

Metals

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: Langan Engineering and Environmental Services.

SDG No.: Q3323

Contract: LANG01

Lab Code: ACE

Initial Calibration Source: EPA

Continuing Calibration Source: PLASMA-PURE

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
ICV68	Mercury	4.11	4.0	103	90 - 110	CV	10/13/2025	13:49	LB137509

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Lab Code: ACE

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Continuing Calibration Source: PLASMA-PURE

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
CCV19	Mercury	4.80	5.0	96	90 - 110	CV	10/13/2025	13:54	LB137509
CCV20	Mercury	4.71	5.0	94	90 - 110	CV	10/13/2025	14:27	LB137509
CCV21	Mercury	4.74	5.0	95	90 - 110	CV	10/13/2025	14:57	LB137509
CCV22	Mercury	4.71	5.0	94	90 - 110	CV	10/13/2025	15:09	LB137509

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SDG No.: Q3323

Contract: LANG01

Lab Code: ACE

Initial Calibration Source: EPA

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
ICV01	Aluminum	7850	8000	98	90 - 110	P	10/13/2025	12:46	LB137518
	Antimony	4150	4000	104	90 - 110	P	10/13/2025	12:46	LB137518
	Arsenic	4000	4000	100	90 - 110	P	10/13/2025	12:46	LB137518
	Barium	7730	8000	97	90 - 110	P	10/13/2025	12:46	LB137518
	Beryllium	204	200	102	90 - 110	P	10/13/2025	12:46	LB137518
	Cadmium	1990	2000	99	90 - 110	P	10/13/2025	12:46	LB137518
	Calcium	19600	20000	98	90 - 110	P	10/13/2025	12:46	LB137518
	Chromium	816	800	102	90 - 110	P	10/13/2025	12:46	LB137518
	Cobalt	1950	2000	98	90 - 110	P	10/13/2025	12:46	LB137518
	Copper	1010	1000	100	90 - 110	P	10/13/2025	12:46	LB137518
	Iron	4010	4000	100	90 - 110	P	10/13/2025	12:46	LB137518
	Lead	3900	4000	98	90 - 110	P	10/13/2025	12:46	LB137518
	Magnesium	19700	20000	99	90 - 110	P	10/13/2025	12:46	LB137518
	Manganese	1950	2000	98	90 - 110	P	10/13/2025	12:46	LB137518
	Nickel	1950	2000	98	90 - 110	P	10/13/2025	12:46	LB137518
	Potassium	19700	20000	98	90 - 110	P	10/13/2025	12:46	LB137518
	Selenium	4040	4000	101	90 - 110	P	10/13/2025	12:46	LB137518
	Silver	957	1000	96	90 - 110	P	10/13/2025	12:46	LB137518
	Sodium	19400	20000	97	90 - 110	P	10/13/2025	12:46	LB137518
	Thallium	3770	4000	94	90 - 110	P	10/13/2025	12:46	LB137518
	Vanadium	2020	2000	101	90 - 110	P	10/13/2025	12:46	LB137518
	Zinc	2050	2000	103	90 - 110	P	10/13/2025	12:46	LB137518

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Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
LLICV01	Aluminum	107	100	107	80 - 120	P	10/13/2025	12:51	LB137518
	Antimony	54.9	50.0	110	80 - 120	P	10/13/2025	12:51	LB137518
	Arsenic	20.8	20.0	104	80 - 120	P	10/13/2025	12:51	LB137518
	Barium	107	100	107	80 - 120	P	10/13/2025	12:51	LB137518
	Beryllium	6.60	6.0	110	80 - 120	P	10/13/2025	12:51	LB137518
	Cadmium	6.16	6.0	103	80 - 120	P	10/13/2025	12:51	LB137518
	Calcium	2130	2000	106	80 - 120	P	10/13/2025	12:51	LB137518
	Chromium	10.8	10.0	108	80 - 120	P	10/13/2025	12:51	LB137518
	Cobalt	31.0	30.0	103	80 - 120	P	10/13/2025	12:51	LB137518
	Copper	22.8	20.0	114	80 - 120	P	10/13/2025	12:51	LB137518
	Iron	108	100	108	80 - 120	P	10/13/2025	12:51	LB137518
	Lead	12.1	12.0	101	80 - 120	P	10/13/2025	12:51	LB137518
	Magnesium	2230	2000	112	80 - 120	P	10/13/2025	12:51	LB137518
	Manganese	21.5	20.0	108	80 - 120	P	10/13/2025	12:51	LB137518
	Nickel	41.7	40.0	104	80 - 120	P	10/13/2025	12:51	LB137518
	Potassium	1930	2000	96	80 - 120	P	10/13/2025	12:51	LB137518
	Selenium	21.8	20.0	109	80 - 120	P	10/13/2025	12:51	LB137518
	Silver	10.8	10.0	108	80 - 120	P	10/13/2025	12:51	LB137518
	Sodium	1930	2000	96	80 - 120	P	10/13/2025	12:51	LB137518
	Thallium	43.9	40.0	110	80 - 120	P	10/13/2025	12:51	LB137518
	Vanadium	39.9	40.0	100	80 - 120	P	10/13/2025	12:51	LB137518
	Zinc	45.6	40.0	114	80 - 120	P	10/13/2025	12:51	LB137518

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SDG No.: Q3323

Contract: LANG01

Lab Code: ACE

Initial Calibration Source: EPA

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
CCV01	Aluminum	9970	10000	100	90 - 110	P	10/13/2025	13:21	LB137518
	Antimony	4980	5000	100	90 - 110	P	10/13/2025	13:21	LB137518
	Arsenic	5020	5000	100	90 - 110	P	10/13/2025	13:21	LB137518
	Barium	9880	10000	99	90 - 110	P	10/13/2025	13:21	LB137518
	Beryllium	250	250	100	90 - 110	P	10/13/2025	13:21	LB137518
	Cadmium	2480	2500	99	90 - 110	P	10/13/2025	13:21	LB137518
	Calcium	24900	25000	100	90 - 110	P	10/13/2025	13:21	LB137518
	Chromium	1000	1000	100	90 - 110	P	10/13/2025	13:21	LB137518
	Cobalt	2470	2500	99	90 - 110	P	10/13/2025	13:21	LB137518
	Copper	1250	1250	100	90 - 110	P	10/13/2025	13:21	LB137518
	Iron	4910	5000	98	90 - 110	P	10/13/2025	13:21	LB137518
	Lead	4920	5000	98	90 - 110	P	10/13/2025	13:21	LB137518
	Magnesium	25000	25000	100	90 - 110	P	10/13/2025	13:21	LB137518
	Manganese	2500	2500	100	90 - 110	P	10/13/2025	13:21	LB137518
	Nickel	2480	2500	99	90 - 110	P	10/13/2025	13:21	LB137518
	Potassium	24300	25000	97	90 - 110	P	10/13/2025	13:21	LB137518
	Selenium	5050	5000	101	90 - 110	P	10/13/2025	13:21	LB137518
	Silver	1230	1250	99	90 - 110	P	10/13/2025	13:21	LB137518
	Sodium	24100	25000	96	90 - 110	P	10/13/2025	13:21	LB137518
	Thallium	5280	5000	106	90 - 110	P	10/13/2025	13:21	LB137518
	Vanadium	2500	2500	100	90 - 110	P	10/13/2025	13:21	LB137518
	Zinc	2520	2500	101	90 - 110	P	10/13/2025	13:21	LB137518
CCV02	Aluminum	10000	10000	100	90 - 110	P	10/13/2025	14:18	LB137518
	Antimony	5030	5000	101	90 - 110	P	10/13/2025	14:18	LB137518
	Arsenic	5070	5000	102	90 - 110	P	10/13/2025	14:18	LB137518
	Barium	9900	10000	99	90 - 110	P	10/13/2025	14:18	LB137518
	Beryllium	255	250	102	90 - 110	P	10/13/2025	14:18	LB137518
	Cadmium	2510	2500	100	90 - 110	P	10/13/2025	14:18	LB137518
	Calcium	25100	25000	101	90 - 110	P	10/13/2025	14:18	LB137518
	Chromium	1030	1000	103	90 - 110	P	10/13/2025	14:18	LB137518
	Cobalt	2500	2500	100	90 - 110	P	10/13/2025	14:18	LB137518
	Copper	1260	1250	101	90 - 110	P	10/13/2025	14:18	LB137518
	Iron	5070	5000	101	90 - 110	P	10/13/2025	14:18	LB137518
	Lead	4980	5000	100	90 - 110	P	10/13/2025	14:18	LB137518

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SDG No.: Q3323

Contract: LANG01

Lab Code: ACE

Initial Calibration Source: EPA

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
CCV02	Magnesium	25300	25000	101	90 - 110	P	10/13/2025	14:18	LB137518
	Manganese	2490	2500	100	90 - 110	P	10/13/2025	14:18	LB137518
	Nickel	2510	2500	100	90 - 110	P	10/13/2025	14:18	LB137518
	Potassium	25600	25000	102	90 - 110	P	10/13/2025	14:18	LB137518
	Selenium	5080	5000	102	90 - 110	P	10/13/2025	14:18	LB137518
	Silver	1270	1250	102	90 - 110	P	10/13/2025	14:18	LB137518
	Sodium	25200	25000	101	90 - 110	P	10/13/2025	14:18	LB137518
	Thallium	5300	5000	106	90 - 110	P	10/13/2025	14:18	LB137518
	Vanadium	2510	2500	100	90 - 110	P	10/13/2025	14:18	LB137518
	Zinc	2600	2500	104	90 - 110	P	10/13/2025	14:18	LB137518
CCV03	Aluminum	10200	10000	102	90 - 110	P	10/13/2025	16:04	LB137518
	Antimony	5000	5000	100	90 - 110	P	10/13/2025	16:04	LB137518
	Arsenic	5040	5000	101	90 - 110	P	10/13/2025	16:04	LB137518
	Barium	9870	10000	99	90 - 110	P	10/13/2025	16:04	LB137518
	Beryllium	264	250	106	90 - 110	P	10/13/2025	16:04	LB137518
	Cadmium	2540	2500	102	90 - 110	P	10/13/2025	16:04	LB137518
	Calcium	25400	25000	102	90 - 110	P	10/13/2025	16:04	LB137518
	Chromium	1050	1000	105	90 - 110	P	10/13/2025	16:04	LB137518
	Cobalt	2520	2500	101	90 - 110	P	10/13/2025	16:04	LB137518
	Copper	1270	1250	101	90 - 110	P	10/13/2025	16:04	LB137518
	Iron	5060	5000	101	90 - 110	P	10/13/2025	16:04	LB137518
	Lead	5010	5000	100	90 - 110	P	10/13/2025	16:04	LB137518
	Magnesium	25800	25000	103	90 - 110	P	10/13/2025	16:04	LB137518
	Manganese	2520	2500	101	90 - 110	P	10/13/2025	16:04	LB137518
	Nickel	2530	2500	101	90 - 110	P	10/13/2025	16:04	LB137518
	Potassium	25000	25000	100	90 - 110	P	10/13/2025	16:04	LB137518
	Selenium	5030	5000	100	90 - 110	P	10/13/2025	16:04	LB137518
	Silver	1280	1250	102	90 - 110	P	10/13/2025	16:04	LB137518
	Sodium	24000	25000	96	90 - 110	P	10/13/2025	16:04	LB137518
	Thallium	5310	5000	106	90 - 110	P	10/13/2025	16:04	LB137518
	Vanadium	2540	2500	102	90 - 110	P	10/13/2025	16:04	LB137518
	Zinc	2520	2500	101	90 - 110	P	10/13/2025	16:04	LB137518
CCV04	Aluminum	9980	10000	100	90 - 110	P	10/13/2025	17:02	LB137518
	Antimony	4970	5000	99	90 - 110	P	10/13/2025	17:02	LB137518

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Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
CCV04	Arsenic	5020	5000	100	90 - 110	P	10/13/2025	17:02	LB137518
	Barium	9520	10000	95	90 - 110	P	10/13/2025	17:02	LB137518
	Beryllium	261	250	104	90 - 110	P	10/13/2025	17:02	LB137518
	Cadmium	2520	2500	101	90 - 110	P	10/13/2025	17:02	LB137518
	Calcium	24900	25000	100	90 - 110	P	10/13/2025	17:02	LB137518
	Chromium	1040	1000	104	90 - 110	P	10/13/2025	17:02	LB137518
	Cobalt	2490	2500	100	90 - 110	P	10/13/2025	17:02	LB137518
	Copper	1250	1250	100	90 - 110	P	10/13/2025	17:02	LB137518
	Iron	4970	5000	99	90 - 110	P	10/13/2025	17:02	LB137518
	Lead	4970	5000	99	90 - 110	P	10/13/2025	17:02	LB137518
	Magnesium	25400	25000	102	90 - 110	P	10/13/2025	17:02	LB137518
	Manganese	2450	2500	98	90 - 110	P	10/13/2025	17:02	LB137518
	Nickel	2500	2500	100	90 - 110	P	10/13/2025	17:02	LB137518
	Potassium	24200	25000	97	90 - 110	P	10/13/2025	17:02	LB137518
	Selenium	5010	5000	100	90 - 110	P	10/13/2025	17:02	LB137518
	Silver	1270	1250	101	90 - 110	P	10/13/2025	17:02	LB137518
	Sodium	23000	25000	92	90 - 110	P	10/13/2025	17:02	LB137518
	Thallium	5270	5000	106	90 - 110	P	10/13/2025	17:02	LB137518
	Vanadium	2500	2500	100	90 - 110	P	10/13/2025	17:02	LB137518
	Zinc	2550	2500	102	90 - 110	P	10/13/2025	17:02	LB137518
CCV05	Aluminum	9680	10000	97	90 - 110	P	10/13/2025	18:11	LB137518
	Antimony	4780	5000	96	90 - 110	P	10/13/2025	18:11	LB137518
	Arsenic	4820	5000	96	90 - 110	P	10/13/2025	18:11	LB137518
	Barium	9440	10000	94	90 - 110	P	10/13/2025	18:11	LB137518
	Beryllium	256	250	102	90 - 110	P	10/13/2025	18:11	LB137518
	Cadmium	2440	2500	97	90 - 110	P	10/13/2025	18:11	LB137518
	Calcium	24300	25000	97	90 - 110	P	10/13/2025	18:11	LB137518
	Chromium	1000	1000	100	90 - 110	P	10/13/2025	18:11	LB137518
	Cobalt	2410	2500	96	90 - 110	P	10/13/2025	18:11	LB137518
	Copper	1210	1250	97	90 - 110	P	10/13/2025	18:11	LB137518
	Iron	4740	5000	95	90 - 110	P	10/13/2025	18:11	LB137518
	Lead	4810	5000	96	90 - 110	P	10/13/2025	18:11	LB137518
	Magnesium	24700	25000	99	90 - 110	P	10/13/2025	18:11	LB137518
	Manganese	2440	2500	98	90 - 110	P	10/13/2025	18:11	LB137518

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SDG No.: Q3323

Contract: LANG01

Lab Code: ACE

Initial Calibration Source: EPA

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
CCV05	Nickel	2410	2500	96	90 - 110	P	10/13/2025	18:11	LB137518
	Potassium	23400	25000	94	90 - 110	P	10/13/2025	18:11	LB137518
	Selenium	4810	5000	96	90 - 110	P	10/13/2025	18:11	LB137518
	Silver	1210	1250	97	90 - 110	P	10/13/2025	18:11	LB137518
	Sodium	24300	25000	97	90 - 110	P	10/13/2025	18:11	LB137518
	Thallium	4990	5000	100	90 - 110	P	10/13/2025	18:11	LB137518
	Vanadium	2440	2500	98	90 - 110	P	10/13/2025	18:11	LB137518
	Zinc	2450	2500	98	90 - 110	P	10/13/2025	18:11	LB137518
CCV06	Aluminum	10400	10000	104	90 - 110	P	10/13/2025	18:56	LB137518
	Antimony	5140	5000	103	90 - 110	P	10/13/2025	18:56	LB137518
	Arsenic	5150	5000	103	90 - 110	P	10/13/2025	18:56	LB137518
	Barium	10100	10000	101	90 - 110	P	10/13/2025	18:56	LB137518
	Beryllium	267	250	107	90 - 110	P	10/13/2025	18:56	LB137518
	Cadmium	2540	2500	102	90 - 110	P	10/13/2025	18:56	LB137518
	Calcium	25900	25000	104	90 - 110	P	10/13/2025	18:56	LB137518
	Chromium	1060	1000	106	90 - 110	P	10/13/2025	18:56	LB137518
	Cobalt	2540	2500	102	90 - 110	P	10/13/2025	18:56	LB137518
	Copper	1280	1250	102	90 - 110	P	10/13/2025	18:56	LB137518
	Iron	5140	5000	103	90 - 110	P	10/13/2025	18:56	LB137518
	Lead	5040	5000	101	90 - 110	P	10/13/2025	18:56	LB137518
	Magnesium	26200	25000	105	90 - 110	P	10/13/2025	18:56	LB137518
	Manganese	2570	2500	103	90 - 110	P	10/13/2025	18:56	LB137518
	Nickel	2540	2500	101	90 - 110	P	10/13/2025	18:56	LB137518
	Potassium	26300	25000	105	90 - 110	P	10/13/2025	18:56	LB137518
	Selenium	5170	5000	103	90 - 110	P	10/13/2025	18:56	LB137518
	Silver	1290	1250	104	90 - 110	P	10/13/2025	18:56	LB137518
	Sodium	27100	25000	108	90 - 110	P	10/13/2025	18:56	LB137518
	Thallium	5040	5000	101	90 - 110	P	10/13/2025	18:56	LB137518
	Vanadium	2610	2500	104	90 - 110	P	10/13/2025	18:56	LB137518
	Zinc	2620	2500	105	90 - 110	P	10/13/2025	18:56	LB137518
CCV07	Aluminum	9810	10000	98	90 - 110	P	10/13/2025	19:46	LB137518
	Antimony	4840	5000	97	90 - 110	P	10/13/2025	19:46	LB137518
	Arsenic	4860	5000	97	90 - 110	P	10/13/2025	19:46	LB137518
	Barium	9600	10000	96	90 - 110	P	10/13/2025	19:46	LB137518

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SDG No.: Q3323

Contract: LANG01

Lab Code: ACE

Initial Calibration Source: EPA

Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
CCV07	Beryllium	257	250	103	90 - 110	P	10/13/2025	19:46	LB137518
	Cadmium	2460	2500	98	90 - 110	P	10/13/2025	19:46	LB137518
	Calcium	24600	25000	98	90 - 110	P	10/13/2025	19:46	LB137518
	Chromium	1010	1000	101	90 - 110	P	10/13/2025	19:46	LB137518
	Cobalt	2430	2500	97	90 - 110	P	10/13/2025	19:46	LB137518
	Copper	1220	1250	98	90 - 110	P	10/13/2025	19:46	LB137518
	Iron	4860	5000	97	90 - 110	P	10/13/2025	19:46	LB137518
	Lead	4850	5000	97	90 - 110	P	10/13/2025	19:46	LB137518
	Magnesium	25100	25000	100	90 - 110	P	10/13/2025	19:46	LB137518
	Manganese	2480	2500	99	90 - 110	P	10/13/2025	19:46	LB137518
	Nickel	2430	2500	97	90 - 110	P	10/13/2025	19:46	LB137518
	Potassium	23800	25000	95	90 - 110	P	10/13/2025	19:46	LB137518
	Selenium	4860	5000	97	90 - 110	P	10/13/2025	19:46	LB137518
	Silver	1230	1250	99	90 - 110	P	10/13/2025	19:46	LB137518
	Sodium	24700	25000	99	90 - 110	P	10/13/2025	19:46	LB137518
	Thallium	4770	5000	95	90 - 110	P	10/13/2025	19:46	LB137518
	Vanadium	2480	2500	99	90 - 110	P	10/13/2025	19:46	LB137518
	Zinc	2420	2500	97	90 - 110	P	10/13/2025	19:46	LB137518