

2025 WILDLIFE MONITORING PROGRAM

Swan Hills Treatment Centre

Veolia Canada

Wildland Management Consultants Ltd.

Leduc County, Alberta

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Executive Summary

Scope

As part of its integrated environmental monitoring program, the Swan Hills Treatment Centre (SHTC) has been conducting demographic studies and analyzing levels of various chemicals in the tissues of red-backed voles (*Myodes gapperi*) annually since 1986. Over this period, the scope of monitoring program was changed so that plots monitored prior to 2000 (10 population and 24 tissue collection plots) would be included as part of an expanded monitoring program once every 5 years. However, in 2000, the wildlife monitoring program was modified so that annually monitored years (Years 1 – 4) was comprised of sampling 3 population and 10 tissue collection plots. However, based on recommendations made in the 2023 annual monitoring report (WMC 2024), sampling effort of the expanded monitoring program was reduced to focus on the 3 annually monitored population plots and 6 tissue collection plots. If warranted in the future, plots previously part of the expanded monitoring program (10 population and 24 tissue collection plots) would be sampled in the event of an upset at the SHTC based on the key trigger responses developed for red-backed voles. Therefore, the 2025 annual wildlife monitoring program was focused on demographic studies of voles on 3 live-trapping plots in June and September (Table 1) while concentrations of PCB congeners and TEQs, dioxin/furan congeners and TEQs, total TEQs, and PAHs were determined for animals collected from 6 plots in May (Table 1). Results were interpreted within the context of comparisons between the 2025 and 2024 monitoring years as well as the 39-year long-term monitoring dataset (1986 – 2025)

Red-backed Vole Demography

Red-backed vole populations increased substantially at all three annually monitored plots (plots 11, 114, and 70) between 2024 and 2025 in both June (Figure 1) and September (Figure 2). June population densities increased by 117% to 600% among plots, with an overall mean increase of approximately 198%. September densities also increased markedly but were within historical ranges for the SHTC study area. As in most previous years, the highest densities occurred at the reference plot (plot 70), followed by plots 11 and 114, reflecting long-standing differences in habitat structure rather than proximity to the facility.

Sex ratios followed typical seasonal patterns, with male-dominated populations in June (overall 2.4 males per female) and female-dominated populations in September (0.5 males per female). Weight class structure also reflected normal seasonal dynamics, with heavy (overwintered) adults dominating in June (83%) and moderate (young-of-the-year) individuals dominating in September. Reproductive activity was consistent with historical trends, with high breeding rates in June (63% of heavy males and 75% of heavy females) and reduced

breeding in September, reflecting the end of the main breeding season. Overwinter survival between September 2024 and June 2025 could not be estimated because no previously tagged individuals were recaptured, which is consistent with the short lifespan of red-backed voles and long intervals between trapping sessions.

Trapping mortality remained elevated in 2025 and continues to be an important operational consideration. Exposure-based mortality for red-backed voles averaged 12.8% per capture event, while individual-based mortality was 31.4%. Non-target mortality, particularly for shrews, was also high and consistent with historical patterns. Despite mitigation measures (additional bedding, moisture sources, mealworms, natural cover, and twice-daily trap checks), mortality was highest during the September session when capture and recapture rates were greatest. Smaller-bodied individuals were more susceptible to mortality. Importantly, elevated trapping mortality did not appear to translate into detectable population-level effects, and vole populations increased substantially in 2025.

Tissue Chemistry of Red-backed Voles

PCB Congers and PCB TEQs

Congener PCB concentrations in vole tissues in 2025 were among the lowest recorded since 2000, despite a modest year-over-year increase from 2024 (Table 2). Average PCB concentrations were approximately 63% lower than the long-term mean (2000–2024). Spatial patterns remained consistent with historical results, with higher concentrations at near-field plots and very low concentrations at the more distant reference plots (Table 2).

While PCB TEQ concentrations exhibited modest increases at some plots, they remained low in a long-term context (Table 3). PCB 126 continued to be the dominant contributor to PCB TEQ because of its high toxicity equivalency factor, followed by PCB 169. Overall, PCB TEQs in 2025 were among the lowest recorded since 2000 at several near-field plots (Table 3).

Dioxin/Furan Congeners and Dioxin/Furan TEQs

Dioxin/furan concentrations and TEQs remained very low relative to early monitoring years and continued the long-term declining trend observed since the mid-2000s (Table 4). Unlike PCBs, dioxin/furan TEQs did not exhibit a consistent spatial gradient with distance or direction from the SHTC in 2025, suggesting that current body burdens are more influenced by regional background sources and analytical variability at low concentrations than by facility-related inputs (Table 4).

Total TEQs

Total TEQs (PCB TEQ + dioxin/furan TEQ) increased slightly between 2024 and 2025 but remained low in a long-term context (Figure 3). PCB TEQs accounted for a greater proportion

of total TEQ in 2025 than the historical average, confirming that PCBs remain the primary driver of spatial variability in total TEQs. Mean total TEQs were still substantially higher at near-field plots than at reference plots, consistent with long-term patterns (Figure 3).

PAHs

All PAHs measured in vole tissues in 2025 were below analytical detection limits. Elevated calculated totals reflect summation of non-detect values ($\frac{1}{2}$ MDL) and variable detection limits rather than true increases in tissue concentrations (Table 6). Results from the 2024 expanded monitoring program demonstrated PAH fingerprints were consistent with regional wildfire sources that occurred in 2023, and 2025 results do not contradict this interpretation (Table 6). There was no evidence that the SHTC was a significant point source of PAHs to red-backed voles in 2025.

Relationships Between Vole Tissue Chemistry and Vole Demography

Comparison of demographic and chemical data for the three annually monitored plots indicated that although PCB and total TEQ concentrations were higher at plots closer to the SHTC, there was no evidence of corresponding impairment in vole population density, reproductive activity, sex ratios, or weight class structure (Table 7). Long-term data collected over 39 years similarly show no sustained population-level effects despite historically elevated contaminant body burdens near the facility. Instead, vole demography continues to be driven primarily by habitat structure, weather, predation, wildfire disturbance, and natural population cycles.

Overall Conclusions

The 2025 monitoring results confirm that red-backed vole populations remain demographically stable and exhibit normal cyclic dynamics. PCB congener and total PCB TEQ concentrations continue to be higher near the SHTC than at reference sites but are historically low and show an overall declining trend. Dioxin/furan congeners and dioxin/furan TEQs are very low and spatially uniform. Elevated PAHs recorded in 2024 reflect regional wildfire influences that occurred in 2023 rather than facility emissions. There was no evidence that chemical exposures measured in 2025 have resulted in adverse population-level effects on voles.

The revised adaptive monitoring framework implemented in 2024 remains scientifically defensible and appropriate for continued long-term assessment of wildlife exposure near the SHTC. While trapping mortality remains an important ethical and operational issue, current evidence indicates that it has not compromised the scientific validity of population assessments or resulted in detectable population-level impacts. Continued refinement of trapping methods and consideration of reduced live-trapping frequency (e.g., once every five years) are recommended to balance scientific objectives with animal welfare considerations.

Table 1. Summary of previous and current annual/expanded red-backed vole monitoring programs.

Plot No.	Distance from SHTC the (km)	Direction from the SHTC	Tissue Collection/Snap-trapping ¹			Population Monitoring/ Live-trapping ¹
			Metals, PAHs ¹	Aroclor PCBs ²	PCB Congeners and TEQs, Dioxins/Furans and TEQs, Total TEQs ³	
Previous Annual and Expanded Monitoring Programs (Prior to 2024):						
11	0.1	N	✓	✓	☑	☑
109	0.2	W	✓	✓	☑	✓
103	0.2	SE	✓	✓	-	✓
4	0.3	E	✓	✓	☑	✓
110	0.3	W	✓	✓	☑	-
104	0.4	NW	✓	✓	-	-
102	0.4	E	✓	✓	-	-
1	0.4	NE	✓	✓	-	✓
27	0.5	S	✓	✓	-	✓
8	0.6	E	✓	✓	-	✓
15	0.6	NW	✓	✓	-	-
114	0.7	E	✓	✓	☑	☑
121	1.2	N	✓	✓	-	-
9	1.4	ENE	✓	✓	-	✓
28	1.4	WNW	✓	✓	-	-
123	1.6	NE	✓	✓	☑	-
16	2.4	E	✓	✓	-	-
117	2.4	SE	✓	✓	☑	-
26	2.6	WNW	✓	✓	-	✓
30	3.6	NW	✓	✓	-	✓
29	3.9	E	✓	✓	-	-
402	7.5	E	✓	✓	☑	-
70	11.5	SW	✓	✓	☑	☑
71	21.0	NNW	✓	✓	☑	✓
Current Annual and Expanded Monitoring Programs (2024 and Onward):						
11	0.1	N	✓	✓	☑	☑
109	0.2	W	✓	✓	☑	-
4	0.3	E	✓	✓	☑	-
110	0.3	W	✓	✓	✓	-
114	0.7	E	✓	✓	☑	☑
123	1.6	NE	✓	✓	✓	-
117	2.4	SE	✓	✓	✓	-
402	7.5	E	✓	✓	✓	-
70	11.5	SW	✓	✓	☑	☑
71	21.0	NNW	✓	✓	☑	-

¹ Bold boxed check marks ☑ indicate plots that are monitored annually for vole tissue collection and population studies. Plain check marks ✓ indicate plots that are part of the expanded monitoring program (i.e., once every 5 years). ² The low resolution GC-ECD method historically used for Aroclor PCBs was discontinued in Canada in 2019. ³ HRMS congener-specific methodology would be used for all expanded monitoring plots in response to a red-backed vole trigger.

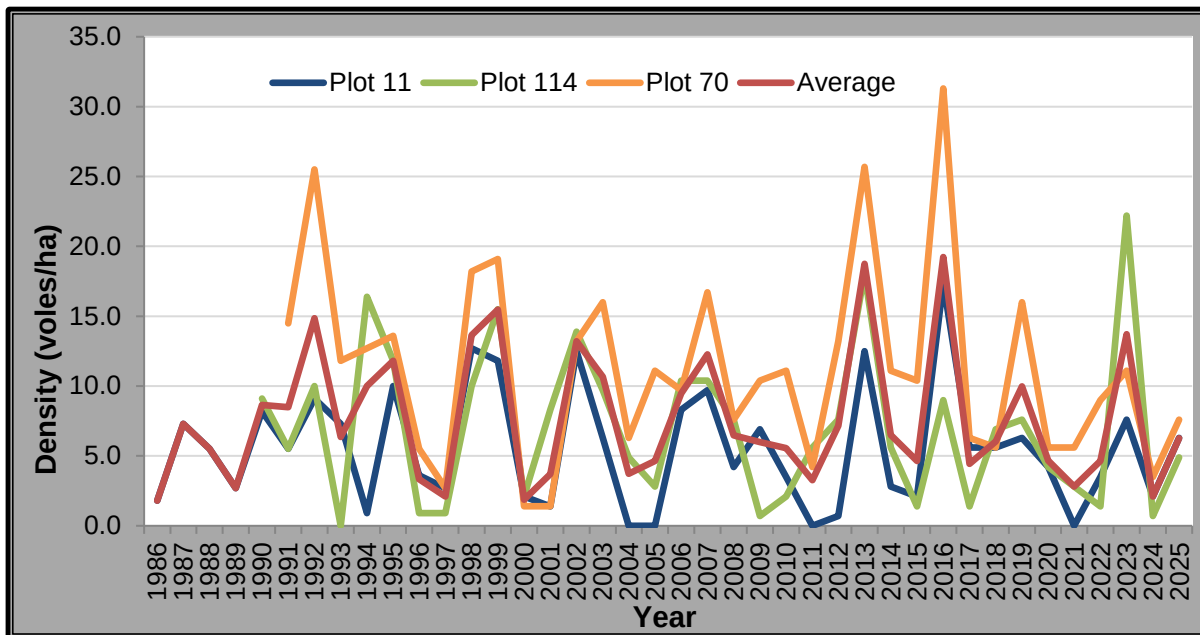


Figure 1. Densities of red-backed voles in the SHTC study area, June 1986 - 2025.

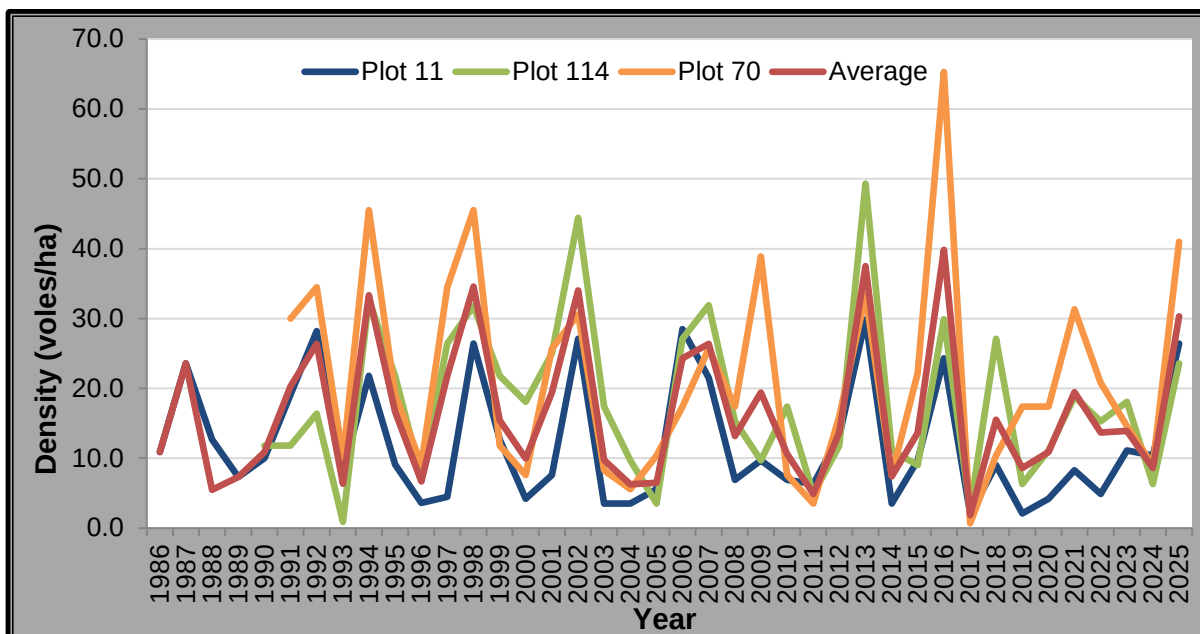


Figure 2. Densities of red-backed voles in the SHTC study area, September 1986 - 2025.

Table 2. PCB congener concentrations¹ (pg/g) in red-backed voles in SHTC study area, 2000 – 2025.

Year	Plot ²										Averages
	11	109	4	110	114	123	117	402	70	71	
2000	480,000	-	300,000	-	170,000	-	24,000	5,500	8,800	3,600	141,700
2001	169,000	563,000	163	28,800	466,000	32,100	34,600	1,960	1,440	479	129,754
2002	627,382	819,944	642,093	16,715	495,810	53,724	108,457	5,557	1,799	393	277,187
2003	249,000	583,000	250,000	11,500	129,000	25,100	35,300	1,330	667	199	128,510
2004	70,359	1,034,201	687,233	133,077	136,802	14,997	17,438	734	1,084	406	209,633
2005	17,865	114,298	140,940	-	34,465	7,601	8,917	953	837	455	36,259
2006	203,545	254,766	867,215	17,820	143,851	9,468	34,099	2,944	2,363	1,273	153,734
2007	91,000	340,000	360,000	19,000	200,000	23,000	45,000	4,300	1,900	2,900	108,710
2008	100,000	99,000	410,000	17,000	85,000	23,000	69,000	47,000	7,200	3,800	86,100
2009	120,000	69,400	245,000	11,000	63,200	10,200	4,500	2,070	1,980	785	52,814
2010	192,000	98,800	351,000	43,500	294,000	19,300	74,900	3,530	1,680	795	107,951
2011	281,000	960,000	547,000	225,000	121,000	16,800	42,500	2,610	3,100	939	219,995
2012	181,000	815,000	357,000	136,000	250,000	27,400	45,900	6,150	1,860	1,280	182,159
2013	296,000	267,000	1,110,000	72,400	209,000	16,400	10,400	4,050	1,480	1,440	198,817
2014	114,000	115,000	399,000	105,000	263,000	19,900	42,500	4,570	935	716	106,462
2015	111,000	97,300	386,000	39,500	82,100	13,100	18,800	2,360	1,200	377	75,174
2016	90,400	87,700	429,000	21,600	86,900	11,300	33,300	2,330	770	356	76,366
2017	110,000	96,700	317,000	21,500	91,900	12,900	16,700	2,220	934	401	67,026
2018	84,200	187,000	368,000	26,400	102,000	14,300	34,500	2,470	779	888	82,054
2019	98,150	83,250	304,500	11,385	68,200	7,620	21,150	1,380	663	255	59,832
2020	63,700	60,400	161,000	7,380	45,900	12,900	17,000	1,410	533	190	37,041
2021	39,500	31,600	92,500	13,200	54,600	18,800	6,540	1,200	544	217	25,870
2022	65,200	66,100	171,000	28,000	121,000	4,650	51,600	663	471	191	50,888
2023	43,500	38,700	140,000	11,200	36,100	3,510	13,100	1,710	32,900 ³	143	32,086
2024	25,300	66,900	116,000	30,600	40,000	6,980	6,820	518	460	278	29,386
2025	9,630	112,000	77,300	- ⁴	37,600	-	-	-	420	316	39,544

¹ PCB congener concentrations are the sum of the homologues. ² Order of plots indicate increasing distance from SHTC (Plot 11 [100 m] to Plot 71 [21 km]). ³ Re-extraction result = 31,700 pg/g. ⁴ Plots 110, 123, 117, and 402 were dropped as part of the annual monitoring program in 2025 and instead will now be included as part of subsequent expanded monitoring programs.

Table 3. TEQ of PCB congeners in red-backed voles (pg/g) collected from the SHTC study area, 2000 - 2025.

Year	Plot ¹										Averages
	11	109	4	110	114	123	117	402	70	71	
2000	500	-	670	-	144	-	33	1.3	6.7	0.06	193.58
2001	108	253	352	18.7	252	15	23.4	0.03	0.01	0.01	102.22
2002	241	346	461	5.1	215	22	53	0.1	0.05	0.00	134.33
2003	400	385	568	6.1	164	20.4	21.2	0.5	0.0	0.00	156.52
2004	94.8	120	836	29.5	3.35	11.5	11.8	0.01	0.02	0.01	110.70
2005	40.6	106	267	-	42.2	4.1	6.4	0.03	0.02	0.01	51.82
2006	369.9	133.2	1039.8	12.3	96.2	9.5	16.7	1.36	0.04	0.02	167.90
2007	119.6	411.2	614.2	7	152.1	18.8	26.4	0.13	0.05	0.03	134.95
2008a ²	85.49	43.97	318.3	5.65	47.07	10.71	41.43	2.4	0.49	0.24	55.58
2008b ³	84.59	42.8	319.02	5.42	45.52	10.42	40.32	2.26	0.47	0.23	55.11
2009	139.16	51.54	279.87	5.11	36.24	6.96	1.71	0.55	0.52	0.26	52.19
2010	146.72	74.46	207.07	22.1	114.18	6.05	18.93	0.02	0.01	0.00	58.95
2011	88.3	259	438	115	34.9	3.9	7.48	0.01	0.99	0.35	94.79
2012	74.2	313	294	49.3	52.2	5.31	12.7	0.99	0.49	0.00	80.22
2013	203	224	603	22.5	84.4	5.95	3.12	0.84	0.01	0.01	114.68
2014	86.4	59.4	305	115	57.6	7.57	10.6	1.0	0.28	0.25	64.31
2015	57.2	38.3	335	15.2	38.1	5.85	9.32	0.83	0.56	0.15	50.05
2016	43.5	28.4	289	6	26.1	3.9	8.62	0.54	0.30	0.13	40.65
2017	52.2	41.8	170	10.6	30.6	4.73	5.24	0.87	0.39	0.20	40.57
2018	39.4	98.4	232	8	33.8	4.42	11.4	0.73	0.27	0.36	42.88
2019	45.1	45.5	198	3.84	25.5	3.06	7.19	0.20	0.26	0.15	32.88
2020	40.4	25.9	113	2.12	18.7	3.7	5.6	0.51	0.24	0.07	21.03
2021	21.5	15.8	61.1	6.15	23	7.1	2.66	0.43	0.22	0.09	13.81
2022	25.2	23.7	111	7.62	54.4/2.4 ⁴	1.67	28.1	0.16	0.11	0.05	25.20
2023	22.5	17.7	96.5	3.7	14.4	1.25	3.7	0.33	11.8 ⁵	0.09	17.20
2024	11.1	33.9	65.3	5.69	12.3	3.10	2.26	0.205	0.24	0.154	14.90
2025	3.9	42.0	46	- ⁶	16.3	-	-	-	0.15-	0.055	18.07

¹ Order of plots indicate increasing distance from SHTC (Plot 11 [100 m] to Plot 71 [21 km]). ² WHO-TEF: World Health Organization Toxic Equivalency Factor (1998). ³ WHO-TEF: World Health Organization Toxic Equivalency Factor (2005). ⁴ September 2022 result. ⁵ Re-extraction result = 11.9 pg/g. ⁶ Plots 110, 123, 117, and 402 were dropped as part of the annual monitoring program in 2025 and instead will now be included as part of subsequent expanded monitoring programs.

Table 4. Concentrations of dioxin/furan congeners (pg/g) in red-backed voles collected from the SHTC study area, 2000 - 2025.

Year	Plot ¹										Averages
	11	109	4	110	114	123	117	402	70	71	
2000	5,757	11,026	11,827	2,229	1,585	1,840	591	22	110	59	3,504.6
2001	655	2,902	9,203	460	960	931	1,225	8	7	7	1,635.8
2002	3,862	4,684	6,349	86	1,550	1,533	1,017	143	23	6	1,925.3
2003	2,994	3,938	9,432	112	1,874	865	273	5	25	4	1,952.2
2004	1,177	530	6,095	323	677	370	99	n.d. ³	1.6	0.2	927.3
2005	581	1,280	2,005	-. ²	344	155	66	2.8	11	1.3	444.4
2006	8,043	648	7,633	158	488	345	78	15	22	8	1,743.8
2007	1,142	2,167	2,546	54	912	716	85	29	26	8	768.5
2008	862	373	2,316	76	223	266	506	20	36	18	469.6
2009	1,013	421	1,145	44	145	194	26	7	31	3	302.9
2010	1,720	503	434	168	314	43	48	7	3.4	<0.2	324.1
2011	131	312	1,010	438	55.8	22.9	10.2	1	1.9	<0.09	198.3
2012	171	973	1,156	168	139	23	43.1	4.4	15.5	1	269.4
2013	651	732	1,493	126	183	30.6	37	7.7	44.4	7.3	331.2
2014	329	162	781	386	91.8	82.3	27.8	13.7	32.8	7.5	191.4
2015	70	12	472	159	45.4	36.9	32.3	6.6	23.2	3.5	86.1
2016	123	53	488	31	53.8	20.5	15.6	3.7	17.0	9.2	81.5
2017	49.7	66.2	309.1	24.2	26.5	15.9	8.4	4.6	13.1	4.7	52.5
2018	77.6	173.7	257.6	21.8	31.1	19.6	11.2	3.4	7.1	1.2	60.4
2019	62.2	70.4	193.3	15.6	25.3	13.1	10.5	3.2	20.3	4.3	41.8
2020	66.6	26.3	111.9	8.5	14.0	8.2	4.3	3.8	6.7	1.9	25.2
2021	27.39	17.11	37.45	11.02	15.25	6.17	9.61	5.72	11.91	3.02	14.5
2022	19.66	18.27	135.15	14.17	41.74	5.81	27.17	1.34	11.85	8.44	28.4
2023	60.70	26.41	98.15	10.00	11.82	6.07	10.23	3.17	13.29 ⁴	1.55	24.1
2024	13.12	31.54	56.36	12.16	10.58	11.44	5.73	2.13	8.91	3.65	16.9
2025	7.42	66.46	48.39	-. ⁵	12.94	-	-	-	10.83	3.34	24.9

¹ Order of plots indicate increasing distance from SHTC (Plot 11 [100 m] to Plot 71 [21 km]). ² No animals were collected for tissue samples. ³ n.d. - Not Detected. Average values calculated based on ½ the reported detection limit. ⁴ Re-extraction result = 14.7 pg/g. ⁵ Plots 110, 123, 117, and 402 were dropped as part of the annual monitoring program in 2025 and instead will now be included as part of subsequent expanded monitoring programs.

Table 5. TEQ of dioxin/furan congeners (pg/g) in red-backed voles collected from the SHTC study area, 2000 - 2025.

Year	Plot ¹										Averages
	11	109	4	110	114	123	117	402	70	71	
2000	2,200	4,200	4,900	820	600	700	230	7.2	37	20	1,371.4
2001	230	1,100	3,800	160	340	350	440	0.76	2.9	1.2	642.5
2002	1,460	1,750	2,450	26.4	553	593	391	19.8	2.6	1.6	724.7
2003	1,200	1,490	3920	28.6	682	321	89.2	0.7	3.1	0.3	773.5
2004	416	187	2,190	99.5	262	126	31.7	0.79	1.5	0.27	331.5
2005	187	465	754	- ²	104	48.8	17.5	0.81	2	0.43	157.8
2006	3,071	219	2,851	32.5	154	109	19.2	2.2	0.5	1.1	646.0
2007	421	765	885	14	283	274	21	4	3	2	267.2
2008a ³	310	110	830	14	58	87	44	3.6	3.4	0.92	146.1
2008b ⁴	200	71	530	11	40	56	30	2.8	4.5	0.94	94.6
2009	217	81	241	7	24	36	3	1	2	0	61.2
2010	366	100	88	32	58	8	7	1	3	0	66.3
2011	19.3	53.4	234	104	8.6	4.5	2.2	1.3	2	0.4	43.0
2012	21.2	185.0	223.6	27.56	19.69	4.48	6.84	0.76	2.94	0.18	49.2
2013	121.2	129.5	197.7	17	20.3	4	3.8	0.5	4.8	1.4	50.0
2014	53.9	22.2	133	81.3	13.0	12.1	2.92	1.4	2.81	0.803	32.3
2015	7.26	1.62	75.9	19.2	4.66	5.01	4.04	0.565	2.59	0.378	12.1
2016	14.8	6.54	80.8	3.4	5.59	2.79	1.73	0.488	1.97	0.745	11.9
2017	5.38	8.71	46.8	4.27	3.03	1.99	0.70	0.53	1.94	0.55	7.4
2018	10.8	25.9	35.9	3.15	3.16	3.42	1.4	0.79	1.55	0.31	8.6
2019	9.86	10.9	33.7	2.54	3.7	2.19	1.39	0.435	3.05	0.65	6.8
2020	10.2	4.32	19.0	1.43	2.1	1.39	0.70	0.516	1.65	0.364	4.2
2021	4.44	2.43	5.79	1.5	1.65	0.77	1.33	0.461	1.69	0.45	2.1
2022	3.03	2.86	12.8	2.19	5.81/0.27 ⁵	1.04	3.97	0.201	2.04	0.284	3.4
2023	8.72	4.28	15.4	1.91	2.02	1.16	1.34	0.557	2.39 ⁶	0.274	3.8
2024	2.22	4.72	8.6	1.78	1.51	1.97	0.84	0.285	2.27	0.698	2.7
2025	1.00	8.75	6.23	- ⁷	1.78	-	-	-	1.78	1.72	3.3

¹ Order of plots indicate increasing distance from SHTC (plot 11 [100 m] to plot 71 [21 km]). ² No animals were collected for tissue samples. ³ Between 2000 and 2008a, dioxin and furan TEQs calculated based on NATO I-TEFs (1990). ⁴ From 2008b and onwards, dioxin and furan TEQs calculated based on WHO (2005). ⁵ September 2022 result. ⁶ Re-extraction result = 1.93 pg/g. ⁷ Plots 110, 123, 117, and 402 were dropped as part of the annual monitoring program in 2025 and instead will now be included as part of subsequent expanded monitoring programs.

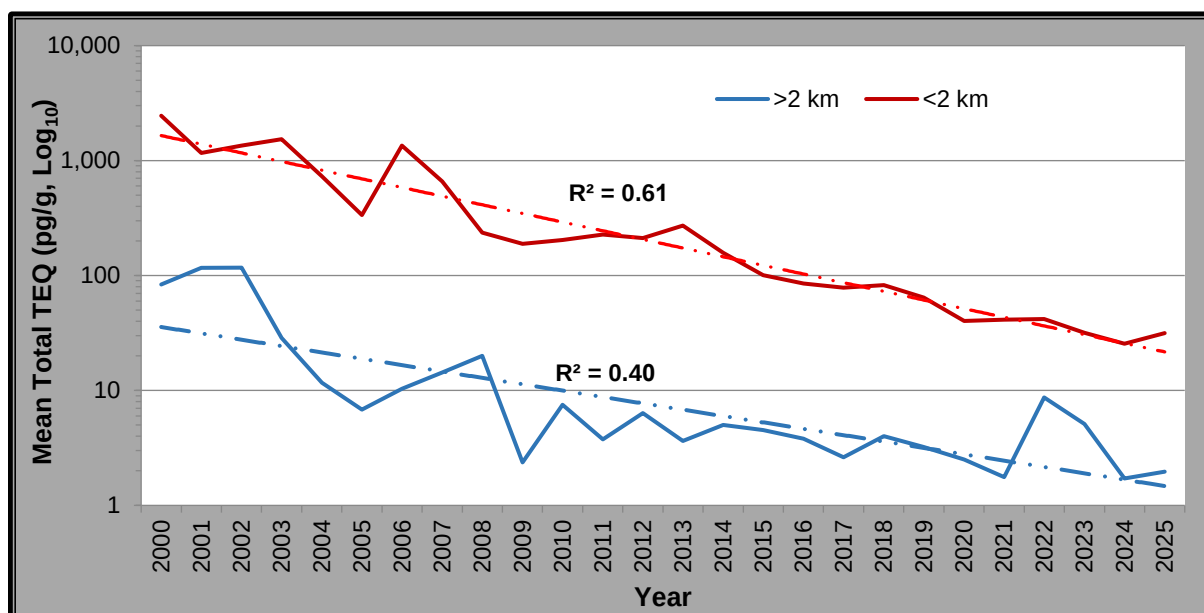


Figure 3. Mean total TEQ concentrations at plots ≤ 2 km and > 2 km from the SHTC, 2000 - 2025.

Table 6. Comparison of average PAH concentrations (mg/kg) between the 2019 and 2025 expanded monitoring years at plots in the SHTC study area.

Plot ¹	Total PAH Concentrations (mg/kg)			% Change Between	
	2019 ²	2024 ²	2025 ³	2019-2024	2024-2025
11	0.01415	0.0998	0.992	605	894
109	0.01323	0.0972	1.598	635	1,544
4	0.01431	0.07357	1.893	414	2,473
110	0.01326	0.07246	- ⁴	447	-
114	0.01384	0.10515	1.043	660	892
123	0.01507	0.12491	-	729	-
117	0.0137	0.16145	-	1,079	-
402	0.01266	0.04876	-	285	-
70	0.01479	0.09956	1.143	573	1,048
71	0.01308	0.10174	0.698	678	586
Totals	0.13809	0.98460	7.364	613	648

¹ Order of plots indicate increasing distance from the SHTC (plot 11 [100 m] to plot 71 [21 km]). ² N=78 analytes analyzed. ³ N=52 analytes analyzed. ⁴ Plots 110, 123, 117, and 402 were dropped as part of the annual monitoring program in 2025 and instead will now be included as part of subsequent expanded monitoring programs.

Table 7. Comparison of population and chemical data collected at the 3 annual monitoring plots in the vicinity of the SHTC, 2025.

Parameter		Plot 11	Plot 114	Plot 70
Distance to SHTC plant site (km)		0.1	0.7	11.5
Direction to SHTC plant site		Upwind (N)	Downwind (SE)	Upwind (SW)
Population Data	June population density (no./ha)	6.3	4.9	7.6
	September population density (no./ha)	26.4	23.6	41.0
	June sex ratio (M:F)	3.5	2.5	1.8
	September sex ratio (M:F)	0.4	0.4	0.6
	% voles in heavy weight class in June	89	86	73
	% voles in heavy weight class in Sept.	18	21	22
	% heavy voles breeding in June	78	71	55
	% heavy voles breeding in Sept.	18	18	20
Chemical Data	PCB congeners (pg/g) in May	9,630	37,600	420
	Dioxins/furans (pg/g) in May	7	13	11
	PCB TEQ (pg/g) in May	4	16	0.15
	Dioxin/furan TEQ (pg/g) in May	1	2	2
	Total TEQ (pg/g) in May	5	18	2.15
	PAHs (mg/kg) in May	0.993	1.0343	1.143

¹ Not detected

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1

1.0 INTRODUCTION

The Swan Hills Treatment Centre (SHTC) is a fully integrated hazardous waste treatment facility located in west central Alberta, approximately 12 km northeast of the Town of Swan Hills. It is the only facility of its kind in Canada and one of only a few in the world. The SHTC plays a major role in the disposal of hazardous waste such as polychlorinated biphenyls (PCBs) and dioxins and furans (which for the most part, is a contaminant in many of the wastes received at the facility). The SHTC also has the capability to treat a wide range of hazardous waste types on-site including fuel blend liquids, paint related materials, pesticides, halogenated and non-halogenated organic liquids, pharmaceuticals, bulk solids, gas plant filters, inorganic aqueous liquids and lab packs. The SHTC also began accepting biomedical waste in July 2015 but does not accept or treat radioactive or explosive wastes.

An integrated environmental monitoring program involving ambient air quality, surface and groundwater, soils, vegetation, and wildlife was initiated at the SHTC in 1986. The wildlife monitoring program, which focuses on the southern red-backed vole (*Myodes gapperi*), has been modified on several occasions in response to changing priorities. These modifications involved the consolidation of some monitoring sites and the addition of others along with increasing the scope of the chemical analyses and reducing the number of plots used for vole tissue collection and population monitoring. With this new protocol, there was a requirement that the wildlife monitoring program be expanded to include plots monitored prior to 1999 at 5-year intervals. The expanded wildlife monitoring program was subsequently conducted in 2004, 2009, 2014, 2019, and most recently, in 2024. In 2006, the collection period for vole tissues was changed from February and June to a single collection period conducted only in May of each monitoring year. However, as has been the case since the beginning of the monitoring program, vole population monitoring has still been conducted in June and September.

The southern red-backed vole was selected as the indicator species for the wildlife monitoring program because of its relative abundance near the SHTC and its sedentary nature, which allows information obtained through the study of these animals to be related to specific locations within the study area. The wildlife monitoring program involves studies to determine the demographic characteristics of red-backed voles and the collection of animals to determine concentrations of chemicals (PCBs and dioxins/furans and periodically, other

potential contaminants such as metals and polycyclic aromatic hydrocarbons (PAHs) in their tissues. The following report presents the results of the 2025 wildlife monitoring program.

2

2.0 METHODS

2.1 Scope of the Monitoring Program

Since the red-backed vole monitoring program was intended to be adaptive, the program has been previously modified based on changing priorities, monitoring results, changes in the facility's waste stream, and/or updates to analytical methodologies over time since 1986. These modifications involved the consolidation of some monitoring sites and the addition of others. Changes to the monitoring program, which involved altering the stratification of study plots, were made in June 1996 in response to an air quality assessment for PCB emissions that was conducted in 1994. In addition, forest clearing, which was implemented as a fire protection measure around the SHTC, resulted in the loss of 2 monitoring plots in spring 1998.

The monitoring program was again modified in 2000 to focus sampling on the types of chemicals previously detected in the SHTC study area. As a result, the number of plots used for both vole population monitoring and vole tissue collection for tissue analysis was reduced, while the scope of the chemical analyses was increased. Prior to 2000, population monitoring was conducted on 13 plots but was reduced to 3 plots (plots 11, 114, and 70) in 2000. In addition, the size of the 3 annually monitored plots was increased from 1.1 ha to 1.44 ha, 2 of which were relocated. Plots 11 and 70 were relocated approximately 250 m south and 750 m north of their previous locations, respectively, to sites used by the Institute for Risk Research in response to a field study conducted in 1999. In addition, plot 71 was moved approximately 2 km closer to the SHTC because the original monitoring site was clearcut in 2015.

The scope of the tissue chemistry component was also changed. Prior to 2000, organic analyses focused on Aroclor PCBs, which were analyzed in voles collected from between 21 and 32 different plots. The number of plots used for tissue analysis was reduced in 2000 to 10 plots but at that time, analyses for PCB congeners, and dioxins and furans were expanded to include voles from all the 10 annually monitored plots. Part of the new monitoring protocol required that monitoring be expanded every 5 years to include the plots sampled prior to 1999 ($n = 24$). The expanded sampling protocol has since been conducted in 2004, 2009, 2014, 2019, and again in 2024. In addition, chemicals other than PCBs and dioxins/furans (e.g., metals, PAHs) in vole tissues have only been periodically analyzed since 2004. A further change in sampling protocol was made in 2006, when tissue collection was conducted only in May. In previous years, red-backed vole tissues were collected in February and June.

Beginning in 2008, the basis for calculating congener PCB, and dioxin and furan toxicity equivalencies (TEQ) was changed. Mammalian toxicity equivalency factors (TEFs) for compounds exhibiting dioxin-like characteristics were updated by the World Health Organization in 2005 (WHO 2005). These new TEFs were used to calculate PCB and dioxin and furan TEQs in vole tissue samples collected in 2009 and have been used as the new benchmark for all chemical monitoring at the SHTC since then. Then in 2017, the analysis for Aroclor PCBs in vole tissues was dropped from the annual monitoring program and shifted to the expanded monitoring program. Previous results from the SHTC study area have indicated that while measured concentrations of PCBs can vary between the Aroclor and high-resolution mass spectrometry (HRMS) methods, the HRMS method is considered more accurate because results are not affected by weathering and the effects of metabolic activity.

Based on a review of long-term data (38 years) for the SHTC wildlife monitoring program, recommendations were made in the 2023 annual monitoring report (WMC 2024) where sampling effort of the expanded monitoring program would be reduced to focus on the 3 annually monitored population plots (plots 11, 114, and 70) and the 10 annually monitored tissue collection plots (plots 11, 114, 70, 4, 109, 110, 117, 123, 70 and 71) (Table 2-1). While vole populations and tissue contaminant levels have varied over the years, there was no indication that SHTC operations affected red-backed vole demography despite elevated chemical levels in vole tissues at plots close to the facility. Even though concentrations of PCB TEQs and dioxin/furan TEQs were, for the most part, at historically low concentrations, the continued presence of elevated contaminants in voles collected near the SHTC indicates that there is still a need to continue monitoring vole demography and tissue chemistry.

Therefore, changes to the vole monitoring program were adopted for the 2024 expanded monitoring program and onward (Table 2-1). If warranted in the future (e.g., facility upset event), plots previously part of the expanded monitoring program (10 population and 24 tissue collection plots) would be sampled based on key trigger responses developed for red-backed voles. Consequently, the 2024 expanded wildlife monitoring program was focused on demographic studies of voles on 3 live-trapping plots in June and September while concentrations of Aroclor PCBs, PCB congeners and TEQs, dioxin/furan congeners and TEQs, total TEQs, metals and PAHs were determined for animals collected from 10 plots in May (Table 2-1). Voles would continue to be archived for a 5-year period to provide tissue reference material if required. The annual monitoring program will now be comprised of 3 population monitoring plots and 6 tissue collection plots (4 experimental and 2 control/reference plots) beginning in 2025 (Table 2-1).

Table 2-1. Summary of previous and current annual/expanded red-backed vole monitoring programs.

Plot No.	Distance from SHTC the (km)	Direction from the SHTC	Tissue Collection/Snap-trapping ¹			Population Monitoring/ Live-trapping ¹
			Metals, PAHs ¹	Aroclor PCBs ²	PCB Congeners and TEQs, Dioxins/Furans and TEQs, Total TEQs ³	
Previous Annual and Expanded Monitoring Programs (Prior to 2024):						
11	0.1	N	✓	✓	☑	☑
109	0.2	W	✓	✓	☑	✓
103	0.2	SE	✓	✓	-	✓
4	0.3	E	✓	✓	☑	✓
110	0.3	W	✓	✓	☑	-
104	0.4	NW	✓	✓	-	-
102	0.4	E	✓	✓	-	-
1	0.4	NE	✓	✓	-	✓
27	0.5	S	✓	✓	-	✓
8	0.6	E	✓	✓	-	✓
15	0.6	NW	✓	✓	-	-
114	0.7	E	✓	✓	☑	☑
121	1.2	N	✓	✓	-	-
9	1.4	ENE	✓	✓	-	✓
28	1.4	WNW	✓	✓	-	-
123	1.6	NE	✓	✓	☑	-
16	2.4	E	✓	✓	-	-
117	2.4	SE	✓	✓	☑	-
26	2.6	WNW	✓	✓	-	✓
30	3.6	NW	✓	✓	-	✓
29	3.9	E	✓	✓	-	-
402	7.5	E	✓	✓	☑	-
70	11.5	SW	✓	✓	☑	☑
71	21.0	NNW	✓	✓	☑	✓
Current Annual and Expanded Monitoring Programs (2024 and Onward):						
11	0.1	N	✓	✓	☑	☑
109	0.2	W	✓	✓	☑	-
4	0.3	E	✓	✓	☑	-
110	0.3	W	✓	✓	✓	-
114	0.7	E	✓	✓	☑	☑
123	1.6	NE	✓	✓	✓	-
117	2.4	SE	✓	✓	✓	-
402	7.5	E	✓	✓	✓	-
70	11.5	SW	✓	✓	☑	☑
71	21.0	NNW	✓	✓	☑	-

¹ Bold boxed check marks ☑ indicate plots that are monitored annually for vole tissue collection and population studies. Plain check marks ✓ indicate plots that are part of the expanded monitoring program (i.e., once every 5 years). ² The low resolution GC-ECD method historically used for Aroclor PCBs was discontinued in Canada in 2019. ³ HRMS congener-specific methodology would be used for all expanded monitoring plots in response to a red-backed vole trigger.

2.2 Red-backed Vole Population Monitoring

Red-backed vole population studies were conducted on 3 live-trapping plots from June 11 - 15 and from September 10 - 14, 2025 (Figure 2-1). Two of the plots (plots 11 and 114) are located near the SHTC while the control or reference site (plot 70) is located near the Town of Swan Hills. Each plot was comprised of 64 trapping stations (8 x 8 grid) spaced at 15 m intervals (1.44 ha). A non-folding Sherman aluminum live trap (7.62 cm x 7.62 cm x 22.86 cm) was placed at a suitable location (e.g., beside a fallen log, along a small mammal runway, close to a small mammal tunnel) within 1.5 m of the station marker. Traps were baited with a mixture of peanut butter and rolled oats. Polyester fibre bedding material was placed in each trap to protect animals from adverse weather conditions but replaced if soiled during each trap check. To further reduce trapping mortality, each trap was also provided with a small piece of potato to serve as a source of moisture and a teaspoon of meal worms as a food source for non-target species such as shrews while traps were covered with natural materials, such as bark or moss, to provide additional protection from inclement weather. Traps were also checked twice daily, once in the morning and once in the evening for 5 consecutive nights.

At first capture, red-backed voles were marked with a uniquely numbered aluminum ear tag, and the following information was recorded: tag number, date/time of capture, plot and station numbers, sex, weight, reproductive condition, and comments (e.g., external abnormalities, stress at release, etc.). The reproductive condition of males was determined by the position of the testes (abdominal or scrotal), whereas that of females was determined by the condition of the nipples (not visible, visible, lactating) and the vagina (perforate or imperforate). Only tag numbers were recorded for second and subsequent captures of each tagged animal. For other incidentally captured non-target animals, only species, date, and capture location were recorded and if alive, the animals were released.

2.3 Red-backed Vole Tissue Collection and Analysis

Red-backed voles were collected for tissue analyses using wooden Victor metal pedal snap traps at the 6 plots located in the vicinity of the SHTC from May 19 and continued to May 21, 2025 (Table 2-1, Figure 2-1). The snap traps were baited with a mixture of rolled oats and peanut butter and placed along logs, runways or near the entrances to vole tunnels and were checked once daily. Where tissue collection was associated with a population monitoring plot, snap traps were placed at least 100 m from the population monitoring plot in similar habitat. Snap-trapping was continued until a minimum of 2 and a maximum of 6 voles/plot were collected to ensure sufficient tissues were collected for lab analysis.

Collected voles were placed in 120 ml clear glass jars with Teflon-lined lids, which were labelled with the following information: capture date and location, specimen number, sex,

reproductive condition, and body weight. This information was also recorded in field books and on Specimen Collection Forms. Collected animals were kept frozen until submitted to the ALS Canada Ltd. for chemical analyses of congener PCBs, PCB TEQs, dioxin/furan congeners, dioxin/furan TEQs, total TEQs, and PAHs (Appendix 1). Results of all chemical analyses were reported as wet weight. Where possible, 6 whole body adult voles (3 males and 3 females) were composited (or homogenized) from each plot prior to chemical analysis to minimize within and between-year variability. An aliquot of the homogenate was then used for each type of tissue analysis conducted.

As in previous annual monitoring years, 2 types of PCB analyses were conducted in 2025 which are briefly summarized below:

- **Congener Specific PCB Analysis** – This method involves quantitative determination of virtually all 209 PCB congeners using HRMS. The method also provides an estimate of PCB concentration based on the sum of homolog groups. The congener specific analysis is more sensitive and has much lower detection limits than the Aroclor PCB method. Detection limits are typically in the parts per trillion (ppt) or picograms per gram (pg/g) range for individual congeners. In addition, the method provides a more accurate assessment of PCB concentrations in environmental samples, as it does not rely on comparison to an Aroclor standard. The 2025 analysis included 162 PCB congeners, including PCBs that co-elute.
- **Toxic PCBs (PCB Toxic Equivalency [TEQ])** – This term is used to describe a group of 12 PCB congeners that exhibit dioxin-like activity. These congeners are included in the congener specific PCB analysis but are discussed separately because of their recognized toxicity. Toxicity equivalency factors (TEFs) have been developed by the World Health Organization (WHO) to express the toxic potential of each congener relative to 2,3,7,8 tetrachlorodibenzo-p-dioxin. The combined PCB toxicity of these compounds is expressed as PCB TEQ and can be added to the dioxin/furan TEQ to provide a total TEQ estimate for each plot.

In addition, a statistical background subtraction calculation on the congener-specific PCB results was performed in the past (1997 – 1999) to eliminate bias originating from background and laboratory sources. However, beginning in 2000, Alberta Environment requested that this calculation not be used. Consequently, all congener PCB data have since been based on the raw, unadjusted results. Efforts were also made during laboratory analysis to ensure that the TEQ is not unduly elevated by the presence of non-toxic PCB congeners that may co-elute with toxic ones. This is particularly important for PCB 126, which has the highest TEF and therefore, typically has the largest impact on the TEQ values. An additional step can be undertaken by the laboratory, where warranted, in which the non-toxic PCB congeners are removed from the sample extract prior to re-analysis. This reduces the potential impact from congeners at higher levels of chlorination that may co-elute with PCB 126, and occasionally

PCB 169. The need for this additional clean-up step for PCB TEQ is recommended by the laboratory following their review of the results.

For dioxins and furans, the analysis is conducted using HRMS. The results are converted to a 2,3,7,8 tetrachlorodibenzo-*p*-dioxin TEQ using TEFs that were developed for dioxin and furan congeners. In 2005, the WHO adopted new TEFs for assessments of potential toxicity on mammals. Historically, dioxin/furan TEQs were calculated using the original NATO I-TEFs that were adopted by Canada in 1990 (NATO 1988). A decision was made during the 2008 SHTC annual technical review meeting to update the dioxin/furan assessment by employing the most recent and scientifically defensible TEFs. It was recognized that this may create some issues regarding monitoring of historical trends based on overall dioxin/furan TEQ values.

To address these issues, the following data interpretation approach was adopted in 2008:

- Congener PCB and dioxin/furan TEQs were calculated using historical TEFs as well as the new WHO (2005) TEFs;
- Differences in TEQ resulting from application of the updated TEFs were discussed;
- Potential trends in congener PCB, dioxin and furan TEQ tissue levels were evaluated using historical TEFs; and
- A new benchmark for future monitoring was established in 2008 based on the application of the new WHO 2005 TEFs.

Therefore, from the 2009 monitoring year and onward, the new TEFs (WHO 2005) were used for calculating PCB and dioxin/furan TEQs.

2.4 Quality Assurance/Quality Control

To ensure quality control in the wildlife monitoring program, the following field procedures were followed:

- The effect of tissue collection on red-backed vole demography was reduced by collecting voles for tissue analyses near, but not on the population monitoring plots.
- Animal contact during tissue collection was minimized by handling voles only when they were first captured. Collected animals were only handled by personnel wearing disposable surgical gloves, which were discarded after each plot was checked.
- Voles collected for tissue analyses were immediately placed in clear glass jars, sealed, and cooled. These jars were labelled in the field to minimize the likelihood of samples being allocated to wrong plots. The sample jars were transported to a freezer, usually within 3 h of capture, and frozen for transport to the laboratory.

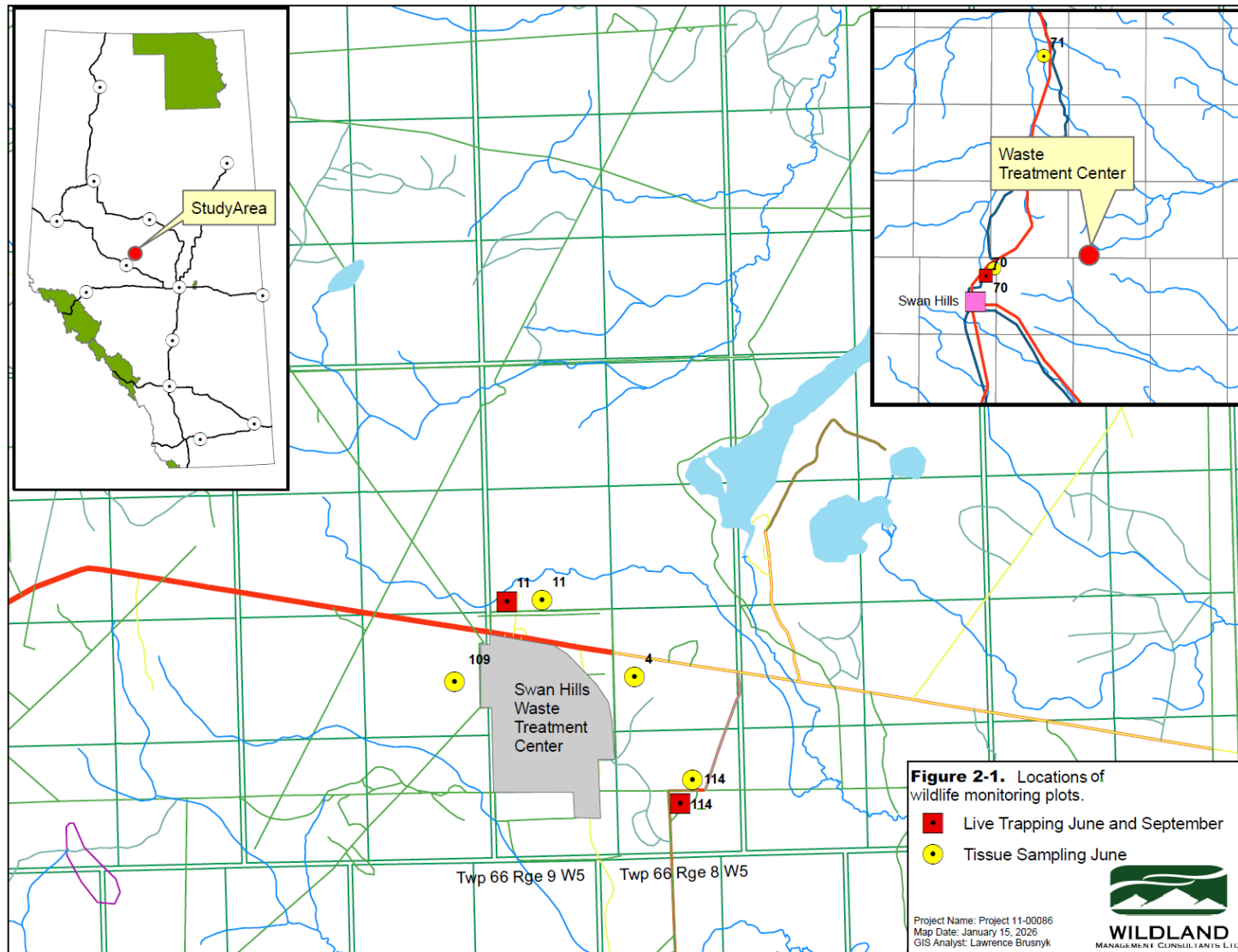


Figure 2-1. Location of plots sampled during the 2025 annual wildlife monitoring program in the vicinity of the SHTC.

- When possible, duplicate samples of voles would be submitted if sufficient animals (i.e., >6 voles) were available from a single plot. However, this would only occur during relatively high population years and would avoid plots where information on vole demography is collected (plots 11, 114, and 70). During years when duplicate samples were not available, a laboratory duplicate, and a method blank were prepared and analyzed along with the samples. The duplicate provides information regarding the precision of the testing, which is affected by sample homogeneity, as well as analytical reproducibility. The method blank provides information regarding potential bias due to laboratory background. Since PCBs are ubiquitous in the environment, when analyzing at ppt levels, some background PCBs will be detected. The reference method USEPA 1668C provides guidance on acceptable levels. In addition, any potentially elevated sample data are identified in the Certificate of Analysis report. A duplicate sample would provide a better estimate of variability from a single site than having the lab split a homogenized sample.
- Specimens were stored in frozen condition until they were submitted to the ALS Canada Ltd. for tissue analysis. The submission was accompanied by the appropriate chain of custody forms.

ALS Canada Ltd was selected for the SHTC environmental monitoring program because of their expertise and long-term experience in the analysis of organic chemicals. ALS Canada Ltd. is accredited with the Standards Council of Canada, American Industrial Hygiene Association, and Agriculture Canada. All aspects of organic analyses were conducted according to standard methods of the United States Environmental Protection Agency and American Society for Testing and Materials. Quality control was ensured by using surrogates, which involves spiking some of the tissue to be analyzed with a known compound and confirming the level of extraction.

2.5 Wildlife Research Permit and Collection License

As in previous monitoring years, a wildlife research permit and collection license (No. 25-341) was obtained from Alberta Environment and Protected Areas (AEPA) to conduct the 2025 SHTC wildlife monitoring program (Appendix 2). The research permit and collection license are required under Alberta's *Wildlife Act* and authorizes the holder to possess and collect wildlife for research or education purposes (GoA 2026). In the case of the SHTC wildlife monitoring program, Alberta Wildlife Animal Care Committee Class Protocol #007 was followed (GoA 2005). In addition, because of high small mammal mortality rates (primarily red-backed voles and shrews) in 2023 and 2024, several additional food items were added to each live trap including small pieces of potato for moisture and 1 teaspoon of meal worms. All field data collected under the wildlife research permit and collection license was entered into the appropriate load forms and submitted to the Fish and Wildlife Management Information System maintained by AEPA (Fish and Wildlife Stewardship Branch) along with the appropriate project completion forms.

2.6 Data Analysis

Live-trapping data collected during 2025 were analyzed using methods similar to those in past monitoring years in the SHTC study area (e.g., Penner 1994, Wildland Management Consultants Ltd. 2014). Red-backed vole abundance was estimated by 2 methods: capture rate (no. of captures/100 trap nights) and the minimum method. The capture rate, which was corrected for traps that had been triggered/robbed or had captured non-target animals (Nelson and Clark 1973), is primarily a measure of trapping efficiency and provides only a crude estimate of abundance. To determine the number of trap nights at each plot, the total number of trap nights for June and September 2024 (960 for each session) was adjusted by assuming that traps that had been triggered/robbed or were otherwise inoperable were unavailable to capture voles for the interval between trap checks, resulting in corrected trap night totals of 917 for both the June and September live-trapping sessions. In comparison, the minimum method, is simply the minimum number of animals known to be alive during each trapping session (Fuller 1969) and describes abundance in terms of density (no./ha). Minimum population estimates are directly comparable to the estimation methods used prior to 1994 (Penner 1994).

Vole survival was calculated as the mean 14-day survival rate between trapping sessions, using the formula:

$$\text{Survival} = e^{[\ln N(t+1) - \ln N(t)] \times 14 / dt}$$

where $N(t)$ is the number of animals known to be alive during period t , $N(t+1)$ is the number captured during period t that are still alive during the previous trapping session, and dt is the interval between the 2 trapping sessions. Use of the 14-day survival rate allows a direct comparison of survival among different time intervals.

All chemical concentrations and detection limits were obtained from the Certificate of Analysis report prepared by ALS Canada Ltd. In the case of average chemical concentration calculations, one-half the detection limit was used for any non-detections. In addition, the results of the tissue analysis were used to determine the effects of distance and direction from the SHTC on chemical concentrations in vole tissues. The effect of distance and direction of each plot from the SHTC on PCB, dioxin and furan, and total TEQ concentrations in red-backed vole tissues was determined using multiple regression analysis. For the purposes of this analysis, all monitoring plots south or east of the SHTC were considered downwind, whereas plots located north or west of the SHTC were considered upwind. Prior to analysis, data were normalized using a $\log_{10}$ transformation. The equation used in the analysis was (Kleinbaum and Kupper 1978):

$$Y = B_0 + B_1(\text{Distance}) + B_2(\text{Direction}) + B_3(\text{Direction} \times \text{Distance})$$

where Y is the concentration of PCB, dioxins/furans, and total TEQ in red-backed vole tissues.

In this type of regression, “Direction” is a qualitative explanatory variable (i.e., a factor), with categories upwind and downwind. The dummy variable is a regressor, representing the factor “Direction”. In the resultant analysis, “Direction” indicates that the intercept of the regression differs between the upwind and downwind categories, whereas significance in the interaction term (Direction x Distance) indicates a difference in slope between the 2 categories (upwind and downwind). Thus, if the interaction term is significant, the equation is partitioned into 2 linear regression equations, 1 for the upwind and 1 for the downwind sector. However, if the dummy variable is significant while the interaction is not, the equation is treated as an analysis of covariance.

3

3.0 RESULTS

3.1 Live-trapping Effort and Success

Only 27 red-backed voles were captured 61 times in 917 trap nights during the June 2025 live-trapping program (Table 3-1). Shrews (*Sorex spp.*) and red squirrel (*Tamiasciurus hudsonicus*) were also captured (Table 3-1) in June accounting for 17.8% of the total number of small mammal captures. Small animal captures were higher in September where 131 red-backed voles were captured 257 times in 917 trap nights (Table 3-1). Other small mammals captured in September (9.8% of the total number of captures) also included the shrew and red squirrel as well the least weasel (*Mustela nivalis*) (Table 3-1). Overall, 140 red-backed voles were captured 345 times in 1,834 trap nights during the 2025 live-trapping program while other species accounted for 14.2% of the total small mammal captures (Table 3-1)

Table 3-1. Summary of small mammal captures during the 2025 expanded wildlife monitoring program in the SHTC study area.

Species	June			September			Totals		
	No. Individuals	Total Captures	% Mortality	No. Individuals	Total Captures	% Mortality	No. Individuals	Total Captures	% Mortality
Red-backed Vole	9	88	5.7	131	257	15.2	140	345	12.8
Shrew <i>spp.</i>	18	18	44.4	33	26	78.8	54	54	64.8
Least Weasel	0	0	0	1	1	100.0	1	1	100.0
Red Squirrel	1	1	0.0	1	1	100.0	2	2	50.0

Trapping mortalities (i.e., expressed as the number of animals found dead in live traps/capture event) of red-backed voles in both June and September 2025 were 5.7% and 15.2%, respectively (Table 3-1). The average trapping mortality rate for red-backed voles in 2025 was 12.8%/capture event, slightly higher than the range of 4 to 12% annual mortality rates reported since 1992 except for 2010 when a high of 15.7% was recorded. It should be noted, however, that during the 2 5-day capture-mark-recapture sessions in 2025 (June and September), 140 unique red-backed voles were captured in 345 capture events. A total of 44 unique individuals died because of live-trapping which represents a 31.4% individual-based mortality rate. Both approaches to presenting trapping mortalities address different questions. For example, exposure-based mortality which has been used since the mark-recapture live-

trapping sessions began in 1986 indicates the probability of death per capture/handling exposure. This approach represents captures as exposures to trap conditions and handling and allows for reasonable comparisons between trapping sessions/years with different recapture rates or population densities. In comparison, animal-based mortality or the minimum % of individuals that died focuses on the proportion of unique voles handled that died during the live-trapping session. This is a conservative approach that represents the risk to animals since each animal is counted once.

Overall, red-backed voles that died during the June and September 2025 live-trapping sessions weighed slightly less (mean = 16.4 g) on average than those that survived (mean = 18.1 g). The average weight of voles that died in 2025 was similar to most previous monitoring years where voles with lower body weights tended to be more susceptible to trapping mortality than heavier animals. However, sample sizes for vole mortalities were generally smaller than for those animals that were alive.

The average mortality rate for non-target species (which was simply presented as animal-based mortality as described above) in 2025 was 67%, slightly higher than that recorded in 2024 (63%), lower than that recorded in 2023 (78%), but at the higher end of the range reported between 2013 and 2021 (range = 28.6% - 69.9%). During 2025, the mortality rates of non-target small mammals was recorded for shrews (67%, $n = 34$), least weasel (100%, $n=1$), and red squirrel (50%, $n = 2$) (Table 3-1). In previous monitoring years, high mortality rates for non-target species were usually associated with shrews, typically ranging from 65% to 100%, which was similar to that recorded in 2025.

3.2 Demographic Characteristics of Red-backed Vole Populations

3.2.1 Abundance

Minimum method estimates indicated that red-backed vole populations increased at all 3 plots between June 2024 and June 2025 (Figure 3-1). The largest increase occurred at plot 114 (0.7 to 4.9 voles/ha or 600%) followed by plots 11 (2.1 to 6.3 voles/ha or 200%) and 70 (3.5 to 7.6 voles/ha or 117%) (Table 3-2, Figure 3-1). The average population density for the 3 plots increased 198% from 2.1 voles/ha in June 2024 to 6.3 voles/ha in June 2025 (Table 3-2, Figure 3-1).

The relative abundance of red-backed voles among plots as indicated by the minimum method and catch/unit effort were significantly different ($P = 0.02$, two-sample t -test) from each other in June 2025 (Table 3-2). While both methods indicated similar trends in vole populations (i.e., increases at all 3 plots), catch/unit effort values were lower by approximately 50% at each of the 3 plots than what was calculated for the minimum method (Table 3-2).

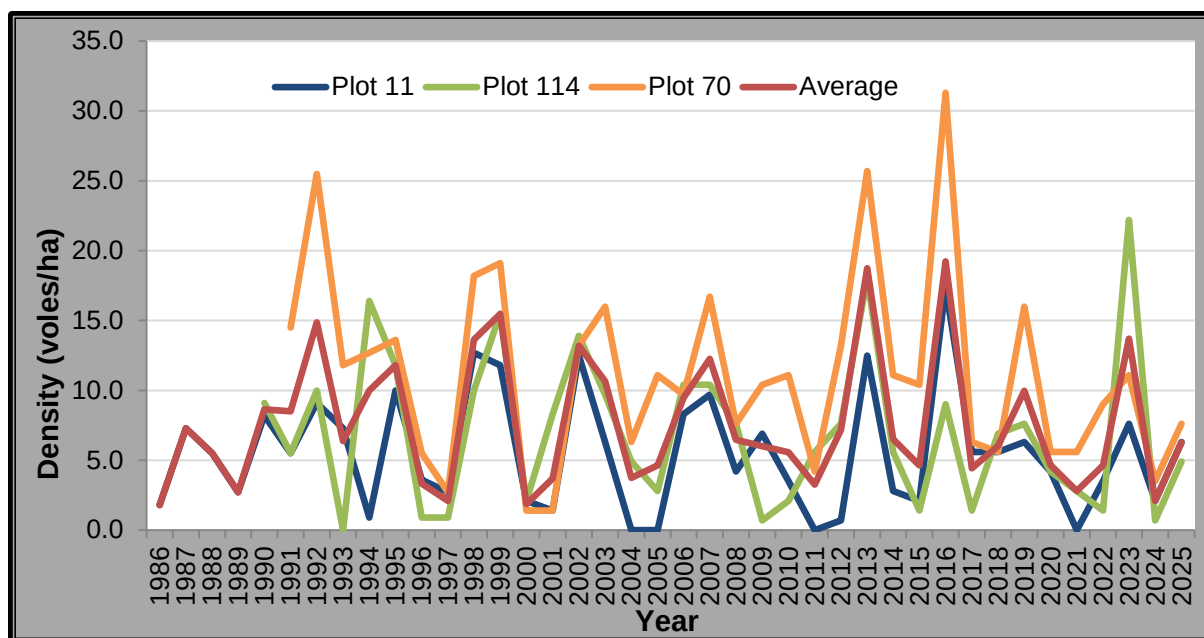


Figure 3-1. Red-backed vole densities for annually monitored plots in the SHTC study area, June 1986 - 2025.

Table 3-2. June and September red-backed vole population estimates for the 2025 annual monitoring program in the SHTC study area.

Plot	Distance from the SHTC (km)	Direction from the SHTC	June		September	
			No./100 TN ¹	Minimum No./ha	No./100 TN	Minimum No./ha
11	0.1	N	2.9	6.3	12.1	26.4
114	0.7	E	2.3	4.9	11.5	23.6
70	11.5	SW	73.6	7.6	19.2	41.0
Averages			2.9	6.3	14.3	30.3

¹ TN – Trap nights for capture rate.

In September, minimum method estimates indicated that vole populations in the SHTC area also increased at the 3 live-trapping plots between 2024 and 2025 (Table 3-2, Figure 3-2). Like previous monitoring years vole densities at plot 70 were the highest in 2025, followed by plots 11 and 114 (Table 3-2). Overall, the average density for these 3 plots increased (1,344%) from 2.1 voles/ha in September 2024 to 30.3 voles/ha in September 2025. Vole densities at the 3 plots were within the ranges previously recorded in the SHTC area (Figure 3-2).

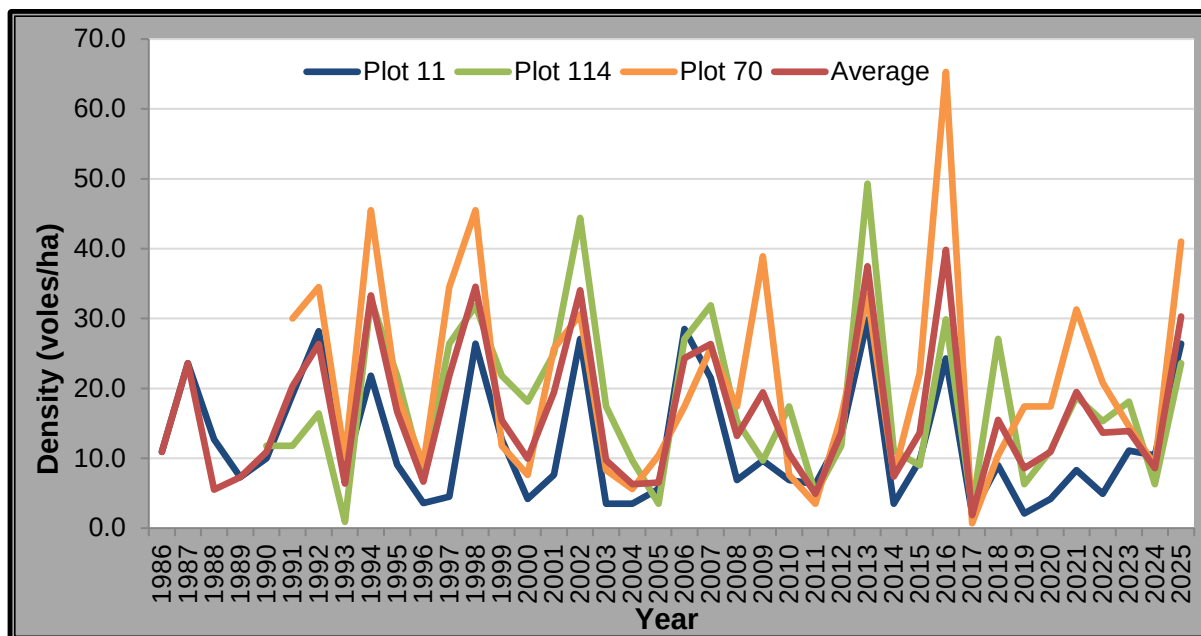


Figure 3-2. Red-backed vole densities for annually monitored plots in the SHTC study area, September 1986 - 2025.

As in June, the abundance of voles in September 2025 also varied by calculation method. Catch/unit effort was consistently lower by about 50% than that indicated by the minimum method across the 3 annually monitored plots and was statistically different based on a two-sample t-test ($P = 0.032$) (Table 3-2). Plot 70 had the highest density and catch/unit effort while plots 11 and 114 were lower. The average abundance of voles as indicated by the minimum method (30.3 voles/ha) was higher than that indicated by catch/unit effort (2.1/100 trap nights) (Table 3-2) in September 2025.

Based on population trends recorded since 1986 at the 3 annually monitored plots, vole populations in the SHTC study area have fluctuated widely with peak numbers occurring about every 3 - 5 years (Figures 3-1 and 3-2). However, population trends have occasionally differed among plots, particularly in June. For instance, between June 1993 and June 1994, and again between June 1998 and June 1999, vole populations at plot 11 declined while populations increased at plots 70 and 114 (Figure 3-1). This also occurred at plot 114 in 2009 and 2010 and again between 2021 and 2022. Furthermore, vole densities have periodically been very low, particularly at plot 11 in 2004, 2005, 2011, and again in 2021 when no voles were live trapped in June (Figure 3-1). This only occurred once at plot 114 (1993) but has not occurred at plot 70 since monitoring began.

In comparison, September vole populations at the 3 plots have tended to be more synchronous over the years (Figure 3-2). However, like June, some differences in vole densities among the plots were apparent over time. For instance, plot 70 had the highest densities during population peaks until 1998. In contrast, peaks in 2002, 2007 were highest

at plot 114. In 2009, this was most apparent with the large increase in vole density at plot 70 while densities at the remaining 2 plots decreased (plot 114) or increased slightly (plot 11). Recently, vole populations have been more synchronous in both June and September between 2011 and 2018. In 2014, vole populations at plots 11, 70, and 114 all exhibited declines from population highs observed in 2013 in June and September but began increasing in 2015 to another peak in 2016 and then a subsequent decline to a population low in 2017. Similarly, in September 2019, vole populations at plots 11 and 114 declined while the voles at plot 70 increased. In September 2021, vole populations at all 3 plots increased followed by a decline in 2022 (Figure 3-2). In comparison, vole populations increased at all 3 plots in June 2023 (Figure 3-1) and at plots 11 and 114 in September (Figure 3-2). Vole densities at plot 70 have continued to decline following a peak density in 2021 (Figure 3-1). Unlike June, voles have been captured at all 3 plots in September during every monitoring year with exception of plot 114 in 1993 and plot 70 in 2017 when densities approached 0 (e.g., 0.9 and 0.7 voles/ha, respectively) (Figure 3-2).

Although the reasons for these inconsistencies are unclear, they likely reflect differences in habitat structure among the 3 plots and therefore, their ability to support voles under variable weather conditions and different levels of predation and food supply. Populations have typically been higher at plot 70 (farthest from the SHTC) in both June and September than at plots 11 and 114 since monitoring began. June peak vole populations at plot 70 varied from highs of between 10.7 to 31.3/ha and lows of 1.4 to 6.3/ha. In comparison, peak populations in September at plot 70 have ranged from 30.0 to 65.3 voles/ha while previously, low populations have ranged from 5.6 to 10.0 voles/ha. From a habitat standpoint, plot 70 is the most structurally diverse (i.e., well-developed ground, shrub, and tree cover) of the 3 monitoring plots. However, the effects of forest fires that occurred during the summer of 2023 on vole demography is unclear but may have affected vole densities, particularly at plot 70.

In contrast, vole densities have ranged from a high of 20 to 49.3 voles/ha to a low of 0.0 to 10.0 voles/ha at plots 11 and 114, both of which are characterized primarily by black spruce with relatively open shrub and ground layers dominated by Labrador tea and feather moss. It is interesting to note however, that the vole density at plot 11 was the same as the density at plot 70 in June 2018 and that vole densities at all 3 plots were similar in 2020. Historically, vole densities at plot 11 have typically been lower than the other 2 plots while densities at plot 70 have been higher. However, the highest vole densities in June 2024 occurred at plot 70 followed by plot 11 while plot 114 had the lowest density (Figure 3-2). In comparison, the highest September vole density was recorded at plot 11, followed by plots 70 and 11, unlike September densities in most previous monitoring years (Figure 3-2). Figure 3-3 depicts the

combined historical densities for June and September further illustrating the relative synchronicity of vole populations in the SHTC study area.

3.2.1 Sex Ratios

Overall, the sex ratio for voles captured in June 2025 favoured males (2.4 males/female) and unlike most previous monitoring years was the fourth highest recorded since 1986 (Table 3-3). The largely male-dominated population was a result of more males captured at plots 11 (3.5 males/female) and 114 (2.5 males/female). In comparison, the average sex ratio for voles in September 2024 favored females (0.5 males/female) reflecting the predominance of females (0.4 males/female) at both plots 11 and 114 although the sex ratio at plot 70 was only slightly higher (0.6 males/female) (Table 3-3).

Previous monitoring indicates that sex ratios of red-backed voles in the SHTC area often differ between June and September (e.g., Penner 1994, Westworth Associates Environmental Ltd. 1999). Between 1986 and 2025, males are usually more prevalent on average, than females in the June population (1.6 males/female) across the 3 annually monitored plots, whereas in September, the dominant sex has differed among years although the average sex ratio for September approaches equilibrium (1.1 males/female).

Table 3-3. Sex ratios (no. of males/female) of red-backed voles recorded on annually monitored plots in the SHTC study area, June and September 1986 - 2025.

Year	June				September			
	Plot 11	Plot 114	Plot 70	Average	Plot 11	Plot 114	Plot 70	Averages
1986	2M ¹	- ²	-	2M	0.2	-	-	0.2
1987	3.0	-	-	3.0	0.5	-	-	0.5
1988	1.0	-	-	1.0	1.8	-	-	1.8
1989	0.5	-	-	0.5	1.7	-	-	1.7
1990	2.0	2.0	-	2.0	1.2	3.0	-	1.9
1991	0.5	5.0	2.2	1.8	1.1	1.6	1.7	1.5
1992	4.0	1.8	1.2	1.6	0.9	1.6	1.0	1.1
1993	7.0	n/a ³	0.9	1.7	0.5	1F	0.8	0.6
1994	1M	1.3	1.4	1.4	1.2	1.0	0.9	0.6
1995	2.0	1.2	1.8	1.6	0.2	0.4	0.9	0.5
1996	1.0	1M	1.0	1.2	1.0	3.0	2.0	0.8
1997	3M	1M	2.0	1.3	1.5	1.5	0.9	1.2
1998	1.8	0.8	1.7	1.4	1.0	0.5	0.8	0.7
1999	3.3	0.7	1.3	1.2	1.8	0.7	3.3	1.2
2000	2.0	2.0	2F	1.0	6M	0.9	0.6	0.8

Year	June				September			
	Plot 11	Plot 114	Plot 70	Average	Plot 11	Plot 114	Plot 70	Averages
2001	2M	1.2	2M	2.0	0.4	0.3	0.2	0.3
2002	1.6	1.2	1.4	1.4	0.8	2.5	1.3	1.4
2003	0.5	1.8	1.3	1.2	4M	1.6	2.0	2.0
2004	n/a	1.3	1.3	1.3	4.0	0.4	1.0	1.8
2005	n/a	1.0	1.7	1.5	7.0	0.3	2.3	2.1
2006	1.8	1.1	3.7	1.9	0.6	1.1	0.6	0.8
2007	1.1	0.9	2.2	1.5	0.8	0.5	1	0.7
2008	5.0	0.8	1.8	1.5	0.1	0.8	0.9	0.7
2009	1.0	1F	2.0	1.5	1.0	0.3	2.1	1.0
2010	1.0	3M	1.5	1.8	1.0	0.3	2.1	1.0
2011	n/a	3.0	5.0	3.7	0.5	0.5	0.7	0.5
2012	1F	2.7	2.8	2.4	0.8	1.0	1.2	1.0
2013	1.3	1.7	1.6	1.5	1.8	1.4	1.1	1.4
2014	0.3	1.7	2.2	1.4	4.0	1.0	0.8	1.9
2015	2.0	1.0	1.5	1.5	0.8	2.2	1.1	1.4
2016	1.3	5.5	1.0	1.3	0.8	0.9	1.1	1.0
2017	0.3	2F	0.5	0.4	3M	0.3	1F	1.0
2018	1.0	0.7	3.0	1.2	2.3	1.2	0.4	1.0
2019	1.3	4.5	2.3	2.3	3M	8.0	0.9	1.6
2020	1.0	0.5	7.0	1.5	5.0	3.0	2.1	2.6
2021	n/a	1.0	3.0	2.0	1.0	0.7	0.6	0.6
2022	0.7	2M	0.9	1.0	2.5	1.2	0.4	0.8
2023	2.7	0.7	1.3	1.0	1.0	1.2	2.0	1.2
2024	3M	1F	4.0	3.5	0.9	0.5	0.3	0.5
2025	3.5	2.5	1.8	2.4	0.4	0.4	0.6	0.5

¹ M, F- single sex captures are denoted as M (male) and F (female). ² Plots not sampled. ³ n/a - no voles captured at this plot.

3.2.2 Weight Classes

Earlier monitoring studies in the SHTC study area assigned voles to age classes based on body weight but analyses by Westworth Associates Environmental Ltd. (1999, 2004) indicated that body weight may be a poor indicator of age which can provide misleading results with respect to breeding status and age structure. Consequently, voles were categorized only based on weight classes since 2007. Voles weighing <13 g were classified as light (formerly 'juveniles'), those weighing 13 - 18 g were classified as moderate (formerly 'sub-adults'), while those weighing >18 g were classified as heavy (formerly 'adults').

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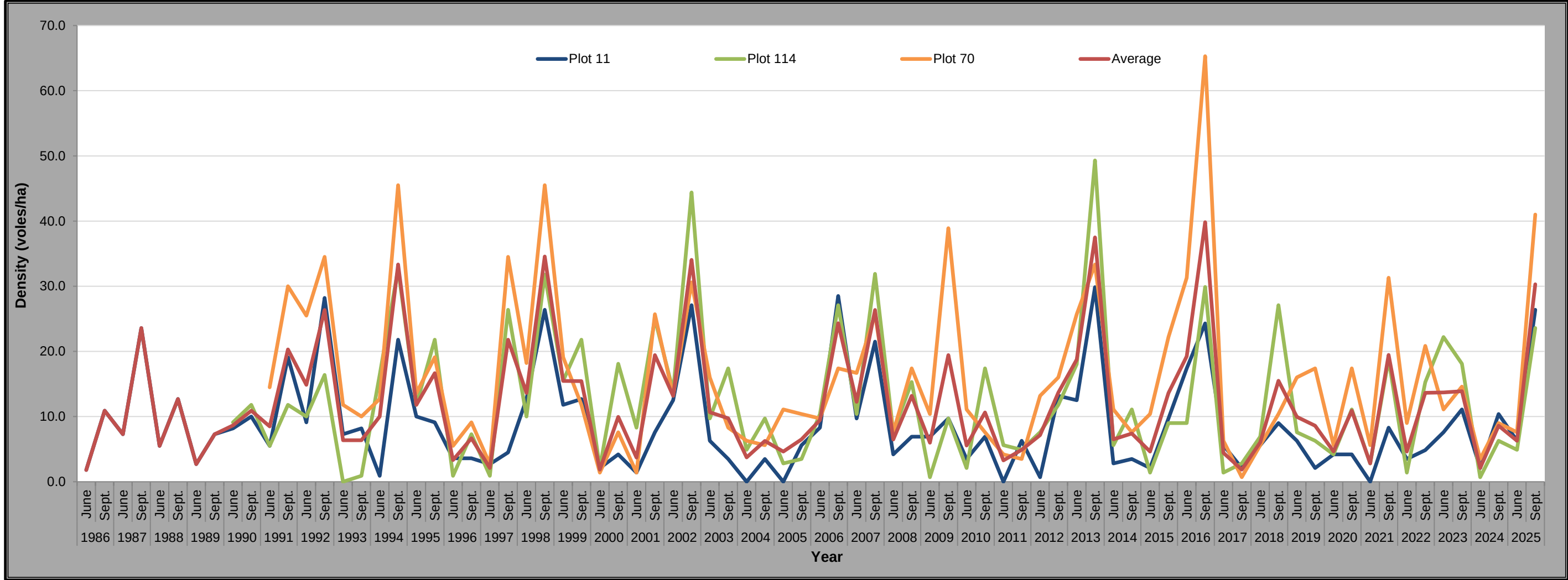


Figure 3-3. Combined historical densities for June and September illustrating the relative 3 – 5 year synchronicity of vole populations in the SHTC study area, 1986 – 2025.

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Using these criteria, 83% of the June 2025 vole population consisted of “heavy” animals. By comparison, only 11% were composed of “moderate” individuals and 6% of the animals in the lightweight class were captured in June (Figure 3-4). On an individual plot basis, 89%, 86%, and 73% of the voles captured on plots 11, 114, and 70 in 2025 were classed as “heavy”, respectively (Figure 3-4). These results are similar, for the most part, to the weight class profiles recorded in previous monitoring years (Figure 3-4). “Heavy” voles have typically comprised an average of 40 to 100% of the June population during most years, while “moderate” voles have ranged between 0 and 58%. “Light” voles generally make up <15% of the population in June although in 1994, “light” voles comprised 46% of the voles captured in that monitoring year (Figure 3-4). The higher ratio of “heavy” to “light” weight voles is typical in June (Figure 3-4) and reflects the predominance of heavier, over-wintered voles.

In September 2025, voles in the “heavy” weight class accounted for only 20% of the animals captured across the 3 monitoring plots, considerably less than the “moderate” category (74%) and more than the “light” vole class (5%) (Figure 3-5). On an individual plot basis, voles characterized as “heavy” comprised 18% of the voles captured at plot 11 with slightly higher percentages of “heavy” voles captured at plots 114 (21%) and 70 (22%) in 2025 (Figure 3-5). Historically, most individuals in September populations are usually in the “moderate” weight class, with fluctuating proportions of individuals in the “heavy” and “light” weight classes. Weight class profiles for individual plots in 2025 were like those in previous years (Figure 3-5), reflecting the predominance of individuals in the “moderate” weight class.

3.2.3 Reproduction

Overall, 63% of males and 75% of females in the heavy weight class were in breeding condition in June 2025 like previously recorded ranges (Table 3-4). The percentage of individuals in the heavy weight breeding class in June is usually high, with overall averages for both sexes typically >70% for most years but percentages of breeding voles can be highly variable among plots (0 - 100%) and between sexes (Table 3-4). No trends in reproductive condition of voles were apparent with respect to distance from the SHTC in June 2025.

Overall, 30% of male and 16% of female voles in the heavy weight class were in breeding condition in September 2025 like previously recorded ranges (Table 3-5). Overall, breeding individuals in the heavy weight class in September have also been highly variable (0 – 100%) among plots and across years (Table 3-5). Two factors likely account for the variable breeding rates: (1) numbers in the heavy weight class is usually low since a larger proportion of the population is comprised of light to moderate voles (i.e., young-of-the year), which increases variability, and (2) the timing of September monitoring occurs after the main breeding season (early June - late August) which affects the number of reproductive voles captured. No trend in vole reproductive condition was apparent with respect to distance from the SHTC in September 2025.

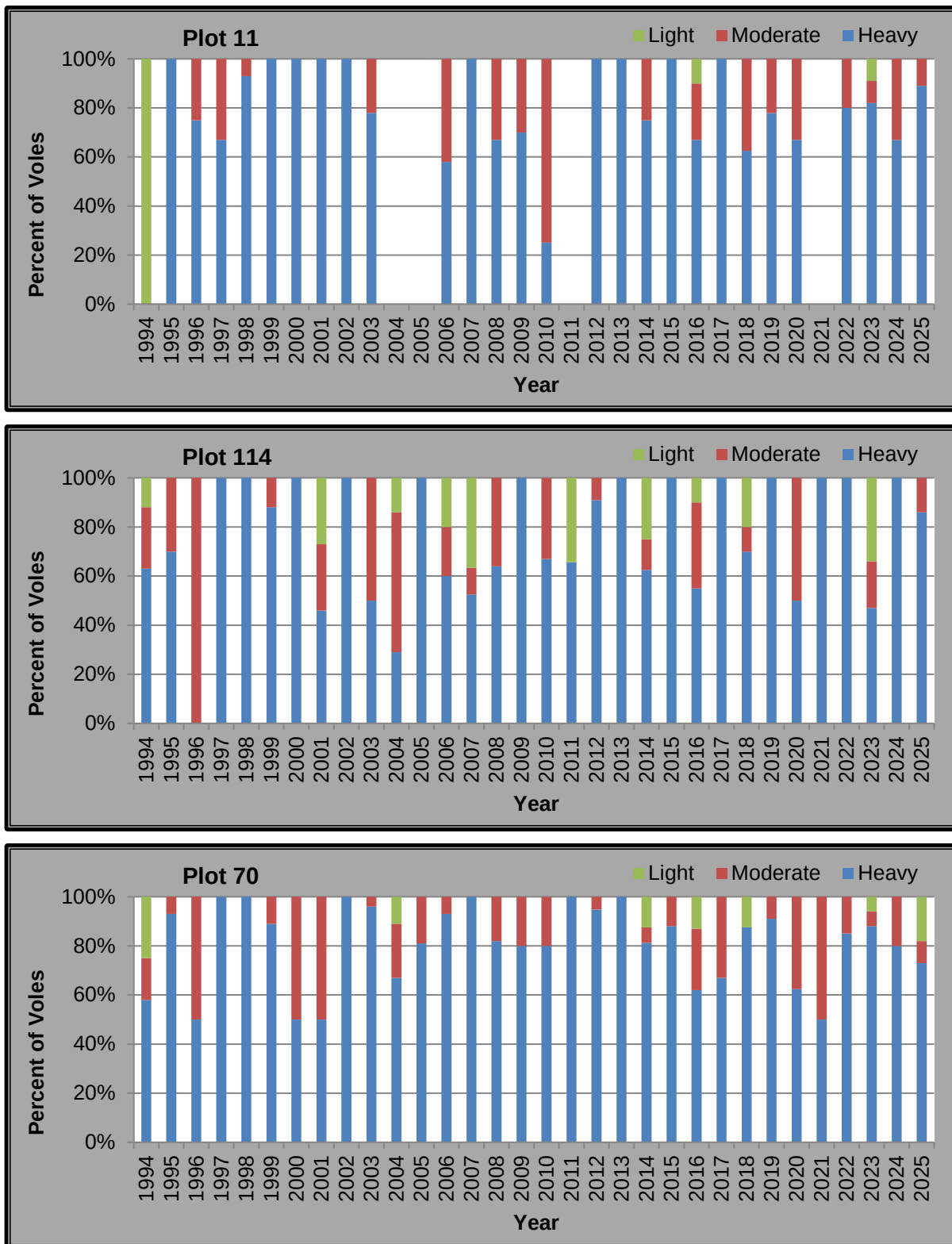


Figure 3-4. June weight classes of red-backed voles at 3 plots monitored annually in the SHTC area between 1994 and 2025.

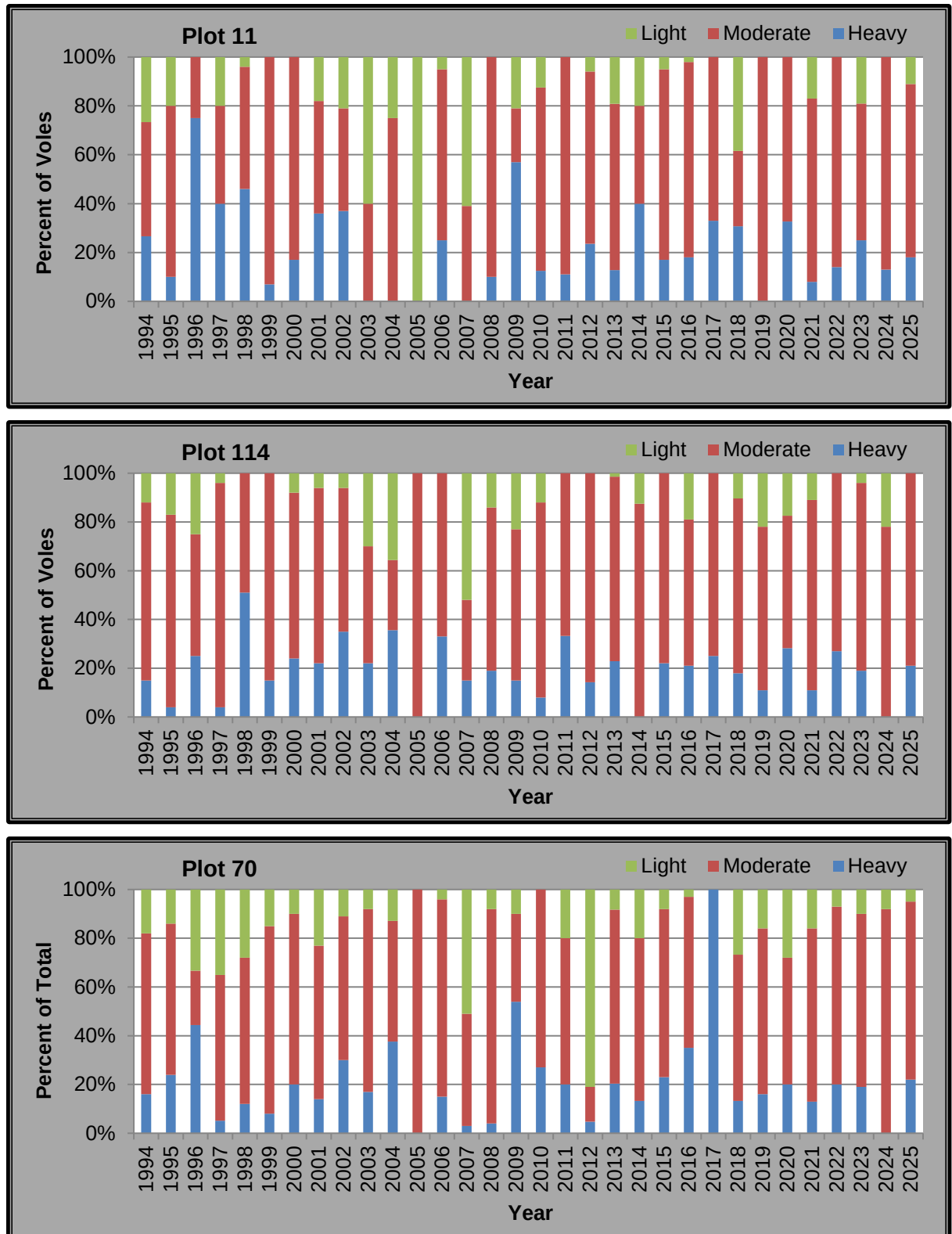


Figure 3-5. September weight classes of red-backed voles at 3 plots monitored annually in the SHTC study area between 1994 and 2025.

Table 3-4. Percentages of red-backed voles in the heavy weight class breeding on annually monitored plots in the SHTC study area, June 1986 - 2025.

Year	Sex	Plot 11		Plot 114		Plot 70		Overall	
		No.	% Breeding	No.	% Breeding	No.	% Breeding	No.	% Breeding
1994	Male	0	0	7	43	4	25	11	36
	Female	0	0	3	67	3	100	6	83
1995	Male	5	80	3	33	8	25	16	44
	Female	3	100	4	50	5	80	12	75
1996	Male	2	100	0	0	2	100	4	100
	Female	1	100	0	0	1	100	2	100
1997	Male	2	100	2	100	5	100	9	100
	Female	0	0	0	0	0	0	0	0
1998	Male	9	78	5	100	12	83	26	85
	Female	5	20	6	83	7	100	18	72
1999	Male	10	100	6	100	8	100	24	100
	Female	3	100	9	56	8	88	20	75
2000	Male	2	100	2	50	1	100	5	80
	Female	1	0	1	100	0	0	2	50
2001	Male	2	100	3	100	1	100	5	100
	Female	0	0	2	100	0	0	2	100
2002	Male	11	100	11	100	11	100	33	100
	Female	7	100	9	78	8	100	24	96
2003	Male	3	100	9	100	13	100	25	100
	Female	6	83	4	80	9	90	18	86
2004	Male	n/a ¹	n/a	1	100	2	50	3	60
	Female	n/a	n/a	1	100	2	100	3	100
2005	Male	n/a	n/a	2	100	8	80	10	83
	Female	n/a	n/a	2	100	4	67	6	75
2006	Male	4	75	6	50	10	70	20	65
	Female	3	67	3	67	3	67	9	67
2007	Male	8	100	4	67	21	95	33	92
	Female	7	100	6	86	7	70	20	83
2008	Male	3	100	2	100	5	100	10	100
	Female	0	0	2	40	3	75	5	50
2009	Male	4	100	0	0	7	100	11	100
	Female	3	100	1	100	5	100	6	100
2010	Male	0	0	0	0	4	50	4	40

Year	Sex	Plot 11		Plot 114		Plot 70		Overall	
		No.	% Breeding	No.	% Breeding	No.	% Breeding	No.	% Breeding
2011	Female	1	100	0	0	2	50	3	60
	Male	n/a	n/a	6	67	5	60	11	64
	Female	n/a	n/a	2	100	1	100	3	100
2012	Male	0	0	7	100	13	85	20	85
	Female	1	100	3	100	5	100	9	100
2013	Male	10	40	14	7	22	41	46	30
	Female	8	25	9	33	12	42	29	34
2014	Male	0	0	2	67	6	86	8	80
	Female	1	50	2	100	3	60	6	67
2015	Male	2	100	1	100	6	86	9	90
	Female	1	100	1	100	5	83	7	88
2016	Male	11	79	5	46	19	86	35	75
	Female	5	46	2	100	15	65	22	61
2017	Male	0	0	0	0	1	33	1	20
	Female	3	50	2	100	3	50	8	57
2018	Male	3	75	3	75	6	100	12	86
	Female	3	75	4	67	1	50	8	58
2019	Male	5	100	6	67	16	100	27	90
	Female	2	50	1	50	4	57	7	54
2020	Male	2	67	0	0	4	57	6	50
	Female	2	67	3	75	1	100	6	75
2021	Male	0	0	2	100	5	83	7	75
	Female	0	0	2	100	0	0	2	50
2022	Male	2	100	2	100	4	67	8	80
	Female	1	33	0	0	7	100	8	80
2023	Male	7	88	5	39	6	67	18	57
	Female	3	100	9	47	6	86	18	62
2024	Male	2	67	0	0	2	50	4	57
	Female	0	0	1	100	0	0	1	50
2025	Male	5	71	3	60	4	57	12	63
	Female	2	100	2	100	2	50	6	75

Table 3-5. Percentages of red-backed voles in the heavy weight class breeding on annually monitored plots in the SHTC study area, September 1986 – 2025.

Year	Sex	Plot 11		Plot 114		Plot 70		Overall	
		No.	% Breeding	No.	% Breeding	No.	% Breeding	No.	% Breeding
1994	Male	3	67	3	33	3	33	9	44
	Female	5	40	2	50	4	75	11	55
1995	Male	0	0	1	100	4	0	5	0
	Female	1	100	0	0	1	100	2	100
1996	Male	1	100	2	100	2	100	5	100
	Female	2	100	0	0	2	100	4	100
1997	Male	1	100	0	0	0	0	1	100
	Female	1	50	1	100	2	50	4	67
1998	Male	7	29	5	20	8	25	20	25
	Female	6	33	13	8	6	17	25	16
1999	Male	2	0	2	50	1	0	5	20
	Female	0	0	1	100	0	0	1	100
2000	Male	1	0	2	0	0	0	3	0
	Female	0	0	4	75	2	0	6	50
2001	Male	0	0	1	100	0	0	1	100
	Female	4	100	7	86	5	80	16	94
2002	Male	4	50	15	7	7	14	26	15
	Female	10	40	7	29	6	50	23	39
2003	Male	4	0	14	7	8	25	26	12
	Female	0	0	9	44	4	50	13	46
2004	Male	0	0	0	0	0	0	0	0
	Female	0	0	0	0	0	0	0	0
2005	Male	0	0	0	0	0	0	0	0
	Female	0	0	0	0	0	0	0	0
2006	Male	3	75	5	83	1	100	9	82
	Female	5	83	2	29	3	100	10	63
2007	Male	0	0	3	75	0	0	3	75
	Female	0	0	2	50	1	100	3	60
2008	Male	0	0	0	0	0	0	0	0
	Female	0	0	0	0	0	0	0	0
2009	Male	0	0	0	0	0	0	0	0
	Female	1	0	3	0	1	0	4	0
2010	Male	0	0	0	0	2	67	2	50
	Female	1	0	1	100	0	0	2	50

Year	Sex	Plot 11		Plot 114		Plot 70		Overall	
		No.	% Breeding	No.	% Breeding	No.	% Breeding	No.	% Breeding
2011	Male	3	67	2	50	2	50	7	57
	Female	6	0	4	25	3	0	13	0
2012	Male	1	100	0	0	0	0	1	100
	Female	2	67	1	50	1	100	4	67
2013	Male	2	50	7	0	4	0	13	8
	Female	4	50	9	44	6	67	19	53
2014	Male	0	0	0	0	1	100	1	100
	Female	0	0	0	0	2	67	2	67
2015	Male	0	0	0	0	0	0	0	0
	Female	0	0	0	0	1	20	1	14
2016	Male	3	20	3	15	5	10	12	14
	Female	3	15	4	17	5	11	11	13
2017	Male	0	0	1	100	0	0	1	25
	Female	0	0	1	33	0	0	1	25
2018	Male	2	22	1	5	1	25	4	12
	Female	1	25	0	0	0	0	5	15
2019	Male	0	0	2	25	1	8	3	21
	Female	0	0	0	0	3	23	3	23
2020	Male	2	40	1	25	3	18	6	18
	Female	0	0	1	13	2	25	3	23
2021	Male	0	0	0	9	3	19	3	9
	Female	1	50	2	13	3	10	6	10
2022	Male	2	40	3	25	4	44	9	35
	Female	0	0	1	10	1	5	2	6
2023	Male	2	25	0	0	1	7	3	9
	Female	2	25	3	12	1	14.3	6	22
2024	Male	0	0	0	0	0	0	0	0
	Female	2	25	1	17	0	0	3	13
2025	Male	2	18	2	20	7	30	13	30
	Female	5	19	4	17	5	14	14	16

3.2.1 Survival

The September 2024 to June 2025 survival rate could not be calculated for the 3 population plots since no previously tagged voles were known to have over-wintered during this period (Table 3-6). Typically, overwinter survival rates are low because of the long interval (274

days) between the 2 trapping sessions which would have reduced the likelihood of recapturing tagged animals in June 2025.

Red-backed voles are short-lived with a maximum lifespan of 1 year (Boonstra and Krebs 2011). Consequently, their entire breeding lifespan typically occurs over 1 season (March – October). Average overwinter survival (when it could be calculated) has ranged from 0.64 to 0.96 (Table 3-6) in the past and is typically higher when previous September vole populations are higher. No voles that were tagged in June 2025 were captured again in September 2025.

Historical data indicate that overwinter survival is typically higher than survival over the summer since voles are more exposed to predators and weather conditions (cool and rain/wet snow conditions) during the snow-free period. When survival rates could be calculated (Table 3-6), the mean September to June (1987-2025) survival is 0.88, whereas the mean June to September (1987-2025) survival is only 0.65 at the 3 annually monitored plots.

Table 3-6. Intercession 14-day survival rate of red-backed voles in the SHTC study area, 1987 - 2025.

Year	Plot 11 ¹		Plot 114		Plot 70		Overall	
	June	September	June	September	June	September	June	September
1987	npc ²	0.79	-	-	-	-	npc	0.79
1988	npc	ns ³	-	-	-	-	npc	ns
1989	0.92	1.00	-	-	-	-	0.92	1.00
1990	npc	ns	npc	0.79	-	-	npc	0.73
1991	npc	ns	0.9	0.71	npc	ns	0.87	0.53
1992	npc	ns	0.89	0.71	0.9	ns	0.89	0.65
1993	npc	ns	npc	ns	npc	ns	npc	ns
1994	0.86	ns	npc	0.67	npc	ns	npc	0.49
1995	1.06 ⁴	ns	0.86	ns	0.92	0.68	0.92	0.54
1996	npc	ns	npc	ns	npc	ns	npc	ns
1997	npc	ns	npc	1.00	npc	ns	npc	0.52
1998	npc	ns	0.77	0.87	0.75	0.88	0.88	0.62
1999	0.87	ns	0.9	ns	0.82	ns	0.9	ns
2000	npc	ns	npc	ns	npc	ns	npc	ns
2001	0.96	ns	npc	ns	npc	ns	0.96	ns
2002	0.86	0.54	0.93	0.56	0.86	0.53	0.89	0.54
2003	0.96	ns	0.97	0.62	0.93	ns	0.94	0.57
2004	npc	npc	npc	ns	npc	ns	npc	ns
2005	npc	npc	npc	ns	npc	0.65	npc	0.63

Year	Plot 11 ¹		Plot 114		Plot 70		Overall	
	June	September	June	September	June	September	June	September
2006	npc	0.75	npc	ns	npc	0.82	npc	0.74
2007	0.87	0.64	0.93	0.53	0.94	0.55	0.93	0.58
2008	npc	ns	0.9	ns	0.86	ns	0.87	ns
2009	npc	ns	npc	ns	npc	0.81	npc	0.68
2010	npc	ns	0.94	0.71	0.92	ns	0.95	0.71
2011	npc	npc	npc	ns	npc	ns	npc	ns
2012	npc	1.00	npc	0.68	npc	0.74	npc	0.81
2013	0.91	0.72	0.87	0.68	0.93	0.74	0.91	0.72
2014	npc	0.82	0.62	npc	0.73	0.75	0.64	0.72
2015	npc	0.66	npc	ns	npc	0.58	npc	0.59
2016	npc	0.62	npc	ns	0.80	0.65	0.76	0.62
2017	0.93	ns	npc	ns	npc	ns	0.89	ns
2018	npc	ns	npc	ns	npc	ns	npc	ns
2019	npc	ns	0.88	ns	npc	ns	0.82	ns
2020	npc	0.76	ns	ns	npc	0.61	npc	0.61
2021	npc	ns	npc	ns	npc	ns	npc	ns
2022	npc	ns	npc	ns	npc	0.63	0.63	ns
2023	npc	ns	npc	0.65	npc	ns	0.63	ns
2024	npc	ns	npc	ns	0.92	ns	0.90	ns
2025	npc	ns	npc	ns	npc	ns	npc	ns

¹ Order of plots indicate increasing distance from SHTC (plot 11 [100 m] to plot 71 [21 km]). ² npc – A survival rate could not be calculated because there were no captures from the previous trapping session. ³ ns - Survival rates could not be calculated as no voles were known to have survived between trapping sessions. ⁴ A survival rate of greater than 1.00 resulted from the inter-plot movement of tagged animals when plot 11 was relocated.

3.3 Snap-trapping Effort and Success

Overall, 1,346 trap nights of effort were expended during the May 2025 monitoring program to capture enough voles for tissue analyses at the 6 plots (Table 3-7). Mean trapping effort in 2025 was 224 trap nights/plot, lower than the 272 trap/nights of effort recorded in May 2024 but within the historical range of effort recorded over the last 12 years (2013 to 2024, range = 74 – 280 trap nights/plot). During 2025, snap trapping effort ranged from a low of 120 trap nights at plot 70 to a high of 314 trap nights at plot 11 (Table 3-7).

Twenty-six voles were collected in 2025 for an overall capture rate of 1.9 voles/100 trap nights (Table 3-7), which was at the lower end of the range recorded over the previous 11-year monitoring period (2013 to 2024, range= 1.7 – 8.6 voles/100 trap nights). The number of voles captured at each plot ranged from 2 to 10 (mean = 4.5 voles/plot, Table 3-7). During previous monitoring years, trapping success has been highly variable in May among plots, likely

reflecting differences in habitat quality and the population phase (i.e., increasing or decreasing) although forest fires in the region also likely had some effect on vole trappability during 2023.

Table 3-7. Summary of snap trapping effort and success during the red-backed vole tissue collection program in the SHTC study area, May 2025.

Plot ¹	Trap Nights	No. of Voles	No./100 Trap Nights
11	314	2	0.6
109	296	3	1.0
4	222	10	4.5
114	234	3	1.3
70	120	6	5.0
71	160	2	1.3
Totals	1,346	26	1.9
Averages	224.3	4.5	-

¹ Order of plots indicate increasing distance from SHTC (plot 11 [100 m] to plot 71 [21 km]).

3.4 Tissue Chemistry of Red-backed Voles

3.4.1 Polychlorinated Biphenyls (PCBs)

The average concentration of congener PCBs in vole tissues across the 10 vole tissue collection plots increased (23% or 7,458 pg/g) from 29,386 pg/g in May 2024 to 39,544 pg/g in May 2025 (Table 3-8). While congener PCBs decreased at 4 plots, year-over-year increases were recorded at the remaining 2 plots, the highest increase of which occurred at plot 109 (189% or by 45,100 pg/g) followed by plot 71 (121% or 38 pg/g). Despite these increases, the average 2025 concentration across the 10 plots was still 63% lower than the 25-year average (2000 – 2024) for the SHTC study area; the fourth lowest concentration recorded since 2000 (Table 3-8).

Table 3-8. PCB congener concentrations¹ (pg/g) in red-backed voles collected in the SHTC study area, 2000 – 2025.

Year	Plot ²										Averages
	11	109	4	110	114	123	117	402	70	71	
2000	480,000	-	300,000	-	170,000	-	24,000	5,500	8,800	3,600	141,700
2001	169,000	563,000	163	28,800	466,000	32,100	34,600	1,960	1,440	479	129,754
2002	627,382	819,944	642,093	16,715	495,810	53,724	108,457	5,557	1,799	393	277,187
2003	249,000	583,000	250,000	11,500	129,000	25,100	35,300	1,330	667	199	128,510
2004	70,359	1,034,201	687,233	133,077	136,802	14,997	17,438	734	1,084	406	209,633
2005	17,865	114,298	140,940	-	34,465	7,601	8,917	953	837	455	36,259

Year	Plot ²										Averages
	11	109	4	110	114	123	117	402	70	71	
2006	203,545	254,766	867,215	17,820	143,851	9,468	34,099	2,944	2,363	1,273	153,734
2007	91,000	340,000	360,000	19,000	200,000	23,000	45,000	4,300	1,900	2,900	108,710
2008	100,000	99,000	410,000	17,000	85,000	23,000	69,000	47,000	7,200	3,800	86,100
2009	120,000	69,400	245,000	11,000	63,200	10,200	4,500	2,070	1,980	785	52,814
2010	192,000	98,800	351,000	43,500	294,000	19,300	74,900	3,530	1,680	795	107,951
2011	281,000	960,000	547,000	225,000	121,000	16,800	42,500	2,610	3,100	939	219,995
2012	181,000	815,000	357,000	136,000	250,000	27,400	45,900	6,150	1,860	1,280	182,159
2013	296,000	267,000	1,110,000	72,400	209,000	16,400	10,400	4,050	1,480	1,440	198,817
2014	114,000	115,000	399,000	105,000	263,000	19,900	42,500	4,570	935	716	106,462
2015	111,000	97,300	386,000	39,500	82,100	13,100	18,800	2,360	1,200	377	75,174
2016	90,400	87,700	429,000	21,600	86,900	11,300	33,300	2,330	770	356	76,366
2017	110,000	96,700	317,000	21,500	91,900	12,900	16,700	2,220	934	401	67,026
2018	84,200	187,000	368,000	26,400	102,000	14,300	34,500	2,470	779	888	82,054
2019	98,150	83,250	304,500	11,385	68,200	7,620	21,150	1,380	663	255	59,832
2020	63,700	60,400	161,000	7,380	45,900	12,900	17,000	1,410	533	190	37,041
2021	39,500	31,600	92,500	13,200	54,600	18,800	6,540	1,200	544	217	25,870
2022	65,200	66,100	171,000	28,000	121,000	4,650	51,600	663	471	191	50,888
2023	43,500	38,700	140,000	11,200	36,100	3,510	13,100	1,710	32,900 ³	143	32,086
2024	25,300	66,900	116,000	30,600	40,000	6,980	6,820	518	460	278	29,386
2025	9,630	112,000	77,300	- ⁴	37,600	-	-	-	420	316	39,544

¹ PCB congener concentrations are the sum of the homologues. ² Order of plots indicate increasing distance from the SHTC (plot 11 [100 m] to plot 71 [21 km]). ³ Re-extraction result = 31,700 pg/g. ⁴ Plots 110, 123, 117, and 402 were dropped as part of the annual monitoring program in 2025 and instead will now be included as part of subsequent expanded monitoring programs.

As in previous monitoring years, PCB 118 was the dominant toxic PCB congener in voles collected in May 2025, accounting for between 53% (plots 11 and 4) and 62% (plot 70) of the 12 toxic PCB congeners that contribute to PCB TEQ in vole tissues (Table 3-9). PCB 156/157 accounted for an additional 7% (plot 71) - 18% (plot 114), while PCB 105 accounted for between 9% (plot 114) - 14% (plot 109) of the total PCB TEQ concentrations. The remaining toxic PCB congeners exhibited low concentration profiles ($\leq 8.6\%$) across all plots (Table 3-9). However, despite having one of the lowest congener concentrations (0.55 – 402 pg/g) across all plots, PCB 126 contributes the most towards PCB TEQ because of its high TEF (0.1) relative to other PCB congeners (see Table 3-11).

Table 3-9. Concentrations of 12 toxic PCB congeners (pg/g) in red-backed voles in the SHTC study area, May 2025.

PCB Congener	Plot ¹									
	11	109	4	110	114	123	117	402	70	71
PCB 77	26.5	111	172	-	52.2	-	-	-	0.19	0.205
PCB 81	0.5	11.6	15.7	-	5.56	-	-	-	0.5	0.788
PCB 105	145	2820	1200	-	536	-	-	-	5.27	4.65
PCB 114	12.7	217	84.5	-	48.7	-	-	-	0.36	0.215
PCB 118	700	11000	6250		3290				26.3	19.8
PCB 123 ²	2.94	43.1	12.4	-	7.75	-	-	-	0.195	0.225
PCB 126	31.4	357	402	-	139	-	-	-	0.55	0.58
PCB 156/157	223	3120	1920	-	1060	-	-	-	3.15	4.68
PCB 167	102	1300	1010	-	511	-	-	-	3.4	2.29
PCB 169	12	95	90	-	37.5	-	-	-	0.325	0.205
PCB 189	57.9	731	589	-	286	-	-	-	2.45	0.75
Totals	1,314	19,806	11,746	- ⁴	5,974	-	-	-	43	34

¹ Order of plots indicate increasing distance from the SHTC (plot 11 [100 m] to plot 71 [21 km]). ² PCB 123 co-elutes with PCB 107 and PCB 109. ³ < = Not detected, ½ the detection limit was used to calculate totals. ⁴ Plots 110, 123, 117, and 402 were dropped as part of the annual monitoring program in 2025 and instead will now be included as part of subsequent expanded monitoring programs.

3.4.1.1 Toxic Equivalency of PCB Congeners

Between May 2024 and May 2025, PCB TEQ concentrations decreased at 4 plots and increased at the remaining 2 plots (Table 3-10), representing an overall increase in PCB TEQ of 21%. The largest percentage increases occurred at plot 114 which increased by 4.00 pg/g (or 33%), followed by plot 109 (8.10 pg/g or 24%) (Table 3-10). In contrast, PCB TEQs at the remaining plots were among the lowest recorded since 2000 with concentrations at plots 11 and 4 declining by -65% and -30% to 3.9 and 46 pg/g, respectively (Table 3-10). Both plots are 2 of the 3 plots located closest to the SHTC. The highest PCB TEQ in 2025 among the 6 plots was recorded at plot 4 (46.0 pg/g), which has been the case for all but one year (plot 109 in 2012) since 2000 (Table 3-10). Although the PCB TEQ at plot 4 was the highest recorded in 2025, it represents the lowest concentration recorded at this plot since 2000. In comparison, PCB TEQ values at plots 70 and 71 were ≤0.15 pg/g in 2025, continuing to represent the lowest levels recorded among the 6 plots during most previous monitoring years. Historically however, plot 70 (11.80 pg/g) had the highest PCB TEQ on record for this plot, likely related to the extensive wildfires and smoke that occurred in the Swan Hills region during 2023 (Table 3-10).

Table 3-10. TEQ of PCB congeners (pg/g) in red-backed voles captured in the SHTC study area, 2000 - 2025.

Year	Plot ¹										Averages
	11	109	4	110	114	123	117	402	70	71	
2000	500	-	670	-	144	-	33	1.3	6.7	0.06	193.58
2001	108	253	352	18.7	252	15	23.4	0.03	0.01	0.01	102.22
2002	241	346	461	5.1	215	22	53	0.1	0.05	0.00	134.33
2003	400	385	568	6.1	164	20.4	21.2	0.5	0.0	0.00	156.52
2004	94.8	120	836	29.5	3.35	11.5	11.8	0.01	0.02	0.01	110.70
2005	40.6	106	267	-	42.2	4.1	6.4	0.03	0.02	0.01	51.82
2006	369.9	133.2	1039.8	12.3	96.2	9.5	16.7	1.36	0.04	0.02	167.90
2007	119.6	411.2	614.2	7	152.1	18.8	26.4	0.13	0.05	0.03	134.95
2008a ²	85.49	43.97	318.3	5.65	47.07	10.71	41.43	2.4	0.49	0.24	55.58
2008b ³	84.59	42.8	319.02	5.42	45.52	10.42	40.32	2.26	0.47	0.23	55.11
2009	139.16	51.54	279.87	5.11	36.24	6.96	1.71	0.55	0.52	0.26	52.19
2010	146.72	74.46	207.07	22.1	114.18	6.05	18.93	0.02	0.01	0.00	58.95
2011	88.3	259	438	115	34.9	3.9	7.48	0.01	0.99	0.35	94.79
2012	74.2	313	294	49.3	52.2	5.31	12.7	0.99	0.49	0.00	80.22
2013	203	224	603	22.5	84.4	5.95	3.12	0.84	0.01	0.01	114.68
2014	86.4	59.4	305	115	57.6	7.57	10.6	1.0	0.28	0.25	64.31
2015	57.2	38.3	335	15.2	38.1	5.85	9.32	0.83	0.56	0.15	50.05
2016	43.5	28.4	289	6	26.1	3.9	8.62	0.54	0.30	0.13	40.65
2017	52.2	41.8	170	10.6	30.6	4.73	5.24	0.87	0.39	0.20	40.57
2018	39.4	98.4	232	8	33.8	4.42	11.4	0.73	0.27	0.36	42.88
2019	45.1	45.5	198	3.84	25.5	3.06	7.19	0.20	0.26	0.15	32.88
2020	40.4	25.9	113	2.12	18.7	3.7	5.6	0.51	0.24	0.07	21.03
2021	21.5	15.8	61.1	6.15	23	7.1	2.66	0.43	0.22	0.09	13.81
2022	25.2	23.7	111	7.62	54.4/2.4 ⁴	1.67	28.1	0.16	0.11	0.05	25.20
2023	22.5	17.7	96.5	3.7	14.4	1.25	3.7	0.33	11.8 ⁵	0.09	17.20
2024	11.1	33.9	65.3	5.69	12.3	3.10	2.26	0.205	0.24	0.154	14.90
2025	3.9	42.0	46.0	- ⁶	16.3	-	-	-	0.15-	0.055	18.07

¹ Order of plots indicate increasing distance from the SHTC (plot 11 [100 m] to plot 71 [(21 km)]. ² Between 2000 and 2008a, PCB TEQs calculated based on the WHO (1998). ³ From 2008b and onwards, PCB TEQs calculated based on the WHO (2005). ⁴ September 2022 result anomaly comparing over-wintered voles (heavier) PC TEQ to young-of year voles (lighter). ⁵ Re-extraction result = 11.8 pg/g. ⁶ Plots 110, 123, 117, and 402 were dropped as part of the annual monitoring program in 2025 and instead will now be included as part of subsequent expanded monitoring programs.

Historically, PCB TEQ concentrations have typically declined with increasing distance from the SHTC and with the exception of plot 11, the data collected in May 2025 are generally consistent with this trend (Figure 3-6). Overall, the mean PCB TEQ from plots ≤0.7 km from the SHTC (plots 11, 109, 4, 114) in 2025 was 27.05 pg/g, an increase of 5% from the 25.66

pg/g reported in 2024. In comparison, the mean concentration for plots >0.7 km away (plots 70 and 71) was 0.10 pg/g, a decrease of -91% from the 1.19 pg/g reported in 2024. PCB TEQ concentrations in voles captured within 0.7 km of the SHTC ranged from 3.90 pg/g (plot 11) to 46.00 pg/g (plot 4), while voles captured >0.7 km away had concentrations that ranged from 0.06 pg/g (plot 71) to 0.15 pg/g (plot 70) in 2025 (Figure 3-6). While it is important to note that the 2025 monitoring year (and going forward) was based on vole tissues collected from 6 plots compared to 10 plots in previous monitoring years, overall trends of PCB TEQ concentrations in relation to distance from the SHTC remained the same.

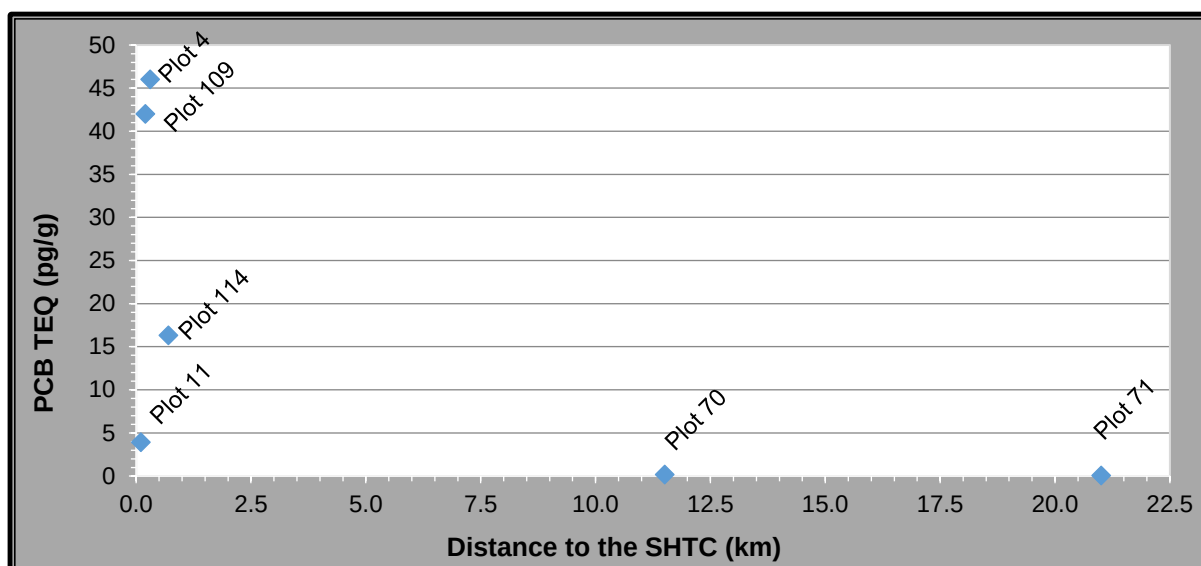


Figure 3-6. Relationship between PCB TEQ concentrations (pg/g) in red-backed voles and distance from the SHTC, May 2025.

As in previous monitoring years, PCB 126 contributed the most to PCB TEQ in 2025 because of its higher TEF, representing between 84% (plot 70) and 93% (plot 4) of the totals at the 6 plots (Table 3-11). PCB 169 contributed the second most to PCB TEQ, accounting for between 7% (plots 109 and 114), while the remaining 8 toxic PCB congeners contributed the least ($\leq 0.4\%$ of the totals) at the 6 plots (Table 3-11).

Table 3-11. TEQ of toxic PCB congeners in red-backed voles (pg/g) collected from the SHTC study area, May 2025.

PCB Congener	WHO TEF ¹	Plot ²									
		11	109	4	110	114	123	117	402	70	71
PCB 77	0.0001	0.0027	0.0111	0.0172	- ⁵	0.0052	-	-	-	0.0000	0.0000
PCB 81	0.0003	0.0001	0.0035	0.0047	-	0.0017	-	-	-	0.0002	0.0002
PCB 105	0.00003	0.0044	0.0846	0.0360	-	0.0161	-	-	-	0.0002	0.0001
PCB 114	0.00003	0.0004	0.0065	0.0025	-	0.0015	-	-	-	0.0000	0.0000

PCB Congener	WHO TEF ¹	Plot ²									
		11	109	4	110	114	123	117	402	70	71
PCB 118	0.00003	0.0210	0.0013	0.0004	-	0.0002	-	-	-	0.0000	0.0000
PCB 123 ⁴	0.00003	0.0001	0.0013	0.0004	-	0.0002	-	-	-	0.0000	0.0000
PCB 126	0.1	3.1400	35.700	40.200	-	13.900	-	-	-	0.0550	0.0580
PCB 156/157	0.00003	0.0067	0.0936	0.0576	-	0.0318	-	-	-	0.0001	0.0001
PCB 167	0.00003	0.0031	0.0390	0.0303	-	0.0153	-	-	-	0.0001	0.0001
PCB 169	0.03	0.3600	2.8500	2.7000	-	1.1250	-	-	-	0.0098	0.0062
PCB 189	0.00003	0.0017	0.0219	0.0177	-	0.0086	-	-	-	0.0001	0.0000
Total PCB TEQs		3.54	38.81	43.07	-	15.11	-	-	-	0.07	0.06

¹ WHO-TEF: World Health Organization Toxic Equivalency Factor (2005). ² Order of plots indicates increasing distance from the SHTC (plot 11 [100 m] to plot 71 [21 km]). ³ n.d. = Not detected, ½ the detection limit used to calculate totals. ⁴ PCB 123 co-elutes with PCB 107 and PCB 109. ⁵ Plots 110, 123, 117, and 402 were dropped as part of the annual monitoring program in 2025 and instead will now be included as part of subsequent expanded monitoring programs.

3.4.2 Dioxins and Furans

3.4.2.1 Dioxin/Furan Congeners

Between May 2024 and May 2025, dioxin/furan concentrations in voles decreased at 3 plots and increased at 3 plots, representing an average increase of 47% (Table 3-12). The largest percentage decrease occurred at plot 11 where the dioxin/furan concentration went from 13.1 pg/g in 2024 to 7.4 pg/g in 2025 (-43% or -5.7 pg/g) followed by plots 4 (-14% or -8.0 pg/g), and 70 (-9% or -0.3 pg/g) (Table 3-12). The highest percentage increases between 2024 and 2025 occurred at plots 109 (111% or 34.9 pg/g), 114 (22% or 2.4 pg/g), and 70 (22% or 1.9 pg/g) (Table 3-12).

Table 3-12. Concentrations of dioxin/furan congeners (pg/g) in red-backed voles collected from the SHTC study area, 2000 - 2025.

Year	Plot ¹										Averages
	11	109	4	110	114	123	117	402	70	71	
2000	5,757	11,026	11,827	2,229	1,585	1,840	591	22	110	59	3,504.6
2001	655	2,902	9,203	460	960	931	1,225	8	7	7	1,635.8
2002	3,862	4,684	6,349	86	1,550	1,533	1,017	143	23	6	1,925.3
2003	2,994	3,938	9,432	112	1,874	865	273	5	25	4	1,952.2
2004	1,177	530	6,095	323	677	370	99	n.d. ³	1.6	0.2	927.3
2005	581	1,280	2,005	- ²	344	155	66	2.8	11	1.3	444.4
2006	8,043	648	7,633	158	488	345	78	15	22	8	1,743.8
2007	1,142	2,167	2,546	54	912	716	85	29	26	8	768.5
2008	862	373	2,316	76	223	266	506	20	36	18	469.6
2009	1,013	421	1,145	44	145	194	26	7	31	3	302.9

Year	Plot ¹										Averages
	11	109	4	110	114	123	117	402	70	71	
2010	1,720	503	434	168	314	43	48	7	3.4	<0.2	324.1
2011	131	312	1,010	438	55.8	22.9	10.2	1	1.9	<0.09	198.3
2012	171	973	1,156	168	139	23	43.1	4.4	15.5	1	269.4
2013	651	732	1,493	126	183	30.6	37	7.7	44.4	7.3	331.2
2014	329	162	781	386	91.8	82.3	27.8	13.7	32.8	7.5	191.4
2015	70	12	472	159	45.4	36.9	32.3	6.6	23.2	3.5	86.1
2016	123	53	488	31	53.8	20.5	15.6	3.7	17.0	9.2	81.5
2017	49.7	66.2	309.1	24.2	26.5	15.9	8.4	4.6	13.1	4.7	52.5
2018	77.6	173.7	257.6	21.8	31.1	19.6	11.2	3.4	7.1	1.2	60.4
2019	62.2	70.4	193.3	15.6	25.3	13.1	10.5	3.2	20.3	4.3	41.8
2020	66.6	26.3	111.9	8.5	14.0	8.2	4.3	3.8	6.7	1.9	25.2
2021	27.39	17.11	37.45	11.02	15.25	6.17	9.61	5.72	11.91	3.02	14.5
2022	19.66	18.27	135.15	14.17	41.74	5.81	27.17	1.34	11.85	8.44	28.4
2023	60.70	26.41	98.15	10.00	11.82	6.07	10.23	3.17	13.29 ⁴	1.55	24.1
2024	13.12	31.54	56.36	12.16	10.58	11.44	5.73	2.13	8.91	3.65	16.9
2025	7.42	66.46	48.39	- ⁵	12.94	-	-	-	10.83	3.34	24.9

¹ Order of plots indicate increasing distance from the SHTC (Plot 11 [100 m] to Plot 71 [21 km]). ² No animals were collected for tissue samples. ³ n.d. or < = Not detected, ½ the detection limit used to calculate averages. ⁴ Re-extraction result = 14.7 pg/g. ⁵ Plots 110, 123, 117, and 402 were dropped as part of the annual monitoring program in 2025 and instead will now be included as part of subsequent expanded monitoring programs.

Congener 1234678 HpCDD was the dominant dioxin/furan at all 6 plots in 2025, accounting for between 10% (plot 4) to 21% (plot 70) of the total concentrations at these plots (Table 3-13). In comparison, the dominant congener at plots 11, 4, 114, 70, and 71 was OCDD, accounting for between 11% (plot 4) - 38% (plot 70) of the total concentrations. Other relatively dominant congeners included 2378 TCDF which accounted for between 11% - 19% of the concentrations at plots 11, 109, 4, and 114, and 23478 PeCDF which accounted for between 15% and 17% at plots 11, 109, 4, and 114 (Table 3-13).

Table 3-13. Concentrations (pg/g) for individual dioxin/furan congeners in red-backed voles collected from the SHTC study area, May 2025.

Dioxin/Furan Congener	Plot ^{1,2}									
	11	109	4	110	114	123	117	402	70	71
2378 TCDD	0.057	0.150	0.105	– ³	0.118	-	-	-	0.186	0.028
12378 PeCDD	0.267	1.870	1.310	-	0.476	-	-	-	1.100	0.165
123478 HxCDD	0.080	1.590	0.791	-	0.150	-	-	-	0.255	0.150
123678 HxCDD	0.278	2.880	1.500	-	0.553	-	-	-	0.420	0.150
123789 HxCDD	0.211	1.440	0.846	-	0.226	-	-	-	0.516	0.266
1234678 HpCDD	0.799	7.390	4.810	-	1.460	-	-	-	2.380	0.430
OCDD	1.010	4.650	5.180	-	1.780	-	-	-	4.160	1.080
2378 TCDF	0.843	9.910	8.520	-	2.390	-	-	-	0.240	0.098
12378 PeCDF	0.515	3.690	2.880	-	0.872	-	-	-	0.286	0.070
23478 PeCDF	1.110	10.900	8.200	-	2.000	-	-	-	0.165	0.060
123478 HxCDF	0.397	3.470	1.760	-	0.431	-	-	-	0.220	0.086
123678 HxCDF	0.404	3.730	2.240	-	0.566	-	-	-	0.105	0.110
123789 HxCDF	0.765	7.350	4.740	-	0.887	-	-	-	0.373	0.141
234678 HxCDF	0.072	0.224	0.219	-	0.029	-	-	-	0.044	0.023
1234678 HpCDF	0.310	5.580	4.430	-	0.752	-	-	-	0.270	0.262
1234789 HpCDF	0.047	0.616	0.180	-	0.029	-	-	-	0.035	0.080
OCDF	0.251	1.020	0.862	-	0.224	-	-	-	0.346	0.139
Totals	7.42	66.46	48.57	-	12.94	-	-	-	11.10	3.34

¹ Order of plots indicate increasing distance from the SHTC (plot 11 [100 m] to plot 71 [21 km]). ² < = Not detected, ½ the detection limit used. ³ Plots 110, 123, 117, and 402 were dropped as part of the annual monitoring program in 2025 and instead will now be included as part of subsequent expanded monitoring programs.

3.4.2.2 Toxic Equivalency of Dioxin/Furan Congeners

Dioxin/furan TEQ concentrations increased at 3 plots and decreased at 3 plots between May 2024 and May 2025 (Table 3-14). This represented an average year-over-year increase of 22% (or 0.60 pg/g) across the 6 plots (from 2.70 pg/g in 2024 to 3.30 pg/g in 2025), the third lowest average concentration recorded since 2000 (Table 3-14). The largest percentage decreases occurred at plot 11 (-55% or -1.22 pg/g), plot 4 (-28% or -2.37 pg/g), and plot 70 (-22% or -0.49 pg/g) while the largest percentage increases occurred at plots 71 (146% or 1.02 pg/g), 109 (85% or 4.03 pg/g), and 114 (18% or 0.27 pg/g) (Table 3-14). Apart from plots 109 (8.75 pg/g) and 114 (1.78 pg/g) which experienced increases between 2024 and 2025, the remaining 2 plots (11 and 4) closest to the SHTC were at their lowest levels recorded since 2000 (Table 3-14). Overall, dioxin/furan TEQs have, for the most part, been declining steadily in the SHTC study area from 2006 (646.0 pg/g) to 2025 (3.30 pg/g). Over the 25-year period from 2000 to 2024, the average dioxin/furan TEQ concentration recorded in 2025 represents a 99% decrease (Table 3-14).

Table 3-14. TEQ of dioxin/furan congeners (pg/g) in red-backed voles collected from the SHTC study area, 2000 - 2025.

Year	Plot ¹										Averages
	11	109	4	110	114	123	117	402	70	71	
2000	2,200	4,200	4,900	820	600	700	230	7.2	37	20	1,371.4
2001	230	1,100	3,800	160	340	350	440	0.76	2.9	1.2	642.5
2002	1,460	1,750	2,450	26.4	553	593	391	19.8	2.6	1.6	724.7
2003	1,200	1,490	3920	28.6	682	321	89.2	0.7	3.1	0.3	773.5
2004	416	187	2,190	99.5	262	126	31.7	0.79	1.5	0.27	331.5
2005	187	465	754	⁻²	104	48.8	17.5	0.81	2	0.43	157.8
2006	3,071	219	2,851	32.5	154	109	19.2	2.2	0.5	1.1	646.0
2007	421	765	885	14	283	274	21	4	3	2	267.2
2008a ³	310	110	830	14	58	87	44	3.6	3.4	0.92	146.1
2008b ⁴	200	71	530	11	40	56	30	2.8	4.5	0.94	94.6
2009	217	81	241	7	24	36	3	1	2	0	61.2
2010	366	100	88	32	58	8	7	1	3	0	66.3
2011	19.3	53.4	234	104	8.6	4.5	2.2	1.3	2	0.4	43.0
2012	21.2	185.0	223.6	27.56	19.69	4.48	6.84	0.76	2.94	0.18	49.2
2013	121.2	129.5	197.7	17	20.3	4	3.8	0.5	4.8	1.4	50.0
2014	53.9	22.2	133	81.3	13.0	12.1	2.92	1.4	2.81	0.803	32.3
2015	7.26	1.62	75.9	19.2	4.66	5.01	4.04	0.565	2.59	0.378	12.1
2016	14.8	6.54	80.8	3.4	5.59	2.79	1.73	0.488	1.97	0.745	11.9
2017	5.38	8.71	46.8	4.27	3.03	1.99	0.70	0.53	1.94	0.55	7.4
2018	10.8	25.9	35.9	3.15	3.16	3.42	1.4	0.79	1.55	0.31	8.6
2019	9.86	10.9	33.7	2.54	3.7	2.19	1.39	0.435	3.05	0.65	6.8
2020	10.2	4.32	19.0	1.43	2.1	1.39	0.70	0.516	1.65	0.364	4.2
2021	4.44	2.43	5.79	1.5	1.65	0.77	1.33	0.461	1.69	0.45	2.1
2022	3.03	2.86	12.8	2.19	5.81/0.27 ⁵	1.04	3.97	0.201	2.04	0.284	3.4
2023	8.72	4.28	15.4	1.91	2.02	1.16	1.34	0.557	2.39 ⁶	0.274	3.8
2024	2.22	4.72	8.6	1.78	1.51	1.97	0.84	0.285	2.27	0.698	2.7
2025	1.00	8.75	6.23	⁻⁷	1.78	-	-	-	1.78	1.72	3.3

¹ Order of plots indicate increasing distance from the SHTC (plot 11 [100 m] to plot 71 [21 km]). ² No animals were collected for tissue samples. ³ Between 2000 and 2008a, dioxin and furan TEQs calculated based on NATO I-TEFs (1990). ⁴ From 2008b and onwards, dioxin and furan TEQs calculated based on the WHO (2005). ⁵ September 2022 result anomaly comparing over-wintered voles (heavier) PC TEQ to young-of year voles (lighter). ⁶ Re-extraction result = 1.93 pg/g. ⁷ Plots 110, 123, 117, and 402 were dropped as part of the annual monitoring program in 2025 and instead will now be included as part of subsequent expanded monitoring programs.

As with PCB TEQs, dioxin/furan TEQ concentrations in voles generally declined with increasing distance from the SHTC in May 2024 (Figure 3-7). The mean dioxin/furan TEQ from plots ≤0.7 km from the SHTC (plots 11, 109, 4, and, 114) in 2025 was 4.44 pg/g (an

increase of 18% from the 3.77 pg/g reported in 2024), whereas the mean concentration for plots >0.7 km away (plots 70 and 71) was 1.75 pg/g (an increase of 44% from the 1.21 pg/g reported in 2024). Dioxin/furan TEQs in voles captured within 0.7 km of the SHTC ranged from 1.00 pg/g (plot 11) to 8.75 pg/g (plot 109), while voles captured >0.7 km away had concentrations that ranged from 1.72 pg/g (plot 71) to 1.78 pg/g (plot 70) in 2025 (Figure 3-7). It is interesting to note that dioxin/furan TEQs in 2025 were higher at plots 70 (11.5 km) and 71 (21.0 km), both of which are the furthest away from the SHTC, than plots 11 (0.1 km) and 114 (0.7 km) and may reflect the recent fire history in the Swan Hills region. While it is important to note that the 2025 monitoring year (and going forward) was based on vole tissues collected from 6 plots compared to 10 plots in previous monitoring years, the overall trend of dioxin/furan PCB TEQ concentrations of decreasing in relation to distance from the SHTC generally remained the same.

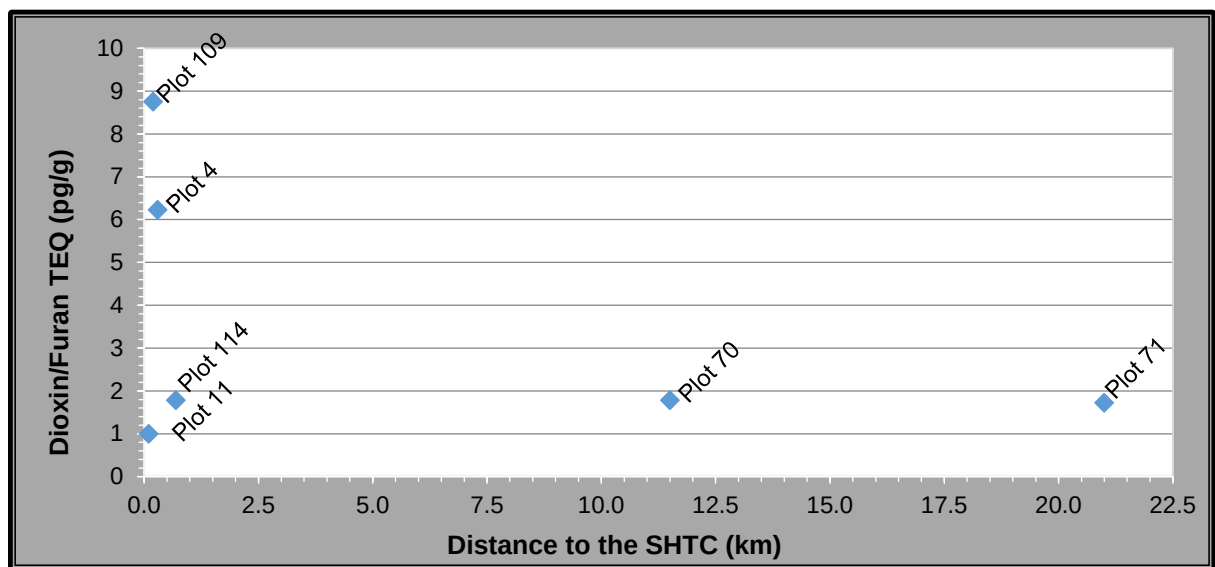


Figure 3-7. Distribution of dioxin/furan TEQs (pg/g) in relation to distance, May 2025.

The congener 12378 PeCDD was the largest contributor to total dioxin/furan TEQs at all 6 plots, ranging from 21% at plot 4 to 69% at plot 70 (Table 3-15). The congener 23478 PeCDF was also a large contributor at 4 of the 6 plots in the SHTC study area, where it accounted for between 4% (plots 11 and 114) and 40% (plot 4) of the total dioxin/furan TEQs in May 2025 (Table 3-15). The remaining individual dioxin/furan TEQs accounted for ≤14% of the total concentrations at the 6 plots in 2025.

Table 3-15. TEQ of individual dioxin/furan congeners (pg/g) in red-backed voles, May 2025.

Congener	WHO TEF ¹	Plot ²									
		11	109	4	110	114	123	117	402	70	71
2378 TeCDD	1	0.057	0.150	0.105	- ⁴	0.118	-	-	-	0.186	0.028
12378 PeCDD	1	0.267	1.870	1.310	-	0.476	-	-	-	1.100	0.165
123478 HxCDD	0.1	0.008	0.159	0.079	-	0.015	-	-	-	0.026	0.015
123678 HxCDD	0.1	0.028	0.288	0.150	-	0.055	-	-	-	0.042	0.015
123789 HxCDD	0.1	0.021	0.144	0.085	-	0.023	-	-	-	0.052	0.027
1234678 HpCDD	0.01	0.008	0.074	0.048	-	0.015	-	-	-	0.024	0.004
OCDD	0.0003	0.000	0.001	0.002	-	0.001	-	-	-	0.001	0.000
2378 TeCDF	0.1	0.084	0.991	0.852	-	0.239	-	-	-	0.024	0.010
12378 PeCDF	0.03	0.015	0.111	0.086	-	0.026	-	-	-	0.009	0.002
23478 PeCDF	0.3	0.333	3.270	2.460	-	0.600	-	-	-	0.050	0.018
123478 HxCDF	0.1	0.040	0.347	0.176	-	0.043	-	-	-	0.022	0.009
123678 HxCDF	0.1	0.040	0.373	0.224	-	0.057	-	-	-	0.011	0.011
123789 HxCDF	0.1	0.077	0.735	0.474	-	0.089	-	-	-	0.037	0.014
234678 HxCDF	0.1	0.007	0.022	0.022	-	0.003	-	-	-	0.004	0.002
1234678 HpCDF	0.01	0.003	0.056	0.044	-	0.008	-	-	-	0.003	0.003
1234789 HpCDF	0.01	0.000	0.006	0.002	-	0.000	-	-	-	0.000	0.001
OCDF	0.0003	0.000	0.000	0.000	-	0.000	-	-	-	0.000	0.000
Total Dioxin/Furan TEQs		0.989	8.598	6.119	-	1.766	-	-	-	1.590	0.324

¹ WHO-TEF: World Health Organization Toxic Equivalency Factor (2005). ² Order of plots indicate increasing distance from the SHTC (plot 11 [100 m] to plot 71 [21 km]). ³ n.d. – Not detected, ½ the detection limit used to calculate totals. ⁴ Plots 110, 123, 117, and 402 were dropped as part of the annual monitoring program in 2025 and instead will now be included as part of subsequent expanded monitoring programs.

3.4.3 Total TEQs

3.4.3.1 Total TEQ in Relation to Plot and Monitoring Year

Total TEQs (PCB TEQs + dioxin/furan TEQs) decreased at 3 and increased at 3 plots between 2024 and 2025, resulting in an average 35% increase (5.67 pg/g) from 15.99 pg/g to 21.66 pg/g across the 6 plots (Table 3-16). The largest percentage decreases occurred at plot 4 (-62% or -8.00 pg/g) and plot 4 (-30% or -22.00 pg/g) while the largest increases were recorded at plots 70 (109% or 0.93 pg/g), 109 (31% or 12.00 pg/g) and 114 (29% or 4.00 pg/g) (Table 3-16). Total TEQ concentration at plot 11 (5 pg/g) was the lowest recorded since 2000.

Overall, PCB TEQs comprised about 58% of the total TEQs in red-backed voles while dioxin/furan TEQs accounted for 42% across the 6 plots in 2025 (Table 3-16). The percentage contribution of PCB TEQ to total TEQ in 2025 was higher than what has been recorded across all plots between 2000 and 2024 (mean = 39%) but has varied from a low of 0% at plots 109,

110, 123, 70 and 71 to a high of 96% at plot 109 over the same historical period. When compared to distance from the SHTC, PCB TEQ accounted for 52% of the total TEQ at plots located ≤ 2 km and only 19% of the total TEQ at plots > 2 km from the SHTC.

Table 3-16. Total TEQ concentrations (pg/g) in red-backed voles collected from the SHTC study area, 2000 - 2025.

Plot ¹	Year	PCB TEQ ²	Dioxin/Furan TEQ ³	Total TEQ	Year	PCB TEQ ²	Dioxin/Furan TEQ ³	Total TEQ
11	2000	500	2200	2700	2013	203	121	324
	2001	108	230	338	2014	86	54	140
	2002	241	1460	1701	2015	57	7	64
	2003	400	1200	1600	2016	44	15	59
	2004	95	416	511	2017	52.2	5	58
	2005	41	187	228	2018	39	11	50
	2006	370	3071	3441	2019	45	10	55
	2007	123	421	544	2020	40	10	50
	2008a/b	85	200	285	2021	21.5	4	26
	2009	140	217	357	2022	25.2	3	28
	2010	147	366	513	2023	23	9	32
	2011	88	19	107	2024	11	2	13
	2012	74	21	95	2025	4	1	5
109	2000	-	4200	4200	2013	224	130	354
	2001	253	1100	1353	2014	59	22	81
	2002	346	1750	2096	2015	38	2	40
	2003	385	1490	1875	2016	28	7	35
	2004	120	187	307	2017	42	9	51
	2005	106	465	571	2018	98	26	124
	2006	133	219	352	2019	46	11	57
	2007	410	765	1175	2020	26	4	30
	2008a/b	43	71	114	2021	16	2	18
	2009	52	81	133	2022	24	3	27
	2010	75	100	175	2023	18	4	22
	2011	259	53	312	2024	34	5	39
	2012	313	185	498	2025	42	9	51
4	2000	670	4900	5570	2013	603	198	801
	2001	352	3800	4152	2014	305	133	438
	2002	461	2450	2911	2015	335	76	411
	2003	568	3920	4488	2016	289	81	370
	2004	836	2190	3026	2017	170	47	217
	2005	267	754	1021	2018	232	36	268

Plot ¹	Year	PCB TEQ ²	Dioxin/Furan TEQ ³	Total TEQ	Year	PCB TEQ ²	Dioxin/Furan TEQ ³	Total TEQ
	2006	1040	2851	3891	2019	198	34	232
	2007	614	885	1499	2020	113	19	132
	2008a/b	319	530	849	2021	61	6	67
	2009	283	241	524	2022	111	13	124
	2010	207	88	295	2023	97	15	112
	2011	438	234	672	2024	65	9	74
	2012	294	223.6	518	2025	42	9	51
110	2000	-	820	820	2013	23	17	40
	2001	19	160	179	2014	115	81	196
	2002	5	26	31	2015	15	19	34
	2003	6	29	35	2016	6	3	9
	2004	30	100	130	2017	11	4	15
	2005	-	-	0	2018	8	3	11
	2006	12	33	45	2019	4	3	7
	2007	7	14	21	2020	2	1	3
	2008a/b	5	11	16	2021	6	2	8
	2009	5	7	12	2022	7	2	9
	2010	22	32	54	2023	4	2	6
	2011	115	104	219	2024	6	2	8
	2012	49	27.56	77	2025	-	-	-
114	2000	144	600	744	2013	84	20	104
	2001	252	340	592	2014	58	13	71
	2002	215	553	768	2015	38	5	43
	2003	164	682	846	2016	26	6	32
	2004	3	262	265	2017	31	3	34
	2005	42	104	146	2018	34	3	37
	2006	96	154	250	2019	26	4	30
	2007	147	283	430	2020	19	2	21
	2008a/b	46	40	86	2021	23	2	25
	2009	37	24	61	2022	54	6	60
	2010	114	58	172	2023	14	2	16
	2011	35	9	44	2024	12	2	14
	2012	52	19.69	72	2025	16	2	8
123	2000	-	700	700	2013	6	4	10
	2001	15	350	365	2014	8	12	20
	2002	22	593	615	2015	6	5	11
	2003	20	321	341	2016	4	3	7
	2004	12	126	138	2017	5	2	7
	2005	4	49	53	2018	4	3	7

Plot ¹	Year	PCB TEQ ²	Dioxin/Furan TEQ ³	Total TEQ	Year	PCB TEQ ²	Dioxin/Furan TEQ ³	Total TEQ
	2006	9	109	118	2019	3	2	5
	2007	19	274	293	2020	4	1	5
	2008a/b	10	56	66	2021	7	1	8
	2009	7	36	43	2022	2	1	3
	2010	6	8	14	2023	1	1	2
	2011	4	5	9	2024	3	2	5
	2012	5	4.48	9	-	-	-	-
117	2000	33	230	263	2013	3	4	7
	2001	23	440	463	2014	11	3	14
	2002	53	391	444	2015	9	4	13
	2003	21	89	110	2016	9	2	11
	2004	12	32	44	2017	5	1	6
	2005	6	18	24	2018	11	1	12
	2006	17	19	36	2019	7	1	8
	2007	27	21	48	2020	6	1	7
	2008a/b	40	30	70	2021	3	1	4
	2009	2	3	5	2022	28	4	32
	2010	19	7	26	2023	4	1	5
	2011	8	2	10	2024	2	1	3
	2012	13	7	20	-	-	-	-
402	2000	1.3	7.2	8.50	2013	0.84	0.50	1.34
	2001	0.03	0.76	0.79	2014	1.03	1.40	2.43
	2002	0.1	19.8	19.90	2015	0.83	0.57	1.40
	2003	0.5	0.7	1.20	2016	0.54	0.49	1.03
	2004	0.01	0.79	0.80	2017	0.87	0.53	1.40
	2005	0.03	0.81	0.84	2018	0.73	0.79	1.52
	2006	1.36	2.2	3.56	2019	0.2	0.44	0.64
	2007	0.13	4.2	4.33	2020	0.51	0.52	1.03
	2008a/b	2.26	2.8	5.06	2021	0.43	0.46	0.89
	2009	0.6	1	1.60	2022	0.16	0.20	0.36
	2010	0.02	1	1.02	2023	0.33	0.56	0.89
	2011	0.01	1.3	1.31	2024	0.21	0.29	0.50
	2012	0.99	0.76	1.75	-	-	-	-
70	2000	6.7	37	43.70	2013	0.01	4.80	4.81
	2001	0.01	2.9	2.91	2014	0.28	2.81	3.09
	2002	0.05	2.6	2.65	2015	0.56	2.59	3.15
	2003	0	3.1	3.10	2016	0.3	1.97	2.27
	2004	0.02	1.5	1.52	2017	0.39	1.94	2.33
	2005	0.02	2	2.02	2018	0.27	1.55	1.82

Plot ¹	Year	PCB TEQ ²	Dioxin/Furan TEQ ³	Total TEQ	Year	PCB TEQ ²	Dioxin/Furan TEQ ³	Total TEQ
	2006	0.04	0.5	0.54	2019	0.26	3.05	3.31
	2007	0.05	3	3.05	2020	0.24	1.65	1.89
	2008a/b	0.47	4.5	4.97	2021	0.22	1.69	1.91
	2009	0.6	1.8	2.40	2022	0.11	2.04	2.15
	2010	0.01	3	3.01	2023	11.78	2.40	14.18
	2011	0.99	2	2.99	2024	0.24	2.27	2.51
	2012	0.49	2.94	3.43	2025	0.15	2	2.15
71	2000	0.06	20	20.06	2013	0.01	1.40	1.41
	2001	0.01	1.2	1.21	2014	0.25	0.80	1.05
	2002	0	1.6	1.60	2015	0.15	0.38	0.53
	2003	0	0.3	0.30	2016	0.13	0.75	0.88
	2004	0.01	0.27	0.28	2017	0.22	0.55	0.77
	2005	0.01	0.43	0.44	2018	0.36	0.31	0.67
	2006	0.02	1.1	1.12	2019	0.15	0.65	0.80
	2007	0.03	2	2.03	2020	0.07	0.36	0.43
	2008a/b	0.23	0.94	1.17	2021	0.09	0.45	0.54
	2009	0.25	0.2	0.45	2022	0.05	0.28	0.33
	2010	0	0	0.00	2023	0.09	0.28	0.37
	2011	0.35	0.4	0.75	2024	0.15	0.7	0.85
	2012	0	0.18	0.18	2025	0.06	1.72	1.78

¹ Order of plots indicate increasing distance from the SHTC (plot 11 [100 m] to plot 71 [21 km]). ² Between 2000 and 2008a, PCB TEQs were calculated based on the WHO (1998) TEFs and from 2008b onwards, were based on the WHO (2005) TEFs. ³ Between 2000 and 2008a, dioxin/furan TEQs were calculated based on NATO I-TEFs and from 2008b onwards, were based on the WHO (2005) TEFs. ⁴ Re-extraction result = 13.8 pg/g. ⁵ Plots 110, 123, 117, and 402 were dropped as part of the annual monitoring program in 2025 and instead will now be included as part of subsequent expanded monitoring programs.

The overall trend for total TEQs in voles collected from plots ≤ 2 km (4 plots) and > 2 km (2 plots) from the SHTC has been to decrease between 2000 and 2021 although concentrations had been somewhat variable up to about 2013 within both distance categories (Figure 3-8). Since 2013, total TEQs have steadily been declining within both distance categories up until 2021 to the lowest concentrations since 2000 (Figure 3-8). However, total TEQs generally increased with relatively large increases recorded at plots 4, 114, and 117 in 2022 and at plot 70 in 2023. Slight increases in total TEQs for both distances, however, slightly increased in 2025 (Figure 3-8). Nevertheless, the mean total TEQ for more distant plots (mean = 2.0 pg/g) was still considerably lower than that for plots located near the SHTC (mean = 31.5 pg/g) in 2025 as in previous monitoring years.

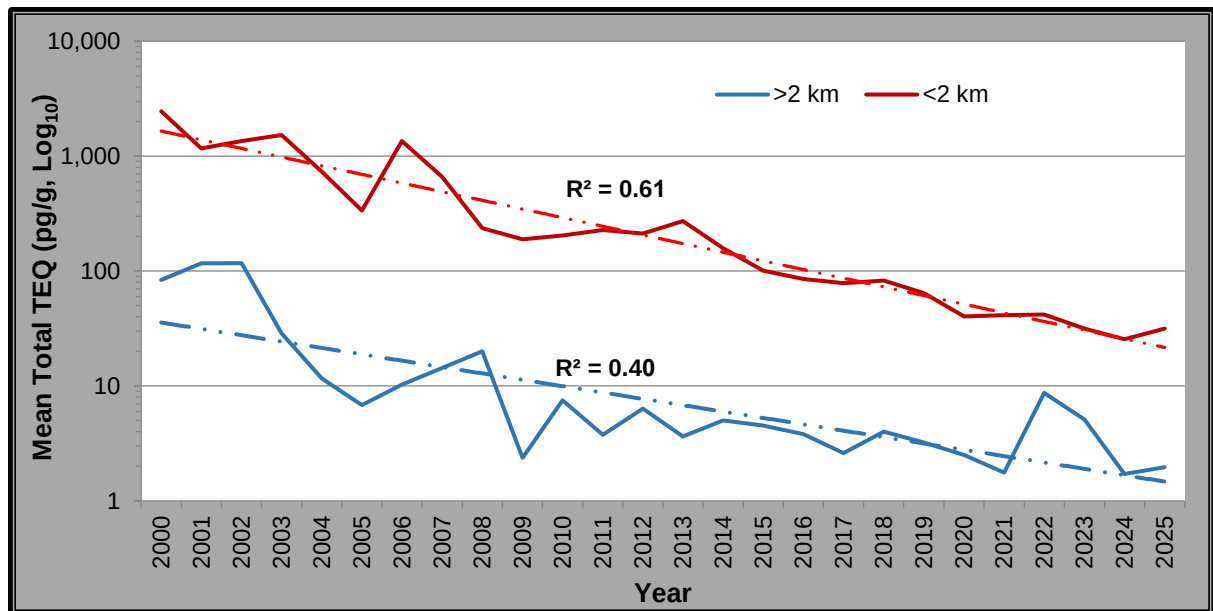


Figure 3-8. Mean total TEQ concentrations at plots ≤ 2 km and > 2 km from the SHTC, 2000 - 2025.

3.4.3.2 Effect of Plot Location on TEQs

The relationships between PCB TEQ, dioxin/furan TEQ, and total TEQ (PCB TEQ + dioxin/furan TEQ) concentrations in red-backed voles and distance and direction from the SHTC in May 2025 were analyzed for the 6 annually monitored plots using multiple linear regression analysis. Values were log-transformed to improve normality. Because TEQ values were log-transformed, the resulting coefficients describe proportional (multiplicative) changes in total TEQ rather than absolute changes. It should be noted that the sample size for the 2025 monitoring program is small ($n = 6$ plots) relative to the number of predictors (3 terms). As a result, statistical power is low, and P-values are large, even where r^2 values appear high. Interpretation of these results will therefore emphasize patterns and consistency and not statistical significance. The results of these analyses yielded the following equations:

PCB TEQ

- $Y = 1.016 - 0.119 (\text{distance}) + 0.985 (\text{direction}) - 1.008 (\text{distance} \times \text{direction})$
- $r^2 = 0.89, P = 0.160$

Dioxin/Furan TEQ

- $Y = 0.457 - 0.012 (\text{distance}) + 0.746 (\text{direction}) - 1.348 (\text{distance} \times \text{direction})$
- $r^2 = 0.34, P = 0.804$

Total TEQ

- $Y = 1.152 - 0.049 (\text{distance}) + 0.910 (\text{direction}) - 1.1034 (\text{distance} \times \text{direction})$
- $r^2 = 0.72, P = 0.385$

Overall, the high r^2 (0.89) indicates that the model explains most of the observed variation in PCB TEQ across the 6 plots. The negative distance coefficient suggests a general tendency for PCB TEQ to decline with increasing distance from the SHTC while the positive direction

coefficient suggests that PCB TEQ differs systematically by direction, implying that concentrations varied when measured in different directions rather than in a uniform radial decline. The strong negative interaction term indicates that the effect of distance depends on direction. For example, PCB TEQ declines sharply with distance in some directions, while in other directions, the distance effect is weak or absent. Despite the high r^2 , the PCB TEQ model is not statistically significant ($P = 0.160$) because of the limited degrees of freedom, and the results should be interpreted as suggestive of directional transport and not conclusive.

The overall regression model for dioxin/furan TEQ had a low r^2 (0.34) which indicates poor explanatory power. The distance coefficient is near zero, suggesting little or no decrease in dioxin/furan TEQ with distance. Direction and interaction terms exhibited inconsistent influence, but none explained much of the variance. Therefore, the model was clearly non-significant ($P = 0.804$) indicating that there was no evidence of a distance- or direction-related gradient for dioxin/furan TEQs in vole tissues in May 2025.

The linear regression for total TEQ resulted in a moderately high r^2 (0.72) indicating that total TEQ patterns were influenced by spatial factors. Since the coefficients closely resemble the PCB TEQ model, PCBs dominate total TEQ spatial patterns in the SHTC in 2025. As with PCB TEQ, total TEQ concentrations generally declines with distance, but the rate and strength of the declines varied by direction. Again, since the total TEQ model was not statistically significant ($P = 0.385$), the results should be interpreted as consistent with PCB-driven spatial structure, but not statistically definitive.

Although none of the regression models were statistically significant because of limited sample sizes, PCB TEQ and total TEQ concentrations exhibited directional and distance-dependent patterns, consistent with variable contaminant dispersion with respect to direction. In contrast, dioxin/furan TEQs showed no discernible spatial gradient. These findings suggest that PCBs were the primary drivers of spatial total TEQ variability in red-backed voles in May 2025, while dioxin/furan contributions appear more spatially uniform or influenced by non-local factors.

No statistically significant relationships were evident between TEQ values and prevailing wind direction in 2025 even though the strong dominant wind direction is from the west (Zelt 2014). Apparently, terrain features in the vicinity of the SHTC may cause winds to be deflected in stable and unstable conditions with light winds (Zelt 2014). Based on results of the air quality modelling and criteria air contaminants, concentrations of PCBs and dioxins/furans were less than threshold values reported for Alberta, Ontario, and Texas and largely limited to areas close to the SHTC (Zelt 2014). The air quality modelling appears to confirm that total TEQ

concentrations in vole tissues are generally higher close to the SHTC (<0.7 km) and decrease as distance from the plant site increases. Direction seemed to be less of a factor in 2025.

3.4.4 Polycyclic Aromatic Hydrocarbons (PAHs)

PAHs in vole tissues have been periodically analyzed on various plots between 2000 and 2003, during the 2019 and 2024 expanded monitoring years and then again in 2025 (Appendix 3). During these monitoring years, PAHs in vole tissues were for the most part, below their detection limits. However, 11 analytes have been detected occasionally at or near their detection limits including 1) flourene and phenanthrene/anthracene in February and June 2000 at plots 11, 4, 114, 402, 70 and 71; and 2) anthracene, chrysene/triphenylene, flouranthene, c1-naphthalene, naphthalene, phenanthrene, 1-methylnaphthalene, 2-methylnaphthalene, and pyrene in May 2019 at most of the 10 plots (Appendix 3). None of the PAHs that were detected in voles exhibited any clear trends with respect to distance between February 2000 and May 2019 when this analysis was conducted suggesting that the SHTC did not appear to be significant source of this class of organic compounds during this period (Appendix 3).

However, 35 (45%) of the 78 analytes present in vole tissues were near or had exceeded the detection limits at between 5 and 10 of the plots during the 2024 expanded monitoring program (Table 3-17, Appendix 3). When compared to the 2019 monitoring year when the same 78 analytes were analyzed, percentage changes in concentrations increased from a low of 285% at plot 402 to a high of 1,079% at plot 117 representing an overall increase of 613% from 2019 (Table 3-28). As in previous monitoring years, there was no clear trend in the concentrations of PAHs in relation to distance from the treatment center in 2024 (Table 3-17).

While anthropogenic sources such as industrial stack emissions can contribute significantly to elevated PAH concentrations in various receptors (including red-backed voles), these results suggest that the higher concentrations recorded during 2024 were more likely related to the recent wildfire history in the Swan Hills region in 2023. Forest fires are considered the single most important natural source of PAHs in Canada. These data were examined further by Dr. P. Richards of Montrose Environmental where PAH fingerprint graphs were used to examine and compare the pyrogenic origins of each of the 10 plots. Based on this analysis, the fingerprint graphs for the background or reference plots (i.e., plots 70 and 71) compared strongly with all other plots, including those near to the SHTC, suggesting that the source of PAHs was regionally related to natural rather than anthropogenic sources (i.e., the SHTC). In addition, "the composition of PAHs closely resembles literature examples for forest fire ash, which includes examples (e.g., following the 2016 Fort McMurray wildfire) for forest fires in the Alberta boreal forest. The composition includes high concentrations of naphthalene, phenanthrene, and of particular importance is a notable concentration of retene. Retene is a

PAH that is characteristic of boreal forest softwood and demonstrates a clear connection to forest fires.” Dr. Richards concluded that all plots related to the SHTC vole monitoring program in 2024 presented a uniform source profile of PAHs, including the background plots indicating that the composition is comparable with what would be expected for boreal forest fire ash.

To confirm whether the elevated PAH concentrations recorded in 2024 in red-backed vole tissues were a result of the forest fires, PAHs were analyzed again during the 2025 monitoring year. However, only 52 of the 78 analytes that were recorded in 2019 and 2024 were analyzed in 2025 (Table 3-17). While year-over-year PAH concentrations increased by orders of magnitude (e.g., 648% from 2024 to 2025), it should be noted that all 52 PAHs measured in 2025 were below the method detection limits (MDL) (Appendix 3). In contrast, 35 (45%) of the 78 analytes present in vole tissues were near or had exceeded the detection limits at between 5 and 10 of the plots in 2024. Since total PAH concentrations were calculated by summing individual PAH analytes and in accordance with CCME (2016) guidance, non-detect results were included in the totals at a value of 1/2 the MDL. Therefore, calculated totals for 2025 appear higher than samples with confirmed detections because of elevated and variable detection limits caused by matrix interference/dilution. This results in conservative estimates and likely overrepresents the actual PAH concentrations present in the 2025 vole tissue samples and should be considered as a statistical artifact or anomaly.

Table 3-17. Comparison of total PAH concentrations (mg/kg) between the 2019 and 2025 monitoring years at plots in the SHTC study area.

Plot ¹	Total PAH Concentrations (mg/kg)			% Change Between	
	2019 ²	2024 ²	2025 ³	2019-2024	2024-2025
11	0.01415	0.0998	0.992	605	894
109	0.01323	0.0972	1.598	635	1,544
4	0.01431	0.07357	1.893	414	2,473
110	0.01326	0.07246	- ⁴	447	-
114	0.01384	0.10515	1.043	660	892
123	0.01507	0.12491	-	729	-
117	0.0137	0.16145	-	1,079	-
402	0.01266	0.04876	-	285	-
70	0.01479	0.09956	1.143	573	1,048
71	0.01308	0.10174	0.698	678	586
Totals	0.13809	0.98460	7.364	613	648

¹ Order of plots indicate increasing distance from the SHTC (plot 11 [100 m] to plot 71 [21 km]). ² N=78 analytes analyzed. ³ N=52 analytes analyzed. ⁴ Plots 110, 123, 117, and 402 were dropped as part of the annual monitoring program in 2025 and instead will now be included as part of subsequent expanded monitoring programs.

Of the various PAH analytes detected in red-backed vole tissues in 2025 and previous monitoring years, 17 are considered to be priority PAHs by the U.S. Protection Agency, the CCME (2016), and Alberta Environment and Protected Areas (GoA 2024) because of their toxicity, persistence, and potential to bioaccumulate (Table 3-18). Overall, only naphthalene had the highest concentrations over the 7 monitoring years when PAH concentrations were recorded, accounting for 10.6% (0.0103 mg/kg) of the total respectively, while the remaining analytes accounted for $\leq 7.7\%$ of the average PAH concentration (Table 3-18). However, differences among the 17 priority PAHs were small and did not appear to exceed current guidelines (e.g., GoA 2024).

Table 3-18. PAH concentrations (mg/kg) recorded in 2025 in comparison to historical concentrations for 17 priority PAHs in the vicinity of the SHTC.

Target Analytes	Feb 2000	June 2000	Feb 2002	Feb 2003	May 2019	May 2024	May 2025	Averages
Acenaphthene	0.005 ¹	0.005	0.01	0.01	0.0001	0.0002	0.005	0.0050
Acenaphthylene	0.006	0.005	0.01	0.01	0.0001	0.0002	0.005	0.0052
Anthracene	0.005	- ²	0.01	0.01	0.000194	0.0002	0.005	0.0051
Benzo(a)anthracene	-	-	0.01	0.01	0.0001	0.0002	0.005	0.0051
Benzo(a)pyrene	-	-	0.01	0.01	0.0001	0.0002	0.005	0.0051
Benzo(b)fluoranthene	0.01	0.005	0.01	0.01	0.0001	0.0005	0.005	0.0058
Benzo(ghi)perylene	0.005	0.005	0.01	0.01	0.0001	0.0000	0.005	0.0050
Benzo(k)fluoranthene	0.005	0.005	0.01	0.01	0.0001	0.0000	0.005	0.0050
Dibenz(ah)anthracene	0.0146	0.005	0.01	0.01	0.0001	0.0002	0.005	0.0064
Fluoranthene	0.005	0.005	0.01	0.01	0.0003	0.0017	0.005	0.0053
Fluorene	0.0146	0.0075	0.01	0.01	0.0001	0.0014	0.005	0.0069
Indeno(1,2,3-cd)pyrene	0.005	-	0.01	0.01	0.0001	0.0002	0.005	0.0050
Perylene	-	0.005	-	-	0.0001	0.0002	0.005	0.0026
Naphthalene	0.01	0.005	0.01	0.01	0.0009	0.0114	0.005	0.0103
Phenanthrene	0.012	-	0.01	0.01	0.0005	0.0055	0.005	0.0072
Pyrene	0.005	-	0.01	0.01	0.0005	0.001	0.005	0.0052
Chrysene	0.005	-	0.01	0.01-	-	-	0.005	0.0075
Totals	0.1072	0.0525	0.15	0.15	0.0032	0.0230	0.105	0.0977

¹ Where present at each plot (see Appendix 3), $\frac{1}{2}$ the detection limit was used to calculate total and average PAH concentrations.

² - Indicates not analyzed.

3.5 Chemical Concentrations in Relation to Red-backed Vole Demography

Chemicals, including PCBs, are known to affect reproductive success (Linzey 1987) and health (Kelly et al. 2009) in some species of small mammals. Consequently, several red-backed vole demographic parameters, including population density, percentage of heavy voles in breeding condition, sex ratios and weight class structure were examined in relation to chemical concentrations in tissues. Because population monitoring and chemical data

analysis occur together at only 3 plots during the annual monitoring program, a statistical comparison of population and chemical parameters could not be conducted. As such, all data were compared qualitatively (Table 3-19).

Table 3-19. Comparison of population and chemical data collected at the 3 annual monitoring plots in the vicinity of the SHTC, 2025.

Parameter		Plot 11	Plot 114	Plot 70
Distance to SHTC plant site (km)		0.1	0.7	11.5
Direction to SHTC plant site		Upwind (N)	Downwind (SE)	Upwind (SW)
Population Data	June population density (no./ha)	6.3	4.9	7.6
	September population density (no./ha)	26.4	23.6	41.0
	June sex ratio (M:F)	3.5	2.5	1.8
	September sex ratio (M:F)	0.4	0.4	0.6
	% voles in heavy weight class in June	89	86	73
	% voles in heavy weight class in Sept.	18	21	22
	% heavy voles breeding in June	78	71	55
	% heavy voles breeding in Sept.	18	18	20
Chemical Data	PCB congeners (pg/g) in May	9,630	37,600	420
	Dioxins/furans (pg/g) in May	7	13	11
	PCB TEQ (pg/g) in May	4	16	0.15
	Dioxin/furan TEQ (pg/g) in May	1	2	2
	Total TEQ (pg/g) in May	5	18	2.15
	PAHs (mg/kg) in May	0.993	1.0343	1.143

Plot 11 is located approximately 0.1 km upwind of the plant, plot 114 is located 0.7 km downwind of the plant (both of which can be considered as treatment or potentially exposed sites) while plot 70 is located 11.5 km upwind of the SHTC (which can be considered as the control or reference site). In 2025, while the results indicated that higher concentrations of chemical parameters were associated with plots 11 and 114 which are closer to the plant site than plot 70, there was no clear indication that the SHTC was affecting vole demography in 2025 (Table 3-19). For example, the highest vole density was recorded at plot 70 in June, followed by plots 11 and plot 114. A similar trend in vole densities was also recorded in September 2025 where plot 70 had the highest density followed by plots 11 and 114. However, there were no consistent trends in other demographic parameters recorded in 2025 (Table 3-19). For example, observed variations in sex ratios, weights, and breeding rates were more likely related to normal seasonal patterns.

Long-term monitoring has also not documented any obvious population-level changes that would be consistent with the higher body burden levels in voles near the SHTC that were

observed between 2000 and 2025. Instead, variations in vole densities appears to more likely reflect different habitat conditions among the 3 plots, seasonal variations in vole densities (e.g., June vs September) and the phase of the population cycle the voles are in despite higher contaminant concentrations in at the 2 plots closest to the SHTC. Over 25 years of data, even with consistently higher contaminant levels near the plant, no sustained declines, no abnormal population crashes, and no consistent demographic impairment have been documented and has not translated into detectable population-level effects.

Overall, while higher contaminant levels were recorded in voles closer to the SHTC, this again did not appear to affect vole densities in 2025. This is consistent with previous monitoring years which indicates that facility operations have not had a discernible effect on vole demography. Historically, observed demographic differences in vole populations in the SHTC study area were related to differences in habitat structure which can affect food supply, cover from inclement weather and predators, and the cyclic nature of red-backed vole populations. For example, plot 11, which is characterized as an upland black spruce stand with an understory dominated by feather moss and Labrador tea, is the least structurally diverse plot (Photo 3-1). In comparison, plot 114 is a lowland black spruce stand characterized by feather moss with higher Labrador tea cover and scattered open, wetter grassy areas. Plot 70 is the most structurally diverse of the 3 plots and is characterized by a multi-species mature tree canopy (black spruce, white spruce, and balsam fir), well developed shrub and ground layers, and abundant downed woody material (Photo 3-1).

Long-term population monitoring data indicate that vole densities are generally highest at plot 70 followed by plot 114 and lowest at plot 11. Furthermore, total TEQ concentrations at plots 114 and 11 have been decreasing over time and have been relatively stable over the past 10 years although increases were recorded in 2022. If total TEQ was impairing reproduction, fluctuations in vole densities at Plot 11 would be expected to be more pronounced than what was observed during the early 2000's when levels ranged from about 228 in 2005 to 3,441 pg/g in 2006 and were above the toxicity threshold where impacts would have been expected. In comparison, over the past few monitoring cycles where total TEQ values were lower at plot 11 (ranging from 26 in 2021 to 140 pg/g in 2014), fluctuations in vole densities were similar to densities recorded in the early 2000s. These trends are similar among the 3 plots during both the June (Figure 3-9) and September live-trapping sessions (Figure 3-10). The magnitude of the population cycles has not exhibited any obvious changes that would be consistent with higher contaminant loadings and instead, appear to be more likely reflect different habitat conditions, variable predation levels, weather conditions, and natural variations in the population cycle (3 - 5 years) among the 3 plots. Vole populations SHTC have been synchronous in their densities since monitoring began (Figures 3-9 and 3-10).

Plot 11



Plot 114

Plot 70



Photo 3-1. Representative habitat conditions for the 3 annually monitored live-trapping plots in the SHTC study area.

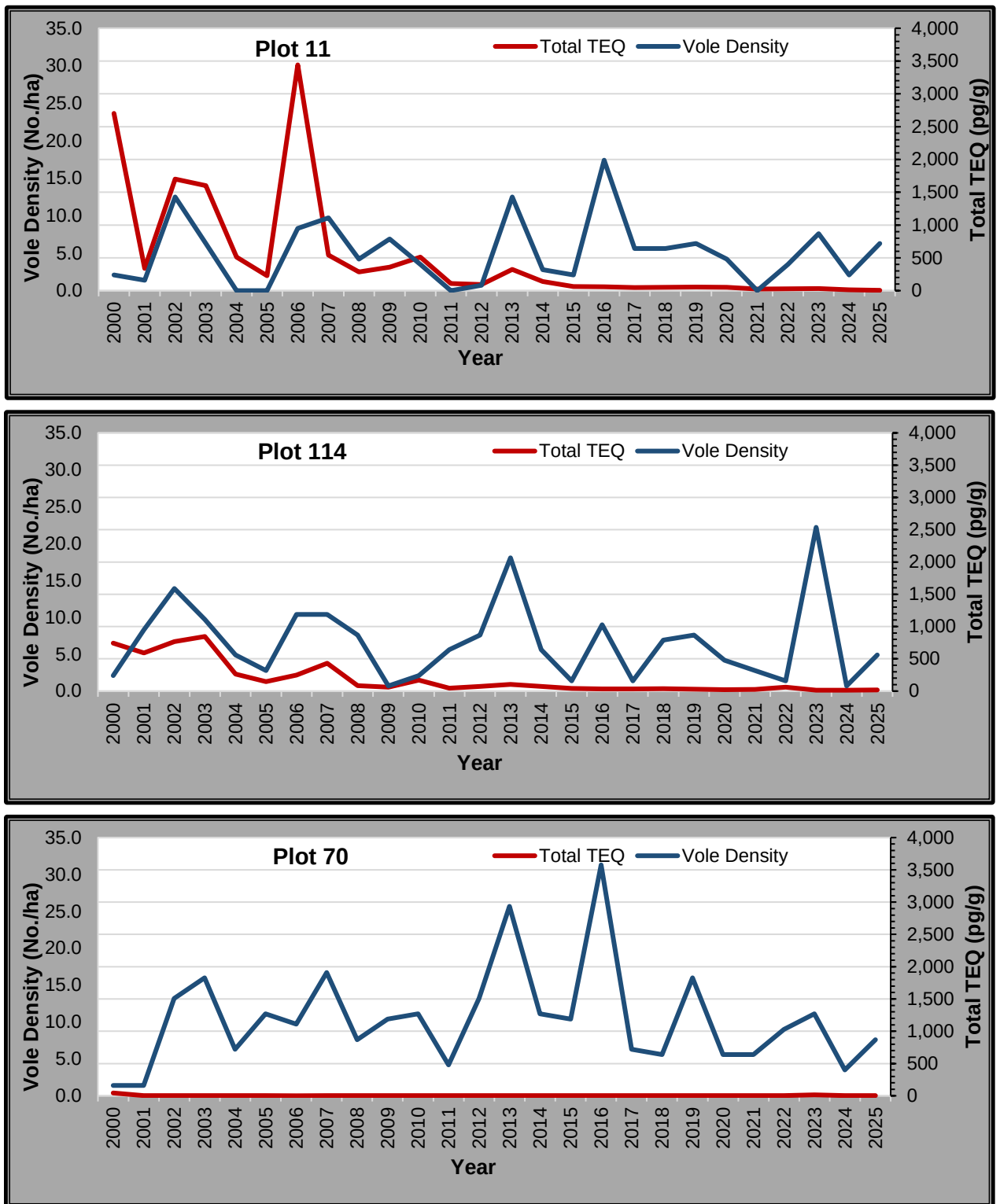


Figure 3-9. Comparison of June red-backed vole densities and total TEQs at the 3 annually monitored plots in the SHTC area from 2000 to 2025.

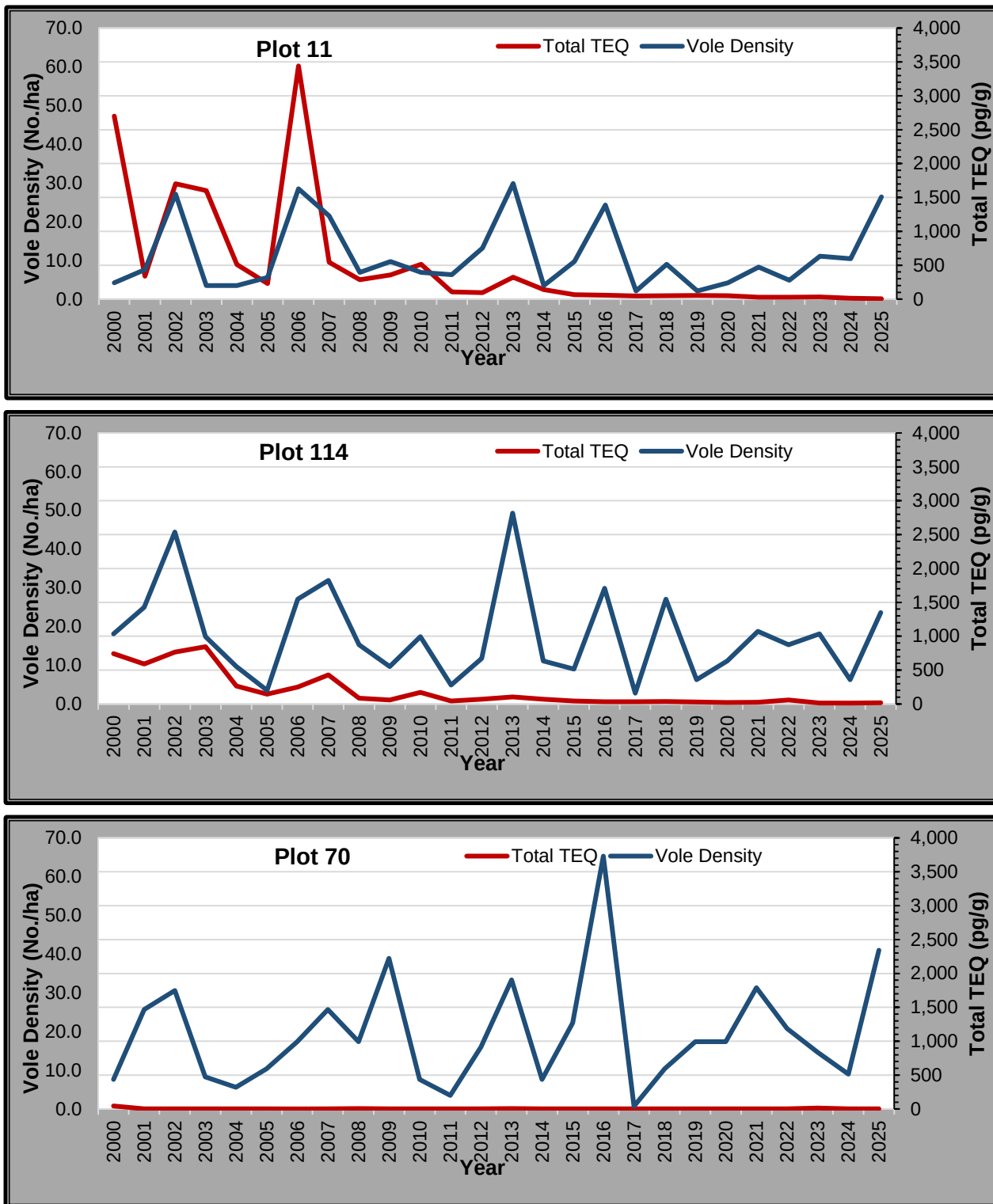


Figure 3-10. Comparison of September red-backed vole densities and total TEQs at the 3 annually monitored plots in the SHTC area from 2000 to 2025.

4

4.0 DISCUSSION

4.1 Red-backed Vole Demography

4.1.1 *Abundance*

Red-backed vole abundance increased substantially at all three annually monitored live-trapping plots (plots 11, 114, and 70) between 2024 and 2025 in both June and September. In June, minimum population estimates increased by 117% to 600% among plots, with an overall mean increase of approximately 198%. In September, vole densities also increased markedly relative to 2024, but densities at all plots were within the historical ranges recorded in the SHTC study area.

Variability in population densities across years appears to be related to the population dynamics of red-backed voles, which typically undergo cyclic population fluctuations over large geographic areas. Vole populations in the SHTC study area and elsewhere in central Alberta (e.g., Wildland Management Consultants Ltd. 2021) and North America (e.g., Krebs et al. 2002, Elias et al. 2006, Boonstra and Krebs 2011) have exhibited 3 - 5 year cycles, which is exemplified by dramatic declines after years of high or peak densities. The reason(s) for these inconsistencies in vole densities among plots is unclear but likely reflect differences in habitat structure at the plots (or site conditions) (e.g., Vanderwel et al. 2010) and therefore, their ability to support voles under variable weather conditions (e.g., overwinter survival) (Boonstra and Krebs 2006), levels of predation, and food supply.

As in most previous monitoring years, plot 70 (reference plot) supported the highest vole densities in both June and September, followed by plots 11 and 114. This pattern is consistent with long-term trends and reflects differences in habitat structure among plots. Plot 70 is the most structurally diverse site, characterized by a mixed-species mature forest canopy, well-developed shrub and ground layers, and abundant downed woody material. In contrast, plots 11 and 114 are dominated by black spruce with relatively simple understory structure, which likely limits carrying capacity for voles.

Differences in abundance estimates between the minimum method and catch/unit effort were evident in both June and September, with catch/unit effort values approximately 50% lower than minimum density estimates. This discrepancy is consistent with previous monitoring years and reflects the fact that catch/unit effort is primarily an index of trapping efficiency influenced by factors such as weather conditions, trap availability, non-target captures, and

behavioural responses of voles to traps, whereas the minimum method provides a more direct estimate of population density and is more suitable for long-term trend comparisons.

Overall, population trends recorded in 2025 were consistent with the well-established 3–5 year population cycle exhibited by red-backed voles in the SHTC study area since monitoring began in 1986. No abnormal population declines or deviations from historical patterns were observed in 2025.

4.1.2 Sex Ratios

Sex ratios in 2025 exhibited the typical seasonal pattern observed in red-backed vole populations. In June, populations were male dominated at all three plots, with an overall sex ratio of 2.4 males/female. This represents one of the higher June sex ratios recorded since 1986 but remains within the historical range. In September, sex ratios shifted to favour females, with an overall average of 0.5 males/female. Seasonal shifts in sex ratios are a common feature of vole populations and are generally attributed to differential movements, mortality, and recruitment between sexes throughout the breeding season. The patterns observed in 2025 are consistent with long-term monitoring data and do not indicate any relationship with distance or direction from the SHTC.

4.1.3 Weight Class Structure

Weight class distributions in 2025 followed expected seasonal patterns. In June, 83% of captured voles were classified in the heavy weight class, reflecting the predominance of overwintered adults early in the breeding season. Only 11% were moderate and 6% were light individuals. In September, the proportion of heavy individuals declined to approximately 20%, while moderate weight individuals dominated the population. This shift reflects recruitment of young-of-the-year animals following summer breeding and is consistent with patterns recorded in most previous monitoring years. Weight class structures were similar among plots and showed no systematic variation with distance or direction from the SHTC, indicating normal seasonal population dynamics.

4.1.4 Reproductive Condition

Breeding activity in 2025 was consistent with historical observations. In June, 63% of heavy males and 75% of heavy females were in breeding condition. These values fall within the typical range recorded for the SHTC study area and indicate active reproduction early in the breeding season. In September, breeding activity declined substantially, with only 30% of heavy males and 16% of heavy females in breeding condition. This decline reflects the timing of monitoring after the peak breeding period and the reduced proportion of older, fully mature individuals in the population. No consistent trends in reproductive condition were observed with respect to distance or direction from the SHTC in either June or September 2025.

4.1.5 Survival

Overwinter survival between September 2024 and June 2025 could not be calculated because no previously tagged individuals were recaptured. This result is not unexpected given the long interval between trapping sessions and the short lifespan of red-backed voles, which typically does not exceed one year. Long-term data indicate that overwinter survival is generally higher than summer survival but varies widely depending on population density, weather conditions, and predation. The lack of overwinter survival estimates in 2025 does not represent an anomaly within the context of the overall monitoring program.

4.1.6 Live-trapping Mortality

Live-trapping mortality in 2025 remained elevated relative to some previous years and continues to be an important consideration for the monitoring program. Exposure-based mortality (expressed per capture event) averaged 12.8% for red-backed voles, with lower mortality in June (5.7%) and higher mortality in September (15.2%). These values are slightly above the typical post-1992 range but comparable to higher mortality years recorded in the long-term dataset. It should be noted that because of the higher mortality rate experienced in September, the live-trapping session was ended after 4 nights of trapping instead of the 5 nights that are usually completed.

When expressed on an individual basis, 44 of the 140 uniquely captured voles died during live-trapping, corresponding to an individual-based mortality rate of 31.4%. These 2-mortality metrics describe different aspects of trapping risk: exposure-based mortality represents the probability of death per handling event, while individual-based mortality represents the minimum proportion of animals affected during the trapping program.

Non-target mortality remained high in 2025, particularly for shrews, which exhibited mortality rates consistent with historical patterns for this taxonomic group. Despite the implementation of mitigation measures (additional bedding, moisture sources, mealworms, natural cover, and twice-daily trap checks), mortality remained elevated, particularly during the September session when capture rates were highest. Lower average body weights among individuals that died suggest that smaller animals are more susceptible to trapping-related stress or environmental exposure.

4.2 Tissue Chemistry of Red-backed Voles

4.2.1 PCB Congeners and PCB TEQs

Congener PCB concentrations in vole tissues in 2025 were among the lowest recorded since 2000, despite a modest increase relative to 2024. Spatially, PCB concentrations remained higher at plots located near the SHTC compared to distant reference plots, consistent with long-term patterns observed throughout the monitoring program. Although year-to-year

variability was evident among individual plots, average PCB congener concentrations in 2025 were approximately 63% lower than the long-term mean (2000 – 2024), indicating a continued overall decline in PCB body burdens in red-backed voles.

PCB TEQ concentrations exhibited modest increases at some plots in 2025 but remained low in a historical context. The highest PCB TEQs continued to occur at near-field plots, while plots 70 and 71 exhibited very low values. PCB 126 remained the dominant contributor to PCB TEQ at all plots due to its high toxicity equivalency factor, with PCB 169 contributing secondarily. Despite occasional year-to-year variability, PCB TEQ concentrations at several near-field plots in 2025 were among the lowest recorded since 2000.

4.2.2 Dioxins/Furans and Dioxin/Furan TEQs

Dioxin/furan concentrations and TEQs in 2025 remained very low relative to early monitoring years and continued the long-term declining trend observed since the mid-2000s. Unlike PCBs, dioxin/furan TEQs did not exhibit a consistent spatial gradient with distance from the SHTC in 2025, and in some cases, distant plots exhibited TEQ values comparable to or slightly higher than near-field plots. This pattern suggests that dioxin/furan body burdens in 2025 may be influenced more strongly by regional background sources and analytical variability at low concentrations than by local facility-related inputs.

4.2.3 Total TEQs

Total TEQs (PCB TEQ + dioxin/furan TEQ) increased slightly between 2024 and 2025 but remained low relative to the long-term dataset. PCB TEQs accounted for a greater proportion of total TEQ in 2025 than the historical average, indicating that PCBs were the primary driver of spatial variability in total TEQ during the current monitoring year. Mean total TEQs remained substantially higher at plots located within approximately 2 km of the SHTC compared to more distant reference plots, consistent with long-term monitoring results.

Multiple regression analyses conducted for 2025 indicated that PCB TEQs and total TEQs generally declined with increasing distance from the SHTC, with some evidence of directional variability. However, because of the small number of plots included in the annual monitoring program ($n = 6$), statistical power was low and the results should be interpreted qualitatively. In contrast, dioxin/furan TEQs showed no clear distance- or direction-related gradient in 2025, reinforcing the conclusion that PCBs dominate spatial TEQ patterns in vole tissues.

4.2.4 PAHs

PAH results in 2025 must be interpreted with caution. Although calculated total PAH concentrations were higher than in 2024, all PAHs measured in 2025 were below analytical detection limits. Elevated totals therefore reflect the summation of non-detect values ($\frac{1}{2}$ MDL) and variable detection limits rather than true increases in vole tissue concentrations. Results

from the 2024 expanded monitoring program demonstrated PAH fingerprints consistent with regional wildfire sources, and 2025 results do not contradict this interpretation. Based on the results obtained in 2025, there is no evidence that the SHTC represents a significant point source of PAHs to red-backed voles.

4.3 Relationships Between Tissue Chemistry and Vole Demography

Comparison of demographic and chemical data for the three annually monitored plots in 2025 indicates that although chemical concentrations (particularly PCBs and total TEQs) were higher at plots closer to the SHTC, there was no evidence of corresponding impairment in vole population density, reproductive activity, sex ratios, or weight class structure. Long-term monitoring data spanning more than 25 years similarly indicate that elevated contaminant body burdens near the SHTC have not translated into sustained population-level effects on red-backed voles. Instead, variation in vole demography is more strongly associated with habitat structure, weather conditions, predation, wildfire disturbance, and the intrinsic cyclic nature of vole populations.

4.4 Summary

- Red-backed vole populations increased in 2025 and exhibited demographic characteristics consistent with historical patterns and natural population cycles.
- PCB and total TEQ concentrations remain higher near the SHTC than at reference sites but are low in a long-term context and continue to show an overall declining trend.
- Dioxin/furan TEQs are very low and do not exhibit a consistent spatial gradient in 2025.
- PAH results are dominated by detection-limit artefacts and regional wildfire influences, with no evidence of SHTC-related PAH contamination.
- There is no indication that chemical exposures measured in vole tissues in 2025 have resulted in detectable adverse effects on vole demography.
- The revised monitoring design that was implemented in 2024 remains scientifically defensible and appropriate for continued long-term assessment of wildlife exposure in the vicinity of the SHTC.

4.5 Program Implications

The 2025 SHTC vole annual monitoring results support continuation of the current adaptive monitoring framework, with annual demographic monitoring at three plots and focused tissue chemistry at six plots, supplemented by expanded monitoring when warranted by trigger conditions. The long-term dataset provides strong evidence that, despite historically elevated contaminant concentrations near the SHTC, red-backed vole populations remain demographically stable and are primarily regulated by natural ecological factors rather than facility-related contaminant exposure.

However, trapping mortality during the 2025 monitoring program remained elevated relative to some previous years and warrants continued attention as an operational and animal welfare consideration. Exposure-based mortality for red-backed voles averaged approximately 12.8% per capture event, while individual-based mortality was approximately 31.4%, reflecting cumulative risk across repeated captures. Non-target mortality, particularly for shrews, was also high but consistent with historical patterns observed in the SHTC study area. Although mitigation measures were implemented in 2025 (including the provision of additional bedding, moisture sources, mealworms, natural cover, and twice-daily trap checks), mortality remained elevated, particularly during the September session when capture rates and recapture frequencies were highest. Lower average body weights among individuals that died indicate that smaller animals are more susceptible to trapping-related stress, hypothermia, or environmental exposure. Despite elevated mortality, population-level demographic indicators (population density, weight class structure, reproductive condition, and seasonal dynamics) did not show evidence of adverse effects attributable to live-trapping, and vole populations increased substantially in 2025 consistent with the natural population cycle.

5

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

The results of the 2025 wildlife monitoring program indicate that overall PCB congener and PCB TEQ concentrations in red-backed vole tissues remain low in a long-term context and continue to exhibit a general declining trend relative to historical levels measured in the SHTC study area since monitoring began in 1988. Although modest year-to-year variability was observed among individual plots, average PCB concentrations and PCB TEQs in 2025 were among the lowest values recorded since 2000. As in previous years, PCB concentrations and PCB TEQs remained higher at plots located near the SHTC than at distant reference plots, consistent with the long-term spatial footprint of facility-related PCB influence.

Average concentrations of dioxin/furan congeners and dioxin/furan TEQs in 2025 also remained very low relative to early monitoring years and continued the long-term declining trend observed since the mid-2000s. Unlike PCBs, dioxin/furan TEQs did not exhibit a consistent spatial gradient with distance or direction from the SHTC in 2025, suggesting that current dioxin/furan body burdens in voles are more strongly influenced by regional background sources and analytical variability at very low concentrations than by facility-related inputs.

Total TEQs (PCB TEQ + dioxin/furan TEQ) increased modestly in 2025 relative to 2024 but remained low in a long-term context. PCB TEQs accounted for a greater proportion of total TEQ in 2025 than the historical average, indicating that PCBs continue to be the dominant driver of spatial variability in total TEQs in vole tissues. Mean total TEQs remained higher at near-field plots than at more distant reference plots, consistent with long-term monitoring patterns.

PAHs analyzed in vole tissues in 2025 were all below analytical detection limits. Elevated calculated PAH totals in 2025 reflect the summation of non-detect values ($\frac{1}{2}$ MDL) and variable detection limits rather than true increases in tissue concentrations. Results from the 2024 expanded monitoring program demonstrated PAH fingerprints consistent with regional wildfire sources, and the 2025 results do not contradict this interpretation. There is no evidence that the SHTC represents a significant point source of PAHs to red-backed voles at present. Consequently, routine annual PAH analysis in vole tissues is not recommended.

unless elevated PAHs are detected in other environmental media or following a facility incident.

As has been the case throughout the long-term monitoring program, operation of the SHTC in 2025 did not appear to influence red-backed vole demography despite the continued presence of elevated PCB-related chemical measures in vole tissues near the SHTC. In contrast to the population lows observed in 2024, vole populations increased substantially at all three annually monitored plots in 2025, consistent with the beginning of the increase phase of the natural population cycle. Population densities, sex ratios, weight class structure, and reproductive condition were all within historical ranges and exhibited typical seasonal patterns.

Based on vole tissue chemistry data and live-trapping results from 2025, there remains no evidence that SHTC operations are adversely affecting red-backed vole population performance. Although PCB and total TEQs continue to be elevated at plots closest to the facility compared to more distant reference plots, concentrations are historically low and have not demonstrated any detectable demographic effects.

5.2 Recommendations

Given the extensive long-term dataset (39 years) and the continued overall decline in contaminant body burdens, the revised monitoring framework implemented in 2024 and continued in 2025 remains scientifically defensible (Table 5-1). The current annual monitoring program is therefore recommended to consist of:

- Ongoing demographic monitoring at the three long-term live-trapping plots (plots 11, 114, and 70) in June and September; and
- Annual vole tissue collection at six plots, including four near-field plots (plots 11, 4, 109, and 114) and two reference plots (plots 70 and 71).

Laboratory analyses of vole tissues should continue to focus on PCB congeners and TEQs, dioxins/furans and TEQs, and total TEQs. Analysis of heavy metals and/or PAHs should be conducted only in response to defined trigger conditions, such as facility incidents or elevated contaminant concentrations detected in other environmental media associated with the integrated monitoring program for the SHTC. This adaptive, trigger-based approach maintains scientific rigour while focusing monitoring effort on the highest-value indicators and locations and remains consistent with principles of long-term environmental surveillance and risk-based monitoring.

Table 5-1. Summary of previous and current annual/expanded red-backed vole monitoring programs.

Plot No.	Distance from SHTC the (km)	Direction from the SHTC	Tissue Collection/Snap-trapping ¹			Population Monitoring/ Live-trapping ¹
			Metals, PAHs ¹	Aroclor PCBs ²	PCB Congeners and TEQs, Dioxins/Furans and TEQs, Total TEQs ³	
Previous Annual and Expanded Monitoring Programs (Prior to 2024):						
11	0.1	N	✓	✓	☑	☑
109	0.2	W	✓	✓	☑	✓
103	0.2	SE	✓	✓	-	✓
4	0.3	E	✓	✓	☑	✓
110	0.3	W	✓	✓	☑	-
104	0.4	NW	✓	✓	-	-
102	0.4	E	✓	✓	-	-
1	0.4	NE	✓	✓	-	✓
27	0.5	S	✓	✓	-	✓
8	0.6	E	✓	✓	-	✓
15	0.6	NW	✓	✓	-	-
114	0.7	E	✓	✓	☑	☑
121	1.2	N	✓	✓	-	-
9	1.4	ENE	✓	✓	-	✓
28	1.4	WNW	✓	✓	-	-
123	1.6	NE	✓	✓	☑	-
16	2.4	E	✓	✓	-	-
117	2.4	SE	✓	✓	☑	-
26	2.6	WNW	✓	✓	-	✓
30	3.6	NW	✓	✓	-	✓
29	3.9	E	✓	✓	-	-
402	7.5	E	✓	✓	☑	-
70	11.5	SW	✓	✓	☑	☑
71	21.0	NNW	✓	✓	☑	✓
Current Annual and Expanded Monitoring Programs (2024 and Onward):						
11	0.1	N	✓	✓	☑	☑
109	0.2	W	✓	✓	☑	-
4	0.3	E	✓	✓	☑	-
110	0.3	W	✓	✓	✓	-
114	0.7	E	✓	✓	☑	☑
123	1.6	NE	✓	✓	✓	-
117	2.4	SE	✓	✓	✓	-
402	7.5	E	✓	✓	✓	-
70	11.5	SW	✓	✓	☑	☑
71	21.0	NNW	✓	✓	☑	-

¹ Bold boxed check marks ☑ indicate plots that are monitored annually for vole tissue collection and population studies. Plain check marks ✓ indicate plots that are part of the expanded monitoring program (i.e., once every 5 years).

² The low resolution GC-ECD method historically used for Aroclor PCBs was discontinued in Canada in 2019.

³ HRMS congener-specific methodology would be used for all expanded monitoring plots in response to a red-backed vole trigger.

However, trapping mortality during the 2025 monitoring program remained elevated relative to some previous years and warrants continued attention as an operational and animal welfare consideration. Exposure-based mortality for red-backed voles averaged approximately 12.8% per capture event, while individual-based mortality was approximately 31.4%, reflecting cumulative risk across repeated captures. Non-target mortality, particularly for shrews, also remained high and consistent with historical patterns observed in the SHTC study area. Although mitigation measures were implemented in 2025 (including the provision of additional bedding, moisture sources, mealworms, natural cover, and twice-daily trap checks), mortality remained elevated, particularly during the September session when capture rates and recapture frequencies were highest and populations were high. Lower average body weights among individuals that died indicate that smaller animals are more susceptible to trapping-related stress, hypothermia, or environmental exposure. Despite elevated mortality, population-level demographic indicators (population density, weight class structure, reproductive condition, and seasonal dynamics) did not show evidence of adverse effects attributable to live-trapping, and vole populations increased substantially in 2025 consistent with the natural population cycle. Nevertheless, continued refinement of trapping methods is recommended to reduce mortality where practicable, particularly under high-density conditions. Some of the adaptive measures recommended for implementation and/or consideration in future monitoring years may include:

- **Seasonal Operational Adjustments** - Where feasible, reduce trapping intensity or duration during periods of exceptionally high capture rates (e.g., peak September populations), while maintaining sufficient effort to meet statistical objectives.
- **Trap Exposure Management** - Consider closing traps during daytime hours in September when nocturnal activity is highest or selectively reducing trap density in high-capture grids to limit repeated exposure of the same individuals.
- **Thermal and Moisture Protection** - Continue and standardize use of insulated bedding materials and natural cover and consider additional insulating sleeves or moisture barriers during cool or wet conditions.
- **Non-target Species Risk Mitigation** - Evaluate the use of shrew-exclusion techniques (e.g., modified baiting strategies or partial trap blocking) where feasible, recognizing inherent limitations of live-trapping small insectivores.
- **Mortality Reporting Framework** - Continue reporting both exposure-based and individual-based mortality metrics, as these provide complementary and transparent measures of trapping risk and animal welfare outcomes.
- **Trigger-based Review Threshold** - Establish an internal review threshold (e.g., individual-based mortality exceeding ~30% or exposure-based mortality exceeding ~15%) to trigger formal evaluation of trapping protocols and additional mitigation measures in subsequent years.
- **Live-trapping Program Frequency Adjustment** - Given the 39-year continuous demographic dataset, the well-established 3–5 year population cycle of red-backed voles (see Figure 3-3), the absence of any population-level effects despite historically

elevated contaminant exposures, and the availability of a robust trigger-based adaptive monitoring framework, Veolia may want to consider reducing the frequency of vole demographic monitoring from annual to once every five years. This approach would still be considered scientifically defensible and consistent with best practices in long-term ecological surveillance. The annual monitoring program would then only be comprised of the vole tissue collection program while the live-trapping program would become part of the 5-year expanded monitoring program.

Overall, while elevated trapping mortality remains an important consideration, current evidence indicates that it has not compromised the scientific validity of population estimates or resulted in detectable population-level effects. Continued adaptive refinement of field methods, combined with transparent reporting of mortality metrics, is considered an appropriate and scientifically defensible approach for long-term wildlife monitoring at the SHTC. Shifting vole demographic monitoring to once every 5 years is not only scientifically defensible, but also methodologically appropriate, ethically preferable, and fully consistent with modern adaptive monitoring principles.

5.3 Red-backed Vole Trigger Protocol

The following trigger protocol will be retained to guide expanded monitoring in the event of facility incidents or changes in contaminant patterns detected in other components of the integrated environmental monitoring program (Table 5-2). The trigger framework remains appropriate under the revised monitoring design and provides a scientifically defensible mechanism for scaling up vole tissue collection and analytical scope in response to defined environmental signals.

Table 5-2. Red-backed vole monitoring program triggers and responses (Source: Intricate 2026).

Trigger	Response - Additional Monitoring Work
Statistically significant change in June vole population levels correlated with April/May tissue contaminant levels.	Collect and analyze September vole tissue from population monitoring plots (11, 114 and 70) for PCBs, dioxins and furans.
A facility upset resulting in off-site emissions of significant magnitude to warrant immediate assessment.	Additional sampling of vole tissue and implementation of the June and September live-trapping sessions. Timing, sample locations and analytical scope would be determined based on meteorological conditions and the nature of the release.
Elevated total TEQs in live moss and Labrador tea are observed.	Expand vole tissue collection to 10 plots consistent with the Soil and Vegetation programs.
Elevated PAHs detected in vegetation, soil, or air deposition media.	Add targeted PAH analysis to vole tissue monitoring at near-field and reference plots in the subsequent monitoring year.

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7.0 APPENDICES

Appendix 1. Results of chemical analyses for red-backed vole tissues collected in the SHTC study area, May 2025.

CERTIFICATE OF ANALYSIS

Work Order	: EO2504379	Page	: 1 of 16
Client	: Wildland Management Consultants Ltd.	Laboratory	: ALS Environmental - Edmonton
Contact	: Lawrence Brusnyk	Account Manager	: Dana Brown
Address	: 50345 Range Road 222 Leduc County AB Canada T0B 3M2	Address	: 9450 - 17 Avenue NW Edmonton AB Canada T6N 1M9
Telephone	: 780-915-4856	Telephone	: 7804136472
Project	: SHTC-11-086	Date Samples Received	: 03-Jun-2025 11:56
PO	: ----	Date Analysis	: 20-Jun-2025
		Commenced	
C-O-C number	: ----	Issue Date	: 30-Jul-2025 09:43
Sampler	: LMB/DJ		
Site	: ----		
Quote number	: EO25-WMCL100-0001 SHTC Vole Tissue Analytical		
No. of samples received	: 6		
No. of samples analysed	: 6		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Sabrina Jin	Analyst	Organics, Burlington, Ontario
Sorina Motea	Team Leader - Organics	Organics, Calgary, Alberta



General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).
Measurement Uncertainty: The reported uncertainties in this report are expanded uncertainties calculated using a coverage factor of 2, which gives a level of confidence of approximately 95%.
Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

<i>Unit</i>	<i>Description</i>
mg/kg ww	milligrams per kilogram wet weight

>: greater than.

<: less than.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLCI	Detection Limit Raised: Chromatographic interference due to co-elution.



Analytical Results

EO2504379-001

Sub-Matrix: Tissue

(Matrix: Biota)

Client sample ID: Plot 4 - 6 jars

Client sampling date / time: 19-Jun-2025

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Polycyclic Aromatic Hydrocarbons								
Acenaphthene	83-32-9	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Acenaphthylene	208-96-8	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Anthracene	120-12-7	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Benz(a)anthracene	56-55-3	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Benzo(a)pyrene	50-32-8	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Benzo(b+j)fluoranthene	n/a	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Benzo(b+j+k)fluoranthene	n/a	<0.015	0.015	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Benzo(e)pyrene	192-97-2	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Benzo(g,h,i)perylene	191-24-2	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Benzo(k)fluoranthene	207-08-9	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Biphenyl	92-52-4	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C1 Acenaphthenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C1 Benz(a)anthracenes + Chrysenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C1 Benzofluoranthenes + Benzopyrenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C1 Biphenyls	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C1 Dibenzothiophenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C1 Fluoranthenes + Pyrenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C1 Fluorenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C1 Phenanthrenes + Anthracenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C2 Benz(a)anthracenes + Chrysenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C2 Benzofluoranthenes + Benzopyrenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C2 Biphenyls	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C2 Dibenzothiophenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C2 Fluoranthenes + Pyrenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C2 Fluorenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C2 Naphthalenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621



Analytical Results

EO2504379-001

Sub-Matrix: Tissue

(Matrix: Biota)

Client sample ID: Plot 4 - 6 jars

Client sampling date / time: 19-Jun-2025

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Polycyclic Aromatic Hydrocarbons								
C2 Phenanthrenes + Anthracenes	----	<0.080 ^{DLCL}	0.080	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C3 Benzantracenes + Chrysenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C3 Dibenzothiophenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C3 Fluoranthenes + Pyrenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C3 Fluorenes	----	<0.160 ^{DLCL}	0.160	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C3 Naphthalenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C3 Phenanthrenes + Anthracenes	----	<2.09 ^{DLCL}	2.09	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C4 Benzantracenes + Chrysenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C4 Dibenzothiophenes	----	<0.110 ^{DLCL}	0.110	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C4 Fluoranthenes + Pyrenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C4 Naphthalenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C4 Phenanthrenes + Anthracenes	----	<0.150 ^{DLCL}	0.150	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Chrysene	218-01-9	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Dibenz(a,h)anthracene	53-70-3	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Dibenzothiophene	132-65-0	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Dimethylbenz(a)anthracene, 7,12-	57-97-6	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Fluoranthene	206-44-0	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Fluorene	86-73-7	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Indeno(1,2,3-c,d)pyrene	193-39-5	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Methylnaphthalene, 1-	90-12-0	<0.020	0.020	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Methylnaphthalene, 2-	91-57-6	<0.020	0.020	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Naphthalene	91-20-3	<0.050	0.050	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Perylene	198-55-0	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Phenanthrene	85-01-8	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Pyrene	129-00-0	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Retene	483-65-8	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621



Analytical Results

EO2504379-001

Sub-Matrix: Tissue

(Matrix: Biota)

Client sample ID: Plot 4 - 6 jars

Client sampling date / time: 19-Jun-2025

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Polycyclic Aromatic Hydrocarbons Surrogates								
Acenaphthene-d10	15067-26-2	87.6	0.010	%	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Chrysene-d12	1719-03-5	96.3	0.010	%	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Naphthalene-d8	1146-65-2	74.8	0.010	%	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Phenanthrene-d10	1517-22-2	96.6	0.010	%	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Analytical Results

EO2504379-002

Sub-Matrix: Tissue

(Matrix: Biota)

Client sample ID: Plot 11 - 2 jars

Client sampling date / time: 19-Jun-2025

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Polycyclic Aromatic Hydrocarbons								
Acenaphthene	83-32-9	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Acenaphthylene	208-96-8	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Anthracene	120-12-7	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Benz(a)anthracene	56-55-3	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Benzo(a)pyrene	50-32-8	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Benzo(b+j)fluoranthene	n/a	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Benzo(b+j+k)fluoranthene	n/a	<0.015	0.015	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Benzo(e)pyrene	192-97-2	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Benzo(g,h,i)perylene	191-24-2	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Benzo(k)fluoranthene	207-08-9	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Biphenyl	92-52-4	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C1 Acenaphthenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C1 Benz(a)anthracenes + Chrysenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C1 Benzofluoranthenes + Benzopyrenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C1 Biphenyls	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C1 Dibenzothiophenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C1 Fluoranthenes + Pyrenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C1 Fluorenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621



Analytical Results

EO2504379-002

Sub-Matrix: Tissue

(Matrix: Biota)

Client sample ID: Plot 11 - 2 jars

Client sampling date / time: 19-Jun-2025

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Polycyclic Aromatic Hydrocarbons								
C1 Phenanthrenes + Anthracenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C2 Benz(a)anthracenes + Chrysenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C2 Benzofluoranthenes + Benzopyrenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C2 Biphenyls	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C2 Dibenzothiophenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C2 Fluoranthenes + Pyrenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C2 Fluorenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C2 Naphthalenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C2 Phenanthrenes + Anthracenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C3 Benzantracenes + Chrysenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C3 Dibenzothiophenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C3 Fluoranthenes + Pyrenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C3 Fluorenes	----	<0.080	0.080	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C3 Naphthalenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C3 Phenanthrenes + Anthracenes	----	<0.588	0.588	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C4 Benzantracenes + Chrysenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C4 Dibenzothiophenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C4 Fluoranthenes + Pyrenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C4 Naphthalenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C4 Phenanthrenes + Anthracenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Chrysene	218-01-9	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Dibenz(a,h)anthracene	53-70-3	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Dibenzothiophene	132-65-0	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Dimethylbenz(a)anthracene, 7,12-	57-97-6	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Fluoranthene	206-44-0	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Fluorene	86-73-7	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621



Analytical Results

EO2504379-002

Sub-Matrix: Tissue

(Matrix: Biota)

Client sample ID: Plot 11 - 2 jars

Client sampling date / time: 19-Jun-2025

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Polycyclic Aromatic Hydrocarbons								
Indeno(1,2,3-c,d)pyrene	193-39-5	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Methylnaphthalene, 1-	90-12-0	<0.020	0.020	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Methylnaphthalene, 2-	91-57-6	<0.020	0.020	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Naphthalene	91-20-3	<0.050	0.050	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Perylene	198-55-0	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Phenanthrene	85-01-8	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Pyrene	129-00-0	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Retene	483-65-8	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Polycyclic Aromatic Hydrocarbons Surrogates								
Acenaphthene-d10	15067-26-2	81.4	0.010	%	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Chrysene-d12	1719-03-5	93.1	0.010	%	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Naphthalene-d8	1146-65-2	71.2	0.010	%	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Phenanthrene-d10	1517-22-2	90.3	0.010	%	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Analytical Results

EO2504379-003

Sub-Matrix: Tissue

(Matrix: Biota)

Client sample ID: Plot 70 - 6 jars

Client sampling date / time: 19-Jun-2025

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Polycyclic Aromatic Hydrocarbons								
Acenaphthene	83-32-9	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Acenaphthylene	208-96-8	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Anthracene	120-12-7	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Benz(a)anthracene	56-55-3	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Benzo(a)pyrene	50-32-8	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Benzo(b+j)fluoranthene	n/a	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Benzo(b+j+k)fluoranthene	n/a	<0.015	0.015	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Benzo(e)pyrene	192-97-2	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Benzo(g,h,i)perylene	191-24-2	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621



Analytical Results

EO2504379-003

Sub-Matrix: Tissue

(Matrix: Biota)

Client sample ID: Plot 70 - 6 jars

Client sampling date / time: 19-Jun-2025

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Polycyclic Aromatic Hydrocarbons								
Benzo(k)fluoranthene	207-08-9	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Biphenyl	92-52-4	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C1 Acenaphthenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C1 Benz(a)anthracenes + Chrysenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C1 Benzofluoranthenes + Benzopyrenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C1 Biphenyls	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C1 Dibenzothiophenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C1 Fluoranthenes + Pyrenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C1 Fluorenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C1 Phenanthrenes + Anthracenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C2 Benz(a)anthracenes + Chrysenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C2 Benzofluoranthenes + Benzopyrenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C2 Biphenyls	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C2 Dibenzothiophenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C2 Fluoranthenes + Pyrenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C2 Fluorenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C2 Naphthalenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C2 Phenanthrenes + Anthracenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C3 Benzantracenes + Chrysenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C3 Dibenzothiophenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C3 Fluoranthenes + Pyrenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C3 Fluorenes	----	<0.080 ^{DLCL}	0.080	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C3 Naphthalenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C3 Phenanthrenes + Anthracenes	----	<0.810 ^{DLCL}	0.810	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C4 Benzantracenes + Chrysenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C4 Dibenzothiophenes	----	<0.080 ^{DLCL}	0.080	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621



Analytical Results

EO2504379-003

Sub-Matrix: Tissue

(Matrix: Biota)

Client sample ID: Plot 70 - 6 jars

Client sampling date / time: 19-Jun-2025

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Polycyclic Aromatic Hydrocarbons								
C4 Fluoranthenes + Pyrenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C4 Naphthalenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C4 Phenanthrenes + Anthracenes	----	<0.080	0.080	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Chrysene	218-01-9	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Dibenz(a,h)anthracene	53-70-3	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Dibenzothiophene	132-65-0	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Dimethylbenz(a)anthracene, 7,12-	57-97-6	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Fluoranthene	206-44-0	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Fluorene	86-73-7	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Indeno(1,2,3-c,d)pyrene	193-39-5	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Methylnaphthalene, 1-	90-12-0	<0.020	0.020	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Methylnaphthalene, 2-	91-57-6	<0.020	0.020	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Naphthalene	91-20-3	<0.050	0.050	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Perylene	198-55-0	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Phenanthrene	85-01-8	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Pyrene	129-00-0	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Retene	483-65-8	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Polycyclic Aromatic Hydrocarbons Surrogates								
Acenaphthene-d10	15067-26-2	87.4	0.010	%	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Chrysene-d12	1719-03-5	102	0.010	%	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Naphthalene-d8	1146-65-2	75.2	0.010	%	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Phenanthrene-d10	1517-22-2	97.9	0.010	%	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Analytical Results

EO2504379-004

Sub-Matrix: Tissue

(Matrix: Biota)

Client sample ID: Plot 71 - 2 jars

Client sampling date / time: 19-Jun-2025

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Polycyclic Aromatic Hydrocarbons								



Analytical Results

EO2504379-004

Sub-Matrix: Tissue

(Matrix: Biota)

Client sample ID: Plot 71 - 2 jars

Client sampling date / time: 19-Jun-2025

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Polycyclic Aromatic Hydrocarbons								
Acenaphthene	83-32-9	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Acenaphthylene	208-96-8	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Anthracene	120-12-7	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Benz(a)anthracene	56-55-3	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Benzo(a)pyrene	50-32-8	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Benzo(b+j)fluoranthene	n/a	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Benzo(b+j+k)fluoranthene	n/a	<0.015	0.015	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Benzo(e)pyrene	192-97-2	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Benzo(g,h,i)perylene	191-24-2	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Benzo(k)fluoranthene	207-08-9	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Biphenyl	92-52-4	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C1 Acenaphthenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C1 Benz(a)anthracenes + Chrysenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C1 Benzofluoranthenes + Benzopyrenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C1 Biphenyls	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C1 Dibenzothiophenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C1 Fluoranthenes + Pyrenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C1 Fluorenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C1 Phenanthrenes + Anthracenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C2 Benz(a)anthracenes + Chrysenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C2 Benzofluoranthenes + Benzopyrenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C2 Biphenyls	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C2 Dibenzothiophenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C2 Fluoranthenes + Pyrenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C2 Fluorenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C2 Naphthalenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621



Analytical Results

EO2504379-004

Sub-Matrix: Tissue

(Matrix: Biota)

Client sample ID: Plot 71 - 2 jars

Client sampling date / time: 19-Jun-2025

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Polycyclic Aromatic Hydrocarbons								
C2 Phenanthrenes + Anthracenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C3 Benzantracenes + Chrysenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C3 Dibenzothiophenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C3 Fluoranthenes + Pyrenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C3 Fluorenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C3 Naphthalenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C3 Phenanthrenes + Anthracenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C4 Benzantracenes + Chrysenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C4 Dibenzothiophenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C4 Fluoranthenes + Pyrenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C4 Naphthalenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C4 Phenanthrenes + Anthracenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Chrysene	218-01-9	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Dibenz(a,h)anthracene	53-70-3	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Dibenzothiophene	132-65-0	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Dimethylbenz(a)anthracene, 7,12-	57-97-6	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Fluoranthene	206-44-0	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Fluorene	86-73-7	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Indeno(1,2,3-c,d)pyrene	193-39-5	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Methylnaphthalene, 1-	90-12-0	<0.020	0.020	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Methylnaphthalene, 2-	91-57-6	<0.020	0.020	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Naphthalene	91-20-3	<0.050	0.050	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Perylene	198-55-0	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Phenanthrene	85-01-8	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Pyrene	129-00-0	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Retene	483-65-8	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621



Analytical Results

EO2504379-004

Sub-Matrix: Tissue

(Matrix: Biota)

Client sample ID: Plot 71 - 2 jars

Client sampling date / time: 19-Jun-2025

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Polycyclic Aromatic Hydrocarbons Surrogates								
Acenaphthene-d10	15067-26-2	90.4	0.010	%	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Chrysene-d12	1719-03-5	104	0.010	%	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Naphthalene-d8	1146-65-2	82.0	0.010	%	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Phenanthrene-d10	1517-22-2	102	0.010	%	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Analytical Results

EO2504379-005

Sub-Matrix: Tissue

(Matrix: Biota)

Client sample ID: Plot 109 - 3 jars

Client sampling date / time: 19-Jun-2025

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Polycyclic Aromatic Hydrocarbons								
Acenaphthene	83-32-9	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Acenaphthylene	208-96-8	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Anthracene	120-12-7	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Benz(a)anthracene	56-55-3	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Benzo(a)pyrene	50-32-8	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Benzo(b+j)fluoranthene	n/a	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Benzo(b+j+k)fluoranthene	n/a	<0.015	0.015	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Benzo(e)pyrene	192-97-2	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Benzo(g,h,i)perylene	191-24-2	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Benzo(k)fluoranthene	207-08-9	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Biphenyl	92-52-4	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C1 Acenaphthenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C1 Benz(a)anthracenes + Chrysenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C1 Benzofluoranthenes + Benzopyrenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C1 Biphenyls	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C1 Dibenzothiophenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C1 Fluoranthenes + Pyrenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C1 Fluorenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621



Analytical Results

EO2504379-005

Sub-Matrix: Tissue

(Matrix: Biota)

Client sample ID: Plot 109 - 3 jars

Client sampling date / time: 19-Jun-2025

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Polycyclic Aromatic Hydrocarbons								
C1 Phenanthrenes + Anthracenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C2 Benz(a)anthracenes + Chrysenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C2 Benzofluoranthenes + Benzopyrenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C2 Biphenyls	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C2 Dibenzothiophenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C2 Fluoranthenes + Pyrenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C2 Fluorenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C2 Naphthalenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C2 Phenanthrenes + Anthracenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C3 Benzantracenes + Chrysenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C3 Dibenzothiophenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C3 Fluoranthenes + Pyrenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C3 Fluorenes	----	<0.080	DLCL 0.080	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C3 Naphthalenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C3 Phenanthrenes + Anthracenes	----	<1.60	DLCL 1.60	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C4 Benzantracenes + Chrysenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C4 Dibenzothiophenes	----	<0.120	DLCL 0.120	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C4 Fluoranthenes + Pyrenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C4 Naphthalenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C4 Phenanthrenes + Anthracenes	----	<0.160	DLCL 0.160	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Chrysene	218-01-9	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Dibenz(a,h)anthracene	53-70-3	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Dibenzothiophene	132-65-0	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Dimethylbenz(a)anthracene, 7,12-	57-97-6	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Fluoranthene	206-44-0	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Fluorene	86-73-7	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621



Analytical Results

EO2504379-005

Sub-Matrix: Tissue

(Matrix: Biota)

Client sample ID: Plot 109 - 3 jars

Client sampling date / time: 19-Jun-2025

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Polycyclic Aromatic Hydrocarbons								
Indeno(1,2,3-c,d)pyrene	193-39-5	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Methylnaphthalene, 1-	90-12-0	<0.020	0.020	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Methylnaphthalene, 2-	91-57-6	<0.020	0.020	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Naphthalene	91-20-3	<0.050	0.050	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Perylene	198-55-0	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Phenanthrene	85-01-8	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Pyrene	129-00-0	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Retene	483-65-8	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Polycyclic Aromatic Hydrocarbons Surrogates								
Acenaphthene-d10	15067-26-2	90.6	0.010	%	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Chrysene-d12	1719-03-5	85.4	0.010	%	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Naphthalene-d8	1146-65-2	76.6	0.010	%	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Phenanthrene-d10	1517-22-2	97.5	0.010	%	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Analytical Results

EO2504379-006

Sub-Matrix: Tissue

(Matrix: Biota)

Client sample ID: Plot 114- 3 jars

Client sampling date / time: 19-Jun-2025

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Polycyclic Aromatic Hydrocarbons								
Acenaphthene	83-32-9	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Acenaphthylene	208-96-8	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Anthracene	120-12-7	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Benz(a)anthracene	56-55-3	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Benzo(a)pyrene	50-32-8	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Benzo(b+j)fluoranthene	n/a	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Benzo(b+j+k)fluoranthene	n/a	<0.015	0.015	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Benzo(e)pyrene	192-97-2	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Benzo(g,h,i)perylene	191-24-2	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621



Analytical Results

EO2504379-006

Sub-Matrix: Tissue

(Matrix: Biota)

Client sample ID: Plot 114- 3 jars

Client sampling date / time: 19-Jun-2025

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Polycyclic Aromatic Hydrocarbons								
Benzo(k)fluoranthene	207-08-9	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Biphenyl	92-52-4	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C1 Acenaphthenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C1 Benz(a)anthracenes + Chrysenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C1 Benzofluoranthenes + Benzopyrenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C1 Biphenyls	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C1 Dibenzothiophenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C1 Fluoranthenes + Pyrenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C1 Fluorenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C1 Phenanthrenes + Anthracenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C2 Benz(a)anthracenes + Chrysenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C2 Benzofluoranthenes + Benzopyrenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C2 Biphenyls	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C2 Dibenzothiophenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C2 Fluoranthenes + Pyrenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C2 Fluorenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C2 Naphthalenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C2 Phenanthrenes + Anthracenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C3 Benzantracenes + Chrysenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C3 Dibenzothiophenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C3 Fluoranthenes + Pyrenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C3 Fluorenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C3 Naphthalenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C3 Phenanthrenes + Anthracenes	----	<0.730	0.730	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C4 Benzantracenes + Chrysenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C4 Dibenzothiophenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621



Analytical Results

EO2504379-006

Sub-Matrix: Tissue

(Matrix: Biota)

Client sample ID: Plot 114- 3 jars

Client sampling date / time: 19-Jun-2025

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
Polycyclic Aromatic Hydrocarbons								
C4 Fluoranthenes + Pyrenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C4 Naphthalenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
C4 Phenanthrenes + Anthracenes	----	<0.040	0.040	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Chrysene	218-01-9	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Dibenz(a,h)anthracene	53-70-3	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Dibenzothiophene	132-65-0	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Dimethylbenz(a)anthracene, 7,12-	57-97-6	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Fluoranthene	206-44-0	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Fluorene	86-73-7	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Indeno(1,2,3-c,d)pyrene	193-39-5	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Methylnaphthalene, 1-	90-12-0	<0.020	0.020	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Methylnaphthalene, 2-	91-57-6	<0.020	0.020	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Naphthalene	91-20-3	<0.050	0.050	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Perylene	198-55-0	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Phenanthrene	85-01-8	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Pyrene	129-00-0	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Retene	483-65-8	<0.010	0.010	mg/kg wwt	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Polycyclic Aromatic Hydrocarbons Surrogates								
Acenaphthene-d10	15067-26-2	84.9	0.010	%	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Chrysene-d12	1719-03-5	97.3	0.010	%	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Naphthalene-d8	1146-65-2	77.6	0.010	%	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621
Phenanthrene-d10	1517-22-2	93.4	0.010	%	E642E.A/CG	27-Jun-2025	15-Jul-2025	2079621

Please refer to the General Comments section for an explanation of any result qualifiers detected.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	:EO2504379	Page	: 1 of 7
Client	: Wildland Management Consultants Ltd.	Laboratory	: ALS Environmental - Edmonton
Contact	: Lawrence Brusnyk	Account Manager	: Dana Brown
Address	: 50345 Range Road 222 Leduc County AB Canada T0B 3M2	Address	: 9450 - 17 Avenue NW Edmonton, Alberta Canada T6N 1M9
Telephone	: 780-915-4856	Telephone	: 7804136472
Project	: SHTC-11-086	Date Samples Received	: 03-Jun-2025 11:56
PO	: ----	Issue Date	: 30-Jul-2025 09:43
C-O-C number	: ----		
Sampler	: LMB/DJ		
Site	: ----		
Quote number	: EO25-WMCL100-0001 SHTC Vole Tissue Analytical		
No. of samples received	: 6		
No. of samples analysed	: 6		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "----" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Biota** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group : Analytical Method	Method	Sampling Date	Extraction / Preparation				Analysis			
Container / Client Sample ID(s)			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Dioxins and Furans : Dioxins and Furans in Biota by GC/HRMS - (Wet Weight)										
Glass soil jar/Teflon lined cap Plot 109 - 3 jars	E766A	19-Jun-2025	20-Jun-2025	381 days	17 days	✓	12-Jul-2025	365 days	22 days	✓
Dioxins and Furans : Dioxins and Furans in Biota by GC/HRMS - (Wet Weight)										
Glass soil jar/Teflon lined cap Plot 11 - 2 jars	E766A	19-Jun-2025	20-Jun-2025	381 days	17 days	✓	12-Jul-2025	365 days	22 days	✓
Dioxins and Furans : Dioxins and Furans in Biota by GC/HRMS - (Wet Weight)										
Glass soil jar/Teflon lined cap Plot 114- 3 jars	E766A	19-Jun-2025	20-Jun-2025	381 days	17 days	✓	12-Jul-2025	365 days	22 days	✓
Dioxins and Furans : Dioxins and Furans in Biota by GC/HRMS - (Wet Weight)										
Glass soil jar/Teflon lined cap Plot 4 - 6 jars	E766A	19-Jun-2025	20-Jun-2025	381 days	17 days	✓	12-Jul-2025	365 days	22 days	✓
Dioxins and Furans : Dioxins and Furans in Biota by GC/HRMS - (Wet Weight)										
Glass soil jar/Teflon lined cap Plot 70 - 6 jars	E766A	19-Jun-2025	20-Jun-2025	381 days	17 days	✓	12-Jul-2025	365 days	22 days	✓
Dioxins and Furans : Dioxins and Furans in Biota by GC/HRMS - (Wet Weight)										
Glass soil jar/Teflon lined cap Plot 71 - 2 jars	E766A	19-Jun-2025	20-Jun-2025	381 days	17 days	✓	12-Jul-2025	365 days	22 days	✓
Polychlorinated Biphenyls : PCBs in Biota by GC/HRMS - (Wet Weight)										
Glass soil jar/Teflon lined cap Plot 109 - 3 jars	E781A	19-Jun-2025	20-Jun-2025	381 days	17 days	✓	24-Jul-2025	365 days	34 days	✓



Matrix: **Biota** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group : Analytical Method	Method	Sampling Date	Extraction / Preparation				Analysis			
Container / Client Sample ID(s)			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Polychlorinated Biphenyls : PCBs in Biota by GC/HRMS - (Wet Weight)										
Glass soil jar/Teflon lined cap Plot 11 - 2 jars	E781A	19-Jun-2025	20-Jun-2025	381 days	17 days	✓	24-Jul-2025	365 days	34 days	✓
Polychlorinated Biphenyls : PCBs in Biota by GC/HRMS - (Wet Weight)										
Glass soil jar/Teflon lined cap Plot 114- 3 jars	E781A	19-Jun-2025	20-Jun-2025	381 days	17 days	✓	24-Jul-2025	365 days	34 days	✓
Polychlorinated Biphenyls : PCBs in Biota by GC/HRMS - (Wet Weight)										
Glass soil jar/Teflon lined cap Plot 4 - 6 jars	E781A	19-Jun-2025	20-Jun-2025	381 days	17 days	✓	24-Jul-2025	365 days	34 days	✓
Polychlorinated Biphenyls : PCBs in Biota by GC/HRMS - (Wet Weight)										
Glass soil jar/Teflon lined cap Plot 70 - 6 jars	E781A	19-Jun-2025	20-Jun-2025	381 days	17 days	✓	24-Jul-2025	365 days	34 days	✓
Polychlorinated Biphenyls : PCBs in Biota by GC/HRMS - (Wet Weight)										
Glass soil jar/Teflon lined cap Plot 71 - 2 jars	E781A	19-Jun-2025	20-Jun-2025	381 days	17 days	✓	24-Jul-2025	365 days	34 days	✓
Polycyclic Aromatic Hydrocarbons : Alkylated PAHs by GC-MS (Wet Weight)										
Glass soil jar/Teflon lined cap Plot 109 - 3 jars	E642E.A	19-Jun-2025	27-Jun-2025	380 days	24 days	✓	15-Jul-2025	40 days	18 days	✓
Polycyclic Aromatic Hydrocarbons : Alkylated PAHs by GC-MS (Wet Weight)										
Glass soil jar/Teflon lined cap Plot 11 - 2 jars	E642E.A	19-Jun-2025	27-Jun-2025	380 days	24 days	✓	15-Jul-2025	40 days	18 days	✓
Polycyclic Aromatic Hydrocarbons : Alkylated PAHs by GC-MS (Wet Weight)										
Glass soil jar/Teflon lined cap Plot 114- 3 jars	E642E.A	19-Jun-2025	27-Jun-2025	380 days	24 days	✓	15-Jul-2025	40 days	18 days	✓
Polycyclic Aromatic Hydrocarbons : Alkylated PAHs by GC-MS (Wet Weight)										
Glass soil jar/Teflon lined cap Plot 4 - 6 jars	E642E.A	19-Jun-2025	27-Jun-2025	380 days	24 days	✓	15-Jul-2025	40 days	18 days	✓



Matrix: **Biota** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Polycyclic Aromatic Hydrocarbons : Alkylated PAHs by GC-MS (Wet Weight)										
Glass soil jar/Teflon lined cap Plot 70 - 6 jars	E642E.A	19-Jun-2025	27-Jun-2025	380 days	24 days	✓	15-Jul-2025	40 days	18 days	✓
Polycyclic Aromatic Hydrocarbons : Alkylated PAHs by GC-MS (Wet Weight)										
Glass soil jar/Teflon lined cap Plot 71 - 2 jars	E642E.A	19-Jun-2025	27-Jun-2025	380 days	24 days	✓	15-Jul-2025	40 days	18 days	✓

Legend & Qualifier Definitions

Rec. HT: ALS recommended hold time (see units).



Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Biota**

Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
Analytical Methods							
Laboratory Duplicates (DUP)							
Alkylated PAHs by GC-MS (Wet Weight)	E642E.A	2079621	1	9	11.1	5.0	✓
Laboratory Control Samples (LCS)							
Alkylated PAHs by GC-MS (Wet Weight)	E642E.A	2079621	1	9	11.1	5.0	✓
Method Blanks (MB)							
Alkylated PAHs by GC-MS (Wet Weight)	E642E.A	2079621	1	9	11.1	5.0	✓



Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkylated PAHs by GC-MS (Wet Weight)	E642E.A ALS Environmental - Calgary	Biota	EPA 8270E (mod)	Polycyclic Aromatic Hydrocarbons (PAHs) are analyzed by GC-MS.
Dioxins and Furans in Biota by GC/HRMS - (Wet Weight)	E766A ALS Environmental - Burlington	Biota	USEPA 1613B	The sample is extracted by Soxhlet extraction using Dichloromethane. The extracts are prepared using column chromatography, reduced in volume and analyzed by isotope-dilution GC/HRMS Reported on a wet-weight basis.
PCBs in Biota by GC/HRMS - (Wet Weight)	E781A ALS Environmental - Burlington	Biota	EPA 1668C	The sample is extracted by Soxhlet extraction. Extracts are prepared using column chromatography, reduced in volume and analyzed by isotope-dilution GC/HRMS Reported on a wet-weight basis.
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
PAHs DCM-Acetone Tumbler Extraction	EP642 ALS Environmental - Calgary	Biota	EPA 3570 (mod)	Samples are subsampled and PAHs are extracted with 1:1 DCM:acetone using a rotary extractor.
Soxhlet extraction of Tissues for DX/Fs, and/or PCNs	EP800 ALS Environmental - Burlington	Biota	EPA Method 3540C (preparation)	Solid samples are homogenized and sub-sampled, then extracted using Soxhlet.

QUALITY CONTROL REPORT

Work Order	: EO2504379	Page	: 1 of 8
Client	: Wildland Management Consultants Ltd.	Laboratory	: ALS Environmental - Edmonton
Contact	: Lawrence Brusnyk	Account Manager	: Dana Brown
Address	: 50345 Range Road 222 Leduc County AB Canada T0B 3M2	Address	: 9450 - 17 Avenue NW Edmonton, Alberta Canada T6N 1M9
Telephone	: 780-915-4856	Telephone	: 7804136472
Project	: SHTC-11-086	Date Samples Received	: 03-Jun-2025 11:56
PO	: ----	Date Analysis Commenced	: 20-Jun-2025
C-O-C number	: ----	Issue Date	: 30-Jul-2025 09:43
Sampler	: LMB/DJ		
Site	: ----		
Quote number	: EO25-WMCL100-0001 SHTC Vole Tissue Analytical		
No. of samples received	: 6		
No. of samples analysed	: 6		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department
Sabrina Jin	Analyst	Burlington Organics, Burlington, Ontario
Sorina Motea	Team Leader - Organics	Calgary Organics, Calgary, Alberta



General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.



Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: Biota					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Polycyclic Aromatic Hydrocarbons (QC Lot: 2079621)											
EO2504379-001	Plot 4 - 6 jars	Acenaphthene	83-32-9	E642E.A	0.010	mg/kg wwt	<0.010	<0.010	0	Diff <2x LOR	----
		Acenaphthylene	208-96-8	E642E.A	0.010	mg/kg wwt	<0.010	<0.010	0	Diff <2x LOR	----
		Anthracene	120-12-7	E642E.A	0.010	mg/kg wwt	<0.010	<0.010	0	Diff <2x LOR	----
		Benz(a)anthracene	56-55-3	E642E.A	0.010	mg/kg wwt	<0.010	<0.010	0	Diff <2x LOR	----
		Benzo(a)pyrene	50-32-8	E642E.A	0.010	mg/kg wwt	<0.010	<0.010	0	Diff <2x LOR	----
		Benzo(b+j)fluoranthene	n/a	E642E.A	0.010	mg/kg wwt	<0.010	<0.010	0	Diff <2x LOR	----
		Benzo(e)pyrene	192-97-2	E642E.A	0.010	mg/kg wwt	<0.010	<0.010	0	Diff <2x LOR	----
		Benzo(g,h,i)perylene	191-24-2	E642E.A	0.010	mg/kg wwt	<0.010	<0.010	0	Diff <2x LOR	----
		Benzo(k)fluoranthene	207-08-9	E642E.A	0.010	mg/kg wwt	<0.010	<0.010	0	Diff <2x LOR	----
		Biphenyl	92-52-4	E642E.A	0.010	mg/kg wwt	<0.010	<0.010	0	Diff <2x LOR	----
		C1 Acenaphthenes	----	E642E.A	0.040	mg/kg wwt	<0.040	<0.040	0	Diff <2x LOR	----
		C1 Benz(a)anthracenes + Chrysenes	----	E642E.A	0.040	mg/kg wwt	<0.040	<0.040	0	Diff <2x LOR	----
		C1 Benzo(a)fluoranthenes + Benzopyrenes	----	E642E.A	0.040	mg/kg wwt	<0.040	<0.040	0	Diff <2x LOR	----
		C1 Biphenyls	----	E642E.A	0.040	mg/kg wwt	<0.040	<0.040	0	Diff <2x LOR	----
		C1 Dibenzo(a)thiophenes	----	E642E.A	0.040	mg/kg wwt	<0.040	<0.040	0	Diff <2x LOR	----
		C1 Fluoranthenes + Pyrenes	----	E642E.A	0.040	mg/kg wwt	<0.040	<0.040	0	Diff <2x LOR	----
		C1 Fluorenes	----	E642E.A	0.040	mg/kg wwt	<0.040	<0.040	0	Diff <2x LOR	----
		C1 Phenanthrenes + Anthracenes	----	E642E.A	0.040	mg/kg wwt	<0.040	<0.040	0	Diff <2x LOR	----
		C2 Benz(a)anthracenes + Chrysenes	----	E642E.A	0.040	mg/kg wwt	<0.040	<0.040	0	Diff <2x LOR	----
		C2 Benzo(a)fluoranthenes + Benzopyrenes	----	E642E.A	0.040	mg/kg wwt	<0.040	<0.040	0	Diff <2x LOR	----
		C2 Biphenyls	----	E642E.A	0.040	mg/kg wwt	<0.040	<0.040	0	Diff <2x LOR	----
		C2 Dibenzo(a)thiophenes	----	E642E.A	0.040	mg/kg wwt	<0.040	0.044	0.004	Diff <2x LOR	----
		C2 Fluoranthenes + Pyrenes	----	E642E.A	0.040	mg/kg wwt	<0.040	<0.040	0	Diff <2x LOR	----
		C2 Fluorenes	----	E642E.A	0.040	mg/kg wwt	<0.040	<0.040	0	Diff <2x LOR	----
		C2 Naphthalenes	----	E642E.A	0.040	mg/kg wwt	<0.040	<0.040	0	Diff <2x LOR	----
		C2 Phenanthrenes + Anthracenes	----	E642E.A	0.080	mg/kg wwt	<0.080	<0.080	0	Diff <2x LOR	----
		C3 Benzo(a)anthracenes + Chrysenes	----	E642E.A	0.040	mg/kg wwt	<0.040	<0.040	0	Diff <2x LOR	----
		C3 Dibenzo(a)thiophenes	----	E642E.A	0.040	mg/kg wwt	<0.040	<0.040	0	Diff <2x LOR	----
		C3 Fluoranthenes + Pyrenes	----	E642E.A	0.040	mg/kg wwt	<0.040	0.049	0.009	Diff <2x LOR	----



Sub-Matrix: Biota

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Polycyclic Aromatic Hydrocarbons (QC Lot: 2079621) - continued											
EO2504379-001	Plot 4 - 6 jars	C3 Fluorenes	----	E642E.A	0.160	mg/kg ww	<0.160	<0.160	0	Diff <2x LOR	----
		C3 Naphthalenes	----	E642E.A	0.040	mg/kg ww	<0.040	<0.040	0	Diff <2x LOR	----
		C3 Phenanthrenes + Anthracenes	----	E642E.A	2.09	mg/kg ww	<2.09	<2.09	0	Diff <2x LOR	----
		C4 Benzantracenes + Chrysenes	----	E642E.A	0.040	mg/kg ww	<0.040	<0.040	0	Diff <2x LOR	----
		C4 Dibenzothiophenes	----	E642E.A	0.110	mg/kg ww	<0.110	<0.110	0	Diff <2x LOR	----
		C4 Fluoranthenes + Pyrenes	----	E642E.A	0.040	mg/kg ww	<0.040	<0.040	0	Diff <2x LOR	----
		C4 Naphthalenes	----	E642E.A	0.040	mg/kg ww	<0.040	<0.040	0	Diff <2x LOR	----
		C4 Phenanthrenes + Anthracenes	----	E642E.A	0.150	mg/kg ww	<0.150	<0.150	0	Diff <2x LOR	----
		Chrysene	218-01-9	E642E.A	0.010	mg/kg ww	<0.010	<0.010	0	Diff <2x LOR	----
		Dibenz(a,h)anthracene	53-70-3	E642E.A	0.010	mg/kg ww	<0.010	<0.010	0	Diff <2x LOR	----
		Dibenzothiophene	132-65-0	E642E.A	0.010	mg/kg ww	<0.010	<0.010	0	Diff <2x LOR	----
		Dimethylbenz(a)anthracene, 7,12-	57-97-6	E642E.A	0.010	mg/kg ww	<0.010	<0.010	0	Diff <2x LOR	----
		Fluoranthene	206-44-0	E642E.A	0.010	mg/kg ww	<0.010	<0.010	0	Diff <2x LOR	----
		Fluorene	86-73-7	E642E.A	0.010	mg/kg ww	<0.010	<0.010	0	Diff <2x LOR	----
		Indeno(1,2,3-c,d)pyrene	193-39-5	E642E.A	0.010	mg/kg ww	<0.010	<0.010	0	Diff <2x LOR	----
		Methylnaphthalene, 1-	90-12-0	E642E.A	0.020	mg/kg ww	<0.020	<0.020	0	Diff <2x LOR	----
		Methylnaphthalene, 2-	91-57-6	E642E.A	0.020	mg/kg ww	<0.020	<0.020	0	Diff <2x LOR	----
		Naphthalene	91-20-3	E642E.A	0.050	mg/kg ww	<0.050	<0.050	0	Diff <2x LOR	----
		Perylene	198-55-0	E642E.A	0.010	mg/kg ww	<0.010	<0.010	0	Diff <2x LOR	----
		Phenanthrene	85-01-8	E642E.A	0.010	mg/kg ww	<0.010	<0.010	0	Diff <2x LOR	----
		Pyrene	129-00-0	E642E.A	0.010	mg/kg ww	<0.010	<0.010	0	Diff <2x LOR	----
		Retene	483-65-8	E642E.A	0.010	mg/kg ww	<0.010	<0.010	0	Diff <2x LOR	----



Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: Biota

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 2079621)						
Acenaphthene	83-32-9	E642E.A	0.01	mg/kg wwt	<0.010	----
Acenaphthylene	208-96-8	E642E.A	0.01	mg/kg wwt	<0.010	----
Anthracene	120-12-7	E642E.A	0.01	mg/kg wwt	<0.010	----
Benz(a)anthracene	56-55-3	E642E.A	0.01	mg/kg wwt	<0.010	----
Benzo(a)pyrene	50-32-8	E642E.A	0.01	mg/kg wwt	<0.010	----
Benzo(b+j)fluoranthene	n/a	E642E.A	0.01	mg/kg wwt	<0.010	----
Benzo(e)pyrene	192-97-2	E642E.A	0.01	mg/kg wwt	<0.010	----
Benzo(g,h,i)perylene	191-24-2	E642E.A	0.01	mg/kg wwt	<0.010	----
Benzo(k)fluoranthene	207-08-9	E642E.A	0.01	mg/kg wwt	<0.010	----
Biphenyl	92-52-4	E642E.A	0.01	mg/kg wwt	<0.010	----
C1 Acenaphthenes	----	E642E.A	0.04	mg/kg wwt	<0.040	----
C1 Benz(a)anthracenes + Chrysenes	----	E642E.A	0.04	mg/kg wwt	<0.040	----
C1 Benzo(a)fluoranthenes + Benzopyrenes	----	E642E.A	0.04	mg/kg wwt	<0.040	----
C1 Biphenyls	----	E642E.A	0.04	mg/kg wwt	<0.040	----
C1 Dibenzothiophenes	----	E642E.A	0.04	mg/kg wwt	<0.040	----
C1 Fluoranthenes + Pyrenes	----	E642E.A	0.04	mg/kg wwt	<0.040	----
C1 Fluorenes	----	E642E.A	0.04	mg/kg wwt	<0.040	----
C1 Phenanthrenes + Anthracenes	----	E642E.A	0.04	mg/kg wwt	<0.040	----
C2 Benz(a)anthracenes + Chrysenes	----	E642E.A	0.04	mg/kg wwt	<0.040	----
C2 Benzo(a)fluoranthenes + Benzopyrenes	----	E642E.A	0.04	mg/kg wwt	<0.040	----
C2 Biphenyls	----	E642E.A	0.04	mg/kg wwt	<0.040	----
C2 Dibenzothiophenes	----	E642E.A	0.04	mg/kg wwt	<0.040	----
C2 Fluoranthenes + Pyrenes	----	E642E.A	0.04	mg/kg wwt	<0.040	----
C2 Fluorenes	----	E642E.A	0.04	mg/kg wwt	<0.040	----
C2 Naphthalenes	----	E642E.A	0.04	mg/kg wwt	<0.040	----
C2 Phenanthrenes + Anthracenes	----	E642E.A	0.04	mg/kg wwt	<0.040	----
C3 Benzanthracenes + Chrysenes	----	E642E.A	0.04	mg/kg wwt	<0.040	----
C3 Dibenzothiophenes	----	E642E.A	0.04	mg/kg wwt	<0.040	----
C3 Fluoranthenes + Pyrenes	----	E642E.A	0.04	mg/kg wwt	<0.040	----
C3 Fluorenes	----	E642E.A	0.04	mg/kg wwt	<0.040	----
C3 Naphthalenes	----	E642E.A	0.04	mg/kg wwt	<0.040	----
C3 Phenanthrenes + Anthracenes	----	E642E.A	0.04	mg/kg wwt	<0.040	----



Sub-Matrix: Biota

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 2079621) - continued						
C4 Benzantracenes + Chrysenes	----	E642E.A	0.04	mg/kg wwt	<0.040	----
C4 Dibenzothiophenes	----	E642E.A	0.04	mg/kg wwt	<0.040	----
C4 Fluoranthenes + Pyrenes	----	E642E.A	0.04	mg/kg wwt	<0.040	----
C4 Naphthalenes	----	E642E.A	0.04	mg/kg wwt	<0.040	----
C4 Phenanthrenes + Anthracenes	----	E642E.A	0.04	mg/kg wwt	<0.040	----
Chrysene	218-01-9	E642E.A	0.01	mg/kg wwt	<0.010	----
Dibenz(a,h)anthracene	53-70-3	E642E.A	0.01	mg/kg wwt	<0.010	----
Dibenzothiophene	132-65-0	E642E.A	0.01	mg/kg wwt	<0.010	----
Dimethylbenz(a)anthracene, 7,12-	57-97-6	E642E.A	0.01	mg/kg wwt	<0.010	----
Fluoranthene	206-44-0	E642E.A	0.01	mg/kg wwt	<0.010	----
Fluorene	86-73-7	E642E.A	0.01	mg/kg wwt	<0.010	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E642E.A	0.01	mg/kg wwt	<0.010	----
Methylnaphthalene, 1-	90-12-0	E642E.A	0.02	mg/kg wwt	<0.020	----
Methylnaphthalene, 2-	91-57-6	E642E.A	0.02	mg/kg wwt	<0.020	----
Naphthalene	91-20-3	E642E.A	0.05	mg/kg wwt	<0.050	----
Perylene	198-55-0	E642E.A	0.01	mg/kg wwt	<0.010	----
Phenanthrene	85-01-8	E642E.A	0.01	mg/kg wwt	<0.010	----
Pyrene	129-00-0	E642E.A	0.01	mg/kg wwt	<0.010	----
Retene	483-65-8	E642E.A	0.01	mg/kg wwt	<0.010	----



Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: Biota

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 2079621)									
Acenaphthene	83-32-9	E642E.A	0.01	mg/kg wwt	0.469 mg/kg wwt	83.0	60.0	130	----
Acenaphthylene	208-96-8	E642E.A	0.01	mg/kg wwt	0.469 mg/kg wwt	83.3	60.0	130	----
Anthracene	120-12-7	E642E.A	0.01	mg/kg wwt	0.469 mg/kg wwt	94.8	60.0	130	----
Benz(a)anthracene	56-55-3	E642E.A	0.01	mg/kg wwt	0.469 mg/kg wwt	95.7	60.0	130	----
Benzo(a)pyrene	50-32-8	E642E.A	0.01	mg/kg wwt	0.469 mg/kg wwt	112	60.0	130	----
Benzo(b+j)fluoranthene	n/a	E642E.A	0.01	mg/kg wwt	0.469 mg/kg wwt	97.8	60.0	130	----
Benzo(e)pyrene	192-97-2	E642E.A	0.01	mg/kg wwt	0.469 mg/kg wwt	100	60.0	130	----
Benzo(g,h,i)perylene	191-24-2	E642E.A	0.01	mg/kg wwt	0.469 mg/kg wwt	91.0	60.0	130	----
Benzo(k)fluoranthene	207-08-9	E642E.A	0.01	mg/kg wwt	0.469 mg/kg wwt	95.2	60.0	130	----
Biphenyl	92-52-4	E642E.A	0.01	mg/kg wwt	0.469 mg/kg wwt	77.4	60.0	130	----
C1 Acenaphthenes	----	E642E.A	0.04	mg/kg wwt	0.469 mg/kg wwt	83.0	60.0	130	----
C1 Benz(a)anthracenes + Chrysenes	----	E642E.A	0.04	mg/kg wwt	0.469 mg/kg wwt	76.1	60.0	130	----
C1 Benzofluoranthenes + Benzopyrenes	----	E642E.A	0.04	mg/kg wwt	0.469 mg/kg wwt	97.8	60.0	130	----
C1 Biphenyls	----	E642E.A	0.04	mg/kg wwt	0.469 mg/kg wwt	77.4	60.0	130	----
C1 Dibenzothiophenes	----	E642E.A	0.04	mg/kg wwt	0.469 mg/kg wwt	80.4	60.0	130	----
C1 Fluoranthenes + Pyrenes	----	E642E.A	0.04	mg/kg wwt	0.469 mg/kg wwt	88.6	60.0	130	----
C1 Fluorenes	----	E642E.A	0.04	mg/kg wwt	0.469 mg/kg wwt	90.4	60.0	130	----
C1 Phenanthrenes + Anthracenes	----	E642E.A	0.04	mg/kg wwt	0.469 mg/kg wwt	93.9	60.0	130	----
C2 Benz(a)anthracenes + Chrysenes	----	E642E.A	0.04	mg/kg wwt	0.469 mg/kg wwt	76.1	60.0	130	----
C2 Benzofluoranthenes + Benzopyrenes	----	E642E.A	0.04	mg/kg wwt	0.469 mg/kg wwt	97.8	60.0	130	----
C2 Biphenyls	----	E642E.A	0.04	mg/kg wwt	0.469 mg/kg wwt	77.4	60.0	130	----
C2 Dibenzothiophenes	----	E642E.A	0.04	mg/kg wwt	0.469 mg/kg wwt	80.4	60.0	130	----
C2 Fluoranthenes + Pyrenes	----	E642E.A	0.04	mg/kg wwt	0.469 mg/kg wwt	88.6	60.0	130	----
C2 Fluorenes	----	E642E.A	0.04	mg/kg wwt	0.469 mg/kg wwt	90.4	60.0	130	----
C2 Naphthalenes	----	E642E.A	0.04	mg/kg wwt	0.469 mg/kg wwt	77.2	60.0	130	----
C2 Phenanthrenes + Anthracenes	----	E642E.A	0.04	mg/kg wwt	0.469 mg/kg wwt	93.9	60.0	130	----
C3 Benzanthracenes + Chrysenes	----	E642E.A	0.04	mg/kg wwt	0.469 mg/kg wwt	76.1	60.0	130	----
C3 Dibenzothiophenes	----	E642E.A	0.04	mg/kg wwt	0.469 mg/kg wwt	80.4	60.0	130	----
C3 Fluoranthenes + Pyrenes	----	E642E.A	0.04	mg/kg wwt	0.469 mg/kg wwt	88.6	60.0	130	----
C3 Fluorenes	----	E642E.A	0.04	mg/kg wwt	0.469 mg/kg wwt	90.4	60.0	130	----
C3 Naphthalenes	----	E642E.A	0.04	mg/kg wwt	0.469 mg/kg wwt	77.2	60.0	130	----
C3 Phenanthrenes + Anthracenes	----	E642E.A	0.04	mg/kg wwt	0.469 mg/kg wwt	93.9	60.0	130	----
C4 Benzanthracenes + Chrysenes	----	E642E.A	0.04	mg/kg wwt	0.469 mg/kg wwt	76.1	60.0	130	----



Sub-Matrix: Biota

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 2079621) - continued									
C4 Dibenzothiophenes	----	E642E.A	0.04	mg/kg wwt	0.469 mg/kg wwt	80.4	60.0	130	----
C4 Fluoranthenes + Pyrenes	----	E642E.A	0.04	mg/kg wwt	0.469 mg/kg wwt	76.1	60.0	130	----
C4 Naphthalenes	----	E642E.A	0.04	mg/kg wwt	0.469 mg/kg wwt	77.2	60.0	130	----
C4 Phenanthrenes + Anthracenes	----	E642E.A	0.04	mg/kg wwt	0.469 mg/kg wwt	93.9	60.0	130	----
Chrysene	218-01-9	E642E.A	0.01	mg/kg wwt	0.469 mg/kg wwt	76.1	60.0	130	----
Dibenz(a,h)anthracene	53-70-3	E642E.A	0.01	mg/kg wwt	0.469 mg/kg wwt	83.6	60.0	130	----
Dibenzothiophene	132-65-0	E642E.A	0.01	mg/kg wwt	0.469 mg/kg wwt	80.4	60.0	130	----
Dimethylbenz(a)anthracene, 7,12-	57-97-6	E642E.A	0.01	mg/kg wwt	0.469 mg/kg wwt	76.4	60.0	130	----
Fluoranthene	206-44-0	E642E.A	0.01	mg/kg wwt	0.469 mg/kg wwt	88.6	60.0	130	----
Fluorene	86-73-7	E642E.A	0.01	mg/kg wwt	0.469 mg/kg wwt	90.4	60.0	130	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E642E.A	0.01	mg/kg wwt	0.469 mg/kg wwt	98.1	60.0	130	----
Methylnaphthalene, 1-	90-12-0	E642E.A	0.02	mg/kg wwt	0.469 mg/kg wwt	75.9	50.0	130	----
Methylnaphthalene, 2-	91-57-6	E642E.A	0.02	mg/kg wwt	0.469 mg/kg wwt	85.6	50.0	130	----
Naphthalene	91-20-3	E642E.A	0.05	mg/kg wwt	0.469 mg/kg wwt	77.2	50.0	130	----
Perylene	198-55-0	E642E.A	0.01	mg/kg wwt	0.469 mg/kg wwt	97.4	60.0	130	----
Phenanthrene	85-01-8	E642E.A	0.01	mg/kg wwt	0.469 mg/kg wwt	93.9	60.0	130	----
Pyrene	129-00-0	E642E.A	0.01	mg/kg wwt	0.469 mg/kg wwt	90.3	60.0	130	----
Retene	483-65-8	E642E.A	0.01	mg/kg wwt	0.469 mg/kg wwt	79.5	60.0	130	----



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Certificate of Analysis

ALS Project Contact:	Tasnia Tarannum	Client Name:	Wildland Management Consultants Ltd.
ALS Project ID:	WMCL100	Client Address:	50345 Range Road 222
ALS WO#:	EO2504379		Leduc County, AB
Date of Report	17-Jul-25		T0B 3M2
Date of Sample Receipt	3-Jun-25	Client Contact:	Lawrence Brusnyk
		Client Project ID:	
		Project Description:	SHTC-11-086

COMMENTS: PCDD/F by EPA 1613B via Isotope Dilution

All results have been reported on an as-received (wet weight) basis.

Certified by:

A handwritten signature in black ink, appearing to read "Jin", is written over a horizontal line.

Sabrina Jin
Technical Specialist

Results in this certificate relate only to the samples as submitted to the laboratory.

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ALS Life Sciences						
Sample Analysis Summary Report						
Sample Name	Plot 4 - 6 jars	Plot 11 - 2 jars	Plot 70 - 6 jars	Plot 71 - 2 jars	Plot 109 - 3 jars	Plot 114- 3 jars
ALS Sample ID	EO2504379-001	EO2504379-002	EO2504379-003	EO2504379-004	EO2504379-005	EO2504379-006
Sample Size	10.38	10.12	10.41	10.13	10.29	10.22
Sample size units	g	g	g	g	g	g
Percent Moisture	n/a	n/a	n/a	n/a	n/a	n/a
Sample Matrix	TISSUE	TISSUE	TISSUE	TISSUE	TISSUE	TISSUE
Sampling Date	19-Jun-25	19-Jun-25	19-Jun-25	19-Jun-25	19-Jun-25	19-Jun-25
Extraction Date	20-Jun-25	20-Jun-25	20-Jun-25	20-Jun-25	20-Jun-25	20-Jun-25
Target Analytes	pg/g wwt	pg/g wwt	pg/g wwt	pg/g wwt	pg/g wwt	pg/g wwt
2,3,7,8-TCDD	<0.21	0.0569	0.186	<0.056	<0.30	0.118
1,2,3,7,8-PeCDD	1.31	0.267	1.10	<0.33	1.87	0.476
1,2,3,4,7,8-HxCDD	0.791	<0.16	<0.51	<0.30	1.59	<0.30
1,2,3,6,7,8-HxCDD	1.50	0.278	<0.84	<0.30	2.88	0.553
1,2,3,7,8,9-HxCDD	0.846	0.211	0.516	0.266	1.44	0.226
1,2,3,4,6,7,8-HpCDD	4.81	0.799	2.38	<0.86	7.39	1.46
OCDD	5.18	1.01	4.16	1.08	4.65	1.78
2,3,7,8-TCDF	8.52	0.843	0.240	0.0982	9.91	2.39
1,2,3,7,8-PeCDF	2.88	0.515	0.286	<0.14	3.69	0.872
2,3,4,7,8-PeCDF	8.20	1.11	<0.33	<0.12	10.9	2.00
1,2,3,4,7,8-HxCDF	1.76	0.397	0.220	0.0858	3.47	0.431
1,2,3,6,7,8-HxCDF	2.24	0.404	<0.21	<0.11	3.73	0.566
2,3,4,6,7,8-HxCDF	4.74	0.765	0.373	0.141	7.35	0.887
1,2,3,7,8,9-HxCDF	0.219	0.0721	0.0437	<0.045	0.224	<0.058
1,2,3,4,6,7,8-HpCDF	4.43	<0.62	<0.54	0.262	5.58	0.752
1,2,3,4,7,8,9-HpCDF	<0.36	<0.094	<0.070	<0.080	0.616	<0.057
OCDF	0.862	0.251	0.346	0.139	1.02	0.224
Extraction Standards	% Rec	% Rec	% Rec	% Rec	% Rec	% Rec
13C12-2,3,7,8-TCDD	80	88	87	84	81	93
13C12-1,2,3,7,8-PeCDD	71	73	74	68	71	80
13C12-1,2,3,4,7,8-HxCDD	81	80	85	78	84	91
13C12-1,2,3,6,7,8-HxCDD	80	79	82	79	81	89
13C12-1,2,3,4,6,7,8-HpCDD	60	57	59	57	59	67
13C12-OCDD	49	45	46	43	45	54
13C12-2,3,7,8-TCDF	78	84	86	80	79	91
13C12-1,2,3,7,8-PeCDF	75	76	80	74	76	81
13C12-2,3,4,7,8-PeCDF	71	72	73	68	70	79
13C12-1,2,3,4,7,8-HxCDF	89	85	91	87	92	99
13C12-1,2,3,6,7,8-HxCDF	95	91	98	88	94	102
13C12-2,3,4,6,7,8-HxCDF	78	75	83	76	79	87
13C12-1,2,3,7,8,9-HxCDF	77	74	81	77	80	87
13C12-1,2,3,4,6,7,8-HpCDF	68	65	71	64	67	76
13C12-1,2,3,4,7,8,9-HpCDF	60	58	61	58	60	68
Cleanup Standard						
37Cl4-2,3,7,8-TCDD (Cleanup)	87	101	98	104	89	99
Homologue Group Totals	pg/g wwt	pg/g wwt	pg/g wwt	pg/g wwt	pg/g wwt	pg/g wwt
Total-TCDD	0.102	0.0569	0.205	0.0895	0.0337	0.118
Total-PeCDD	1.57	0.267	1.47	<0.030	2.38	0.660
Total-HxCDD	5.34	0.488	2.04	0.266	7.24	1.25
Total-HpCDD	6.76	0.799	3.58	<0.076	8.46	2.20
Total-TCDF	11.0	1.17	0.570	0.548	11.1	3.20
Total-PeCDF	17.4	2.67	0.692	0.253	20.2	5.01
Total-HxCDF	12.9	1.91	1.98	0.658	18.9	2.50
Total-HpCDF	6.01	0.229	<0.070	0.262	6.19	0.998
Toxic Equivalency - (WHO 2005)						
Lower Bound PCDD/F TEQ (WHO 2005)	6.01	0.978	1.46	0.0621	8.45	1.75
Mid Point PCDD/F TEQ (WHO 2005)	6.23	1.00	1.72	0.565	8.75	1.78
Upper Bound PCDD/F TEQ (WHO 2005)	6.23	1.00	1.72	0.573	8.75	1.78

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Quality Control Summary Report

Sample Name	Method Blank	Duplicate	Dup. Reference	Laboratory Control Sample	
ALS Sample ID	QC-MRG2-2062741-001	QC-MRG2-2062741-004	EO2504379-001	QC-MRG2-2062741-002	
Sample Size	10.00	10.03		1.00	
Sample size units	g	g		g	
Percent Moisture	n/a	n/a		n/a	
Sample Matrix	QC	QC		QC	
Sampling Date	n/a	n/a		n/a	
Extraction Date	20-Jun-25	20-Jun-25		20-Jun-25	
Target Analytes	pg/g wwt	pg/g wwt	pg/g wwt	% RPD	% Rec
2,3,7,8-TCDD	<0.10	0.202	0.21	3.9	99
1,2,3,7,8-PeCDD	<0.13	1.36	1.31	3.7	105
1,2,3,4,7,8-HxCDD	<0.17	0.863	0.791	8.7	100
1,2,3,6,7,8-HxCDD	<0.18	1.58	1.50	5.2	97
1,2,3,7,8,9-HxCDD	<0.17	0.940	0.846	11	95
1,2,3,4,6,7,8-HpCDD	<0.24	4.79	4.81	0.42	105
OCDD	1.12	5.57	5.18	7.3	98
2,3,7,8-TCDF	<0.12	8.51	8.52	0.12	107
1,2,3,7,8-PeCDF	<0.12	2.98	2.88	3.4	106
2,3,4,7,8-PeCDF	<0.11	8.28	8.20	0.97	98
1,2,3,4,7,8-HxCDF	0.164	1.80	1.76	2.2	99
1,2,3,6,7,8-HxCDF	<0.11	2.44	2.24	8.5	106
2,3,4,6,7,8-HxCDF	<0.13	4.74	4.74	0.0	103
1,2,3,7,8,9-HxCDF	0.197	0.288	0.219	27	101
1,2,3,4,6,7,8-HpCDF	<0.22	4.48	4.43	1.1	109
1,2,3,4,7,8,9-HpCDF	<0.34	<0.29	0.36	22	106
OCDF	0.965	0.960	0.862	11	101
Extraction Standards	% Rec	% Rec			% Rec
13C12-2,3,7,8-TCDD	48	80			80
13C12-1,2,3,7,8-PeCDD	43	68			67
13C12-1,2,3,4,7,8-HxCDD	46	81			80
13C12-1,2,3,6,7,8-HxCDD	48	77			77
13C12-1,2,3,4,6,7,8-HpCDD	36	58			56
13C12-OCDD	30	46			44
13C12-2,3,7,8-TCDF	46	79			77
13C12-1,2,3,7,8-PeCDF	46	73			71
13C12-2,3,4,7,8-PeCDF	44	68			66
13C12-1,2,3,4,7,8-HxCDF	48	86			83
13C12-1,2,3,6,7,8-HxCDF	60	85			84
13C12-2,3,4,6,7,8-HxCDF	47	77			76
13C12-1,2,3,7,8,9-HxCDF	44	77			73
13C12-1,2,3,4,6,7,8-HpCDF	41	66			64
13C12-1,2,3,4,7,8,9-HpCDF	35	57			56
Cleanup Standard					
37Cl4-2,3,7,8-TCDD (Cleanup)	84	92			93
Homologue Group Totals	pg/g wwt	pg/g wwt			
Total-TCDD	<0.10	0.202			
Total-PeCDD	<0.13	1.63			
Total-HxCDD	<0.18	4.75			
Total-HpCDD	<0.24	6.78			
Total-TCDF	<0.12	10.7			
Total-PeCDF	<0.12	19.7			
Total-HxCDF	0.361	13.9			
Total-HpCDF	<0.34	6.23			
Toxic Equivalency - (WHO 2005)					
Lower Bound PCDD/F TEQ (WHO 2005)	0.0367	6.35			
Mid Point PCDD/F TEQ (WHO 2005)	0.218	6.35			
Upper Bound PCDD/F TEQ (WHO 2005)	0.399	6.35			

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Sample Analysis Report

Sample Name	Plot 4 - 6 jars	Sampling Date	19-Jun-25	Approved: M.Elchawiche --e-signature-- 16-Jul-2025
ALS Sample ID	EO2504379-001	Extraction Date	20-Jun-25	
Analysis Method	EPA1613B	Sample Size	10.38 g	
Analysis Type	Sample	Percent Moisture	n/a	
Sample Matrix	TISSUE	Split Ratio	1	

Run Information	Analysis 1
Filename	7-250713A09
Run Date	13-Jul-25 11:15
Final Volume	10 uL
Dilution Factor	1
Analysis Units	pg/g wwt
Instrument - Column	HRMS-7 ZB-DX1193633

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg/g wwt	Flags	EDL pg/g wwt	EMPC pg/g wwt	LoD pg/g wwt	LoQ pg/g wwt
2,3,7,8-TCDD	1	28.39	<0.21	J,R	0.031	0.21	0.24	0.48
1,2,3,7,8-PeCDD	1	31.47	1.31		0.039		0.24	0.48
1,2,3,4,7,8-HxCDD	0.1	33.65	0.791	M	0.060		0.24	0.48
1,2,3,6,7,8-HxCDD	0.1	33.73	1.50	M	0.058		0.24	0.48
1,2,3,7,8,9-HxCDD	0.1	33.92	0.846		0.057		0.24	0.48
1,2,3,4,6,7,8-HpCDD	0.01	36.17	4.81		0.058		0.24	0.48
OCDD	0.0003	39.01	5.18	B	0.12		0.48	0.96
2,3,7,8-TCDF	0.1	27.81	8.52		0.084		0.24	0.48
1,2,3,7,8-PeCDF	0.03	30.73	2.88		0.057		0.24	0.48
2,3,4,7,8-PeCDF	0.3	31.35	8.20	M	0.056		0.24	0.48
1,2,3,4,7,8-HxCDF	0.1	33.09	1.76		0.040		0.24	0.48
1,2,3,6,7,8-HxCDF	0.1	33.18	2.24		0.038		0.24	0.48
2,3,4,6,7,8-HxCDF	0.1	33.60	4.74	M	0.048		0.24	0.48
1,2,3,7,8,9-HxCDF	0.1	34.28	0.219	J,B	0.059		0.24	0.48
1,2,3,4,6,7,8-HpCDF	0.01	35.25	4.43		0.077		0.24	0.48
1,2,3,4,7,8,9-HpCDF	0.01	36.80	<0.36	J,R	0.12	0.36	0.24	0.48
OCDF	0.0003	39.37	0.862	J,B	0.071		0.48	0.96
Extraction Standards	pg		% Rec		Limits			
13C12-2,3,7,8-TCDD	2000	28.36	80		25-164			
13C12-1,2,3,7,8-PeCDD	2000	31.45	71		25-181			
13C12-1,2,3,4,7,8-HxCDD	2000	33.64	81		32-141			
13C12-1,2,3,6,7,8-HxCDD	2000	33.72	80		28-130			
13C12-1,2,3,4,6,7,8-HpCDD	2000	36.16	60		23-140			
13C12-OCDD	4000	39.00	49		17-157			
13C12-2,3,7,8-TCDF	2000	27.79	78		24-169			
13C12-1,2,3,7,8-PeCDF	2000	30.72	75		24-185			
13C12-2,3,4,7,8-PeCDF	2000	31.34	71		21-178			
13C12-1,2,3,4,7,8-HxCDF	2000	33.07	89		26-152			
13C12-1,2,3,6,7,8-HxCDF	2000	33.17	95		26-123			
13C12-2,3,4,6,7,8-HxCDF	2000	33.58	78		28-136			
13C12-1,2,3,7,8,9-HxCDF	2000	34.28	77		29-147			
13C12-1,2,3,4,6,7,8-HpCDF	2000	35.24	68		28-143			
13C12-1,2,3,4,7,8,9-HpCDF	2000	36.80	60		26-138			
Cleanup Standard	pg							
37C14-2,3,7,8-TCDD (Cleanup)	40	28.37	87		35-197			
Homologue Group Totals	# peaks		Conc. pg/g wwt		EDL pg/g wwt		LoD pg/g wwt	LoQ pg/g wwt
Total-TCDD	1	0.102		J	0.031		0.24	0.48
Total-PeCDD	2	1.57			0.039		0.24	0.48
Total-HxCDD	5	5.34			0.060		0.24	0.48
Total-HpCDD	2	6.76			0.058		0.24	0.48
Total-TCDF	8	11.0			0.084		0.24	0.48
Total-PeCDF	8	17.4			0.057		0.24	0.48
Total-HxCDF	7	12.9			0.059		0.24	0.48
Total-HpCDF	2	6.01			0.12		0.24	0.48

Toxic Equivalency - (WHO 2005)	pg/g wwt
Lower Bound PCDD/F TEQ (WHO 2005)	6.01
Mid Point PCDD/F TEQ (WHO 2005)	6.23
Upper Bound PCDD/F TEQ (WHO 2005)	6.23

Definitions	EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
	TEF	Indicates the Toxic Equivalency Factor
	LoD	Limit of Detection, validated quarterly, adjusted for sample size, splits and dilutions.
	LoQ	Limit of Quantification, based on the lowest calibrated level, adjusted for sample size, splits and dilutions.
	EMPC	Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure
Flags/Qualifiers	M	Indicates that a peak has been manually integrated.
	U	Indicates that this compound was not detected above the EDL.
	J	Indicates that a target analyte was detected below the calibrated range.
	R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
	B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.

ALS Life Sciences

Sample Analysis Report

Sample Name	Plot 11 - 2 jars	Sampling Date	19-Jun-25	Approved: M.Elchawiche --e-signature-- 16-Jul-2025
ALS Sample ID	EO2504379-002	Extraction Date	20-Jun-25	
Analysis Method	EPA1613B	Sample Size	10.12 g	
Analysis Type	Sample	Percent Moisture	n/a	
Sample Matrix	TISSUE	Split Ratio	1	

Run Information	Analysis 1
Filename	7-250713A11
Run Date	13-Jul-25 12:44
Final Volume	10 uL
Dilution Factor	1
Analysis Units	pg/g wwt
Instrument - Column	HRMS-7 ZB-DX1193633

Target Analytes	TEF (WHO 2001)	Ret. Time	Conc. pg/g wwt	Flags	EDL pg/g wwt	EMPC pg/g wwt	LoD pg/g wwt	LoQ pg/g wwt
2,3,7,8-TCDD	1	28.37	0.0569	M,J	0.027		0.25	0.49
1,2,3,7,8-PeCDD	1	31.46	0.267	M,J	0.040		0.25	0.49
1,2,3,4,7,8-HxCDD	0.1	33.66	<0.16	M,J,R	0.076	0.16	0.25	0.49
1,2,3,6,7,8-HxCDD	0.1	33.72	0.278	M,J	0.079		0.25	0.49
1,2,3,7,8,9-HxCDD	0.1	33.92	0.211	J	0.075		0.25	0.49
1,2,3,4,6,7,8-HpCDD	0.01	36.17	0.799		0.048		0.25	0.49
OCDD	0.0003	39.01	1.01	B	0.11		0.49	0.99
2,3,7,8-TCDF	0.1	27.81	0.843		0.047		0.25	0.49
1,2,3,7,8-PeCDF	0.03	30.73	0.515		0.030		0.25	0.49
2,3,4,7,8-PeCDF	0.3	31.35	1.11		0.029		0.25	0.49
1,2,3,4,7,8-HxCDF	0.1	33.09	0.397	J,B	0.018		0.25	0.49
1,2,3,6,7,8-HxCDF	0.1	33.18	0.404	J	0.019		0.25	0.49
2,3,4,6,7,8-HxCDF	0.1	33.60	0.765		0.021		0.25	0.49
1,2,3,7,8,9-HxCDF	0.1	34.29	0.0721	M,J,B	0.029		0.25	0.49
1,2,3,4,6,7,8-HpCDF	0.01	35.25	<0.62	R	0.048	0.62	0.25	0.49
1,2,3,4,7,8,9-HpCDF	0.01	36.79	<0.094	M,J,R	0.073	0.094	0.25	0.49
OCDF	0.0003	39.34	0.251	M,J,B	0.091		0.49	0.99
Extraction Standards	pg		% Rec		Limits			
13C12-2,3,7,8-TCDD	2000	28.36	88		25-164			
13C12-1,2,3,7,8-PeCDD	2000	31.45	73		25-181			
13C12-1,2,3,4,7,8-HxCDD	2000	33.64	80		32-141			
13C12-1,2,3,6,7,8-HxCDD	2000	33.72	79		28-130			
13C12-1,2,3,4,6,7,8-HpCDD	2000	36.16	57		23-140			
13C12-OCDD	4000	39.00	45		17-157			
13C12-2,3,7,8-TCDF	2000	27.79	84		24-169			
13C12-1,2,3,7,8-PeCDF	2000	30.72	76		24-185			
13C12-2,3,4,7,8-PeCDF	2000	31.34	72		21-178			
13C12-1,2,3,4,7,8-HxCDF	2000	33.07	85		26-152			
13C12-1,2,3,6,7,8-HxCDF	2000	33.17	91		26-123			
13C12-2,3,4,6,7,8-HxCDF	2000	33.58	75		28-136			
13C12-1,2,3,7,8,9-HxCDF	2000	34.27	74		29-147			
13C12-1,2,3,4,6,7,8-HpCDF	2000	35.24	65		28-143			
13C12-1,2,3,4,7,8,9-HpCDF	2000	36.79	58		26-138			
Cleanup Standard	pg							
37C14-2,3,7,8-TCDD (Cleanup)	40	28.37	101		35-197			
Homologue Group Totals	# peaks		Conc. pg/g wwt		EDL pg/g wwt		LoD pg/g wwt	LoQ pg/g wwt
Total-TCDD	1		0.0569	J	0.027		0.25	0.49
Total-PeCDD	1		0.267	J	0.040		0.25	0.49
Total-HxCDD	2		0.488	J	0.079		0.25	0.49
Total-HpCDD	1		0.799		0.048		0.25	0.49
Total-TCDF	5		1.17		0.047		0.25	0.49
Total-PeCDF	4		2.67		0.030		0.25	0.49
Total-HxCDF	6		1.91		0.029		0.25	0.49
Total-HpCDF	1		0.229	J	0.073		0.25	0.49

Toxic Equivalency - (WHO 2005)	pg/g wwt
Lower Bound PCDD/F TEQ (WHO 2005)	0.978
Mid Point PCDD/F TEQ (WHO 2005)	1.00
Upper Bound PCDD/F TEQ (WHO 2005)	1.00

Definitions	
EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor
LoD	Limit of Detection, validated quarterly, adjusted for sample size, splits and dilutions.
LoQ	Limit of Quantification, based on the lowest calibrated level, adjusted for sample size, splits and dilutions.
EMPC	Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure
Flags/Qualifiers	
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.

ALS Life Sciences

Sample Analysis Report

Sample Name	Plot 70 - 6 jars	Sampling Date	19-Jun-25	g	Approved: M.Elchawiche --e-signature-- 16-Jul-2025
ALS Sample ID	EO2504379-003	Extraction Date	20-Jun-25		
Analysis Method	EPA1613B	Sample Size	10.41		
Analysis Type	Sample	Percent Moisture	n/a		
Sample Matrix	TISSUE	Split Ratio	1		

Run Information	Analysis 1	Analysis 2
Filename	7-250713A12	7-250714C10
Run Date	13-Jul-25 13:28	15-Jul-25 00:04
Final Volume	10 uL	10 uL
Dilution Factor	1	5
Analysis Units	pg/g wwt	pg/g wwt
Instrument - Column	HRMS-7 ZB-DX1193633	HRMS-7 ZB-DX1193633

Target Analytes	TEF (WHO 200)	Ret. Time	Conc. pg/g wwt	Flags	EDL pg/g wwt	EMPC pg/g wwt	LoD pg/g wwt	LoQ pg/g wwt	Ret. Time	Conc. pg/g wwt	Flags	EDL pg/g wwt	EMPC pg/g wwt	LoD pg/g wwt	LoQ pg/g wwt
2,3,7,8-TCDD	1	28.39	0.186	J	0.027		0.24	0.48							
1,2,3,7,8-PeCDD	1	31.46	1.10	M	0.034		0.24	0.48							
1,2,3,4,7,8-HxCDD	0.1	33.65	<0.51	R	0.059	0.51	0.24	0.48							
1,2,3,6,7,8-HxCDD	0.1	33.72	<0.84	R	0.058	0.84	0.24	0.48							
1,2,3,7,8,9-HxCDD	0.1	33.91	0.516		0.057		0.24	0.48							
1,2,3,4,6,7,8-HpCDD	0.01	36.16	2.38		0.077		0.24	0.48							
OCDD	0.0003	39.00	4.16	B	0.22		0.48	0.96							
2,3,7,8-TCDF	0.1	27.81	0.240	M,J	0.044		0.24	0.48							
1,2,3,7,8-PeCDF	0.03	30.72	0.286	J	0.043		0.24	0.48							
2,3,4,7,8-PeCDF	0.3	31.34	<0.33	M,J,R	0.039	0.33	0.24	0.48							
1,2,3,4,7,8-HxCDF	0.1	33.07	0.220	J,B	0.029		0.24	0.48							
1,2,3,6,7,8-HxCDF	0.1								33.20	<0.21	M,J,R	0.15	0.21	1.2	2.4
2,3,4,6,7,8-HxCDF	0.1	33.59	0.373	M,J	0.033		0.24	0.48							
1,2,3,7,8,9-HxCDF	0.1	34.30	0.0437	M,J,B	0.043		0.24	0.48							
1,2,3,4,6,7,8-HpCDF	0.01	35.24	<0.54	M,R	0.045	0.54	0.24	0.48							
1,2,3,4,7,8,9-HpCDF	0.01	36.80	<0.070	M,U	0.070	0.048	0.24	0.48							
OCDF	0.0003	39.34	0.346	M,J,B	0.16		0.48	0.96							
Extraction Standards	pg		% Rec		Limits					% Rec					
13C12-2,3,7,8-TCDD	2000	28.36	87		25-164										
13C12-1,2,3,7,8-PeCDD	2000	31.45	74		25-181										
13C12-1,2,3,4,7,8-HxCDD	2000	33.64	85		32-141										
13C12-1,2,3,6,7,8-HxCDD	2000	33.71	82		28-130										
13C12-1,2,3,4,6,7,8-HpCDD	2000	36.16	59		23-140										
13C12-OCDD	4000	39.00	46		17-157										
13C12-2,3,7,8-TCDF	2000	27.78	86		24-169										
13C12-1,2,3,7,8-PeCDF	2000	30.72	80		24-185										
13C12-2,3,4,7,8-PeCDF	2000	31.34	73		21-178										
13C12-1,2,3,4,7,8-HxCDF	2000	33.07	91		26-152										
13C12-1,2,3,6,7,8-HxCDF	2000				26-123				33.18	98					
13C12-2,3,4,6,7,8-HxCDF	2000	33.58	83		28-136										
13C12-1,2,3,7,8,9-HxCDF	2000	34.27	81		29-147										
13C12-1,2,3,4,6,7,8-HpCDF	2000	35.23	71		28-143										
13C12-1,2,3,4,7,8,9-HpCDF	2000	36.79	61		26-138										
Cleanup Standard	pg														
37Cl4-2,3,7,8-TCDD (Cleanup)	40	28.37	98		35-197										
Homologue Group Totals	# peaks		Conc. pg/g wwt		EDL pg/g wwt		LoD pg/g wwt	LoQ pg/g wwt	# peaks		Conc. pg/g wwt		EDL pg/g wwt	LoD pg/g wwt	LoQ pg/g wwt
Total-TCDD	2	0.205	J	0.027		0.24	0.48								
Total-PeCDD	3	1.47		0.034		0.24	0.48								
Total-HxCDD	3	2.04		0.059		0.24	0.48								
Total-HpCDD	2	3.58		0.077		0.24	0.48								
Total-TCDF	5	0.570		0.044		0.24	0.48								
Total-PeCDF	2	0.692		0.043		0.24	0.48								
Total-HxCDF	7	1.98		0.044		0.24	0.48								
Total-HpCDF	0	<0.070	U	0.070		0.24	0.48								

Toxic Equivalency - (WHO 2005)	pg/g wwt
Lower Bound PCDD/F TEQ (WHO 2005)	1.46
Mid Point PCDD/F TEQ (WHO 2005)	1.72
Upper Bound PCDD/F TEQ (WHO 2005)	1.72

Definitions	
EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor
LoD	Limit of Detection, validated quarterly, adjusted for sample size, splits and dilutions.
LoQ	Limit of Quantification, based on the lowest calibrated level, adjusted for sample size, splits and dilutions.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure
Flags/Qualifiers	
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.

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Sample Analysis Report

Sample Name	Plot 71 - 2 jars	Sampling Date	19-Jun-25	g	Approved: M.Elchawiche --e-signature-- 16-Jul-2025
ALS Sample ID	EO2504379-004	Extraction Date	20-Jun-25		
Analysis Method	EPA1613B	Sample Size	10.13		
Analysis Type	Sample	Percent Moisture	n/a		
Sample Matrix	TISSUE	Split Ratio	1		

Run Information	Analysis 1	Analysis 2
Filename	7-250713A13	7-250714C11
Run Date	13-Jul-25 14:12	15-Jul-25 00:49
Final Volume	10 uL	10 uL
Dilution Factor	1	5
Analysis Units	pg/g wwt	pg/g wwt
Instrument - Column	HRMS-7 ZB-DX1193633	HRMS-7 ZB-DX1193633

Target Analytes	TEF (WHO 200)	Ret. Time	Conc. pg/g wwt	Flags	EDL pg/g wwt	EMPC pg/g wwt	LoD pg/g wwt	LoQ pg/g wwt	Ret. Time	Conc. pg/g wwt	Flags	EDL pg/g wwt	EMPC pg/g wwt	LoD pg/g wwt	LoQ pg/g wwt
2,3,7,8-TCDD	1	28.39	<0.056	J,R	0.031	0.056	0.25	0.49							
1,2,3,7,8-PeCDD	1	31.47	<0.33	M,J,R	0.030	0.33	0.25	0.49							
1,2,3,4,7,8-HxCDD	0.1	33.65	<0.30	J,R	0.045	0.30	0.25	0.49							
1,2,3,6,7,8-HxCDD	0.1	33.73	<0.30	J,R	0.046	0.30	0.25	0.49							
1,2,3,7,8,9-HxCDD	0.1	33.93	0.266	J	0.044		0.25	0.49							
1,2,3,4,6,7,8-HpCDD	0.01	36.17	<0.86	R	0.076	0.86	0.25	0.49							
OCDD	0.0003	39.03	1.08	B	0.13		0.49	0.99							
2,3,7,8-TCDF	0.1	27.79	0.0982	M,J	0.046		0.25	0.49							
1,2,3,7,8-PeCDF	0.03	30.73	<0.14	M,J,R	0.028	0.14	0.25	0.49							
2,3,4,7,8-PeCDF	0.3	31.36	<0.12	J,R	0.027	0.12	0.25	0.49							
1,2,3,4,7,8-HxCDF	0.1	33.10	0.0858	M,J,B	0.031		0.25	0.49							
1,2,3,6,7,8-HxCDF	0.1								33.17	<0.11	M,U	0.11	0.091	1.2	2.5
2,3,4,6,7,8-HxCDF	0.1	33.59	0.141	J	0.036		0.25	0.49							
1,2,3,7,8,9-HxCDF	0.1	NotFnd	<0.045	U	0.045		0.25	0.49							
1,2,3,4,6,7,8-HpCDF	0.01	35.25	0.262	J	0.055		0.25	0.49							
1,2,3,4,7,8,9-HpCDF	0.01	NotFnd	<0.080	U	0.080		0.25	0.49							
OCDF	0.0003	39.37	0.139	M,J,B	0.12		0.49	0.99							
Extraction Standards	pg		% Rec		Limits					% Rec					
13C12-2,3,7,8-TCDD	2000	28.36	84		25-164										
13C12-1,2,3,7,8-PeCDD	2000	31.46	68		25-181										
13C12-1,2,3,4,7,8-HxCDD	2000	33.65	78		32-141										
13C12-1,2,3,6,7,8-HxCDD	2000	33.72	79		28-130										
13C12-1,2,3,4,6,7,8-HpCDD	2000	36.16	57		23-140										
13C12-OCDD	4000	39.00	43		17-157										
13C12-2,3,7,8-TCDF	2000	27.79	80		24-169										
13C12-1,2,3,7,8-PeCDF	2000	30.72	74		24-185										
13C12-2,3,4,7,8-PeCDF	2000	31.35	68		21-178										
13C12-1,2,3,4,7,8-HxCDF	2000	33.09	87		26-152										
13C12-1,2,3,6,7,8-HxCDF	2000				26-123				33.17	88					
13C12-2,3,4,6,7,8-HxCDF	2000	33.59	76		28-136										
13C12-1,2,3,7,8,9-HxCDF	2000	34.28	77		29-147										
13C12-1,2,3,4,6,7,8-HpCDF	2000	35.24	64		28-143										
13C12-1,2,3,4,7,8,9-HpCDF	2000	36.80	58		26-138										
Cleanup Standard	pg														
37Cl4-2,3,7,8-TCDD (Cleanup)	40	28.37	104		35-197										
Homologue Group Totals	# peaks		Conc. pg/g wwt		EDL pg/g wwt		LoD pg/g wwt	LoQ pg/g wwt	# peaks	Conc. pg/g wwt		EDL pg/g wwt		LoD pg/g wwt	LoQ pg/g wwt
Total-TCDD	1	0.0895	J	0.031		0.25	0.49								
Total-PeCDD	0	<0.030	U	0.030		0.25	0.49								
Total-HxCDD	1	0.266	J	0.046		0.25	0.49								
Total-HpCDD	0	<0.076	U	0.076		0.25	0.49								
Total-TCDF	7	0.548		0.046		0.25	0.49								
Total-PeCDF	1	0.253	J	0.028		0.25	0.49								
Total-HxCDF	5	0.658		0.045		0.25	0.49								
Total-HpCDF	1	0.262	J	0.080		0.25	0.49								

Toxic Equivalency - (WHO 2005)	pg/g wwt
Lower Bound PCDD/F TEQ (WHO 2005)	0.0621
Mid Point PCDD/F TEQ (WHO 2005)	0.565
Upper Bound PCDD/F TEQ (WHO 2005)	0.573

Definitions	
EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor
LoD	Limit of Detection, validated quarterly, adjusted for sample size, splits and dilutions.
LoQ	Limit of Quantification, based on the lowest calibrated level, adjusted for sample size, splits and dilutions.
EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure
Flags/Qualifiers	
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.

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Sample Analysis Report

Sample Name	Plot 109 - 3 jars	Sampling Date	19-Jun-25	g	Approved: M.Elchawiche --e-signature-- 16-Jul-2025
ALS Sample ID	EO2504379-005	Extraction Date	20-Jun-25		
Analysis Method	EPA1613B	Sample Size	10.29		
Analysis Type	Sample	Percent Moisture	n/a		
Sample Matrix	TISSUE	Split Ratio	1		

Run Information	Analysis 1	Analysis 2
Filename	7-250713A14	7-250714C12
Run Date	13-Jul-25 14:57	15-Jul-25 01:33
Final Volume	10 uL	10 uL
Dilution Factor	1	5
Analysis Units	pg/g wwt	pg/g wwt
Instrument - Column	HRMS-7 ZB-DX1193633	HRMS-7 ZB-DX1193633

Target Analytes	TEF (WHO 200)	Ret. Time	Conc. pg/g wwt	Flags	EDL pg/g wwt	EMPC pg/g wwt	LoD pg/g wwt	LoQ pg/g wwt	Ret. Time	Conc. pg/g wwt	Flags	EDL pg/g wwt	EMPC pg/g wwt	LoD pg/g wwt	LoQ pg/g wwt
2,3,7,8-TCDD	1	28.37	<0.30	M,J,R	0.026	0.30	0.24	0.49							
1,2,3,7,8-PeCDD	1	31.46	1.87		0.035		0.24	0.49							
1,2,3,4,7,8-HxCDD	0.1	33.65	1.59		0.050		0.24	0.49							
1,2,3,6,7,8-HxCDD	0.1	33.72	2.88		0.051		0.24	0.49							
1,2,3,7,8,9-HxCDD	0.1	33.91	1.44		0.049		0.24	0.49							
1,2,3,4,6,7,8-HpCDD	0.01	36.17	7.39		0.081		0.24	0.49							
OCDD	0.0003	39.01	4.65	B	0.15		0.49	0.97							
2,3,7,8-TCDF	0.1	27.81	9.91		0.056		0.24	0.49							
1,2,3,7,8-PeCDF	0.03	30.73	3.69		0.033		0.24	0.49							
2,3,4,7,8-PeCDF	0.3	31.35	10.9		0.031		0.24	0.49							
1,2,3,4,7,8-HxCDF	0.1	33.09	3.47		0.037		0.24	0.49							
1,2,3,6,7,8-HxCDF	0.1								33.19	3.73		0.16		1.2	2.4
2,3,4,6,7,8-HxCDF	0.1	33.59	7.35		0.044		0.24	0.49							
1,2,3,7,8,9-HxCDF	0.1	34.29	0.224	J,B	0.058		0.24	0.49							
1,2,3,4,6,7,8-HpCDF	0.01	35.24	5.58		0.043		0.24	0.49							
1,2,3,4,7,8,9-HpCDF	0.01	36.79	0.616		0.066		0.24	0.49							
OCDF	0.0003	39.35	1.02	M,B	0.10		0.49	0.97							
Extraction Standards	pg		% Rec		Limits					% Rec					
13C12-2,3,7,8-TCDD	2000	28.36	81		25-164										
13C12-1,2,3,7,8-PeCDD	2000	31.45	71		25-181										
13C12-1,2,3,4,7,8-HxCDD	2000	33.64	84		32-141										
13C12-1,2,3,6,7,8-HxCDD	2000	33.71	81		28-130										
13C12-1,2,3,4,6,7,8-HpCDD	2000	36.16	59		23-140										
13C12-OCDD	4000	39.00	45		17-157										
13C12-2,3,7,8-TCDF	2000	27.78	79		24-169										
13C12-1,2,3,7,8-PeCDF	2000	30.72	76		24-185										
13C12-2,3,4,7,8-PeCDF	2000	31.34	70		21-178										
13C12-1,2,3,4,7,8-HxCDF	2000	33.07	92		26-152										
13C12-1,2,3,6,7,8-HxCDF	2000	33.17	84		26-123				33.18	94					
13C12-2,3,4,6,7,8-HxCDF	2000	33.58	79		28-136										
13C12-1,2,3,7,8,9-HxCDF	2000	34.27	80		29-147										
13C12-1,2,3,4,6,7,8-HpCDF	2000	35.24	67		28-143										
13C12-1,2,3,4,7,8,9-HpCDF	2000	36.79	60		26-138										
Cleanup Standard	pg														
37Cl4-2,3,7,8-TCDD (Cleanup)	40	28.37	89		35-197										
Homologue Group Totals	# peaks	Conc. pg/g wwt	EDL pg/g wwt		LoD pg/g wwt	LoQ pg/g wwt	# peaks	Conc. pg/g wwt	EDL pg/g wwt		LoD pg/g wwt	LoQ pg/g wwt			
Total-TCDD	1	0.0337	J	0.026	0.24	0.49									
Total-PeCDD	3	2.38		0.035	0.24	0.49									
Total-HxCDD	6	7.24		0.051	0.24	0.49									
Total-HpCDD	2	8.46		0.081	0.24	0.49									
Total-TCDF	5	11.1		0.056	0.24	0.49									
Total-PeCDF	7	20.2		0.033	0.24	0.49									
Total-HxCDF	9	18.9		0.058	0.24	0.49									
Total-HpCDF	2	6.19		0.066	0.24	0.49									

Toxic Equivalency - (WHO 2005)	pg/g wwt
Lower Bound PCDD/F TEQ (WHO 2005)	8.45
Mid Point PCDD/F TEQ (WHO 2005)	8.75
Upper Bound PCDD/F TEQ (WHO 2005)	8.75

Definitions	EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
	TEF	Indicates the Toxic Equivalency Factor
	LoD	Limit of Detection, validated quarterly, adjusted for sample size, splits and dilutions.
	LoQ	Limit of Quantification, based on the lowest calibrated level, adjusted for sample size, splits and dilutions.
	EMPC	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure
Flags/Qualifiers	M	Indicates that a peak has been manually integrated.
	U	Indicates that this compound was not detected above the EDL.
	J	Indicates that a target analyte was detected below the calibrated range.
	R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
	B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.

ALS Life Sciences

Sample Analysis Report

Sample Name	Plot 114- 3 jars	Sampling Date	19-Jun-25	Approved: M.Elchawiche --e-signature-- 16-Jul-2025
ALS Sample ID	EO2504379-006	Extraction Date	20-Jun-25	
Analysis Method	EPA1613B	Sample Size	10.22 g	
Analysis Type	Sample	Percent Moisture	n/a	
Sample Matrix	TISSUE	Split Ratio	1	

Run Information	Analysis 1
Filename	7-250713A15
Run Date	13-Jul-25 15:41
Final Volume	10 uL
Dilution Factor	1
Analysis Units	pg/g wwt
Instrument - Column	HRMS-7 ZB-DX1193633

Target Analytes	TEF (WHO 2001)	Ret. Time	Conc. pg/g wwt	Flags	EDL pg/g wwt	EMPC pg/g wwt	LoD pg/g wwt	LoQ pg/g wwt
2,3,7,8-TCDD	1	28.39	0.118	M,J	0.032		0.25	0.49
1,2,3,7,8-PeCDD	1	31.46	0.476	J	0.035		0.25	0.49
1,2,3,4,7,8-HxCDD	0.1	33.65	<0.30	J,R	0.044	0.30	0.25	0.49
1,2,3,6,7,8-HxCDD	0.1	33.73	0.553		0.044		0.25	0.49
1,2,3,7,8,9-HxCDD	0.1	33.92	0.226	J	0.043		0.25	0.49
1,2,3,4,6,7,8-HpCDD	0.01	36.17	1.46	M	0.072		0.25	0.49
OCDD	0.0003	39.02	1.78	B	0.11		0.49	0.98
2,3,7,8-TCDF	0.1	27.81	2.39		0.047		0.25	0.49
1,2,3,7,8-PeCDF	0.03	30.73	0.872		0.024		0.25	0.49
2,3,4,7,8-PeCDF	0.3	31.35	2.00		0.023		0.25	0.49
1,2,3,4,7,8-HxCDF	0.1	33.09	0.431	J,B	0.040		0.25	0.49
1,2,3,6,7,8-HxCDF	0.1	33.18	0.566		0.040		0.25	0.49
2,3,4,6,7,8-HxCDF	0.1	33.59	0.887	M	0.045		0.25	0.49
1,2,3,7,8,9-HxCDF	0.1	NotFnd	<0.058	U	0.058		0.25	0.49
1,2,3,4,6,7,8-HpCDF	0.01	35.25	0.752		0.036		0.25	0.49
1,2,3,4,7,8,9-HpCDF	0.01	NotFnd	<0.057	U	0.057		0.25	0.49
OCDF	0.0003	39.36	0.224	M,J,B	0.086		0.49	0.98
Extraction Standards	pg		% Rec		Limits			
13C12-2,3,7,8-TCDD	2000	28.36	93		25-164			
13C12-1,2,3,7,8-PeCDD	2000	31.45	80		25-181			
13C12-1,2,3,4,7,8-HxCDD	2000	33.64	91		32-141			
13C12-1,2,3,6,7,8-HxCDD	2000	33.72	89		28-130			
13C12-1,2,3,4,6,7,8-HpCDD	2000	36.16	67		23-140			
13C12-OCDD	4000	39.00	54		17-157			
13C12-2,3,7,8-TCDF	2000	27.79	91		24-169			
13C12-1,2,3,7,8-PeCDF	2000	30.72	81		24-185			
13C12-2,3,4,7,8-PeCDF	2000	31.34	79		21-178			
13C12-1,2,3,4,7,8-HxCDF	2000	33.07	99		26-152			
13C12-1,2,3,6,7,8-HxCDF	2000	33.17	102		26-123			
13C12-2,3,4,6,7,8-HxCDF	2000	33.58	87		28-136			
13C12-1,2,3,7,8,9-HxCDF	2000	34.28	87		29-147			
13C12-1,2,3,4,6,7,8-HpCDF	2000	35.24	76		28-143			
13C12-1,2,3,4,7,8,9-HpCDF	2000	36.80	68		26-138			
Cleanup Standard	pg							
37C14-2,3,7,8-TCDD (Cleanup)	40	28.37	99		35-197			
Homologue Group Totals	# peaks	Conc. pg/g wwt	EDL pg/g wwt		LoD pg/g wwt	LoQ pg/g wwt		
Total-TCDD	1	0.118	0.032	J	0.25	0.49		
Total-PeCDD	2	0.660	0.035		0.25	0.49		
Total-HxCDD	3	1.25	0.044		0.25	0.49		
Total-HpCDD	2	2.20	0.072		0.25	0.49		
Total-TCDF	7	3.20	0.047		0.25	0.49		
Total-PeCDF	7	5.01	0.024		0.25	0.49		
Total-HxCDF	4	2.50	0.058		0.25	0.49		
Total-HpCDF	2	0.998	0.057		0.25	0.49		

Toxic Equivalency - (WHO 2005)	pg/g wwt
Lower Bound PCDD/F TEQ (WHO 2005)	1.75
Mid Point PCDD/F TEQ (WHO 2005)	1.78
Upper Bound PCDD/F TEQ (WHO 2005)	1.78

Definitions	
EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor
LoD	Limit of Detection, validated quarterly, adjusted for sample size, splits and dilutions.
LoQ	Limit of Quantification, based on the lowest calibrated level, adjusted for sample size, splits and dilutions.
EMPC	Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure
Flags/Qualifiers	
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.

ALS Life Sciences

Laboratory Method Blank Analysis Report

Sample Name	Method Blank	Sampling Date	n/a	Approved: M.Elchawiche --e-signature-- 16-Jul-2025
ALS Sample ID	QC-MRG2-2062741-001	Extraction Date	20-Jun-25	
Analysis Method	EPA1613B	Sample Size	10 g	
Analysis Type	Blank	Percent Moisture	n/a	
Sample Matrix	QC	Split Ratio	1	

Run Information	Analysis 1
Filename	7-250714C05
Run Date	14-Jul-25 20:23
Final Volume	10 uL
Dilution Factor	1
Analysis Units	pg/g wwt
Instrument - Column	HRMS-7 ZB-DX1193633

Target Analytes	TEF (WHO 2001)	Ret. Time	Conc. pg/g wwt	Flags	EDL pg/g wwt	EMPC pg/g wwt	LoD pg/g wwt	LoQ pg/g wwt
2,3,7,8-TCDD	1	NotFnd	<0.10	U	0.10		0.25	0.50
1,2,3,7,8-PeCDD	1	NotFnd	<0.13	U	0.13		0.25	0.50
1,2,3,4,7,8-HxCDD	0.1	NotFnd	<0.17	U	0.17		0.25	0.50
1,2,3,6,7,8-HxCDD	0.1	NotFnd	<0.18	U	0.18		0.25	0.50
1,2,3,7,8,9-HxCDD	0.1	NotFnd	<0.17	U	0.17		0.25	0.50
1,2,3,4,6,7,8-HpCDD	0.01	NotFnd	<0.24	U	0.24		0.25	0.50
OCDD	0.0003	39.01	1.12	M	0.56		0.50	1.0
2,3,7,8-TCDF	0.1	NotFnd	<0.12	U	0.12		0.25	0.50
1,2,3,7,8-PeCDF	0.03	30.73	<0.12	M,U	0.12	0.12	0.25	0.50
2,3,4,7,8-PeCDF	0.3	31.35	<0.11	M,U	0.11	0.074	0.25	0.50
1,2,3,4,7,8-HxCDF	0.1	33.10	0.164	M,J	0.12		0.25	0.50
1,2,3,6,7,8-HxCDF	0.1	33.15	<0.11	M,U	0.11	0.065	0.25	0.50
2,3,4,6,7,8-HxCDF	0.1	NotFnd	<0.13	U	0.13		0.25	0.50
1,2,3,7,8,9-HxCDF	0.1	34.28	0.197	M,J	0.19		0.25	0.50
1,2,3,4,6,7,8-HpCDF	0.01	NotFnd	<0.22	U	0.22		0.25	0.50
1,2,3,4,7,8,9-HpCDF	0.01	36.81	<0.34	M,U	0.34		0.25	0.50
OCDF	0.0003	39.37	0.965	M,J	0.37		0.50	1.0
Extraction Standards	pg		% Rec		Limits			
13C12-2,3,7,8-TCDD	2000	28.36	48		25-164			
13C12-1,2,3,7,8-PeCDD	2000	31.45	43		25-181			
13C12-1,2,3,4,7,8-HxCDD	2000	33.64	46		32-141			
13C12-1,2,3,6,7,8-HxCDD	2000	33.71	48		28-130			
13C12-1,2,3,4,6,7,8-HpCDD	2000	36.16	36		23-140			
13C12-OCDD	4000	39.00	30		17-157			
13C12-2,3,7,8-TCDF	2000	27.79	46		24-169			
13C12-1,2,3,7,8-PeCDF	2000	30.72	46		24-185			
13C12-2,3,4,7,8-PeCDF	2000	31.34	44		21-178			
13C12-1,2,3,4,7,8-HxCDF	2000	33.07	48		26-152			
13C12-1,2,3,6,7,8-HxCDF	2000	33.16	60		26-123			
13C12-2,3,4,6,7,8-HxCDF	2000	33.58	47		28-136			
13C12-1,2,3,7,8,9-HxCDF	2000	34.27	44		29-147			
13C12-1,2,3,4,6,7,8-HpCDF	2000	35.23	41		28-143			
13C12-1,2,3,4,7,8,9-HpCDF	2000	36.79	35		26-138			
Cleanup Standard	pg							
37Cl4-2,3,7,8-TCDD (Cleanup)	40	28.37	84		35-197			
Homologue Group Totals	# peaks		Conc. pg/g wwt		EDL pg/g wwt		LoD pg/g wwt	LoQ pg/g wwt
Total-TCDD	0		<0.10	U	0.10		0.25	0.50
Total-PeCDD	0		<0.13	U	0.13		0.25	0.50
Total-HxCDD	0		<0.18	U	0.18		0.25	0.50
Total-HpCDD	0		<0.24	U	0.24		0.25	0.50
Total-TCDF	0		<0.12	U	0.12		0.25	0.50
Total-PeCDF	0		<0.12	U	0.12		0.25	0.50
Total-HxCDF	2		0.361	J	0.19		0.25	0.50
Total-HpCDF	0		<0.34	U	0.34		0.25	0.50

Toxic Equivalency - (WHO 2005)	pg/g wwt
Lower Bound PCDD/F TEQ (WHO 2005)	0.0367
Mid Point PCDD/F TEQ (WHO 2005)	0.218
Upper Bound PCDD/F TEQ (WHO 2005)	0.399

Definitions	
EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor
LoD	Limit of Detection, validated quarterly, adjusted for sample size, splits and dilutions.
LoQ	Limit of Quantification, based on the lowest calibrated level, adjusted for sample size, splits and dilutions.
EMPC	Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure
Flags/Qualifiers	
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that a target analyte was detected below the calibrated range.

ALS Life Sciences

Laboratory Duplicate Analysis Report

Sample Name	Duplicate	Sampling Date	n/a	
ALS Sample ID	QC-MRG2-2062741-004	Extraction Date	20-Jun-25	
Analysis Method	EPA1613B	Sample Size	10.03	g
Analysis Type	Duplicate	Percent Moisture	n/a	
Sample Matrix	QC	Split Ratio	1	
				Approved: M.Eichawiche --e-signature-- 16-Jul-2025

Run Information	Analysis 1	Replication
Filename	7-250713A10	
Run Date	13-Jul-25 11:59	
Final Volume	10 uL	
Dilution Factor	1	
Analysis Units	pg/g ww	
Instrument - Column	HRMS-7 ZB-DX1193633	

Target Analytes	TEF (WHO 2001)	Ret. Time	Conc. pg/g ww	Flags	EDL pg/g ww	EMPC pg/g ww	LoD pg/g ww	LoQ pg/g ww	Parent pg/g ww	Samp. g/g ww	RPD %
2,3,7,8-TCDD	1	28.39	0.202	J	0.032		0.25	0.50	0.21	0.202	3.9
1,2,3,7,8-PeCDD	1	31.46	1.36		0.041		0.25	0.50	1.31	1.36	3.7
1,2,3,4,7,8-HxCDD	0.1	33.65	0.863		0.064		0.25	0.50	0.791	0.863	8.7
1,2,3,6,7,8-HxCDD	0.1	33.72	1.58		0.066		0.25	0.50	1.50	1.58	5.2
1,2,3,7,8,9-HxCDD	0.1	33.92	0.940		0.064		0.25	0.50	0.846	0.940	11
1,2,3,4,6,7,8-HpCDD	0.01	36.17	4.79		0.092		0.25	0.50	4.81	4.79	0.42
OCDD	0.0003	39.00	5.57	B	0.11		0.50	1.0	5.18	5.57	7.3
2,3,7,8-TCDF	0.1	27.81	8.51		0.053		0.25	0.50	8.52	8.51	0.12
1,2,3,7,8-PeCDF	0.03	30.73	2.98		0.041		0.25	0.50	2.88	2.98	3.4
2,3,4,7,8-PeCDF	0.3	31.35	8.28	M	0.038		0.25	0.50	8.20	8.28	0.97
1,2,3,4,7,8-HxCDF	0.1	33.09	1.80		0.052		0.25	0.50	1.76	1.80	2.2
1,2,3,6,7,8-HxCDF	0.1	33.18	2.44		0.060		0.25	0.50	2.24	2.44	8.5
2,3,4,6,7,8-HxCDF	0.1	33.59	4.74		0.060		0.25	0.50	4.74	4.74	0.0
1,2,3,7,8,9-HxCDF	0.1	34.30	0.288	M,J,B	0.077		0.25	0.50	0.219	0.288	27
1,2,3,4,6,7,8-HpCDF	0.01	35.24	4.48		0.051		0.25	0.50	4.43	4.48	1.1
1,2,3,4,7,8,9-HpCDF	0.01	36.81	<0.29	J,R	0.077	0.29	0.25	0.50	0.36	0.29	22
OCDF	0.0003	39.36	0.960	M,J,B	0.096		0.50	1.0	0.862	0.960	11
Extraction Standards	pg		% Rec		Limits						
13C12-2,3,7,8-TCDD	2000	28.36	80		25-164						
13C12-1,2,3,7,8-PeCDD	2000	31.45	68		25-181						
13C12-1,2,3,4,7,8-HxCDD	2000	33.64	81		32-141						
13C12-1,2,3,6,7,8-HxCDD	2000	33.71	77		28-130						
13C12-1,2,3,4,6,7,8-HpCDD	2000	36.16	58		23-140						
13C12-OCDD	4000	39.00	46		17-157						
13C12-2,3,7,8-TCDF	2000	27.78	79		24-169						
13C12-1,2,3,7,8-PeCDF	2000	30.72	73		24-185						
13C12-2,3,4,7,8-PeCDF	2000	31.34	68		21-178						
13C12-1,2,3,4,7,8-HxCDF	2000	33.07	86		26-152						
13C12-1,2,3,6,7,8-HxCDF	2000	33.17	85		26-123						
13C12-2,3,4,6,7,8-HxCDF	2000	33.58	77		28-136						
13C12-1,2,3,7,8,9-HxCDF	2000	34.27	77		29-147						
13C12-1,2,3,4,6,7,8-HpCDF	2000	35.23	66		28-143						
13C12-1,2,3,4,7,8,9-HpCDF	2000	36.79	57		26-138						
Cleanup Standard	pg										
37Cl4-2,3,7,8-TCDD (Cleanup)	40	28.37	92		35-197						
Homologue Group Totals	# peaks		Conc. pg/g ww		EDL pg/g ww						
Total-TCDD	1	0.202	J	0.032	0.25						
Total-PeCDD	2	1.63		0.041	0.25						
Total-HxCDD	5	4.75		0.066	0.25						
Total-HpCDD	2	6.78		0.092	0.25						
Total-TCDF	9	10.7		0.053	0.25						
Total-PeCDF	7	19.7		0.041	0.25						
Total-HxCDF	9	13.9		0.077	0.25						
Total-HpCDF	2	6.23		0.077	0.25						

Toxic Equivalency - (WHO 2005)	pg/g ww
Lower Bound PCDD/F TEQ (WHO 2005)	6.35
Mid Point PCDD/F TEQ (WHO 2005)	6.35
Upper Bound PCDD/F TEQ (WHO 2005)	6.35

Definitions	
EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor
LoD	Limit of Detection, validated quarterly, adjusted for sample size, splits and dilutions.
LoQ	Limit of Quantification, based on the lowest calibrated level, adjusted for sample size, splits and dilutions.
EMPC	Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure
Flags/Qualifiers	
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that a target analyte was detected below the calibrated range.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.

ALS Life Sciences

Laboratory Control Sample Analysis Report

Sample Name

ALS Sample ID, Parent ID

Analysis Method

Analysis Type

Sample Matrix

Laboratory Control Sample

QC-MRG2-2062741-002 QC-MRG2-2062741-001

EPA1613B

LCS

QC

Sampling Date

Extraction Date

Sample Size

Percent Moisture

Split Ratio

n/a

20-Jun-25

1

n/a

1

g

Approved:

M.Elchawiche

--e-signature--

16-Jul-2025

Run Information

Analysis 1

Recovery Results

Filename

Run Date

Final Volume

Dilution Factor

Analysis Units

Instrument - Column

7-250713A02

13-Jul-25 07:04

10 uL

1

%

HRMS-7 ZB-DX1193633

Target Analytes	pg	Ret. Time	Amt pg	Flags	Amt. pg	Blank pg	Δ pg	Spiked %	Rec %	Limits
2,3,7,8-TCDD	200	28.37	198		198	0	198	200	99	67-158
1,2,3,7,8-PeCDD	1000	31.46	1050		1050	0	1050	1000	105	70-142
1,2,3,4,7,8-HxCDD	1000	33.65	995		995	0	995	1000	100	70-164
1,2,3,6,7,8-HxCDD	1000	33.72	969		969	0	969	1000	97	76-134
1,2,3,7,8,9-HxCDD	1000	33.92	947		947	0	947	1000	95	64-162
1,2,3,4,6,7,8-HpCDD	1000	36.17	1050		1050	0	1050	1000	105	70-140
OCDD	2000	39.01	1960		1960	11.2	1950	2000	98	78-144
2,3,7,8-TCDF	200	27.81	214		214	0	214	200	107	75-158
1,2,3,7,8-PeCDF	1000	30.73	1060		1060	0	1060	1000	106	80-134
2,3,4,7,8-PeCDF	1000	31.35	979		979	0	979	1000	98	68-160
1,2,3,4,7,8-HxCDF	1000	33.09	991		991	1.64	989	1000	99	72-134
1,2,3,6,7,8-HxCDF	1000	33.18	1060		1060	0	1060	1000	106	84-130
2,3,4,6,7,8-HxCDF	1000	33.59	1030		1030	0	1030	1000	103	70-156
1,2,3,7,8,9-HxCDF	1000	34.29	1010		1010	1.97	1010	1000	101	78-130
1,2,3,4,6,7,8-HpCDF	1000	35.25	1090		1090	0	1090	1000	109	82-122
1,2,3,4,7,8,9-HpCDF	1000	36.80	1060		1060	0	1060	1000	106	78-138
OCDF	2000	39.36	2020		2020	9.65	2010	2000	101	63-170
Extraction Standards	pg		% Rec	Limits						
13C12-2,3,7,8-TCDD	2000	28.36	80	20-175						
13C12-1,2,3,7,8-PeCDD	2000	31.45	67	21-227						
13C12-1,2,3,4,7,8-HxCDD	2000	33.64	80	21-193						
13C12-1,2,3,6,7,8-HxCDD	2000	33.72	77	25-163						
13C12-1,2,3,4,6,7,8-HpCDD	2000	36.16	56	26-166						
13C12-OCDD	4000	39.00	44	13-138						
13C12-2,3,7,8-TCDF	2000	27.79	77	22-152						
13C12-1,2,3,7,8-PeCDF	2000	30.72	71	21-192						
13C12-2,3,4,7,8-PeCDF	2000	31.34	66	13-328						
13C12-1,2,3,4,7,8-HxCDF	2000	33.07	83	19-202						
13C12-1,2,3,6,7,8-HxCDF	2000	33.17	84	21-159						
13C12-2,3,4,6,7,8-HxCDF	2000	33.58	76	22-176						
13C12-1,2,3,7,8,9-HxCDF	2000	34.28	73	17-205						
13C12-1,2,3,4,6,7,8-HpCDF	2000	35.24	64	21-158						
13C12-1,2,3,4,7,8,9-HpCDF	2000	36.80	56	20-186						
Cleanup Standard	pg									
37Cl4-2,3,7,8-TCDD (Cleanup)	40	28.37	93	31-191						

Definitions

Flags/Qualifiers



1435 Norjohn Court, Unit 1, Burlington, ON, Canada L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact: Dana Brown
ALS Project ID: WMCL100
ALS WO#: EO2504379
Date of Report: 30-Jul-25
Date of Sample Receipt: 3-Jun-25

Client Name: Wildland Management Consultants Ltd.
Client Address: 50345 Range Road 222
Leduc County AB T0B 3M2
Canada
Client Contact: Lawrence Brusnyk
Client Project ID:

COMMENTS: PCB Congeners by EPA 1668C

PCB Congener Group Totals and Total PCB are a sum of detected values, including EMPC values, consistent with USEPA CLP SOW CBC1.2

All results have been reported on an as-received (wet weight) basis.

Certified by:

A handwritten signature in black ink, appearing to read "S Jin".

Sabrina Jin
Technical Specialist

Results in this certificate relate only to the samples as submitted to the laboratory.
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ALS Life Sciences							
Sample Analysis Summary Report							
Sample Name	Plot 4 - 6 jars	Duplicate	Plot 11 - 2 jars	Plot 70 - 6 jars	Plot 71 - 2 jars	Plot 109 - 3 jars	Plot 114- 3 jars
ALS Sample ID	EO2504379-001	QC-MRG2-2062741-	EO2504379-002	EO2504379-003	EO2504379-004	EO2504379-005	EO2504379-006
Sample Size	10.38	10.03	10.12	10.41	10.13	10.29	10.22
Sample size units	g wwt	g wwt	g wwt	g wwt	g wwt	g wwt	g wwt
Percent Moisture	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Sample Matrix	Tissue	QC	Tissue	Tissue	Tissue	Tissue	Tissue
Sampling Date	19-Jun-25	n/a	19-Jun-25	19-Jun-25	19-Jun-25	19-Jun-25	19-Jun-25
Extraction Date	20-Jun-25	20-Jun-25	20-Jun-25	20-Jun-25	20-Jun-25	20-Jun-25	20-Jun-25
Target Analytes	pg/g wwt	pg/g wwt	pg/g wwt	pg/g wwt	pg/g wwt	pg/g wwt	pg/g wwt
PCB-001	0.733	<0.43	<0.83	<0.42	0.416	<0.82	<0.49
PCB-002	1.36	2.30	<1.7	2.86	2.39	4.42	<1.6
PCB-003	<0.50	<0.59	<0.32	<1.1	<1.1	1.23	0.950
PCB-004	<1.0	<1.1	<1.3	<1.1	<1.2	<1.1	<1.1
PCB-010	<0.61	<0.64	<0.74	<0.65	<0.69	<0.62	<0.63
PCB-009	<0.65	<0.69	<0.79	<0.70	<0.74	1.82	<0.68
PCB-007	<0.56	<0.60	<0.68	<0.60	<0.64	<0.57	<0.58
PCB-006	<0.93	<0.87	1.25	<0.68	<0.72	<0.65	<0.66
PCB-005	<0.62	<0.66	<0.75	<0.66	<0.71	<0.90	<0.64
PCB-008	3.06	<2.2	<1.9	<0.97	<0.69	<3.3	<1.7
PCB-014	<0.67	<0.73	<0.69	<0.73	<0.88	<0.80	<0.92
PCB-011	41.8	39.1	30.4	60.9	53.7	76.1	29.4
PCB-012/013	<0.60	<0.65	<0.61	<0.65	<0.78	<0.71	<0.82
PCB-015	5.57	<5.3	<1.0	<0.71	<0.77	4.80	<2.7
PCB-019	0.292	<0.26	<0.29	<0.24	<0.24	<0.23	<0.33
PCB-018/030	2.49	2.28	1.86	1.42	<1.1	4.07	1.88
PCB-017	1.17	<1.2	<0.80	<0.45	0.963	1.90	<1.1
PCB-027	<0.30	<0.26	<0.38	<0.26	<0.37	<0.32	<0.27
PCB-024	<0.27	<0.23	<0.34	<0.23	<0.33	<0.26	<0.24
PCB-016	<1.5	1.25	<0.76	<0.47	<0.82	1.73	<0.96
PCB-032	1.06	1.11	<0.69	<0.23	<0.37	1.51	<0.65
PCB-034	<0.39	<0.33	<0.39	<0.31	<0.34	<0.45	<0.39
PCB-023	<0.36	<0.30	<0.35	<0.28	<0.31	<0.41	<0.36
PCB-026/029	2.54	2.99	<0.94	<0.29	0.373	10.1	1.45
PCB-025	0.624	0.754	0.379	<0.28	<0.31	4.84	<0.37
PCB-031	8.39	8.49	4.23	1.92	<1.5	22.9	4.49
PCB-020/028	80.1	74.8	15.5	6.17	6.05	223	35.4
PCB-021/033	4.59	4.94	<1.8	1.06	1.36	5.00	<1.6
PCB-022	3.33	3.08	<1.1	<0.38	<0.48	3.32	<1.3
PCB-036	<0.34	<0.28	<0.33	<0.27	<0.30	<0.39	<0.34
PCB-039	<0.32	0.547	<0.31	<0.25	<0.28	0.588	<0.32
PCB-038	0.554	0.346	<0.36	<0.29	<0.32	<0.43	<0.37
PCB-035	<1.9	3.18	1.11	<1.1	<0.77	<2.2	<1.0
PCB-037	20.4	19.6	3.62	<0.75	<0.70	20.0	10.3
PCB-054	<0.17	<0.18	<0.16	<0.14	<0.17	<0.16	<0.17
PCB-050/053	<0.58	<0.80	<0.47	<0.31	<0.33	<0.94	<0.29
PCB-045/051	<1.2	1.51	0.915	0.700	<0.57	<1.6	0.752
PCB-046	<0.42	<0.55	<0.56	<0.37	<0.39	<0.60	<0.33
PCB-052	33.2	32.9	12.6	<5.2	5.66	135	12.2
PCB-073	<0.25	<0.33	<0.33	<0.22	<0.23	<0.36	<0.20
PCB-043	<0.40	<0.53	<0.53	<0.35	<0.37	<0.57	<0.32
PCB-049/069	7.42	<7.8	2.41	<0.66	<0.66	68.4	3.19
PCB-048	<0.94	<0.97	0.565	0.578	<0.32	<1.5	<0.43
PCB-044/047/065	24.9	24.0	15.5	4.94	3.36	364	13.2
PCB-059/062/075	<3.5	3.61	<1.0	<0.24	<0.25	30.4	1.86
PCB-042	<2.5	<2.7	<0.59	<0.50	<0.41	<7.7	<0.95
PCB-040/041/071	3.98	3.99	<1.1	<0.33	<0.35	<4.7	<1.6
PCB-064	9.56	9.37	2.75	0.757	0.578	20.8	3.63
PCB-072	1.23	1.50	<0.52	<0.31	<0.32	13.3	<0.62
PCB-068	0.482	<0.55	<0.46	<0.27	<0.29	8.21	<0.54
PCB-057	<0.48	<0.67	<0.56	<0.33	<0.35	2.13	<0.66
PCB-058	<0.42	<0.57	<0.48	<0.29	<0.30	<1.0	<0.57
PCB-067	6.39	9.04	<1.9	<0.26	<0.27	12.2	5.46
PCB-063	9.68	9.26	<2.4	<0.32	<0.33	41.8	4.44
PCB-061/070/074/076	539	526	78.2	7.48	5.50	960	266
PCB-066	118	115	22.9	1.80	<1.3	529	44.9
PCB-055	2.12	<1.6	<0.51	<0.32	<0.32	<2.0	<0.98
PCB-056	13.7	14.5	2.29	<0.29	<0.30	10.3	4.56
PCB-060	71.0	69.9	9.82	<1.0	0.884	161	34.6
PCB-080	<0.39	<0.53	<0.45	<0.27	<0.28	<0.91	<0.53
PCB-079	6.74	9.04	0.881	<0.28	<0.29	8.85	2.76
PCB-078	1.80	1.74	<0.63	<0.38	<0.39	<2.9	<1.1
PCB-081	15.7	14.8	<0.97	<0.38	<0.41	11.6	5.56
PCB-077	172	166	26.5	<1.0	0.788	111	52.2
PCB-104	<0.18	<0.19	<0.19	<0.18	<0.19	<0.23	<0.19
PCB-096	<0.29	<0.29	<0.31	<0.28	<0.30	<0.33	<0.30
PCB-103	<0.59	<0.62	<0.74	<0.46	<0.78	6.30	<1.0
PCB-094	<0.39	<0.57	<0.68	<0.43	<0.72	<0.45	<0.92
PCB-095	58.3	54.2	11.5	1.81	<0.90	91.4	17.5
PCB-093/098/100/102	<2.0	<2.5	<1.3	<0.42	<0.72	25.0	<1.1

ALS Life Sciences							
Sample Analysis Summary Report							
Sample Name	Plot 4 - 6 jars	Duplicate	Plot 11 - 2 jars	Plot 70 - 6 jars	Plot 71 - 2 jars	Plot 109 - 3 jars	Plot 114- 3 jars
ALS Sample ID	EO2504379-001	QC-MRG2-2062741-	EO2504379-002	EO2504379-003	EO2504379-004	EO2504379-005	EO2504379-006
Sample Size	10.38	10.03	10.12	10.41	10.13	10.29	10.22
Sample size units	g wwt	g wwt	g wwt	g wwt	g wwt	g wwt	g wwt
Percent Moisture	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Sample Matrix	Tissue	QC	Tissue	Tissue	Tissue	Tissue	Tissue
Sampling Date	19-Jun-25	n/a	19-Jun-25	19-Jun-25	19-Jun-25	19-Jun-25	19-Jun-25
Extraction Date	20-Jun-25	20-Jun-25	20-Jun-25	20-Jun-25	20-Jun-25	20-Jun-25	20-Jun-25
Target Analytes	pg/g wwt	pg/g wwt	pg/g wwt	pg/g wwt	pg/g wwt	pg/g wwt	pg/g wwt
PCB-088/091	<8.3	8.24	1.65	<0.45	<0.77	34.0	<2.5
PCB-084	12.9	11.7	<1.9	<0.48	<0.82	8.39	<3.7
PCB-089	<0.55	<0.80	<0.95	<0.59	<1.0	<0.63	<1.3
PCB-121	<0.27	<0.39	<0.47	<0.29	<0.49	0.707	<0.63
PCB-092	43.0	40.6	8.33	<0.54	<0.92	160	15.2
PCB-090/101/113	201	193	33.5	2.43	2.63	470	72.8
PCB-083/099	465	447	105	5.79	4.82	1750	204
PCB-112	<0.96	<0.77	<0.48	<0.30	<0.50	<2.0	<0.67
PCB-086/087/097/109/119/125	72.6	71.1	11.4	1.10	<0.53	134	22.9
PCB-085/110/115/116/117	436	430	71.4	<4.3	3.15	794	181
PCB-082	17.3	18.5	<2.1	<0.62	<1.1	18.7	<5.4
PCB-111	1.61	<1.2	<0.47	<0.29	<0.50	9.84	<0.89
PCB-120	9.54	<8.9	<1.5	<0.33	<0.56	35.1	5.22
PCB-108/124	19.8	20.1	3.22	<0.34	<0.38	21.4	<8.3
PCB-107	143	136	24.1	0.973	<0.36	432	66.5
PCB-123	12.4	15.7	2.94	<0.39	<0.45	43.1	7.75
PCB-106	<0.81	<0.98	<0.62	<0.39	<0.44	<3.3	<0.85
PCB-118	6250	6090	700	26.3	19.8	11000	3290
PCB-122	<1.2	<1.2	<0.74	<0.47	<0.53	<1.0	<1.0
PCB-114	84.5	81.2	12.7	<0.72	<0.43	217	48.7
PCB-105	1200	1130	145	5.27	4.65	2820	536
PCB-127	4.76	<5.8	<0.92	<0.35	<0.39	13.2	<2.6
PCB-126	402	397	31.4	<1.1	<0.58	357	139
PCB-155	<0.15	0.310	<0.28	<0.14	<0.19	<0.66	<0.15
PCB-152	<0.36	<0.32	<0.67	<0.32	<0.43	<0.33	<0.32
PCB-150	<0.27	<0.24	<0.50	<0.24	<0.32	<0.44	<0.24
PCB-136	15.2	14.7	2.01	<0.30	<0.41	7.25	3.85
PCB-145	<0.29	<0.26	<0.54	<0.26	<0.35	<0.26	<0.26
PCB-148	<0.71	0.796	<0.89	<0.42	<0.57	5.16	<0.43
PCB-135/151	140	137	18.4	0.932	<0.87	341	44.5
PCB-154	7.38	8.71	<1.1	<0.28	<0.38	46.0	2.66
PCB-144	15.6	16.7	<1.3	<0.40	<0.54	18.8	4.76
PCB-147/149	394	356	54.6	<2.7	2.19	624	110
PCB-134/143	17.6	14.1	<1.7	<0.73	<0.82	<27	5.11
PCB-139/140	<21	21.7	<3.2	<0.53	<0.59	53.4	9.41
PCB-131	<3.2	3.03	<1.1	<0.73	<0.81	3.54	<1.2
PCB-142	<1.3	<1.6	<1.1	<0.72	<0.80	<1.9	<1.2
PCB-132	106	104	12.9	<1.0	<0.65	130	30.3
PCB-133	49.1	46.6	20.2	0.766	<0.72	298	50.0
PCB-165	8.42	7.59	<1.4	<0.42	<0.47	18.8	4.68
PCB-146	486	465	107	<3.3	2.85	1490	243
PCB-161	<1.2	<0.97	<0.66	<0.43	<0.48	<1.1	<0.73
PCB-153/168	8240	7500	1020	41.7	26.0	14700	3710
PCB-141	218	205	28.7	1.12	<1.1	258	72.0
PCB-130	321	302	47.7	1.71	<1.1	596	141
PCB-137/164	125	121	<0.71	<0.97	<0.80	272	48.3
PCB-129/138/163	7040	6550	893	32.2	19.7	11900	3400
PCB-160	5.15	3.53	1.02	<0.36	<0.40	6.36	2.80
PCB-158	391	367	52.6	<1.7	<1.3	645	170
PCB-128/166	758	730	99.7	4.48	2.81	1110	352
PCB-159	20.6	20.7	2.28	<0.38	<0.42	24.4	8.76
PCB-162	42.5	42.3	<5.5	<0.43	<0.43	77.2	31.0
PCB-167	1010	1000	102	3.40	2.29	1300	511
PCB-156/157	1920	1850	223	<6.3	4.68	3120	1060
PCB-169	<180	<190	<24	<1.3	<0.82	<190	<75
PCB-188	0.704	<0.72	<0.27	<0.25	<0.18	<1.3	<0.39
PCB-179	37.4	33.5	<3.4	<0.37	<0.26	31.9	9.35
PCB-184	<0.49	<0.41	<0.32	<0.31	<0.22	<0.77	<0.45
PCB-176	15.1	13.7	1.53	<0.37	<0.26	10.1	3.31
PCB-186	<0.54	<0.45	<0.35	<0.34	<0.24	<0.50	<0.49
PCB-178	869	790	109	3.99	3.46	1200	496
PCB-175	29.7	26.5	<3.0	<0.51	<0.36	35.4	12.7
PCB-187	4500	4170	539	15.1	12.7	4890	2080
PCB-182	<1.4	<2.2	<0.45	<0.44	<0.31	<3.4	<0.81
PCB-183	877	821	128	3.34	3.23	1440	488
PCB-185	20.5	20.5	<1.2	<0.44	<0.31	27.2	<4.4
PCB-174	189	179	21.9	<1.1	<0.47	216	60.7
PCB-177	2200	2050	252	6.91	5.48	2460	1060
PCB-181	<10	11.5	2.27	<0.45	<0.32	19.0	5.42
PCB-171/173	332	316	40.7	1.72	<0.76	479	158
PCB-172	713	709	113	2.43	<2.1	1200	523

ALS Life Sciences							
Sample Analysis Summary Report							
Sample Name	Plot 4 - 6 jars	Duplicate	Plot 11 - 2 jars	Plot 70 - 6 jars	Plot 71 - 2 jars	Plot 109 - 3 jars	Plot 114- 3 jars
ALS Sample ID	EO2504379-001	QC-MRG2-2062741-	EO2504379-002	EO2504379-003	EO2504379-004	EO2504379-005	EO2504379-006
Sample Size	10.38	10.03	10.12	10.41	10.13	10.29	10.22
Sample size units	g wwt	g wwt	g wwt	g wwt	g wwt	g wwt	g wwt
Percent Moisture	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Sample Matrix	Tissue	QC	Tissue	Tissue	Tissue	Tissue	Tissue
Sampling Date	19-Jun-25	n/a	19-Jun-25	19-Jun-25	19-Jun-25	19-Jun-25	19-Jun-25
Extraction Date	20-Jun-25	20-Jun-25	20-Jun-25	20-Jun-25	20-Jun-25	20-Jun-25	20-Jun-25
Target Analytes	pg/g wwt	pg/g wwt	pg/g wwt	pg/g wwt	pg/g wwt	pg/g wwt	pg/g wwt
PCB-192	<0.56	<0.70	<0.37	<0.36	<0.25	<0.85	<0.52
PCB-180/193	12000	12000	1280	30.8	22.1	15800	6470
PCB-191	33.4	29.8	<5.0	<0.36	<0.25	39.5	<14
PCB-170	1720	1750	216	<5.7	3.45	2920	974
PCB-190	1570	1580	181	4.74	1.95	1920	841
PCB-189	589	535	57.9	2.45	<1.5	731	286
PCB-202	410	396	53.6	<2.8	1.97	417	213
PCB-201	65.2	60.7	<5.8	<0.32	<0.34	62.7	23.2
PCB-204	<0.32	<0.35	<0.39	<0.32	<0.34	<0.37	<0.24
PCB-197	34.4	33.9	<4.3	<0.27	<0.29	35.6	13.0
PCB-200	8.59	9.25	<1.1	<0.34	<0.37	8.11	3.01
PCB-198/199	6400	6570	855	<18	16.8	5570	2740
PCB-196	386	388	54.4	<2.0	<1.3	480	200
PCB-203	2570	2630	307	<7.5	6.41	2720	1130
PCB-195	1280	1360	155	3.57	<2.3	1360	675
PCB-194	5830	6380	702	14.7	10.7	7010	2910
PCB-205	457	461	61.1	<1.7	1.87	515	188
PCB-208	144	141	26.6	2.92	3.19	120	70.1
PCB-207	47.0	44.6	<6.9	1.11	1.35	40.0	19.3
PCB-206	1610	1550	246	14.6	<9.8	1590	601
PCB-209	145	141	52.9	13.5	10.5	109	74.6
Extraction Standards	% Rec	% Rec	% Rec	% Rec	% Rec	% Rec	% Rec
13C12-PCB-001	75	78	74	80	81	79	76
13C12-PCB-003	60	59	57	61	61	60	61
13C12-PCB-004	81	78	77	81	80	79	77
13C12-PCB-015	65	66	61	66	68	67	70
13C12-PCB-019	102	109	105	106	105	109	107
13C12-PCB-037	81	78	72	79	77	79	80
13C12-PCB-054	114	106	104	113	109	110	112
13C12-PCB-081	69	64	63	68	65	67	66
13C12-PCB-077	70	64	61	67	68	68	70
13C12-PCB-104	88	79	81	87	83	81	84
13C12-PCB-123	71	65	67	74	68	70	72
13C12-PCB-118	85	79	71	81	76	93	83
13C12-PCB-114	72	70	68	74	72	75	76
13C12-PCB-105	69	68	62	71	67	73	73
13C12-PCB-126	59	59	52	59	58	61	64
13C12-PCB-155	86	78	79	86	82	84	87
13C12-PCB-167	73	70	73	78	79	75	79
13C12-PCB-156/157	72	71	71	74	78	75	78
13C12-PCB-169	58	60	56	58	63	59	69
13C12-PCB-188	104	97	103	110	107	104	101
13C12-PCB-189	54	61	57	62	64	59	67
13C12-PCB-202	98	92	94	104	103	98	102
13C12-PCB-205	81	76	73	79	78	81	81
13C12-PCB-208	124	113	111	121	117	122	106
13C12-PCB-206	81	81	75	79	81	80	83
13C12-PCB-209	73	74	67	78	76	73	76
Cleanup Standards							
13C12-PCB-028	108	102	107	110	107	104	99
13C12-PCB-111	89	82	89	90	90	85	83
13C12-PCB-178	99	93	105	102	104	97	93

ALS Life Sciences							
Sample Analysis Summary Report							
Sample Name	Plot 4 - 6 jars	Duplicate	Plot 11 - 2 jars	Plot 70 - 6 jars	Plot 71 - 2 jars	Plot 109 - 3 jars	Plot 114- 3 jars
ALS Sample ID	EO2504379-001	QC-MRG2-2062741-	EO2504379-002	EO2504379-003	EO2504379-004	EO2504379-005	EO2504379-006
Sample Size	10.38	10.03	10.12	10.41	10.13	10.29	10.22
Sample size units	g wwt	g wwt	g wwt	g wwt	g wwt	g wwt	g wwt
Percent Moisture	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Sample Matrix	Tissue	QC	Tissue	Tissue	Tissue	Tissue	Tissue
Sampling Date	19-Jun-25	n/a	19-Jun-25	19-Jun-25	19-Jun-25	19-Jun-25	19-Jun-25
Extraction Date	20-Jun-25	20-Jun-25	20-Jun-25	20-Jun-25	20-Jun-25	20-Jun-25	20-Jun-25
Target Analytes	pg/g wwt	pg/g wwt	pg/g wwt	pg/g wwt	pg/g wwt	pg/g wwt	pg/g wwt
Homologue Group Totals							
Total MonoCB	2.59	3.32	2.53	4.38	3.91	6.47	3.04
Total DiCB	51.4	47.5	34.6	62.6	53.7	86.9	33.8
Total TriCB	129	125	32.8	13.7	14.5	302	60.5
Total TetraCB	1050	1030	183	24.6	19.3	2510	461
Total PentaCB	9450	9160	1170	49.8	35.1	18400	4630
Total HexaCB	21500	20100	2720	104	66.5	37300	10100
Total HeptaCB	25700	25000	2950	78.3	57.2	33400	13500
Total OctaCB	17400	18300	2200	50.3	41.4	18200	8100
Total NonaCB	1800	1740	280	18.6	14.3	1750	690
DecaCB	145	141	52.9	13.5	10.5	109	74.6
Total PCB	77300	75600	9630	420	316	112000	37600
Toxic Equivalency - (WHO 2005)							
Lower Bound PCB TEQ	40.6	40.0	3.18	0.00112	0.00102	36.3	14.1
Mid Point PCB TEQ	46.0	45.7	3.90	0.150	0.0547	42.0	16.3
Upper Bound PCB TEQ	46.0	45.7	3.90	0.151	0.0838	42.0	16.3

ALS Life Sciences

Quality Control Summary Report

Sample Name

Method Blank

ALS Sample ID

QC-MRG2-2062741-001

Sample Size	10
Sample size units	g wwt
Percent Moisture	n/a
Sample Matrix	QC
Sampling Date	n/a
Extraction Date	20-Jun-25

Target Analytes

pg/g wwt

PCB-001	<0.64
PCB-002	2.64
PCB-003	<0.53
PCB-004	<1.6
PCB-010	<0.97
PCB-009	<1.0
PCB-007	<0.89
PCB-006	<1.0
PCB-005	<0.99
PCB-008	<0.96
PCB-014	<1.4
PCB-011	19.8
PCB-012/013	<1.3
PCB-015	<1.3
PCB-019	<0.46
PCB-018/030	<1.2
PCB-017	<0.79
PCB-027	<0.60
PCB-024	<0.53
PCB-016	<0.92
PCB-032	<0.54
PCB-034	<0.72
PCB-023	<0.65
PCB-026/029	<0.67
PCB-025	<0.65
PCB-031	<1.2
PCB-020/028	2.05
PCB-021/033	<1.1
PCB-022	<0.63
PCB-036	<0.61
PCB-039	<0.58
PCB-038	<0.67
PCB-035	<0.75
PCB-037	<0.81
PCB-054	<0.34
PCB-050/053	<0.80
PCB-045/051	<1.1
PCB-046	<0.94
PCB-052	<1.4
PCB-073	<0.56
PCB-043	<0.89
PCB-049/069	<0.85
PCB-048	<0.79
PCB-044/047/065	5.79
PCB-059/062/075	<0.61
PCB-042	<0.99
PCB-040/041/071	<0.84
PCB-064	<0.65
PCB-072	<0.62
PCB-068	<0.54
PCB-057	<0.66
PCB-058	<0.57
PCB-067	<0.52
PCB-063	<0.63
PCB-061/070/074/076	<0.58
PCB-066	<0.61
PCB-055	<0.60
PCB-056	<0.57
PCB-060	<0.61
PCB-080	<0.53
PCB-079	<0.56
PCB-078	<0.74
PCB-081	<0.81
PCB-077	<0.82
PCB-104	<0.30
PCB-096	<0.53
PCB-103	<0.82
PCB-094	<0.76
PCB-095	<1.1
PCB-093/098/100/102	<0.75

ALS Life Sciences

Quality Control Summary Report

Sample Name

Method Blank

ALS Sample ID

QC-MRG2-2062741-001

Sample Size	10
Sample size units	g wwt
Percent Moisture	n/a
Sample Matrix	QC
Sampling Date	n/a
Extraction Date	20-Jun-25

Target Analytes

pg/g wwt

PCB-088/091	<0.81
PCB-084	<0.86
PCB-089	<1.1
PCB-121	<0.52
PCB-092	<0.96
PCB-090/101/113	<0.99
PCB-083/099	<0.87
PCB-112	<0.53
PCB-086/087/097/109/119/125	<0.56
PCB-085/110/115/116/117	<0.76
PCB-082	<1.1
PCB-111	<0.52
PCB-120	<0.58
PCB-108/124	<0.70
PCB-107	<0.65
PCB-123	<0.85
PCB-106	<0.80
PCB-118	<0.71
PCB-122	<0.96
PCB-114	<0.80
PCB-105	<0.83
PCB-127	<0.72
PCB-126	<1.2
PCB-155	<0.35
PCB-152	<0.88
PCB-150	<0.66
PCB-136	<0.83
PCB-145	<0.71
PCB-148	<1.2
PCB-135/151	<1.1
PCB-154	<0.78
PCB-144	<1.1
PCB-147/149	<0.59
PCB-134/143	<0.85
PCB-139/140	<0.62
PCB-131	<0.85
PCB-142	<0.84
PCB-132	<0.68
PCB-133	<0.75
PCB-165	<0.49
PCB-146	<0.61
PCB-161	<0.50
PCB-153/168	<0.51
PCB-141	<0.65
PCB-130	<0.84
PCB-137/164	<0.54
PCB-129/138/163	<0.67
PCB-160	<0.42
PCB-158	<0.40
PCB-128/166	<0.54
PCB-159	<0.44
PCB-162	<0.45
PCB-167	<0.49
PCB-156/157	<0.70
PCB-169	<0.77
PCB-188	<0.34
PCB-179	<0.48
PCB-184	<0.40
PCB-176	<0.49
PCB-186	<0.45
PCB-178	<0.68
PCB-175	<0.67
PCB-187	<0.54
PCB-182	<0.57
PCB-183	<0.59
PCB-185	<0.58
PCB-174	<0.63
PCB-177	<0.64
PCB-181	<0.59
PCB-171/173	<0.67
PCB-172	<0.62

ALS Life Sciences

Quality Control Summary Report

Sample Name

Method Blank

ALS Sample ID

QC-MRG2-2062741-001

Sample Size	10
Sample size units	g wwt
Percent Moisture	n/a
Sample Matrix	QC
Sampling Date	n/a
Extraction Date	20-Jun-25

Target Analytes

pg/g wwt

PCB-192	<0.47
PCB-180/193	<0.51
PCB-191	<0.47
PCB-170	<0.66
PCB-190	<0.37
PCB-189	<0.77
PCB-202	<0.45
PCB-201	<0.61
PCB-204	<0.60
PCB-197	<0.53
PCB-200	<0.66
PCB-198/199	<0.82
PCB-196	<0.86
PCB-203	<0.69
PCB-195	<1.1
PCB-194	<1.0
PCB-205	<1.5
PCB-208	<1.4
PCB-207	<1.8
PCB-206	<3.7
PCB-209	<1.0

Extraction Standards

% Rec

13C12-PCB-001	45
13C12-PCB-003	37
13C12-PCB-004	51
13C12-PCB-015	40
13C12-PCB-019	67
13C12-PCB-037	41
13C12-PCB-054	67
13C12-PCB-081	36
13C12-PCB-077	35
13C12-PCB-104	51
13C12-PCB-123	38
13C12-PCB-118	41
13C12-PCB-114	38
13C12-PCB-105	35
13C12-PCB-126	30
13C12-PCB-155	50
13C12-PCB-167	44
13C12-PCB-156/157	43
13C12-PCB-169	32
13C12-PCB-188	55
13C12-PCB-189	33
13C12-PCB-202	61
13C12-PCB-205	44
13C12-PCB-208	70
13C12-PCB-206	46
13C12-PCB-209	43

Cleanup Standards

13C12-PCB-028	116
13C12-PCB-111	85
13C12-PCB-178	105

ALS Life Sciences	
Quality Control Summary Report	
Sample Name	Method Blank
ALS Sample ID	QC-MRG2-2062741-001
Sample Size	10
Sample size units	g wwt
Percent Moisture	n/a
Sample Matrix	QC
Sampling Date	n/a
Extraction Date	20-Jun-25
Target Analytes	pg/g wwt
Homologue Group Totals	
Total MonoCB	3.28
Total DiCB	19.8
Total TriCB	5.55
Total TetraCB	9.14
Total PentaCB	2.09
Total HexaCB	<0.35
Total HeptaCB	<0.34
Total OctaCB	<0.45
Total NonaCB	<1.4
DecaCB	<1.0
Total PCB	39.9
Toxic Equivalency - (WHO 2005)	
Lower Bound PCB TEQ	0.00
Mid Point PCB TEQ	0.0718
Upper Bound PCB TEQ	0.144

ALS Life Sciences

Sample Analysis Summary Report

Sample Name

**Laboratory Control
Sample**

ALS Sample ID

QC-MRG2-2062741-
002

Sample Size 1
Sample size units n/a
Percent Moisture n/a
Sample Matrix QC
Sampling Date n/a
Extraction Date 20-Jun-25

Target Analytes

% Rec

PCB-001	111
PCB-003	107
PCB-004	103
PCB-015	101
PCB-019	92
PCB-037	96
PCB-054	96
PCB-081	89
PCB-077	91
PCB-104	95
PCB-123	102
PCB-118	89
PCB-114	100
PCB-105	92
PCB-126	98
PCB-155	95
PCB-167	99
PCB-156/157	94
PCB-169	94
PCB-188	96
PCB-189	106
PCB-202	103
PCB-205	112
PCB-208	95
PCB-206	93
PCB-209	119

Extraction Standards

% Rec

13C12-PCB-001	66
13C12-PCB-003	55
13C12-PCB-004	74
13C12-PCB-015	64
13C12-PCB-019	100
13C12-PCB-037	79
13C12-PCB-054	106
13C12-PCB-081	67
13C12-PCB-077	67
13C12-PCB-104	86
13C12-PCB-123	67
13C12-PCB-118	74
13C12-PCB-114	68
13C12-PCB-105	66
13C12-PCB-126	55
13C12-PCB-155	85
13C12-PCB-167	77
13C12-PCB-156/157	76
13C12-PCB-169	60
13C12-PCB-188	107
13C12-PCB-189	61
13C12-PCB-202	105
13C12-PCB-205	78
13C12-PCB-208	122
13C12-PCB-206	85
13C12-PCB-209	75

Cleanup Standards

13C12-PCB-028	107
13C12-PCB-111	84
13C12-PCB-178	108

ALS Life Sciences

Sample Analysis Report

Sample Name	Plot 4 - 6 jars	Sampling Date	19-Jun-25	Approved: Henna Saeed --e-signature-- 29-Jul-2025
ALS Sample ID	EO2504379-001	Extraction Date	20-Jun-25	
Analysis Method	EPA 1668C	Sample Size	10.38 g wwt	
Analysis Type	Sample	Percent Moisture	n/a	
Sample Matrix	Tissue	Split Ratio	1	

Run Information	Run 1
Filename	5-250724A29
Run Date	25-Jul-25 09:18
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg/g wwt
Instrument - Column	HRMS-5 SPBOCTYL291720-01

Target Analytes	TEF (WHO 2001)	Ret. Time	Conc. pg/g wwt	EDL pg/g wwt	Flags	EMPC pg/g wwt	LQL
PCB-001		8.97	0.733	0.19	M		0.48
PCB-002		10.36	1.36	0.25	M,B		0.48
PCB-003		10.49	<0.50	0.26	M,R	0.50	0.48
PCB-004		NotFnd	<1.0	1.0	U		0.48
PCB-010		NotFnd	<0.61	0.61	U		0.48
PCB-009		NotFnd	<0.65	0.65	U		0.48
PCB-007		NotFnd	<0.56	0.56	U		0.48
PCB-006		12.18	<0.93	0.63	M,R	0.93	0.48
PCB-005		NotFnd	<0.62	0.62	U		0.48
PCB-008		12.44	3.06	0.60	M		0.48
PCB-014		NotFnd	<0.67	0.67	U		0.48
PCB-011		13.93	41.8	0.66	B		0.48
PCB-012/013		NotFnd	<0.60	0.60	U		0.48
PCB-015		14.31	5.57	0.59			0.48
PCB-019		12.66	0.292	0.23	J		0.48
PCB-018/030		13.74	2.49	0.33	M		0.48
PCB-017		13.98	1.17	0.40			0.48
PCB-027		NotFnd	<0.30	0.30	U		0.48
PCB-024		NotFnd	<0.27	0.27	U		0.48
PCB-016		14.28	<1.5	0.46	M,R	1.5	0.48
PCB-032		14.56	1.06	0.27			0.48
PCB-034		NotFnd	<0.39	0.39	U		0.48
PCB-023		NotFnd	<0.36	0.36	U		0.48
PCB-026/029		15.53	2.54	0.37			0.48
PCB-025		15.65	0.624	0.36			0.48
PCB-031		15.84	8.39	0.37			0.48
PCB-020/028		16.00	80.1	0.35			0.48
PCB-021/033		16.15	4.59	0.38			0.48
PCB-022		16.39	3.33	0.34			0.48
PCB-036		NotFnd	<0.34	0.34	U		0.48
PCB-039		NotFnd	<0.32	0.32	U		0.48
PCB-038		17.77	0.554	0.37	M		0.48
PCB-035		18.01	<1.9	0.41	R	1.9	0.48
PCB-037		18.25	20.4	0.42			0.48
PCB-054		NotFnd	<0.17	0.17	U		0.48
PCB-050/053		15.70	<0.58	0.36	M,R	0.58	0.48
PCB-045/051		16.11	<1.2	0.38	M,R	1.2	0.48
PCB-046		NotFnd	<0.42	0.42	U		0.48
PCB-052		17.00	33.2	0.44			0.48
PCB-073		NotFnd	<0.25	0.25	U		0.48
PCB-043		NotFnd	<0.40	0.40	U		0.48
PCB-049/069		17.28	7.42	0.33			0.48
PCB-048		17.42	<0.94	0.36	M,R	0.94	0.48
PCB-044/047/065		17.57	24.9	0.34	B		0.48
PCB-059/062/075		17.75	<3.5	0.28	R	3.5	0.48
PCB-042		17.86	<2.5	0.45	R	2.5	0.48
PCB-040/041/071		18.13	3.98	0.38			0.48
PCB-064		18.25	9.56	0.30			0.48
PCB-072		18.63	1.23	0.45			0.48
PCB-068		18.81	0.482	0.40	M		0.48
PCB-057		NotFnd	<0.48	0.48	U		0.48
PCB-058		19.17	<0.42	0.42	M,U	0.30	0.48
PCB-067		19.26	6.39	0.38			0.48
PCB-063		19.41	9.68	0.46			0.48
PCB-061/070/074/076		19.63	539	0.43			0.48
PCB-066		19.78	118	0.45	M		0.48
PCB-055		19.87	2.12	0.44	M		0.48
PCB-056		20.16	13.7	0.42			0.48
PCB-060		20.28	71.0	0.44	M		0.48
PCB-080		20.41	<0.39	0.39	M,U	0.35	0.48
PCB-079		21.27	6.74	0.41			0.48
PCB-078		21.59	1.80	0.55	M		0.48
PCB-081	0.0003	21.81	15.7	0.54			0.48
PCB-077	0.0001	22.12	172	0.57			0.48
PCB-104		NotFnd	<0.18	0.18	U		0.48
PCB-096		NotFnd	<0.29	0.29	U		0.48
PCB-103		18.73	<0.59	0.42	R	0.59	0.48
PCB-094		NotFnd	<0.39	0.39	U		0.48
PCB-095		19.14	58.3	0.49	M		0.48
PCB-093/098/100/102		19.20	<2.0	0.39	M,R	2.0	0.48

ALS Life Sciences

Sample Analysis Report

Sample Name Plot 4 - 6 jars
ALS Sample ID EO2504379-001
Analysis Method EPA 1668C
Analysis Type Sample
Sample Matrix Tissue

Sampling Date 19-Jun-25
Extraction Date 20-Jun-25
Sample Size 10.38 g wwt
Percent Moisture n/a
Split Ratio 1

Approved:
Henna Saeed
 --e-signature--
 29-Jul-2025

Run Information

Run 1

Filename 5-250724A29
Run Date 25-Jul-25 09:18
Final Volume 25 ul
Dilution Factor 1
Analysis Units pg/g wwt
Instrument - Column HRMS-5 SPBOCTYL291720-01

Target Analytes	TEF (WHO 2001)	Ret. Time	Conc. pg/g wwt	EDL pg/g wwt	Flags	EMPC pg/g wwt	LQL
PCB-088/091		19.60	<8.3	0.42	R	8.3	0.48
PCB-084		19.76	12.9	0.44			0.48
PCB-089		NotFnd	<0.55	0.55	U		0.48
PCB-121		NotFnd	<0.27	0.27	U		0.48
PCB-092		20.35	43.0	0.50			0.48
PCB-090/101/113		20.66	201	0.36			0.48
PCB-083/099		20.96	465	0.45	M		0.48
PCB-112		21.05	<0.96	0.27	M,R	0.96	0.48
PCB-086/087/097/109/119/125		21.32	72.6	0.29	M		0.48
PCB-085/110/115/116/117		21.74	436	0.39	M		0.48
PCB-082		21.93	17.3	0.57			0.48
PCB-111		22.04	1.61	0.27			0.48
PCB-120		22.28	9.54	0.30			0.48
PCB-108/124		22.91	19.8	0.71			0.48
PCB-107		23.05	143	0.66	M		0.48
PCB-123	0.00003	23.09	12.4	0.87	M		0.48
PCB-106		NotFnd	<0.81	0.81	U		0.48
PCB-118	0.00003	23.28	6250	0.64	M		0.48
PCB-122		23.48	<1.2	0.97	R	1.2	0.48
PCB-114	0.00003	23.58	84.5	0.81			0.48
PCB-105	0.00003	23.93	1200	0.86			0.48
PCB-127		24.65	4.76	0.72	M		0.48
PCB-126	0.1	25.51	402	1.1	M		0.48
PCB-155		20.51	<0.15	0.15	M,U	0.093	0.48
PCB-152		NotFnd	<0.36	0.36	U		0.48
PCB-150		20.76	<0.27	0.27	U	0.15	0.48
PCB-136		20.99	15.2	0.34			0.48
PCB-145		NotFnd	<0.29	0.29	U		0.48
PCB-148		21.83	<0.71	0.47	R	0.71	0.48
PCB-135/151		22.18	140	0.46	M		0.48
PCB-154		22.26	7.38	0.32	M		0.48
PCB-144		22.49	15.6	0.45	M		0.48
PCB-147/149		22.67	394	0.95			0.48
PCB-134/143		22.82	17.6	1.4			0.48
PCB-139/140		22.99	<21	1.0	R	21	0.48
PCB-131		23.13	<3.2	1.4	R	3.2	0.48
PCB-142		NotFnd	<1.3	1.3	U		0.48
PCB-132		23.37	106	1.1			0.48
PCB-133		23.55	49.1	1.2			0.48
PCB-165		23.76	8.42	0.79			0.48
PCB-146		23.88	486	0.99	M		0.48
PCB-161		23.95	<1.2	0.81	M,R	1.2	0.48
PCB-153/168		24.21	8240	0.82			0.48
PCB-141		24.34	218	1.1			0.48
PCB-130		24.56	321	1.4			0.48
PCB-137/164		24.67	125	0.87	M		0.48
PCB-129/138/163		24.90	7040	1.1	M		0.48
PCB-160		24.98	5.15	0.68	M		0.48
PCB-158		25.09	391	0.65			0.48
PCB-128/166		25.57	758	0.88			0.48
PCB-159		26.03	20.6	0.71	M		0.48
PCB-162		26.16	42.5	0.72			0.48
PCB-167	0.00003	26.41	1010	0.81			0.48
PCB-156/157	0.00003	27.03	1920	1.1			0.48
PCB-169	0.03	28.71	<180	1.1	M,R	180	0.48
PCB-188		23.52	0.704	0.39			0.48
PCB-179		23.74	37.4	0.58			0.48
PCB-184		NotFnd	<0.49	0.49	U		0.48
PCB-176		24.19	15.1	0.59			0.48
PCB-186		NotFnd	<0.54	0.54	U		0.48
PCB-178		25.09	869	0.82			0.48
PCB-175		25.41	29.7	0.81			0.48
PCB-187		25.55	4500	0.66	M		0.48
PCB-182		25.67	<1.4	0.69	M,R	1.4	0.48
PCB-183		25.86	877	0.71	M		0.48
PCB-185		25.96	20.5	0.69	M		0.48
PCB-174		26.03	189	0.75			0.48
PCB-177		26.26	2200	0.77			0.48
PCB-181		26.45	<10	0.71	R	10	0.48
PCB-171/173		26.59	332	0.81			0.48
PCB-172		27.37	713	0.74			0.48

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Sample Analysis Report

Sample Name	Plot 4 - 6 jars	Sampling Date	19-Jun-25	Approved: Henna Saeed --e-signature-- 29-Jul-2025
ALS Sample ID	EO2504379-001	Extraction Date	20-Jun-25	
Analysis Method	EPA 1668C	Sample Size	10.38 g wwt	
Analysis Type	Sample	Percent Moisture	n/a	
Sample Matrix	Tissue	Split Ratio	1	

Run Information	Run 1
Filename	5-250724A29
Run Date	25-Jul-25 09:18
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg/g wwt
Instrument - Column	HRMS-5 SPBCTYL291720-01

Target Analytes	TEF (WHO 2001)	Ret. Time	Conc. pg/g wwt	EDL pg/g wwt	Flags	EMPC pg/g wwt	LQL
PCB-192		NotFnd	<0.56	0.56	U		0.48
PCB-180/193		27.71	12000	0.61			0.48
PCB-191		27.89	33.4	0.56			0.48
PCB-170		28.40	1720	0.80			0.48
PCB-190		28.67	1570	0.45			0.48
PCB-189	0.00003	29.97	589	0.79			0.48
PCB-202		26.30	410	0.23			0.48
PCB-201		26.77	65.2	0.32			0.48
PCB-204		NotFnd	<0.32	0.32	U		0.48
PCB-197		27.23	34.4	0.27			0.48
PCB-200		27.32	8.59	0.34			0.48
PCB-198/199		28.71	6400	0.43			0.48
PCB-196		29.04	386	0.45			0.48
PCB-203		29.15	2570	0.36			0.48
PCB-195		29.88	1280	0.85			0.48
PCB-194		31.08	5830	0.79			0.48
PCB-205		31.36	457	1.1			0.48
PCB-208		29.72	144	0.54			0.48
PCB-207		30.19	47.0	0.71			0.48
PCB-206		32.42	1610	1.5			0.48
PCB-209		33.54	145	0.60			0.48
Extraction Standards	pg	Time	% Rec	Limits			
13C12-PCB-001	2000	8.96	75	5-145			
13C12-PCB-003	2000	10.47	60	5-145			
13C12-PCB-004	2000	10.65	81	5-145			
13C12-PCB-015	2000	14.29	65	5-145			
13C12-PCB-019	2000	12.63	102	5-145			
13C12-PCB-037	2000	18.23	81	5-145			
13C12-PCB-054	2000	14.49	114	5-145			
13C12-PCB-081	2000	21.80	69	10-145			
13C12-PCB-077	2000	22.11	70	10-145			
13C12-PCB-104	2000	17.52	88	10-145			
13C12-PCB-123	2000	23.09	71	10-145			
13C12-PCB-118	2000	23.26	85	10-145			
13C12-PCB-114	2000	23.57	72	10-145			
13C12-PCB-105	2000	23.92	69	10-145			
13C12-PCB-126	2000	25.50	59	10-145			
13C12-PCB-155	2000	20.50	86	10-145			
13C12-PCB-167	2000	26.39	73	10-145			
13C12-PCB-156/157	4000	27.03	72	10-145			
13C12-PCB-169	2000	28.69	58	10-145			
13C12-PCB-188	2000	23.51	104	10-145			
13C12-PCB-189	2000	29.95	54	10-145			
13C12-PCB-202	2000	26.28	98	10-145			
13C12-PCB-205	2000	31.33	81	10-145			
13C12-PCB-208	2000	29.70	124	10-145			
13C12-PCB-206	2000	32.41	81	10-145			
13C12-PCB-209	2000	33.51	73	10-145			
Cleanup Standards							
13C12-PCB-028	2000	16.00	108	5-145			
13C12-PCB-111	2000	22.03	89	10-145			
13C12-PCB-178	2000	25.08	99	10-145			

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Sample Analysis Report

Sample Name	Plot 4 - 6 jars	Sampling Date	19-Jun-25	Approved: <i>Henna Saeed</i> --e-signature-- 29-Jul-2025
ALS Sample ID	EO2504379-001	Extraction Date	20-Jun-25	
Analysis Method	EPA 1668C	Sample Size	10.38 g wwt	
Analysis Type	Sample	Percent Moisture	n/a	
Sample Matrix	Tissue	Split Ratio	1	

Run Information	Run 1
Filename	5-250724A29
Run Date	25-Jul-25 09:18
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg/g wwt
Instrument - Column	HRMS-5 SPBOCTYL291720-01

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg/g wwt	EDL pg/g wwt	Flags	EMPC pg/g wwt	LQL
Homologue Group Totals							
Total MonoCB			2.59	0.19	J		9.6
Total DiCB			51.4	0.56	J		19
Total TriCB			129	0.23	J		19
Total TetraCB			1050	0.17	J		39
Total PentaCB			9450	0.18	J		39
Total HexaCB			21500	0.15	J		39
Total HeptaCB			25700	0.39	J		19
Total OctaCB			17400	0.23	J		19
Total NonaCB			1800	0.54	J		9.6
DecaCB			145	0.60	J		9.6
Total PCB			77300		J		77
Toxic Equivalency - (WHO 2005)							
Lower Bound PCB TEQ			40.6				
Mid Point PCB TEQ			46.0				
Upper Bound PCB TEQ			46.0				

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor
LQL	Indicates the Toxic Equivalency Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that the analyte was positively identified. The associated numerical result is an estimate.
R	Indicates that the ion abundance ratio for this analyte did not meet the control limit. The reported value represents an estimated concentration.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
EMPC	Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure

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Sample Analysis Report

Sample Name	Duplicate	Sampling Date	n/a	Approved: Henna Saeed --e-signature-- 29-Jul-2025
ALS Sample ID	QC-MRG2-2062741-004	Extraction Date	20-Jun-25	
Analysis Method	EPA 1668C	Sample Size	10.03 g wwt	
Analysis Type	Sample	Percent Moisture	n/a	
Sample Matrix	QC	Split Ratio	1	

Run Information	Run 1
Filename	5-250724A30
Run Date	25-Jul-25 10:01
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg/g wwt
Instrument - Column	HRMS-5 SPBOCTYL291720-01

Target Analytes	TEF (WHO 2001)	Ret. Time	Conc. pg/g wwt	EDL pg/g wwt	Flags	EMPC pg/g wwt	LQL	%RPD
PCB-001		8.96	<0.43	0.20	M,J,R	0.43	0.50	n/a
PCB-002		10.36	2.30	0.26	M,B		0.50	51
PCB-003		10.49	<0.59	0.28	M,R	0.59	0.50	n/a
PCB-004		NotFnd	<1.1	1.1	U		0.50	n/a
PCB-010		NotFnd	<0.64	0.64	U		0.50	n/a
PCB-009		NotFnd	<0.69	0.69	U		0.50	n/a
PCB-007		NotFnd	<0.60	0.60	U		0.50	n/a
PCB-006		12.17	<0.87	0.67	M,R	0.87	0.50	n/a
PCB-005		NotFnd	<0.66	0.66	U		0.50	n/a
PCB-008		12.44	<2.2	0.64	R	2.2	0.50	n/a
PCB-014		NotFnd	<0.73	0.73	U		0.50	n/a
PCB-011		13.92	39.1	0.72	B		0.50	6.7
PCB-012/013		NotFnd	<0.65	0.65	U		0.50	n/a
PCB-015		14.30	<5.3	0.64	R	5.3	0.50	n/a
PCB-019		NotFnd	<0.26	0.26	U		0.50	n/a
PCB-018/030		13.74	2.28	0.29	M		0.50	8.8
PCB-017		13.98	<1.2	0.35	R	1.2	0.50	n/a
PCB-027		14.12	<0.26	0.26	M,U	0.15	0.50	n/a
PCB-024		NotFnd	<0.23	0.23	U		0.50	n/a
PCB-016		14.29	1.25	0.40	M		0.50	n/a
PCB-032		14.55	1.11	0.24			0.50	4.6
PCB-034		NotFnd	<0.33	0.33	U		0.50	n/a
PCB-023		NotFnd	<0.30	0.30	U		0.50	n/a
PCB-026/029		15.52	2.99	0.31			0.50	16
PCB-025		15.65	0.754	0.30			0.50	19
PCB-031		15.83	8.49	0.31			0.50	1.2
PCB-020/028		16.00	74.8	0.29	M		0.50	6.8
PCB-021/033		16.14	4.94	0.32	M		0.50	7.3
PCB-022		16.38	3.08	0.29			0.50	7.8
PCB-036		NotFnd	<0.28	0.28	U		0.50	n/a
PCB-039		17.42	0.547	0.27			0.50	n/a
PCB-038		17.76	0.346	0.31	M,J		0.50	46
PCB-035		18.00	3.18	0.35			0.50	n/a
PCB-037		18.24	19.6	0.35			0.50	4.0
PCB-054		NotFnd	<0.18	0.18	U		0.50	n/a
PCB-050/053		15.68	<0.80	0.47	M,R	0.80	0.50	n/a
PCB-045/051		16.10	1.51	0.50			0.50	n/a
PCB-046		NotFnd	<0.55	0.55	U		0.50	n/a
PCB-052		16.99	32.9	0.57			0.50	0.91
PCB-073		NotFnd	<0.33	0.33	U		0.50	n/a
PCB-043		17.15	<0.53	0.53	M,U	0.48	0.50	n/a
PCB-049/069		17.27	<7.8	0.42	R	7.8	0.50	n/a
PCB-048		17.42	<0.97	0.46	R	0.97	0.50	n/a
PCB-044/047/065		17.57	24.0	0.44	B		0.50	3.7
PCB-059/062/075		17.74	3.61	0.36			0.50	n/a
PCB-042		17.85	<2.7	0.59	R	2.7	0.50	n/a
PCB-040/041/071		18.13	3.99	0.50	M		0.50	0.25
PCB-064		18.25	9.37	0.39			0.50	2.0
PCB-072		18.64	1.50	0.62			0.50	20
PCB-068		18.80	<0.55	0.55	U		0.50	n/a
PCB-057		NotFnd	<0.67	0.67	U		0.50	n/a
PCB-058		19.16	<0.57	0.57	M,U	0.25	0.50	n/a
PCB-067		19.26	9.04	0.53			0.50	34
PCB-063		19.41	9.26	0.64			0.50	4.4
PCB-061/070/074/076		19.62	526	0.59			0.50	2.4
PCB-066		19.77	115	0.62	M		0.50	2.6
PCB-055		19.87	<1.6	0.61	M,R	1.6	0.50	n/a
PCB-056		20.15	14.5	0.58			0.50	5.7
PCB-060		20.27	69.9	0.61	M		0.50	1.6
PCB-080		20.40	<0.53	0.53	M,U		0.50	n/a
PCB-079		21.25	9.04	0.57	M		0.50	29
PCB-078		21.57	1.74	0.75	M		0.50	3.4
PCB-081	0.0003	21.81	14.8	0.75			0.50	5.9
PCB-077	0.0001	22.11	166	0.79			0.50	3.6
PCB-104		NotFnd	<0.19	0.19	U		0.50	n/a
PCB-096		17.80	<0.29	0.29	M,U	0.21	0.50	n/a
PCB-103		NotFnd	<0.62	0.62	U		0.50	n/a
PCB-094		NotFnd	<0.57	0.57	U		0.50	n/a
PCB-095		19.14	54.2	0.71	M		0.50	7.3
PCB-093/098/100/102		19.20	<2.5	0.57	M,R	2.5	0.50	n/a

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Sample Analysis Report

Sample Name	Duplicate	Sampling Date	n/a	Approved: Henna Saeed --e-signature-- 29-Jul-2025
ALS Sample ID	QC-MRG2-2062741-004	Extraction Date	20-Jun-25	
Analysis Method	EPA 1668C	Sample Size	10.03 g wwt	
Analysis Type	Sample	Percent Moisture	n/a	
Sample Matrix	QC	Split Ratio	1	

Run Information	Run 1
Filename	5-250724A30
Run Date	25-Jul-25 10:01
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg/g wwt
Instrument - Column	HRMS-5 SPBOCTYL291720-01

Target Analytes	TEF (WHO 2001)	Ret. Time	Conc. pg/g wwt	EDL pg/g wwt	Flags	EMPC pg/g wwt	LQL	%RPD
PCB-088/091		19.60	8.24	0.61			0.50	n/a
PCB-084		19.75	11.7	0.65			0.50	9.8
PCB-089		NotFnd	<0.80	0.80	U		0.50	n/a
PCB-121		NotFnd	<0.39	0.39	U		0.50	n/a
PCB-092		20.34	40.6	0.73			0.50	5.7
PCB-090/101/113		20.65	193	0.53			0.50	4.1
PCB-083/099		20.96	447	0.66	M		0.50	3.9
PCB-112		21.05	<0.77	0.40	M,R	0.77	0.50	n/a
PCB-086/087/097/109/119/125		21.31	71.1	0.42	M		0.50	2.1
PCB-085/110/115/116/117		21.74	430	0.57	M		0.50	1.4
PCB-082		21.93	18.5	0.84			0.50	6.7
PCB-111		22.03	<1.2	0.40	R	1.2	0.50	n/a
PCB-120		22.28	<8.9	0.44	R	8.9	0.50	n/a
PCB-108/124		22.91	20.1	0.86			0.50	1.5
PCB-107		23.03	136	0.79	M		0.50	5.0
PCB-123	0.00003	23.08	15.7	1.0	M		0.50	23
PCB-106		NotFnd	<0.98	0.98	U		0.50	n/a
PCB-118	0.00003	23.26	6090	0.79	M		0.50	2.6
PCB-122		NotFnd	<1.2	1.2	U		0.50	n/a
PCB-114	0.00003	23.58	81.2	0.94			0.50	4.0
PCB-105	0.00003	23.93	1130	0.94			0.50	6.0
PCB-127		24.65	<5.8	0.88	M,R	5.8	0.50	n/a
PCB-126	0.1	25.51	397	1.2	M		0.50	1.3
PCB-155		20.53	0.310	0.15	J		0.50	n/a
PCB-152		NotFnd	<0.32	0.32	U		0.50	n/a
PCB-150		20.76	<0.24	0.24	M,U	0.18	0.50	n/a
PCB-136		20.99	14.7	0.30			0.50	3.3
PCB-145		NotFnd	<0.26	0.26	U		0.50	n/a
PCB-148		21.82	0.796	0.43	M		0.50	n/a
PCB-135/151		22.18	137	0.42	M		0.50	2.2
PCB-154		22.25	8.71	0.29	M		0.50	17
PCB-144		22.48	16.7	0.40			0.50	6.8
PCB-147/149		22.67	356	1.1			0.50	10
PCB-134/143		22.82	14.1	1.6			0.50	22
PCB-139/140		22.97	21.7	1.2			0.50	n/a
PCB-131		23.13	3.03	1.6			0.50	n/a
PCB-142		NotFnd	<1.6	1.6	U		0.50	n/a
PCB-132		23.37	104	1.3			0.50	1.9
PCB-133		23.54	46.6	1.4			0.50	5.2
PCB-165		23.75	7.59	0.94			0.50	10
PCB-146		23.88	465	1.2	M		0.50	4.4
PCB-161		23.96	<0.97	0.97	M,U	0.48	0.50	n/a
PCB-153/168		24.19	7500	0.99			0.50	9.4
PCB-141		24.34	205	1.3			0.50	6.1
PCB-130		24.56	302	1.6			0.50	6.1
PCB-137/164		24.67	121	1.0	M		0.50	3.3
PCB-129/138/163		24.88	6550	1.3	M		0.50	7.2
PCB-160		24.98	3.53	0.82	M		0.50	37
PCB-158		25.09	367	0.78	M		0.50	6.3
PCB-128/166		25.56	730	1.0			0.50	3.8
PCB-159		26.02	20.7	0.86	M		0.50	0.48
PCB-162		26.15	42.3	0.86			0.50	0.47
PCB-167	0.00003	26.41	1000	0.94			0.50	1.0
PCB-156/157	0.00003	27.02	1850	1.3			0.50	3.7
PCB-169	0.03	28.71	<190	1.3	M,R	190	0.50	n/a
PCB-188		23.52	<0.72	0.35	R	0.72	0.50	n/a
PCB-179		23.74	33.5	0.49			0.50	11
PCB-184		NotFnd	<0.41	0.41	U		0.50	n/a
PCB-176		24.18	13.7	0.49			0.50	9.7
PCB-186		NotFnd	<0.45	0.45	U		0.50	n/a
PCB-178		25.09	790	0.69			0.50	9.5
PCB-175		25.41	26.5	0.67			0.50	11
PCB-187		25.55	4170	0.55	M		0.50	7.6
PCB-182		25.64	<2.2	0.58	M,R	2.2	0.50	n/a
PCB-183		25.86	821	0.59	M		0.50	6.6
PCB-185		25.95	20.5	0.58	M		0.50	0.0
PCB-174		26.02	179	0.63	M		0.50	5.4
PCB-177		26.26	2050	0.64			0.50	7.1
PCB-181		26.45	11.5	0.59			0.50	n/a
PCB-171/173		26.58	316	0.68			0.50	4.9
PCB-172		27.36	709	0.62			0.50	0.56

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Sample Analysis Report

Sample Name	Duplicate	Sampling Date	n/a	Approved: <i>Henna Saeed</i> --e-signature-- 29-Jul-2025
ALS Sample ID	QC-MRG2-2062741-004	Extraction Date	20-Jun-25	
Analysis Method	EPA 1668C	Sample Size	10.03 g wwt	
Analysis Type	Sample	Percent Moisture	n/a	
Sample Matrix	QC	Split Ratio	1	

Run Information	Run 1
Filename	5-250724A30
Run Date	25-Jul-25 10:01
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg/g wwt
Instrument - Column	HRMS-5 SPBOCTYL291720-01

Target Analytes	TEF (WHO 2001)	Ret. Time	Conc. pg/g wwt	EDL pg/g wwt	Flags	EMPC pg/g wwt	LQL	%RPD
PCB-192		27.52	<0.70	0.47	R	0.70	0.50	n/a
PCB-180/193		27.70	12000	0.51			0.50	0.0
PCB-191		27.88	29.8	0.47			0.50	11
PCB-170		28.39	1750	0.67			0.50	1.7
PCB-190		28.67	1580	0.38			0.50	0.63
PCB-189	0.00003	29.97	535	0.97			0.50	9.6
PCB-202		26.28	396	0.28			0.50	3.5
PCB-201		26.76	60.7	0.35			0.50	7.1
PCB-204		NotFnd	<0.35	0.35	U		0.50	n/a
PCB-197		27.22	33.9	0.31			0.50	1.5
PCB-200		27.32	9.25	0.38			0.50	7.4
PCB-198/199		28.71	6570	0.48			0.50	2.6
PCB-196		29.04	388	0.50			0.50	0.52
PCB-203		29.14	2630	0.40			0.50	2.3
PCB-195		29.87	1360	0.79			0.50	6.1
PCB-194		31.07	6380	0.74			0.50	9.0
PCB-205		31.35	461	0.96			0.50	0.87
PCB-208		29.70	141	0.50			0.50	2.1
PCB-207		30.18	44.6	0.62			0.50	5.2
PCB-206		32.41	1550	1.2			0.50	3.8
PCB-209		33.53	141	0.49			0.50	2.8
Extraction Standards	pg	Time	% Rec	Limits				
13C12-PCB-001	2000	8.96	78	5-145				
13C12-PCB-003	2000	10.47	59	5-145				
13C12-PCB-004	2000	10.64	78	5-145				
13C12-PCB-015	2000	14.29	66	5-145				
13C12-PCB-019	2000	12.63	109	5-145				
13C12-PCB-037	2000	18.23	78	5-145				
13C12-PCB-054	2000	14.48	106	5-145				
13C12-PCB-081	2000	21.79	64	10-145				
13C12-PCB-077	2000	22.10	64	10-145				
13C12-PCB-104	2000	17.52	79	10-145				
13C12-PCB-123	2000	23.08	65	10-145				
13C12-PCB-118	2000	23.26	79	10-145				
13C12-PCB-114	2000	23.57	70	10-145				
13C12-PCB-105	2000	23.92	68	10-145				
13C12-PCB-126	2000	25.50	59	10-145				
13C12-PCB-155	2000	20.49	78	10-145				
13C12-PCB-167	2000	26.39	70	10-145				
13C12-PCB-156/157	4000	27.03	71	10-145				
13C12-PCB-169	2000	28.68	60	10-145				
13C12-PCB-188	2000	23.49	97	10-145				
13C12-PCB-189	2000	29.95	61	10-145				
13C12-PCB-202	2000	26.27	92	10-145				
13C12-PCB-205	2000	31.33	76	10-145				
13C12-PCB-208	2000	29.69	113	10-145				
13C12-PCB-206	2000	32.39	81	10-145				
13C12-PCB-209	2000	33.51	74	10-145				
Cleanup Standards								
13C12-PCB-028	2000	15.99	102	5-145				
13C12-PCB-111	2000	22.02	82	10-145				
13C12-PCB-178	2000	25.08	93	10-145				

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Sample Analysis Report

Sample Name	Duplicate	Sampling Date	n/a	Approved: Henna Saeed --e-signature-- 29-Jul-2025
ALS Sample ID	QC-MRG2-2062741-004	Extraction Date	20-Jun-25	
Analysis Method	EPA 1668C	Sample Size	10.03 g wwt	
Analysis Type	Sample	Percent Moisture	n/a	
Sample Matrix	QC	Split Ratio	1	

Run Information	Run 1
Filename	5-250724A30
Run Date	25-Jul-25 10:01
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg/g wwt
Instrument - Column	HRMS-5 SPBCTYL291720-01

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg/g wwt	EDL pg/g wwt	Flags	EMPC pg/g wwt	LQL	%RPD
Homologue Group Totals								
Total MonoCB			3.32	0.20	J		10	
Total DiCB			47.5	0.60	J		20	
Total TriCB			125	0.23	J		20	
Total TetraCB			1030	0.18	J		40	
Total PentaCB			9160	0.19	J		40	
Total HexaCB			20100	0.15	J		40	
Total HeptaCB			25000	0.35	J		20	
Total OctaCB			18300	0.28	J		20	
Total NonaCB			1740	0.50	J		10	
DecaCB			141	0.49	J		10	
Total PCB			75600		J		80	
Toxic Equivalency - (WHO 2005)								
Lower Bound PCB TEQ			40.0					
Mid Point PCB TEQ			45.7					
Upper Bound PCB TEQ			45.7					

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor
LQL	Indicates the Toxic Equivalency Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that the analyte was positively identified. The associated numerical result is an estimate.
R	Indicates that the ion abundance ratio for this analyte did not meet the control limit. The reported value represents an estimated concentration.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
EMPC	Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure

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Sample Analysis Report

Sample Name	Plot 11 - 2 jars	Sampling Date	19-Jun-25	Approved: Henna Saeed --e-signature-- 29-Jul-2025
ALS Sample ID	EO2504379-002	Extraction Date	20-Jun-25	
Analysis Method	EPA 1668C	Sample Size	10.12 g wwt	
Analysis Type	Sample	Percent Moisture	n/a	
Sample Matrix	Tissue	Split Ratio	1	

Run Information	Run 1
Filename	5-250724A31
Run Date	25-Jul-25 10:43
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg/g wwt
Instrument - Column	HRMS-5 SPBOCTYL291720-01

Target Analytes	TEF (WHO 200)	Ret. Time	Conc. pg/g wwt	EDL pg/g wwt	Flags	EMPC pg/g wwt	LQL
PCB-001		8.97	<0.83	0.22	R	0.83	0.49
PCB-002		10.36	<1.7	0.30	M,R	1.7	0.49
PCB-003		NotFnd	<0.32	0.32	U		0.49
PCB-004		NotFnd	<1.3	1.3	U		0.49
PCB-010		NotFnd	<0.74	0.74	U		0.49
PCB-009		NotFnd	<0.79	0.79	U		0.49
PCB-007		NotFnd	<0.68	0.68	U		0.49
PCB-006		12.18	1.25	0.77	M		0.49
PCB-005		NotFnd	<0.75	0.75	U		0.49
PCB-008		12.44	<1.9	0.73	R	1.9	0.49
PCB-014		NotFnd	<0.69	0.69	U		0.49
PCB-011		13.93	30.4	0.67	B		0.49
PCB-012/013		NotFnd	<0.61	0.61	U		0.49
PCB-015		14.31	<1.0	0.62	M,R	1.0	0.49
PCB-019		NotFnd	<0.29	0.29	U		0.49
PCB-018/030		13.74	1.86	0.42			0.49
PCB-017		13.99	<0.80	0.50	R	0.80	0.49
PCB-027		NotFnd	<0.38	0.38	U		0.49
PCB-024		NotFnd	<0.34	0.34	U		0.49
PCB-016		14.29	<0.76	0.59	M,R	0.76	0.49
PCB-032		14.56	<0.69	0.34	M,R	0.69	0.49
PCB-034		NotFnd	<0.39	0.39	U		0.49
PCB-023		NotFnd	<0.35	0.35	U		0.49
PCB-026/029		15.54	<0.94	0.37	R	0.94	0.49
PCB-025		15.66	0.379	0.35	M,J		0.49
PCB-031		15.84	4.23	0.36			0.49
PCB-020/028		16.01	15.5	0.34	B		0.49
PCB-021/033		16.15	<1.8	0.38	R	1.8	0.49
PCB-022		16.39	<1.1	0.34	R	1.1	0.49
PCB-036		NotFnd	<0.33	0.33	U		0.49
PCB-039		NotFnd	<0.31	0.31	U		0.49
PCB-038		NotFnd	<0.36	0.36	U		0.49
PCB-035		18.00	1.11	0.41			0.49
PCB-037		18.26	3.62	0.42			0.49
PCB-054		NotFnd	<0.16	0.16	U		0.49
PCB-050/053		NotFnd	<0.47	0.47	U		0.49
PCB-045/051		16.11	0.915	0.50			0.49
PCB-046		NotFnd	<0.56	0.56	U		0.49
PCB-052		17.00	12.6	0.57			0.49
PCB-073		NotFnd	<0.33	0.33	U		0.49
PCB-043		NotFnd	<0.53	0.53	U		0.49
PCB-049/069		17.27	2.41	0.43			0.49
PCB-048		17.43	0.565	0.47	M		0.49
PCB-044/047/065		17.57	15.5	0.44	B		0.49
PCB-059/062/075		17.73	<1.0	0.36	R	1.0	0.49
PCB-042		17.85	<0.59	0.59	U		0.49
PCB-040/041/071		18.13	<1.1	0.50	M,R	1.1	0.49
PCB-064		18.26	2.75	0.39	M		0.49
PCB-072		NotFnd	<0.52	0.52	U		0.49
PCB-068		NotFnd	<0.46	0.46	U		0.49
PCB-057		NotFnd	<0.56	0.56	U		0.49
PCB-058		NotFnd	<0.48	0.48	U		0.49
PCB-067		19.27	<1.9	0.44	R	1.9	0.49
PCB-063		19.41	<2.4	0.53	R	2.4	0.49
PCB-061/070/074/076		19.63	78.2	0.49			0.49
PCB-066		19.78	22.9	0.52	M		0.49
PCB-055		NotFnd	<0.51	0.51	U		0.49
PCB-056		20.17	2.29	0.48			0.49
PCB-060		20.28	9.82	0.51			0.49
PCB-080		NotFnd	<0.45	0.45	U		0.49
PCB-079		21.26	0.881	0.47	M		0.49
PCB-078		NotFnd	<0.63	0.63	U		0.49
PCB-081	0.0003	21.81	<0.97	0.64	M,R	0.97	0.49
PCB-077	0.0001	22.12	26.5	0.68			0.49
PCB-104		NotFnd	<0.19	0.19	U		0.49
PCB-096		NotFnd	<0.31	0.31	U		0.49
PCB-103		NotFnd	<0.74	0.74	U		0.49
PCB-094		NotFnd	<0.68	0.68	U		0.49
PCB-095		19.15	11.5	0.85	M		0.49
PCB-093/098/100/102		19.19	<1.3	0.68	M,R	1.3	0.49

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Sample Analysis Report

Sample Name	Plot 11 - 2 jars	Sampling Date	19-Jun-25	Approved: <i>Henna Saeed</i> --e-signature-- 29-Jul-2025
ALS Sample ID	EO2504379-002	Extraction Date	20-Jun-25	
Analysis Method	EPA 1668C	Sample Size	10.12 g wwt	
Analysis Type	Sample	Percent Moisture	n/a	
Sample Matrix	Tissue	Split Ratio	1	

Run Information	Run 1
Filename	5-250724A31
Run Date	25-Jul-25 10:43
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg/g wwt
Instrument - Column	HRMS-5 SPBOCTYL291720-01

Target Analytes	TEF (WHO 2001)	Ret. Time	Conc. pg/g wwt	EDL pg/g wwt	Flags	EMPC pg/g wwt	LQL
PCB-088/091		19.61	1.65	0.73			0.49
PCB-084		19.75	<1.9	0.77	R	1.9	0.49
PCB-089		NotFnd	<0.95	0.95	U		0.49
PCB-121		NotFnd	<0.47	0.47	U		0.49
PCB-092		20.34	8.33	0.87			0.49
PCB-090/101/113		20.66	33.5	0.63			0.49
PCB-083/099		20.97	105	0.79			0.49
PCB-112		NotFnd	<0.48	0.48	U		0.49
PCB-086/087/097/109/119/125		21.32	11.4	0.50	M		0.49
PCB-085/110/115/116/117		21.74	71.4	0.68	M		0.49
PCB-082		21.94	<2.1	1.0	R	2.1	0.49
PCB-111		NotFnd	<0.47	0.47	U		0.49
PCB-120		22.29	<1.5	0.53	R	1.5	0.49
PCB-108/124		22.91	3.22	0.54			0.49
PCB-107		23.05	24.1	0.50	M		0.49
PCB-123	0.00003	23.09	2.94	0.61	M		0.49
PCB-106		NotFnd	<0.62	0.62	U		0.49
PCB-118	0.00003	23.28	700	0.54	M		0.49
PCB-122		NotFnd	<0.74	0.74	U		0.49
PCB-114	0.00003	23.58	12.7	0.61			0.49
PCB-105	0.00003	23.93	145	0.66			0.49
PCB-127		24.67	<0.92	0.55	M,R	0.92	0.49
PCB-126	0.1	25.52	31.4	0.88	M		0.49
PCB-155		NotFnd	<0.28	0.28	U		0.49
PCB-152		NotFnd	<0.67	0.67	U		0.49
PCB-150		NotFnd	<0.50	0.50	U		0.49
PCB-136		21.00	2.01	0.63			0.49
PCB-145		NotFnd	<0.54	0.54	U		0.49
PCB-148		NotFnd	<0.89	0.89	U		0.49
PCB-135/151		22.19	18.4	0.86	M		0.49
PCB-154		22.26	<1.1	0.60	M,R	1.1	0.49
PCB-144		22.49	<1.3	0.83	R	1.3	0.49
PCB-147/149		22.67	54.6	0.77			0.49
PCB-134/143		22.82	<1.7	1.1	R	1.7	0.49
PCB-139/140		22.99	<3.2	0.81	R	3.2	0.49
PCB-131		NotFnd	<1.1	1.1	U		0.49
PCB-142		NotFnd	<1.1	1.1	U		0.49
PCB-132		23.37	12.9	0.90			0.49
PCB-133		23.55	20.2	0.98			0.49
PCB-165		23.76	<1.4	0.64	R	1.4	0.49
PCB-146		23.88	107	0.80	M		0.49
PCB-161		NotFnd	<0.66	0.66	U		0.49
PCB-153/168		24.21	1020	0.67			0.49
PCB-141		24.34	28.7	0.86			0.49
PCB-130		24.56	47.7	1.1			0.49
PCB-137/164		NotFnd	<0.71	0.71	U		0.49
PCB-129/138/163		24.90	893	0.88	M		0.49
PCB-160		24.98	1.02	0.55	M		0.49
PCB-158		25.09	52.6	0.53			0.49
PCB-128/166		25.57	99.7	0.71			0.49
PCB-159		26.03	2.28	0.58	M		0.49
PCB-162		26.16	<5.5	0.59	M,R	5.5	0.49
PCB-167	0.00003	26.42	102	0.66			0.49
PCB-156/157	0.00003	27.03	223	0.90			0.49
PCB-169	0.03	28.69	<24	0.94	M,1.	24	0.49
PCB-188		NotFnd	<0.27	0.27	U		0.49
PCB-179		23.74	<3.4	0.39	R	3.4	0.49
PCB-184		NotFnd	<0.32	0.32	U		0.49
PCB-176		24.19	1.53	0.39			0.49
PCB-186		NotFnd	<0.35	0.35	U		0.49
PCB-178		25.09	109	0.54			0.49
PCB-175		25.40	<3.0	0.53	R	3.0	0.49
PCB-187		25.56	539	0.43	M		0.49
PCB-182		25.66	<0.45	0.45	M,U		0.49
PCB-183		25.86	128	0.47	M		0.49
PCB-185		25.95	<1.2	0.46	M,R	1.2	0.49
PCB-174		26.03	21.9	0.50	M		0.49
PCB-177		26.26	252	0.51			0.49
PCB-181		26.45	2.27	0.47	M		0.49
PCB-171/173		26.59	40.7	0.54			0.49
PCB-172		27.37	113	0.49			0.49

ALS Life Sciences

Sample Analysis Report

Sample Name	Plot 11 - 2 jars	Sampling Date	19-Jun-25	Approved: Henna Saeed --e-signature-- 29-Jul-2025
ALS Sample ID	EO2504379-002	Extraction Date	20-Jun-25	
Analysis Method	EPA 1668C	Sample Size	10.12 g wwt	
Analysis Type	Sample	Percent Moisture	n/a	
Sample Matrix	Tissue	Split Ratio	1	

Run Information	Run 1
Filename	5-250724A31
Run Date	25-Jul-25 10:43
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg/g wwt
Instrument - Column	HRMS-5 SPBOCTYL291720-01

Target Analytes	TEF (WHO 2001)	Ret. Time	Conc. pg/g wwt	EDL pg/g wwt	Flags	EMPC pg/g wwt	LQL
PCB-192		NotFnd	<0.37	0.37	U		0.49
PCB-180/193		27.71	1280	0.40			0.49
PCB-191		27.89	<5.0	0.37	R	5.0	0.49
PCB-170		28.40	216	0.53			0.49
PCB-190		28.67	181	0.30			0.49
PCB-189	0.00003	29.97	57.9	0.53			0.49
PCB-202		26.30	53.6	0.29			0.49
PCB-201		26.77	<5.8	0.39	R	5.8	0.49
PCB-204		NotFnd	<0.39	0.39	U		0.49
PCB-197		27.22	<4.3	0.34	R	4.3	0.49
PCB-200		27.32	<1.1	0.43	R	1.1	0.49
PCB-198/199		28.71	855	0.53			0.49
PCB-196		29.05	54.4	0.56			0.49
PCB-203		29.15	307	0.45			0.49
PCB-195		29.88	155	0.90			0.49
PCB-194		31.08	702	0.84			0.49
PCB-205		31.36	61.1	1.2			0.49
PCB-208		29.72	26.6	0.63			0.49
PCB-207		30.18	<6.9	0.82	M,R	6.9	0.49
PCB-206		32.42	246	1.7			0.49
PCB-209		33.54	52.9	0.59			0.49
Extraction Standards	pg	Time	% Rec	Limits			
13C12-PCB-001	2000	8.96	74	5-145			
13C12-PCB-003	2000	10.49	57	5-145			
13C12-PCB-004	2000	10.65	77	5-145			
13C12-PCB-015	2000	14.29	61	5-145			
13C12-PCB-019	2000	12.63	105	5-145			
13C12-PCB-037	2000	18.24	72	5-145			
13C12-PCB-054	2000	14.49	104	5-145			
13C12-PCB-081	2000	21.81	63	10-145			
13C12-PCB-077	2000	22.11	61	10-145			
13C12-PCB-104	2000	17.52	81	10-145			
13C12-PCB-123	2000	23.09	67	10-145			
13C12-PCB-118	2000	23.26	71	10-145			
13C12-PCB-114	2000	23.57	68	10-145			
13C12-PCB-105	2000	23.92	62	10-145			
13C12-PCB-126	2000	25.51	52	10-145			
13C12-PCB-155	2000	20.50	79	10-145			
13C12-PCB-167	2000	26.41	73	10-145			
13C12-PCB-156/157	4000	27.03	71	10-145			
13C12-PCB-169	2000	28.69	56	10-145			
13C12-PCB-188	2000	23.51	103	10-145			
13C12-PCB-189	2000	29.97	57	10-145			
13C12-PCB-202	2000	26.28	94	10-145			
13C12-PCB-205	2000	31.35	73	10-145			
13C12-PCB-208	2000	29.70	111	10-145			
13C12-PCB-206	2000	32.41	75	10-145			
13C12-PCB-209	2000	33.51	67	10-145			
Cleanup Standards							
13C12-PCB-028	2000	16.00	107	5-145			
13C12-PCB-111	2000	22.03	89	10-145			
13C12-PCB-178	2000	25.08	105	10-145			

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Sample Analysis Report

Sample Name	Plot 11 - 2 jars	Sampling Date	19-Jun-25	Approved: <i>Henna Saeed</i> --e-signature-- 29-Jul-2025
ALS Sample ID	EO2504379-002	Extraction Date	20-Jun-25	
Analysis Method	EPA 1668C	Sample Size	10.12 g wwt	
Analysis Type	Sample	Percent Moisture	n/a	
Sample Matrix	Tissue	Split Ratio	1	

Run Information	Run 1
Filename	5-250724A31
Run Date	25-Jul-25 10:43
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg/g wwt
Instrument - Column	HRMS-5 SPBIOCTYL291720-01

Target Analytes	TEF (WHO 2001)	Ret. Time	Conc. pg/g wwt	EDL pg/g wwt	Flags	EMPC pg/g wwt	LQL
Homologue Group Totals							
Total MonoCB			2.53	0.22	J		9.9
Total DiCB			34.6	0.61	J		20
Total TriCB			32.8	0.29	J		20
Total TetraCB			183	0.16	J		40
Total PentaCB			1170	0.19	J		40
Total HexaCB			2720	0.28	J		40
Total HeptaCB			2950	0.27	J		20
Total OctaCB			2200	0.29	J		20
Total NonaCB			280	0.63	J		9.9
DecaCB			52.9	0.59	J		9.9
Total PCB			9630		J		79
Toxic Equivalency - (WHO 2005)							
Lower Bound PCB TEQ			3.18				
Mid Point PCB TEQ			3.90				
Upper Bound PCB TEQ			3.90				

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor
LQL	Indicates the Toxic Equivalency Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that the analyte was positively identified. The associated numerical result is an estimate.
R	Indicates that the ion abundance ratio for this analyte did not meet the control limit. The reported value represents an estimated concentration.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
1.	This result is an EMPC
EMPC	Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure

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Sample Analysis Report

Sample Name	Plot 70 - 6 jars	Sampling Date	19-Jun-25	Approved: <i>Henna Saeed</i> --e-signature-- 29-Jul-2025
ALS Sample ID	EO2504379-003	Extraction Date	20-Jun-25	
Analysis Method	EPA 1668C	Sample Size	10.41 g wwt	
Analysis Type	Sample	Percent Moisture	n/a	
Sample Matrix	Tissue	Split Ratio	1	

Run Information	Run 1
Filename	5-250724A32
Run Date	25-Jul-25 11:25
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg/g wwt
Instrument - Column	HRMS-5 SPBOCTYL291720-01

Target Analytes	TEF (WHO 200)	Ret. Time	Conc. pg/g wwt	EDL pg/g wwt	Flags	EMPC pg/g wwt	LQL
PCB-001		8.96	<0.42	0.22	M,J,R	0.42	0.48
PCB-002		10.36	2.86	0.29	B		0.48
PCB-003		10.46	<1.1	0.31	R	1.1	0.48
PCB-004		NotFnd	<1.1	1.1	U		0.48
PCB-010		NotFnd	<0.65	0.65	U		0.48
PCB-009		NotFnd	<0.70	0.70	U		0.48
PCB-007		NotFnd	<0.60	0.60	U		0.48
PCB-006		NotFnd	<0.68	0.68	U		0.48
PCB-005		NotFnd	<0.66	0.66	U		0.48
PCB-008		12.44	<0.97	0.64	M,R	0.97	0.48
PCB-014		NotFnd	<0.73	0.73	U		0.48
PCB-011		13.92	60.9	0.71	B		0.48
PCB-012/013		NotFnd	<0.65	0.65	U		0.48
PCB-015		14.30	<0.71	0.65	M,R	0.71	0.48
PCB-019		NotFnd	<0.24	0.24	U		0.48
PCB-018/030		13.74	1.42	0.28			0.48
PCB-017		13.97	<0.45	0.34	J,R	0.45	0.48
PCB-027		NotFnd	<0.26	0.26	U		0.48
PCB-024		NotFnd	<0.23	0.23	U		0.48
PCB-016		14.28	<0.47	0.39	M,J,R	0.47	0.48
PCB-032		14.57	<0.23	0.23	M,U	0.20	0.48
PCB-034		NotFnd	<0.31	0.31	U		0.48
PCB-023		NotFnd	<0.28	0.28	U		0.48
PCB-026/029		15.51	<0.29	0.29	U	0.28	0.48
PCB-025		NotFnd	<0.28	0.28	U		0.48
PCB-031		15.84	1.92	0.29			0.48
PCB-020/028		16.00	6.17	0.27	B		0.48
PCB-021/033		16.14	1.06	0.30			0.48
PCB-022		16.36	<0.38	0.27	M,J,R	0.38	0.48
PCB-036		NotFnd	<0.27	0.27	U		0.48
PCB-039		NotFnd	<0.25	0.25	U		0.48
PCB-038		17.76	<0.29	0.29	M,U	0.21	0.48
PCB-035		18.01	<1.1	0.32	M,R	1.1	0.48
PCB-037		18.26	<0.75	0.34	R	0.75	0.48
PCB-054		NotFnd	<0.14	0.14	U		0.48
PCB-050/053		NotFnd	<0.31	0.31	U		0.48
PCB-045/051		16.10	0.700	0.33			0.48
PCB-046		NotFnd	<0.37	0.37	U		0.48
PCB-052		16.99	<5.2	0.38	R	5.2	0.48
PCB-073		NotFnd	<0.22	0.22	U		0.48
PCB-043		NotFnd	<0.35	0.35	U		0.48
PCB-049/069		17.26	<0.66	0.28	M,R	0.66	0.48
PCB-048		17.42	0.578	0.31			0.48
PCB-044/047/065		17.56	4.94	0.29	B		0.48
PCB-059/062/075		17.76	<0.24	0.24	U	0.22	0.48
PCB-042		17.87	<0.50	0.39	R	0.50	0.48
PCB-040/041/071		NotFnd	<0.33	0.33	U		0.48
PCB-064		18.24	0.757	0.26	M		0.48
PCB-072		NotFnd	<0.31	0.31	U		0.48
PCB-068		18.80	<0.27	0.27	M,U	0.23	0.48
PCB-057		NotFnd	<0.33	0.33	U		0.48
PCB-058		NotFnd	<0.29	0.29	U		0.48
PCB-067		NotFnd	<0.26	0.26	U		0.48
PCB-063		NotFnd	<0.32	0.32	U		0.48
PCB-061/070/074/076		19.62	7.48	0.29			0.48
PCB-066		19.77	1.80	0.31			0.48
PCB-055		NotFnd	<0.30	0.30	U		0.48
PCB-056		NotFnd	<0.29	0.29	U		0.48
PCB-060		20.27	<1.0	0.31	R	1.0	0.48
PCB-080		NotFnd	<0.27	0.27	U		0.48
PCB-079		NotFnd	<0.28	0.28	U		0.48
PCB-078		NotFnd	<0.38	0.38	U		0.48
PCB-081	0.0003	NotFnd	<0.38	0.38	U		0.48
PCB-077	0.0001	22.11	<1.0	0.39	M,R	1.0	0.48
PCB-104		NotFnd	<0.18	0.18	U		0.48
PCB-096		NotFnd	<0.28	0.28	U		0.48
PCB-103		NotFnd	<0.46	0.46	U		0.48
PCB-094		NotFnd	<0.43	0.43	U		0.48
PCB-095		19.14	1.81	0.53			0.48
PCB-093/098/100/102		NotFnd	<0.42	0.42	U		0.48

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Sample Analysis Report

Sample Name	Plot 70 - 6 jars	Sampling Date	19-Jun-25	Approved: Henna Saeed --e-signature-- 29-Jul-2025
ALS Sample ID	EO2504379-003	Extraction Date	20-Jun-25	
Analysis Method	EPA 1668C	Sample Size	10.41 g wwt	
Analysis Type	Sample	Percent Moisture	n/a	
Sample Matrix	Tissue	Split Ratio	1	

Run Information	Run 1
Filename	5-250724A32
Run Date	25-Jul-25 11:25
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg/g wwt
Instrument - Column	HRMS-5 SPBOCTYL291720-01

Target Analytes	TEF (WHO 2001)	Ret. Time	Conc. pg/g wwt	EDL pg/g wwt	Flags	EMPC pg/g wwt	LQL
PCB-088/091		NotFnd	<0.45	0.45	U		0.48
PCB-084		NotFnd	<0.48	0.48	U		0.48
PCB-089		NotFnd	<0.59	0.59	U		0.48
PCB-121		NotFnd	<0.29	0.29	U		0.48
PCB-092		NotFnd	<0.54	0.54	U		0.48
PCB-090/101/113		20.65	2.43	0.39			0.48
PCB-083/099		20.96	5.79	0.49			0.48
PCB-112		NotFnd	<0.30	0.30	U		0.48
PCB-086/087/097/109/119/125		21.31	1.10	0.31	M		0.48
PCB-085/110/115/116/117		21.74	<4.3	0.42	M,R	4.3	0.48
PCB-082		NotFnd	<0.62	0.62	U		0.48
PCB-111		NotFnd	<0.29	0.29	U		0.48
PCB-120		NotFnd	<0.33	0.33	U		0.48
PCB-108/124		NotFnd	<0.34	0.34	U		0.48
PCB-107		23.03	0.973	0.32	M		0.48
PCB-123	0.00003	NotFnd	<0.39	0.39	U		0.48
PCB-106		NotFnd	<0.39	0.39	U		0.48
PCB-118	0.00003	23.26	26.3	0.34			0.48
PCB-122		NotFnd	<0.47	0.47	U		0.48
PCB-114	0.00003	23.57	<0.72	0.39	R	0.72	0.48
PCB-105	0.00003	23.93	5.27	0.40			0.48
PCB-127		NotFnd	<0.35	0.35	U		0.48
PCB-126	0.1	25.52	<1.1	0.53	M,R	1.1	0.48
PCB-155		NotFnd	<0.14	0.14	U		0.48
PCB-152		NotFnd	<0.32	0.32	U		0.48
PCB-150		NotFnd	<0.24	0.24	U		0.48
PCB-136		NotFnd	<0.30	0.30	U		0.48
PCB-145		NotFnd	<0.26	0.26	U		0.48
PCB-148		NotFnd	<0.42	0.42	U		0.48
PCB-135/151		22.17	0.932	0.41			0.48
PCB-154		22.25	<0.28	0.28	M,U		0.48
PCB-144		NotFnd	<0.40	0.40	U		0.48
PCB-147/149		22.67	<2.7	0.50	R	2.7	0.48
PCB-134/143		NotFnd	<0.73	0.73	U		0.48
PCB-139/140		NotFnd	<0.53	0.53	U		0.48
PCB-131		NotFnd	<0.73	0.73	U		0.48
PCB-142		NotFnd	<0.72	0.72	U		0.48
PCB-132		23.37	<1.0	0.58	R	1.0	0.48
PCB-133		23.54	0.766	0.64			0.48
PCB-165		NotFnd	<0.42	0.42	U		0.48
PCB-146		23.88	<3.3	0.52	R	3.3	0.48
PCB-161		NotFnd	<0.43	0.43	U		0.48
PCB-153/168		24.19	41.7	0.44			0.48
PCB-141		24.34	1.12	0.56			0.48
PCB-130		24.53	1.71	0.72			0.48
PCB-137/164		24.71	<0.97	0.46	M,R	0.97	0.48
PCB-129/138/163		24.88	32.2	0.57	M		0.48
PCB-160		NotFnd	<0.36	0.36	U		0.48
PCB-158		25.09	<1.7	0.35	R	1.7	0.48
PCB-128/166		25.56	4.48	0.47			0.48
PCB-159		NotFnd	<0.38	0.38	U		0.48
PCB-162		26.16	<0.43	0.38	J,R	0.43	0.48
PCB-167	0.00003	26.41	3.40	0.41			0.48
PCB-156/157	0.00003	27.02	<6.3	0.57	R	6.3	0.48
PCB-169	0.03	28.70	<1.3	0.63	R	1.3	0.48
PCB-188		NotFnd	<0.25	0.25	U		0.48
PCB-179		NotFnd	<0.37	0.37	U		0.48
PCB-184		NotFnd	<0.31	0.31	U		0.48
PCB-176		NotFnd	<0.37	0.37	U		0.48
PCB-186		NotFnd	<0.34	0.34	U		0.48
PCB-178		25.09	3.99	0.52			0.48
PCB-175		NotFnd	<0.51	0.51	U		0.48
PCB-187		25.55	15.1	0.42			0.48
PCB-182		NotFnd	<0.44	0.44	U		0.48
PCB-183		25.86	3.34	0.45			0.48
PCB-185		NotFnd	<0.44	0.44	U		0.48
PCB-174		26.02	<1.1	0.48	R	1.1	0.48
PCB-177		26.26	6.91	0.49			0.48
PCB-181		NotFnd	<0.45	0.45	U		0.48
PCB-171/173		26.58	1.72	0.52	M		0.48
PCB-172		27.36	2.43	0.47			0.48

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Sample Analysis Report

Sample Name Plot 70 - 6 jars
ALS Sample ID EO2504379-003
Analysis Method EPA 1668C
Analysis Type Sample
Sample Matrix Tissue

Sampling Date 19-Jun-25
Extraction Date 20-Jun-25
Sample Size 10.41 g wwt
Percent Moisture n/a
Split Ratio 1

Approved:
Henna Saeed
 --e-signature--
 29-Jul-2025

Run Information

Run 1

Filename 5-250724A32
Run Date 25-Jul-25 11:25
Final Volume 25 ul
Dilution Factor 1
Analysis Units pg/g wwt
Instrument - Column HRMS-5 SPBOCTYL291720-01

Target Analytes	TEF (WHO 2001)	Ret. Time	Conc. pg/g wwt	EDL pg/g wwt	Flags	EMPC pg/g wwt	LQL
PCB-192		NotFnd	<0.36	0.36	U		0.48
PCB-180/193		27.70	30.8	0.39			0.48
PCB-191		NotFnd	<0.36	0.36	U		0.48
PCB-170		28.40	<5.7	0.51	R	5.7	0.48
PCB-190		28.67	4.74	0.29			0.48
PCB-189	0.00003	29.97	2.45	0.38	M		0.48
PCB-202		26.28	<2.8	0.24	R	2.8	0.48
PCB-201		NotFnd	<0.32	0.32	U		0.48
PCB-204		NotFnd	<0.32	0.32	U		0.48
PCB-197		27.20	<0.27	0.27	U	0.26	0.48
PCB-200		NotFnd	<0.34	0.34	U		0.48
PCB-198/199		28.70	<18	0.43	R	18	0.48
PCB-196		29.04	<2.0	0.45	R	2.0	0.48
PCB-203		29.15	<7.5	0.36	R	7.5	0.48
PCB-195		29.88	3.57	0.52			0.48
PCB-194		31.07	14.7	0.49			0.48
PCB-205		31.33	<1.7	0.67	R	1.7	0.48
PCB-208		29.70	2.92	0.72	M		0.48
PCB-207		30.18	1.11	0.95	M		0.48
PCB-206		32.41	14.6	2.0			0.48
PCB-209		33.53	13.5	0.46			0.48

Extraction Standards	pg	Time	% Rec	Limits
13C12-PCB-001	2000	8.96	80	5-145
13C12-PCB-003	2000	10.47	61	5-145
13C12-PCB-004	2000	10.64	81	5-145
13C12-PCB-015	2000	14.29	66	5-145
13C12-PCB-019	2000	12.63	106	5-145
13C12-PCB-037	2000	18.23	79	5-145
13C12-PCB-054	2000	14.48	113	5-145
13C12-PCB-081	2000	21.80	68	10-145
13C12-PCB-077	2000	22.10	67	10-145
13C12-PCB-104	2000	17.51	87	10-145
13C12-PCB-123	2000	23.08	74	10-145
13C12-PCB-118	2000	23.25	81	10-145
13C12-PCB-114	2000	23.57	74	10-145
13C12-PCB-105	2000	23.92	71	10-145
13C12-PCB-126	2000	25.50	59	10-145
13C12-PCB-155	2000	20.49	86	10-145
13C12-PCB-167	2000	26.39	78	10-145
13C12-PCB-156/157	4000	27.03	74	10-145
13C12-PCB-169	2000	28.68	58	10-145
13C12-PCB-188	2000	23.49	110	10-145
13C12-PCB-189	2000	29.95	62	10-145
13C12-PCB-202	2000	26.27	104	10-145
13C12-PCB-205	2000	31.33	79	10-145
13C12-PCB-208	2000	29.69	121	10-145
13C12-PCB-206	2000	32.39	79	10-145
13C12-PCB-209	2000	33.51	78	10-145

Cleanup Standards

13C12-PCB-028	2000	15.99	110	5-145
13C12-PCB-111	2000	22.02	90	10-145
13C12-PCB-178	2000	25.08	102	10-145

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Sample Analysis Report

Sample Name	Plot 70 - 6 jars	Sampling Date	19-Jun-25	Approved: <i>Henna Saeed</i> --e-signature-- 29-Jul-2025
ALS Sample ID	EO2504379-003	Extraction Date	20-Jun-25	
Analysis Method	EPA 1668C	Sample Size	10.41 g wwt	
Analysis Type	Sample	Percent Moisture	n/a	
Sample Matrix	Tissue	Split Ratio	1	

Run Information	Run 1
Filename	5-250724A32
Run Date	25-Jul-25 11:25
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg/g wwt
Instrument - Column	HRMS-5 SPBOCTYL291720-01

Target Analytes	TEF (WHO 2001)	Ret. Time	Conc. pg/g wwt	EDL pg/g wwt	Flags	EMPC pg/g wwt	LQL
Homologue Group Totals							
Total MonoCB			4.38	0.22	J		9.6
Total DiCB			62.6	0.60	J		19
Total TriCB			13.7	0.23	J		19
Total TetraCB			24.6	0.14	J		38
Total PentaCB			49.8	0.18	J		38
Total HexaCB			104	0.14	J		38
Total HeptaCB			78.3	0.25	J		19
Total OctaCB			50.3	0.24	J		19
Total NonaCB			18.6	0.72	J		9.6
DecaCB			13.5	0.46	J		9.6
Total PCB			420		J		77
Toxic Equivalency - (WHO 2005)							
Lower Bound PCB TEQ			0.00112				
Mid Point PCB TEQ			0.150				
Upper Bound PCB TEQ			0.151				

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor
LQL	Indicates the Toxic Equivalency Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that the analyte was positively identified. The associated numerical result is an estimate.
R	Indicates that the ion abundance ratio for this analyte did not meet the control limit. The reported value represents an estimated concentration.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
EMPC	Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure

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Sample Analysis Report

Sample Name	Plot 71 - 2 jars	Sampling Date	19-Jun-25	Approved: <i>Henna Saeed</i> --e-signature-- 29-Jul-2025
ALS Sample ID	EO2504379-004	Extraction Date	20-Jun-25	
Analysis Method	EPA 1668C	Sample Size	10.13 g wwt	
Analysis Type	Sample	Percent Moisture	n/a	
Sample Matrix	Tissue	Split Ratio	1	

Run Information	Run 1
Filename	5-250724A33
Run Date	25-Jul-25 12:07
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg/g wwt
Instrument - Column	HRMS-5 SPBOCTYL291720-01

Target Analytes	TEF (WHO 200)	Ret. Time	Conc. pg/g wwt	EDL pg/g wwt	Flags	EMPC pg/g wwt	LQL
PCB-001		8.97	0.416	0.21	M,J		0.49
PCB-002		10.37	2.39	0.29	B		0.49
PCB-003		10.47	<1.1	0.32	R	1.1	0.49
PCB-004		NotFnd	<1.2	1.2	U		0.49
PCB-010		NotFnd	<0.69	0.69	U		0.49
PCB-009		NotFnd	<0.74	0.74	U		0.49
PCB-007		NotFnd	<0.64	0.64	U		0.49
PCB-006		NotFnd	<0.72	0.72	U		0.49
PCB-005		NotFnd	<0.71	0.71	U		0.49
PCB-008		NotFnd	<0.69	0.69	U		0.49
PCB-014		NotFnd	<0.88	0.88	U		0.49
PCB-011		13.93	53.7	0.86	B		0.49
PCB-012/013		NotFnd	<0.78	0.78	U		0.49
PCB-015		NotFnd	<0.77	0.77	U		0.49
PCB-019		NotFnd	<0.24	0.24	U		0.49
PCB-018/030		13.74	<1.1	0.41	R	1.1	0.49
PCB-017		13.98	0.963	0.48			0.49
PCB-027		NotFnd	<0.37	0.37	U		0.49
PCB-024		NotFnd	<0.33	0.33	U		0.49
PCB-016		14.29	<0.82	0.57	R	0.82	0.49
PCB-032		14.57	<0.37	0.33	M,J,R	0.37	0.49
PCB-034		NotFnd	<0.34	0.34	U		0.49
PCB-023		NotFnd	<0.31	0.31	U		0.49
PCB-026/029		15.54	0.373	0.32	M,J		0.49
PCB-025		NotFnd	<0.31	0.31	U		0.49
PCB-031		15.84	<1.5	0.32	R	1.5	0.49
PCB-020/028		16.00	6.05	0.30	B		0.49
PCB-021/033		16.16	1.36	0.33	M		0.49
PCB-022		16.40	<0.48	0.30	J,R	0.48	0.49
PCB-036		NotFnd	<0.30	0.30	U		0.49
PCB-039		NotFnd	<0.28	0.28	U		0.49
PCB-038		NotFnd	<0.32	0.32	U		0.49
PCB-035		18.01	<0.77	0.36	M,R	0.77	0.49
PCB-037		18.26	<0.70	0.38	R	0.70	0.49
PCB-054		NotFnd	<0.17	0.17	U		0.49
PCB-050/053		NotFnd	<0.33	0.33	U		0.49
PCB-045/051		16.10	<0.57	0.35	M,R	0.57	0.49
PCB-046		NotFnd	<0.39	0.39	U		0.49
PCB-052		16.99	5.66	0.40			0.49
PCB-073		NotFnd	<0.23	0.23	U		0.49
PCB-043		NotFnd	<0.37	0.37	U		0.49
PCB-049/069		17.27	<0.66	0.30	R	0.66	0.49
PCB-048		NotFnd	<0.32	0.32	U		0.49
PCB-044/047/065		17.57	3.36	0.31	B		0.49
PCB-059/062/075		NotFnd	<0.25	0.25	U		0.49
PCB-042		NotFnd	<0.41	0.41	U		0.49
PCB-040/041/071		NotFnd	<0.35	0.35	U		0.49
PCB-064		18.26	0.578	0.27			0.49
PCB-072		NotFnd	<0.32	0.32	U		0.49
PCB-068		NotFnd	<0.29	0.29	U		0.49
PCB-057		NotFnd	<0.35	0.35	U		0.49
PCB-058		NotFnd	<0.30	0.30	U		0.49
PCB-067		NotFnd	<0.27	0.27	U		0.49
PCB-063		NotFnd	<0.33	0.33	U		0.49
PCB-061/070/074/076		19.63	5.50	0.31			0.49
PCB-066		19.77	<1.3	0.32	M,R	1.3	0.49
PCB-055		NotFnd	<0.32	0.32	U		0.49
PCB-056		NotFnd	<0.30	0.30	U		0.49
PCB-060		20.29	0.884	0.32			0.49
PCB-080		NotFnd	<0.28	0.28	U		0.49
PCB-079		NotFnd	<0.29	0.29	U		0.49
PCB-078		NotFnd	<0.39	0.39	U		0.49
PCB-081	0.0003	NotFnd	<0.41	0.41	U		0.49
PCB-077	0.0001	22.13	0.788	0.40			0.49
PCB-104		NotFnd	<0.19	0.19	U		0.49
PCB-096		NotFnd	<0.30	0.30	U		0.49
PCB-103		NotFnd	<0.78	0.78	U		0.49
PCB-094		NotFnd	<0.72	0.72	U		0.49
PCB-095		NotFnd	<0.90	0.90	U		0.49
PCB-093/098/100/102		NotFnd	<0.72	0.72	U		0.49

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Sample Analysis Report

Sample Name	Plot 71 - 2 jars	Sampling Date	19-Jun-25	Approved: <i>Henna Saeed</i> --e-signature-- 29-Jul-2025
ALS Sample ID	EO2504379-004	Extraction Date	20-Jun-25	
Analysis Method	EPA 1668C	Sample Size	10.13 g wwt	
Analysis Type	Sample	Percent Moisture	n/a	
Sample Matrix	Tissue	Split Ratio	1	

Run Information	Run 1
Filename	5-250724A33
Run Date	25-Jul-25 12:07
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg/g wwt
Instrument - Column	HRMS-5 SPBOCTYL291720-01

Target Analytes	TEF (WHO 2001)	Ret. Time	Conc. pg/g wwt	EDL pg/g wwt	Flags	EMPC pg/g wwt	LQL
PCB-088/091		NotFnd	<0.77	0.77	U		0.49
PCB-084		NotFnd	<0.82	0.82	U		0.49
PCB-089		NotFnd	<1.0	1.0	U		0.49
PCB-121		NotFnd	<0.49	0.49	U		0.49
PCB-092		NotFnd	<0.92	0.92	U		0.49
PCB-090/101/113		20.66	2.63	0.66			0.49
PCB-083/099		20.96	4.82	0.83			0.49
PCB-112		NotFnd	<0.50	0.50	U		0.49
PCB-086/087/097/109/119/125		NotFnd	<0.53	0.53	U		0.49
PCB-085/110/115/116/117		21.74	3.15	0.72	M		0.49
PCB-082		NotFnd	<1.1	1.1	U		0.49
PCB-111		NotFnd	<0.50	0.50	U		0.49
PCB-120		NotFnd	<0.56	0.56	U		0.49
PCB-108/124		NotFnd	<0.38	0.38	U		0.49
PCB-107		23.05	<0.36	0.36	M,U	0.35	0.49
PCB-123	0.00003	NotFnd	<0.45	0.45	U		0.49
PCB-106		NotFnd	<0.44	0.44	U		0.49
PCB-118	0.00003	23.28	19.8	0.38			0.49
PCB-122		NotFnd	<0.53	0.53	U		0.49
PCB-114	0.00003	NotFnd	<0.43	0.43	U		0.49
PCB-105	0.00003	23.93	4.65	0.46			0.49
PCB-127		NotFnd	<0.39	0.39	U		0.49
PCB-126	0.1	NotFnd	<0.58	0.58	U		0.49
PCB-155		NotFnd	<0.19	0.19	U		0.49
PCB-152		NotFnd	<0.43	0.43	U		0.49
PCB-150		NotFnd	<0.32	0.32	U		0.49
PCB-136		NotFnd	<0.41	0.41	U		0.49
PCB-145		NotFnd	<0.35	0.35	U		0.49
PCB-148		NotFnd	<0.57	0.57	U		0.49
PCB-135/151		22.19	<0.87	0.55	M,R	0.87	0.49
PCB-154		NotFnd	<0.38	0.38	U		0.49
PCB-144		NotFnd	<0.54	0.54	U		0.49
PCB-147/149		22.67	2.19	0.56			0.49
PCB-134/143		NotFnd	<0.82	0.82	U		0.49
PCB-139/140		NotFnd	<0.59	0.59	U		0.49
PCB-131		NotFnd	<0.81	0.81	U		0.49
PCB-142		NotFnd	<0.80	0.80	U		0.49
PCB-132		23.37	<0.65	0.65	U	0.50	0.49
PCB-133		NotFnd	<0.72	0.72	U		0.49
PCB-165		NotFnd	<0.47	0.47	U		0.49
PCB-146		23.89	2.85	0.58			0.49
PCB-161		NotFnd	<0.48	0.48	U		0.49
PCB-153/168		24.21	26.0	0.49			0.49
PCB-141		24.35	<1.1	0.62	R	1.1	0.49
PCB-130		24.56	<1.1	0.80	R	1.1	0.49
PCB-137/164		24.74	<0.80	0.52	M,R	0.80	0.49
PCB-129/138/163		24.90	19.7	0.64	M		0.49
PCB-160		NotFnd	<0.40	0.40	U		0.49
PCB-158		25.09	<1.3	0.39	M,R	1.3	0.49
PCB-128/166		25.58	2.81	0.52			0.49
PCB-159		NotFnd	<0.42	0.42	U		0.49
PCB-162		NotFnd	<0.43	0.43	U		0.49
PCB-167	0.00003	26.41	2.29	0.47			0.49
PCB-156/157	0.00003	27.03	4.68	0.63			0.49
PCB-169	0.03	28.71	<0.82	0.66	M,R	0.82	0.49
PCB-188		NotFnd	<0.18	0.18	U		0.49
PCB-179		NotFnd	<0.26	0.26	U		0.49
PCB-184		NotFnd	<0.22	0.22	U		0.49
PCB-176		NotFnd	<0.26	0.26	U		0.49
PCB-186		NotFnd	<0.24	0.24	U		0.49
PCB-178		25.09	3.46	0.37			0.49
PCB-175		NotFnd	<0.36	0.36	U		0.49
PCB-187		25.55	12.7	0.29			0.49
PCB-182		NotFnd	<0.31	0.31	U		0.49
PCB-183		25.87	3.23	0.32			0.49
PCB-185		NotFnd	<0.31	0.31	U		0.49
PCB-174		26.03	<0.47	0.34	J,R	0.47	0.49
PCB-177		26.26	5.48	0.34			0.49
PCB-181		NotFnd	<0.32	0.32	U		0.49
PCB-171/173		26.59	<0.76	0.36	M,R	0.76	0.49
PCB-172		27.37	<2.1	0.33	R	2.1	0.49

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Sample Analysis Report

Sample Name	Plot 71 - 2 jars	Sampling Date	19-Jun-25	Approved: Henna Saeed --e-signature-- 29-Jul-2025
ALS Sample ID	EO2504379-004	Extraction Date	20-Jun-25	
Analysis Method	EPA 1668C	Sample Size	10.13 g wwt	
Analysis Type	Sample	Percent Moisture	n/a	
Sample Matrix	Tissue	Split Ratio	1	

Run Information	Run 1
Filename	5-250724A33
Run Date	25-Jul-25 12:07
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg/g wwt
Instrument - Column	HRMS-5 SPBOCTYL291720-01

Target Analytes	TEF (WHO 2001)	Ret. Time	Conc. pg/g wwt	EDL pg/g wwt	Flags	EMPC pg/g wwt	LQL
PCB-192		NotFnd	<0.25	0.25	U		0.49
PCB-180/193		27.71	22.1	0.27			0.49
PCB-191		NotFnd	<0.25	0.25	U		0.49
PCB-170		28.40	3.45	0.36			0.49
PCB-190		28.67	1.95	0.20	M		0.49
PCB-189	0.00003	29.98	<1.5	0.47	R	1.5	0.49
PCB-202		26.30	1.97	0.26			0.49
PCB-201		NotFnd	<0.34	0.34	U		0.49
PCB-204		NotFnd	<0.34	0.34	U		0.49
PCB-197		NotFnd	<0.29	0.29	U		0.49
PCB-200		NotFnd	<0.37	0.37	U		0.49
PCB-198/199		28.73	16.8	0.46			0.49
PCB-196		29.04	<1.3	0.48	R	1.3	0.49
PCB-203		29.15	6.41	0.39			0.49
PCB-195		29.88	<2.3	0.78	M,R	2.3	0.49
PCB-194		31.08	10.7	0.72	M		0.49
PCB-205		31.36	1.87	0.96			0.49
PCB-208		29.72	3.19	0.56			0.49
PCB-207		30.20	1.35	0.71	M		0.49
PCB-206		32.42	<9.8	1.4	M,R	9.8	0.49
PCB-209		33.54	10.5	0.64			0.49
Extraction Standards	pg	Time	% Rec	Limits			
13C12-PCB-001	2000	8.96	81	5-145			
13C12-PCB-003	2000	10.49	61	5-145			
13C12-PCB-004	2000	10.65	80	5-145			
13C12-PCB-015	2000	14.29	68	5-145			
13C12-PCB-019	2000	12.63	105	5-145			
13C12-PCB-037	2000	18.24	77	5-145			
13C12-PCB-054	2000	14.49	109	5-145			
13C12-PCB-081	2000	21.80	65	10-145			
13C12-PCB-077	2000	22.11	68	10-145			
13C12-PCB-104	2000	17.52	83	10-145			
13C12-PCB-123	2000	23.09	68	10-145			
13C12-PCB-118	2000	23.26	76	10-145			
13C12-PCB-114	2000	23.57	72	10-145			
13C12-PCB-105	2000	23.92	67	10-145			
13C12-PCB-126	2000	25.51	58	10-145			
13C12-PCB-155	2000	20.50	82	10-145			
13C12-PCB-167	2000	26.41	79	10-145			
13C12-PCB-156/157	4000	27.03	78	10-145			
13C12-PCB-169	2000	28.69	63	10-145			
13C12-PCB-188	2000	23.51	107	10-145			
13C12-PCB-189	2000	29.97	64	10-145			
13C12-PCB-202	2000	26.28	103	10-145			
13C12-PCB-205	2000	31.33	78	10-145			
13C12-PCB-208	2000	29.70	117	10-145			
13C12-PCB-206	2000	32.41	81	10-145			
13C12-PCB-209	2000	33.51	76	10-145			
Cleanup Standards							
13C12-PCB-028	2000	16.00	107	5-145			
13C12-PCB-111	2000	22.03	90	10-145			
13C12-PCB-178	2000	25.08	104	10-145			

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Sample Analysis Report

Sample Name	Plot 71 - 2 jars	Sampling Date	19-Jun-25	Approved: Henna Saeed --e-signature-- 29-Jul-2025
ALS Sample ID	EO2504379-004	Extraction Date	20-Jun-25	
Analysis Method	EPA 1668C	Sample Size	10.13 g wwt	
Analysis Type	Sample	Percent Moisture	n/a	
Sample Matrix	Tissue	Split Ratio	1	

Run Information	Run 1
Filename	5-250724A33
Run Date	25-Jul-25 12:07
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg/g wwt
Instrument - Column	HRMS-5 SPBCTYL291720-01

Target Analytes	TEF (WHO 2001)	Ret. Time	Conc. pg/g wwt	EDL pg/g wwt	Flags	EMPC pg/g wwt	LQL
Homologue Group Totals							
Total MonoCB			3.91	0.21	J		9.9
Total DiCB			53.7	0.64	J		20
Total TriCB			14.5	0.24	J		20
Total TetraCB			19.3	0.17	J		39
Total PentaCB			35.1	0.19	J		39
Total HexaCB			66.5	0.19	J		39
Total HeptaCB			57.2	0.18	J		20
Total OctaCB			41.4	0.26	J		20
Total NonaCB			14.3	0.56	J		9.9
DecaCB			10.5	0.64	J		9.9
Total PCB			316		J		79
Toxic Equivalency - (WHO 2005)							
Lower Bound PCB TEQ			0.00102				
Mid Point PCB TEQ			0.0547				
Upper Bound PCB TEQ			0.0838				

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor
LQL	Indicates the Toxic Equivalency Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that the analyte was positively identified. The associated numerical result is an estimate.
R	Indicates that the ion abundance ratio for this analyte did not meet the control limit. The reported value represents an estimated concentration.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
EMPC	Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure

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Sample Analysis Report

Sample Name	Plot 109 - 3 jars	Sampling Date	19-Jun-25	Approved: Henna Saeed --e-signature-- 29-Jul-2025
ALS Sample ID	EO2504379-005	Extraction Date	20-Jun-25	
Analysis Method	EPA 1668C	Sample Size	10.29 g wwt	
Analysis Type	Sample	Percent Moisture	n/a	
Sample Matrix	Tissue	Split Ratio	1	

Run Information	Run 1
Filename	5-250724A34
Run Date	25-Jul-25 12:49
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg/g wwt
Instrument - Column	HRMS-5 SPBOCTYL291720-01

Target Analytes	TEF (WHO 200)	Ret. Time	Conc. pg/g wwt	EDL pg/g wwt	Flags	EMPC pg/g wwt	LQL
PCB-001		8.96	<0.82	0.19	R	0.82	0.49
PCB-002		10.34	4.42	0.27	B		0.49
PCB-003		10.47	1.23	0.29	M		0.49
PCB-004		NotFnd	<1.1	1.1	U		0.49
PCB-010		NotFnd	<0.62	0.62	U		0.49
PCB-009		11.90	1.82	0.67	M		0.49
PCB-007		NotFnd	<0.57	0.57	U		0.49
PCB-006		NotFnd	<0.65	0.65	U		0.49
PCB-005		12.37	<0.90	0.63	M,R	0.90	0.49
PCB-008		12.44	<3.3	0.62	M,R	3.3	0.49
PCB-014		NotFnd	<0.80	0.80	U		0.49
PCB-011		13.91	76.1	0.78	B		0.49
PCB-012/013		NotFnd	<0.71	0.71	U		0.49
PCB-015		14.29	4.80	0.69			0.49
PCB-019		12.63	<0.23	0.23	M,U	0.20	0.49
PCB-018/030		13.73	4.07	0.33			0.49
PCB-017		13.98	1.90	0.39			0.49
PCB-027		14.11	<0.32	0.30	M,J,R	0.32	0.49
PCB-024		NotFnd	<0.26	0.26	U		0.49
PCB-016		14.28	1.73	0.46	M		0.49
PCB-032		14.55	1.51	0.27			0.49
PCB-034		NotFnd	<0.45	0.45	U		0.49
PCB-023		NotFnd	<0.41	0.41	U		0.49
PCB-026/029		15.51	10.1	0.42			0.49
PCB-025		15.64	4.84	0.41			0.49
PCB-031		15.83	22.9	0.42			0.49
PCB-020/028		16.00	223	0.40			0.49
PCB-021/033		16.14	5.00	0.43			0.49
PCB-022		16.37	3.32	0.39			0.49
PCB-036		NotFnd	<0.39	0.39	U		0.49
PCB-039		17.40	0.588	0.36			0.49
PCB-038		17.74	<0.43	0.42	J,R	0.43	0.49
PCB-035		17.99	<2.2	0.47	R	2.2	0.49
PCB-037		18.23	20.0	0.48			0.49
PCB-054		NotFnd	<0.16	0.16	U		0.49
PCB-050/053		15.68	<0.94	0.51	R	0.94	0.49
PCB-045/051		16.09	<1.6	0.54	R	1.6	0.49
PCB-046		NotFnd	<0.60	0.60	U		0.49
PCB-052		16.98	135	0.62	M		0.49
PCB-073		17.06	<0.36	0.36	M,U	0.26	0.49
PCB-043		17.11	<0.57	0.57	M,U	0.54	0.49
PCB-049/069		17.26	68.4	0.46			0.49
PCB-048		17.41	<1.5	0.50	R	1.5	0.49
PCB-044/047/065		17.56	364	0.48			0.49
PCB-059/062/075		17.73	30.4	0.39			0.49
PCB-042		17.85	<7.7	0.64	R	7.7	0.49
PCB-040/041/071		18.12	<4.7	0.54	R	4.7	0.49
PCB-064		18.24	20.8	0.42			0.49
PCB-072		18.63	13.3	1.1			0.49
PCB-068		18.79	8.21	0.94			0.49
PCB-057		19.03	2.13	1.1			0.49
PCB-058		19.16	<1.0	0.98	M,1.	1.0	0.49
PCB-067		19.25	12.2	0.89			0.49
PCB-063		19.40	41.8	1.1			0.49
PCB-061/070/074/076		19.61	960	1.0			0.49
PCB-066		19.76	529	1.1	M		0.49
PCB-055		19.87	<2.0	1.0	M,R	2.0	0.49
PCB-056		20.15	10.3	0.98			0.49
PCB-060		20.27	161	1.0	M		0.49
PCB-080		20.39	<0.91	0.91	M,U	0.46	0.49
PCB-079		21.25	8.85	0.96	M		0.49
PCB-078		21.57	<2.9	1.3	M,R	2.9	0.49
PCB-081	0.0003	21.80	11.6	1.3	M		0.49
PCB-077	0.0001	22.10	111	1.2			0.49
PCB-104		NotFnd	<0.23	0.23	U		0.49
PCB-096		NotFnd	<0.33	0.33	U		0.49
PCB-103		18.72	6.30	0.49			0.49
PCB-094		NotFnd	<0.45	0.45	U		0.49
PCB-095		19.13	91.4	0.56			0.49
PCB-093/098/100/102		19.20	25.0	0.44	M		0.49

ALS Life Sciences

Sample Analysis Report

Sample Name	Plot 109 - 3 jars	Sampling Date	19-Jun-25	Approved: <i>Henna Saeed</i> --e-signature-- 29-Jul-2025
ALS Sample ID	EO2504379-005	Extraction Date	20-Jun-25	
Analysis Method	EPA 1668C	Sample Size	10.29 g wwt	
Analysis Type	Sample	Percent Moisture	n/a	
Sample Matrix	Tissue	Split Ratio	1	

Run Information	Run 1
Filename	5-250724A34
Run Date	25-Jul-25 12:49
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg/g wwt
Instrument - Column	HRMS-5 SPBOCTYL291720-01

Target Analytes	TEF (WHO 2001)	Ret. Time	Conc. pg/g wwt	EDL pg/g wwt	Flags	EMPC pg/g wwt	LQL
PCB-088/091		19.59	34.0	0.48			0.49
PCB-084		19.74	8.39	0.51			0.49
PCB-089		NotFnd	<0.63	0.63	U		0.49
PCB-121		20.11	0.707	0.31			0.49
PCB-092		20.33	160	0.57			0.49
PCB-090/101/113		20.65	470	0.41			0.49
PCB-083/099		20.95	1750	0.52	M		0.49
PCB-112		21.04	<2.0	0.31	M,1.	2.0	0.49
PCB-086/087/097/109/119/125		21.23	134	0.33	M		0.49
PCB-085/110/115/116/117		21.73	794	0.45	M		0.49
PCB-082		21.92	18.7	0.66			0.49
PCB-111		22.03	9.84	0.31			0.49
PCB-120		22.27	35.1	0.35			0.49
PCB-108/124		22.90	21.4	0.74			0.49
PCB-107		23.03	432	0.69	M		0.49
PCB-123	0.00003	23.08	43.1	0.90	M		0.49
PCB-106		23.19	<3.3	0.85	M,R	3.3	0.49
PCB-118	0.00003	23.26	11000	0.62	M		0.49
PCB-122		NotFnd	<1.0	1.0	U		0.49
PCB-114	0.00003	23.57	217	0.83			0.49
PCB-105	0.00003	23.92	2820	0.82			0.49
PCB-127		24.65	13.2	0.76	M		0.49
PCB-126	0.1	25.51	357	1.1	M		0.49
PCB-155		20.52	<0.66	0.14	R	0.66	0.49
PCB-152		NotFnd	<0.33	0.33	U		0.49
PCB-150		20.73	<0.44	0.24	M,J,R	0.44	0.49
PCB-136		20.98	7.25	0.31			0.49
PCB-145		NotFnd	<0.26	0.26	U		0.49
PCB-148		21.83	5.16	0.43			0.49
PCB-135/151		22.17	341	0.42			0.49
PCB-154		22.27	46.0	0.29			0.49
PCB-144		22.47	18.8	0.41	M		0.49
PCB-147/149		22.66	624	1.3			0.49
PCB-134/143		22.80	<27	1.9	R	27	0.49
PCB-139/140		22.97	53.4	1.4			0.49
PCB-131		23.12	3.54	1.9			0.49
PCB-142		NotFnd	<1.9	1.9	U		0.49
PCB-132		23.36	130	1.5			0.49
PCB-133		23.54	298	1.7			0.49
PCB-165		23.75	18.8	1.1			0.49
PCB-146		23.87	1490	1.4	M		0.49
PCB-161		23.95	<1.1	1.1	M,U	0.98	0.49
PCB-153/168		24.19	14700	1.2			0.49
PCB-141		24.33	258	1.5			0.49
PCB-130		24.54	596	1.9			0.49
PCB-137/164		24.65	272	1.2			0.49
PCB-129/138/163		24.88	11900	1.5	M		0.49
PCB-160		24.97	6.36	0.95	M		0.49
PCB-158		25.08	645	0.91			0.49
PCB-128/166		25.56	1110	1.2			0.49
PCB-159		26.02	24.4	1.0	M		0.49
PCB-162		26.15	77.2	1.0			0.49
PCB-167	0.00003	26.39	1300	1.1			0.49
PCB-156/157	0.00003	27.02	3120	1.5			0.49
PCB-169	0.03	28.70	<190	1.6	M,R	190	0.49
PCB-188		23.51	<1.3	0.38	R	1.3	0.49
PCB-179		23.72	31.9	0.54			0.49
PCB-184		23.95	<0.77	0.45	R	0.77	0.49
PCB-176		24.18	10.1	0.54			0.49
PCB-186		NotFnd	<0.50	0.50	U		0.49
PCB-178		25.08	1200	0.76			0.49
PCB-175		25.40	35.4	0.75			0.49
PCB-187		25.54	4890	0.61	M		0.49
PCB-182		25.64	<3.4	0.64	M,R	3.4	0.49
PCB-183		25.85	1440	0.66	M		0.49
PCB-185		25.95	27.2	0.64	M		0.49
PCB-174		26.02	216	0.70			0.49
PCB-177		26.25	2460	0.71			0.49
PCB-181		26.44	19.0	0.66			0.49
PCB-171/173		26.58	479	0.75			0.49
PCB-172		27.36	1200	0.69			0.49

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Sample Analysis Report

Sample Name Plot 109 - 3 jars
ALS Sample ID EO2504379-005
Analysis Method EPA 1668C
Analysis Type Sample
Sample Matrix Tissue

Sampling Date 19-Jun-25
Extraction Date 20-Jun-25
Sample Size 10.29 g wwt
Percent Moisture n/a
Split Ratio 1

Approved:
Henna Saeed
 --e-signature--
 29-Jul-2025

Run Information

Run 1

Filename 5-250724A34
Run Date 25-Jul-25 12:49
Final Volume 25 ul
Dilution Factor 1
Analysis Units pg/g wwt
Instrument - Column HRMS-5 SPBOCTYL291720-01

Target Analytes	TEF (WHO 2001)	Ret. Time	Conc. pg/g wwt	EDL pg/g wwt	Flags	EMPC pg/g wwt	LQL
PCB-192		27.52	<0.85	0.52	R	0.85	0.49
PCB-180/193		27.70	15800	0.56			0.49
PCB-191		27.88	39.5	0.52			0.49
PCB-170		28.39	2920	0.74			0.49
PCB-190		28.65	1920	0.42			0.49
PCB-189	0.00003	29.95	731	1.0			0.49
PCB-202		26.28	417	0.28			0.49
PCB-201		26.76	62.7	0.37			0.49
PCB-204		27.09	<0.37	0.37	U	0.28	0.49
PCB-197		27.22	35.6	0.32	M		0.49
PCB-200		27.31	8.11	0.40			0.49
PCB-198/199		28.70	5570	0.50			0.49
PCB-196		29.04	480	0.53			0.49
PCB-203		29.14	2720	0.42			0.49
PCB-195		29.87	1360	0.85			0.49
PCB-194		31.07	7010	0.79			0.49
PCB-205		31.35	515	1.1			0.49
PCB-208		29.70	120	0.48			0.49
PCB-207		30.18	40.0	0.62			0.49
PCB-206		32.41	1590	1.3			0.49
PCB-209		33.53	109	0.64			0.49

Extraction Standards	pg	Time	% Rec	Limits
13C12-PCB-001	2000	8.94	79	5-145
13C12-PCB-003	2000	10.47	60	5-145
13C12-PCB-004	2000	10.64	79	5-145
13C12-PCB-015	2000	14.29	67	5-145
13C12-PCB-019	2000	12.62	109	5-145
13C12-PCB-037	2000	18.22	79	5-145
13C12-PCB-054	2000	14.47	110	5-145
13C12-PCB-081	2000	21.79	67	10-145
13C12-PCB-077	2000	22.09	68	10-145
13C12-PCB-104	2000	17.51	81	10-145
13C12-PCB-123	2000	23.08	70	10-145
13C12-PCB-118	2000	23.25	93	10-145
13C12-PCB-114	2000	23.55	75	10-145
13C12-PCB-105	2000	23.90	73	10-145
13C12-PCB-126	2000	25.50	61	10-145
13C12-PCB-155	2000	20.49	84	10-145
13C12-PCB-167	2000	26.38	75	10-145
13C12-PCB-156/157	4000	27.02	75	10-145
13C12-PCB-169	2000	28.68	59	10-145
13C12-PCB-188	2000	23.49	104	10-145
13C12-PCB-189	2000	29.95	59	10-145
13C12-PCB-202	2000	26.27	98	10-145
13C12-PCB-205	2000	31.32	81	10-145
13C12-PCB-208	2000	29.69	122	10-145
13C12-PCB-206	2000	32.39	80	10-145
13C12-PCB-209	2000	33.50	73	10-145

Cleanup Standards

13C12-PCB-028	2000	15.99	104	5-145
13C12-PCB-111	2000	22.01	85	10-145
13C12-PCB-178	2000	25.06	97	10-145

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Sample Analysis Report

Sample Name	Plot 109 - 3 jars	Sampling Date	19-Jun-25	Approved: <i>Henna Saeed</i> --e-signature-- 29-Jul-2025
ALS Sample ID	EO2504379-005	Extraction Date	20-Jun-25	
Analysis Method	EPA 1668C	Sample Size	10.29 g wwt	
Analysis Type	Sample	Percent Moisture	n/a	
Sample Matrix	Tissue	Split Ratio	1	

Run Information	Run 1
Filename	5-250724A34
Run Date	25-Jul-25 12:49
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg/g wwt
Instrument - Column	HRMS-5 SPBOCTYL291720-01

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg/g wwt	EDL pg/g wwt	Flags	EMPC pg/g wwt	LQL
Homologue Group Totals							
Total MonoCB			6.47	0.19	J		9.7
Total DiCB			86.9	0.57	J		19
Total TriCB			302	0.23	J		19
Total TetraCB			2510	0.16	J		39
Total PentaCB			18400	0.23	J		39
Total HexaCB			37300	0.14	J		39
Total HeptaCB			33400	0.38	J		19
Total OctaCB			18200	0.28	J		19
Total NonaCB			1750	0.48	J		9.7
DecaCB			109	0.64	J		9.7
Total PCB			112000		J		78
Toxic Equivalency - (WHO 2005)							
Lower Bound PCB TEQ			36.3				
Mid Point PCB TEQ			42.0				
Upper Bound PCB TEQ			42.0				

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor
LQL	Indicates the Toxic Equivalency Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that the analyte was positively identified. The associated numerical result is an estimate.
R	Indicates that the ion abundance ratio for this analyte did not meet the control limit. The reported value represents an estimated concentration.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
1.	This result is an EMPC
EMPC	Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure

ALS Life Sciences

Sample Analysis Report

Sample Name	Plot 114- 3 jars	Sampling Date	19-Jun-25	Approved: Henna Saeed --e-signature-- 29-Jul-2025
ALS Sample ID	EO2504379-006	Extraction Date	20-Jun-25	
Analysis Method	EPA 1668C	Sample Size	10.22 g wwt	
Analysis Type	Sample	Percent Moisture	n/a	
Sample Matrix	Tissue	Split Ratio	1	

Run Information	Run 1
Filename	5-250724A35
Run Date	25-Jul-25 13:31
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg/g wwt
Instrument - Column	HRMS-5 SPBOCTYL291720-01

Target Analytes	TEF (WHO 2001)	Ret. Time	Conc. pg/g wwt	EDL pg/g wwt	Flags	EMPC pg/g wwt	LQL
PCB-001		8.97	<0.49	0.17	R	0.49	0.49
PCB-002		10.36	<1.6	0.23	M,R	1.6	0.49
PCB-003		10.49	0.950	0.24	M		0.49
PCB-004		NotFnd	<1.1	1.1	U		0.49
PCB-010		NotFnd	<0.63	0.63	U		0.49
PCB-009		NotFnd	<0.68	0.68	U		0.49
PCB-007		NotFnd	<0.58	0.58	U		0.49
PCB-006		NotFnd	<0.66	0.66	U		0.49
PCB-005		NotFnd	<0.64	0.64	U		0.49
PCB-008		12.44	<1.7	0.63	M,R	1.7	0.49
PCB-014		NotFnd	<0.92	0.92	U		0.49
PCB-011		13.93	29.4	0.90	B		0.49
PCB-012/013		NotFnd	<0.82	0.82	U		0.49
PCB-015		14.30	<2.7	0.78	R	2.7	0.49
PCB-019		NotFnd	<0.33	0.33	U		0.49
PCB-018/030		13.74	1.88	0.29			0.49
PCB-017		13.98	<1.1	0.35	R	1.1	0.49
PCB-027		NotFnd	<0.27	0.27	U		0.49
PCB-024		NotFnd	<0.24	0.24	U		0.49
PCB-016		14.29	<0.96	0.41	R	0.96	0.49
PCB-032		14.56	<0.65	0.24	M,R	0.65	0.49
PCB-034		NotFnd	<0.39	0.39	U		0.49
PCB-023		NotFnd	<0.36	0.36	U		0.49
PCB-026/029		15.53	1.45	0.37	M		0.49
PCB-025		15.66	<0.37	0.36	M,J,R	0.37	0.49
PCB-031		15.84	4.49	0.37			0.49
PCB-020/028		16.00	35.4	0.35			0.49
PCB-021/033		16.16	<1.6	0.38	R	1.6	0.49
PCB-022		16.39	<1.3	0.34	R	1.3	0.49
PCB-036		NotFnd	<0.34	0.34	U		0.49
PCB-039		NotFnd	<0.32	0.32	U		0.49
PCB-038		NotFnd	<0.37	0.37	U		0.49
PCB-035		18.00	<1.0	0.41	R	1.0	0.49
PCB-037		18.24	10.3	0.41			0.49
PCB-054		NotFnd	<0.17	0.17	U		0.49
PCB-050/053		15.70	<0.29	0.28	J,R	0.29	0.49
PCB-045/051		16.10	0.752	0.30	M		0.49
PCB-046		NotFnd	<0.33	0.33	U		0.49
PCB-052		17.00	12.2	0.34			0.49
PCB-073		NotFnd	<0.20	0.20	U		0.49
PCB-043		NotFnd	<0.32	0.32	U		0.49
PCB-049/069		17.27	3.19	0.25			0.49
PCB-048		17.41	<0.43	0.28	M,J,R	0.43	0.49
PCB-044/047/065		17.57	13.2	0.26	B		0.49
PCB-059/062/075		17.74	1.86	0.22			0.49
PCB-042		17.87	<0.95	0.35	R	0.95	0.49
PCB-040/041/071		18.13	<1.6	0.30	M,R	1.6	0.49
PCB-064		18.26	3.63	0.23			0.49
PCB-072		NotFnd	<0.62	0.62	U		0.49
PCB-068		NotFnd	<0.54	0.54	U		0.49
PCB-057		NotFnd	<0.66	0.66	U		0.49
PCB-058		NotFnd	<0.57	0.57	U		0.49
PCB-067		19.26	5.46	0.52			0.49
PCB-063		19.42	4.44	0.63			0.49
PCB-061/070/074/076		19.63	266	0.58			0.49
PCB-066		19.78	44.9	0.61	M		0.49
PCB-055		19.89	<0.98	0.60	M,R	0.98	0.49
PCB-056		20.16	4.56	0.57			0.49
PCB-060		20.28	34.6	0.61	M		0.49
PCB-080		NotFnd	<0.53	0.53	U		0.49
PCB-079		21.26	2.76	0.56	M		0.49
PCB-078		21.57	<1.1	0.74	M,R	1.1	0.49
PCB-081	0.0003	21.81	5.56	0.79	M		0.49
PCB-077	0.0001	22.12	52.2	0.73			0.49
PCB-104		NotFnd	<0.19	0.19	U		0.49
PCB-096		NotFnd	<0.30	0.30	U		0.49
PCB-103		NotFnd	<1.0	1.0	U		0.49
PCB-094		NotFnd	<0.92	0.92	U		0.49
PCB-095		19.15	17.5	1.1	M		0.49
PCB-093/098/100/102		19.20	<1.1	0.91	M,R	1.1	0.49

ALS Life Sciences

Sample Analysis Report

Sample Name	Plot 114- 3 jars	Sampling Date	19-Jun-25	Approved: <i>Henna Saeed</i> --e-signature-- 29-Jul-2025
ALS Sample ID	EO2504379-006	Extraction Date	20-Jun-25	
Analysis Method	EPA 1668C	Sample Size	10.22 g wwt	
Analysis Type	Sample	Percent Moisture	n/a	
Sample Matrix	Tissue	Split Ratio	1	

Run Information	Run 1
Filename	5-250724A35
Run Date	25-Jul-25 13:31
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg/g wwt
Instrument - Column	HRMS-5 SPBOCTYL291720-01

Target Analytes	TEF (WHO 200)	Ret. Time	Conc. pg/g wwt	EDL pg/g wwt	Flags	EMPC pg/g wwt	LQL
PCB-088/091		19.61	<2.5	0.99	R	2.5	0.49
PCB-084		19.75	<3.7	1.0	R	3.7	0.49
PCB-089		NotFnd	<1.3	1.3	U		0.49
PCB-121		NotFnd	<0.63	0.63	U		0.49
PCB-092		20.35	15.2	1.2			0.49
PCB-090/101/113		20.66	72.8	0.85			0.49
PCB-083/099		20.96	204	1.1	M		0.49
PCB-112		21.05	<0.67	0.64	M,R	0.67	0.49
PCB-086/087/097/109/119/125		21.32	22.9	0.68	M		0.49
PCB-085/110/115/116/117		21.74	181	0.92	M		0.49
PCB-082		21.93	<5.4	1.4	R	5.4	0.49
PCB-111		22.03	<0.89	0.64	M,R	0.89	0.49
PCB-120		22.28	5.22	0.71			0.49
PCB-108/124		22.91	<8.3	0.74	R	8.3	0.49
PCB-107		23.05	66.5	0.69	M		0.49
PCB-123	0.00003	23.08	7.75	0.89	M		0.49
PCB-106		NotFnd	<0.85	0.85	U		0.49
PCB-118	0.00003	23.28	3290	0.68			0.49
PCB-122		NotFnd	<1.0	1.0	U		0.49
PCB-114	0.00003	23.58	48.7	0.85			0.49
PCB-105	0.00003	23.93	536	0.84			0.49
PCB-127		24.64	<2.6	0.76	M,R	2.6	0.49
PCB-126	0.1	25.52	139	1.1	M		0.49
PCB-155		NotFnd	<0.15	0.15	U		0.49
PCB-152		NotFnd	<0.32	0.32	U		0.49
PCB-150		20.77	<0.24	0.24	M,U	0.12	0.49
PCB-136		20.99	3.85	0.30			0.49
PCB-145		NotFnd	<0.26	0.26	U		0.49
PCB-148		NotFnd	<0.43	0.43	U		0.49
PCB-135/151		22.18	44.5	0.42	M		0.49
PCB-154		22.26	2.66	0.29	M		0.49
PCB-144		22.49	4.76	0.40			0.49
PCB-147/149		22.67	110	0.85			0.49
PCB-134/143		22.82	5.11	1.2			0.49
PCB-139/140		22.97	9.41	0.90			0.49
PCB-131		NotFnd	<1.2	1.2	U		0.49
PCB-142		NotFnd	<1.2	1.2	U		0.49
PCB-132		23.37	30.3	0.99			0.49
PCB-133		23.55	50.0	1.1			0.49
PCB-165		23.76	4.68	0.70			0.49
PCB-146		23.88	243	0.88	M		0.49
PCB-161		23.96	<0.73	0.73	M,U	0.35	0.49
PCB-153/168		24.21	3710	0.74			0.49
PCB-141		24.34	72.0	0.94			0.49
PCB-130		24.57	141	1.2			0.49
PCB-137/164		24.67	48.3	0.78	M		0.49
PCB-129/138/163		24.90	3400	0.97	M		0.49
PCB-160		24.98	2.80	0.61	M		0.49
PCB-158		25.09	170	0.58			0.49
PCB-128/166		25.57	352	0.78			0.49
PCB-159		26.02	8.76	0.64	M		0.49
PCB-162		26.16	31.0	0.65	M		0.49
PCB-167	0.00003	26.42	511	0.71			0.49
PCB-156/157	0.00003	27.03	1060	0.95			0.49
PCB-169	0.03	28.71	<75	0.94	M,R	75	0.49
PCB-188		NotFnd	<0.39	0.39	U		0.49
PCB-179		23.74	9.35	0.54			0.49
PCB-184		NotFnd	<0.45	0.45	U		0.49
PCB-176		24.18	3.31	0.54			0.49
PCB-186		NotFnd	<0.49	0.49	U		0.49
PCB-178		25.09	496	0.75			0.49
PCB-175		25.41	12.7	0.74			0.49
PCB-187		25.56	2080	0.60	M		0.49
PCB-182		25.66	<0.81	0.63	M,R	0.81	0.49
PCB-183		25.86	488	0.65	M		0.49
PCB-185		25.96	<4.4	0.64	M,R	4.4	0.49
PCB-174		26.03	60.7	0.69			0.49
PCB-177		26.26	1060	0.71			0.49
PCB-181		26.45	5.42	0.65			0.49
PCB-171/173		26.59	158	0.74			0.49
PCB-172		27.37	523	0.68			0.49

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Sample Analysis Report

Sample Name	Plot 114- 3 jars	Sampling Date	19-Jun-25	Approved: Henna Saeed --e-signature-- 29-Jul-2025
ALS Sample ID	EO2504379-006	Extraction Date	20-Jun-25	
Analysis Method	EPA 1668C	Sample Size	10.22 g wwt	
Analysis Type	Sample	Percent Moisture	n/a	
Sample Matrix	Tissue	Split Ratio	1	

Run Information	Run 1
Filename	5-250724A35
Run Date	25-Jul-25 13:31
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg/g wwt
Instrument - Column	HRMS-5 SPBOCTYL291720-01

Target Analytes	TEF (WHO 2001)	Ret. Time	Conc. pg/g wwt	EDL pg/g wwt	Flags	EMPC pg/g wwt	LQL
PCB-192		NotFnd	<0.52	0.52	U		0.49
PCB-180/193		27.71	6470	0.56			0.49
PCB-191		27.89	<14	0.52	R	14	0.49
PCB-170		28.40	974	0.73			0.49
PCB-190		28.67	841	0.41			0.49
PCB-189	0.00003	29.97	286	0.60			0.49
PCB-202		26.30	213	0.19			0.49
PCB-201		26.77	23.2	0.24			0.49
PCB-204		NotFnd	<0.24	0.24	U		0.49
PCB-197		27.23	13.0	0.20			0.49
PCB-200		27.34	3.01	0.26			0.49
PCB-198/199		28.71	2740	0.32			0.49
PCB-196		29.05	200	0.33			0.49
PCB-203		29.15	1130	0.27			0.49
PCB-195		29.88	675	0.52			0.49
PCB-194		31.08	2910	0.49			0.49
PCB-205		31.36	188	0.58			0.49
PCB-208		29.72	70.1	0.45			0.49
PCB-207		30.19	19.3	0.56			0.49
PCB-206		32.42	601	1.1			0.49
PCB-209		33.54	74.6	0.26			0.49
Extraction Standards	pg	Time	% Rec	Limits			
13C12-PCB-001	2000	8.96	76	5-145			
13C12-PCB-003	2000	10.47	61	5-145			
13C12-PCB-004	2000	10.65	77	5-145			
13C12-PCB-015	2000	14.29	70	5-145			
13C12-PCB-019	2000	12.63	107	5-145			
13C12-PCB-037	2000	18.23	80	5-145			
13C12-PCB-054	2000	14.49	112	5-145			
13C12-PCB-081	2000	21.80	66	10-145			
13C12-PCB-077	2000	22.11	70	10-145			
13C12-PCB-104	2000	17.52	84	10-145			
13C12-PCB-123	2000	23.09	72	10-145			
13C12-PCB-118	2000	23.26	83	10-145			
13C12-PCB-114	2000	23.57	76	10-145			
13C12-PCB-105	2000	23.92	73	10-145			
13C12-PCB-126	2000	25.51	64	10-145			
13C12-PCB-155	2000	20.50	87	10-145			
13C12-PCB-167	2000	26.39	79	10-145			
13C12-PCB-156/157	4000	27.03	78	10-145			
13C12-PCB-169	2000	28.69	69	10-145			
13C12-PCB-188	2000	23.51	101	10-145			
13C12-PCB-189	2000	29.95	67	10-145			
13C12-PCB-202	2000	26.28	102	10-145			
13C12-PCB-205	2000	31.33	81	10-145			
13C12-PCB-208	2000	29.70	106	10-145			
13C12-PCB-206	2000	32.41	83	10-145			
13C12-PCB-209	2000	33.51	76	10-145			
Cleanup Standards							
13C12-PCB-028	2000	16.00	99	5-145			
13C12-PCB-111	2000	22.03	83	10-145			
13C12-PCB-178	2000	25.08	93	10-145			

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Sample Analysis Report

Sample Name	Plot 114- 3 jars	Sampling Date	19-Jun-25	Approved: <i>Henna Saeed</i> --e-signature-- 29-Jul-2025
ALS Sample ID	EO2504379-006	Extraction Date	20-Jun-25	
Analysis Method	EPA 1668C	Sample Size	10.22 g wwt	
Analysis Type	Sample	Percent Moisture	n/a	
Sample Matrix	Tissue	Split Ratio	1	

Run Information	Run 1
Filename	5-250724A35
Run Date	25-Jul-25 13:31
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg/g wwt
Instrument - Column	HRMS-5 SPBIOCTYL291720-01

Target Analytes	TEF (WHO 2001)	Ret. Time	Conc. pg/g wwt	EDL pg/g wwt	Flags	EMPC pg/g wwt	LQL
Homologue Group Totals							
Total MonoCB			3.04	0.17	J		9.8
Total DiCB			33.8	0.58	J		20
Total TriCB			60.5	0.24	J		20
Total TetraCB			461	0.17	J		39
Total PentaCB			4630	0.19	J		39
Total HexaCB			10100	0.15	J		39
Total HeptaCB			13500	0.39	J		20
Total OctaCB			8100	0.19	J		20
Total NonaCB			690	0.45	J		9.8
DecaCB			74.6	0.26	J		9.8
Total PCB			37600		J		78
Toxic Equivalency - (WHO 2005)							
Lower Bound PCB TEQ			14.1				
Mid Point PCB TEQ			16.3				
Upper Bound PCB TEQ			16.3				

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor
LQL	Indicates the Toxic Equivalency Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that the analyte was positively identified. The associated numerical result is an estimate.
R	Indicates that the ion abundance ratio for this analyte did not meet the control limit. The reported value represents an estimated concentration.
B	Indicates that this target was detected in the blank at greater than 10% of the sample concentration.
EMPC	Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure

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Laboratory Method Blank Analysis Report

Sample Name	Method Blank	Sampling Date	n/a	Approved: Henna Saeed --e-signature-- 29-Jul-2025
ALS Sample ID	QC-MRG2-2062741-001	Extraction Date	20-Jun-25	
Analysis Method	EPA 1668C	Sample Size	10 g wwt	
Analysis Type	Blank	Percent Moisture	n/a	
Sample Matrix	QC	Split Ratio	1	

Run Information	Run 1
Filename	5-250724A28
Run Date	25-Jul-25 08:36
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg/g wwt
Instrument - Column	HRMS-5 SPBOCTYL291720-01

Target Analytes	TEF (WHO 200)	Ret. Time	Conc. pg/g wwt	EDL pg/g wwt	Flags	EMPC pg/g wwt	LQL
PCB-001		8.97	<0.64	0.42	M,R	0.64	0.50
PCB-002		10.37	2.64	0.53			0.50
PCB-003		NotFnd	<0.53	0.53	U		0.50
PCB-004		NotFnd	<1.6	1.6	U		0.50
PCB-010		NotFnd	<0.97	0.97	U		0.50
PCB-009		NotFnd	<1.0	1.0	U		0.50
PCB-007		NotFnd	<0.89	0.89	U		0.50
PCB-006		NotFnd	<1.0	1.0	U		0.50
PCB-005		NotFnd	<0.99	0.99	U		0.50
PCB-008		NotFnd	<0.96	0.96	U		0.50
PCB-014		NotFnd	<1.4	1.4	U		0.50
PCB-011		13.94	19.8	1.4			0.50
PCB-012/013		NotFnd	<1.3	1.3	U		0.50
PCB-015		NotFnd	<1.3	1.3	U		0.50
PCB-019		NotFnd	<0.46	0.46	U		0.50
PCB-018/030		13.75	<1.2	0.66	M,R	1.2	0.50
PCB-017		NotFnd	<0.79	0.79	U		0.50
PCB-027		NotFnd	<0.60	0.60	U		0.50
PCB-024		NotFnd	<0.53	0.53	U		0.50
PCB-016		NotFnd	<0.92	0.92	U		0.50
PCB-032		NotFnd	<0.54	0.54	U		0.50
PCB-034		NotFnd	<0.72	0.72	U		0.50
PCB-023		NotFnd	<0.65	0.65	U		0.50
PCB-026/029		NotFnd	<0.67	0.67	U		0.50
PCB-025		NotFnd	<0.65	0.65	U		0.50
PCB-031		15.85	<1.2	0.67	M,R	1.2	0.50
PCB-020/028		16.01	2.05	0.63			0.50
PCB-021/033		16.16	<1.1	0.69	M,R	1.1	0.50
PCB-022		NotFnd	<0.63	0.63	U		0.50
PCB-036		NotFnd	<0.61	0.61	U		0.50
PCB-039		NotFnd	<0.58	0.58	U		0.50
PCB-038		NotFnd	<0.67	0.67	U		0.50
PCB-035		NotFnd	<0.75	0.75	U		0.50
PCB-037		NotFnd	<0.81	0.81	U		0.50
PCB-054		NotFnd	<0.34	0.34	U		0.50
PCB-050/053		NotFnd	<0.80	0.80	U		0.50
PCB-045/051		16.12	<1.1	0.84	R	1.1	0.50
PCB-046		NotFnd	<0.94	0.94	U		0.50
PCB-052		17.01	<1.4	0.96	R	1.4	0.50
PCB-073		NotFnd	<0.56	0.56	U		0.50
PCB-043		NotFnd	<0.89	0.89	U		0.50
PCB-049/069		17.29	<0.85	0.72	M,R	0.85	0.50
PCB-048		NotFnd	<0.79	0.79	U		0.50
PCB-044/047/065		17.58	5.79	0.74			0.50
PCB-059/062/075		NotFnd	<0.61	0.61	U		0.50
PCB-042		NotFnd	<0.99	0.99	U		0.50
PCB-040/041/071		NotFnd	<0.84	0.84	U		0.50
PCB-064		NotFnd	<0.65	0.65	U		0.50
PCB-072		NotFnd	<0.62	0.62	U		0.50
PCB-068		NotFnd	<0.54	0.54	U		0.50
PCB-057		NotFnd	<0.66	0.66	U		0.50
PCB-058		NotFnd	<0.57	0.57	U		0.50
PCB-067		NotFnd	<0.52	0.52	U		0.50
PCB-063		NotFnd	<0.63	0.63	U		0.50
PCB-061/070/074/076		NotFnd	<0.58	0.58	U		0.50
PCB-066		NotFnd	<0.61	0.61	U		0.50
PCB-055		NotFnd	<0.60	0.60	U		0.50
PCB-056		NotFnd	<0.57	0.57	U		0.50
PCB-060		NotFnd	<0.61	0.61	U		0.50
PCB-080		NotFnd	<0.53	0.53	U		0.50
PCB-079		NotFnd	<0.56	0.56	U		0.50
PCB-078		NotFnd	<0.74	0.74	U		0.50
PCB-081	0.0003	NotFnd	<0.81	0.81	U		0.50
PCB-077	0.0001	NotFnd	<0.82	0.82	U		0.50
PCB-104		NotFnd	<0.30	0.30	U		0.50
PCB-096		NotFnd	<0.53	0.53	U		0.50
PCB-103		NotFnd	<0.82	0.82	U		0.50
PCB-094		NotFnd	<0.76	0.76	U		0.50
PCB-095		19.13	<1.1	0.94	M,R	1.1	0.50
PCB-093/098/100/102		NotFnd	<0.75	0.75	U		0.50

ALS Life Sciences

Laboratory Method Blank Analysis Report

Sample Name	Method Blank	Sampling Date	n/a	Approved: <i>Henna Saeed</i> --e-signature-- 29-Jul-2025
ALS Sample ID	QC-MRG2-2062741-001	Extraction Date	20-Jun-25	
Analysis Method	EPA 1668C	Sample Size	10 g wwt	
Analysis Type	Blank	Percent Moisture	n/a	
Sample Matrix	QC	Split Ratio	1	

Run Information	Run 1
Filename	5-250724A28
Run Date	25-Jul-25 08:36
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg/g wwt
Instrument - Column	HRMS-5 SPBOCTYL291720-01

Target Analytes	TEF (WHO 2001)	Ret. Time	Conc. pg/g wwt	EDL pg/g wwt	Flags	EMPC pg/g wwt	LQL
PCB-088/091		NotFnd	<0.81	0.81	U		0.50
PCB-084		NotFnd	<0.86	0.86	U		0.50
PCB-089		NotFnd	<1.1	1.1	U		0.50
PCB-121		NotFnd	<0.52	0.52	U		0.50
PCB-092		NotFnd	<0.96	0.96	U		0.50
PCB-090/101/113		20.66	<0.99	0.70	M,R	0.99	0.50
PCB-083/099		NotFnd	<0.87	0.87	U		0.50
PCB-112		NotFnd	<0.53	0.53	U		0.50
PCB-086/087/097/109/119/125		NotFnd	<0.56	0.56	U		0.50
PCB-085/110/115/116/117		NotFnd	<0.76	0.76	U		0.50
PCB-082		NotFnd	<1.1	1.1	U		0.50
PCB-111		NotFnd	<0.52	0.52	U		0.50
PCB-120		NotFnd	<0.58	0.58	U		0.50
PCB-108/124		NotFnd	<0.70	0.70	U		0.50
PCB-107		NotFnd	<0.65	0.65	U		0.50
PCB-123	0.00003	NotFnd	<0.85	0.85	U		0.50
PCB-106		NotFnd	<0.80	0.80	U		0.50
PCB-118	0.00003	23.26	<0.71	0.71	M,U	0.54	0.50
PCB-122		NotFnd	<0.96	0.96	U		0.50
PCB-114	0.00003	NotFnd	<0.80	0.80	U		0.50
PCB-105	0.00003	NotFnd	<0.83	0.83	U		0.50
PCB-127		NotFnd	<0.72	0.72	U		0.50
PCB-126	0.1	NotFnd	<1.2	1.2	U		0.50
PCB-155		NotFnd	<0.35	0.35	U		0.50
PCB-152		NotFnd	<0.88	0.88	U		0.50
PCB-150		NotFnd	<0.66	0.66	U		0.50
PCB-136		21.01	<0.83	0.83	U		0.50
PCB-145		NotFnd	<0.71	0.71	U		0.50
PCB-148		NotFnd	<1.2	1.2	U		0.50
PCB-135/151		NotFnd	<1.1	1.1	U		0.50
PCB-154		NotFnd	<0.78	0.78	U		0.50
PCB-144		NotFnd	<1.1	1.1	U		0.50
PCB-147/149		NotFnd	<0.59	0.59	U		0.50
PCB-134/143		NotFnd	<0.85	0.85	U		0.50
PCB-139/140		NotFnd	<0.62	0.62	U		0.50
PCB-131		NotFnd	<0.85	0.85	U		0.50
PCB-142		NotFnd	<0.84	0.84	U		0.50
PCB-132		NotFnd	<0.68	0.68	U		0.50
PCB-133		NotFnd	<0.75	0.75	U		0.50
PCB-165		NotFnd	<0.49	0.49	U		0.50
PCB-146		NotFnd	<0.61	0.61	U		0.50
PCB-161		NotFnd	<0.50	0.50	U		0.50
PCB-153/168		NotFnd	<0.51	0.51	U		0.50
PCB-141		NotFnd	<0.65	0.65	U		0.50
PCB-130		NotFnd	<0.84	0.84	U		0.50
PCB-137/164		NotFnd	<0.54	0.54	U		0.50
PCB-129/138/163		NotFnd	<0.67	0.67	U		0.50
PCB-160		NotFnd	<0.42	0.42	U		0.50
PCB-158		NotFnd	<0.40	0.40	U		0.50
PCB-128/166		NotFnd	<0.54	0.54	U		0.50
PCB-159		NotFnd	<0.44	0.44	U		0.50
PCB-162		NotFnd	<0.45	0.45	U		0.50
PCB-167	0.00003	NotFnd	<0.49	0.49	U		0.50
PCB-156/157	0.00003	NotFnd	<0.70	0.70	U		0.50
PCB-169	0.03	NotFnd	<0.77	0.77	U		0.50
PCB-188		NotFnd	<0.34	0.34	U		0.50
PCB-179		NotFnd	<0.48	0.48	U		0.50
PCB-184		NotFnd	<0.40	0.40	U		0.50
PCB-176		NotFnd	<0.49	0.49	U		0.50
PCB-186		NotFnd	<0.45	0.45	U		0.50
PCB-178		NotFnd	<0.68	0.68	U		0.50
PCB-175		NotFnd	<0.67	0.67	U		0.50
PCB-187		NotFnd	<0.54	0.54	U		0.50
PCB-182		NotFnd	<0.57	0.57	U		0.50
PCB-183		NotFnd	<0.59	0.59	U		0.50
PCB-185		NotFnd	<0.58	0.58	U		0.50
PCB-174		NotFnd	<0.63	0.63	U		0.50
PCB-177		NotFnd	<0.64	0.64	U		0.50
PCB-181		NotFnd	<0.59	0.59	U		0.50
PCB-171/173		NotFnd	<0.67	0.67	U		0.50
PCB-172		NotFnd	<0.62	0.62	U		0.50

ALS Life Sciences

Laboratory Method Blank Analysis Report

Sample Name	Method Blank	Sampling Date	n/a	Approved: <i>Henna Saeed</i> --e-signature-- 29-Jul-2025
ALS Sample ID	QC-MRG2-2062741-001	Extraction Date	20-Jun-25	
Analysis Method	EPA 1668C	Sample Size	10 g wwt	
Analysis Type	Blank	Percent Moisture	n/a	
Sample Matrix	QC	Split Ratio	1	

Run Information	Run 1
Filename	5-250724A28
Run Date	25-Jul-25 08:36
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg/g wwt
Instrument - Column	HRMS-5 SPBOCTYL291720-01

Target Analytes	TEF (WHO 2001)	Ret. Time	Conc. pg/g wwt	EDL pg/g wwt	Flags	EMPC pg/g wwt	LQL
PCB-192	0.00003	NotFnd	<0.47	0.47	U		0.50
PCB-180/193		NotFnd	<0.51	0.51	U		0.50
PCB-191		NotFnd	<0.47	0.47	U		0.50
PCB-170		NotFnd	<0.66	0.66	U		0.50
PCB-190		NotFnd	<0.37	0.37	U		0.50
PCB-189		NotFnd	<0.77	0.77	U		0.50
PCB-202		NotFnd	<0.45	0.45	U		0.50
PCB-201		NotFnd	<0.61	0.61	U		0.50
PCB-204		NotFnd	<0.60	0.60	U		0.50
PCB-197		NotFnd	<0.53	0.53	U		0.50
PCB-200		NotFnd	<0.66	0.66	U		0.50
PCB-198/199		NotFnd	<0.82	0.82	U		0.50
PCB-196		NotFnd	<0.86	0.86	U		0.50
PCB-203		NotFnd	<0.69	0.69	U		0.50
PCB-195		NotFnd	<1.1	1.1	U		0.50
PCB-194		NotFnd	<1.0	1.0	U		0.50
PCB-205		NotFnd	<1.5	1.5	U		0.50
PCB-208		NotFnd	<1.4	1.4	U		0.50
PCB-207		NotFnd	<1.8	1.8	U		0.50
PCB-206		NotFnd	<3.7	3.7	U		0.50
PCB-209	NotFnd	<1.0	1.0	U		0.50	
Extraction Standards	pg	Time	% Rec	Limits			
13C12-PCB-001	2000	8.96	45	5-145			
13C12-PCB-003	2000	10.49	37	5-145			
13C12-PCB-004	2000	10.65	51	5-145			
13C12-PCB-015	2000	14.30	40	5-145			
13C12-PCB-019	2000	12.65	67	5-145			
13C12-PCB-037	2000	18.24	41	5-145			
13C12-PCB-054	2000	14.50	67	5-145			
13C12-PCB-081	2000	21.81	36	10-145			
13C12-PCB-077	2000	22.12	35	10-145			
13C12-PCB-104	2000	17.53	51	10-145			
13C12-PCB-123	2000	23.11	38	10-145			
13C12-PCB-118	2000	23.28	41	10-145			
13C12-PCB-114	2000	23.58	38	10-145			
13C12-PCB-105	2000	23.93	35	10-145			
13C12-PCB-126	2000	25.52	30	10-145			
13C12-PCB-155	2000	20.51	50	10-145			
13C12-PCB-167	2000	26.41	44	10-145			
13C12-PCB-156/157	4000	27.05	43	10-145			
13C12-PCB-169	2000	28.69	32	10-145			
13C12-PCB-188	2000	23.51	55	10-145			
13C12-PCB-189	2000	29.97	33	10-145			
13C12-PCB-202	2000	26.28	61	10-145			
13C12-PCB-205	2000	31.35	44	10-145			
13C12-PCB-208	2000	29.70	70	10-145			
13C12-PCB-206	2000	32.41	46	10-145			
13C12-PCB-209	2000	33.53	43	10-145			
Cleanup Standards							
13C12-PCB-028	2000	16.00	116	5-145			
13C12-PCB-111	2000	22.03	85	10-145			
13C12-PCB-178	2000	25.09	105	10-145			

ALS Life Sciences

Laboratory Method Blank Analysis Report

Sample Name	Method Blank	Sampling Date	n/a	Approved: Henna Saeed --e-signature-- 29-Jul-2025
ALS Sample ID	QC-MRG2-2062741-001	Extraction Date	20-Jun-25	
Analysis Method	EPA 1668C	Sample Size	10 g wwt	
Analysis Type	Blank	Percent Moisture	n/a	
Sample Matrix	QC	Split Ratio	1	

Run Information	Run 1
Filename	5-250724A28
Run Date	25-Jul-25 08:36
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg/g wwt
Instrument - Column	HRMS-5 SPBOCTYL291720-01

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg/g wwt	EDL pg/g wwt	Flags	EMPC pg/g wwt	LQL
Homologue Group Totals							
Total MonoCB			3.28	0.42	J		10
Total DiCB			19.8	0.89	J		20
Total TriCB			5.55	0.46	J		20
Total TetraCB			9.14	0.34	J		40
Total PentaCB			2.09	0.30	J		40
Total HexaCB			<0.35	0.35	U		40
Total HeptaCB			<0.34	0.34	U		20
Total OctaCB			<0.45	0.45	U		20
Total NonaCB			<1.4	1.4	U		10
DecaCB			<1.0	1.0	U		10
Total PCB			39.9		J		80
Toxic Equivalency - (WHO 2005)							
Lower Bound PCB TEQ			0.00				
Mid Point PCB TEQ			0.0718				
Upper Bound PCB TEQ			0.144				

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor
LQL	Indicates the Toxic Equivalency Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that the analyte was positively identified. The associated numerical result is an estimate.
R	Indicates that the ion abundance ratio for this analyte did not meet the control limit. The reported value represents an estimated concentration.
EMPC	Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure

ALS Life Sciences

Laboratory Control Sample Analysis Report

Sample Name	Laboratory Control Sample	Sampling Date	n/a	Approved: Henna Saeed --e-signature-- 29-Jul-2025
ALS Sample ID	QC-MRG2-2062741-002	Extraction Date	20-Jun-25	
Analysis Method	EPA 1668C	Sample Size	1 n/a	
Analysis Type	LCS	Percent Moisture	n/a	
Sample Matrix	QC	Split Ratio	1	

Run Information	Run 1
Filename	5-250724A26
Run Date	25-Jul-25 07:12
Final Volume	25 ul
Dilution Factor	1
Analysis Units	% Rec
Instrument - Column	HRMS-5 SPBOCTYL291720-01

Target Analytes	pg	Ret. Time	% Rec	Limits	Flags
PCB-001	1000	8.97	111	60-135	
PCB-003	1000	10.49	107	60-135	
PCB-004	1000	10.66	103	60-135	
PCB-015	1000	14.31	101	60-135	
PCB-019	1000	12.66	92	60-135	
PCB-037	1000	18.25	96	60-135	
PCB-054	1000	14.51	96	60-135	
PCB-081	1000	21.82	89	60-135	
PCB-077	1000	22.13	91	60-135	
PCB-104	1000	17.54	95	60-135	
PCB-123	1000	23.12	102	60-135	
PCB-118	1000	23.29	89	60-135	
PCB-114	1000	23.59	100	60-135	
PCB-105	1000	23.94	92	60-135	
PCB-126	1000	25.52	98	60-135	
PCB-155	1000	20.52	95	60-135	
PCB-167	1000	26.42	99	60-135	
PCB-156/157	2000	27.06	94	60-135	
PCB-169	1000	28.70	94	60-135	
PCB-188	1000	23.53	96	60-135	
PCB-189	1000	29.98	106	60-135	
PCB-202	1000	26.31	103	60-135	
PCB-205	1000	31.36	112	60-135	
PCB-208	1000	29.72	95	60-135	
PCB-206	1000	32.44	93	60-135	
PCB-209	1000	33.54	119	60-135	
Extraction Standards					
13C12-PCB-001	2000	8.96	66	15-145	
13C12-PCB-003	2000	10.49	55	15-145	
13C12-PCB-004	2000	10.65	74	15-145	
13C12-PCB-015	2000	14.30	64	15-145	
13C12-PCB-019	2000	12.65	100	15-145	
13C12-PCB-037	2000	18.24	79	15-145	
13C12-PCB-054	2000	14.49	106	15-145	
13C12-PCB-081	2000	21.81	67	40-145	
13C12-PCB-077	2000	22.12	67	40-145	
13C12-PCB-104	2000	17.53	86	40-145	
13C12-PCB-123	2000	23.09	67	40-145	
13C12-PCB-118	2000	23.28	74	40-145	
13C12-PCB-114	2000	23.58	68	40-145	
13C12-PCB-105	2000	23.93	66	40-145	
13C12-PCB-126	2000	25.51	55	40-145	
13C12-PCB-155	2000	20.51	85	40-145	
13C12-PCB-167	2000	26.41	77	40-145	
13C12-PCB-156/157	4000	27.05	76	40-145	
13C12-PCB-169	2000	28.70	60	40-145	
13C12-PCB-188	2000	23.51	107	40-145	
13C12-PCB-189	2000	29.97	61	40-145	
13C12-PCB-202	2000	26.28	105	40-145	
13C12-PCB-205	2000	31.35	78	40-145	
13C12-PCB-208	2000	29.70	122	40-145	
13C12-PCB-206	2000	32.42	85	40-145	
13C12-PCB-209	2000	33.53	75	40-145	
Cleanup Standards					
13C12-PCB-028	2000	16.00	107	15-145	
13C12-PCB-111	2000	22.03	84	40-145	
13C12-PCB-178	2000	25.09	108	40-145	



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NA-FM-0326a v09 Front04 January 2014

Appendix 2. 2025 Wildlife research permit and collection license.



#25-341

General Permit - GP

RESEARCH PERMIT
FEE \$ NIL

Region: Upper Athabasca

PERMITTEE: Lawrence M Brusnyk: Wildland Management Consultants Ltd)

ADDRESS: 50345 Range Road 222: Leduc County: AB T0B 3M2

AUTHORIZED TO: Live-trap and release red-backed voles in the vicinity of Swan Hills Treatment Centre (age: sex: ear tag with a numbered aluminum tag) Non-target species will be identified and released) Holder is also authorized to kill up to 36 southern red-backed voles for tissue sampling)

DATE OF ISSUE: May 16: 2025

DATE OF EXPIRY: December 31: 2025


Signature of Permittee



Kristie Derkson
Provincial Wildlife Habitat
Biologist
Resource Stewardship Division: Fish and Wildlife Stewardship
Branch
Alberta Environment and Protected Areas

IN ACCORDANCE WITH: The approved research plan (application # 29675165) and Class Protocol(s) #007

Class Protocols are reviewed by the Alberta Wildlife Animal Care Committee and approved by the Director of Fish and Wildlife Policy) Class Protocols are available at <http://aep.alberta.ca/fish-wildlife/wildlife-research-collection/default.aspx>

Conditions:

- 1) The Permit is subject to all conditions listed in the attached Appendix 1)
- 2) All aspects of class protocol 007 must be followed including continual evaluation of mitigation as it relates to mortality rates.
- 3) Due to high mortality rates in 2023 and 24 traps should be placed inside a protective cover such as a white cardboard sleeve or plastic milk carton. These covers help to keep the animal dry during periods of precipitation, reflect the daytime sun to help prevent heat stress, and provide additional insulation in cooler temperatures.
- 4) Should trapping be halted due to higher than expected mortality rates the Sr. Bio (Vicki Trim - Vicki.Trim@gov.ab.ca) must be contacted to discuss additional mitigation and confirm if trapping can be continued.
- 5) Traps must be checked a minimum of twice daily, once early in the morning and once late afternoon. Due to high shrew mortality in 2023 and 24 traps should be checked more frequently (every 1.5 to 2 hours) to minimize mortality.

Hailey Dunsmire (field lead with 14 live-trapping sessions of experience), Taylor Whidden (field assistant with 4 live-trapping sessions of experience), Daryl Jacura (field assistant with 1 live-trapping session of experience), Daniel Bovenshen (field assistant with 0 live-trapping sessions of experience) and/or other staff as required. As in most previous years, Lawrence Brusnyk will initiate each live-trapping session with the field crew to ensure that the correct procedures for live-trap placement and live-animal handling are correctly followed. With the exception of Daniel Bovenshen, all named personnel have at least 2 snap-trapping sessions of experience.

**COLLECTION LICENCE
FEE \$ N L**

L cence - CN

NAME: Lawrence M Brusnyk Wildland Management Consultants Ltd

Region: Upper Athabasca

ADDRESS: 50345 Range Road 222 Leduc County AB T0B 3M2

s authorized) sub@ect to the conditions of this licence) and in accordance with the approved research plan # 29675165) to hunt* or collect) the following wildlife species: Small mammals (targeting red-backed voles)

This Licence authorizes the use of the following equipment and methods: Aluminum non-folding Sherran live traps and wooden Victor metal pedal snap traps

This Licence is valid (location): Upper Athabasca

EFFECTIVE DATE: May 16 2025

DATE OF EXPIRY: December 31 2025

Date of issue: May 16 2025

Signature of Licencee (not valid until signed by the Licencee)

L cence must be carried while hunting or collecting.



Kristie Derkson
Provincial Wildlife Habitat Biologist
Resource Stewardship Division) Fish and Wildlife Stewardship
Branch
Alberta Environment and Protected Areas

The meaning of the word 'hunt' is inclusive of activities within the definition of 'hunt' in the Wildlife Act except that the activity authorized by this licence is limited to what is expressly stated in it and, to be lawful, that activity must occur in accordance with the approved research plan and licence conditions.



Appendix 1 Research Permit General Permit Conditions

Addendum to Research Permit #25-341

- 1 The permit is valid only for research and collection activities in the specific area and for the dates identified on the permit.
- 2 All research must be conducted according to the approved Research Plan (the approved application) along with any special conditions outlined on the permit and/or licence= all captured animals must be handled in a humane manner and according any additional approvals or instructions provided by the Alberta Wildlife Animal Care Committee.
- 3 Animals captured using immobilization drugs must follow the Chemical Immobilization of Wildlife: Drug Volume Calculation TablesC [httpsC //www. alberta. ca/system/files/custom_downloaded_images/ep-chemical-immobilization-drug-calculation. pdf](https://www.alberta.ca/system/files/custom_downloaded_images/ep-chemical-immobilization-drug-calculation.pdf)
- 4 For all projects, a report of activities from the past year is required before permits will be renewed. If the project has finished and the permit will not be renewed, the report is due within 30 days of the expiry of the permit. Reports are to be uploaded via the Online Permitting and Clearance system (OPaC) [httpsC //www. opac. alberta. ca/](https://www.opac.alberta.ca/), and must includeC
 - a) A Progress Report with a general summary of project activities
 - b) All wildlife observations made during the project, uploaded via OPaC using eitherC
 - i) a FWMIS Load Form (for the appropriate data type), or
 - ii) where USFWS bands are used in the project, a BANDIT digital export. NoteC Banding data locations are to be provided as Latitude/Longitude in Degrees-Minutes-Seconds.

FWMIS.xls digital files can be accessed at the following web siteC
[httpsC //www. alberta. ca/wildlife-loadforms. aspx](https://www.alberta.ca/wildlife-loadforms.aspx)

 - c) Any accidental mortalities, oversampling exceeding 1 0%, and incidental captures.
 - d) If radio telemetry is a component of the research, the report must include the following information:
 - i) frequencies used, date, general location, species, transmitter type, manufacturer, and expected transmitter life.
 - ii) last known whereabouts of transmitters still deployed.
- 5 Notwithstanding the authorization that this permit confers, while conducting wildlife research activities, the permit holder is responsible for the following:
 - a) For activities in any Provincial Park, Provincial Recreation Area, Wildland Provincial Park, Willmore Wilderness Park, Ecological Reserve, Heritage Rangeland, Natural Area, or Wilderness Area, additional approvals for access may be required= please contact your local Alberta Environment and Protected Areas, Parks Division authority or visit [httpsC //albertaparks. ca/albertaparksca/science -research/](https://albertaparks.ca/albertaparksca/science-research/)
 - b) The issuance of this Permit does not exempt the permit holder from any other Canadian Laws that might otherwise apply, including, but not limited to, requirements under the federal Migratory Birds Convention Act or Species at Risk Act.
 - c) This Permit does not exempt the Permit Holder from the need to obtain permission to access private or leased land.
 - d) The Permit Holder is responsible for ensuring that public safety is not endangered by activities associated with the project.
 - e) The Permit Holder may be held accountable for damages to resources or property arising directly or indirectly from the project.

Appendix 3. Results of chemical analyses for PAHs (mg/kg) in red-backed voles in the SHTC study area, June/February 2000, February 2002, February 2003, May 2019, May 2024, and May 2025.

Target Analytes	Plot ¹									
	11	109	4	110	114	123	117	402	70	71
February 2000:										
Acenaphthene	<0.01	.. ²	<0.01	-	<0.01	-	-	<0.01	<0.01	-
Acenaphthylene	<0.01	-	<0.01	-	<0.01	-	-	<0.02	<0.01	-
Benzo(a)pyrene	<0.01	-	<0.01	-	<0.01	-	-	<0.01	<0.01	-
Benzo(b)fluoranthene	<0.02	-	<0.02	-	<0.02	-	-	<0.02	<0.02	-
Benzo(ghi)perylene	<0.01	-	<0.01	-	<0.01	-	-	<0.01	<0.01	-
B(a)A/Chrysene/B(c)P	<0.01	-	<0.01	-	<0.01	-	-	<0.01	<0.01	-
Benzo(b/j/k)fluoranthene	<0.01	-	<0.01	-	<0.01	-	-	<0.01	<0.01	-
7,12-Dimethylbenz(a)anthracene	<0.01	-	<0.01	-	<0.01	-	-	<0.01	<0.01	-
Dibenzo(a,h)anthracene	<0.01	-	<0.01	-	<0.01	-	-	<0.01	<0.01	-
Fluoranthene	<0.01	-	<0.01	-	<0.01	-	-	<0.01	<0.01	-
Fluorene	0.02^{3, 4}	-	0.02	-	0.01	-	-	0.01	0.01	-
Indeno(c,d-123)pyrene	<0.01	-	<0.01	-	<0.01	-	-	<0.01	<0.01	-
3-Methylcholanthrene	<0.01	-	<0.01	-	<0.01	-	-	<0.01	<0.01	-
Phenanthrene/anthracene	0.01	-	0.03	-	<0.01	-	-	0.01	0.01	-
Napthalene	<0.02	-	<0.02	-	<0.02	-	-	<0.02	<0.02	-
Pyrene	<0.01	-	<0.01	-	<0.01	-	-	<0.01	<0.01	-
2000 February PAH Totals (n=16)	0.108	-	0.13	-	0.085	-	-	0.105	0.1	-
June 2000:										
Acenaphthene	-	-	-	-	-	-	-	-	<0.01	<0.01
Acenaphthylene	-	-	-	-	-	-	-	-	<0.01	<0.01
Benzo(a)anthracene/Chrysene	-	-	-	-	-	-	-	-	<0.01	<0.01
Benzo(a)pyrene	-	-	-	-	-	-	-	-	<0.01	<0.01
Benzo(b)fluoranthene	-	-	-	-	-	-	-	-	<0.01	<0.01
Benzo(ghi)perylene	-	-	-	-	-	-	-	-	<0.01	<0.01

Target Analytes	Plot ¹									
	11	109	4	110	114	123	117	402	70	71
Dibenzo(a,h)anthracene	-	-	-	-	-	-	-	-	<0.01	<0.01
Fluoranthene	-	-	-	-	-	-	-	-	<0.01	<0.01
Fluorene	-	-	-	-	-	-	-	-	<0.01	0.01
Phenanthrene/anthracene	-	-	-	-	-	-	-	-	<0.01	<0.01
Napthalene	-	-	-	-	-	-	-	-	<0.01	<0.01
Methyl napthalene	-	-	-	-	-	-	-	-	<0.01	<0.01
Pyrene	-	-	-	-	-	-	-	-	<0.01	<0.01
2000 June PAH Totals (n=13)	-	-	-	-	-	-	-	-	0.065	0.07
February 2002:										
Acenaphthene	<0.02	-	<0.02	-	<0.02	-	-	<0.02	<0.02	-
Acenaphthylene	<0.02	-	<0.02	-	<0.02	-	-	<0.02	<0.02	-
Anthracene	<0.02	-	<0.02	-	<0.02	-	-	<0.02	<0.02	-
Benzo(a)anthracene	<0.02	-	<0.02	-	<0.02	-	-	<0.02	<0.02	-
Benzo(a)pyrene	<0.02	-	<0.02	-	<0.02	-	-	<0.02	<0.02	-
Benzo(b)fluoranthene	<0.02	-	<0.02	-	<0.02	-	-	<0.02	<0.02	-
Benzo(k)fluoranthene	<0.02	-	<0.02	-	<0.02	-	-	<0.02	<0.02	-
Benzo(ghi)perylene	<0.02	-	<0.02	-	<0.02	-	-	<0.02	<0.02	-
Biphenyl	<0.04	-	<0.04	-	<0.04	-	-	<0.04	<0.04	-
C2 sub'd B(a)A/chrysene	<0.04	-	<0.04	-	<0.04	-	-	<0.04	<0.04	-
C2 sub'd B(b&k)F/B(a)P	<0.04	-	<0.04	-	<0.04	-	-	<0.04	<0.04	-
C2 sub'd biphenyl	<0.04	-	<0.04	-	<0.04	-	-	<0.04	<0.04	-
C2 sub'd dibenzothiophene	<0.04	-	<0.04	-	<0.04	-	-	<0.04	<0.04	-
C2 sub'd fluorene	<0.04	-	<0.04	-	<0.04	-	-	<0.04	<0.04	-
C2 sub'd napthalene	<0.04	-	<0.04	-	<0.04	-	-	<0.04	<0.04	-
C2 sub'd phenanthrene/anth.	<0.04	-	<0.04	-	<0.04	-	-	<0.04	<0.04	-
C3 sub'd dibenzothiophene	<0.04	-	<0.04	-	<0.04	-	-	<0.04	<0.04	-
C3 sub'd napthalene	<0.04	-	<0.04	-	<0.04	-	-	<0.04	<0.04	-
C3 sub'd phenanthrene/anth.	<0.04	-	<0.04	-	<0.04	-	-	<0.04	<0.04	-

Target Analytes	Plot ¹									
	11	109	4	110	114	123	117	402	70	71
C4 sub'd dibenzothiophene	<0.04	-	<0.04	-	<0.04	-	-	<0.04	<0.04	-
C4 sub'd naphthalene	<0.04	-	<0.04	-	<0.04	-	-	<0.04	<0.04	-
C4 sub'd phenanthrene/anth.	<0.04	-	<0.04	-	<0.04	-	-	<0.04	<0.04	-
Chrysene	<0.02	-	<0.02	-	<0.02	-	-	<0.02	<0.02	-
Dibenzo(a,h)anthracene	<0.02	-	<0.02	-	<0.02	-	-	<0.02	<0.02	-
Dibenzothiophene	<0.02	-	<0.02	-	<0.02	-	-	<0.02	<0.02	-
Fluoranthene	<0.02	-	<0.02	-	<0.02	-	-	<0.02	<0.02	-
Fluorene	<0.02	-	<0.02	-	<0.02	-	-	<0.02	<0.02	-
Indeno(c,d-123)pyrene	<0.02	-	<0.02	-	<0.02	-	-	<0.02	<0.02	-
Methyl B(a)Achrysene	<0.04	-	<0.04	-	<0.04	-	-	<0.04	<0.04	-
Methyl B(b&k)F/B(a)P	<0.04	-	<0.04	-	<0.04	-	-	<0.04	<0.04	-
Methyl acenaphthene	<0.04	-	<0.04	-	<0.04	-	-	<0.04	<0.04	-
Methyl biphenyl	<0.04	-	<0.04	-	<0.04	-	-	<0.04	<0.04	-
Methyl dibenzothiophene	<0.04	-	<0.04	-	<0.04	-	-	<0.04	<0.04	-
Methyl fluoranthene/pyrene	<0.04	-	<0.04	-	<0.04	-	-	<0.04	<0.04	-
Methyl fluorene	<0.04	-	<0.04	-	<0.04	-	-	<0.04	<0.04	-
Methyl naphthalene	<0.02	-	<0.02	-	<0.02	-	-	<0.02	<0.02	-
Methyl phenanthrene/anthracene	<0.04	-	<0.04	-	<0.04	-	-	<0.04	<0.04	-
Napthalene	<0.02	-	<0.02	-	<0.02	-	-	<0.02	<0.02	-
Phenanthrene	<0.02	-	<0.02	-	<0.02	-	-	<0.02	<0.02	-
Pyrene	<0.02	-	<0.02	-	<0.02	-	-	<0.02	<0.02	-
2002 February PAH Totals (n=40)	0.62	-	0.62	-	0.62	-	-	0.62	0.62	
February 2003:										
Acenaphthene	<0.02	-	<0.02	-	<0.02	-	-	<0.02	<0.02	-
Acenaphthylene	<0.02	-	<0.02	-	<0.02	-	-	<0.02	<0.02	-
Anthracene	<0.02	-	<0.02	-	<0.02	-	-	<0.02	<0.02	-
Benzo(a)anthracene	<0.02	-	<0.02	-	<0.02	-	-	<0.02	<0.02	-
Benzo(a)pyrene	<0.02	-	<0.02	-	<0.02	-	-	<0.02	<0.02	-

Target Analytes	Plot ¹									
	11	109	4	110	114	123	117	402	70	71
Benzo(b)fluoranthene	<0.02	-	<0.02	-	<0.02	-	-	<0.02	<0.02	-
Benzo(k)fluoranthene	<0.02	-	<0.02	-	<0.02	-	-	<0.02	<0.02	-
Benzo(ghi)perylene	<0.02	-	<0.02	-	<0.02	-	-	<0.02	<0.02	-
Biphenyl	<0.04	-	<0.04	-	<0.04	-	-	<0.04	<0.04	-
C2 sub'd B(a)A/chrysene	<0.04	-	<0.04	-	<0.04	-	-	<0.04	<0.04	-
C2 sub'd B(b&k)F/B(a)P	<0.04	-	<0.04	-	<0.04	-	-	<0.04	<0.04	-
C2 sub'd biphenyl	<0.04	-	<0.04	-	<0.04	-	-	<0.04	<0.04	-
C2 sub'd dibenzothiophene	<0.04	-	<0.04	-	<0.04	-	-	<0.04	<0.04	-
C2 sub'd fluorene	<0.04	-	<0.04	-	<0.04	-	-	<0.04	<0.04	-
C2 sub'd naphthalene	<0.04	-	<0.04	-	<0.04	-	-	<0.04	<0.04	-
C2 sub'd phenanthrene/anth.	<0.04	-	<0.04	-	<0.04	-	-	<0.04	<0.04	-
C3 sub'd dibenzothiophene	<0.04	-	<0.04	-	<0.04	-	-	<0.04	<0.04	-
C3 sub'd naphthalene	<0.04	-	<0.04	-	<0.04	-	-	<0.04	<0.04	-
C3 sub'd phenanthrene/anth.	<0.04	-	<0.04	-	<0.04	-	-	<0.04	<0.04	-
C4 sub'd dibenzothiophene	<0.04	-	<0.04	-	<0.04	-	-	<0.04	<0.04	-
C4 sub'd naphthalene	<0.04	-	<0.04	-	<0.04	-	-	<0.04	<0.04	-
C4 sub'd phenanthrene/anth.	<0.04	-	<0.04	-	<0.04	-	-	<0.04	<0.04	-
Chrysene	<0.02	-	<0.02	-	<0.02	-	-	<0.02	<0.02	-
Dibenzo(a,h)anthracene	<0.02	-	<0.02	-	<0.02	-	-	<0.02	<0.02	-
Dibenzothiophene	<0.02	-	<0.02	-	<0.02	-	-	<0.02	<0.02	-
Fluoranthene	<0.02	-	<0.02	-	<0.02	-	-	<0.02	<0.02	-
Fluorene	<0.02	-	<0.02	-	<0.02	-	-	<0.02	<0.02	-
Indeno(c,d-123)pyrene	<0.02	-	<0.02	-	<0.02	-	-	<0.02	<0.02	-
Methyl B(a)Achrysene	<0.04	-	<0.04	-	<0.04	-	-	<0.04	<0.04	-
Methyl B(b&k)F/B(a)P	<0.04	-	<0.04	-	<0.04	-	-	<0.04	<0.04	-
Methyl acenaphthene	<0.04	-	<0.04	-	<0.04	-	-	<0.04	<0.04	-
Methyl biphenyl	<0.04	-	<0.04	-	<0.04	-	-	<0.04	<0.04	-
Methyl dibenzothiophene	<0.04	-	<0.04	-	<0.04	-	-	<0.04	<0.04	-

Target Analytes	Plot ¹									
	11	109	4	110	114	123	117	402	70	71
Methyl fluoranthene/pyrene	<0.04	-	<0.04	-	<0.04	-	-	<0.04	<0.04	-
Methyl fluorene	<0.04	-	<0.04	-	<0.04	-	-	<0.04	<0.04	-
Methyl naphthalene	<0.02	-	<0.02	-	<0.02	-	-	<0.02	<0.02	-
Methyl phenanthrene/anthracene	<0.04	-	<0.04	-	<0.04	-	-	<0.04	<0.04	-
Napthalene	<0.02	-	<0.02	-	<0.02	-	-	<0.02	<0.02	-
Phenanthrene	<0.02	-	<0.02	-	<0.02	-	-	<0.02	<0.02	-
Pyrene	<0.02	-	<0.02	-	<0.02	-	-	<0.02	<0.02	-
2003 February PAH Totals (n=40)	0.62		0.62		0.62			0.62	0.62	
May 2019:⁴										
Acenaphthene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Acenaphthylene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Anthracene	0.0003	<0.0002	0.00031	<0.0002	<0.0002	0.00032	0.0002	<0.0002	0.0003	<0.0002
Benzo(a)anthracene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzo(a)pyrene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzo(b)fluoranthene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzo(e)Pyrene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzo(ghi)perylene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzo(k)fluoranthene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Biphenyl	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
C1-Acenaphthenes	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
C1-Benz(a)anthracenes/Chrysenes	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
C1-Benzofluoranthenes/BAPs	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
C1-Biphenyl	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
C1-Dibenzothiophenes	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
C1-Fluoranthenes/Pyrenes	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
C1-Fluorenes	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
C1-Naphthalenes	0.00086	0.00077	0.00088	0.00072	0.00087	0.00092	0.00078	0.00062	0.0009	0.00058
C1-Phenanthrenes/Anthracenes	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002

Target Analytes	Plot ¹									
	11	109	4	110	114	123	117	402	70	71
C2-Benz(a)anthracenes/Chrysenes	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
C2-Benzofluoranthenes/BAPs	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
C2-Biphenyl	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
C2-Dibenzothiophenes	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
C2-Fluoranthenes/Pyrenes	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
C2-Fluorenes	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
C2-Naphthalenes	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
C2-Phenanthrenes/Anthracenes	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
C3-Benz(a)anthracenes/Chrysenes	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
C3-Dibenzothiophenes	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
C3-Fluoranthenes/Pyrenes	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
C3-Fluorenes	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
C3-Naphthalenes	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
C3-Phenanthrenes/Anthracenes	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
C4-Benz(a)anthracenes/Chrysenes	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
C4-Dibenzothiophenes	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
C4-Fluoranthenes/Pyrenes	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
C4-Naphthalenes	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
C4-Phenanthrenes/Anthracenes	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Chrysene/Triphenylene	0.00036	0.00036	0.0006	0.00044	0.00053	0.00078	0.00041	0.00023	0.00071	0.00073
Dibenz(ah)anthracene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Dibenzothiophene	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Fluoranthene	0.00026	0.00028	0.00042	0.00027	0.00026	0.00066	0.00034	<0.0002	0.0005	<0.0002
Fluorene	0.00026	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Indeno(1,2,3-cd) pyrene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perylene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Naphthalene	0.00096	0.00084	0.00088	0.00085	0.00099	0.001	0.00094	0.00084	0.00103	0.00094
Phenanthrene	0.00062	0.00035	0.00045	0.00039	0.00046	0.00053	0.00048	0.00035	0.0005	0.00038

Target Analytes	Plot ¹									
	11	109	4	110	114	123	117	402	70	71
Pyrene	<0.0002	<0.0002	0.00025	<0.0002	<0.0002	0.00027	<0.0002	<0.0002	0.00023	<0.0002
Quinoline	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Retene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
1,2,6-Trimethylphenanthrene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
1,2-Dimethylnaphthalene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
1,4,6,7-Tetramethylnaphthalene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
1,7-Dimethylfluorene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
1,7-Dimethylphenanthrene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
1,8-Dimethylphenanthrene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
1-Methylchrysene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
1-Methylfluoranthene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
1-Methylnaphthalene	0.00029	0.00024	0.00027	0.00023	0.00029	0.00031	0.00025	0.00021	0.00032	<0.0002
1-Methylphenanthrene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
2,3,5-Trimethylnaphthalene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
2,3,6-Trimethylnaphthalene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
2,6-Dimethylnaphthalene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
2,6-Dimethylphenanthrene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
2/3-Methylbenzothiophene	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
2-Methylantracene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
2-Methylfluorene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
2-Methylnaphthalene	0.00054	0.00049	0.00055	0.00046	0.00054	0.00058	0.0005	0.00041	0.00059	0.00035
2-Methylphenanthrene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
3,11/5,9-Dimethylchrysene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
3,6-Dimethylphenanthrene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
3-Methylfluoranthene/Benzo(a)fluorene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
3-Methylphenanthrene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
4,6-Dimethyldibenzothiophene	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
5/6-Methylchrysene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002

Target Analytes	Plot ¹									
	11	109	4	110	114	123	117	402	70	71
7,12-Dimethylbenz(a)anthracene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
7-Methylbenzo(a)pyrene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
9/4-Methylphenanthrene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
2019 PAH Totals (n=78)	0.01415	0.01323	0.01431	0.01326	0.01384	0.01507	0.0137	0.01266	0.01479	0.01308
May 2024:										
Acenaphthene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00019	<0.0002	<0.0002	<0.0002
Acenaphthylene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00019	<0.0002	<0.0002	<0.0002
Anthracene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00019	<0.0002	<0.0002	<0.0002
Benzo(a)anthracene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00019	<0.0002	<0.0002	<0.0002
Benzo(a)pyrene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00019	<0.0002	<0.0002	<0.0002
Benzo(b)fluoranthene	0.00046	0.00061	0.00062	0.00063	0.00058	0.00076	<0.00019	<0.0002	0.00053	<0.0002
Benzo(e)Pyrene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00019	<0.0002	<0.0002	<0.0002
Benzo(ghi)perylene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00019	<0.0002	<0.0002	<0.0002
Benzo(k)fluoranthene	0.00117	0.00128	0.00080	0.00105	0.00109	0.00092	<0.00019	<0.0002	<0.0002	<0.0002
Biphenyl	0.00052	0.00051	0.00047	0.00045	0.00067	0.00089	<0.00019	0.00047	0.00058	0.00064
C1-Acenaphthenes	0.00043	0.00042	<0.0002	<0.0002	0.00049	0.00046	<0.00019	<0.0002	0.00046	0.00046
C1-Benz(a)anthracenes/Chrysenes	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00019	<0.0002	<0.0002	<0.0002
C1-Benzofluoranthenes/BAPs	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00019	<0.0002	<0.0002	<0.0002
C1-Biphenyl	0.00196	0.00167	0.00161	0.00123	0.00175	0.00193	0.00791	0.00129	0.00205	0.00188
C1-Dibenzothiophenes	0.00066	0.00072	0.00052	0.00060	0.00052	0.00083	<0.00019	0.00041	0.00067	0.00053
C1-Fluoranthenes/Pyrenes	<0.0002	<0.0002	0.00061	<0.0002	0.00056	0.00074	<0.00019	<0.0002	<0.0002	0.00043
C1-Fluorenes	0.00086	0.00074	0.00095	0.00057	0.00091	0.00080	<0.00019	0.00072	0.00096	0.00085
C1-Naphthalenes	0.00952	0.00635	0.00307	0.00410	0.01150	0.00977	0.01430	0.00344	0.00819	0.01480
C1-Phenanthrenes/Anthracenes	0.00214	0.00239	0.00297	0.00218	0.00280	0.00316	0.00985	0.00255	0.00253	0.00274
C2-Benz(a)anthracenes/Chrysenes	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00019	<0.0002	<0.0002	<0.0002
C2-Benzofluoranthenes/BAPs	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00019	<0.0002	<0.0002	<0.0002
C2-Biphenyl	0.00056	<0.0002	<0.0002	<0.0002	<0.0002	0.00064	<0.00019	0.00031	<0.0002	<0.0002
C2-Dibenzothiophenes	0.00880	0.01600	0.00939	0.01060	0.00508	0.01680	<0.00019	<0.0002	0.01110	0.00087
C2-Fluoranthenes/Pyrenes	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00019	<0.0002	<0.0002	<0.0002
C2-Fluorenes	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00019	<0.0002	<0.0002	<0.0002
C2-Naphthalenes	0.00610	0.00423	0.00301	0.00312	0.00567	0.00713	0.01290	0.00319	0.00547	0.00762

Target Analytes	Plot ¹									
	11	109	4	110	114	123	117	402	70	71
C2-Phenanthrenes/Anthracenes	0.00094	0.00074	0.00140	0.00107	0.00071	0.00129	<0.00019	0.00071	0.00096	0.00097
C3-Benz(a)anthracenes/Chrysenes	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00019	<0.0002	<0.0002	<0.0002
C3-Dibenzothiophenes	<0.0002	<0.0002	0.00075	<0.0002	<0.0002	<0.0002	<0.00019	0.00057	0.00056	<0.0002
C3-Fluoranthenes/Pyrenes	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00019	<0.0002	<0.0002	<0.0002
C3-Fluorenes	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00019	<0.0002	<0.0002	<0.0002
C3-Naphthalenes	0.00319	0.00339	0.00185	0.00163	0.00320	0.00312	0.00959	0.00163	0.00349	0.00280
C3-Phenanthrenes/Anthracenes	0.00041	<0.0002	0.00049	0.00047	<0.0002	<0.0002	<0.00019	<0.0002	<0.0002	<0.0002
C4-Benz(a)anthracenes/Chrysenes	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00019	<0.0002	<0.0002	<0.0002
C4-Dibenzothiophenes	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00019	<0.0002	<0.0002	<0.0002
C4-Fluoranthenes/Pyrenes	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00019	<0.0002	<0.0002	<0.0002
C4-Naphthalenes	0.00288	0.00289	0.00132	0.00178	0.00224	0.00278	0.00680	0.00102	0.00299	0.00235
C4-Phenanthrenes/Anthracenes	0.00060	0.00049	0.00099	0.00052	0.00059	0.00071	<0.00019	0.00045	0.00050	0.00056
Chrysene/Triphenylene	0.00099	0.00067	0.00147	0.00125	0.00103	0.00174	<0.00019	0.00068	0.00089	0.00100
Dibenz(ah)anthracene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00019	<0.0002	<0.0002	<0.0002
Dibenzothiophene	<0.0002	<0.0002	<0.0002	<0.0002	0.00039	<0.0002	<0.00019	<0.0002	<0.0002	0.00046
Fluoranthene	0.00101	0.00106	0.00176	0.00109	0.00135	0.00116	0.00607	0.00106	0.00128	0.00124
Fluorene	0.00117	0.00103	0.00090	0.00077	0.00136	0.00105	0.00409	0.00094	0.00107	0.00130
Indeno(1,2,3-cd)pyrene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00019	<0.0002	<0.0002	<0.0002
Perylene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00019	<0.0002	<0.0002	<0.0002
Naphthalene	0.01220	0.00607	0.00316	0.00417	0.01790	0.01360	0.02530	0.00427	0.00973	0.01750
Phenanthrene	0.00419	0.00417	0.00431	0.00323	0.00468	0.00392	0.01810	0.00328	0.00470	0.00471
Pyrene	0.00056	0.00066	0.00088	0.00053	0.00074	0.00069	0.00381	0.00069	0.00073	0.00076
Quinoline	0.00178	0.00311	0.00128	0.00154	0.00133	0.00346	0.00452	<0.0002	0.00236	<0.0002
Retene	0.00143	0.00110	0.00250	0.00156	0.00179	0.00214	<0.00019	0.00136	0.00110	0.00141
1,2,6-Trimethylphenanthrene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00019	<0.0002	<0.0002	<0.0002
1,2-Dimethylnaphthalene	0.00088	0.00086	0.00068	0.00066	0.00091	0.00143	<0.00019	0.00077	0.00093	0.00096
1,4,6,7-Tetramethylnaphthalene	0.00048	0.00062	<0.0002	<0.0002	0.00087	0.00076	<0.00019	<0.0002	0.00046	<0.0002
1,7-Dimethylfluorene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00019	<0.0002	<0.0002	<0.0002
1,7-Dimethylphenanthrene	0.00043	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00019	<0.0002	<0.0002	<0.0002
1,8-Dimethylphenanthrene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00019	<0.0002	<0.0002	<0.0002
1-Methylchrysene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00019	<0.0002	<0.0002	<0.0002

Target Analytes	Plot ¹									
	11	109	4	110	114	123	117	402	70	71
1-Methylfluoranthene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00019	<0.0002	<0.0002	<0.0002
1-Methylnaphthalene	0.00389	0.00254	0.00128	0.00161	0.00454	0.00375	0.00548	0.00129	0.00324	0.00601
1-Methylphenanthrene	<0.0002	0.00039	0.00041	<0.0002	0.00047	<0.0002	<0.00019	0.00040	0.00045	0.00057
2,3,5-Trimethylnaphthalene	0.00077	0.00074	0.00048	0.00046	0.00084	0.00087	<0.00019	0.00039	0.00081	0.00083
2,3,6-Trimethylnaphthalene	0.00044	<0.0002	<0.0002	<0.0002	<0.0002	0.00042	<0.00019	<0.0002	<0.0002	<0.0002
2,6-Dimethylnaphthalene	0.00124	0.00096	0.00064	0.00066	0.00131	0.00163	<0.00019	0.00068	0.00112	0.00140
2,6-Dimethylphenanthrene	0.00062	0.00087	0.00112	0.00069	0.00092	0.00113	<0.00019	0.00061	0.00090	0.00078
2/3-Methylbenzothiophene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00019	<0.0002	<0.0002	<0.0002
2-Methylantracene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00019	<0.0002	<0.0002	<0.0002
2-Methylfluorene	<0.0002	0.00112	0.00020	0.00090	0.00141	0.00121	0.00556	0.00127	0.00129	0.00149
2-Methylnaphthalene	0.00753	0.00492	0.00237	0.00312	0.00930	0.00787	0.01170	0.00273	0.00644	0.01170
2-Methylphenanthrene	0.00085	0.00112	0.00110	0.00098	0.00116	0.00112	0.00400	0.00088	0.00103	0.00112
3,11/5,9-Dimethylchrysene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00019	<0.0002	<0.0002	<0.0002
3,6-Dimethylphenanthrene	0.00089	0.00077	0.00154	0.00113	0.00114	0.00107	<0.00019	0.00085	0.00069	0.00086
3-Methylfluoranthene/Benzo(a)fluorene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00019	<0.0002	<0.0002	<0.0002
3-Methylphenanthrene	0.00065	0.00070	0.00075	0.00058	0.00080	0.00086	<0.00019	0.00068	0.00082	0.00081
4,6-Dimethyldibenzothiophene	0.00860	0.01310	0.00793	0.00895	0.00475	0.01430	<0.00019	<0.0002	0.00951	0.00053
5/6-Methylchrysene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00019	<0.0002	<0.0002	<0.0002
7,12-Dimethylbenz(a)anthracene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00019	<0.0002	<0.0002	<0.0002
7-Methylbenzo(a)pyrene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00019	<0.0002	<0.0002	<0.0002
9/4-Methylphenanthrene	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00019	<0.0002	<0.0002	<0.0002
2024 PAH Totals (n=78)	0.09980	0.09720	0.07357	0.07246	0.10515	0.12491	0.16145	0.04876	0.09956	0.10174
May 2025 ⁵										
Acenaphthene	<0.010	<0.010	<0.010	.5	<0.010	-	-	-	<0.010	<0.010
Acenaphthylene	<0.010	<0.010	<0.010	-	<0.010	-	-	-	<0.010	<0.010
Anthracene	<0.010	<0.010	<0.010	-	<0.010	-	-	-	<0.010	<0.010
Benzo(a)anthracene	<0.010	<0.010	<0.010	-	<0.010	-	-	-	<0.010	<0.010
Benzo(a)pyrene	<0.010	<0.010	<0.010	-	<0.010	-	-	-	<0.010	<0.010
Benzo(b)fluoranthene	<0.010	<0.010	<0.010	-	<0.010	-	-	-	<0.010	<0.010
Benzo(bjk)fluoranthene	<0.015	<0.015	<0.015	-	<0.015	-	-	-	<0.015	<0.015
Benzo(e)pyrene	<0.010	<0.010	<0.010	-	<0.010	-	-	-	<0.010	<0.010

Target Analytes	Plot ¹									
	11	109	4	110	114	123	117	402	70	71
Benzo(ghi)perylene	<0.010	<0.010	<0.010	-	<0.010	-	-	-	<0.010	<0.010
Benzo(k)fluoranthene	<0.010	<0.010	<0.010	-	<0.010	-	-	-	<0.010	<0.010
Biphenyl	<0.010	<0.010	<0.010	-	<0.010	-	-	-	<0.010	<0.010
C1-Acenaphthenes	<0.040	<0.040	<0.040	-	<0.040	-	-	-	<0.040	<0.040
C1-Benz(a)anthracenes/Chrysenes	<0.040	<0.040	<0.040	-	<0.040	-	-	-	<0.040	<0.040
C1-Benzofluoranthenes/Benzopyrenes	<0.040	<0.040	<0.040	-	<0.040	-	-	-	<0.040	<0.040
C1-Biphenyls	<0.040	<0.040	<0.040	-	<0.040	-	-	-	<0.040	<0.040
C1-Dibenzothiophenes	<0.040	<0.040	<0.040	-	<0.040	-	-	-	<0.040	<0.040
C1-Fluoranthenes/Pyrenes	<0.040	<0.040	<0.040	-	<0.040	-	-	-	<0.040	<0.040
C1-Fluorenes	<0.040	<0.040	<0.040	-	<0.040	-	-	-	<0.040	<0.040
C1-Phenanthrenes/Anthracenes	<0.040	<0.040	<0.040	-	<0.040	-	-	-	<0.040	<0.040
C2-Benz(a)anthracenes/Chrysenes	<0.040	<0.040	<0.040	-	<0.040	-	-	-	<0.040	<0.040
C2-Benzofluoranthenes/Benzopyrenes	<0.040	<0.040	<0.040	-	<0.040	-	-	-	<0.040	<0.040
C2-Biphenyls	<0.040	<0.040	<0.040	-	<0.040	-	-	-	<0.040	<0.040
C2-Dibenzothiophenes	<0.040	<0.040	<0.040	-	<0.040	-	-	-	<0.040	<0.040
C2-Fluoranthenes/Pyrenes	<0.040	<0.040	<0.040	-	<0.040	-	-	-	<0.040	<0.040
C2-Fluorenes	<0.040	<0.040	<0.040	-	<0.040	-	-	-	<0.040	<0.040
C2-Naphthalenes	<0.040	<0.040	<0.040	-	<0.040	-	-	-	<0.040	<0.040
C2-Phenanthrenes/Anthracenes	<0.040	<0.040	<0.080	-	<0.040	-	-	-	<0.040	<0.040
C3-Benzanthracenes/Chrysenes	<0.040	<0.040	<0.040	-	<0.040	-	-	-	<0.040	<0.040
C3-Dibenzothiophenes	<0.040	<0.040	<0.040	-	<0.040	-	-	-	<0.040	<0.040
C3-Fluoranthenes/Pyrenes	<0.040	<0.040	<0.040	-	<0.040	-	-	-	<0.040	<0.040
C3-Fluorenes	<0.080	<0.080	<0.160	-	<0.040	-	-	-	<0.080	<0.040
C3-Naphthalenes	<0.040	<0.040	<0.040	-	<0.040	-	-	-	<0.040	<0.040
C3-Phenanthrenes/Anthracenes	<0.588	<1.60	<2.09	-	<0.730	-	-	-	<0.810	<0.040
C4-Benzanthracenes/Chrysenes	<0.040	<0.040	<0.040	-	<0.040	-	-	-	<0.040	<0.040
C4-Dibenzothiophenes	<0.040	<0.120	<0.110	-	<0.040	-	-	-	<0.080	<0.040
C4-Fluoranthenes/Pyrenes	<0.040	<0.040	<0.040	-	<0.040	-	-	-	<0.040	<0.040
C4-Naphthalenes	<0.040	<0.040	<0.040	-	<0.040	-	-	-	<0.040	<0.040
C4-Phenanthrenes/Anthracenes	<0.040	<0.160	<0.150	-	<0.040	-	-	-	<0.080	<0.040
Chrysene2	<0.010	<0.010	<0.010	-	<0.010	-	-	-	<0.010	<0.010

Target Analytes	Plot ¹									
	11	109	4	110	114	123	117	402	70	71
Dibenz(ah)anthracene	<0.010	<0.010	<0.010	-	<0.010	-	-	-	<0.010	<0.010
Dibenzothiophene	<0.010	<0.010	<0.010	-	<0.010	-	-	-	<0.010	<0.010
Fluoranthene	<0.010	<0.010	<0.010	-	<0.010	-	-	-	<0.010	<0.010
Fluorene	<0.010	<0.010	<0.010	-	<0.010	-	-	-	<0.010	<0.010
Indeno(1,2,3-cd)pyrene	<0.010	<0.010	<0.010	-	<0.010	-	-	-	<0.010	<0.010
Methylnaphthalene, 1-	<0.010	<0.010	<0.010	-	<0.010	-	-	-	<0.010	<0.010
Methylnaphthalene, 2-	<0.020	<0.020	<0.020	-	<0.020	-	-	-	<0.020	<0.020
Perylene	<0.020	<0.020	<0.020	-	<0.020	-	-	-	<0.020	<0.020
Naphthalene	<0.050	<0.050	<0.050	-	<0.050	-	-	-	<0.050	<0.050
Perylene	<0.010	<0.010	<0.010	-	<0.010	-	-	-	<0.010	<0.010
Phenanthrene	<0.010	<0.010	<0.010	-	<0.010	-	-	-	<0.010	<0.010
Pyrene	<0.010	<0.010	<0.010	-	<0.010	-	-	-	<0.010	<0.010
Retene	<0.010	<0.010	<0.010	-	<0.010	-	-	-	<0.010	<0.010
2025 PAH Totals (n=52)	0.992	1.598	1.893	-	1.043	-	-	-	1.143	0.698

¹ Order of plots (plots 11 [100 m] to 71 [21 km]) indicates increasing distance from the SHTC. ² Analyte not sampled on plot or during a monitoring year. ³ Bold italicized values indicate analyte detected above detection limit. ⁴ ½ the detection limit used to calculate total PAH values/plot in during each monitoring year. ⁵ Plots 110, 123, 117, and 402 were dropped as part of the annual monitoring program in 2025 and instead will now be included as part of subsequent expanded monitoring programs.