November 10, 2011

Utah Department of Environmental Protection
ATTN: Jodi Gardberg
195 North 1950 West, Third Floor
Salt Lake City, UT 84116
jgardberg@utah.gov

RE: Project UDE-SL1101 Client Project: Great Salt Lake Sampling

Dear Ms. Gardberg,

On August 5, 2011, Brooks Rand Labs (BRL) received eight (8) water samples and eight (8) brine shrimp samples. The water samples were logged-in for the contracted analyses of total mercury (Hg), monomethyl mercury (MeHg), arsenic (As), copper (Cu), cadmium (Cd), lead (Pb), selenium (Se), and thallium (Tl). The biota samples were logged-in for mercury (Hg), arsenic (As), cadmium (Cd), copper (Cu), lead (Pb), selenium (Se), and thallium (Tl) analyses. The samples were received, prepared, analyzed, and stored according to BRL SOPs and EPA methodology.

This is an addendum report including only the Hg analysis of brine shrimp samples. All other sample results were reported October 21, 2011.

The results were blank-corrected as described in the calculations section of the relevant SOP(s) and may be evaluated using adjusted reporting limits to account for sample aliquot size. Please refer to the *Sample Results* page for sample-specific MDLs, MRLs, and other details.

The batch matrix spike duplicate (MSD) was accidentally spilled prior to analysis and some volume was lost. The MSD recovered low, which was expected, while the analysis of the associated matrix spike and certified reference material produced excellent recoveries. On this basis, the MSD was not reported and no sample results were qualified. All other quality assurance criteria were satisfied.

BRL, an accredited laboratory, certifies that the reported results of all analyses for which BRL is NELAP accredited meet all NELAP requirements. For more information please see the *Report Information* page in your report. Please feel free to contact us if you have any questions regarding this report.

Sincerely,

Tiffany Stilwater
Project Manager
tiffany@brooksrand.com

Lydia Greaves
Project Manager
lydia@brooksrand.com

Project ID: UDE-SL1101
PM: Tiffany Stilwater

Client PM: Jodi Gardberg

Report Information

Laboratory Accreditation

BRL is accredited by the *National Environmental Laboratory Accreditation Program* (NELAP) through the State of Florida Department of Health, Bureau of Laboratories (E87982) and is certified to perform many environmental analyses. BRL is also certified by many other states to perform environmental analyses. For a current list of our accreditations /certifications, please visit our website at <http://www.brooksrand.com/default.asp?contentID=586>. Results reported relate only to the samples listed in the report.

Field Quality Control Samples

Please be notified that certain EPA methods require the collection of field quality control samples of an appropriate type and frequency; failure to do so is considered a deviation from some methods and for compliance purposes should only be done with the approval of regulatory authorities. Please see the specific EPA methods for details regarding required field quality control samples.

Common Abbreviations

BLK	method blank	**MS**	matrix spike
BRL	Brooks Rand Labs	**MSD**	matrix spike duplicate
BS	laboratory fortified blank	**ND**	non-detect
CAL	calibration standard	**NR**	non-reportable
CCV	continuing calibration verification	**PS**	post preparation spike
COC	chain of custody record	**REC**	percent recovery
CRM	certified reference material	**RPD**	relative percent difference
D	dissolved fraction	**RSD**	relative standard deviation
DUP	duplicate	**SCV**	secondary calibration verification
ICV	initial calibration verification	**SOP**	standard operating procedure
MDL	method detection limit	**SRM**	standard reference material
MRL	method reporting limit	**T**	total recoverable fraction

Definition of Data Qualifiers

(Effective 9/23/09)

B Detected by the instrument, the result is > the MDL but ≤ the MRL. Result is reported and considered an estimate.
E An estimated value due to the presence of interferences. A full explanation is presented in the narrative.
H Holding time and/or preservation requirements not met. Result is estimated.
J Estimated value. A full explanation is presented in the narrative.
J-M Duplicate precision (RPD) for associated QC sample was not within acceptance criteria. Result is estimated.
J-N Spike recovery for associated QC sample was not within acceptance criteria. Result is estimated.
M Duplicate precision (RPD) was not within acceptance criteria. Result is estimated.
N Spike recovery was not within acceptance criteria. Result is estimated.
R Rejected, unusable value. A full explanation is presented in the narrative.
U Result is ≤ the MDL or client requested reporting limit (CRRL). Result reported as the MDL or CRRL.
X Result is not BLK-corrected and is within 10x the absolute value of the highest detectable BLK in the batch. Result is estimated.

These qualifiers are based on those previously utilized by Brooks Rand, Ltd., those found in the EPA SOW ILM03.0, Exhibit B, Section III, pg. B-18, and the USEPA Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses; USEPA; July 2002. These supersede all previous qualifiers ever employed by BRL.

Project ID: UDE-SL1101
PM: Tiffany Stilwater

Client PM: Jodi Gardberg

Sample Information

Sample	Lab ID	Report Matrix	Type	Sampled	Received
GSL 4069	1134052-01	Biota	Sample	07/30/2011	08/05/2011
GSL 2767	1134052-02	Biota	Sample	07/29/2011	08/05/2011
GSL @ AIC	1134052-03	Biota	Sample	07/29/2011	08/05/2011
GSL 2820	1134052-04	Biota	Sample	07/28/2011	08/05/2011
N1018	1134052-05	Biota	Sample	07/28/2011	08/05/2011
GSL 2267	1134052-06	Biota	Sample	07/28/2011	08/05/2011
GSL 3510	1134052-07	Biota	Sample	07/29/2011	08/05/2011
GSL 2565	1134052-08	Biota	Sample	07/28/2011	08/05/2011
N1018 0.2m	1134052-09	Water	Sample	07/28/2011	08/05/2011
N1018 0.5m	1134052-10	Water	Sample	07/28/2011	08/05/2011
GSL 4069 0.2m	1134052-11	Water	Sample	07/30/2011	08/05/2011
GSL 4069 0.2m	1134052-12	Water	Field Duplicate	07/30/2011	08/05/2011
GSL 4069 0.5m	1134052-13	Water	Sample	07/30/2011	08/05/2011
GSL 3510 0.2m	1134052-14	Water	Sample	07/29/2011	08/05/2011
GSL 3510 0.5m	1134052-15	Water	Sample	07/29/2011	08/05/2011
GSL 4069 FB	1134052-16	DIW	Field Blank	07/30/2011	08/05/2011

Batch Summary

Analyte	Lab Matrix	Method	Prepared	Analyzed	Batch	Sequence
Hg	Biota	EPA 1631 Appendix	11/02/2011	11/08/2011	B111778	1100788

Sample Results

Sample	Analyte	Report Matrix	Fraction	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
GSL @ AIC										
1134052-03	Hg	Biota	N/A	1.18		0.08	0.19	ng/g	B111778	1100788
GSL 2267										
1134052-06	Hg	Biota	N/A	35.5		0.39	0.97	ng/g	B111778	1100788
GSL 2565										
1134052-08	Hg	Biota	N/A	11.6		0.08	0.19	ng/g	B111778	1100788
GSL 2767										
1134052-02	Hg	Biota	N/A	34.0		0.40	1.01	ng/g	B111778	1100788
GSL 2820										
1134052-04	Hg	Biota	N/A	43.2		0.41	1.02	ng/g	B111778	1100788
GSL 3510										
1134052-07	Hg	Biota	N/A	46.2		0.38	0.94	ng/g	B111778	1100788
GSL 4069										
1134052-01	Hg	Biota	N/A	28.4		0.42	1.05	ng/g	B111778	1100788
N1018										
1134052-05	Hg	Biota	N/A	45.0		0.39	0.97	ng/g	B111778	1100788

Project ID: UDE-SL1101
PM: Tiffany Stilwater

Client PM: Jodi Gardberg

Accuracy & Precision Summary

Batch: B111778
Lab Matrix: Biota
Method: EPA 1631 Appendix

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B111778-SRM1	**Certified Reference Material (1051005, TORT-2)**						
	Hg		270.0	306.8	ng/g	114% 75-125	
B111778-DUP1	**Duplicate (1134052-05)**						
	Hg	44.98		47.18	ng/g		5% 30
B111778-MS1	**Matrix Spike (1134052-05)**						
	Hg	44.98	277.8	341.2	ng/g	107% 70-130	

Method Blanks & Reporting Limits

Batch: B111778
Matrix: Biota
Method: EPA 1631 Appendix
Analyte: Hg

Sample	Result	Units
B111778-BLK1	0.02	ng/g
B111778-BLK2	0.006	ng/g
B111778-BLK3	0.005	ng/g
B111778-BLK4	0.01	ng/g

Average: 0.01 **Standard Deviation:** 0.01 **MDL:** 0.04
Limit: 0.08 **Limit:** 0.03 **MRL:** 0.10

Sample Containers

Lab ID: 1134052-01
Sample: GSL 4069
Report Matrix: Biota
Sample Type: Sample
Collected: 07/30/2011
Received: 08/05/2011

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Jar HDPE	16 oz.	Client Provided	none	n/a		Cooler

Lab ID: 1134052-02
Sample: GSL 2767
Report Matrix: Biota
Sample Type: Sample
Collected: 07/29/2011
Received: 08/05/2011

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Jar HDPE	16 oz.	Client Provided	none	n/a		Cooler

Lab ID: 1134052-03
Sample: GSL @ AIC
Report Matrix: Biota
Sample Type: Sample
Collected: 07/29/2011
Received: 08/05/2011

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Jar HDPE	16 oz.	Client Provided	none	n/a		Cooler

Lab ID: 1134052-04
Sample: GSL 2820
Report Matrix: Biota
Sample Type: Sample
Collected: 07/28/2011
Received: 08/05/2011

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Jar HDPE	16 oz.	Client Provided	none	n/a		Cooler

Lab ID: 1134052-05
Sample: N1018
Report Matrix: Biota
Sample Type: Sample
Collected: 07/28/2011
Received: 08/05/2011

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Jar HDPE	16 oz.	Client Provided	none	n/a		Cooler

Lab ID: 1134052-06
Sample: GSL 2267
Report Matrix: Biota
Sample Type: Sample
Collected: 07/28/2011
Received: 08/05/2011

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Jar HDPE	16 oz.	Client Provided	none	n/a		Cooler

Sample Containers

Lab ID: 1134052-07 **Report Matrix:** Biota **Collected:** 07/29/2011
Sample: GSL 3510 **Sample Type:** Sample **Received:** 08/05/2011

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Jar HDPE	16 oz.	Client Provided	none	n/a		Cooler

Lab ID: 1134052-08 **Report Matrix:** Biota **Collected:** 07/28/2011
Sample: GSL 2565 **Sample Type:** Sample **Received:** 08/05/2011

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Jar HDPE	16 oz.	Client Provided	none	n/a		Cooler

Lab ID: 1134052-09 **Report Matrix:** Water **Collected:** 07/28/2011
Sample: N1018 0.2m **Sample Type:** Sample **Received:** 08/05/2011

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Bottle FLPE Hg-T	250 mL	7144339030	0.1% HCl (BRL)	1121032	<2	Cooler
B	Bottle FLPE Hg-SP	250 mL	7144339030	1mL 9N H2SO4 (PP)	1125022	<2	Cooler
C	Bottle HDPE ICP-RP	250 mL	No Lot #	HNO3 (Client)	Client Preserve	<2	Cooler

Lab ID: 1134052-10 **Report Matrix:** Water **Collected:** 07/28/2011
Sample: N1018 0.5m **Sample Type:** Sample **Received:** 08/05/2011

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Bottle FLPE Hg-T	250 mL	7144339030	0.1% HCl (BRL)	1121032	<2	Cooler
B	Bottle FLPE Hg-SP	250 mL	7144339030	1mL 9N H2SO4 (PP)	1125022	<2	Cooler
C	Bottle HDPE ICP-RP	250 mL	No Lot #	HNO3 (Client)	Client Preserve	<2	Cooler

Lab ID: 1134052-11 **Report Matrix:** Water **Collected:** 07/30/2011
Sample: GSL 4069 0.2m **Sample Type:** Sample **Received:** 08/05/2011

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Bottle FLPE Hg-T	250 mL	7144339030	0.1% HCl (BRL)	1121032	<2	Cooler
B	Bottle FLPE Hg-SP	250 mL	7144339030	1mL 9N H2SO4 (PP)	1125022	<2	Cooler
C	Bottle HDPE ICP-RP	250 mL	No Lot #	HNO3 (Client)	Client Preserve	<2	Cooler

Project ID: UDE-SL1101
PM: Tiffany Stilwater

Client PM: Jodi Gardberg

Sample Containers

Lab ID: 1134052-12 **Report Matrix:** Water **Collected:** 07/30/2011
Sample: GSL 4069 0.2m **Sample Type:** Field Duplicate **Received:** 08/05/2011

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Bottle FLPE Hg-T	250 mL	7144339030	0.1% HCl (BRL)	1121032	<2	Cooler
C	Bottle HDPE ICP-RP	250 mL	No Lot #	HNO3 (Client)	Client Preserve	<2	Cooler

Lab ID: 1134052-13 **Report Matrix:** Water **Collected:** 07/30/2011
Sample: GSL 4069 0.5m **Sample Type:** Sample **Received:** 08/05/2011

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Bottle FLPE Hg-T	250 mL	7144339030	0.1% HCl (BRL)	1121032	<2	Cooler
B	Bottle FLPE Hg-SP	250 mL	7144339030	1mL 9N H2SO4 (PP)	1125022	<2	Cooler
C	Bottle HDPE ICP-RP	250 mL	No Lot #	HNO3 (Client)	Client Preserve	<2	Cooler

Lab ID: 1134052-14 **Report Matrix:** Water **Collected:** 07/29/2011
Sample: GSL 3510 0.2m **Sample Type:** Sample **Received:** 08/05/2011

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Bottle FLPE Hg-T	250 mL	7144339030	0.1% HCl (BRL)	1121032	<2	Cooler
B	Bottle FLPE Hg-SP	250 mL	7144339030	1mL 9N H2SO4 (PP)	1125022	<2	Cooler
C	Bottle HDPE ICP-RP	250 mL	No Lot #	HNO3 (Client)	Client Preserve	<2	Cooler

Lab ID: 1134052-15 **Report Matrix:** Water **Collected:** 07/29/2011
Sample: GSL 3510 0.5m **Sample Type:** Sample **Received:** 08/05/2011

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Bottle FLPE Hg-T	250 mL	7144339030	0.1% HCl (BRL)	1121032	<2	Cooler
B	Bottle FLPE Hg-SP	250 mL	7144339030	1mL 9N H2SO4 (PP)	1125022	<2	Cooler
C	Bottle HDPE ICP-RP	250 mL	No Lot #	HNO3 (Client)	Client Preserve	<2	Cooler

Lab ID: 1134052-16 **Report Matrix:** DIW **Collected:** 07/30/2011
Sample: GSL 4069 FB **Sample Type:** Field Blank **Received:** 08/05/2011

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Bottle FLPE Hg-T	250 mL	7144339030	0.1% HCl (BRL)	1121032	<2	Cooler
C	Bottle HDPE ICP-RP	250 mL	No Lot #	HNO3 (Client)	Client Preserve	<2	Cooler

Project ID: UDE-SL1101
PM: Tiffany Stilwater

Client PM: Jodi Gardberg

Shipping Containers

Cooler

Received: August 5, 2011 9:30
Tracking No: 8764 0642 8180 via FedEx
Coolant Type: Ice
Temperature: 6.8 °C

Description: Cooler
Damaged in transit? No
Returned to client? No

Custody seals present? No
Custody seals intact? No
COC present? Yes

BROOKS RAND LABS
MEANINGFUL METALS DATA
3958 6th Avenue NW
Seattle, WA 98107
Phone: 206-632-6206
Fax: 206-632-6017
samples@brooksrand.com
www.brooksrand.com

Chain of Custody Record

1134052

White: LAB COPY
Yellow: CUSTOMER COPY

Client: USGS - UT Water Science Ctr.	Address: 2329 West Orton Circle Salt Lake City, UT 84119	COC receipt confirmation? (Y) / N
Contact: Tom Marston		If so, by: (email) / fax (circle one)
Client project ID: WSV-0611Ø1		Email: tmarston@usgs.gov
PO #:	Phone #: 801-908-5030	Fax #:

Requested TAT in business days:
- ☑ 20 (standard)
- ☐ 15
- ☐ 10
- ☐ 5
- ☐ Other ____

Surcharges apply for expedited turn around times.

	Sample ID	Collection: Date	Collection: Time	Misc: Sampler (initials)	Misc: Matrix type	Misc: # of containers	Misc: Field filtered? (Y/N)	Field Preservation: Unpreserved/ ice only	Field Preservation: HCl / HNO_3 (circle one)	Field Preservation: Other (specify)	Analyses required: Total Hg, EPA 1631	Analyses required: Methyl Hg, EPA 1630	Analyses required: ICP-MS Metals (specify)	Analyses required: As / Se species (specify)	Analyses required: % Solids	Analyses required: Filtration	Analyses required: Other (specify)	Analyses required: Other (specify)	Comments
1	GSL 4069	7/30/11	10:10	RB	Brine Shrimp	1	N	1	—	—	1		✓	✓					8 Large containers
2	GSL 2767	7/29/11	14:50	RB	|	1	Y	1	—	—	1		✓	✓					containing brine
3	GSL @ AIL	7/29/11	10:15	RB	|	1	Y	1	—	—	1		✓	✓					shrimp in environment
4	GSL 2820	7/28/11	14:00	RB	|	1	Y	1	—	—	1		✓	✓					water. (Unrinsed)
5	N1018	7/28/11	15:20	RB	|	1	Y	1	—	—	1		✓	✓					
6	GSL 2767	7/28/11	09:50	RB	|	1	Y	1	—	—	1		✓	✓					
7	GSL 3510	7/29/11	13:00	RB	|	1	Y	1	—	—	1		✓	✓					
8	GSL 2565	7/28/11	12:25	RB	↓	1	Y	1	—	—	1		✓	✓					
9																			
10																			

Relinquished by: Tom Marston	Date: 8/4/11	Time: 16:00	Relinquished by:
Received by:	Date:	Time:	Received at BRL by: Tyler Peck
Shipping carrier:	# of coolers:		BRL work order ID:

Date:	Time:
Date: 8/5/11	Time: 0930
BRL project ID:	

BROOKS RAND LABS
MEANINGFUL METALS DATA
3958 6th Avenue NW
Seattle, WA 98107
Phone: 206-632-6206
Fax: 206-632-6017
samples@brooksrand.com
www.brooksrand.com

Chain of Custody Record

1134052

White: LAB COPY
Yellow: CUSTOMER COPY

Client: USGS - Utah Water Science Ctr	Address: 2329 West Orton Circle Salt Lake City, UT 84119	COC receipt confirmation? (Y) / N
Contact: Tom Marston		If so, by: email / fax (circle one)
Client project ID: WSU-0611Ø1		Email: tmarston@usgs.gov
PO #:	Phone #: 801-908-5030	Fax #:

Requested TAT in business days:
- ☑ 20 (standard)
- ☐ 15
- ☐ 10
- ☐ 5
- ☐ Other ____

Surcharges apply for expedited turn around times.

	Sample ID	Collection: Date	Collection: Time	Miscellaneous: Sampler (initials)	Miscellaneous: Matrix type	Miscellaneous: # of containers	Miscellaneous: Field filtered? (Y/N)	Field Preservation: Unpreserved / ice only	Field Preservation: HCl / HNO3 (circle one)	Field Preservation: Other (specify) Sulfuric	Analyses required: Total Hg, EPA 1631	Analyses required: Methyl Hg, EPA 1630	Analyses required: ICP-MS Metals (specify)	Analyses required: As / Se species (specify)	Analyses required: % Solids	Analyses required: Filtration	Analyses required: Other (specify)	Analyses required: Other (specify)	Comments
1	N1018 0.2m	7/28/11	15:40	TM	H2O	3	N	THg	1	1	1	1	1	1					Each site, other than
2	N1018 0.5m	7/28/11	16:00	TM	"	3	N	THg	1	1	1	1	1	1					blank and replicate,
3	USL 4069 0.2m	7/30/11	10:30	TM	"	3	N	THg	1	1	1	1	1	1					was 3 bottles, one
4	USL 4069 0.2m	7/30/11	10:35	TM	"	2	N	THg	1	0	1	0	1	1					unpreserved THg, one
5	USL 4069 0.5m	7/30/11	10:55	TM	"	3	N	THg	1	1	1	1	1	1					MeHg, and one 250mL
6	USL 3510 0.2m	7/29/11	12:45	TM	"	3	N	THg	1	1	1	1	1	1					bottle for Se, As, Cd,
7	USL 3510 0.5m	7/29/11	13:15	TM	"	3	N	THg	1	1	1	1	1	1					Cu, Ag, and Zn, preserved
8	USL 4069 FB	7/30/11	11:25	TM	"	2	N	THg	1	0	1	0	1	1					with HNO3. Rep
9					"														and blank don't have
10					"														MeHg.

Relinquished by: Tom Marston	Date: 8/4/11	Time: 16:00	Relinquished by:
Received by:	Date:	Time:	Received at BRL by: Tyler Radke
Shipping carrier:	# of coolers:		BRL work order ID:

Date:	Time:	
Date: 8/5/11	Time: 0930	
BRL project ID:		