02 @ 12/19/02

Connect to # 8932 in DPPN-1.1 #2

meas. WL = 5.83' btoc

15:21 start test DPPN1.1 #2 @ 121902

15:22 connect to # 8876 in DPPN1.1 #1

meas. WL = 5.85' btoc

15:30 start test DPPN1.1 #1 @ 121902

15:32 reconnect to # 8935 in #3 to reset clock - delete test.

15:33 Start new test DPPN1.1 #3 @ 121902

1545 S. Purdue and B. Gray off-site.

S. Purdue 12/19/02

12/23/02

730 S. Purdue and C. Schultz have safety tailgate briefing and mob to DP Canyon for water level measurements and D.O. measurements.

815 On-site DP Canyon.

820 Begin taking water level measurements.

930 Complete water level measurements

940 Attempts to calibrate Oxi 330 D.O. meter were unsuccesful.

945 Mob to SMO to calibration trailer to bring supplies to office that should not freeze over the break.

1015 S. Purdue and C. Schultz on-site at UGI/PMC office to attempt to calibrate D.O. meter.

1035 D.O. meter will not calibrate. Meter is reading 0.31 mg/L O_2, should be reading around 0.8 mg/L.

12/23/02

S. Purdue called A. Groffman at 10:15 to see if he has any suggestions for calibration.

S. Purdue
12/23/02

1/6/03

800 S. Purdue and A. Banar replace membrane on Oxi 330i D.O. Meter SN 01340040.

930 Calibrate Oxi 330i D.O. Meter with Oxi-Cal-SL calibration vessel.

Mob to SMO/FSF for transducer.

1030 S. Purdue and A. Banar on-site DP Canyon. Safety tailgate meeting given by S. Purdue.

1040 Begin taking water level measurements.

1130 Complete water level measurments.

1150 Begin D.O. measurements.

1340 Complete D.O. Measurements.

1350 Replace transducer in LAUZ-1. (See "Alluvial well Probes #2 ER-2001-0088 Vol. 2) for transducer information

1405 S. Purdue and A. Banar off-site.

S.P. 01/06/03

745 S. Purdue calibrates YSI 63 SN 01C0004 AA, with pH 7.00 buffer solution, Lot. No. 026464-24, Exp. 07/04 & pH 4.00 buffer solution Lot. No. 024520-24, Exp. 03/04 Meter is reading 7.01 in 7.00 solution, 3.98 in 4.00 solution. Conductivity checked with YSI 3161 Conductivity Calibrator Lot. No. 02A0608, Exp. 01/03. Experation date is 01/03, so conductivity was also checked with 1413 µS/cm Oakton Standard solution, Lot No. 2206185 Exp. 05/03. Meter reads 1413 µS in 1413 µS/cm solution.

830 Load truck + mob to SMO for more equipment.

945 On-site DP Canyon. (S. Purdue, A. Banar) Safety tailgate given by S. Purdue. Prepare to sample DPW-1S for standards.

1004 DTW = 6.46 ft TOC

01/07/03

TD = 9.52 ft TOC

$\frac{0.17^2 (3.14)}{4} (9.52 - 6.46) \times 7.48 =$

(0.02669) = 0.61

One ~~bore~~ casing volume = 0.61 gallons

Three casing volumes = 1.83 gallons

1010 Begin purging DPW-15

Time	pH	Temp. °C	Cond. (µS/cm)	gallons
1020	6.45	5.2	1216	0.75
1023	6.61	5.1	1235	1.25
1025	6.74	5.1	1233	1.50
1028	6.90	5.2	1232	1.75
1030	6.95	5.1	1234	2.00
1033	6.96	5.2	1235	2.25

1035 Begin collecting 5 gallons for standards.

1123 Complete collecting sample.

1130 Mob to W&II office.

1300 Mob to SMO to drop off equipment. Sample locked in sample trailer.

1345 Return to office.

S. Purdue

01/07/03

715 S. Purdue calibrates YSI 63 SN 01C0004 AA with

pH 7.00 Lot. No 026464-24

Meter reads 7.01/7.00 Exp. date 07/04

pH 10.00 Lot. No. 011794-243

meter reads 10.01/10.00 Exp. date 12/03

pH 4.00 Lot. No. 024520-24

meter reads 3.99/4.00 Exp. date 03/04

S. Purdue loads truck & mobs to SMO for more equipment

800 S. Purdue on-site DP Canyon.

810 Robert Budd on-site.

S. Purdue gives safety tailgate briefing.

Prepare to take samples, discuss today's goals.

8:30 DPBN-1B #2 DTW = 6.82 FT TOC

TD = 7.48 FT TOC

835 Begin Purging DPBN-1B #2

850 Recharge is very slow - we have purged ~200 mL in 15 minutes. S. Purdue calls A. Groffman, but does not reach him. We will move to the next well to

wait for his call.
900 DPW-3.2N DTW = 9.89 ft TOC
TD = 12.06 ft TOC
905 Begin Purging DPW-3.2N.
917 Collect Sample #CADP-03-50364
at DPW-3.2N.
922 Complete collecting Sample.
925 Mob to DPBN-5B.
934 DPBN-5B #2
1/14/03 ~~DPW~~ DTW = 6.65 ft TOC
TD = 9.56 ft TOC
940 Begin Purging DPBN-5B #2
951 Complete Purging.
955 Collect Sample #CADP-03-50365
from DPBN-5B #2.
Mob to DPBN-4A #2.
1024 Begin Purging DPBN-4A #2
1029 Complete purging DPBN-4A #2
1030 Collect Sample #CADP-03-50366.
1035 Complete Collecting Sample 1/14/03
1040 Mob to DPBN-1B ~~#2~~ #1
1045 Begin Purging DPBN-1B #1
Recharge is very slow.
1110 Collect Sample DPBN-1B #1
#CADP-03-50367.

1130 Complete Collecting
CADP-03-50367
1135 Mob to DPW-6.2S
1136 DTW = 6.72 ft TOC
TD = 8.56 ft TOC.
1137 Begin Purging DPW-6.2S
1145 Complete Purging / collect
Sample #CADP-03-50368.
1148 Complete collecting sample.
Mob to DPBN-7B #2.
1200 DPBN-7B #2
DTW = 5.32 TD = 8.73
1202 Begin Purging DPBN-7B #2
1210 Collect sample CADP-03-50369
1215 A. Groffman on-site.
J. Lyman on-site
1225 R. Budd & A. Groffman
offsite. J. Lyman briefed
on safety tailgate.
1250 DPW-7.4N DTW = 7.88 ft TOC
TD = ~~9.81~~ 9.27 ft TOC 1/14/03
1300 Begin Purging DPW-7.4N
1310 Collect Sample #CADP-03-50370
1320 Mob to DPBN-8A.

1/14/03

1335 DPBN 8A#2 DTW = 6.83 ft TOC
TD = 8.71 ft TOC

1337 Begin Purging

1345 Collect Sample #CADP-03-50371 from DPBN-8A #2.

Mob to E039 to collect surface water from DP Canyon Surface stream.

Parameters:

pH 7.19 Conductivity 458 µS/cm

Temp. 1.0°C

Specific Conductance would not read. Reading above is conductivity at 1.0°C

1400 Collect Sample from E039 Sample # CADP-03-50372 at location ID # DP-03-2165I.

1410 Do final Decon of pump tubing and pack-up field equipment.

1450 Mob to Sample trailer to preserve samples.

1525 Submit Samples to K. Greene at SMO.

1530 J. ~~Lyam~~ Lyman and R. Budd

1/14/03

Submit Samples to Barbara Zeleny at ARS.

1540 S. Purdue Mobs to WCI office to unload supplies.

S. Purdue
1/14/03

1/15/03

740 S. Purdue Calibrates YSI 63 S/N 01C0004 AA with pH 7.00 buffer solution Lot. No. 026464-24 Exp. 03/04
pH 4.00 buffer Solution Lot No. 024520-24 Exp. 03/04
pH 10.00 buffer Solution Lot No. 011794-23 Exp. 12/03
Meter reads 4.00/4.00/7.01/7.00/10.01/10.00.

800 S. Purdue and R. Budd mob to LA Canyon for hike to DP Spring.

820 Safety tailgate given by S. Purdue.

915 Begin Collecting sample #CADP-03-50373 from DP Spring, Loc. ID 21-01854.

1100 Complete collecting water from DP Spring. Water collected from dripping icecles. We will filter and preserve at sample trailer.

1130 On-site at Sample

trailer. Sample is filtered and preserved. S. Purdue will return later to take parameters from melted ice.

1150 R. Budd takes Radvan cut to ARS.

1300 S. Purdue collects parameter measurements of melted ice-water from DP Spring.
pH 6.36 Ec (Specific Conductance = ~~26~~ 236 µS/cm) SP 1/15/03
Temp. 6.3°C

1320 Submit sample to Joylene Valdez at SMO.

1330 Mob to WCI office.

S. Purdue 1/15/03

Charles Emmrich 1/17/03

ER Records Package Transmittal Form

Section I — Records Transmitter Information: (Completed by Records Transmitter.)

Name: Lisa Gomez

Package transmittal date: 2/4/03

TA:

Organization: Washington Group International

Electronic file(s) transmitted? ☐ Yes ☑ NA

OU:

Z number: 151728 Phone: 662-1303

Privileged record? ☐ Yes ☑ No

Focus area: Canyons

Is this record package transmittal (check one)

☒ an addition to a previous package? Include number: 680

☐ a new package?

Records package number: _____ (RPF use only)

PRS(s):

Is a reconciliation report requested? ☒ Yes ☐ No

Records package title: DP Canyon Tracer Study

Record Package Table of Contents

File Folder Name	Record Title or Subject (Limited to 255 characters)	Doc. Date	Author/Originator	Page Count	ER ID #
1 (This row RPF use only.)					
2 (This row RPF use only.)					
3	DP Canyon Tracer Study Field Notebook #4932-4866 Copies Pages 1-77	9/17/02 – 10/08/02	Robert Gray	42	

Section II (Completed by RPF personnel only.)

Name: _____ (Print Name) _____ (Date)

QP-4.4, R1, ICN2

Los Alamos
Environmental Restoration Project

********** DO NOT WRITE IN SECTION I, LINES 1 AND 2. FOR LANL RPF USE ONLY **********
START WITH LINE 3 AND USE CONTINUATION SHEET IF NECESSARY

ER Records Package Transmittal Continuation Form

Section I (Completed by record transmitter.)
Enter the previous record package number, 680, or the new records package title: DP Canyon Tracer Study

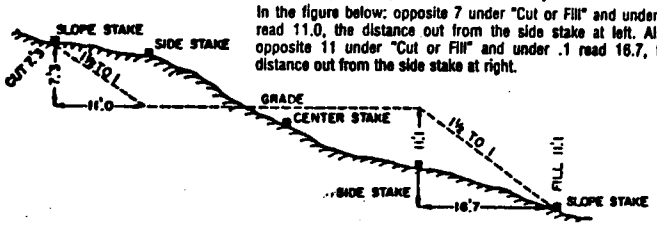
Record Package Table of Contents

File Folder Name	Record Title or Subject (Limited to 255 characters.)	Doc. Date	Author/Originator	Page Count	ER ID # (RPF Use Only)
	DP Canyon Tracer Study Field Notebook #4932-4866 Copies Pages 78-122	10/8/02-1/15/03	Shannon Purdue	23	

DISTANCES FROM SIDE STAKES FOR CROSS-SECTIONING

Roadway of any Width. Side Slopes 1½ to 1.

In the figure below: opposite 7 under "Cut or Fill" and under .3 read 11.0, the distance out from the side stake at left. Also, opposite 11 under "Cut or Fill" and under .1 read 16.7, the distance out from the side stake at right.



Cut or Fill	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	Cut or Fill
	Distance out from Side or Shoulder Stake										
0	0.0	0.2	0.3	0.5	0.6	0.8	0.9	1.1	1.2	1.4	0
1	1.5	1.7	1.8	2.0	2.1	2.3	2.4	2.6	2.7	2.9	1
2	3.0	3.2	3.3	3.5	3.6	3.8	3.9	4.1	4.2	4.4	2
3	4.5	4.7	4.8	5.0	5.1	5.3	5.4	5.6	5.7	5.9	3
4	6.0	6.2	6.3	6.5	6.6	6.8	6.9	7.1	7.2	7.4	4
5	7.5	7.7	7.8	8.0	8.1	8.3	8.4	8.6	8.7	8.9	5
6	9.0	9.2	9.3	9.5	9.6	9.8	9.9	10.1	10.2	10.4	6
7	10.5	10.7	10.8	11.0	11.1	11.3	11.4	11.6	11.7	11.9	7
8	12.0	12.2	12.3	12.5	12.6	12.8	12.9	13.1	13.2	13.4	8
9	13.5	13.7	13.8	14.0	14.1	14.3	14.4	14.6	14.7	14.9	9
10	15.0	15.2	15.3	15.5	15.6	15.8	15.9	16.1	16.2	16.4	10
11	16.5	16.7	16.8	17.0	17.1	17.3	17.4	17.6	17.7	17.9	11
12	18.0	18.2	18.3	18.5	18.6	18.8	18.9	19.1	19.2	19.4	12
13	19.5	19.7	19.8	20.0	20.1	20.3	20.4	20.6	20.7	20.9	13
14	21.0	21.2	21.3	21.5	21.6	21.8	21.9	22.1	22.2	22.4	14
15	22.5	22.7	22.8	23.0	23.1	23.3	23.4	23.6	23.7	23.9	15
16	24.0	24.2	24.3	24.5	24.6	24.8	24.9	25.1	25.2	25.4	16
17	25.5	25.7	25.8	26.0	26.1	26.3	26.4	26.6	26.7	26.9	17
18	27.0	27.2	27.3	27.5	27.6	27.8	27.9	28.1	28.2	28.4	18
19	28.5	28.7	28.8	29.0	29.1	29.3	29.4	29.6	29.7	29.9	19
20	30.0	30.2	30.3	30.5	30.6	30.8	30.9	31.1	31.2	31.4	20
21	31.5	31.7	31.8	32.0	32.1	32.3	32.4	32.6	32.7	32.9	21
22	33.0	33.2	33.3	33.5	33.6	33.8	33.9	34.1	34.2	34.4	22
23	34.5	34.7	34.8	35.0	35.1	35.3	35.4	35.6	35.7	35.9	23
24	36.0	36.2	36.3	36.5	36.6	36.8	36.9	37.1	37.2	37.4	24
25	37.5	37.7	37.8	38.0	38.1	38.3	38.4	38.6	38.7	38.9	25
26	39.0	39.2	39.3	39.5	39.6	39.8	39.9	40.1	40.2	40.4	26
27	40.5	40.7	40.8	41.0	41.1	41.3	41.4	41.6	41.7	41.9	27
28	42.0	42.2	42.3	42.5	42.6	42.8	42.9	43.1	43.2	43.4	28
29	43.5	43.7	43.8	44.0	44.1	44.3	44.4	44.6	44.7	44.9	29
30	45.0	45.2	45.3	45.5	45.6	45.8	45.9	46.1	46.2	46.4	30
31	46.5	46.7	46.8	47.0	47.1	47.3	47.4	47.6	47.7	47.9	31
32	48.0	48.2	48.3	48.5	48.6	48.8	48.9	49.1	49.2	49.4	32
33	49.5	49.7	49.8	50.0	50.1	50.3	50.4	50.6	50.7	50.9	33
34	51.0	51.2	51.3	51.5	51.6	51.8	51.9	52.1	52.2	52.4	34
35	52.5	52.7	52.8	53.0	53.1	53.3	53.4	53.6	53.7	53.9	35
36	54.0	54.2	54.3	54.5	54.6	54.8	54.9	55.1	55.2	55.4	36
37	55.5	55.7	55.8	56.0	56.1	56.3	56.4	56.6	56.7	56.9	37
38	57.0	57.2	57.3	57.5	57.6	57.8	57.9	58.1	58.2	58.4	38
39	58.5	58.7	58.8	59.0	59.1	59.3	59.4	59.6	59.7	59.9	39
40	60.0	60.2	60.3	60.5	60.6	60.8	60.9	61.1	61.2	61.4	40

D.P Vol. 2 2/4/03 - 4/23/03 3

6335 18.950 Environmental Field Logbook - Tracer Study Sampling
Field logbook for DP Canyon Tracer Study 0 - water levels
- transducer info.

This field book will be used to record field activities during the DP Canyon Tracer Study. Water levels will be taken according to WBI SOP 7.02, Rev. 1. Pressure transducer activities will be done in accordance to WBI SOP 7.01, Rev. 1. Piezometer + well samples will be collected in accordance to WBI SOP 6.01 rev. 3 unless otherwise documented in this field book. Surface water samples will be collected in accordance to WBI SOP 6.13, Rev. 2.
This field book belongs to Shannon Purdue - PMC Technologies 662-1305. The following personnel are authorized to make entries: Robert Gray, Armand Groffman, Robert Budd, Jared Lyman, Alethea Banar, Clancy Pigman

Samples collected for bromide screening are collected per the procedure on p. 158 of this field book.

The paper in this book is made of 50% high grade rag stock with a WATER RESISTING surface sizing.

2/4/03

1152 DPBN-2C #1 7.98 ft TOC
#2 8.00 ft TOC
#3 7.99 ft TOC

1155 DPBN-2B #1 6.81 ft TOC
#2 6.81 ft TOC
#3 dry

1156 DPBN-2A #1 7.73 ft TOC
#2 dry
#3 dry

DPBN-2C	#1	#2	#3
	7.95	8.00	7.99
stickup	- 2.88	- 2.88	- 2.88
Depth bgs	5.10	5.12	5.11
TD bgs screen bottom	8.35	6.61	5.48
Sat th. (ft)	3.25	1.49	0.87

DPBN-2B	#1	#2	#3
	6.81	6.81	Dry
stickup	- 3.00	- 3.00	
Depth bgs	3.81	3.81	
Screen bot bgs	5.58	4.23	
Sat th. (ft)	1.77	0.44	

2/4/03

DPBN-2A	#1	#2	#3
	7.73	Dry	Dry
stickup	2.90		
Depth BGS	4.83		
Screen bot.	5.39		
Sat th.	0.56		

- Installing Temphion Br. probes
Probe hanging lengths - hand cut
. 0.1 ft above bot. of screen
(allow 1/2 in. for S hook)

DPBN-2C #1

Hung at screen bot 8.35 ft bgs
stickup + 2.88
11' 2 1/4" 11.23 blue

#2 screen bot 6.61
+ 2.88
9' 5 3/8" 9.49 blue

#3 screen bot 5.98
+ 2.88
8' 9 3/4" 8.86 blue

↑ measured cable length from tip of probe to hanger on S hook

2/4/03

DPBN-2B

#1 screen bot. 5.58
stickup +3.00
8.58'

hung at 8' 6 1/2"

#2 : screen bot. 4.23
+3.00
7.23

hung at 7' 2 1/2"

DPBN-2A

#1 screen bot 4.83
+2.90
7.73

hung at 7' 8 1/2 in

2/4/03

Campbell Instructions:

*-5 to set date/time

"A" Gives year
input "03"

"A" Enter Julian Date

"A" Military time hrs/mins

1343 DPPN 7.7 #2 = 5.97 ft TOC WL

1352 DPPN 7.7 #3 = 5.76 ft TOC WL

Installed mini-trolls in DPPN-7.7

1354 Connect to # 5515 in #3
Battery = 100% (2.8v)
CPU = 70 s
Storage = 99% free
Reset pressure reading to
WL depth bTOC, such
elev. = 7024 ft
set ref. elev to 5.77 ft
(actual depth = 1.419)

2/4/03

1406 connect to # 5600 in #2
battery = 100% (2.7 V)
CPU = 72 s
Storage = 98% free
Measured #2 WL = 5.85' btoc
set ref. elev.
14:11 Start test DPPN7.7#2@020403
14:12 Start test DPPN7.7-#3@020403
14:17 check WL in LAUZ-2
= 6.04 ft btoc
connect to # 40655
battery = 61% (8.2 V)
CPU = 84114 s
Storage = 97% free
extract test LAUZ-2@012403
transducer WL = 5.977 ft btoc
(actual depth = 6.214)
!! DO reading are between 0
and -1.0 mg/L
EC readings erratic
pH is between 8.5 and 10
* need to install recalibrated probe!
14:34 connect to # 40624 in LAUZ-1
battery = 72% (8.5 V)
CPU = 64005 s storage = 93% free

2/4/03

transducer WL reading = 6.616' btoc
(actual depth = 5.793 ft
Manual WL reading = 6.63 ft btoc
Extract test LAUZ-1@010603
1457 - Depart field for lab trailer
1515 - at lab trailer
- Complete DO calibration for probe # 40656 and clean up NaS mess.

R Gray 2/4/03

2/7/03

1400. S. Purdue and R. Budd on-site DP Canyon to install transducers.
Safety Tailgate given by S. Purdue.

1410 DPW-7.1S DTW = 7.60 ft TOC
Install MP Troll # 40656 in DPW-7.1S.
Set elevation to 7028 ft, level reference to DTW = 7.51 ft TOC

1419 Start test DPW-7.1S@020703
Battery Capacity = 47% (7.9V)
Storage = 99% free

1425 Connect to # 40655 in LAUZ-2
Download LAUZ-2@012403.

1426 Stop test.
Pull Probe.
LAUZ-2 DTW = 6.13 ft TOC

1436 Connect to # 40624 in LAUZ-1.
Extract test LAUZ-1@010603.

1438 Stop test
pull probe. Install ↓

1440 Connect to MP Troll # 40659
BC = 100% (9.1V)

2/7/03

Set elevation to 7174 ft.

1444 LAUZ-1 DTW = 6.68 ft TOC
Set level reference.

1447 Start Test LAUZ-1@020703

1500 S. Purdue and R. Budd off-site.

S. Purdue 2/7/03

2/11/03

Shannon Purdue and Bob Gray on site at 13:58 to test injection rate for pumping water into DPW-15. Safety tailgate given.

1400 - Measured DPW-15 WL = 7.22' btoc

1410 - Turn on pump with speed of 8. This was too fast DTW = 6.22 ft btoc after ~0.5 gallons. Stop Pump

1411 DTW = 6.90 ft btoc

1413 DTW = 7.00 ft btoc.

1418 Start Pump at speed 5 30 seconds, water reached 6.22 ft btoc. Stop Pump. Drop ½ foot in one minute

1427 back to 7.22 ft btoc

1428 Start pump on speed 1.

1429 Water reached 6.22 ft TOC Stop Pump.

1431 DTW = 6.97 ft btoc

1432 ~~Start Pump at~~ SP 2/11/03 DTW = 7.1 ft btoc

1433 Start Pump with Speed at 0.5.

1433.30 DTW = 6.57 ft TOC

1434 DTW = 6.36 ft TOC

1434.30 DTW = 6.13 ft btoc

1435 DTW = 6.04 ft btoc

1436 DTW = 5.98 ft btoc

1437 DTW = 5.97 ft btoc

1438 DTW = 5.96 ft btoc

1439 DTW = 5.95 ft btoc

1440 DTW = 5.95 ft btoc

1442 DTW = 5.94 ft btoc

1443 DTW = 5.94 ft btoc

1445 DTW = 5.95 ft btoc

1446 DTW = 5.96 ft btoc

1447 We have emptied ~1/2 of a 50 L carboy DTW = 5.96 ft BTOC

1447.30 Move speed to 1.

1448 DTW = 5.61 ft BTOC

1449 DTW = 5.54 ft BTOC

1450 DTW = 5.52 ft BTOC

1451 DTW = 5.52 ft BTOC

1452 DTW = 5.52 ft BTOC

1453 DTW = 5.52 ft BTOC

1454 DTW = 5.51 ft BTOC

1456 DTW = 5.51 ft btoc

1457 DTW = 5.50 ft btoc

1458 DTW = 5.50 ft btoc

2/11/03

1500 DTW = 5.50 ft btoc
1501 " 5.51 "
1502 Switched to 2nd Carboy
We pumped ~ 25 L in 15 mins.
1504 DTW = 5.58 ft btoc
1505 DTW = 5.55 ft btoc
1507 DTW = 5.53 ft btoc
1508 DTW = 5.55 ft btoc
1510 DTW = 5.57 ft btoc
1511 DTW = 5.58 ft btoc
1512 DTW = 5.58 ft btoc
1513 DTW = 5.58 ft btoc
1514 DTW = 5.58 ft btoc
1515 DTW = 5.58 ft btoc
1516 DTW = 5.59 ft btoc
1517 DTW = 5.60 ft btoc
1519 DTW = 5.62 ft btoc
1521 DTW = 5.62 ft btoc
1522 DTW = 5.63 ft btoc
1524 DTW = 5.63 ft btoc
1526 DTW = 5.65 ft btoc
1528 DTW = 5.65 ft btoc
1530 DTW = 5.67 ft btoc
1532 DTW = 5.68 ft btoc
1533 completed emptying the

2nd 50 L carboy
- Pumped 50 L in 31 mins.
1536 DTW = ~~5.90~~ ft btoc 6.90
1537 DTW = ~~5.95~~ ft btoc 6.95
RA 2/11/03
1538 DTW = 6.97 ft btoc
1539 DTW = 6.98 ft btoc
1540 DTW = 6.99 ft btoc
1541 DTW = 7.01 ft btoc
1545 Mob to Calibration trailer to store equipment.

S. Pum 2/11/03

2/12/03

1355 S. Purdue and B. Gray on-site at LAUZ-1 to download data off transducer. Safety tailgate given by S. Purdue.

1357 - measured WL in LAUZ-1 = 6.75' btoc

connect to MPTROLL # 40659

transducer WL = 6.800 ft btoc (actual depth = 5.584 ft)

Extract LAUZ-1 @ 020703.

1405 On-site DPPN-1.1 #1.

DTW = 7.50 ft btoc

connect to minitroll # 8876

transducer WL = 7.494 ft btoc

extract test DPPN1.1#1 @ 121902

1410 Measure WL in DPPN-1.1 #2

WL = 7.49 ft btoc

connect to minitroll # 8932

transducer WL = 7.481 ft btoc

extract test DPPN1.1#2 @ 121902

1414 Measure WL in DPPN-1.1 #3

WL = Dry ~~ft btoc~~ RA 2/11/03

connect to minitroll # 8935

transducer WL = 6.282 ft btoc

(actual depth = -0.075 ft ~~btoc~~) RA

2/12/03

extract test DPPN1.1#3 @ 121902

1417 - stopped test, pulled probe to install in DPBN-1B

1419 DPBN-1B #1 DTW = 7.51 ft btoc

#2 dry

#3 dry

1420 DPBN-1A #1 7.02

#2 7.01

#3 dry

1429 - installed minitroll # 8935 in DPBN-1A #1

1440 Start test DPBN-1A #1 @ 021103

1444 on-site at DPPN-4.5N RA

measured WL in #3 = Dry ~~ft btoc~~

connect to minitroll # 8901

transducer WL = 7.607 ft btoc

(actual depth = -0.048 ft)

extract test DP4.5N#3 @ 121902

1448 Measure WL in #2 = 8.35 ft btoc

connect to minitroll # 5615

transducer WL = 8.363 ft btoc

(actual depth = 2.279 ft)

extract test DP4.5N#2 @ 121902

1451 Measure WL in #1 = 8.35 ft btoc

connect to minitroll # 8866

2/12/03

measured WL by transducer = 8.369' btoc
(actual depth = 3.401 ft)
extract test DP4.5N#1 @ 121902
1458 measured WL in DPW-7.15
WL = 7.74 ft btoc
connect to MPTROLL # 40656
transducer WL = 7.734 ft btoc
(actual depth = 3.002 ft)
extract test DPW-7.15 @ 020703
DO data is bad - values dropped to negative after installation indicating that Na_2SO_3 was not sufficiently rinsed from probe prior to installation.
1505 stopped test and pulled probe. Plan to recalibrate probe and flush out well prior to reinstalling.
1511 Measure WL in DPPN-7.7 #2
WL = 6.11 ft btoc
Connect to minitroll # 5600
transducer WL = 6.131 ft btoc
(actual depth = 2.511 ft)
extract test DPPN7.7#2 @ 020403
1514 Measure WL in DPPN-7.7 #3

2/12/03

WL = 5.90 ft btoc
connect to minitroll # 5515
transducer WL = 5.943 (actual 1.247)
extract test DPPN7.7#3 @ 020403
1519 stopped test - reset reference depth to 5.90 ft btoc
1521 Start test DPPN7.7#3 @ 021203

R Ray 2/12/03

2/17/03

745 S. Purdue calibrates Oxi330i SN 01340040 with Oxical-SL calibration vessel. Slope = 1.21

800 S. Purdue and A. Banar mob to SMO to pick up equipment.

845 S. Purdue and A. Banar on-site DP Canyon to take water level measurements and dissolved oxygen and temperature measurements. Safety tailgate meeting given by S. Purdue.

1145 Complete collecting measurements. Mob to WLI office for lunch break.

1245 Mob to DP Canyon to pump mud out of DPW-7.1S

1300 S. Purdue and A. Banar on-site DP Canyon.

1330 Begin pumping 2 gallons from DPW-7.1S. After 2 gallons, water has cleared.

2/17/03

Purge water was put into storage drum on-site.

1430 Mob back to WLI office.

2/17/03

2/19/03

0940 S. Purdue Calibrates
YSI 63 SN 01C0004 AA
and YSI 63 SN 01C0004 AD
with Fisher Buffer Solutions:
pH 4.00 Lot No: 024520-24
Exp. date: 03/04
pH 7.00 Lot No. 026464-24
Exp. date 07/04
pH 10.00 Lot No. 011794-24
Exp. date 12/03
YSI 63 SN 01C0004 AA
reads 4.00/4.00 7.01/7.00 10.01/10.00
YSI 63 SN 01C0004 AD
reads 4.00/4.00 7.01/7.00 10.02/10.00
1130 S. Purdue on-site DP Cayuga
to unload supplies.
1155 S. Purdue begins transducer
installation for Pager
at PRS-21-011(k) Will
use buddy system with
S. Purdue.
1157 DPW-7.1 S DTW = 7.32 ft btoc
1203 Install MP Troll # 40656
in DPW-7.1 S.
Set level reference to 7.24 ft btoc

1207 Start test DPW-7.1 S 0021903
for 30 minute interval readings.
1212 Install MP Troll # 40491
in LAUZ-2.
Set level reference to
1215 DTW = 5.93 ft TOC
(6660 ft elevation)
1220 Start test LAUZ-2 0021903
DTW + temp. only, every
30 minutes.
1230 Robert Budd + Jared Lyman
on-site. S. Purdue gives
safety tailgate meeting.
1235 Prep for sampling
DPBN-1B #1, DPBN-2B #1,
DPW-1.1 N.
We will collect samples
per WLI + LANL SOP 6.01
(they are the same).
1245 Begin purging DPBN-1B #1.
1300 Begin purging DPW-1.1 N
1320 S. Purdue calls A. Groffman
to discuss sampling.
Decision was made by
A. Groffman to not collect

2/19/03

sample from DPBN-1B #1 due to trial injection last week being so close to well. We will sample DPBN-3B instead of DPBN-1B.

1325 Begin collecting UF Sample from DPW-1.1N, loc ID # DP-03-21604, sample ID CADP-03-50678.

1340 Begin collecting F Sample from DPW-1.1N, loc. ID # DP-03-21604, Sample ID CADP-03-50679.

1345 Purging DPBN-3B #1 since 1340.

1400 Begin collecting UF Sample from DPBN-3B #1, loc. ID # DP-03-21612, Sample ID CADP-03-50680.

1410 Begin Purging DPBN-2B #1.

1420 Collect F Sample from DPBN-3B #1. Sample ID CADP-03-50681

1425 Collect UF Sample from DPBN-2B #1 loc. ID # DP-03-21609 SI # CADP-03-50682

2/19/03

1447 Collect F Sample from DPBN-2B #1, loc-ID # DP-03-21609, Sample ID # CADP-03-50683

1510 Complete Sampling. Load equipment into 21-011(K) trailer.

1530 Mob to Sample trailer at SMO to preserve and store samples.

1545 On-site SMO trailer.

1645 Mob to WGI office. R. Budd & J. Lyman mob to Pueblo Complex. Samples will be stored in refridgerators (in sample trailer) until A. Groffman decides to turn them in.

S. Pu
2/19/03

2/20/03

815 YSI 63 SN 0100004 AA
& YSI 63 SN 0100004 AD
Response checked with
"Traceable Conductivity Calibration
Standard". Fisher brand,
Lot No. 2790, Exp. 8/7/03
Certificate of analysis
reads 1002 µS/cm.
YSI 63 SN 0100004 AA
reads 992 µS/cm in 1002 µS/cm
Meter Calibrated to read
1002 µS/cm in 1002 µS/cm solution.
YSI 63 SN 0100004 AD
reads 991 µS/cm in 1002 µS/cm
Meter Calibrated to read
1002 µS/cm in 1002 µS/cm
solution.
Both meters were in
acceptable tolerance before
this calibration.
This calibration is good
for several months.
1020 S. Purdue, R. Budd, J. Salazar
Tracy Schofield, A. Groffman outside
DP Canyon to ~~calibrate~~ response check 8/26/03

2/20/03

bromide sensors with
formation standards and
DI water. Safety tailgate given
we will start with by S. Purdue
transect #1.
DPBN-2C - probe #1
checking response with
$Br^-_{(aq)}H_2O$ standards. Range
of standards is: 1 ppm
10 ppm
100 ppm
1000 ppm
10000 ppm
100,000 ppm
Response recorded by
the data logger. All data from
the probe check will be down
loaded today and processed by
Tracy S.

*Moderate to heavy snow
falling making it difficult
to write in field. Transcribing
in vehicle. ARG.

02/20/03

We will check calibrate the 8 Temptron probes in transect 2 and transect 7

Probes are located in:

DPBN-2C #1, 2 and 3

DPBN 2B #1 & 2

DPBN 2A #1

DPBN 7B #2

DPBN 7C #2

~~1255~~ 88 02/20/03 1130 A. Groffman & R. Budd off-site

1255 ~~Cat~~ 88 02/20/03 Response checks complete on all 8 probes. Download data off of data loggers onto laptop computer.

1310 S. Purdue, T. Schofield, and S. Salazar off-site.

go 2/20/03

2/24/03

930 S. Purdue, A. Groffman, J. Lyman, R. Budd, R. Gray on-site DP Canyon. Safety tailgate given by A. Groffman.

Begin setting up for injection.

941 Measure WL in DPPN-4.5N #1

WL = 7.14' btoc

connect to minitroll # 8866

transducer WL = 7.16 ft btoc

(actual depth = 4.610 ft)

extract test DP4.5N #1 @ 121902

(note that last reading was taken @ 10:38:33; appears to be set 1 hour ahead)

949 stopped test - pulled probe

installed MPTROLL # 40660

set ref. level = 7.14 ft btoc

1002 Start new test DP4.5 #1 @ 022403.

1008 Measured WL in DPW-15

WL = 5.41 ft btoc

installed minitroll # 8866 in DPW-15

synchronized clock w/ computer clock

Set ref. level = 5.41' btoc

programmed test DPW-15 022403 inj. with 30-sec. intervals (to start later)

2/24/03

DPPN-1.1 WLs

1009 #1 = 5.53

1010 #2 = 5.53

1012 #3 = 5.54

1020 connect to minitroll #8932 in DPPN-1.1 #2

transducer wl = 5.516' btoc

(actual depth = 2.129 ft)

extract test DPPN1.1#2@ 121902

1022 stopped test

resynchronize clock

program new test DPPN1.1-022403 for 30-sec. intervals (start later).

1026 connect to minitroll # 8876 in DPPN-1.1 #1

transducer wl = 5.535 ft btoc

(actual depth = 3.499 ft)

extract test DPPN1.1#1@ 121902

1028 stop test

program new test DPPN1.1-022403 with 30-sec. intervals (start later)

synchronize clock

1038 started minitroll in DPW-1s

1039 started pumping tracer into DPW-1s with Master-Flex pump setting at "1".

1035 Doug Barney and Tinny Nygam on-site. A. Hoffman briefs them on safety tailgate.

1043 connect to minitroll # 8935 in DPBN-1A #1

extract test DPBN-1A#1@ 021203

stopped test

transducer wl = 5.415' btoc

(actual depth = 3.310 ft)

1048 start 30-sec. test in DPBN-1A #1

1050 Started sampling LAUZ-1/Kent Rich on-site.

1055 start 30-sec. readings in DPPN-1.1 #1

1056 Start 30-sec. readings in DPPN-1.1#2

1100 Finished sampling LAUZ-1

1105 Collect 125ml from LAUZ-1

1140 - 1143 Sampling DPBN-1A

1152 - 1154 Sampling DPBN-1A

1110 Sampled DPBN-1B

1135 - Sampled DPBN-1B

2/24/03

1205 - Sampled DPBN-1C
1211 - Sampled DPBN-1A
1225 - switched hose from 1st drum to 2nd drum when noticed that pump was sucking air - appears to be 1-2 gals left in 1st drum, but unable to get it to pump out.
1230 - Sampling LAUZ-1
1245 - Sampling DPBN-1A
1247 - Sampling DPBN-1B
1300 - sampling LAUZ-1
1301 - sampling DPBN-1A + DPBN-1C
1315 Sampled LAUZ-1
1318 Sampled DPBN-1A
Continue sampling DPBN-1A, -1B -1C and LAUZ-1 at 15 min. intervals
~~1540~~ 1440 - finished pumping the 100 gals of KBr solution and started pumping 5 gals of water into well
~~1547~~ 1447 - collected surface water sample from stream channel at bc adjacent to DPW-1S

1452 - finished pumping 5 gals of water into DPW-1S
Continue sampling LAUZ-1, DPBN-1A #2 & #3, DPBN-1B (all), & DPBN-1C (all) every 15-20 minutes. J. Lyman off-site
1630 Collect Cation samples from above wells.
1710 ~~S. Ford~~ SF 2/24/03 All personnel off-site.

S. F. 2/24/03

32

2/25/03

0815 S. Purdue on-site.
Wait for R. Budd + J. Lyman.
Safety tailgate given by S. Purdue
0830 J. Lyman + R. Budd on-site
0940 A. Groffman, J. Salazar,
T. Schofield on-site.
S. Purdue briefs them on
safety tailgate. 1030 A. Groffman off-site, J.S. + T.S. off-site
1130 R. Budd off-site.
We are collecting from
DPBN-1A, 1B, 1C, ~~DPW~~ DP Overflow
every 1/2 hour.
DPW-1N + DPW-1.1N
every hour.
DPBN-3A, 3B, 3C every
1/2 hour.
DPBN-3B #3 is dry,
so nothing collected.
We will collect cation
samples from above
wells at 8:45, 11:00, 1300,
and 1500.
1610 S. Purdue + J. Lyman
mob to SMO to drop off
samples for screening.
SP. 2/25/03

2/26/03 (33)

0830 S. Purdue + J. Lyman
on-site DP Canyon.
Safety tailgate meeting
given by S. Purdue.
We will sample DPBN-1A,
1B, + 1C every 1/2 hour.
We will collect from DPW-1N
and DPW-1.1N every hour.
1013 Channel begins to flow
Flowing ~6-10 inches at
SW2 location
Collect grab samples from
SW1, SW2, transect 2 channel,
and transect 3 channel.
J. Lyman checks ISCOs
to ensure that they are
sampling.
1026 Flow is steady at same
depth for SW2.
1045 Steady flow - same depth.
1113 Flow is down 1" on
SW2 stake.
A. Groffman on-site.
1209 Flow is down another 2" on SW2
stake.
1300 A. Groffman off-site.

2/26/03

1530 S. Purdue and J. Lyman complete sampling for the day.
We have collected 4 cation samples from each of the following wells:
DPBN-1A, DPBN-1B, DPBN-1C, PPW-1N, DPW1.1N.
Mob to Pueblo Complex to pick up ISCO bottles for ISCO samplers.

1640 S. Purdue and J. Lyman back-on site to re-program ISCO sampler to collect every hour throughout the night.
Set ISCO to begin sampling at 1700.

1700 ISCO did not collect. Program reading "sampler inhibited". Through several attempts to re-program sampler, we get the same message.

2/26/03

1710 Collect manual samples SP 02/26/03

1720 Program ISCO again. We will see in the morning if the ISCO has collected any samples.

1725 Mob to Pueblo Complex. S. Purdue + J. Lyman off-site.

S. Purdue 2/26/03

2/27/03

800 S. Purdue mobs to SMO to pick up more sampling supplies.

830 S. Purdue at Pueblo Complex to pick up J. Lyman.

1000 On-site DP Canyon. Cannot access site via road. Bring down supplies in wheel barrows. Safety tailgate meeting held. We will collect from DPBN-1A, DPBN-1B, DPBN-1C DPW-1N, and DPW-1.1N every hour. We will try to collect 2 to 8 2/28/03 cation samples if we have enough supplies.

1007 Stream is flowing, ~5 inches on SW2 stake.

1053 Check ISCO sampler. No samples were collected last night. We will collect stream samples by hand from

2/27/03

SW2, ISCO ½ location & lower ISCO location.

1400 A. Groffman on-site.

1430 J. Lyman off-site.

1545 S. Purdue & A. Groffman off-site.

ISCO samplers 1-4 were emptied & re-programmed today.

S. Purdue 2/27/03

02/28/03

715 S. Purdue on-site DP Canyon. Collect 1 Pound of samples from DPBN-1A, 1B, 1C, DPW-1N and DPW-1.1N. Brief Al Shumaker on safety and sampling procedure. A. Shumaker will collect samples from above wells every hour.

800 S. Purdue mobs to SMO to screen samples.

1115 S. Purdue back on-site DP Canyon. S. Purdue + A. Shumaker collect cations from above wells and Rad samples from DPBN-1B #1. Rad samples were collected according to ER+WI SOP6.01. Unfiltered Rad Sample ID# CADP-03-50684 collected at 1157. Filtered Rad Sample ID# (cont.)

02/28/03

CADP-03-50685 was collected at 12:00.

1250 S. Purdue off-site. A. Shumaker to 21-011(c) work site. Samples will be stored in locked sample trailer until submittal to SMO.

S. Purdue 02/28/03

(40) 3/3/03

1000 S. Purdue and Clancy Pigman on-site DP Canyon. Safety tailgate meeting held by S. Purdue. C. Pigman will sample DPBN-1A, 1B, 1C, DPW-1N and DPW-1.1N every hour. S. Purdue will maintenance ISCO samplers. See ISCO field book for ISCO information.

1220 C. Pigman off-site for lunch. S. Purdue will have Tom Benson at 21-01(k) as a buddy while Clancy is gone.

1310 C. Pigman on-site

1620 S. Purdue & C. Pigman off site.

S. Purdue
3/3/03

03/04/03 (41)

800 S. Purdue and C. Pigman on-site DP Canyon. We will sample DPBN-1A, 1B, 1C, DPW-1.1N, DPW 1N every hour or so. We will sample DPBN-3A, 3B, + 3C every few hours. Cations will be collected at least 2 times. Safety tailgate meeting given by S. Purdue. DPBN-4A, 4B, 4C, DPW-3.5N 2 times a day

950 R. Budd on-site.

1000 S. Purdue off-site.

1130 R. BUDD CALLED A. GRAFFMAN, HAD BROMIDE IN TRANSECT 3 SO WANTS TO SAMPLE TRANSECT 5 AT END OF DAY

1200 C. PIGMAN & R. BUDD BREAK FOR LUNCH

1240 C. PIGMAN BACK ON SITE

1300 R. BUDD BACK ON SITE

1400 TRACY SCHOFIELD ON SITE TO MOVE PROBES FROM

03/04/03 C. PIGMAN

1400 TRANSECT 2 TO TRANSECT
(ONT) 3 (DPBN-3A, 3B, & 3C)
1500 A. GRIFFMAN ON SITE
1515 A. GRIFFMAN & TRACY SCHOFIELD OFF SITE
1620 SITE SECURE. C. PIGMAN & R. BUDD OFF SITE

S. Purdue
03/04/03

03/05/03

815 S. Purdue, C. Pigman, and R. Budd on-site DP Canyon. We will continue sampling DPBN-1A, 1B, 1C, DPW-1N, DPW 1.1N, DPBN-4A, 4B + 4C. Safety tailgate meeting given by S. Purdue.
0928 T. Shofield, M. Garcia, and S. Salazar on site to calibrate bromide sensors.
1210 ALL PERSONEL OFF SITE FOR LUNCH
1250 C. PIGMAN BACK ON SITE
1620 C. PIGMAN & R. BUDD OFF SITE

S. Purdue
03/05/03

(44) 03/06/03 C. PIGMAN

0815 C. PIGMAN + S. PURDUE ON SITE

0840 WILL CONTINUE TO SAMPLE DPBN-1A, 1B, + 1C, DPW-1N, DPW-4N, DPBN-4A, 4B, + 4C, AND DPBN-5A, 5B + 5C

1130 C. PIGMAN + S. PURDUE OFF SITE

1215 C. PIGMAN BACK ON SITE

1300 S. Purdue on-site.

1630 C. Pigman + S. Purdue off-site.

S. Purdue
03/06/03

(45)

03/07/03

805 S. Purdue and C. Pigman on-site at DP Canyon. Safety tailgate meeting given by S. Purdue.

825 Receive call from A. Groffman we will continue to sample transects 1, 4, and 5, and we will collect one sample from transects 2 and 3 to verify probe readings. We will also collect one gallon F, and one gallon UF from DPBN-1B #1, and DPBN-1B #2 for potential rad analysis. We will also check the ISCO stations and collect any samples that are in the ISCOS.

0930 S. Purdue calibrates YSI 63 SN 01C0004AA with pH 4.00 buffer solution Lot No. 024520-24 exp. 03/04 pH 7.00 buffer solution (cont.)

pH 7.00 buffer solution
lot No. 02464-24 exp. 07/04
pH 10.00 buffer solution
lot No. 011794-24, exp. 12/03
Meter reads 3.98 in 4.00
7.01 at 8.7°C in 7.00
10.27 in 10.00
at 7.9°C

Meter has accepted calibration.

0947 Begin purging DPBN-1B #2 for rad sample.
~~we~~ SP 03/07/03

time	total Volume purged	pH	EC µS/cm	Temp °C
0948	200 ml	7.63	1965	4.6
0950	400 ml	7.57	1972	4.6
0951	600 ml	7.53	1972	3.7
0955	800 ml	7.45	1960	4.5

1000 Begin collecting 1 gallon UF from DPBN-1B #2.
This piezometer has been pumped for ~~samp~~ SP 03/07/03 bromide screening every hour for the last 2 weeks.
Purging 3 casings volumes

prior to sampling DPBN-1B#2 or DPBN-1B#1 is not necessary, but I have purged 800 ml anyway to get stable parameter readings.
An official sample ID will be assigned at a later time if this sample is chosen for analysis.

1004 Complete collecting DPBN-1B#2 UF.

1005 Begin collecting DPBN-1B#2 F.
F sample collected with ~~a~~ SP 03/07/03 0.45 µm disposable filter cartridge.

1012 Complete collecting DPBN-1B#2 F.

1018 SP 03/07/03 Begin Purging DPBN-1B#1

time	total Volume Purged	pH	EC µS/cm	Temp °C
1015	250 ml	7.28	2691	7.1
1016	350 ml	7.18	3679	6.0
1017	450 ml	7.20	3192	5.6
1018	550 ml	7.19	3322	5.4
1020	750 ml	7.25	2591	5.2

Specific Conductance will not be stable

03/07/03

due to variances in Kbr from the injection.

1025 Begin collecting DPBN-1B#1 UF gallon

1039 Complete collecting DPBN-1B#1 UF gallon. Pump rate must be very slow to ~~03/07/03~~ not dry out well.

1040 Begin collecting DPBN-1B#1 F gallon.

(1900) R. Budd on-site.

(1015) J. Salazar on-site.

1050 Complete collecting DPBN-1B#1 F

1105 J. Salazar off-site.
S. Purdue returned Masterflex pump and 2 50L containers to J. Salazar.

1115 R. Evans onsite to deliver 30 gal close top poly drum from storage.
Conduct Waste Storage Area Inspections. Two storage areas
1st area near 21-011(K).

4 drums (capacity)

DP-L11	55g	~75%	2/24/03
L12	30g	~70%	2/25
L13	55g	~75%	2/26
L14	55g	~75%	2/27

labeled Radioactive Waste drum specific label
area posted @ RMWSA*
Bungs are closed

1140 R. Budd offsite
2nd Waste storage area
2 drums

ID #	Capacity	% full	accum. date
DP-L15	55 gal	70-80% 47.5g	2/28/03 to 3/7/03
DP-L16	30 gal	~25g	3/7/03

55 gal
90%
49.5 gal

labled Rad. Waste & drum-specific label.
area posted as Radioactive Material Waste Storage Area
*(RMWSA)
Bungs closed

(50) 3/7/03

1145 Break for lunch. C. Pigman off-site.
1230 C. Pigman on-site. R. Evans off-site.
1330 R. Budd on-site.
1445 All Personel off-site. S. Purdue mobs to sample trailer at SMO. Rad samples collected today will be stored in locked sample trailer until a decision is made to submit for analysis.

S. Purdue
03/07/03

3/10/03 (51)

830 S. Purdue and C. Pigman on-site DP Canyon. Safety tailgate meeting given by S. Purdue.
900 S. Purdue receives call from A. Griffman. We will collect screening samples from transects 1, 4 & 5. We will collect ~~an~~ for 3/10/03 ration samples once in the morning ~~in~~ of 3/10/03 and once in the afternoon.
1100 R. Budd on-site to maintain ISCOs
1125 R. Evans on-site to drop off drums.
1150 R. Evans off-site.
1230 R. Budd off-site.
1330 R. Budd on-site.
1515 S. PURDUE OFF SITE
1545 A. GRIFFMAN ON SITE
1615 ALL PERSONEL OFF SITE

S. Purdue
03/10/03

03/11/03

830 S. Purdue and R. Budd on-site DP Canyon for taking bromide screening samples. Safety tailgate meeting given by S. Purdue. We will collect from transects 1, 4 + 5 approximately every hour. One round of cations taken at 1100-1140.

1200 S. Purdue and R. Budd off-site for lunch.

1310 S. Purdue and R. Budd on-site. Mob to DP Spring to collect samples from ISCO 6 at DP Spring. See ISCO notebook.

1435 On-site at tracer reach. Continue collecting from transect 1, 4, + 5.

1545 S. Purdue and R. Budd off-site. Mob to SMO to drop off screening samples.

1600 S. Purdue on-site SMO

1615 S. Purdue mobs to WGI office.

S. Pur 3/11/03

03/12/03

805 S. Purdue on-site DP Canyon. Set-up equipment.

830 Leo Martinez on-site. ~~LM~~ 3/12/03 Safety tailgate meeting given by S. Purdue. We will collect from transects 1, 4 + 5. We will collect cations on the second round in the morning. S. Purdue will check with A. Groffman to see if we should collect more than one cation sample.

1130 J. Salazar on-site to download data.

1140 ~~Leo Martinez~~ All Personnel off-site for lunch. 3/12/03

1235 S. Purdue on-site.

1245 L. Martinez on-site. Continue collecting as above.

1600 S. Purdue mobs to SMO. L. Martinez off-site.

1620 S. Purdue mobs to WGI office.

S. Pur 3/12/03

3/13/03

830 S. Purdue and R. Budd on-site at DP Canyon. Safety tailgate meeting given by S. Purdue. Today we will sample transects 1, 4, & 5 2 times in the morning, and 2 times this afternoon we will collect cations samples on the first and last collections.

0856 A. Banar on-site DP Canyon for waste pick-up. (off-site 930)

1140 S. Purdue and R. Budd off-site for lunch break.

1245 S. Purdue and R. Budd on-site.

1555 S. Purdue and R. Budd off-site. All ISCOs have been emptied and re-programmed for the weekend. S. Purdue mobs to SMO to drop off samples.

S. Purdue
3/13/03

3/14/03

0850 S. Purdue and A. Banar on site DP Canyon to collect samples from transect 1, 4 & 5. Safety tailgate meeting given by S. Purdue.

1000 S. Purdue and A. Banar mob to SMO to screen samples.

1200 S. Purdue & A. Banar mob to DP Canyon to collect another round of samples.

1350 S. Purdue & A. Banar mob to SMO to screen samples.

1545 S. Purdue & A. Banar mob to WGI office.

S. Purdue
03/14/03

56.

03/17/03

0810 S. Purdue on-site DP Canyon

0830 R. Budd on-site DP Canyon.
We will collect one round of screening samples from transects 1, 4, & 5.
We will also empty ISCO 7.

0945 Round 1 is complete.
Samples were also collected from ISCO 7. set up on DPBN-5B2 for the weekend.
See ISCO logbook for ISCO sample information.
S. Purdue & R. Budd mob to SMO to screen samples

1145 Break for lunch.

1300 On-site DP Canyon.
S. Purdue & R. Budd.
Maintenance and collect from ISCOs.
Collect 1 Round of screening samples from transects 1, 4, & 5.
Collect cations with this Round.

1525 S. Purdue & R. Budd mob to SMO.

03/18/03

657
03/22/03

1040 S. Purdue & R. Budd on-site DP Canyon.
We will sample transects 1, 4, 5, & 6 once now, and once this afternoon.

1140 S. Purdue and R. Budd mob to DP Spring to collect ISCO samples from DP6.

1245 ~~RBB~~ 3/18/03 S. Purdue & R. Budd off-site.

1430 S. Purdue and R. Budd on-site to collect 2nd Round.

1545 S. Purdue and R. Budd off-site.
Deliver screening samples to SMO.

S. Pu
03/18/03

03/19/03

0740 S. Purdue on-site DP Canyon.

0800 Leo Martinez on-site DP Canyon. Safety tailgate given by S. Purdue. Collect screening samples from transects 1, 4, 5, & 6.

0845 S. Purdue and Leo Martinez off-site.

1440 S. Purdue and L. Martinez on-site to collect screening samples from transects 1, 4, 5, 6 & 7.

1550 S. Purdue and L. Martinez mob to SMO.

S. Purdue 03/19/03

03/20/03

800 S. Purdue on-site DP Canyon R. Budd on-site DP Canyon Safety tailgate meeting held. We will collect screening samples from transects 1, 4, 5, 6 & 7. We will also collect from ISCO samplers.

1140 Break for lunch - S. Purdue and R. Budd off-site.

1445 A. Groffman, J. Lyman, R. Budd, Danny Katzman, and S. Purdue on-site to select ISCO location between DP Spring and DP 3.

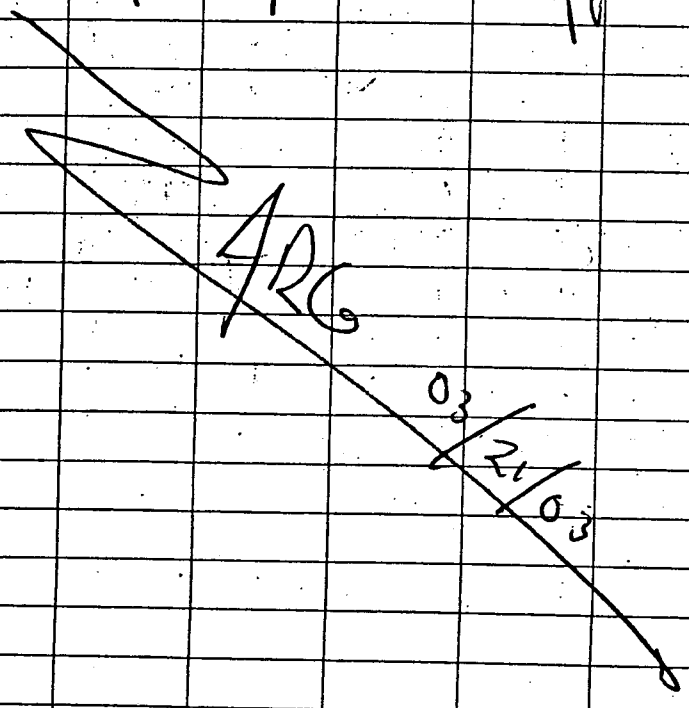
1630 All personnel off-site.

S. Purdue 03/20/03

03/21/03

9:58 ARG & R Budd on site for complete sampling round. Safety Meeting given by ARG, signed sheet. Sample collection for screening purposes. Transect 1, 5, 6, 7, & 8

1200 ARG & R. Budd off site.



03/24/03

0800 S. Purdue on-site DP Canyon

0845 R. Budd on-site DP Canyon. Safety tailgate meeting held. Today we will collect 2 sets of screening samples from transects 1, 4c, 5, 6, 7 + 8. One set in the morning and one set in the afternoon.

900 A. Groffman on-site to drop-off equipment. He would like us to collect 1 gallon F + 1 gallon UF for possible rad samples from the following wells: DPBN-1B-1, DPW-1.1N, + DPBN-7B-1.

0940 S. Purdue calibrates YSI 63 SN 01C0004AD with pH 4.00, 7.00, + 10.00 buffer solutions.
pH 4.00 Fisher brand solution Lot No. 024570-24, exp. 03/04

(continued on page 62)

03/24/03

pH 7.00 Fisher solution
lot No. 026464-24; exp. 07/04.
pH 10.00 Fisher Solution
lot No. 011794-24 exp. 12/03.
Meter reads 4.00 in 4.00

0949 Ec cal in 7.01 in 7.00
1000 µs/cm see Water Quality records 10.01 in 10.00

0955 Begin purging DPBN-1B #1

time	Amount Purged (total)	pH	Temp °C	Ec (µS/cm)
0957	200 ml	6.58	9.8	2140
0959	350 ml	6.89	8.2	2332
1000	450 ml	6.97	6.3	2307
1001	550 ml	7.07	6.7	2132
1002	650 ml	7.05	6.9	2265
1003	750 ml	7.06	6.9	2277
1004	850 ml	7.10	6.9	2240

1005 Parameters are stable > 3 casing volumes purged. Begin collecting UF gallon
*This piezometer has been purged already today for screening samples.

1014 Complete collecting UF sample.
1015 Begin collecting F gallon
1023 Complete collecting F gallon

03/24/03

1028 Begin purging DPW 1.1N. Approximately 2 liters have been pumped from this ~~well~~ piezometer earlier today. 03/24/03

time	vol. purged (total)	pH	Temp °C	Ec (µS/cm)
1030	250 ml	7.22	10.4	2512
1031	450 ml	7.29	7.8	2338
1032	700 ml	7.27	7.3	2126
1033	1000 ml	7.27	6.5	2241
1034	1.5 L	7.32	6.2	2061
1036	4 L	7.27	5.8	2074
1038	8 L	7.27	6.1	2015
1039	12 L	7.26	5.8	2044

1040 Parameters are stable, Begin collecting 1 gallon UF from DPW-1.1N

1043 Complete collecting UF gallon
1045 Begin collecting F gallon from DPW-1.1N.
1053 Complete collecting F gallon.
1130 S. Purdue + R. Budd off-site.
1345 S. Purdue on-site.
1400 Begin purging DPBN-7B-1 for rcd sample gallons.
(cont. p. 64)

03/24/03

DPBN-7B-1

time	vol. Purged (total)	pH	Temp (°C)	Ec (µS/cm)
1401	200 ml	6.68	9.6	1045
1402	400 ml	6.92	7.4	1055
1403	500 ml	7.03	7.0	1047
1404	600 ml	7.07	7.3	1032
1405	750 ml	7.10	7.0	1042
1406	1000 ml	7.11	7.1	1031

1407 Parameters are stable.
Approx. 1 Liter was purged from this well earlier today.

1410 Begin collecting 1 gallon UF from DPBN-7B#1

1413 Complete collecting 1 gallon UF from DPBN-7B#1.

1415 Begin collecting F gallon from DPBN-7B#1
R. Budd on-site.

1424 Complete collecting DPBN-7B#1 F gallon.
All F gallons collected today were filtered using a 0.45µm disposable filter cartridge and a peristaltic pump.

1443 Collect Cations site wide from Br-nests.
ARG on site to install DMCS rods.

1512 DPW 7.95 - Installed rod with 11 cells. Top cell may be dubious with respect to H_2O table -
1512 not fully immersed.
rod + 1 full + 1 ½ connectors.

1532 DPW 5.7N - Installed a 10-cell array with 1 & ½ risers. Tenth cell is at the Water Table ▽.

1546 DPW 4.4N - Installed a 12-cell array with 1 & ½ risers. Watertable ~ 5cm above the top cell.

1600 DPW 3.5N Installed a 11-cell array with 1 & ½ risers. Water table is at the top cell; at top of hole.

03/24/03

1635 DPW 1.5 - Installed a 11-cell array with 1 ~~1~~ 12 ARG 03/24/03 riser. Water Table at top of 1st cell.

1640 ARG, Shannon Perdue, & Rob Budd off site. Far Samples stored in locked trailer at SMO.

03/24/03

03/~~24~~ 25/03

0800 S. Purdue SP 03/25/03 + R. Budd on-site DP Canyon. Safety tailgate meeting given by S. Purdue. We will take water level readings and one round of screening samples.

1040 S. Purdue and R. Budd mob to DP Spring to collect ISCO samples.

1200 S. Purdue + R. Budd off-site. R. Budd takes screening samples to SMO.

1530 S. Purdue and R. Budd mob to DP Spring to unclog catchment pipe.

1710 S. Purdue and R. Budd off-site.

S. Purdue 03/25/03

03/26/03

0745 S. Purdue and A. Bauer mob to SMO to pickup equipment.

0820 S. Purdue and A. Bauer on-site DP Canyon. Safety tailgate meeting given by S. Purdue. Collect screening samples from transects 1, 4, 5, 6, 7c + 8.

0950 S. Purdue and A. Bauer mob to SMO to screen samples.

1200 S. Purdue and A. Bauer break for lunch.

1300 S. Purdue and A. Bauer on-site at SMO to screen samples.

1430 Mob to DP Canyon to collect screening samples from transects 1, 4, 5, 6, 7, & 8.

1555 Mob to SMO to drop-off samples.

1610 Mob to WGI office.

S. Purdue
03/26/03

0830 S. Purdue + R. Budd on-site DP Canyon. Safety tailgate meeting held. Collect screening samples from transects 1, 4, 5, 6, 7c, + 8.

1000 S. Purdue + R. Budd mob to SMO to screen samples. Off-site DP Canyon.

S. Purdue
03/27/03

03/28/03

0815 S. Purdue on-site DP Canyon to collect screening samples from transects 1, 4, 5, 6, 7C, & 8.

850 A. Groffman on-site.

945 A. Groffman off-site.

1000 R. Evans on-site. Conduct OSA Inspection & complete KBr Tracer waste water CWDR for 10 drums generated 2/24/03 through 3/27/03. Currently S. Purdue filling 11th & 12th drums - empty drum capacity 2x55gal + 2x30 = 170 gal.

1035 S. Purdue & R. Evans off-site.

1450 S. Purdue & A. Groffman on-site to install transducers in DP Channel.

1511 Intall mini-troll # 8866 Set minitroll to Depth to Collect actual depth reading.

1517 Start test DPr3@032803. to record every 10 minutes

1545 S. Purdue and A. Groffman off-site.

S. Purdue 03/28/03

03/31/03

815 R. Budd on-site DP Canyon.
830 S. Purdue on-site DP Canyon.
Safety tailgate given by S. Purdue.
Collect one round of screening samples and collect from ISCO samplers.
1045 S. Purdue + R. Budd mob to SMO.

S. Purdue
03/31/03

04/01/03

0800 S. Purdue on-site DP Canyon.
R. Budd on-site DP Canyon.
Safety tailgate meeting held by S. Purdue
Collect screening samples and cation samples from transects 1, 4, 5, 6, 7c + 8.
1045 S. Purdue + R. Budd mob to DP Spring to collect from ISCO 6.
1220 R. Budd off-site
1230 S. Purdue off-site.
S. Purdue mobs to SMO to screen samples.

S. Purdue
04/01/03

04/02/03

0800 S. Purdue on-site DP Canyon.
0815 R. Budd on-site DP Canyon.
Safety tailgate meeting held.
Collect screening samples
from transects 1, 4, 5, 6, 7C, + 8.
04/02/03
0915 Mob to DP 8 to collect
ISCO samples and check
transducer.
0952 Connect to mini troll # 8866.
BC = 7670, Storage 98% free.
Extract test DP-30 032803.
Data looks fine.
1030 S. Purdue + R. Budd off-site.
S. Purdue mobs to SMO
to sort samples.

S. Purdue
04/02/03

04/03/03

0715 S. Purdue replaces
membrane on Oxi 330i
D.O. meter.
0800 S. Purdue mobs to
DP Canyon.
0810 S. Purdue on-site DP Canyon.
S. Purdue calibrates
Oxi330i D.O. meter
SN 01340040 with
OxiCal-SL calibration vessel,
slope = 0.88.
0815 Begin taking D.O. measurements.
0855 R. Budd on-site.
Begin collecting screening
samples from transects
1, 4, 5, 6, 7C, + 8.
0940 Complete collecting D.O.
measurements.
1020 S. Purdue + R. Budd off-site.
Mob to SMO for
sample screening.

S. Purdue
04/03/03

04/04/03

815 S. Purdue + R. Budd on-site DP canyon to collect screening samples from transects 1, 4, 5, 6, 7C, + 8. Safety tailgate meeting held.

0925 S. Purdue + R. Budd mob to SMO to screen samples.

S. Purdue 04/04/03

04/~~8~~07/03

~~8~~ 04/07/03

815 S. Purdue + R. Budd on-site DP canyon. Safety tailgate given.
Collect screening samples from transects 1, 4, 5, 6, 7C, + 8.
Collect from DP2 + DP3

1030 S. Purdue + R. Budd off-site.

S. Purdue 04/07/03

04/10/03

10:40 A. Groffman and J. Lyman on site for daily round of water sampling. Transect 1, 4, 5, 6, 7, 8 screening samples.

Note: At DPBN6D - Screen 1 (DPBN6D1) dry after approx 50 ml we run through pump - NO sample collected; Screen 3 (DPBN6D3) Dry - NO sample collected.

Suite for screening included Nonfiltered anion/Br⁻ bottle and filtered and acidified cation bottle.

Off site (ARG, JL) at approx. 12:30.

ARG
04/10/03

04/11/03

10:16 A. Groffman on site to perform screening sampling. Collected samples from entire set of wells that were not instrumented. This includes the DPW & DPPN series. I recommend doing the full suite every friday - once per week.

Note: DPBN6D screens #1 & #3 are dry - or will be very soon. Managed to collect enough volume from screen 1 to perform screening analysis.

Off site at 12:28

ARG
04/11/03

04/14/03

0900 R. Budd and J. Lyman on site. Daily safety tailgate meeting. Collect one round of samples from regular sampling wells in DP canyon. Collected samples from DP1 through DP4 and changed batteries in DP1-3. No samples to collect in DP1, DP2 and DP3. Note: DPBN 1B-3, DPW 1N, and DPBN-6D-3 are dry.

1145 R. Budd and J. Lyman offsite.

RB 04/14/03

04/15/03

0830 R. Budd and J. Lyman on site at DP Canyon. Safety tailgate meeting. Took water level measurements. No samples collected due to weather.

0935 R. Budd and J. Lyman offsite

R Budd 04/15/03

04/16/03

0900 J. Lyman and R. Budd on site to collect daily samples + cations in DP Canyon. Safety tailgate meeting. A. Groffman, R. Budd, and M. Garcia went to DP spring to collect samples from DP6 and determine best approach (method) for future collections. Changed battery on bubbler and ISCO. Preserved cations at SMO.

1300 off site - J. Lyman, A. Groffman, M. Garcia and R. Budd

R. Budd 04/16/03

04/17/03

0850 R. Budd and J. Lyman on site to collect daily samples in DP Canyon. Safety tailgate meeting. Collected samples from DP7. Changed battery on DP4 and DP7.

1000 R. Budd and J. Lyman offsite

R. Budd 4/17/03

04/18/03

0900 J. Lyman and R. Budd on site to collect daily samples in DP Canyon. Daily safety tailgate meeting.

1015 J. Lyman and R. Budd offsite

R. Budd 4/18/03

04/~~19~~ 31/03 SP 04/21/03

0845 S. Purdue & R. Budd on-site DP Canyon. Safety tailgate meeting held. Collect screening samples from transects 1, 4, 5, 6, 7C, & 8. Collect ISCO samples from DP1, DP2, & DP3.

1100 S. Purdue & R. Budd off-site

S. Purdue 04/19/03

04/23/03

0730 S. Purdue calibrates YSI 63 SN 01C0004 AD with Fisher pH buffer solutions:
pH 7.00 lot No. 026464-24 exp 07/04
pH 4.00 Lot No. 024520-24 exp. 03/04
pH 10.00 lot No. 011794-24 exp. 12/04 03
Meter reads 7.01 in 7.00 SP 04/23/03
4.00 in 4.00
10.05 in 10.00

0745 Calibrate specific conductance with Fisher 1000 us/cm Calibration Standard Lot No. 2790, exp. 08/07/03
Meter reads 1000 us/cm in 1000 us/cm

0755 S. Purdue mobs to SMO for sampling supplies.

0835 S. Purdue on-site DP Canyon. Buddy system with 71-011(c) site personnel.

0840 S. Purdue is collecting ^{90}Sr groundwater samples at the following locations DPW-3.2N, DPBN-5B2, DPBN4A2, Stream next to EO39, DP Springs, DPW-1.1N,

04/23/03

continued DPBN-1B1, DPBN-1B2, DPW-6.2S, DPW-7.4N, and DPBN-8A2.

10:20 A. Groffman on site to sample DMLS rods. NF sample at this collection.

1115 Pulled DPW1S rod, cells 1 through 11, #1 slot was empty. H_2O ▽ at center of cell #1. Start Numbering top-down at slot #2 (cell 1) to slot-12 (cell-11).

1200 S. Purdue & A. Groffman off site for lunch.

1235 S. Purdue & A. Groffman on site for continuation of sampling.

Note: DPW3.5N - pulled 11-cell rod w/top cell at hole/slot #2. Cells deployed from hole 2 through 12. Numbered accordingly. ▽ at very top of rod

04/23/03

1355 Collect surface water F rad sample at Stream next to E039.

pH 7.05

Temp 10.2° C

EC 1008 us/cm

1415 Mob to SMO.

S Pul 04/23/03

End of Entries

Charles C. Gonzales 04/23/03

4/24/03