FINAL

Appendix C
Compositing Plans

Fish and Crab Compositing Memorandum

Lower Duwamish Waterway Group
City of Seattle / King County / The Boeing Company

MEMORANDUM

To:	Elly Hale, EPA
From:	Windward Environmental LLC, on behalf of LDWG
Subject:	LDW 2023 Periodic Monitoring: Fish and Crab Tissue Compositing Plan
Date:	October 16, 2023

Fish and crab were collected throughout the Lower Duwamish Waterway (LDW) from August 21 to August 25, 2023, in accordance with the periodic monitoring quality assurance project plan (QAPP) (Windward and Anchor QEA 2023). This memorandum presents the compositing plan proposed for the collected fish and crab. Field data (i.e., individual specimen identifications [IDs], lengths, and weights) for all fish and crab are provided in Attachment A.

SUMMARY OF FISH AND CRAB TISSUE COLLECTION

As described in the QAPP (Windward and Anchor QEA 2023), fish and crab were collected to fulfill two data quality objectives (DQOs):

- DQO 1 – Calculate site-wide 95% upper confidence limit (on the mean) (95UCL) concentrations of human health risk drivers in fish and crab tissue collected in 2023 for comparison with target tissue levels.
- DQO 2 – Calculate site-wide mean concentrations of contaminants with TTLs in fish and crab tissue collected in 2023; these concentrations will be used in trends assessments as sediment remediation and source control continue.

To meet these 2 DQOs, 120 English sole, 180 shiner surfperch, and 84 graceful crab were collected, split evenly across the sampling reaches (Maps 1 and 2). The target and actual numbers of fish and crab collected in each reach of the LDW are summarized in Table 1. Targeted numbers of all species were achieved in all reaches, with the exception of graceful crab in Reach 2. In Reach 2, a total of 40 graceful crab were collected, which was 2 crabs fewer than the target of 42 crabs. This outcome was accepted by EPA after repeated attempts to collect the targeted number. As described in the QAPP (Windward and Anchor QEA 2023), Dungeness crabs were also collected for analysis. These results will be used for human health risk communication purposes. A total of 42 Dungeness crab were collected: 2 crabs from Reach 1 and 40 crabs from Reach 2 (Table 1).

Table 1. Target and actual numbers of target species by reach

Species	Target Size	Target Individuals per Composite	Reach 1		Reach 2	
			Target	Actual	Target	Actual
English sole	≥ 20 cm	10	60	70[a]	60	70[a]
Shiner surfperch[b]	≥ 8 cm	15	90 (45 per subreach)	120 (60 per subreach)[a]	90 (45 per subreach)	120 (60 per subreach)[a]
Graceful crab	≥ 9 cm	7	42	50[a]	42	40
Dungeness crab[c]	≥ 9 cm	na	na	2	na	40

[a] Additional fish and crab were collected to provide additional compositing options.

[b] Shiner surfperch were collected within four subreaches (each reach containing two subreaches; Map 1).

[c] Graceful crab were collected as the target species for trend analysis. Dungeness crabs were also collected during the field effort for comparison to target tissue levels and for human health risk communication purposes.

na – not applicable

QAPP – quality assurance project plan

ENGLISH SOLE COMPOSITES

Sampling achieved the QAPP goal of creating 6 composites of 10 English sole each for both Reach 1 and Reach 2, for a total of 12 English sole composites (Table 2). The proposed composites have comparable fish sizes and (when known) gender compositions . In order to represent the spatial extent of each reach, each proposed composite has individuals collected from different trawls distributed within each reach (Map 1).

Table 2. English sole composites

Sample ID	Individuals per Composite	Mass (g)			Length (cm)			No. of Females[a]
		Min.	Max.	Average	Min.	Max.	Average	
Reach 1								
LDW23-R1-ESFL-comp01; LDW23-R1-ESRM-comp01	10	72.2	388.5	188	200	360	265	3
LDW23-R1-ESFL-comp02; LDW23-R1-ESRM-comp02	10	73.3	565.0	195	201	388	266	4
LDW23-R1-ESFL-comp03; LDW23-R1-ESRM-comp03	10	83.4	619.5	196	202	395	268	3
LDW23-R1-ESFL-comp04; LDW23-R1-ESRM-comp04	10	72.3	423.0	192	202	356	262	4
LDW23-R1-ESFL-comp05; LDW23-R1-ESRM-comp05	10	77.5	441.0	195	204	359	266	4
LDW23-R1-ESFL-comp06; LDW23-R1-ESRM-comp06	10	79.7	487	191	206	370	266	4
Reach 2								
LDW23-R2-ESFL-comp01; LDW23-R2-ESRM-comp01	10	84.5	248.5	150	200	296	241	3
LDW23-R2-ESFL-comp02; LDW23-R2-ESRM-comp02	10	82.4	309.5	151	200	300	242	2
LDW23-R2-ESFL-comp03; LDW23-R2-ESRM-comp03	10	73.2	553.0	167	200	407	251	3
LDW23-R2-ESFL-comp04; LDW23-R2-ESRM-comp04	10	73.6	416.5	161	200	357	246	3
LDW23-R2-ESFL-comp05; LDW23-R2-ESRM-comp05	10	81.3	458.5	165	200	358	248	3
LDW23-R2-ESFL-comp06; LDW23-R2-ESRM-comp06	10	75.8	337.5	154	200	325	243	3

Note: Details regarding the fish included in each composite are presented in Attachment A.

[a] Some fish were identified as female; all others were identified as indeterminate.

ESFL – English sole fillet

ESRM – English sole remainder

ID – identification

The average lengths and masses and gender compositions of all proposed composites were designed to be similar to each other within each reach (Table 2). English sole collected in Reach 1 were somewhat larger on average than those collected in Reach 2.

Composite samples of two tissue types (i.e., fillet and remainder) will be analyzed separately. Whole-body English sole concentrations will be calculated using the results from the two tissue types, as described in the fish and crab QAPP (Windward 2017).

SHINER SURFPERCH COMPOSITES

Sampling achieved the QAPP goal of creating 3 composites of 15 shiner surfperch each for each of the 4 subreaches sampled, for a total of 12 composites. The proposed composites have comparable fish sizes (gender is not known for these fish) (Table 3). In order to represent the spatial extent of the subreach, each proposed composite contains individuals collected from trawls distributed throughout the subreach (Map 1).

Table 3. Shiner surfperch tissue composites

Sample ID	Individuals per Composite	Mass (g)			Length (cm)		
		Min.	Max.	Average	Min.	Max.	Average
Subreach 1A							
LDW23-R1A-SSWB-comp01	15	9.8	23.1	16.1	93	126	106
LDW23-R1A-SSWB-comp02	15	9.7	25.7	16.0	93	128	107
LDW23-R1A-SSWB-comp03	15	10.1	26.8	16.7	93	131	108
Subreach 1B							
LDW23-R1B-SSWB-comp01	15	10.4	29.1	18.3	94	131	110
LDW23-R1B-SSWB-comp02	15	10.2	28.2	18.0	94	135	111
LDW23-R1B-SSWB-comp03	15	10.7	32.5	18.8	94	135	111
Subreach 2A							
LDW23-R2A-SSWB-comp01	15	10.9	34.7	19.6	93	135	114
LDW23-R2A-SSWB-comp02	15	10.3	29.3	19.9	94	130	114
LDW23-R2A-SSWB-comp03	15	10.5	35.9	20.2	96	136	114
Subreach 2B							
LDW23-R2B-SSWB-comp01	15	11.0	19.0	14.8	98	120	106
LDW23-R2B-SSWB-comp02	15	11.3	24.3	15.7	98	128	107
LDW23-R2B-SSWB-comp03	15	11.5	25.6	16.2	98	128	107

Note: Details regarding the fish included in each composite are presented in Attachment A.
ID – identification
SSWB – shiner surfperch whole body

The average lengths and masses of the proposed composites are similar within each subreach (Table 3). Shiner surfperch composites will be homogenized to create whole-body composites for analysis.

CRAB COMPOSITES

For both crab species, the proposed composites have comparable crab sizes, and will represent the spatial extent of each reach by including individuals collected from sampling locations throughout the reach. Trawl and trap locations are presented on Maps 1 and 2, respectively.

Two types of crab composites will be analyzed: edible meat and hepatopancreas. Because the mass of hepatopancreas tissue is far less than the mass of edible meat, hepatopancreas tissue from crabs in two edible meat composites will be combined to create a single hepatopancreas tissue composite (i.e., the hepatopancreases composites will include tissue from twice the number of crab as the edible meat composites). The results from the edible meat and hepatopancreas composite samples will be used to calculate whole-body concentrations.

For graceful crab, 6 edible meat composites and 3 hepatopancreases composites are proposed for both Reach 1 and Reach 2, for a total of 12 edible meat and 6 hepatopancreas composites (Table 4). As noted above, two fewer than the target number of graceful crab were collected during the sampling effort. Thus, four of the six proposed edible meat composites from Reach 2 will contain tissue from seven crabs; the remaining two composites will each contain tissue from six crabs. Similarly, 2 of the 3 proposed hepatopancreas composites from Reach 2 will contain tissue from 13 crabs; the remaining composite will contain tissue from 14 crabs.

Only two Dungeness crab were collected in Reach 1,[1] and thus no composites are proposed for that area. For Reach 2, four edible meat composites and two hepatopancreases composites are proposed for analysis of the human health risk drivers with TTLs (i.e., polychlorinated biphenyls and dioxins/furans). Each edible meat composite will consist of tissue from 5 crabs, and each hepatopancreas composite will consist of tissue from 10 crabs (Table 5).

[1] The two Dungeness crab collected in Reach 1 were collected near the upper end of the reach, at approximately RM 2.75; the boundary between Reach 1 and Reach 2 is at RM 2.9.

Table 4. Graceful crab composites

Edible Meat Sample ID	Edible Meat Composites							Hepatopancreases Composites	
	Individuals per Composite	Mass (g)			Length (cm)			Hepatopancreases Sample ID	Individuals per Composite
		Min.	Max.	Average	Min.	Max.	Average		
Reach 1									
LDW23-R1-GCEM-comp01	7	118.3	243.5	180.3	90	108	99	LDW23-R1-GCHP-comp01	14
LDW23-R1-GCEM-comp02	7	124.3	259.0	179.4	90	114	100		
LDW23-R1-GCEM-comp03	7	135.6	220.0	181.8	90	110	100	LDW23-R1-GCHP-comp02	14
LDW23-R1-GCEM-comp04	7	121.5	235.7	174.8	90	111	100		
LDW23-R1-GCEM-comp05	7	135.0	224.8	175	91	110	101	LDW23-R1-GCHP-comp03	14
LDW23-R1-GCEM-comp06	7	130.1	223	175.5	92	111	102		
Reach 2									
LDW23-R2-GCEM-comp01	7	116.3	209.6	160.9	92	104	97	LDW23-R2-GCHP-comp01	14
LDW23-R2-GCEM-comp02	7	97.0	219.0	158.6	90	110	98		
LDW23-R2-GCEM-comp03	7	108.6	192.5	156.2	90	105	98	LDW23-R2-GCHP-comp02	13
LDW23-R2-GCEM-comp04	6	117.2	204.1	157.9	91	103	97		
LDW23-R2-GCEM-comp05	7	123.4	204.5	160.1	92	109	99	LDW23-R2-GCHP-comp03	13
LDW23-R2-GCEM-comp06	6	112.5	188.8	164.8	90	105	98		

Note: Details regarding the crab included in each composite are presented in Attachment A.
GCEM – graceful crab edible meat
GCHP – graceful crab hepatopancreas
ID – identification

Table 5. Dungeness crab composites

Edible Meat Sample ID	Edible Meat Composites							Hepatopancreases Composites	
	Individuals per Composite	Mass (g)			Length (cm)			Hepatopancreases Sample ID	Individuals per Composite
		Min.	Max.	Average	Min.	Max.	Average		
Reach 2									
LDW23-R2-DCEM-comp01	5	417.5	907.5	668.2	147	187	171	LDW23-R2-DCHP-comp01	10
LDW23-R2-DCEM-comp02	5	379	892	668.2	147	188	170		
LDW23-R2-DCEM-comp03	5	429	893.5	662.9	152	189	171	LDW23-R2-DCHP-comp02	10
LDW23-R2-DCEM-comp04	5	493.5	896.5	664	154	191	172		

Note: Details regarding the crab included in each composite are presented in Attachment A.
DCEM – Dungeness crab edible meat
DCHP – Dungeness crab hepatopancreas
ID – identification

REFERENCES

Windward. 2017. Baseline fish and crab tissue collection and chemical analyses - quality assurance project plan. Final. Submitted to EPA on July 19, 2017. Lower Duwamish Waterway Pre-Design Studies. Windward Environmental LLC, Seattle, WA.

Windward, Anchor QEA. 2023. Fish, crab, clam, and surface water periodic monitoring quality assurance project plan for the Lower Duwamish Waterway. Final. Windward Environmental LLC and Anchor QEA, Seattle, WA.

Table A1. Composite Details for English Sole

Specimen ID	Species - Common Name	Species - Latin Name	Collection Date/Time	Collection Method	Trawl/ Trap #	Specimen	Length (mm)	Weight (g)	Sex	Comments	Location	Composite No.	Fillet Composite ID	Remainder Composite ID
LDW23-R1-ES113	English sole	*Parophrys vetulus*	8/23/2023 11:24	trawl net	TR22	ES113	200	72.2	Indeterminate		R1	comp01	LDW23-R1-ESFL-comp01	LDW23-R1-ESRM-comp01
LDW23-R1-ES098	English sole	*Parophrys vetulus*	8/23/2023 11:24	trawl net	TR22	ES098	201	73.3	Indeterminate		R1	comp02	LDW23-R1-ESFL-comp02	LDW23-R1-ESRM-comp02
LDW23-R1-ES081	English sole	*Parophrys vetulus*	8/22/2023 14:06	trawl net	TR16	ES081	202	83.4	Indeterminate		R1	comp03	LDW23-R1-ESFL-comp03	LDW23-R1-ESRM-comp03
LDW23-R1-ES108	English sole	*Parophrys vetulus*	8/23/2023 11:24	trawl net	TR22	ES108	202	72.3	Indeterminate		R1	comp04	LDW23-R1-ESFL-comp04	LDW23-R1-ESRM-comp04
LDW23-R1-ES090	English sole	*Parophrys vetulus*	8/23/2023 8:30	trawl net	TR19	ES090	204	77.5	Indeterminate		R1	comp05	LDW23-R1-ESFL-comp05	LDW23-R1-ESRM-comp05
LDW23-R1-ES130	English sole	*Parophrys vetulus*	8/23/2023 13:32	trawl net	TR25	ES130	206	79.7	Indeterminate		R1	comp06	LDW23-R1-ESFL-comp06	LDW23-R1-ESRM-comp06
LDW23-R1-ES109	English sole	*Parophrys vetulus*	8/23/2023 11:24	trawl net	TR22	ES109	207	82.6	Indeterminate		R1	comp02	LDW23-R1-ESFL-comp02	LDW23-R1-ESRM-comp02
LDW23-R1-ES074	English sole	*Parophrys vetulus*	8/22/2023 12:59	trawl net	TR14	ES074	208	87.8	Indeterminate		R1	-	-	-
LDW23-R1-ES122	English sole	*Parophrys vetulus*	8/23/2023 12:53	trawl net	TR24	ES122	210	87.2	Indeterminate		R1	comp03	LDW23-R1-ESFL-comp03	LDW23-R1-ESRM-comp03
LDW23-R1-ES121	English sole	*Parophrys vetulus*	8/23/2023 12:53	trawl net	TR24	ES121	212	92.8	Indeterminate		R1	comp04	LDW23-R1-ESFL-comp04	LDW23-R1-ESRM-comp04
LDW23-R1-ES097	English sole	*Parophrys vetulus*	8/23/2023 11:24	trawl net	TR22	ES097	215	92.5	Indeterminate		R1	comp05	LDW23-R1-ESFL-comp05	LDW23-R1-ESRM-comp05
LDW23-R1-ES107	English sole	*Parophrys vetulus*	8/23/2023 11:24	trawl net	TR22	ES107	215	93.2	Indeterminate		R1	comp06	LDW23-R1-ESFL-comp06	LDW23-R1-ESRM-comp06
LDW23-R1-ES092	English sole	*Parophrys vetulus*	8/23/2023 10:43	trawl net	TR21	ES092	216	92.3	Indeterminate		R1	-	-	-
LDW23-R1-ES077	English sole	*Parophrys vetulus*	8/22/2023 12:59	trawl net	TR14	ES077	220	99.8	Indeterminate		R1	comp01	LDW23-R1-ESFL-comp01	LDW23-R1-ESRM-comp01
LDW23-R1-ES106	English sole	*Parophrys vetulus*	8/23/2023 11:24	trawl net	TR22	ES106	220	99.3	Indeterminate		R1	comp03	LDW23-R1-ESFL-comp03	LDW23-R1-ESRM-comp03
LDW23-R1-ES096	English sole	*Parophrys vetulus*	8/23/2023 10:43	trawl net	TR21	ES096	223	99.8	Indeterminate		R1	comp04	LDW23-R1-ESFL-comp04	LDW23-R1-ESRM-comp04
LDW23-R1-ES072	English sole	*Parophrys vetulus*	8/22/2023 12:59	trawl net	TR14	ES072	224	126.8	Indeterminate		R1	comp05	LDW23-R1-ESFL-comp05	LDW23-R1-ESRM-comp05
LDW23-R1-ES139	English sole	*Parophrys vetulus*	8/23/2023 14:16	trawl net	TR26	ES139	224	103.4	Indeterminate		R1	comp06	LDW23-R1-ESFL-comp06	LDW23-R1-ESRM-comp06
LDW23-R1-ES115	English sole	*Parophrys vetulus*	8/23/2023 11:24	trawl net	TR22	ES115	225	99.9	Indeterminate		R1	comp01	LDW23-R1-ESFL-comp01	LDW23-R1-ESRM-comp01
LDW23-R1-ES129	English sole	*Parophrys vetulus*	8/23/2023 13:32	trawl net	TR25	ES129	226	103.1	Indeterminate		R1	comp02	LDW23-R1-ESFL-comp02	LDW23-R1-ESRM-comp02
LDW23-R1-ES131	English sole	*Parophrys vetulus*	8/23/2023 13:32	trawl net	TR25	ES131	226	108.4	Indeterminate		R1	comp04	LDW23-R1-ESFL-comp04	LDW23-R1-ESRM-comp04
LDW23-R1-ES082	English sole	*Parophrys vetulus*	8/22/2023 14:06	trawl net	TR16	ES082	228	87.4	Indeterminate		R1	-	-	-
LDW23-R1-ES111	English sole	*Parophrys vetulus*	8/23/2023 11:24	trawl net	TR22	ES111	228	100.7	Indeterminate		R1	comp05	LDW23-R1-ESFL-comp05	LDW23-R1-ESRM-comp05
LDW23-R1-ES116	English sole	*Parophrys vetulus*	8/23/2023 12:18	trawl net	TR23	ES116	229	116.6	Indeterminate		R1	comp06	LDW23-R1-ESFL-comp06	LDW23-R1-ESRM-comp06
LDW23-R1-ES073	English sole	*Parophrys vetulus*	8/22/2023 12:59	trawl net	TR14	ES073	236	125.7	Indeterminate		R1	comp01	LDW23-R1-ESFL-comp01	LDW23-R1-ESRM-comp01
LDW23-R1-ES140	English sole	*Parophrys vetulus*	8/23/2023 14:16	trawl net	TR26	ES140	241	133.1	Indeterminate		R1	comp02	LDW23-R1-ESFL-comp02	LDW23-R1-ESRM-comp02
LDW23-R1-ES099	English sole	*Parophrys vetulus*	8/23/2023 11:24	trawl net	TR22	ES099	245	129.4	Female		R1	comp05	LDW23-R1-ESFL-comp05	LDW23-R1-ESRM-comp05
LDW23-R1-ES137	English sole	*Parophrys vetulus*	8/23/2023 14:16	trawl net	TR26	ES137	245	118.3	Indeterminate		R1	-	-	-
LDW23-R1-ES088	English sole	*Parophrys vetulus*	8/22/2023 15:21	trawl net	TR18	ES088	246	147.4	Indeterminate		R1	comp03	LDW23-R1-ESFL-comp03	LDW23-R1-ESRM-comp03
LDW23-R1-ES100	English sole	*Parophrys vetulus*	8/23/2023 11:24	trawl net	TR22	ES100	246	138.5	Indeterminate		R1	comp06	LDW23-R1-ESFL-comp06	LDW23-R1-ESRM-comp06
LDW23-R1-ES102	English sole	*Parophrys vetulus*	8/23/2023 11:24	trawl net	TR22	ES102	246	137.3	Indeterminate		R1	comp01	LDW23-R1-ESFL-comp01	LDW23-R1-ESRM-comp01
LDW23-R1-ES135	English sole	*Parophrys vetulus*	8/23/2023 14:16	trawl net	TR26	ES135	246	128.4	Indeterminate		R1	comp02	LDW23-R1-ESFL-comp02	LDW23-R1-ESRM-comp02
LDW23-R1-ES110	English sole	*Parophrys vetulus*	8/23/2023 11:24	trawl net	TR22	ES110	252	152.2	Indeterminate		R1	comp03	LDW23-R1-ESFL-comp03	LDW23-R1-ESRM-comp03
LDW23-R1-ES080	English sole	*Parophrys vetulus*	8/22/2023 14:06	trawl net	TR16	ES080	253	111.5	Indeterminate		R1	-	-	-
LDW23-R1-ES123	English sole	*Parophrys vetulus*	8/23/2023 12:53	trawl net	TR24	ES123	256	143.3	Female		R1	comp04	LDW23-R1-ESFL-comp04	LDW23-R1-ESRM-comp04
LDW23-R1-ES093	English sole	*Parophrys vetulus*	8/23/2023 10:43	trawl net	TR21	ES093	257	165.5	Female		R1	comp06	LDW23-R1-ESFL-comp06	LDW23-R1-ESRM-comp06
LDW23-R1-ES134	English sole	*Parophrys vetulus*	8/23/2023 14:16	trawl net	TR26	ES134	257	144.6	Indeterminate		R1	comp01	LDW23-R1-ESFL-comp01	LDW23-R1-ESRM-comp01
LDW23-R1-ES138	English sole	*Parophrys vetulus*	8/23/2023 14:16	trawl net	TR26	ES138	257	154.7	Female		R1	comp02	LDW23-R1-ESFL-comp02	LDW23-R1-ESRM-comp02
LDW23-R1-ES118	English sole	*Parophrys vetulus*	8/23/2023 12:53	trawl net	TR24	ES118	258	153.8	Indeterminate		R1	comp03	LDW23-R1-ESFL-comp03	LDW23-R1-ESRM-comp03
LDW23-R1-ES071	English sole	*Parophrys vetulus*	8/22/2023 12:59	trawl net	TR14	ES071	262	173.7	Indeterminate		R1	comp04	LDW23-R1-ESFL-comp04	LDW23-R1-ESRM-comp04
LDW23-R1-ES095	English sole	*Parophrys vetulus*	8/23/2023 10:43	trawl net	TR21	ES095	265	189.8	Indeterminate		R1	comp05	LDW23-R1-ESFL-comp05	LDW23-R1-ESRM-comp05
LDW23-R1-ES078	English sole	*Parophrys vetulus*	8/22/2023 14:06	trawl net	TR16	ES078	267	186.6	Indeterminate		R1	comp01	LDW23-R1-ESFL-comp01	LDW23-R1-ESRM-comp01
LDW23-R1-ES105	English sole	*Parophrys vetulus*	8/23/2023 11:24	trawl net	TR22	ES105	267	173.3	Indeterminate		R1	-	-	-
LDW23-R1-ES083	English sole	*Parophrys vetulus*	8/22/2023 14:06	trawl net	TR16	ES083	271	178.8	Indeterminate		R1	comp02	LDW23-R1-ESFL-comp02	LDW23-R1-ESRM-comp02
LDW23-R1-ES104	English sole	*Parophrys vetulus*	8/23/2023 11:24	trawl net	TR22	ES104	274	170.2	Indeterminate		R1	comp03	LDW23-R1-ESFL-comp03	LDW23-R1-ESRM-comp03
LDW23-R1-ES136	English sole	*Parophrys vetulus*	8/23/2023 14:16	trawl net	TR26	ES136	276	194.6	Indeterminate		R1	comp04	LDW23-R1-ESFL-comp04	LDW23-R1-ESRM-comp04
LDW23-R1-ES094	English sole	*Parophrys vetulus*	8/23/2023 10:43	trawl net	TR21	ES094	278	158.2	Indeterminate		R1	comp06	LDW23-R1-ESFL-comp06	LDW23-R1-ESRM-comp06
LDW23-R1-ES101	English sole	*Parophrys vetulus*	8/23/2023 11:24	trawl net	TR22	ES101	284	182.2	Female		R1	comp05	LDW23-R1-ESFL-comp05	LDW23-R1-ESRM-comp05
LDW23-R1-ES120	English sole	*Parophrys vetulus*	8/23/2023 12:53	trawl net	TR24	ES120	291	212.5	Indeterminate		R1	-	-	-
LDW23-R1-ES124	English sole	*Parophrys vetulus*	8/23/2023 13:32	trawl net	TR25	ES124	295	230.5	Female		R1	comp02	LDW23-R1-ESFL-comp02	LDW23-R1-ESRM-comp02
LDW23-R1-ES128	English sole	*Parophrys vetulus*	8/23/2023 13:32	trawl net	TR25	ES128	298	215.5	Female		R1	comp03	LDW23-R1-ESFL-comp03	LDW23-R1-ESRM-comp03

Table A1. Composite Details for English Sole

Specimen ID	Species - Common Name	Species - Latin Name	Collection Date/Time	Collection Method	Trawl/ Trap #	Specimen	Length (mm)	Weight (g)	Sex	Comments	Location	Composite No.	Fillet Composite ID	Remainder Composite ID
LDW23-R1-ES126	English sole	*Parophrys vetulus*	8/23/2023 13:32	trawl net	TR25	ES126	299	268.5	Female		R1	comp04	LDW23-R1-ESFL-comp04	LDW23-R1-ESRM-comp04
LDW23-R1-ES091	English sole	*Parophrys vetulus*	8/23/2023 10:43	trawl net	TR21	ES091	302	203.5	Indeterminate		R1	-	-	-
LDW23-R1-ES103	English sole	*Parophrys vetulus*	8/23/2023 11:24	trawl net	TR22	ES103	304	241.5	Female		R1	comp06	LDW23-R1-ESFL-comp06	LDW23-R1-ESRM-comp06
LDW23-R1-ES112	English sole	*Parophrys vetulus*	8/23/2023 11:24	trawl net	TR22	ES112	305	253.5	Indeterminate		R1	comp05	LDW23-R1-ESFL-comp05	LDW23-R1-ESRM-comp05
LDW23-R1-ES125	English sole	*Parophrys vetulus*	8/23/2023 13:32	trawl net	TR25	ES125	310	307.5	Female		R1	comp01	LDW23-R1-ESFL-comp01	LDW23-R1-ESRM-comp01
LDW23-R1-ES076	English sole	*Parophrys vetulus*	8/22/2023 12:59	trawl net	TR14	ES076	311	346.5	Female		R1	comp04	LDW23-R1-ESFL-comp04	LDW23-R1-ESRM-comp04
LDW23-R1-ES075	English sole	*Parophrys vetulus*	8/22/2023 12:59	trawl net	TR14	ES075	322	229.5	Female		R1	comp03	LDW23-R1-ESFL-comp03	LDW23-R1-ESRM-comp03
LDW23-R1-ES085	English sole	*Parophrys vetulus*	8/22/2023 14:48	trawl net	TR17	ES085	330	356.5	Female		R1	comp05	LDW23-R1-ESFL-comp05	LDW23-R1-ESRM-comp05
LDW23-R1-ES119	English sole	*Parophrys vetulus*	8/23/2023 12:53	trawl net	TR24	ES119	330	300	Female		R1	comp02	LDW23-R1-ESFL-comp02	LDW23-R1-ESRM-comp02
LDW23-R1-ES133	English sole	*Parophrys vetulus*	8/23/2023 14:16	trawl net	TR26	ES133	330	322	Female		R1	comp01	LDW23-R1-ESFL-comp01	LDW23-R1-ESRM-comp01
LDW23-R1-ES127	English sole	*Parophrys vetulus*	8/23/2023 13:32	trawl net	TR25	ES127	332	325.5	Female		R1	comp06	LDW23-R1-ESFL-comp06	LDW23-R1-ESRM-comp06
LDW23-R1-ES086	English sole	*Parophrys vetulus*	8/22/2023 14:48	trawl net	TR17	ES086	338	337.5	Indeterminate		R1	-	-	-
LDW23-R1-ES089	English sole	*Parophrys vetulus*	8/22/2023 15:21	trawl net	TR18	ES089	356	423	Female		R1	comp04	LDW23-R1-ESFL-comp04	LDW23-R1-ESRM-comp04
LDW23-R1-ES117	English sole	*Parophrys vetulus*	8/23/2023 12:53	trawl net	TR24	ES117	359	441	Female		R1	comp05	LDW23-R1-ESFL-comp05	LDW23-R1-ESRM-comp05
LDW23-R1-ES132	English sole	*Parophrys vetulus*	8/23/2023 14:16	trawl net	TR26	ES132	360	388.5	Female		R1	comp01	LDW23-R1-ESFL-comp01	LDW23-R1-ESRM-comp01
LDW23-R1-ES079	English sole	*Parophrys vetulus*	8/22/2023 14:06	trawl net	TR16	ES079	370	487	Female		R1	comp06	LDW23-R1-ESFL-comp06	LDW23-R1-ESRM-comp06
LDW23-R1-ES087	English sole	*Parophrys vetulus*	8/22/2023 15:21	trawl net	TR18	ES087	371	505.5	Indeterminate		R1	-	-	-
LDW23-R1-ES084	English sole	*Parophrys vetulus*	8/22/2023 14:48	trawl net	TR17	ES084	388	565	Female		R1	comp02	LDW23-R1-ESFL-comp02	LDW23-R1-ESRM-comp02
LDW23-R1-ES114	English sole	*Parophrys vetulus*	8/23/2023 11:24	trawl net	TR22	ES114	395	619.5	Female		R1	comp03	LDW23-R1-ESFL-comp03	LDW23-R1-ESRM-comp03
LDW23-R2-ES010	English sole	*Parophrys vetulus*	8/21/2023 13:10	trawl net	TR07	ES010	200	84.5	Indeterminate		R2	comp01	LDW23-R2-ESFL-comp01	LDW23-R2-ESRM-comp01
LDW23-R2-ES017	English sole	*Parophrys vetulus*	8/21/2023 13:10	trawl net	TR07	ES017	200	82.4	Indeterminate		R2	comp02	LDW23-R2-ESFL-comp02	LDW23-R2-ESRM-comp02
LDW23-R2-ES018	English sole	*Parophrys vetulus*	8/21/2023 13:10	trawl net	TR07	ES018	200	73.2	Indeterminate		R2	comp03	LDW23-R2-ESFL-comp03	LDW23-R2-ESRM-comp03
LDW23-R2-ES019	English sole	*Parophrys vetulus*	8/21/2023 13:10	trawl net	TR07	ES019	200	73.6	Indeterminate		R2	comp04	LDW23-R2-ESFL-comp04	LDW23-R2-ESRM-comp04
LDW23-R2-ES026	English sole	*Parophrys vetulus*	8/21/2023 13:10	trawl net	TR07	ES026	200	81.3	Indeterminate		R2	comp05	LDW23-R2-ESFL-comp05	LDW23-R2-ESRM-comp05
LDW23-R2-ES034	English sole	*Parophrys vetulus*	8/21/2023 14:02	trawl net	TR08	ES034	200	75.8	Indeterminate		R2	comp06	LDW23-R2-ESFL-comp06	LDW23-R2-ESRM-comp06
LDW23-R2-ES025	English sole	*Parophrys vetulus*	8/21/2023 13:10	trawl net	TR07	ES025	202	87.5	Indeterminate		R2	-	-	-
LDW23-R2-ES028	English sole	*Parophrys vetulus*	8/21/2023 14:02	trawl net	TR08	ES028	202	85.4	Female		R2	comp01	LDW23-R2-ESFL-comp01	LDW23-R2-ESRM-comp01
LDW23-R2-ES041	English sole	*Parophrys vetulus*	8/21/2023 14:02	trawl net	TR08	ES041	202	86.9	Indeterminate		R2	comp04	LDW23-R2-ESFL-comp04	LDW23-R2-ESRM-comp04
LDW23-R2-ES032	English sole	*Parophrys vetulus*	8/21/2023 14:02	trawl net	TR08	ES032	204	79.7	Indeterminate		R2	comp03	LDW23-R2-ESFL-comp03	LDW23-R2-ESRM-comp03
LDW23-R2-ES024	English sole	*Parophrys vetulus*	8/21/2023 13:10	trawl net	TR07	ES024	205	93.6	Indeterminate		R2	comp05	LDW23-R2-ESFL-comp05	LDW23-R2-ESRM-comp05
LDW23-R2-ES035	English sole	*Parophrys vetulus*	8/21/2023 14:02	trawl net	TR08	ES035	205	81.9	Indeterminate		R2	comp06	LDW23-R2-ESFL-comp06	LDW23-R2-ESRM-comp06
LDW23-R2-ES004	English sole	*Parophrys vetulus*	8/21/2023 11:25	trawl net	TR04	ES004	206	58.9	Indeterminate		R2	-	-	-
LDW23-R2-ES011	English sole	*Parophrys vetulus*	8/21/2023 13:10	trawl net	TR07	ES011	206	89.0	Indeterminate		R2	comp02	LDW23-R2-ESFL-comp02	LDW23-R2-ESRM-comp02
LDW23-R2-ES054	English sole	*Parophrys vetulus*	8/22/2023 11:21	trawl net	TR12	ES054	208	92.2	Indeterminate		R2	-	-	-
LDW23-R2-ES015	English sole	*Parophrys vetulus*	8/21/2023 13:10	trawl net	TR07	ES015	210	100.9	Indeterminate		R2	comp03	LDW23-R2-ESFL-comp03	LDW23-R2-ESRM-comp03
LDW23-R2-ES037	English sole	*Parophrys vetulus*	8/21/2023 14:02	trawl net	TR08	ES037	210	105.9	Indeterminate		R2	comp04	LDW23-R2-ESFL-comp04	LDW23-R2-ESRM-comp04
LDW23-R2-ES045	English sole	*Parophrys vetulus*	8/21/2023 14:02	trawl net	TR08	ES045	210	82.4	Indeterminate		R2	comp05	LDW23-R2-ESFL-comp05	LDW23-R2-ESRM-comp05
LDW23-R2-ES040	English sole	*Parophrys vetulus*	8/21/2023 14:02	trawl net	TR08	ES040	211	92.1	Indeterminate		R2	comp06	LDW23-R2-ESFL-comp06	LDW23-R2-ESRM-comp06
LDW23-R2-ES047	English sole	*Parophrys vetulus*	8/21/2023 14:02	trawl net	TR08	ES047	211	92.9	Indeterminate		R2	comp01	LDW23-R2-ESFL-comp01	LDW23-R2-ESRM-comp01
LDW23-R2-ES022	English sole	*Parophrys vetulus*	8/21/2023 13:10	trawl net	TR07	ES022	214	101.3	Indeterminate		R2	comp02	LDW23-R2-ESFL-comp02	LDW23-R2-ESRM-comp02
LDW23-R2-ES036	English sole	*Parophrys vetulus*	8/21/2023 14:02	trawl net	TR08	ES036	219	111.5	Female		R2	comp04	LDW23-R2-ESFL-comp04	LDW23-R2-ESRM-comp04
LDW23-R2-ES012	English sole	*Parophrys vetulus*	8/21/2023 13:10	trawl net	TR07	ES012	220	96.0	Indeterminate		R2	-	-	-
LDW23-R2-ES038	English sole	*Parophrys vetulus*	8/21/2023 14:02	trawl net	TR08	ES038	220	102.3	Indeterminate		R2	comp05	LDW23-R2-ESFL-comp05	LDW23-R2-ESRM-comp05
LDW23-R2-ES043	English sole	*Parophrys vetulus*	8/21/2023 14:02	trawl net	TR08	ES043	220	107.9	Female		R2	comp06	LDW23-R2-ESFL-comp06	LDW23-R2-ESRM-comp06
LDW23-R2-ES064	English sole	*Parophrys vetulus*	8/22/2023 11:50	trawl net	TR13	ES064	220	106.5	Indeterminate		R2	comp01	LDW23-R2-ESFL-comp01	LDW23-R2-ESRM-comp01
LDW23-R2-ES013	English sole	*Parophrys vetulus*	8/21/2023 13:10	trawl net	TR07	ES013	221	121.6	Indeterminate		R2	comp02	LDW23-R2-ESFL-comp02	LDW23-R2-ESRM-comp02
LDW23-R2-ES014	English sole	*Parophrys vetulus*	8/21/2023 13:10	trawl net	TR07	ES014	221	109.7	Indeterminate		R2	comp03	LDW23-R2-ESFL-comp03	LDW23-R2-ESRM-comp03
LDW23-R2-ES057	English sole	*Parophrys vetulus*	8/22/2023 11:50	trawl net	TR13	ES057	221	119.1	Female		R2	comp05	LDW23-R2-ESFL-comp05	LDW23-R2-ESRM-comp05
LDW23-R2-ES070	English sole	*Parophrys vetulus*	8/23/2023 14:56	trawl net	TR27	ES070	221	91.7	Indeterminate		R2	-	-	-
LDW23-R2-ES033	English sole	*Parophrys vetulus*	8/21/2023 14:02	trawl net	TR08	ES033	224	114.0	Indeterminate		R2	comp06	LDW23-R2-ESFL-comp06	LDW23-R2-ESRM-comp06
LDW23-R2-ES044	English sole	*Parophrys vetulus*	8/21/2023 14:02	trawl net	TR08	ES044	226	121.9	Indeterminate		R2	comp01	LDW23-R2-ESFL-comp01	LDW23-R2-ESRM-comp01

Table A1. Composite Details for English Sole

Specimen ID	Species - Common Name	Species - Latin Name	Collection Date/Time	Collection Method	Trawl/ Trap #	Specimen	Length (mm)	Weight (g)	Sex	Comments	Location	Composite No.	Fillet Composite ID	Remainder Composite ID
LDW23-R2-ES029	English sole	*Parophrys vetulus*	8/21/2023 14:02	trawl net	TR08	ES029	228	117.8	Indeterminate		R2	comp02	LDW23-R2-ESFL-comp02	LDW23-R2-ESRM-comp02
LDW23-R2-ES016	English sole	*Parophrys vetulus*	8/21/2023 13:10	trawl net	TR07	ES016	229	124.2	Female		R2	comp03	LDW23-R2-ESFL-comp03	LDW23-R2-ESRM-comp03
LDW23-R2-ES052	English sole	*Parophrys vetulus*	8/22/2023 11:21	trawl net	TR12	ES052	229	108.9	Indeterminate		R2	comp04	LDW23-R2-ESFL-comp04	LDW23-R2-ESRM-comp04
LDW23-R2-ES031	English sole	*Parophrys vetulus*	8/21/2023 14:02	trawl net	TR08	ES031	230	116.1	Indeterminate		R2	-	-	-
LDW23-R2-ES042	English sole	*Parophrys vetulus*	8/21/2023 14:02	trawl net	TR08	ES042	230	129.6	Indeterminate		R2	comp06	LDW23-R2-ESFL-comp06	LDW23-R2-ESRM-comp06
LDW23-R2-ES039	English sole	*Parophrys vetulus*	8/21/2023 14:02	trawl net	TR08	ES039	236	129.6	Indeterminate		R2	comp03	LDW23-R2-ESFL-comp03	LDW23-R2-ESRM-comp03
LDW23-R2-ES061	English sole	*Parophrys vetulus*	8/22/2023 11:50	trawl net	TR13	ES061	239	98.1	Female		R2	comp02	LDW23-R2-ESFL-comp02	LDW23-R2-ESRM-comp02
LDW23-R2-ES068	English sole	*Parophrys vetulus*	8/22/2023 11:50	trawl net	TR13	ES068	239	142.4	Indeterminate		R2	comp01	LDW23-R2-ESFL-comp01	LDW23-R2-ESRM-comp01
LDW23-R2-ES001	English sole	*Parophrys vetulus*	8/21/2023 9:30	trawl net	TR01	ES001	245	146.9	Indeterminate		R2	comp04	LDW23-R2-ESFL-comp04	LDW23-R2-ESRM-comp04
LDW23-R2-ES056	English sole	*Parophrys vetulus*	8/22/2023 11:50	trawl net	TR13	ES056	248	143.3	Indeterminate		R2	comp05	LDW23-R2-ESFL-comp05	LDW23-R2-ESRM-comp05
LDW23-R2-ES059	English sole	*Parophrys vetulus*	8/22/2023 11:50	trawl net	TR13	ES059	249	144.7	Indeterminate		R2	-	-	-
LDW23-R2-ES060	English sole	*Parophrys vetulus*	8/22/2023 11:50	trawl net	TR13	ES060	250	152.4	Indeterminate		R2	comp01	LDW23-R2-ESFL-comp01	LDW23-R2-ESRM-comp01
LDW23-R2-ES020	English sole	*Parophrys vetulus*	8/21/2023 13:10	trawl net	TR07	ES020	251	152.7	Indeterminate		R2	comp02	LDW23-R2-ESFL-comp02	LDW23-R2-ESRM-comp02
LDW23-R2-ES067	English sole	*Parophrys vetulus*	8/22/2023 11:50	trawl net	TR13	ES067	253	188.1	Indeterminate		R2	comp04	LDW23-R2-ESFL-comp04	LDW23-R2-ESRM-comp04
LDW23-R2-ES051	English sole	*Parophrys vetulus*	8/22/2023 10:33	trawl net	TR11	ES051	254	146.6	Female		R2	comp03	LDW23-R2-ESFL-comp03	LDW23-R2-ESRM-comp03
LDW23-R2-ES058	English sole	*Parophrys vetulus*	8/22/2023 11:50	trawl net	TR13	ES058	256	191.3	Indeterminate		R2	comp05	LDW23-R2-ESFL-comp05	LDW23-R2-ESRM-comp05
LDW23-R2-ES063	English sole	*Parophrys vetulus*	8/22/2023 11:50	trawl net	TR13	ES063	257	170.7	Indeterminate		R2	-	-	-
LDW23-R2-ES023	English sole	*Parophrys vetulus*	8/21/2023 13:10	trawl net	TR07	ES023	258	192.0	Female		R2	comp06	LDW23-R2-ESFL-comp06	LDW23-R2-ESRM-comp06
LDW23-R2-ES002	English sole	*Parophrys vetulus*	8/21/2023 9:30	trawl net	TR01	ES002	265	180.3	Indeterminate		R2	comp02	LDW23-R2-ESFL-comp02	LDW23-R2-ESRM-comp02
LDW23-R2-ES008	English sole	*Parophrys vetulus*	8/21/2023 13:10	trawl net	TR07	ES008	265	182.3	Indeterminate		R2	comp03	LDW23-R2-ESFL-comp03	LDW23-R2-ESRM-comp03
LDW23-R2-ES048	English sole	*Parophrys vetulus*	8/22/2023 10:33	trawl net	TR11	ES048	266	172.1	Indeterminate		R2	comp04	LDW23-R2-ESFL-comp04	LDW23-R2-ESRM-comp04
LDW23-R2-ES066	English sole	*Parophrys vetulus*	8/22/2023 11:50	trawl net	TR13	ES066	267	168.3	Female		R2	comp05	LDW23-R2-ESFL-comp05	LDW23-R2-ESRM-comp05
LDW23-R2-ES065	English sole	*Parophrys vetulus*	8/22/2023 11:50	trawl net	TR13	ES065	269	183.4	Indeterminate		R2	comp06	LDW23-R2-ESFL-comp06	LDW23-R2-ESRM-comp06
LDW23-R2-ES021	English sole	*Parophrys vetulus*	8/21/2023 13:10	trawl net	TR07	ES021	273	223.5	Indeterminate		R2	comp01	LDW23-R2-ESFL-comp01	LDW23-R2-ESRM-comp01
LDW23-R2-ES049	English sole	*Parophrys vetulus*	8/22/2023 10:33	trawl net	TR11	ES049	274	203.5	Indeterminate		R2	-	-	-
LDW23-R2-ES030	English sole	*Parophrys vetulus*	8/21/2023 14:02	trawl net	TR08	ES030	277	203.5	Female		R2	comp04	LDW23-R2-ESFL-comp04	LDW23-R2-ESRM-comp04
LDW23-R2-ES069	English sole	*Parophrys vetulus*	8/22/2023 11:50	trawl net	TR13	ES069	279	174.4	Indeterminate		R2	comp03	LDW23-R2-ESFL-comp03	LDW23-R2-ESRM-comp03
LDW23-R2-ES009	English sole	*Parophrys vetulus*	8/21/2023 13:10	trawl net	TR07	ES009	290	211.5	Indeterminate		R2	comp05	LDW23-R2-ESFL-comp05	LDW23-R2-ESRM-comp05
LDW23-R2-ES007	English sole	*Parophrys vetulus*	8/21/2023 11:55	trawl net	TR05	ES007	292	221.5	Female		R2	comp06	LDW23-R2-ESFL-comp06	LDW23-R2-ESRM-comp06
LDW23-R2-ES050	English sole	*Parophrys vetulus*	8/22/2023 10:33	trawl net	TR11	ES050	294	241	Female		R2	comp01	LDW23-R2-ESFL-comp01	LDW23-R2-ESRM-comp01
LDW23-R2-ES006	English sole	*Parophrys vetulus*	8/21/2023 11:55	trawl net	TR05	ES006	295	309.5	Female		R2	comp02	LDW23-R2-ESFL-comp02	LDW23-R2-ESRM-comp02
LDW23-R2-ES046	English sole	*Parophrys vetulus*	8/21/2023 14:02	trawl net	TR08	ES046	296	248.5	Female		R2	comp01	LDW23-R2-ESFL-comp01	LDW23-R2-ESRM-comp01
LDW23-R2-ES055	English sole	*Parophrys vetulus*	8/22/2023 11:21	trawl net	TR12	ES055	300	254.5	Indeterminate		R2	comp02	LDW23-R2-ESFL-comp02	LDW23-R2-ESRM-comp02
LDW23-R2-ES027	English sole	*Parophrys vetulus*	8/21/2023 13:10	trawl net	TR07	ES027	306	174.5	Indeterminate		R2	-	-	-
LDW23-R2-ES053	English sole	*Parophrys vetulus*	8/22/2023 11:21	trawl net	TR12	ES053	325	337.5	Indeterminate		R2	comp06	LDW23-R2-ESFL-comp06	LDW23-R2-ESRM-comp06
LDW23-R2-ES062	English sole	*Parophrys vetulus*	8/22/2023 11:50	trawl net	TR13	ES062	357	416.5	Female		R2	comp04	LDW23-R2-ESFL-comp04	LDW23-R2-ESRM-comp04
LDW23-R2-ES003	English sole	*Parophrys vetulus*	8/21/2023 11:25	trawl net	TR04	ES003	358	458.5	Female		R2	comp05	LDW23-R2-ESFL-comp05	LDW23-R2-ESRM-comp05
LDW23-R2-ES005	English sole	*Parophrys vetulus*	8/21/2023 11:55	trawl net	TR05	ES005	407	553.0	Female		R2	comp03	LDW23-R2-ESFL-comp03	LDW23-R2-ESRM-comp03

Table A2. Composite Details for Shiner Surfperch

Specimen ID	Species - Common Name	Species - Latin Name	Collection Date/Time	Collection Method	Trawl/ Trap #	Specimen	Length (mm)	Weight (g)	Sex	Comments	Location	Composite No.	Composite ID
LDW23-R1A-SS171	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 10:43	trawl net	TR21	SS171	90	10.3	unknown		R1A	-	-
LDW23-R1A-SS135	shiner surfperch	*Cymatogaster aggregate*	8/22/2023 12:59	trawl net	TR14	SS135	91	10.1	unknown		R1A	-	-
LDW23-R1A-SS177	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 10:43	trawl net	TR21	SS177	91	9.9	unknown		R1A	-	-
LDW23-R1A-SS144	shiner surfperch	*Cymatogaster aggregate*	8/22/2023 14:48	trawl net	TR17	SS144	92	12.0	unknown		R1A	-	-
LDW23-R1A-SS156	shiner surfperch	*Cymatogaster aggregate*	8/22/2023 15:21	trawl net	TR18	SS156	92	11.0	unknown		R1A	-	-
LDW23-R1A-SS167	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 10:43	trawl net	TR21	SS167	92	10.3	unknown		R1A	-	-
LDW23-R1A-SS140	shiner surfperch	*Cymatogaster aggregate*	8/22/2023 14:06	trawl net	TR16	SS140	93	10.5	unknown		R1A	comp01	LDW23-R1A-SSWB-comp01
LDW23-R1A-SS151	shiner surfperch	*Cymatogaster aggregate*	8/22/2023 15:21	trawl net	TR18	SS151	93	9.7	unknown		R1A	comp02	LDW23-R1A-SSWB-comp02
LDW23-R1A-SS154	shiner surfperch	*Cymatogaster aggregate*	8/22/2023 15:21	trawl net	TR18	SS154	93	10.1	unknown		R1A	comp03	LDW23-R1A-SSWB-comp03
LDW23-R1A-SS166	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 10:43	trawl net	TR21	SS166	93	10.5	unknown		R1A	-	-
LDW23-R1A-SS179	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 10:43	trawl net	TR21	SS179	93	10.3	unknown		R1A	comp01	LDW23-R1A-SSWB-comp01
LDW23-R1A-SS180	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 10:43	trawl net	TR21	SS180	93	10.8	unknown		R1A	comp02	LDW23-R1A-SSWB-comp02
LDW23-R1A-SS130	shiner surfperch	*Cymatogaster aggregate*	8/22/2023 12:59	trawl net	TR14	SS130	94	10.5	unknown		R1A	comp03	LDW23-R1A-SSWB-comp03
LDW23-R1A-SS133	shiner surfperch	*Cymatogaster aggregate*	8/22/2023 12:59	trawl net	TR14	SS133	94	9.6	unknown		R1A	-	-
LDW23-R1A-SS145	shiner surfperch	*Cymatogaster aggregate*	8/22/2023 14:48	trawl net	TR17	SS145	94	9.8	unknown		R1A	comp01	LDW23-R1A-SSWB-comp01
LDW23-R1A-SS134	shiner surfperch	*Cymatogaster aggregate*	8/22/2023 12:59	trawl net	TR14	SS134	95	10.7	unknown		R1A	comp02	LDW23-R1A-SSWB-comp02
LDW23-R1A-SS146	shiner surfperch	*Cymatogaster aggregate*	8/22/2023 14:48	trawl net	TR17	SS146	95	11.4	unknown		R1A	comp03	LDW23-R1A-SSWB-comp03
LDW23-R1A-SS169	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 10:43	trawl net	TR21	SS169	95	10.1	unknown		R1A	-	-
LDW23-R1A-SS170	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 10:43	trawl net	TR21	SS170	95	10.7	unknown		R1A	comp01	LDW23-R1A-SSWB-comp01
LDW23-R1A-SS142	shiner surfperch	*Cymatogaster aggregate*	8/22/2023 14:06	trawl net	TR16	SS142	96	9.8	unknown		R1A	comp02	LDW23-R1A-SSWB-comp02
LDW23-R1A-SS176	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 10:43	trawl net	TR21	SS176	96	12.9	unknown		R1A	comp03	LDW23-R1A-SSWB-comp03
LDW23-R1A-SS150	shiner surfperch	*Cymatogaster aggregate*	8/22/2023 15:21	trawl net	TR18	SS150	97	12.0	unknown		R1A	-	-
LDW23-R1A-SS165	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 10:43	trawl net	TR21	SS165	97	11.1	unknown		R1A	comp01	LDW23-R1A-SSWB-comp01
LDW23-R1A-SS168	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 10:43	trawl net	TR21	SS168	97	10.8	unknown		R1A	comp02	LDW23-R1A-SSWB-comp02
LDW23-R1A-SS147	shiner surfperch	*Cymatogaster aggregate*	8/22/2023 15:21	trawl net	TR18	SS147	98	11.9	unknown		R1A	comp03	LDW23-R1A-SSWB-comp03
LDW23-R1A-SS152	shiner surfperch	*Cymatogaster aggregate*	8/22/2023 15:21	trawl net	TR18	SS152	98	11.4	unknown		R1A	-	-
LDW23-R1A-SS137	shiner surfperch	*Cymatogaster aggregate*	8/22/2023 12:59	trawl net	TR14	SS137	99	10.7	unknown		R1A	comp01	LDW23-R1A-SSWB-comp01
LDW23-R1A-SS175	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 10:43	trawl net	TR21	SS175	99	13.5	unknown		R1A	comp02	LDW23-R1A-SSWB-comp02
LDW23-R1A-SS128	shiner surfperch	*Cymatogaster aggregate*	8/22/2023 12:59	trawl net	TR14	SS128	100	14.8	unknown		R1A	comp03	LDW23-R1A-SSWB-comp03
LDW23-R1A-SS136	shiner surfperch	*Cymatogaster aggregate*	8/22/2023 12:59	trawl net	TR14	SS136	100	13.5	unknown		R1A	-	-
LDW23-R1A-SS174	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 10:43	trawl net	TR21	SS174	101	17.3	unknown		R1A	comp01	LDW23-R1A-SSWB-comp01
LDW23-R1A-SS141	shiner surfperch	*Cymatogaster aggregate*	8/22/2023 14:06	trawl net	TR16	SS141	103	11.8	unknown		R1A	comp02	LDW23-R1A-SSWB-comp02
LDW23-R1A-SS160	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 10:43	trawl net	TR21	SS160	103	15.6	unknown		R1A	comp03	LDW23-R1A-SSWB-comp03
LDW23-R1A-SS123	shiner surfperch	*Cymatogaster aggregate*	8/22/2023 12:59	trawl net	TR14	SS123	104	17.8	unknown		R1A	-	-
LDW23-R1A-SS148	shiner surfperch	*Cymatogaster aggregate*	8/22/2023 15:21	trawl net	TR18	SS148	104	14.8	unknown		R1A	comp01	LDW23-R1A-SSWB-comp01
LDW23-R1A-SS132	shiner surfperch	*Cymatogaster aggregate*	8/22/2023 12:59	trawl net	TR14	SS132	105	13.1	unknown		R1A	comp02	LDW23-R1A-SSWB-comp02
LDW23-R1A-SS164	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 10:43	trawl net	TR21	SS164	105	14.3	unknown		R1A	comp03	LDW23-R1A-SSWB-comp03
LDW23-R1A-SS122	shiner surfperch	*Cymatogaster aggregate*	8/22/2023 12:59	trawl net	TR14	SS122	110	16.9	unknown		R1A	-	-
LDW23-R1A-SS149	shiner surfperch	*Cymatogaster aggregate*	8/22/2023 15:21	trawl net	TR18	SS149	110	18.6	unknown		R1A	comp01	LDW23-R1A-SSWB-comp01
LDW23-R1A-SS153	shiner surfperch	*Cymatogaster aggregate*	8/22/2023 15:21	trawl net	TR18	SS153	110	18.9	unknown		R1A	comp02	LDW23-R1A-SSWB-comp02
LDW23-R1A-SS162	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 10:43	trawl net	TR21	SS162	110	16.8	unknown		R1A	comp03	LDW23-R1A-SSWB-comp03
LDW23-R1A-SS172	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 10:43	trawl net	TR21	SS172	110	20.8	unknown		R1A	comp01	LDW23-R1A-SSWB-comp01
LDW23-R1A-SS131	shiner surfperch	*Cymatogaster aggregate*	8/22/2023 12:59	trawl net	TR14	SS131	111	17.7	unknown		R1A	comp02	LDW23-R1A-SSWB-comp02
LDW23-R1A-SS163	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 10:43	trawl net	TR21	SS163	112	17.5	unknown		R1A	comp03	LDW23-R1A-SSWB-comp03
LDW23-R1A-SS125	shiner surfperch	*Cymatogaster aggregate*	8/22/2023 12:59	trawl net	TR14	SS125	114	20.2	unknown		R1A	comp01	LDW23-R1A-SSWB-comp01
LDW23-R1A-SS126	shiner surfperch	*Cymatogaster aggregate*	8/22/2023 12:59	trawl net	TR14	SS126	114	20.1	unknown		R1A	comp02	LDW23-R1A-SSWB-comp02
LDW23-R1A-SS161	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 10:43	trawl net	TR21	SS161	114	17.9	unknown		R1A	comp03	LDW23-R1A-SSWB-comp03
LDW23-R1A-SS173	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 10:43	trawl net	TR21	SS173	116	20.9	unknown		R1A	comp01	LDW23-R1A-SSWB-comp01
LDW23-R1A-SS139	shiner surfperch	*Cymatogaster aggregate*	8/22/2023 14:06	trawl net	TR16	SS139	118	21.4	unknown		R1A	comp02	LDW23-R1A-SSWB-comp02
LDW23-R1A-SS124	shiner surfperch	*Cymatogaster aggregate*	8/22/2023 12:59	trawl net	TR14	SS124	119	24.4	unknown		R1A	comp03	LDW23-R1A-SSWB-comp03
LDW23-R1A-SS138	shiner surfperch	*Cymatogaster aggregate*	8/22/2023 14:06	trawl net	TR16	SS138	119	21.7	unknown		R1A	comp01	LDW23-R1A-SSWB-comp01

Table A2. Composite Details for Shiner Surfperch

Specimen ID	Species - Common Name	Species - Latin Name	Collection Date/Time	Collection Method	Trawl/ Trap #	Specimen	Length (mm)	Weight (g)	Sex	Comments	Location	Composite No.	Composite ID
LDW23-R1A-SS159	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 10:43	trawl net	TR21	SS159	120	20.8	unknown		R1A	comp02	LDW23-R1A-SSWB-comp02
LDW23-R1A-SS155	shiner surfperch	*Cymatogaster aggregate*	8/22/2023 15:21	trawl net	TR18	SS155	121	21.8	unknown		R1A	comp03	LDW23-R1A-SSWB-comp03
LDW23-R1A-SS129	shiner surfperch	*Cymatogaster aggregate*	8/22/2023 12:59	trawl net	TR14	SS129	123	21.6	unknown		R1A	comp01	LDW23-R1A-SSWB-comp01
LDW23-R1A-SS127	shiner surfperch	*Cymatogaster aggregate*	8/22/2023 12:59	trawl net	TR14	SS127	125	25.6	unknown		R1A	comp02	LDW23-R1A-SSWB-comp02
LDW23-R1A-SS178	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 10:43	trawl net	TR21	SS178	125	23.8	unknown		R1A	comp03	LDW23-R1A-SSWB-comp03
LDW23-R1A-SS157	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 10:43	trawl net	TR21	SS157	126	23.1	unknown		R1A	comp01	LDW23-R1A-SSWB-comp01
LDW23-R1A-SS121	shiner surfperch	*Cymatogaster aggregate*	8/22/2023 12:59	trawl net	TR14	SS121	128	25.7	unknown		R1A	comp02	LDW23-R1A-SSWB-comp02
LDW23-R1A-SS158	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 10:43	trawl net	TR21	SS158	131	26.8	unknown		R1A	comp03	LDW23-R1A-SSWB-comp03
LDW23-R1A-SS143	shiner surfperch	*Cymatogaster aggregate*	8/22/2023 14:48	trawl net	TR17	SS143	139	35.7	unknown		R1A	-	-
LDW23-R1B-SS205	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 11:24	trawl net	TR22	SS205	87	9.3	unknown		R1B	-	-
LDW23-R1B-SS235	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 12:53	trawl net	TR24	SS235	88	9.5	unknown		R1B	-	-
LDW23-R1B-SS206	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 11:24	trawl net	TR22	SS206	90	9.7	unknown		R1B	-	-
LDW23-R1B-SS232	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 12:53	trawl net	TR24	SS232	90	10.6	unknown		R1B	-	-
LDW23-R1B-SS238	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 12:53	trawl net	TR24	SS238	91	10.9	unknown		R1B	-	-
LDW23-R1B-SS194	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 11:24	trawl net	TR22	SS194	94	11.5	unknown		R1B	comp01	LDW23-R1B-SSWB-comp01
LDW23-R1B-SS230	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 12:53	trawl net	TR24	SS230	94	10.2	unknown		R1B	comp02	LDW23-R1B-SSWB-comp02
LDW23-R1B-SS231	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 12:53	trawl net	TR24	SS231	94	10.7	unknown		R1B	comp03	LDW23-R1B-SSWB-comp03
LDW23-R1B-SS187	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 11:24	trawl net	TR22	SS187	95	10.5	unknown		R1B	-	-
LDW23-R1B-SS240	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 12:53	trawl net	TR24	SS240	95	11.8	unknown		R1B	comp01	LDW23-R1B-SSWB-comp01
LDW23-R1B-SS229	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 12:53	trawl net	TR24	SS229	96	11.9	unknown		R1B	comp02	LDW23-R1B-SSWB-comp02
LDW23-R1B-SS204	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 11:24	trawl net	TR22	SS204	97	11.6	unknown		R1B	comp03	LDW23-R1B-SSWB-comp03
LDW23-R1B-SS197	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 11:24	trawl net	TR22	SS197	98	12.2	unknown		R1B	-	-
LDW23-R1B-SS202	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 11:24	trawl net	TR22	SS202	98	12.7	unknown		R1B	comp01	LDW23-R1B-SSWB-comp01
LDW23-R1B-SS195	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 11:24	trawl net	TR22	SS195	99	10.7	unknown		R1B	comp02	LDW23-R1B-SSWB-comp02
LDW23-R1B-SS201	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 11:24	trawl net	TR22	SS201	99	12.8	unknown		R1B	comp03	LDW23-R1B-SSWB-comp03
LDW23-R1B-SS234	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 12:53	trawl net	TR24	SS234	99	11.5	unknown		R1B	-	-
LDW23-R1B-SS237	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 12:53	trawl net	TR24	SS237	99	10.4	unknown		R1B	comp01	LDW23-R1B-SSWB-comp01
LDW23-R1B-SS196	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 11:24	trawl net	TR22	SS196	100	11.6	unknown		R1B	comp02	LDW23-R1B-SSWB-comp02
LDW23-R1B-SS193	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 11:24	trawl net	TR22	SS193	101	12.8	unknown		R1B	comp03	LDW23-R1B-SSWB-comp03
LDW23-R1B-SS198	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 11:24	trawl net	TR22	SS198	104	15	unknown		R1B	-	-
LDW23-R1B-SS200	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 11:24	trawl net	TR22	SS200	104	12.7	unknown		R1B	comp01	LDW23-R1B-SSWB-comp01
LDW23-R1B-SS239	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 12:53	trawl net	TR24	SS239	105	16.1	unknown		R1B	comp02	LDW23-R1B-SSWB-comp02
LDW23-R1B-SS188	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 11:24	trawl net	TR22	SS188	106	14.2	unknown		R1B	comp03	LDW23-R1B-SSWB-comp03
LDW23-R1B-SS226	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 12:53	trawl net	TR24	SS226	106	13.8	unknown		R1B	-	-
LDW23-R1B-SS191	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 11:24	trawl net	TR22	SS191	107	17.1	unknown		R1B	comp01	LDW23-R1B-SSWB-comp01
LDW23-R1B-SS207	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 11:24	trawl net	TR22	SS207	107	14.7	unknown		R1B	comp02	LDW23-R1B-SSWB-comp02
LDW23-R1B-SS233	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 12:53	trawl net	TR24	SS233	107	13	unknown		R1B	comp03	LDW23-R1B-SSWB-comp03
LDW23-R1B-SS236	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 12:53	trawl net	TR24	SS236	107	13.9	unknown		R1B	-	-
LDW23-R1B-SS184	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 11:24	trawl net	TR22	SS184	108	14.5	unknown		R1B	comp01	LDW23-R1B-SSWB-comp01
LDW23-R1B-SS190	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 11:24	trawl net	TR22	SS190	108	14.5	unknown		R1B	comp02	LDW23-R1B-SSWB-comp02
LDW23-R1B-SS208	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 11:24	trawl net	TR22	SS208	108	16.8	unknown		R1B	comp03	LDW23-R1B-SSWB-comp03
LDW23-R1B-SS227	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 12:53	trawl net	TR24	SS227	108	15.7	unknown		R1B	-	-
LDW23-R1B-SS215	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 12:18	trawl net	TR23	SS215	109	16	unknown		R1B	comp01	LDW23-R1B-SSWB-comp01
LDW23-R1B-SS189	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 11:24	trawl net	TR22	SS189	110	15.9	unknown		R1B	-	-
LDW23-R1B-SS222	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 12:53	trawl net	TR24	SS222	110	22.3	unknown		R1B	comp03	LDW23-R1B-SSWB-comp03
LDW23-R1B-SS213	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 12:18	trawl net	TR23	SS213	111	17.7	unknown		R1B	comp02	LDW23-R1B-SSWB-comp02
LDW23-R1B-SS221	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 12:53	trawl net	TR24	SS221	111	19	unknown		R1B	comp01	LDW23-R1B-SSWB-comp01
LDW23-R1B-SS224	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 12:53	trawl net	TR24	SS224	111	19.3	unknown		R1B	comp02	LDW23-R1B-SSWB-comp02
LDW23-R1B-SS228	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 12:53	trawl net	TR24	SS228	112	19	unknown		R1B	comp03	LDW23-R1B-SSWB-comp03
LDW23-R1B-SS192	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 11:24	trawl net	TR22	SS192	113	18.5	unknown		R1B	-	-
LDW23-R1B-SS209	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 12:18	trawl net	TR23	SS209	113	21.4	unknown		R1B	comp01	LDW23-R1B-SSWB-comp01

Table A2. Composite Details for Shiner Surfperch

Specimen ID	Species - Common Name	Species - Latin Name	Collection Date/Time	Collection Method	Trawl/ Trap #	Specimen	Length (mm)	Weight (g)	Sex	Comments	Location	Composite No.	Composite ID
LDW23-R1B-SS183	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 11:24	trawl net	TR22	SS183	114	22.1	unknown		R1B	-	-
LDW23-R1B-SS223	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 12:53	trawl net	TR24	SS223	114	22.1	unknown		R1B	comp03	LDW23-R1B-SSWB-comp03
LDW23-R1B-SS214	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 12:18	trawl net	TR23	SS214	116	22.9	unknown		R1B	comp02	LDW23-R1B-SSWB-comp02
LDW23-R1B-SS199	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 11:24	trawl net	TR22	SS199	117	18.7	unknown		R1B	comp01	LDW23-R1B-SSWB-comp01
LDW23-R1B-SS185	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 11:24	trawl net	TR22	SS185	118	21.3	unknown		R1B	comp02	LDW23-R1B-SSWB-comp02
LDW23-R1B-SS203	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 11:24	trawl net	TR22	SS203	118	20.5	unknown		R1B	comp03	LDW23-R1B-SSWB-comp03
LDW23-R1B-SS186	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 11:24	trawl net	TR22	SS186	119	26.4	unknown		R1B	comp01	LDW23-R1B-SSWB-comp01
LDW23-R1B-SS225	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 12:53	trawl net	TR24	SS225	119	20.5	unknown		R1B	comp02	LDW23-R1B-SSWB-comp02
LDW23-R1B-SS211	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 12:18	trawl net	TR23	SS211	120	24.4	unknown		R1B	comp03	LDW23-R1B-SSWB-comp03
LDW23-R1B-SS217	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 12:53	trawl net	TR24	SS217	120	24	unknown		R1B	comp01	LDW23-R1B-SSWB-comp01
LDW23-R1B-SS218	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 12:53	trawl net	TR24	SS218	120	22.3	unknown		R1B	comp02	LDW23-R1B-SSWB-comp02
LDW23-R1B-SS181	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 11:24	trawl net	TR22	SS181	124	26.3	unknown		R1B	comp03	LDW23-R1B-SSWB-comp03
LDW23-R1B-SS212	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 12:18	trawl net	TR23	SS212	125	22.3	unknown		R1B	comp03	LDW23-R1B-SSWB-comp03
LDW23-R1B-SS220	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 12:53	trawl net	TR24	SS220	127	28.2	unknown		R1B	comp02	LDW23-R1B-SSWB-comp02
LDW23-R1B-SS210	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 12:18	trawl net	TR23	SS210	130	29.1	unknown		R1B	comp01	LDW23-R1B-SSWB-comp01
LDW23-R1B-SS219	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 12:53	trawl net	TR24	SS219	131	28.6	unknown		R1B	comp01	LDW23-R1B-SSWB-comp01
LDW23-R1B-SS182	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 11:24	trawl net	TR22	SS182	135	28	unknown		R1B	comp02	LDW23-R1B-SSWB-comp02
LDW23-R1B-SS216	shiner surfperch	*Cymatogaster aggregate*	8/23/2023 12:53	trawl net	TR24	SS216	135	32.5	unknown		R1B	comp03	LDW23-R1B-SSWB-comp03
LDW23-R2A-SS005	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 9:30	trawl net	TR01	SS005	93	10.9	unknown		R2A	comp01	LDW23-R2A-SSWB-comp01
LDW23-R2A-SS029	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 10:40	trawl net	TR03	SS029	94	10.3	unknown		R2A	comp02	LDW23-R2A-SSWB-comp02
LDW23-R2A-SS008	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 9:30	trawl net	TR01	SS008	96	10.5	unknown		R2A	comp03	LDW23-R2A-SSWB-comp03
LDW23-R2A-SS018	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 10:40	trawl net	TR03	SS018	97	11.9	unknown		R2A	-	-
LDW23-R2A-SS042	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 11:55	trawl net	TR05	SS042	98	12.1	unknown		R2A	comp01	LDW23-R2A-SSWB-comp01
LDW23-R2A-SS050	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 11:55	trawl net	TR05	SS050	101	13.8	unknown		R2A	comp02	LDW23-R2A-SSWB-comp02
LDW23-R2A-SS025	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 10:40	trawl net	TR03	SS025	103	14.5	unknown		R2A	comp03	LDW23-R2A-SSWB-comp03
LDW23-R2A-SS028	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 10:40	trawl net	TR03	SS028	104	15.3	unknown		R2A	-	-
LDW23-R2A-SS031	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 11:25	trawl net	TR04	SS031	105	17.2	unknown		R2A	comp01	LDW23-R2A-SSWB-comp01
LDW23-R2A-SS038	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 11:55	trawl net	TR05	SS038	105	14.9	unknown		R2A	comp02	LDW23-R2A-SSWB-comp02
LDW23-R2A-SS041	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 11:55	trawl net	TR05	SS041	105	12.4	unknown		R2A	comp03	LDW23-R2A-SSWB-comp03
LDW23-R2A-SS048	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 11:55	trawl net	TR05	SS048	105	16.3	unknown		R2A	-	-
LDW23-R2A-SS032	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 11:25	trawl net	TR04	SS032	106	14.2	unknown		R2A	-	-
LDW23-R2A-SS004	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 9:30	trawl net	TR01	SS004	107	14.9	unknown		R2A	comp01	LDW23-R2A-SSWB-comp01
LDW23-R2A-SS030	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 10:40	trawl net	TR03	SS030	107	10.7	unknown		R2A	comp02	LDW23-R2A-SSWB-comp02
LDW23-R2A-SS049	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 11:55	trawl net	TR05	SS049	107	16.2	unknown		R2A	comp03	LDW23-R2A-SSWB-comp03
LDW23-R2A-SS045	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 11:55	trawl net	TR05	SS045	108	19.3	unknown		R2A	-	-
LDW23-R2A-SS006	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 9:30	trawl net	TR01	SS006	109	15.9	unknown		R2A	comp01	LDW23-R2A-SSWB-comp01
LDW23-R2A-SS044	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 11:55	trawl net	TR05	SS044	109	20.2	unknown		R2A	comp02	LDW23-R2A-SSWB-comp02
LDW23-R2A-SS047	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 11:55	trawl net	TR05	SS047	109	17.2	unknown		R2A	-	-
LDW23-R2A-SS054	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 12:38	trawl net	TR06	SS054	109	18.2	unknown		R2A	comp03	LDW23-R2A-SSWB-comp03
LDW23-R2A-SS003	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 9:30	trawl net	TR01	SS003	110	17.5	unknown		R2A	comp01	LDW23-R2A-SSWB-comp01
LDW23-R2A-SS024	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 10:40	trawl net	TR03	SS024	110	21.1	unknown		R2A	comp02	LDW23-R2A-SSWB-comp02
LDW23-R2A-SS051	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 11:55	trawl net	TR05	SS051	110	19.1	unknown		R2A	comp03	LDW23-R2A-SSWB-comp03
LDW23-R2A-SS036	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 11:25	trawl net	TR04	SS036	111	16.8	unknown		R2A	-	-
LDW23-R2A-SS020	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 10:40	trawl net	TR03	SS020	112	19.5	unknown		R2A	comp01	LDW23-R2A-SSWB-comp01
LDW23-R2A-SS035	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 11:25	trawl net	TR04	SS035	112	18.4	unknown		R2A	comp02	LDW23-R2A-SSWB-comp02
LDW23-R2A-SS053	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 11:55	trawl net	TR05	SS053	112	20.1	unknown		R2A	comp03	LDW23-R2A-SSWB-comp03
LDW23-R2A-SS056	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 12:38	trawl net	TR06	SS056	112	17.5	unknown		R2A	-	-
LDW23-R2A-SS019	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 10:40	trawl net	TR03	SS019	113	17.9	unknown		R2A	comp01	LDW23-R2A-SSWB-comp01
LDW23-R2A-SS055	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 12:38	trawl net	TR06	SS055	113	22.7	unknown		R2A	comp02	LDW23-R2A-SSWB-comp02
LDW23-R2A-SS033	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 11:25	trawl net	TR04	SS033	114	21.6	unknown		R2A	comp03	LDW23-R2A-SSWB-comp03
LDW23-R2A-SS037	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 11:25	trawl net	TR04	SS037	114	19.7	unknown		R2A	-	-

Table A2. Composite Details for Shiner Surfperch

Specimen ID	Species - Common Name	Species - Latin Name	Collection Date/Time	Collection Method	Trawl/ Trap #	Specimen	Length (mm)	Weight (g)	Sex	Comments	Location	Composite No.	Composite ID
LDW23-R2A-SS052	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 11:55	trawl net	TR05	SS052	114	18.5	unknown		R2A	comp01	LDW23-R2A-SSWB-comp01
LDW23-R2A-SS007	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 9:30	trawl net	TR01	SS007	115	19.6	unknown		R2A	comp02	LDW23-R2A-SSWB-comp02
LDW23-R2A-SS011	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 10:40	trawl net	TR03	SS011	115	20.9	unknown		R2A	comp03	LDW23-R2A-SSWB-comp03
LDW23-R2A-SS046	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 11:55	trawl net	TR05	SS046	115	19.9	unknown		R2A	-	-
LDW23-R2A-SS022	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 10:40	trawl net	TR03	SS022	116	17.7	unknown		R2A	comp01	LDW23-R2A-SSWB-comp01
LDW23-R2A-SS040	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 11:55	trawl net	TR05	SS040	116	17.6	unknown		R2A	comp02	LDW23-R2A-SSWB-comp02
LDW23-R2A-SS010	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 10:08	trawl net	TR02	SS010	117	20.4	unknown		R2A	comp03	LDW23-R2A-SSWB-comp03
LDW23-R2A-SS017	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 10:40	trawl net	TR03	SS017	119	25.9	unknown		R2A	-	-
LDW23-R2A-SS021	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 10:40	trawl net	TR03	SS021	119	21.4	unknown		R2A	comp01	LDW23-R2A-SSWB-comp01
LDW23-R2A-SS014	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 10:40	trawl net	TR03	SS014	120	25.3	unknown		R2A	comp02	LDW23-R2A-SSWB-comp02
LDW23-R2A-SS016	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 10:40	trawl net	TR03	SS016	120	24.7	unknown		R2A	comp03	LDW23-R2A-SSWB-comp03
LDW23-R2A-SS023	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 10:40	trawl net	TR03	SS023	120	21.6	unknown		R2A	-	-
LDW23-R2A-SS057	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 14:50	trawl net	TR09	SS057	120	21.5	unknown		R2A	comp03	LDW23-R2A-SSWB-comp03
LDW23-R2A-SS002	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 9:30	trawl net	TR01	SS002	122	29.3	unknown		R2A	comp02	LDW23-R2A-SSWB-comp02
LDW23-R2A-SS027	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 10:40	trawl net	TR03	SS027	122	23.3	unknown		R2A	comp01	LDW23-R2A-SSWB-comp01
LDW23-R2A-SS039	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 11:55	trawl net	TR05	SS039	122	21.6	unknown		R2A	-	-
LDW23-R2A-SS060	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 14:50	trawl net	TR09	SS060	122	23.3	unknown		R2A	comp01	LDW23-R2A-SSWB-comp01
LDW23-R2A-SS034	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 11:25	trawl net	TR04	SS034	123	24.3	unknown		R2A	comp02	LDW23-R2A-SSWB-comp02
LDW23-R2A-SS043	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 11:55	trawl net	TR05	SS043	123	19.6	unknown		R2A	comp03	LDW23-R2A-SSWB-comp03
LDW23-R2A-SS013	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 10:40	trawl net	TR03	SS013	124	25.0	unknown		R2A	-	-
LDW23-R2A-SS026	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 10:40	trawl net	TR03	SS026	126	21.2	unknown		R2A	comp02	LDW23-R2A-SSWB-comp02
LDW23-R2A-SS015	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 10:40	trawl net	TR03	SS015	128	29.3	unknown		R2A	comp01	LDW23-R2A-SSWB-comp01
LDW23-R2A-SS001	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 9:30	trawl net	TR01	SS001	129	27.1	unknown		R2A	comp03	LDW23-R2A-SSWB-comp03
LDW23-R2A-SS009	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 10:08	trawl net	TR02	SS009	129	28.6	unknown		R2A	-	-
LDW23-R2A-SS059	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 14:50	trawl net	TR09	SS059	130	28.8	unknown		R2A	comp02	LDW23-R2A-SSWB-comp02
LDW23-R2A-SS058	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 14:50	trawl net	TR09	SS058	135	34.7	unknown		R2A	comp01	LDW23-R2A-SSWB-comp01
LDW23-R2A-SS012	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 10:40	trawl net	TR03	SS012	136	35.9	unknown		R2A	comp03	LDW23-R2A-SSWB-comp03
LDW23-R2B-SS116	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 13:10	trawl net	TR07	SS116	90	10.3	unknown		R2B	-	-
LDW23-R2B-SS099	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 13:10	trawl net	TR07	SS099	91	9.5	unknown		R2B	-	-
LDW23-R2B-SS103	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 13:10	trawl net	TR07	SS103	91	9.2	unknown		R2B	-	-
LDW23-R2B-SS104	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 13:10	trawl net	TR07	SS104	92	8.7	unknown		R2B	-	-
LDW23-R2B-SS113	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 13:10	trawl net	TR07	SS113	92	10.3	unknown		R2B	-	-
LDW23-R2B-SS090	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 13:10	trawl net	TR07	SS090	95	10.3	unknown		R2B	-	-
LDW23-R2B-SS115	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 13:10	trawl net	TR07	SS115	95	11.5	unknown		R2B	-	-
LDW23-R2B-SS119	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 13:10	trawl net	TR07	SS119	95	11.2	unknown		R2B	-	-
LDW23-R2B-SS069	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 13:10	trawl net	TR07	SS069	96	11.1	unknown		R2B	-	-
LDW23-R2B-SS085	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 13:10	trawl net	TR07	SS085	96	11.2	unknown		R2B	-	-
LDW23-R2B-SS101	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 13:10	trawl net	TR07	SS101	96	11.0	unknown		R2B	-	-
LDW23-R2B-SS105	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 13:10	trawl net	TR07	SS105	96	12.1	unknown		R2B	-	-
LDW23-R2B-SS108	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 13:10	trawl net	TR07	SS108	96	12.1	unknown		R2B	-	-
LDW23-R2B-SS094	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 13:10	trawl net	TR07	SS094	97	10.8	unknown		R2B	-	-
LDW23-R2B-SS107	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 13:10	trawl net	TR07	SS107	97	12.8	unknown		R2B	-	-
LDW23-R2B-SS084	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 13:10	trawl net	TR07	SS084	98	11.0	unknown		R2B	comp01	LDW23-R2B-SSWB-comp01
LDW23-R2B-SS110	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 13:10	trawl net	TR07	SS110	98	11.3	unknown		R2B	comp02	LDW23-R2B-SSWB-comp02
LDW23-R2B-SS117	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 13:10	trawl net	TR07	SS117	98	12.7	unknown		R2B	comp03	LDW23-R2B-SSWB-comp03
LDW23-R2B-SS065	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 13:10	trawl net	TR07	SS065	100	12.3	unknown		R2B	comp01	LDW23-R2B-SSWB-comp01
LDW23-R2B-SS078	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 13:10	trawl net	TR07	SS078	100	13.2	unknown		R2B	comp02	LDW23-R2B-SSWB-comp02
LDW23-R2B-SS087	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 13:10	trawl net	TR07	SS087	100	11.5	unknown		R2B	comp03	LDW23-R2B-SSWB-comp03
LDW23-R2B-SS089	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 13:10	trawl net	TR07	SS089	100	11.1	unknown		R2B	comp01	LDW23-R2B-SSWB-comp01
LDW23-R2B-SS071	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 13:10	trawl net	TR07	SS071	101	15.9	unknown		R2B	comp02	LDW23-R2B-SSWB-comp02
LDW23-R2B-SS082	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 13:10	trawl net	TR07	SS082	101	12.7	unknown		R2B	comp03	LDW23-R2B-SSWB-comp03

Table A2. Composite Details for Shiner Surfperch

Specimen ID	Species - Common Name	Species - Latin Name	Collection Date/Time	Collection Method	Trawl/ Trap #	Specimen	Length (mm)	Weight (g)	Sex	Comments	Location	Composite No.	Composite ID
LDW23-R2B-SS092	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 13:10	trawl net	TR07	SS092	101	13.3	unknown		R2B	comp01	LDW23-R2B-SSWB-comp01
LDW23-R2B-SS100	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 13:10	trawl net	TR07	SS100	101	11.8	unknown		R2B	comp02	LDW23-R2B-SSWB-comp02
LDW23-R2B-SS106	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 13:10	trawl net	TR07	SS106	101	13.7	unknown		R2B	comp03	LDW23-R2B-SSWB-comp03
LDW23-R2B-SS079	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 13:10	trawl net	TR07	SS079	102	15.8	unknown		R2B	comp01	LDW23-R2B-SSWB-comp01
LDW23-R2B-SS091	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 13:10	trawl net	TR07	SS091	102	15.9	unknown		R2B	comp02	LDW23-R2B-SSWB-comp02
LDW23-R2B-SS098	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 13:10	trawl net	TR07	SS098	102	12.7	unknown		R2B	comp03	LDW23-R2B-SSWB-comp03
LDW23-R2B-SS118	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 13:10	trawl net	TR07	SS118	102	11.9	unknown		R2B	comp01	LDW23-R2B-SSWB-comp01
LDW23-R2B-SS068	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 13:10	trawl net	TR07	SS068	103	15.9	unknown		R2B	comp02	LDW23-R2B-SSWB-comp02
LDW23-R2B-SS064	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 13:10	trawl net	TR07	SS064	104	14.8	unknown		R2B	comp03	LDW23-R2B-SSWB-comp03
LDW23-R2B-SS081	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 13:10	trawl net	TR07	SS081	104	15.9	unknown		R2B	comp01	LDW23-R2B-SSWB-comp01
LDW23-R2B-SS083	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 13:10	trawl net	TR07	SS083	104	14.2	unknown		R2B	comp02	LDW23-R2B-SSWB-comp02
LDW23-R2B-SS111	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 13:10	trawl net	TR07	SS111	104	15.5	unknown		R2B	comp03	LDW23-R2B-SSWB-comp03
LDW23-R2B-SS096	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 13:10	trawl net	TR07	SS096	105	16.8	unknown		R2B	comp01	LDW23-R2B-SSWB-comp01
LDW23-R2B-SS114	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 13:10	trawl net	TR07	SS114	105	16.0	unknown		R2B	comp02	LDW23-R2B-SSWB-comp02
LDW23-R2B-SS073	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 13:10	trawl net	TR07	SS073	106	14.8	unknown		R2B	comp03	LDW23-R2B-SSWB-comp03
LDW23-R2B-SS112	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 13:10	trawl net	TR07	SS112	106	14.2	unknown		R2B	comp01	LDW23-R2B-SSWB-comp01
LDW23-R2B-SS120	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 13:10	trawl net	TR07	SS120	106	13.3	unknown		R2B	comp02	LDW23-R2B-SSWB-comp02
LDW23-R2B-SS093	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 13:10	trawl net	TR07	SS093	107	16.3	unknown		R2B	comp03	LDW23-R2B-SSWB-comp03
LDW23-R2B-SS066	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 13:10	trawl net	TR07	SS066	108	16.4	unknown		R2B	comp01	LDW23-R2B-SSWB-comp01
LDW23-R2B-SS076	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 13:10	trawl net	TR07	SS076	108	12.3	unknown		R2B	comp02	LDW23-R2B-SSWB-comp02
LDW23-R2B-SS097	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 13:10	trawl net	TR07	SS097	108	17.4	unknown		R2B	comp03	LDW23-R2B-SSWB-comp03
LDW23-R2B-SS072	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 13:10	trawl net	TR07	SS072	109	17.8	unknown		R2B	comp01	LDW23-R2B-SSWB-comp01
LDW23-R2B-SS086	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 13:10	trawl net	TR07	SS086	109	15.4	unknown		R2B	comp02	LDW23-R2B-SSWB-comp02
LDW23-R2B-SS061	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 13:10	trawl net	TR07	SS061	110	17.1	unknown		R2B	comp03	LDW23-R2B-SSWB-comp03
LDW23-R2B-SS074	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 13:10	trawl net	TR07	SS074	110	15.4	unknown		R2B	comp01	LDW23-R2B-SSWB-comp01
LDW23-R2B-SS077	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 13:10	trawl net	TR07	SS077	110	17.8	unknown		R2B	comp02	LDW23-R2B-SSWB-comp02
LDW23-R2B-SS070	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 13:10	trawl net	TR07	SS070	111	16.9	unknown		R2B	comp03	LDW23-R2B-SSWB-comp03
LDW23-R2B-SS075	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 13:10	trawl net	TR07	SS075	111	12.3	unknown		R2B	comp01	LDW23-R2B-SSWB-comp01
LDW23-R2B-SS102	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 13:10	trawl net	TR07	SS102	111	18.1	unknown		R2B	comp02	LDW23-R2B-SSWB-comp02
LDW23-R2B-SS109	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 13:10	trawl net	TR07	SS109	111	18.9	unknown		R2B	comp03	LDW23-R2B-SSWB-comp03
LDW23-R2B-SS067	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 13:10	trawl net	TR07	SS067	112	18.2	unknown		R2B	comp01	LDW23-R2B-SSWB-comp01
LDW23-R2B-SS062	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 13:10	trawl net	TR07	SS062	117	20.3	unknown		R2B	comp02	LDW23-R2B-SSWB-comp02
LDW23-R2B-SS063	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 13:10	trawl net	TR07	SS063	119	21.9	unknown		R2B	comp03	LDW23-R2B-SSWB-comp03
LDW23-R2B-SS080	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 13:10	trawl net	TR07	SS080	120	19.0	unknown		R2B	comp01	LDW23-R2B-SSWB-comp01
LDW23-R2B-SS088	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 13:10	trawl net	TR07	SS088	128	24.3	unknown		R2B	comp02	LDW23-R2B-SSWB-comp02
LDW23-R2B-SS095	shiner surfperch	*Cymatogaster aggregate*	8/21/2023 13:10	trawl net	TR07	SS095	128	25.6	unknown		R2B	comp03	LDW23-R2B-SSWB-comp03

Table A3. Composite Details for Graceful Crab

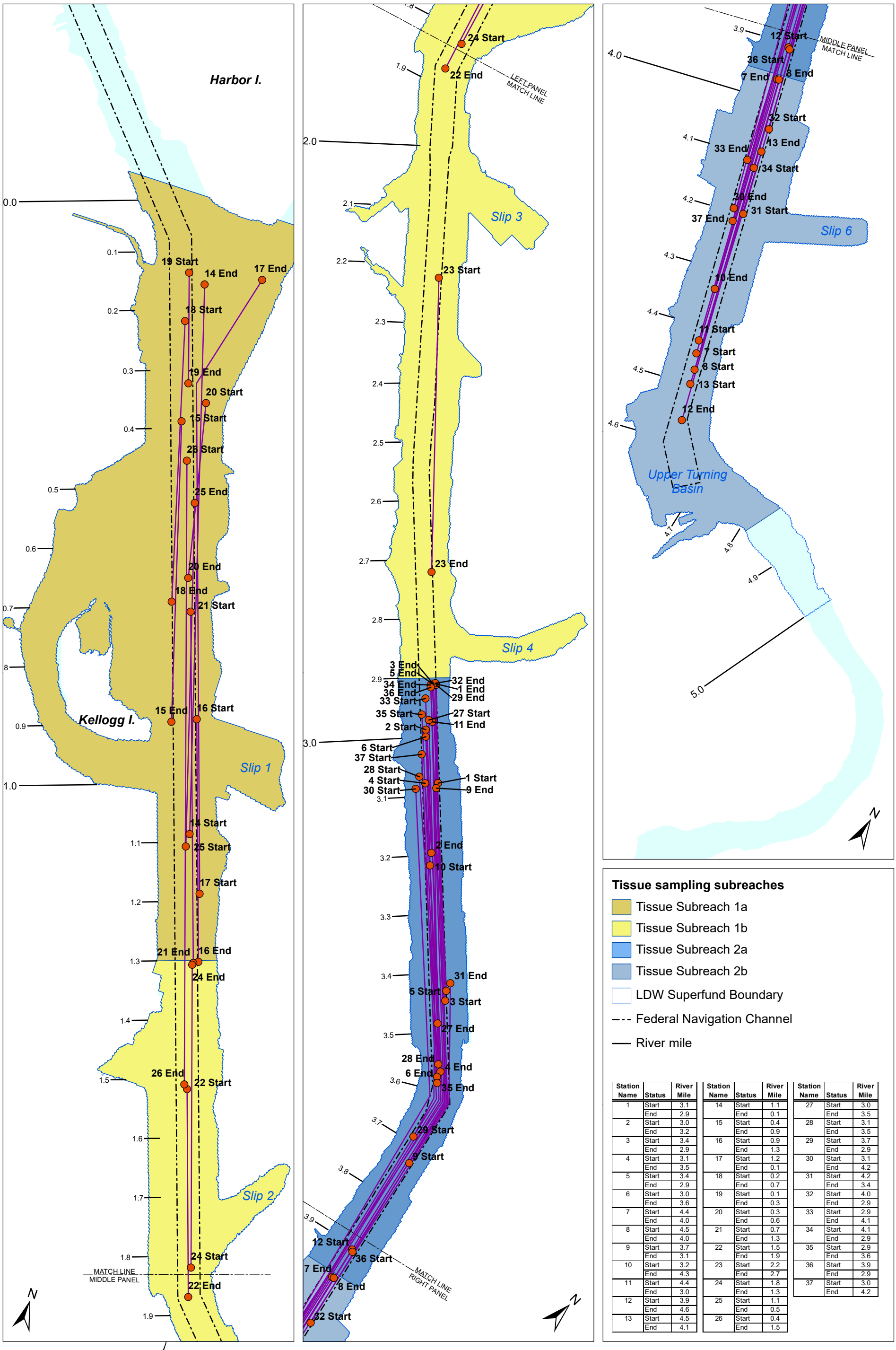
Specimen ID	Species - Common Name	Species - Latin Name	Collection Date/Time	Collection Method	Trawl/ Trap #	Specimen	Length (mm)	Weight (g)	Sex	Comments	Location	Composite No.	Edible Meat Composite ID	Hepatopancreas Composite ID
LDW23-R1-GC023	graceful crab	*Metacarcinus gracilis*	8/22/2023 14:06	trawl net	TR16	GC023	90	118.3	Male		R1	comp01	LDW23-R1-GCEM-comp01	LDW23-R1-GCHP-comp01
LDW23-R1-GC061	graceful crab	*Metacarcinus gracilis*	8/23/2023 12:18	trawl net	TR23	GC061	90	124.3	Male		R1	comp02	LDW23-R1-GCEM-comp02	LDW23-R1-GCHP-comp01
LDW23-R1-GC043	graceful crab	*Metacarcinus gracilis*	8/23/2023 14:44	crab trap	CT59	GC043	90	135.6	Male	missing 1 right leg	R1	comp03	LDW23-R1-GCEM-comp03	LDW23-R1-GCHP-comp02
LDW23-R1-GC067	graceful crab	*Metacarcinus gracilis*	8/24/2023 12:31	crab trap	CT75	GC067	90	133.4	Male		R1	comp04	LDW23-R1-GCEM-comp04	LDW23-R1-GCHP-comp02
LDW23-R1-GC060	graceful crab	*Metacarcinus gracilis*	8/23/2023 11:24	trawl net	TR22	GC060	91	135	Male		R1	comp05	LDW23-R1-GCEM-comp05	LDW23-R1-GCHP-comp03
LDW23-R1-GC054	graceful crab	*Metacarcinus gracilis*	8/23/2023 10:43	trawl net	TR21	GC054	92	130.1	Male		R1	comp06	LDW23-R1-GCEM-comp06	LDW23-R1-GCHP-comp03
LDW23-R1-GC029	graceful crab	*Metacarcinus gracilis*	8/23/2023 11:43	crab trap	CT46	GC029	92	120.2	Male	missing left claw	R1	-	-	-
LDW23-R1-GC041	graceful crab	*Metacarcinus gracilis*	8/23/2023 13:03	crab trap	CT55	GC041	92	149.7	Male		R1	comp01	LDW23-R1-GCEM-comp01	LDW23-R1-GCHP-comp01
LDW23-R1-GC058	graceful crab	*Metacarcinus gracilis*	8/23/2023 11:24	trawl net	TR22	GC058	93	146.2	Male		R1	comp02	LDW23-R1-GCEM-comp02	LDW23-R1-GCHP-comp01
LDW23-R1-GC027	graceful crab	*Metacarcinus gracilis*	8/22/2023 15:21	trawl net	TR18	GC027	94	165.7	Male		R1	comp03	LDW23-R1-GCEM-comp03	LDW23-R1-GCHP-comp02
LDW23-R1-GC073	graceful crab	*Metacarcinus gracilis*	8/24/2023 12:45	crab trap	CT77	GC073	95	156.9	Male		R1	comp04	LDW23-R1-GCEM-comp04	LDW23-R1-GCHP-comp02
LDW23-R1-GC068	graceful crab	*Metacarcinus gracilis*	8/24/2023 12:31	crab trap	CT75	GC068	96	170.3	Male		R1	comp05	LDW23-R1-GCEM-comp05	LDW23-R1-GCHP-comp03
LDW23-R1-GC024	graceful crab	*Metacarcinus gracilis*	8/22/2023 14:06	trawl net	TR16	GC024	97	142.4	Male		R1	comp06	LDW23-R1-GCEM-comp06	LDW23-R1-GCHP-comp03
LDW23-R1-GC025	graceful crab	*Metacarcinus gracilis*	8/22/2023 14:06	trawl net	TR16	GC025	97	149.2	Male		R1	comp01	LDW23-R1-GCEM-comp01	LDW23-R1-GCHP-comp01
LDW23-R1-GC076	graceful crab	*Metacarcinus gracilis*	8/24/2023 12:45	crab trap	CT77	GC076	97	168.9	Male	barnacles	R1	comp02	LDW23-R1-GCEM-comp02	LDW23-R1-GCHP-comp01
LDW23-R1-GC056	graceful crab	*Metacarcinus gracilis*	8/23/2023 11:24	trawl net	TR22	GC056	98	164	Male		R1	comp03	LDW23-R1-GCEM-comp03	LDW23-R1-GCHP-comp02
LDW23-R1-GC030	graceful crab	*Metacarcinus gracilis*	8/23/2023 12:47	crab trap	CT53	GC030	98	183.4	Male	barnacles on legs	R1	comp04	LDW23-R1-GCEM-comp04	LDW23-R1-GCHP-comp02
LDW23-R1-GC032	graceful crab	*Metacarcinus gracilis*	8/23/2023 12:47	crab trap	CT53	GC032	98	161.5	Male	barnacles on legs and carapace; cracked	R1	-	-	-
LDW23-R1-GC038	graceful crab	*Metacarcinus gracilis*	8/23/2023 13:03	crab trap	CT55	GC038	98	162.8	Male	missing 1 right leg	R1	comp05	LDW23-R1-GCEM-comp05	LDW23-R1-GCHP-comp03
LDW23-R1-GC044	graceful crab	*Metacarcinus gracilis*	8/23/2023 14:44	crab trap	CT59	GC044	98	152.5	Male	missing 1 right leg	R1	comp06	LDW23-R1-GCEM-comp06	LDW23-R1-GCHP-comp03
LDW23-R1-GC045	graceful crab	*Metacarcinus gracilis*	8/23/2023 14:57	crab trap	CT61	GC045	98	173.7	Male		R1	comp01	LDW23-R1-GCEM-comp01	LDW23-R1-GCHP-comp01
LDW23-R1-GC046	graceful crab	*Metacarcinus gracilis*	8/23/2023 15:08	crab trap	CT63	GC046	98	177.3	Male	barnacles on claws	R1	comp02	LDW23-R1-GCEM-comp02	LDW23-R1-GCHP-comp01
LDW23-R1-GC071	graceful crab	*Metacarcinus gracilis*	8/24/2023 12:40	crab trap	CT76	GC071	98	175.3	Male	barnacles	R1	comp03	LDW23-R1-GCEM-comp03	LDW23-R1-GCHP-comp02
LDW23-R1-GC033	graceful crab	*Metacarcinus gracilis*	8/23/2023 12:47	crab trap	CT53	GC033	99	121.5	Male	barnacles on legs	R1	comp04	LDW23-R1-GCEM-comp04	LDW23-R1-GCHP-comp02
LDW23-R1-GC052	graceful crab	*Metacarcinus gracilis*	8/23/2023 8:30	trawl net	TR19	GC052	100	152.9	Male	missing left claw, left leg damaged	R1	-	-	-
LDW23-R1-GC040	graceful crab	*Metacarcinus gracilis*	8/23/2023 13:03	crab trap	CT55	GC040	100	144.7	Male	missing right claw	R1	-	-	-
LDW23-R1-GC051	graceful crab	*Metacarcinus gracilis*	8/23/2023 8:30	trawl net	TR19	GC051	101	189.9	Male		R1	comp05	LDW23-R1-GCEM-comp05	LDW23-R1-GCHP-comp03
LDW23-R1-GC039	graceful crab	*Metacarcinus gracilis*	8/23/2023 13:03	crab trap	CT55	GC039	101	177.8	Male		R1	comp06	LDW23-R1-GCEM-comp06	LDW23-R1-GCHP-comp03
LDW23-R1-GC072	graceful crab	*Metacarcinus gracilis*	8/24/2023 12:45	crab trap	CT77	GC072	101	182.6	Male		R1	-	-	-
LDW23-R1-GC031	graceful crab	*Metacarcinus gracilis*	8/23/2023 12:47	crab trap	CT53	GC031	102	207.8	Male		R1	comp01	LDW23-R1-GCEM-comp01	LDW23-R1-GCHP-comp01
LDW23-R1-GC042	graceful crab	*Metacarcinus gracilis*	8/23/2023 13:03	crab trap	CT55	GC042	102	170.3	Male		R1	comp02	LDW23-R1-GCEM-comp02	LDW23-R1-GCHP-comp01
LDW23-R1-GC049	graceful crab	*Metacarcinus gracilis*	8/23/2023 15:21	crab trap	CT65	GC049	102	214.6	Male		R1	comp03	LDW23-R1-GCEM-comp03	LDW23-R1-GCHP-comp02
LDW23-R1-GC069	graceful crab	*Metacarcinus gracilis*	8/24/2023 12:40	crab trap	CT76	GC069	102	200.5	Male		R1	comp04	LDW23-R1-GCEM-comp04	LDW23-R1-GCHP-comp02
LDW23-R1-GC075	graceful crab	*Metacarcinus gracilis*	8/24/2023 12:45	crab trap	CT77	GC075	104	201	Male		R1	comp05	LDW23-R1-GCEM-comp05	LDW23-R1-GCHP-comp03
LDW23-R1-GC053	graceful crab	*Metacarcinus gracilis*	8/23/2023 10:11	trawl net	TR20	GC053	105	194.4	Male		R1	comp06	LDW23-R1-GCEM-comp06	LDW23-R1-GCHP-comp03
LDW23-R1-GC036	graceful crab	*Metacarcinus gracilis*	8/23/2023 12:54	crab trap	CT54	GC036	105	220	Male		R1	comp01	LDW23-R1-GCEM-comp01	LDW23-R1-GCHP-comp01
LDW23-R1-GC037	graceful crab	*Metacarcinus gracilis*	8/23/2023 12:54	crab trap	CT54	GC037	105	209.7	Male	barnacles on claws	R1	comp02	LDW23-R1-GCEM-comp02	LDW23-R1-GCHP-comp01
LDW23-R1-GC055	graceful crab	*Metacarcinus gracilis*	8/23/2023 10:43	trawl net	TR21	GC055	106	197.6	Male		R1	comp03	LDW23-R1-GCEM-comp03	LDW23-R1-GCHP-comp02
LDW23-R1-GC047	graceful crab	*Metacarcinus gracilis*	8/23/2023 15:08	crab trap	CT63	GC047	106	192.5	Male		R1	comp04	LDW23-R1-GCEM-comp04	LDW23-R1-GCHP-comp02
LDW23-R1-GC048	graceful crab	*Metacarcinus gracilis*	8/23/2023 15:08	crab trap	CT63	GC048	106	224.8	Male		R1	comp05	LDW23-R1-GCEM-comp05	LDW23-R1-GCHP-comp03
LDW23-R1-GC059	graceful crab	*Metacarcinus gracilis*	8/23/2023 11:24	trawl net	TR22	GC059	107	223	Male		R1	comp06	LDW23-R1-GCEM-comp06	LDW23-R1-GCHP-comp03
LDW23-R1-GC035	graceful crab	*Metacarcinus gracilis*	8/23/2023 12:54	crab trap	CT54	GC035	108	246	Male	barnacles on legs; small crack on carapa	R1	-	-	-
LDW23-R1-GC074	graceful crab	*Metacarcinus gracilis*	8/24/2023 12:45	crab trap	CT77	GC074	108	243.5	Male		R1	comp01	LDW23-R1-GCEM-comp01	LDW23-R1-GCHP-comp01
LDW23-R1-GC022	graceful crab	*Metacarcinus gracilis*	8/22/2023 14:06	trawl net	TR16	GC022	110	220	Male		R1	comp03	LDW23-R1-GCEM-comp03	LDW23-R1-GCHP-comp02
LDW23-R1-GC034	graceful crab	*Metacarcinus gracilis*	8/23/2023 12:47	crab trap	CT53	GC034	110	141.5	Male	barnacles on legs	R1	comp05	LDW23-R1-GCEM-comp05	LDW23-R1-GCHP-comp03
LDW23-R1-GC070	graceful crab	*Metacarcinus gracilis*	8/24/2023 12:40	crab trap	CT76	GC070	110	288	Male	cracked carapace; barnacles	R1	-	-	-
LDW23-R1-GC057	graceful crab	*Metacarcinus gracilis*	8/23/2023 11:24	trawl net	TR22	GC057	111	208.5	Male		R1	comp06	LDW23-R1-GCEM-comp06	LDW23-R1-GCHP-comp03
LDW23-R1-GC050	graceful crab	*Metacarcinus gracilis*	8/23/2023 15:21	crab trap	CT65	GC050	111	235.7	Male		R1	comp04	LDW23-R1-GCEM-comp04	LDW23-R1-GCHP-comp02
LDW23-R1-GC026	graceful crab	*Metacarcinus gracilis*	8/22/2023 15:21	trawl net	TR18	GC026	112	235	Male	missing left claw	R1	-	-	-
LDW23-R1-GC062	graceful crab	*Metacarcinus gracilis*	8/23/2023 13:32	trawl net	TR25	GC062	114	259	Male		R1	comp02	LDW23-R1-GCEM-comp02	LDW23-R1-GCHP-comp01
LDW23-R2-GC001	graceful crab	*Metacarcinus gracilis*	8/21/2023 10:40	trawl net	TR03	GC001	90	97.0	Male	missing right claw, left leg	R2	comp02	LDW23-R2-GCEM-comp02	LDW23-R2-GCHP-comp01

Table A3. Composite Details for Graceful Crab

Specimen ID	Species - Common Name	Species - Latin Name	Collection Date/Time	Collection Method	Trawl/ Trap #	Specimen	Length (mm)	Weight (g)	Sex	Comments	Location	Composite No.	Edible Meat Composite ID	Hepatopancreas Composite ID
LDW23-R2-GC080	graceful crab	*Metacarcinus gracilis*	8/24/2023 10:02	trawl net	TR30	GC080	90	112.5	Male		R2	comp06	LDW23-R2-GCEM-comp06	LDW23-R2-GCHP-comp03
LDW23-R2-GC082	graceful crab	*Metacarcinus gracilis*	8/24/2023 11:36	trawl net	TR32	GC082	90	108.6	Male		R2	comp03	LDW23-R2-GCEM-comp03	LDW23-R2-GCHP-comp02
LDW23-R2-GC007	graceful crab	*Metacarcinus gracilis*	8/21/2023 11:55	trawl net	TR05	GC007	91	117.2	Male	missing right claw	R2	comp04	LDW23-R2-GCEM-comp04	LDW23-R2-GCHP-comp02
LDW23-R2-GC003	graceful crab	*Metacarcinus gracilis*	8/21/2023 11:55	trawl net	TR05	GC003	92	156.2	Male		R2	comp05	LDW23-R2-GCEM-comp05	LDW23-R2-GCHP-comp03
LDW23-R2-GC028	graceful crab	*Metacarcinus gracilis*	8/22/2023 11:21	trawl net	TR12	GC028	92	133.1	Male		R2	comp01	LDW23-R2-GCEM-comp01	LDW23-R2-GCHP-comp01
LDW23-R2-GC009	graceful crab	*Metacarcinus gracilis*	8/22/2023 11:33	crab trap	CT29	GC009	92	122.1	Male		R2	comp03	LDW23-R2-GCEM-comp03	LDW23-R2-GCHP-comp02
LDW23-R2-GC020	graceful crab	*Metacarcinus gracilis*	8/22/2023 14:57	crab trap	CT43	GC020	92	127.7	Male	missing right claw	R2	comp02	LDW23-R2-GCEM-comp02	LDW23-R2-GCHP-comp01
LDW23-R2-GC081	graceful crab	*Metacarcinus gracilis*	8/24/2023 10:02	trawl net	TR30	GC081	92	120.7	Male		R2	comp01	LDW23-R2-GCEM-comp01	LDW23-R2-GCHP-comp01
LDW23-R2-GC086	graceful crab	*Metacarcinus gracilis*	8/24/2023 13:02	trawl net	TR34	GC086	92	121.4	Male		R2	comp04	LDW23-R2-GCEM-comp04	LDW23-R2-GCHP-comp02
LDW23-R2-GC002	graceful crab	*Metacarcinus gracilis*	8/21/2023 10:40	trawl net	TR03	GC002	94	134.9	Male		R2	comp05	LDW23-R2-GCEM-comp05	LDW23-R2-GCHP-comp03
LDW23-R2-GC014	graceful crab	*Metacarcinus gracilis*	8/22/2023 12:20	crab trap	CT33	GC014	94	153	Male		R2	comp06	LDW23-R2-GCEM-comp06	LDW23-R2-GCHP-comp03
LDW23-R2-GC084	graceful crab	*Metacarcinus gracilis*	8/24/2023 11:36	trawl net	TR32	GC084	94	116.3	Male	missing left claw and 1 left leg	R2	comp01	LDW23-R2-GCEM-comp01	LDW23-R2-GCHP-comp01
LDW23-R2-GC006	graceful crab	*Metacarcinus gracilis*	8/21/2023 11:55	trawl net	TR05	GC006	95	126.4	Male	missing left claw	R2	comp02	LDW23-R2-GCEM-comp02	LDW23-R2-GCHP-comp01
LDW23-R2-GC021	graceful crab	*Metacarcinus gracilis*	8/22/2023 14:57	crab trap	CT43	GC021	95	149.6	Male	missing right claw	R2	comp03	LDW23-R2-GCEM-comp03	LDW23-R2-GCHP-comp02
LDW23-R2-GC088	graceful crab	*Metacarcinus gracilis*	8/24/2023 14:59	trawl net	TR37	GC088	95	142.8	Male		R2	comp04	LDW23-R2-GCEM-comp04	LDW23-R2-GCHP-comp02
LDW23-R2-GC064	graceful crab	*Metacarcinus gracilis*	8/24/2023 11:44	crab trap	CT72	GC064	95	123.4	Male	missing both claws; missing 1 leg on eac	R2	comp05	LDW23-R2-GCEM-comp05	LDW23-R2-GCHP-comp03
LDW23-R2-GC016	graceful crab	*Metacarcinus gracilis*	8/22/2023 14:13	crab trap	CT38	GC016	97	169.5	Male		R2	comp06	LDW23-R2-GCEM-comp06	LDW23-R2-GCHP-comp03
LDW23-R2-GC018	graceful crab	*Metacarcinus gracilis*	8/22/2023 14:47	crab trap	CT42	GC018	97	152.2	Male	missing right claw	R2	comp01	LDW23-R2-GCEM-comp01	LDW23-R2-GCHP-comp01
LDW23-R2-GC004	graceful crab	*Metacarcinus gracilis*	8/21/2023 11:55	trawl net	TR05	GC004	99	177.6	Male		R2	comp02	LDW23-R2-GCEM-comp02	LDW23-R2-GCHP-comp01
LDW23-R2-GC017	graceful crab	*Metacarcinus gracilis*	8/22/2023 14:16	crab trap	CT39	GC017	99	166.7	Male	cracked carapace	R2	comp03	LDW23-R2-GCEM-comp03	LDW23-R2-GCHP-comp02
LDW23-R2-GC089	graceful crab	*Metacarcinus gracilis*	8/25/2023 11:13	crab trap	CT94	GC089	100	172.8	Male		R2	comp04	LDW23-R2-GCEM-comp04	LDW23-R2-GCHP-comp02
LDW23-R2-GC008	graceful crab	*Metacarcinus gracilis*	8/21/2023 12:38	trawl net	TR06	GC008	101	170.0	Male		R2	comp05	LDW23-R2-GCEM-comp05	LDW23-R2-GCHP-comp03
LDW23-R2-GC011	graceful crab	*Metacarcinus gracilis*	8/22/2023 11:33	crab trap	CT29	GC011	101	180	Male		R2	comp06	LDW23-R2-GCEM-comp06	LDW23-R2-GCHP-comp03
LDW23-R2-GC013	graceful crab	*Metacarcinus gracilis*	8/22/2023 11:45	crab trap	CT30	GC013	101	188.5	Male		R2	comp01	LDW23-R2-GCEM-comp01	LDW23-R2-GCHP-comp01
LDW23-R2-GC078	graceful crab	*Metacarcinus gracilis*	8/24/2023 8:50	trawl net	TR28	GC078	101	168.3	Male		R2	comp02	LDW23-R2-GCEM-comp02	LDW23-R2-GCHP-comp01
LDW23-R2-GC079	graceful crab	*Metacarcinus gracilis*	8/24/2023 10:02	trawl net	TR30	GC079	101	172.6	Male		R2	comp03	LDW23-R2-GCEM-comp03	LDW23-R2-GCHP-comp02
LDW23-R2-GC063	graceful crab	*Metacarcinus gracilis*	8/24/2023 11:23	crab trap	CT69	GC063	101	189.3	Male		R2	comp04	LDW23-R2-GCEM-comp04	LDW23-R2-GCHP-comp02
LDW23-R2-GC010	graceful crab	*Metacarcinus gracilis*	8/22/2023 11:33	crab trap	CT29	GC010	102	177.5	Male		R2	comp05	LDW23-R2-GCEM-comp05	LDW23-R2-GCHP-comp03
LDW23-R2-GC019	graceful crab	*Metacarcinus gracilis*	8/22/2023 14:47	crab trap	CT42	GC019	102	194.5	Male		R2	comp02	LDW23-R2-GCEM-comp02	LDW23-R2-GCHP-comp01
LDW23-R2-GC065	graceful crab	*Metacarcinus gracilis*	8/24/2023 11:56	crab trap	CT73	GC065	102	209.6	Male		R2	comp01	LDW23-R2-GCEM-comp01	LDW23-R2-GCHP-comp01
LDW23-R2-GC090	graceful crab	*Metacarcinus gracilis*	8/25/2023 11:21	crab trap	CT96	GC090	102	188.8	Male		R2	comp06	LDW23-R2-GCEM-comp06	LDW23-R2-GCHP-comp03
LDW23-R2-GC005	graceful crab	*Metacarcinus gracilis*	8/21/2023 11:55	trawl net	TR05	GC005	103	181.5	Male	missing right leg	R2	comp03	LDW23-R2-GCEM-comp03	LDW23-R2-GCHP-comp02
LDW23-R2-GC015	graceful crab	*Metacarcinus gracilis*	8/22/2023 13:55	crab trap	CT37	GC015	103	204.1	Male		R2	comp04	LDW23-R2-GCEM-comp04	LDW23-R2-GCHP-comp02
LDW23-R2-GC085	graceful crab	*Metacarcinus gracilis*	8/24/2023 13:02	trawl net	TR34	GC085	103	154.5	Male	missing left claw	R2	comp05	LDW23-R2-GCEM-comp05	LDW23-R2-GCHP-comp03
LDW23-R2-GC012	graceful crab	*Metacarcinus gracilis*	8/22/2023 11:33	crab trap	CT29	GC012	104	205.8	Male		R2	comp01	LDW23-R2-GCEM-comp01	LDW23-R2-GCHP-comp01
LDW23-R2-GC083	graceful crab	*Metacarcinus gracilis*	8/24/2023 11:36	trawl net	TR32	GC083	105	184.8	Male		R2	comp06	LDW23-R2-GCEM-comp06	LDW23-R2-GCHP-comp03
LDW23-R2-GC077	graceful crab	*Metacarcinus gracilis*	8/24/2023 15:55	crab trap	CT88	GC077	105	192.5	Male		R2	comp03	LDW23-R2-GCEM-comp03	LDW23-R2-GCHP-comp02
LDW23-R2-GC087	graceful crab	*Metacarcinus gracilis*	8/24/2023 14:14	trawl net	TR36	GC087	109	204.5	Male		R2	comp05	LDW23-R2-GCEM-comp05	LDW23-R2-GCHP-comp03
LDW23-R2-GC066	graceful crab	*Metacarcinus gracilis*	8/24/2023 12:00	crab trap	CT74	GC066	110	219	Male		R2	comp02	LDW23-R2-GCEM-comp02	LDW23-R2-GCHP-comp01

Table A4. Composite Details for Dungeness Crab

Specimen ID	Species - Common Name	Species - Latin Name	Collection Date/Time	Collection Method	Trawl/ Trap #	Specimen	Length (mm)	Weight (g)	Sex	Comments	Location	Composite No.	Edible Meat Composite ID	Hepatopancreas Composite ID
LDW23-R1-DC023	Dungeness crab	*Metacarcinus magister*	8/23/2023 11:33	crab trap	CT45	DC023	156	470.9	Male		R1	-	-	-
LDW23-R1-DC022	Dungeness crab	*Metacarcinus magister*	8/23/2023 11:33	crab trap	CT45	DC022	207	1011	Male		R1	-	-	-
LDW23-R2-DC010	Dungeness crab	*Metacarcinus magister*	8/21/2023 11:55	trawl net	TR05	DC010	97	107.6	Male		R2	-	-	-
LDW23-R2-DC015	Dungeness crab	*Metacarcinus magister*	8/21/2023 14:50	trawl net	TR09	DC015	100	116.7	Male	missing left leg and left claw; right claw brok	R2	-	-	-
LDW23-R2-DC001	Dungeness crab	*Metacarcinus magister*	8/21/2023 12:21	crab trap	CT10	DC001	102	248.0	Male		R2	-	-	-
LDW23-R2-DC004	Dungeness crab	*Metacarcinus magister*	8/21/2023 10:40	trawl net	TR03	DC004	106	146.2	Male		R2	-	-	-
LDW23-R2-DC002	Dungeness crab	*Metacarcinus magister*	8/21/2023 10:40	trawl net	TR03	DC002	114	187.2	Male		R2	-	-	-
LDW23-R2-DC014	Dungeness crab	*Metacarcinus magister*	8/21/2023 14:50	trawl net	TR09	DC014	114	162.3	Male		R2	-	-	-
LDW23-R2-DC013	Dungeness crab	*Metacarcinus magister*	8/21/2023 14:50	trawl net	TR09	DC013	115	162.3	Male	missing right leg	R2	-	-	-
LDW23-R2-DC003	Dungeness crab	*Metacarcinus magister*	8/21/2023 10:40	trawl net	TR03	DC003	118	196.2	Male	missing left leg	R2	-	-	-
LDW23-R2-DC009	Dungeness crab	*Metacarcinus magister*	8/21/2023 11:55	trawl net	TR05	DC009	118	181.1	Male	missing left leg	R2	-	-	-
LDW23-R2-DC041	Dungeness crab	*Metacarcinus magister*	8/24/2023 8:50	trawl net	TR28	DC041	122	240	Male		R2	-	-	-
LDW23-R2-DC008	Dungeness crab	*Metacarcinus magister*	8/21/2023 9:30	trawl net	TR01	DC008	129	268.0	Male		R2	-	-	-
LDW23-R2-DC020	Dungeness crab	*Metacarcinus magister*	8/22/2023 14:16	crab trap	CT39	DC020	147	379	Male		R2	comp02	LDW23-R2-DCEM-comp02	LDW23-R2-DCHP-comp1
LDW23-R2-DC027	Dungeness crab	*Metacarcinus magister*	8/24/2023 11:23	crab trap	CT69	DC027	147	417.5	Male		R2	comp01	LDW23-R2-DCEM-comp01	LDW23-R2-DCHP-comp1
LDW23-R2-DC019	Dungeness crab	*Metacarcinus magister*	8/22/2023 14:16	crab trap	CT39	DC019	152	429	Male		R2	comp03	LDW23-R2-DCEM-comp03	LDW23-R2-DCHP-comp2
LDW23-R2-DC042	Dungeness crab	*Metacarcinus magister*	8/24/2023 13:39	trawl net	TR35	DC042	154	493.5	Male		R2	comp04	LDW23-R2-DCEM-comp04	LDW23-R2-DCHP-comp2
LDW23-R2-DC039	Dungeness crab	*Metacarcinus magister*	8/24/2023 14:09	crab trap	CT80	DC039	154	452.5	Male		R2	-	-	-
LDW23-R2-DC024	Dungeness crab	*Metacarcinus magister*	8/24/2023 11:11	crab trap	CT67	DC024	155	482.8	Male		R2	comp02	LDW23-R2-DCEM-comp02	LDW23-R2-DCHP-comp1
LDW23-R2-DC032	Dungeness crab	*Metacarcinus magister*	8/24/2023 11:44	crab trap	CT72	DC032	160	576.5	Male	missing right claw	R2	-	-	-
LDW23-R2-DC017	Dungeness crab	*Metacarcinus magister*	8/22/2023 11:45	crab trap	CT30	DC017	161	547.5	Male		R2	comp03	LDW23-R2-DCEM-comp03	LDW23-R2-DCHP-comp2
LDW23-R2-DC036	Dungeness crab	*Metacarcinus magister*	8/24/2023 13:58	crab trap	CT78	DC036	165	586.5	Male		R2	comp04	LDW23-R2-DCEM-comp04	LDW23-R2-DCHP-comp2
LDW23-R2-DC005	Dungeness crab	*Metacarcinus magister*	8/21/2023 10:40	trawl net	TR03	DC005	166	586.5	Male		R2	comp01	LDW23-R2-DCEM-comp01	LDW23-R2-DCHP-comp1
LDW23-R2-DC012	Dungeness crab	*Metacarcinus magister*	8/21/2023 14:50	trawl net	TR09	DC012	166	619.5	Male		R2	-	-	-
LDW23-R2-DC025	Dungeness crab	*Metacarcinus magister*	8/24/2023 11:17	crab trap	CT68	DC025	169	619.5	Male		R2	-	-	-
LDW23-R2-DC031	Dungeness crab	*Metacarcinus magister*	8/24/2023 11:39	crab trap	CT71	DC031	169	648	Male		R2	comp03	LDW23-R2-DCEM-comp03	LDW23-R2-DCHP-comp2
LDW23-R2-DC007	Dungeness crab	*Metacarcinus magister*	8/21/2023 10:40	trawl net	TR03	DC007	170	656.5	Male		R2	comp04	LDW23-R2-DCEM-comp04	LDW23-R2-DCHP-comp2
LDW23-R2-DC016	Dungeness crab	*Metacarcinus magister*	8/22/2023 11:20	crab trap	CT28	DC016	170	609	Male		R2	comp01	LDW23-R2-DCEM-comp01	LDW23-R2-DCHP-comp1
LDW23-R2-DC026	Dungeness crab	*Metacarcinus magister*	8/24/2023 11:23	crab trap	CT69	DC026	177	638	Male	small right claw	R2	-	-	-
LDW23-R2-DC040	Dungeness crab	*Metacarcinus magister*	8/24/2023 14:12	crab trap	CT81	DC040	179	820	Male		R2	comp02	LDW23-R2-DCEM-comp02	LDW23-R2-DCHP-comp1
LDW23-R2-DC006	Dungeness crab	*Metacarcinus magister*	8/21/2023 10:40	trawl net	TR03	DC006	181	758.5	Male		R2	-	-	-
LDW23-R2-DC021	Dungeness crab	*Metacarcinus magister*	8/22/2023 14:47	crab trap	CT42	DC021	181	747	Male		R2	-	-	-
LDW23-R2-DC018	Dungeness crab	*Metacarcinus magister*	8/22/2023 14:04	crab trap	CT36	DC018	182	739	Male		R2	-	-	-
LDW23-R2-DC037	Dungeness crab	*Metacarcinus magister*	8/24/2023 14:02	crab trap	CT79	DC037	182	687	Male		R2	comp04	LDW23-R2-DCEM-comp04	LDW23-R2-DCHP-comp2
LDW23-R2-DC011	Dungeness crab	*Metacarcinus magister*	8/21/2023 11:55	trawl net	TR05	DC011	183	767.0	Male		R2	comp02	LDW23-R2-DCEM-comp02	LDW23-R2-DCHP-comp1
LDW23-R2-DC034	Dungeness crab	*Metacarcinus magister*	8/24/2023 12:00	crab trap	CT74	DC034	184	820.5	Male		R2	comp01	LDW23-R2-DCEM-comp01	LDW23-R2-DCHP-comp1
LDW23-R2-DC030	Dungeness crab	*Metacarcinus magister*	8/24/2023 11:39	crab trap	CT71	DC030	185	796.5	Male		R2	comp03	LDW23-R2-DCEM-comp03	LDW23-R2-DCHP-comp2
LDW23-R2-DC033	Dungeness crab	*Metacarcinus magister*	8/24/2023 12:00	crab trap	CT74	DC033	186	827.5	Male		R2	-	-	-
LDW23-R2-DC035	Dungeness crab	*Metacarcinus magister*	8/24/2023 12:00	crab trap	CT74	DC035	187	907.5	Male		R2	comp01	LDW23-R2-DCEM-comp01	LDW23-R2-DCHP-comp1
LDW23-R2-DC029	Dungeness crab	*Metacarcinus magister*	8/24/2023 11:39	crab trap	CT71	DC029	188	892	Male		R2	comp02	LDW23-R2-DCEM-comp02	LDW23-R2-DCHP-comp1
LDW23-R2-DC028	Dungeness crab	*Metacarcinus magister*	8/24/2023 11:28	crab trap	CT70	DC028	189	893.5	Male		R2	comp03	LDW23-R2-DCEM-comp03	LDW23-R2-DCHP-comp2
LDW23-R2-DC038	Dungeness crab	*Metacarcinus magister*	8/24/2023 14:09	crab trap	CT80	DC038	191	896.5	Male		R2	comp04	LDW23-R2-DCEM-comp04	LDW23-R2-DCHP-comp2



Tissue sampling subreaches

- Tissue Subreach 1a
- Tissue Subreach 1b
- Tissue Subreach 2a
- Tissue Subreach 2b
- LDW Superfund Boundary
- Federal Navigation Channel
- River mile

Station Name	Status	River Mile
1	Start	3.1
	End	2.9
2	Start	3.0
	End	3.2
3	Start	3.4
	End	2.9
4	Start	3.1
	End	3.5
5	Start	3.4
	End	2.9
6	Start	3.0
	End	3.6
7	Start	4.4
	End	4.0
8	Start	4.5
	End	4.0
9	Start	3.7
	End	3.1
10	Start	3.2
	End	4.3
11	Start	4.4
	End	3.0
12	Start	3.9
	End	4.6
13	Start	4.5
	End	4.1

Station Name	Status	River Mile
14	Start	1.1
	End	0.1
15	Start	0.4
	End	0.9
16	Start	0.9
	End	1.3
17	Start	1.2
	End	0.1
18	Start	0.2
	End	0.7
19	Start	0.1
	End	0.3
20	Start	0.3
	End	0.6
21	Start	0.7
	End	1.3
22	Start	1.5
	End	1.9
23	Start	2.2
	End	2.7
24	Start	1.8
	End	1.3
25	Start	1.1
	End	0.5
26	Start	0.4
	End	1.5

Station Name	Status	River Mile
27	Start	3.0
	End	3.5
28	Start	3.1
	End	3.5
29	Start	3.7
	End	2.9
30	Start	3.1
	End	4.2
31	Start	4.2
	End	3.4
32	Start	4.0
	End	2.9
33	Start	2.9
	End	4.1
34	Start	4.1
	End	2.9
35	Start	2.9
	End	3.6
36	Start	3.9
	End	2.9
37	Start	3.0
	End	4.2

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0 0.1 0.2 Miles

0 0.1 0.2 Kilometers

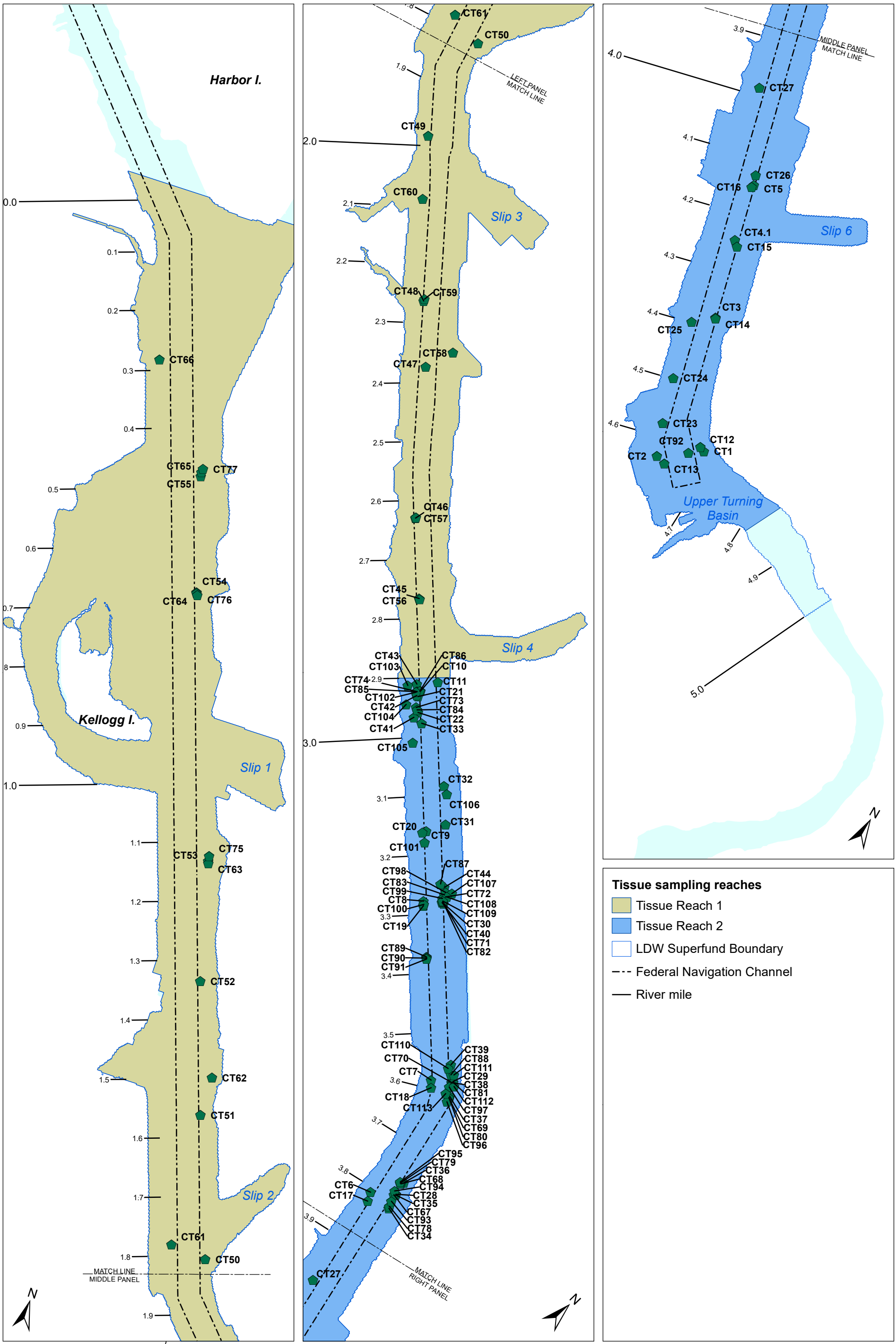
Scale is the same for each inset map

Map 1. LDW trawl locations, 2023 periodic monitoring for fish and crab

DRAFT

OCTOBER 17, 2023

Prepared by craigh, 10/17/23; W:\Projects\Duwamish AOC4\GIS\Maps and Analyses\Periodic Monitoring\Fish and Crab 2023\Map 1 6520 Trawls.mxd



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Map 2. LDW crab trap locations, 2023 periodic monitoring for fish and crab

DRAFT

OCTOBER 17, 2023

Prepared by craigh, 10/17/23; W:\Projects\Duwamish AOC4\GIS\Maps and Analyses\Periodic Monitoring\Fish and Crab 2023\Map 2 6520 Crab traps.mxd

Clam Compositing Memorandum

Lower Duwamish Waterway Group
Port of Seattle / City of Seattle / King County / The Boeing Company

MEMORANDUM

To:	Elly Hale, EPA
From:	Windward Environmental, on behalf of LDWG
Subject:	LDW 2023 Periodic Monitoring: Clam Tissue Compositing Plan (REVISED)
Date:	September 7, 2023

Clams were collected throughout the Lower Duwamish Waterway (LDW) from June 4 to 6, 2023, as described in the US Environmental Protection Agency (EPA)-approved periodic monitoring quality assurance project plan (QAPP) (Windward and Anchor QEA 2023). This memorandum documents the compositing plan proposed for the collected clams. Field data (i.e., individual clam identifications [IDs] and clam widths) for each individual clam are provided in Attachment A.

SUMMARY OF CLAM TISSUE COLLECTION

As described in the QAPP (Windward and Anchor QEA 2023), clams were collected to fulfill two data quality objectives (DQOs):

- DQO 1 – Calculate site-wide 95% upper confidence limit (on the mean) (95UCL) concentrations of human health risk drivers in clam tissues in 2023 for comparison with target tissue levels (TTLs).
- DQO 2 – Calculate site-wide mean concentrations in clam tissue of contaminants with TTLs in 2023, for use in trends assessment as sediment remediation and source control continue.

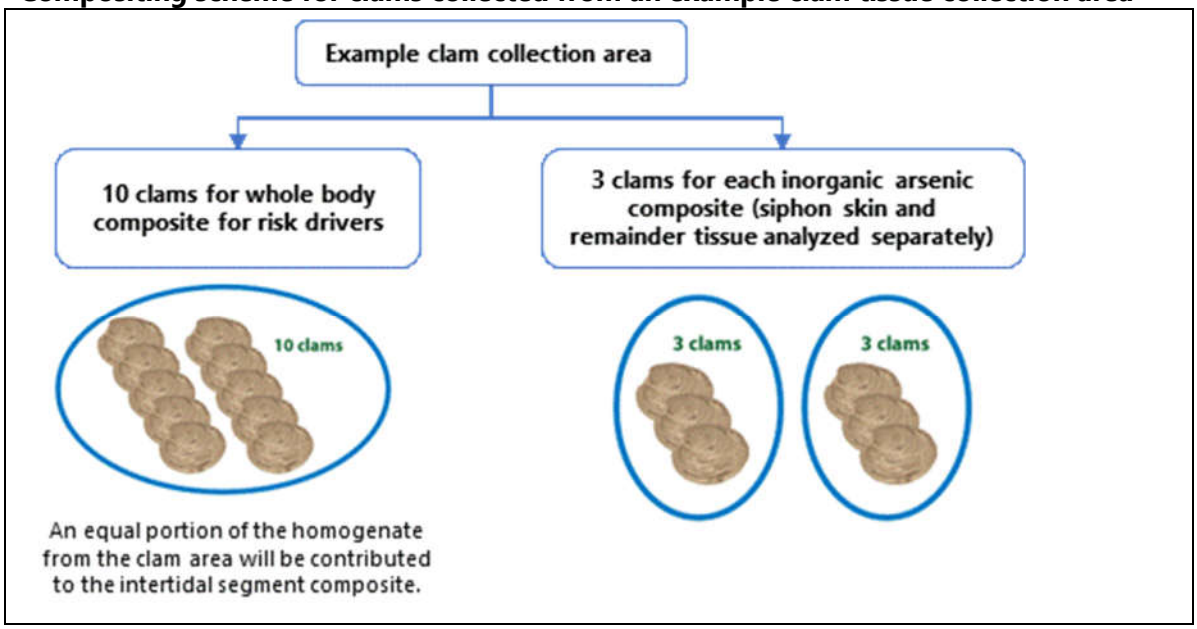
For these two DQOs, a target number of 16 clams was determined for each of the 11 clam tissue collection areas (i.e., a total of 6 clams are needed for the two arsenic composites [3 clams each] and the remaining 10 clams are needed for the other risk driver composite;[1] see Figure 1). In addition, three segment-wide composite samples will be analyzed for the non-risk driver chemicals.[2] The three intertidal segments are from river mile (RM) 0.0 to RM 1.3, from RM 1.3 to RM 2.6, and above RM 2.6 (Map 1).

[1] The other risk driver composite samples will be analyzed for polychlorinated biphenyls (PCBs), dioxins/furans, and carcinogenic polycyclic aromatic hydrocarbons (cPAHs). Inorganic arsenic will be analyzed in separate composite samples, because siphon skin will be analyzed separately from the remainder of the clam (Windward 2018).

[2] Non-risk driver chemicals for the LDW, as specified in the Record of Decision (EPA 2014), include vanadium, tributyltin, select semivolatile organic compounds (bis[2-ethylhexyl] phthalate, carbazole, hexachlorobenzene, and pentachlorophenol), and organochlorine pesticides.

The segment-wide composite samples will contain equal portions of tissue from each of the clam tissue collection area composites within the given segment.

Figure 1
Compositing scheme for clams collected from an example clam tissue collection area



The target numbers of clams were collected from all 11 areas, except for Area 7 (Slip 4) (Table 1 and Map 1). In 2018, four clams had been found in Area 7, primarily in a small area near the head of the slip (Windward 2019). Despite extensive searching in Area 7 during the 2023 collection effort (including near the head of the slip), no clams were found.

Table 1. Target and actual numbers of clams by collection area

Clam Tissue Collection Area	Target No. of Clams	Actual No. of Clams Collected[a]	Sufficient Clams Collected?		Average Size (Range), in mm
			Inorganic Arsenic Composites	Other Risk Driver Composite	
1	16	21	✓	✓	30 (24–42)
2	16	21	✓	✓	30 (20–40)
3	16	21	✓	✓	26 (20–35)
4	16	21	✓	✓	29 (21–39)
5	16	21	✓	✓	27 (21–36)
6	16	21	✓	✓	30 (24–37)
7	16	0[b]	no (insufficient clams)	no (insufficient clams)	na
8	16	21	✓	✓	30 (22–43)
9	16	21	✓	✓	29 (22–39)
10	16	21	✓	✓	31 (22–37)
11	16	21	✓	✓	33 (25–40)

[a] An extra five clams were collected from each of the clam tissue collection areas when possible, to provide additional compositing options.

[b] No clams of target size (i.e., 20 mm wide or larger) were found even after searching for nine person-hours (the maximum level of effort listed in the QAPP). Two clams were found that were less than 5 mm wide.

QAPP – quality assurance project plan

CLAM TISSUE COMPOSITES

Composites for clam tissue DQOs 1 and 2 will be created using the following criteria:

- **Spatial coverage** – Clams included in composites will be, to the extent possible, selected to provide good spatial coverage of the clam collection area.
- **Clam size** – Only clams > 20 mm wide will be included in composites; a range of clam sizes will be included in the composites to the extent possible. Note that clam size varied among the tissue collection areas.

Based on these criteria, the process for assigning clams to composites consists of balancing spatial distribution so that each composite sample (both the two arsenic composites and the other risk driver composite) includes a mix of clams from across the entire area (Maps 2 through 10). In addition, clam sizes will be considered when making composite assignments, so that the average clam size and range of clam sizes in each composite sample are reasonability similar to those of the clams found in a given area. The smallest clams (e.g., those around 20 mm wide) will be generally excluded to ensure sufficient tissue mass for analysis.

Table 2 presents information regarding the inorganic arsenic composites and other risk driver composites for clam tissue DQOs 1 and 2. In addition, Table 2 shows how tissue from the other risk driver composites will be used to create the segment-wide composites for the non-risk driver chemicals.

Table 2. Overview of clam composite samples

Clam Tissue Collection Area	Inorganic Arsenic Composite			Other Risk Driver Composite			Segment-wide Composite[b]		
	Composite ID[a]	Clam Width (mm)		Composite ID	Clam Width (mm)		Composite ID	Clam Width (mm)	
		Average	Range		Average	Range		Average	Range
Intertidal segment 1:									
1	LDW23-C01-CLSP-Comp1; LDW23-C01-CLRM-Comp1	31	25–39	LDW23-C01-CLWB-Comp3	30	26–35	LDW23-S1-CLWB-Comp1	30	22–37
	LDW23-C01-CLSP-Comp2; LDW23-C01-CLRM-Comp2	32	24–42						
2	LDW23-C02-CLSP-Comp1; LDW23-C02-CLRM-Comp1	32	25–40	LDW23-C02-CLWB-Comp3	32	25–37			
	LDW23-C02-CLSP-Comp2; LDW23-C02-CLRM-Comp2	29	28–30						
3	LDW23-C03-CLSP-Comp1; LDW23-C03-CLRM-Comp1	27	25–29	LDW23-C03-CLWB-Comp3	27	22–34			
	LDW23-C03-CLSP-Comp2; LDW23-C03-CLRM-Comp2	30	26–35						
Intertidal segment 2:									
4	LDW23-C04-CLSP-Comp1; LDW23-C04-CLRM-Comp1	29	25–32	LDW23-C04-CLWB-Comp3	30	25–39	LDW23-S2-CLWB-Comp1	29	21–39
	LDW23-C04-CLSP-Comp2; LDW23-C04-CLRM-Comp2	30	27–34						
5	LDW23-C05-CLSP-Comp1; LDW23-C05-CLRM-Comp1	29	25–32	LDW23-C05-CLWB-Comp3	27	21–36			
	LDW23-C05-CLSP-Comp2; LDW23-C05-CLRM-Comp2[c]	27	24–32						
6	LDW23-C06-CLSP-Comp1; LDW23-C06-CLRM-Comp1	29	26–31	LDW23-C06-CLWB-Comp3	31	24–37			
	LDW23-C06-CLSP-Comp2; LDW23-C06-CLRM-Comp2	30	24–35						
Intertidal segment 3:									
7	none	no clams collected		none	no clams collected		LDW23-S2-CLWB-Comp1	31	22–43
	none	no clams collected							
8	LDW23-C08-CLSP-Comp1; LDW23-C08-CLRM-Comp1	32	24–40	LDW23-C08-CLWB-Comp3	30	22–43			
	LDW23-C08-CLSP-Comp2; LDW23-C08-CLRM-Comp2	30	26–32						
9	LDW23-C09-CLSP-Comp1; LDW23-C09-CLRM-Comp1	31	27–35	LDW23-C09-CLWB-Comp3	29	22–39			
	LDW23-C09-CLSP-Comp2; LDW23-C09-CLRM-Comp2	29	24–33						
10	LDW23-C10-CLSP-Comp1; LDW23-C10-CLRM-Comp1	31	29–35	LDW23-C10-CLWB-Comp3	30	22–37			
	LDW23-C10-CLSP-Comp2; LDW23-C10-CLRM-Comp2	33	30–36						
11	LDW23-C11-CLSP-Comp1; LDW23-C11-CLRM-Comp1	34	31–38	LDW23-C11-CLWB-Comp3	33	25–40			
	LDW23-C11-CLSP-Comp2; LDW23-C11-CLRM-Comp2	31	27–35						

Note: As described in the QAPP (Windward and Anchor QEA 2023), 3 clams will be included in each of the 2 inorganic arsenic composites, and 10 clams will be included in the composite from each of the clam tissue collection areas for the other risk drivers (i.e., PCBs, dioxins/furans, and cPAHs). Details regarding the clams included in each composite are presented in Attachment A.

[a] Two arsenic composites (each consisting of three clams) will be created for each clam tissue collection area. Each of these arsenic composites will be treated the same – siphon skin (SP) will be removed and analyzed separately from the remainder (RM) tissue. Thus, a total of four samples will be analyzed for arsenic from each area (i.e., two siphon skin and two remainder tissue samples).

[b] Segment-wide composites will include equal amounts of homogenized tissue from each of the whole-body clam tissue collection area composite samples for other risk drivers from that segment. These samples will be analyzed for non-risk driver chemicals per the QAPP (Windward and Anchor QEA 2023).

[c] Composite 2 for Beach 5 was revised during clam dissection and processing because one of the clams that was originally included in the composite (CL021) was not actually a clam (i.e., a clam shell filled with sand was inadvertently collected). CL013 was used to replace CL021 in the arsenic composite (see Attachment A).

cPAH – carcinogenic polycyclic aromatic hydrocarbon PCB – polychlorinated biphenyl QAPP – quality assurance project plan
ID – identification

REFERENCES

EPA. 2014. Record of Decision. Lower Duwamish Waterway Superfund Site. US Environmental Protection Agency.

Windward. 2018. Lower Duwamish Waterway clam collection and chemical analyses - quality assurance project plan - addendum. Final. Windward Environmental LLC, Seattle, WA.

Windward. 2019. Lower Duwamish Waterway clam data report. Final. Windward Environmental LLC, Seattle, WA.

Windward, Anchor QEA. 2023. Fish, crab, clam, and surface water periodic monitoring quality assurance project plan for the Lower Duwamish Waterway. Final. Windward Environmental LLC and Anchor QEA, Seattle, WA.

Attachment A. Clam tissue collection details

Clam Area	Date	Time	Clam ID	Width	Included in Inorganic Arsenic Composite?	Included in Other Risk Driver Composite?	Extra Clam (Not Included in Composite)	Composite No.	Composite ID(s), if applicable
C01	6/4/2023	1230	LDW23-C01-CL001	35		Comp3		Comp3	LDW23-C01-CLWB-Comp3
C01	6/4/2023	1230	LDW23-C01-CL002	34			x	-	-
C01	6/4/2023	1235	LDW23-C01-CL003	42	Comp2			Comp2	LDW23-C01-CLSP-Comp2 and LDW23-C01-CLRM-Comp2
C01	6/4/2023	1235	LDW23-C01-CL004	25	Comp1			Comp1	LDW23-C01-CLSP-Comp1 and LDW23-C01-CLRM-Comp1
C01	6/4/2023	1240	LDW23-C01-CL005	30		Comp3		Comp3	LDW23-C01-CLWB-Comp3
C01	6/4/2023	1240	LDW23-C01-CL006	26		Comp3		Comp3	LDW23-C01-CLWB-Comp3
C01	6/4/2023	1245	LDW23-C01-CL007	33		Comp3		Comp3	LDW23-C01-CLWB-Comp3
C01	6/4/2023	1246	LDW23-C01-CL008	27		Comp3		Comp3	LDW23-C01-CLWB-Comp3
C01	6/4/2023	1247	LDW23-C01-CL009	30	Comp2			Comp2	LDW23-C01-CLSP-Comp2 and LDW23-C01-CLRM-Comp2
C01	6/4/2023	1257	LDW23-C01-CL010	27			x	-	-
C01	6/4/2023	1254	LDW23-C01-CL011	26		Comp3		Comp3	LDW23-C01-CLWB-Comp3
C01	6/4/2023	1301	LDW23-C01-CL012	24			x	-	-
C01	6/4/2023	1257	LDW23-C01-CL013	30	Comp1			Comp1	LDW23-C01-CLSP-Comp1 and LDW23-C01-CLRM-Comp1
C01	6/4/2023	1301	LDW23-C01-CL014	33		Comp3		Comp3	LDW23-C01-CLWB-Comp3
C01	6/4/2023	1300	LDW23-C01-CL015	30			x	-	-
C01	6/4/2023	1305	LDW23-C01-CL016	29		Comp3		Comp3	LDW23-C01-CLWB-Comp3
C01	6/4/2023	1310	LDW23-C01-CL017	33			x	-	-
C01	6/4/2023	1316	LDW23-C01-CL018	34		Comp3		Comp3	LDW23-C01-CLWB-Comp3
C01	6/4/2023	1311	LDW23-C01-CL019	27		Comp3		Comp3	LDW23-C01-CLWB-Comp3
C01	6/4/2023	1317	LDW23-C01-CL020	39	Comp1			Comp1	LDW23-C01-CLSP-Comp1 and LDW23-C01-CLRM-Comp1
C01	6/4/2023	1318	LDW23-C01-CL021	24	Comp2			Comp2	LDW23-C01-CLSP-Comp2 and LDW23-C01-CLRM-Comp2
C02	6/4/2023	0945	LDW23-C02-CL001	20			x	-	-
C02	6/4/2023	0950	LDW23-C02-CL002	28	Comp2			Comp2	LDW23-C02-CLSP-Comp2 and LDW23-C02-CLRM-Comp2
C02	6/4/2023	0930	LDW23-C02-CL003	21			x	-	-
C02	6/4/2023	1105	LDW23-C02-CL004	40	Comp1			Comp1	LDW23-C02-CLSP-Comp1 and LDW23-C02-CLRM-Comp1
C02	6/4/2023	1020	LDW23-C02-CL005	37		Comp3		Comp3	LDW23-C02-CLWB-Comp3
C02	6/4/2023	0955	LDW23-C02-CL006	21			x	-	-
C02	6/4/2023	1055	LDW23-C02-CL007	30	Comp2			Comp2	LDW23-C02-CLSP-Comp2 and LDW23-C02-CLRM-Comp2
C02	6/4/2023	1015	LDW23-C02-CL008	25	Comp1			Comp1	LDW23-C02-CLSP-Comp1 and LDW23-C02-CLRM-Comp1
C02	6/4/2023	1033	LDW23-C02-CL009	32		Comp3		Comp3	LDW23-C02-CLWB-Comp3
C02	6/4/2023	1112	LDW23-C02-CL010	36		Comp3		Comp3	LDW23-C02-CLWB-Comp3
C02	6/4/2023	0945	LDW23-C02-CL011	35		Comp3		Comp3	LDW23-C02-CLWB-Comp3
C02	6/4/2023	1030	LDW23-C02-CL012	29	Comp2			Comp2	LDW23-C02-CLSP-Comp2 and LDW23-C02-CLRM-Comp2
C02	6/4/2023	1059	LDW23-C02-CL013	35		Comp3		Comp3	LDW23-C02-CLWB-Comp3
C02	6/4/2023	1050	LDW23-C02-CL014	32		Comp3		Comp3	LDW23-C02-CLWB-Comp3
C02	6/4/2023	1040	LDW23-C02-CL015	31	Comp1			Comp1	LDW23-C02-CLSP-Comp1 and LDW23-C02-CLRM-Comp1
C02	6/4/2023	1047	LDW23-C02-CL016	25		Comp3		Comp3	LDW23-C02-CLWB-Comp3
C02	6/4/2023	1115	LDW23-C02-CL017	33			x	-	-
C02	6/4/2023	1020	LDW23-C02-CL018	30			x	-	-
C02	6/4/2023	1000	LDW23-C02-CL019	28		Comp3		Comp3	LDW23-C02-CLWB-Comp3
C02	6/4/2023	1108	LDW23-C02-CL020	29		Comp3		Comp3	LDW23-C02-CLWB-Comp3
C02	6/4/2023	1037	LDW23-C02-CL021	31		Comp3		Comp3	LDW23-C02-CLWB-Comp3

Attachment A. Clam tissue collection details

Clam Area	Date	Time	Clam ID	Width	Included in Inorganic Arsenic Composite?	Included in Other Risk Driver Composite?	Extra Clam (Not Included in Composite)	Composite No.	Composite ID(s), if applicable
C03	6/4/2023	0957	LDW23-C03-CL001	27		Comp3		Comp3	LDW23-C03-CLWB-Comp3
C03	6/4/2023	0948	LDW23-C03-CL002	20			x	-	-
C03	6/4/2023	0937	LDW23-C03-CL003	23		Comp3		Comp3	LDW23-C03-CLWB-Comp3
C03	6/4/2023	0952	LDW23-C03-CL004	22		Comp3		Comp3	LDW23-C03-CLWB-Comp3
C03	6/4/2023	1003	LDW23-C03-CL005	26		Comp3		Comp3	LDW23-C03-CLWB-Comp3
C03	6/4/2023	1103	LDW23-C03-CL006	28		Comp3		Comp3	LDW23-C03-CLWB-Comp3
C03	6/4/2023	1112	LDW23-C03-CL007	25	Comp1			Comp1	LDW23-C03-CLSP-Comp1 and LDW23-C03-CLRM-Comp1
C03	6/4/2023	1055	LDW23-C03-CL008	24		Comp3		Comp3	LDW23-C03-CLWB-Comp3
C03	6/4/2023	1030	LDW23-C03-CL009	34		Comp3		Comp3	LDW23-C03-CLWB-Comp3
C03	6/4/2023	1013	LDW23-C03-CL010	26	Comp1			Comp1	LDW23-C03-CLSP-Comp1 and LDW23-C03-CLRM-Comp1
C03	6/4/2023	1022	LDW23-C03-CL011	30		Comp3		Comp3	LDW23-C03-CLWB-Comp3
C03	6/4/2023	1036	LDW23-C03-CL012	21			x	-	-
C03	6/4/2023	0944	LDW23-C03-CL013	21			x	-	-
C03	6/4/2023	1031	LDW23-C03-CL014	25			x	-	-
C03	6/4/2023	1033	LDW23-C03-CL015	29	Comp1			Comp1	LDW23-C03-CLSP-Comp1 and LDW23-C03-CLRM-Comp1
C03	6/4/2023	1057	LDW23-C03-CL016	28	Comp2			Comp2	LDW23-C03-CLSP-Comp2 and LDW23-C03-CLRM-Comp2
C03	6/4/2023	1107	LDW23-C03-CL017	35	Comp2			Comp2	LDW23-C03-CLSP-Comp2 and LDW23-C03-CLRM-Comp2
C03	6/4/2023	1031	LDW23-C03-CL018	29		Comp3		Comp3	LDW23-C03-CLWB-Comp3
C03	6/4/2023	1045	LDW23-C03-CL019	22		Comp3		Comp3	LDW23-C03-CLWB-Comp3
C03	6/4/2023	1045	LDW23-C03-CL020	27			x	-	-
C03	6/4/2023	1045	LDW23-C03-CL021	26	Comp2			Comp2	LDW23-C03-CLSP-Comp2 and LDW23-C03-CLRM-Comp2
C04	6/6/2023	1220	LDW23-C04-CL001	24			x	-	-
C04	6/6/2023	1220	LDW23-C04-CL002	27			x	-	-
C04	6/6/2023	1230	LDW23-C04-CL003	29		Comp3		Comp3	LDW23-C04-CLWB-Comp3
C04	6/6/2023	1241	LDW23-C04-CL004	30	Comp2			Comp2	LDW23-C04-CLSP-Comp2 and LDW23-C04-CLRM-Comp2
C04	6/6/2023	1244	LDW23-C04-CL005	26		Comp3		Comp3	LDW23-C04-CLWB-Comp3
C04	6/6/2023	1301	LDW23-C04-CL006	32		Comp3		Comp3	LDW23-C04-CLWB-Comp3
C04	6/6/2023	1245	LDW23-C04-CL007	25	Comp1			Comp1	LDW23-C04-CLSP-Comp1 and LDW23-C04-CLRM-Comp1
C04	6/6/2023	1255	LDW23-C04-CL008	27	Comp2			Comp2	LDW23-C04-CLSP-Comp2 and LDW23-C04-CLRM-Comp2
C04	6/6/2023	1238	LDW23-C04-CL009	30		Comp3		Comp3	LDW23-C04-CLWB-Comp3
C04	6/6/2023	1250	LDW23-C04-CL010	26		Comp3		Comp3	LDW23-C04-CLWB-Comp3
C04	6/6/2023	1256	LDW23-C04-CL011	29	Comp1			Comp1	LDW23-C04-CLSP-Comp1 and LDW23-C04-CLRM-Comp1
C04	6/6/2023	1308	LDW23-C04-CL012	32	Comp1			Comp1	LDW23-C04-CLSP-Comp1 and LDW23-C04-CLRM-Comp1
C04	6/6/2023	1318	LDW23-C04-CL013	39		Comp3		Comp3	LDW23-C04-CLWB-Comp3
C04	6/6/2023	1300	LDW23-C04-CL014	34		Comp3		Comp3	LDW23-C04-CLWB-Comp3
C04	6/6/2023	1306	LDW23-C04-CL015	30			x	-	-
C04	6/6/2023	1317	LDW23-C04-CL016	25		Comp3		Comp3	LDW23-C04-CLWB-Comp3
C04	6/6/2023	1320	LDW23-C04-CL017	30		Comp3		Comp3	LDW23-C04-CLWB-Comp3
C04	6/6/2023	1324	LDW23-C04-CL018	21			x	-	-
C04	6/6/2023	1330	LDW23-C04-CL019	29		Comp3		Comp3	LDW23-C04-CLWB-Comp3
C04	6/6/2023	1332	LDW23-C04-CL020	30			x	-	-
C04	6/6/2023	1325	LDW23-C04-CL021	34	Comp2			Comp2	LDW23-C04-CLSP-Comp2 and LDW23-C04-CLRM-Comp2

Attachment A. Clam tissue collection details

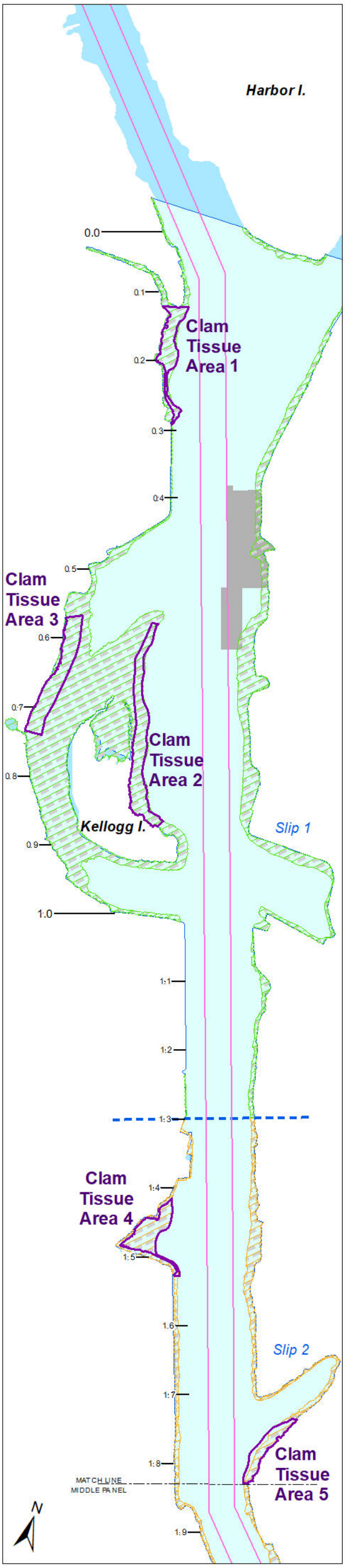
Clam Area	Date	Time	Clam ID	Width	Included in Inorganic Arsenic Composite?	Included in Other Risk Driver Composite?	Extra Clam (Not Included in Composite)	Composite No.	Composite ID(s), if applicable
C05	6/5/2023	1435	LDW23-C05-CL001	21			x	-	-
C05	6/5/2023	1445	LDW23-C05-CL002	32	Comp2			Comp2	LDW23-C05-CLSP-Comp2 and LDW23-C05-CLRM-Comp2
C05	6/5/2023	1417	LDW23-C05-CL003	26		Comp3		Comp3	LDW23-C05-CLWB-Comp3
C05	6/5/2023	1428	LDW23-C05-CL004	30	Comp1			Comp1	LDW23-C05-CLSP-Comp1 and LDW23-C05-CLRM-Comp1
C05	6/5/2023	1434	LDW23-C05-CL005	24	Comp2			Comp2	LDW23-C05-CLSP-Comp2 and LDW23-C05-CLRM-Comp2
C05	6/5/2023	1443	LDW23-C05-CL006	28		Comp3		Comp3	LDW23-C05-CLWB-Comp3
C05	6/5/2023	1435	LDW23-C05-CL007	28			x	-	-
C05	6/5/2023	1448	LDW23-C05-CL008	36		Comp3		Comp3	LDW23-C05-CLWB-Comp3
C05	6/5/2023	1441	LDW23-C05-CL009	30		Comp3		Comp3	LDW23-C05-CLWB-Comp3
C05	6/5/2023	1440	LDW23-C05-CL010	21		Comp3		Comp3	LDW23-C05-CLWB-Comp3
C05	6/5/2023	1434	LDW23-C05-CL011	21			x	-	-
C05	6/5/2023	1436	LDW23-C05-CL012	25	Comp1			Comp1	LDW23-C05-CLSP-Comp1 and LDW23-C05-CLRM-Comp1
C05	6/5/2023	1434	LDW23-C05-CL013	25	Comp2			Comp2	LDW23-C05-CLSP-Comp2 and LDW23-C05-CLRM-Comp2
C05	6/5/2023	1431	LDW23-C05-CL014	26		Comp3		Comp3	LDW23-C05-CLWB-Comp3
C05	6/5/2023	1429	LDW23-C05-CL015	22		Comp3		Comp3	LDW23-C05-CLWB-Comp3
C05	6/5/2023	1426	LDW23-C05-CL016	28		Comp3		Comp3	LDW23-C05-CLWB-Comp3
C05	6/5/2023	1424	LDW23-C05-CL017	32	Comp1			Comp1	LDW23-C05-CLSP-Comp1 and LDW23-C05-CLRM-Comp1
C05	6/5/2023	1427	LDW23-C05-CL018	23			x	-	-
C05	6/5/2023	1422	LDW23-C05-CL019	25		Comp3		Comp3	LDW23-C05-CLWB-Comp3
C05	6/5/2023	1420	LDW23-C05-CL020	30		Comp3		Comp3	LDW23-C05-CLWB-Comp3
C05	6/5/2023	1415	LDW23-C05-CL021	29			x	-	-
C06	6/6/2023	1045	LDW23-C06-CL001	24	Comp2			Comp2	LDW23-C06-CLSP-Comp2 and LDW23-C06-CLRM-Comp2
C06	6/6/2023	1050	LDW23-C06-CL002	25		Comp3		Comp3	LDW23-C06-CLWB-Comp3
C06	6/6/2023	1050	LDW23-C06-CL003	28			x	-	-
C06	6/6/2023	1055	LDW23-C06-CL004	34		Comp3		Comp3	LDW23-C06-CLWB-Comp3
C06	6/6/2023	1100	LDW23-C06-CL005	31	Comp2			Comp2	LDW23-C06-CLSP-Comp2 and LDW23-C06-CLRM-Comp2
C06	6/6/2023	1050	LDW23-C06-CL006	33		Comp3		Comp3	LDW23-C06-CLWB-Comp3
C06	6/6/2023	1110	LDW23-C06-CL007	29		Comp3		Comp3	LDW23-C06-CLWB-Comp3
C06	6/6/2023	1100	LDW23-C06-CL008	32		Comp3		Comp3	LDW23-C06-CLWB-Comp3
C06	6/6/2023	1055	LDW23-C06-CL009	31	Comp1			Comp1	LDW23-C06-CLSP-Comp1 and LDW23-C06-CLRM-Comp1
C06	6/6/2023	1115	LDW23-C06-CL010	29			x	-	-
C06	6/6/2023	1104	LDW23-C06-CL011	28			x	-	-
C06	6/6/2023	1130	LDW23-C06-CL012	32		Comp3		Comp3	LDW23-C06-CLWB-Comp3
C06	6/6/2023	1111	LDW23-C06-CL013	24		Comp3		Comp3	LDW23-C06-CLWB-Comp3
C06	6/6/2023	1115	LDW23-C06-CL014	35	Comp2			Comp2	LDW23-C06-CLSP-Comp2 and LDW23-C06-CLRM-Comp2
C06	6/6/2023	1130	LDW23-C06-CL015	30	Comp1			Comp1	LDW23-C06-CLSP-Comp1 and LDW23-C06-CLRM-Comp1
C06	6/6/2023	1136	LDW23-C06-CL016	37		Comp3		Comp3	LDW23-C06-CLWB-Comp3
C06	6/6/2023	1121	LDW23-C06-CL017	36			x	-	-
C06	6/6/2023	1126	LDW23-C06-CL018	26	Comp1			Comp1	LDW23-C06-CLSP-Comp1 and LDW23-C06-CLRM-Comp1
C06	6/6/2023	1125	LDW23-C06-CL019	35		Comp3		Comp3	LDW23-C06-CLWB-Comp3
C06	6/6/2023	1140	LDW23-C06-CL020	26			x	-	-
C06	6/6/2023	1132	LDW23-C06-CL021	27		Comp3		Comp3	LDW23-C06-CLWB-Comp3

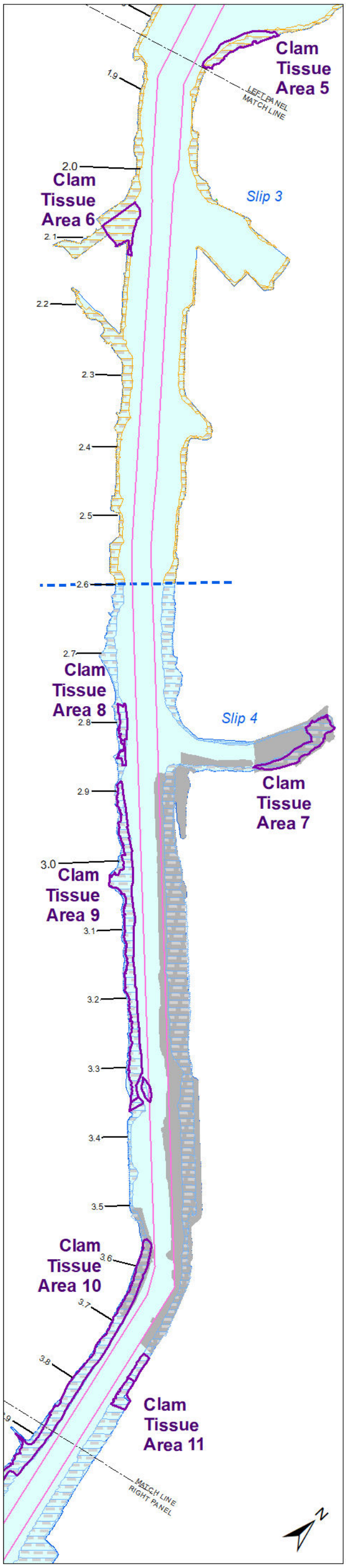
Attachment A. Clam tissue collection details

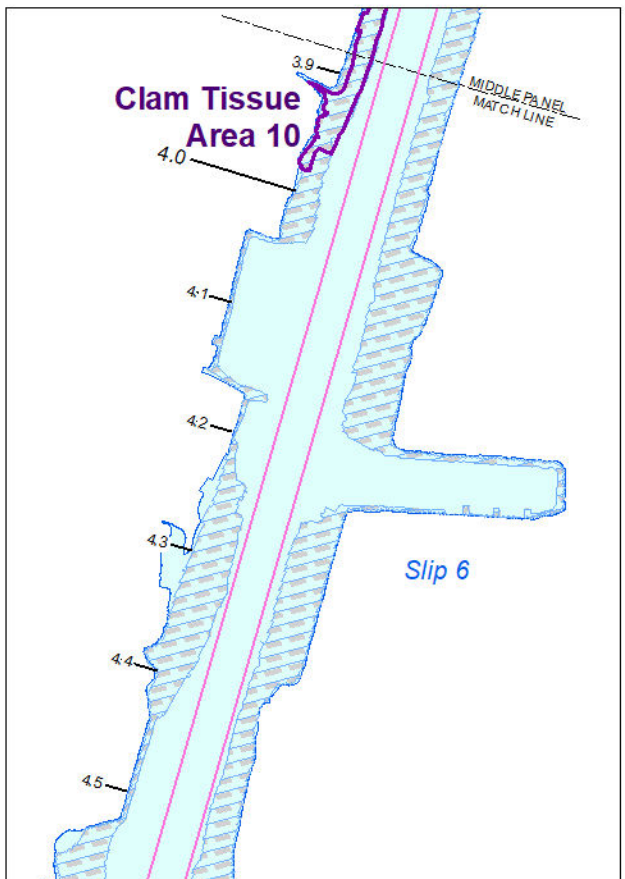
Clam Area	Date	Time	Clam ID	Width	Included in Inorganic Arsenic Composite?	Included in Other Risk Driver Composite?	Extra Clam (Not Included in Composite)	Composite No.	Composite ID(s), if applicable
C07	6/6/2023	-	none	-				-	-
C08	6/5/2023	1010	LDW23-C08-CL001	32		Comp3		Comp3	LDW23-C08-CLWB-Comp3
C08	6/5/2023	1010	LDW23-C08-CL002	38		Comp3		Comp3	LDW23-C08-CLWB-Comp3
C08	6/5/2023	1015	LDW23-C08-CL003	30			x	-	-
C08	6/5/2023	1030	LDW23-C08-CL004	30		Comp3		Comp3	LDW23-C08-CLWB-Comp3
C08	6/5/2023	1043	LDW23-C08-CL005	33			x	-	-
C08	6/5/2023	1048	LDW23-C08-CL006	24	Comp1			Comp1	LDW23-C08-CLSP-Comp1 and LDW23-C08-CLRM-Comp1
C08	6/5/2023	1055	LDW23-C08-CL007	43		Comp3		Comp3	LDW23-C08-CLWB-Comp3
C08	6/5/2023	1108	LDW23-C08-CL008	32	Comp2			Comp2	LDW23-C08-CLSP-Comp2 and LDW23-C08-CLRM-Comp2
C08	6/5/2023	1100	LDW23-C08-CL009	31		Comp3		Comp3	LDW23-C08-CLWB-Comp3
C08	6/5/2023	1105	LDW23-C08-CL010	33	Comp1			Comp1	LDW23-C08-CLSP-Comp1 and LDW23-C08-CLRM-Comp1
C08	6/5/2023	1025	LDW23-C08-CL011	28			x	-	-
C08	6/5/2023	1015	LDW23-C08-CL012	40	Comp1			Comp1	LDW23-C08-CLSP-Comp1 and LDW23-C08-CLRM-Comp1
C08	6/5/2023	1030	LDW23-C08-CL013	23		Comp3		Comp3	LDW23-C08-CLWB-Comp3
C08	6/5/2023	1108	LDW23-C08-CL014	22		Comp3		Comp3	LDW23-C08-CLWB-Comp3
C08	6/5/2023	1035	LDW23-C08-CL015	32	Comp2			Comp2	LDW23-C08-CLSP-Comp2 and LDW23-C08-CLRM-Comp2
C08	6/5/2023	1035	LDW23-C08-CL016	25		Comp3		Comp3	LDW23-C08-CLWB-Comp3
C08	6/5/2023	1035	LDW23-C08-CL017	27			x	-	-
C08	6/5/2023	1052	LDW23-C08-CL018	26	Comp2			Comp2	LDW23-C08-CLSP-Comp2 and LDW23-C08-CLRM-Comp2
C08	6/5/2023	1052	LDW23-C08-CL019	31			x	-	-
C08	6/5/2023	1100	LDW23-C08-CL020	28		Comp3		Comp3	LDW23-C08-CLWB-Comp3
C08	6/5/2023	1109	LDW23-C08-CL021	31		Comp3		Comp3	LDW23-C08-CLWB-Comp3
C09	6/5/2023	1010	LDW23-C09-CL001	30	Comp1			Comp1	LDW23-C09-CLSP-Comp1 and LDW23-C09-CLRM-Comp1
C09	6/5/2023	1034	LDW23-C09-CL002	24		Comp3		Comp3	LDW23-C09-CLWB-Comp3
C09	6/5/2023	1015	LDW23-C09-CL003	31		Comp3		Comp3	LDW23-C09-CLWB-Comp3
C09	6/5/2023	1107	LDW23-C09-CL004	33	Comp2			Comp2	LDW23-C09-CLSP-Comp2 and LDW23-C09-CLRM-Comp2
C09	6/5/2023	1019	LDW23-C09-CL005	32		Comp3		Comp3	LDW23-C09-CLWB-Comp3
C09	6/5/2023	1230	LDW23-C09-CL006	35	Comp1			Comp1	LDW23-C09-CLSP-Comp1 and LDW23-C09-CLRM-Comp1
C09	6/5/2023	1231	LDW23-C09-CL007	35			x	-	-
C09	6/5/2023	1237	LDW23-C09-CL008	27	Comp1			Comp1	LDW23-C09-CLSP-Comp1 and LDW23-C09-CLRM-Comp1
C09	6/5/2023	1247	LDW23-C09-CL009	27			x	-	-
C09	6/5/2023	1257	LDW23-C09-CL010	31		Comp3		Comp3	LDW23-C09-CLWB-Comp3
C09	6/5/2023	1258	LDW23-C09-CL011	32		Comp3		Comp3	LDW23-C09-CLWB-Comp3
C09	6/6/2023	1317	LDW23-C09-CL012	36		Comp3		Comp3	LDW23-C09-CLWB-Comp3
C09	6/6/2023	1323	LDW23-C09-CL013	22		Comp3		Comp3	LDW23-C09-CLWB-Comp3
C09	6/6/2023	1323	LDW23-C09-CL014	24	Comp2			Comp2	LDW23-C09-CLSP-Comp2 and LDW23-C09-CLRM-Comp2
C09	6/6/2023	1336	LDW23-C09-CL015	29			x	-	-
C09	6/6/2023	1337	LDW23-C09-CL016	24			x	-	-
C09	6/6/2023	1352	LDW23-C09-CL017	24		Comp3		Comp3	LDW23-C09-CLWB-Comp3
C09	6/6/2023	1358	LDW23-C09-CL018	31	Comp2			Comp2	LDW23-C09-CLSP-Comp2 and LDW23-C09-CLRM-Comp2
C09	6/6/2023	1358	LDW23-C09-CL019	22		Comp3		Comp3	LDW23-C09-CLWB-Comp3
C09	6/6/2023	1358	LDW23-C09-CL020	31			x	-	-
C09	6/6/2023	1402	LDW23-C09-CL021	39		Comp3		Comp3	LDW23-C09-CLWB-Comp3

Attachment A. Clam tissue collection details

Clam Area	Date	Time	Clam ID	Width	Included in Inorganic Arsenic Composite?	Included in Other Risk Driver Composite?	Extra Clam (Not Included in Composite)	Composite No.	Composite ID(s), if applicable
C10	6/5/2023	1255	LDW23-C10-CL001	31		Comp3		Comp3	LDW23-C10-CLWB-Comp3
C10	6/5/2023	1228	LDW23-C10-CL002	35	Comp1			Comp1	LDW23-C10-CLSP-Comp1 and LDW23-C10-CLRM-Comp1
C10	6/5/2023	1302	LDW23-C10-CL003	37			x	-	-
C10	6/5/2023	1305	LDW23-C10-CL004	31		Comp3		Comp3	LDW23-C10-CLWB-Comp3
C10	6/5/2023	1235	LDW23-C10-CL005	28		Comp3		Comp3	LDW23-C10-CLWB-Comp3
C10	6/5/2023	1228	LDW23-C10-CL006	29			x	-	-
C10	6/5/2023	1250	LDW23-C10-CL007	32	Comp2			Comp2	LDW23-C10-CLSP-Comp2 and LDW23-C10-CLRM-Comp2
C10	6/5/2023	1309	LDW23-C10-CL008	33			x	-	-
C10	6/5/2023	1314	LDW23-C10-CL009	37			x	-	-
C10	6/5/2023	1243	LDW23-C10-CL010	22		Comp3		Comp3	LDW23-C10-CLWB-Comp3
C10	6/5/2023	1318	LDW23-C10-CL011	32		Comp3		Comp3	LDW23-C10-CLWB-Comp3
C10	6/5/2023	1308	LDW23-C10-CL012	29	Comp1			Comp1	LDW23-C10-CLSP-Comp1 and LDW23-C10-CLRM-Comp1
C10	6/5/2023	1300	LDW23-C10-CL013	31			x	-	-
C10	6/5/2023	1320	LDW23-C10-CL014	26		Comp3		Comp3	LDW23-C10-CLWB-Comp3
C10	6/5/2023	1313	LDW23-C10-CL015	37		Comp3		Comp3	LDW23-C10-CLWB-Comp3
C10	6/5/2023	1320	LDW23-C10-CL016	36	Comp2			Comp2	LDW23-C10-CLSP-Comp2 and LDW23-C10-CLRM-Comp2
C10	6/5/2023	1330	LDW23-C10-CL017	30	Comp1			Comp1	LDW23-C10-CLSP-Comp1 and LDW23-C10-CLRM-Comp1
C10	6/5/2023	1328	LDW23-C10-CL018	29		Comp3		Comp3	LDW23-C10-CLWB-Comp3
C10	6/5/2023	1333	LDW23-C10-CL019	29		Comp3		Comp3	LDW23-C10-CLWB-Comp3
C10	6/5/2023	1325	LDW23-C10-CL020	30	Comp2			Comp2	LDW23-C10-CLSP-Comp2 and LDW23-C10-CLRM-Comp2
C10	6/5/2023	1325	LDW23-C10-CL021	35		Comp3		Comp3	LDW23-C10-CLWB-Comp3
C11	6/4/2023	1220	LDW23-C11-CL001	33	Comp1			Comp1	LDW23-C11-CLSP-Comp1 and LDW23-C11-CLRM-Comp1
C11	6/4/2023	1155	LDW23-C11-CL002	31		Comp3		Comp3	LDW23-C11-CLWB-Comp3
C11	6/4/2023	1234	LDW23-C11-CL003	34			x	-	-
C11	6/4/2023	1252	LDW23-C11-CL004	38		Comp3		Comp3	LDW23-C11-CLWB-Comp3
C11	6/4/2023	1227	LDW23-C11-CL005	27	Comp2			Comp2	LDW23-C11-CLSP-Comp2 and LDW23-C11-CLRM-Comp2
C11	6/4/2023	1155	LDW23-C11-CL006	38	Comp1			Comp1	LDW23-C11-CLSP-Comp1 and LDW23-C11-CLRM-Comp1
C11	6/4/2023	1320	LDW23-C11-CL007	25		Comp3		Comp3	LDW23-C11-CLWB-Comp3
C11	6/4/2023	1220	LDW23-C11-CL008	35		Comp3		Comp3	LDW23-C11-CLWB-Comp3
C11	6/4/2023	1215	LDW23-C11-CL009	33			x	-	-
C11	6/4/2023	1245	LDW23-C11-CL010	31	Comp1			Comp1	LDW23-C11-CLSP-Comp1 and LDW23-C11-CLRM-Comp1
C11	6/4/2023	1320	LDW23-C11-CL011	31	Comp2			Comp2	LDW23-C11-CLSP-Comp2 and LDW23-C11-CLRM-Comp2
C11	6/5/2023	1150	LDW23-C11-CL012	35			x	-	-
C11	6/5/2023	1153	LDW23-C11-CL013	29		Comp3		Comp3	LDW23-C11-CLWB-Comp3
C11	6/4/2023	1155	LDW23-C11-CL014	35		Comp3		Comp3	LDW23-C11-CLWB-Comp3
C11	6/5/2023	1150	LDW23-C11-CL015	31			x	-	-
C11	6/5/2023	1154	LDW23-C11-CL016	40		Comp3		Comp3	LDW23-C11-CLWB-Comp3
C11	6/4/2023	1228	LDW23-C11-CL017	38		Comp3		Comp3	LDW23-C11-CLWB-Comp3
C11	6/5/2023	1155	LDW23-C11-CL018	31			x	-	-
C11	6/4/2023	1210	LDW23-C11-CL019	31		Comp3		Comp3	LDW23-C11-CLWB-Comp3
C11	6/5/2023	1205	LDW23-C11-CL020	26		Comp3		Comp3	LDW23-C11-CLWB-Comp3
C11	6/5/2023	1203	LDW23-C11-CL021	35	Comp2			Comp2	LDW23-C11-CLSP-Comp2 and LDW23-C11-CLRM-Comp2







Clam tissue sampling area[a]

Clam tissue intertidal segments

- Segment 1
- Segment 2
- Segment 3
- Intertidal segment boundary
- Early Action Area
- LDW Superfund Boundary
- Federal Navigation Channel
- River mile

[a] Based on LDW RI clam tissue sampling areas and consistent with baseline sampling.

Windward environmental LLC

ANCHOR QEA

Lower Duwamish Waterway Group

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0 0.1 0.2 Miles

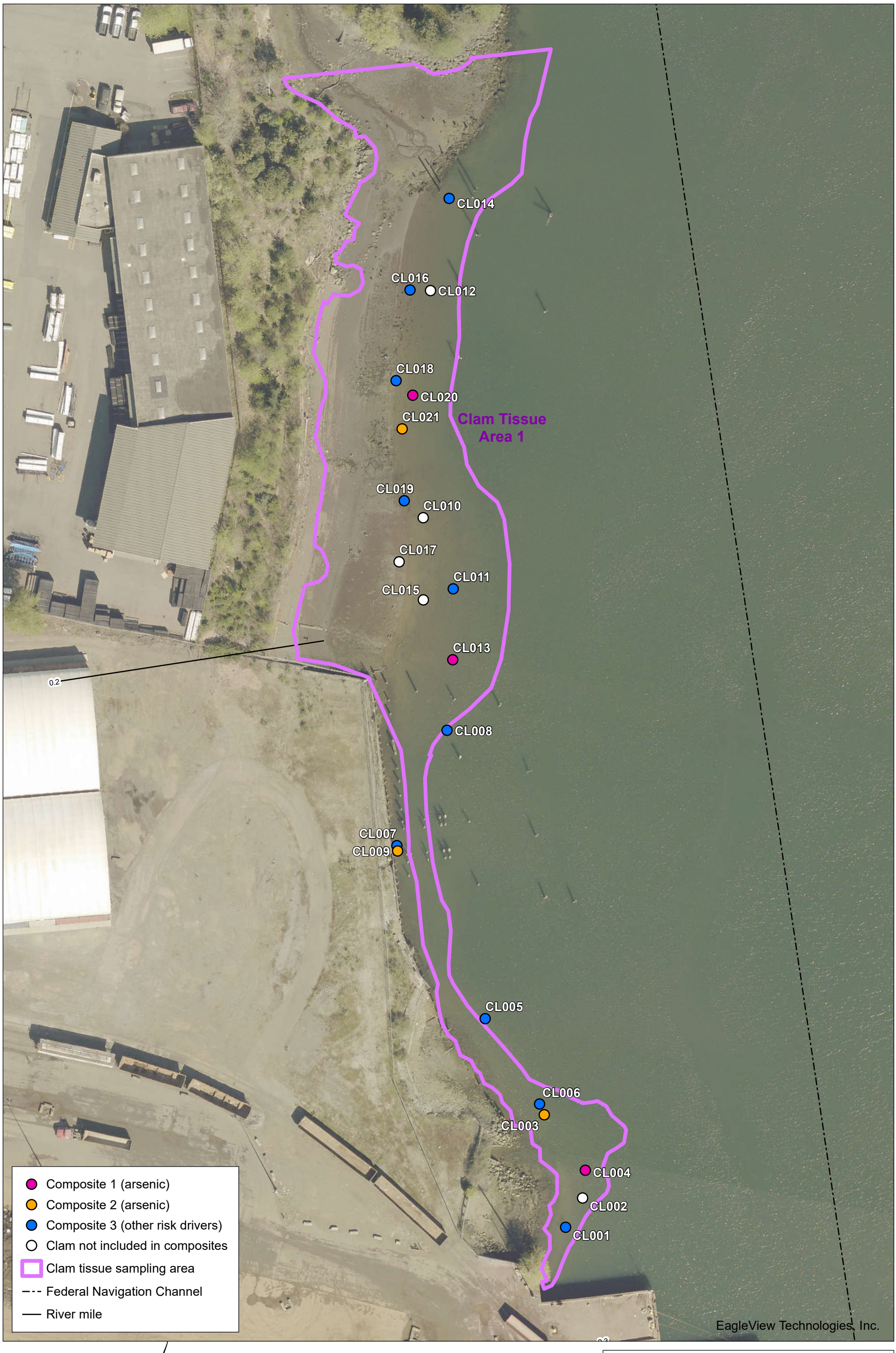
0 0.2 0.4 Kilometers

Scale is the same for each inset map

Map 1. Clam tissue collection areas and intertidal segments

SEPTEMBER 07, 2023

Prepared by ClaireC, 9/7/2023; W:\Projects\Duwamish AOC4\GIS\Maps and Analyses\Periodic Monitoring\Clamming 2023\Composite Assignments\6523 Clam sampling plan.mxd



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N

0 50 100 Feet

0 10 20 Meters

Map 2. Clam composite assignments for clam tissue collection area 1

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N

0 90 180 Feet

0 10 20 Meters

Map 3. Clam composite assignments for clam tissue collection areas 2 and 3

SEPTEMBER 07, 2023

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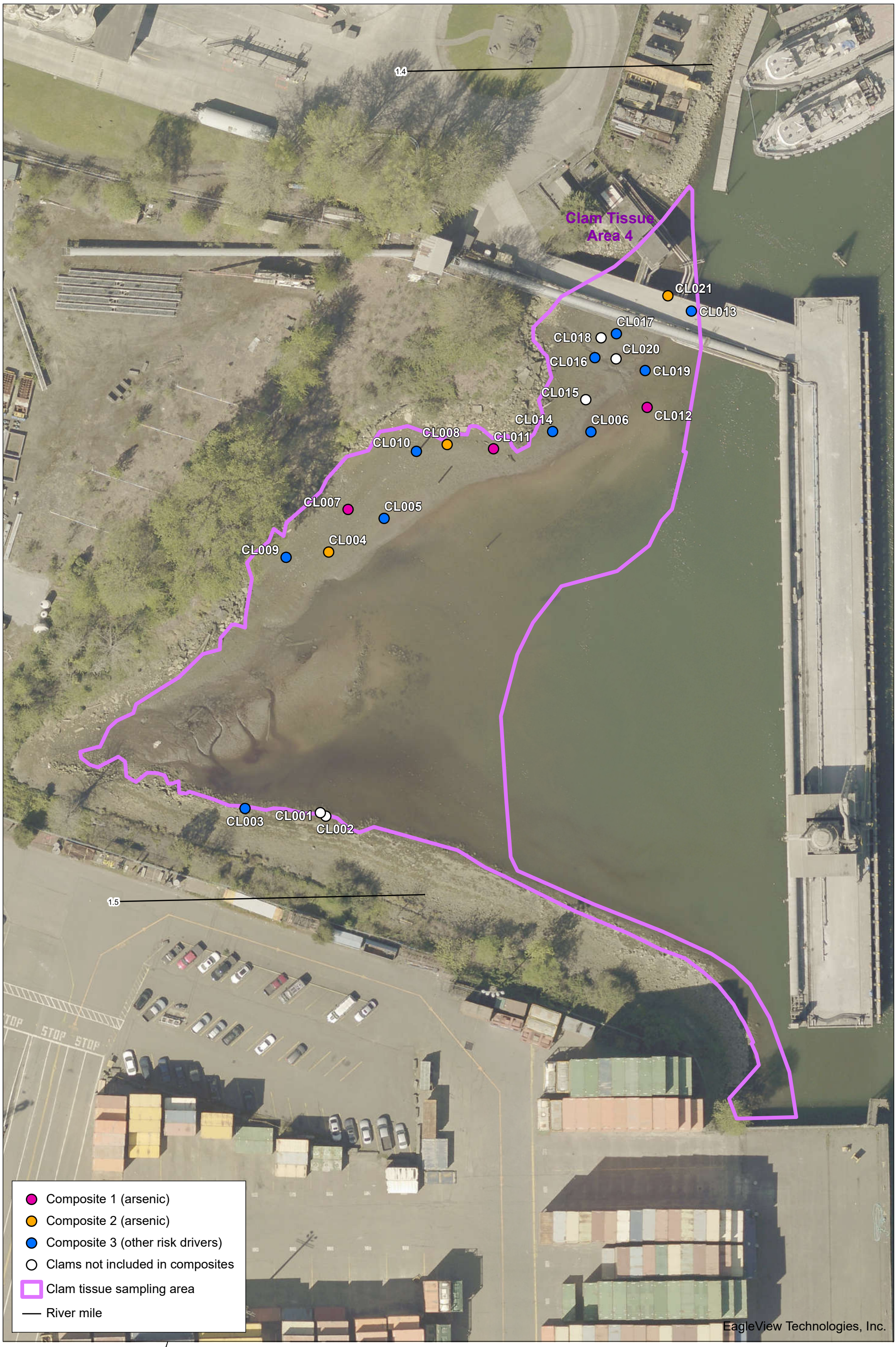

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N

0 40 80 Feet

0 10 20 Meters

Map 4. Clam composite assignments for clam tissue collection area 4

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N

0 40 80 Feet

0 10 20 Meters

Map 5. Clam composite assignments for clam tissue collection area 5

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N

0 25 50 Feet

0 5 10 Meters

Map 6. Clam composite assignments for clam tissue collection area 6

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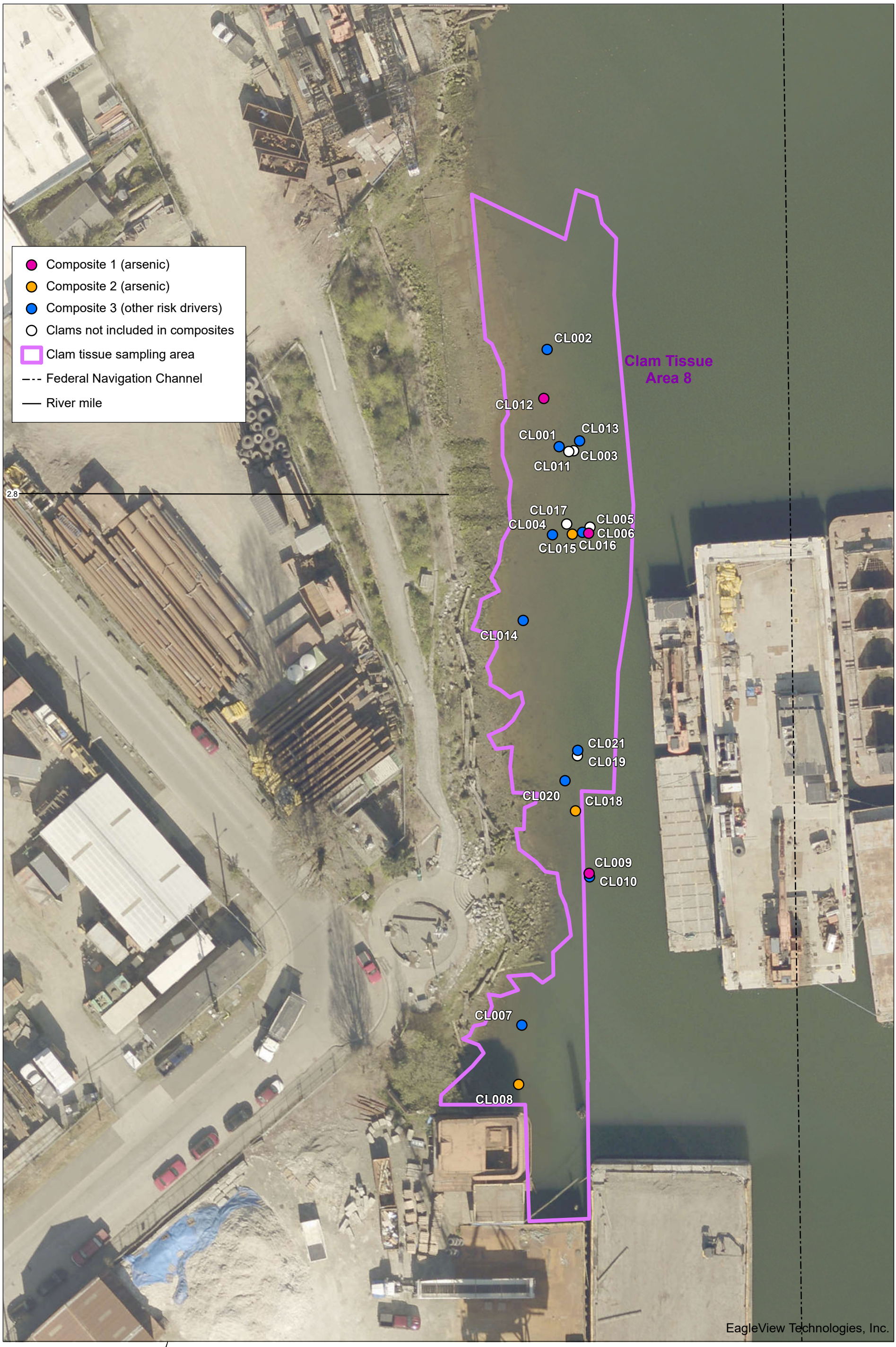

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0 40 80 Feet

0 10 20 Meters

Map 7. Clam composite assignments for clam tissue collection area 8

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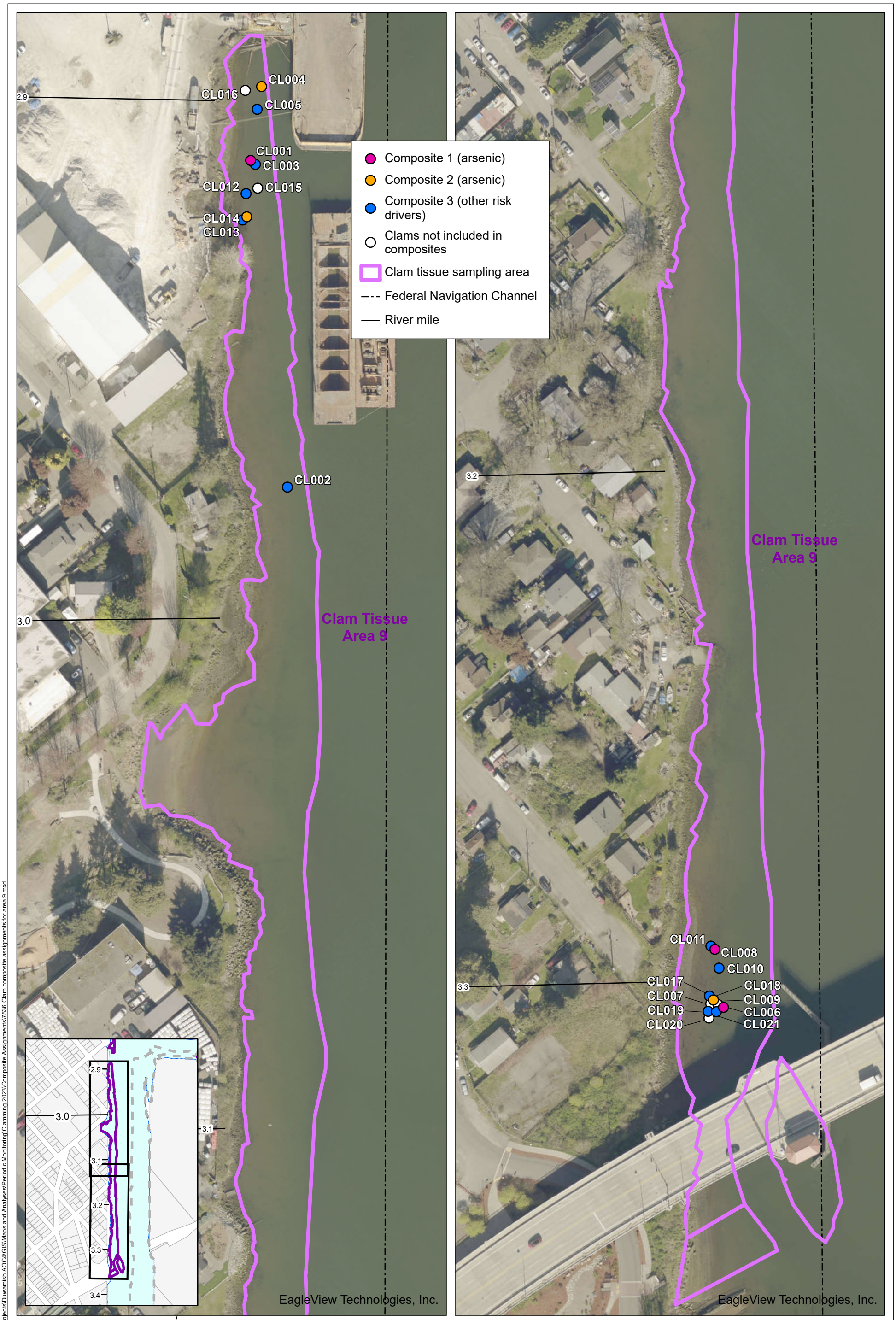

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0 75 150 Feet

0 25 50 Meters

Scale is the same for each inset map

Map 8. Clam composite assignments for clam tissue collection area 9

SEPTEMBER 07, 2023

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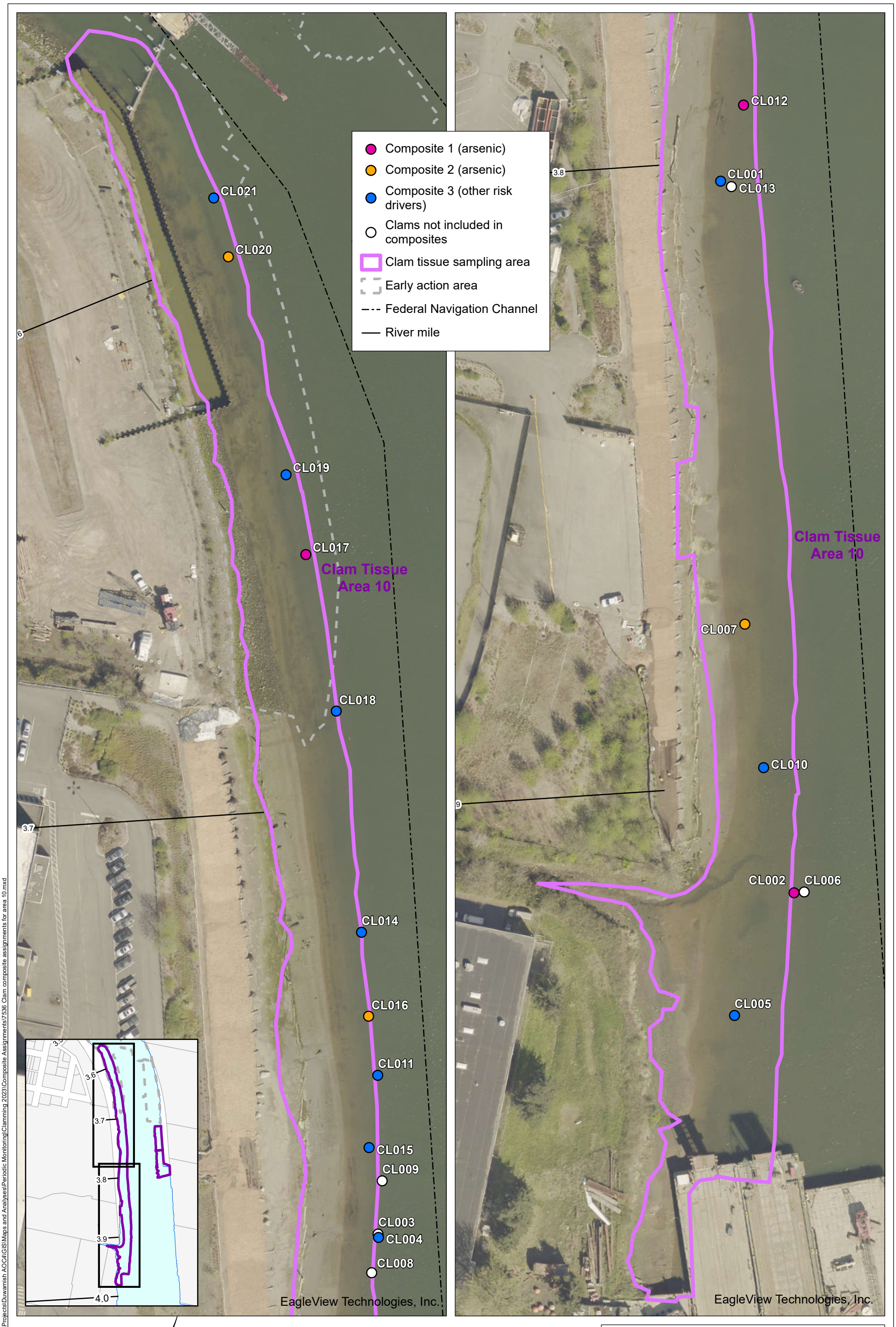

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N

0 50 100 Feet

0 20 40 Meters

Scale is the same for each inset map

Map 9. Clam composite assignments for clam tissue collection area 10

SEPTEMBER 07, 2023

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N

0 25 50 Feet

0 5 10 Meters

Map 10. Clam composite assignments for clam tissue collection area 11

SEPTEMBER 07, 2023

Prepared by ClaireC, 9/7/2023; W:\Projects\Duwamish AOC4\GIS\Maps and Analyses\Periodic Monitoring\Clamming 2023\Composite Assignments\7536 Clam composite assignments for area 11.mxd