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M E M O R A N D U M

To:	Haley McDaniel, Idaho Department of Environmental Quality
From:	Jeremy Johnson Mara Thorhaug
Date:	June 25, 2026
Contract No./Title:	K305, Task Order #56
Alta Project No.:	23077.030
Subject:	**Harrison Beach Sampling Results from the September 2025 Sampling Event - Addendum to the *Final Risk-Based Evaluation of Selected Recreational Areas in Coeur d'Alene Lake and Spokane River —Expanded Screening-Level Risk Evaluation***

1 Introduction

The purpose of this memorandum is to serve as an addendum to the *Final Risk-Based Evaluation of Selected Recreational Areas in Coeur d'Alene Lake and Spokane River — Expanded Screening-Level Risk Evaluation* (SLRE, Alta 2025). This memorandum summarizes the sampling methods and results for the sampling conducted at Harrison Beach in 2025, as well as the screening approach, results, additional risk considerations, and recommendations.

Harrison Beach (identified as "Harrison Beach, North (site 2 – beach)" in the QAPP) was designated a high-priority site. However, Idaho Department of Environmental Quality (DEQ) and Alta Science & Engineering, Inc. (Alta) were unable to reach the City of Harrison despite multiple attempts by email, phone, and in person during spring and summer 2024. Recognizing the importance of this high-use site, DEQ asked Alta to renew contact efforts in summer 2025 that were successful.

2 Field and Site Sampling Summary

The field crew collected upland soil, wet sediment, dry sediment, and nearshore surface water samples from Harrison Beach on August 26, 2025 following the methods outlined in the Work Plan (Alta 2024a) and the Sampling and Analysis Plan / Quality Assurance Project Plan (SAP/QAPP, Alta 2024b). Soil and sediment samples collected from three decision units (DUs) included a dry sediment 30-point Incremental Sampling Methodology (ISM) sample collected from 0-12 inches, an upland sediment 30-point ISM sample collected from the 0–1-inch depth, and a 30-point wet sediment sample collected from 0-6 inches. All soil and sediment DUs were sampled in triplicate. The field crew collected a 7-point nearshore surface water sample and a field replicate from the footprint of the wet sediment DU. Appendix A provides a more detailed description of site sampling activities, observations, photographs, and a sample map.

The field crew handled samples and all laboratories analyzed the samples according to the methods identified in the SAP/QAPP (Alta 2024b). After receipt of results from SVL Analytical, DEQ and Alta had ALS Environmental analyze S050-US-DU01-A-03 (the upland soil sample with the highest lead concentration) for lead and arsenic in vitro bioaccessibility (IVBA).

3 Sample Results

Sample results underwent Stage 2B data validation (detailed in Appendix B). The data review noted the following:

- Mercury results for the surface water, soil, and sediment samples are qualified as estimates (UJ or J) due to temperature upon laboratory receipt.
- The percent relative standard deviations (RSDs), or coefficients of variation (CVs), are generally considered reasonable for field conditions. The calculated RSDs for total lead only slightly exceed the SAP/QAPP objective. No data are qualified based on field replicate results; however, the RSDs for total lead in Decision Unit (DU) 01 (upland soil) and DU02 (dry sediment) may suggest a higher degree of heterogeneity in lead concentrations in those DUs.

Based on the data validation, the data are usable for the purpose of the SLRE and are of sufficient quality for estimating exposure point concentrations (EPCs).

Table 1 presents the final analytical, field, and bioavailability results.

While this site was sampled for the 1999 SLRA-CUA, those results are not compared to the current sampling results, as was performed in the 2025 SLRE for sites sampled in both periods. The rationale for not comparing these results is because Harrison Beach exceeded the lead screening completed in 1999, was then included in the Selected Remedy in the 2002 Bunker Hill Mining and Metallurgical Complex Superfund Site (BHSS) Operable Unit (OU) 3 Record of Decision, and was subsequently remediated in 2003.

Table 1. 2025 Sample Results for Harrison Beach (S050)

Decision Unit	Type	Depth (inches)	Sample Date	Units	Analyte																		Parameter	
					Antimony		Arsenic		Cadmium		Copper		Iron		Lead		Manganese		Mercury		Zinc		Arsenic IVBA / RBA (%)	Lead IVBA / RBA / ABA (%)	Temp (˚C)	Turbidity (NTU)
DU01	US	0-1	8/26/2025	mg/kg	6.16		16.0		1.89		44.7		24,200		1000		620		0.257	J	394	J	6.7 / 5.3	64 / 56 / 28	-	-
DU02	DS	0-12	8/26/2025	mg/kg	4.00	U	2.50	U	0.400	U	9.76		10,300		35.2		251		0.033	UJ	39.5		-	-	-	-
DU03	WS	0-6	8/26/2025	mg/kg	4.00	U	2.50	U	0.450		6.98		7,390		75.3		160		0.046	J	96.8		-	-	-	-
DU03	NS	-	8/26/2025	mg/L	0.00100	U	0.00510		0.00117		0.00559		4.96		0.140		0.260		0.000200	UJ	0.152		-	-	25.7	4.95

Notes:

The maximum sample result for field duplicate or replicate samples is presented. The average sample result for laboratory replicates (IVBA) is presented.

mg/kg = milligrams per kilogram

mg/L = milligrams per Liter

US = upland soil, DS = dry sediment, WS = wet sediment, NS = nearshore surface water

U = The analyte was not detected below the limit of detection shown.

UJ = Concentration was not detected and is qualified as an estimate.

J = The result is an estimated quantity based on the data quality review.

IVBA = In Vitro Bioaccessibility Assay

RBA and ABA were calculated as described in Section 3.1.2 of the SLRE (Alta 2025)

Temp = Temperature, ˚C = degrees Celsius, NTU = nephelometric turbidity units

- = Not Applicable

4 Screening Approach

The screening evaluation approach for Harrison Beach, a public beach, followed the approach outlined in the Work Plan (Alta 2024a) and utilized in the Final SLRE (Alta 2025). This approach includes comparing soil/sediment and surface water EPCs to risk-based screening levels (RBSLs) for the Public Recreational Visitor and Outdoor Worker receptors. Alta calculated RBSLs for all contaminants of potential concern (COPCs) as described in Section 3.3 of the SLRE, and EPCs for sediments, upland soils, and nearshore surface water using methods detailed in Section 3.4 of the SLRE (Alta 2025). For non-lead COPCs, EPCs are based on the 95% Upper Confidence Limits (UCL) of the arithmetic mean, calculated using the Interstate Technology Regulatory Council (ITRC) 95% UCL (see Appendix C for the calculator outputs). Then, EPCs are compared to the RBSLs to determine if the EPCs exceed RBSLs (see Section 5 of this memo). For arsenic, where site-specific bioavailability data are available, Atla calculated the RBSL using the DU-specific bioavailability value (see Appendix D for arsenic RBSL calculation inputs and outputs).

For lead, the initial screening compares lead sediment and soil DU EPCs with RBSLs and U.S. Environmental Protection Agency (EPA) residential screening levels as explained in Section 3.5.2.1 of the SLRE. If an EPC exceeds the Outdoor Worker RBSL, the DU-specific bioavailability value is applied to the Adult Lead Methodology (ALM) to calculate a bioavailability-adjusted RBSL. The EPC is then compared to the bioavailability-adjusted RBSL. Alta completed secondary screening with Integrated Exposure Uptake Biokinetic (IEUBK, IEUBKwin version 2.0) modeling using nearshore surface water data and the maximum concentration of the sediment data, along with assumed baseline conditions to calculate the probability of exceeding a target blood lead level of 5 or 3.5 micrograms per deciliter (µg/dL; P5 or P3.5). Details on assumptions and IEUBK inputs are provided in Section 3.5.2.2 of the SLRE (Alta 2025).

5 Screening Results

Screening results and findings for non-lead COPCs and lead are discussed in this section.

5.1 Non-lead COPCs

Table 2, Table 3, and Table 4 compare DU EPCs with RBSLs for non-lead COPCs, based on a target level of 1×10^{-5} or HQ=0.1.

For all soil and sediment DUs, all EPCs are less than RBSLs for antimony, cadmium, copper, iron, manganese, mercury, and zinc (Table 2). For arsenic, the upland soil EPC exceeds the bioavailability-adjusted cancer RBSLs for the Public Recreational Visitor and Outdoor Worker (Table 3). The dry sediment and wet sediment EPCs exceed the cancer RBSL for the Outdoor Worker; however, arsenic was not detected in samples collected from those DUs (the detection limit for arsenic is greater than the cancer RBSL).

For surface water, all EPCs are less than RBSLs for antimony, cadmium, copper, iron, manganese, mercury, and zinc (Table 4). The arsenic EPC exceeds the Public Recreational and Outdoor Worker cancer RBSLs.

Table 2. Soil/Sediment Non-Lead COPC EPCs - Public Recreational Visitors and Outdoor Workers

				Analyte (mg/kg)						
				Antimony	Cadmium ~	Copper	Iron	Manganese	Mercury	Zinc
Public Recreational Visitor RBSL†				22.8	5.4	2,280	39,900	1,360	17.1	17,100
Outdoor Worker RBSL†				51.9	11.1	5,190	90,800	2,850	38.9	38,900
Site Name	Site ID	DU	Type	EPC						
Harrison Beach	S050	DU01*	US	7.82	2.00	47	24,584	658	0.343	422
		DU02**	DS	4.00	0.40	9.9	10,646	259	0.033	42
		DU03**	WS	4.00	0.46	7.2	7,651	164	0.049	100

Notes:

Arsenic EPCs are not included in this table, as they are summarized separately in Table 3.

mg/kg = milligrams per kilogram, US = upland soil, DS = dry sediment, WS = wet sediment

* EPC was calculated using ISM replicate data from the DU. ITRC recommended Student's t 95% UCL for these analytes, except antimony and mercury (for which Chebyshev 95% UCL was recommended).

** EPC was calculated using ISM replicate data from the DU. ITRC recommended Student's t 95% UCL for these analytes.

~ Cadmium cancer RBSLs based on 10^{-5} are 696,000 mg/kg and 100,000 mg/kg for public recreators and outdoor workers, respectively. There were no exceedances.

† Noncancer RBSLs based on HQ=0.1.

Table 3. Soil/Sediment Arsenic EPCs - Public Recreational Visitors and Outdoor Workers

				Arsenic (mg/kg)											
					Public Recreational Visitor						Outdoor Worker				
					RBSLs		Bioavailability-Adjusted RBSLs				RBSLs		Bioavailability-Adjusted RBSLs			
Site Name	Site ID	DU	Type	EPC	Cancer: EPC ≥ 2.6	Non-cancer: EPC ≥ 5.28	Cancer	Non-cancer	EPC ≥ Cancer	EPC ≥ Non-cancer	Cancer: EPC ≥ 1.56	Non-cancer: EPC ≥ 10.7	Cancer	Non-cancer	EPC ≥ Cancer	EPC ≥ Non-cancer
Harrison Beach	S050	DU01*	US	20.9	-	-	15.1	34.0	Y	N	-	-	6.31	43.1	Y	N
		DU02**	DS	2.5	N	N	-	-	-	-	Y	N	-	-	-	-
		DU03**	WS	2.5	N	N	-	-	-	-	Y	N	-	-	-	-

Notes:

mg/kg = milligrams per kilogram

* EPC was calculated using ISM replicate data from the DU. ITRC recommended Chebyshev 95% UCL.

** EPC is the value of the nondetected sample results, as all ISM replicate results are the same (nondetected) and a 95% UCL could not be calculated.

- not applicable

US = upland soil, DS = dry sediment, WS = wet sediment

Bioavailability-adjusted RBSLs are used to compare with the EPC when samples are analyzed for IVBA; otherwise, the site-wide RBSLs are used.

Non-cancer = noncarcinogenic, based on HQ=0.1

Cancer = carcinogenic, based on 10^{-5}

Table 4. Nearshore Surface Water EPCs – Public Recreational Visitors and Outdoor Workers

			Analyte (µg/L)							
			Antimony	Arsenic	Cadmium	Copper	Iron	Manganese	Mercury	Zinc
Public Recreational RBSL**- NC			42.1	8.12	6.9	5,420	94,800	1,470	24.3	41,500
Public Recreational RBSL* - C				3.01						
Outdoor Worker RBSL** - NC			44.9	8.15	8.0	5430	95100	1730	27.3	41400
Outdoor Worker RBSL* - C				1.19						
Site Name	**Site ID**	**DU**	**EPC**							
Harrison Beach	S050	DU03	1.00 U	**5.10**	1.2	5.59	4,960	260	0.2 U	152

Notes:

*C = cancer RBSLs based on 10^{-5}., **NC = Noncancer RBSLs based on HQ=0.1, µg/L = micrograms per Liter

Lead EPCs are not presented because surface water RBSLs for recreational receptors are dependent on sediment lead concentrations and methods to calculate RBSLs for occupational exposures to surface water are not available.

Bold, gray cells indicate an exceedance of the lowest RBSL.

U = The analyte was not detected below the limit of detection shown.

5.2 Lead

Table 5 summarizes soil/sediment lead DU EPCs compared to the RBSLs. Except for upland soils, dry and wet sediment lead EPCs are less than all screening values. Surface water lead EPCs are not compared with RBSLs because surface water RBSLs for recreational receptors are dependent on sediment lead concentrations and methods to calculate RBSLs for occupational exposures to surface water are not available. Additional discussion on surface water lead is provided below.

The upland soil lead EPC exceeds the EPA residential screening level, Public Recreational Visitor RBSLs, and Outdoor Worker RBSLs. Because this EPC exceeds the Outdoor Worker RBSLs, the DU-specific bioavailability value was applied to the ALM to calculate bioavailability-adjusted RBSLs. The upland soil EPC exceeds the bioavailability-adjusted Outdoor Worker RBSLs based on P3.5 and P5 of 317 milligrams per kilogram (mg/kg) and 545 mg/kg, respectively. The bioavailability of lead in upland soil area is slightly less than the default bioavailability used to calculate the Public Recreational Visitor RBSLs (28% versus 30%).

Table 6 presents the results of the secondary screening based on combined surface water and sediment exposures using the IEUBK model. Appendix E of this memo contains the IEUBK input and output files. The P3.5 values are greater than 5% for both the minimum and average assumed baseline residential scenarios. The exceedances are attributed to the assumed residential baseline soil and dust concentrations, as P3.5 values exceed 5% at residential baseline concentrations for all baseline residential scenarios. The P5 value is less than 5% for the minimum baseline residential scenario (3.7%) and slightly above 5% for the average baseline residential scenario (5.2%). Lead in surface water is a key contributor to predicted P5 for the average baseline residential scenario; however, sampling was not intended nor designed to identify potential sources of lead in surface water.

The Final SLRE (Alta, 2025) provides a discussion of uncertainties that also apply to this SLRE addendum, including potential temporal variability in water concentrations and IEUBK model assumptions such as baseline residential scenarios and bioavailability. These conservative assumptions to address these uncertainties may result in a slight overestimate of risk.

Table 5. Initial Lead Screening Results

Site Name	Site ID	Type	DU	Lead EPC (mg/kg)	EPA Residential Screening Level (mg/kg)	Public Recreational Visitor RBSL (mg/kg) - Target BLL = P5		Outdoor Worker RBSL (mg/kg) - Target BLL = P5	Outdoor Worker RBSL (mg/kg) - Target BLL = P3.5
					EPC ≥ 200 mg/kg*	EPC ≥ 590 mg/kg†	EPC ≥ 410 mg/kg§	EPC ≥ 511 mg/kg	EPC ≥ 297 mg/kg
Harrison Beach	S050	US	DU01	1000	Y	Y	Y	Y	Y
		DS	DU02	35.2	N	N	N	N	N
		WS	DU03	75.3	N	N	N	N	N

Notes:

mg/kg = milligrams per kilogram

US = upland soil, DS = dry sediment, WS = wet sediment

* USEPA residential soil screening level (USEPA 2025)

† RBSL derived with an assumed minimum baseline residential property lead concentration (soil = 80 mg/kg and dust = 130 mg/kg).
§ RBSL derived with an assumed average baseline residential property lead concentration (soil = 150 mg/kg and dust = 130 mg/kg).
***Based on National Geometric Standard Deviation and Background Blood lead concentration (geometric mean), as recommended based on single national estimates from using data from NHANES 2007-2012 (USEPA, 2017).

- not applicable

The maximum concentration is used for the lead EPC where field replicate samples were collected.

Table 6. Secondary Lead Screening Results for the Public Recreational Visitor

Site Name	Site ID	P5 (%)		P3.5 (%)	
		80/130*	150/130**	80/130*	150/130**
Harrison	S050	3.7	**5.2**	**15**	**19**

Notes:

P5 and P3.5 = probability of exceeding a blood level of 5 or 3.5 µg/dL (micrograms per deciliter) in IEUBK model

*Soil and dust inputs assume minimum baseline residential property lead concentration (soil = 80 mg/kg and dust = 130 mg/kg).

**Soil and dust inputs assume average baseline residential property lead concentration (soil = 150 mg/kg and dust = 130 mg/kg).

Bold, gray cells indicate an exceedance of either P3.5 (%) or P5 (%)

6 Additional Risk Considerations

The Final SLRE discusses additional risk considerations, including regional background concentrations, the non-cancer risk endpoint, a comparison to action levels established for OU 3 of the BHSS, the application of maximum contaminant levels (MCLs), and residential baseline and target blood lead levels (Alta 2025). The effects of these considerations on the Harrison site findings are discussed in this section.

Arsenic and lead exceed their cancer and IEUBK-derived RBSLs, respectively, for soils/sediment. Arsenic exceeds the Public Recreational Visitor and/or Outdoor worker carcinogenic site-specific RBSLs for all soil/sediment DUs. Arsenic EPCs in sediments are below the 90% background concentration identified for comparison in the SLRE of 12.6 mg/kg. However, the arsenic concentration in upland soils (16.0 mg/kg) is slightly above the background concentration. Lead exceeds RBSLs in the upland soil DU, and combined sediment/surface water exposures result in a P5 value (5.2%) slightly greater than 5% for average residential baseline conditions. The nearshore surface water lead concentration of 0.140 milligrams per liter (mg/L) is a key contributor to the P5 result. Regarding drinking water standards and nearshore surface water, lead exceeds its treatment technique action level of 0.010 mg/L, and arsenic is below the MCL[1].

Although the lake was not selected for remedial actions in the 2002 OU 3 Interim Record of Decision (ROD, USEPA 2002), Coeur d'Alene Lake is spatially located within the BHSS. The recreational area surface soil/sediment action levels for arsenic and lead in OU 3 are 100 mg/kg and 700 mg/kg, respectively. Sites in OU 3 with arsenic or lead concentrations greater than these action levels are recommended for remedial actions such as capping or removal in order to be protective of human health (USEPA 2002). Harrison Beach has arsenic concentrations less than the OU 3 action levels[2]; however, the upland soil lead concentration is above the action level of 700 mg/kg.

7 Recommendations

Based on the findings of this memorandum discussed in Sections 5 and 6, Harrison Beach warrants further evaluation by DEQ or partner agencies.

- Lead concentrations in upland soil exceed recreational and outdoor worker RBSLs and BHSS OU 3 action levels. Because the Harrison Beach site lies within the BHSS Selected Remedy boundary, and specifically within the Rails-to-Trails right-of-way, Alta recommends that DEQ implement remedial actions for the upland soil DU in accordance with the BHSS OU 3 Interim ROD.
- Lead in nearshore surface water is a key contributor to the P5 result of 5.2% under the average residential baseline scenario. While DEQ and federal agencies are evaluating how to achieve BHSS surface water quality remedial action objectives, Alta recommends that DEQ monitors the nearshore surface water quality at the Harrison Beach site to determine if the lead concentrations temporally fluctuate. This will provide information on the average or expected range of nearshore surface water exposures during summer

[1] Lead does not have an MCL. Lead and copper are regulated by a treatment technique that requires systems to control the corrosiveness of their water.

[2] Note that arsenic cleanup levels developed in the baseline risk assessment used arsenic toxicity values published at that time (TerraGraphics et al. 2001). Arsenic's toxicity values were updated by EPA in 2025 which lowered the screening concentrations (Alta 2025).

recreation. It will also help determine whether the borderline P5 result represents a true exceedance of the lead guideline.

8 References

Alta Science and Engineering, Inc. (Alta), 2024a. Risk-Based Evaluation of Selected Recreational Areas in Coeur d'Alene Lake and Spokane River – Work Plan. Final. Prepared for Idaho Department of Environmental Quality. February 5.

Alta Science and Engineering, Inc. (Alta), 2024b. Sampling and Analysis Plan (SAP)/ Quality Assurance Project Plan (QAPP) for the Risk-Based Evaluation for Selected Recreational Areas at Coeur d'Alene Lake and the Spokane River. Revision 0. Prepared for Idaho Department of Environmental Quality. June 3.

Alta Science and Engineering, Inc. (Alta), 2025. Risk-Based Evaluation of Selected Recreational Areas in Coeur d'Alene Lake and Spokane River – Expanded Screening-Level Risk Evaluation. Final. Prepared for Idaho Department of Environmental Quality. November 26.

TerraGraphics Environmental Engineering, Inc., URS Greiner, CH2M Hill, Inc. 2001. Human Health Risk Assessment (HHRA) for the Coeur d'Alene Basin extending from Harrison to Mullan on the Coeur d'Alene River and tributaries: Remedial Investigation/Feasibility Study (RI/FS).

U.S. Environmental Protection Agency (USEPA), 2002. The Bunker Hill Mining and Metallurgical Complex Operable Unit 3 Record of Decision. September.

U.S. Environmental Protection Agency (USEPA), 2017. Update of the Adult Lead Methodology's Default Baseline Blood Lead Concentration and Geometric Standard Deviation Parameters and the Integrated Exposure Uptake Biokinetic Model's Default Maternal Blood Lead Concentration at Birth Variable. Washington, D.C.: U.S. Environmental Protection Agency Office of Land and Emergency Management. 12 p. OLEM Directive 9285.6-56; [accessed 2019 Oct 18]. https://semspub.epa.gov/work/HQ/196766.pdf.

U.S. Environmental Protection Agency (USEPA). 2025. Residential Lead Directive for CERCLA Sites and RCRA Hazardous Waste Cleanup Program Facilities. Washington, D.C. 6 p. [accessed on 2026 Mar 5]. https://semspub.epa.gov/work/HQ/100003761.pdf.

Appendix A
Summary of Site Conditions and Sampling Activities



G:\Project_Maps\IDEQ\Lake_focused_HHRA\slre_report\slre_report.aprx Harrison - S050

Alta Science & Engineering, Inc.

Print Date	Feb 19, 2026
Project Number	23077
Projection	NAD83
Project Manager	J. Johnson
Cartographer	M.Wood

1:360
1 in = 30 ft
0 30 US Feet

Harrison - S050

S050: Harrison Beach
Site Priority: High
Site Visit and Sampling: August 26, 2025

Main dry sediment sample area (DU02).



Wet sediment and nearshore surface water sample area (DU03).



Upland soil sample area (DU01) facing south.



Upland soil sample area (DU01) facing north.



The site is owned by the City of Harrison and is a developed public beach and boat launch located on Coeur d'Alene Lake.

Observed recreation activities included: boating, floating, watersports, swimming, wading, beach play activities, sunbathing, walking, dog-walking, trail running, hiking, picnicking, and camping (at the adjacent campground/RV park).

Receptors (observed): Public recreational visitors included young children. Field crew observed children swimming, wading, digging in the sand, and engaging in beach play. Field crew did not observe outdoor workers but their presence is probable since this is a maintained beach and picnic area.

Exposure potential (based on observed receptors and observed/probable activities):

- Recreational: Ingestion of soils, sediment, and lake water; dermal contact with soils, sediment, and lake water; inhalation of contaminants in dry soil or sediment that is released into air via wind or during play activities; and ingestion of fish.
- Occupational: Incidental ingestion of soils and sediment; dermal contact with soils and sediment; inhalation of contaminants in dry soil or sediment that is released into air via soil disturbance activities or wind.

Site Features/Setting: Site is located in lakeshore forested/shrub habitat with an open/maintained sandy beach area on a gentle, sloped shoreline. Beach area includes picnic tables, docks, an enclosed designated swimming area, boat launch, walking paths, gravel parking area, and a welcome sign. The beach is immediately adjacent to the Trail of the Coeur d'Alenes, a paved walking and bike path maintained by the Idaho Parks and Recreation Department. Bathroom facilities are located nearby alongside the bike trail. The City of Harrison campground is adjacent to Harrison Beach.

No drinking water facilities are located on site. Several nearby stores and restaurants supply drinking water.

Sample areas included beach/shoreline (DU02), shallow-water areas adjacent to the beach (DU03), and an upland soil area (DU01) between the beach and forested area.

Sample Area (DU)	Sample Description
Upland Soil (DU01):	▪ One sample area approximately 145'x20' between the beach and paved bike trail, east of boat launch. ▪ Mixture of soil and gravel with some organics and patches of vegetation. Good recovery of fines. ▪ 30-point ISM sample composite. ▪ Used trowel with 2-ounce cup from 0-1 inches.
Dry Sediment (DU02):	▪ One shoreline sample area of approximately 8,300 square feet. ▪ Mixture of fine to coarse sand with minor gravel. Good recovery of fines with minimal depth refusal due to hard packed ground in some locations adjacent to the upland soil area. ▪ 30-point ISM sample composite. ▪ Used sediment probe from 0-12 inches.
Wet Sediment (DU03):	▪ One sample from shallow water area adjacent to dry sediment area. ▪ Wet sediment is brown silty sand. ▪ 30-point ISM sample composite. ▪ Used sediment probe from 0-6 inches.
Nearshore Surface Water (DU03):	▪ One sample collected from the wet sediment area. ▪ 7-point composite sample. ▪ Collected water from mid water depth at each subsample location and combined using churn splitter.

1998 CUA Site: Yes, CUA Site No.18: Harrison Beach, North (site 2). Prior sampling did not include an upland soil area. However, Alta delineated an upland soil area to sample based on current site conditions. The upper portion of the beach was considered an upland soil area because of its relative elevation to the lake, soil differences (less sand and more organic soil), and presence of ground cover vegetation and trees. The dry sediment area had been remediated and is periodically sampled and replaced by the UPRR.

Appendix B
Quality Assurance/Quality Control Memorandum

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INTERNAL MEMORANDUM

To: Jeremy Johnson, Project Manager

From: Mara Thorhaug, Quality Assurance Officer
Allison Marshall, Data Validator

Date: February 17, 2026

Contract No./Title: K305, TO #56

Alta Project No.: 23077.030

Subject: **QA/QC Review of Sampling at Harrison Beach for the Screening Level Risk Evaluation for Coeur d'Alene Lake and the Spokane River in Coeur d'Alene, Idaho**

1 Introduction

This memorandum provides a summary of the data validation performed and the resulting data quality for the sampling effort that occurred in 2025 at Harrison Beach near Coeur d'Alene, Idaho, in support of the Screening Level Risk Evaluation. This memo summarizes the review of the surface water (near shore), sediment (wet and dry), and soil (upland) samples collected on August 26, 2025.

Alta Science & Engineering, Inc.'s (Alta's) quality assurance/quality control (QA/QC) review followed guidelines set forth in the following documents:

- *Sampling and Analysis Plan (SAP) / Quality Assurance Project Plan (QAPP) for the Risk-Based Evaluation for Selected Recreational Areas at Coeur d'Alene Lake and the Spokane River* (Alta 2024) – hereinafter referred to as the SAP/QAPP.
- *National Functional Guidelines for Inorganic Superfund Methods Data Review* (EPA 2020) – hereinafter referred to as the NFG-Inorganic.
- *Incremental Sampling Methodology (ISM) Update ISM-2* (ITRC 2020) – hereinafter referred to as the ISM-2.
- *Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use* (EPA 2009).
- *Guidance on Environmental Data Verification and Data Validation EPA QA/G-8* (EPA 2002).

This memorandum discusses the data validation and quality review performed for the Sample Delivery Groups (SDGs) listed in Table 1. Chain of Custody records are included in Attachment A. Data qualifiers used in this review are defined by EPA (2020). Final qualified data are presented in Attachment B and Attachment C.

Table 1. Sample Delivery Groups (SDGs) Reviewed

SDG	Field Sample Matrix	QC samples	Analyses	Data Review Method [a]
X5H0474 [b]	Surface Water	Rinsate blank and Field blank, Duplicate	Total metals [d]	MS and Mercury
X5H0518 [b]	Dry/Wet Sediment [e]	Replicate samples	Total metals [f]	AES and Mercury
X5H0475 [b]	Upland Soil [e]	Replicate samples	Total metals [f]	AES and Mercury
K2510615 [c]	Upland Soil [e]	Replicate samples	IVBA (arsenic and lead) [g]	MS

Footnotes:

Data validation level (Stage 2B) based on EPA 2009.

[a] AES = Atomic Emission Spectrometry, MS = Mass Spectrometry, and Mercury for the NFG-Inorganic (EPA 2020).

[b] Sample Delivery Groups (SDG) analyzed by SVL Analytical in Kellogg, Idaho.

[c] .SDG analyzed by ALS Environmental (ALS) in Kelso, Washington.

[d] Total metals in surface water and water QC samples include antimony, arsenic, cadmium, copper, iron, lead, manganese, mercury, and zinc analyzed using EPA Methods 200.8 and 245.1 (EPA 1994a, 1994b).

[e] Sediment samples were sieved through a #60 mesh, and upland soil samples were sieved through a #100 mesh prior to total metals analysis.

[f] Total metals in sediment and soil include antimony, arsenic, cadmium, copper, iron, lead, manganese, and zinc analyzed using EPA Method 6010D (EPA 2018) and mercury using EPA Method 7471B (EPA 2007).

[g] *In-vitro* bioaccessibility (IVBA) of arsenic and lead analyzed using EPA Method 6020B (EPA 2014) and EPA Method 1340M (EPA 2017).

2 Data Validation and Quality Review Summary of Surface Water and Water Quality Control Samples

Alta's Stage 2B validation of the surface water analytical data and the water QC data (for surface water, sediment, and soil) and review of the surface water field data are summarized in Table 2. Procedures/checks that require further discussion are explained below the table, as necessary.

Table 2. Data Quality Review Summary for Surface Water and Water QC Samples

Data Validation Procedure or Check	Acceptable Frequency? [a]	Acceptable Performance? [b]	Data Qualified?	Discussion Item Number
General Data Review				
Sample condition upon receipt at laboratory	--	Y	N	
Preservation (temperature)	--	N	Y	1

Table 2. Data Quality Review Summary for Surface Water and Water QC Samples

Data Validation Procedure or Check	Acceptable Frequency? [a]	Acceptable Performance? [b]	Data Qualified?	Discussion Item Number
Laboratory followed specified analytical methods, preparatory methods, and shows analysis dates	--	Y	N	
Requested target analyte results are reported with lab qualifiers and units	--	Y	N	
Sensitivity Assessment				
Requested reporting limits are present	--	Y	N	
Instrument Tunes	Y	Y	N	
Representativeness Assessment				
Holding times	--	Y	N	
Method blanks	Y	Y	N	
Field blanks (Table 3)	Y	Y	N	2
Rinsate blanks	--	--	N	3
Accuracy Assessment				
Laboratory Control Samples (LCS)	Y	Y	N	
Matrix Spikes (MS)	Y	N	N	4
Initial Calibration data (ICV/ICB)	Y	Y	N	
Continuing Calibration data (CCV/CCB)	Y	Y	N	
Precision Assessment				
Matrix Spike Duplicates (MSD)	Y	Y	N	
Field Duplicates (Table 4)	Y	Y	N	

[a] Frequencies as defined in the SAP/QAPP (Alta 2024).

[b] As defined in the SAP/QAPP (Alta 2024),or based on professional judgment of the data validator.

-- = not applicable

Discussion Items:

1. **Preservation:** The samples were received by the laboratory at 8.4°C, which is outside the temperature range (0°C-6°C) specified in the SAP/QAPP (Alta 2024). The samples were stored on ice after collection and stored in a refrigerator until delivery to the laboratory. Samples were transported to the laboratory in a cooler with ice. Based on the NFG-Inorganic: AES, no data qualifications are necessary for samples received outside temperature criteria. Based on the guidelines in the NFG-Inorganic: Mercury and professional judgment, the field sample mercury results were qualified as estimates (UJ) since the sample temperature upon laboratory receipt was greater than 6°C but less than or equal to 10°C.

2. **Field blanks:** All samples for this event were collected in one day from one location; therefore, one field blank was collected representing the sampling event with results shown in Table 3. No analytes were detected in the field blank and no qualifications are necessary.
3. **Rinsate blanks:** Two surface water samples were collected from one sample location during this sampling event; therefore, a rinsate blank for surface water was not collected.
4. **Matrix Spike/Matrix Spike Duplicate (MS/MSD):** The laboratory analyzed site-specific MS/MSD sample pairs at a ratio of 1:20 as specified in the SAP/QAPP. Percent recoveries (%Rs) were within their analyte-specific acceptance limits for the site-specific MS/MSD sample pairs except for the following analytes:
    a. Total iron, lead, manganese, and zinc in the MS/MSD surface water sample had unusable spike recovery values because the analyte concentrations in the sample are disproportionate to the spike levels. The Laboratory Control Samples (LCS) %Rs and the field duplicate relative percent differences (RPDs) for these analytes were acceptable; therefore, no data were qualified due to MS/MSD results.

Table 3. Field Blank Analysis

SDG:	Sample Date:	Field Sample ID:	Analyte Concentrations (mg/L):								
			Arsenic	Cadmium	Copper	Iron	Manganese	Lead	Antimony	Zinc	Mercury
X5H0474	8/26/2025	S050-WS-DU03-C-04	0.00100 U	0.000100 U	0.000400 U	0.0150 U	0.000400 U	0.000200 U	0.00100 U	0.00400 U	0.000200 UJ

mg/L = milligrams per liter.

U = Concentration was not detected above the reporting limit as listed in the SAP/QAPP (Alta 2024).

UJ = Non-detected concentration is estimated.

Table 4. Surface Water Field Duplicate Results

SDG	Field Sample ID	Sample Date	Analyte	Original Concentration (mg/L)	Duplicate Concentration (mg/L)	RPD
X5H0474	S050-NS-DU03-Z-01 & S050-NS-DU03-Z-02	8/26/2025	Arsenic	0.00510	0.00485	NA
			Cadmium	0.00117	0.00106	9.87%
			Copper	0.00559	0.00535	4.39%
			Iron	4.96	4.59	7.75%
			Manganese	0.260	0.244	6.35%
			Lead	0.140	0.137	2.17%
			Antimony	0.00100 U	0.00100 U	NA
			Zinc	0.152	0.141	7.51%
			Mercury	0.000200 UJ	0.000200 UJ	NA

Relative Percent Difference (RPD) = (|X1-X2|/((X1+X2)/2))*100

X1 = Original Concentration

X2 = Duplicate Concentration

NA = RPD was not calculated because one or more of the results were not detected or were less than 5 x the RL. Precision is acceptable because the absolute difference between the sample and duplicate result is less than or equal to the RL.

U = concentration was not detected above the method reporting limit.

UJ = Non-detected concentration is estimated.

mg/L = milligrams per liter.

3 Data Validation and Quality Review Summary of Sediment and Soil Results

Alta's Stage 2B validation of the analytical data and review of the sediment and soil field data are summarized in Table 5. Procedures/checks that require further discussion are explained below the table, as necessary.

Table 5. Data Quality Review Summary for Sediment and Soil Results

Data Validation Procedure of Check	Acceptable Frequency? [a]	Acceptable Performance? [b]	Data Qualified?	Discussion Item Number
General Data Review				
Sample condition upon receipt at laboratory	--	Y	N	
Laboratory followed specified analytical methods, preparatory methods, and shows analysis dates	--	Y	N	
Preservation (temperature and in-field preservative, if applicable)	--	N	Y	1
Requested target analyte results are reported with lab qualifiers and units	--	Y	N	
Sensitivity Assessment				
Requested reporting limits are present	--	Y	N	
ISM Processed/Unprocessed silica sand blanks	--	--	--	2
Serial dilution	Y	Y	N	
Representativeness Assessment				
Holding times	--	Y	N	
Method blanks	Y	Y	N	
Field blanks (Table 3)	Y	Y	N	
Rinsate blanks (Table 6)	Y	Y	N	
Accuracy Assessment				
Site-specific Matrix Spike (MS) %Recoveries	Y	Y	N	3
Laboratory Control Samples (LCS) %Recoveries	Y	Y	N	
Initial and Continuing Calibration Verification data (ICV/CCV)	Y	Y	N	
Initial and Continuing Calibration Blank data (ICB/CCB)	Y	Y	N	

Table 5. Data Quality Review Summary for Sediment and Soil Results

Data Validation Procedure of Check	Acceptable Frequency? [a]	Acceptable Performance? [b]	Data Qualified?	Discussion Item Number
Precision Assessment				
Laboratory Control Sample Duplicate (LCSD) RPDs	--	--	--	
Site-specific Matrix Spike Duplicate (MSD) RPDs	Y	Y	N	
ISM Field Replicates (Table 7)	Y	N	N	4
ISM Laboratory Replicates	--	--	--	5

[a] Frequencies as defined in the SAP/QAPP (Alta 2024).
[b] As defined in the SAP/QAPP (Alta 2024) or based on professional judgment of the data validator.
-- = not applicable
RPD = relative percent difference.

Discussion Items:

1. **Preservation:** Dry/wet sediment and upland soil samples were received by the laboratory outside the temperature range (0°C-6°C) specified in the SAP/QAPP (Alta 2024) as follows:

   - SDG X5H0518: 9.2°C
   - SDG X5H0475: 8.4°C

   The samples were stored on ice after collection and stored in a refrigerator until delivery to the laboratory. Samples were transported to the laboratory in a cooler with ice. Based on the NFG-Inorganic: AES, no data qualifications are necessary for samples received outside temperature criteria. Based on the guidelines in the NFG-Inorganic: Mercury and professional judgment, the field sample mercury results were qualified as estimates (J or UJ) since the sample temperature upon laboratory receipt was greater than 6°C but less than or equal to 10°C.

2. **ISM Processed/Unprocessed silica sand blanks:** The SAP/QAPP specifies that 1 processed/unprocessed silica sand blank be analyzed per project to address potential contamination introduced during ISM sample preparation. This requirement was fulfilled during the original sampling event; therefore, additional silica sand blanks were not analyzed for this event.

3. **Site-specific Matrix Spike (MS) %Recoveries:** The laboratory analyzed 1 site-specific MS/MSD pair, which meets the SAP/QAPP frequency of 1:20 samples.

   All %Rs met the SAP/QAPP requirements except in SDG X5H0518 and X5H0475, where total iron and manganese in an MS sample are qualified by the laboratory as M3, which means the spike recovery values are unusable since the analyte concentrations in the field sample are disproportionate to spike levels. However, the LCS %Rs were acceptable. Therefore, no data are qualified.

4. **ISM Field Replicates:** ISM field triplicate samples were collected for the dry sediment, wet sediment, and upland soil areas. This meets the SAP/QAPP frequency of 1 replicate for every 10 field samples.

All total metals' percent relative standard deviations (RSDs) met the SAP/QAPP guidance of ≤35% except for the following instances (Table 7 summarizes the calculated percent RSDs for the ISM field replicates):

a. In the field replicate samples S050-DS-DU02-D-01, S050-DS-DU02-D-02, and S050-DS-DU02-D-03, the total lead RSD was calculated to be 39.6%.

b. In the field replicate samples S050-US-DU01-A-01, S050-US-DU01-A-02, and S050-US-DU01-A-03, the total lead RSD was calculated to be 37.1%.

The percent RSDs, or coefficients of variation (CVs), are generally considered reasonable for field conditions. The calculated RSDs for total lead only slightly exceed the SAP/QAPP objective. No data were qualified based on field replicate results; however, the RSDs for total lead noted above may suggest a higher degree of heterogeneity in lead concentrations in those DUs.

5. **ISM Laboratory Replicates:** The SAP/QAPP specifies that 2 laboratory replicate samples be prepared and analyzed per project to evaluate laboratory precision. This requirement was met during the original sampling event; therefore, an additional laboratory replicate was not analyzed for metals for this event.

Table 6. Dry/Wet Sediment and Upland Soil Rinsate Blank Analysis

SDG:	Sample Date:	Field Sample ID:	Analyte Concentrations (mg/L):								
			Arsenic	Cadmium	Copper	Iron	Manganese	Lead	Antimony	Zinc	Mercury
X5H0474	8/26/2025	S050-US-DU01-A-04	0.00100 U	0.000100 U	0.00040 U	0.015 U	0.00040 U	0.00020 U	0.00100 U	0.0040 U	0.000200 UJ

mg/L = milligrams per liter

U = Concentration was not detected above the reporting limit as listed in the SAP/QAPP (Alta 2024).

UJ = Non-detected concentration is estimated.

Table 7. ISM Dry/Wet Sediment and Upland Soil Field Replicate Analysis

Field Sample ID	SDG	Sample Date	Unit	Arsenic	Cadmium	Copper	Iron	Manganese	Lead	Antimony	Zinc	Mercury
Dry Sediment												
S050-DS-DU02-D-01	X5H0518	8/26/2025	mg/kg	2.50 U	0.40 U	9.76	9,920	243	23.8	4.00 U	36.1	0.033 UJ
S050-DS-DU02-D-02	X5H0518	8/26/2025	mg/kg	2.50 U	0.40 U	9.41	10,300	231	15.6	4.00 U	32.2	0.033 UJ
S050-DS-DU02-D-03	X5H0518	8/26/2025	mg/kg	2.50 U	0.40 U	9.27	9,380	251	35.2	4.00 U	39.5	0.033 UJ
		Mean	mg/kg	2.50	0.40	9.48	9,867	242	24.9	4.00	35.9	0.033
		Standard Deviation	mg/kg	0.00	0.00	0.25	462.3	10.1	9.84	0.00	3.65	0.000
		Relative Standard Deviation	mg/kg	0.00%	0.00%	2.66%	4.69%	4.17%	**39.6%**	0.00%	10.2%	0.00%
Wet Sediment												
S050-WS-DU03-C-01	X5H0518	8/26/2025	mg/kg	2.50 U	0.40 U	6.40	6,710	151	64.0	4.00 U	86.1	0.035 J
S050-WS-DU03-C-02	X5H0518	8/26/2025	mg/kg	2.50 U	0.45	6.80	6,500	158	75.3	4.00 U	96.8	0.046 J
S050-WS-DU03-C-03	X5H0518	8/26/2025	mg/kg	2.50 U	0.41	6.98	7,390	160	68.4	4.00 U	91.4	0.039 J
		Mean	mg/kg	2.50	0.42	6.73	6,867	156	69.2	4.00	91.4	0.040
		Standard Deviation	mg/kg	0.00	0.026	0.297	465	4.73	5.70	0.00	5.35	0.006
		Relative Standard Deviation	mg/kg	0.00%	6.30%	4.41%	6.78%	3.02%	8.23%	0.00%	5.85%	13.9%
Upland Soils												
S050-US-DU01-A-01	X5H0475	8/26/2025	mg/kg	9.84	1.55	37.0	24,200	500	582	4.00 U	310	0.142 J
S050-US-DU01-A-02	X5H0475	8/26/2025	mg/kg	9.70	1.51	38.1	24,200	495	523	4.11	297	0.154 J
S050-US-DU01-A-03	X5H0475	8/26/2025	mg/kg	16.0	1.89	44.7	23,600	620	1000	6.16	394	0.257 J
		Mean	mg/kg	11.8	1.65	39.9	24,000	538	702	4.76	334	0.184
		Standard Deviation	mg/kg	3.60	0.209	4.16	346	70.8	260	1.22	52.7	0.063
		Relative Standard Deviation	mg/kg	30.4%	12.7%	10.4%	1.44%	13.1%	**37.1%**	25.6%	15.8%	34.3%

Relative standard deviation = (Standard Deviation of the sample/Mean Concentration)*100

Bold RSD exceeds the SAP/QAPP guideline of ≤35% (Alta 2024).

U = concentration is not detected above the reporting limit shown. The mean, standard deviation, and relative standard deviation were calculated using the reporting limit shown.

J = concentration is qualified as an estimate.

UJ = concentration is a non-detect estimate. The mean, standard deviation, and relative standard deviation were calculated using the reporting limit shown.

4 Data Validation and Quality Review Summary of IVBA Results

Alta's Stage 2B validation and review of the IVBA analytical data and the laboratory QC data are summarized in Table 8. Procedures/checks that require further discussion are explained below the table, as necessary.

Table 8. Data Quality Review Summary for IVBA and Laboratory QC Samples

Data Validation Procedure or Check	Acceptable Frequency? [a]	Acceptable Performance? [b]	Data Qualified?	Discussion Item Number
General Data Review				
Sample condition upon receipt at laboratory	--	Y	N	--
Preservation (temperature)	--	--	--	--
Laboratory followed specified analytical methods, preparatory methods, and shows analysis dates	--	Y	N	--
Requested target analyte results are reported with lab qualifiers and units	--	Y	N	--
Sensitivity Assessment				
Requested reporting limits are present	--	--	--	--
Instrument Tunes	Y	Y	N	--
Representativeness Assessment				
Holding times	--	Y	N	--
Method blanks	Y	Y	N	--
Field blanks	--	--	--	--
Rinsate blanks	--	--	--	--
Accuracy Assessment				
Laboratory Control Samples (LCS)	Y	Y	N	--
Matrix Spikes (MS)	Y	Y	N	1
Initial or Continuing Calibration Blanks (ICB/CCB)	Y	N	N	2
Initial or Continuing Calibration Verifications (ICV/CCV)	Y	Y	N	--
Precision Assessment				
Matrix Spike Duplicates (MSD)	Y	Y	N	--
Laboratory Control Samples Duplicates (LCSD)	Y	Y	N	--
Laboratory Duplicates	Y	Y	N	--

Table 8. Data Quality Review Summary for IVBA and Laboratory QC Samples

Data Validation Procedure or Check	Acceptable Frequency? [a]	Acceptable Performance? [b]	Data Qualified?	Discussion Item Number
Laboratory Replicates (Table 9, Table 10)	Y	Y	N	--
Field Replicates	--	--	--	--

[a] Frequencies as defined in the SAP/QAPP (Alta 2024).

[b] As defined in the SAP/QAPP (Alta 2024), or based on professional judgment of the data validator.

-- = not applicable

Discussion Items

1. **Site-specific Matrix Spike (MS) %Recoveries:** The laboratory analyzed 1 site-specific MS/MSD pair, which meets the SAP/QAPP frequency of 1:20 samples (Alta 2024). All %Rs met the SAP/QAPP requirements except in SDG K2510615, IVBA lead and total IVBA lead are qualified by the laboratory as "#", which means the spike recovery values are unusable since the analyte concentrations in the field sample are disproportionate to spike levels. The LCS %Rs were acceptable; therefore, no data are qualified.
2. **Initial Calibration Blank (ICB) and Continuing Calibration Blank (CCB) data:** The laboratory analyzed ICB samples and the CCB samples at the proper frequency. All ICB and CCB samples were non-detects for arsenic and lead except for the following:
    - Lead was detected in two of the four CCBs with concentrations ranging from 0.05-0.08 micrograms per liter (µg/L), which is above the method detection limit (MDL) of 0.02 µg/L. No data were qualified because the field sample lead results were orders of magnitude higher than the CCB detections.

Table 9. Upland Soil IVBA Laboratory Replicate Analysis

Field Sample ID	Laboratory ID Code	Sample Date	Unit	Arsenic, Total Metals for IVBA [a]	Arsenic, IVBA [b]	Lead, Total Metals for IVBA [a]	Lead, IVBA [b]
S050-US-DU01-A-03	KQ2518988-05	8/26/2025	mg/kg	16.5	1.09	1200	768
	KQ2518988-05 (Duplicate Sample Result)	8/26/2025	mg/kg	16.7	1.15	1200	765
	KQ2518988-05 (Triplicate Sample Result)	8/26/2025	mg/kg	16.5	1.08	1210	776
	Mean			16.6	1.11	1203	770
	Standard Deviation			0.115	0.0379	5.77	5.69
	Relative Standard Deviation			0.697%	3.42%	0.480%	0.739%

a. Prepared using EPA Method 3050B (EPA 1996) and analyzed using EPA Method 6020B (EPA 2014).

b. Prepared using EPA Method 1340 (EPA 2017) and analyzed using EPA Method 6020B (EPA 2014).

Relative standard deviation = (Standard Deviation of the sample/Mean Concentration)*100
Bold RSD exceeds the SAP/QAPP guideline of ≤35% (none).

Table 10. Laboratory Replicate Bioaccessibility Results

Field Sample ID	Laboratory ID Code	Sample Date	Unit	Arsenic Bioaccessibility (%)	Lead Bioaccessibility (%)
S050-US-DU01-A-03	K2510615-001	8/26/2025	%	6.6	64.0
	KQ2518988-04-KQ2518989-04	8/26/2025	%	6.9	63.8
	KQ2518988-05-KQ2518989-05	8/26/2025	%	6.5	64.1
	Mean			6.7	64.0
	Standard Deviation			0.21	0.153
	Relative Standard Deviation			3.12%	0.24%

Relative standard deviation = (Standard Deviation of the sample/Mean Concentration)*100
Bold RSD exceeds the SAP/QAPP guideline of ≤35% (none) (Alta 2024).

5 Overall Assessment

Based on this data quality review, the Alta QAO has determined the laboratory and field data to be of acceptable quality and meets the data quality objectives for precision, accuracy, sensitivity, representativeness, and comparability, with the exceptions noted above. The Alta QAO did not reject any data; therefore, the completeness for surface water, dry/wet sediment, and upland soil is calculated at 100%, which meets the SAP/QAPP criteria. Attachment B and Attachment C include the final laboratory data.

6 References and Resources Used

Alta Science & Engineering, Inc. (Alta), 2024. Sampling and Analysis Plan (SAP) / Quality Assurance Project Plan (QAPP) for the Risk-Based Evaluation for Selected Recreational Areas at Coeur d'Alene Lake and the Spokane River. Prepared for the Idaho Department of Environmental Quality. Revision 0, June 3.

U.S. Environmental Protection Agency (EPA),1994a. Method 200.8: Determination of Trace Elements in Waters and Wastes by Inductively Couple Plasma-Mass Spectrometry. Revision 5.4.

EPA,1994b. Method 245.1: Determination of Mercury in Water by Cold Vapor Atomic Absorption Spectrometry. Revision 3.

EPA, 1996. Method 3050B: Acid Digestion of Sediments, Sludges, and Soils. Revision 2. December.

EPA, 2002. EPA Guidance on Environmental Data Verification and Data Validation. EPA QA/G-8; November.

EPA, 2007. Method 7471B (SW-846): Mercury in Solid or Semisolid Waste (Manual Cold-vapor Technique). Revision 2, February.

EPA, 2009. Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use. OSWER No. 9200.1-85, EPA 540-R-08-005 prepared by the Office of Solid Waste and Emergency Response; January.

EPA, 2014. Method 6020B (SW-846): Inductively Coupled Plasma-Mass Spectrometry, Revision 2. Washington, DC. July.

EPA, 2017. Method 1340M: *In Vitro* Bioaccessibility Assay for Lead in Soil. Revision 1, February.

EPA, 2018. Method 6010D (SW-846): Inductively Coupled Plasma-Optical Emission Spectrometry. Revision 5, July.

EPA, 2020. National Functional Guidelines for Inorganic Superfund Methods Data Review, (SFAM01.1), Office of Superfund Remediation and Technology Innovation (OSRTI). OLEM 9240.1-66, EPA-542-R-20-006; November.

Interstate Technology & Regulatory Council (ITRC), 2020. Incremental Sampling Methodology (ISM) Update ISM-2. October.

Attachment A

Chains-of-Custody Documentation

Work Order: **X5H0474**

Alta Science and Engineering - Kellogg

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SVL Anal... • Kellogg, ID 83837 • (208) 784-1258 • FAX: (208) 783-0891

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SVL Work Order #

Temperature on Receipt: 8.4°C

Report to Company:	Alta Science & Engineering, Inc.
Contact:	Jeremy Johnson and Shelley Hicks
Address:	1220 Big Creek Rd., Suite A Kellogg, ID 83837
Phone Number:	208-786-1206
FAX Number:	shelley.hicks@alta-se.com
E-mail:	jeremy.johnson@alta-se.com

Invoice Sent To:	Alta Science & Engineering, Inc.
Contact:	Accounting
Address:	220 East 5th Street, Suite 325 Moscow, ID 83843
Phone Number:	208-882-7858
FAX Number:	accounting@alta-se.com
PO#:	23077

Table 1. – Matrix Type
1 = Surface Water, 2 = Ground Water
3 = Soil, 4 = Sediment, 5 = Rock, 6 = Rinsate, 7 = Oil
8 = Waste, 9= Other: DI Water

Project Name: Coeur d'Alene Lake

Sampler's Signature: Shelley Hicks

Indicate State of sample origination: ID

	Sample ID	Collection			Misc.		Preservative(s)								Analyses Required										Comments
	Please take care to distinguish between: 1 and I 2 and Z 5 and S Ø and O Thanks!	Date	Time	Collected by: (Init.)	Matrix Type (From Table 1)	No. of Containers	Unpreserved	HNO_3 Filtered	HNO_3 Unfiltered	HCl	H_2SO_4	NaOH	Other (Specify)	Total Metals (Sb,As,Cd,Cu,Fe,Pb,Mn,Zn,Hg										Rush Instructions (Days)	
1	S050-US-DU01-A-04	8/26/25	14:00	SH	6	1			X					X											Total Metals: Method 200.8/6020B: Sb,As,Cd,Cu,Fe,Pb,Mn,Zn and Method 245.1/7470A: Hg
2	S050-WS-DU03-C-04	8/26/25	14:45	SH	9	1			X					X											
3	S050-NS-DU03-Z-01	8/26/25	15:00	SH	1	1			X					X											Complete MS/D on this sample.
4	S050-NS-DU03-Z-02	8/26/25	15:00	SH	1	1			X					X											
5																									
6																									
7																									
8																									
9																									
10																									

Cooler #2A

Relinquished by:	Date: 8/27/25	Time: 1025	Received by:	Date: 8/27/25	Time: 1025
Relinquished by:	Date:	Time:	Received by:	Date:	Time:

* Sample Reject: ☐ Return ☐ Dispose ☐ Store (30 Days)

White: LAB COPY Yellow: CUSTOMER COPY

SVL-COC 07/17

206

Work Order: **X5H0475**

Alta Science and Engineering - Kellogg



age 1 of 1

CHAIN OF CUSTODY RECORD

SVL Analytical, Inc. • One Government Gulch • Kellogg, ID 83837 • (208) 784-1258 • FAX: (208) 783-0891

FOR SVL USE ONLY
SVL Work Order #

Temperature on Receipt: 8.4°C

Table 1. -- Matrix Type
1 = Surface Water, 2 = Ground Water
3 = Soil, 4 = Sediment, 5 = Rock, 6 = Rinsate, 7 = Oil
8 = Waste, 9= Other:

Report to Company:	Alta Science & Engineering, Inc.
Contact:	Jeremy Johnson and Shelley Hicks
Address:	1220 Big Creek Rd., Suite A Kellogg, ID 83837
Phone Number:	208-786-1206
FAX Number:	shelley.hicks@alta-se.com
E-mail:	jeremy.johnson@alta-se.com

Invoice Sent To:	Alta Science & Engineering, Inc.
Contact:	Accounting
Address:	220 East 5th Street, Suite 325 Moscow, ID 83843
Phone Number:	208-882-7858
FAX Number:	accounting@alta-se.com
PO#:	23077

Project Name: Coeur d'Alene Lake

Sampler's Signature: Shelley Hicks

Indicate State of sample origination: ID

	Sample ID	Collection			Misc.		Preservative(s)							Analyses Required											Rush Instructions (Days)	Comments
	Please take care to distinguish between: 1 and I 2 and Z 5 and S Ø and O Thanks!	Date	Time	Collected by: (Init.)	Matrix Type (From Table 1)	No. of Containers	Unpreserved	HNO_3 Filtered	HNO_3 Unfiltered	HCl	H_2SO_4	NaOH	Other (Specify)	Dry and Sieve: No. 100 Mesh	ISM Preparation	1D Linear Collection Subfraction	Total Metals (Sb,As,Cd,Cu,Fe,Pb,Mn,Zn,Hg									
1	S050-US-DU01-A-01	8/26/25	13:30	SH	3	1	X							X	X	X	X									**Total Metals: Method 6010D: Sb,As,Cd,Cu,Fe,Pb,Mn,Zn and Method 7471B: Hg *Return ALL Sample Rejects and Unused Sample Portions to ALTA***
2	S050-US-DU01-A-02	8/26/25	13:30	SH	3	1	X							X	X	X	X									
3	S050-US-DU01-A-03	8/26/25	13:30	SH	3	1	X							X	X	X	X									
4																										
5																										
6																										
7																										
8																										
9																										
10																										

Coolers #2 (

Relinquished by:	Date: 8/27/25	Time: 1025	Received by:	Date: 8/27/25	Time: 1025
Relinquished by:	Date:	Time:	Received by:	Date:	Time:

* Sample Reject: ☐ Return ☐ Dispose ☐ Store (30 Days)

White: LAB COPY Yellow: CUSTOMER COPY

SVL-COC 07/17

209

Work Order: **X5H0518**

Alta Science and Engineering - Kellogg

of 1

SVL Analytical, Inc. • One Government Gulch • Kellogg, ID 83837 • (208) 784-1258 • FAX: (208) 783-0891

FOR SVL USE ONLY
SVL Work Order #

Temperature on Receipt: 9.2°C

Table 1. – Matrix Type
1 = Surface Water, 2 = Ground Water
3 = Soil, 4 = Sediment, 5 = Rock, 6 = Rinsate, 7 = Oil
8 = Waste, 9= Other:

Report to Company: Alta Science & Engineering, Inc.
Contact: Jeremy Johnson and Shelley Hicks
Address: 1220 Big Creek Rd., Suite A
Kellogg, ID 83837
Phone Number: 208-786-1206
FAX Number: shelley.hicks@alta-se.com
E-mail: jeremy.johnson@alta-se.com

Invoice Sent To: Alta Science & Engineering, Inc.
Contact: Accounting
Address: 220 East 5th Street, Suite 325
Moscow, ID 83843
Phone Number: 208-882-7858
FAX Number: accounting@alta-se.com
PO#: 23077

Project Name: Coeur d'Alene Lake

Sampler's Signature: Shelley Hicks

Indicate State of sample origination: ID

	Sample ID	Collection			Misc.		Preservative(s)							Analyses Required												Rush Instructions (Days)	Comments
	Please take care to distinguish between: 1 and I, 2 and Z, 5 and S, Ø and O. Thanks!	Date	Time	Collected by: (Init.)	Matrix Type (From Table 1)	No. of Containers	Unpreserved	HNO_3 Filtered	HNO_3 Unfiltered	HCl	H_2SO_4	NaOH	Other (Specify)	Dry and Sieve: No. 60 Mesh	ISM Preparation	1D Linear Collection Subfraction	Total Metals (Sb,As,Cd,Cu,Fe,Pb,Mn,Zn,Hg										
1	S050-DS-DU02-D-01	8/26/25	9:30	SH	4	1	X							X	X	X	X										Total Metals: Method 6010D: Sb,As,Cd,Cu,Fe,Pb,Mn,Zn and Method 7471B: Hg *Return ALL Sample Rejects and Unused Sample Portions to ALTA*
2	S050-DS-DU02-D-02	8/26/25	9:30	SH	4	1	X							X	X	X	X										Conduct MS/D on this sample.
3	S050-DS-DU02-D-03	8/26/25	9:30	SH	4	1	X							X	X	X	X										
4	S050-WS-DU03-C-01	8/26/25	14:30	SH	4	1	X							X	X	X	X										
5	S050-WS-DU03-C-02	8/26/25	14:30	SH	4	1	X							X	X	X	X										
6	S050-WS-DU03-C-03	8/26/25	14:30	SH	4	1	X							X	X	X	X										
7																											
8																											
9																											
10																											

1 Cooler #1

Relinquished by: [signature] Date: 8/27/25 Time: 1025 Received by: [signature] Date: 8/27/25 Time: 1025

Relinquished by: Date: Time: Received by: Date: Time:

* Sample Reject: ☐ Return ☐ Dispose ☐ Store (30 Days)

White: LAB COPY Yellow: CUSTOMER COPY

SVL-COC 07/17

Chain of Custody

ADDRESS 1317 South 13th Ave., Kelso, WA 98626
PHONE 1 360 577 7222 FAX 1 360 636 1068

Part of the ALS Group A Campbell Brothers Limited Company

Work Order No.: K2510615

Project Manager:	Jeremy Johnson		**Bill to:**	Accounting	
Client Name:	Alta Science & Engineering, Inc.		**Company:**	Alta Science & Engineering, Inc.	
Address:	220 East 5th Street, Suite 325		**Address:**	220 East 5th Street, Suite 325	
City, State ZIP:	Moscow, ID 83843		**City, State ZIP:**	Moscow, ID 83843	
Email:	jeremy.johnson@alta-se.com	**Phone:**	**Email:**	accounting@alta-se.com	208-882-7858
Project Name:	Coeur d'Alene Lake IVBA - Quote 55455				
Project Number:	23077				
P.O. Number:	23077				
Sampler's Name:	Shelley Hicks				

SAMPLE RECEIPT

Temperature (°C):		Temp Blank Present		
Received Intact:	Yes	No	N/A	Wet Ice / Blue Ice
Cooler Custody Seals:	Yes	No	N/A	Total Containers:
Sample Custody Seals:	Yes	No	N/A	

REQUESTED ANALYSIS

TAT

- ■ Routine
- ☐ Same Day ***
- ☐ Next Day ***
- ☐ 3 Day
- ☐ 5 Day

*** Please call for availability

Due Date:

Sample Identification	Matrix	Date Sampled	Time Sampled	Lab ID	No. of Containers	IVBA As and Pb by EPA 1340M - 6020A
S050-US-DU01-A-03	soil	8/26/2025	13:30		1	X

Comments

Tier IV Reporting

All samples on this COC have been prepared by ISM methods and sieved to less than 150 microns (100 mesh).

Dissolved	
Total	

Additional Methods Available Upon Request

RELINQUISHED BY			RECEIVED BY		
Print Name	Signature	Date/Time	Print Name	Signature	Date/Time
Shelley Hicks		10/22/25 0800			10/24/25 0945

Revised : 10/22/2025

Attachment B
Final Qualified Field Sample Results

Attachment B: Final Qualified Field Sample Results

Case Number	Sample Delivery Group	Lab Sample ID	Sample Date	METHOD	CAS Number	Sample Fraction	Analyte	Lab Result	Final Lab Qualifier	Lab Qualifier reason	IDEQ Qualifier	IDEQ Qualifier Reason	Combined Result	Combined Qualifier	Combined Qualifier Reason	Result Units
X536146	X5H0474	X5H0474-01	8/26/2025	EPA 200.8	7440382	Total	AS	0.001	U	Not detected above RL			0.001	U	Not detected above RL	mg/L
X536146	X5H0474	X5H0474-01	8/26/2025	EPA 200.8		Total	bi	0	.				0			ug/l
X536146	X5H0474	X5H0474-01	8/26/2025	EPA 200.8	7440439	Total	CD	0.0001	U	Not detected above RL			0.0001	U	Not detected above RL	mg/L
X536146	X5H0474	X5H0474-01	8/26/2025	EPA 200.8	7440508	Total	CU	0.0004	U	Not detected above RL			0.0004	U	Not detected above RL	mg/L
X536146	X5H0474	X5H0474-01	8/26/2025	EPA 200.8	7439896	Total	FE	0.015	U	Not detected above RL			0.015	U	Not detected above RL	mg/L
X536146	X5H0474	X5H0474-01	8/26/2025	EPA 200.8	7439965	Total	MN	0.0004	U	Not detected above RL			0.0004	U	Not detected above RL	mg/L
X536146	X5H0474	X5H0474-01	8/26/2025	EPA 200.8	7439921	Total	PB	0.0002	U	Not detected above RL			0.0002	U	Not detected above RL	mg/L
X536146	X5H0474	X5H0474-01	8/26/2025	EPA 200.8	7440360	Total	SB	0.001	U	Not detected above RL			0.001	U	Not detected above RL	mg/L
X536146	X5H0474	X5H0474-01	8/26/2025	EPA 200.8	7440666	Total	ZN	0.004	U	Not detected above RL			0.004	U	Not detected above RL	mg/L
X536030	X5H0474	X5H0474-01	8/26/2025	EPA 245.1	7439976	Total	HG	0.0002	U	Not detected above RL	UJ	Sample temp exceeded 6°C	0.0002	UJ	Not detected above RL; Sample temp exceeded 6°C	mg/L
X536146	X5H0474	X5H0474-02	8/26/2025	EPA 200.8	7440382	Total	AS	0.001	U	Not detected above RL			0.001	U	Not detected above RL	mg/L
X536146	X5H0474	X5H0474-02	8/26/2025	EPA 200.8		Total	bi	0	.				0			ug/l
X536146	X5H0474	X5H0474-02	8/26/2025	EPA 200.8	7440439	Total	CD	0.0001	U	Not detected above RL			0.0001	U	Not detected above RL	mg/L
X536146	X5H0474	X5H0474-02	8/26/2025	EPA 200.8	7440508	Total	CU	0.0004	U	Not detected above RL			0.0004	U	Not detected above RL	mg/L
X536146	X5H0474	X5H0474-02	8/26/2025	EPA 200.8	7439896	Total	FE	0.015	U	Not detected above RL			0.015	U	Not detected above RL	mg/L
X536146	X5H0474	X5H0474-02	8/26/2025	EPA 200.8	7439965	Total	MN	0.0004	U	Not detected above RL			0.0004	U	Not detected above RL	mg/L
X536146	X5H0474	X5H0474-02	8/26/2025	EPA 200.8	7439921	Total	PB	0.0002	U	Not detected above RL			0.0002	U	Not detected above RL	mg/L
X536146	X5H0474	X5H0474-02	8/26/2025	EPA 200.8	7440360	Total	SB	0.001	U	Not detected above RL			0.001	U	Not detected above RL	mg/L
X536146	X5H0474	X5H0474-02	8/26/2025	EPA 200.8	7440666	Total	ZN	0.004	U	Not detected above RL			0.004	U	Not detected above RL	mg/L
X536030	X5H0474	X5H0474-02	8/26/2025	EPA 245.1	7439976	Total	HG	0.0002	U	Not detected above RL	UJ	Sample temp exceeded 6°C	0.0002	UJ	Not detected above RL; Sample temp exceeded 6°C	mg/L
X536146	X5H0474	X5H0474-03	8/26/2025	EPA 200.8	7440382	Total	AS	0.0051	.				0.0051			mg/L
X536146	X5H0474	X5H0474-03	8/26/2025	EPA 200.8		Total	bi	0	.				0			ug/l
X536146	X5H0474	X5H0474-03	8/26/2025	EPA 200.8	7440439	Total	CD	0.00117	.				0.00117			mg/L
X536146	X5H0474	X5H0474-03	8/26/2025	EPA 200.8	7440508	Total	CU	0.00559	.				0.00559			mg/L
X536146	X5H0474	X5H0474-03	8/26/2025	EPA 200.8	7439896	Total	FE	4.96	M3	MS %R n/a due to disproportionate spike level for the analyte conc.			4.96			mg/L
X536146	X5H0474	X5H0474-03	8/26/2025	EPA 200.8	7439965	Total	MN	0.26	M3	MS %R n/a due to disproportionate spike level for the analyte conc.			0.26			mg/L
X536146	X5H0474	X5H0474-03	8/26/2025	EPA 200.8	7439921	Total	PB	0.14	.				0.14			mg/L
X536146	X5H0474	X5H0474-03	8/26/2025	EPA 200.8	7440360	Total	SB	0.001	U	Not detected above RL			0.001	U	Not detected above RL	mg/L
X536146	X5H0474	X5H0474-03	8/26/2025	EPA 200.8	7440666	Total	ZN	0.152	M3	MS %R n/a due to disproportionate spike level for the analyte conc.			0.152			mg/L
X536030	X5H0474	X5H0474-03	8/26/2025	EPA 245.1	7439976	Total	HG	0.0002	U	Not detected above RL	UJ	Sample temp exceeded 6°C	0.0002	UJ	Not detected above RL; Sample temp exceeded 6°C	mg/L
X536146	X5H0474	X5H0474-04	8/26/2025	EPA 200.8	7440382	Total	AS	0.00485	.				0.00485			mg/L
X536146	X5H0474	X5H0474-04	8/26/2025	EPA 200.8		Total	bi	0	.				0			ug/l
X536146	X5H0474	X5H0474-04	8/26/2025	EPA 200.8	7440439	Total	CD	0.00106	.				0.00106			mg/L
X536146	X5H0474	X5H0474-04	8/26/2025	EPA 200.8	7440508	Total	CU	0.00535	.				0.00535			mg/L
X536146	X5H0474	X5H0474-04	8/26/2025	EPA 200.8	7439896	Total	FE	4.59	.				4.59			mg/L
X536146	X5H0474	X5H0474-04	8/26/2025	EPA 200.8	7439965	Total	MN	0.244	.				0.244			mg/L
X536146	X5H0474	X5H0474-04	8/26/2025	EPA 200.8	7439921	Total	PB	0.137	.				0.137			mg/L
X536146	X5H0474	X5H0474-04	8/26/2025	EPA 200.8	7440360	Total	SB	0.001	U	Not detected above RL			0.001	U	Not detected above RL	mg/L
X536146	X5H0474	X5H0474-04	8/26/2025	EPA 200.8	7440666	Total	ZN	0.141	.				0.141			mg/L
X536030	X5H0474	X5H0474-04	8/26/2025	EPA 245.1	7439976	Total	HG	0.0002	U	Not detected above RL	UJ	Sample temp exceeded 6°C	0.0002	UJ	Not detected above RL; Sample temp exceeded 6°C	mg/L
X536077	X5H0475	X5H0475-01	8/26/2025	EPA 6010D	7440382	Total	AS	9.84	.				9.84			mg/kg
X536077	X5H0475	X5H0475-01	8/26/2025	EPA 6010D	7440439	Total	CD	1.55	.				1.55			mg/kg
X536077	X5H0475	X5H0475-01	8/26/2025	EPA 6010D	7440508	Total	CU	37	.				37			mg/kg
X536077	X5H0475	X5H0475-01	8/26/2025	EPA 6010D	7439896	Total	FE	24200	.				24200			mg/kg
X536077	X5H0475	X5H0475-01	8/26/2025	EPA 6010D	7439965	Total	MN	500	.				500			mg/kg
X536077	X5H0475	X5H0475-01	8/26/2025	EPA 6010D	7439921	Total	PB	582	.				582			mg/kg
X536077	X5H0475	X5H0475-01	8/26/2025	EPA 6010D	7440360	Total	SB	4	U	Not detected above RL			4	U	Not detected above RL	mg/kg
X536077	X5H0475	X5H0475-01	8/26/2025	EPA 6010D	7440666	Total	ZN	310	.				310			mg/kg
X536072	X5H0475	X5H0475-01	8/26/2025	EPA 7471B	7439976	Total	HG	0.142	.		J	Sample temp exceeded 6°C	0.142	J	Sample temp exceeded 6°C	mg/kg
X536017	X5H0475	X5H0475-01	8/26/2025	Percent Solids	NA	Total	% Solids	98.3	.				98.3			%
X536077	X5H0475	X5H0475-02	8/26/2025	EPA 6010D	7440382	Total	AS	9.7	.				9.7			mg/kg
X536077	X5H0475	X5H0475-02	8/26/2025	EPA 6010D	7440439	Total	CD	1.51	.				1.51			mg/kg
X536077	X5H0475	X5H0475-02	8/26/2025	EPA 6010D	7440508	Total	CU	38.1	.				38.1			mg/kg
X536077	X5H0475	X5H0475-02	8/26/2025	EPA 6010D	7439896	Total	FE	24200	.				24200			mg/kg
X536077	X5H0475	X5H0475-02	8/26/2025	EPA 6010D	7439965	Total	MN	495	.				495			mg/kg
X536077	X5H0475	X5H0475-02	8/26/2025	EPA 6010D	7439921	Total	PB	523	.				523			mg/kg
X536077	X5H0475	X5H0475-02	8/26/2025	EPA 6010D	7440360	Total	SB	4.11	.				4.11			mg/kg
X536077	X5H0475	X5H0475-02	8/26/2025	EPA 6010D	7440666	Total	ZN	297	.				297			mg/kg
X536072	X5H0475	X5H0475-02	8/26/2025	EPA 7471B	7439976	Total	HG	0.154	.		J	Sample temp exceeded 6°C	0.154	J	Sample temp exceeded 6°C	mg/kg
X536017	X5H0475	X5H0475-02	8/26/2025	Percent Solids	NA	Total	% Solids	98.6	.				98.6			%
X536077	X5H0475	X5H0475-03	8/26/2025	EPA 6010D	7440382	Total	AS	16	.				16			mg/kg
X536077	X5H0475	X5H0475-03	8/26/2025	EPA 6010D	7440439	Total	CD	1.89	.				1.89			mg/kg
X536077	X5H0475	X5H0475-03	8/26/2025	EPA 6010D	7440508	Total	CU	44.7	.				44.7			mg/kg
X536077	X5H0475	X5H0475-03	8/26/2025	EPA 6010D	7439896	Total	FE	23600	.				23600			mg/kg
X536077	X5H0475	X5H0475-03	8/26/2025	EPA 6010D	7439965	Total	MN	620	.				620			mg/kg
X536077	X5H0475	X5H0475-03	8/26/2025	EPA 6010D	7439921	Total	PB	1000	.				1000			mg/kg
X536077	X5H0475	X5H0475-03	8/26/2025	EPA 6010D	7440360	Total	SB	6.16	.				6.16			mg/kg
X536077	X5H0475	X5H0475-03	8/26/2025	EPA 6010D	7440666	Total	ZN	394	.				394			mg/kg
X536072	X5H0475	X5H0475-03	8/26/2025	EPA 7471B	7439976	Total	HG	0.257	.		J	Sample temp exceeded 6°C	0.257	J	Sample temp exceeded 6°C	mg/kg
X536017	X5H0475	X5H0475-03	8/26/2025	Percent Solids	NA	Total	% Solids	98.8	.				98.8			%
X536077	X5H0518	X5H0518-01	8/26/2025	EPA 6010D	7440382	Total	AS	2.5	U	Not detected above RL			2.5	U	Not detected above RL	mg/kg
X536077	X5H0518	X5H0518-01	8/26/2025	EPA 6010D	7440439	Total	CD	0.4	U	Not detected above RL			0.4	U	Not detected above RL	mg/kg

Attachment B: Final Qualified Field Sample Results

Case Number	Sample Delivery Group	Lab Sample ID	Sample Date	METHOD	CAS Number	Sample Fraction	Analyte	Lab Result	Final Lab Qualifier	Lab Qualifier reason	IDEQ Qualifier	IDEQ Qualifier Reason	Combined Result	Combined Qualifier	Combined Qualifier Reason	Result Units
X536077	X5H0518	X5H0518-01	8/26/2025	EPA 6010D	7440508	Total	CU	9.76	.				9.76			mg/kg
X536077	X5H0518	X5H0518-01	8/26/2025	EPA 6010D	7439896	Total	FE	9920	M3	MS %R n/a due to disproportionate spike level for the analyte conc.			9920			mg/kg
X536077	X5H0518	X5H0518-01	8/26/2025	EPA 6010D	7439965	Total	MN	243	M3	MS %R n/a due to disproportionate spike level for the analyte conc.			243			mg/kg
X536077	X5H0518	X5H0518-01	8/26/2025	EPA 6010D	7439921	Total	PB	23.8	.				23.8			mg/kg
X536077	X5H0518	X5H0518-01	8/26/2025	EPA 6010D	7440360	Total	SB	4	U	Not detected above RL			4	U	Not detected above RL	mg/kg
X536077	X5H0518	X5H0518-01	8/26/2025	EPA 6010D	7440666	Total	ZN	36.1	.				36.1			mg/kg
X536072	X5H0518	X5H0518-01	8/26/2025	EPA 7471B	7439976	Total	HG	0.033	U	Not detected above RL	UJ	Sample temp exceeded 6°C	0.033	UJ	Not detected above RL; Sample temp exceeded 6°C	mg/kg
X536017	X5H0518	X5H0518-01	8/26/2025	Percent Solids	NA	Total	% Solids	99.5	.				99.5			%
X536077	X5H0518	X5H0518-02	8/26/2025	EPA 6010D	7440382	Total	AS	2.5	U	Not detected above RL			2.5	U	Not detected above RL	mg/kg
X536077	X5H0518	X5H0518-02	8/26/2025	EPA 6010D	7440439	Total	CD	0.4	U	Not detected above RL			0.4	U	Not detected above RL	mg/kg
X536077	X5H0518	X5H0518-02	8/26/2025	EPA 6010D	7440508	Total	CU	9.41	.				9.41			mg/kg
X536077	X5H0518	X5H0518-02	8/26/2025	EPA 6010D	7439896	Total	FE	10300	.				10300			mg/kg
X536077	X5H0518	X5H0518-02	8/26/2025	EPA 6010D	7439965	Total	MN	231	.				231			mg/kg
X536077	X5H0518	X5H0518-02	8/26/2025	EPA 6010D	7439921	Total	PB	15.6	.				15.6			mg/kg
X536077	X5H0518	X5H0518-02	8/26/2025	EPA 6010D	7440360	Total	SB	4	U	Not detected above RL			4	U	Not detected above RL	mg/kg
X536077	X5H0518	X5H0518-02	8/26/2025	EPA 6010D	7440666	Total	ZN	32.2	.				32.2			mg/kg
X536072	X5H0518	X5H0518-02	8/26/2025	EPA 7471B	7439976	Total	HG	0.033	U	Not detected above RL	UJ	Sample temp exceeded 6°C	0.033	UJ	Not detected above RL; Sample temp exceeded 6°C	mg/kg
X536017	X5H0518	X5H0518-02	8/26/2025	Percent Solids	NA	Total	% Solids	99.5	.				99.5			%
X536077	X5H0518	X5H0518-03	8/26/2025	EPA 6010D	7440382	Total	AS	2.5	U	Not detected above RL			2.5	U	Not detected above RL	mg/kg
X536077	X5H0518	X5H0518-03	8/26/2025	EPA 6010D	7440439	Total	CD	0.4	U	Not detected above RL			0.4	U	Not detected above RL	mg/kg
X536077	X5H0518	X5H0518-03	8/26/2025	EPA 6010D	7440508	Total	CU	9.27	.				9.27			mg/kg
X536077	X5H0518	X5H0518-03	8/26/2025	EPA 6010D	7439896	Total	FE	9380	.				9380			mg/kg
X536077	X5H0518	X5H0518-03	8/26/2025	EPA 6010D	7439965	Total	MN	251	.				251			mg/kg
X536077	X5H0518	X5H0518-03	8/26/2025	EPA 6010D	7439921	Total	PB	35.2	.				35.2			mg/kg
X536077	X5H0518	X5H0518-03	8/26/2025	EPA 6010D	7440360	Total	SB	4	U	Not detected above RL			4	U	Not detected above RL	mg/kg
X536077	X5H0518	X5H0518-03	8/26/2025	EPA 6010D	7440666	Total	ZN	39.5	.				39.5			mg/kg
X536072	X5H0518	X5H0518-03	8/26/2025	EPA 7471B	7439976	Total	HG	0.033	U	Not detected above RL	UJ	Sample temp exceeded 6°C	0.033	UJ	Not detected above RL; Sample temp exceeded 6°C	mg/kg
X536017	X5H0518	X5H0518-03	8/26/2025	Percent Solids	NA	Total	% Solids	99.5	.				99.5			%
X536077	X5H0518	X5H0518-04	8/26/2025	EPA 6010D	7440382	Total	AS	2.5	U	Not detected above RL			2.5	U	Not detected above RL	mg/kg
X536077	X5H0518	X5H0518-04	8/26/2025	EPA 6010D	7440439	Total	CD	0.4	U	Not detected above RL			0.4	U	Not detected above RL	mg/kg
X536077	X5H0518	X5H0518-04	8/26/2025	EPA 6010D	7440508	Total	CU	6.4	.				6.4			mg/kg
X536077	X5H0518	X5H0518-04	8/26/2025	EPA 6010D	7439896	Total	FE	6710	.				6710			mg/kg
X536077	X5H0518	X5H0518-04	8/26/2025	EPA 6010D	7439965	Total	MN	151	.				151			mg/kg
X536077	X5H0518	X5H0518-04	8/26/2025	EPA 6010D	7439921	Total	PB	64	.				64			mg/kg
X536077	X5H0518	X5H0518-04	8/26/2025	EPA 6010D	7440360	Total	SB	4	U	Not detected above RL			4	U	Not detected above RL	mg/kg
X536077	X5H0518	X5H0518-04	8/26/2025	EPA 6010D	7440666	Total	ZN	86.1	.				86.1			mg/kg
X536072	X5H0518	X5H0518-04	8/26/2025	EPA 7471B	7439976	Total	HG	0.035	.		J	Sample temp exceeded 6°C	0.035	J	Sample temp exceeded 6°C	mg/kg
X536017	X5H0518	X5H0518-04	8/26/2025	Percent Solids	NA	Total	% Solids	99.7	.				99.7			%
X536077	X5H0518	X5H0518-05	8/26/2025	EPA 6010D	7440382	Total	AS	2.5	U	Not detected above RL			2.5	U	Not detected above RL	mg/kg
X536077	X5H0518	X5H0518-05	8/26/2025	EPA 6010D	7440439	Total	CD	0.45	.				0.45			mg/kg
X536077	X5H0518	X5H0518-05	8/26/2025	EPA 6010D	7440508	Total	CU	6.8	.				6.8			mg/kg
X536077	X5H0518	X5H0518-05	8/26/2025	EPA 6010D	7439896	Total	FE	6500	.				6500			mg/kg
X536077	X5H0518	X5H0518-05	8/26/2025	EPA 6010D	7439965	Total	MN	158	.				158			mg/kg
X536077	X5H0518	X5H0518-05	8/26/2025	EPA 6010D	7439921	Total	PB	75.3	.				75.3			mg/kg
X536077	X5H0518	X5H0518-05	8/26/2025	EPA 6010D	7440360	Total	SB	4	U	Not detected above RL			4	U	Not detected above RL	mg/kg
X536077	X5H0518	X5H0518-05	8/26/2025	EPA 6010D	7440666	Total	ZN	96.8	.				96.8			mg/kg
X536072	X5H0518	X5H0518-05	8/26/2025	EPA 7471B	7439976	Total	HG	0.046	.		J	Sample temp exceeded 6°C	0.046	J	Sample temp exceeded 6°C	mg/kg
X536017	X5H0518	X5H0518-05	8/26/2025	Percent Solids	NA	Total	% Solids	99.7	.				99.7			%
X536077	X5H0518	X5H0518-06	8/26/2025	EPA 6010D	7440382	Total	AS	2.5	U	Not detected above RL			2.5	U	Not detected above RL	mg/kg
X536077	X5H0518	X5H0518-06	8/26/2025	EPA 6010D	7440439	Total	CD	0.41	.				0.41			mg/kg
X536077	X5H0518	X5H0518-06	8/26/2025	EPA 6010D	7440508	Total	CU	6.98	.				6.98			mg/kg
X536077	X5H0518	X5H0518-06	8/26/2025	EPA 6010D	7439896	Total	FE	7390	.				7390			mg/kg
X536077	X5H0518	X5H0518-06	8/26/2025	EPA 6010D	7439965	Total	MN	160	.				160			mg/kg
X536077	X5H0518	X5H0518-06	8/26/2025	EPA 6010D	7439921	Total	PB	68.4	.				68.4			mg/kg
X536077	X5H0518	X5H0518-06	8/26/2025	EPA 6010D	7440360	Total	SB	4	U	Not detected above RL			4	U	Not detected above RL	mg/kg
X536077	X5H0518	X5H0518-06	8/26/2025	EPA 6010D	7440666	Total	ZN	91.4	.				91.4			mg/kg
X536072	X5H0518	X5H0518-06	8/26/2025	EPA 7471B	7439976	Total	HG	0.039	.		J	Sample temp exceeded 6°C	0.039	J	Sample temp exceeded 6°C	mg/kg
X536017	X5H0518	X5H0518-06	8/26/2025	Percent Solids	NA	Total	% Solids	99.7	.				99.7			%

Notes:
U = not detected above the reporting limit shown
UJ = estimated non-detect
J = result is an estimate

Attachment C

Final Qualified IVBA Field Sample Results

Attachment C: Final Qualified IVBA Field Sample Results

Sample Delievery Group	Lab Sample ID	Sample Date	Extraction Method	Analytical Method	Analyte	Lab Result	Combined Qualifier	Result Units
K2510615	K2510615-001	8/26/2025	EPA 1340	6020B	Arsenic, IVBA	1.09		mg/Kg
K2510615	K2510615-001	8/26/2025	EPA 3050A	6020B	Arsenic, Total IVBA	16.5		mg/Kg
K2510615	K2510615-001	8/26/2025	EPA 3050A	6020B	Lead, Total IVBA	1200		mg/Kg
K2510615	K2510615-001	8/26/2025	EPA 1340	6020B	Lead, IVBA	768		mg/Kg
K2510615	KQ2518988-04	8/26/2025	EPA 3050A	6020B	Arsenic, Total IVBA	16.7		mg/Kg
K2510615	KQ2518988-04	8/26/2025	EPA 3050A	6020B	Lead, Total IVBA	1200		mg/Kg
K2510615	KQ2518988-05	8/26/2025	EPA 3050A	6020B	Arsenic, Total IVBA	16.5		mg/Kg
K2510615	KQ2518988-05	8/26/2025	EPA 3050A	6020B	Lead, Total IVBA	1210		mg/Kg
K2510615	KQ2518989-04	8/26/2025	EPA 1340	6020B	Arsenic, IVBA	1.15		mg/Kg
K2510615	KQ2518989-04	8/26/2025	EPA 1340	6020B	Lead, IVBA	765		mg/Kg
K2510615	KQ2518989-05	8/26/2025	EPA 1340	6020B	Arsenic, IVBA	1.08		mg/Kg
K2510615	KQ2518989-05	8/26/2025	EPA 1340	6020B	Lead, IVBA	776		mg/Kg
K2510615	K2510615-001	8/26/2025	NONE	160.3 Modified	Solids, Total	97.9		%
K2510615	K2510615-001	8/26/2025	InVitro	RubyBioavail	Arsenic, Total	6.6		%
K2510615	KQ2518988-04-KQ2518989-04	8/26/2025	InVitro	RubyBioavail	Arsenic, Total	6.9		%
K2510615	KQ2518988-05-KQ2518989-05	8/26/2025	InVitro	RubyBioavail	Arsenic, Total	6.5		%
K2510615	K2510615-001	8/26/2025	InVitro	RubyBioavail	Lead, Total	64.0		%
K2510615	KQ2518988-04-KQ2518989-04	8/26/2025	InVitro	RubyBioavail	Lead, Total	63.8		%
K2510615	KQ2518988-05-KQ2518989-05	8/26/2025	InVitro	RubyBioavail	Lead, Total	64.1		%

Appendix C
95% UCL Inputs and ITRC Calculator Outputs

Calculation of Weighted 95% UCLs for a Combined Decision Unit (DU) from Several Smaller DUs Having Replicate Incremental Samples

Enter information in green highlighted cells. See the "Instructions" tab for detailed instructions.

Project ID:	IDEQ Lake CDA
Property/Sample ID:	S050-US-DU01
Date of calculations:	10/21/2025
Calculator completed by:	Paul Burke
Analyte:	Mercury
Analyte units:	mg/kg
DU metric units:	Unweighted
Notes:	

Click in green cell below to select from drop-down menu

DU size metric: area, volume, or depth interval: **Area**

Note: Assumes all replicates have the same number of increments

Number of increments per replicate: **30**

Row #	IDs/Names of the Smaller DUs	DU Area (Unweighted)	Replicate field sample concentrations						Number of Replicates	Weight	Arithmetic Mean	SD of Replicates	calc'd SD of Increments	calc'd CV for the DU	Adj Factor	adj'd SD of Increments	adj'd CV for DU	SE of DU	95% UCL			
			Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6											Student's-t	Chebychev	CV of Increments	95% UCL
1	S050-US-DU01	1.0	0.142	0.154	0.257				3	1.00	0.2	0.06	0.35	1.88	1.30	0.45	2.44	0.04	0.3	0.3	Med	0.3
2															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
3															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
4															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
5															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
6															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
7															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
8															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
9																						
10																						
	Sum:	1	--	--	--	--	--	--	3	1.00	0.2	0.06	0.35	1.88	NA	0.45	2.44	0.04	0.3	0.3	Med	0.3

df by Welch-Satterthwaite approximation: **2.0**

Recommended UCL: **0.3** **mg/kg** >> Chebyshev 95% UCL

Note: Chebychev 95% UCL is recommended because the dispersion of the data is elevated.

*Student's t UCL is acceptable if adj'd CV for DU is "Low" (e.g., CV ≤ 1.5). The User should consult the instructions for additional guidance on which 95% UCL is recommended for specific data sets.

Notes

adj'd	= adjusted	df	= degrees of freedom	SD	= arithmetic standard deviation
calc'd	= calculated	DU	= decision unit	SE	= standard error
CV	= coefficient of variation	RSD	= relative standard deviation	95% UCL	= 95% upper confidence limit for arithmetic mean

Calculation of Weighted 95% UCLs for a Combined Decision Unit (DU) from Several Smaller DUs Having Replicate Incremental Samples

Enter information in green highlighted cells. See the "Instructions" tab for detailed instructions.

Project ID:	IDEQ Lake CDA
Property/Sample ID:	S050-US-DU01
Date of calculations:	10/21/2025
Calculator completed by:	Paul Burke
Analyte:	Zinc
Analyte units:	mg/kg
DU metric units:	Unweighted
Notes:	

Click in green cell below to select from drop-down menu

DU size metric: area, volume, or depth interval: Area

Note: Assumes all replicates have the same number of increments

Number of increments per replicate: 30

Row #	IDs/Names of the Smaller DUs	DU Area (Unweighted)	Replicate field sample concentrations						Number of Replicates	Weight	Arithmetic Mean	SD of Replicates	calc'd SD of Increments	calc'd CV for the DU	Adj Factor	adj'd SD of Increments	adj'd CV for DU	SE of DU	95% UCL			
			Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6											Student's-t	Chebychev	CV of Increments	95% UCL
1	S050-US-DU01	1.0	310	297	394				3	1.00	333.7	52.65	288.39	0.86	1.15	331.80	0.99	30.40	422.4	466.2	Low	422.4
2															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
3															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
4															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
5															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
6															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
7															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
8															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
9																						
10																						
	Sum:	1	--	--	--	--	--	--	3	1.00	333.7	52.65	288.39	0.86	NA	331.80	0.99	30.40	422.4	466.2	Low	422.4

df by Welch-Satterthwaite approximation: **2.0**

Recommended UCL: **422.4** **mg/kg** >> Student's t 95% UCL

Note: Student's-t or Chebychev 95% UCL may be appropriate.

*Student's t UCL is acceptable if adj'd CV for DU is "Low" (e.g., CV ≤ 1.5). The User should consult the instructions for additional guidance on which 95% UCL is recommended for specific data sets.

Notes

adj'd	= adjusted	df	= degrees of freedom	SD	= arithmetic standard deviation
calc'd	= calculated	DU	= decision unit	SE	= standard error
CV	= coefficient of variation	RSD	= relative standard deviation	95% UCL	= 95% upper confidence limit for arithmetic mean

Calculation of Weighted 95% UCLs for a Combined Decision Unit (DU) from Several Smaller DUs Having Replicate Incremental Samples

Enter information in green highlighted cells. See the "Instructions" tab for detailed instructions.

Project ID:	IDEQ Lake CDA
Property/Sample ID:	S050-US-DU01
Date of calculations:	10/21/2025
Calculator completed by:	Paul Burke
Analyte:	Antimony
Analyte units:	mg/kg
DU metric units:	Unweighted
Notes:	

Click in green cell below to select from drop-down menu

DU size metric: area, volume, or depth interval: Area

Note: Assumes all replicates have the same number of increments

Number of increments per replicate: 30

Row #	IDs/Names of the Smaller DUs	DU Area (Unweighted)	Replicate field sample concentrations						Number of Replicates	Weight	Arithmetic Mean	SD of Replicates	calc'd SD of Increments	calc'd CV for the DU	Adj Factor	adj'd SD of Increments	adj'd CV for DU	SE of DU	95% UCL			
			Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6											Student's-t	Chebychev	CV of Increments	95% UCL
1	S050-US-DU01	1.0	4	4.11	6.16				3	1.00	4.8	1.22	6.66	1.40	1.21	8.07	1.70	0.70	6.8	7.8	Med	7.8
2															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
3															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
4															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
5															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
6															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
7															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
8															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
9																						
10																						
	Sum:	1	--	--	--	--	--	--	3	1.00	4.8	1.22	6.66	1.40	NA	8.07	1.70	0.70	6.8	7.8	Med	7.8

df by Welch-Satterthwaite approximation: **2.0**

Recommended UCL: **7.8** **mg/kg** >> Chebyshev 95% UCL

Note: Chebychev 95% UCL is recommended because the dispersion of the data is elevated.

*Student's t UCL is acceptable if adj'd CV for DU is "Low" (e.g., CV ≤ 1.5). The User should consult the instructions for additional guidance on which 95% UCL is recommended for specific data sets.

Notes

adj'd	= adjusted	df	= degrees of freedom	SD	= arithmetic standard deviation
calc'd	= calculated	DU	= decision unit	SE	= standard error
CV	= coefficient of variation	RSD	= relative standard deviation	95% UCL	= 95% upper confidence limit for arithmetic mean

Calculation of Weighted 95% UCLs for a Combined Decision Unit (DU) from Several Smaller DUs Having Replicate Incremental Samples

Enter information in green highlighted cells. See the "Instructions" tab for detailed instructions.

Project ID:	IDEQ Lake CDA
Property/Sample ID:	S050-US-DU01
Date of calculations:	10/21/2025
Calculator completed by:	Paul Burke
Analyte:	Lead
Analyte units:	mg/kg
DU metric units:	Unweighted
Notes:	

Click in green cell below to select from drop-down menu

DU size metric: area, volume, or depth interval: Area

Note: Assumes all replicates have the same number of increments

Number of increments per replicate: 30

Row #	IDs/Names of the Smaller DUs	DU Area (Unweighted)	Replicate field sample concentrations						Number of Replicates	Weight	Arithmetic Mean	SD of Replicates	calc'd SD of Increments	calc'd CV for the DU	Adj Factor	adj'd SD of Increments	adj'd CV for DU	SE of DU	95% UCL			
			Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6											Student's-t	Chebychev	CV of Increments	95% UCL
1	S050-US-DU01	1.0	582	523	1000				3	1.00	701.7	260.04	1424.31	2.03	1.33	1894.33	2.70	150.14	1140.1	1356.1	Med	1356.1
2															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
3															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
4															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
5															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
6															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
7															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
8															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
9																						
10																						
	Sum:	1	--	--	--	--	--	--	3	1.00	701.7	260.04	1424.31	2.03	NA	1894.33	2.70	150.14	1140.1	1356.1	Med	1356.1

df by Welch-Satterthwaite approximation: **2.0**

Recommended UCL: **1356.1** **mg/kg** >> Chebyshev 95% UCL

Note: Chebychev 95% UCL is recommended because the dispersion of the data is elevated.

*Student's t UCL is acceptable if adj'd CV for DU is "Low" (e.g., CV ≤ 1.5). The User should consult the instructions for additional guidance on which 95% UCL is recommended for specific data sets.

Notes

adj'd	= adjusted	df	= degrees of freedom	SD	= arithmetic standard deviation
calc'd	= calculated	DU	= decision unit	SE	= standard error
CV	= coefficient of variation	RSD	= relative standard deviation	95% UCL	= 95% upper confidence limit for arithmetic mean

Calculation of Weighted 95% UCLs for a Combined Decision Unit (DU) from Several Smaller DUs Having Replicate Incremental Samples

Enter information in green highlighted cells. See the "Instructions" tab for detailed instructions.

Project ID:	IDEQ Lake CDA
Property/Sample ID:	S050-US-DU01
Date of calculations:	10/21/2025
Calculator completed by:	Paul Burke
Analyte:	Manganese
Analyte units:	mg/kg
DU metric units:	Unweighted
Notes:	

Click in green cell below to select from drop-down menu

DU size metric: area, volume, or depth interval: Area

Note: Assumes all replicates have the same number of increments

Number of increments per replicate: 30

Row #	IDs/Names of the Smaller DUs	DU Area (Unweighted)	Replicate field sample concentrations						Number of Replicates	Weight	Arithmetic Mean	SD of Replicates	calc'd SD of Increments	calc'd CV for the DU	Adj Factor	adj'd SD of Increments	adj'd CV for DU	SE of DU	95% UCL			
			Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6											Student's-t	Chebychev	CV of Increments	95% UCL
1	S050-US-DU01	1.0	500	495	620				3	1.00	538.3	70.77	387.62	0.72	1.14	442.08	0.82	40.86	657.6	716.4	Low	657.6
2															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
3															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
4															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
5															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
6															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
7															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
8															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
9																						
10																						
	Sum:	1	--	--	--	--	--	--	3	1.00	538.3	70.77	387.62	0.72	NA	442.08	0.82	40.86	657.6	716.4	Low	657.6

df by Welch-Satterthwaite approximation: **2.0**

Recommended UCL: **657.6** **mg/kg** >> Student's t 95% UCL

Note: Student's-t or Chebychev 95% UCL may be appropriate.

*Student's t UCL is acceptable if adj'd CV for DU is "Low" (e.g., CV ≤ 1.5). The User should consult the instructions for additional guidance on which 95% UCL is recommended for specific data sets.

Notes

adj'd	= adjusted	df	= degrees of freedom	SD	= arithmetic standard deviation
calc'd	= calculated	DU	= decision unit	SE	= standard error
CV	= coefficient of variation	RSD	= relative standard deviation	95% UCL	= 95% upper confidence limit for arithmetic mean

Calculation of Weighted 95% UCLs for a Combined Decision Unit (DU) from Several Smaller DUs Having Replicate Incremental Samples

Enter information in green highlighted cells. See the "Instructions" tab for detailed instructions.

Project ID:	IDEQ Lake CDA
Property/Sample ID:	S050-US-DU01
Date of calculations:	10/21/2025
Calculator completed by:	Paul Burke
Analyte:	Iron
Analyte units:	mg/kg
DU metric units:	Unweighted
Notes:	

Click in green cell below to select from drop-down menu

DU size metric: area, volume, or depth interval: Area

Note: Assumes all replicates have the same number of increments

Number of increments per replicate: 30

Row #	IDs/Names of the Smaller DUs	DU Area (Unweighted)	Replicate field sample concentrations						Number of Replicates	Weight	Arithmetic Mean	SD of Replicates	calc'd SD of Increments	calc'd CV for the DU	Adj Factor	adj'd SD of Increments	adj'd CV for DU	SE of DU	95% UCL			
			Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6											Student's-t	Chebychev	CV of Increments	95% UCL
1	S050-US-DU01	1.0	24200	24200	23600				3	1.00	24000.0	346.41	1897.37	0.08	1.13	2141.02	0.09	200.00	24584.0	24871.8	Low	24584.0
2															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
3															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
4															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
5															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
6															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
7															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
8															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
9																						
10																						
	Sum:	1	--	--	--	--	--	--	3	1.00	24000.0	346.41	1897.37	0.08	NA	2141.02	0.09	200.00	24584.0	24871.8	Low	24584.0

df by Welch-Satterthwaite approximation: **2.0**

Recommended UCL: **24584.0** **mg/kg** >> Student's t 95% UCL

Note: Student's-t or Chebychev 95% UCL may be appropriate.

*Student's t UCL is acceptable if adj'd CV for DU is "Low" (e.g., CV ≤ 1.5). The User should consult the instructions for additional guidance on which 95% UCL is recommended for specific data sets.

Notes

adj'd	= adjusted	df	= degrees of freedom	SD	= arithmetic standard deviation
calc'd	= calculated	DU	= decision unit	SE	= standard error
CV	= coefficient of variation	RSD	= relative standard deviation	95% UCL	= 95% upper confidence limit for arithmetic mean

Calculation of Weighted 95% UCLs for a Combined Decision Unit (DU) from Several Smaller DUs Having Replicate Incremental Samples

Enter information in green highlighted cells. See the "Instructions" tab for detailed instructions.

Project ID:	IDEQ Lake CDA
Property/Sample ID:	S050-US-DU01
Date of calculations:	10/21/2025
Calculator completed by:	Paul Burke
Analyte:	Copper
Analyte units:	mg/kg
DU metric units:	Unweighted
Notes:	

Click in green cell below to select from drop-down menu

DU size metric: area, volume, or depth interval: Area

Note: Assumes all replicates have the same number of increments

Number of increments per replicate: 30

Row #	IDs/Names of the Smaller DUs	DU Area (Unweighted)	Replicate field sample concentrations						Number of Replicates	Weight	Arithmetic Mean	SD of Replicates	calc'd SD of Increments	calc'd CV for the DU	Adj Factor	adj'd SD of Increments	adj'd CV for DU	SE of DU	95% UCL			
			Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6											Student's-t	Chebychev	CV of Increments	95% UCL
1	S050-US-DU01	1.0	37	38.1	44.7				3	1.00	39.9	4.16	22.81	0.57	1.13	25.84	0.65	2.40	47.0	50.4	Low	47.0
2															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
3															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
4															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
5															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
6															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
7															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
8															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
9																						
10																						
	Sum:	1	--	--	--	--	--	--	3	1.00	39.9	4.16	22.81	0.57	NA	25.84	0.65	2.40	47.0	50.4	Low	47.0

df by Welch-Satterthwaite approximation: **2.0**

Recommended UCL: **47.0** **mg/kg** >> Student's t 95% UCL

Note: Student's-t or Chebychev 95% UCL may be appropriate.

*Student's t UCL is acceptable if adj'd CV for DU is "Low" (e.g., CV ≤ 1.5). The User should consult the instructions for additional guidance on which 95% UCL is recommended for specific data sets.

Notes

adj'd	= adjusted	df	= degrees of freedom	SD	= arithmetic standard deviation
calc'd	= calculated	DU	= decision unit	SE	= standard error
CV	= coefficient of variation	RSD	= relative standard deviation	95% UCL	= 95% upper confidence limit for arithmetic mean

Calculation of Weighted 95% UCLs for a Combined Decision Unit (DU) from Several Smaller DUs Having Replicate Incremental Samples

Enter information in green highlighted cells. See the "Instructions" tab for detailed instructions.

Project ID:	IDEQ Lake CDA
Property/Sample ID:	S050-US-DU01
Date of calculations:	10/21/2025
Calculator completed by:	Paul Burke
Analyte:	Cadmium
Analyte units:	mg/kg
DU metric units:	Unweighted
Notes:	

Click in green cell below to select from drop-down menu

DU size metric: area, volume, or depth interval: Area

Note: Assumes all replicates have the same number of increments

Number of increments per replicate: 30

Row #	IDs/Names of the Smaller DUs	DU Area (Unweighted)	Replicate field sample concentrations						Number of Replicates	Weight	Arithmetic Mean	SD of Replicates	calc'd SD of Increments	calc'd CV for the DU	Adj Factor	adj'd SD of Increments	adj'd CV for DU	SE of DU	95% UCL			
			Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6											Student's-t	Chebychev	CV of Increments	95% UCL
1	S050-US-DU01	1.0	1.55	1.51	1.89				3	1.00	1.7	0.21	1.14	0.69	1.14	1.30	0.79	0.12	2.0	2.2	Low	2.0
2															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
3															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
4															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
5															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
6															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
7															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
8															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
9																						
10																						
	Sum:	1	--	--	--	--	--	--	3	1.00	1.7	0.21	1.14	0.69	NA	1.30	0.79	0.12	2.0	2.2	Low	2.0

df by Welch-Satterthwaite approximation: **2.0**

Recommended UCL: **2.0** **mg/kg** >> Student's t 95% UCL

Note: Student's-t or Chebychev 95% UCL may be appropriate.

*Student's t UCL is acceptable if adj'd CV for DU is "Low" (e.g., CV ≤ 1.5). The User should consult the instructions for additional guidance on which 95% UCL is recommended for specific data sets.

Notes

adj'd	= adjusted	df	= degrees of freedom	SD	= arithmetic standard deviation
calc'd	= calculated	DU	= decision unit	SE	= standard error
CV	= coefficient of variation	RSD	= relative standard deviation	95% UCL	= 95% upper confidence limit for arithmetic mean

Calculation of Weighted 95% UCLs for a Combined Decision Unit (DU) from Several Smaller DUs Having Replicate Incremental Samples

Enter information in green highlighted cells. See the "Instructions" tab for detailed instructions.

Project ID:	IDEQ Lake CDA
Property/Sample ID:	S050-US-DU01
Date of calculations:	10/21/2025
Calculator completed by:	Paul Burke
Analyte:	Arsenic
Analyte units:	mg/kg
DU metric units:	Unweighted
Notes:	

Click in green cell below to select from drop-down menu

DU size metric: area, volume, or depth interval: Area

Note: Assumes all replicates have the same number of increments

Number of increments per replicate: 30

Row #	IDs/Names of the Smaller DUs	DU Area (Unweighted)	Replicate field sample concentrations						Number of Replicates	Weight	Arithmetic Mean	SD of Replicates	calc'd SD of Increments	calc'd CV for the DU	Adj Factor	adj'd SD of Increments	adj'd CV for DU	SE of DU	95% UCL			
			Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6											Student's-t	Chebychev	CV of Increments	95% UCL
1	S050-US-DU01	1.0	9.84	9.7	16				3	1.00	11.8	3.60	19.70	1.66	1.25	24.72	2.09	2.08	17.9	20.9	Med	20.9
2															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
3															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
4															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
5															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
6															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
7															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
8															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
9																						
10																						
	Sum:	1	--	--	--	--	--	--	3	1.00	11.8	3.60	19.70	1.66	NA	24.72	2.09	2.08	17.9	20.9	Med	20.9

df by Welch-Satterthwaite approximation: **2.0**

Recommended UCL: **20.9** **mg/kg** >> Chebyshev 95% UCL

Note: Chebychev 95% UCL is recommended because the dispersion of the data is elevated.

*Student's t UCL is acceptable if adj'd CV for DU is "Low" (e.g., CV ≤ 1.5). The User should consult the instructions for additional guidance on which 95% UCL is recommended for specific data sets.

Notes

adj'd	= adjusted	df	= degrees of freedom	SD	= arithmetic standard deviation
calc'd	= calculated	DU	= decision unit	SE	= standard error
CV	= coefficient of variation	RSD	= relative standard deviation	95% UCL	= 95% upper confidence limit for arithmetic mean

Calculation of Weighted 95% UCLs for a Combined Decision Unit (DU) from Several Smaller DUs Having Replicate Incremental Samples

Enter information in green highlighted cells. See the "Instructions" tab for detailed instructions.

Project ID:	IDEQ Lake CDA
Property/Sample ID:	S050-DS-DU02
Date of calculations:	10/21/2025
Calculator completed by:	Paul Burke
Analyte:	Arsenic
Analyte units:	mg/kg
DU metric units:	Unweighted
Notes:	

Click in green cell below to select from drop-down menu

DU size metric: area, volume, or depth interval: Area

Note: Assumes all replicates have the same number of increments

Number of increments per replicate: 30

Row #	IDs/Names of the Smaller DUs	DU Area (Unweighted)	Replicate field sample concentrations						Number of Replicates	Weight	Arithmetic Mean	SD of Replicates	calc'd SD of Increments	calc'd CV for the DU	Adj Factor	adj'd SD of Increments	adj'd CV for DU	SE of DU	95% UCL			
			Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6											Student's-t	Chebychev	CV of Increments	95% UCL
1	S050-DS-DU02	1.0	2.5	2.5	2.5				3	1.00	2.5	0.00	0.00	0.00	1.13	0.00	0.00	0.00	2.5	2.5	Low	2.5
2															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
3															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
4															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
5															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
6															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
7															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
8															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
9																						
10																						
	Sum:	1	--	--	--	--	--	--	3	1.00	2.5	0.00	0.00	0.00	NA	0.00	0.00	0.00	#DIV/0!	2.5	Low	#DIV/0!

df by Welch-Satterthwaite approximation: **#DIV/0!**

Recommended UCL: **#DIV/0!** **mg/kg** >> Student's t 95% UCL

Note: Student's-t or Chebychev 95% UCL may be appropriate.

*Student's t UCL is acceptable if adj'd CV for DU is "Low" (e.g., CV ≤ 1.5). The User should consult the instructions for additional guidance on which 95% UCL is recommended for specific data sets.

Notes

adj'd	= adjusted	df	= degrees of freedom	SD	= arithmetic standard deviation
calc'd	= calculated	DU	= decision unit	SE	= standard error
CV	= coefficient of variation	RSD	= relative standard deviation	95% UCL	= 95% upper confidence limit for arithmetic mean

Calculation of Weighted 95% UCLs for a Combined Decision Unit (DU) from Several Smaller DUs Having Replicate Incremental Samples

Enter information in green highlighted cells. See the "Instructions" tab for detailed instructions.

Project ID:	IDEQ Lake CDA
Property/Sample ID:	S050-DS-DU02
Date of calculations:	10/21/2025
Calculator completed by:	Paul Burke
Analyte:	Mercury
Analyte units:	mg/kg
DU metric units:	Unweighted
Notes:	

Click in green cell below to select from drop-down menu

DU size metric: area, volume, or depth interval: Area

Note: Assumes all replicates have the same number of increments

Number of increments per replicate: 30

Row #	IDs/Names of the Smaller DUs	DU Area (Unweighted)	Replicate field sample concentrations						Number of Replicates	Weight	Arithmetic Mean	SD of Replicates	calc'd SD of Increments	calc'd CV for the DU	Adj Factor	adj'd SD of Increments	adj'd CV for DU	SE of DU	95% UCL			
			Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6											Student's-t	Chebychev	CV of Increments	95% UCL
1	S050-DS-DU02	1.0	0.033	0.033	0.033				3	1.00	0.0	0.00	0.00	0.00	1.13	0.00	0.00	0.00	0.0	0.0	Low	0.0
2															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
3															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
4															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
5															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
6															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
7															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
8															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
9																						
10																						
	Sum:	1	--	--	--	--	--	--	3	1.00	0.0	0.00	0.00	0.00	NA	0.00	0.00	0.00	#DIV/0!	0.0	Low	#DIV/0!

df by Welch-Satterthwaite approximation: **#DIV/0!**

Recommended UCL: **#DIV/0!** **mg/kg** >> Student's t 95% UCL

Note: Student's-t or Chebychev 95% UCL may be appropriate.

*Student's t UCL is acceptable if adj'd CV for DU is "Low" (e.g., CV ≤ 1.5). The User should consult the instructions for additional guidance on which 95% UCL is recommended for specific data sets.

Notes

adj'd	= adjusted	df	= degrees of freedom	SD	= arithmetic standard deviation
calc'd	= calculated	DU	= decision unit	SE	= standard error
CV	= coefficient of variation	RSD	= relative standard deviation	95% UCL	= 95% upper confidence limit for arithmetic mean

Calculation of Weighted 95% UCLs for a Combined Decision Unit (DU) from Several Smaller DUs Having Replicate Incremental Samples

Enter information in green highlighted cells. See the "Instructions" tab for detailed instructions.

Project ID:	IDEQ Lake CDA
Property/Sample ID:	S050-DS-DU02
Date of calculations:	10/21/2025
Calculator completed by:	Paul Burke
Analyte:	Zinc
Analyte units:	mg/kg
DU metric units:	Unweighted
Notes:	

Click in green cell below to select from drop-down menu

DU size metric: area, volume, or depth interval: Area

Note: Assumes all replicates have the same number of increments

Number of increments per replicate: 30

Row #	IDs/Names of the Smaller DUs	DU Area (Unweighted)	Replicate field sample concentrations						Number of Replicates	Weight	Arithmetic Mean	SD of Replicates	calc'd SD of Increments	calc'd CV for the DU	Adj Factor	adj'd SD of Increments	adj'd CV for DU	SE of DU	95% UCL			
			Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6											Student's-t	Chebychev	CV of Increments	95% UCL
1	S050-DS-DU02	1.0	36.1	32.2	39.5				3	1.00	35.9	3.65	20.01	0.56	1.13	22.66	0.63	2.11	42.1	45.1	Low	42.1
2															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
3															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
4															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
5															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
6															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
7															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
8															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
9																						
10																						
	Sum:	1	--	--	--	--	--	--	3	1.00	35.9	3.65	20.01	0.56	NA	22.66	0.63	2.11	42.1	45.1	Low	42.1

df by Welch-Satterthwaite approximation: **2.0**

Recommended UCL: **42.1** **mg/kg** >> Student's t 95% UCL

Note: Student's-t or Chebychev 95% UCL may be appropriate.

*Student's t UCL is acceptable if adj'd CV for DU is "Low" (e.g., CV ≤ 1.5). The User should consult the instructions for additional guidance on which 95% UCL is recommended for specific data sets.

Notes

adj'd	= adjusted	df	= degrees of freedom	SD	= arithmetic standard deviation
calc'd	= calculated	DU	= decision unit	SE	= standard error
CV	= coefficient of variation	RSD	= relative standard deviation	95% UCL	= 95% upper confidence limit for arithmetic mean

Calculation of Weighted 95% UCLs for a Combined Decision Unit (DU) from Several Smaller DUs Having Replicate Incremental Samples

Enter information in green highlighted cells. See the "Instructions" tab for detailed instructions.

Project ID:	IDEQ Lake CDA
Property/Sample ID:	S050-DS-DU02
Date of calculations:	10/21/2025
Calculator completed by:	Paul Burke
Analyte:	Antimony
Analyte units:	mg/kg
DU metric units:	Unweighted
Notes:	

Click in green cell below to select from drop-down menu

DU size metric: area, volume, or depth interval: Area

Note: Assumes all replicates have the same number of increments

Number of increments per replicate: 30

Row #	IDs/Names of the Smaller DUs	DU Area (Unweighted)	Replicate field sample concentrations						Number of Replicates	Weight	Arithmetic Mean	SD of Replicates	calc'd SD of Increments	calc'd CV for the DU	Adj Factor	adj'd SD of Increments	adj'd CV for DU	SE of DU	95% UCL			
			Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6											Student's-t	Chebychev	CV of Increments	95% UCL
1	S050-DS-DU02	1.0	4	4	4				3	1.00	4.0	0.00	0.00	0.00	1.13	0.00	0.00	0.00	4.0	4.0	Low	4.0
2															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
3															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
4															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
5															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
6															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
7															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
8															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
9																						
10																						
	Sum:	1	--	--	--	--	--	--	3	1.00	4.0	0.00	0.00	0.00	NA	0.00	0.00	0.00	#DIV/0!	4.0	Low	#DIV/0!

df by Welch-Satterthwaite approximation: **#DIV/0!**

Recommended UCL: **#DIV/0!** **mg/kg** >> Student's t 95% UCL

Note: Student's-t or Chebychev 95% UCL may be appropriate.

*Student's t UCL is acceptable if adj'd CV for DU is "Low" (e.g., CV ≤ 1.5). The User should consult the instructions for additional guidance on which 95% UCL is recommended for specific data sets.

Notes

adj'd	= adjusted	df	= degrees of freedom	SD	= arithmetic standard deviation
calc'd	= calculated	DU	= decision unit	SE	= standard error
CV	= coefficient of variation	RSD	= relative standard deviation	95% UCL	= 95% upper confidence limit for arithmetic mean

Calculation of Weighted 95% UCLs for a Combined Decision Unit (DU) from Several Smaller DUs Having Replicate Incremental Samples

Enter information in green highlighted cells. See the "Instructions" tab for detailed instructions.

Project ID:	IDEQ Lake CDA
Property/Sample ID:	S050-DS-DU02
Date of calculations:	10/21/2025
Calculator completed by:	Paul Burke
Analyte:	Lead
Analyte units:	mg/kg
DU metric units:	Unweighted
Notes:	

Click in green cell below to select from drop-down menu

DU size metric: area, volume, or depth interval: Area

Note: Assumes all replicates have the same number of increments

Number of increments per replicate: 30

Row #	IDs/Names of the Smaller DUs	DU Area (Unweighted)	Replicate field sample concentrations						Number of Replicates	Weight	Arithmetic Mean	SD of Replicates	calc'd SD of Increments	calc'd CV for the DU	Adj Factor	adj'd SD of Increments	adj'd CV for DU	SE of DU	95% UCL			
			Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6											Student's-t	Chebychev	CV of Increments	95% UCL
1	S050-DS-DU02	1.0	23.8	15.6	35.2				3	1.00	24.9	9.84	53.91	2.17	1.36	73.48	2.95	5.68	41.5	49.6	Med	49.6
2															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
3															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
4															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
5															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
6															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
7															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
8															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
9																						
10																						
	Sum:	1	--	--	--	--	--	--	3	1.00	24.9	9.84	53.91	2.17	NA	73.48	2.95	5.68	41.5	49.6	Med	49.6

df by Welch-Satterthwaite approximation: **2.0**

Recommended UCL: **49.6** **mg/kg** >> Chebyshev 95% UCL

Note: Chebychev 95% UCL is recommended because the dispersion of the data is elevated.

*Student's t UCL is acceptable if adj'd CV for DU is "Low" (e.g., CV ≤ 1.5). The User should consult the instructions for additional guidance on which 95% UCL is recommended for specific data sets.

Notes

adj'd	= adjusted	df	= degrees of freedom	SD	= arithmetic standard deviation
calc'd	= calculated	DU	= decision unit	SE	= standard error
CV	= coefficient of variation	RSD	= relative standard deviation	95% UCL	= 95% upper confidence limit for arithmetic mean

Calculation of Weighted 95% UCLs for a Combined Decision Unit (DU) from Several Smaller DUs Having Replicate Incremental Samples

Enter information in green highlighted cells. See the "Instructions" tab for detailed instructions.

Project ID:	IDEQ Lake CDA
Property/Sample ID:	S050-DS-DU02
Date of calculations:	10/21/2025
Calculator completed by:	Paul Burke
Analyte:	Manganese
Analyte units:	mg/kg
DU metric units:	Unweighted
Notes:	

Click in green cell below to select from drop-down menu

DU size metric: area, volume, or depth interval: Area

Note: Assumes all replicates have the same number of increments

Number of increments per replicate: 30

Row #	IDs/Names of the Smaller DUs	DU Area (Unweighted)	Replicate field sample concentrations						Number of Replicates	Weight	Arithmetic Mean	SD of Replicates	calc'd SD of Increments	calc'd CV for the DU	Adj Factor	adj'd SD of Increments	adj'd CV for DU	SE of DU	95% UCL			
			Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6											Student's-t	Chebychev	CV of Increments	95% UCL
1	S050-DS-DU02	1.0	243	231	251				3	1.00	241.7	10.07	55.14	0.23	1.13	62.11	0.26	5.81	258.6	267.0	Low	258.6
2															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
3															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
4															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
5															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
6															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
7															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
8															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
9																						
10																						
	Sum:	1	--	--	--	--	--	--	3	1.00	241.7	10.07	55.14	0.23	NA	62.11	0.26	5.81	258.6	267.0	Low	258.6

df by Welch-Satterthwaite approximation: **2.0**

Recommended UCL: **258.6** **mg/kg** >> Student's t 95% UCL

Note: Student's-t or Chebychev 95% UCL may be appropriate.

*Student's t UCL is acceptable if adj'd CV for DU is "Low" (e.g., CV ≤ 1.5). The User should consult the instructions for additional guidance on which 95% UCL is recommended for specific data sets.

Notes

adj'd	= adjusted	df	= degrees of freedom	SD	= arithmetic standard deviation
calc'd	= calculated	DU	= decision unit	SE	= standard error
CV	= coefficient of variation	RSD	= relative standard deviation	95% UCL	= 95% upper confidence limit for arithmetic mean

Calculation of Weighted 95% UCLs for a Combined Decision Unit (DU) from Several Smaller DUs Having Replicate Incremental Samples

Enter information in green highlighted cells. See the "Instructions" tab for detailed instructions.

Project ID:	IDEQ Lake CDA
Property/Sample ID:	S050-DS-DU02
Date of calculations:	10/21/2025
Calculator completed by:	Paul Burke
Analyte:	Iron
Analyte units:	mg/kg
DU metric units:	Unweighted
Notes:	

Click in green cell below to select from drop-down menu

DU size metric: area, volume, or depth interval: Area

Note: Assumes all replicates have the same number of increments

Number of increments per replicate: 30

Row #	IDs/Names of the Smaller DUs	DU Area (Unweighted)	Replicate field sample concentrations						Number of Replicates	Weight	Arithmetic Mean	SD of Replicates	calc'd SD of Increments	calc'd CV for the DU	Adj Factor	adj'd SD of Increments	adj'd CV for DU	SE of DU	95% UCL			
			Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6											Student's-t	Chebychev	CV of Increments	95% UCL
1	S050-DS-DU02	1.0	9920	10300	9380				3	1.00	9866.7	462.31	2532.19	0.26	1.13	2852.40	0.29	266.92	10646.1	11030.1	Low	10646.1
2															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
3															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
4															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
5															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
6															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
7															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
8															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
9																						
10																						
	Sum:	1	--	--	--	--	--	--	3	1.00	9866.7	462.31	2532.19	0.26	NA	2852.40	0.29	266.92	10646.1	11030.1	Low	10646.1

df by Welch-Satterthwaite approximation: **2.0**

Recommended UCL: **10646.1** **mg/kg** >> Student's t 95% UCL

Note: Student's-t or Chebychev 95% UCL may be appropriate.

*Student's t UCL is acceptable if adj'd CV for DU is "Low" (e.g., CV ≤ 1.5). The User should consult the instructions for additional guidance on which 95% UCL is recommended for specific data sets.

Notes

adj'd	= adjusted	df	= degrees of freedom	SD	= arithmetic standard deviation
calc'd	= calculated	DU	= decision unit	SE	= standard error
CV	= coefficient of variation	RSD	= relative standard deviation	95% UCL	= 95% upper confidence limit for arithmetic mean

Calculation of Weighted 95% UCLs for a Combined Decision Unit (DU) from Several Smaller DUs Having Replicate Incremental Samples

Enter information in green highlighted cells. See the "Instructions" tab for detailed instructions.

Project ID:	IDEQ Lake CDA
Property/Sample ID:	S050-DS-DU02
Date of calculations:	10/21/2025
Calculator completed by:	Paul Burke
Analyte:	Copper
Analyte units:	mg/kg
DU metric units:	Unweighted
Notes:	

Click in green cell below to select from drop-down menu

DU size metric: area, volume, or depth interval: Area

Note: Assumes all replicates have the same number of increments

Number of increments per replicate: 30

Row #	IDs/Names of the Smaller DUs	DU Area (Unweighted)	Replicate field sample concentrations						Number of Replicates	Weight	Arithmetic Mean	SD of Replicates	calc'd SD of Increments	calc'd CV for the DU	Adj Factor	adj'd SD of Increments	adj'd CV for DU	SE of DU	95% UCL			
			Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6											Student's-t	Chebychev	CV of Increments	95% UCL
1	S050-DS-DU02	1.0	9.76	9.41	9.27				3	1.00	9.5	0.25	1.38	0.15	1.13	1.56	0.16	0.15	9.9	10.1	Low	9.9
2															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
3															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
4															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
5															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
6															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
7															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
8															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
9																						
10																						
	Sum:	1	--	--	--	--	--	--	3	1.00	9.5	0.25	1.38	0.15	NA	1.56	0.16	0.15	9.9	10.1	Low	9.9

df by Welch-Satterthwaite approximation: **2.0**

Recommended UCL: **9.9** **mg/kg** >> Student's t 95% UCL

Note: Student's-t or Chebychev 95% UCL may be appropriate.

*Student's t UCL is acceptable if adj'd CV for DU is "Low" (e.g., CV ≤ 1.5). The User should consult the instructions for additional guidance on which 95% UCL is recommended for specific data sets.

Notes

adj'd	= adjusted	df	= degrees of freedom	SD	= arithmetic standard deviation
calc'd	= calculated	DU	= decision unit	SE	= standard error
CV	= coefficient of variation	RSD	= relative standard deviation	95% UCL	= 95% upper confidence limit for arithmetic mean

Calculation of Weighted 95% UCLs for a Combined Decision Unit (DU) from Several Smaller DUs Having Replicate Incremental Samples

Enter information in green highlighted cells. See the "Instructions" tab for detailed instructions.

Project ID:	IDEQ Lake CDA
Property/Sample ID:	S050-DS-DU02
Date of calculations:	10/21/2025
Calculator completed by:	Paul Burke
Analyte:	Cadmium
Analyte units:	mg/kg
DU metric units:	Unweighted
Notes:	

Click in green cell below to select from drop-down menu

DU size metric: area, volume, or depth interval: Area

Note: Assumes all replicates have the same number of increments

Number of increments per replicate: 30

Row #	IDs/Names of the Smaller DUs	DU Area (Unweighted)	Replicate field sample concentrations						Number of Replicates	Weight	Arithmetic Mean	SD of Replicates	calc'd SD of Increments	calc'd CV for the DU	Adj Factor	adj'd SD of Increments	adj'd CV for DU	SE of DU	95% UCL			
			Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6											Student's-t	Chebychev	CV of Increments	95% UCL
1	S050-DS-DU02	1.0	0.4	0.4	0.4				3	1.00	0.4	0.00	0.00	0.00	1.13	0.00	0.00	0.00	0.4	0.4	Low	0.4
2															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
3															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
4															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
5															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
6															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
7															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
8															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
9																						
10																						
	Sum:	1	--	--	--	--	--	--	3	1.00	0.4	0.00	0.00	0.00	NA	0.00	0.00	0.00	0.4	0.4	Low	0.4

df by Welch-Satterthwaite approximation: **2.0**

Recommended UCL: **0.4** **mg/kg** >> Student's t 95% UCL

Note: Student's-t or Chebychev 95% UCL may be appropriate.

*Student's t UCL is acceptable if adj'd CV for DU is "Low" (e.g., CV ≤ 1.5). The User should consult the instructions for additional guidance on which 95% UCL is recommended for specific data sets.

Notes

adj'd	= adjusted	df	= degrees of freedom	SD	= arithmetic standard deviation
calc'd	= calculated	DU	= decision unit	SE	= standard error
CV	= coefficient of variation	RSD	= relative standard deviation	95% UCL	= 95% upper confidence limit for arithmetic mean

Calculation of Weighted 95% UCLs for a Combined Decision Unit (DU) from Several Smaller DUs Having Replicate Incremental Samples

Enter information in green highlighted cells. See the "Instructions" tab for detailed instructions.

Project ID:	IDEQ Lake CDA
Property/Sample ID:	S050-WS-DU03
Date of calculations:	10/21/2025
Calculator completed by:	Paul Burke
Analyte:	Arsenic
Analyte units:	mg/kg
DU metric units:	Unweighted
Notes:	

Click in green cell below to select from drop-down menu

DU size metric: area, volume, or depth interval: Area

Note: Assumes all replicates have the same number of increments

Number of increments per replicate: 30

Row #	IDs/Names of the Smaller DUs	DU Area (Unweighted)	Replicate field sample concentrations						Number of Replicates	Weight	Arithmetic Mean	SD of Replicates	calc'd SD of Increments	calc'd CV for the DU	Adj Factor	adj'd SD of Increments	adj'd CV for DU	SE of DU	95% UCL			
			Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6											Student's-t	Chebychev	CV of Increments	95% UCL
1	S050-WS-DU03	1.0	2.5	2.5	2.5				3	1.00	2.5	0.00	0.00	0.00	1.13	0.00	0.00	0.00	2.5	2.5	Low	2.5
2															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
3															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
4															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
5															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
6															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
7															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
8															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
9																						
10																						
	Sum:	1	--	--	--	--	--	--	3	1.00	2.5	0.00	0.00	0.00	NA	0.00	0.00	0.00	#DIV/0!	2.5	Low	#DIV/0!

df by Welch-Satterthwaite approximation: **#DIV/0!**

Recommended UCL: **#DIV/0!** **mg/kg** >> Student's t 95% UCL

Note: Student's-t or Chebychev 95% UCL may be appropriate.

*Student's t UCL is acceptable if adj'd CV for DU is "Low" (e.g., CV ≤ 1.5). The User should consult the instructions for additional guidance on which 95% UCL is recommended for specific data sets.

Notes

adj'd	= adjusted	df	= degrees of freedom	SD	= arithmetic standard deviation
calc'd	= calculated	DU	= decision unit	SE	= standard error
CV	= coefficient of variation	RSD	= relative standard deviation	95% UCL	= 95% upper confidence limit for arithmetic mean

Calculation of Weighted 95% UCLs for a Combined Decision Unit (DU) from Several Smaller DUs Having Replicate Incremental Samples

Enter information in green highlighted cells. See the "Instructions" tab for detailed instructions.

Project ID:	IDEQ Lake CDA
Property/Sample ID:	S050-WS-DU03
Date of calculations:	10/21/2025
Calculator completed by:	Paul Burke
Analyte:	Mercury
Analyte units:	mg/kg
DU metric units:	Unweighted
Notes:	

Click in green cell below to select from drop-down menu

DU size metric: area, volume, or depth interval: **Area**

Note: Assumes all replicates have the same number of increments

Number of increments per replicate: **30**

Row #	IDs/Names of the Smaller DUs	DU Area (Unweighted)	Replicate field sample concentrations						Number of Replicates	Weight	Arithmetic Mean	SD of Replicates	calc'd SD of Increments	calc'd CV for the DU	Adj Factor	adj'd SD of Increments	adj'd CV for DU	SE of DU	95% UCL			
			Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6											Student's-t	Chebychev	CV of Increments	95% UCL
1	S050-WS-DU03	1.0	0.035	0.046	0.039				3	1.00	0.0	0.01	0.03	0.76	1.14	0.03	0.87	0.00	0.0	0.1	Low	0.0
2															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
3															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
4															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
5															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
6															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
7															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
8															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
9																						
10																						
	Sum:	1	--	--	--	--	--	--	3	1.00	0.0	0.01	0.03	0.76	NA	0.03	0.87	0.00	0.0	0.1	Low	0.0

df by Welch-Satterthwaite approximation: **2.0**

Recommended UCL: **0.0** **mg/kg** >> Student's t 95% UCL

Note: Student's-t or Chebychev 95% UCL may be appropriate.

*Student's t UCL is acceptable if adj'd CV for DU is "Low" (e.g., CV ≤ 1.5). The User should consult the instructions for additional guidance on which 95% UCL is recommended for specific data sets.

Notes

adj'd	= adjusted	df	= degrees of freedom	SD	= arithmetic standard deviation
calc'd	= calculated	DU	= decision unit	SE	= standard error
CV	= coefficient of variation	RSD	= relative standard deviation	95% UCL	= 95% upper confidence limit for arithmetic mean

Calculation of Weighted 95% UCLs for a Combined Decision Unit (DU) from Several Smaller DUs Having Replicate Incremental Samples

Enter information in green highlighted cells. See the "Instructions" tab for detailed instructions.

Project ID:	IDEQ Lake CDA
Property/Sample ID:	S050-WS-DU03
Date of calculations:	10/21/2025
Calculator completed by:	Paul Burke
Analyte:	Zinc
Analyte units:	mg/kg
DU metric units:	Unweighted
Notes:	

Click in green cell below to select from drop-down menu

DU size metric: area, volume, or depth interval: Area

Note: Assumes all replicates have the same number of increments

Number of increments per replicate: 30

Row #	IDs/Names of the Smaller DUs	DU Area (Unweighted)	Replicate field sample concentrations						Number of Replicates	Weight	Arithmetic Mean	SD of Replicates	calc'd SD of Increments	calc'd CV for the DU	Adj Factor	adj'd SD of Increments	adj'd CV for DU	SE of DU	95% UCL			
			Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6											Student's-t	Chebychev	CV of Increments	95% UCL
1	S050-WS-DU03	1.0	86.1	96.8	91.4				3	1.00	91.4	5.35	29.30	0.32	1.13	33.02	0.36	3.09	100.5	104.9	Low	100.5
2															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
3															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
4															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
5															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
6															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
7															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
8															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
9																						
10																						
	Sum:	1	--	--	--	--	--	--	3	1.00	91.4	5.35	29.30	0.32	NA	33.02	0.36	3.09	100.5	104.9	Low	100.5

df by Welch-Satterthwaite approximation: **2.0**

Recommended UCL: **100.5** **mg/kg** >> Student's t 95% UCL

Note: Student's-t or Chebychev 95% UCL may be appropriate.

*Student's t UCL is acceptable if adj'd CV for DU is "Low" (e.g., CV ≤ 1.5). The User should consult the instructions for additional guidance on which 95% UCL is recommended for specific data sets.

Notes

adj'd	= adjusted	df	= degrees of freedom	SD	= arithmetic standard deviation
calc'd	= calculated	DU	= decision unit	SE	= standard error
CV	= coefficient of variation	RSD	= relative standard deviation	95% UCL	= 95% upper confidence limit for arithmetic mean

Calculation of Weighted 95% UCLs for a Combined Decision Unit (DU) from Several Smaller DUs Having Replicate Incremental Samples

Enter information in green highlighted cells. See the "Instructions" tab for detailed instructions.

Project ID:	IDEQ Lake CDA
Property/Sample ID:	S050-WS-DU03
Date of calculations:	10/21/2025
Calculator completed by:	Paul Burke
Analyte:	Antimony
Analyte units:	mg/kg
DU metric units:	Unweighted
Notes:	

Click in green cell below to select from drop-down menu

DU size metric: area, volume, or depth interval: Area

Note: Assumes all replicates have the same number of increments

Number of increments per replicate: 30

Row #	IDs/Names of the Smaller DUs	DU Area (Unweighted)	Replicate field sample concentrations						Number of Replicates	Weight	Arithmetic Mean	SD of Replicates	calc'd SD of Increments	calc'd CV for the DU	Adj Factor	adj'd SD of Increments	adj'd CV for DU	SE of DU	95% UCL			
			Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6											Student's-t	Chebychev	CV of Increments	95% UCL
1	S050-WS-DU03	1.0	4	4	4				3	1.00	4.0	0.00	0.00	0.00	1.13	0.00	0.00	0.00	4.0	4.0	Low	4.0
2															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
3															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
4															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
5															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
6															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
7															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
8															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
9																						
10																						
	Sum:	1	--	--	--	--	--	--	3	1.00	4.0	0.00	0.00	0.00	NA	0.00	0.00	0.00	#DIV/0!	4.0	Low	#DIV/0!

df by Welch-Satterthwaite approximation: **#DIV/0!**

Recommended UCL: **#DIV/0!** **mg/kg** >> Student's t 95% UCL

Note: Student's-t or Chebychev 95% UCL may be appropriate.

*Student's t UCL is acceptable if adj'd CV for DU is "Low" (e.g., CV ≤ 1.5). The User should consult the instructions for additional guidance on which 95% UCL is recommended for specific data sets.

Notes

adj'd	= adjusted	df	= degrees of freedom	SD	= arithmetic standard deviation
calc'd	= calculated	DU	= decision unit	SE	= standard error
CV	= coefficient of variation	RSD	= relative standard deviation	95% UCL	= 95% upper confidence limit for arithmetic mean

Calculation of Weighted 95% UCLs for a Combined Decision Unit (DU) from Several Smaller DUs Having Replicate Incremental Samples

Enter information in green highlighted cells. See the "Instructions" tab for detailed instructions.

Project ID:	IDEQ Lake CDA
Property/Sample ID:	S050-WS-DU03
Date of calculations:	10/21/2025
Calculator completed by:	Paul Burke
Analyte:	Lead
Analyte units:	mg/kg
DU metric units:	Unweighted
Notes:	

Click in green cell below to select from drop-down menu

DU size metric: area, volume, or depth interval: Area

Note: Assumes all replicates have the same number of increments

Number of increments per replicate: 30

Row #	IDs/Names of the Smaller DUs	DU Area (Unweighted)	Replicate field sample concentrations						Number of Replicates	Weight	Arithmetic Mean	SD of Replicates	calc'd SD of Increments	calc'd CV for the DU	Adj Factor	adj'd SD of Increments	adj'd CV for DU	SE of DU	95% UCL			
			Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6											Student's-t	Chebychev	CV of Increments	95% UCL
1	S050-WS-DU03	1.0	64	75.3	68.4				3	1.00	69.2	5.70	31.20	0.45	1.13	35.22	0.51	3.29	78.8	83.6	Low	78.8
2															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
3															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
4															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
5															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
6															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
7															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
8															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
9																						
10																						
	Sum:	1	--	--	--	--	--	--	3	1.00	69.2	5.70	31.20	0.45	NA	35.22	0.51	3.29	78.8	83.6	Low	78.8

df by Welch-Satterthwaite approximation: **2.0**

Recommended UCL: **78.8** **mg/kg** >> Student's t 95% UCL

Note: Student's-t or Chebychev 95% UCL may be appropriate.

*Student's t UCL is acceptable if adj'd CV for DU is "Low" (e.g., CV ≤ 1.5). The User should consult the instructions for additional guidance on which 95% UCL is recommended for specific data sets.

Notes

adj'd	= adjusted	df	= degrees of freedom	SD	= arithmetic standard deviation
calc'd	= calculated	DU	= decision unit	SE	= standard error
CV	= coefficient of variation	RSD	= relative standard deviation	95% UCL	= 95% upper confidence limit for arithmetic mean

Calculation of Weighted 95% UCLs for a Combined Decision Unit (DU) from Several Smaller DUs Having Replicate Incremental Samples

Enter information in green highlighted cells. See the "Instructions" tab for detailed instructions.

Project ID:	IDEQ Lake CDA
Property/Sample ID:	S050-WS-DU03
Date of calculations:	10/21/2025
Calculator completed by:	Paul Burke
Analyte:	Manganese
Analyte units:	mg/kg
DU metric units:	Unweighted
Notes:	

Click in green cell below to select from drop-down menu

DU size metric: area, volume, or depth interval: Area

Note: Assumes all replicates have the same number of increments

Number of increments per replicate: 30

Row #	IDs/Names of the Smaller DUs	DU Area (Unweighted)	Replicate field sample concentrations						Number of Replicates	Weight	Arithmetic Mean	SD of Replicates	calc'd SD of Increments	calc'd CV for the DU	Adj Factor	adj'd SD of Increments	adj'd CV for DU	SE of DU	95% UCL			
			Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6											Student's-t	Chebychev	CV of Increments	95% UCL
1	S050-WS-DU03	1.0	151	158	160				3	1.00	156.3	4.73	25.88	0.17	1.13	29.17	0.19	2.73	164.3	168.2	Low	164.3
2															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
3															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
4															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
5															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
6															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
7															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
8															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
9																						
10																						
	Sum:	1	--	--	--	--	--	--	3	1.00	156.3	4.73	25.88	0.17	NA	29.17	0.19	2.73	164.3	168.2	Low	164.3

df by Welch-Satterthwaite approximation: **2.0**

Recommended UCL: **164.3** **mg/kg** >> Student's t 95% UCL

Note: Student's-t or Chebychev 95% UCL may be appropriate.

*Student's t UCL is acceptable if adj'd CV for DU is "Low" (e.g., CV ≤ 1.5). The User should consult the instructions for additional guidance on which 95% UCL is recommended for specific data sets.

Notes

adj'd	= adjusted	df	= degrees of freedom	SD	= arithmetic standard deviation
calc'd	= calculated	DU	= decision unit	SE	= standard error
CV	= coefficient of variation	RSD	= relative standard deviation	95% UCL	= 95% upper confidence limit for arithmetic mean

Calculation of Weighted 95% UCLs for a Combined Decision Unit (DU) from Several Smaller DUs Having Replicate Incremental Samples

Enter information in green highlighted cells. See the "Instructions" tab for detailed instructions.

Project ID:	IDEQ Lake CDA
Property/Sample ID:	S050-WS-DU03
Date of calculations:	10/21/2025
Calculator completed by:	Paul Burke
Analyte:	Iron
Analyte units:	mg/kg
DU metric units:	Unweighted
Notes:	

Click in green cell below to select from drop-down menu

DU size metric: area, volume, or depth interval: **Area**

Note: Assumes all replicates have the same number of increments

Number of increments per replicate: **30**

Row #	IDs/Names of the Smaller DUs	DU Area (Unweighted)	Replicate field sample concentrations						Number of Replicates	Weight	Arithmetic Mean	SD of Replicates	calc'd SD of Increments	calc'd CV for the DU	Adj Factor	adj'd SD of Increments	adj'd CV for DU	SE of DU	95% UCL			
			Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6											Student's-t	Chebychev	CV of Increments	95% UCL
1	S050-WS-DU03	1.0	6710	6500	7390				3	1.00	6866.7	465.22	2548.14	0.37	1.13	2872.64	0.42	268.60	7651.0	8037.5	Low	7651.0
2															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
3															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
4															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
5															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
6															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
7															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
8															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
9																						
10																						
	Sum:	1	--	--	--	--	--	--	3	1.00	6866.7	465.22	2548.14	0.37	NA	2872.64	0.42	268.60	7651.0	8037.5	Low	7651.0

df by Welch-Satterthwaite approximation: **2.0**

Recommended UCL: 7651.0 mg/kg >> Student's t 95% UCL

Note: Student's-t or Chebychev 95% UCL may be appropriate.

*Student's t UCL is acceptable if adj'd CV for DU is "Low" (e.g., CV ≤ 1.5). The User should consult the instructions for additional guidance on which 95% UCL is recommended for specific data sets.

Notes

adj'd	= adjusted	df	= degrees of freedom	SD	= arithmetic standard deviation
calc'd	= calculated	DU	= decision unit	SE	= standard error
CV	= coefficient of variation	RSD	= relative standard deviation	95% UCL	= 95% upper confidence limit for arithmetic mean

Calculation of Weighted 95% UCLs for a Combined Decision Unit (DU) from Several Smaller DUs Having Replicate Incremental Samples

Enter information in green highlighted cells. See the "Instructions" tab for detailed instructions.

Project ID:	IDEQ Lake CDA
Property/Sample ID:	S050-WS-DU03
Date of calculations:	10/21/2025
Calculator completed by:	Paul Burke
Analyte:	Copper
Analyte units:	mg/kg
DU metric units:	Unweighted
Notes:	

Click in green cell below to select from drop-down menu

DU size metric: area, volume, or depth interval: Area

Note: Assumes all replicates have the same number of increments

Number of increments per replicate: 30

Row #	IDs/Names of the Smaller DUs	DU Area (Unweighted)	Replicate field sample concentrations						Number of Replicates	Weight	Arithmetic Mean	SD of Replicates	calc'd SD of Increments	calc'd CV for the DU	Adj Factor	adj'd SD of Increments	adj'd CV for DU	SE of DU	95% UCL			
			Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6											Student's-t	Chebychev	CV of Increments	95% UCL
1	S050-WS-DU03	1.0	6.4	6.8	6.98				3	1.00	6.7	0.30	1.63	0.24	1.13	1.83	0.27	0.17	7.2	7.5	Low	7.2
2															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
3															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
4															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
5															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
6															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
7															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
8															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
9																						
10																						
	Sum:	1	--	--	--	--	--	--	3	1.00	6.7	0.30	1.63	0.24	NA	1.83	0.27	0.17	7.2	7.5	Low	7.2

df by Welch-Satterthwaite approximation: **2.0**

Recommended UCL: **7.2** **mg/kg** >> Student's t 95% UCL

Note: Student's-t or Chebychev 95% UCL may be appropriate.

*Student's t UCL is acceptable if adj'd CV for DU is "Low" (e.g., CV ≤ 1.5). The User should consult the instructions for additional guidance on which 95% UCL is recommended for specific data sets.

Notes

adj'd	= adjusted	df	= degrees of freedom	SD	= arithmetic standard deviation
calc'd	= calculated	DU	= decision unit	SE	= standard error
CV	= coefficient of variation	RSD	= relative standard deviation	95% UCL	= 95% upper confidence limit for arithmetic mean

Calculation of Weighted 95% UCLs for a Combined Decision Unit (DU) from Several Smaller DUs Having Replicate Incremental Samples

Enter information in green highlighted cells. See the "Instructions" tab for detailed instructions.

Project ID:	IDEQ Lake CDA
Property/Sample ID:	S050-WS-DU03
Date of calculations:	10/21/2025
Calculator completed by:	Paul Burke
Analyte:	Cadmium
Analyte units:	mg/kg
DU metric units:	Unweighted
Notes:	

Click in green cell below to select from drop-down menu

DU size metric: area, volume, or depth interval: Area

Note: Assumes all replicates have the same number of increments

Number of increments per replicate: 30

Row #	IDs/Names of the Smaller DUs	DU Area (Unweighted)	Replicate field sample concentrations						Number of Replicates	Weight	Arithmetic Mean	SD of Replicates	calc'd SD of Increments	calc'd CV for the DU	Adj Factor	adj'd SD of Increments	adj'd CV for DU	SE of DU	95% UCL			
			Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6											Student's-t	Chebychev	CV of Increments	95% UCL
1	S050-WS-DU03	1.0	0.4	0.45	0.41				3	1.00	0.4	0.03	0.14	0.35	1.13	0.16	0.39	0.02	0.5	0.5	Low	0.5
2															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
3															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
4															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
5															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
6															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
7															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
8															#N/A	#VALUE!	#VALUE!				#VALUE!	#VALUE!
9																						
10																						
	Sum:	1	--	--	--	--	--	--	3	1.00	0.4	0.03	0.14	0.35	NA	0.16	0.39	0.02	0.5	0.5	Low	0.5

df by Welch-Satterthwaite approximation: **2.0**

Recommended UCL: **0.5** **mg/kg** >> Student's t 95% UCL

Note: Student's-t or Chebychev 95% UCL may be appropriate.

*Student's t UCL is acceptable if adj'd CV for DU is "Low" (e.g., CV ≤ 1.5). The User should consult the instructions for additional guidance on which 95% UCL is recommended for specific data sets.

Notes

adj'd	= adjusted	df	= degrees of freedom	SD	= arithmetic standard deviation
calc'd	= calculated	DU	= decision unit	SE	= standard error
CV	= coefficient of variation	RSD	= relative standard deviation	95% UCL	= 95% upper confidence limit for arithmetic mean

Appendix D
RBSLs

Site-specific
Recreator Soil Inputs

Variable	Recreator Soil Default Value	Site-Specific Value
A (PEF Dispersion Constant)	16.2302	16.2302
A (VF Dispersion Constant)	11.911	11.911
A (VF Dispersion Constant - mass limit)	11.911	11.911
B (PEF Dispersion Constant)	18.7762	18.7762
B (VF Dispersion Constant)	18.4385	18.4385
B (VF Dispersion Constant - mass limit)	18.4385	18.4385
City (PEF Climate Zone) Selection	Default	Default
City (VF Climate Zone) Selection	Default	Default
C (PEF Dispersion Constant)	216.108	216.108
C (VF Dispersion Constant)	209.7845	209.7845
C (VF Dispersion Constant - mass limit)	209.7845	209.7845
foc (fraction organic carbon in soil) g/g	0.006	0.006
F(x) (function dependent on U_m/U_t) unitless	0.194	0.194
n (total soil porosity) L_{pore}/L_{soil}	0.43396	0.43396
p_h (dry soil bulk density) g/cm ^{3}	1.5	1.5
p_h (dry soil bulk density - mass limit) Mg/m ^{3}	1.5	1.5
PEF (particulate emission factor) m ^{3}/kg	1359344438	1359344438
p_s (soil particle density) g/cm ^{3}	2.65	2.65
Q/C_{wind} (g/m^2-s per kg/m^3)	93.77	93.77
Q/C_{vol} (g/m^2-s per kg/m^3)	68.18	68.18
Q/C_{vol} (g/m^2-s per kg/m^3 - mass limit)	68.18	68.18
A_s (PEF acres)	0.5	0.5
A_s (VF acres)	0.5	0.5
A_s (VF mass-limit acres)	0.5	0.5
AF_{0-2} (skin adherence factor) mg/cm ^{2}	.	.2
AF_{2-6} (skin adherence factor) mg/cm ^{2}	.	.2
AF_{6-16} (skin adherence factor) mg/cm ^{2}	.	.07
AF_{16-26} (skin adherence factor) mg/cm ^{2}	.	.07
AF_{rec-a} (skin adherence factor - adult) mg/cm ^{2}	.	0.07

Output generated 11NOV2025:14:34:20

Site-specific
Recreator Soil Inputs

Variable	Recreator Soil Default Value	Site-Specific Value
AF_{rec-c} (skin adherence factor - child) mg/cm ^{2}	.	0.2
AT_{rec} (averaging time)	365	365
BW_{0-2} (body weight) kg	15	15
BW_{2-6} (body weight) kg	15	15
BW_{6-16} (body weight) kg	80	80
BW_{16-26} (body weight) kg	80	80
BW_{rec-a} (body weight - adult) kg	80	80
BW_{rec-c} (body weight - child) kg	15	15
$DFS_{rec-adj}$ (age-adjusted soil dermal factor) mg/kg	.	9452.8
$DFSM_{rec-adj}$ (mutagenic age-adjusted soil dermal factor) mg/kg	.	39155.2
ED_{rec} (exposure duration - recreator) years	26	26
ED_{0-2} (exposure duration) year	2	2
ED_{2-6} (exposure duration) year	4	4
ED_{6-16} (exposure duration) year	10	10
ED_{16-26} (exposure duration) year	10	10
ED_{rec-c} (exposure duration - child) years	6	6
EF_{rec} (exposure frequency) days/year	.	32
EF_{0-2} (exposure frequency) days/year	.	32
EF_{2-6} (exposure frequency) days/year	.	32
EF_{6-16} (exposure frequency) days/year	.	32
EF_{16-26} (exposure frequency) days/year	.	32
EF_{rec-a} (exposure frequency - adult) days/year	.	32
EF_{rec-c} (exposure frequency - child) days/year	.	32
ET_{rec} (exposure time - recreator) hours/day	.	8
ET_{0-2} (exposure time) hours/day	.	8
ET_{2-6} (exposure time) hours/day	.	8
ET_{6-16} (exposure time) hours/day	.	8
ET_{16-26} (exposure time) hours/day	.	8
ET_{rec-a} (adult exposure time) hours/day	.	8

Site-specific
Recreator Soil Inputs

Variable	Recreator Soil Default Value	Site-Specific Value
ET_{rec-c} (child exposure time) hours/day	.	8
THQ (target hazard quotient) unitless	0.1	0.1
$IFS_{rec-adj}$ (age-adjusted soil ingestion factor) mg/kg	.	4640
$IFSM_{rec-adj}$ (mutagenic age-adjusted soil ingestion factor) mg/kg	.	22080
IRS_{0-2} (soil intake rate) mg/day	.	300
IRS_{2-6} (soil intake rate) mg/day	.	300
IRS_{6-16} (soil intake rate) mg/day	.	100
IRS_{16-26} (soil intake rate) mg/day	.	100
IRS_{rec-a} (soil intake rate - adult) mg/day	.	100
IRS_{rec-c} (soil intake rate - child) mg/day	.	300
LT (lifetime - recreator) years	70	70
SA_{0-2} (skin surface area) cm^2/day	.	2373
SA_{2-6} (skin surface area) cm^2/day	.	2373
SA_{6-16} (skin surface area) cm^2/day	.	6032
SA_{16-26} (skin surface area) cm^2/day	.	6032
SA_{rec-a} (skin surface area - adult) cm^2/day	.	6032
SA_{rec-c} (skin surface area - child) cm^2/day	.	2373
TR (target risk) unitless	1.0E-06	1.0E-05
T_w (groundwater temperature) Celsius	25	25
$Theta_a$ (air-filled soil porosity) L_{air}/L_{soil}	0.28396	0.28396
$Theta_w$ (water-filled soil porosity) L_{water}/L_{soil}	0.15	0.15
T (exposure interval) s	819936000	819936000
T (exposure interval) yr	26	26
U_m (mean annual wind speed) m/s	4.69	4.69
U_t (equivalent threshold value)	11.32	11.32
V (fraction of vegetative cover) unitless	0.5	0.5

Site-specific

Recreator Risk-Based Regional Screening Levels (RSL) for Soil

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; T = ATSDR DRAFT; C = Cal EPA; X = PPRTV Screening Level; H = HEAST; D = OW; R = ORD; N = WI; W = TEF applied; E = RPF applied; G = see user guide; U = user provided; ca = cancer; nc = noncancer; * = where: nc SL < 100X ca SL; ** = where nc SL < 10X ca SL; SSL values are based on DAF=1; max = ceiling limit exceeded; sat = Csat exceeded.

Chemical	CAS Number	Mutagen?	Volatile?	Chemical Analytical Type	SF_o (mg/kg-day)$^{-1}$	SF_o Ref	IUR (ug/m^3)$^{-1}$	IUR Ref	RfD (mg/kg-day)	RfD Ref	RfC (mg/m^3)	RfC Ref	GIABS
Arsenic, Inorganic	7440-38-2	No	No	Inorganics	3.20E+01	U	4.30E-03	U	6.00E-05	U	1.50E-05	U	1

ABS	RBA	Soil Saturation Concentration (mg/kg)	S (mg/L)	K_{oc} (cm^3/g)	K_d (cm^3/g)	Henry's Law Constant (atm-m^3/mole)	Henry's Law Constant Used in Calcs (unitless)	H` and HLC Ref	Normal Boiling Point BP (K)	BP Ref	Critical Temperature T_C (K)	T_C Ref
0.03	0.053	-	-	-	2.90E+01	-	-		888.15	U	1670	U

Chemical Type	D_{ia} (cm^2/s)	D_{iw} (cm^2/s)	D_A\ (cm^2/s)	Particulate Emission Factor (m^3/kg)	Volatilization Factor Unlimited Reservoir (m^3/kg)	Volatilization Factor Mass Limit (m^3/kg)	Volatilization Factor Selected (m^3/kg)	Ingestion SL TR=1E-05 (mg/kg)	Dermal SL TR=1E-05 (mg/kg)	Inhalation SL TR=1E-05 (mg/kg)
INORGANIC	1.79E-01	2.96E-05	-	1.36E+09	-	-	-	3.25E+01	2.82E+01	2.91E+05

Carcinogenic SL TR=1E-05 (mg/kg)	Ingestion SL Child THQ=0.1 (mg/kg)	Dermal SL Child THQ=0.1 (mg/kg)	Inhalation SL Child THQ=0.1 (mg/kg)	Noncarcinogenic SL Child THI=0.1 (mg/kg)	Ingestion SL Adult THQ=0.1 (mg/kg)	Dermal SL Adult THQ=0.1 (mg/kg)	Inhalation SL Adult THQ=0.1 (mg/kg)	Noncarcinogenic SL Adult THI=0.1 (mg/kg)	Screening Level (mg/kg)
1.51E+01	6.46E+01	7.21E+01	6.98E+04	3.40E+01	1.03E+03	4.32E+02	6.98E+04	3.03E+02	1.51E+01 ca

Site-specific
Outdoor Worker Soil Inputs

Variable	Outdoor Worker Soil Default Value	Site-Specific Value
A (PEF Dispersion Constant)	16.2302	16.2302
A (VF Dispersion Constant)	11.911	11.911
A (VF Dispersion Constant - mass limit)	11.911	11.911
B (PEF Dispersion Constant)	18.7762	18.7762
B (VF Dispersion Constant)	18.4385	18.4385
B (VF Dispersion Constant - mass limit)	18.4385	18.4385
City (PEF Climate Zone) Selection	Default	Default
City (VF Climate Zone) Selection	Default	Default
C (PEF Dispersion Constant)	216.108	216.108
C (VF Dispersion Constant)	209.7845	209.7845
C (VF Dispersion Constant - mass limit)	209.7845	209.7845
foc (fraction organic carbon in soil) g/g	0.006	0.006
F(x) (function dependent on U_m/U_t) unitless	0.194	0.194
n (total soil porosity) L_{pore}/L_{soil}	0.43396	0.43396
ρ_b (dry soil bulk density) g/cm ^{3}	1.5	1.5
ρ_b (dry soil bulk density - mass limit) Mg/m ^{3}	1.5	1.5
PEF (particulate emission factor) m ^{3}/kg	1359344438	1359344438
ρ_s (soil particle density) g/cm ^{3}	2.65	2.65
Q/C_{wind} (g/m^2-s per kg/m^3)	93.77	93.77
Q/C_{vol} (g/m^2-s per kg/m^3)	68.18	68.18
Q/C_{vol} (g/m^2-s per kg/m^3 - mass limit)	68.18	68.18
A_s (PEF acres)	0.5	0.5
A_s (VF acres)	0.5	0.5
A_s (VF mass-limit acres)	0.5	0.5
AF_{out} (skin adherence factor - outdoor worker) mg/cm ^{2}	0.12	0.12
AT_{out} (averaging time - outdoor worker)	365	365
BW_{out} (body weight - outdoor worker)	80	80
ED_{out} (exposure duration - outdoor worker) yr	25	25

Output generated 11NOV2025:14:36:56

Site-specific
Outdoor Worker Soil Inputs

Variable	Outdoor Worker Soil Default Value	Site-Specific Value
EF_{out} (exposure frequency - outdoor worker) day/yr	225	225
ET_{out} (exposure time - outdoor worker) hr	8	8
THQ (target hazard quotient) unitless	0.1	0.1
IRS_{out} (soil ingestion rate - outdoor worker) mg/day	100	100
LT (lifetime) yr	70	70
SA_{out} (surface area - outdoor worker) cm^2/day	3527	3527
TR (target cancer risk) unitless	1.0E-06	1.0E-05
T_w (groundwater temperature) Celsius	25	25
$Theta_a$ (air-filled soil porosity) L_{air}/L_{soil}	0.28396	0.28396
$Theta_w$ (water-filled soil porosity) L_{water}/L_{soil}	0.15	0.15
T (exposure interval) s	819936000	819936000
T (exposure interval) yr	26	26
U_m (mean annual wind speed) m/s	4.69	4.69
U_t (equivalent threshold value)	11.32	11.32
V (fraction of vegetative cover) unitless	0.5	0.5

Site-specific

Outdoor Worker Risk-Based Regional Screening Levels (RSL) for Soil

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; T = ATSDR DRAFT; C = Cal EPA; X = PPRTV Screening Level; H = HEAST; D = OW; R = ORD; N = WI; W = TEF applied; E = RPF applied; G = see user guide; U = user provided; ca = cancer; nc = noncancer; * = where: nc SL < 100X ca SL; ** = where nc SL < 10X ca SL; SSL values are based on DAF=1; max = ceiling limit exceeded; sat = Csat exceeded.

Chemical	CAS Number	Mutagen?	Volatile?	Chemical Analytical Type	SF_o (mg/kg-day)$^{-1}$	SF_o Ref	IUR (ug/m^3)$^{-1}$	IUR Ref	RfD (mg/kg-day)	RfD Ref	RfC (mg/m^3)	RfC Ref	GIABS	ABS	RBA	Soil Saturation Concentration (mg/kg)
Arsenic, Inorganic	7440-38-2	No	No	Inorganics	3.20E+01	U	4.30E-03	U	6.00E-05	U	1.50E-05	U	1	0.03	0.053	-

S (mg/L)	K_{oc} (cm^3/g)	K_d (cm^3/g)	Henry's Law Constant (atm-m^3/mole)	Henry's Law Constant Used in Calcs (unitless)	H` and HLC Ref	Normal Boiling Point BP (K)	BP Ref	Critical Temperature T_C (K)	T_C Ref	Chemical Type	D_{ia} (cm^2/s)	D_{iw} (cm^2/s)	D_A\ (cm^2/s)	Particulate Emission Factor (m^3/kg)
-	-	2.90E+01	-	-		888.15	U	1670	U	INORGANIC	1.79E-01	2.96E-05	-	1.36E+09

Volatilization Factor Unlimited Reservoir (m^3/kg)	Volatilization Factor Mass Limit (m^3/kg)	Volatilization Factor Selected (m^3/kg)	Ingestion SL TR=1E-05 (mg/kg)	Dermal SL TR=1E-05 (mg/kg)	Inhalation SL TR=1E-05 (mg/kg)	Carcinogenic SL TR=1E-05 (mg/kg)	Ingestion SL THQ=0.1 (mg/kg)	Dermal SL THQ=0.1 (mg/kg)	Inhalation SL THQ=0.1 (mg/kg)	Noncarcinogenic SL THI=0.1 (mg/kg)	Screening Level (mg/kg)
-	-	-	2.14E+01	8.94E+00	4.31E+04	6.31E+00	1.47E+02	6.13E+01	9.92E+03	4.31E+01	6.31E+00 ca**

Appendix E
IEUBK Input and Output Files

Table E-1. IEUBK Model Inputs

SiteID	Scenario	Soil Input (mg/kg) - Assumes 80 mg/kg background	Soil Input (mg/kg) - Assumes 150 mg/kg background	Alternate Source Input (µg/day)	Dust Input (mg/kg)
S050	Public	78.7	129	1.96	130

Notes:

mg/kg = milligrams per kilogram

Time-weighted soil concentrations (Alta 2025):

Weighted PbC_{soil} = (PbC_{Res} x f_{Res}) + (PbC_{Loc} x f_{Loc})

Where:

Weighted PbC_{soil} = weighted soil lead concentration (mg/kg)

PbC_{Res} = "baseline" residential soil concentration

f_{Res} = fraction of week spent at home (number of days/7 days)

PbC_{Loc} = lake or river sediment/upland soil concentration (mg/kg).

f_{Loc} = fraction of week spent recreating at CDA Lake and the Spokane River (number of days/7 days).

Alternate source intake of lead from surface water (Alta 2025):

ASI_{SW} = $WeightedPbC_{SW}$ x IR_{SW}

Where:

ASI_{SW} = alternate source intake from surface water (micrograms per day [µg/day])

Weighted PbCsw = weighted surface water lead concentration (µg/L)

IR_{SW} = surface water incidental ingestion rate (liters per day [L/day])

Weighted surface water lead concentration (Alta 2025):

Weighted PbC_{SW} = PBC_{SW} x f_{Loc}

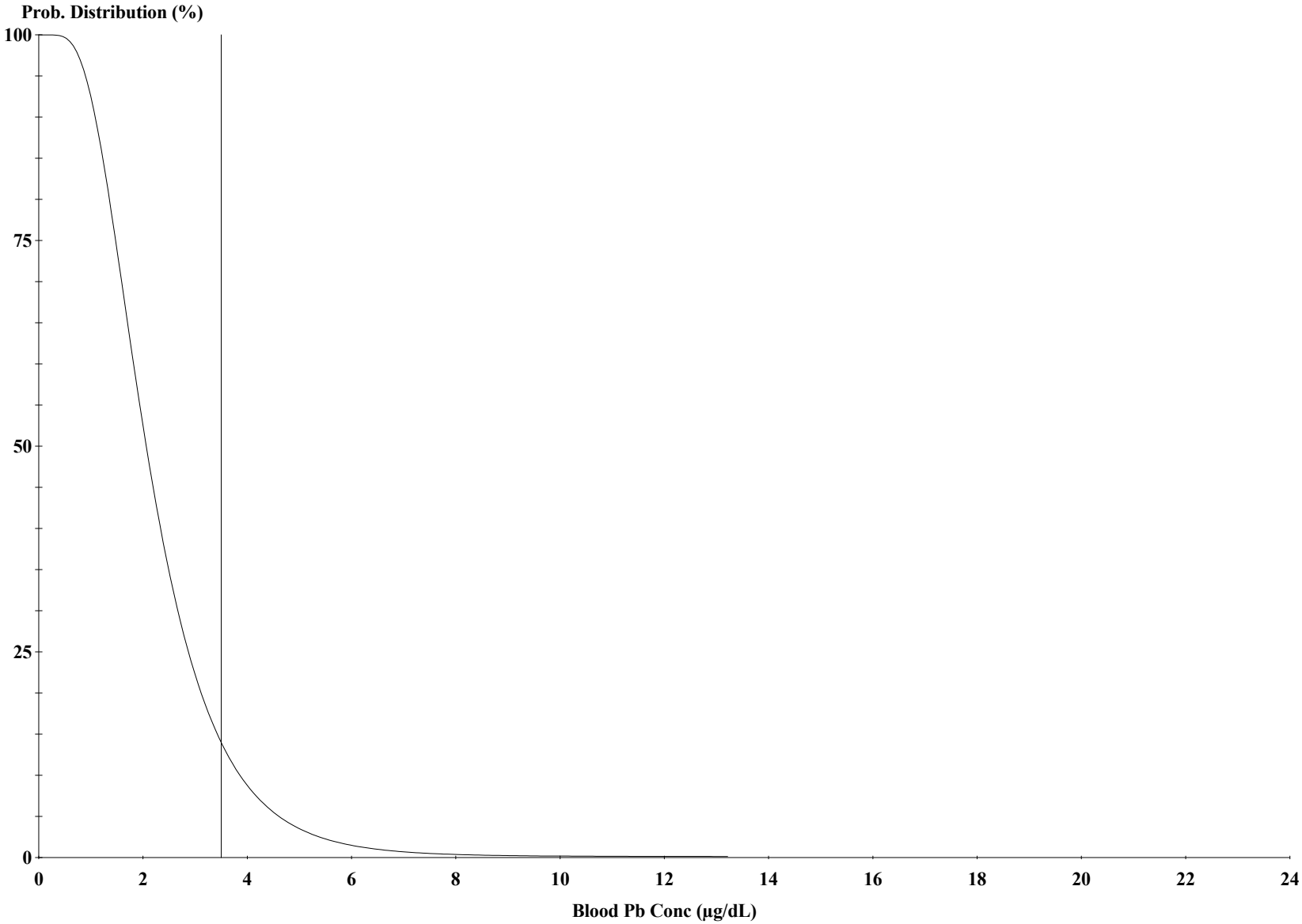
Where:

PbC_{SW} = surface water concentration (µg/L)

f_{Loc} = fraction of week spent at CDA Lake and Spokane River (number of days/7 days)

It is assumed that f_{Res} = 5/7 and f_{Loc} = 2/7 for Public Recreational Visitors (at Public Sites).

Figure E-1. Low P3-5 IEUBK Model Output



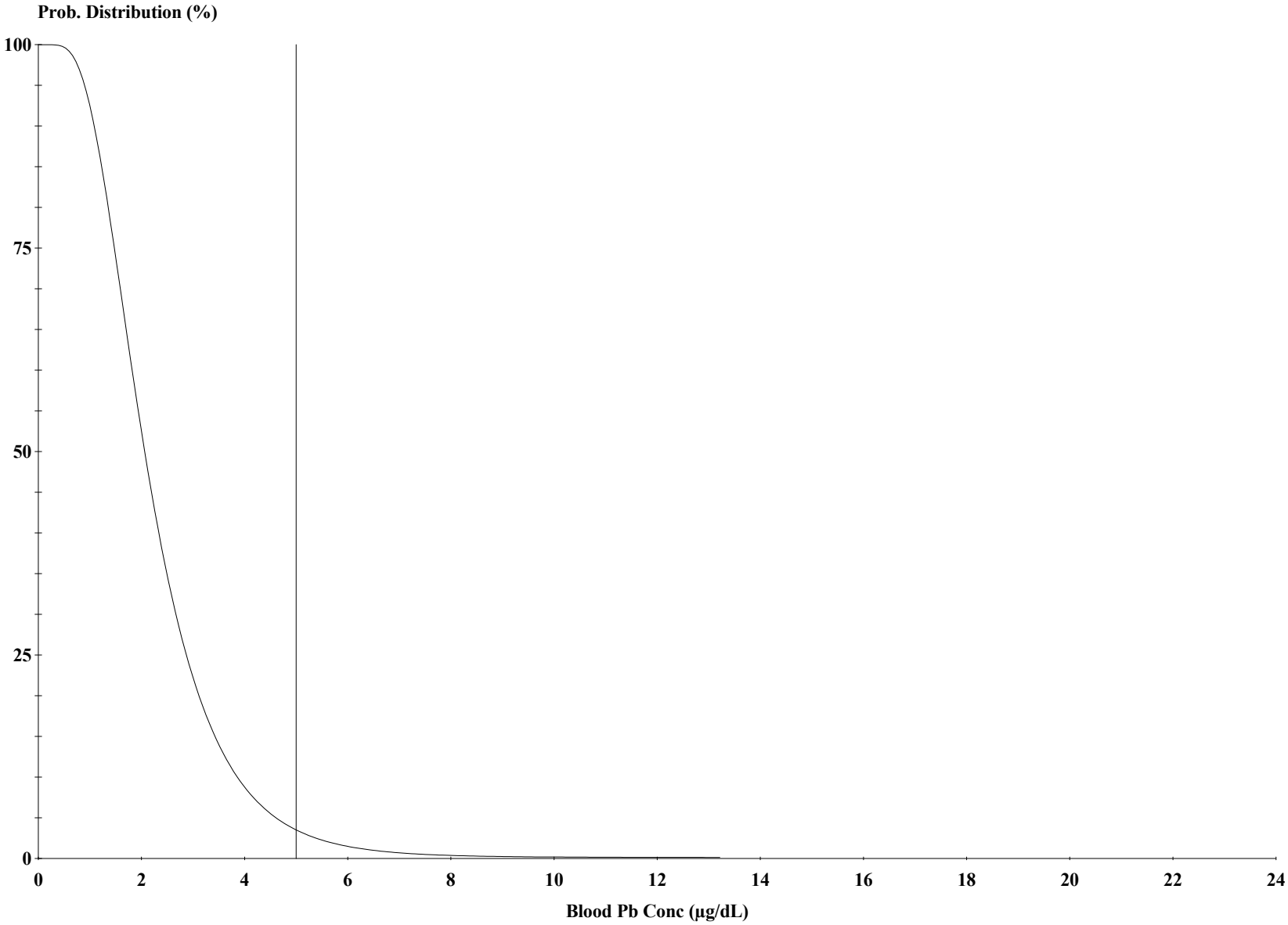
Cutoff = 3.500 µg/dl
Geo Mean = 2.162
GSD = 1.600
% Above = 15.261

Age Range = 12 to 72 months

Run Mode = Research

These IEUBK Model results are valid as long as they were produced with an official, unmodified version of the IEUBK Model with a software certificate.
While IEUBK Model output is generally written with three digits to the right of the decimal point, the true precision of the output is strongly influenced by least precise input values.

Figure E-2. Low P-5 IEUBK Model Output



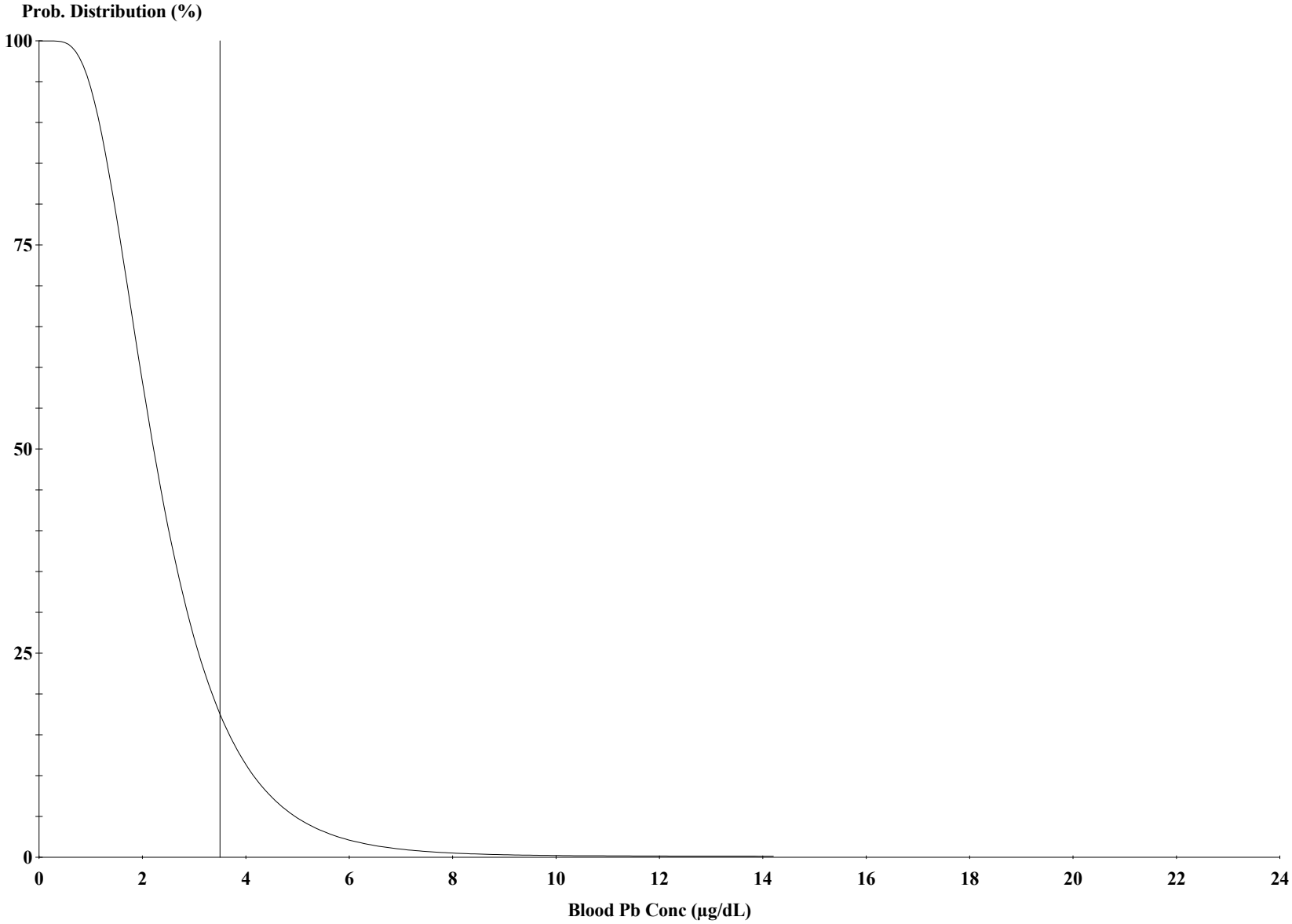
Cutoff = 5.000 µg/dl
Geo Mean = 2.162
GSD = 1.600
% Above = 3.720

Age Range = 12 to 72 months

Run Mode = Research

These IEUBK Model results are valid as long as they were produced with an official, unmodified version of the IEUBK Model with a software certificate.
While IEUBK Model output is generally written with three digits to the right of the decimal point, the true precision of the output is strongly influenced by least precise input values.

Figure E-3. Mid P3-5 IEUBK Model Output



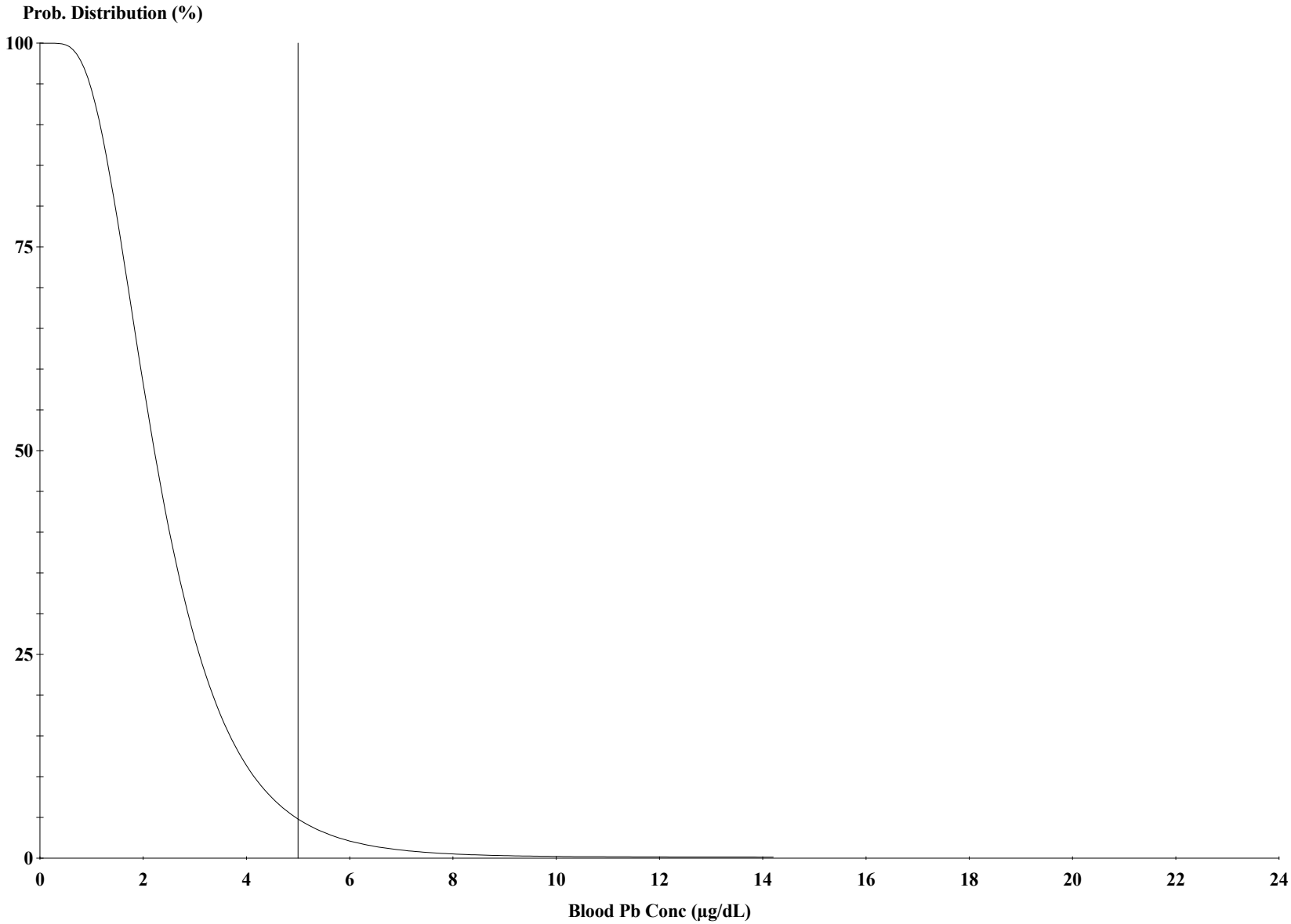
Cutoff = 3.500 µg/dl
Geo Mean = 2.323
GSD = 1.600
% Above = 19.163

Age Range = 12 to 72 months

Run Mode = Research

These IEUBK Model results are valid as long as they were produced with an official, unmodified version of the IEUBK Model with a software certificate.
While IEUBK Model output is generally written with three digits to the right of the decimal point, the true precision of the output is strongly influenced by least precise input values.

Figure E-4. Mid P-5 IEUBK Model Output



Cutoff = 5.000 µg/dl
Geo Mean = 2.323
GSD = 1.600
% Above = 5.147

Age Range = 12 to 72 months

Run Mode = Research

These IEUBK Model results are valid as long as they were produced with an official, unmodified version of the IEUBK Model with a software certificate.
While IEUBK Model output is generally written with three digits to the right of the decimal point, the true precision of the output is strongly influenced by least precise input values.