WM-41

DATA VALIDATION
SALT LAKE CITY, UTAH

December 2003
Water Sampling

Prepared by the
U.S. Department of Energy
Grand Junction, Colorado

Work Performed under DOE Contract No. DE-AC01-02GJ79491 for the U.S. Department of Energy, Grand Junction, Colorado.

UMS508

WM-41

Salt Lake City, Utah
Sampled December 2003

DATA PACKAGE CONTENTS

This data package includes the following information:

Item No.	Description of Contents
1.	**Site Hydrologist Summary.**
2.	**Data Package Assessment,** which includes the following:
	a. Field activities verification checklist.
	b. Confirmation that chain-of-custody was maintained.
	c. Confirmation that holding time requirements were met.
	d. Evaluation of the adequacy of the QC sample results.
3.	**Data Assessment Summary,** which describes problems identified in the data validation process and summarizes the validator's findings.
4.	**Minimum / Maximum Table** is generated by the database system and is used primarily as a screening tool to monitor data trends. The current data are compared to historical maximums and minimums and are listed on the table if they exceed the historical maximums and minimums. The data are further scrutinized and listed on the Anomalous Data Review Checksheet if they are 50 percent greater than or 50 percent less than the historical maximums and minimums, respectively.
5.	**Database Printouts** of analytical data organized as follows:
	a. General water quality data (included on disk).
	b. Equipment blank sample data (included on disk).
	c. Static ground water level data.
	d. Time Versus Concentration Graphs.
6.	**Sampling and Analysis Work Order and Trip Report.**
7.	**Sampling Location Map.**

Site Hydrologist Summary

Site: Salt Lake City, Utah, Processing Site

Sampling Period: December 2-3, 2003

SUMMARY

Molybdenum and uranium concentrations in ground water are below their respective U.S. Environmental Protection Agency (EPA) standards (40 CFR 192) for well 0134 and the uranium concentration in well 0144 also is below the standard. However, the molybdenum concentration in well 0144, which had been decreasing over time, has increased to a value of 0.215 milligrams per liter (mg/L), which is above the 0.1 mg/L standard. Elevated concentrations of molybdenum in ground water at the site have been observed in the past, so the increase is not unexpected. Changes in concentrations will be noted in future sampling events.

Ground water elevations in the shallow unconfined aquifer are consistent at approximately 4225 feet above sea level (based on datalogger measurements) and observed water levels in the deeper confined aquifer are approximately 10 feet higher. This confirms that there continues to be an upward vertical hydraulic gradient.

Results from this sampling event demonstrate improvement of surface water quality in the ponds located on the site (see time versus concentration graphs for locations 0146, 0148, 0149, 0150, and 0151). Molybdenum and uranium concentrations remained the same in Mill Creek upstream of the site (location 0181), while molybdenum decreased and uranium stayed about the same downstream of the site (location 0182) (see time versus concentration graphs). The concentrations are well below their respective standards.

Dick Heydenburg
Site Hydrologist

02 Feb 04
Date

DATA ASSESSMENT

Water Sampling Field Activities Verification Checklist

Project	Salt Lake City, Utah	Date(s) of Water Sampling	12/02-03/03
Date(s) of Verification	01/27/04	Name of Verifier	Jeff Price

	Response (Yes, No, NA)	Comments
1. Is the SAP the primary document directing field procedures?	Yes	
List other documents, SOP's, instructions.		Work Request.
2. Were the sampling locations specified in the planning documents sampled?	Yes	
3. Was a pre-trip calibration conducted as specified in the above named documents?	Yes	
4. Was an operational check of the field equipment conducted twice daily?	Yes	
Did the operational checks meet criteria?	Yes	
5. Were the number and types (alkalinity, temperature, Ec, pH, turbidity, DO, ORP) of field measurements taken as specified?	Yes	
6. Was the Category of the well documented?	No	
7. Were the following conditions met when purging a Category I well:		
Was one pump/tubing volume purged prior to sampling?	Yes	
Did the water level stabilize prior to sampling?	Yes	
Did pH, specific conductance, and turbidity measurements stabilize prior to sampling?	Yes	
Was the flow rate less than 500 mL/min?	Yes	
If a portable pump was used, was there a 4 hour delay between pump installation and sampling?	NA	

Water Sampling Field Activities Verification Checklist (continued)

8. Were the following conditions met when purging a Category II well:		
Was the flow rate less than 500 mL/min?	N/A	
Was one pump/tubing volume removed prior to sampling?	N/A	
9. Were duplicates taken at a frequency of one per 20 samples?	Yes	
10. Were equipment blanks taken at a frequency of one per 20 samples that were collected with nondedicated equipment?	Yes	
11. Were trip blanks prepared and included with each shipment of VOC samples?	NA	
12. Were QC samples assigned a fictitious site identification number?	Yes	
Was the true identity of the samples recorded on the Quality Assurance Sample Log?	Yes	
13. Were samples collected in the containers specified?	Yes	
14. Were samples filtered and preserved as specified?	Yes	
15. Were the number and types of samples collected as specified?	Yes	
16. Were chain of custody records completed and was sample custody maintained?	Yes	
17. Are field data sheets signed and dated by both team members?	No	
18. Was all other pertinent information documented on the field data sheets?	Yes	
19. Was the presence or absence of ice in the cooler documented at every sample location?	N/A	
20. Were water levels measured at the locations specified in the planning documents?	Yes	

Data Package Assessment

Requisition Numbers: 18771 Site: Salt Lake City, Ut Laboratory: GJO Analysis Dates: 12/10 – 12/11/03

Reviewer: Jeff Price J. E. Price January 5, 2004

Name (print) Signature Date

	ICP-MS	ICP-AES	FAA	$NaBH_4$	AS	LSc	PC	IC	Gravimetric	Colorimetric	Other
Chain of Custody	OK	OK	NA	NA	NA	NA	NA	NA	NA	NA	NA
Holding Time	OK	OK	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calib. Verification (For As, internal tracer)	OK	OK	NA	NA	NA	NA	NA	NA	NA	NA	NA
Prep. Blanks (Only if digestion)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Int/Cont Cal. Blanks	OK	OK	NA	NA	NA	NA	NA	NA	NA	NA	NA
ICP Serial Dilution	OK	OK	NA	NA	NA	NA	NA	NA	NA	NA	NA
ICS (ICP only)	NA	OK	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lab Control Sample	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Duplicates	OK	OK	NA	NA	NA	NA	NA	NA	NA	NA	NA
Postdigest. Spks. (Only if MS fails)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Matrix Spks.	OK	OK	NA	NA	NA	NA	NA	NA	NA	NA	NA
Overall Assess.	OK	OK	NA	NA	NA	NA	NA	NA	NA	NA	NA

Data Requiring Flags:

SALT LAKE CITY, UTAH
DECEMBER 2003 SAMPLING
DATA ASSESSMENT SUMMARY

Samples were analyzed and reported under requisition 18771.

METALS/MAJOR CATIONS ANALYSIS

Molybdenum results were obtained by inductively coupled plasma-atomic emission spectrometry (ICP-AES). Uranium was analyzed using inductively coupled plasma-mass spectrometry (ICP-MS).

FIELD ANALYSIS / ACTIVITIES

Equipment blank results were collected and analyzed for the same constituents and are considered acceptable. Both wells were micro-purged and the associated data were flagged with an "F" flag in the data base. A field duplicate was collected from location 0146. There are no established regulatory criteria for the evaluation of field duplicate samples; therefore, EPA guidance for *laboratory* duplicates (less than 20 percent relative difference), which is conservative for field duplicates, was used to assess the precision of the field duplicate. All results met the laboratory duplicate criteria and are considered acceptable.

MINIMUM / MAXIMUM TABLE

Values listed in the MIN / MAX table were considered valid if: (1) identified low concentrations were the result of low detection limits; or (2) the concentration detected was within 50 percent historical minimum or maximum values. Results that did not meet these criteria are listed on the Anomalous Data Review Checksheet.

SUMMARY

All analytical quality control criteria were met except as qualified on the General Water Quality Data by Parameter or equipment blank printouts. The meaning of data qualifiers is as defined on the UMTRA ground water database printout or as defined in the USEPA Contract Laboratory Program Statement of Work for Inorganic Analysis, Multi-Media Multi-Concentration, Document Number ILMO2.0, 1991. All data in this package are considered validated and acceptable for use. A disk copy of the General Water Quality Data by Parameter and equipment blank database printouts with the qualifiers are included in this package.

J.E. Price Jan 28, 04

Jeff Price Date
Data Validation Lead

MINIMUM / MAXIMUM TABLE

SAMPLING DATA VALIDATION MINIMUMS AND MAXIMUMS REPORT
LAB REQUISITION(S): 18771
REPORT DATE: 01/27/04 01:33:46: PM

SITE CODE	LOCATION CODE	SAMPLE DATE	ANALYTE	RESULT	QUALIFIERS		MAXIMUM	MAXIMUM LAB	MAXIMUM DATA	MINIMUM	MINIMUM LAB	MINIMUM DATA	N	N BELOW
SLC01	0134	12/02/2003	Molybdenum	0.0017	U	F	0.0352			0.0021	B	F	17	1
SLC01	0134	12/02/2003	Specific Conductance	731		F	1790			755			13	0
SLC01	0144	12/03/2003	Molybdenum	0.215		F	0.137			0.0228		F	6	0
SLC01	0144	12/03/2003	Specific Conductance	9117		F	12249		F	10120			4	0
SLC01	0144	12/03/2003	Turbidity	2.38		F	8.06			3.06			4	0
SLC01	0146	12/03/2003	Molybdenum	0.046			0.0457			0.019			7	0
SLC01	0148	12/03/2003	Molybdenum	0.0067	B		0.0465			0.0079	B		6	0
SLC01	0149	12/02/2003	Uranium	0.0027			0.374			0.0031			6	0
SLC01	0151	12/02/2003	Alkalinity, Total (As CaCO3)	155			294			161			4	0
SLC01	0182	12/03/2003	Molybdenum	0.0031	B		0.02			0.0062	B		13	4

SAMPLING DATA VALIDATION MINIMUMS AND MAXIMUMS REPORT
LAB REQUISITION(S): 18771
REPORT DATE: 01/27/04 01:33:46: PM

SITE CODE	LOCATION CODE	SAMPLE DATE	ANALYTE	RESULT	QUALIFIERS	MAXIMUM	MAXIMUM LAB DATA	MINIMUM	MINIMUM LAB DATA	N	N BELOW

SAMPLE ID CODES: 000X = Filtered sample (0.45 µm). N00X = Unfiltered sample. X = replicate number.

LAB QUALIFIERS:

*	Replicate analysis not within control limits.
+	Correlation coefficient for MSA < 0.995.
A	TIC is a suspected aldol-condensation product.
B	Inorganic: Result is between the IDL and CRDL. Organic: Analyte also found in method blank.
E	Inorganic: Estimate value because of interference, see case narrative. Organic: Analyte exceeded calibration range of the GC-MS.
Z	Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
H	Holding time expired, value suspect.
I	Increased detection limit due to required dilution.
C	Pesticide result confirmed by GC-MS.
M	GFAA duplicate injection precision not met.
N	Inorganic or radiochemical: Spike sample recovery not within control limits. Organic: Tentatively identified compund (TIC).
S	Result determined by method of standard addition (MSA).
U	Analytical result below detection limit.
W	Post-digestion spike outside control limits while sample absorbance < 50% of analytical spike absorbance.
D	Analyte determined in diluted sample.
P	> 25% difference in detected pesticide or Arochlor concentrations between 2 columns.
X	Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
Y	Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
>	Result above upper detection limit.
J	Estimated

DATA QUALIFIERS:

J	Estimated value.	F	Low flow sampling method used.	G	Possible grout contamination, pH > 9.
L	Less than 3 bore volumes purged prior to sampling.	R	Unusable result.	X	Location is undefined.
U	Parameter analyzed for but was not detected.	Q	Qualitative result due to sampling technique		

DATA REVIEW CHECKSHEET

Anomalous Data Review Checksheet

Site: Salt Lake City, Utah Sampling Data: December 2003

Reviewer: Jeff Price (Name (print)) [signature] (Signature) January 27, 2004 (Date)

Site Hydrologist: Dick Heydenburg (Name (print)) [signature] (Signature) 28 Jan 04 (Date)

Date of Review: January 27, 2004

Loc. No.	Analyte	Type of Anomaly	Disposition
144	Molybdenum	High	Compare to other rounds
182	Molybdenum	Low	Compare to other rounds

WATER QUALITY DATA

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE SLC01, SALT LAKE CITY
REPORT DATE: 1/27/2004 2:06 pm

PARAMETER	UNITS	LOCATION ID	LOC TYPE, SUBTYPE	SAMPLE: DATE	ID	DEPTH RANGE (FT BLS)	RESULT	QUALIFIERS: LAB	DATA	QA	DETECTION LIMIT	UN-CERTAINTY
Alkalinity, Total (As CaCO3	mg/L	0134	WL	12/02/2003	0001	29.42 - 39.42	323		F	#	-	-
	mg/L	0144	WL	12/03/2003	0001	29.70 - 39.70	685		F	#	-	-
	mg/L	0146	SL, DTCH	12/03/2003	0001	0.00 - 0.00	229			#	-	-
	mg/L	0148	SL, POND	12/03/2003	0001	0.00 - 0.00	134			#	-	-
	mg/L	0149	SL, POND	12/02/2003	0001	0.00 - 0.00	153			#	-	-
	mg/L	0150	SL, POND	12/02/2003	0001	0.00 - 0.00	155			#	-	-
	mg/L	0151	SL, POND	12/02/2003	0001	0.00 - 0.00	155			#	-	-
	mg/L	0181	SL	12/03/2003	0001	0.00 - 0.00	216			#	-	-
	mg/L	0182	SL	12/03/2003	0001	0.00 - 0.00	157			#	-	-
Molybdenum	mg/L	0134	WL	12/02/2003	0001	29.42 - 39.42	0.00170	U	F	#	0.0017	-
	mg/L	0144	WL	12/03/2003	0001	29.70 - 39.70	0.215		F	#	0.0017	-
	mg/L	0146	SL, DTCH	12/03/2003	0001	0.00 - 0.00	0.0454			#	0.0017	-
	mg/L	0146	SL, DTCH	12/03/2003	0002	0.00 - 0.00	0.0460			#	0.0017	-
	mg/L	0148	SL, POND	12/03/2003	0001	0.00 - 0.00	0.00670	B		#	0.0017	-
	mg/L	0149	SL, POND	12/02/2003	0001	0.00 - 0.00	0.00540	B		#	0.0017	-
	mg/L	0150	SL, POND	12/02/2003	0001	0.00 - 0.00	0.00560	B		#	0.0017	-
	mg/L	0151	SL, POND	12/02/2003	0001	0.00 - 0.00	0.00480	B		#	0.0017	-
	mg/L	0181	SL	12/03/2003	0001	0.00 - 0.00	0.00170	U		#	0.0017	-
	mg/L	0182	SL	12/03/2003	0001	0.00 - 0.00	0.00310	B		#	0.0017	-
Oxidation Reduction Potent	mV	0134	WL	12/02/2003	N001	29.42 - 39.42	-139		F	#	-	-
	mV	0144	WL	12/03/2003	N001	29.70 - 39.70	-64		F	#	-	-
	mV	0146	SL, DTCH	12/03/2003	N001	0.00 - 0.00	107			#	-	-
	mV	0148	SL, POND	12/03/2003	N001	0.00 - 0.00	144			#	-	-
	mV	0149	SL, POND	12/02/2003	N001	0.00 - 0.00	155			#	-	-
	mV	0150	SL, POND	12/02/2003	N001	0.00 - 0.00	160.3			#	-	-
	mV	0151	SL, POND	12/02/2003	N001	0.00 - 0.00	139			#	-	-

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE SLC01, SALT LAKE CITY
REPORT DATE: 1/27/2004 2:06 pm

PARAMETER	UNITS	LOCATION ID	LOC TYPE, SUBTYPE	SAMPLE: DATE	ID	DEPTH RANGE (FT BLS)	RESULT	QUALIFIERS: LAB	DATA	QA	DETECTION LIMIT	UN-CERTAINTY
Oxidation Reduction Potent	mV	0181	SL	12/03/2003	N001	0.00 - 0.00	132			#	-	-
	mV	0182	SL	12/03/2003	N001	0.00 - 0.00	213			#	-	-
pH	s.u.	0134	WL	12/02/2003	N001	29.42 - 39.42	7.79		F	#	-	-
	s.u.	0144	WL	12/03/2003	N001	29.70 - 39.70	7.55		F	#	-	-
	s.u.	0146	SL, DTCH	12/03/2003	N001	0.00 - 0.00	8.01			#	-	-
	s.u.	0148	SL, POND	12/03/2003	N001	0.00 - 0.00	8.6			#	-	-
	s.u.	0149	SL, POND	12/02/2003	N001	0.00 - 0.00	9.03			#	-	-
	s.u.	0150	SL, POND	12/02/2003	N001	0.00 - 0.00	8.75			#	-	-
	s.u.	0151	SL, POND	12/02/2003	N001	0.00 - 0.00	8.49			#	-	-
	s.u.	0181	SL	12/03/2003	N001	0.00 - 0.00	8.16			#	-	-
	s.u.	0182	SL	12/03/2003	N001	0.00 - 0.00	7.37			#	-	-
Specific Conductance	umhos/cm	0134	WL	12/02/2003	N001	29.42 - 39.42	731		F	#	-	-
	umhos/cm	0144	WL	12/03/2003	N001	29.70 - 39.70	9117		F	#	-	-
	umhos/cm	0146	SL, DTCH	12/03/2003	N001	0.00 - 0.00	1293			#	-	-
	umhos/cm	0148	SL, POND	12/03/2003	N001	0.00 - 0.00	1136			#	-	-
	umhos/cm	0149	SL, POND	12/02/2003	N001	0.00 - 0.00	1303			#	-	-
	umhos/cm	0150	SL, POND	12/02/2003	N001	0.00 - 0.00	1280			#	-	-
	umhos/cm	0151	SL, POND	12/02/2003	N001	0.00 - 0.00	1348			#	-	-
	umhos/cm	0181	SL	12/03/2003	N001	0.00 - 0.00	929			#	-	-
	umhos/cm	0182	SL	12/03/2003	N001	0.00 - 0.00	1225			#	-	-
Temperature	C	0134	WL	12/02/2003	N001	29.42 - 39.42	15.44		F	#	-	-
	C	0144	WL	12/03/2003	N001	29.70 - 39.70	12.72		F	#	-	-
	C	0146	SL, DTCH	12/03/2003	N001	0.00 - 0.00	12.58			#	-	-
	C	0148	SL, POND	12/03/2003	N001	0.00 - 0.00	4.5			#	-	-
	C	0149	SL, POND	12/02/2003	N001	0.00 - 0.00	4.72			#	-	-
	C	0150	SL, POND	12/02/2003	N001	0.00 - 0.00	5.37			#	-	-

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE SLC01, SALT LAKE CITY
REPORT DATE: 1/27/2004 2:06 pm

PARAMETER	UNITS	LOCATION ID	LOC TYPE, SUBTYPE	SAMPLE: DATE	ID	DEPTH RANGE (FT BLS)	RESULT	QUALIFIERS: LAB	DATA	QA	DETECTION LIMIT	UN-CERTAINTY
Temperature	C	0151	SL, POND	12/02/2003	N001	0.00 - 0.00	6			#	-	-
	C	0181	SL	12/03/2003	N001	0.00 - 0.00	6.95			#	-	-
	C	0182	SL	12/03/2003	N001	0.00 - 0.00	13.03			#	-	-
Turbidity	NTU	0134	WL	12/02/2003	N001	29.42 - 39.42	3.15		F	#	-	-
	NTU	0144	WL	12/03/2003	N001	29.70 - 39.70	2.38		F	#	-	-
	NTU	0146	SL, DTCH	12/03/2003	N001	0.00 - 0.00	3.51			#	-	-
	NTU	0148	SL, POND	12/03/2003	N001	0.00 - 0.00	20.1			#	-	-
	NTU	0149	SL, POND	12/02/2003	N001	0.00 - 0.00	5.03			#	-	-
	NTU	0150	SL, POND	12/02/2003	N001	0.00 - 0.00	3.11			#	-	-
	NTU	0151	SL, POND	12/02/2003	N001	0.00 - 0.00	3.97			#	-	-
	NTU	0181	SL	12/03/2003	N001	0.00 - 0.00	5.4			#	-	-
	NTU	0182	SL	12/03/2003	N001	0.00 - 0.00	3.52			#	-	-
Uranium	mg/L	0134	WL	12/02/2003	0001	29.42 - 39.42	0.00010	U	F	#	0.0001	-
	mg/L	0144	WL	12/03/2003	0001	29.70 - 39.70	0.0142		F	#	0.0001	-
	mg/L	0146	SL, DTCH	12/03/2003	0001	0.00 - 0.00	0.0190			#	0.0001	-
	mg/L	0146	SL, DTCH	12/03/2003	0002	0.00 - 0.00	0.0183			#	0.0001	-
	mg/L	0148	SL, POND	12/03/2003	0001	0.00 - 0.00	0.00360			#	0.0001	-
	mg/L	0149	SL, POND	12/02/2003	0001	0.00 - 0.00	0.00270			#	0.0001	-
	mg/L	0150	SL, POND	12/02/2003	0001	0.00 - 0.00	0.00330			#	0.0001	-
	mg/L	0151	SL, POND	12/02/2003	0001	0.00 - 0.00	0.00340			#	0.0001	-
	mg/L	0181	SL	12/03/2003	0001	0.00 - 0.00	0.00170			#	0.0001	-
	mg/L	0182	SL	12/03/2003	0001	0.00 - 0.00	0.00290			#	0.0001	-

GENERAL WATER QUALITY DATA BY PARAMETER (USEE205) FOR SITE SLC01, SALT LAKE CITY
REPORT DATE: 1/27/2004 2:06 pm

PARAMETER	UNITS	LOCATION ID	LOC TYPE, SUBTYPE	SAMPLE: DATE	ID	DEPTH RANGE (FT BLS)	RESULT	QUALIFIERS: LAB	DATA	QA	DETECTION LIMIT	UN-CERTAINTY

RECORDS: SELECTED FROM USEE200 WHERE site_code='SLC01' AND quality_assurance = TRUE AND (data_validation_qualifiers IS NULL OR data_validation_qualifiers NOT LIKE '%R%' AND data_validation_qualifiers NOT LIKE '%X%') AND DATE_SAMPLED between #11/1/2003# and #12/15/2003#

SAMPLE ID CODES: 000X = Filtered sample (0.45 µm). N00X = Unfiltered sample. X = replicate number.

LOCATION TYPES: SL SURFACE LOCATION WL WELL

LOCATION SUBTYPES: DTCH Ditch POND Pond/Lake

LAB QUALIFIERS:

- * Replicate analysis not within control limits.
- + Correlation coefficient for MSA < 0.995.
- > Result above upper detection limit.
- A TIC is a suspected aldol-condensation product.
- B Inorganic: Result is between the IDL and CRDL. Organic: Analyte also found in method blank.
- C Pesticide result confirmed by GC-MS.
- D Analyte determined in diluted sample.
- E Inorganic: Estimate value because of interference, see case narrative. Organic: Analyte exceeded calibration range of the GC-MS.
- H Holding time expired, value suspect.
- I Increased detection limit due to required dilution.
- J Estimated
- M GFAA duplicate injection precision not met.
- N Inorganic or radiochemical: Spike sample recovery not within control limits. Organic: Tentatively identified compund (TIC).
- P > 25% difference in detected pesticide or Arochlor concentrations between 2 columns.
- S Result determined by method of standard addition (MSA).
- U Analytical result below detection limit.
- W Post-digestion spike outside control limits while sample absorbance < 50% of analytical spike absorbance.
- X Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
- Y Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
- Z Laboratory defined (USEPA CLP organic) qualifier, see case narrative.

DATA QUALIFIERS:

F	Low flow sampling method used.	G	Possible grout contamination, pH > 9.	J	Estimated value.
L	Less than 3 bore volumes purged prior to sampling.	Q	Qualitative result due to sampling technique	R	Unusable result.
U	Parameter analyzed for but was not detected.	X	Location is undefined.		

QA QUALIFIER: # = validated according to Quality Assurance guidelines.

BLANKS REPORT
LAB REQUISITION(S): 18771
REPORT DATE: 01/27/04 01:32:18: PM

PARAMETER	SITE CODE	LOCATION ID	SAMPLE DATE	SAMPLE ID	UNITS	RESULT	QUALIFIERS LAB	QUALIFIERS DATA	DETECTION LIMIT	UNCERTAINTY	SAMPLE TYPE
Molybdenum	SLC01	0999	12/03/2003	0001	mg/L	0.0017	U		0.0017		E
Molybdenum	SLC01	0999	12/03/2003	0002	mg/L	0.0017	U		0.0017		E
Uranium	SLC01	0999	12/03/2003	0001	mg/L	0.0001	U		0.0001		E
Uranium	SLC01	0999	12/03/2003	0002	mg/L	0.0001	U		0.0001		E

BLANKS REPORT
LAB REQUISITION(S): 18771
REPORT DATE: 01/27/04 01:32:19: PM

PARAMETER	SITE CODE	LOCATION ID	SAMPLE DATE	ID	UNITS	RESULT	QUALIFIERS LAB	QUALIFIERS DATA	DETECTION LIMIT	UNCERTAINTY	SAMPLE TYPE

SAMPLE ID CODES: 000X = Filtered sample (0.45 µm). N00X = Unfiltered sample. X = replicate number.

LAB QUALIFIERS:

*	Replicate analysis not within control limits.
+	Correlation coefficient for MSA < 0.995.
A	TIC is a suspected aldol-condensation product.
B	Inorganic: Result is between the IDL and CRDL. Organic: Analyte also found in method blank.
E	Inorganic: Estimate value because of interference, see case narrative. Organic: Analyte exceeded calibration range of the GC-MS.
Z	Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
H	Holding time expired, value suspect.
I	Increased detection limit due to required dilution.
C	Pesticide result confirmed by GC-MS.
M	GFAA duplicate injection precision not met.
N	Inorganic or radiochemical: Spike sample recovery not within control limits. Organic: Tentatively identified compund (TIC).
S	Result determined by method of standard addition (MSA).
U	Analytical result below detection limit.
W	Post-digestion spike outside control limits while sample absorbance < 50% of analytical spike absorbance.
D	Analyte determined in diluted sample.
P	> 25% difference in detected pesticide or Arochlor concentrations between 2 columns.
X	Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
Y	Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
>	Result above upper detection limit.
J	Estimated

DATA QUALIFIERS:

J	Estimated value.	F	Low flow sampling method used.	G	Possible grout contamination, pH > 9.
L	Less than 3 bore volumes purged prior to sampling.	R	Unusable result.	X	Location is undefined.
U	Parameter analyzed for but was not detected.	Q	Qualitative result due to sampling technique		

SAMPLE TYPES:

AK	ANALYTICAL KNOWN	D	DUPLICATE	E	EQUIPMENT BLANK
F	FIELD SAMPLE	FB	FIELD BLANK	FR	FIELD SAMPLE WITH REPLICATES
K	KNOWN	L	LABORATORY	N	NOT KNOWN
R	REPLICATE	TB	TRIP BLANK	TK	THEORETICAL KNOWN
XB	EXTRACTION BLANK				

WATER LEVELS

STATIC WATER LEVELS (USEE700) FOR SITE SLC01, SALT LAKE CITY
REPORT DATE: 1/27/2004 2:07 pm

LOCATION CODE	FLOW CODE	TOP OF CASING ELEVATION (FT)	MEASUREMENT		DEPTH FROM TOP OF CASING (FT)	WATER ELEVATION (FT)	WATER LEVEL FLAG
			DATE	TIME			
0134	D	4239.50	12/02/2003	15:00	14.67	4224.83	
0143		4239.50	12/02/2003		5.22	4234.28	
0144		-	12/03/2003	09:05	8.31	-8.31	
0145		4234.00	12/03/2003			-	F

RECORDS: SELECTED FROM USEE700 WHERE site_code='SLC01' AND LOG_DATE between #11/1/2003# and #12/15/2003#

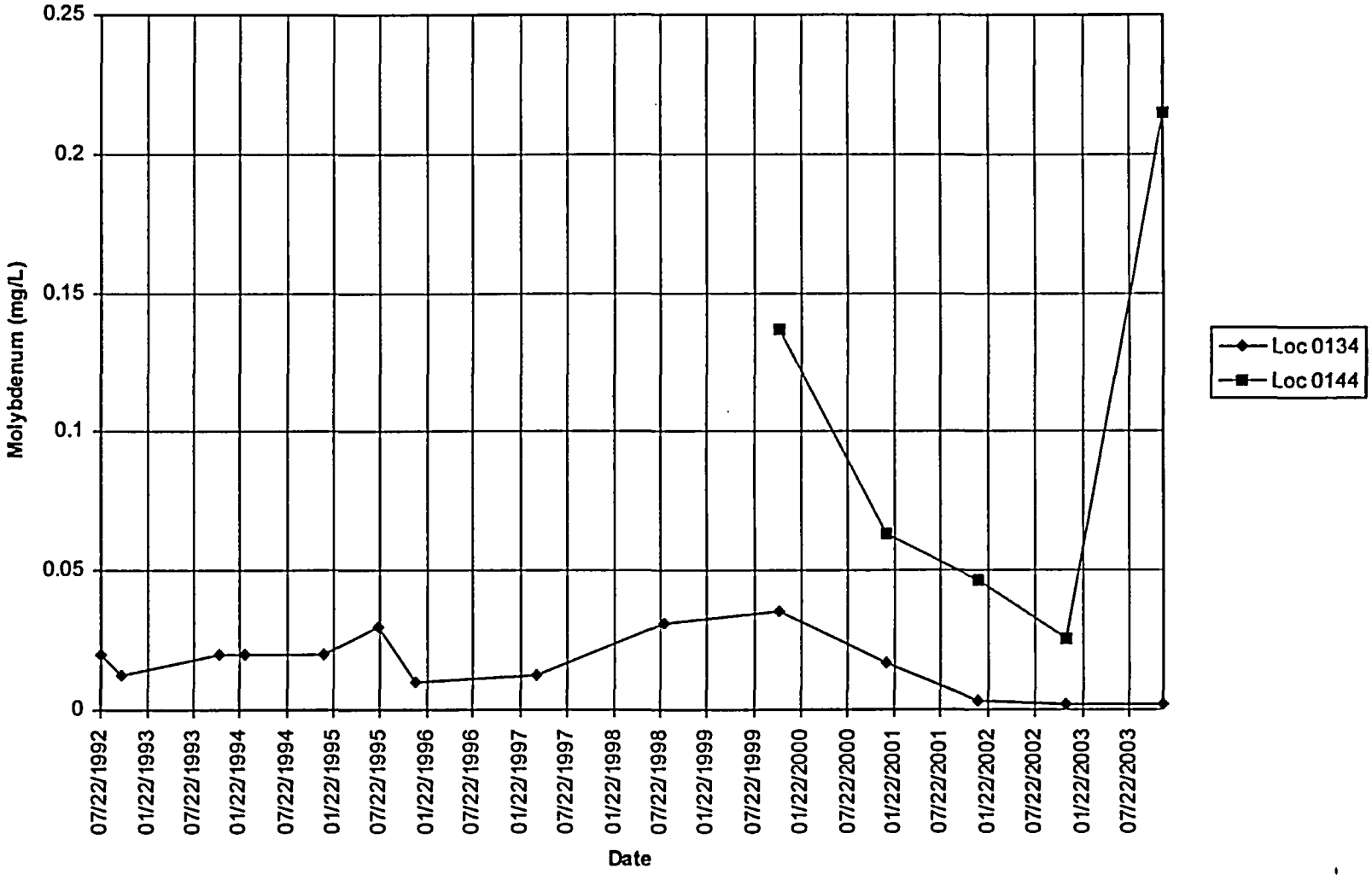
FLOW CODES: D DOWN GRADIENT

WATER LEVEL FLAGS:
F Flowing

TIME VERSUS CONCENTRATION GRAPHS

SALT LAKE CITY (SLC01)

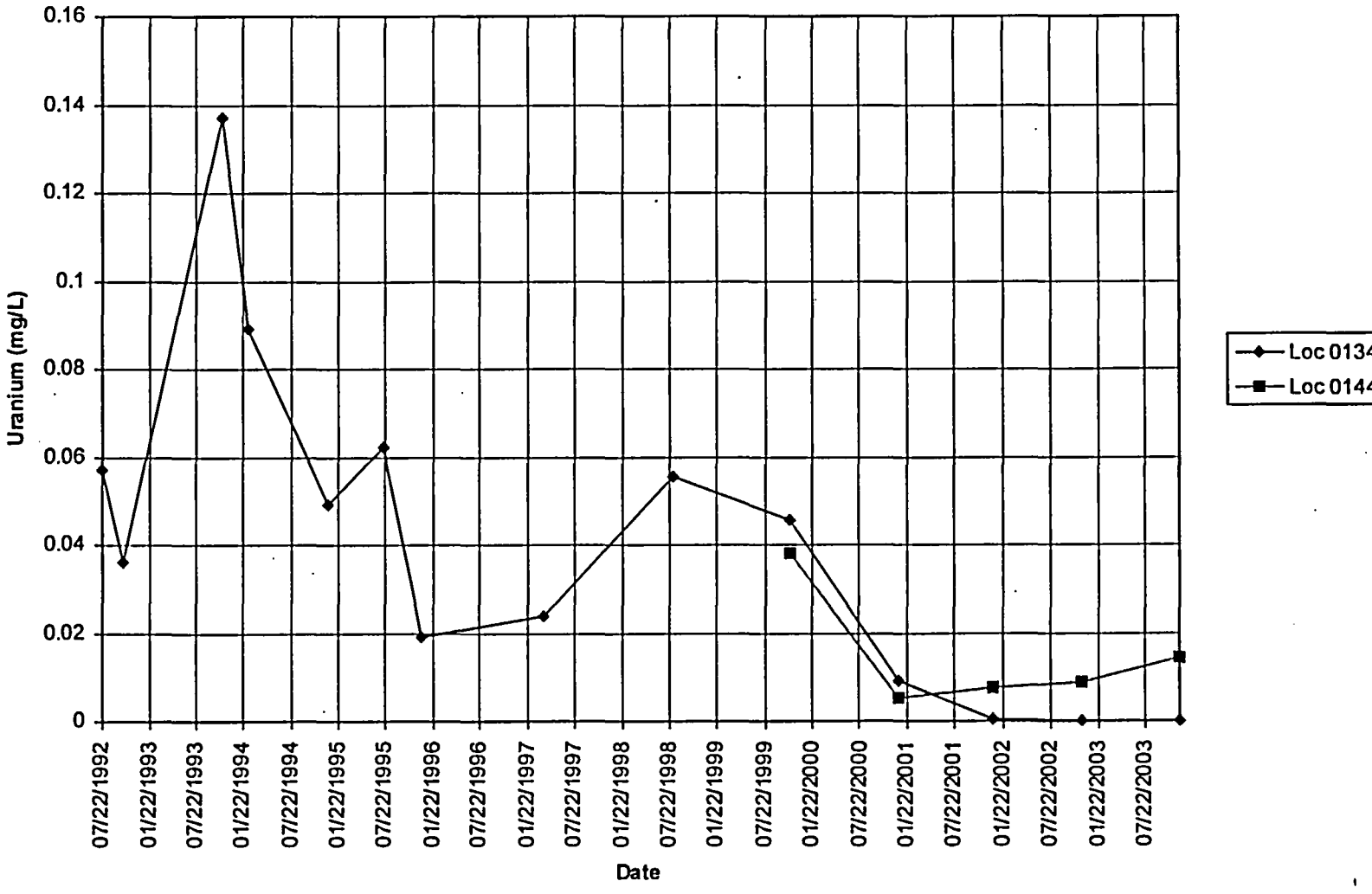
Molybdenum Concentration



1/28/2004 8:57 am

SALT LAKE CITY (SLC01)

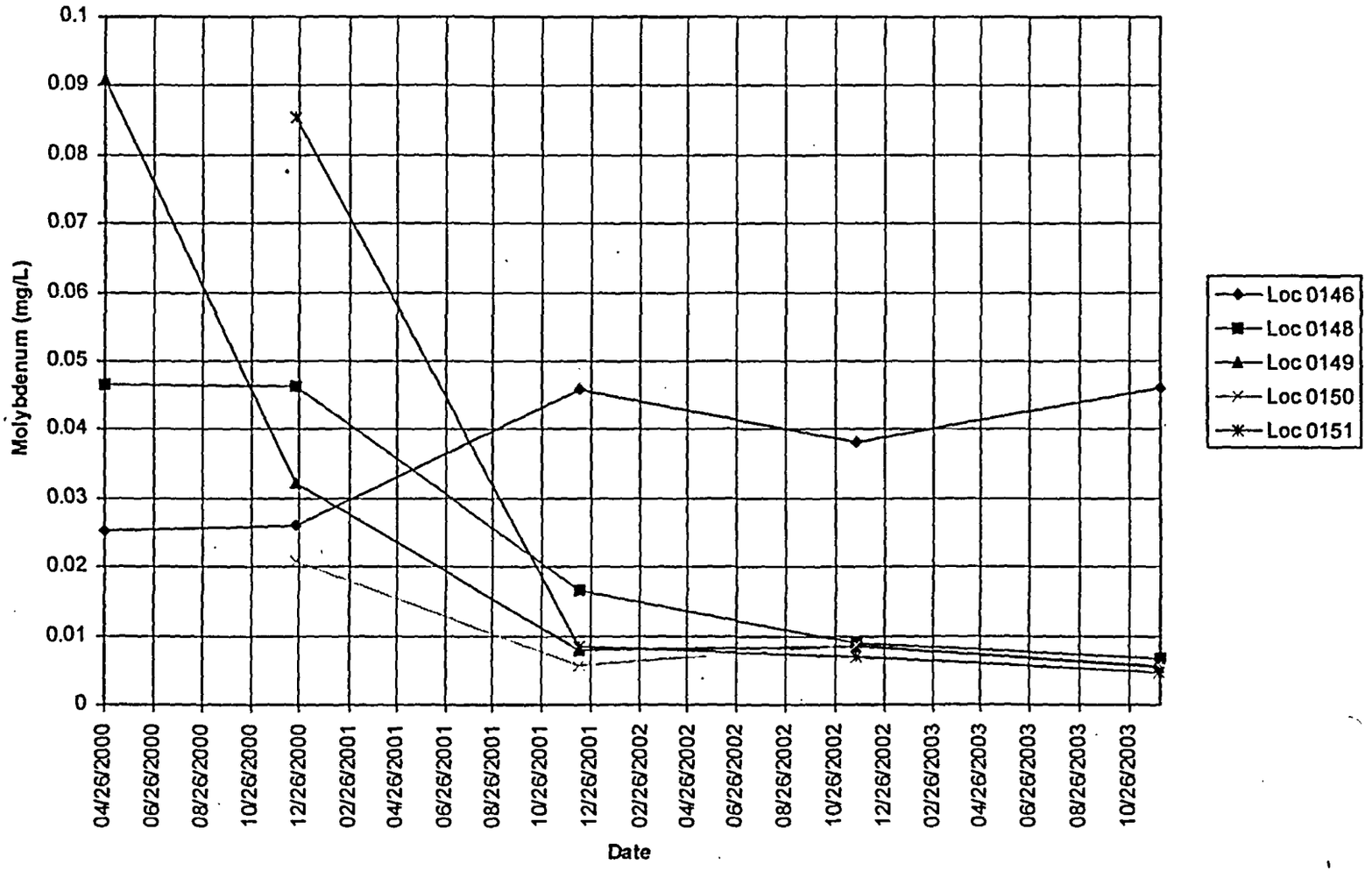
Uranium Concentration



1/28/2004 8:58 am

SALT LAKE CITY (SLC01)

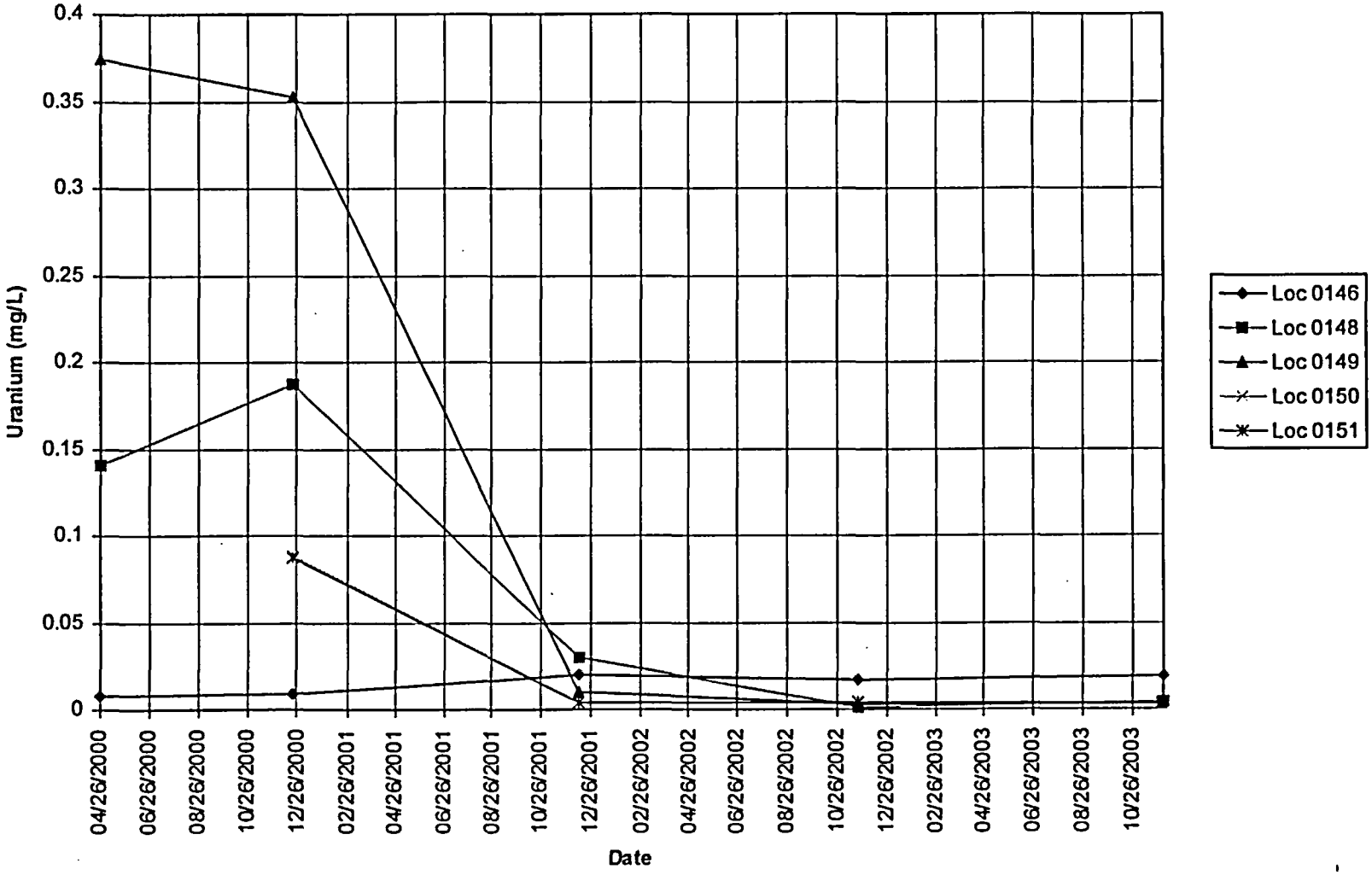
Molybdenum Concentration



1/28/2004 9:02 am

SALT LAKE CITY (SLC01)

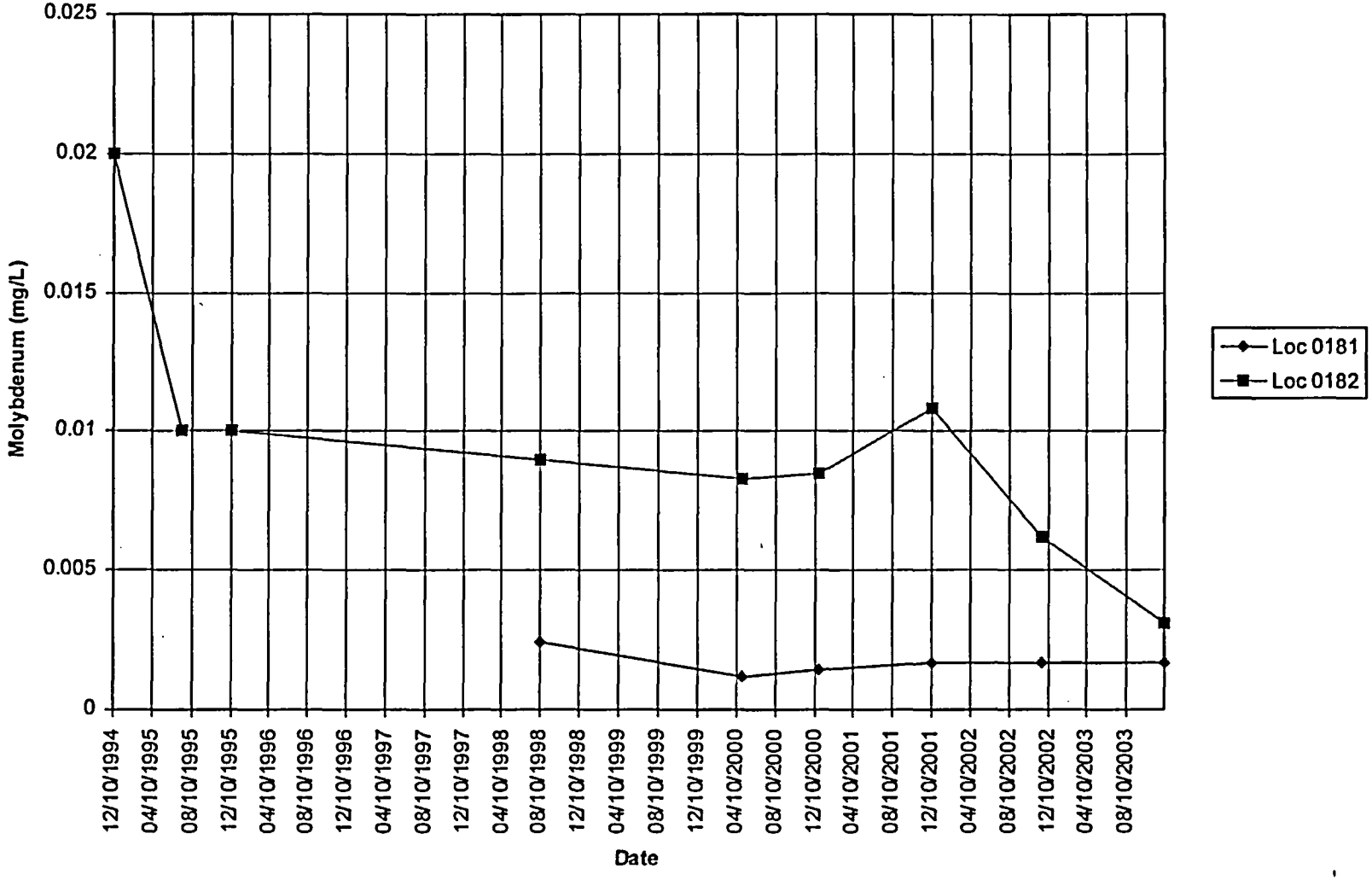
Uranium Concentration



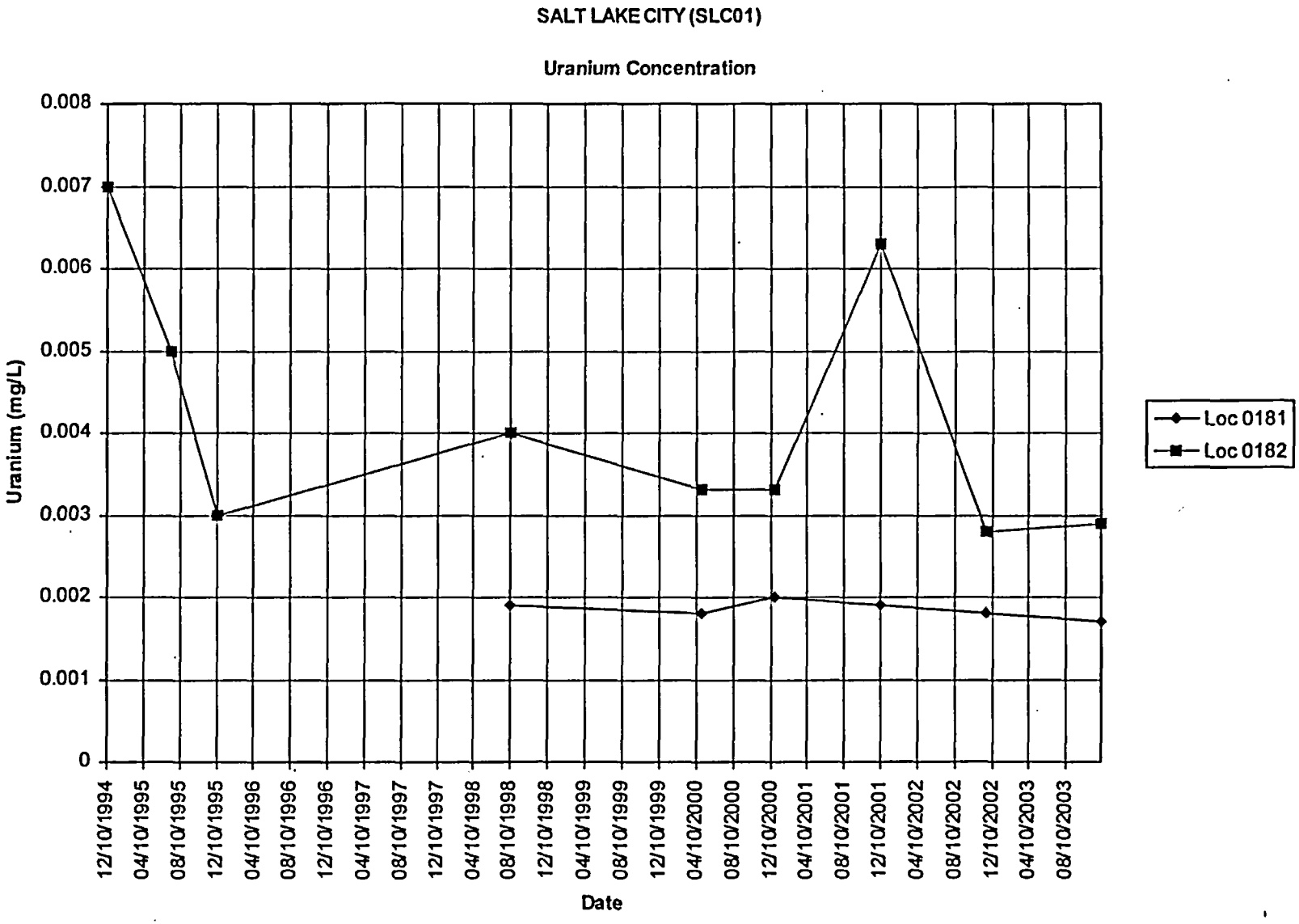
1/28/2004 9:02 am

SALT LAKE CITY (SLC01)

Molybdenum Concentration



1/28/2004 9:03 am



1/28/2004 9:03 am

WORK ORDER
AND
TRIP REPORT

Stoller

Grand Junction Office

established 1959

Memorandum

Control Number N/A

DATE: December 18, 2003

TO: Richard K. Johnson

FROM: David G. Traub

SUBJECT: Sampling Trip Report

Site: Salt Lake City

Dates of Sampling Event: December 2 - 3, 2003.

Team Members: Dave Traub and Dick Johnson.

Trip Summary: Water samples were collected from 2 wells and 7 surface water locations. Data loggers were downloaded from two wells. The data logger in well 0144 was removed and the support cable replaced due to corrosion on the top cable connector. The logger was reset and a new test started.

Locations Not Sampled / Reason: None.

Field Variance: None.

Requisition Numbers Assigned: Samples were turned in on Friday morning, December 5 after completing sampling at Green River on December 4. The samples were assigned requisition number 18771.

Water Level Measurements: A water level measurement was taken in well 0143, which is adjacent to well 0134 on the northwest corner of the site. The water level in 0143 was 5.22 feet on December 2. There was some evidence that this well had a higher water level in the past due to stains around the weep hole in the protective casing. Well 0145 was checked and has a slow artesian flow. This well has a secure J-plug to prevent constant flow.

Well Inspection Summary: Well inspections were conducted on all sampled wells. All wells were in good condition.

Quality Control Sample Cross Reference: One sample duplicate was collected for quality control. Two equipment blanks were collected. Both wells were sampled using dedicated tubing and a peristaltic pump. All surface water samples were collected using a portable peristaltic pump.

The following table lists the identification numbers of the quality control samples.

Sample ID	False Loc.	True Loc.	Sample Type
NDU 237	1001	0144	Equipment blank, 120V peristaltic
NDU 233	1002	0146	Sample Duplicate
NDU 236	1003	0182	Equipment blank , 12V portable peristaltic

Corrective Action: None.

Equipment: Wells were sampled using the low flow purge procedure with dedicated tubing in each well. Surface water samples were collected using a small peristaltic pump. All equipment functioned normally.

Location Specific Information: No issues were noted for scheduled locations. The water in well 0148 had a greenish tint to it.

Regulatory: None.

Site Issues: None.

Additional Action Required / Taken: None.

Next Sampling Trip: No action required.

(DGT/lcg)

cc: K. E. Miller, Stoller

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Stoller
Grand Junction Office

established 1959

Task Order ST04-102
Control Number 1000-T04-0230

November 6, 2003

Michael Tucker
Program Manager
U.S. Department of Energy
Grand Junction Office
2597 B ¾ Road
Grand Junction, CO 81503

SUBJECT: Contract No. DE-AC13-02GJ79491, Stoller
December 2003 Environmental Sampling at Salt Lake City, Utah

Reference: FY 2004 LM Task Order No. ST04-102-S2

Dear Mr. Tucker:

The purpose of this letter is to inform you of the upcoming sampling event at Salt Lake City, Utah. Enclosed are the map and tables specifying sample locations and analytes for routine monitoring. Water quality data will be collected from monitor wells at this site as part of the routine environmental sampling scheduled to begin the week of December 1, 2003.

The following lists show the monitor wells and surface water locations scheduled to be sampled during this event.

Monitor Wells (filtered)*
134 Lu 144 Lu

*NOTE: Lu = Lacustrine unconfined.

Surface locations (filtered)
146 148 149 150 151 181 182

Additionally, water levels will be collected at monitor well locations 143 and 145.

QA/QC samples will be collected as directed in the *Sampling and Analysis Plan for GJO Projects*. Access agreements are being reviewed and are expected to be completed by the beginning of fieldwork.

If you have any questions, please call me at extension 6588 or Dave Traub at extension 6557.

Sincerely,

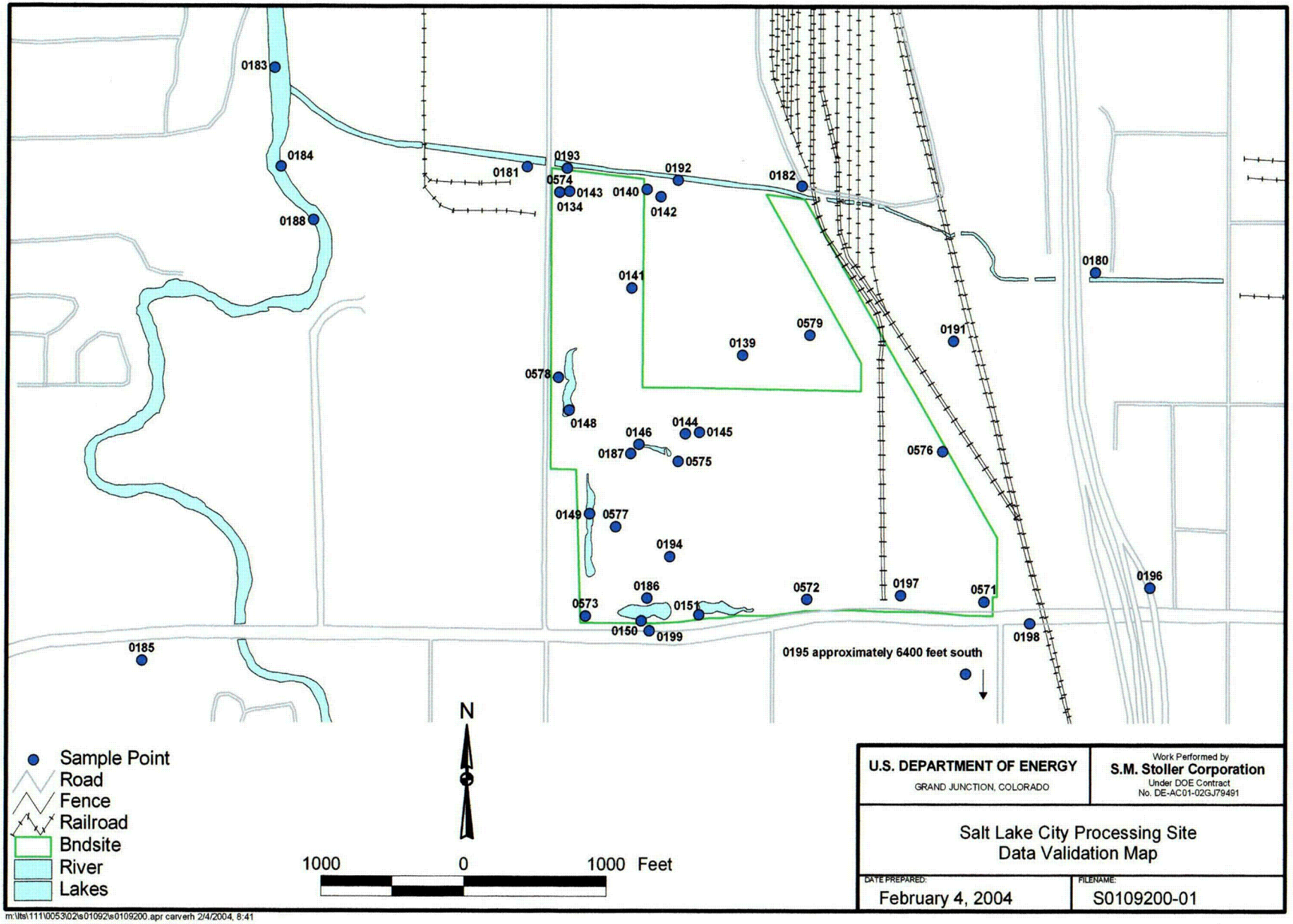
Clay Carpenter
Project Manager

CC/lcg/lad
Enclosures (3)

cc: C. I. Bahrke, Stoller
R. B. Chessmore, Stoller
R. K. Johnson, Stoller
D. G. Traub, Stoller
Working File (Thru A. Temple)

cc w/o enclosures:
K. E. Miller, Stoller
Correspondence Control File (Thru V. Creagar)

SAMPLING LOCATION MAP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0199
0572
0197
0571
0196
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0195 approximately 6400 feet south
N
Sample Point
Road
Fence
Railroad
Bndsite
River
Lakes
1000
0
1000 Feet
U.S. DEPARTMENT OF ENERGY
GRAND JUNCTION, COLORADO
Work Performed by
S.M. Stoller Corporation
Under DOE Contract
No. DE-AC01-02GJ79491
Salt Lake City Processing Site
Data Validation Map
DATE PREPARED:
February 4, 2004
FILENAME:
S0109200-01
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