General

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Sent: Friday, February 23, 2007 10:54 AM
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Subject: January 07 Groundwater Data

Attachments: NMED 1-07 GW Data Review.doc; NMED 1-07 gw data screening.xls

NMED 1-07 GW Data Review.doc (.. NMED 1-07 gw data screening.xl...

James and others, attached are two files that provide a summary of the most recent LANL groundwater data loaded in January 2007. The first file is a summary report that describes the key findings. The second file includes the relevant data referred to in the report. Please contact me if you have any questions or comments. Thanks. Tina

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LA-UR-07-0927

Summary of New LANL Groundwater Data Loaded in January 2007

February 9, 2007

Executive Summary

This result represents a new finding:

- **MCO-0.6 filtered cobalt (51% of the NM GW Standard), iron and manganese above standards. These results are higher than reported for MCO-0.6 in the October 2006 Mortandad Investigation Report. The trends for metals reported in this month's summary will be tracked following the sampling round scheduled for February 2007.**

These data are consistent with prior results or may result from reporting errors or analytical laboratory or sampling contamination:

- **Chloride and TDS results in PCO-3 and MCO-0.6;**
- **Fluoride and perchlorate results in Mortandad Canyon alluvial wells;**
- **Aluminum, iron, and manganese concentrations in other wells and springs related to turbidity or drilling fluid effects;**
- **RDX in Bulldog Spring;**
- **VOCs and dioxane at SM-30 wells 03-B-10 and 03-B-13;**
- **Bis(2-ethylhexyl)phthalate at R-31 (at 2.96 µg/L with an MDL of 2.0 µg/L).**

Introduction

This report provides preliminary information to NMED concerning recent groundwater data. This report highlights constituents that exceed 50% of an applicable regulatory standard in groundwater samples taken from several wells or springs (listed on four accompanying tables), which provide surveillance of the groundwater zones indicated in the tables.

In the tables, information is given for sample date, detection limits, values for regulatory standards, analytical and secondary validation qualifiers. All data have been through secondary validation, as indicated on the tables by a preliminary flag of N.

The following discussion provides information on prior occurrence of the constituents at the given locations.

General Chemistry Results

Fluoride results in Mortandad Canyon alluvial wells MCO-7.5 and MT-3 are about 110% of the NM GW Standard, similar to results for the last 8+ years. Fluoride values for other nearby alluvial wells are just below the standard as in recent years.

Chloride and TDS values from alluvial wells MCO-0.6 in Mortandad Canyon and PCO-3 in Pajarito Canyon are either just below or exceed the NM GW Standards. The values in these wells have fluctuated widely, with these results in middle of the range. Both wells have little water and have not been sampled often.

The perchlorate results from Mortandad Canyon alluvial wells are in the range of earlier values and show a long-term decline.

Metals Results

Several wells and springs generally have dissolved concentrations of aluminum, iron, or manganese that were more than 50% of groundwater standards. These metals are derived from soil or aquifer materials or related to well-drilling impact on sample quality.

In October 27, 2006 sampling of MCO-0.6 the filtered cobalt result was 25.4 µg/L (which was 51% of the NM GW Standard). This value is 180% of the previous high, out of three total samples.

MCO-0.6 has been sampled a total of three times (since September 2005) although the well has existed for about eight years; it has rarely contained water. MCO-0.6 is located upstream of Effluent Canyon where the RLWTF discharge enters. This well is a shallow (water level is about 4 ft deep) well that has shown high total dissolved solids concentrations (1170 mg/L) in samples, and moderate turbidity (13 NTU).

Of three samples the current cobalt result is 180% of the prior high value of 14.3 μg/L on 9/19/05; a sample on 7/10/06 gave a result of 7.3 μg/L.

This well also has filtered iron and manganese results that are above NM GW Standards: the iron result of 16.2 mg/L is 16 times the standard of 1 mg/L, and the manganese result of 5.9 mg/L is 29 times the standard of 0.2 mg/L. These values are both approximately twice the previous high from a sample on 9/19/05.

These results are higher than reported for MCO-0.6 in the October 2006 Mortandad Investigation Report. The trends for metals reported in this month's summary will be tracked following the sampling round scheduled for February 2007.

The December 2006 iron results from SM-30 wells 03-B-10 and 03-B-13 were all about three times the NM GW Standard of 1 mg/L. Similarly, December 2006 aluminum values in these wells were near the NM GW Standard of 5 mg/L. Sampling results in August for iron and aluminum were about 10 times higher; the recent turbidity at 03-B-13 was 27 NTU and for August it was 122 NTU; for 03-B-10 the values were 44 NTU and 153 NTU. Manganese concentrations were below standards in these wells.

Recent iron and manganese results from 532 ft and 672 ft at Ancho Canyon regional well R-31 are above NM GW Standards and are in the range of 2005 results. Earlier values from 2000 were lower.

Organic Results

A number of low-level organic compound detections often occur that are sporadic and likely result from contamination during sampling or analysis, with numerous compounds found in trip, field, or equipment blanks. Such compounds include bis(2-ethylhexyl) phthalate, acetone, toluene, methylene chloride, and carbon disulfide.

At Bulldog Spring the RDX concentration (at 7.5 times the EPA tap water screening level) is similar to prior results.

Concentrations of VOCs and dioxane at the two SM-30 wells 03-B-10 and 03-B-13 are within ranges for samples collected since June 2006. The values vary by more than a factor of two across these samples.

Bis(2-ethylhexyl)phthalate, a common analytical laboratory contaminant, was found in a sample at R-31 (at 2.96 μg/L with an MDL of 2.0 μg/L).

Results from field QC samples
Samples where result/screening level > 10
Samples where 1 < result/screening level < 10
Samples with blank contamination or rejected

Hdr 1	Zone	Location Name	Well Class	Port Dept	Start Date	Fld C	Fld P	Lab S	Sample Id	Anyl S	Analyte Desc	Analyte	Sou	Syn	Std Result	Std Mdl	Std U	Dilut	Lab	Conc	Conc	Preli	Lab	Anyl	Lab	Load Date	Uri	Lvl T Risk Code	EPA PRIM DW STD Scr Lvl	EPA PRIM DW STD Ratio (Result/Scr Level)	EPA TAP SCRN LVL C Scr Lvl	EPA TAP SCRN LVL C Ratio (Result/Scr Level)	NM GW LIM Scr Lvl	NM GW LIM Ratio (Result/Scr Level)
Pajarito Canyon	Alluvial	18-MW-8	SINGLE	8	12/11/06	FTB	UF	CS	GU06120G18M801-F	VOA	Methylene Chloride	75-09-2		ESH-18H	3.2	2	ug/L	1	J			N	###	SW-	GEL	01/23/07	14399841		5	0.64	4.2756318	0.75		
Pajarito Canyon	Alluvial	18-MW-9	SINGLE	6	12/11/06	FTB	UF	CS	GU06120G18M901-F	VOA	Methylene Chloride	75-09-2		ESH-18H	2.9	2	ug/L	1	J			N	###	SW-	GEL	01/24/07	14413641		5	0.58	4.2756318	0.68		
Pajarito Canyon	Alluvial	18-MW-18	SINGLE	12.5	12/07/06	FTB	UF	CS	GU06120G181801-F	VOA	Methylene Chloride	75-09-2		ESH-18H	3.91	2	ug/L	1	J			N	###	SW-	GEL	01/09/07	14261511		5	0.78	4.2756318	0.91		
Pajarito Canyon	Interme	Anderson Spring	SPRING	0	12/11/06	FTB	UF	CS	GU06120GANDS01-	VOA	Methylene Chloride	75-09-2		ESH-18H	2.82	2	ug/L	1	J			N	###	SW-	GEL	01/23/07	14395591		5	0.56	4.2756318	0.66		
Pajarito Canyon	Interme	Bulldog Spring	SPRING	0	12/07/06		UF	CS	GU061200GSLB01	HEXP	RDX	121-82-4		ESH-18H	4.58	0.13	ug/L	2		J, J-	LIS1	N	###	SW-	GEL	01/09/07	14264421				0.6111958	7.49		
Pajarito Canyon	Interme	03-B-10	SINGLE	20.6	12/14/06		UF	CS	GU06120G3B1001	SVOA	Dioxane[1,4-]	123-91-1		ESH-18H	38.4	1	ug/L	1				N	###	SW-	GEL	01/24/07	14407041				6.1119577	6.28		
Pajarito Canyon	Interme	03-B-10	SINGLE	20.6	12/14/06		UF	CS	GU06120G3B1001	VOA	Dichloroethene[1,1	75-35-4		ESH-18H	3.11	0.3	ug/L	1				N	###	SW-	GEL	01/24/07	14406731						5	0.62
Pajarito Canyon	Interme	03-B-10	SINGLE	20.6	12/14/06		UF	RE	GU06120G3B1001	VOA	Dichloroethene[1,1	75-35-4		ESH-18H	3.31	0.6	ug/L	2				N	###	SW-	GEL	01/24/07	14405721						5	0.66
Pajarito Canyon	Interme	03-B-10	SINGLE	20.6	12/14/06		UF	CS	GU06120G3B1001	VOA	Dioxane[1,4-]	123-91-1		ESH-18H	84.3	20	ug/L	1		J	V7b	N	###	SW-	GEL	01/24/07	14408111				6.1119577	13.79		
Pajarito Canyon	Interme	03-B-10	SINGLE	20.6	12/14/06		UF	RE	GU06120G3B1001	VOA	Dioxane[1,4-]	123-91-1		ESH-18H	104	40	ug/L	2		J	V7b	N	###	SW-	GEL	01/24/07	14405821				6.1119577	17.02		
Pajarito Canyon	Interme	03-B-10	SINGLE	20.6	12/14/06		UF	CS	GU06120G3B1001	VOA	Trichloroethane[1,	71-55-6		ESH-18H	136	0.3	ug/L	1	E	J	VWC	N	###	SW-	GEL	01/24/07	14406301		200	0.68			60	2.27
Pajarito Canyon	Interme	03-B-10	SINGLE	20.6	12/14/06		UF	RE	GU06120G3B1001	VOA	Trichloroethane[1,	71-55-6		ESH-18H	140	0.6	ug/L	2				N	###	SW-	GEL	01/24/07	14405511		200	0.7			60	2.33
Pajarito Canyon	Interme	03-B-10	SINGLE	20.6	12/14/06		UF	CS	GU06120G3B1001	VOA	Trichloroethene	79-01-6		ESH-18H	2.26	0.25	ug/L	1				N	###	SW-	GEL	01/24/07	14408931				0.028015	80.67		
Pajarito Canyon	Interme	03-B-10	SINGLE	20.6	12/14/06		UF	RE	GU06120G3B1001	VOA	Trichloroethene	79-01-6		ESH-18H	2.38	0.5	ug/L	2				N	###	SW-	GEL	01/24/07	14406241				0.028015	84.95		
Pajarito Canyon	Interme	03-B-13	SINGLE	21.5	12/18/06		UF	CS	GU06120G3B1301	SVOA	Dioxane[1,4-]	123-91-1		ESH-18H	76.4	1.03	ug/L	1		J	SV16	N	###	SW-	GEL	01/24/07	14402311				6.1119577	12.5		
Pajarito Canyon	Interme	03-B-13	SINGLE	21.5	12/18/06		UF	CS	GU06120G3B1301	VOA	Dichloroethene[1,1	75-35-4		ESH-18H	3.16	0.3	ug/L	1				N	###	SW-	GEL	01/24/07	14402131						5	0.63
Pajarito Canyon	Interme	03-B-13	SINGLE	21.5	12/18/06		UF	RE	GU06120G3B1301	VOA	Dichloroethene[1,1	75-35-4		ESH-18H	2.94	0.6	ug/L	2				N	###	SW-	GEL	01/24/07	14401351						5	0.59
Pajarito Canyon	Interme	03-B-13	SINGLE	21.5	12/18/06		UF	CS	GU06120G3B1301	VOA	Dioxane[1,4-]	123-91-1		ESH-18H	209	20	ug/L	1		J	V7b	N	###	SW-	GEL	01/24/07	14401451				6.1119577	34.2		
Pajarito Canyon	Interme	03-B-13	SINGLE	21.5	12/18/06		UF	RE	GU06120G3B1301	VOA	Dioxane[1,4-]	123-91-1		ESH-18H	201	40	ug/L	2		J	V7b	N	###	SW-	GEL	01/24/07	14400671				6.1119577	32.89		
Pajarito Canyon	Interme	03-B-13	SINGLE	21.5	12/18/06		UF	CS	GU06120G3B1301	VOA	Trichloroethane[1,	71-55-6		ESH-18H	112	0.3	ug/L	1	E	J, J-	VWC	N	###	SW-	GEL	01/24/07	14401921		200	0.56			60	1.87
Pajarito Canyon	Interme	03-B-13	SINGLE	21.5	12/18/06		UF	RE	GU06120G3B1301	VOA	Trichloroethane[1,	71-55-6		ESH-18H	103	0.6	ug/L	2		J-	VWC	N	###	SW-	GEL	01/24/07	14401141		200	0.52			60	1.72
Pajarito Canyon	Interme	03-B-13	SINGLE	21.5	12/18/06		UF	CS	GU06120G3B1301	VOA	Trichloroethene	79-01-6		ESH-18H	1.85	0.25	ug/L	1		J-	VWC	N	###	SW-	GEL	01/24/07	14401871				0.028015	66.04		
Pajarito Canyon	Interme	03-B-13	SINGLE	21.5	12/18/06		UF	RE	GU06120G3B1301	VOA	Trichloroethene	79-01-6		ESH-18H	1.57	0.5	ug/L	2	J	J, J-	VWC	N	###	SW-	GEL	01/24/07	14401091				0.028015	56.04		
Pajarito Canyon	Regiona	R-32	MULTI	976	12/13/06	FTB	UF	CS	GU06120G32R301-F	VOA	Methylene Chloride	75-09-2		ER/WQH	2.35	2	ug/L	1	J	J+	VWC	N	###	SW-	GEL	01/24/07	14417691				4.2756318	0.55		
Ancho Canyon	Regiona	Test Well DT-9	SINGLE	1040	12/05/06	FTB	UF	CS	GU061100G9WT01-i	VOA	Methylene Chloride	75-09-2		ESH-18H	5.35	2	ug/L	1				N	###	SW-	GEL	01/10/07	14293091		5	1.07	4.2756318	1.25		
Ancho Canyon	Regiona	R-31	MULTI	532.2	11/28/06		UF	CS	GU06110G31R201	SVOA	Bis(2-ethylhexyl)ph	117-81-7		ER/WQH	2.96	2	ug/L	1	J			N	###	SW-	GEL	01/05/07	14254311				4.8022525	0.62		

(E) (Organic) - The result for this anlayte exceeded the upper range of the instrument initial calibration curve.
(B) (Organic) - This analyte was detected in the associated Laboratory Method Blank and the sample.

This report contains all LC/MS/MS results and all IC detections (Note lower IC MDL for EES-6)
Sample with result > 24.5 (EPA Drinking Water Equivalent Level)
Sample with result > 4 CO Screening Level)
Sample with 0.6 < result < 4 (NMED background upper limit and CO Screening Level)

Hdr 1	Zor	Location Name	Well Class	Port Depth	Start Date	Fld Q	Fld P	Lab S	Analy	Anyl Meth Code	Symbol	Std Result	Std Mdl	Std U	Diluti	Lab Q	Conc	Conc	Prelir	Load Date	Lab Code	Source Org	Comments	Sample Id
Mortar	Allu	MCO-3	SINGLE	2	11/13/06		F	CS	ClO4	SW846 6850 Modified		2.86	0.25	ug/L	5		J	I14b	N	01/05/07	GELC	ESH-18HDRO		GF061000G3CM01
Mortar	Allu	MCO-3	SINGLE	2	11/13/06	FD	F	CS	ClO4	SW846 6850 Modified		2.89	0.25	ug/L	5		J	I14b	N	01/05/07	GELC	ESH-18HDRO		GF061000G3CM20
Mortar	Allu	MCA-2	SINGLE	45	11/01/06		F	CS	ClO4	EPA:314.0		28	4	ug/L	1				N	01/05/07	GELC	ESH-18HDRO		GF060900GMA201
Mortar	Allu	MCA-2	SINGLE	45	11/01/06		F	CS	ClO4	SW846 6850 Modified		28.2	2	ug/L	40		J	LMS	N	01/05/07	GELC	ESH-18HDRO		GF060900GMA201
Mortar	Allu	MCO-7	SINGLE	39	10/25/06		F	CS	ClO4	EPA:314.0		25.3	4	ug/L	1				N	01/04/07	GELC	ESH-18HDRO		GF060900G7CM01
Mortar	Allu	MCO-7	SINGLE	39	10/25/06		F	CS	ClO4	SW846 6850 Modified		26.9	2	ug/L	40		J	LMS	N	01/04/07	GELC	ESH-18HDRO		GF060900G7CM01
Mortar	Allu	MCO-7.5	SINGLE	35	10/25/06		F	CS	ClO4	EPA:314.0		21	4	ug/L	1				N	01/05/07	GELC	ESH-18HDRO		GF060900G57M01
Mortar	Allu	MCO-7.5	SINGLE	35	10/25/06		F	CS	ClO4	SW846 6850 Modified		23.5	2	ug/L	40		J	LMS	N	01/05/07	GELC	ESH-18HDRO		GF060900G57M01
Mortar	Allu	MT-3	SINGLE	44	10/26/06		F	CS	ClO4	EPA:314.0		27	4	ug/L	1				N	01/05/07	GELC	ESH-18HDRO		GF060900G3TM01
Mortar	Allu	MT-3	SINGLE	44	10/26/06		F	CS	ClO4	SW846 6850 Modified		27.7	2	ug/L	40		J	LMS	N	01/05/07	GELC	ESH-18HDRO		GF060900G3TM01

Samples where result/screening level > 10

Samples where 1 < result/screening level < 10

He	Ul	Hdr 1	Zone	Location Name	Well Class	Port Depth	Start Date	Source Or	Analyt	Fld Pre	Lab Sa	Fld Qc	Symbo	Std Result	Std Mdl	Std U	Anyl Meth Cod	Load Date	Lab Code	Lab C	Conc	Conc	Prelin	Samp	Uri	Lvl Ty	EPA PRIM DW STD Scr Lvl	EPA PRIM DW STD Ratio (Result/Scr Level)	NM GW LIM Scr Lvl	NM GW LIM Ratio (Result/Scr Level)
#	#	Morta	Alluvi	MCO-0.6	SINGLE	1.05	10/27/06	ESH-18HD	Co	F	CS			25.4	1	ug/L	SW-846:6010B	01/19/07	GELC				N	GF06	14325641				50	0.51
#	#	Morta	Alluvi	MCO-0.6	SINGLE	1.05	10/27/06	ESH-18HD	Fe	F	CS			16200	18	ug/L	SW-846:6010B	01/19/07	GELC				N	GF06	14325621				1000	16.20
#	#	Morta	Alluvi	MCO-0.6	SINGLE	1.05	10/27/06	ESH-18HD	Mn	F	CS			5870	2	ug/L	SW-846:6010B	01/19/07	GELC				N	GF06	14325591				200	29.35
#	#	Pajari	Alluvi	TW-1.72 Spring	SPRING	0	12/13/06	ESH-18HD	Al	F	CS			7290	68	ug/L	SW-846:6010B	01/22/07	GELC				N	GF06	14372471				5000	1.46
#	#	Pajari	Alluvi	TW-1.72 Spring	SPRING	0	12/13/06	ESH-18HD	Fe	F	CS			3610	18	ug/L	SW-846:6010B	01/22/07	GELC				N	GF06	14372361				1000	3.61
#	#	Pajari	Alluvi	PCO-3	SINGLE	5.7	12/13/06	ESH-18HD	Mn	F	CS			322	2	ug/L	SW-846:6010B	01/22/07	GELC				N	GF06	14345101				200	1.61
#	#	Pajari	Intern	03-B-10	SINGLE	20.6	12/14/06	ESH-18HD	Al	F	CS			5580	68	ug/L	SW-846:6010B	01/24/07	GELC				N	GF06	14405341				5000	1.12
#	#	Pajari	Intern	03-B-10	SINGLE	20.6	12/14/06	ESH-18HD	Fe	F	CS			2910	18	ug/L	SW-846:6010B	01/24/07	GELC				N	GF06	14405231				1000	2.91
#	#	Pajari	Intern	03-B-13	SINGLE	21.5	12/18/06	ESH-18HD	Al	F	CS			4660	68	ug/L	SW-846:6010B	01/24/07	GELC				N	GF06	14400321				5000	.93
#	#	Pajari	Intern	03-B-13	SINGLE	21.5	12/18/06	ESH-18HD	Fe	F	CS			2520	18	ug/L	SW-846:6010B	01/24/07	GELC				N	GF06	14400211				1000	.52
#	#	Pajari	Regio	R-32	MULTI	976	12/13/06	ER/WQH	Mn	F	CS			1580	2	ug/L	SW-846:6010B	01/24/07	GELC				N	GF06	14414331				200	7.90
#	#	Anche	Regio	R-31	MULTI	532.2	11/28/06	ER/WQH	Fe	F	CS			892	18	ug/L	SW-846:6010B	01/05/07	GELC				N	GF06	14251811				1000	0.89
#	#	Anche	Regio	R-31	MULTI	532.2	11/28/06	ER/WQH	Mn	F	CS			1490	2	ug/L	SW-846:6010B	01/05/07	GELC				N	GF06	14251781				200	7.45
#	#	Anche	Regio	R-31	MULTI	670.3	11/30/06	ER/WQH	Fe	F	CS			2840	18	ug/L	SW-846:6010B	01/09/07	GELC				N	GF06	14286331				1000	2.84
#	#	Anche	Regio	R-31	MULTI	670.3	11/30/06	ER/WQH	Mn	F	CS			276	2	ug/L	SW-846:6010B	01/09/07	GELC				N	GF06	14286301				200	1.38

result>standard

Analyte	H	U	Hdr 1	Zone	Location Name	Well Class	Port Depth	Start Date	Source Orc	Fld Pr	Fld Qu	Lab S	Sample Id	Symbol	Std Result	Std U	Std D	Std U	Load Date	Lab Co	Lab	Con	Con	Preli	Uri	Lvl Type Code	NM GW LIM Scr Lvl	NM GW LIM Ratio (Result/Scr Level)
Cl(-1)			Mortandad	Alluvial	MCO-0.6	SINGLE	1.05	10/27/06	ESH-18HD	F		CS	GF060900GM0601		434		6.6	mg/L	01/19/07	GELC				N	14325801		250	1.74
Cl(-1)			Pajarito Ca	Alluvial	PCO-3	SINGLE	5.7	12/13/06	ESH-18HD	F		CS	GF061200G3CP02		275		1.3	mg/L	01/22/07	GELC				N	14344811		250	1.1
F(-1)			Mortandad	Alluvial	MCA-2	SINGLE	45	11/01/06	ESH-18HD	F		CS	GF060900GMA201		1.39		0	mg/L	01/05/07	GELC				N	14240421		1.6	0.87
F(-1)			Mortandad	Alluvial	MCO-7	SINGLE	39	10/25/06	ESH-18HD	F		CS	GF060900G7CM01		1.46		0	mg/L	01/04/07	GELC				N	14232871		1.6	0.91
F(-1)			Mortandad	Alluvial	MCO-7.5	SINGLE	35	10/25/06	ESH-18HD	F		CS	GF060900G57M01		1.68		0	mg/L	01/05/07	GELC				N	14244401		1.6	1.05
F(-1)			Mortandad	Alluvial	MT-3	SINGLE	44	10/26/06	ESH-18HD	F		CS	GF060900G3TM01		1.73		0	mg/L	01/05/07	GELC				N	14247781		1.6	1.08
TDS			Mortandad	Alluvial	MCO-0.6	SINGLE	1.05	10/27/06	ESH-18HD	F		CS	GF060900GM0601		1150		2.4	mg/L	01/19/07	GELC				N	14325811		1000	1.15
TDS			Pajarito Ca	Alluvial	PCO-3	SINGLE	5.7	12/13/06	ESH-18HD	F		CS	GF061200G3CP02		819		2.4	mg/L	01/22/07	GELC				N	14344851		1000	0.82