APPENDIX A
REPRESENTATIVE PHOTOGRAPHS

Appendix A: Representative Photographs

RM18.35 East Bank Overview Photos

Photo 18.35E-1: Looking northeast from the Willamette River towards the mouth of Johnson Creek (right).

Photo 18.35E -2: Angular cobble retrieved power- during sampling attempt near mouth of Johnson Creek.

Photo 18.35E -3: Rounded gravels collected in grab sample near mouth of Johnson Creek.

Appendix A: Representative Photographs

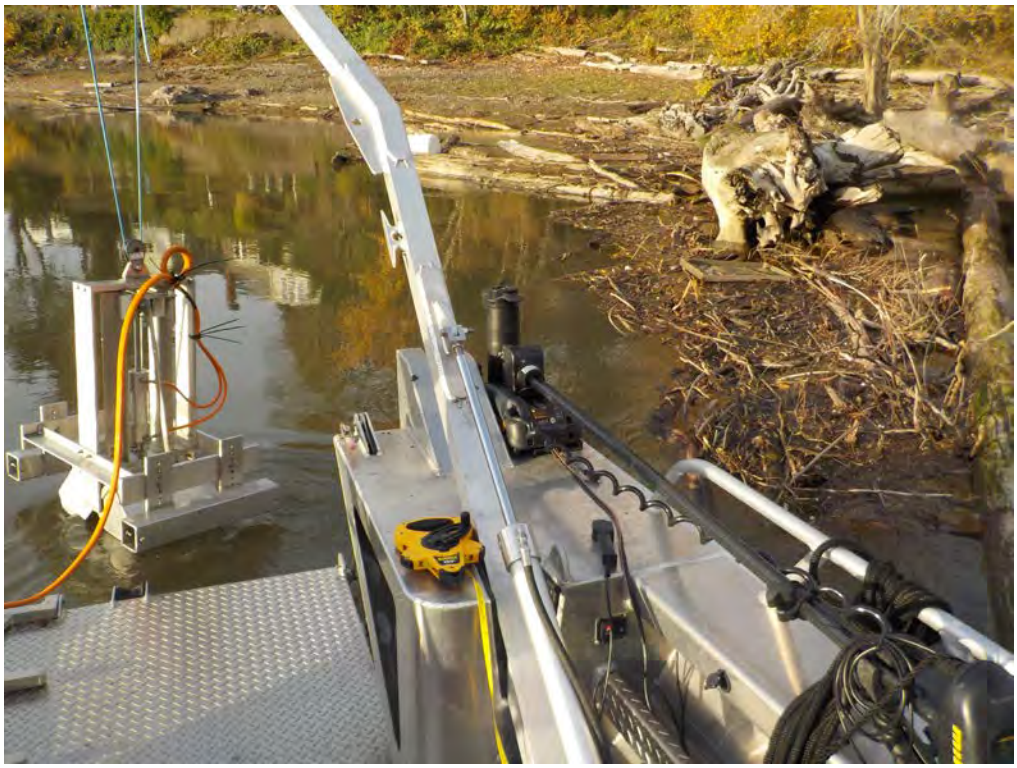

Photo 18.35E -4: Sampler deployment near logjam, looking northeast towards east bank (beneath residential properties).

Photo 18.35E -5: Dense sediment with plant fibers collected from near shore (beneath residential properties), west of Johnson Creek mouth.

Appendix A: Representative Photographs

RM18.45 East Bank Overview Photos

Photo RM18.45E-1: Deploying power-grab sampler, looking east. Boulder armored shoreline.

Photo RM18.45E-2: Rusted cable debris caught in power-grab sampler. URSC-RM18.45-G007.

Appendix A: Representative Photographs

Photo RM18.45E-3: Soft sediment and woody debris in sampler. URSC-RM18.45-G010.

Appendix A: Representative Photographs

RM20.0 East Bank Overview Photos

Photo RM20.0E-1: Looking southeast towards east bank of Willamette River.

Photo RM20.0E-2: Manual shoreline grab sampling.

Photo RM20.0E-3: Verifying sample collection depth.

Appendix A: Representative Photographs

RM20.0 West Bank Overview Photos

Photo RM20.0W-1: Power-grab sample URSC-RM20.0W-G003.

Photo RM20.0W-2: Lamprey at surface of grab sample.

Photo RM20.0W-3: Power-grab sample URSC-RM20.0W-G005.

Appendix A: Representative Photographs

RM20.1 West Bank Overview Photos

Photo RM20.1W-1: Looking west towards west bank of RM20.1.

Photo RM20.1W-2: Looking west towards west bank of RM20.1. Residential properties along riverbank.

Appendix A: Representative Photographs

Photo RM20.1W-3: Sample URSC-RM20.1W-G003.

Photo RM20.1W-4: Lamprey on sampling tube, URSC-RM20.1W-G003.

Photo RM20.1W-5: Looking north RM20.1W towards armored bank beneath dock access.

Appendix A: Representative Photographs

RM20.4 East Bank Overview Photos

Photo RM20.4E-1: Looking towards east bank of RM20.4. Residential properties, boat ramp, and private docks.

Photo RM20.4E-2: Manual sediment collection with sampling tube.

Photo RM20.4E-3: Representative sediment core for URSC-RM20.4E-COMP

Appendix A: Representative Photographs

RM20.9 West Bank Overview Photos

Photo RM20.9W-1: Looking towards west bank of RM20.9 and mouth of Oswego Creek.

Photo RM20.9W-2: Looking northwest along shoreline of RM20.9W. High-density housing (right). Park access (left).

Appendix A: Representative Photographs

Photo RM20.9W-3: Representative sediment in power-grab sampler. URSC-RM20.9W-G005.

Appendix A: Representative Photographs

RM24.7 East Bank Overview Photos

Photo RM24.7E-1: Looking east-southeast at the mouth of the Clackamas River. Armored park shoreline (left)

Photo RM24.7E-2: Looking north along shoreline of RW24.7E of Willamette River. Manual grab sample collection with sampling tube.

Appendix A: Representative Photographs

Photo RM24.7E-3: Representative sediment in successful power-grab sample. URSC-RM24.7E-G004. Two lamprey in sampler.

Appendix A: Representative Photographs

RM25.2 East Bank Overview Photos

Photo RM25.2E-1: Looking southeast at I-205 bridge and bank. Boat ramp/dock just right of photo.

Photo RM25.2E-2: Successful power-grab sample at URSC-RM25.2E-G001. Lamprey in sampler.

Appendix A: Representative Photographs

Photo RM25.2E-3: Poor recovery in armored areas. Rounded gravels and cobbles and corbicula.

Photo RM25.2E-4: Power-grab sampler deploying. Looking east towards Abernathy Creek culvert, south of I-205 Bridge.

Appendix A: Representative Photographs

Photo RM25.2E-5: Successful power-grab sample. URSC-RM25.2E-G003.

APPENDIX B
GRAB SAMPLE DESCRIPTION FORMS

RM 13.5E

11/29/17
3 of 3

Grab Sample Description Form

Sampler: P. Cordell

Station	Rep	Date	Time	Water Depth (ft)	Water Depth Source	Recovery Depth (cm)	Sediment Type and Description [Relative density or consistency; color; moisture; modifiers and MAJOR CONSTITUENT; (USCS symbol); trace descriptors; grain size, shape and gradation; structure, bedding, cementation, mineralogy, organics, odor; (Formation Name)]	Debris or Benthic	Odor	Sheen	Color
RM 18.35E G-1 G-2 G-3		~~11/29/17~~ 11/29/17 ECH					No Recovery				
X G-8		~~11/29/17~~ 11/29/17 ECH	1440	9.8'	LL	15cm	(loose) wet, gray, GRAVEL w/ course Sand gravel is rounded to subrounded 1-4" diameter 2 - 32oz jars filled	None	No	No	Brown
X G-5		~~11/29/17~~ 11/29/17 ECH	1539	4'	LL	13cm	(soft - m.stiff) wet, gray w/ orange mottled SILT w/ fine sand and numerous roots	numerous roots	No	No	GRAY

Sheet 1 of 3 11/30/17

Grab Sample Description Form

Sampler: PC | MS

RM 18.45E -COMP TIME@0815

Station	Rep	Date	Time	Water Depth (ft)	Water Depth Source	Recovery Depth (cm)	Sediment Type and Description [Relative density or consistency; color; moisture; modifiers and MAJOR CONSTITUENT; (USCS symbol); trace descriptors; grain size, shape and gradation; structure, bedding, cementation, mineralogy, organics, odor; (Formation Name)]	Debris or Benthic	Odor	Sheen	Color
G-1	PC/MS	11/30/17	0811	8'	LL	20cm	(v.soft) wet, olive brown to gray, SILT w/ scattered debris leaves and roots becomes (loose) wet, dark gray SAND w/ silt to SILT w/ sand	scattered leaves and roots	organic odor	No	brown to dark gray
G-2			0832	22'	LL	22cm	same as above, G-1 →				
G-3			0906	4.3'	LL	15cm	(v.soft) dark brown, SILT w/ scattered roots and leaves at 5-6cm becomes (loose-med dense) olive gray w/ orange mottling SAND to SAND w/ silt w/ scattered roots	scattered roots and leaves	No	No	Dark brown to olive gray
G-4			0924	21.5	LL	20cm	(v.soft) wet, dark brown to brown SILT w/ scattered roots, wood fragments, and leaves. Becomes (loose-med dense) olive gray SAND w/ silt at ~8cm				
G-5			1018	47'	LL	13cm	(loose-med dense), wet, gray SAND trace silt w/ scattered wood debris (milled) and one fish (~5" sculpin)	1-sculpin scattered wood debris			

11/30/17

Grab Sample Description Form

RM-18.5E

Sampler: P. Cordell

Station	Rep	Date	Time	Water Depth (ft)	Water Depth Source	Recovery Depth (cm)	Sediment Type and Description [Relative density or consistency; color; moisture; modifiers and MAJOR CONSTITUENT; (USCS symbol); trace descriptors; grain size, shape and gradation; structure, bedding, cementation, mineralogy, organics, odor; (Formation Name)]	Debris or Benthic	Odor	Sheen	Color
RM-18.45E											
G-6		11/30/17	1027	8'	LL	27cm	(v. soft), wet, olive gray, SILT w/ scattered leaves, wood frags, and roots becomes gray SILT with sand @ ~20cm	wood fragments, roots, leaves	No	No	olive gray
G-7		11/30/17	1053	24'	Sower	17cm	(loose-med. dense), wet gray, SAND trace silt, w/ debris (fishing line, hook, and weight) and one baby lamprey	fishing debris, wood, and lamprey ~1-2cm long	organic odor	No	gray
G-8				48'			NO RECOVERY				
RM 20.2E G-3							NO RECOVERY				
RM 20.0W G-1		11/30/17	1326	8.8'	LL	20cm	(med dense-loose), wet, gray SAND w/ scattered wood debris	wood debris sticks/twigs	organic H_2S like odor	No	Gray
RM 20.0W G-2		↓	1349	13.5'	LL	18cm	(med dense), wet, gray F-M SAND w/ gravel trace silt w/ scattered wood and leaf debris one lamprey observed (SW-SP)	wood & leaf			

11/30/17

Grab Sample Description Form

RM 20.0W & RM 18.45E

Sampler: P. Cordell

Station	Rep	Date	Time	Water Depth (ft)	Water Depth Source	Recovery Depth (cm)	Sediment Type and Description [Relative density or consistency; color; moisture; modifiers and MAJOR CONSTITUENT; (USCS symbol); trace descriptors; grain size, shape and gradation; structure, bedding, cementation, mineralogy, organics, odor; (Formation Name)]	Debris or Benthic	Odor	Sheen	Color
RM-20.0W											
G-3	PC/MS	11/30/17	1403	45'	Sonar	24cm	(med dense-loose) olive brown SAND fine-med (SW-SP) one lamprey observed	one lamprey	NO	NO	Olive brown
G-4	PC/MS	11/30/17	1424	6.5'	LL	20cm	(med dense) light to brown GRAVEL w/ sand, trace silt (GW) 32 oz jars filled	NO	No	No	gray to brown
G-5	PC/MS	11/30/17	1447	62' (R-1) 55' (R-2)	Sonar, too deep for LL	20cm	(med dense) gray to brown FSAND w/ gravel to GRAVEL w/ sand trace fines w/ scattered wood debris - (GW-SW)	scattered wood debris	No	No	gray to brown
RM 18.45 G-9		11/30/17	1516	12.1	LL	26cm	(loose-med dense) wet gray SILT trace fine sand, becomes SAND w/ silt to SILT w/ sand @ ~18cm (ML → ML/SM) scattered wood fragments observed in upper 20cm	scattered wood debris	NO	NO	gray
G-10				34'	LL		No Recovery				

Grab Sample Description Form

Sampler: E Hughes

Rm 20.1W

Station	Rep	Date	Time	Water Depth (ft)	Water Depth Source	Recovery Depth (cm)	Sediment Type and Description [Relative density or consistency; color; moisture; modifiers and MAJOR CONSTITUENT; (USCS symbol); trace descriptors; grain size, shape and gradation; structure, bedding, cementation, mineralogy, organics, odor; (Formation Name)]	Debris or Benthic	Odor	Sheen	Color
Rm20.1W G001	1	12/1/17	800	5 ft	lead line	21	0-5cm loose, dark brown, wet, silt, minor organics 5-21cm med dense olive grey, wet, sandy silt, sand is v. fine & poorly sorted	minor leaves/ roots	none	none	dark brown olive grey
20.1W G002	1	12/1/17	815	36 ft	lead line	18 cm	med dense, olive grey, sandy silt, v. fine sand, poorly sorted -some fines may have washed out of sampler	minor leaves/ roots	organic	none	olive grey
20.1W G003	1	12/1/17	835	10 ft	"	27 cm	med dense olive grey, silty sand, v fine poorly sorted sand. ~2 cm dark brown silt on surface	small lamprey (~1") leaves, roots, sticks	organic	none	olive grey (dark brown silt on surface)
20.1W G004	~~X~~ Bad 3	12/1/17	919	17.5	Sounder	26 cm	0-2cm dark brown sand w/ silt, v. fine sand, poorly sorted, loose 2cm olive grey, wet, loose, silt w/sand. sand is fine-grained & poorly sorted	some leaves, roots, sticks	slight organic	none	dark brown olive grey
20.1W G005	1	12/1/17	932	5.5	lead line	17 cm	0-8 cm dark brown, loose, wet, silt. 8 cm-17cm med dense, olive grey, silty sand, fine-grained poorly sorted	some leaves, sticks, roots.	none	none	dark brown/ olive grey

Grab Sample Description Form

Sampler: E. Hughes

Rm 20.1W

Station	Rep	Date	Time	Water Depth (ft)	Water Depth Source	Recovery Depth (cm)	Sediment Type and Description [Relative density or consistency; color; moisture; modifiers and MAJOR CONSTITUENT; (USCS symbol); trace descriptors; grain size, shape and gradation; structure, bedding, cementation, mineralogy, organics, odor; (Formation Name)]	Debris or Benthic	Odor	Sheen	Color
Rm 20.1W G007	1	12/1/17	10:15	23 ft	sounder	30 cm	loose, wet, dark brown silt 0-8 cm 8cm to 30cm, mld dense, olive grey, sandy silt, sand is v. fine-grained	dark snail some twigs	none	none	dark brown olive gray
Rm 20.1W-G008	2	12/1/17	1037	21.5	sounder	24 cm	loose, dark brown, wet, silt 0-2cm 2cm to bottom, soft, wet, olive grey silt w/sand, sand is fine grained	minor leaf debris, twigs	none	none	"
Rm 20.1W-G009	1	12/1/17	1053	30.5	sounder	26 cm	0-2cm loose, dark brown, wet silt 2cm to 26cm soft, olive gray, ~~silt~~ sandy silt, sand is v. fine grained & poorly sorted	minor leaf debris	none	none	"
Rm 20.1W G010	3	12/1/17	11:18	43.4	sounder	20 cm	loose, dark brown (0-2cm) & olive grey (2cm-20cm), sandy silt, sand is fine-grained, poorly sorted.	rootlets	none	none	"

Grab Sample Description Form

Sampler: E. Hughes

RM20.4E

Station	Rep	Date	Time	Water Depth (ft)	Water Depth Source	Recovery Depth (cm)	Sediment Type and Description [Relative density or consistency; color; moisture; modifiers and MAJOR CONSTITUENT; (USCS symbol); trace descriptors; grain size, shape and gradation; structure, bedding, cementation, mineralogy, organics, odor; (Formation Name)]	Debris or Benthic	Odor	Sheen	Color
Rm20.4E G001	6	12/1/17	12:28	20	sounder	13 cm	Olive gray, med dense, sand w/silt, fine grained poorly	1 corbicula ang. gravel 1 6" rounded cobble	none	light sheen	olive gray
RM20.4E G002	1	12/1/17	12:40	0 (on shore)	N/A	30 cm	collected from shore, field composited from 2 cores olive gray clay, very stiff, moist, sandy silt ~20 cm below mudline, fine-grained, poorly sorted	none	none	white & colorful sheen on shoreline	olive gray
Rm20.4E G003	1	12/1/17	13:10	N/A on-shore	N/A	30 cm	collected from shore, 4" (~12 cm) clay w/silt, olive gray w/yellow red mottling, very stiff, fine silty sand below 12-30 cm) medium grained yellow red w/silt	none	none	none	olive gray yellow red
Rm20.4E G004	2	12/1/17	1330 ECH	18	sounder	21 cm	0-4cm dark brown 7 4cm olive gray to dark gray soft/loose, fine-grained sand with silt.	none	none	none	dark brown olive gray
Rm 20.4E G005	1	12/1/17	1348	6	guestimate	19 cm	med dense, olive gray, moist, sand w/silt, fine-grained poorly sorted, mod. rounded sand.	None	None	None	olive gray

Grab Sample Description Form

Sampler: E. Hughes

Rm 20.9W

Station	Rep	Date	Time	Water Depth (ft)	Water Depth Source	Recovery Depth (cm)	Sediment Type and Description [Relative density or consistency; color; moisture; modifiers and MAJOR CONSTITUENT; (USCS symbol); trace descriptors; grain size, shape and gradation; structure, bedding, cementation, mineralogy, organics, odor; (Formation Name)]	Debris or Benthic	Odor	Sheen	Color
X Rm20.9W G001	2	12/1/17	14:13	5	sounder	16 cm	-Dark brown, very loose, silty clay flocculent 0-2cm - olive gray silty sand med dense. fine grained, poorly sorted, some red/white lithics	none	none	none	Olive gray
X G002	1	12/1/17	1440	21	Sounder	20 cm	-Dark brown sandy silt (upper 1cm, very loose) - Olive gray, med dense, silty sand, fine-grained, poorly sorted,	small lamprey 2"	none	none	olive gray
X G003	3	12/1/17	15:00	8	sounder	17 cm	same as G002	sticks & leaves	none	none	olive gray
X G004	2	12/1/17	15:15	3	lead line	15cm	same as G002				
X G005	1	12/1/17	15:32	15	Sounder	21 cm	same as G002				

12/4/17
Sheet 1 of 3
Rm20.9W

Grab Sample Description Form

Sampler: E Hughes

Station	Rep	Date	Time	Water Depth (ft)	Water Depth Source	Recovery Depth (cm)	Sediment Type and Description [Relative density or consistency; color; moisture; modifiers and MAJOR CONSTITUENT; (USCS symbol); trace descriptors; grain size, shape and gradation; structure, bedding, cementation, mineralogy, organics, odor; (Formation Name)]	Debris or Benthic	Odor	Sheen	Color
Rm20.9W ~~G007~~ G007	1	12/4/17	8:15	23	Sounder	18	med dense, dark brown, 0-1cm silty sand (fine-grained) 1-3cm silt (dark brown) 3-18cm, med dense, olive gray, silty sand, fine-grained, well rounded, poorly sorted	minor leaves	none	none	dark brown olive gray
Rm20.9W G008	2	12/4/17	8:35	10	Sounder	18	0-3cm, loose, dark brown, wet sandy silt, fine-grained sand, 3-18cm, med dense, olive gray, wet, silty sand, sand is fine-grained. poorly sorted, mod. rounded	~~minor~~ leaves in bottom	none	none	"
Rm 20.9W G010	2	12/4/17	928	85	sounder	15	0-2cm, very loose, dark brown sandy silty clay, 2cm-15, med dense, moist, olive gray silty sand, sand is fine-grained, poorly sorted	none	none	none	"
Rm 24.7E G001	1	12/4/17	1042	N/A on shore	N/A on shore	22	med dense, olive gray, moist, sand, fine-grained, well rounded, clear, poorly sorted	none	none	none	olive gray
~~G00~~ Rm 24.7E G002	1	12/4/17	10:00	N/A on-shore	N/A	22	same as G001, a couple clay pockets	none	none	none	olive gray

12/4/17
Sheet 2 of 3

Grab Sample Description Form

Sampler: E. Hughes (ECH)

Station	Rep	Date	Time	Water Depth (ft)	Water Depth Source	Recovery Depth (cm)	Sediment Type and Description [Relative density or consistency; color; moisture; modifiers and MAJOR CONSTITUENT; (USCS symbol); trace descriptors; grain size, shape and gradation; structure, bedding, cementation, mineralogy, organics, odor; (Formation Name)]	Debris or Benthic	Odor	Sheen	Color
X RM 24.7E G003	6	12/4/17	1120	5	Sounder	15	med dense, olive gray, wet, sand, fine-grained, well rounded, some red mottling, well rounded	lots of baby lamprey <1"	none	none	olive gray
X RM 24.7E G004	5	12/4/17	11:48	4	Sounder	20	Same as G003	a couple lamprey one is 4" leaves	none	none	olive gray
X RM24.7E ECH G005	3	12/4/17	12:06	3	Sounder	20	Same as G003	more baby lamprey	none	none	olive gray
X RM 25.2E G001	2	12/4/17	1300	15	Sounder	15	med dense, olive gray, silty sand and gravel. fine-grained sand, mod rounded. gravel is a mix of angular & rounded <1/2" to 6"	juvenile lamprey 5" sticks	none	none	olive gray
X RM 25.2E G003	1	12/4/17	1335			28	0-2cm, soft, dark brown, silty clay, 2cm-28cm, med dense, olive gray, fine to med sand, mod. rounded, some mica & lithics, mod sorted	none	none	none	olive gray

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12/4/17
Sheet 3 of 3

Grab Sample Description Form

Sampler: E. Hughes

Station	Rep	Date	Time	Water Depth (ft)	Water Depth Source	Recovery Depth (cm)	Sediment Type and Description [Relative density or consistency; color; moisture; modifiers and MAJOR CONSTITUENT; (USCS symbol); trace descriptors; grain size, shape and gradation; structure, bedding, cementation, mineralogy, organics, odor; (Formation Name)]	Debris or Benthic	Odor	Sheen	Color
X RM252E G004	7	12/4/17	14:20	17	Sounder	16	0-8cm dark brown, loose, wet silty sand, fine-grained, ~~mod~~ poorly sorted, mod rounded 8-16cm olive gray, soft, sandy silt, sand is fine-grained, poorly sorted, well rounded	none	organic	none	dark brown, olive gray

12/5/17
Sheet 1 of 2

Grab Sample Description Form

Sampler: E. Hughes

Station	Rep	Date	Time	Water Depth (ft)	Water Depth Source	Recovery Depth (cm)	Sediment Type and Description [Relative density or consistency; color; moisture; modifiers and MAJOR CONSTITUENT; (USCS symbol); trace descriptors; grain size, shape and gradation; structure, bedding, cementation, mineralogy, organics, odor; (Formation Name)]	Debris or Benthic	Odor	Sheen	Color
RM25.2E G010	2	12/5/17	8:09	7	Sounder	17 (highest)	med dense, olive gray, wet, silty sand, sand is fine-grained poorly sorted, well rounded.	minor wood	none	none	olive gray
RM25.2E G002	5	12/5/17	8:43	16	Sounder	20	loose, olive gray, wet, silt w/ sand, silt is non-plastic, sand is fine-grained, poorly sorted, well rounded	organics (twigs leaves)	slight organic	none	olive gray
~~RM25.2E~~ RM 20.0E G001	6	12/5/17	10:35	10	Sounder	15	med dense, dark brown, moist, sandy silty sand (0-3cm), sand is fine-grained, poorly sorted, well rounded, 3-15cm, wet, soft, sandy silt, olive gray, sand is fine grained	organics corbicula	none	none	dark brown olive gray
RM 20.0E ~~RM25.2E~~ G002		12/5/17	11:25	N/A on shore	N/A on shore	30	DENSE fine sand, trace silt, lt brown, wet	NONE	NONE	NONE	lt BR
RM 20.0E G003	1	12/5/17	11:10	Shore	Shore	30	DENSE fine silty sand lt brown, wet	trace organic woody debris	NO	NO	lt BR

GSI Water Solutions, Inc.

12/5/17

Sheet 2 of 2

Grab Sample Description Form

Sampler: E. Hughes

Station	Rep	Date	Time	Water Depth (ft)	Water Depth Source	Recovery Depth (cm)	Sediment Type and Description [Relative density or consistency; color; moisture; modifiers and MAJOR CONSTITUENT; (USCS symbol); trace descriptors; grain size, shape and gradation; structure, bedding, cementation, mineralogy, organics, odor; (Formation Name)]	Debris or Benthic	Odor	Sheen	Color
ECH ~~RM 20.0E~~ ~~RM 20.0E~~ RM 20.0E G004	1	12/5/17	10:35	N/A on-shore	N/A on-shore	30	DENSE SAND w/ SILT fine lt BROWN, WET	TRACE ORGANICS woody debris	NO	NO	lt BR
RM 20.0E ECH G005	1	12/5/17	10:55	N/A on-shore	N/A	25	DENSE Silty SAND, fine lt BROWN, WET	TRACE ORGANICS woody debris	NO	NO	lt BR
X Rm 8.35 E- G011	1	12/5/17	12:16	N/A on-shore	N/A	30	med stiff, dark brown, wet sandy silt, sand is fine-grained, ~~mod~~ well rounded, mod sorted,	organic/ woody debris	none	none	dark brown
X G012	1	12/5/17	1230	NA/on-shore	N/A	15cm	med dense, dark brown, moist, silty sand, sand is fine-grained, well rounded mod. sorted gravel @ 15cm	none	none	none	dark brown
X G013	1	12/5/17	1300	N/A on-shore	N/A	15cm	med dense, dark brown, moist, silty sand, fine-grained well rounded mod sorted gravel @ 15cm	none	none	none	dark brown

18.35E comp time 1448

APPENDIX C
FIELD NOTEBOOKS

RM-16.5

1227 G3 44'-DTS
R-1 No Recovery
R-2 No Recovery

1236 G-4 R-1 No Recovery
R-2 No Recovery
gravel pinched w/ cobbles in sampler

1248 G5 R-1 No Recovery
R-2 No Recovery

1302 Call w/ Erin and decide to not collect additional samples below Sellwood Bridge in H group. Moving to Up-River sample locations

1340 Collect RM16.5 Rinse Blank

URSC

1305 Head to RM 18.35E composite sample location (Comp time - 1448)

1354 RM 18.35 E G-1 DTS - 12.5'
R-1 pinched cobble - NR
R-2 pinched cobble/stick - NR
R-3 DTS - 20' pinched cobble - NR

Bank is very steep, up to 65' deep possibly vertical in places suggesting bedrock.

1403 RM 18.35 E G-2 DTS - 20' (LL)
R-1 - No recovery
1408 R-2 - pinched cobbles - NR
R-3 - No recovery

1418 RM 18.35E G3 DTS - 13.8' (LL)
R-1 NO RECOVERY
1423 R-2 DTS - 18' (LL)
Cobbles - 1 large 7-8" cobble
R-3 DTS - 10' (sonar)
pinched cobble (5-6" dia)

Rite in the Rain

CONTENTS

PAGE	REFERENCE	DATE

12/1/2017
URSC Sed Characterization
- 630 Erin loads supplies @ HC office
715 Erin & Matt meet Gravity at Willamette Park Boat Ramp, load supplies & have health & safety briefing, including pinch point warnings
750 Arrived @ Rm 20.1W
800 Collected Rm20.1W-G001
water depth = 5 ft
21 cm recovery
1648354.70
647437.20
815 Rep 1 on 20.1W G002
18 cm recovery
water depth = 36 ft
1648453.84
647351.03
835 20.1W G003
water depth = 10 ft
27 cm
1648424.66
647248.45

ZLH

Rite in the Rain.

12/1/17 ECH

900 Moving to 20.1W G004

912 Attempt 1 @ G004
reject, pulled up
large log
water depth = 20ft

916 Rep 2 - reject
cobbles & cloth (eg. rag)
moved closer to shore

919 Rep 3 - retain
26 cm recovery
water depth = 17.5 ft
7648480.95
647104.30

932 Rm 20.1W G005
water depth = 5.5 ft.
7648489.59
646964.80

950 Rm 20.1W G006
Rep 1 - reject, empty
water depth in front of
dock = 50 ft
R2 behind dock, water
depth ≈ 40 ft reject due to
one cobble & no recovery

ECH

12/1/17

10:06 Rep 3 - reject ECH ~~empty~~ <10cm recovery

10:08 Rep 4 - rejected, cobbles & mostly empty
→ moved on

10:15 Rep 1 Rm 20.1W G007
retained 30 cm recovery
water depth = 23 ft
7648556.21
646710.26

1030 Rep 1 G008, rejected, empty

1037 Rep 2 - retained.
water depth = 21.5
7648560.90
646572.25

1053 Rm 20.1W G009
WL = 30.5 ft deep
7648568.82
646431.73

1108 Rm 20.1W G010
WL = 40.5 ft
Rep 1 - Reject - No recovery
but two 6" cobbles

ECH

Rite in the Rain

12/1/17

11:14 Rep 2 on G010
Reject, empty
water level was 37.8,
Closer to old docks,
debris on river bottom

11:18 Rep 3 on G010
water level = 43.4
7648582.51
646278.48
retained, recovery = 20cm
7648582.51
646278.48

1200 Heading to Rm20.4E
water level = 3.4 ft
12:13 Rep 1 angular rock, reject
12:15 Rep 2 hard ground, reject
Rep 3 rocks, reject
Rep 4 rocks, reject
Rep 5 wood chips, no sediment, reject
12:28 Rep 6 retained 13cm
7648824.10
645369.82
ECH water depth = 20 ft

12/1/17

12:40 Collected G002 from shore
7648903.44
645319.07
used corer to collect two 30 cm cores & field ~~Composite &~~ ECH
~~Split to cores~~ homogenized two cores & split into two bottles
~~13:05~~
13:10 Collected G003 from shore using coring device to 30 cm 7648858.57
645208.93
13:~~30~~ 28 ECH Rep 1 on G-4
water depth = 18ft.
rejected, no recovery
wood chips
13~~30~~ ECH Rep 2 retained
18 ft deep
7648741.57
645219.07

1348 Rep 1 RM20.4E G005
In front of Forest Creek
4.5 ft water depth
retained 20cm
7648784.46 645133.27

Rite in the Rain

12/1/17

14:10 Rm 20.9W Began attempts at G001, sample rejected, grab empty

14:13 Rep 2 retained
water depth = 5ft
7647595.73
643058.28

1440 Rep 1 G002 retained
20 cm recovery
7647668.86
643001.32

14:53 Rep 1 G003
reject, big chunk of basalt
water depth = 8 ft.
Rep 2 - reject < 10 cm sediment
7647632.77 } Rep 3
642984.11 } Retained
15:00

1512 Rep 1 G004
rejected < 10 cm
sediment recovery

ECH

12/1/17

15:15 Rep 2 G004
water depth = 3 ft
retained, ~15cm
7647581.68
642923.30

15:32 R1 G005
water depth = 15 ft
7647697.61
642940.68

15:45 R1 G006
water depth = 6.2
R1 through R3 rejected due to low recovery
will head back to Willamette Park & start here again on monday.

1615 Dropped off @ W.P. Erin unloaded @ H.C.

ECH

Rite in the Rain

12/4/17 URSC

6:50 Erin @ H.C. to load supplies

7:15 met Gravity @ Willamette Park

Started heading out & remembered we needed more ethanol so grabbed that from Hart Crowgers office.

Erin (ESI), Matt (DEQ), Ryan (Gravity) & (Gravity) on boat.

Gravity added 50 lbs of weight to sampler over weekend to help with the sandy substrate.

805 Finished decon moving to RM20.9W G006 - Rep 4 reject < 10 cm recovery

8:07 Rep 5 reject <10 cm recovery ⇒ moving to G007

ECH

12/4/17 ECH

8:14 G007, water depth = 23 ft. (15 ft in back of boat so quite a slope)

8:15 7647764.03
648902.84
23' deep
Rep 1 retained

8 33 water depth @ G008 = 10 ft
Rep 1 < 10 cm recovery rejected.

835 Rep 2 retained G008
18 cm recovery
7647723.56
642840.49
10 ft

853 water depth on G009 = 7.6 ft, lead line located offshore of the little waterfall
Rep 1 reject ~5 cm recovery

851 Rep 2 reject ~5 cm recovery

900 Rep 3 reject ~5 cm recovery

Rep 4 low recovery, reject 12/4/17

Rep 5 low recovery, reject
clay sticking to bottom of sampler

Rep 6 912 reject, low recovery
Moving to G010

920 water depth @ G010 = 6.5 ft
rejected, low recovery
sand w/ silt & clay, sticky on top but not sure why grab isnt working.

928 Rep 2 - retained
6.5 ft
7647681.83
642805.08
~15 cm recovery in middle

945 Heading up-river to Rm 24.7 E, Clackamas River

ECH

12/4/17

1017 on Rm 24.7 E G010
water depth = 18 ft
moved closer to shore due to current.
sample is 1/2 full of clean gravel & you can see gravel on river bottom

Discussed w/ Madi & she agreed that we could re-distribute & reduce to 5-Point Composite focusing on nearshore areas w/ sandy sediment

1042 Collected G001 from shore
629239.24 N
7660481.00 E
22 cm recovery

11:00 Collected G002 from shore
629218.73
7660513.52
22 cm recovery

Rite in the Rain ECH

12/4/17

Trying to collect three off-shore

11 20 successful Rep 6 of off shore power-grab G003. 7660442.68 629212.93

11:40 R1-R2 reject <10cm recovery

11 44 Rep 3 G004 reject, blanket/cloth in sampler

1148 Rep 5. Retained 7660408.11 629237.83 4 ft

11:58 Rm24.7E G005, Rep 1 cobbles reject

12:00 Rep 2, reject, sediment drained to <15 cm due to cobble in jaw

12:06 Rep 3, G005 retained 7660395.66 629246.93 20 cm 3 ft water depth

ECH

12/4/17

1250 Arrived @ Rm 25.2E

12:55 Attempt 1 @ 25.2E-G001 reject cobble

13:00 Return Rep 2 ~15 cm max recovery 7661829.67 626352.48 water depth = 15 ft

1322 25.2E-G002 Rep 1 - Reject, rounded gravel 1/2" to 2" & Corbicula

13:27 25.2E-G002 Rep 2 rejected gravel (up to 6" rounded & Corbicula

13:29 25.2E-G002 Rep 3 (offshore of outfall) rejected. There were fines on the top of gravel but sampler didn't close & they washed out.

ECH

12/4/17

13:31 Rep 4, cobbles w/ a couple corbicula moving on to G003

13:35 Rep 1 G003 - Retain full bucket.
7661911.59
626214.93
in front of abernathy creek culvert

13:55 Rep 1 G004
Made a couple attempts (unmarked, sampler tipped over)
3rd attempt (marked as Rep 1) right @ end of first row of boat slips)
4th attempt (R2) in spot between slips
5th attempt (R3) in between slips closer to OF & G6 reject due to debris
14.5 ft
Continued multiple attempts between slips (gravity recording

Ext

12/4/17

coordinates). Multiple rejects due to trash, woody debris,

14:20 Retained Rep 7, 16 cm recovery
17 ft deep

14:40 Began trying more reps for G-5 between slips, current too crazy in next skinnier slip to try there.
No success due to gravel, moving to G006

14:55 Rep 1 G006 - Reject 2 cobbles
14:57 Rep 2 G006 - Reject 2 cobbles
15:00 Rep 3 G006 - Reject large rock.
15:04 Rep 4 G006 - Reject - cobbles

15:08 Began Rep on Rm25.2E-G008
Made 3 failed attemps, collecting debris (e.g. old saw blade, rubber from side of dock, log, etc.) All rejected, moving to G007

Ext

12/4/17

15:26 Rep 1 G007. debris (woody) reject

15:28 Rep 2 G007 large log

15:30 Rep 3 G007 plastic fisherman pants. Reject

15:32 Rep 4 G004 Reject Stick out the side, Clams & sand inside, but < 3 cm recovery

15:34 Rep 5 G004, same location reject, mostly washed out sand ~3-4 cm on one half of sampler, reject.

1537 Rep 6, reject, 1 rock

1540 Rep 7, reject, one stick moving on.

1546 1st rep on G010 17 ft water empty bucket

15:48 Rep 2 on G010 ~3cm sand, one rock reject.

ECH

12/4/17

15:51 Rep 3 on G010 reject, little (22cm) sand & and 8" cobble ECH

14:53 Rep 4 on G010 rocks, rejected

- Catching up on Captain notes Erin called Madi to discuss progress & game plan.
- Tomorrow we will try at the lower end of R25.2E

ECH

Rite in the Rain

12/5/17 Rm 25.2E
Trying upstream of the docks in the aerial photo, behind S.end (Rm 25.5)
8:07 New Rep on G10
reject <10 cm recovery
~~Try~~ ECH
8:09 Rep 2 Rm 25.2E G010
retained 17 cm at center
water depth = 7 ft
7661364.57
624985.23

8:15-8:40 Break, hydraulic piston is slightly bent so Gravity

8:43 Trying near G002 again
closer to shore
Retained, 16 ft
Rep 5 (4 yesterday)
7661859.69
626268.34

ECH

12/5
9:10 Trying to get another grab sample inside dock downstream of G001. Calling location G011 - Rep 1 reject woody debris
9:12 Rep 2 reject, woody debris

9:14 Rep 3 reject woody debris

9:17 Rep 4 reject 2 rocks

9:20 Rep 5 reject, empty

moving upstream of the dock to continue trying
water depth = 13 ft
9:27 Rep 6, open by cobbles
9:29 Rep 7, lots of sediment
Rep 8, couple rocks
9:30 no luck, moving downstream to Rm 20.0E

ECH

Rite in the Rain

10:03 Rep 1 on Rm20.0E 12/5
reject, rocks,

10:08 Rep 2 on Rm20.0E
reject, ~10 cm sediment

10:10 Rep 3 reject ~5 cm sandy silt
w/ rock in jaw

10:12 Rep 4 reject, low recovery

10:14 Rep 5 reject, low recovery

- Dropping Matt Anthony off to get shoreline grabs while we continue grab sampling.

10:35 Rep 6, returned @ G001
764944449.15
648586.95
water depth = 10 ft
15 cm recovery

ECH

12/5 ECH

10:45-11:00 Rep 1 through 5 on G002
low recovery, cobbles, empty bucket on last

Changed nitrogen gas can

11:00-11:20 Continued attempts on G002 w/ power-grab. not successful. Decided to collect from shore

10:35 G004 Collected from shore w/ corer
648421.85
764934462

11:10 G003 Collected from shore
10:55 G005 Collected from shore
11:25 G002 Collected from shore
Coordinates on GSI Trimble GPS

ECH

12/5

12:10 G011 collected from shore @ confluence of Johnson Creek & willamette
655463.94
765836.21
30 cm penetration

12:35-13:00 Collecting G012, after several cores <20cm
Dug hole w/trowel
Gravel @ 15cm
Sampled above
655465.04
765767.88

13:00 Collected G013 from shore using trowel to 15 cm

~14:00 ended field work & demobilized equipment at Willamette Park.

ECH

APPENDIX D
LABORATORY REPORTS
(PROVIDED ON CD ONLY)

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Kelso, WA 98626
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F : +1 360 636 1068
www.alsglobal.com

January 29, 2018

Analytical Report for Service Request No: K1712961

Erin Carroll Hughes
GSI Water Solutions, Inc.
55 SW Yamhill, Suite 300
Portland, OR 97204

RE: URSC / 150-001-056

Dear Erin,

Enclosed are the results of the sample(s) submitted to our laboratory December 01, 2017
For your reference, these analyses have been assigned our service request number **K1712961.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3364. You may also contact me via email at howard.holmes@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Howard Holmes
Project Manager

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Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water-	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

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1317 South 13th Ave, Kelso, WA 98626 | 1-360-577-7222 | www.alsglobal.com

Client: Hart Crowser, Incorporated
Project: URSC
Sample Matrix: Sediment

Service Request: K1712961
Date Received: 12/01/2017

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt:

Fifteen sediment samples were received for analysis at ALS Environmental on 12/01/2017. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4ºC upon receipt at the laboratory.

Semivolatiles by GC/MS:

Method 8270D:The ALS minimum relative response factor criterion for Pentachlorophenol was not met in Continuing Calibration Verification (CCV) MS29\0102F015.D. In accordance with ALS standard operating procedures, a Method Reporting Limit (MRL) check standard containing the analyte of concern was analyzed each day of analysis. The MRL check standard verified instrument sensitivity was adequate to detect the analyte at the MRL on the day of analysis. Because the sensitivity was shown to be adequate to detect the compound in question and the compound was not detected in the field sample, the data quality was not significantly affected. No further corrective action was appropriate.
Method 8270D, PBDE:Sample URSC-RM20.0W-COMP required dilution due to the presence of elevated levels of target analyte. The reporting limits are adjusted to reflect the dilution.
Method 8270D, PBDE:The analysis of sample URSC-RM18.45E-COMP was initially performed past the recommended holding time. Due to an equipment malfunction during the extraction process the sample extract was lost. Efforts were made to analyze the sample as soon as the error was identified. The data was flagged to indicate the holding time violation.
Method 8270D, PBDE :The matrix spike recovery of a few analytes for sample Batch QC was outside control criteria. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicated the analytical batch was in control. The matrix spike outlier suggested a potential bias in this matrix. No further corrective action was appropriate.
Method 8270D, PBDE:The recovery of PBDE 209 in lab control sample KWG1711053-3 was outside the control limits listed in the results summary. The limits are default values temporarily in use until sufficient data points are generated to calculate statistical control limits. Based on the method and historic data, the recoveries observed were in the range expected for this procedure. No further corrective action was taken.

Method 8270D, PBDE:The following analyte was flagged as outside the control criterion for Continuing Calibration Verification (CCV) 1220F002: PBDE 209. In accordance with the EPA Method, 80% or more of the CCV analytes must have passed within 20% of the true value. The remaining analytes are allowed a 40% difference as per the ALS SOP. The data was flagged to indicate the issue. No further corrective action was taken.
Method 8270D, PBDE:The following analyte was flagged as outside the control criterion for Continuing Calibration Verification (CCV) 1221F002: PBDE 128. In accordance with the EPA Method, 80% or more of the CCV analytes must have passed within 20% of the true value. The remaining analytes are allowed a 40% difference as per the ALS SOP. The data was flagged to indicate the issue. No further corrective action was taken.

Method ALS SOP, 01/15/2018:The following analytes were outside the lower control criterion for Continuing Calibration Verification (CCV) 0115F0004.D: S_4,4'-DDT-d4, S_Heptachlor-13C10, and and S_Mxchlord-d6. The associated unlabeled compounds were within acceptance indicating the quality of the sample data was not significantly affected. No further corrective action was required.

Approved by _____ Date 01/29/2018

Semivoa GC:

Method NWTPH-Dx, :The Relative Percent Difference (RPD) criterion for the replicate analysis of DRO and RRO in sample Batch QC was not applicable because the analyte concentration was not significantly greater than the Method Reporting Limit (MRL). Analytical values derived from measurements close to the detection limit are not subject to the same accuracy and precision criteria as results derived from measurements higher on the calibration range for the method.

Metals:

Method 6020A :The Relative Percent Difference (RPD) for the replicate analysis of Lead in the Batch QC sample was outside the normal ALS control limits. The variability in the results was attributed to the heterogeneous character of the sample. Standard mixing techniques were used, but were not sufficient for complete homogenization of this sample.

General Chemistry:

No significant anomalies were noted with this analysis.

Subcontracted Analytical Parameters:

Dioxins and Furans by EPA Method 1613B

The analysis for Dioxins and Furans was performed at ALS Houston, Texas Laboratory. The data for this analysis is included in the corresponding section of this report.

PCB Congeners by EPA Method 1668C

The analysis for PCB Congeners was performed at ALS Environmental, Texas Laboratory. The data for this analysis is included in the corresponding section of this report.

Approved by _____ Date 01/29/2018

Chain of Custody

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Phone (360)577-7222 Fax (360)636-1068
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GSI Water Solutions, Inc.
55 SW Yamhill St, Suite 300
Portland, Oregon 97204
971-200-8528

Chain of Custody Record

K1712961

Field Sampler(s): PAC, MS (DEQ)

Client Contact

Project Name: URSC
Project # or PO #: 150-001-056
Contracting Manager: Rick Ernst
Project Manager: Erin Hughes
Field Director: Phil Cordell
Erin Phone #: 971-200-8528
Phil Phone #: 971-327-9101
Report to email: echughes@gsiws.com; phil.cordell@hartcrowser.com; Anne.Conrad@hartcrowser.com
Analysis Turnaround Time:

For Lab Use Only:
SDG:_____
Custody Seals intact?
Hand delivered?
Cooler Temp :____°C
Therm ID No.:____Therm Exp.____
Standard 21 day TAT

ALS PM
Howard Homes
360-501-3364
Howard.Holmes@alsglobal.com

Analysis Requested*

	Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	Total # of Cont.	Sieving and Homogenizing (of each increment)	ISM Subsampling and Compositing	PSEP: Total Organic Carbon	ASTM DM22M: Condensed Breakout Grain Size (on ISM Composite)	EPA 6020A: Metals and Total Solids	EPA 7471A: Mercury	NWTPH-Dx: Diesel Range Hydrocarbons (with Silica gel cleanup)	EPA 8270D-LL: PAHs, SVOCs, Phenols, and Phthalates	8270D PBDE	EPA 1699M: High Resolution Pesticides	EPA 1613B: PCDD/Fs	EPA 1668b: PCB Congeners	Frozen Archival			Sample Specific Notes
1	URSC- RM20.0W-G001	11/30/17	1326	G	SE	1													X			
2	URSC- RM20.0W-G002		1349	G	SE	1													X			
3	URSC- RM20.0W-G003		1403	G	SE	1													X			
4	URSC- RM20.0W-G004		1424	G	SE	1													X			
5	URSC- RM20.0W-G005		1447	G	SE	1													X			
6	URSC- RM20.0W-COMP		1330	C	SE	5	X	X	X	X	X	X	X	X	X	X	X	X				
7	URSC- RM18.45E-G001		0811	G	SE	1													X			
8	URSC- RM18.45E-G002		0832	G	SE	1													X			
9	URSC- RM18.45E-G003		0906	G	SE	1													X			
10	URSC- RM18.45E-G004		0924	G	SE	1													X			
11	URSC- RM18.45E-G005		1018	G	SE	1													X			
12	URSC- RM18.45E-G006		1027	G	SE	1													X			

Possible Hazard Identification:
Are samples hazardous? ☑ No
If yes, select hazard(s): ☐ Listed ☐ Ignitable ☐ Corrosive ☐ Reactive ☐ Toxic

☐ Return to Client ☐ Disposal by Lab ☑ Archive frozen for 6 months

Relinquished by: [signature] 12/1/17 @ 1045
Received by: [signature] Date/Time: 12/1/17 1430

Relinquished by:
Received by: Date/Time:

Shipped Via: ☐ UPS ☐ Fed-Ex ☐ USPS ☑ ALS Lab Courier
Received in Laboratory by: Date/Time:

Special Instructions
SE = Sediment
***See Table 2 of Work Plan for analytes included within each analytical method listed below.**
* Increments will be provided to the laboratory in a clean laboratory provided 16- or 32-ounce container (the larger container will be used in areas with an abundance of rocks and pebbles). For each composite area, the laboratory will separately process each increment by sieving out the ≥ 2 millimeter (mm) size fraction and homogenize the remaining sediment; an equal mass of sediment from each of the 5 or 10 increments will be obtained and then combined for processing, homogenizing, and subsampling for the composite sample in a manner consistent with ITRC ISM guidance and the laboratory standard operating procedure. The laboratory should gather enough mass from each container to be able to run the full analytical suite and have material left over for archival and potential future analysis. An extra container of sediment will be provided from each sample station for immediate frozen archival (no ISM processing needed).

2 of 2

K1712961

55 SW Yamhill St, Suite 300
Portland, Oregon 97204
971-200-8528

Chain of Custody Record

Field Sampler(s): PRC, MS (DEQ)

Client Contact

Project Name: URSC
Project # or PO #: 150-001-056
Contracting Manager: Rick Ernst
Project Manager: Erin Hughes
Field Director: Phil Cordell
Erin Phone #: 971-200-8528
Phil Phone #: 971-327-9101
Report to email: echughes@gslws.com; phil.cordell@hartcrowser.com; Anne.Conrad@hartcrowser.com
Analysis Turnaround Time:

For Lab Use Only:
SDG:_____
Custody Seals intact?
Hand delivered?
Cooler Temp :____°C
Therm ID No.:____Therm Exp.____
Standard 21 day TAT

ALS PM
Howard Homes
360-501-3364
Howard.Holmes@alsglobal.com

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	Total # of Cont.	Sieving and Homogenizing (of each increment)	ISM Subsampling and Compositing	PSEP: Total Organic Carbon	ASTM DM22M: Condensed Breakout Grain Size (on ISM Composite)	EPA 6020A: Metals and Total Solids	EPA 7471A: Mercury	NWTPH-Dx: Diesel Range Hydrocarbons (with Silica gel cleanup)	EPA 8270D-LL: PAHs, SVOCs, Phenols, and Phthalates	8270D PBDE	EPA 1699M: High Resolution Pesticides	EPA 1613B: PCDD/Fs	EPA 1668b: PCB Congeners	Frozen Archival			Sample Specific Notes
URSC- ~~COMP-18.45E~~	11/30/17	~~0815~~	~~C~~	SE																	NO SAMPLE) SM 12/1/17
URSC- ~~6001-18.45F~~			~~G~~	SE																	↓
URSC- ~~6002-18~~				SE																	
13 URSC- RM18.45E-6007	11/30/17	1053	G	SE	1													X			
14 URSC- RM18.45E-6009	↓	1516	G	SE	1													X			
15 URSC- RM18.45E-COMP	↓	0815	C	SE	8	X	X	X	X	X	X	X	X	X	X	X	X				
URSC-				SE																	
URSC-				SE																	
URSC-				SE																	
URSC-				SE																	
URSC-				SE																	
URSC-				SE																	

Possible Hazard Identification:
Are samples hazardous? ☑ No
If yes, select hazard(s): ☐ Listed ☐ Ignitable ☐ Corrosive ☐ Reactive ☐ Toxic

☐ Return to Client ☐ Disposal by Lab ☑ Archive frozen for 6 months

Relinquished by: [signature] 12/1/17 @ 1045
Received by: [signature] Date/Time: 12/1/17 1430
Relinquished by:
Received by: Date/Time:
Shipped Via: ☐ UPS ☐ Fed-Ex ☐ USPS ☑ ALS Lab Courier
Received in Laboratory by: Date/Time:

Special Instructions
SE = Sediment
***See Table 2 of Work Plan for analytes included within each analytical method listed below.**
* Increments will be provided to the laboratory in a clean laboratory provided 16- or 32-ounce container (the larger container will be used in areas with an abundance of rocks and pebbles). For each composite area, the laboratory will separately process each increment by sieving out the ≥ 2 millimeter (mm) size fraction and homogenize the remaining sediment; an equal mass of sediment from each of the 5 or 10 increments will be obtained and then combined for processing, homogenizing, and subsampling for the composite sample in a manner consistent with ITRC ISM guidance and the laboratory standard operating procedure. The laboratory should gather enough mass from each container to be able to run the full analytical suite and have material left over for archival and potential future analysis. An extra container of sediment will be provided from each sample station for immediate frozen archival (no ISM processing needed).

ALS

PC 111

Cooler Receipt and Preservation Form

lient Hart Crowser Service Request K17 12961

eceived: 12/1/17 Opened: 12/1/17 By: BR Unloaded: 12/1/17 By: BR

Samples were received via? *USPS* *Fed Ex* *UPS* *DHL* *PDX* (*Courier*) *Hand Delivered*

Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other* _____ *NA*

Were custody seals on coolers? NA (Y) N If yes, how many and where? 1 front

If present, were custody seals intact? (Y) N If present, were they signed and dated? (Y) N

Raw Cooler Temp	Corrected. Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID (NA)	Tracking Number (NA)	Filed
0.2	0.2	—	—	0.0	370			
0.2	0.2	3.5	3.5	0.0	369			
-0.6	-0.6	3.9	3.9	0.0	308			
-0.7	-0.7	—	—	0.0	360			

. Packing material: *Inserts* *Baggies* (*Bubble Wrap*) (*Gel Packs*) *Wet Ice* *Dry Ice* *Sleeves* _____

. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N

. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA (Y) N

If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*

. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N

. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N

. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N

). Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* (NA) Y N

1. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N

2. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

otes, Discrepancies, & Resolutions:

~~Missing 3 jars for sample RM20CW-COMP~~ CG 12/1

7/25/16 *Page* ____ *of* ____

Total Solids

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	11/30/17
Sample Matrix:	Sediment	**Date Received:**	12/1/17
Analysis Method:	PSEP TS	**Units:**	Percent
Prep Method:	None	**Basis:**	As Received

Solids, Total

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
URSC-RM20.0W-COMP	K1712961-006	**70.9**	-	-	1	12/12/17 16:48	
URSC-RM18.45E-COMP	K1712961-015	**61.5**	-	-	1	12/12/17 16:48	

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Analysis Method:	PSEP TS	**Units:**	Percent
Prep Method:	None	**Basis:**	As Received

Replicate Sample Summary
Solids, Total

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
Batch QC	K1713130-006DUP1	-	68.5	68.6	68.6	<1	10	12/12/17
Batch QC	K1713130-006DUP2	-	68.5	68.9	68.7	<1	10	12/12/17

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

General Chemistry

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	11/30/2017
Sample Matrix:	Sediment	**Date Received:**	12/1/2017
		Date Analyzed:	1/9/2018

Particle Size Determination
ASTM D422M

Sample Name: URSC-RM20.0W-COMP
Lab Code: K1712961-006

Sand Fraction: Weight (Grams)	30.8698
Sand Fraction: Weight Recovered (Grams)	31.4227
Sand Fraction: Percent Recovery	101.79

Weight as received (Grams)	50.97
Percent Solids	70.9
Weight Oven-Dried (Grams)	36.1377

Description	Sieve Size	Sieve Number	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	4.75 mm	4	0.0000	0.00
Gravel, Fine	2.00 mm	10	0.0000	0.00
Sand, Very Coarse	0.850 mm	20	3.4169	9.46
Sand, Coarse	0.425 mm	40	4.2322	11.71
Sand, Medium	0.250 mm	60	9.7845	27.08
Sand, Fine	0.106 mm	140	10.5988	29.33
Sand, Very Fine	0.075 mm	200	2.3260	6.44
Silt			5.0000	13.84
Clay			1.0583	2.93
		Total	36.4168	100.79

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	11/30/2017
Sample Matrix:	Sediment	**Date Received:**	12/1/2017
		Date Analyzed:	1/9/2018

Particle Size Determination
ASTM D422M

Sample Name: URSC-RM20.0W-COMP
Lab Code: K1712961-006DUP

Sand Fraction: Weight (Grams)	32.3996
Sand Fraction: Weight Recovered (Grams)	32.3922
Sand Fraction: Percent Recovery	99.98

Weight as received (Grams)	53.256
Percent Solids	70.9
Weight Oven-Dried (Grams)	37.7585

Description	Sieve Size	Sieve Number	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	4.75 mm	4	0.0000	0.00
Gravel, Fine	2.00 mm	10	0.0000	0.00
Sand, Very Coarse	0.850 mm	20	3.6486	9.66
Sand, Coarse	0.425 mm	40	4.4074	11.67
Sand, Medium	0.250 mm	60	9.4875	25.13
Sand, Fine	0.106 mm	140	11.9364	31.61
Sand, Very Fine	0.075 mm	200	2.3600	6.25
Silt			5.2950	14.02
Clay			1.2283	3.25
		Total	38.3632	101.59

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	11/30/2017
Sample Matrix:	Sediment	**Date Received:**	12/1/2017
		Date Analyzed:	1/9/2018

Particle Size Determination
ASTM D422M

Sample Name: URSC-RM18.45E-COMP
Lab Code: K1712961-015

Sand Fraction: Weight (Grams)	27.3356
Sand Fraction: Weight Recovered (Grams)	27.3438
Sand Fraction: Percent Recovery	100.03

Weight as received (Grams)	58.107
Percent Solids	61.5
Weight Oven-Dried (Grams)	35.7358

Description	Sieve Size	Sieve Number	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	4.75 mm	4	0.0000	0.00
Gravel, Fine	2.00 mm	10	0.0000	0.00
Sand, Very Coarse	0.850 mm	20	0.0846	0.24
Sand, Coarse	0.425 mm	40	0.4348	1.22
Sand, Medium	0.250 mm	60	4.7496	13.29
Sand, Fine	0.106 mm	140	17.6006	49.25
Sand, Very Fine	0.075 mm	200	3.3443	9.36
Silt			8.1950	22.93
Clay			1.2933	3.62
		Total	35.7023	99.91

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	11/30/17
Sample Matrix:	Sediment	**Date Received:**	12/1/17
Analysis Method:	PSEP TOC	**Units:**	Percent
Prep Method:	ALS SOP	**Basis:**	Dry, per Method

Carbon, Total Organic (TOC)

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
URSC-RM20.0W-COMP	K1712961-006	**0.476**	0.050	0.020	1	12/13/17 14:30	12/13/17	
URSC-RM18.45E-COMP	K1712961-015	**0.937**	0.050	0.020	1	12/13/17 14:30	12/13/17	
Method Blank	K1712961-MB	ND U	0.050	0.020	1	12/13/17 14:30	12/13/17	

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
		Date Analyzed:	12/13/17

Triplicate Sample Summary
General Chemistry Parameters

Sample Name:	Batch QC	**Units:**	Percent
Lab Code:	K1712926-001	**Basis:**	Dry, per Method
Analysis Method:	PSEP TOC		
Prep Method:	ALS SOP		

Analyte Name	MRL	MDL	Sample Result	Duplicate K1712926-001DUP Result	Triplicate K1712926-001TRP Result	Average	RSD	RSD Limit
Carbon, Total Organic (TOC)	0.050	0.020	0.821	0.832	0.828	0.827	<1	27

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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SuperSet Reference:17-0000448017 rev 00

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	N/A
Sample Matrix:	Sediment	**Date Received:**	N/A
		Date Analyzed:	12/13/17
		Date Extracted:	12/13/17

Duplicate Matrix Spike Summary
Carbon, Total Organic (TOC)

Sample Name:	Batch QC	**Units:**	Percent
Lab Code:	K1712926-001	**Basis:**	Dry, per Method
Analysis Method:	PSEP TOC		
Prep Method:	ALS SOP		

		Matrix Spike K1712926-001MS			**Duplicate Matrix Spike** K1712926-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Carbon, Total Organic (TOC)	0.821	4.31	3.41	102	4.15	3.28	102	69-123	<1	27

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Analyzed:**	12/13/17
Sample Matrix:	Sediment	**Date Extracted:**	12/13/17

Lab Control Sample Summary
Carbon, Total Organic (TOC)

Analysis Method:	PSEP TOC	**Units:**	Percent
Prep Method:	ALS SOP	**Basis:**	Dry, per Method
		Analysis Lot:	573691

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1712961-LCS	0.581	0.603	96	74-118

Client: Hart Crowser, Incorporated **Service Request:** K1712961
Project: URSC/150-001-056

Continuing Calibration Verification (CCV) Summary

Carbon, Total Organic (TOC)

Analysis Method: PSEP TOC **Units:** Percent

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	573691	KQ1718788-01	12/13/17 14:30	20.0	19.8	99	90-110
CCV2	573691	KQ1718788-02	12/13/17 14:30	20.0	19.6	98	90-110
CCV3	573691	KQ1718788-03	12/13/17 14:30	20.0	19.8	99	90-110

Client: Hart Crowser, Incorporated **Service Request:**K1712961
Project: URSC/150-001-056

Continuing Calibration Blank (CCB) Summary
Carbon, Total Organic (TOC)

Analysis Method: PSEP TOC **Units:**Percent

	Analysis Lot	Lab Code	Date Analyzed	MRL	MDL	Result	Q
CCB1	573691	KQ1718788-04	12/13/17 14:30	0.050	0.020	ND	U
CCB2	573691	KQ1718788-05	12/13/17 14:30	0.050	0.020	ND	U
CCB3	573691	KQ1718788-06	12/13/17 14:30	0.050	0.020	ND	U

Metals

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	11/30/17 13:30
Sample Matrix:	Sediment	**Date Received:**	12/01/17 14:30
Sample Name:	URSC-RM20.0W-COMP	**Basis:**	Dry
Lab Code:	K1712961-006		

Total Metals

Analyte Name	Analysis Method	Result		Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**4.70**		mg/Kg	0.48	0.04	5	12/18/17 10:51	12/12/17	
Cadmium	6020A	**0.085**		mg/Kg	0.019	0.007	5	12/18/17 10:51	12/12/17	
Chromium	6020A	**23.8**		mg/Kg	0.19	0.06	5	12/18/17 10:51	12/12/17	
Copper	6020A	**16.8**		mg/Kg	0.096	0.038	5	12/18/17 10:51	12/12/17	
Lead	6020A	**22.3**		mg/Kg	0.048	0.019	5	12/18/17 10:51	12/12/17	
Manganese	6020A	**456**		mg/Kg	0.48	0.02	5	12/18/17 10:51	12/12/17	
Mercury	7471B	**0.016**	**J**	mg/Kg	0.018	0.002	1	12/19/17 13:33	12/19/17	
Nickel	6020A	**18.8**		mg/Kg	0.19	0.03	5	12/18/17 10:51	12/12/17	
Zinc	6020A	**82.7**		mg/Kg	0.48	0.19	5	12/18/17 10:51	12/12/17	

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	11/30/17 08:15
Sample Matrix:	Sediment	**Date Received:**	12/01/17 14:30
Sample Name:	URSC-RM18.45E-COMP	**Basis:**	Dry
Lab Code:	K1712961-015		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**2.92**	mg/Kg	0.52	0.04	5	12/18/17 10:53	12/12/17	
Cadmium	6020A	**0.087**	mg/Kg	0.021	0.007	5	12/18/17 10:53	12/12/17	
Chromium	6020A	**21.4**	mg/Kg	0.21	0.06	5	12/18/17 10:53	12/12/17	
Copper	6020A	**19.4**	mg/Kg	0.10	0.04	5	12/18/17 10:53	12/12/17	
Lead	6020A	**12.3**	mg/Kg	0.052	0.021	5	12/18/17 10:53	12/12/17	
Manganese	6020A	**384**	mg/Kg	0.52	0.02	5	12/18/17 10:53	12/12/17	
Mercury	7471B	**0.027**	mg/Kg	0.016	0.002	1	12/19/17 13:34	12/19/17	
Nickel	6020A	**20.4**	mg/Kg	0.21	0.03	5	12/18/17 10:53	12/12/17	
Zinc	6020A	**64.6**	mg/Kg	0.52	0.21	5	12/18/17 10:53	12/12/17	

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dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Basis:**	Dry
Lab Code:	KQ1718249-03		

Total Metals

Analyte Name	Analysis Method	Result		Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	ND	U	mg/Kg	0.5	0.04	5	12/18/17 10:47	12/12/17	
Cadmium	6020A	ND	U	mg/Kg	0.020	0.007	5	12/18/17 10:47	12/12/17	
Chromium	6020A	ND	U	mg/Kg	0.20	0.06	5	12/18/17 10:47	12/12/17	
Copper	6020A	ND	U	mg/Kg	0.10	0.04	5	12/18/17 10:47	12/12/17	
Lead	6020A	**0.021**	**J**	mg/Kg	0.05	0.020	5	12/18/17 10:47	12/12/17	
Manganese	6020A	**0.30**	**J**	mg/Kg	0.5	0.02	5	12/18/17 10:47	12/12/17	
Nickel	6020A	**0.03**	**J**	mg/Kg	0.20	0.03	5	12/18/17 10:47	12/12/17	
Zinc	6020A	ND	U	mg/Kg	0.5	0.20	5	12/18/17 10:47	12/12/17	

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Basis:**	Dry
Lab Code:	KQ1718364-03		

Total Metals

Analyte Name	Analysis Method	Result		Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Mercury	7471B	ND	U	mg/Kg	0.02	0.002	1	12/19/17 13:28	12/19/17	

ALS Group USA, Corp.

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
		Date Analyzed:	12/18/17

Replicate Sample Summary
Total Metals

Sample Name:	Batch QC	**Units:**	mg/Kg
Lab Code:	K1713130-006	**Basis:**	Dry

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample KQ1718249-01 Result	Average	RPD	RPD Limit
Arsenic	6020A	0.48	0.04	3.61	4.01	3.81	11	20
Cadmium	6020A	0.019	0.007	0.105	0.124	0.115	17	20
Chromium	6020A	0.19	0.06	23.2	23.6	23.4	2	20
Copper	6020A	0.097	0.039	24.4	26.2	25.3	7	20
Lead	6020A	0.048	0.019	26.7	35.4	31.1	28 *	20
Manganese	6020A	0.48	0.02	456	495	476	8	20
Nickel	6020A	0.19	0.03	23.3	26.1	24.7	11	20
Zinc	6020A	0.48	0.19	80.7	85.3	83.0	5	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
		Date Analyzed:	12/19/17

Replicate Sample Summary
Total Metals

Sample Name:	Batch QC	**Units:**	mg/Kg
Lab Code:	K1713018-010	**Basis:**	Dry

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample KQ1718364-01 Result	Average	RPD	RPD Limit
Mercury	7471B	0.020	0.002	0.028	0.025	0.027	13	20

Results flagged with an asterisk (*) indicate values outside control criteria.

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Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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Superset Reference:

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
		Date Analyzed:	12/19/17

Replicate Sample Summary
Total Metals

Sample Name:	Batch QC	**Units:**	mg/Kg
Lab Code:	K1713130-006	**Basis:**	Dry

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample KQ1718364-06 Result	Average	RPD	RPD Limit
Mercury	7471B	0.017	0.002	0.020	0.020	0.020	<1	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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Superset Reference:

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA
		Date Analyzed:	12/19/17

Replicate Sample Summary
Total Metals

Sample Name:	Batch QC	**Units:**	mg/Kg
Lab Code:	K1713195-001	**Basis:**	Dry

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample KQ1718364-08 Result	Average	RPD	RPD Limit
Mercury	7471B	0.023	0.002	0.008 J	0.006 J	0.007	33 #	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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Superset Reference:

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Misc. Solid	**Date Received:**	NA
		Date Analyzed:	12/19/17

Replicate Sample Summary
Total Metals

Sample Name:	Batch QC	**Units:**	mg/Kg
Lab Code:	K1713368-002	**Basis:**	Dry

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample KQ1718364-12 Result	Average	RPD	RPD Limit
Mercury	7471B	0.015	0.001	ND U	ND U	ND	-	20

Results flagged with an asterisk (*) indicate values outside control criteria.

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Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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Superset Reference:

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	N/A
Sample Matrix:	Sediment	**Date Received:**	N/A
		Date Analyzed:	12/18/17
		Date Extracted:	12/12/17

Matrix Spike Summary
Total Metals

Sample Name:	Batch QC	**Units:**	mg/Kg
Lab Code:	K1713130-006	**Basis:**	Dry
Analysis Method:	6020A		
Prep Method:	EPA 3050B		

Matrix Spike
KQ1718249-02

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Arsenic	3.61	94.2	94.7	96	75-125
Cadmium	0.105	9.46	9.47	99	75-125
Chromium	23.2	60.8	38.0	99	75-125
Copper	24.4	69.4	47.3	95	75-125
Lead	26.7	131	94.7	110	75-125
Manganese	456	623	94.7	177 #	75-125
Nickel	23.3	115	94.7	96	75-125
Zinc	80.7	174	94.7	98	75-125

Results flagged with an asterisk (*) indicate values outside control criteria.

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Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	N/A
Sample Matrix:	Sediment	**Date Received:**	N/A
		Date Analyzed:	12/19/17
		Date Extracted:	12/19/17

Matrix Spike Summary
Total Metals

Sample Name:	Batch QC	**Units:**	mg/Kg
Lab Code:	K1713018-010	**Basis:**	Dry
Analysis Method:	7471B		
Prep Method:	Method		

Matrix Spike
KQ1718364-02

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Mercury	0.028	0.490	0.485	95	80-120

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	N/A
Sample Matrix:	Sediment	**Date Received:**	N/A
		Date Analyzed:	12/19/17
		Date Extracted:	12/19/17

Matrix Spike Summary
Total Metals

Sample Name:	Batch QC	**Units:**	mg/Kg
Lab Code:	K1713130-006	**Basis:**	Dry
Analysis Method:	7471B		
Prep Method:	Method		

Matrix Spike
KQ1718364-07

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Mercury	0.020	0.426	0.428	95	80-120

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	N/A
Sample Matrix:	Soil	**Date Received:**	N/A
		Date Analyzed:	12/19/17
		Date Extracted:	12/19/17

Matrix Spike Summary
Total Metals

Sample Name:	Batch QC	**Units:**	mg/Kg
Lab Code:	K1713195-001	**Basis:**	Dry
Analysis Method:	7471B		
Prep Method:	Method		

Matrix Spike
KQ1718364-09

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Mercury	0.008 J	0.534	0.541	97	80-120

Results flagged with an asterisk (*) indicate values outside control criteria.

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Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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Superset Reference:

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	N/A
Sample Matrix:	Misc. Solid	**Date Received:**	N/A
		Date Analyzed:	12/19/17
		Date Extracted:	12/19/17

Matrix Spike Summary
Total Metals

Sample Name:	Batch QC	**Units:**	mg/Kg
Lab Code:	K1713368-002	**Basis:**	Dry
Analysis Method:	7471B		
Prep Method:	Method		

Matrix Spike
KQ1718364-13

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Mercury	ND U	0.382	0.374	102	80-120

Results flagged with an asterisk (*) indicate values outside control criteria.

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Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	N/A
Sample Matrix:	Soil	**Date Received:**	N/A
		Date Analyzed:	12/19/17
		Date Extracted:	12/19/17

Duplicate Matrix Spike Summary
Total Metals

Sample Name:	Batch QC	**Units:**	mg/Kg
Lab Code:	K1713262-043	**Basis:**	Dry
Analysis Method:	7471B		
Prep Method:	Method		

		Matrix Spike KQ1718364-10				Duplicate Matrix Spike KQ1718364-11					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Mercury	0.050	0.397	0.365	95	0.407	0.364	98	80-120	2	20

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Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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Superset Reference:

ALS Group USA, Corp.
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QA/QC Report

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056
Sample Matrix: Sediment

Service Request: K1712961
Date Analyzed: 12/18/17

Lab Control Sample Summary
Total Metals

Units:mg/Kg
Basis: Dry

Lab Control Sample
KQ1718249-04

Analyte Name	Analytical Method	Result	Spike Amount	% Rec	% Rec Limits
Arsenic	6020A	99.5	100	100	80-120
Cadmium	6020A	10.2	10.0	102	80-120
Chromium	6020A	41.0	40.0	102	80-120
Copper	6020A	50.5	50.0	101	80-120
Lead	6020A	101	100	101	80-120
Manganese	6020A	98.3	100	98	80-120
Nickel	6020A	104	100	104	80-120
Zinc	6020A	98.7	100	99	80-120

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Analyzed:**	12/19/17
Sample Matrix:	Sediment		

Lab Control Sample Summary
Total Metals

Units:mg/Kg
Basis: Dry

Lab Control Sample
KQ1718364-04

Analyte Name	Analytical Method	Result	Spike Amount	% Rec	% Rec Limits
Mercury	7471B	0.495	0.500	99	80-120

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Analyzed:**	12/19/17
Sample Matrix:	Sediment		

Lab Control Sample Summary
Total Metals

Units:mg/Kg
Basis: Dry

Lab Control Sample
KQ1718364-05

Analyte Name	Analytical Method	Result	Spike Amount	% Rec	% Rec Limits
Mercury	7471B	6.86	7.10	97	51-149

ALS Group USA, Corp.
dba ALS Environmental

Prep Summary Report

Client: Hart Crowser, Incorporated **Service Request:**K1712961
Project: URSC/150-001-056
Sample Matrix: Sediment

Metals

Prep Method: EPA 3050B **Extraction Lot:**304809
Analytical Method: 6020A

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Amount	Percent Solids
URSC-RM20.0W-COMP	K1712961-006	11/30/17	12/1/17	1.470 g	100 mL	
URSC-RM18.45E-COMP	K1712961-015	11/30/17	12/1/17	1.569 g	100 mL	
Batch QC	KQ1718249-01DUP	NA	NA	1.509 g	100 mL	
Batch QC	KQ1718249-02MS	NA	NA	1.541 g	100 mL	
Method Blank	KQ1718249-03MB	NA	NA	1.00 g	100 mL	
Lab Control Sample	KQ1718249-04LCS	NA	NA	1.00 g	100 mL	

ALS Group USA, Corp.
dba ALS Environmental

Prep Summary Report

Client: Hart Crowser, Incorporated **Service Request:**K1712961
Project: URSC/150-001-056
Sample Matrix: Sediment

Metals

Prep Method: Method **Extraction Lot:**305006
Analytical Method: 7471B

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Amount	Percent Solids
URSC-RM20.0W-COMP	K1712961-006	11/30/17	12/1/17	0.772 g	50 mL	
URSC-RM18.45E-COMP	K1712961-015	11/30/17	12/1/17	0.987 g	50 mL	
Batch QC	KQ1718364-01DUP	NA	NA	0.824 g	50 mL	
Batch QC	KQ1718364-02MS	NA	NA	0.850 g	50 mL	
Method Blank	KQ1718364-03MB	NA	NA	0.500 g	50 mL	
Lab Control Sample	KQ1718364-04LCS	NA	NA	0.500 g	50 mL	
Lab Control Sample	KQ1718364-05LCS	NA	NA	0.250 g	50 mL	
Batch QC	KQ1718364-06DUP	NA	NA	0.854 g	50 mL	
Batch QC	KQ1718364-07MS	NA	NA	0.854 g	50 mL	
Batch QC	KQ1718364-08DUP	NA	NA	0.512 g	50 mL	
Batch QC	KQ1718364-09MS	NA	NA	0.547 g	50 mL	
Batch QC	KQ1718364-10MS	NA	NA	0.684 g	50 mL	
Batch QC	KQ1718364-11DMS	NA	NA	0.687 g	50 mL	
Batch QC	KQ1718364-12DUP	NA	NA	0.872 g	50 mL	
Batch QC	KQ1718364-13MS	NA	NA	0.848 g	50 mL	

Client: Hart Crowser, Incorporated **Service Request:** K1712961
Project: URSC/150-001-056

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Concentration Units: ug/L

Analyte	Method	Analysis Batch	Initial Calibration			Continuing Calibration			Continuing Calibration		
			True	Found	%R (1)	True	Found	%R (1)	True	Found	%R (1)
Arsenic	6020A	574087	25.0	25.2	101	25.0	25.6	102	25.0	25.2	101
Cadmium	6020A	574087	12.5	12.7	101	25.0	25.3	101	25.0	25.1	100
Chromium	6020A	574087	10.0	10.1	101	25.0	25.2	101	25.0	25.3	101
Copper	6020A	574087	12.5	12.4	99	25.0	24.9	99	25.0	24.9	100
Lead	6020A	574087	25.0	25.1	100	25.0	25.2	101	25.0	25.0	100
Manganese	6020A	574087	25.0	25.3	101	25.0	24.7	99	25.0	24.3	97
Mercury	7471B	574347	5.00	4.90	98	5.00	5.03	101	5.00	5.09	102
Nickel	6020A	574087	25.0	25.7	103	25.0	25.5	102	25.0	25.6	102
Zinc	6020A	574087	25.0	25.4	101	25.0	24.9	99	25.0	25.3	101

Client: Hart Crowser, Incorporated **Service Request:** K1712961
Project: URSC/150-001-056

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Concentration Units: ug/L

Analyte	Method	Analysis Batch	Initial Calibration			Continuing Calibration			Continuing Calibration		
			True	Found	%R (1)	True	Found	%R (1)	True	Found	%R (1)
Arsenic	6020A	574087				25.0	25.5	102	25.0	25.6	102
Cadmium	6020A	574087				25.0	24.9	100	25.0	25.2	101
Chromium	6020A	574087				25.0	25.4	102	25.0	25.6	102
Copper	6020A	574087				25.0	25.2	101	25.0	25.0	100
Lead	6020A	574087				25.0	24.7	99	25.0	24.9	100
Manganese	6020A	574087				25.0	24.7	99	25.0	25.2	101
Mercury	7471B	574347				5.00	5.03	101	5.00	5.13	103
Nickel	6020A	574087				25.0	25.9	104	25.0	25.7	103
Zinc	6020A	574087				25.0	25.4	102	25.0	25.2	101

Client: Hart Crowser, Incorporated **Service Request:** K1712961
Project: URSC/150-001-056

INITIAL AND CONTINUING CALIBRATION BLANK

Concentration Units: ug/L

Analyte	Method	Analysis Batch	Initial Calibration Blank		Continuing Calibration Blank		Continuing Calibration Blank		Continuing Calibration Blank	
			Result	C	Result	C	Result	C	Result	C
Arsenic	6020A	574087	0.08	U	0.08	U	0.08	U	0.08	U
Cadmium	6020A	574087	0.014	U	0.014	U	0.014	U	0.014	U
Chromium	6020A	574087	0.12	U	0.12	U	0.12	U	0.12	U
Copper	6020A	574087	0.08	U	0.08	U	0.08	U	0.08	U
Lead	6020A	574087	0.04	U	0.04	U	0.04	U	0.04	U
Manganese	6020A	574087	0.04	U	0.04	U	0.04	U	0.04	U
Mercury	7471B	574347	0.02	U	0.02	U	0.02	U	0.02	U
Nickel	6020A	574087	0.06	U	0.06	U	0.06	U	0.06	U
Zinc	6020A	574087	0.4	U	0.4	U	0.4	U	0.4	U

Client: Hart Crowser, Incorporated **Service Request:** K1712961
Project: URSC/150-001-056

INITIAL AND CONTINUING CALIBRATION BLANK

Concentration Units: ug/L

Analyte	Method	Analysis Batch	Initial Calibration Blank Result	C	Continuing Calibration Blank Result	C	Continuing Calibration Blank Result	C	Continuing Calibration Blank Result	C
Arsenic	6020A	574087			0.08	U				
Cadmium	6020A	574087			0.017	J				
Chromium	6020A	574087			0.12	U				
Copper	6020A	574087			0.08	U				
Lead	6020A	574087			0.04	U				
Manganese	6020A	574087			0.04	U				
Mercury	7471B	574347			0.02	U				
Nickel	6020A	574087			0.06	U				
Zinc	6020A	574087			0.4	U				

Client: Hart Crowser, Incorporated **Service Request:** K1712961
Project: URSC/150-001-056

LOW LEVEL INITIAL AND LOW LEVEL CONTINUING CALIBRATION VERIFICATION

Concentration Units: ug/L

Sample ID / Analyte	Method	Analysis Batch:	Result	True Value	% Rec	% Rec. Limits	Analysis Date
LLICVS							
Arsenic	6020A	574087	0.96	1.0	96	70-130	12/18/17 10:04
Cadmium	6020A	574087	0.039	0.04	98	70-130	12/18/17 10:04
Chromium	6020A	574087	0.37	0.4	92	70-130	12/18/17 10:04
Copper	6020A	574087	0.20	0.2	100	70-130	12/18/17 10:04
Lead	6020A	574087	0.096	0.1	96	70-130	12/18/17 10:04
Manganese	6020A	574087	0.098	0.1	98	70-130	12/18/17 10:04
Nickel	6020A	574087	0.39	0.4	97	70-130	12/18/17 10:04
Zinc	6020A	574087	0.87	1.0	87	70-130	12/18/17 10:04
LLCCVS							
Arsenic	6020A	574087	0.91	1.0	91	70-130	12/18/17 11:33
Cadmium	6020A	574087	0.041	0.04	102	70-130	12/18/17 11:33
Chromium	6020A	574087	0.39	0.4	97	70-130	12/18/17 11:33
Copper	6020A	574087	0.21	0.2	104	70-130	12/18/17 11:33
Lead	6020A	574087	0.10	0.1	100	70-130	12/18/17 11:33
Nickel	6020A	574087	0.40	0.4	101	70-130	12/18/17 11:33
Zinc	6020A	574087	0.83	1.0	83	70-130	12/18/17 11:33
LLCCVS							
Manganese	6020A	574087	1.1	1.0	108	70-130	12/18/17 11:35
LLICV							
Mercury	7471B	574347	0.25	0.2	125	50-150	12/19/17 13:23

Client: Hart Crowser, Incorporated **Service Request:** K1712961
Project: URSC/150-001-056

ICP INTERFERENCE CHECK SAMPLE

Sample ID ICSA **Concentration Units:** ug/L

Analyte	Method	Analysis Batch:	Result	True Value	% Rec	% Rec. Limits	Analysis Date
Arsenic	6020A	574087	0.08	-	-	-	12/18/17 10:07
Cadmium	6020A	574087	0.029	-	-	-	12/18/17 10:07
Chromium	6020A	574087	0.59	-	-	-	12/18/17 10:07
Copper	6020A	574087	0.69	-	-	-	12/18/17 10:07
Lead	6020A	574087	0.08	-	-	-	12/18/17 10:07
Manganese	6020A	574087	0.8	-	-	-	12/18/17 10:07
Nickel	6020A	574087	0.62	-	-	-	12/18/17 10:07
Zinc	6020A	574087	0.4	-	-	-	12/18/17 10:07

Client: Hart Crowser, Incorporated **Service Request:** K1712961
Project: URSC/150-001-056

ICP INTERFERENCE CHECK SAMPLE

Sample ID ICSAB **Concentration Units:** ug/L

Analyte	Method	Analysis Batch:	Result	True Value	% Rec	% Rec. Limits	Analysis Date
Arsenic	6020A	574087	24.6	25.0	98	80-120	12/18/17 10:09
Cadmium	6020A	574087	25.0	25.0	100	80-120	12/18/17 10:09
Chromium	6020A	574087	48.9	50.0	98	80-120	12/18/17 10:09
Copper	6020A	574087	45.5	50.0	91	80-120	12/18/17 10:09
Lead	6020A	574087	0.08	-	-	-	12/18/17 10:09
Manganese	6020A	574087	48.0	50.0	96	80-120	12/18/17 10:09
Nickel	6020A	574087	47.2	50.0	94	80-120	12/18/17 10:09
Zinc	6020A	574087	23.4	25.0	94	80-120	12/18/17 10:09

Client: Hart Crowser, Incorporated **Service Request:** K1712961
Project: URSC/150-001-056

POST SPIKE SAMPLE RECOVERY

Concentration Units: ug/L

Sample ID / Analyte	Method	Analysis Batch:	Initial Sample Result	Post Spike Result	True Value	% Rec	% Rec. Limits	Analysis Date
K1713130-006A								
Arsenic	6020A	574087	7.1	55.8	50.0	98	80-120	12/18/17 11:07
Cadmium	6020A	574087	0.21	50.0	50.0	99	80-120	12/18/17 11:07
Chromium	6020A	574087	45.4	92.8	50.0	95	80-120	12/18/17 11:07
Copper	6020A	574087	47.9	94.4	50.0	93	80-120	12/18/17 11:07
Lead	6020A	574087	52.3	100	50.0	96	80-120	12/18/17 11:07
Manganese	6020A	574087	893	939	50.0	90	80-120	12/18/17 11:07
Nickel	6020A	574087	45.7	94.8	50.0	98	80-120	12/18/17 11:07
Zinc	6020A	574087	158	205	50.0	93	80-120	12/18/17 11:07
K1713018-010A								
Mercury	7471B	574347	0.28	4.94	5.00	93	80-120	12/19/17 13:41

Results flagged with a pound (#) indicate the control criteria is not applicable.

Client: Hart Crowser, Incorporated **Service Request:** K1712961
Project: URSC/150-001-056

ICP SERIAL DILUTIONS

Concentration Units: ug/L

Sample ID / Analyte	Method	Analysis Batch:	Initial Sample Result	Serial Dillution Result	% Diff	% Diff. Limit	Analysis Date
K1713130-006SDL							
Arsenic	6020A	574087	35.4	35.6	0	10	12/18/17 11:00
Cadmium	6020A	574087	1.03	1.15	12	10	12/18/17 11:00
Chromium	6020A	574087	227	230	1	10	12/18/17 11:00
Copper	6020A	574087	239	252	5	10	12/18/17 11:00
Lead	6020A	574087	262	278	6	10	12/18/17 11:00
Manganese	6020A	574087	4470	4580	3	10	12/18/17 11:00
Nickel	6020A	574087	228	242	6	10	12/18/17 11:00
Zinc	6020A	574087	791	829	5	10	12/18/17 11:00

Client: Hart Crowser, Incorporated **Service Request:** K1712961
Project: URSC/150-001-056

Detection Limits

Matrix: Sediment

Analyte	Wavelength (nm)	Units	MRL	MDL	Method
Mercury	253	ug/L	0.2	0.02	7471B

Client: Hart Crowser, Incorporated **Service Request:** K1712961
Project: URSC/150-001-056

Detection Limits

Matrix: Sediment

Analyte	Mass	Units	MRL	MDL	Method
Arsenic	75	ug/L	1	0.08	6020A
Cadmium	111	ug/L	0.04	0.014	6020A
Chromium	52	ug/L	0.4	0.12	6020A
Copper	65	ug/L	0.2	0.08	6020A
Lead	208	ug/L	0.1	0.04	6020A
Manganese	55	ug/L	1.0	0.04	6020A
Nickel	60	ug/L	0.4	0.06	6020A
Zinc	66	ug/L	1	0.4	6020A

Client: Hart Crowser, Incorporated **Service Request:** K1712961
Project: URSC/150-001-056

ICP Linear Range (Quarterly)

Instrument: K-ICP-MS-05

Analyte	Concentration (ug/L)	Method
Arsenic 75	3000	6020A
Cadmium 111	3000	6020A
Chromium 52	3000	6020A
Copper 65	3000	6020A
Lead 208	3000	6020A
Manganese 55	3000	6020A
Nickel 60	3000	6020A
Zinc 66	3000	6020A

Client: Hart Crowser, Incorporated **Service Request:** K1712961
Project: URSC/150-001-056

Analysis Run Log

Instrument ID: **K-ICP-MS-05** **Analytical BatchID:** **574087**

Sample	Dilution Factor	Date/Time	As	Cd	Cr	Cu	Pb	Mn	Ni	Zn
ZZZZZZ	1	12/18/17 09:50								
ZZZZZZ	1	12/18/17 09:52								
ICV	1	12/18/17 09:54	X	X	X	X	X	X	X	X
CCV	1	12/18/17 09:57	X	X	X	X	X	X	X	X
ICB	1	12/18/17 09:59	X	X	X	X	X	X	X	X
CCB	1	12/18/17 10:02	X	X	X	X	X	X	X	X
LLICVS	1	12/18/17 10:04	X	X	X	X	X	X	X	X
ICSA	1	12/18/17 10:07	X	X	X	X	X	X	X	X
ICSAB	1	12/18/17 10:09	X	X	X	X	X	X	X	X
ZZZZZZ	5	12/18/17 10:11								
ZZZZZZ	20	12/18/17 10:14								
ZZZZZZ	5	12/18/17 10:16								
ZZZZZZ	5	12/18/17 10:18								
ZZZZZZ	25	12/18/17 10:21								
ZZZZZZ	5	12/18/17 10:23								
ZZZZZZ	5	12/18/17 10:26								
ZZZZZZ	5	12/18/17 10:28								
ZZZZZZ	5	12/18/17 10:30								
ZZZZZZ	5	12/18/17 10:33								
CCV	1	12/18/17 10:35	X	X	X	X	X	X	X	X
CCB	1	12/18/17 10:38	X	X	X	X	X	X	X	X
ZZZZZZ	5	12/18/17 10:40								
ZZZZZZ	5	12/18/17 10:42								
ZZZZZZ	5	12/18/17 10:44								
KQ1718249-03MB	5	12/18/17 10:47	X	X	X	X	X	X	X	X
KQ1718249-04LCS	20	12/18/17 10:49	X	X	X	X	X	X	X	X
K1712961-006	5	12/18/17 10:51	X	X	X	X	X	X	X	X
K1712961-015	5	12/18/17 10:53	X	X	X	X	X	X	X	X
ZZZZZZ	5	12/18/17 10:55								
K1713130-006DUP	5	12/18/17 10:58	X	X	X	X	X	X	X	X
K1713130-006SDL	25	12/18/17 11:00	X	X	X	X	X	X	X	X
CCV	1	12/18/17 11:02	X	X	X	X	X	X	X	X
CCB	1	12/18/17 11:04	X	X	X	X	X	X	X	X
K1713130-006PS	5	12/18/17 11:07	X	X	X	X	X	X	X	X
K1713130-006MS	5	12/18/17 11:09	X	X	X	X	X	X	X	X
ZZZZZZ	5	12/18/17 11:11								
ZZZZZZ	20	12/18/17 11:13								

Client: Hart Crowser, Incorporated **Service Request:** K1712961
Project: URSC/150-001-056

Analysis Run Log

Instrument ID: **K-ICP-MS-05** **Analytical BatchID:** **574087**

Sample	Dilution Factor	Date/Time	As	Cd	Cr	Cu	Pb	Mn	Ni	Zn
ZZZZZZ	5	12/18/17 11:15								
ZZZZZZ	5	12/18/17 11:18								
ZZZZZZ	25	12/18/17 11:20								
ZZZZZZ	5	12/18/17 11:22								
ZZZZZZ	5	12/18/17 11:24								
ZZZZZZ	5	12/18/17 11:26								
CCV	1	12/18/17 11:29	X	X	X	X	X	X	X	X
CCB	1	12/18/17 11:31	X	X	X	X	X	X	X	X
LLCCVS	1	12/18/17 11:33	X	X	X	X	X		X	X
LLCCVS 1.0 ppb	1	12/18/17 11:35						X		
ZZZZZZ	20	12/18/17 11:38								
ZZZZZZ	20	12/18/17 11:40								
ZZZZZZ	20	12/18/17 11:42								
ZZZZZZ	20	12/18/17 11:44								
ZZZZZZ	100	12/18/17 11:46								
ZZZZZZ	20	12/18/17 11:49								
ZZZZZZ	1	12/18/17 11:51								
ZZZZZZ	1	12/18/17 11:53								
ZZZZZZ	20	12/18/17 11:55								
ZZZZZZ	20	12/18/17 11:58								
ZZZZZZ	20	12/18/17 12:00								
ZZZZZZ	20	12/18/17 12:02								
ZZZZZZ	20	12/18/17 12:04								
ZZZZZZ	20	12/18/17 12:06								
ZZZZZZ	20	12/18/17 12:09								
ZZZZZZ	1	12/18/17 12:11								
ZZZZZZ	1	12/18/17 12:13								
ZZZZZZ	1	12/18/17 12:15								

Client: Hart Crowser, Incorporated **Service Request:** K1712961
Project: URSC/150-001-056

Analysis Run Log

Instrument ID: **K-CVAA-02** **Analytical BatchID:** **574347**

Sample	Dilution Factor	Date/Time	Hg
ZZZZZZ	1	12/19/17 13:10	
ZZZZZZ	1	12/19/17 13:12	
ZZZZZZ	1	12/19/17 13:13	
ZZZZZZ	1	12/19/17 13:15	
ZZZZZZ	1	12/19/17 13:17	
ZZZZZZ	1	12/19/17 13:18	
ICV1	1	12/19/17 13:20	X
ICB1	1	12/19/17 13:22	X
LLICV1	1	12/19/17 13:23	X
CCV1	1	12/19/17 13:25	X
CCB1	1	12/19/17 13:26	X
KQ1718364-03MB	1	12/19/17 13:28	X
KQ1718364-04LCS	1	12/19/17 13:30	X
KQ1718364-05LCS1	10	12/19/17 13:31	X
K1712961-006	1	12/19/17 13:33	X
K1712961-015	1	12/19/17 13:34	X
ZZZZZZ	1	12/19/17 13:36	
K1713018-010DUP	1	12/19/17 13:38	X
K1713018-010MS	1	12/19/17 13:39	X
K1713018-010PS	1	12/19/17 13:41	X
ZZZZZZ	1	12/19/17 13:43	
CCV2	1	12/19/17 13:44	X
CCB2	1	12/19/17 13:46	X
ZZZZZZ	1	12/19/17 13:47	
K1713130-006DUP	1	12/19/17 13:49	X
K1713130-006MS	1	12/19/17 13:51	X
ZZZZZZ	1	12/19/17 13:52	
ZZZZZZ	1	12/19/17 13:54	
ZZZZZZ	1	12/19/17 13:56	
ZZZZZZ	1	12/19/17 13:57	
ZZZZZZ	1	12/19/17 13:59	
ZZZZZZ	1	12/19/17 14:00	
K1713195-001DUP	1	12/19/17 14:02	X
CCV3	1	12/19/17 14:04	X
CCB3	1	12/19/17 14:05	X
K1713195-001MS	1	12/19/17 14:07	X
ZZZZZZ	1	12/19/17 14:08	

Client: Hart Crowser, Incorporated **Service Request:** K1712961
Project: URSC/150-001-056

Analysis Run Log

Instrument ID: **K-CVAA-02** **Analytical BatchID:** **574347**

Sample	Dilution Factor	Date/Time	Hg
K1713262-043MS	1	12/19/17 14:10	X
K1713262-043DMS	1	12/19/17 14:12	X
ZZZZZZ	1	12/19/17 14:13	
ZZZZZZ	1	12/19/17 14:15	
K1713368-002DUP	1	12/19/17 14:17	X
K1713368-002MS	1	12/19/17 14:18	X
ZZZZZZ	1	12/19/17 14:21	
ZZZZZZ	1	12/19/17 14:22	
CCV4	1	12/19/17 14:24	X
CCB4	1	12/19/17 14:25	X

Client: Hart Crowser, Incorporated **Service Request:** K1712961
Project: URSC/150-001-056

ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Instrument ID: **K-ICP-MS-05** **Analytical BatchID:** **574087**

Sample	Date/Time	Ge72He	Ge72H2	In115He	Lu175He
ZZZZZZ	12/18/17 09:50				
ZZZZZZ	12/18/17 09:52				
ICV	12/18/17 09:54	98	99	98	100
CCV	12/18/17 09:57	97	98	97	98
ICB	12/18/17 09:59	97	98	98	99
CCB	12/18/17 10:02	97	98	99	97
LLICVS	12/18/17 10:04	96	97	98	100
ICSA	12/18/17 10:07	93	93	88	92
ICSAB	12/18/17 10:09	94	93	90	94
ZZZZZZ	12/18/17 10:11				
ZZZZZZ	12/18/17 10:14				
ZZZZZZ	12/18/17 10:16				
ZZZZZZ	12/18/17 10:18				
ZZZZZZ	12/18/17 10:21				
ZZZZZZ	12/18/17 10:23				
ZZZZZZ	12/18/17 10:26				
ZZZZZZ	12/18/17 10:28				
ZZZZZZ	12/18/17 10:30				
ZZZZZZ	12/18/17 10:33				
CCV	12/18/17 10:35	99	99	99	100
CCB	12/18/17 10:38	99	99	100	100
ZZZZZZ	12/18/17 10:40				
ZZZZZZ	12/18/17 10:42				
ZZZZZZ	12/18/17 10:44				
KQ1718249-03MB	12/18/17 10:47	100	100	102	101
KQ1718249-04LCS	12/18/17 10:49	98	98	97	98
K1712961-006	12/18/17 10:51	100	98	98	99
K1712961-015	12/18/17 10:53	102	100	99	100
ZZZZZZ	12/18/17 10:55				
K1713130-006DUP	12/18/17 10:58	101	98	99	101
K1713130-006SDL	12/18/17 11:00	100	100	99	99
CCV	12/18/17 11:02	99	100	101	101
CCB	12/18/17 11:04	100	100	102	102
K1713130-006PS	12/18/17 11:07	101	99	99	101
K1713130-006MS	12/18/17 11:09	99	98	96	99
ZZZZZZ	12/18/17 11:11				
ZZZZZZ	12/18/17 11:13				

Client: Hart Crowser, Incorporated **Service Request:** K1712961
Project: URSC/150-001-056

ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Instrument ID: **K-ICP-MS-05** **Analytical BatchID:** **574087**

Sample	Date/Time	Ge72He	Ge72H2	In115He	Lu175He
ZZZZZZ	12/18/17 11:15				
ZZZZZZ	12/18/17 11:18				
ZZZZZZ	12/18/17 11:20				
ZZZZZZ	12/18/17 11:22				
ZZZZZZ	12/18/17 11:24				
ZZZZZZ	12/18/17 11:26				
CCV	12/18/17 11:29	95	95	97	100
CCB	12/18/17 11:31	95	95	99	99
LLCCVS	12/18/17 11:33	97	95	98	99
LLCCVS 1.0 ppb	12/18/17 11:35	95	95	97	98
ZZZZZZ	12/18/17 11:38				
ZZZZZZ	12/18/17 11:40				
ZZZZZZ	12/18/17 11:42				
ZZZZZZ	12/18/17 11:44				
ZZZZZZ	12/18/17 11:46				
ZZZZZZ	12/18/17 11:49				
ZZZZZZ	12/18/17 11:51				
ZZZZZZ	12/18/17 11:53				
ZZZZZZ	12/18/17 11:55				
ZZZZZZ	12/18/17 11:58				
ZZZZZZ	12/18/17 12:00				
ZZZZZZ	12/18/17 12:02				
ZZZZZZ	12/18/17 12:04				
ZZZZZZ	12/18/17 12:06				
ZZZZZZ	12/18/17 12:09				
ZZZZZZ	12/18/17 12:11				
ZZZZZZ	12/18/17 12:13				
ZZZZZZ	12/18/17 12:15				

Organochlorine Pesticides

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	11/30/17 13:30
Sample Matrix:	Sediment	**Date Received:**	12/01/17 14:30
Sample Name:	URSC-RM20.0W-COMP	**Units:**	ug/Kg
Lab Code:	K1712961-006	**Basis:**	Dry

Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP
Prep Method: EPA 3541

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2,4'-DDD	ND	U	0.069	0.063	1	01/15/18 17:47	12/12/17	
2,4'-DDE	ND	U	0.079	0.079	1	01/15/18 17:47	12/12/17	
2,4'-DDT	ND	U	0.094	0.094	1	01/15/18 17:47	12/12/17	
4,4'-DDD	**0.12**		0.069	0.035	1	01/15/18 17:47	12/12/17	
4,4'-DDE	**0.21**		0.070	0.070	1	01/15/18 17:47	12/12/17	
4,4'-DDT	**0.071**		0.069	0.047	1	01/15/18 17:47	12/12/17	
Aldrin	ND	U	0.079	0.079	1	01/15/18 17:47	12/12/17	
alpha-BHC	ND	U	0.069	0.041	1	01/15/18 17:47	12/12/17	
alpha-Chlordane	**0.10**	**J**	0.14	0.062	1	01/15/18 17:47	12/12/17	
beta-BHC	ND	U	0.069	0.061	1	01/15/18 17:47	12/12/17	
Chlorpyrifos	**0.12**		0.077	0.077	1	01/15/18 17:47	12/12/17	
cis-Nonachlor	ND	U	0.097	0.097	1	01/15/18 17:47	12/12/17	
delta-BHC	ND	U	0.097	0.097	1	01/15/18 17:47	12/12/17	
Dieldrin	ND	U	0.20	0.077	1	01/15/18 17:47	12/12/17	
Endosulfan I	ND	U	0.20	0.088	1	01/15/18 17:47	12/12/17	
Endosulfan II	**0.56**		0.20	0.15	1	01/15/18 17:47	12/12/17	
Endosulfan Sulfate	ND	U	0.069	0.061	1	01/15/18 17:47	12/12/17	
Endrin	ND	U	0.20	0.073	1	01/15/18 17:47	12/12/17	
Endrin Aldehyde	ND	U	0.20	0.10	1	01/15/18 17:47	12/12/17	
Endrin Ketone	ND	U	0.20	0.071	1	01/15/18 17:47	12/12/17	
gamma-BHC (Lindane)	ND	U	0.069	0.031	1	01/15/18 17:47	12/12/17	
gamma-Chlordane	**0.11**	**J**	0.14	0.064	1	01/15/18 17:47	12/12/17	
Heptachlor	ND	U	0.069	0.039	1	01/15/18 17:47	12/12/17	
Heptachlor Epoxide	ND	U	0.14	0.073	1	01/15/18 17:47	12/12/17	
Hexachlorobenzene	ND	U	0.092	0.092	1	01/15/18 17:47	12/12/17	
Isodrin	ND	U	0.14	0.069	1	01/15/18 17:47	12/12/17	
Methoxychlor	ND	U	0.069	0.019	1	01/15/18 17:47	12/12/17	
Mirex	ND	U	0.069	0.045	1	01/15/18 17:47	12/12/17	
Octachlorostyrene	ND	U	0.069	0.058	1	01/15/18 17:47	12/12/17	
Oxychlordane	ND	U	0.20	0.13	1	01/15/18 17:47	12/12/17	
trans-Nonachlor	**0.10**	**J**	0.14	0.058	1	01/15/18 17:47	12/12/17	

ALS Group USA, Corp.
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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	11/30/17 13:30
Sample Matrix:	Sediment	**Date Received:**	12/01/17 14:30
Sample Name:	URSC-RM20.0W-COMP	**Units:**	ug/Kg
Lab Code:	K1712961-006	**Basis:**	Dry

Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP
Prep Method: EPA 3541

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
S_4,4'-DDT-d4	105	13 - 200	01/15/18 17:47	
S_4,4'DDD-d4	76	5 - 120	01/15/18 17:47	
S_Aldrin-13C12	101	10 - 143	01/15/18 17:47	
S_Chlorpyrifos-d10	88	39 - 135	01/15/18 17:47	
S_Endrin-13C12	83	20 - 157	01/15/18 17:47	
S_Endrinket13C12	72	12 - 140	01/15/18 17:47	
S_GBHCD6	87	5 - 124	01/15/18 17:47	
S_HXCBZ13C6	61	5 - 120	01/15/18 17:47	
S_Heptachlor-13C10	136	10 - 177	01/15/18 17:47	
S_Heptachlrepox13C10	80	8 - 146	01/15/18 17:47	
S_Isodrin-13C12	103	10 - 168	01/15/18 17:47	
S_Mirex-13C10	63	5 - 138	01/15/18 17:47	
S_Mxchlord-d6	112	10 - 178	01/15/18 17:47	
S_Ocstyrene13C8	66	31 - 124	01/15/18 17:47	
S_Oxychlordane-13C10	88	5 - 144	01/15/18 17:47	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	11/30/17 08:15
Sample Matrix:	Sediment	**Date Received:**	12/01/17 14:30
Sample Name:	URSC-RM18.45E-COMP	**Units:**	ug/Kg
Lab Code:	K1712961-015	**Basis:**	Dry

Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP
Prep Method: EPA 3541

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2,4'-DDD	ND	U	0.081	0.063	1	01/15/18 18:14	12/12/17	
2,4'-DDE	ND	U	0.081	0.079	1	01/15/18 18:14	12/12/17	
2,4'-DDT	ND	U	0.094	0.094	1	01/15/18 18:14	12/12/17	
4,4'-DDD	**0.19**		0.081	0.035	1	01/15/18 18:14	12/12/17	
4,4'-DDE	**0.36**		0.081	0.070	1	01/15/18 18:14	12/12/17	
4,4'-DDT	**0.11**		0.081	0.047	1	01/15/18 18:14	12/12/17	
Aldrin	ND	U	0.081	0.079	1	01/15/18 18:14	12/12/17	
alpha-BHC	ND	U	0.081	0.041	1	01/15/18 18:14	12/12/17	
alpha-Chlordane	ND	U	0.16	0.062	1	01/15/18 18:14	12/12/17	
beta-BHC	ND	U	0.081	0.061	1	01/15/18 18:14	12/12/17	
Chlorpyrifos	**0.37**		0.081	0.077	1	01/15/18 18:14	12/12/17	
cis-Nonachlor	ND	U	0.097	0.097	1	01/15/18 18:14	12/12/17	
delta-BHC	ND	U	0.097	0.097	1	01/15/18 18:14	12/12/17	
Dieldrin	ND	U	0.20	0.077	1	01/15/18 18:14	12/12/17	
Endosulfan I	ND	U	0.20	0.088	1	01/15/18 18:14	12/12/17	
Endosulfan II	ND	U	0.20	0.15	1	01/15/18 18:14	12/12/17	
Endosulfan Sulfate	ND	U	0.081	0.061	1	01/15/18 18:14	12/12/17	
Endrin	ND	U	0.20	0.073	1	01/15/18 18:14	12/12/17	
Endrin Aldehyde	ND	U	0.20	0.10	1	01/15/18 18:14	12/12/17	
Endrin Ketone	ND	U	0.20	0.071	1	01/15/18 18:14	12/12/17	
gamma-BHC (Lindane)	ND	U	0.081	0.031	1	01/15/18 18:14	12/12/17	
gamma-Chlordane	ND	U	0.16	0.064	1	01/15/18 18:14	12/12/17	
Heptachlor	ND	U	0.081	0.039	1	01/15/18 18:14	12/12/17	
Heptachlor Epoxide	ND	U	0.16	0.073	1	01/15/18 18:14	12/12/17	
Hexachlorobenzene	ND	U	0.092	0.092	1	01/15/18 18:14	12/12/17	
Isodrin	ND	U	0.16	0.069	1	01/15/18 18:14	12/12/17	
Methoxychlor	ND	U	0.081	0.019	1	01/15/18 18:14	12/12/17	
Mirex	ND	U	0.081	0.045	1	01/15/18 18:14	12/12/17	
Octachlorostyrene	ND	U	0.081	0.058	1	01/15/18 18:14	12/12/17	
Oxychlordane	ND	U	0.20	0.13	1	01/15/18 18:14	12/12/17	
trans-Nonachlor	ND	U	0.16	0.058	1	01/15/18 18:14	12/12/17	

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	11/30/17 08:15
Sample Matrix:	Sediment	**Date Received:**	12/01/17 14:30
Sample Name:	URSC-RM18.45E-COMP	**Units:**	ug/Kg
Lab Code:	K1712961-015	**Basis:**	Dry

Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP
Prep Method: EPA 3541

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
S_4,4'-DDT-d4	113	13 - 200	01/15/18 18:14	
S_4,4'DDD-d4	82	5 - 120	01/15/18 18:14	
S_Aldrin-13C12	100	10 - 143	01/15/18 18:14	
S_Chlorpyrifos-d10	91	39 - 135	01/15/18 18:14	
S_Endrin-13C12	89	20 - 157	01/15/18 18:14	
S_Endrinket13C12	78	12 - 140	01/15/18 18:14	
S_GBHCD6	87	5 - 124	01/15/18 18:14	
S_HXCBZ13C6	56	5 - 120	01/15/18 18:14	
S_Heptachlor-13C10	143	10 - 177	01/15/18 18:14	
S_Heptachlrepox13C10	80	8 - 146	01/15/18 18:14	
S_Isodrin-13C12	101	10 - 168	01/15/18 18:14	
S_Mirex-13C10	66	5 - 138	01/15/18 18:14	
S_Mxchlord-d6	122	10 - 178	01/15/18 18:14	
S_Ocstyrene13C8	66	31 - 124	01/15/18 18:14	
S_Oxychlordane-13C10	93	5 - 144	01/15/18 18:14	

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Batch QC	**Units:**	ug/Kg
Lab Code:	K1713130-006	**Basis:**	Dry

Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP
Prep Method: EPA 3541

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2,4'-DDD	**0.074**		0.072	0.063	1	01/15/18 18:42	12/12/17	
2,4'-DDE	ND	U	0.079	0.079	1	01/15/18 18:42	12/12/17	
2,4'-DDT	**0.10**		0.094	0.094	1	01/15/18 18:42	12/12/17	
4,4'-DDD	**0.35**		0.072	0.035	1	01/15/18 18:42	12/12/17	
4,4'-DDE	**0.72**		0.072	0.070	1	01/15/18 18:42	12/12/17	
4,4'-DDT	**1.6**		0.072	0.047	1	01/15/18 18:42	12/12/17	
Aldrin	ND	U	0.079	0.079	1	01/15/18 18:42	12/12/17	
alpha-BHC	ND	U	0.072	0.041	1	01/15/18 18:42	12/12/17	
alpha-Chlordane	**0.093**	**J**	0.14	0.062	1	01/15/18 18:42	12/12/17	
beta-BHC	ND	U	0.072	0.061	1	01/15/18 18:42	12/12/17	
Chlorpyrifos	**0.45**		0.077	0.077	1	01/15/18 18:42	12/12/17	
cis-Nonachlor	ND	U	0.097	0.097	1	01/15/18 18:42	12/12/17	
delta-BHC	ND	U	0.097	0.097	1	01/15/18 18:42	12/12/17	
Dieldrin	**0.21**		0.20	0.077	1	01/15/18 18:42	12/12/17	
Endosulfan I	ND	U	0.20	0.088	1	01/15/18 18:42	12/12/17	
Endosulfan II	**0.56**		0.20	0.15	1	01/15/18 18:42	12/12/17	
Endosulfan Sulfate	ND	U	0.072	0.061	1	01/15/18 18:42	12/12/17	
Endrin	ND	U	0.20	0.073	1	01/15/18 18:42	12/12/17	
Endrin Aldehyde	ND	U	0.20	0.10	1	01/15/18 18:42	12/12/17	
Endrin Ketone	ND	U	0.20	0.071	1	01/15/18 18:42	12/12/17	
gamma-BHC (Lindane)	**0.035**	**J**	0.072	0.031	1	01/15/18 18:42	12/12/17	
gamma-Chlordane	**0.12**	**J**	0.14	0.064	1	01/15/18 18:42	12/12/17	
Heptachlor	ND	U	0.072	0.039	1	01/15/18 18:42	12/12/17	
Heptachlor Epoxide	ND	U	0.14	0.073	1	01/15/18 18:42	12/12/17	
Hexachlorobenzene	**0.85**		0.092	0.092	1	01/15/18 18:42	12/12/17	
Isodrin	ND	U	0.14	0.069	1	01/15/18 18:42	12/12/17	
Methoxychlor	**0.073**		0.072	0.019	1	01/15/18 18:42	12/12/17	
Mirex	ND	U	0.072	0.045	1	01/15/18 18:42	12/12/17	
Octachlorostyrene	ND	U	0.072	0.058	1	01/15/18 18:42	12/12/17	
Oxychlordane	ND	U	0.20	0.13	1	01/15/18 18:42	12/12/17	
trans-Nonachlor	**0.11**	**J**	0.14	0.058	1	01/15/18 18:42	12/12/17	

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Batch QC	**Units:**	ug/Kg
Lab Code:	K1713130-006	**Basis:**	Dry

Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP
Prep Method: EPA 3541

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
S_4,4'-DDT-d4	116	13 - 200	01/15/18 18:42	
S_4,4'DDD-d4	80	5 - 120	01/15/18 18:42	
S_Aldrin-13C12	101	10 - 143	01/15/18 18:42	
S_Chlorpyrifos-d10	93	39 - 135	01/15/18 18:42	
S_Endrin-13C12	92	20 - 157	01/15/18 18:42	
S_Endrinket13C12	81	12 - 140	01/15/18 18:42	
S_GBHCD6	94	5 - 124	01/15/18 18:42	
S_HXCBZ13C6	59	5 - 120	01/15/18 18:42	
S_Heptachlor-13C10	149	10 - 177	01/15/18 18:42	
S_Heptachlrepox13C10	80	8 - 146	01/15/18 18:42	
S_Isodrin-13C12	99	10 - 168	01/15/18 18:42	
S_Mirex-13C10	67	5 - 138	01/15/18 18:42	
S_Mxchlord-d6	128	10 - 178	01/15/18 18:42	
S_Ocstyrene13C8	65	31 - 124	01/15/18 18:42	
S_Oxychlordane-13C10	100	5 - 144	01/15/18 18:42	

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	KQ1718251-04	**Basis:**	Dry

Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP
Prep Method: EPA 3541

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2,4'-DDD	ND U	0.10	0.063	1	01/15/18 20:31	12/12/17	
2,4'-DDE	ND U	0.10	0.079	1	01/15/18 20:31	12/12/17	
2,4'-DDT	ND U	0.10	0.094	1	01/15/18 20:31	12/12/17	
4,4'-DDD	ND U	0.10	0.035	1	01/15/18 20:31	12/12/17	
4,4'-DDE	ND U	0.10	0.070	1	01/15/18 20:31	12/12/17	
4,4'-DDT	ND U	0.10	0.047	1	01/15/18 20:31	12/12/17	
Aldrin	ND U	0.10	0.079	1	01/15/18 20:31	12/12/17	
alpha-BHC	ND U	0.10	0.041	1	01/15/18 20:31	12/12/17	
alpha-Chlordane	ND U	0.20	0.062	1	01/15/18 20:31	12/12/17	
beta-BHC	ND U	0.10	0.061	1	01/15/18 20:31	12/12/17	
Chlorpyrifos	ND U	0.10	0.077	1	01/15/18 20:31	12/12/17	
cis-Nonachlor	ND U	0.10	0.097	1	01/15/18 20:31	12/12/17	
delta-BHC	ND U	0.10	0.097	1	01/15/18 20:31	12/12/17	
Dieldrin	ND U	0.20	0.077	1	01/15/18 20:31	12/12/17	
Endosulfan I	ND U	0.20	0.088	1	01/15/18 20:31	12/12/17	
Endosulfan II	ND U	0.20	0.15	1	01/15/18 20:31	12/12/17	
Endosulfan Sulfate	ND U	0.10	0.061	1	01/15/18 20:31	12/12/17	
Endrin	ND U	0.20	0.073	1	01/15/18 20:31	12/12/17	
Endrin Aldehyde	ND U	0.20	0.10	1	01/15/18 20:31	12/12/17	
Endrin Ketone	ND U	0.20	0.071	1	01/15/18 20:31	12/12/17	
gamma-BHC (Lindane)	ND U	0.10	0.031	1	01/15/18 20:31	12/12/17	
gamma-Chlordane	ND U	0.20	0.064	1	01/15/18 20:31	12/12/17	
Heptachlor	ND U	0.10	0.039	1	01/15/18 20:31	12/12/17	
Heptachlor Epoxide	ND U	0.20	0.073	1	01/15/18 20:31	12/12/17	
Hexachlorobenzene	ND U	0.10	0.092	1	01/15/18 20:31	12/12/17	
Isodrin	ND U	0.20	0.069	1	01/15/18 20:31	12/12/17	
Methoxychlor	ND U	0.10	0.019	1	01/15/18 20:31	12/12/17	
Mirex	ND U	0.10	0.045	1	01/15/18 20:31	12/12/17	
Octachlorostyrene	ND U	0.10	0.058	1	01/15/18 20:31	12/12/17	
Oxychlordane	ND U	0.20	0.13	1	01/15/18 20:31	12/12/17	
trans-Nonachlor	ND U	0.20	0.058	1	01/15/18 20:31	12/12/17	

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	KQ1718251-04	**Basis:**	Dry

Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP
Prep Method: EPA 3541

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
S_4,4'-DDT-d4	101	13 - 200	01/15/18 20:31	
S_4,4'DDD-d4	73	5 - 120	01/15/18 20:31	
S_Aldrin-13C12	51	10 - 143	01/15/18 20:31	
S_Chlorpyrifos-d10	78	39 - 135	01/15/18 20:31	
S_Endrin-13C12	78	20 - 157	01/15/18 20:31	
S_Endrinket13C12	71	12 - 140	01/15/18 20:31	
S_GBHCD6	63	5 - 124	01/15/18 20:31	
S_HXCBZ13C6	42	5 - 120	01/15/18 20:31	
S_Heptachlor-13C10	78	10 - 177	01/15/18 20:31	
S_Heptachlrepox13C10	62	8 - 146	01/15/18 20:31	
S_Isodrin-13C12	58	10 - 168	01/15/18 20:31	
S_Mirex-13C10	61	5 - 138	01/15/18 20:31	
S_Mxchlord-d6	109	10 - 178	01/15/18 20:31	
S_Ocstyrene13C8	54	31 - 124	01/15/18 20:31	
S_Oxychlordane-13C10	68	5 - 144	01/15/18 20:31	

Client: Hart Crowser, Incorporated **Service Request:** K1712961
Project: URSC/150-001-056
Sample Matrix: Sediment

SURROGATE RECOVERY SUMMARY
Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP
Extraction Method: EPA 3541

Sample Name	Lab Code	S_4,4'DDD-d4 5 - 120	S_4,4'-DDT-d4 13 - 200	S_Aldrin-13C12 10 - 143
URSC-RM20.0W-COMP	K1712961-006	76	105	101
URSC-RM18.45E-COMP	K1712961-015	82	113	100
Batch QC	K1713130-006	80	116	101
Batch QC MS	KQ1718251-01	75	109	96
Batch QC DMS	KQ1718251-02	77	111	89
Lab Control Sample	KQ1718251-03	76	107	61
Method Blank	KQ1718251-04	73	101	51

Client: Hart Crowser, Incorporated **Service Request:** K1712961
Project: URSC/150-001-056
Sample Matrix: Sediment

SURROGATE RECOVERY SUMMARY
Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP
Extraction Method: EPA 3541

Sample Name	Lab Code	S_Chlorpyrifos-d10 39 - 135	S_Endrin-13C12 20 - 157	S_Endrinket13C12 12 - 140
URSC-RM20.0W-COMP	K1712961-006	88	83	72
URSC-RM18.45E-COMP	K1712961-015	91	89	78
Batch QC	K1713130-006	93	92	81
Batch QC	KQ1718251-01	90	93	78
Batch QC	KQ1718251-02	89	89	80
Lab Control Sample	KQ1718251-03	83	86	76
Method Blank	KQ1718251-04	78	78	71

Client: Hart Crowser, Incorporated **Service Request:** K1712961
Project: URSC/150-001-056
Sample Matrix: Sediment

SURROGATE RECOVERY SUMMARY
Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP
Extraction Method: EPA 3541

Sample Name	Lab Code	S_GBHCD6 5 - 124	S_Heptachlor-13C10 10 - 177	S_Heptachlrepox13C10 8 - 146
URSC-RM20.0W-COMP	K1712961-006	87	136	80
URSC-RM18.45E-COMP	K1712961-015	87	143	80
Batch QC	K1713130-006	94	149	80
Batch QC	KQ1718251-01	90	148	78
Batch QC	KQ1718251-02	88	144	74
Lab Control Sample	KQ1718251-03	59	83	67
Method Blank	KQ1718251-04	63	78	62

Client: Hart Crowser, Incorporated **Service Request:** K1712961
Project: URSC/150-001-056
Sample Matrix: Sediment

SURROGATE RECOVERY SUMMARY
Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP
Extraction Method: EPA 3541

Sample Name	Lab Code	S_HXCBZ13C6 5 - 120	S_Isodrin-13C12 10 - 168	S_Mirex-13C10 5 - 138
URSC-RM20.0W-COMP	K1712961-006	61	103	63
URSC-RM18.45E-COMP	K1712961-015	56	101	66
Batch QC	K1713130-006	59	99	67
Batch QC	KQ1718251-01	59	95	67
Batch QC	KQ1718251-02	58	88	69
Lab Control Sample	KQ1718251-03	42	63	67
Method Blank	KQ1718251-04	42	58	61

Client: Hart Crowser, Incorporated **Service Request:** K1712961
Project: URSC/150-001-056
Sample Matrix: Sediment

SURROGATE RECOVERY SUMMARY
Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP
Extraction Method: EPA 3541

Sample Name	Lab Code	S_Mxchlord-d6 10 - 178	S_Ocstyrene13C8 31 - 124	S_Oxychlordane-13C10 5 - 144
URSC-RM20.0W-COMP	K1712961-006	112	66	88
URSC-RM18.45E-COMP	K1712961-015	122	66	93
Batch QC	K1713130-006	128	65	100
Batch QC	KQ1718251-01	120	64	96
Batch QC	KQ1718251-02	123	63	93
Lab Control Sample	KQ1718251-03	114	57	69
Method Blank	KQ1718251-04	109	54	68

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QA/QC Report

Client: Hart Crowser, Incorporated **Service Request:**K1712961
Project: URSC/150-001-056 **Date Analyzed:**01/15/18 16:52

Internal Standard Area and RT SUMMARY
Organochlorine Pesticides by GC/MS/MS

File ID: J:\MS21\Data\011518\0115F004.D\ **Lab Code:**KQ1800767-01
Instrument ID: K-MSMS-01 **Analysis Lot:**577627
Analysis Method: ALS SOP **Signal ID:**

		Pyrene-d10	
		Area	**RT**
	ICAL Result ==>	51,082	14.1523
	Upper Limit ==>	102,163	14.65
	Lower Limit ==>	25,541	13.65
Associated Analyses			
URSC-RM20.0W-COMP	K1712961-006	45769.8	14.1523
URSC-RM18.45E-COMP	K1712961-015	46845.8	14.1546
Batch QC	K1713130-006	45965.9	14.1546
Batch QCMS	KQ1718251-01	47428.6	14.1546
Batch QCDMS	KQ1718251-02	44816.9	14.1546
Lab Control Sample	KQ1718251-03	47825.1	14.15
Method Blank	KQ1718251-04	47217.9	14.1476

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	N/A
Sample Matrix:	Sediment	**Date Received:**	N/A
		Date Analyzed:	01/15/18
		Date Extracted:	12/12/17

Duplicate Matrix Spike Summary
Organochlorine Pesticides by GC/MS/MS

Sample Name:	Batch QC	**Units:**	ug/Kg
Lab Code:	K1713130-006	**Basis:**	Dry
Analysis Method:	ALS SOP		
Prep Method:	EPA 3541		

		Matrix Spike KQ1718251-01			**Duplicate Matrix Spike** KQ1718251-02					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
2,4'-DDD	0.074	1.67	1.46	109	1.55	1.43	103	32-169	7	40
2,4'-DDE	ND U	1.48	1.46	102	1.36	1.43	95	43-155	8	40
2,4'-DDT	0.10	1.50	1.46	96	1.43	1.43	93	55-161	4	40
4,4'-DDD	0.35	2.09	1.46	119	1.84	1.43	104	10-190	13	40
4,4'-DDE	0.72	2.23	1.46	104	2.11	1.43	97	35-162	6	40
4,4'-DDT	1.6	2.12	1.46	36	2.04	1.43	32	24-183	4	40
Aldrin	ND U	1.47	1.46	101	1.52	1.43	106	52-151	3	40
alpha-BHC	ND U	1.39	1.46	95	1.34	1.43	93	48-124	4	40
alpha-Chlordane	0.093 J	1.18	1.46	74	1.11	1.43	71	31-156	6	40
beta-BHC	ND U	1.35	1.46	92	1.29	1.43	90	19-221	4	40
Chlorpyrifos	0.45	1.93	1.46	101	1.84	1.43	97	71-131	4	40
cis-Nonachlor	ND U	1.23	1.46	84	1.18	1.43	83	27-144	4	40
delta-BHC	ND U	1.06	1.46	73	0.976	1.43	68	10-228	8	40
Dieldrin	0.21	1.31	1.46	76	1.25	1.43	72	28-150	5	40
Endosulfan I	ND U	1.07	1.46	74	1.15	1.43	80	52-154	7	40
Endosulfan II	0.56	1.33	1.46	53	1.27	1.43	49	10-180	5	40
Endosulfan Sulfate	ND U	1.28	1.46	87	1.24	1.43	86	31-135	3	40
Endrin	ND U	1.28	1.46	88	1.32	1.43	92	34-160	3	40
Endrin Aldehyde	ND U	1.15	1.46	79	1.19	1.43	83	21-130	3	40
Endrin Ketone	ND U	1.40	1.46	96	1.39	1.43	97	53-136	1	40
gamma-BHC (Lindane)	0.035 J	1.44	1.46	97	1.36	1.43	92	64-135	6	40
gamma-Chlordane	0.12 J	1.14	1.46	70	1.13	1.43	71	31-158	<1	40
Heptachlor	ND U	1.48	1.46	101	1.44	1.43	100	76-117	3	40
Heptachlor Epoxide	ND U	1.54	1.46	106	1.59	1.43	111	45-146	3	40
Hexachlorobenzene	0.85	2.31	1.46	100	2.17	1.43	92	22-171	6	40
Isodrin	ND U	1.37	1.46	94	1.38	1.43	96	30-122	<1	40
Methoxychlor	0.073	1.51	1.46	98	1.45	1.43	96	73-123	4	40
Mirex	ND U	1.59	1.46	109	1.46	1.43	102	83-115	9	40
Octachlorostyrene	ND U	1.56	1.46	107	1.52	1.43	106	67-130	2	40
Oxychlordane	ND U	1.24	1.46	85	1.28	1.43	89	53-144	3	40
trans-Nonachlor	0.11 J	1.26	1.46	79	1.25	1.43	80	35-153	<1	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Analyzed:**	01/15/18
Sample Matrix:	Sediment	**Date Extracted:**	12/12/17

Lab Control Sample Summary
Organochlorine Pesticides by GC/MS/MS

Analysis Method:	ALS SOP	**Units:**	ug/Kg
Prep Method:	EPA 3541	**Basis:**	Dry
		Analysis Lot:	577627

Lab Control Sample
KQ1718251-03

Analyte Name	Result	Spike Amount	% Rec	% Rec Limits
2,4'-DDD	2.06	2.00	103	73-122
2,4'-DDE	1.90	2.00	95	54-145
2,4'-DDT	1.84	2.00	92	77-118
4,4'-DDD	2.10	2.00	105	74-117
4,4'-DDE	1.91	2.00	95	66-132
4,4'-DDT	1.92	2.00	96	78-116
Aldrin	2.02	2.00	101	74-122
alpha-BHC	1.91	2.00	95	61-113
alpha-Chlordane	1.87	2.00	94	74-130
beta-BHC	2.38	2.00	119	60-183
Chlorpyrifos	2.02	2.00	101	74-128
cis-Nonachlor	2.14	2.00	107	69-134
delta-BHC	1.89	2.00	95	10-211
Dieldrin	1.54	2.00	77	62-131
Endosulfan I	1.44	2.00	72	61-126
Endosulfan II	1.74	2.00	87	47-135
Endosulfan Sulfate	1.80	2.00	90	57-124
Endrin	1.83	2.00	92	57-143
Endrin Aldehyde	1.79	2.00	89	45-110
Endrin Ketone	2.15	2.00	108	73-117
gamma-BHC (Lindane)	2.03	2.00	101	79-116
gamma-Chlordane	1.79	2.00	90	76-128
Heptachlor	2.08	2.00	104	81-114
Heptachlor Epoxide	2.00	2.00	100	68-126
Hexachlorobenzene	2.11	2.00	106	72-130
Isodrin	2.05	2.00	102	65-127
Methoxychlor	1.97	2.00	98	75-117
Mirex	2.09	2.00	105	85-115
Octachlorostyrene	2.09	2.00	105	53-150
Oxychlordane	2.07	2.00	104	59-141
trans-Nonachlor	1.99	2.00	99	76-124

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Analyzed:**	01/15/18 20:31
Sample Matrix:	Sediment	**Date Extracted:**	12/12/17

Method Blank Summary
Organochlorine Pesticides by GC/MS/MS

Sample Name:	Method Blank	**Instrument ID:**	K-MSMS-01
Lab Code:	KQ1718251-04	**File ID:**	J:\MS21\Data\011518\0115F012.D\
Analysis Method:	ALS SOP	**Analysis Lot:**	577627
Prep Method:	EPA 3541	**Extraction Lot:**	304811

This Method Blank applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
URSC-RM20.0W-COMP	K1712961-006	J:\MS21\Data\011518\0115F006.D\	01/15/18 17:47
URSC-RM18.45E-COMP	K1712961-015	J:\MS21\Data\011518\0115F007.D\	01/15/18 18:14
Batch QC	K1713130-006	J:\MS21\Data\011518\0115F008.D\	01/15/18 18:42
Batch QC	KQ1718251-01	J:\MS21\Data\011518\0115F009.D\	01/15/18 19:09
Batch QC	KQ1718251-02	J:\MS21\Data\011518\0115F010.D\	01/15/18 19:36
Lab Control Sample	KQ1718251-03	J:\MS21\Data\011518\0115F011.D\	01/15/18 20:04

ALS Group USA, Corp.
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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Analyzed:**	01/15/18 20:04
Sample Matrix:	Sediment	**Date Extracted:**	12/12/17

Lab Control Sample Summary
Organochlorine Pesticides by GC/MS/MS

Sample Name:	Lab Control Sample	**Instrument ID:**	K-MSMS-01
Lab Code:	KQ1718251-03	**File ID:**	J:\MS21\Data\011518\0115F011.D\
Analysis Method:	ALS SOP	**Analysis Lot:**	577627
Prep Method:	EPA 3541	**Extraction Lot:**	304811

This Lab Control Sample applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
URSC-RM20.0W-COMP	K1712961-006	J:\MS21\Data\011518\0115F006.D\	01/15/18 17:47
URSC-RM18.45E-COMP	K1712961-015	J:\MS21\Data\011518\0115F007.D\	01/15/18 18:14
Batch QC	K1713130-006	J:\MS21\Data\011518\0115F008.D\	01/15/18 18:42
Batch QC	KQ1718251-01	J:\MS21\Data\011518\0115F009.D\	01/15/18 19:09
Batch QC	KQ1718251-02	J:\MS21\Data\011518\0115F010.D\	01/15/18 19:36
Method Blank	KQ1718251-04	J:\MS21\Data\011518\0115F012.D\	01/15/18 20:31

ALS Group USA, Corp.
dba ALS Environmental

QC/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Analyzed:**	01/15/18 16:52

Tune Summary
Organochlorine Pesticides by GC/MS/MS

File ID:	J:\MS21\Data\011518\0115F004.D\	**Analytical Method:**	ALS SOP
Instrument ID:	K-MSMS-01	**Analysis Lot:**	577627

Sample Name	Lab Code	File ID:	Date Analyzed:	Q
Continuing Calibration Verification	KQ1800767-01	J:\MS21\Data\011518\0115F004.D\	01/15/18 16:52	
URSC-RM20.0W-COMP	K1712961-006	J:\MS21\Data\011518\0115F006.D\	01/15/18 17:47	
URSC-RM18.45E-COMP	K1712961-015	J:\MS21\Data\011518\0115F007.D\	01/15/18 18:14	
Batch QC	K1713130-006	J:\MS21\Data\011518\0115F008.D\	01/15/18 18:42	
Batch QC	KQ1718251-01	J:\MS21\Data\011518\0115F009.D\	01/15/18 19:09	
Batch QC	KQ1718251-02	J:\MS21\Data\011518\0115F010.D\	01/15/18 19:36	
Lab Control Sample	KQ1718251-03	J:\MS21\Data\011518\0115F011.D\	01/15/18 20:04	
Method Blank	KQ1718251-04	J:\MS21\Data\011518\0115F012.D\	01/15/18 20:31	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: Hart Crowser, Incorporated **Service Request:** K1712961
Project: URSC **Calibration Date:** 1/11/2018

Initial Calibration Summary
Organochlorine Pesticides by GC/MS/MS

Calibration ID: KC1800030 **Signal ID:** 1
Instrument ID: K-MSMS-01

#	Lab Code	Sample Name	File Location	Aquisition Date
01	KC1800030-01		J:\MS21\Data\011118\0111F006.D	01/11/2018 13:10
02	KC1800030-02		J:\MS21\Data\011118\0111F007.D	01/11/2018 13:37
03	KC1800030-03		J:\MS21\Data\011118\0111F008.D	01/11/2018 14:04
04	KC1800030-04		J:\MS21\Data\011118\0111F009.D	01/11/2018 14:32
05	KC1800030-05		J:\MS21\Data\011118\0111F010.D	01/11/2018 14:59
06	KC1800030-06		J:\MS21\Data\011118\0111F011.D	01/11/2018 15:26
07	KC1800030-07		J:\MS21\Data\011118\0111F012.D	01/11/2018 15:54
08	KC1800030-08		J:\MS21\Data\011118\0111F013.D	01/11/2018 16:21
09	KC1800030-09		J:\MS21\Data\011118\0111F014.D	01/11/2018 16:49
10	KC1800030-10		J:\MS21\Data\011118\0111F015.D	01/11/2018 17:16

Analyte

2,4'-DDD

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	0.7544	02	1.0	0.697	03	2.0	0.6901	04	5.0	0.7229
05	10	0.6667	06	20	0.7006	07	40	0.7293	08	60	0.7285
09	80	0.7062	10	100	0.7221						

2,4'-DDE

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	0.6635	02	1.0	0.6268	03	2.0	0.6052	04	5.0	0.6352
05	10	0.6026	06	20	0.6222	07	40	0.642	08	60	0.6599
09	80	0.6333	10	100	0.6426						

2,4'-DDT

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	0.7628	02	1.0	0.5904	03	2.0	0.6037	04	5.0	0.6458
05	10	0.6075	06	20	0.6194	07	40	0.6221	08	60	0.6173
09	80	0.616	10	100	0.6365						

4,4'-DDD

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	0.9172	02	1.0	0.7837	03	2.0	0.6965	04	5.0	0.7624
05	10	0.6862	06	20	0.6973	07	40	0.7333	08	60	0.7362
09	80	0.726	10	100	0.7382						

4,4'-DDE

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	0.4896	02	1.0	0.464	03	2.0	0.4147	04	5.0	0.4437
05	10	0.4127	06	20	0.4239	07	40	0.4484	08	60	0.4465
09	80	0.4374	10	100	0.4439						

4,4'-DDT

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	0.7382	02	1.0	0.5423	03	2.0	0.47	04	5.0	0.4819
05	10	0.4532	06	20	0.4708	07	40	0.4962	08	60	0.4876

Client: Hart Crowser, Incorporated **Service Request:** K1712961
Project: URSC **Calibration Date:** 1/11/2018

Initial Calibration Summary
Organochlorine Pesticides by GC/MS/MS

Calibration ID: KC1800030 **Signal ID:** 1
Instrument ID: K-MSMS-01

Analyte

4,4'-DDT

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
09	80	0.4761	10	100	0.5001						

Aldrin

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.266	02	1.0	0.9392	03	2.0	1.011	04	5.0	0.9583
05	10	0.9299	06	20	0.863	07	40	1.011	08	60	0.8972
09	80	0.8853	10	100	0.9189						

alpha-BHC

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.094	02	1.0	0.9104	03	2.0	0.8291	04	5.0	0.8151
05	10	0.7444	06	20	0.7992	07	40	0.8558	08	60	0.8376
09	80	0.8493	10	100	0.912						

alpha-Chlordane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	2.403	02	1.0	2.371	03	2.0	2.255	04	5.0	2.415
05	10	2.087	06	20	2.343	07	40	2.416	08	60	2.417
09	80	2.414	10	100	2.68						

beta-BHC

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.008	02	1.0	1.112	03	2.0	0.8451	04	5.0	0.9823
05	10	0.8673	06	20	0.9804	07	40	0.9946	08	60	0.9102
09	80	0.994	10	100	1.051						

Chlorpyrifos

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.191	02	1.0	1.087	03	2.0	1.034	04	5.0	1.038
05	10	0.9699	06	20	0.9866	07	40	1.065	08	60	1.053
09	80	1.041	10	100	1.122						

cis-Nonachlor

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.493	02	1.0	1.342	03	2.0	1.395	04	5.0	1.344
05	10	1.268	06	20	1.465	07	40	1.548	08	60	1.565
09	80	1.704	10	100	1.982						

delta-BHC

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.068	02	1.0	1.032	03	2.0	0.8342	04	5.0	0.9099
05	10	0.8627	06	20	0.9546	07	40	0.9833	08	60	0.9431
09	80	1.041	10	100	1.106						

Dieldrin

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.577	02	1.0	1.132	03	2.0	0.9834	04	5.0	1.062

Client: Hart Crowser, Incorporated **Service Request:** K1712961
Project: URSC **Calibration Date:** 1/11/2018

Initial Calibration Summary
Organochlorine Pesticides by GC/MS/MS

Calibration ID: KC1800030 **Signal ID:** 1
Instrument ID: K-MSMS-01

Analyte

Dieldrin

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
05	10	0.9566	06	20	1.142	07	40	1.047	08	60	1.091
09	80	1.006	10	100	1.057						

Endosulfan I

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	1.0	0.6424	03	2.0	0.4275	04	5.0	0.577	05	10	0.4798
06	20	0.5326	07	40	0.4651	08	60	0.4692	09	80	0.4403
10	100	0.4478									

Endosulfan II

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	1.0	0.5022	03	2.0	0.5726	04	5.0	0.6274	05	10	0.5272
06	20	0.503	07	40	0.5005	08	60	0.4993	09	80	0.525

Endosulfan Sulfate

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	6.283	02	1.0	5.545	03	2.0	5.036	04	5.0	5.623
05	10	5.466	06	20	5.856	07	40	5.886	08	60	5.939
09	80	6.165	10	100	6.662						

Endrin

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.308	02	1.0	0.9688	03	2.0	0.9136	04	5.0	0.9473
05	10	0.9187	06	20	0.8665	07	40	0.8749	08	60	0.8658
09	80	0.8337	10	100	0.8658						

Endrin Aldehyde

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	1.0	0.5434	03	2.0	0.5059	04	5.0	0.388	05	10	0.526
06	20	0.6293	07	40	0.5349	08	60	0.5218	09	80	0.5761
10	100	0.6202									

Endrin Ketone

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	1.0	1.202	03	2.0	0.8066	04	5.0	0.9275	05	10	0.7796
06	20	0.7989	07	40	0.8184	08	60	0.8085	09	80	0.8085
10	100	0.8451									

gamma-BHC (Lindane)

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	0.9962	02	1.0	0.7752	03	2.0	0.7247	04	5.0	0.701
05	10	0.6206	06	20	0.6752	07	40	0.689	08	60	0.672
09	80	0.679	10	100	0.7179						

gamma-Chlordane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	3.051	02	1.0	2.801	03	2.0	2.229	04	5.0	2.495

Client: Hart Crowser, Incorporated
Project: URSC

Service Request: K1712961
Calibration Date: 1/11/2018

Initial Calibration Summary
Organochlorine Pesticides by GC/MS/MS

Calibration ID: KC1800030
Instrument ID: K-MSMS-01

Signal ID: 1

Analyte

gamma-Chlordane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
05	10	2.359	06	20	2.629	07	40	2.655	08	60	2.632
09	80	2.688	10	100	2.939						

Heptachlor

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.333	02	1.0	1.018	03	2.0	0.8798	04	5.0	0.9662
05	10	0.9558	06	20	0.9627	07	40	0.9444	08	60	0.9392
09	80	0.8984	10	100	0.9477						

Heptachlor Epoxide

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.323	02	1.0	1.197	03	2.0	1.128	04	5.0	1.084
05	10	1.075	06	20	1.079	07	40	1.124	08	60	1.113
09	80	1.04	10	100	1.106						

Hexachlorobenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.237	02	1.0	1.316	03	2.0	1.067	04	5.0	1.092
05	10	1.059	06	20	1.062	07	40	1.058	08	60	1.015
09	80	0.9474	10	100	0.9742						

Isodrin

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	1.0	1.258	03	2.0	0.9888	04	5.0	1.097	05	10	0.9876
06	20	1.003	07	40	1.068	08	60	1.048	09	80	1.005
10	100	1.067									

Methoxychlor

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.095	02	1.0	0.8758	03	2.0	0.8413	04	5.0	0.8656
05	10	0.861	06	20	0.8767	07	40	0.9113	08	60	0.9208
09	80	0.9111	10	100	0.9777						

Mirex

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.271	02	1.0	1.127	03	2.0	1.054	04	5.0	1.041
05	10	0.9652	06	20	1.011	07	40	0.9428	08	60	0.9247
09	80	0.8564	10	100	0.8516						

Octachlorostyrene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	1.0	0.7817	03	2.0	0.7101	04	5.0	0.7516	05	10	0.7182
06	20	0.7267	07	40	0.747	08	60	0.7156	09	80	0.6836
10	100	0.7186									

Client: Hart Crowser, Incorporated
Project: URSC

Service Request: K1712961
Calibration Date: 1/11/2018

Initial Calibration Summary
Organochlorine Pesticides by GC/MS/MS

Calibration ID: KC1800030
Instrument ID: K-MSMS-01

Signal ID: 1

Analyte

Oxychlordane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	1.0	0.9567	03	2.0	1.267	04	5.0	1.257	05	10	1.042
06	20	1.137	07	40	1.103	08	60	1.112	09	80	1.099
10	100	1.144									

trans-Nonachlor

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.635	02	1.0	1.866	03	2.0	1.7	04	5.0	1.701
05	10	1.567	06	20	1.799	07	40	1.777	08	60	1.772
09	80	1.858	10	100	2.087						

S_4,4'-DDT-d4

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	5	3.028	02	5	2.999	03	5	2.907	04	5	2.887
05	5	2.95	06	5	2.975	07	5	3.096	08	5	2.644
09	5	2.667	10	5	2.486						

S_4,4'DDD-d4

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	5	4.716	02	5	4.638	03	5	4.541	04	5	4.518
05	5	4.64	06	5	4.575	07	5	4.505	08	5	3.827
09	5	3.711	10	5	3.507						

S_Aldrin-13C12

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	20	0.2734	02	20	0.2763	03	20	0.2734	04	20	0.2721
05	20	0.2645	06	20	0.2721	07	20	0.2335	08	20	0.2166
09	20	0.1842	10	20	0.1614						

S_Chlorpyrifos-d10

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	20	0.8104	02	20	0.8162	03	20	0.7911	04	20	0.824
05	20	0.8184	06	20	0.8227	07	20	0.8202	08	20	0.7266
09	20	0.7033	10	20	0.6241						

S_Endrin-13C12

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	20	0.1334	02	20	0.1331	03	20	0.1292	04	20	0.1322
05	20	0.1316	06	20	0.1264	07	20	0.1308	08	20	0.113
09	20	0.1076	10	20	0.09654						

S_Endrinket13C12

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	20	0.09657	02	20	0.09094	03	20	0.09989	04	20	0.09287
05	20	0.09249	06	20	0.09517	07	20	0.09997	08	20	0.08433
09	20	0.08567	10	20	0.07947						

Client: Hart Crowser, Incorporated **Service Request:** K1712961
Project: URSC **Calibration Date:** 1/11/2018

Initial Calibration Summary
Organochlorine Pesticides by GC/MS/MS

Calibration ID: KC1800030 **Signal ID:** 1
Instrument ID: K-MSMS-01

Analyte

S_GBHCD6

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	20	0.5321	02	20	0.5256	03	20	0.5417	04	20	0.5215
05	20	0.5384	06	20	0.4824	07	20	0.4663	08	20	0.4213
09	20	0.3577	10	20	0.3073						

S_HXCBZ13C6

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	20	1.232	02	20	1.217	03	20	1.278	04	20	1.248
05	20	1.264	06	20	1.203	07	20	1.195	08	20	1.131
09	20	1.014	10	20	0.9365						

S_Heptachlor-13C10

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	20	0.5505	02	20	0.5374	03	20	0.5581	04	20	0.546
05	20	0.535	06	20	0.5252	07	20	0.5106	08	20	0.4596
09	20	0.4111	10	20	0.3592						

S_Heptachlrepox13C10

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	20	0.3063	02	20	0.3052	03	20	0.3114	04	20	0.3144
05	20	0.3078	06	20	0.3032	07	20	0.2832	08	20	0.2501
09	20	0.2309	10	20	0.1954						

S_Isodrin-13C12

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	20	0.2726	02	20	0.2578	03	20	0.2626	04	20	0.2564
05	20	0.2552	06	20	0.2427	07	20	0.2169	08	20	0.1967
09	20	0.1625	10	20	0.1364						

S_Mirex-13C10

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	5	2.275	02	5	2.242	03	5	2.252	04	5	2.343
05	5	2.42	06	5	2.383	07	5	2.619	08	5	2.302
09	5	2.437	10	5	2.404						

S_Mxchlord-d6

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	20	1.295	02	20	1.264	03	20	1.216	04	20	1.236
05	20	1.253	06	20	1.232	07	20	1.229	08	20	1.063
09	20	1.083	10	20	0.9857						

S_Ocstyrene13C8

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	20	0.7863	02	20	0.7646	03	20	0.7839	04	20	0.7941
05	20	0.8159	06	20	0.7927	07	20	0.7887	08	20	0.7163
09	20	0.6841	10	20	0.6055						

Client: Hart Crowser, Incorporated
Project: URSC

Service Request: K1712961
Calibration Date: 1/11/2018

Initial Calibration Summary
Organochlorine Pesticides by GC/MS/MS

Calibration ID: KC1800030
Instrument ID: K-MSMS-01

Signal ID: 1

Analyte

S_Oxychlordane-13C10

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	20	0.2216	02	20	0.2126	03	20	0.2118	04	20	0.2145
05	20	0.2201	06	20	0.2024	07	20	0.1934	08	20	0.1733
09	20	0.1515	10	20	0.1268						

Client: Hart Crowser, Incorporated
Project: URSC
Service Request: K1712961
Calibration Date: 1/11/2018

Initial Calibration Summary
Organochlorine Pesticides by GC/MS/MS

Calibration ID: KC1800030
Instrument ID: K-MSMS-01
Signal ID: 1

		Calibration Evaluation				Calibration Evaluation	
Analyte Name	Compound Type	Fit Type	Eval	Eval Result	Control Criteria	Average RRF	Minimum RRF
2,4'-DDD	TRG	Average RF	% RSD	3.5	≤20	0.7118	0.01
2,4'-DDE	TRG	Average RF	% RSD	3.2	≤20	0.6333	0.01
2,4'-DDT	TRG	Average RF	% RSD	7.7	≤20	0.6321	0.01
4,4'-DDD	TRG	Average RF	% RSD	8.9	≤20	0.7477	0.01
4,4'-DDE	TRG	Average RF	% RSD	5.2	≤20	0.4425	0.01
4,4'-DDT	TRG	Average RF	% RSD	16.2	≤20	0.5116	0.01
Aldrin	TRG	Average RF	% RSD	11.9	≤20	0.9679	0.01
alpha-BHC	TRG	Average RF	% RSD	10.9	≤20	0.8647	0.01
alpha-Chlordane	TRG	Average RF	% RSD	6.2	≤20	2.38	0.01
beta-BHC	TRG	Average RF	% RSD	8.3	≤20	0.9745	0.01
Chlorpyrifos	TRG	Average RF	% RSD	6.0	≤20	1.059	0.01
cis-Nonachlor	TRG	Average RF	% RSD	13.9	≤20	1.511	0.01
delta-BHC	TRG	Average RF	% RSD	9.2	≤20	0.9735	0.01
Dieldrin	TRG	Average RF	% RSD	15.9	≤20	1.105	0.01
Endosulfan I	TRG	Average RF	% RSD	14.4	≤20	0.498	0.01
Endosulfan II	TRG	Quadratic	COD	0.9988	≥	0.5322	0.01
Endosulfan Sulfate	TRG	Average RF	% RSD	7.9	≤20	5.846	0.01
Endrin	TRG	Average RF	% RSD	14.6	≤20	0.9363	0.01
Endrin Aldehyde	TRG	Average RF	% RSD	13.2	≤20	0.5384	0.01
Endrin Ketone	TRG	Average RF	% RSD	15.4	≤20	0.8661	0.01
gamma-BHC (Lindane)	TRG	Average RF	% RSD	14.3	≤20	0.7251	0.01
gamma-Chlordane	TRG	Average RF	% RSD	9.4	≤20	2.648	0.01
Heptachlor	TRG	Average RF	% RSD	13.0	≤20	0.9845	0.01
Heptachlor Epoxide	TRG	Average RF	% RSD	7.2	≤20	1.127	0.01
Hexachlorobenzene	TRG	Average RF	% RSD	10.4	≤20	1.083	0.01
Isodrin	TRG	Average RF	% RSD	8.0	≤20	1.058	0.01
Methoxychlor	TRG	Average RF	% RSD	8.2	≤20	0.9137	0.01
Mirex	TRG	Average RF	% RSD	12.7	≤20	1.004	0.01
Octachlorostyrene	TRG	Average RF	% RSD	3.9	≤20	0.7281	0.01
Oxychlordane	TRG	Average RF	% RSD	8.6	≤20	1.124	0.01
trans-Nonachlor	TRG	Average RF	% RSD	8.1	≤20	1.776	0.01
S_4,4'-DDT-d4	SURR	Average RF	% RSD	6.9	≤20	2.864	0.01
S_4,4'DDD-d4	SURR	Average RF	% RSD	10.4	≤20	4.318	0.01
S_Aldrin-13C12	SURR	Average RF	% RSD	17.4	≤20	0.2428	0.01

Client: Hart Crowser, Incorporated
Project: URSC

Service Request: K1712961
Calibration Date: 1/11/2018

Initial Calibration Summary
Organochlorine Pesticides by GC/MS/MS

Calibration ID: KC1800030
Instrument ID: K-MSMS-01

Signal ID: 1

		Calibration Evaluation				Calibration Evaluation	
Analyte Name	Compound Type	Fit Type	Eval	Eval Result	Control Criteria	Average RRF	Minimum RRF
S_Chlorpyrifos-d10	SURR	Average RF	% RSD	8.8	≤20	0.7757	0.01
S_Endrin-13C12	SURR	Average RF	% RSD	10.5	≤20	0.1234	0.01
S_Endrinket13C12	SURR	Average RF	% RSD	7.4	≤20	0.09174	0.01
S_GBHCD6	SURR	Average RF	% RSD	17.5	≤20	0.4694	0.01
S_HXCBZ13C6	SURR	Average RF	% RSD	9.6	≤20	1.172	0.01
S_Heptachlor-13C10	SURR	Average RF	% RSD	13.5	≤20	0.4993	0.01
S_Heptachlrepox13C10	SURR	Average RF	% RSD	14.7	≤20	0.2808	0.01
S_Isodrin-13C12	SURR	Average RF	% RSD	20.6	≤20	0.226	0.01
S_Mirex-13C10	SURR	Average RF	% RSD	4.8	≤20	2.368	0.01
S_Mxchlord-d6	SURR	Average RF	% RSD	8.7	≤20	1.186	0.01
S_Ocstyrene13C8	SURR	Average RF	% RSD	8.7	≤20	0.7532	0.01
S_Oxychlordane-13C10	SURR	Average RF	% RSD	16.7	≤20	0.1928	0.01

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: Hart Crowser, Incorporated **Service Request:** K1712961
Project: URSC **Calibration Date:** 1/11/2018

Initial Calibration Verification Summary
Organochlorine Pesticides by GC/MS/MS

Calibration ID: KC1800030 **Signal ID:** 1
Instrument ID: K-MSMS-01

#	Lab Code	Sample Name	File Location	Aquisition Date
11	KC1800030-11		J:\MS21\Data\011118\0111F016.D	01/11/2018 17:44

Analyte Name	Expected	Result	Average RF	SSV RF	% D	Criteria	Curve Fit
2,4'-DDD	20.0	18.2	7.118E-1	6.466E-1	-9.160	±25	Average RF
2,4'-DDE	20.0	18.8	6.333E-1	5.963E-1	-5.844	±25	Average RF
2,4'-DDT	20.0	16.7	6.321E-1	5.292E-1	-16.290	±25	Average RF
4,4'-DDD	20.0	18.5	7.477E-1	6.935E-1	-7.251	±25	Average RF
4,4'-DDE	20.0	19.8	4.425E-1	4.375E-1	-1.121	±25	Average RF
4,4'-DDT	20.0	17.3	5.116E-1	4.417E-1	-13.662	±25	Average RF
Aldrin	20.0	17.6	9.679E-1	8.526E-1	-11.916	±25	Average RF
alpha-BHC	20.0	17.3	8.647E-1	7.498E-1	-13.279	±25	Average RF
alpha-Chlordane	20.0	18.9	2.38E0	2.252E0	-5.370	±25	Average RF
beta-BHC	20.0	20.0	9.745E-1	9.738E-1	-0.069	±25	Average RF
Chlorpyrifos	20.0	16.4	1.059E0	8.664E-1	-18.187	±25	Average RF
cis-Nonachlor	20.0	17.7	1.511E0	1.336E0	-11.540	±25	Average RF
delta-BHC	20.0	18.7	9.735E-1	9.096E-1	-6.567	±25	Average RF
Dieldrin	20.0	17.4	1.105E0	9.619E-1	-12.978	±25	Average RF
Endosulfan I	20.0	18.6	4.98E-1	4.623E-1	-7.168	±25	Average RF
Endosulfan II	20.0	16.3	5.322E-1	4.168E-1	-18.469	±25	Quadratic
Endosulfan Sulfate	20.0	18.3	5.846E0	5.342E0	-8.624	±25	Average RF
Endrin	20.0	17.0	9.363E-1	7.97E-1	-14.875	±25	Average RF
Endrin Aldehyde	20.0	20.1	5.384E-1	5.405E-1	0.388	±25	Average RF
Endrin Ketone	20.0	19.0	8.661E-1	8.226E-1	-5.025	±25	Average RF
gamma-BHC (Lindane)	20.0	17.8	7.251E-1	6.451E-1	-11.028	±25	Average RF
gamma-Chlordane	20.0	19.2	2.648E0	2.542E0	-3.991	±25	Average RF
Heptachlor	20.0	19.3	9.845E-1	9.488E-1	-3.622	±25	Average RF
Heptachlor Epoxide	20.0	17.9	1.127E0	1.01E0	-10.353	±25	Average RF
Hexachlorobenzene	20.0	16.9	1.083E0	9.167E-1	-15.342	±25	Average RF
Isodrin	20.0	19.1	1.058E0	1.012E0	-4.315	±25	Average RF
Methoxychlor	20.0	18.4	9.137E-1	8.411E-1	-7.944	±25	Average RF
Mirex	20.0	17.8	1.004E0	8.946E-1	-10.934	±25	Average RF
Octachlorostyrene	20.0	16.1	7.281E-1	5.853E-1	-19.609	±25	Average RF
Oxychlordane	20.0	17.5	1.124E0	9.811E-1	-12.719	±25	Average RF
trans-Nonachlor	20.0	17.6	1.776E0	1.567E0	-11.776	±25	Average RF
S_4,4'-DDT-d4	5.00	5.02	2.864E0	2.877E0	0.469	±30	Average RF
S_4,4'DDD-d4	5.00	4.88	4.318E0	4.21E0	-2.497	±30	Average RF
S_Aldrin-13C12	20.0	21.2	2.428E-1	2.572E-1	5.94	±25	Average RF
S_Chlorpyrifos-d10	20.0	21.7	7.757E-1	8.428E-1	8.65	±25	Average RF

ALS Group USA, Corp.
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QA/QC Report

Client: Hart Crowser, Incorporated **Service Request:** K1712961
Project: URSC **Calibration Date:** 1/11/2018

Initial Calibration Verification Summary
Organochlorine Pesticides by GC/MS/MS

Calibration ID: KC1800030 **Signal ID:** 1
Instrument ID: K-MSMS-01

#	Lab Code	Sample Name	File Location	Aquisition Date
11	KC1800030-11		J:\MS21\Data\011118\0111F016.D	01/11/2018 17:44

Analyte Name	Expected	Result	Average RF	SSV RF	% D	Criteria	Curve Fit
S_Endrin-13C12	20.0	20.9	1.234E-1	1.287E-1	4.29	±30	Average RF
S_Endrinket13C12	20.0	19.5	9.174E-2	8.967E-2	-2.250	±25	Average RF
S_GBHCD6	20.0	19.1	4.694E-1	4.478E-1	-4.600	±30	Average RF
S_HXCBZ13C6	20.0	20.2	1.172E0	1.182E0	0.870	±30	Average RF
S_Heptachlor-13C10	20.0	20.3	4.993E-1	5.068E-1	1.51	±25	Average RF
S_Heptachlrepox13C10	20.0	21.3	2.808E-1	2.996E-1	6.71	±30	Average RF
S_Isodrin-13C12	20.0	20.1	2.26E-1	2.268E-1	0.368	±25	Average RF
S_Mirex-13C10	5.00	5.25	2.368E0	2.486E0	5.01	±30	Average RF
S_Mxchlord-d6	20.0	20.1	1.186E0	1.19E0	0.332	±25	Average RF
S_Ocstyrene13C8	20.0	21.5	7.532E-1	8.101E-1	7.55	±25	Average RF
S_Oxychlordane-13C10	20.0	20.4	1.928E-1	1.962E-1	1.76	±30	Average RF

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056

Service Request: K1712961
Date Analyzed: 01/15/18 16:52

Continuing Calibration Verification (CCV) Summary
Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP
File ID: J:\MS21\Data\011518\0115F004.D\

Calibration Date: 1/11/2018
Calibration ID: KC1800030
Analysis Lot: 577627
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
2,4'-DDD	20.0	20.0	0.7118	0.7106	-0.2	NA	±25	Average RF
2,4'-DDE	20.0	19.4	0.6333	0.6153	-2.8	NA	±25	Average RF
2,4'-DDT	20.0	18.6	0.6321	0.5865	-7.2	NA	±25	Average RF
4,4'-DDD	20.0	19.7	0.7477	0.7376	-1.4	NA	±25	Average RF
4,4'-DDE	20.0	18.9	0.4425	0.418	-5.5	NA	±25	Average RF
4,4'-DDT	20.0	19.1	0.5116	0.4875	-4.7	NA	±25	Average RF
Aldrin	20.0	20.8	0.9679	1.0084	4.2	NA	±25	Average RF
alpha-BHC	20.0	19.9	0.8647	0.8611	-0.4	NA	±25	Average RF
alpha-Chlordane	20.0	16.8	2.3802	2.0003	-16.0	NA	±25	Average RF
beta-BHC	20.0	19.0	0.9745	0.9277	-4.8	NA	±25	Average RF
Chlorpyrifos	20.0	19.2	1.059	1.0144	-4.2	NA	±25	Average RF
cis-Nonachlor	20.0	19.5	1.5107	1.4763	-2.3	NA	±25	Average RF
delta-BHC	20.0	19.3	0.9735	0.9372	-3.7	NA	±25	Average RF
Dieldrin	20.0	16.4	1.1053	0.9048	-18.1	NA	±25	Average RF
Endosulfan I	20.0	15.9	0.498	0.3951	-20.7	NA	±25	Average RF
Endosulfan II	20.0	16.5	0.5322	0.4213	NA	-17.6	±25	Quadratic
Endosulfan Sulfate	20.0	18.3	5.8462	5.3614	-8.3	NA	±25	Average RF
Endrin	20.0	17.0	0.9363	0.7975	-14.8	NA	±25	Average RF
Endrin Aldehyde	20.0	15.4	0.5384	0.4139	-23.1	NA	±25	Average RF
Endrin Ketone	20.0	21.2	0.8661	0.9165	5.8	NA	±25	Average RF
gamma-BHC (Lindane)	20.0	19.1	0.7251	0.6933	-4.4	NA	±25	Average RF
gamma-Chlordane	20.0	16.6	2.6479	2.1942	-17.1	NA	±25	Average RF
Heptachlor	20.0	19.1	0.9845	0.9408	-4.4	NA	±25	Average RF
Heptachlor Epoxide	20.0	21.5	1.1269	1.2102	7.4	NA	±25	Average RF
Hexachlorobenzene	20.0	20.7	1.0828	1.1225	3.7	NA	±25	Average RF
Isodrin	20.0	20.6	1.0581	1.0887	2.9	NA	±25	Average RF
Methoxychlor	20.0	18.9	0.9137	0.8639	-5.4	NA	±25	Average RF
Mirex	20.0	20.0	1.0045	1.0068	0.2	NA	±25	Average RF
Octachlorostyrene	20.0	21.0	0.7281	0.764	4.9	NA	±25	Average RF
Oxychlordane	20.0	17.7	1.1241	0.9967	-11.3	NA	±25	Average RF
trans-Nonachlor	20.0	18.7	1.7762	1.6634	-6.4	NA	±25	Average RF
S_4,4'-DDT-d4	5.00	7.03	2.864	4.0293	40.7*	NA	±30	Average RF
S_4,4'DDD-d4	5.00	5.59	4.3176	4.8251	11.8	NA	±30	Average RF
S_Aldrin-13C12	20.0	21.2	0.2428	0.2569	5.8	NA	±30	Average RF
S_Chlorpyrifos-d10	20.0	24.1	0.7757	0.9359	20.6	NA	±30	Average RF
S_Endrin-13C12	20.0	24.8	0.1234	0.1527	23.8	NA	±30	Average RF
S_Endrinket13C12	20.0	21.1	0.0917	0.0967	5.4	NA	±30	Average RF
S_GBHCD6	20.0	22.9	0.4694	0.5382	14.7	NA	±30	Average RF
S_HXCBZ13C6	20.0	20.0	1.1718	1.1727	0.1	NA	±30	Average RF
S_Heptachlor-13C10	20.0	28.1	0.4993	0.7023	40.7*	NA	±30	Average RF
S_Heptachlrepox13C10	20.0	19.9	0.2808	0.2795	-0.5	NA	±30	Average RF
S_Isodrin-13C12	20.0	21.7	0.226	0.2449	8.4	NA	±30	Average RF

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Analyzed:**	01/15/18 16:52

Continuing Calibration Verification (CCV) Summary
Organochlorine Pesticides by GC/MS/MS

Analysis Method:	ALS SOP	**Calibration Date:**	1/11/2018
File ID:	J:\MS21\Data\011518\0115F004.D\	**Calibration ID:**	KC1800030
		Analysis Lot:	577627
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
S_Mirex-13C10	5.00	5.17	2.3678	2.4481	3.4	NA	±30	Average RF
S_Mxchlord-d6	20.0	30.2	1.1857	1.7922	51.2*	NA	±30	Average RF
S_Ocstyrene13C8	20.0	20.0	0.7532	0.7533	0.0	NA	±30	Average RF
S_Oxychlordane-13C10	20.0	23.4	0.1928	0.2253	16.9	NA	±30	Average RF

ALS Group USA, Corp.
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QA/QC Report

Client: Hart Crowser, Incorporated **Service Request:**K1712961
Project: URSC/150-001-056

Analysis Run Log
Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP **Analysis Lot:**577627
Instrument ID:K-MSMS-01

Raw Data File	Sample Name	Lab Code	Date Analyzed	Time Analyzed	Q
J:\MS21\Data\011518\0115F003.D\	Continuing Calibration Verification	KQ1800767-01	1/15/2018	16:25:49	
J:\MS21\Data\011518\0115F004.D\	Continuing Calibration Verification	KQ1800767-01	1/15/2018	16:52:45	
J:\MS21\Data\011518\0115F006.D\	URSC-RM20.0W-COMP	K1712961-006	1/15/2018	17:47:32	
J:\MS21\Data\011518\0115F007.D\	URSC-RM18.45E-COMP	K1712961-015	1/15/2018	18:14:51	
J:\MS21\Data\011518\0115F008.D\	Batch QC	K1713130-006	1/15/2018	18:42:09	
J:\MS21\Data\011518\0115F009.D\	Batch QC MS	KQ1718251-01	1/15/2018	19:09:27	
J:\MS21\Data\011518\0115F010.D\	Batch QC DMS	KQ1718251-02	1/15/2018	19:36:45	
J:\MS21\Data\011518\0115F011.D\	Lab Control Sample	KQ1718251-03	1/15/2018	20:04:04	
J:\MS21\Data\011518\0115F012.D\	Method Blank	KQ1718251-04	1/15/2018	20:31:31	
J:\MS21\Data\011518\0115F013.D\	ZZZZZZZ	ZZZZZZZ	1/15/2018	20:58:43	
J:\MS21\Data\011518\0115F014.D\	ZZZZZZZ	ZZZZZZZ	1/15/2018	21:26:00	
J:\MS21\Data\011518\0115F015.D\	ZZZZZZZ	ZZZZZZZ	1/15/2018	21:53:23	
J:\MS21\Data\011518\0115F016.D\	ZZZZZZZ	ZZZZZZZ	1/15/2018	22:21:47	
J:\MS21\Data\011518\0115F017.D\	ZZZZZZZ	ZZZZZZZ	1/15/2018	22:49:05	
J:\MS21\Data\011518\0115F018.D\	ZZZZZZZ	ZZZZZZZ	1/15/2018	23:16:31	
J:\MS21\Data\011518\0115F019.D\	ZZZZZZZ	ZZZZZZZ	1/15/2018	23:43:54	
J:\MS21\Data\011518\0115F020.D\	ZZZZZZZ	ZZZZZZZ	1/16/2018	00:11:12	
J:\MS21\Data\011518\0115F021.D\	ZZZZZZZ	ZZZZZZZ	1/16/2018	00:38:39	
J:\MS21\Data\011518\0115F022.D\	ZZZZZZZ	ZZZZZZZ	1/16/2018	01:05:57	

ALS Group USA, Corp.
dba ALS Environmental

Prep Summary Report

Client: Hart Crowser, Incorporated **Service Request:**K1712961
Project: URSC/150-001-056
Sample Matrix: Sediment

Organochlorine Pesticides by GC/MS/MS

Prep Method: EPA 3541 **Extraction Lot:**304811
Analytical Method: ALS SOP

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Amount	Percent Solids
URSC-RM20.0W-COMP	K1712961-006	11/30/17	12/1/17	20.444 g	1 mL	70.9
URSC-RM18.45E-COMP	K1712961-015	11/30/17	12/1/17	20.192 g	1 mL	61.5
Batch QC	K1713130-006	NA	NA	20.260 g	1 mL	68.5
Batch QC	KQ1718251-01MS	NA	NA	20.028 g	1 mL	68.5
Batch QC	KQ1718251-02DMS	NA	NA	20.374 g	1 mL	68.5
Lab Control Sample	KQ1718251-03LCS	NA	NA	10 g	1 mL	
Method Blank	KQ1718251-04MB	NA	NA	10 g	1 mL	

Diesel and Residual Range Organics - Silica Gel Treated

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Client: Hart Crowser, Incorporated **Service Request:** K1712961
Project: URSC/150-001-056

Cover Page - Organic Analysis Data Package
Diesel and Residual Range Organics - Silica Gel Treated

Sample Name	Lab Code	Date Collected	Date Received
URSC-RM20.0W-COMP	K1712961-006	11/30/2017	12/01/2017
URSC-RM18.45E-COMP	K1712961-015	11/30/2017	12/01/2017

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	11/30/2017
Sample Matrix:	Sediment	**Date Received:**	12/01/2017

Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	URSC-RM20.0W-COMP	**Units:**	mg/Kg
Lab Code:	K1712961-006	**Basis:**	Dry
Extraction Method:	EPA 3550B	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**13**	J	35	2.6	1	12/13/17	12/13/17	KWG1710978	
Residual Range Organics (RRO)	**60**	J	140	5.5	1	12/13/17	12/13/17	KWG1710978	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	103	50-150	12/13/17	Acceptable
n-Triacontane	91	50-150	12/13/17	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	11/30/2017
Sample Matrix:	Sediment	**Date Received:**	12/01/2017

Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	URSC-RM18.45E-COMP	**Units:**	mg/Kg
Lab Code:	K1712961-015	**Basis:**	Dry
Extraction Method:	EPA 3550B	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**15**	J	41	2.9	1	12/13/17	12/13/17	KWG1710978	
Residual Range Organics (RRO)	**80**	J	170	6.3	1	12/13/17	12/13/17	KWG1710978	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	85	50-150	12/13/17	Acceptable
n-Triacontane	76	50-150	12/13/17	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA

Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	Method Blank	**Units:**	mg/Kg
Lab Code:	KWG1710978-3	**Basis:**	Dry
Extraction Method:	EPA 3550B	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**3.6**	J	25	1.8	1	12/13/17	12/13/17	KWG1710978	
Residual Range Organics (RRO)	**12**	J	99	3.9	1	12/13/17	12/13/17	KWG1710978	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	106	50-150	12/13/17	Acceptable
n-Triacontane	96	50-150	12/13/17	Acceptable

Comments:

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056
Sample Matrix: Sediment
Service Request: K1712961

Surrogate Recovery Summary
Diesel and Residual Range Organics - Silica Gel Treated

Extraction Method: EPA 3550B
Analysis Method: NWTPH-Dx
Units: Percent
Level: Low

Sample Name	Lab Code	Sur1	Sur2
URSC-RM20.0W-COMP	K1712961-006	103	91
URSC-RM18.45E-COMP	K1712961-015	85	76
Batch QC	K1713130-006	105	95
Batch QCDUP	KWG1710978-1	103	94
Method Blank	KWG1710978-3	106	96
Lab Control Sample	KWG1710978-2	108	97

Surrogate Recovery Control Limits (%)

Sur1	=	o-Terphenyl	50-150
Sur2	=	n-Triacontane	50-150

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Extracted:**	12/13/2017
Sample Matrix:	Sediment	**Date Analyzed:**	12/13/2017

Duplicate Sample Summary
Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	Batch QC	**Units:**	mg/Kg
Lab Code:	K1713130-006	**Basis:**	Dry
Extraction Method:	EPA 3550B	**Level:**	Low
Analysis Method:	NWTPH-Dx	**Extraction Lot:**	KWG1710978

				Batch QCDUP KWG1710978-1			
				Duplicate Sample			
Analyte Name	**MRL**	**MDL**	**Sample Result**	**Result**	**Average**	**Relative Percent Difference**	**RPD Limit**
Diesel Range Organics (DRO)	37	2.6	7.7	7.8	7.8	1 #	40
Residual Range Organics (RRO)	150	5.7	49	57	53	15 #	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Extracted:**	12/13/2017
Sample Matrix:	Sediment	**Date Analyzed:**	12/13/2017

Lab Control Spike Summary
Diesel and Residual Range Organics - Silica Gel Treated

Extraction Method:	EPA 3550B	**Units:**	mg/Kg
Analysis Method:	NWTPH-Dx	**Basis:**	Dry
		Level:	Low
		Extraction Lot:	KWG1710978

	Lab Control Sample KWG1710978-2 Lab Control Spike			
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
Diesel Range Organics (DRO)	269	267	101	42-134
Residual Range Organics (RRO)	174	133	131	48-141

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Extracted:**	12/13/2017
Sample Matrix:	Sediment	**Date Analyzed:**	12/13/2017
		Time Analyzed:	13:27

Method Blank Summary
Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	Method Blank	**Instrument ID:**	GC21
Lab Code:	KWG1710978-3	**File ID:**	J:\GC21\DATA\121317F\1213210.D
Extraction Method:	EPA 3550B	**Level:**	Low
Analysis Method:	NWTPH-Dx	**Extraction Lot:**	KWG1710978

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1710978-2	J:\GC21\DATA\121317F\1213209.D	12/13/17	13:05
Batch QC	K1713130-006	J:\GC21\DATA\121317F\1213211.D	12/13/17	13:48
Batch QCDUP	KWG1710978-1	J:\GC21\DATA\121317F\1213212.D	12/13/17	14:10
URSC-RM20.0W-COMP	K1712961-006	J:\GC21\DATA\121317F\1213213.D	12/13/17	14:32
URSC-RM18.45E-COMP	K1712961-015	J:\GC21\DATA\121317F\1213214.D	12/13/17	14:53

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Extracted:**	12/13/2017
Sample Matrix:	Sediment	**Date Analyzed:**	12/13/2017
		Time Analyzed:	13:05

Lab Control Sample Summary
Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	Lab Control Sample	**Instrument ID:**	GC21
Lab Code:	KWG1710978-2	**File ID:**	J:\GC21\DATA\121317F\1213209.D
Extraction Method:	EPA 3550B	**Level:**	Low
Analysis Method:	NWTPH-Dx	**Extraction Lot:**	KWG1710978

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1710978-3	J:\GC21\DATA\121317F\1213210.D	12/13/17	13:27
Batch QC	K1713130-006	J:\GC21\DATA\121317F\1213211.D	12/13/17	13:48
Batch QCDUP	KWG1710978-1	J:\GC21\DATA\121317F\1213212.D	12/13/17	14:10
URSC-RM20.0W-COMP	K1712961-006	J:\GC21\DATA\121317F\1213213.D	12/13/17	14:32
URSC-RM18.45E-COMP	K1712961-015	J:\GC21\DATA\121317F\1213214.D	12/13/17	14:53

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: Hart Crowser, Incorporated **Service Request:** K1712961
Project: URSC/150-001-056 **Calibration Date:** 08/22/2017

Initial Calibration Summary
Diesel and Residual Range Organics - Silica Gel Treated

Calibration ID: CAL15584 **Column:** ZB-1
Instrument ID: GC21

Level ID	File ID	Level ID	File ID
A	J:\GC21\DATA\082217F\0822F052.D	J	J:\GC21\DATA\082317F\0823004.D
B	J:\GC21\DATA\082217F\0822F056.D	K	J:\GC21\DATA\101817F\1018206.D
C	J:\GC21\DATA\082217F\0822F058.D	L	J:\GC21\DATA\101817F\1018207.D
D	J:\GC21\DATA\082217F\0822F060.D	M	J:\GC21\DATA\101817F\1018209.D
E	J:\GC21\DATA\082217F\0822F068.D	N	J:\GC21\DATA\101817F\1018210.D
F	J:\GC21\DATA\082217F\0822F070.D	O	J:\GC21\DATA\101817F\1018211.D
G	J:\GC21\DATA\082217F\0822F072.D	P	J:\GC21\DATA\101817F\1018212.D
H	J:\GC21\DATA\082217F\0822F074.D	Q	J:\GC21\DATA\101817F\1018213.D
I	J:\GC21\DATA\082217F\0822F076.D		

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Diesel Range Organics (DRO)															
	K	20	1520	L	50	1250	M	500	1460	N	2000	1170	O	5000	1370
	P	20000	1340	Q	50000	1270									
Residual Range Organics (RRO)													E	50	802
	F	200	672	G	500	647	H	2000	635	I	5000	628			
o-Terphenyl															
	K	1.0	1590	L	2.5	1600	M	25	2040	N	100	1590	O	250	1940
n-Triacontane															
	K	1.0	1220	L	2.5	1360	M	25	1810	N	100	1430	O	250	1730

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056

Service Request: K1712961
Calibration Date: 08/22/2017

Initial Calibration Summary
Diesel and Residual Range Organics - Silica Gel Treated

Calibration ID: CAL15584
Instrument ID: GC21

Column: ZB-1

Analyte Name	Compound Type	Calibration Evaluation				
		Fit Type	Eval.	Eval. Result	Q	Control Criteria
Diesel Range Organics (DRO)	MS	AverageRF	% RSD	9.1		≤ 20
Residual Range Organics (RRO)	MS	AverageRF	% RSD	10.6		≤ 20
o-Terphenyl	SURR	AverageRF	% RSD	12.7		≤ 20
n-Triacontane	SURR	AverageRF	% RSD	16.5		≤ 20

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Results

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056

Service Request: K1712961
Calibration Date: 08/22/2017
Date Analyzed: 08/24/2017 - 10/18/2017

Second Source Calibration Verification
Diesel and Residual Range Organics - Silica Gel Treated

Calibration Type: External Standard
Analysis Method: NWTPH-Dx

Calibration ID: CAL15584
Units: ppm

File ID: J:\GC21\DATA\082317F\0823005.D
J:\GC21\DATA\082417F\0824004.D
J:\GC21\DATA\101817F\1018215.D

Column ID: ZB-1

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	1100	1340	1500	12	NA	± 15 %	AverageRF
Residual Range Organics (RRO)	1000	860	677	580	-14	NA	± 15 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056

Service Request: K1712961
Date Analyzed: 12/13/2017

Continuing Calibration Verification Summary
Diesel and Residual Range Organics - Silica Gel Treated

Calibration Type: External Standard
Analysis Method: NWTPH-Dx

Calibration Date: 08/22/2017
Calibration ID: CAL15584
Analysis Lot: KWG1711038
Units: ppm

File ID: J:\GC21\DATA\121317F\1213202.D
J:\GC21\DATA\121317F\1213203.D

Column ID: ZB-1

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	1000	1340	1390	4	NA	± 15	AverageRF
Residual Range Organics (RRO)	1000	980	677	665	-2	NA	± 15	AverageRF
o-Terphenyl	50	51	1750	1790	2	NA	± 15	AverageRF
n-Triacontane	50	44	1510	1340	-11	NA	± 15	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056

Service Request: K1712961
Date Analyzed: 12/13/2017

Continuing Calibration Verification Summary
Diesel and Residual Range Organics - Silica Gel Treated

Calibration Type: External Standard
Analysis Method: NWTPH-Dx

Calibration Date: 08/22/2017
Calibration ID: CAL15584
Analysis Lot: KWG1711038
Units: ppm

File ID: J:\GC21\DATA\121317F\1213215.D
J:\GC21\DATA\121317F\1213216.D

Column ID: ZB-1

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	1100	1340	1440	8	NA	± 15	AverageRF
Residual Range Organics (RRO)	1000	1000	677	696	3	NA	± 15	AverageRF
o-Terphenyl	50	53	1750	1860	6	NA	± 15	AverageRF
n-Triacontane	50	47	1510	1430	-5	NA	± 15	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: Hart Crowser, Incorporated **Service Request:** K1712961
Project: URSC/150-001-056

Analysis Run Log
Diesel and Residual Range Organics - Silica Gel Treated

Analysis Method: NWTPH-Dx **Analysis Lot:** KWG1711038
Instrument ID: GC21
Column: ZB-1

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
\1213202.D	Continuing Calibration Verification	KWG1711038-1	12/13/2017	10:34		12/13/2017	10:50
\1213203.D	Continuing Calibration Verification	KWG1711038-1	12/13/2017	10:55		12/13/2017	11:11
\1213204.D	Instrument Blank	KWG1711038-4	12/13/2017	11:17		12/13/2017	11:33
\1213207.D	ZZZZZZ	ZZZZZZ	12/13/2017	12:22		12/13/2017	12:38
\1213208.D	ZZZZZZ	ZZZZZZ	12/13/2017	12:43		12/13/2017	12:59
\1213209.D	Lab Control Sample	KWG1710978-2	12/13/2017	13:05		12/13/2017	13:21
\1213210.D	Method Blank	KWG1710978-3	12/13/2017	13:27		12/13/2017	13:43
\1213211.D	Batch QC	K1713130-006	12/13/2017	13:48		12/13/2017	14:04
\1213212.D	Batch QCDUP	KWG1710978-1	12/13/2017	14:10		12/13/2017	14:26
\1213213.D	URSC-RM20.0W-COMP	K1712961-006	12/13/2017	14:32		12/13/2017	14:48
\1213214.D	URSC-RM18.45E-COMP	K1712961-015	12/13/2017	14:53		12/13/2017	15:09
\1213215.D	Continuing Calibration Verification	KWG1711038-2	12/13/2017	15:15		12/13/2017	15:31
\1213216.D	Continuing Calibration Verification	KWG1711038-2	12/13/2017	15:37		12/13/2017	15:53
\1213218.D	Instrument Blank	KWG1711038-5	12/13/2017	16:20		12/13/2017	16:36
\1213219.D	ZZZZZZ	ZZZZZZ	12/13/2017	16:41		12/13/2017	16:57
\1213220.D	ZZZZZZ	ZZZZZZ	12/13/2017	17:03		12/13/2017	17:19
\1213221.D	ZZZZZZ	ZZZZZZ	12/13/2017	17:25		12/13/2017	17:41
\1213222.D	ZZZZZZ	ZZZZZZ	12/13/2017	17:46		12/13/2017	18:02
\1213223.D	ZZZZZZ	ZZZZZZ	12/13/2017	18:08		12/13/2017	18:24
\1213224.D	ZZZZZZ	ZZZZZZ	12/13/2017	18:30		12/13/2017	18:46
\1213225.D	ZZZZZZ	ZZZZZZ	12/13/2017	18:51		12/13/2017	19:07
\1213226.D	ZZZZZZ	ZZZZZZ	12/13/2017	19:13		12/13/2017	19:29
\1213227.D	Continuing Calibration Verification	KWG1711038-3	12/13/2017	19:35		12/13/2017	19:51
\1213229.D	Instrument Blank	KWG1711038-6	12/13/2017	20:18		12/13/2017	20:34

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Extracted:**	12/13/2017
Sample Matrix:	Sediment		

Extraction Prep Log
Diesel and Residual Range Organics - Silica Gel Treated

Extraction Method:	EPA 3550B	**Extraction Lot:**	KWG1710978
Analysis Method:	NWTPH-Dx	**Level:**	Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
URSC-RM20.0W-COMP	K1712961-006	11/30/17	12/01/17	30.287g	10mL	70.9	
URSC-RM18.45E-COMP	K1712961-015	11/30/17	12/01/17	30.317g	10mL	61.5	
Batch QCDUP	KWG1710978-1	NA	NA	30.404g	10mL	68.5	
Method Blank	KWG1710978-3	NA	NA	30.431g	10mL	NA	
Batch QC	K1713130-006	NA	NA	30.431g	10mL	68.5	
Lab Control Sample	KWG1710978-2	NA	NA	30.000g	10mL	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Polybrominated Diphenyl Ethers

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056
Service Request: K1712961

Cover Page - Organic Analysis Data Package
Polybrominated Diphenyl Ethers by 8270C-SIM

Sample Name	Lab Code	Date Collected	Date Received
URSC-RM20.0W-COMP	K1712961-006	11/30/2017	12/01/2017
URSC-RM18.45E-COMP	K1712961-015	11/30/2017	12/01/2017

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	11/30/2017
Sample Matrix:	Sediment	**Date Received:**	12/01/2017

Polybrominated Diphenyl Ethers by 8270C-SIM

Sample Name:	URSC-RM20.0W-COMP	**Units:**	ug/Kg
Lab Code:	K1712961-006	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
PBDE 17	ND	U	0.14	0.046	2	12/13/17	12/19/17	KWG1710980	
PBDE 28	ND	U	0.14	0.048	2	12/13/17	12/19/17	KWG1710980	
PBDE 71	ND	U	0.14	0.030	2	12/13/17	12/19/17	KWG1710980	
PBDE 47	**0.81**	D	0.14	0.058	2	12/13/17	12/19/17	KWG1710980	
PBDE 66	ND	U	0.14	0.038	2	12/13/17	12/19/17	KWG1710980	
PBDE 100	ND	U	0.14	0.028	2	12/13/17	12/19/17	KWG1710980	
PBDE 99	**0.83**	D	0.14	0.060	2	12/13/17	12/19/17	KWG1710980	
PBDE 85	ND	U	0.16	0.080	2	12/13/17	12/19/17	KWG1710980	
PBDE 154	ND	U	0.14	0.016	2	12/13/17	12/19/17	KWG1710980	
PBDE 153	ND	U	0.14	0.018	2	12/13/17	12/19/17	KWG1710980	
PBDE 138	ND	U	0.14	0.032	2	12/13/17	12/19/17	KWG1710980	
PBDE 128	ND	U	0.14	0.020	2	12/13/17	12/19/17	KWG1710980	
PBDE 183	ND	U	0.14	0.026	2	12/13/17	12/19/17	KWG1710980	
PBDE 190	ND	U	0.14	0.040	2	12/13/17	12/19/17	KWG1710980	
PBDE 203	ND	U	0.14	0.058	2	12/13/17	12/19/17	KWG1710980	
PBDE 206	**2.0**	D	1.4	0.062	2	12/13/17	12/19/17	KWG1710980	
PBDE 209	**68**	D	14	0.52	20	12/13/17	12/19/17	KWG1710980	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
PBDE 47C13	84	70-130	12/19/17	Acceptable
PBDE 99C13	97	70-130	12/19/17	Acceptable

Comments:

Analytical Results

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	11/30/2017
Sample Matrix:	Sediment	**Date Received:**	12/01/2017

Polybrominated Diphenyl Ethers by 8270C-SIM

Sample Name:	URSC-RM18.45E-COMP	**Units:**	ug/Kg
Lab Code:	K1712961-015	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
PBDE 17	ND	U	0.080	0.023	1	12/15/17	12/21/17	KWG1711053	*
PBDE 28	ND	U	0.080	0.024	1	12/15/17	12/21/17	KWG1711053	*
PBDE 71	ND	U	0.080	0.015	1	12/15/17	12/21/17	KWG1711053	*
PBDE 47	**0.25**		0.080	0.029	1	12/15/17	12/21/17	KWG1711053	*
PBDE 66	ND	U	0.080	0.019	1	12/15/17	12/21/17	KWG1711053	*
PBDE 100	ND	U	0.080	0.014	1	12/15/17	12/21/17	KWG1711053	*
PBDE 99	ND	U	0.080	0.030	1	12/15/17	12/21/17	KWG1711053	*
PBDE 85	ND	U	0.080	0.040	1	12/15/17	12/21/17	KWG1711053	*
PBDE 154	ND	U	0.080	0.0078	1	12/15/17	12/21/17	KWG1711053	*
PBDE 153	ND	U	0.080	0.0087	1	12/15/17	12/21/17	KWG1711053	*
PBDE 138	ND	U	0.080	0.016	1	12/15/17	12/21/17	KWG1711053	*
PBDE 128	ND	U	0.080	0.0099	1	12/15/17	12/21/17	KWG1711053	*
PBDE 183	ND	U	0.080	0.013	1	12/15/17	12/21/17	KWG1711053	*
PBDE 190	ND	U	0.080	0.020	1	12/15/17	12/21/17	KWG1711053	*
PBDE 203	ND	U	0.080	0.029	1	12/15/17	12/21/17	KWG1711053	*
PBDE 206	ND	U	0.80	0.031	1	12/15/17	12/21/17	KWG1711053	*
PBDE 209	**2.1**		0.80	0.026	1	12/15/17	12/21/17	KWG1711053	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
PBDE 47C13	78	70-130	12/21/17	Acceptable
PBDE 99C13	96	70-130	12/21/17	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA

Polybrominated Diphenyl Ethers by 8270C-SIM

Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	KWG1710980-4	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
PBDE 17	ND	U	0.050	0.023	1	12/13/17	12/20/17	KWG1710980	
PBDE 28	ND	U	0.050	0.024	1	12/13/17	12/20/17	KWG1710980	
PBDE 71	ND	U	0.050	0.015	1	12/13/17	12/20/17	KWG1710980	
PBDE 47	ND	U	0.050	0.029	1	12/13/17	12/20/17	KWG1710980	
PBDE 66	ND	U	0.050	0.019	1	12/13/17	12/20/17	KWG1710980	
PBDE 100	ND	U	0.050	0.014	1	12/13/17	12/20/17	KWG1710980	
PBDE 99	ND	U	0.050	0.030	1	12/13/17	12/20/17	KWG1710980	
PBDE 85	ND	U	0.080	0.040	1	12/13/17	12/20/17	KWG1710980	
PBDE 154	ND	U	0.050	0.0078	1	12/13/17	12/20/17	KWG1710980	
PBDE 153	ND	U	0.050	0.0087	1	12/13/17	12/20/17	KWG1710980	
PBDE 138	ND	U	0.050	0.016	1	12/13/17	12/20/17	KWG1710980	
PBDE 128	ND	U	0.050	0.0099	1	12/13/17	12/20/17	KWG1710980	
PBDE 183	ND	U	0.050	0.013	1	12/13/17	12/20/17	KWG1710980	
PBDE 190	ND	U	0.050	0.020	1	12/13/17	12/20/17	KWG1710980	
PBDE 203	ND	U	0.050	0.029	1	12/13/17	12/20/17	KWG1710980	
PBDE 206	ND	U	0.50	0.031	1	12/13/17	12/20/17	KWG1710980	
PBDE 209	ND	U	0.50	0.026	1	12/13/17	12/20/17	KWG1710980	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
PBDE 47C13	89	70-130	12/20/17	Acceptable
PBDE 99C13	99	70-130	12/20/17	Acceptable

Comments:

Analytical Results

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA

Polybrominated Diphenyl Ethers by 8270C-SIM

Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	KWG1711053-4	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
PBDE 17	ND	U	0.050	0.023	1	12/15/17	12/21/17	KWG1711053	
PBDE 28	ND	U	0.050	0.024	1	12/15/17	12/21/17	KWG1711053	
PBDE 71	ND	U	0.050	0.015	1	12/15/17	12/21/17	KWG1711053	
PBDE 47	ND	U	0.050	0.029	1	12/15/17	12/21/17	KWG1711053	
PBDE 66	ND	U	0.050	0.019	1	12/15/17	12/21/17	KWG1711053	
PBDE 100	ND	U	0.050	0.014	1	12/15/17	12/21/17	KWG1711053	
PBDE 99	ND	U	0.050	0.030	1	12/15/17	12/21/17	KWG1711053	
PBDE 85	ND	U	0.080	0.040	1	12/15/17	12/21/17	KWG1711053	
PBDE 154	ND	U	0.050	0.0078	1	12/15/17	12/21/17	KWG1711053	
PBDE 153	ND	U	0.050	0.0087	1	12/15/17	12/21/17	KWG1711053	
PBDE 138	ND	U	0.050	0.016	1	12/15/17	12/21/17	KWG1711053	
PBDE 128	ND	U	0.050	0.0099	1	12/15/17	12/21/17	KWG1711053	
PBDE 183	ND	U	0.050	0.013	1	12/15/17	12/21/17	KWG1711053	
PBDE 190	ND	U	0.050	0.020	1	12/15/17	12/21/17	KWG1711053	
PBDE 203	ND	U	0.050	0.029	1	12/15/17	12/21/17	KWG1711053	
PBDE 206	ND	U	0.50	0.031	1	12/15/17	12/21/17	KWG1711053	
PBDE 209	ND	U	0.50	0.026	1	12/15/17	12/21/17	KWG1711053	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
PBDE 47C13	89	70-130	12/21/17	Acceptable
PBDE 99C13	100	70-130	12/21/17	Acceptable

Comments:

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056
Sample Matrix: Sediment

Service Request: K1712961

Surrogate Recovery Summary
Polybrominated Diphenyl Ethers by 8270C-SIM

Extraction Method: EPA 3541
Analysis Method: 8270D SIM

Units: Percent
Level: Low

Sample Name	Lab Code	Sur1	Sur2
URSC-RM20.0W-COMP	K1712961-006	84 D	97 D
URSC-RM18.45E-COMP	K1712961-015	78	96
Batch QC	K1713018-010	80	101
Batch QC	K1713130-006	75 D	94 D
Method Blank	KWG1710980-4	89	99
Method Blank	KWG1711053-4	89	100
Batch QCMS	KWG1710980-1	79 D	92 D
Batch QCDMS	KWG1710980-2	75 D	99 D
Batch QCMS	KWG1711053-1	73	89
Batch QCDMS	KWG1711053-2	85	92
Lab Control Sample	KWG1710980-3	80	86
Lab Control Sample	KWG1711053-3	93	102

Surrogate Recovery Control Limits (%)

Sur1	=	PBDE 47C13	70-130
Sur2	=	PBDE 99C13	70-130

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Analyzed:**	12/19/2017
		Time Analyzed:	05:25

Internal Standard Area and RT Summary
Polybrominated Diphenyl Ethers by 8270C-SIM

File ID:	J:\MS14\DATA\121917\1219F002.D	**Lab Code:**	KWG1711159-2
Instrument ID:	MS14	**Analysis Lot:**	KWG1711159
Analysis Method:	8270D SIM		

		PCB 207	
		Area	**RT**
	Results ==>	88,473	8.18
	Upper Limit ==>	176,946	8.68
	Lower Limit ==>	44,237	7.68
	ICAL Result ==>	80,634	8.17
Associated Analyses			
Lab Control Sample	KWG1710980-3	81,614	8.18
Batch QCDL	K1713130-006	80,710	8.18
URSC-RM20.0W-COMPDL	K1712961-006	84,298	8.18
Batch QC	K1713130-006	67,353	8.19
URSC-RM20.0W-COMP	K1712961-006	67,036	8.20
Batch QCMS	KWG1710980-1	69,236	8.20
Batch QCDMS	KWG1710980-2	70,581	8.20

Results flagged with an asterisk (*) indicate values outside control criteria.

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Analyzed:**	12/20/2017
		Time Analyzed:	07:29

Internal Standard Area and RT Summary
Polybrominated Diphenyl Ethers by 8270C-SIM

File ID:	J:\MS14\DATA\122017\1220F002.D	**Lab Code:**	KWG1711185-2
Instrument ID:	MS14	**Analysis Lot:**	KWG1711185
Analysis Method:	8270D SIM		

		PCB 207	
		Area	**RT**
	Results ==>	90,003	8.15
	Upper Limit ==>	180,006	8.65
	Lower Limit ==>	45,002	7.65
	ICAL Result ==>	80,634	8.17
Associated Analyses			
Method Blank	KWG1710980-4	82,032	8.15
Lab Control Sample	KWG1711053-3	83,501	8.15

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Analyzed:**	12/21/2017
		Time Analyzed:	06:49

Internal Standard Area and RT Summary
Polybrominated Diphenyl Ethers by 8270C-SIM

File ID:	J:\MS14\DATA\122117\1221F002.D	**Lab Code:**	KWG1711222-2
Instrument ID:	MS14	**Analysis Lot:**	KWG1711222
Analysis Method:	8270D SIM		

		PCB 207	
		Area	**RT**
	Results ==>	75,336	8.15
	Upper Limit ==>	150,672	8.65
	Lower Limit ==>	37,668	7.65
	ICAL Result ==>	80,634	8.17
Associated Analyses			
Method Blank	KWG1711053-4	77,268	8.15
Batch QCMS	KWG1711053-1	66,100	8.16
Batch QCDMS	KWG1711053-2	67,869	8.16
Batch QC	K1713018-010	68,564	8.17
URSC-RM18.45E-COMP	K1712961-015	67,730	8.17

Results flagged with an asterisk (*) indicate values outside control criteria.

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Extracted:**	12/13/2017
Sample Matrix:	Sediment	**Date Analyzed:**	12/19/2017

Matrix Spike/Duplicate Matrix Spike Summary
Polybrominated Diphenyl Ethers by 8270C-SIM

Sample Name:	Batch QC	**Units:**	ug/Kg
Lab Code:	K1713130-006	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM	**Extraction Lot:**	KWG1710980

		Batch QCMS KWG1710980-1 Matrix Spike			Batch QCDMS KWG1710980-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
PBDE 17	ND	3.72	3.65	102	3.71	3.59	104	70-130	0	40
PBDE 28	ND	4.16	3.65	114	3.98	3.59	111	70-130	4	40
PBDE 71	0.29	3.06	3.65	76	2.95	3.59	74	70-130	4	40
PBDE 47	1.1	4.11	3.65	84	4.03	3.59	83	70-130	2	40
PBDE 66	0.27	3.87	3.65	99	3.52	3.59	91	70-130	9	40
PBDE 100	ND	3.90	3.65	107	3.76	3.59	105	70-130	4	40
PBDE 99	1.1	4.64	3.65	97	4.69	3.59	100	70-130	1	40
PBDE 85	ND	4.49	3.65	123	4.26	3.59	119	70-130	5	40
PBDE 154	ND	4.01	3.65	110	3.71	3.59	104	70-130	8	40
PBDE 153	0.37	5.00	3.65	127	4.99	3.59	129	70-130	0	40
PBDE 138	ND	4.73	3.65	130	4.66	3.59	130	70-130	2	40
PBDE 128	ND	4.84	3.65	133 *	5.91	3.59	165 *	70-130	20	40
PBDE 183	ND	4.89	3.65	134 *	4.97	3.59	139 *	70-130	2	40
PBDE 190	ND	5.26	3.65	144 *	5.44	3.59	152 *	70-130	3	40
PBDE 203	ND	5.10	3.65	140 *	5.47	3.59	153 *	70-130	7	40
PBDE 206	1.7	7.46	3.65	159 *	8.29	3.59	185 *	70-130	11	40
PBDE 209	39	36.8E	3.65	-69 #	41.7E	3.59	67 #	70-130	13	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Extracted:**	12/15/2017
Sample Matrix:	Sediment	**Date Analyzed:**	12/21/2017

Matrix Spike/Duplicate Matrix Spike Summary
Polybrominated Diphenyl Ethers by 8270C-SIM

Sample Name:	Batch QC	**Units:**	ug/Kg
Lab Code:	K1713018-010	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM	**Extraction Lot:**	KWG1711053

		Batch QCMS KWG1711053-1 Matrix Spike			Batch QCDMS KWG1711053-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
PBDE 17	ND	4.01	4.08	98	4.32	4.12	105	70-130	7	40
PBDE 28	ND	3.61	4.08	88	3.71	4.12	90	70-130	3	40
PBDE 71	ND	3.31	4.08	81	3.20	4.12	78	70-130	3	40
PBDE 47	0.29	3.24	4.08	72	3.50	4.12	78	70-130	8	40
PBDE 66	ND	3.61	4.08	88	3.81	4.12	92	70-130	5	40
PBDE 100	ND	3.77	4.08	92	4.38	4.12	106	70-130	15	40
PBDE 99	ND	3.99	4.08	98	4.38	4.12	106	70-130	9	40
PBDE 85	ND	4.55	4.08	111	5.03	4.12	122	70-130	10	40
PBDE 154	ND	4.15	4.08	102	4.48	4.12	109	70-130	8	40
PBDE 153	ND	4.79	4.08	117	5.14	4.12	125	70-130	7	40
PBDE 138	ND	4.73	4.08	116	5.65	4.12	137 *	70-130	18	40
PBDE 128	ND	5.13	4.08	126	5.92	4.12	144 *	70-130	14	40
PBDE 183	ND	4.75	4.08	116	5.05	4.12	122	70-130	6	40
PBDE 190	ND	4.55	4.08	111	5.06	4.12	123	70-130	11	40
PBDE 203	ND	4.16	4.08	102	4.50	4.12	109	70-130	8	40
PBDE 206	ND	4.62	4.08	113	5.14	4.12	125	70-130	11	40
PBDE 209	4.7	6.35	4.08	40 *	9.46	4.12	115	70-130	39	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Extracted:**	12/13/2017
Sample Matrix:	Sediment	**Date Analyzed:**	12/19/2017

Lab Control Spike Summary
Polybrominated Diphenyl Ethers by 8270C-SIM

Extraction Method:	EPA 3541	**Units:**	ug/Kg
Analysis Method:	8270D SIM	**Basis:**	Dry
		Level:	Low
		Extraction Lot:	KWG1710980

	Lab Control Sample KWG1710980-3 Lab Control Spike			
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
PBDE 17	2.05	2.50	82	70-130
PBDE 28	2.00	2.50	80	70-130
PBDE 71	2.12	2.50	85	70-130
PBDE 47	2.12	2.50	85	70-130
PBDE 66	2.20	2.50	88	70-130
PBDE 100	2.25	2.50	90	70-130
PBDE 99	2.27	2.50	91	70-130
PBDE 85	2.25	2.50	90	70-130
PBDE 154	2.31	2.50	92	70-130
PBDE 153	2.37	2.50	95	70-130
PBDE 138	2.35	2.50	94	70-130
PBDE 128	2.37	2.50	95	70-130
PBDE 183	2.38	2.50	95	70-130
PBDE 190	2.34	2.50	94	70-130
PBDE 203	2.28	2.50	91	70-130
PBDE 206	2.59	2.50	104	70-130
PBDE 209	3.10	2.50	124	70-130

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Extracted:**	12/15/2017
Sample Matrix:	Sediment	**Date Analyzed:**	12/20/2017

Lab Control Spike Summary
Polybrominated Diphenyl Ethers by 8270C-SIM

Extraction Method:	EPA 3541	**Units:**	ug/Kg
Analysis Method:	8270D SIM	**Basis:**	Dry
		Level:	Low
		Extraction Lot:	KWG1711053

	Lab Control Sample KWG1711053-3 Lab Control Spike			
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
PBDE 17	2.30	2.50	92	70-130
PBDE 28	2.29	2.50	92	70-130
PBDE 71	2.45	2.50	98	70-130
PBDE 47	2.50	2.50	100	70-130
PBDE 66	2.60	2.50	104	70-130
PBDE 100	2.59	2.50	103	70-130
PBDE 99	2.65	2.50	106	70-130
PBDE 85	2.62	2.50	105	70-130
PBDE 154	2.62	2.50	105	70-130
PBDE 153	2.78	2.50	111	70-130
PBDE 138	2.71	2.50	108	70-130
PBDE 128	2.87	2.50	115	70-130
PBDE 183	2.71	2.50	108	70-130
PBDE 190	2.66	2.50	106	70-130
PBDE 203	2.56	2.50	102	70-130
PBDE 206	2.93	2.50	117	70-130
PBDE 209	4.07	2.50	163 *	70-130

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Extracted:**	12/13/2017
Sample Matrix:	Sediment	**Date Analyzed:**	12/20/2017
		Time Analyzed:	07:50

Method Blank Summary
Polybrominated Diphenyl Ethers by 8270C-SIM

Sample Name:	Method Blank	**Instrument ID:**	MS14
Lab Code:	KWG1710980-4	**File ID:**	J:\MS14\DATA\122017\1220F003.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM	**Extraction Lot:**	KWG1710980

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1710980-3	J:\MS14\DATA\121917\1219F006.D	12/19/17	06:57
Batch QC	K1713130-006	J:\MS14\DATA\121917\1219F010.D	12/19/17	08:20
URSC-RM20.0W-COMP	K1712961-006	J:\MS14\DATA\121917\1219F011.D	12/19/17	08:38
Batch QC	K1713130-006	J:\MS14\DATA\121917\1219F030.D	12/19/17	14:26
URSC-RM20.0W-COMP	K1712961-006	J:\MS14\DATA\121917\1219F031.D	12/19/17	14:44
Batch QCMS	KWG1710980-1	J:\MS14\DATA\121917\1219F032.D	12/19/17	15:02
Batch QCDMS	KWG1710980-2	J:\MS14\DATA\121917\1219F033.D	12/19/17	15:21

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Extracted:**	12/15/2017
Sample Matrix:	Sediment	**Date Analyzed:**	12/21/2017
		Time Analyzed:	07:29

Method Blank Summary
Polybrominated Diphenyl Ethers by 8270C-SIM

Sample Name:	Method Blank	**Instrument ID:**	MS14
Lab Code:	KWG1711053-4	**File ID:**	J:\MS14\DATA\122117\1221F004.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM	**Extraction Lot:**	KWG1711053

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1711053-3	J:\MS14\DATA\122017\1220F006.D	12/20/17	08:46
Batch QCMS	KWG1711053-1	J:\MS14\DATA\122117\1221F009.D	12/21/17	08:59
Batch QCDMS	KWG1711053-2	J:\MS14\DATA\122117\1221F010.D	12/21/17	09:17
Batch QC	K1713018-010	J:\MS14\DATA\122117\1221F011.D	12/21/17	09:35
URSC-RM18.45E-COMP	K1712961-015	J:\MS14\DATA\122117\1221F012.D	12/21/17	09:54

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Extracted:**	12/13/2017
Sample Matrix:	Sediment	**Date Analyzed:**	12/19/2017
		Time Analyzed:	06:57

Lab Control Sample Summary
Polybrominated Diphenyl Ethers by 8270C-SIM

Sample Name:	Lab Control Sample	**Instrument ID:**	MS14
Lab Code:	KWG1710980-3	**File ID:**	J:\MS14\DATA\121917\1219F006.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM	**Extraction Lot:**	KWG1710980

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Batch QC	K1713130-006	J:\MS14\DATA\121917\1219F010.D	12/19/17	08:20
URSC-RM20.0W-COMP	K1712961-006	J:\MS14\DATA\121917\1219F011.D	12/19/17	08:38
Batch QC	K1713130-006	J:\MS14\DATA\121917\1219F030.D	12/19/17	14:26
URSC-RM20.0W-COMP	K1712961-006	J:\MS14\DATA\121917\1219F031.D	12/19/17	14:44
Batch QCMS	KWG1710980-1	J:\MS14\DATA\121917\1219F032.D	12/19/17	15:02
Batch QCDMS	KWG1710980-2	J:\MS14\DATA\121917\1219F033.D	12/19/17	15:21
Method Blank	KWG1710980-4	J:\MS14\DATA\122017\1220F003.D	12/20/17	07:50

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Extracted:**	12/15/2017
Sample Matrix:	Sediment	**Date Analyzed:**	12/20/2017
		Time Analyzed:	08:46

Lab Control Sample Summary
Polybrominated Diphenyl Ethers by 8270C-SIM

Sample Name:	Lab Control Sample	**Instrument ID:**	MS14
Lab Code:	KWG1711053-3	**File ID:**	J:\MS14\DATA\122017\1220F006.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM	**Extraction Lot:**	KWG1711053

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1711053-4	J:\MS14\DATA\122117\1221F004.D	12/21/17	07:29
Batch QCMS	KWG1711053-1	J:\MS14\DATA\122117\1221F009.D	12/21/17	08:59
Batch QCDMS	KWG1711053-2	J:\MS14\DATA\122117\1221F010.D	12/21/17	09:17
Batch QC	K1713018-010	J:\MS14\DATA\122117\1221F011.D	12/21/17	09:35
URSC-RM18.45E-COMP	K1712961-015	J:\MS14\DATA\122117\1221F012.D	12/21/17	09:54

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056

Service Request: K1712961
Date Analyzed: 12/19/2017
Time Analyzed: 05:05

Tune Summary
Polybrominated Diphenyl Ethers by 8270C-SIM

File ID: J:\MS14\DATA\121917\1219F001.D
Instrument ID: MS14
Column:

Analysis Method: 8270D SIM
Analysis Lot: KWG1711159

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	10	80	48.9	228658	PASS
68	69	0	2	0.9	1988	PASS
69	198	0	100	47.8	223649	PASS
70	69	0	2	0.0	0	PASS
127	198	10	80	51.9	242839	PASS
197	198	0	2	0.2	1033	PASS
198	442	30	100	59.8	467698	PASS
199	198	5	9	6.7	31146	PASS
275	198	10	60	37.3	174386	PASS
365	442	1	50	4.1	32092	PASS
441	443	0	100	74.6	116405	PASS
442	442	100	100	100.0	782458	PASS
443	442	15	24	19.9	156100	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1711159-2	J:\MS14\DATA\121917\1219F002.D	12/19/2017	05:25	
Lab Control Sample	KWG1710980-3	J:\MS14\DATA\121917\1219F006.D	12/19/2017	06:57	
Batch QC	K1713130-006	J:\MS14\DATA\121917\1219F010.D	12/19/2017	08:20	
URSC-RM20.0W-COMP	K1712961-006	J:\MS14\DATA\121917\1219F011.D	12/19/2017	08:38	
Batch QC	K1713130-006	J:\MS14\DATA\121917\1219F030.D	12/19/2017	14:26	
URSC-RM20.0W-COMP	K1712961-006	J:\MS14\DATA\121917\1219F031.D	12/19/2017	14:44	
Batch QCMS	KWG1710980-1	J:\MS14\DATA\121917\1219F032.D	12/19/2017	15:02	
Batch QCDMS	KWG1710980-2	J:\MS14\DATA\121917\1219F033.D	12/19/2017	15:21	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056

Service Request: K1712961
Date Analyzed: 12/20/2017
Time Analyzed: 07:10

Tune Summary
Polybrominated Diphenyl Ethers by 8270C-SIM

File ID: J:\MS14\DATA\122017\1220F001.D
Instrument ID: MS14
Column:

Analysis Method: 8270D SIM
Analysis Lot: KWG1711185

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	10	80	43.3	514771	PASS
68	69	0	2	1.2	6677	PASS
69	198	0	100	45.3	538575	PASS
70	69	0	2	0.5	2660	PASS
127	198	10	80	50.8	604402	PASS
197	198	0	2	0.0	276	PASS
198	442	30	100	44.6	1190165	PASS
199	198	5	9	6.8	81512	PASS
275	198	10	60	40.6	483157	PASS
365	442	1	50	3.3	87021	PASS
441	443	0	100	75.8	396685	PASS
442	442	100	100	100.0	2666005	PASS
443	442	15	24	19.6	523349	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1711185-2	J:\MS14\DATA\122017\1220F002.D	12/20/2017	07:29	
Method Blank	KWG1710980-4	J:\MS14\DATA\122017\1220F003.D	12/20/2017	07:50	
Lab Control Sample	KWG1711053-3	J:\MS14\DATA\122017\1220F006.D	12/20/2017	08:46	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056

Service Request: K1712961
Date Analyzed: 12/21/2017
Time Analyzed: 06:29

Tune Summary
Polybrominated Diphenyl Ethers by 8270C-SIM

File ID: J:\MS14\DATA\122117\1221F001.D
Instrument ID: MS14
Column:

Analysis Method: 8270D SIM
Analysis Lot: KWG1711222

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	10	80	49.7	486866	PASS
68	69	0	2	1.3	6669	PASS
69	198	0	100	51.5	504823	PASS
70	69	0	2	0.6	3140	PASS
127	198	10	80	53.9	527693	PASS
197	198	0	2	0.0	0	PASS
198	442	30	100	46.5	979626	PASS
199	198	5	9	6.8	66370	PASS
275	198	10	60	35.1	343637	PASS
365	442	1	50	3.3	68701	PASS
441	443	0	100	76.2	318954	PASS
442	442	100	100	100.0	2106069	PASS
443	442	15	24	19.9	418709	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1711222-2	J:\MS14\DATA\122117\1221F002.D	12/21/2017	06:49	
Method Blank	KWG1711053-4	J:\MS14\DATA\122117\1221F004.D	12/21/2017	07:29	
Batch QCMS	KWG1711053-1	J:\MS14\DATA\122117\1221F009.D	12/21/2017	08:59	
Batch QCDMS	KWG1711053-2	J:\MS14\DATA\122117\1221F010.D	12/21/2017	09:17	
Batch QC	K1713018-010	J:\MS14\DATA\122117\1221F011.D	12/21/2017	09:35	
URSC-RM18.45E-COMP	K1712961-015	J:\MS14\DATA\122117\1221F012.D	12/21/2017	09:54	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

QA/QC Results

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056
Service Request: K1712961
Calibration Date: 12/18/2017

Initial Calibration Summary
Polybrominated Diphenyl Ethers by 8270C-SIM

Calibration ID: CAL15642
Instrument ID: MS14
Column: MS

Level ID	File ID	Level ID	File ID
A	J:\MS14\DATA\121817\1218F004.D	G	J:\MS14\DATA\121817\1218F010.D
B	J:\MS14\DATA\121817\1218F005.D	H	J:\MS14\DATA\121817\1218F011.D
C	J:\MS14\DATA\121817\1218F006.D	I	J:\MS14\DATA\121817\1218F012.D
D	J:\MS14\DATA\121817\1218F007.D	J	J:\MS14\DATA\121817\1218F013.D
E	J:\MS14\DATA\121817\1218F008.D	K	J:\MS14\DATA\121817\1218F014.D
F	J:\MS14\DATA\121817\1218F009.D		

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
PBDE 47C13	A	0.50	0.569	B	1.0	0.530	C	5.0	0.533	D	10	0.571	E	15	0.564
	F	20	0.555	G	25	0.588	H	30	0.571	I	40	0.614	J	50	0.616
	K	60	0.590												
PBDE 99C13	A	0.50	0.397	B	1.0	0.365	C	5.0	0.374	D	10	0.400	E	15	0.395
	F	20	0.400	G	25	0.431	H	30	0.422	I	40	0.451	J	50	0.449
	K	60	0.446												
PBDE 17	A	0.50	0.827	B	1.0	0.805	C	5.0	0.762	D	10	0.803	E	15	0.757
	F	20	0.787	G	25	0.805	H	30	0.806	I	40	0.834	J	50	0.828
	K	60	0.797												
PBDE 28	A	0.50	0.687	B	1.0	0.592	C	5.0	0.618	D	10	0.658	E	15	0.642
	F	20	0.660	G	25	0.677	H	30	0.667	I	40	0.708	J	50	0.704
	K	60	0.669												
PBDE 71	A	0.50	0.827	B	1.0	0.776	C	5.0	0.784	D	10	0.808	E	15	0.794
	F	20	0.826	G	25	0.878	H	30	0.843	I	40	0.902	J	50	0.911
	K	60	0.860												
PBDE 47	A	0.50	0.624	B	1.0	0.570	C	5.0	0.505	D	10	0.566	E	15	0.544
	F	20	0.555	G	25	0.585	H	30	0.580	I	40	0.617	J	50	0.601
	K	60	0.574												
PBDE 66	A	0.50	0.673	B	1.0	0.606	C	5.0	0.592	D	10	0.622	E	15	0.629
	F	20	0.627	G	25	0.653	H	30	0.650	I	40	0.692	J	50	0.677
	K	60	0.667												
PBDE 100	A	0.50	0.403	B	1.0	0.336	C	5.0	0.330	D	10	0.357	E	15	0.343
	F	20	0.362	G	25	0.373	H	30	0.365	I	40	0.389	J	50	0.383
	K	60	0.387												
PBDE 99	A	0.50	0.418	B	1.0	0.384	C	5.0	0.379	D	10	0.401	E	15	0.394
	F	20	0.404	G	25	0.435	H	30	0.428	I	40	0.455	J	50	0.446
	K	60	0.446												
PBDE 85	A	0.50	0.408	B	1.0	0.362	C	5.0	0.380	D	10	0.395	E	15	0.384
	F	20	0.392	G	25	0.435	H	30	0.411	I	40	0.453	J	50	0.444
	K	60	0.437												

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Hart Crowser, Incorporated **Service Request:** K1712961
Project: URSC/150-001-056 **Calibration Date:** 12/18/2017

Initial Calibration Summary
Polybrominated Diphenyl Ethers by 8270C-SIM

Calibration ID: CAL15642 **Column:** MS
Instrument ID: MS14

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
PBDE 154	A	0.50	0.380	B	1.0	0.353	C	5.0	0.350	D	10	0.378	E	15	0.380
	F	20	0.377	G	25	0.412	H	30	0.395	I	40	0.429	J	50	0.423
	K	60	0.415												
PBDE 153	A	0.50	0.362	B	1.0	0.346	C	5.0	0.353	D	10	0.395	E	15	0.385
	F	20	0.393	G	25	0.434	H	30	0.409	I	40	0.445	J	50	0.445
	K	60	0.449												
PBDE 138	A	0.50	0.347	B	1.0	0.301	C	5.0	0.329	D	10	0.366	E	15	0.358
	F	20	0.368	G	25	0.406	H	30	0.390	I	40	0.416	J	50	0.434
	K	60	0.437												
PBDE 128	A	0.50	0.336	B	1.0	0.316	C	5.0	0.359	D	10	0.391	E	15	0.384
	F	20	0.394	G	25	0.456	H	30	0.415	I	40	0.460	J	50	0.460
	K	60	0.484												
PBDE 183	A	0.50	0.230	B	1.0	0.231	C	5.0	0.257	D	10	0.298	E	15	0.305
	F	20	0.301	G	25	0.332	H	30	0.320	I	40	0.348	J	50	0.346
	K	60	0.345												
PBDE 190	A	0.50	0.223	B	1.0	0.255	C	5.0	0.215	D	10	0.246	E	15	0.250
	F	20	0.266	G	25	0.300	H	30	0.296	I	40	0.318	J	50	0.326
	K	60	0.332												
PBDE 203	A	0.50	0.200	B	1.0	0.167	C	5.0	0.180	D	10	0.209	E	15	0.211
	F	20	0.217	G	25	0.254	H	30	0.250	I	40	0.275	J	50	0.280
	K	60	0.285												
PBDE 206							C	5.0	0.0612	D	10	0.0755	E	15	0.0802
	F	20	0.0877	G	25	0.103	H	30	0.103	I	40	0.116	J	50	0.124
	K	60	0.129												
PBDE 209							C	5.0	0.0204	D	10	0.0276	E	15	0.0286
	F	20	0.0318	G	25	0.0367	H	30	0.0390	I	40	0.0478	J	50	0.0521
	K	60	0.0560												

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056

Service Request: K1712961
Calibration Date: 12/18/2017

Initial Calibration Summary
Polybrominated Diphenyl Ethers by 8270C-SIM

Calibration ID: CAL15642
Instrument ID: MS14

Column: MS

		Calibration Evaluation					RRF Evaluation		
Analyte Name	Compound Type	Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
PBDE 47C13	SURR	AverageRF	% RSD	4.9		≤ 20	0.573		0.01
PBDE 99C13	SURR	AverageRF	% RSD	7.3		≤ 20	0.412		0.01
PBDE 17	MS	AverageRF	% RSD	3.1		≤ 20	0.801		0.01
PBDE 28	MS	AverageRF	% RSD	5.3		≤ 20	0.662		0.01
PBDE 71	MS	AverageRF	% RSD	5.5		≤ 20	0.837		0.01
PBDE 47	MS	AverageRF	% RSD	5.9		≤ 20	0.575		0.01
PBDE 66	MS	AverageRF	% RSD	4.9		≤ 20	0.644		0.01
PBDE 100	MS	AverageRF	% RSD	6.4		≤ 20	0.366		0.01
PBDE 99	MS	AverageRF	% RSD	6.4		≤ 20	0.417		0.01
PBDE 85	MS	AverageRF	% RSD	7.2		≤ 20	0.409		0.01
PBDE 154	MS	AverageRF	% RSD	6.9		≤ 20	0.390		0.01
PBDE 153	MS	AverageRF	% RSD	9.6		≤ 20	0.401		0.01
PBDE 138	MS	AverageRF	% RSD	11.5		≤ 20	0.378		0.01
PBDE 128	MS	AverageRF	% RSD	13.6		≤ 20	0.405		0.01
PBDE 183	MS	AverageRF	% RSD	14.6		≤ 20	0.301		0.01
PBDE 190	MS	Quadratic(0,0)	COD	0.999		≥ 0.990	0.275		0.01
PBDE 203	MS	Quadratic(0,0)	COD	0.998		≥ 0.990	0.230		0.01
PBDE 206	MS	Quadratic(0,0)	COD	0.998		≥ 0.990	0.0979		0.01
PBDE 209	MS	Quadratic(0,0)	COD	0.998		≥ 0.990	0.0378		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

QA/QC Results

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056

Service Request: K1712961
Calibration Date: 12/18/2017
Date Analyzed: 12/18/2017

Second Source Calibration Verification
Polybrominated Diphenyl Ethers by 8270C-SIM

Calibration Type: Internal Standard
Analysis Method: 8270D SIM

Calibration ID: CAL15642
Units: ng/ml

File ID: J:\MS14\DATA\121817\1218F016.D
J:\MS14\DATA\121817\1218F017.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
PBDE 17	5.0	6.0	0.801	0.964	20	NA	± 30 %	AverageRF
PBDE 28	5.0	6.1	0.662	0.814	23	NA	± 30 %	AverageRF
PBDE 71	5.0	5.9	0.837	0.994	19	NA	± 30 %	AverageRF
PBDE 47	5.0	6.0	0.575	0.692	20	NA	± 30 %	AverageRF
PBDE 66	5.0	6.3	0.644	0.811	26	NA	± 30 %	AverageRF
PBDE 100	5.0	6.0	0.366	0.443	21	NA	± 30 %	AverageRF
PBDE 99	5.0	6.1	0.417	0.506	21	NA	± 30 %	AverageRF
PBDE 85	5.0	5.6	0.409	0.461	13	NA	± 30 %	AverageRF
PBDE 154	5.0	5.7	0.390	0.448	15	NA	± 30 %	AverageRF
PBDE 153	5.0	6.0	0.401	0.486	21	NA	± 30 %	AverageRF
PBDE 138	7.5	8.9	0.378	0.446	18	NA	± 30 %	AverageRF
PBDE 183	5.0	5.5	0.301	0.331	10	NA	± 30 %	AverageRF
PBDE 190	5.0	6.3	0.275	0.333	NA	27	± 30 %	Quadratic(0,0
PBDE 203	25	26	0.230	0.250	NA	2	± 30 %	Quadratic(0,0
PBDE 206	25	30	0.0979	0.126	NA	22	± 30 %	Quadratic(0,0
PBDE 209	25	26	0.0378	0.0396	NA	5	± 30 %	Quadratic(0,0

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

QA/QC Results

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056

Service Request: K1712961
Date Analyzed: 12/19/2017

Continuing Calibration Verification Summary
Polybrominated Diphenyl Ethers by 8270C-SIM

Calibration Type: Internal Standard
Analysis Method: 8270D SIM

Calibration Date: 12/18/2017
Calibration ID: CAL15642
Analysis Lot: KWG1711159
Units: ng/ml

File ID: J:\MS14\DATA\121917\1219F002.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
PBDE 47C13	25	23	0.01	0.573	0.521	-9	NA	± 20	AverageRF
PBDE 99C13	25	24	0.01	0.412	0.402	-2	NA	± 20	AverageRF
PBDE 17	25	22	0.01	0.801	0.720	-10	NA	± 20	AverageRF
PBDE 28	25	23	0.01	0.662	0.617	-7	NA	± 20	AverageRF
PBDE 71	25	23	0.01	0.837	0.774	-8	NA	± 20	AverageRF
PBDE 47	25	23	0.01	0.575	0.523	-9	NA	± 20	AverageRF
PBDE 66	25	24	0.01	0.644	0.617	-4	NA	± 20	AverageRF
PBDE 100	25	23	0.01	0.366	0.335	-8	NA	± 20	AverageRF
PBDE 99	25	24	0.01	0.417	0.400	-4	NA	± 20	AverageRF
PBDE 85	25	26	0.01	0.409	0.420	3	NA	± 20	AverageRF
PBDE 154	25	24	0.01	0.390	0.380	-3	NA	± 20	AverageRF
PBDE 153	25	26	0.01	0.401	0.418	4	NA	± 20	AverageRF
PBDE 138	25	27	0.01	0.378	0.402	6	NA	± 20	AverageRF
PBDE 128	25	28	0.01	0.405	0.450	11	NA	± 20	AverageRF
PBDE 183	25	26	0.01	0.301	0.307	2	NA	± 20	AverageRF
PBDE 190	25	25	0.01	0.275	0.288	NA	0	± 20	Quadratic(0,0)
PBDE 203	25	25	0.01	0.230	0.245	NA	0	± 20	Quadratic(0,0)
PBDE 206	25	26	0.01	0.0979	0.104	NA	5	± 20	Quadratic(0,0)
PBDE 209	25	27	0.01	0.0378	0.0416	NA	9	± 20	Quadratic(0,0)

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

QA/QC Results

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056

Service Request: K1712961
Date Analyzed: 12/20/2017

Continuing Calibration Verification Summary
Polybrominated Diphenyl Ethers by 8270C-SIM

Calibration Type: Internal Standard
Analysis Method: 8270D SIM

Calibration Date: 12/18/2017
Calibration ID: CAL15642
Analysis Lot: KWG1711185
Units: ng/ml

File ID: J:\MS14\DATA\122017\1220F002.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift		Criteria	Curve Fit
PBDE 47C13	25	23	0.01	0.573	0.520	-9	NA		± 20	AverageRF
PBDE 99C13	25	24	0.01	0.412	0.392	-5	NA		± 20	AverageRF
PBDE 17	25	23	0.01	0.801	0.732	-9	NA		± 20	AverageRF
PBDE 28	25	23	0.01	0.662	0.610	-8	NA		± 20	AverageRF
PBDE 71	25	23	0.01	0.837	0.756	-10	NA		± 20	AverageRF
PBDE 47	25	23	0.01	0.575	0.533	-7	NA		± 20	AverageRF
PBDE 66	25	24	0.01	0.644	0.610	-5	NA		± 20	AverageRF
PBDE 100	25	24	0.01	0.366	0.348	-5	NA		± 20	AverageRF
PBDE 99	25	24	0.01	0.417	0.399	-4	NA		± 20	AverageRF
PBDE 85	25	25	0.01	0.409	0.408	0	NA		± 20	AverageRF
PBDE 154	25	23	0.01	0.390	0.360	-8	NA		± 20	AverageRF
PBDE 153	25	25	0.01	0.401	0.398	-1	NA		± 20	AverageRF
PBDE 138	25	25	0.01	0.378	0.384	2	NA		± 20	AverageRF
PBDE 128	25	28	0.01	0.405	0.449	11	NA		± 20	AverageRF
PBDE 183	25	25	0.01	0.301	0.303	1	NA		± 20	AverageRF
PBDE 190	25	25	0.01	0.275	0.291	NA	1		± 20	Quadratic(0,0)
PBDE 203	25	25	0.01	0.230	0.247	NA	1		± 20	Quadratic(0,0)
PBDE 206	25	28	0.01	0.0979	0.114	NA	12		± 20	Quadratic(0,0)
PBDE 209	25	30	0.01	0.0378	0.0486	NA	22	*	± 20	Quadratic(0,0)

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

QA/QC Results

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056

Service Request: K1712961
Date Analyzed: 12/21/2017

Continuing Calibration Verification Summary
Polybrominated Diphenyl Ethers by 8270C-SIM

Calibration Type: Internal Standard
Analysis Method: 8270D SIM

Calibration Date: 12/18/2017
Calibration ID: CAL15642
Analysis Lot: KWG1711222
Units: ng/ml

File ID: J:\MS14\DATA\122117\1221F002.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D		%Drift	Criteria	Curve Fit
PBDE 47C13	25	23	0.01	0.573	0.518	-10		NA	± 20	AverageRF
PBDE 99C13	25	25	0.01	0.412	0.413	0		NA	± 20	AverageRF
PBDE 17	25	21	0.01	0.801	0.679	-15		NA	± 20	AverageRF
PBDE 28	25	23	0.01	0.662	0.600	-9		NA	± 20	AverageRF
PBDE 71	25	23	0.01	0.837	0.755	-10		NA	± 20	AverageRF
PBDE 47	25	22	0.01	0.575	0.506	-12		NA	± 20	AverageRF
PBDE 66	25	24	0.01	0.644	0.611	-5		NA	± 20	AverageRF
PBDE 100	25	24	0.01	0.366	0.353	-4		NA	± 20	AverageRF
PBDE 99	25	24	0.01	0.417	0.408	-2		NA	± 20	AverageRF
PBDE 85	25	27	0.01	0.409	0.437	7		NA	± 20	AverageRF
PBDE 154	25	24	0.01	0.390	0.371	-5		NA	± 20	AverageRF
PBDE 153	25	25	0.01	0.401	0.409	2		NA	± 20	AverageRF
PBDE 138	25	27	0.01	0.378	0.401	6		NA	± 20	AverageRF
PBDE 128	25	31	0.01	0.405	0.497	23	*	NA	± 20	AverageRF
PBDE 183	25	26	0.01	0.301	0.310	3		NA	± 20	AverageRF
PBDE 190	25	26	0.01	0.275	0.305	NA		5	± 20	Quadratic(0,0)
PBDE 203	25	26	0.01	0.230	0.251	NA		3	± 20	Quadratic(0,0)
PBDE 206	25	26	0.01	0.0979	0.102	NA		3	± 20	Quadratic(0,0)
PBDE 209	25	25	0.01	0.0378	0.0361	NA		-2	± 20	Quadratic(0,0)

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: Hart Crowser, Incorporated **Service Request:** K1712961
Project: URSC/150-001-056

Analysis Run Log
Polybrominated Diphenyl Ethers by 8270C-SIM

Analysis Method: 8270D SIM **Analysis Lot:** KWG1711159
Instrument ID: MS14

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1219F001.D	GC/MS Tuning - Decafluorotriphenylphosph	KWG1711159-1	12/19/2017	05:05		12/19/2017	05:19
1219F002.D	Continuing Calibration Verification	KWG1711159-2	12/19/2017	05:25		12/19/2017	05:37
1219F006.D	Lab Control Sample	KWG1710980-3	12/19/2017	06:57		12/19/2017	07:09
1219F007.D	ZZZZZZ	ZZZZZZ	12/19/2017	07:16		12/19/2017	07:28
1219F010.D	Batch QC	K1713130-006	12/19/2017	08:20		12/19/2017	08:32
1219F011.D	URSC-RM20.0W-COMP	K1712961-006	12/19/2017	08:38		12/19/2017	08:50
1219F012.D	ZZZZZZ	ZZZZZZ	12/19/2017	08:57		12/19/2017	09:09
1219F013.D	ZZZZZZ	ZZZZZZ	12/19/2017	09:15		12/19/2017	09:27
1219F014.D	ZZZZZZ	ZZZZZZ	12/19/2017	09:33		12/19/2017	09:45
1219F015.D	ZZZZZZ	ZZZZZZ	12/19/2017	09:52		12/19/2017	10:04
1219F016.D	ZZZZZZ	ZZZZZZ	12/19/2017	10:10		12/19/2017	10:22
1219F017.D	ZZZZZZ	ZZZZZZ	12/19/2017	10:28		12/19/2017	10:40
1219F018.D	ZZZZZZ	ZZZZZZ	12/19/2017	10:46		12/19/2017	10:58
1219F019.D	ZZZZZZ	ZZZZZZ	12/19/2017	11:05		12/19/2017	11:17
1219F020.D	ZZZZZZ	ZZZZZZ	12/19/2017	11:23		12/19/2017	11:35
1219F021.D	ZZZZZZ	ZZZZZZ	12/19/2017	11:41		12/19/2017	11:53
1219F022.D	ZZZZZZ	ZZZZZZ	12/19/2017	11:59		12/19/2017	12:11
1219F023.D	ZZZZZZ	ZZZZZZ	12/19/2017	12:18		12/19/2017	12:30
1219F024.D	ZZZZZZ	ZZZZZZ	12/19/2017	12:36		12/19/2017	12:48
1219F025.D	ZZZZZZ	ZZZZZZ	12/19/2017	12:54		12/19/2017	13:06
1219F026.D	ZZZZZZ	ZZZZZZ	12/19/2017	13:13		12/19/2017	13:25
1219F027.D	ZZZZZZ	ZZZZZZ	12/19/2017	13:31		12/19/2017	13:43
1219F028.D	ZZZZZZ	ZZZZZZ	12/19/2017	13:49		12/19/2017	14:01
1219F029.D	ZZZZZZ	ZZZZZZ	12/19/2017	14:07		12/19/2017	14:19
1219F030.D	Batch QC	K1713130-006	12/19/2017	14:26		12/19/2017	14:38
1219F031.D	URSC-RM20.0W-COMP	K1712961-006	12/19/2017	14:44		12/19/2017	14:56
1219F032.D	Batch QCMS	KWG1710980-1	12/19/2017	15:02		12/19/2017	15:14
1219F033.D	Batch QCDMS	KWG1710980-2	12/19/2017	15:21		12/19/2017	15:33
1219F034.D	ZZZZZZ	ZZZZZZ	12/19/2017	15:39		12/19/2017	15:51
1219F035.D	ZZZZZZ	ZZZZZZ	12/19/2017	15:57		12/19/2017	16:09
1219F036.D	ZZZZZZ	ZZZZZZ	12/19/2017	16:15		12/19/2017	16:27
1219F037.D	ZZZZZZ	ZZZZZZ	12/19/2017	16:34		12/19/2017	16:46
1219F038.D	ZZZZZZ	ZZZZZZ	12/19/2017	16:52		12/19/2017	17:04

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: Hart Crowser, Incorporated **Service Request:** K1712961
Project: URSC/150-001-056

Analysis Run Log
Polybrominated Diphenyl Ethers by 8270C-SIM

Analysis Method: 8270D SIM **Analysis Lot:** KWG1711185
Instrument ID: MS14

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1220F001.D	GC/MS Tuning - Decafluorotriphenylphosph	KWG1711185-1	12/20/2017	07:10		12/20/2017	07:24
1220F002.D	Continuing Calibration Verification	KWG1711185-2	12/20/2017	07:29		12/20/2017	07:41
1220F003.D	Method Blank	KWG1710980-4	12/20/2017	07:50		12/20/2017	08:02
1220F006.D	Lab Control Sample	KWG1711053-3	12/20/2017	08:46		12/20/2017	08:58
1220F007.D	ZZZZZZ	ZZZZZZ	12/20/2017	09:09		12/20/2017	09:21
1220F008.D	ZZZZZZ	ZZZZZZ	12/20/2017	09:27		12/20/2017	09:39
1220F009.D	ZZZZZZ	ZZZZZZ	12/20/2017	09:46		12/20/2017	09:58
1220F010.D	ZZZZZZ	ZZZZZZ	12/20/2017	10:04		12/20/2017	10:16
1220F011.D	ZZZZZZ	ZZZZZZ	12/20/2017	10:22		12/20/2017	10:34
1220F012.D	ZZZZZZ	ZZZZZZ	12/20/2017	10:40		12/20/2017	10:52
1220F013.D	ZZZZZZ	ZZZZZZ	12/20/2017	10:58		12/20/2017	11:10
1220F014.D	ZZZZZZ	ZZZZZZ	12/20/2017	11:17		12/20/2017	11:29
1220F015.D	ZZZZZZ	ZZZZZZ	12/20/2017	11:35		12/20/2017	11:47
1220F016.D	ZZZZZZ	ZZZZZZ	12/20/2017	11:53		12/20/2017	12:05
1220F017.D	ZZZZZZ	ZZZZZZ	12/20/2017	12:11		12/20/2017	12:23
1220F018.D	ZZZZZZ	ZZZZZZ	12/20/2017	12:29		12/20/2017	12:41
1220F019.D	ZZZZZZ	ZZZZZZ	12/20/2017	12:47		12/20/2017	12:59
1220F020.D	ZZZZZZ	ZZZZZZ	12/20/2017	13:06		12/20/2017	13:18
1220F021.D	ZZZZZZ	ZZZZZZ	12/20/2017	13:24		12/20/2017	13:36
1220F022.D	ZZZZZZ	ZZZZZZ	12/20/2017	13:42		12/20/2017	13:54
1220F023.D	ZZZZZZ	ZZZZZZ	12/20/2017	14:00		12/20/2017	14:12
1220F024.D	ZZZZZZ	ZZZZZZ	12/20/2017	14:18		12/20/2017	14:30
1220F025.D	ZZZZZZ	ZZZZZZ	12/20/2017	14:37		12/20/2017	14:49
1220F026.D	ZZZZZZ	ZZZZZZ	12/20/2017	14:55		12/20/2017	15:07
1220F027.D	ZZZZZZ	ZZZZZZ	12/20/2017	15:13		12/20/2017	15:25
1220F028.D	ZZZZZZ	ZZZZZZ	12/20/2017	15:31		12/20/2017	15:43
1220F029.D	ZZZZZZ	ZZZZZZ	12/20/2017	15:49		12/20/2017	16:01
1220F030.D	ZZZZZZ	ZZZZZZ	12/20/2017	16:08		12/20/2017	16:20
1220F031.D	ZZZZZZ	ZZZZZZ	12/20/2017	16:26		12/20/2017	16:38
1220F032.D	ZZZZZZ	ZZZZZZ	12/20/2017	16:44		12/20/2017	16:56
1220F033.D	ZZZZZZ	ZZZZZZ	12/20/2017	17:02		12/20/2017	17:14
1220F034.D	ZZZZZZ	ZZZZZZ	12/20/2017	17:20		12/20/2017	17:32
1220F035.D	ZZZZZZ	ZZZZZZ	12/20/2017	17:38		12/20/2017	17:50
1220F036.D	ZZZZZZ	ZZZZZZ	12/20/2017	17:56		12/20/2017	18:08
1220F037.D	ZZZZZZ	ZZZZZZ	12/20/2017	18:15		12/20/2017	18:27

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: Hart Crowser, Incorporated **Service Request:** K1712961
Project: URSC/150-001-056

Analysis Run Log
Polybrominated Diphenyl Ethers by 8270C-SIM

Analysis Method: 8270D SIM **Analysis Lot:** KWG1711185
Instrument ID: MS14

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1220F038.D	ZZZZZZ	ZZZZZZ	12/20/2017	18:33		12/20/2017	18:45

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: Hart Crowser, Incorporated **Service Request:** K1712961
Project: URSC/150-001-056

Analysis Run Log
Polybrominated Diphenyl Ethers by 8270C-SIM

Analysis Method: 8270D SIM **Analysis Lot:** KWG1711222
Instrument ID: MS14

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1221F001.D	GC/MS Tuning - Decafluorotriphenylphosph	KWG1711222-1	12/21/2017	06:29		12/21/2017	06:43
1221F002.D	Continuing Calibration Verification	KWG1711222-2	12/21/2017	06:49		12/21/2017	07:01
1221F004.D	Method Blank	KWG1711053-4	12/21/2017	07:29		12/21/2017	07:41
1221F005.D	ZZZZZZ	ZZZZZZ	12/21/2017	07:47		12/21/2017	07:59
1221F006.D	ZZZZZZ	ZZZZZZ	12/21/2017	08:05		12/21/2017	08:17
1221F007.D	ZZZZZZ	ZZZZZZ	12/21/2017	08:23		12/21/2017	08:35
1221F008.D	ZZZZZZ	ZZZZZZ	12/21/2017	08:41		12/21/2017	08:53
1221F009.D	Batch QCMS	KWG1711053-1	12/21/2017	08:59		12/21/2017	09:11
1221F010.D	Batch QCDMS	KWG1711053-2	12/21/2017	09:17		12/21/2017	09:29
1221F011.D	Batch QC	K1713018-010	12/21/2017	09:35		12/21/2017	09:47
1221F012.D	URSC-RM18.45E-COMP	K1712961-015	12/21/2017	09:54		12/21/2017	10:06
1221F013.D	ZZZZZZ	ZZZZZZ	12/21/2017	10:12		12/21/2017	10:24
1221F014.D	ZZZZZZ	ZZZZZZ	12/21/2017	10:30		12/21/2017	10:42
1221F015.D	ZZZZZZ	ZZZZZZ	12/21/2017	10:48		12/21/2017	11:00
1221F016.D	ZZZZZZ	ZZZZZZ	12/21/2017	11:06		12/21/2017	11:18
1221F017.D	ZZZZZZ	ZZZZZZ	12/21/2017	11:24		12/21/2017	11:36
1221F018.D	ZZZZZZ	ZZZZZZ	12/21/2017	11:42		12/21/2017	11:54
1221F019.D	ZZZZZZ	ZZZZZZ	12/21/2017	12:00		12/21/2017	12:12
1221F020.D	ZZZZZZ	ZZZZZZ	12/21/2017	12:18		12/21/2017	12:30
1221F021.D	ZZZZZZ	ZZZZZZ	12/21/2017	12:36		12/21/2017	12:48

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056
Sample Matrix: Sediment

Service Request: K1712961
Date Extracted: 12/13/2017

Extraction Prep Log
Polybrominated Diphenyl Ethers by 8270C-SIM

Extraction Method: EPA 3541
Analysis Method: 8270D SIM

Extraction Lot: KWG1710980
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
URSC-RM20.0W-COMP	K1712961-006	11/30/17	12/01/17	20.297g	2mL	70.9	
URSC-RM20.0W-COMPDL	K1712961-006	11/30/17	12/01/17	20.297g	2mL	70.9	
Method Blank	KWG1710980-4	NA	NA	20.353g	2mL	NA	
Batch QC	K1713130-006	NA	NA	20.244g	2mL	68.5	
Batch QCDL	K1713130-006	NA	NA	20.244g	2mL	68.5	
Batch QCMS	KWG1710980-1	NA	NA	20.022g	2mL	68.5	
Batch QCDMS	KWG1710980-2	NA	NA	20.353g	2mL	68.5	
Lab Control Sample	KWG1710980-3	NA	NA	20.000g	2mL	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Extracted:**	12/15/2017
Sample Matrix:	Sediment		

Extraction Prep Log
Polybrominated Diphenyl Ethers by 8270C-SIM

Extraction Method:	EPA 3541	**Extraction Lot:**	KWG1711053
Analysis Method:	8270D SIM	**Level:**	Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
URSC-RM18.45E-COMP	K1712961-015	11/30/17	12/01/17	20.378g	2mL	61.5	*
Method Blank	KWG1711053-4	NA	NA	20.309g	2mL	NA	
Batch QC	K1713018-010	NA	NA	20.048g	2mL	60.6	
Batch QCMS	KWG1711053-1	NA	NA	20.204g	2mL	60.6	
Batch QCDMS	KWG1711053-2	NA	NA	20.023g	2mL	60.6	
Lab Control Sample	KWG1711053-3	NA	NA	20.000g	2mL	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Semi-Volatile Organic Compounds by GC/MS

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Client: Hart Crowser, Incorporated **Service Request:** K1712961
Project: URSC/150-001-056

Cover Page - Organic Analysis Data Package
Semi-Volatile Organic Compounds by GC/MS

Sample Name	Lab Code	Date Collected	Date Received
URSC-RM20.0W-COMP	K1712961-006	11/30/2017	12/01/2017
URSC-RM18.45E-COMP	K1712961-015	11/30/2017	12/01/2017

Analytical Results

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	11/30/2017
Sample Matrix:	Sediment	**Date Received:**	12/01/2017

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	URSC-RM20.0W-COMP	**Units:**	ug/Kg
Lab Code:	K1712961-006	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	7.0	2.9	1	12/13/17	01/03/18	KWG1710979	
2-Methylnaphthalene	ND	U	7.0	2.8	1	12/13/17	01/03/18	KWG1710979	
Acenaphthylene	ND	U	7.0	2.6	1	12/13/17	01/03/18	KWG1710979	
Acenaphthene	ND	U	7.0	3.2	1	12/13/17	01/03/18	KWG1710979	
Fluorene	ND	U	7.0	3.3	1	12/13/17	01/03/18	KWG1710979	
Phenanthrene	**14**		7.0	3.6	1	12/13/17	01/03/18	KWG1710979	
Anthracene	ND	U	7.0	3.2	1	12/13/17	01/03/18	KWG1710979	
Fluoranthene	**37**		7.0	3.7	1	12/13/17	01/03/18	KWG1710979	
Pyrene	**39**		7.0	3.7	1	12/13/17	01/03/18	KWG1710979	
Benz(a)anthracene	**16**		7.0	3.6	1	12/13/17	01/03/18	KWG1710979	
Chrysene	**25**		7.0	4.1	1	12/13/17	01/03/18	KWG1710979	
Hexachlorobenzene	ND	U	7.0	3.3	1	12/13/17	01/03/18	KWG1710979	
Pentachlorophenol	ND	U	70	5.3	1	12/13/17	01/03/18	KWG1710979	*
Bis(2-ethylhexyl) Phthalate	**53**	J	70	8.9	1	12/13/17	01/03/18	KWG1710979	
Benzo(b)fluoranthene	**28**		7.0	3.4	1	12/13/17	01/03/18	KWG1710979	
Benzo(k)fluoranthene	**9.2**		7.0	4.0	1	12/13/17	01/03/18	KWG1710979	
Benzo(a)pyrene	**29**		7.0	3.6	1	12/13/17	01/03/18	KWG1710979	
Indeno(1,2,3-cd)pyrene	**25**		7.0	3.2	1	12/13/17	01/03/18	KWG1710979	
Dibenz(a,h)anthracene	**4.3**	J	7.0	3.0	1	12/13/17	01/03/18	KWG1710979	
Benzo(g,h,i)perylene	**32**		7.0	3.7	1	12/13/17	01/03/18	KWG1710979	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	61	14-85	01/03/18	Acceptable
2-Fluorobiphenyl	54	22-85	01/03/18	Acceptable
2,4,6-Tribromophenol	48	10-124	01/03/18	Acceptable
Terphenyl-d14	61	30-102	01/03/18	Acceptable

Comments:

Analytical Results

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	11/30/2017
Sample Matrix:	Sediment	**Date Received:**	12/01/2017

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	URSC-RM18.45E-COMP	**Units:**	ug/Kg
Lab Code:	K1712961-015	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	8.1	2.9	1	12/13/17	01/03/18	KWG1710979	
2-Methylnaphthalene	ND	U	8.1	2.8	1	12/13/17	01/03/18	KWG1710979	
Acenaphthylene	ND	U	8.1	2.6	1	12/13/17	01/03/18	KWG1710979	
Acenaphthene	ND	U	8.1	3.2	1	12/13/17	01/03/18	KWG1710979	
Fluorene	ND	U	8.1	3.3	1	12/13/17	01/03/18	KWG1710979	
Phenanthrene	**6.5**	J	8.1	3.6	1	12/13/17	01/03/18	KWG1710979	
Anthracene	ND	U	8.1	3.2	1	12/13/17	01/03/18	KWG1710979	
Fluoranthene	**18**		8.1	3.7	1	12/13/17	01/03/18	KWG1710979	
Pyrene	**16**		8.1	3.7	1	12/13/17	01/03/18	KWG1710979	
Benz(a)anthracene	**15**		8.1	3.6	1	12/13/17	01/03/18	KWG1710979	
Chrysene	**17**		8.1	4.1	1	12/13/17	01/03/18	KWG1710979	
Hexachlorobenzene	ND	U	8.1	3.3	1	12/13/17	01/03/18	KWG1710979	
Pentachlorophenol	ND	U	81	5.3	1	12/13/17	01/03/18	KWG1710979	*
Bis(2-ethylhexyl) Phthalate	**63**	J	81	8.9	1	12/13/17	01/03/18	KWG1710979	
Benzo(b)fluoranthene	**17**		8.1	3.4	1	12/13/17	01/03/18	KWG1710979	
Benzo(k)fluoranthene	**6.7**	J	8.1	4.0	1	12/13/17	01/03/18	KWG1710979	
Benzo(a)pyrene	**18**		8.1	3.6	1	12/13/17	01/03/18	KWG1710979	
Indeno(1,2,3-cd)pyrene	**10**		8.1	3.2	1	12/13/17	01/03/18	KWG1710979	
Dibenz(a,h)anthracene	ND	U	8.1	3.0	1	12/13/17	01/03/18	KWG1710979	
Benzo(g,h,i)perylene	**13**		8.1	3.7	1	12/13/17	01/03/18	KWG1710979	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	55	14-85	01/03/18	Acceptable
2-Fluorobiphenyl	49	22-85	01/03/18	Acceptable
2,4,6-Tribromophenol	55	10-124	01/03/18	Acceptable
Terphenyl-d14	58	30-102	01/03/18	Acceptable

Comments:

Analytical Results

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	KWG1710979-4	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	50	15	1	12/13/17	01/02/18	KWG1710979	
2-Methylnaphthalene	ND	U	50	14	1	12/13/17	01/02/18	KWG1710979	
Acenaphthylene	ND	U	50	13	1	12/13/17	01/02/18	KWG1710979	
Acenaphthene	ND	U	50	16	1	12/13/17	01/02/18	KWG1710979	
Fluorene	ND	U	50	17	1	12/13/17	01/02/18	KWG1710979	
Phenanthrene	ND	U	50	18	1	12/13/17	01/02/18	KWG1710979	
Anthracene	ND	U	50	16	1	12/13/17	01/02/18	KWG1710979	
Fluoranthene	ND	U	50	19	1	12/13/17	01/02/18	KWG1710979	
Pyrene	ND	U	50	19	1	12/13/17	01/02/18	KWG1710979	
Benz(a)anthracene	ND	U	50	18	1	12/13/17	01/02/18	KWG1710979	
Chrysene	ND	U	50	21	1	12/13/17	01/02/18	KWG1710979	
Hexachlorobenzene	ND	U	50	17	1	12/13/17	01/02/18	KWG1710979	
Pentachlorophenol	ND	U	500	27	1	12/13/17	01/02/18	KWG1710979	*
Bis(2-ethylhexyl) Phthalate	**240**	J	500	45	1	12/13/17	01/02/18	KWG1710979	
Benzo(b)fluoranthene	ND	U	50	17	1	12/13/17	01/02/18	KWG1710979	
Benzo(k)fluoranthene	ND	U	50	20	1	12/13/17	01/02/18	KWG1710979	
Benzo(a)pyrene	ND	U	50	18	1	12/13/17	01/02/18	KWG1710979	
Indeno(1,2,3-cd)pyrene	ND	U	50	16	1	12/13/17	01/02/18	KWG1710979	
Dibenz(a,h)anthracene	ND	U	50	15	1	12/13/17	01/02/18	KWG1710979	
Benzo(g,h,i)perylene	ND	U	50	19	1	12/13/17	01/02/18	KWG1710979	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	68	14-85	01/02/18	Acceptable
2-Fluorobiphenyl	62	22-85	01/02/18	Acceptable
2,4,6-Tribromophenol	49	10-124	01/02/18	Acceptable
Terphenyl-d14	64	30-102	01/02/18	Acceptable

Comments:

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056
Sample Matrix: Sediment

Service Request: K1712961

Surrogate Recovery Summary
Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3541
Analysis Method: 8270D

Units: Percent
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3	Sur4
URSC-RM20.0W-COMP	K1712961-006	61	54	48	61
URSC-RM18.45E-COMP	K1712961-015	55	49	55	58
Batch QC	K1713130-006	57	50	51	57
Method Blank	KWG1710979-4	68	62	49	64
Batch QCMS	KWG1710979-1	59	55	60	62
Batch QCDMS	KWG1710979-2	57	51	57	58
Lab Control Sample	KWG1710979-3	63	56	56	65

Surrogate Recovery Control Limits (%)

Sur1	=	Nitrobenzene-d5	14-85
Sur2	=	2-Fluorobiphenyl	22-85
Sur3	=	2,4,6-Tribromophenol	10-124
Sur4	=	Terphenyl-d14	30-102

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Analyzed:**	01/02/2018
		Time Analyzed:	17:15

Internal Standard Area and RT Summary
Semi-Volatile Organic Compounds by GC/MS

File ID:	J:\MS29\DATA\010218\0102F015.D	**Lab Code:**	KWG1800134-2
Instrument ID:	MS29	**Analysis Lot:**	KWG1800134
Analysis Method:	8270D		

		Naphthalene-d8		Acenaphthene-d10		Phenanthrene-d10	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Results ==>	305,037	6.29	154,088	9.69	274,191	12.02
	Upper Limit ==>	610,074	6.79	308,176	10.19	548,382	12.52
	Lower Limit ==>	152,519	5.79	77,044	9.19	137,096	11.52
	ICAL Result ==>	214,057	6.29	108,131	9.68	207,632	12.02
Associated Analyses							
Method Blank	KWG1710979-4	287,431	6.29	135,854	9.69	240,522	12.02
Lab Control Sample	KWG1710979-3	289,123	6.29	143,619	9.68	260,455	12.02
Batch QCMS	KWG1710979-1	291,462	6.29	147,713	9.69	275,066	12.02
Batch QCDMS	KWG1710979-2	287,793	6.29	148,116	9.69	271,971	12.02
Batch QC	K1713130-006	286,014	6.29	146,646	9.69	269,762	12.02
URSC-RM20.0W-COMP	K1712961-006	287,298	6.29	145,915	9.69	265,123	12.02
URSC-RM18.45E-COMP	K1712961-015	288,112	6.29	148,333	9.69	268,075	12.02

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Report

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056

Service Request: K1712961
Date Analyzed: 01/02/2018
Time Analyzed: 17:15

Internal Standard Area and RT Summary
Semi-Volatile Organic Compounds by GC/MS

File ID: J:\MS29\DATA\010218\0102F015.D
Instrument ID: MS29
Analysis Method: 8270D

Lab Code: KWG1800134-2
Analysis Lot: KWG1800134

		Chrysene-d12		Perylene-d12	
		Area	**RT**	**Area**	**RT**
	Results ==>	267,850	15.48	288,062	18.60
	Upper Limit ==>	535,700	15.98	576,124	19.10
	Lower Limit ==>	133,925	14.98	144,031	18.10
	ICAL Result ==>	211,022	15.47	201,630	18.59
Associated Analyses					
Method Blank	KWG1710979-4	246,066	15.47	273,795	18.60
Lab Control Sample	KWG1710979-3	235,445	15.47	254,711	18.60
Batch QCMS	KWG1710979-1	302,580	15.48	312,645	18.60
Batch QCDMS	KWG1710979-2	274,254	15.48	284,628	18.60
Batch QC	K1713130-006	297,225	15.48	317,350	18.60
URSC-RM20.0W-COMP	K1712961-006	270,472	15.48	293,989	18.60
URSC-RM18.45E-COMP	K1712961-015	284,352	15.48	304,748	18.60

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Extracted:**	12/13/2017
Sample Matrix:	Sediment	**Date Analyzed:**	01/02/2018

Matrix Spike/Duplicate Matrix Spike Summary
Semi-Volatile Organic Compounds by GC/MS

Sample Name:	Batch QC	**Units:**	ug/Kg
Lab Code:	K1713130-006	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D	**Extraction Lot:**	KWG1710979

		Batch QCMS KWG1710979-1 Matrix Spike			Batch QCDMS KWG1710979-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Naphthalene	ND	110	181	61	101	182	56	10-109	8	40
2-Methylnaphthalene	ND	118	181	65	108	182	59	10-117	9	40
Acenaphthylene	ND	134	181	74	119	182	65	10-108	12	40
Acenaphthene	ND	126	181	70	111	182	61	10-108	13	40
Fluorene	ND	141	181	78	123	182	68	10-110	13	40
Phenanthrene	10	153	181	79	123	182	62	10-132	22	40
Anthracene	ND	136	181	75	120	182	66	10-119	13	40
Fluoranthene	25	201	181	97	135	182	60	10-140	39	40
Pyrene	24	184	181	88	127	182	57	10-132	36	40
Benz(a)anthracene	9.7	172	181	90	135	182	69	13-120	24	40
Chrysene	13	175	181	90	130	182	64	10-138	30	40
Hexachlorobenzene	ND	140	181	77	125	182	69	33-92	11	40
Pentachlorophenol	ND	127	181	70	115	182	63	10-134	10	40
Bis(2-ethylhexyl) Phthalate	46	200	181	85	191	182	80	23-123	5	40
Benzo(b)fluoranthene	15	187	181	95	142	182	70	10-128	28	40
Benzo(k)fluoranthene	5.1	164	181	88	132	182	70	15-114	21	40
Benzo(a)pyrene	18	178	181	89	132	182	63	10-148	30	40
Indeno(1,2,3-cd)pyrene	12	214	181	111	158	182	80	10-143	30	40
Dibenz(a,h)anthracene	ND	168	181	93	141	182	78	29-102	18	40
Benzo(g,h,i)perylene	17	225	181	115	164	182	81	10-126	32	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Extracted:**	12/13/2017
Sample Matrix:	Sediment	**Date Analyzed:**	01/02/2018

Lab Control Spike Summary
Semi-Volatile Organic Compounds by GC/MS

Extraction Method:	EPA 3541	**Units:**	ug/Kg
Analysis Method:	8270D	**Basis:**	Dry
		Level:	Low
		Extraction Lot:	KWG1710979

	Lab Control Sample KWG1710979-3 Lab Control Spike			
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
Naphthalene	152	250	61	30-74
2-Methylnaphthalene	157	250	63	26-80
Acenaphthylene	172	250	69	30-79
Acenaphthene	158	250	63	31-77
Fluorene	166	250	66	30-81
Phenanthrene	169	250	67	36-85
Anthracene	186	250	74	36-87
Fluoranthene	184	250	74	25-115
Pyrene	193	250	77	40-99
Benz(a)anthracene	203	250	81	43-98
Chrysene	193	250	77	41-98
Hexachlorobenzene	174	250	70	36-86
Pentachlorophenol	111	250	44	19-103
Bis(2-ethylhexyl) Phthalate	248	250	99	39-113
Benzo(b)fluoranthene	198	250	79	39-99
Benzo(k)fluoranthene	192	250	77	38-93
Benzo(a)pyrene	192	250	77	43-102
Indeno(1,2,3-cd)pyrene	212	250	85	36-105
Dibenz(a,h)anthracene	203	250	81	38-101
Benzo(g,h,i)perylene	214	250	86	39-99

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Extracted:**	12/13/2017
Sample Matrix:	Sediment	**Date Analyzed:**	01/02/2018
		Time Analyzed:	22:34

Method Blank Summary
Semi-Volatile Organic Compounds by GC/MS

Sample Name:	Method Blank	**Instrument ID:**	MS29
Lab Code:	KWG1710979-4	**File ID:**	J:\MS29\DATA\010218\0102F026.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D	**Extraction Lot:**	KWG1710979

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1710979-3	J:\MS29\DATA\010218\0102F027.D	01/02/18	23:02
Batch QCMS	KWG1710979-1	J:\MS29\DATA\010218\0102F028.D	01/02/18	23:31
Batch QCDMS	KWG1710979-2	J:\MS29\DATA\010218\0102F029.D	01/02/18	23:59
Batch QC	K1713130-006	J:\MS29\DATA\010218\0102F030.D	01/03/18	00:28
URSC-RM20.0W-COMP	K1712961-006	J:\MS29\DATA\010218\0102F031.D	01/03/18	00:56
URSC-RM18.45E-COMP	K1712961-015	J:\MS29\DATA\010218\0102F032.D	01/03/18	01:25

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Extracted:**	12/13/2017
Sample Matrix:	Sediment	**Date Analyzed:**	01/02/2018
		Time Analyzed:	23:02

Lab Control Sample Summary
Semi-Volatile Organic Compounds by GC/MS

Sample Name:	Lab Control Sample	**Instrument ID:**	MS29
Lab Code:	KWG1710979-3	**File ID:**	J:\MS29\DATA\010218\0102F027.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D	**Extraction Lot:**	KWG1710979

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1710979-4	J:\MS29\DATA\010218\0102F026.D	01/02/18	22:34
Batch QCMS	KWG1710979-1	J:\MS29\DATA\010218\0102F028.D	01/02/18	23:31
Batch QCDMS	KWG1710979-2	J:\MS29\DATA\010218\0102F029.D	01/02/18	23:59
Batch QC	K1713130-006	J:\MS29\DATA\010218\0102F030.D	01/03/18	00:28
URSC-RM20.0W-COMP	K1712961-006	J:\MS29\DATA\010218\0102F031.D	01/03/18	00:56
URSC-RM18.45E-COMP	K1712961-015	J:\MS29\DATA\010218\0102F032.D	01/03/18	01:25

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QA/QC Results

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056

Service Request: K1712961
Date Analyzed: 01/02/2018
Time Analyzed: 16:47

Tune Summary
Semi-Volatile Organic Compounds by GC/MS

File ID: J:\MS29\DATA\010218\0102F014.D
Instrument ID: MS29
Column:

Analysis Method: 8270D
Analysis Lot: KWG1800134

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	10	80	27.1	513749	PASS
68	69	0	2	0.0	0	PASS
69	198	0	100	31.6	599629	PASS
70	69	0	2	0.5	3170	PASS
127	198	10	80	41.2	781717	PASS
197	198	0	2	0.0	0	PASS
198	442	30	100	55.1	1898154	PASS
199	198	5	9	6.6	125082	PASS
275	198	10	60	33.5	635349	PASS
365	442	1	50	2.2	76002	PASS
441	443	0	100	83.6	548885	PASS
442	442	100	100	100.0	3445077	PASS
443	442	15	24	19.0	656213	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1800134-2	J:\MS29\DATA\010218\0102F015.D	01/02/2018	17:15	
Method Blank	KWG1710979-4	J:\MS29\DATA\010218\0102F026.D	01/02/2018	22:34	
Lab Control Sample	KWG1710979-3	J:\MS29\DATA\010218\0102F027.D	01/02/2018	23:02	
Batch QCMS	KWG1710979-1	J:\MS29\DATA\010218\0102F028.D	01/02/2018	23:31	
Batch QCDMS	KWG1710979-2	J:\MS29\DATA\010218\0102F029.D	01/02/2018	23:59	
Batch QC	K1713130-006	J:\MS29\DATA\010218\0102F030.D	01/03/2018	00:28	
URSC-RM20.0W-COMP	K1712961-006	J:\MS29\DATA\010218\0102F031.D	01/03/2018	00:56	
URSC-RM18.45E-COMP	K1712961-015	J:\MS29\DATA\010218\0102F032.D	01/03/2018	01:25	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

QA/QC Results

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056

Service Request: K1712961
Calibration Date: 12/21/2017

Initial Calibration Summary
Semi-Volatile Organic Compounds by GC/MS

Calibration ID: CAL15647
Instrument ID: MS29

Column: MS

Level ID	File ID	Level ID	File ID
A	J:\MS29\DATA\122117\1221F003.D	G	J:\MS29\DATA\122117\1221F009.D
B	J:\MS29\DATA\122117\1221F004.D	H	J:\MS29\DATA\122117\1221F010.D
C	J:\MS29\DATA\122117\1221F005.D	I	J:\MS29\DATA\122117\1221F011.D
D	J:\MS29\DATA\122117\1221F006.D	J	J:\MS29\DATA\122117\1221F012.D
E	J:\MS29\DATA\122117\1221F007.D		
F	J:\MS29\DATA\122117\1221F008.D		

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Naphthalene	A	50	1.01	B	100	0.915	C	200	0.981	D	500	0.967	E	1000	0.973
	F	2000	1.00	G	3000	0.997	H	5000	0.999	I	7000	0.985	J	10000	1.00
2-Methylnaphthalene	A	50	0.519	B	100	0.500	C	200	0.531	D	500	0.545	E	1000	0.559
	F	2000	0.579	G	3000	0.565	H	5000	0.580	I	7000	0.576	J	10000	0.586
Acenaphthylene				B	100	1.24	C	200	1.38	D	500	1.56	E	1000	1.74
	F	2000	1.88	G	3000	1.91	H	5000	1.95	I	7000	1.95	J	10000	1.98
Acenaphthene	A	50	1.13	B	100	1.10	C	200	1.14	D	500	1.12	E	1000	1.13
	F	2000	1.16	G	3000	1.17	H	5000	1.16	I	7000	1.16	J	10000	1.16
Fluorene	A	50	1.16	B	100	1.21	C	200	1.22	D	500	1.26	E	1000	1.32
	F	2000	1.38	G	3000	1.36	H	5000	1.38	I	7000	1.36	J	10000	1.41
Phenanthrene	A	50	1.06	B	100	0.987	C	200	1.07	D	500	1.05	E	1000	1.07
	F	2000	1.09	G	3000	1.06	H	5000	1.08	I	7000	1.07	J	10000	1.07
Anthracene	A	50	0.794	B	100	0.781	C	200	0.830	D	500	0.915	E	1000	0.985
	F	2000	1.05	G	3000	1.05	H	5000	1.09	I	7000	1.07	J	10000	1.09
Fluoranthene	A	50	0.954	B	100	0.943	C	200	1.01	D	500	1.12	E	1000	1.19
	F	2000	1.22	G	3000	1.21	H	5000	1.20	I	7000	1.16	J	10000	1.18
Pyrene	A	50	1.14	B	100	1.15	C	200	1.26	D	500	1.30	E	1000	1.31
	F	2000	1.30	G	3000	1.30	H	5000	1.31	I	7000	1.31	J	10000	1.30
Benz(a)anthracene	A	50	0.937	B	100	0.801	C	200	0.829	D	500	0.931	E	1000	1.02
	F	2000	1.08	G	3000	1.12	H	5000	1.19	I	7000	1.21	J	10000	1.20
Chrysene	A	50	0.967	B	100	1.01	C	200	1.10	D	500	1.06	E	1000	1.06
	F	2000	1.08	G	3000	1.07	H	5000	1.08	I	7000	1.07	J	10000	1.06
Hexachlorobenzene	A	50	0.275	B	100	0.260	C	200	0.283	D	500	0.294	E	1000	0.297
	F	2000	0.303	G	3000	0.297	H	5000	0.296	I	7000	0.297	J	10000	0.297
Pentachlorophenol										D	500	0.0978	E	1000	0.124
	F	2000	0.152	G	3000	0.156	H	5000	0.171	I	7000	0.175	J	10000	0.178
Bis(2-ethylhexyl) Phthalate										D	500	0.248	E	1000	0.346
	F	2000	0.489	G	3000	0.567	H	5000	0.662	I	7000	0.706	J	10000	0.711

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Hart Crowser, Incorporated **Service Request:** K1712961
Project: URSC/150-001-056 **Calibration Date:** 12/21/2017

Initial Calibration Summary
Semi-Volatile Organic Compounds by GC/MS

Calibration ID: CAL15647 **Column:** MS
Instrument ID: MS29

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Benzo(b)fluoranthene	A	50	0.861	B	100	0.805	C	200	0.819	D	500	0.967	E	1000	1.06
	F	2000	1.13	G	3000	1.12	H	5000	1.13	I	7000	1.17	J	10000	1.18
Benzo(k)fluoranthene	A	50	0.861	B	100	0.810	C	200	0.870	D	500	1.02	E	1000	1.09
	F	2000	1.20	G	3000	1.16	H	5000	1.15	I	7000	1.21	J	10000	1.16
Benzo(a)pyrene				B	100	0.607	C	200	0.566	D	500	0.697	E	1000	0.828
	F	2000	0.936	G	3000	0.956	H	5000	0.980	I	7000	1.02	J	10000	1.01
Indeno(1,2,3-cd)pyrene	A	50	0.917	B	100	0.797	C	200	0.797	D	500	0.874	E	1000	0.805
	F	2000	0.807	G	3000	0.810	H	5000	0.829	I	7000	0.874	J	10000	0.910
Dibenz(a,h)anthracene	A	50	0.941	B	100	0.797	C	200	0.932	D	500	0.989	E	1000	0.856
	F	2000	0.963	G	3000	0.927	H	5000	0.929	I	7000	0.950	J	10000	0.974
Benzo(g,h,i)perylene	A	50	0.892	B	100	0.812	C	200	0.979	D	500	0.912	E	1000	0.765
	F	2000	0.599	G	3000	0.640	H	5000	0.683	I	7000	0.708	J	10000	0.720
Nitrobenzene-d5	A	50	0.815	B	100	0.825	C	200	0.858	D	500	0.906	E	1000	0.996
	F	2000	1.04	G	3000	1.01	H	5000	1.08	I	7000	1.08	J	10000	1.08
2-Fluorobiphenyl	A	50	1.50	B	100	1.45	C	200	1.51	D	500	1.50	E	1000	1.50
	F	2000	1.53	G	3000	1.52	H	5000	1.52	I	7000	1.50	J	10000	1.51
2,4,6-Tribromophenol							C	200	0.0995	D	500	0.118	E	1000	0.141
	F	2000	0.154	G	3000	0.154	H	5000	0.162	I	7000	0.162			
Terphenyl-d14	A	50	0.923	B	100	0.855	C	200	0.938	D	500	0.905	E	1000	0.898
	F	2000	0.898	G	3000	0.916	H	5000	0.949	I	7000	0.944	J	10000	0.954

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Hart Crowser, Incorporated **Service Request:** K1712961
Project: URSC/150-001-056 **Calibration Date:** 12/21/2017

Initial Calibration Summary
Semi-Volatile Organic Compounds by GC/MS

Calibration ID: CAL15647 **Column:** MS
Instrument ID: MS29

		Calibration Evaluation					RRF Evaluation		
Analyte Name	Compound Type	Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
Naphthalene	MS	AverageRF	% RSD	2.7		≤ 20	0.982		0.700
2-Methylnaphthalene	MS	AverageRF	% RSD	5.3		≤ 20	0.554		0.300
Acenaphthylene	MS	AverageRF	% RSD	15.9		≤ 20	1.73		0.900
Acenaphthene	MS	AverageRF	% RSD	2.1		≤ 20	1.14		0.700
Fluorene	MS	AverageRF	% RSD	6.6		≤ 20	1.31		0.800
Phenanthrene	MS	AverageRF	% RSD	2.6		≤ 20	1.06		0.600
Anthracene	MS	AverageRF	% RSD	12.9		≤ 20	0.965		0.600
Fluoranthene	MS	AverageRF	% RSD	9.6		≤ 20	1.12		0.600
Pyrene	MS	AverageRF	% RSD	5.2		≤ 20	1.27		0.600
Benz(a)anthracene	MS	AverageRF	% RSD	14.8		≤ 20	1.03		0.600
Chrysene	MS	AverageRF	% RSD	3.7		≤ 20	1.06		0.600
Hexachlorobenzene	MS	AverageRF	% RSD	4.6		≤ 20	0.290		0.100
Pentachlorophenol	MS	Quadratic	COD	1.000		≥ 0.990	0.151		0.050
Bis(2-ethylhexyl) Phthalate	MS	Quadratic	COD	0.997		≥ 0.990	0.533		0.010
Benzo(b)fluoranthene	MS	AverageRF	% RSD	14.4		≤ 20	1.02		0.600
Benzo(k)fluoranthene	MS	AverageRF	% RSD	14.5		≤ 20	1.05		0.600
Benzo(a)pyrene	MS	Quadratic	COD	0.999		≥ 0.990	0.845		0.600
Indeno(1,2,3-cd)pyrene	MS	AverageRF	% RSD	5.6		≤ 20	0.842		0.500
Dibenz(a,h)anthracene	MS	AverageRF	% RSD	6.2		≤ 20	0.926		0.400
Benzo(g,h,i)perylene	MS	AverageRF	% RSD	16.2		≤ 20	0.771		0.500
Nitrobenzene-d5	SURR	AverageRF	% RSD	11.1		≤ 20	0.969		0.01
2-Fluorobiphenyl	SURR	AverageRF	% RSD	1.4		≤ 20	1.50		0.01
2,4,6-Tribromophenol	SURR	Quadratic	COD	1.000		≥ 0.990	0.141		0.01
Terphenyl-d14	SURR	AverageRF	% RSD	3.3		≤ 20	0.918		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056

Service Request: K1712961
Calibration Date: 12/21/2017
Date Analyzed: 12/21/2017

Second Source Calibration Verification
Semi-Volatile Organic Compounds by GC/MS

Calibration Type: Internal Standard
Analysis Method: 8270D

Calibration ID: CAL15647
Units: ng/ml

File ID: J:\MS29\DATA\122117\1221F013.D
J:\MS29\DATA\122117\1221F014.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Naphthalene	3000	3000	0.982	0.986	0	NA	± 30 %	AverageRF
2-Methylnaphthalene	3000	3400	0.554	0.623	12	NA	± 30 %	AverageRF
Acenaphthylene	3000	3000	1.73	1.74	0	NA	± 30 %	AverageRF
Acenaphthene	3000	3200	1.14	1.21	6	NA	± 30 %	AverageRF
Fluorene	3000	3200	1.31	1.40	7	NA	± 30 %	AverageRF
Phenanthrene	3000	3100	1.06	1.10	4	NA	± 30 %	AverageRF
Anthracene	3000	3500	0.965	1.11	16	NA	± 30 %	AverageRF
Fluoranthene	3000	3300	1.12	1.25	12	NA	± 30 %	AverageRF
Pyrene	3000	2900	1.27	1.23	-3	NA	± 30 %	AverageRF
Benz(a)anthracene	3000	3300	1.03	1.14	11	NA	± 30 %	AverageRF
Chrysene	3000	2900	1.06	1.03	-2	NA	± 30 %	AverageRF
Hexachlorobenzene	3000	3100	0.290	0.303	5	NA	± 30 %	AverageRF
Pentachlorophenol	3000	3700	0.151	0.204	NA	23	± 30 %	Quadratic
Bis(2-ethylhexyl) Phthalate	3000	3200	0.533	0.629	NA	7	± 30 %	Quadratic
Benzo(b)fluoranthene	3000	3300	1.02	1.11	9	NA	± 30 %	AverageRF
Benzo(k)fluoranthene	3000	3200	1.05	1.13	8	NA	± 30 %	AverageRF
Benzo(a)pyrene	3000	3300	0.845	1.04	NA	10	± 30 %	Quadratic
Indeno(1,2,3-cd)pyrene	3000	2900	0.842	0.826	-2	NA	± 30 %	AverageRF
Dibenz(a,h)anthracene	3000	3100	0.926	0.949	2	NA	± 30 %	AverageRF
Benzo(g,h,i)perylene	3000	2700	0.771	0.693	-10	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

QA/QC Results

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056

Service Request: K1712961
Date Analyzed: 01/02/2018

Continuing Calibration Verification Summary
Semi-Volatile Organic Compounds by GC/MS

Calibration Type: Internal Standard
Analysis Method: 8270D

Calibration Date: 12/21/2017
Calibration ID: CAL15647
Analysis Lot: KWG1800134
Units: ng/ml

File ID: J:\MS29\DATA\010218\0102F015.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift		Criteria	Curve Fit
Naphthalene	3000	3000	0.700	0.982	0.972	-1	NA		± 20	AverageRF
2-Methylnaphthalene	3000	3100	0.300	0.554	0.572	3	NA		± 20	AverageRF
Acenaphthylene	3000	3400	0.900	1.73	1.94	12	NA		± 20	AverageRF
Acenaphthene	3000	3000	0.700	1.14	1.14	0	NA		± 20	AverageRF
Fluorene	3000	3100	0.800	1.31	1.36	4	NA		± 20	AverageRF
Phenanthrene	3000	2900	0.600	1.06	1.04	-2	NA		± 20	AverageRF
Anthracene	3000	3300	0.600	0.965	1.05	9	NA		± 20	AverageRF
Fluoranthene	3000	2900	0.600	1.12	1.08	-4	NA		± 20	AverageRF
Pyrene	3000	2800	0.600	1.27	1.19	-6	NA		± 20	AverageRF
Benz(a)anthracene	3000	3200	0.600	1.03	1.09	5	NA		± 20	AverageRF
Chrysene	3000	3000	0.600	1.06	1.06	0	NA		± 20	AverageRF
Hexachlorobenzene	3000	3100	0.100	0.290	0.303	4	NA		± 20	AverageRF
Pentachlorophenol	3000	1800	0.050	0.151	0.0895	NA	-40	*	± 20	Quadratic
Bis(2-ethylhexyl) Phthalate	3000	3200	0.010	0.533	0.632	NA	7		± 20	Quadratic
Benzo(b)fluoranthene	3000	2900	0.600	1.02	0.997	-3	NA		± 20	AverageRF
Benzo(k)fluoranthene	3000	2900	0.600	1.05	1.02	-3	NA		± 20	AverageRF
Benzo(a)pyrene	3000	2900	0.600	0.845	0.908	NA	-4		± 20	Quadratic
Indeno(1,2,3-cd)pyrene	3000	3100	0.500	0.842	0.872	4	NA		± 20	AverageRF
Dibenz(a,h)anthracene	3000	3000	0.400	0.926	0.926	0	NA		± 20	AverageRF
Benzo(g,h,i)perylene	3000	2800	0.500	0.771	0.722	-6	NA		± 20	AverageRF
Nitrobenzene-d5	3000	3400	0.01	0.969	1.10	14	NA		± 20	AverageRF
2-Fluorobiphenyl	3000	3000	0.01	1.50	1.51	1	NA		± 20	AverageRF
2,4,6-Tribromophenol	3000	2900	0.01	0.141	0.151	NA	-3		± 20	Quadratic
Terphenyl-d14	3000	2600	0.01	0.918	0.800	-13	NA		± 20	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: Hart Crowser, Incorporated **Service Request:** K1712961
Project: URSC/150-001-056

Analysis Run Log
Semi-Volatile Organic Compounds by GC/MS

Analysis Method: 8270D **Analysis Lot:** KWG1800134
Instrument ID: MS29

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0102F014.D	GC/MS Tuning - Decafluorotriphenylphosph	KWG1800134-1	1/2/2018	16:47		1/2/2018	17:10
0102F015.D	Continuing Calibration Verification	KWG1800134-2	1/2/2018	17:15		1/2/2018	17:38
0102F017.D	ZZZZZZ	ZZZZZZ	1/2/2018	18:18		1/2/2018	18:41
0102F018.D	ZZZZZZ	ZZZZZZ	1/2/2018	18:47		1/2/2018	19:10
0102F019.D	ZZZZZZ	ZZZZZZ	1/2/2018	19:15		1/2/2018	19:38
0102F020.D	ZZZZZZ	ZZZZZZ	1/2/2018	19:43		1/2/2018	20:06
0102F021.D	ZZZZZZ	ZZZZZZ	1/2/2018	20:12		1/2/2018	20:35
0102F022.D	ZZZZZZ	ZZZZZZ	1/2/2018	20:40		1/2/2018	21:03
0102F023.D	ZZZZZZ	ZZZZZZ	1/2/2018	21:09		1/2/2018	21:32
0102F024.D	ZZZZZZ	ZZZZZZ	1/2/2018	21:37		1/2/2018	22:00
0102F025.D	ZZZZZZ	ZZZZZZ	1/2/2018	22:06		1/2/2018	22:29
0102F026.D	Method Blank	KWG1710979-4	1/2/2018	22:34		1/2/2018	22:57
0102F027.D	Lab Control Sample	KWG1710979-3	1/2/2018	23:02		1/2/2018	23:25
0102F028.D	Batch QCMS	KWG1710979-1	1/2/2018	23:31		1/2/2018	23:54
0102F029.D	Batch QCDMS	KWG1710979-2	1/2/2018	23:59		1/3/2018	00:22
0102F030.D	Batch QC	K1713130-006	1/3/2018	00:28		1/3/2018	00:51
0102F031.D	URSC-RM20.0W-COMP	K1712961-006	1/3/2018	00:56		1/3/2018	01:19
0102F032.D	URSC-RM18.45E-COMP	K1712961-015	1/3/2018	01:25		1/3/2018	01:48
0102F033.D	ZZZZZZ	ZZZZZZ	1/3/2018	01:53		1/3/2018	02:16
0102F034.D	ZZZZZZ	ZZZZZZ	1/3/2018	02:22		1/3/2018	02:45
0102F035.D	ZZZZZZ	ZZZZZZ	1/3/2018	02:50		1/3/2018	03:13
0102F036.D	ZZZZZZ	ZZZZZZ	1/3/2018	03:18		1/3/2018	03:41
0102F037.D	ZZZZZZ	ZZZZZZ	1/3/2018	03:47		1/3/2018	04:10

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056
Sample Matrix: Sediment

Service Request: K1712961
Date Extracted: 12/13/2017

Extraction Prep Log
Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3541
Analysis Method: 8270D

Extraction Lot: KWG1710979
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
URSC-RM20.0W-COMP	K1712961-006	11/30/17	12/01/17	40.305g	2mL	70.9	
URSC-RM18.45E-COMP	K1712961-015	11/30/17	12/01/17	40.445g	2mL	61.5	
Method Blank	KWG1710979-4	NA	NA	4.0445g	2mL	NA	
Batch QC	K1713130-006	NA	NA	40.132g	2mL	68.5	
Batch QCMS	KWG1710979-1	NA	NA	40.399g	2mL	68.5	
Batch QCDMS	KWG1710979-2	NA	NA	40.208g	2mL	68.5	
Lab Control Sample	KWG1710979-3	NA	NA	20.000g	2mL	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Subcontract Lab Results

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

January 17, 2018. Service Request No K1712961

Howard Holmes.
ALS Group USA, Corp.
1317 South 13th Avenue
Kelso, WA 98626

Laboratory Results for: GSI Water Solutions, Inc.

Dear Howard,

Enclosed are the results of the samples submitted to our laboratory December 19, 2017.
For your reference these analyses have been assigned our service request number **K1712961.**

Analyses were performed according to our laboratory's NELAP approved quality assurance program The test results meet requirements of the current TNI standards where applicable and except as noted in the laboratory case narrative provided All results are intended to be considered in their entirety and ALS Environmental is not responsible for use of less than the final complete report Results apply only to the items submitted to the laboratory for analysis and individual items samples analyzed as listed in the report In accordance to the TNI 2009 Standard, a statement on the estimated uncertainty of measurement of any quantitative analysis will be supplied upon request

Respectfully submitted

ALS Group USA Corp dba ALS Environmental

Nicole Brown
Project Manager

ADDRESS Stancliff Rd Suite Houston TX
PHONE 281 530 5656 |
ALS Group USA Corp
dba ALS Environmental

Certificate of Analysis

ALS Environmental - Houston HRMS
10450 Stancliff Rd, Suite 210, Houston TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

ALS Environmental

Client:	GSI Water Solutions, Inc	**Service Request No.:**	K1712961
Project:	URSC / 150-001-056	**Date Received:**	12/19/17
Sample Matrix:	Sediment		

CASE NARRATIVE

All analyses were performed in adherence to the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Two sediment samples were received for analysis at ALS Environmental in Houston on 12/19/17.

Please note the reporting forms are currently referencing the date ALS-Kelso received the samples (12/01/17) and not the date ALS-Houston received the samples (12/19/17).

The samples were received at 1.4 °C in good condition and are consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Data Validation Notes and Discussion

B flags – Method Blanks

The Method Blank EQ1800009-01 contained low levels of various compounds below the Method Reporting Limit (MRL). The associated compounds in the samples are flagged with 'B' flags where the sample result is less than ten times the level detected in the method blank.

MS/MSD

EQ1700575: Laboratory Control Spike/Duplicate Laboratory Control Spike (LCS/DLCS) samples were analyzed and reported in lieu of an MS/MSD for this extraction batch.

Table 5 in the method for 1668A lists the native toxics/LOC PCB congener list that should be analyzed for in the MS and MSD. ALS Houston also reports the entire 209 PCB congeners for the matrix spike samples for additional accuracy and precision. The matrix spike recoveries for the table 5 list of PCB congeners were within control limits for all compounds with the exception of PCB 54 in the LCS and DLCS and 104 in the DLCS which are slightly above control limits. Various congeners outside the table 5 list were also above control limits. All relative percent differences (RPDs) were within control limits.

EQ1800009: Laboratory Control Spike/Duplicate Laboratory Control Spike (LCS/DLCS) samples were analyzed and reported in lieu of an MS/MSD for this extraction batch.

K flags

EMPC - When the ion abundance ratios associated with a particular compound are outside the QC limits, samples are flagged with a 'K' flag. A 'K' flag indicates an estimated maximum possible concentration for the associated compound.

Detection Limits

Detection limits are calculated for each congener in each sample by measuring the height of the noise level for each quantitation ion for the associated labeled standard. The concentration equivalent to 2.5 times the height of the noise is then calculated using the appropriate response factor and the weight of the sample. The calculated concentration equals the detection limit.

The TEQ Summary results for each sample have been calculated by ALS/Houston to include:

- WHO-2005 TEFs, The 2005 World Health Organization Reevaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-Like Compounds (M. Van den Berg et al., Toxicological Sciences 93(2):223-241, 2006)
- Non-detected compounds are not included in the 'Total'

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS group USA Corp dba ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.

Client: Hart Crowser, Incorporated **Service Request:**K1712961
Project: URSC/150-001-056

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
K1712961-001	URSC-RM20.0W-G001	11/30/2017	1326
K1712961-002	URSC-RM20.0W-G002	11/30/2017	1349
K1712961-003	URSC-RM20.0W-G003	11/30/2017	1403
K1712961-004	URSC-RM20.0W-G004	11/30/2017	1424
K1712961-005	URSC-RM20.0W-G005	11/30/2017	1447
K1712961-006	URSC-RM20.0W-COMP	11/30/2017	1330
K1712961-007	URSC-RM18.45E-G001	11/30/2017	0811
K1712961-008	URSC-RM18.45E-G002	11/30/2017	0832
K1712961-009	URSC-RM18.45E-G003	11/30/2017	0906
K1712961-010	URSC-RM18.45E-G004	11/30/2017	0924
K1712961-011	URSC-RM18.45E-G005	11/30/2017	1018
K1712961-012	URSC-RM18.45E-G006	11/30/2017	1027
K1712961-013	URSC-RM18.45E-G007	11/30/2017	1053
K1712961-014	URSC-RM18.45E-G009	11/30/2017	1516
K1712961-015	URSC-RM18.45E-COMP	11/30/2017	0815

Service Request Summary

Folder #: **K1712961**
Client Name: GSI Water Solutions, Inc
Project Name: URSC
Project Number: 150-001-056

Report To: Erin Carroll Hughes
GSI Water Solutions, Inc.
55 SW Yamhill, Suite 300
Portland, OR 97204
USA
Phone Number: 971-200-8528
Cell Number: 503-927-4553
Fax Number: 503-239-8940
E-mail: echughes@gsiws.com

Project Chemist: Howard Holmes
Originating Lab: KELSO
Logged By: CGRAVES
Date Received: 12/01/17
Internal Due Date: 12/22/2017
QAP: LAB QAP
Qualifier Set: Lab Standard
Formset: Lab Standard
Merged?: Y
Report to MDL?: N, Y
P.O. Number: 150-001-056
EDD: EQUIS 5.0

12 8 oz-Glass Jar WM CLEAR Teflon Liner Unpreserved
24 16 oz-Glass Jar WM CLEAR Teflon Liner Unpreserved
5 4 oz-Glass Jar WM CLEAR Teflon Liner Unpreserved
4 40 mL-Glass Vial VOA CLEAR Tef/Silicone Septa Unpreserved
4 32 oz-Glass Jar WM CLEAR Teflon Liner Unpreserved

Location: K-DELILAH, K-RENTAL-28, SMO, E-Disposed

Pressure Gas:

				KELSO		KELSO		KELSO	HOUSTON		KELSO			KELSO	
Lab Samp No.	**Client Samp No**	**Matrix**	**Collected**	PartSize ASTMCB/ASTM D422M	PSEP TOC T/PSEP TOC	Hg/7471B	Metals T/6020A	NW TPH SGT/NWTPH-Dx	Cl Biphen Cong/1668C	Dioxins Furans/1613B	OC_Pest/ALS SOP	PBDE/8270D	SVO LL/8270D	PSEP TS/PSEP TS	TS/160.3 Modified
K1712961-006	URSC-RM20.0W-COMP	Sediment	11/30/17 1330	**V**	**V**	**V**	**V**	**V**	**IV**	**IV**	**V**	**V**	**V**	**V**	**V**
K1712961-015	URSC-RM18.45E-COMP	Sediment	11/30/17 0815	**V**	**V**	**V**	**V**	**V**	**IV**	**IV**	**V**	**V**	**V**	**V**	**V**

Folder Comments:

Wet sieve samples thru 2mm sieve
ISM Wet material
Tier IV

Service Request Summary

Folder #:	**K1712961**
Client Name:	GSI Water Solutions, Inc
Project Name:	URSC
Project Number:	150-001-056
Report To:	Erin Carroll Hughes GSI Water Solutions, Inc. 55 SW Yamhill, Suite 300 Portland, OR 97204 USA
Phone Number:	971-200-8528
Cell Number:	503-927-4553
Fax Number:	503-239-8940
E-mail:	echughes@gsiws.com

Project Chemist:	Howard Holmes
Originating Lab:	KELSO
Logged By:	CGRAVES
Date Received:	12/01/17
Internal Due Date:	12/22/2017
QAP:	LAB QAP
Qualifier Set:	Lab Standard
Formset:	Lab Standard
Merged?:	Y
Report to MDL?:	N, Y
P.O. Number:	150-001-056
EDD:	EQUIS 5.0

12	8 oz-Glass Jar WM CLEAR Teflon Liner Unpreserved
24	16 oz-Glass Jar WM CLEAR Teflon Liner Unpreserved
5	4 oz-Glass Jar WM CLEAR Teflon Liner Unpreserved
4	40 mL-Glass Vial VOA CLEAR Tef/Silicone Septa Unpreserved
4	32 oz-Glass Jar WM CLEAR Teflon Liner Unpreserved

Location: K-DELILAH, K-RENTAL-28, SMO, E-Disposed

Pressure Gas:

Test Comments:

Group	Test/Method	Samples	Comments
GenChem	PartSize ASTMCB/ASTM D422M	1	use -2mm material,ISM subsample
GenChem	PartSize ASTMCB/ASTM D422M	1	use -2mm material, ISM subsample
Metals	Metals T/6020A	2	As,Cd,Cr,Cu,Pb,Mn,Ni,Zn
Semivoa GCMS	OC_Pest/ALS SOP	2	RL 18469
Semivoa GCMS	SVO LL/8270D	2	PAHs,SVOC,Phenols,Phthalates
SMO	Archive -20C/Archive	13	Fee is for 6 months
Soils Prep	ISM PCB/ISM Subsample	2	For 1668 PCB Congeners to ALS-Houston
Soils Prep	ISM 8290/DIOXIN/ISM Subsample	2	For Dioxins by 1613B to ALS-Houston
Soils Prep	ISM 8270/ISM Subsample	2	For 8270 PBDE
Soils Prep	ISM 6000Tot Met/ISM Subsample	2	For 6020 metals
Soils Prep	ISM TOC/ISM Subsample	2	For PSEP TOC
Soils Prep	ISM PEST/ISM Subsample	2	For OC Pest by GC/MS/MS
Soils Prep	ISM 8015/ISM Subsample	2	For NWTPH-Dx + SGT
Soils Prep	ISM 8270 LL/ISM Subsample	2	For 8270D LL
Soils Prep	ISM TS/ISM Subsample	2	For PSEP TS
Soils Prep	ISM/ISM Subsample	2	For Grain Size
Soils Prep	Composite/Composite	2	Composite equal mass from each jar with -2mm sieved materiial to run full analytical suite. Retain material for each sample jar not used for the composite
Soils Prep	ISM Hg/ISM Subsample	2	For 7471 Hg

Service Request Summary

Folder #:	**K1712961**
Client Name:	GSI Water Solutions, Inc
Project Name:	URSC
Project Number:	150-001-056
Report To:	Erin Carroll Hughes GSI Water Solutions, Inc. 55 SW Yamhill, Suite 300 Portland, OR 97204 USA
Phone Number:	971-200-8528
Cell Number:	503-927-4553
Fax Number:	503-239-8940
E-mail:	echughes@gsiws.com

Project Chemist:	Howard Holmes
Originating Lab:	KELSO
Logged By:	CGRAVES
Date Received:	12/01/17
Internal Due Date:	12/22/2017
QAP:	LAB QAP
Qualifier Set:	Lab Standard
Formset:	Lab Standard
Merged?:	Y
Report to MDL?:	N, Y
P.O. Number:	150-001-056
EDD:	EQUIS 5.0

12	8 oz-Glass Jar WM CLEAR Teflon Liner Unpreserved
24	16 oz-Glass Jar WM CLEAR Teflon Liner Unpreserved
5	4 oz-Glass Jar WM CLEAR Teflon Liner Unpreserved
4	40 mL-Glass Vial VOA CLEAR Tef/Silicone Septa Unpreserved
4	32 oz-Glass Jar WM CLEAR Teflon Liner Unpreserved

Location: K-DELILAH, K-RENTAL-28, SMO, E-Disposed

Pressure Gas:

Test Comments:

Group	Test/Method	Samples	Comments
Soils Prep	ISM Sieve/ISM Sieve	2	Wet sieve each jar separately through 2mm sieve. Retain both retained and passed material for each sample jar $25/jar

Superset Summary

Service Request: K1712961 **SuperSet Reference:** 17-0000448017 rev 00

Analytical Method: **1613B**

Calibrations: 07/26/17

Data Files:

Raw Data	Begin CCAL	Method Blank	Lab ID
P513666	P513663	P513666	EQ1800009-01
P513697	P513686	P513666	EQ1800009-02
P513698	P513686	P513666	EQ1800009-03
P513709	P513702	P513666	K1712961-006
P513710	P513702	P513666	K1712961-015

Analytical Method: **1668C**

Calibrations: 04/03/17

Data Files:

Raw Data	Begin CCAL	Method Blank	Lab ID
P305033	P305032	P305033	EQ1700575-01
P305053	P305045	P305033	EQ1700575-02
P305054	P305045	P305033	EQ1700575-03
P305037	P305032	P305033	K1712961-006
P305038	P305032	P305033	K1712961-015

Data Qualifiers

HRMS Qualifier Set

B Indicates the associated analyte was found in the method blank at >1/10th the reported value.
E Estimated value. The reported concentration is above the calibration range of the instrument.
H Sample extracted and/or analyzed out of suggested holding time.
J Estimated value. The reported concentration is below the MRL.
K The ion abundance ratio between the primary and secondary ions were outside of theoretical acceptance limits.The concentration of this analyte should be considered as an estimate.
P Chlorodiphenyl ether interference was present at the retention time of the target analyte. Reported result should be considered an estimate.
Q Monitored lock-mass indicates matrix-interference. Reported result is estimated.
S Signal saturated detector. Result reported from dilution.
U Compound was analyzed for, but was not detected (ND).
X See Case Narrative.
Y Isotopically Labeled Standard recovery outside of acceptance limits. In all cases, the signal-to-nois ratios are greater than 10:1, making the recoveries acceptable.
i The MDL/MRL have been elevated due to a matrix interference.

Acronyms

Cal	Calibration
Conc	CONCentration
Dioxin(s)	Polychlorinated dibenzo-p-dioxin(s)
EDL	Estimated Detection Limit
EMPC	Estimated Maximum Possible Concentration
Flags	Data qualifiers
Furan(s)	Polychlorinated dibenzofuran(s)
g	Grams
ICAL	Initial CALibration
ID	IDentifier
Ions	Masses monitored for the analyte during data acquisition
L	Liter (s)
LCS	Laboratory Control Sample
DLCS	Duplicate Laboratory Control Sample
MB	Method Blank
MCL	Method Calibration Limit
MDL	Method Detection Limit
mL	Milliliters
MS	Matrix Spiked sample
DMS	Duplicate Matrix Spiked sample
NO	Number of peaks meeting all identification criteria
PCDD(s)	Polychlorinated dibenzo-p-dioxin(s)
PCDF(s)	Polychlorinated dibenzofuran(s)
ppb	Parts per billion
ppm	Parts per million
ppq	Parts per quadrillion
ppt	Parts per trillion
QA	Quality Assurance
QC	Quality Control
Ratio	Ratio of areas from monitored ions for an analyte
% Rec.	Percent recovery
RPD	Relative Percent Difference
RRF	Relative Response Factor
RT	Retention Time
SDG	Sample Delivery Group
S/N	Signal-to-noise ratio
TEF	Toxicity Equivalence Factor
TEQ	Toxicity Equivalence Quotient

State Certifications, Accreditations, and Licenses

Agency	Number	Expire Date
Arizona Department of Health Services	AZ0793	5/27/2018
Arkansas Department of Environmental Quality	17-027-0	3/27/2018
California Department of Health Services	2452	2/28/2018
Florida Department of Health	E87611	7/31/2018
Hawaii Department of Health	TX02694	4/30/2018
Illinois Environmental Protection Agency	004112	5/9/2018
Louisiana Department of Environmental Quality	03048	6/30/2018
Maine Center for Disease Control and Prevention	2014019	6/5/2018
Maryland Department of the Environment	343	6/30/2018
Michigan Depratment of Environmental Quality	9971	6/5/2018
Nebraska Department of Health and Human Services	NE-OS-25-13	4/30/2018
Nevada Department of Concervation and Natural Resources	TX014112013-2	7/31/2018
New Jersey Department of Environmental Protection	NLC140001	6/30/2018
New Mexico Environment Department	TX02694	4/30/2018
New York Department of Health	11707	3/31/2018
Oklahoma Department of Environmental Quality	2014 124	8/31/2018
Oregon Environmental Laboratory Accreditation Program	TX200002-009	3/24/2018
Pennsylvania Department of Environmental Protection	68-03441	6/30/2018
Tennessee Department of Environment and Concervation	04016	6/30/2018
Texas Commision on Environmental Quality	TX104704231-17-18	4/30/2018
United States Department of Agriculture	P330-14-00067	6/19/2018
Utah Department of Health Environmental Laboratory Certification	TX02694	7/31/2018
West Virginia Department of Environmental Protection	347	6/30/2018

ALS ENVIRONMENTAL – Houston
Data Processing/Form Production and Peer Review Signatures

SR# Unique ID K1712961 DB-5MSUI SPB-Octyl

First Level - Data Processing - to be filled by person generating the forms

Date:	Analyst:	Samples:
01/15/18	[illegible]	006, 015

Second Level - Data Review – to be filled by person doing peer review

Date:	Analyst:	Samples:
01/16/18	LKC	006, 015

PEER REVIEW PAGE2015

ALS ENVIRONMENTAL – Houston
Data Processing/Form Production and Peer Review Signatures

SR# Unique ID K1712961 DB-5MSUI SPB-Octyl

First Level - Data Processing - to be filled by person generating the forms

Date:	Analyst:	Samples:
01/04/18	JC	-006, -015

Second Level - Data Review – to be filled by person doing peer review

Date:	Analyst:	Samples:
01/08/18	LKL	006, 015

PEER REVIEW PAGE2015

Chain of Custody

ALS Environmental - Houston HRMS
10450 Stancliff Rd, Suite 210, Houston TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

Intra-Network Chain of Custody

1317 South 13th Avenue • Kelso, WA 98626 • 1-360-577-7222 • FAX 1-360-636-1068

ALS Contact: Howard Holmes

Project Name: URSC
Project Number: 150-001-056
Project Manager: Erin Carroll Hughes
Company: GSI Water Solutions, Inc.
QAP: LAB QAP

Lab Code	Client Sample ID	# of Cont.	Matrix	Sample Date	Sample Time	Date Received	Send To	Cl Biphen Cong 1668C	Dioxins Furans 1613B
K1712961-006	URSC-RM20.0W-COMP	2	Sediment	11/30/17	1330	12/1/17	HOUSTON	V	V
K1712961-015	URSC-RM18.45E-COMP	2	Sediment	11/30/17	0815	12/1/17	HOUSTON	V	V

K1712961 5
GSI Water Solutions, Inc.
URSC

Folder Comments:
Wet sieve samples thru 2mm sieve
ISM Wet material
Tier IV

Special Instructions/Comments	Turnaround Requirements	Report Requirements	Invoice Information
Please provide the electronic (PDF and EDD) report to the following e-mail address: ALKLS.Data@alsglobal.com. pH Checked _____	____ **RUSH** (Surcharges Apply) **PLEASE CIRCLE WORK DAYS** 1 2 3 4 5 X **STANDARD** Requested FAX Date: _____ Requested Report Date: 12/22/17	____ I. Results Only ____ II. Results + QC Summaries ____ III. Results + QC and Calibration Summaries X IV. Data Validation Report with Raw Data PQL/MDL/J Y EDD Y	PO# 51K1712961 Bill to

Relinquished By: 12/18/17 Received By: 12/19/17 9:50 Airbill Number:

ALS Environmental

Cooler Receipt Form

Project Chemist NB

Client/Project ALS Kelso

Thermometer ID SMO 4

Date/Time Received: 12/19/17 9:50 Initials: AL

Date/Time Logged in: 12/19/17 Initials AL

1. Method of delivery: ○ US Mail ✓ Fed Ex ○ UPS ○ DHL ○ Courier ○ Client
2. Samples received in: ✓ Cooler ○ Box ○ Envelope ○ Other
3. Were custody seals on coolers? ✓ Yes ○ No
   Were they intact? ✓ Yes ○ No ○ N/A
   Were they signed and dated? ✓ Yes ○ No ○ N/A
   If yes, how many and where? 1 seal
4. Packing Material: ○ Inserts ○ Baggies ✓ Bubble Wrap ✓ Gel Packs ○ Wet Ice ○ Sleeves ○ Other
5. Foreign or Regulated Soil? ○ Yes ✓ No Location of Sampling:

Cooler Tracking Number	COC ID	Date Opened	Time Opened	Opened By	Temp. °C	Temp Blank?
7227 2437 6069		12/19/17	12:59	AL	1.8/1.4	☐
						☐
						☐
						☐

6. Were custody papers properly filled out (ink, signed, dated, etc)? ✓ Yes ○ No
7. Did all bottles arrive in good condition (not broken, no signs of leakage)? ✓ Yes ○ No
8. Were all sample labels complete (i.e., sample ID, analysis, preservation, etc)? ✓ Yes ○ No
9. Were appropriate bottles/containers and volumes received for the requested tests? ✓ Yes ○ No
10. Did sample labels and tags agree with custody documents? ✓ Yes ○ No

Notes, Discrepancies, & Resolutions:

Service request Label: K1712961 5
GSI Water Solutions, Inc.
URSC

10450 Stancliff Rd., Suite 210
Houston, TX 77099
T: +1 713 266 1599
F: +1 713 266 1599
www.alsglobal.com

SAMPLE ACCEPTANCE POLICY

This policy outlines the criteria samples must meet to be accepted by ALS Environmental – Houston HRMS.

Cooler Custody Seals (desirable, mandatory if specified in SAP):

- ✓ Intact on outside of cooler, signed and dated

Chain-of-Custody (COC) documentation (mandatory):

The following is required on each COC:

- ✓ Sample ID, the location, date and time of collection, collector's name, preservation type, sample type, and any other special remarks concerning the sampleThe COC must be completed in ink.
- ✓ Signature and date of relinquishing party.

In the absence of a COC at sample receipt, the COC will be requested from the client.

Sample Integrity (mandatory):

Samples are inspected upon arrival to ensure that sample integrity was not compromised during transfer to the laboratory.

- ✓ Sample containers must arrive in good condition (not broken or leaking).
- ✓ Samples must be labeled appropriately, including Sample IDs, and requested test using durable labels and indelible ink.
- ✓ The correct type of sample bottle must be used for the method requested.
- ✓ An appropriate sample volume, or weight, must be received.
- ✓ Sample IDs and number of containers must reconcile with the COC.
- ✓ Samples must be received within the method defined holding time.

Temperature Requirement (varies by sample matrix):

- ✓ Aqueous and Non-aqueous samples must be shipped and stored cold, at 0 to 6ºC.
- ✓ Tissue samples must be shipped and stored frozen, at -20 to -10ºC.
- ✓ Air samples are shipped and stored cold, at 0 to 6ºC
- ✓ The sample temperature must be recorded on the COC

All cooler inspections are documented on the Cooler Receipt Form (CRF). A separate CRF is completed for each service request. Any samples not meeting the above criteria are noted on the CRF and the Project Manager notified. The Project Manager must resolve any sample integrity issues with the client prior to proceeding with the analysis. Such resolutions are documented in writing and filed with the project folder. Data associated with samples received outside of this acceptance policy will be qualified on the case narrative of the final report

Preparation Information Benchsheets

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 210, Houston, TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

Preparation Information Benchsheet

Prep Run#: 305740 **Prep WorkFlow:** OrgExtS(365) **Status:** Prepped
Team: Semivoa GCMS/JRAMIREZ **Prep Method:** Method **Prep Date/Time:** 12/27/17 01:00 PM

#	Lab Code	Client ID	B#	Method /Test	pH	Cl	Matrix	Amt. Ext.	Sample Description
1	EQ1700575-01	MB		1668C/Cl Biphen Cong			Solid	5.227g	
2	EQ1700575-02	LCS		1668C/Cl Biphen Cong			Solid	5.117g	
3	EQ1700575-03	DLCS		1668C/Cl Biphen Cong			Solid	5.537g	
4	K1712926-001	RM16.5-G005-K	.02	1668C/Cl Biphen Cong			Sediment	5.644g	APOSEY k-balance-48 / Wet Brown Soil
5	K1712926-002	RM16.5-G010-K	.02	1668C/Cl Biphen Cong			Sediment	5.644g	APOSEY k-balance-48 / Wet Brown Soil
6	K1712928-017	RM16.5-COMP-I	.01	1668C/Cl Biphen Cong			Sediment	10.039g	DMADDEN K-Balance-54 / Wet Brown Soil
7	K1712961-006	URSC-RM20.0W-COMP	.01	1668C/Cl Biphen Cong			Sediment	10.189g	DMADDEN K-Balance-54 / Wet Brown Soil
8	K1712961-015	URSC-RM18.45E-COMP	.01	1668C/Cl Biphen Cong			Sediment	10.338g	DMADDEN K-Balance-54 / Wet Brown Soil
9	K1713018-010	URSC-RM20.1W-COMP	.01	1668C/Cl Biphen Cong			Sediment	10.446g	DMADDEN K-Balance-54 / Wet Brown Soil
10	K1713018-016	URSC-RM20.4E-COMP	.01	1668C/Cl Biphen Cong			Sediment	10.200g	DMADDEN K-Balance-54 / Wet Brown Soil
11	K1713130-006	URSC-RM18.35E-COMP	.01	1668C/Cl Biphen Cong			Sediment	10.484g	DMADDEN K-Balance-54 / Wet Brown Soil
12	K1713130-015	URSC-RM20.9W-COMP	.01	1668C/Cl Biphen Cong			Sediment	10.208g	DMADDEN K-Balance-54 / Wet Brown Soil
13	K1713130-021	URSC-RM24.7E-COMP	.01	1668C/Cl Biphen Cong			Sediment	10.218g	DMADDEN K-Balance-54 / Wet Brown Soil
14	K1713130-032	URSC-RM20.0E-COMP	.01	1668C/Cl Biphen Cong			Sediment	10.336g	DMADDEN K-Balance-54 / Wet Brown Soil
15	K1713130-033	URSC-RM25.2E-COMP	.01	1668C/Cl Biphen Cong			Sediment	10.394g	DMADDEN K-Balance-54 / Wet Brown Soil

Spiking Solutions

Name: 1668 A/C PCB Congener (209) Working Matrix Inventory ID 183026 Logbook Ref: 183026 JG 10-30 ng/mL 8/1/17 Expires On: 01/28/2018

EQ1700575-02	100.00µL	EQ1700575-03	100.00µL

Name: 1668A Clean Up Working Standard Inventory ID 185279 Logbook Ref: 185279 tw 110317 20ng/ml Expires On: 05/02/2018

EQ1700575-01	100.00µL	EQ1700575-02	100.00µL	EQ1700575-03	100.00µL	K1712926-001	100.00µL	K1712926-002	100.00µL	K1712928-017	100.00µL
K1712961-006	100.00µL	K1712961-015	100.00µL	K1713018-010	100.00µL	K1713018-016	100.00µL	K1713130-006	100.00µL	K1713130-015	100.00µL
K1713130-021	100.00µL	K1713130-032	100.00µL	K1713130-033	100.00µL						

Name: 1668A Labeled Working Standard Inventory ID 186489 Logbook Ref: 186489 AL 12/18/17 2-4 ng/mL Expires On: 05/15/2018

EQ1700575-01	1,000.00µL	EQ1700575-02	1,000.00µL	EQ1700575-03	1,000.00µL	K1712926-001	1,000.00µL	K1712926-002	1,000.00µL	K1712928-017	1,000.00µL
K1712961-006	1,000.00µL	K1712961-015	1,000.00µL	K1713018-010	1,000.00µL	K1713018-016	1,000.00µL	K1713130-006	1,000.00µL	K1713130-015	1,000.00µL
K1713130-021	1,000.00µL	K1713130-032	1,000.00µL	K1713130-033	1,000.00µL						

Preparation Information Benchsheet

Prep Run#: 305740 **Prep WorkFlow:** OrgExtS(365) **Status:** Prepped
Team: Semivoa GCMS/JRAMIREZ **Prep Method:** Method **Prep Date/Time:** 12/27/17 01:00 PM

Preparation Materials

Glass Wool	AL 12/28/17 (186762)	Hexanes 95%	AL 12/28/17 (186765)	Dichloromethane (Methylene Chloride) 99.9% MeCl2	JG 9/28/17 (184340)
Sodium Hydroxide 1N NaOH	sodium hydroxide (180303)	Sodium Sulfate Anhydrous Reagent Grade Na2SO4	AL 8/23/17 (183590)	Silica Gel	AL 12/28/17 (186767)
sulfuric acid	AL 10/11/17 (184727)	Toluene 99.9% Minimum	AL 11/11/17 (185534)		

Preparation Steps

Step:	Extraction	Step:	Acid Clean	Step:	Silica Gel Clean	Step:	Final Volume
Started:	12/27/17 13:00	Started:	12/28/17 08:00	Started:	12/29/17 09:00	Started:	12/29/17 14:00
Finished:	12/27/17 15:00	Finished:	12/28/17 09:00	Finished:	12/29/17 10:00	Finished:	12/29/17 14:30
By:	ALOPEZ	By:	ALOPEZ	By:	ALOPEZ	By:	ALOPEZ
Comments		Comments		Comments		Comments	

Comments: _____

Reviewed By: GC Date: 1/9/2018

Chain of Custody

Relinquished By: _____ Date: _____ Extracts Examined

Received By: _____ Date: _____ Yes No

Preparation Information Benchsheet

Prep Run#: 306153 **Prep WorkFlow:** OrgExtS(365) **Status:** Prepped
Team: Semivoa GCMS/JRAMIREZ **Prep Method:** Method Soxhlet **Prep Date/Time:** 1/4/18 03:00 PM

#	Lab Code	Client ID	B#	Method /Test	pH	Cl	Matrix	Amt. Ext.	Sample Description
1	EQ1800009-01	MB		1613B/Dioxins Furans			Solid	10.365g	
2	EQ1800009-02	LCS		1613B/Dioxins Furans			Solid	10.567g	
3	EQ1800009-03	DLCS		1613B/Dioxins Furans			Solid	10.326g	
4	J1708532-001	CTR Cups	.03	1613B/Dioxins Furans			Paperboard	5.970g	Plastic Filter Cup
5	K1712961-006	URSC-RM20.0W-COMP	.01	1613B/Dioxins Furans			Sediment	10.397g	DMADDEN K-Balance-54 / Wet Brown Gravel
6	K1712961-015	URSC-RM18.45E-COMP	.01	1613B/Dioxins Furans			Sediment	10.462g	DMADDEN K-Balance-54 / Wet Brown Gravel
7	K1713018-010	URSC-RM20.1W-COMP	.01	1613B/Dioxins Furans			Sediment	10.291g	DMADDEN K-Balance-54 / Wet Brown Gravel
8	K1713018-016	URSC-RM20.4E-COMP	.01	1613B/Dioxins Furans			Sediment	10.368g	DMADDEN K-Balance-54 / Wet Brown Gravel
9	K1713130-006	URSC-RM18.35E-COMP	.01	1613B/Dioxins Furans			Sediment	10.251g	DMADDEN K-Balance-54 / Wet Brown Gravel
10	K1713130-015	URSC-RM20.9W-COMP	.01	1613B/Dioxins Furans			Sediment	10.315g	DMADDEN K-Balance-54 / Wet Brown Gravel
11	K1713130-021	URSC-RM24.7E-COMP	.01	1613B/Dioxins Furans			Sediment	10.175g	DMADDEN K-Balance-54 / Wet Brown Gravel
12	K1713130-032	URSC-RM20.0E-COMP	.01	1613B/Dioxins Furans			Sediment	10.228g	DMADDEN K-Balance-54 / Wet Brown Gravel
13	K1713130-033	URSC-RM25.2E-COMP	.01	1613B/Dioxins Furans			Sediment	10.277g	DMADDEN K-Balance-54 / Wet Brown Gravel

Spiking Solutions

Name: 1613B Matrix Working Standard Inventory ID 186237 Logbook Ref: 186237 JR 2-20 ng/mL 12717 Expires On: 06/05/2018

EQ1800009-02	100.00µL	EQ1800009-03	100.00µL

Name: 8290/1613B Cleanup Working Standard Inventory ID 186645 Logbook Ref: 186645 JG 122217 8 ng/mL Expires On: 04/28/2018

EQ1800009-01	100.00µL	EQ1800009-02	100.00µL	EQ1800009-03	100.00µL	J1708532-001	100.00µL	K1712961-006	100.00µL	K1712961-015	100.00µL
K1713018-010	100.00µL	K1713018-016	100.00µL	K1713130-006	100.00µL	K1713130-015	100.00µL	K1713130-021	100.00µL	K1713130-032	100.00µL
K1713130-033	100.00µL										

Name: 1613B Labeled Working Standard Inventory ID 186916 Logbook Ref: 186916 JR 1/4/18 2-4ng/ml Expires On: 06/25/2018

EQ1800009-01	1,000.00µL	EQ1800009-02	1,000.00µL	EQ1800009-03	1,000.00µL	J1708532-001	1,000.00µL	K1712961-006	1,000.00µL	K1712961-015	1,000.00µL
K1713018-010	1,000.00µL	K1713018-016	1,000.00µL	K1713130-006	1,000.00µL	K1713130-015	1,000.00µL	K1713130-021	1,000.00µL	K1713130-032	1,000.00µL
K1713130-033	1,000.00µL										

Preparation Materials

Carbon, High Purity	JG 12/27/17 (186784)	Ethyl Acetate 99.9% Minimum EtOAc	AL 3/3/17 (179750)	Glass Wool	AL 12/28/17 (186762)
Hexanes 95%	AL 12/28/17 (186765)	Dichloromethane (Methylene Chloride) 99.9% MeCl2	JG 9/28/17 (184340)	Sodium Hydroxide 1N NaOH	sodium hydroxide (180303)
Sodium Sulfate Anhydrous Reagent Grade Na2SO4	JG 1/3/18 (186882)	Tridecane (n-Tridecane)	AL 9/27/17 (184312)	Silica Gel	AL 10/9/17 (184623)
sulfuric acid	AL 10/11/17 (184727)	Toluene 99.9% Minimum	AL 12/28/17 (186763)		

Preparation Information Benchsheet

Prep Run#: 306153 **Prep WorkFlow:** OrgExtS(365) **Status:** Prepped
Team: Semivoa GCMS/JRAMIREZ **Prep Method:** Method Soxhlet **Prep Date/Time:** 1/4/18 03:00 PM

Preparation Steps

Step:	Extraction	Step:	Acid Clean	Step:	Silica Gel Clean	Step:	Final Volume
Started:	1/4/18 15:00	Started:	1/5/18 15:00	Started:	1/10/18 09:45	Started:	1/10/18 19:30
Finished:	1/4/18 16:00	Finished:	1/5/18 16:00	Finished:	1/10/18 12:30	Finished:	1/10/18 20:30
By:	JRAMIREZ	By:	JRAMIREZ	By:	JRAMIREZ	By:	JRAMIREZ
Comments		Comments		Comments		Comments	

Comments: _____

Reviewed By: GC Date: 1/12/2018

Chain of Custody

Relinquished By: _____ Date: _____

Received By: _____ Date: _____

Extracts Examined

Yes No

Analytical Results

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 210, Houston, TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	11/30/17 13:30
Sample Matrix:	Sediment	**Date Received:**	12/01/17 14:30
Sample Name:	URSC-RM20.0W-COMP	**Units:**	ng/Kg
Lab Code:	K1712961-006	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	01/13/18 04:56
Prep Method:	Method Soxhlet	**Date Extracted:**	1/4/18
Sample Amount:	10.397g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P513709	**Blank File Name:**	P513666
ICAL Date:	07/26/17	**Cal Ver. File Name:**	P513702

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	0.193	0.678			1
1,2,3,7,8-PeCDD	0.226**BJK**		0.0519	3.39	1.15	1.000	1
1,2,3,4,7,8-HxCDD	0.239**BJ**		0.0660	3.39	1.39	1.000	1
1,2,3,6,7,8-HxCDD	0.560**J**		0.0751	3.39	1.38	1.000	1
1,2,3,7,8,9-HxCDD	0.326**BJK**		0.0671	3.39	0.94	1.007	1
1,2,3,4,6,7,8-HpCDD	10.6		0.0996	3.39	1.03	1.000	1
OCDD	104		0.255	6.78	0.89	1.000	1
2,3,7,8-TCDF	ND	U	0.104	0.678			1
1,2,3,7,8-PeCDF	0.195**JK**		0.0953	3.39	1.12	1.001	1
2,3,4,7,8-PeCDF	0.287**BJ**		0.102	3.39	1.51	1.001	1
1,2,3,4,7,8-HxCDF	0.338**BJK**		0.0714	3.39	0.97	1.000	1
1,2,3,6,7,8-HxCDF	0.290**BJ**		0.0695	3.39	1.06	1.000	1
1,2,3,7,8,9-HxCDF	0.185**BJ**		0.0728	3.39	1.08	1.000	1
2,3,4,6,7,8-HxCDF	0.218**BJK**		0.0728	3.39	0.89	1.000	1
1,2,3,4,6,7,8-HpCDF	2.18**BJP**		0.0452	3.39	0.93	1.000	1
1,2,3,4,7,8,9-HpCDF	0.236**J**		0.0763	3.39	0.91	1.000	1
OCDF	7.32		0.255	6.78	0.90	1.005	1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	11/30/17 13:30
Sample Matrix:	Sediment	**Date Received:**	12/01/17 14:30
Sample Name:	URSC-RM20.0W-COMP	**Units:**	ng/Kg
Lab Code:	K1712961-006	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	01/13/18 04:56
Prep Method:	Method Soxhlet	**Date Extracted:**	1/4/18
Sample Amount:	10.397g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P513709	**Blank File Name:**	P513666
ICAL Date:	07/26/17	**Cal Ver. File Name:**	P513702

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	0.236**J**		0.193	0.678	0.86		1
Total Penta-Dioxins	ND	U	0.0519	3.39			1
Total Hexa-Dioxins	3.13**J**		0.0705	3.39	1.11		1
Total Hepta-Dioxins	10.6		0.0996	3.39	1.03		1
Total Tetra-Furans	0.206**J**		0.104	0.678	0.85		1
Total Penta-Furans	0.427**J**		0.0981	3.39	1.43		1
Total Hexa-Furans	1.49**J**		0.0715	3.39	1.07		1
Total Hepta-Furans	2.51**J**		0.0584	3.39	0.93		1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	11/30/17 13:30
Sample Matrix:	Sediment	**Date Received:**	12/01/17 14:30
Sample Name:	URSC-RM20.0W-COMP	**Units:**	Percent
Lab Code:	K1712961-006	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	01/13/18 04:56
Prep Method:	Method Soxhlet	**Date Extracted:**	1/4/18
Sample Amount:	10.397g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P513709	**Blank File Name:**	P513666
ICAL Date:	07/26/17	**Cal Ver. File Name:**	P513702

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	1244.459	62		25-164	0.79	1.023
13C-1,2,3,7,8-PeCDD	2000	1537.876	77		25-181	1.57	1.200
13C-1,2,3,4,7,8-HxCDD	2000	1685.492	84		32-141	1.24	0.990
13C-1,2,3,6,7,8-HxCDD	2000	1497.149	75		28-130	1.28	0.993
13C-1,2,3,4,6,7,8-HpCDD	2000	1596.605	80		23-140	1.06	1.072
13C-OCDD	4000	2278.458	57		17-157	0.88	1.155
13C-2,3,7,8-TCDF	2000	1428.206	71		24-169	0.79	0.993
13C-1,2,3,7,8-PeCDF	2000	1501.547	75		24-185	1.58	1.154
13C-2,3,4,7,8-PeCDF	2000	1434.969	72		21-178	1.58	1.189
13C-1,2,3,4,7,8-HxCDF	2000	1384.438	69		26-152	0.51	0.969
13C-1,2,3,6,7,8-HxCDF	2000	1404.269	70		26-123	0.51	0.972
13C-1,2,3,7,8,9-HxCDF	2000	1616.394	81		29-147	0.51	1.008
13C-2,3,4,6,7,8-HxCDF	2000	1414.928	71		28-136	0.51	0.986
13C-1,2,3,4,6,7,8-HpCDF	2000	1554.002	78		28-143	0.44	1.045
13C-1,2,3,4,7,8,9-HpCDF	2000	1689.012	84		26-138	0.43	1.086
37Cl-2,3,7,8-TCDD	800	628.376	79		35-197	NA	1.024

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	11/30/17 13:30
Sample Matrix:	Sediment	**Date Received:**	12/01/17 14:30
Sample Name:	URSC-RM20.0W-COMP	**Units:**	ng/Kg
Lab Code:	K1712961-006	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 1613B

Prep Method: Method Soxhlet

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	ND	0.193	0.678	1	1	
1,2,3,7,8-PeCDD	**0.226**	0.0519	3.39	1	1	0.226
1,2,3,4,7,8-HxCDD	**0.239**	0.0660	3.39	1	0.1	0.0239
1,2,3,6,7,8-HxCDD	**0.560**	0.0751	3.39	1	0.1	0.0560
1,2,3,7,8,9-HxCDD	**0.326**	0.0671	3.39	1	0.1	0.0326
1,2,3,4,6,7,8-HpCDD	**10.6**	0.0996	3.39	1	0.01	0.106
OCDD	**104**	0.255	6.78	1	0.0003	0.0312
2,3,7,8-TCDF	ND	0.104	0.678	1	0.1	
1,2,3,7,8-PeCDF	**0.195**	0.0953	3.39	1	0.03	0.00585
2,3,4,7,8-PeCDF	**0.287**	0.102	3.39	1	0.3	0.0861
1,2,3,4,7,8-HxCDF	**0.338**	0.0714	3.39	1	0.1	0.0338
1,2,3,6,7,8-HxCDF	**0.290**	0.0695	3.39	1	0.1	0.0290
1,2,3,7,8,9-HxCDF	**0.185**	0.0728	3.39	1	0.1	0.0185
2,3,4,6,7,8-HxCDF	**0.218**	0.0728	3.39	1	0.1	0.0218
1,2,3,4,6,7,8-HpCDF	**2.18**	0.0452	3.39	1	0.01	0.0218
1,2,3,4,7,8,9-HpCDF	**0.236**	0.0763	3.39	1	0.01	0.00236
OCDF	**7.32**	0.255	6.78	1	0.0003	0.00220
		Total TEQ				0.697

2005 WHO TEFs, ND = 0

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	11/30/17 13:30
Sample Matrix:	Sediment	**Date Received:**	12/01/17 14:30
Sample Name:	URSC-RM20.0W-COMP	**Units:**	ng/Kg
Lab Code:	K1712961-006	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/29/17 22:32
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	10.189g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305037	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305032

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 1	ND	U	6.47	6.47			1
PCB 2	ND	U	6.03	6.03			1
PCB 3	ND	U	7.29	7.29			1
PCB 4	ND	U	10.4	10.4			1
PCB 10	ND	U	5.24	6.92			1
PCB 9	ND	U	2.17	2.77			1
PCB 7	ND	U	2.00	2.77			1
PCB 6	ND	U	2.20	2.77			1
PCB 5	ND	U	2.20	2.77			1
PCB 8	ND	U	2.07	6.92			1
PCB 14	ND	U	2.21	2.77			1
PCB 11	11.4**J**		2.26	13.8	-	0.972	1
PCBs 12 + 13	ND	U	2.17	6.92			1
PCB 15	ND	U	2.60	2.77			1
PCB 19	ND	U	22.9	22.9			1
PCBs 18 + 30	ND	U	12.2	12.2			1
PCB 17	ND	U	14.1	14.1			1
PCB 27	ND	U	11.4	11.4			1
PCB 24	ND	U	10.4	10.4			1
PCB 16	ND	U	16.6	16.6			1
PCB 32	ND	U	10.5	10.5			1
PCB 34	ND	U	12.1	12.1			1
PCB 23	ND	U	10.8	10.8			1
PCBs 26 + 29	ND	U	11.1	11.1			1
PCB 25	ND	U	9.57	9.57			1
PCB 31	ND	U	11.5	11.5			1
PCBs 20 + 28	ND	U	10.9	10.9			1
PCBs 21 + 33	ND	U	10.7	10.7			1
PCB 22	ND	U	11.0	11.0			1
PCB 36	ND	U	11.0	11.0			1
PCB 39	ND	U	10.5	10.5			1
PCB 38	ND	U	12.4	12.4			1
PCB 35	ND	U	13.4	13.4			1
PCB 37	ND	U	12.9	12.9			1

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	11/30/17 13:30
Sample Matrix:	Sediment	**Date Received:**	12/01/17 14:30
Sample Name:	URSC-RM20.0W-COMP	**Units:**	ng/Kg
Lab Code:	K1712961-006	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/29/17 22:32
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	10.189g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305037	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305032

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 54	ND	U	15.7	15.7			1
PCBs 50 + 53	ND	U	10.9	13.8			1
PCBs 45 + 51	ND	U	11.0	11.0			1
PCB 46	ND	U	12.4	12.4			1
PCB 52	53.9		11.3	11.3	0.71	1.197	1
PCBs 43 + 73	ND	U	9.34	9.34			1
PCBs 49 + 69	33.4		9.26	13.8	0.76	1.217	1
PCB 48	ND	U	10.4	10.4			1
PCBs 44 + 47 + 65	37.5		9.57	13.8	0.75	1.241	1
PCBs 59 + 62 + 75	ND	U	8.23	13.8			1
PCB 42	ND	U	11.7	13.8			1
PCBs 41 + 71 + 40	11.7**JK**		11.6	13.8	1.83	1.284	1
PCB 64	17.9**K**		8.23	8.23	0.91	1.293	1
PCB 72	ND	U	8.78	8.78			1
PCB 68	ND	U	7.94	7.94			1
PCB 57	ND	U	8.97	8.97			1
PCB 58	ND	U	8.10	8.10			1
PCB 67	ND	U	7.31	7.31			1
PCB 63	ND	U	8.67	8.67			1
PCBs 70 + 61 + 74 + 76	67.5		8.13	27.7	0.72	1.402	1
PCB 66	57.2		8.77	8.77	0.77	1.416	1
PCB 55	ND	U	8.66	8.66			1
PCB 56	15.8		6.25	6.92	0.69	1.447	1
PCB 60	ND	U	6.02	6.92			1
PCB 80	ND	U	5.46	6.92			1
PCB 79	ND	U	5.99	6.92			1
PCB 78	ND	U	6.85	6.92			1
PCB 81	ND	U	8.86	8.86			1
PCB 77	ND	U	8.99	8.99			1
PCB 104	ND	U	8.85	8.85			1
PCB 96	ND	U	6.52	6.92			1
PCB 103	ND	U	7.69	7.69			1
PCB 94	ND	U	8.65	8.65			1
PCBs 95 + 93 + 100	53.6		8.16	27.7	1.35	1.106	1

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	11/30/17 13:30
Sample Matrix:	Sediment	**Date Received:**	12/01/17 14:30
Sample Name:	URSC-RM20.0W-COMP	**Units:**	ng/Kg
Lab Code:	K1712961-006	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/29/17 22:32
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	10.189g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305037	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305032

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCBs 98 + 102	ND	U	7.66	27.7			1
PCBs 88 + 91	15.8		8.71	8.71	1.53	1.135	1
PCB 84	20.2**K**		9.54	9.54	2.08	1.144	1
PCB 89	ND	U	9.79	9.79			1
PCB 121	ND	U	4.85	6.92			1
PCB 92	13.5		6.98	6.98	1.42	1.184	1
PCBs 90 + 101 + 113	63.3		5.82	27.7	1.68	1.204	1
PCBs 83 + 99	49.9		6.51	13.8	1.45	1.224	1
PCB 112	ND	U	4.79	6.92			1
PCBs 86 + 87 + 97 + 109 + 119 + 125	46.9		5.63	27.7	1.60	1.248	1
PCBs 85 + 116 + 117	26.9**K**		5.51	13.8	1.12	1.268	1
PCBs 110 + 115	97.3		4.83	13.8	1.51	1.275	1
PCB 82	ND	U	8.83	8.83			1
PCB 111	ND	U	4.93	6.92			1
PCB 120	ND	U	5.23	6.92			1
PCBs 108 + 124	ND	U	6.81	13.8			1
PCB 107	ND	U	7.21	7.21			1
PCB 123	ND	U	8.41	8.41			1
PCB 106	ND	U	7.03	7.03			1
PCB 118	68.4		8.09	8.09	1.35	1.000	1
PCB 122	ND	U	7.95	7.95			1
PCB 114	ND	U	8.22	8.22			1
PCB 105	34.6		7.81	7.81	1.38	1.001	1
PCB 127	ND	U	7.52	7.52			1
PCB 126	ND	U	9.35	9.35			1
PCB 155	ND	U	6.47	6.47			1
PCB 152	ND	U	5.60	6.92			1
PCB 150	ND	U	4.52	6.92			1
PCB 136	ND	U	5.34	6.92			1
PCB 145	ND	U	4.86	6.92			1
PCB 148	ND	U	6.94	6.94			1
PCBs 135 + 151 + 154	19.6		6.30	13.8	1.17	1.095	1
PCB 144	ND	U	7.05	7.05			1
PCBs 147 + 149	32.3		5.61	13.8	1.09	1.121	1
PCB 134	ND	U	9.42	13.8			1

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	11/30/17 13:30
Sample Matrix:	Sediment	**Date Received:**	12/01/17 14:30
Sample Name:	URSC-RM20.0W-COMP	**Units:**	ng/Kg
Lab Code:	K1712961-006	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/29/17 22:32
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	10.189g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305037	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305032

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 143	ND	U	5.07	13.8			1
PCBs 139 + 140	ND	U	5.70	13.8			1
PCB 131	ND	U	6.70	6.92			1
PCB 142	ND	U	6.64	6.92			1
PCB 132	17.0**K**		6.69	6.92	1.48	1.159	1
PCB 133	ND	U	6.96	6.96			1
PCB 165	ND	U	4.93	6.92			1
PCB 146	ND	U	5.73	6.92			1
PCB 161	ND	U	4.92	6.92			1
PCBs 153 + 168	53.9		5.07	13.8	1.07	1.205	1
PCB 141	8.82**K**		6.07	6.92	1.75	1.212	1
PCB 130	ND	U	7.48	7.48			1
PCB 137	ND	U	6.19	6.92			1
PCB 164	ND	U	4.85	6.92			1
PCBs 129 + 138 + 163	87.7		6.91	27.7	1.27	1.243	1
PCB 160	ND	U	3.49	27.7			1
PCB 158	ND	U	4.33	6.92			1
PCBs 128 + 166	ND	U	5.62	13.8			1
PCB 159	ND	U	4.42	6.92			1
PCB 162	ND	U	3.94	6.92			1
PCB 167	ND	U	4.25	4.25			1
PCBs 156 + 157	7.70**K**		6.19	6.19	1.04	0.999	1
PCB 169	ND	U	4.80	4.80			1
PCB 188	ND	U	8.24	8.24			1
PCB 179	ND	U	6.10	6.92			1
PCB 184	ND	U	5.36	6.92			1
PCB 176	ND	U	6.21	6.92			1
PCB 186	ND	U	5.76	6.92			1
PCB 178	ND	U	8.25	8.25			1
PCB 175	ND	U	8.00	8.00			1
PCB 187	25.4		6.96	6.96	1.08	1.099	1
PCB 182	ND	U	7.19	7.19			1
PCB 183 + 185	ND	U	9.72	13.8			1
PCB 174	13.1**K**		9.75	9.75	0.79	1.121	1
PCB 177	ND	U	11.3	11.3			1

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	11/30/17 13:30
Sample Matrix:	Sediment	**Date Received:**	12/01/17 14:30
Sample Name:	URSC-RM20.0W-COMP	**Units:**	ng/Kg
Lab Code:	K1712961-006	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/29/17 22:32
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	10.189g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305037	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305032

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 181	ND	U	9.57	9.57			1
PCBs 171 + 173	ND	U	10.9	13.8			1
PCB 172	ND	U	11.1	11.1			1
PCB 192	ND	U	7.96	7.96			1
PCBs 180 + 193	35.7**K**		8.33	13.8	0.88	0.918	1
PCB 191	ND	U	8.28	8.28			1
PCB 170	16.1**K**		11.7	11.7	0.87	0.943	1
PCB 190	ND	U	7.97	7.97			1
PCB 189	ND	U	9.35	9.35			1
PCB 202	ND	U	5.78	5.78			1
PCB 201	ND	U	4.84	6.92			1
PCB 204	ND	U	4.74	6.92			1
PCB 197	ND	U	4.42	13.8			1
PCB 200	ND	U	4.85	13.8			1
PCBs 198 + 199	16.3		6.28	13.8	0.95	1.103	1
PCB 196	ND	U	6.52	6.92			1
PCB 203	9.15		5.56	6.92	0.89	0.926	1
PCB 195	ND	U	7.03	7.03			1
PCB 194	13.9		6.74	6.92	0.92	0.992	1
PCB 205	ND	U	5.62	5.62			1
PCB 208	ND	U	9.92	9.92			1
PCB 207	ND	U	9.51	9.51			1
PCB 206	ND	U	12.0	12.0			1
PCB 209	6.46**K**		6.39	6.39	0.65	1.000	1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	11/30/17 13:30
Sample Matrix:	Sediment	**Date Received:**	12/01/17 14:30
Sample Name:	URSC-RM20.0W-COMP	**Units:**	ng/Kg
Lab Code:	K1712961-006	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/29/17 22:32
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	10.189g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305037	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305032

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total MonoCB	ND	U	6.03	6.92			1
Total DiCB	11.4**J**		2.00	13.8			1
Total TriCB	ND	U	9.57	9.57			1
Total TetraCB	295		5.46	27.7			1
Total PentaCB	491		4.79	27.7			1
Total HexaCB	227		3.49	27.7			1
Total HeptaCB	90.3		5.36	13.8			1
Total OctaCB	39.4		4.42	13.8			1
Total NonaCB	ND	U	9.51	9.51			1
Total PCBs	1160		2.00	27.7			1

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	11/30/17 13:30
Sample Matrix:	Sediment	**Date Received:**	12/01/17 14:30
Sample Name:	URSC-RM20.0W-COMP	**Units:**	Percent
Lab Code:	K1712961-006	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/29/17 22:32
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	10.189g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305037	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305032

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
PCB 1L	2000	704.929	35		5-145	3.21	0.744
PCB 3L	2000	697.233	35		5-145	3.43	0.874
PCB 4L	2000	476.605	24		5-145	1.69	0.888
PCB 15L	2000	777.663	39		5-145	1.64	1.223
PCB 19L	2000	603.468	30		5-145	1.02	1.068
PCB 37L	2000	1050.326	53		5-145	0.92	1.082
PCB 54L	2000	380.983	19		5-145	0.75	0.837
PCB 81L	2000	1099.775	55		10-145	0.77	1.321
PCB 77L	2000	1057.219	53		10-145	0.69	1.343
PCB 104L	2000	685.691	34		10-145	1.72	0.831
PCB 123L	2000	1444.230	72		10-145	1.54	1.132
PCB 118L	2000	1427.837	71		10-145	1.40	1.142
PCB 114L	2000	1476.724	74		10-145	1.55	1.157
PCB 105L	2000	1500.501	75		10-145	1.67	1.177
PCB 126L	2000	1491.490	75		10-145	1.46	1.265
PCB 155L	2000	692.829	35		10-145	1.29	0.805
PCB 167L	2000	1346.846	67		10-145	1.20	1.068
PCBs 156L + 157L	4000	2861.368	72		10-145	1.29	1.097
PCB 169L	2000	1483.226	74		10-145	1.39	1.171
PCB 188L	2000	839.260	42		10-145	1.17	0.736
PCB 189L	2000	1380.911	69		10-145	1.02	0.964
PCB 202L	2000	961.580	48		10-145	0.83	0.833
PCB 205L	2000	1272.194	64		10-145	0.92	1.008
PCB 208L	2000	814.925	41		10-145	0.86	0.952
PCB 206L	2000	1615.267	81		10-145	0.80	1.039
PCB 209L	2000	1510.900	76		10-145	1.31	1.067
PCB 28L	2000	1074.899	54		5-145	0.99	0.934
PCB 111L	2000	1130.401	57		10-145	1.77	1.075
PCB 178L	2000	1059.137	53		10-145	1.10	1.008

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	11/30/17 13:30
Sample Matrix:	Sediment	**Date Received:**	12/01/17 14:30
Sample Name:	URSC-RM20.0W-COMP	**Units:**	ng/Kg
Lab Code:	K1712961-006	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method: 1668C

Prep Method: Method

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
PCB 81	ND	8.86	8.86	1	0.0003	
PCB 77	ND	8.99	8.99	1	0.0001	
PCB 123	ND	8.41	8.41	1	0.00003	
PCB 118	**68.4**	8.09	8.09	1	0.00003	0.00205
PCB 114	ND	8.22	8.22	1	0.00003	
PCB 105	**34.6**	7.81	7.81	1	0.00003	0.00104
PCB 126	ND	9.35	9.35	1	0.1	
PCB 167	ND	4.25	4.25	1	0.00003	
PCBs 156 + 157	**7.70**	6.19	6.19	1	0.00003	0.000231
PCB 169	ND	4.80	4.80	1	0.03	
PCB 189	ND	9.35	9.35	1	0.00003	
	Total TEQ					0.00332

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	11/30/17 08:15
Sample Matrix:	Sediment	**Date Received:**	12/01/17 14:30
Sample Name:	URSC-RM18.45E-COMP	**Units:**	ng/Kg
Lab Code:	K1712961-015	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	01/13/18 05:45
Prep Method:	Method Soxhlet	**Date Extracted:**	1/4/18
Sample Amount:	10.462g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P513710	**Blank File Name:**	P513666
ICAL Date:	07/26/17	**Cal Ver. File Name:**	P513702

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	0.232	0.777			1
1,2,3,7,8-PeCDD	0.245**BJK**		0.114	3.89	1.81	1.001	1
1,2,3,4,7,8-HxCDD	0.134**BJK**		0.0885	3.89	0.74	1.000	1
1,2,3,6,7,8-HxCDD	0.658**J**		0.104	3.89	1.30	1.000	1
1,2,3,7,8,9-HxCDD	0.337**BJ**		0.0914	3.89	1.05	1.008	1
1,2,3,4,6,7,8-HpCDD	8.78		0.137	3.89	1.02	1.000	1
OCDD	83.8		0.421	7.77	0.89	1.000	1
2,3,7,8-TCDF	ND	U	0.118	0.777			1
1,2,3,7,8-PeCDF	0.213**JK**		0.156	3.89	1.29	1.000	1
2,3,4,7,8-PeCDF	0.268**BJ**		0.171	3.89	1.47	1.001	1
1,2,3,4,7,8-HxCDF	0.392**BJ**		0.117	3.89	1.09	1.000	1
1,2,3,6,7,8-HxCDF	0.285**BJ**		0.120	3.89	1.22	1.000	1
1,2,3,7,8,9-HxCDF	ND	U	0.129	3.89			1
2,3,4,6,7,8-HxCDF	0.261**BJ**		0.120	3.89	1.17	1.000	1
1,2,3,4,6,7,8-HpCDF	2.14**BJ**		0.0611	3.89	1.06	1.000	1
1,2,3,4,7,8,9-HpCDF	0.195**J**		0.0807	3.89	1.06	1.000	1
OCDF	6.46**J**		0.480	7.77	0.84	1.006	1

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	11/30/17 08:15
Sample Matrix:	Sediment	**Date Received:**	12/01/17 14:30
Sample Name:	URSC-RM18.45E-COMP	**Units:**	ng/Kg
Lab Code:	K1712961-015	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	01/13/18 05:45
Prep Method:	Method Soxhlet	**Date Extracted:**	1/4/18
Sample Amount:	10.462g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P513710	**Blank File Name:**	P513666
ICAL Date:	07/26/17	**Cal Ver. File Name:**	P513702

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	ND	U	0.232	0.777			1
Total Penta-Dioxins	ND	U	0.114	3.89			1
Total Hexa-Dioxins	3.21**J**		0.0961	3.89	1.19		1
Total Hepta-Dioxins	8.78		0.137	3.89	1.02		1
Total Tetra-Furans	0.333**J**		0.118	0.777	0.82		1
Total Penta-Furans	0.564**J**		0.163	3.89	1.48		1
Total Hexa-Furans	1.71**J**		0.122	3.89	1.26		1
Total Hepta-Furans	6.15		0.0686	3.89	1.06		1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	11/30/17 08:15
Sample Matrix:	Sediment	**Date Received:**	12/01/17 14:30
Sample Name:	URSC-RM18.45E-COMP	**Units:**	Percent
Lab Code:	K1712961-015	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	01/13/18 05:45
Prep Method:	Method Soxhlet	**Date Extracted:**	1/4/18
Sample Amount:	10.462g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P513710	**Blank File Name:**	P513666
ICAL Date:	07/26/17	**Cal Ver. File Name:**	P513702

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	919.282	46		25-164	0.79	1.023
13C-1,2,3,7,8-PeCDD	2000	1159.324	58		25-181	1.57	1.199
13C-1,2,3,4,7,8-HxCDD	2000	1285.794	64		32-141	1.36	0.990
13C-1,2,3,6,7,8-HxCDD	2000	1170.016	59		28-130	1.19	0.993
13C-1,2,3,4,6,7,8-HpCDD	2000	1265.576	63		23-140	1.05	1.072
13C-OCDD	4000	1820.020	46		17-157	0.89	1.153
13C-2,3,7,8-TCDF	2000	1051.724	53		24-169	0.78	0.993
13C-1,2,3,7,8-PeCDF	2000	1130.245	57		24-185	1.59	1.154
13C-2,3,4,7,8-PeCDF	2000	1077.087	54		21-178	1.58	1.189
13C-1,2,3,4,7,8-HxCDF	2000	1081.150	54		26-152	0.51	0.969
13C-1,2,3,6,7,8-HxCDF	2000	1113.823	56		26-123	0.52	0.972
13C-1,2,3,7,8,9-HxCDF	2000	1244.347	62		29-147	0.51	1.008
13C-2,3,4,6,7,8-HxCDF	2000	1125.144	56		28-136	0.50	0.986
13C-1,2,3,4,6,7,8-HpCDF	2000	1235.741	62		28-143	0.43	1.046
13C-1,2,3,4,7,8,9-HpCDF	2000	1316.331	66		26-138	0.43	1.084
37Cl-2,3,7,8-TCDD	800	461.511	58		35-197	NA	1.024

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	11/30/17 08:15
Sample Matrix:	Sediment	**Date Received:**	12/01/17 14:30
Sample Name:	URSC-RM18.45E-COMP	**Units:**	ng/Kg
Lab Code:	K1712961-015	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 1613B

Prep Method: Method Soxhlet

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	ND	0.232	0.777	1	1	
1,2,3,7,8-PeCDD	**0.245**	0.114	3.89	1	1	0.245
1,2,3,4,7,8-HxCDD	**0.134**	0.0885	3.89	1	0.1	0.0134
1,2,3,6,7,8-HxCDD	**0.658**	0.104	3.89	1	0.1	0.0658
1,2,3,7,8,9-HxCDD	**0.337**	0.0914	3.89	1	0.1	0.0337
1,2,3,4,6,7,8-HpCDD	**8.78**	0.137	3.89	1	0.01	0.0878
OCDD	**83.8**	0.421	7.77	1	0.0003	0.0251
2,3,7,8-TCDF	ND	0.118	0.777	1	0.1	
1,2,3,7,8-PeCDF	**0.213**	0.156	3.89	1	0.03	0.00639
2,3,4,7,8-PeCDF	**0.268**	0.171	3.89	1	0.3	0.0804
1,2,3,4,7,8-HxCDF	**0.392**	0.117	3.89	1	0.1	0.0392
1,2,3,6,7,8-HxCDF	**0.285**	0.120	3.89	1	0.1	0.0285
1,2,3,7,8,9-HxCDF	ND	0.129	3.89	1	0.1	
2,3,4,6,7,8-HxCDF	**0.261**	0.120	3.89	1	0.1	0.0261
1,2,3,4,6,7,8-HpCDF	**2.14**	0.0611	3.89	1	0.01	0.0214
1,2,3,4,7,8,9-HpCDF	**0.195**	0.0807	3.89	1	0.01	0.00195
OCDF	**6.46**	0.480	7.77	1	0.0003	0.00194
		Total TEQ				0.677

2005 WHO TEFs, ND = 0

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	11/30/17 08:15
Sample Matrix:	Sediment	**Date Received:**	12/01/17 14:30
Sample Name:	URSC-RM18.45E-COMP	**Units:**	ng/Kg
Lab Code:	K1712961-015	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/29/17 23:36
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	10.338g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305038	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305032

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 1	ND	U	6.32	6.32			1
PCB 2	ND	U	6.12	6.12			1
PCB 3	ND	U	7.71	7.71			1
PCB 4	ND	U	8.35	8.35			1
PCB 10	ND	U	4.47	7.86			1
PCB 9	ND	U	2.85	3.15			1
PCB 7	ND	U	2.63	3.15			1
PCB 6	ND	U	2.89	3.15			1
PCB 5	ND	U	2.90	3.15			1
PCB 8	7.77**J**		2.72	7.86	-	1.184	1
PCB 14	ND	U	2.90	3.15			1
PCB 11	20.5		2.97	15.7	-	0.972	1
PCBs 12 + 13	ND	U	2.86	7.86			1
PCB 15	8.53		3.54	3.54	-	1.000	1
PCB 19	ND	U	22.6	22.6			1
PCBs 18 + 30	17.0**K**		14.9	14.9	1.41	1.096	1
PCB 17	ND	U	17.2	17.2			1
PCB 27	ND	U	14.0	14.0			1
PCB 24	ND	U	12.7	12.7			1
PCB 16	ND	U	20.3	20.3			1
PCB 32	ND	U	12.9	12.9			1
PCB 34	ND	U	18.5	18.5			1
PCB 23	ND	U	16.7	16.7			1
PCBs 26 + 29	ND	U	17.1	17.1			1
PCB 25	ND	U	14.8	14.8			1
PCB 31	26.6		17.6	17.6	0.88	0.853	1
PCBs 20 + 28	31.2		16.8	16.8	1.06	0.863	1
PCBs 21 + 33	ND	U	16.5	16.5			1
PCB 22	ND	U	16.9	16.9			1
PCB 36	ND	U	16.9	16.9			1
PCB 39	ND	U	16.1	16.1			1
PCB 38	ND	U	19.1	19.1			1
PCB 35	ND	U	20.6	20.6			1
PCB 37	ND	U	22.9	22.9			1

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	11/30/17 08:15
Sample Matrix:	Sediment	**Date Received:**	12/01/17 14:30
Sample Name:	URSC-RM18.45E-COMP	**Units:**	ng/Kg
Lab Code:	K1712961-015	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/29/17 23:36
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	10.338g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305038	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305032

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 54	ND	U	15.7	15.7			1
PCBs 50 + 53	ND	U	11.0	15.7			1
PCBs 45 + 51	ND	U	11.1	11.1			1
PCB 46	ND	U	12.5	12.5			1
PCB 52	50.1**K**		11.4	11.4	0.61	1.196	1
PCBs 43 + 73	ND	U	9.40	9.40			1
PCBs 49 + 69	18.5**K**		9.33	15.7	0.45	1.216	1
PCB 48	ND	U	10.5	10.5			1
PCBs 44 + 47 + 65	37.4		9.64	15.7	0.76	1.240	1
PCBs 59 + 62 + 75	ND	U	8.29	15.7			1
PCB 42	ND	U	11.8	15.7			1
PCBs 41 + 71 + 40	ND	U	11.7	15.7			1
PCB 64	16.7		8.29	8.29	0.71	1.294	1
PCB 72	ND	U	8.84	8.84			1
PCB 68	ND	U	8.00	8.00			1
PCB 57	ND	U	9.03	9.03			1
PCB 58	ND	U	8.16	8.16			1
PCB 67	ND	U	7.36	7.86			1
PCB 63	ND	U	8.73	8.73			1
PCBs 70 + 61 + 74 + 76	47.9		8.19	31.5	0.86	1.402	1
PCB 66	25.3		8.83	8.83	0.85	1.416	1
PCB 55	ND	U	8.72	8.72			1
PCB 56	11.4**K**		6.80	7.86	0.92	1.445	1
PCB 60	ND	U	6.55	7.86			1
PCB 80	ND	U	5.94	7.86			1
PCB 79	ND	U	6.52	7.86			1
PCB 78	ND	U	7.45	7.86			1
PCB 81	ND	U	9.73	9.73			1
PCB 77	ND	U	10.1	10.1			1
PCB 104	ND	U	12.4	12.4			1
PCB 96	ND	U	9.18	9.18			1
PCB 103	ND	U	10.9	10.9			1
PCB 94	ND	U	12.2	12.2			1
PCBs 95 + 93 + 100	39.0**K**		11.5	31.5	1.27	1.106	1

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	11/30/17 08:15
Sample Matrix:	Sediment	**Date Received:**	12/01/17 14:30
Sample Name:	URSC-RM18.45E-COMP	**Units:**	ng/Kg
Lab Code:	K1712961-015	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/29/17 23:36
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	10.338g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305038	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305032

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCBs 98 + 102	ND	U	10.8	31.5			1
PCBs 88 + 91	ND	U	12.3	12.3			1
PCB 84	ND	U	13.5	13.5			1
PCB 89	ND	U	13.8	13.8			1
PCB 121	ND	U	7.21	7.86			1
PCB 92	ND	U	10.4	10.4			1
PCBs 90 + 101 + 113	54.5		8.65	31.5	1.58	1.204	1
PCBs 83 + 99	33.8		9.68	15.7	1.70	1.224	1
PCB 112	ND	U	7.12	7.86			1
PCBs 86 + 87 + 97 + 109 + 119 + 125	29.7**JK**		8.37	31.5	1.12	1.247	1
PCBs 85 + 116 + 117	ND	U	8.19	15.7			1
PCBs 110 + 115	57.3		7.19	15.7	1.59	1.274	1
PCB 82	ND	U	13.2	13.2			1
PCB 111	ND	U	7.33	7.86			1
PCB 120	ND	U	7.77	7.86			1
PCBs 108 + 124	ND	U	7.39	15.7			1
PCB 107	ND	U	7.82	7.86			1
PCB 123	ND	U	8.97	8.97			1
PCB 106	ND	U	7.64	7.86			1
PCB 118	38.1**K**		9.03	9.03	1.04	1.000	1
PCB 122	ND	U	8.63	8.63			1
PCB 114	ND	U	8.90	8.90			1
PCB 105	11.5**K**		9.14	9.14	0.75	1.002	1
PCB 127	ND	U	8.17	8.17			1
PCB 126	ND	U	10.3	10.3			1
PCB 155	ND	U	7.38	7.38			1
PCB 152	ND	U	6.21	7.86			1
PCB 150	ND	U	5.00	7.86			1
PCB 136	ND	U	5.92	7.86			1
PCB 145	ND	U	5.38	7.86			1
PCB 148	ND	U	7.70	7.86			1
PCBs 135 + 151 + 154	17.9		6.98	15.7	1.10	1.096	1
PCB 144	ND	U	7.81	7.86			1
PCBs 147 + 149	37.2		6.55	15.7	1.23	1.121	1
PCB 134	ND	U	11.1	15.7			1

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	11/30/17 08:15
Sample Matrix:	Sediment	**Date Received:**	12/01/17 14:30
Sample Name:	URSC-RM18.45E-COMP	**Units:**	ng/Kg
Lab Code:	K1712961-015	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/29/17 23:36
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	10.338g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305038	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305032

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 143	ND	U	5.92	15.7			1
PCBs 139 + 140	ND	U	6.67	15.7			1
PCB 131	ND	U	7.83	7.86			1
PCB 142	ND	U	7.76	7.86			1
PCB 132	13.0		7.82	7.86	1.08	1.159	1
PCB 133	ND	U	8.14	8.14			1
PCB 165	ND	U	5.77	7.86			1
PCB 146	8.01**K**		6.70	7.86	1.88	1.188	1
PCB 161	ND	U	5.74	7.86			1
PCBs 153 + 168	48.2		5.92	15.7	1.14	1.205	1
PCB 141	ND	U	7.10	7.86			1
PCB 130	ND	U	8.74	8.74			1
PCB 137	ND	U	7.23	7.86			1
PCB 164	ND	U	5.67	7.86			1
PCBs 129 + 138 + 163	76.6		8.07	31.5	1.23	1.242	1
PCB 160	ND	U	4.08	31.5			1
PCB 158	ND	U	5.06	7.86			1
PCBs 128 + 166	8.39**JK**		6.57	15.7	1.53	1.280	1
PCB 159	ND	U	6.29	7.86			1
PCB 162	ND	U	5.61	7.86			1
PCB 167	ND	U	5.58	5.58			1
PCBs 156 + 157	ND	U	9.02	9.02			1
PCB 169	ND	U	6.89	6.89			1
PCB 188	ND	U	10.2	10.2			1
PCB 179	ND	U	7.57	7.86			1
PCB 184	ND	U	6.66	7.86			1
PCB 176	ND	U	7.71	7.86			1
PCB 186	ND	U	7.15	7.86			1
PCB 178	ND	U	10.3	10.3			1
PCB 175	ND	U	9.94	9.94			1
PCB 187	20.2**K**		8.65	8.65	1.47	1.098	1
PCB 182	ND	U	8.93	8.93			1
PCB 183 + 185	ND	U	10.4	15.7			1
PCB 174	ND	U	10.4	10.4			1
PCB 177	ND	U	12.0	12.0			1

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	11/30/17 08:15
Sample Matrix:	Sediment	**Date Received:**	12/01/17 14:30
Sample Name:	URSC-RM18.45E-COMP	**Units:**	ng/Kg
Lab Code:	K1712961-015	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/29/17 23:36
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	10.338g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305038	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305032

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 181	ND	U	10.2	10.2			1
PCBs 171 + 173	ND	U	11.6	15.7			1
PCB 172	ND	U	11.9	11.9			1
PCB 192	ND	U	8.47	8.47			1
PCBs 180 + 193	30.1		8.87	15.7	1.06	0.918	1
PCB 191	ND	U	8.81	8.81			1
PCB 170	16.1**K**		12.4	12.4	1.33	0.943	1
PCB 190	ND	U	8.48	8.48			1
PCB 189	ND	U	10.1	10.1			1
PCB 202	ND	U	10.6	10.6			1
PCB 201	ND	U	9.24	9.24			1
PCB 204	ND	U	9.05	9.05			1
PCB 197	ND	U	8.43	15.7			1
PCB 200	ND	U	9.25	15.7			1
PCBs 198 + 199	12.1**JK**		12.0	15.7	0.45	1.104	1
PCB 196	ND	U	12.5	12.5			1
PCB 203	ND	U	10.7	10.7			1
PCB 195	ND	U	13.5	13.5			1
PCB 194	ND	U	12.9	12.9			1
PCB 205	ND	U	11.3	11.3			1
PCB 208	ND	U	6.90	6.90			1
PCB 207	ND	U	7.36	7.86			1
PCB 206	ND	U	15.8	15.8			1
PCB 209	12.3**K**		7.13	7.13	0.82	1.000	1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	11/30/17 08:15
Sample Matrix:	Sediment	**Date Received:**	12/01/17 14:30
Sample Name:	URSC-RM18.45E-COMP	**Units:**	ng/Kg
Lab Code:	K1712961-015	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/29/17 23:36
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	10.338g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305038	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305032

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total MonoCB	ND	U	6.12	7.86			1
Total DiCB	36.8		2.63	15.7			1
Total TriCB	74.8		12.7	12.7			1
Total TetraCB	207		5.94	31.5			1
Total PentaCB	264		7.12	31.5			1
Total HexaCB	209		4.08	31.5			1
Total HeptaCB	66.4		6.66	15.7			1
Total OctaCB	12.1**J**		8.43	15.7			1
Total NonaCB	ND	U	6.90	7.86			1
Total PCBs	883		2.63	31.5			1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	11/30/17 08:15
Sample Matrix:	Sediment	**Date Received:**	12/01/17 14:30
Sample Name:	URSC-RM18.45E-COMP	**Units:**	Percent
Lab Code:	K1712961-015	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/29/17 23:36
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	10.338g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305038	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305032

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
PCB 1L	2000	954.444	48		5-145	2.90	0.744
PCB 3L	2000	862.987	43		5-145	3.24	0.874
PCB 4L	2000	611.495	31		5-145	1.58	0.888
PCB 15L	2000	925.285	46		5-145	1.50	1.224
PCB 19L	2000	745.252	37		5-145	1.07	1.068
PCB 37L	2000	1243.858	62		5-145	1.00	1.083
PCB 54L	2000	602.750	30		5-145	0.86	0.837
PCB 81L	2000	1232.143	62		10-145	0.86	1.322
PCB 77L	2000	1202.555	60		10-145	0.84	1.343
PCB 104L	2000	738.627	37		10-145	1.69	0.831
PCB 123L	2000	1563.561	78		10-145	1.56	1.133
PCB 118L	2000	1523.023	76		10-145	1.56	1.142
PCB 114L	2000	1618.017	81		10-145	1.62	1.158
PCB 105L	2000	1564.833	78		10-145	1.69	1.177
PCB 126L	2000	1554.579	78		10-145	1.46	1.265
PCB 155L	2000	738.995	37		10-145	1.22	0.805
PCB 167L	2000	1538.704	77		10-145	1.17	1.068
PCBs 156L + 157L	4000	3036.315	76		10-145	1.31	1.097
PCB 169L	2000	1525.005	76		10-145	1.12	1.171
PCB 188L	2000	975.646	49		10-145	1.11	0.736
PCB 189L	2000	1507.269	75		10-145	1.06	0.964
PCB 202L	2000	1087.467	54		10-145	0.79	0.833
PCB 205L	2000	1269.287	63		10-145	0.86	1.009
PCB 208L	2000	896.409	45		10-145	0.76	0.952
PCB 206L	2000	1595.138	80		10-145	0.82	1.039
PCB 209L	2000	1515.370	76		10-145	1.25	1.067
PCB 28L	2000	1374.470	69		5-145	1.13	0.934
PCB 111L	2000	1089.249	54		10-145	1.73	1.075
PCB 178L	2000	988.066	49		10-145	1.21	1.008

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	11/30/17 08:15
Sample Matrix:	Sediment	**Date Received:**	12/01/17 14:30
Sample Name:	URSC-RM18.45E-COMP	**Units:**	ng/Kg
Lab Code:	K1712961-015	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method: 1668C

Prep Method: Method

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
PCB 81	ND	9.73	9.73	1	0.0003	
PCB 77	ND	10.1	10.1	1	0.0001	
PCB 123	ND	8.97	8.97	1	0.00003	
PCB 118	**38.1**	9.03	9.03	1	0.00003	0.00114
PCB 114	ND	8.90	8.90	1	0.00003	
PCB 105	**11.5**	9.14	9.14	1	0.00003	0.000345
PCB 126	ND	10.3	10.3	1	0.1	
PCB 167	ND	5.58	5.58	1	0.00003	
PCBs 156 + 157	ND	9.02	9.02	1	0.00003	
PCB 169	ND	6.89	6.89	1	0.03	
PCB 189	ND	10.1	10.1	1	0.00003	
	Total TEQ					0.00149

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ng/Kg
Lab Code:	EQ1800009-01	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	01/11/18 08:48
Prep Method:	Method Soxhlet	**Date Extracted:**	1/4/18
Sample Amount:	10.365g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P513666	**Blank File Name:**	P513666
ICAL Date:	07/26/17	**Cal Ver. File Name:**	P513663

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	0.214	0.482			1
1,2,3,7,8-PeCDD	0.120**JK**		0.0815	2.41	2.33	1.001	1
1,2,3,4,7,8-HxCDD	0.0985**JK**		0.0557	2.41	0.95	1.000	1
1,2,3,6,7,8-HxCDD	ND	U	0.0613	2.41			1
1,2,3,7,8,9-HxCDD	0.113**JK**		0.0557	2.41	0.76	1.007	1
1,2,3,4,6,7,8-HpCDD	0.251**J**		0.103	2.41	1.18	1.000	1
OCDD	0.526**JK**		0.334	4.82	1.11	1.000	1
2,3,7,8-TCDF	ND	U	0.151	0.482			1
1,2,3,7,8-PeCDF	ND	U	0.141	2.41			1
2,3,4,7,8-PeCDF	0.408**JK**		0.145	2.41	1.20	1.001	1
1,2,3,4,7,8-HxCDF	0.336**J**		0.0531	2.41	1.43	1.000	1
1,2,3,6,7,8-HxCDF	0.346**JK**		0.0515	2.41	0.93	1.000	1
1,2,3,7,8,9-HxCDF	0.175**JK**		0.0636	2.41	0.88	1.000	1
2,3,4,6,7,8-HxCDF	0.371**JK**		0.0532	2.41	1.53	1.000	1
1,2,3,4,6,7,8-HpCDF	1.02**J**		0.0747	2.41	1.00	1.000	1
1,2,3,4,7,8,9-HpCDF	ND	U	0.107	2.41			1
OCDF	ND	U	0.442	4.82			1

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ng/Kg
Lab Code:	EQ1800009-01	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	01/11/18 08:48
Prep Method:	Method Soxhlet	**Date Extracted:**	1/4/18
Sample Amount:	10.365g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P513666	**Blank File Name:**	P513666
ICAL Date:	07/26/17	**Cal Ver. File Name:**	P513663

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	ND	U	0.214	0.482			1
Total Penta-Dioxins	ND	U	0.0815	2.41			1
Total Hexa-Dioxins	ND	U	0.0586	2.41			1
Total Hepta-Dioxins	0.632**J**		0.103	2.41	1.04		1
Total Tetra-Furans	ND	U	0.151	0.482			1
Total Penta-Furans	0.402**J**		0.143	2.41	1.34		1
Total Hexa-Furans	1.83**J**		0.0550	2.41	1.27		1
Total Hepta-Furans	1.02**J**		0.0872	2.41	1.00		1

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	Percent
Lab Code:	EQ1800009-01	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	01/11/18 08:48
Prep Method:	Method Soxhlet	**Date Extracted:**	1/4/18
Sample Amount:	10.365g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P513666	**Blank File Name:**	P513666
ICAL Date:	07/26/17	**Cal Ver. File Name:**	P513663

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	905.971	45		25-164	0.78	1.022
13C-1,2,3,7,8-PeCDD	2000	1197.411	60		25-181	1.58	1.195
13C-1,2,3,4,7,8-HxCDD	2000	1365.706	68		32-141	1.28	0.991
13C-1,2,3,6,7,8-HxCDD	2000	1277.283	64		28-130	1.28	0.994
13C-1,2,3,4,6,7,8-HpCDD	2000	1189.305	59		23-140	1.07	1.072
13C-OCDD	4000	1486.079	37		17-157	0.91	1.154
13C-2,3,7,8-TCDF	2000	1105.168	55		24-169	0.79	0.993
13C-1,2,3,7,8-PeCDF	2000	1215.379	61		24-185	1.58	1.151
13C-2,3,4,7,8-PeCDF	2000	1202.253	60		21-178	1.58	1.185
13C-1,2,3,4,7,8-HxCDF	2000	1357.241	68		26-152	0.51	0.970
13C-1,2,3,6,7,8-HxCDF	2000	1363.059	68		26-123	0.53	0.973
13C-1,2,3,7,8,9-HxCDF	2000	1408.561	70		29-147	0.51	1.009
13C-2,3,4,6,7,8-HxCDF	2000	1396.272	70		28-136	0.51	0.987
13C-1,2,3,4,6,7,8-HpCDF	2000	1256.908	63		28-143	0.44	1.045
13C-1,2,3,4,7,8,9-HpCDF	2000	1254.034	63		26-138	0.45	1.085
37Cl-2,3,7,8-TCDD	800	460.880	58		35-197	NA	1.023

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ng/Kg
Lab Code:	EQ1700575-01	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/29/17 18:15
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	5.227g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305033	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305032

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 1	ND	U	22.5	22.5			1
PCB 2	ND	U	18.3	18.3			1
PCB 3	ND	U	19.2	19.2			1
PCB 4	ND	U	69.1	69.1			1
PCB 10	ND	U	28.8	28.8			1
PCB 9	ND	U	4.25	4.25			1
PCB 7	ND	U	3.92	3.92			1
PCB 6	ND	U	4.31	4.31			1
PCB 5	ND	U	4.32	4.32			1
PCB 8	ND	U	4.05	9.57			1
PCB 14	ND	U	4.33	4.33			1
PCB 11	ND	U	4.42	19.1			1
PCBs 12 + 13	ND	U	4.26	9.57			1
PCB 15	ND	U	4.21	4.21			1
PCB 19	ND	U	43.7	43.7			1
PCBs 18 + 30	ND	U	38.4	38.4			1
PCB 17	ND	U	44.4	44.4			1
PCB 27	ND	U	36.0	36.0			1
PCB 24	ND	U	32.8	32.8			1
PCB 16	ND	U	52.4	52.4			1
PCB 32	ND	U	33.3	33.3			1
PCB 34	ND	U	19.5	19.5			1
PCB 23	ND	U	17.5	17.5			1
PCBs 26 + 29	ND	U	18.0	18.0			1
PCB 25	ND	U	15.5	15.5			1
PCB 31	ND	U	18.5	18.5			1
PCBs 20 + 28	ND	U	17.7	17.7			1
PCBs 21 + 33	ND	U	17.3	17.3			1
PCB 22	ND	U	17.7	17.7			1
PCB 36	ND	U	17.7	17.7			1
PCB 39	ND	U	16.9	16.9			1
PCB 38	ND	U	20.1	20.1			1
PCB 35	ND	U	21.6	21.6			1
PCB 37	ND	U	28.9	28.9			1

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ng/Kg
Lab Code:	EQ1700575-01	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/29/17 18:15
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	5.227g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305033	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305032

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 54	ND	U	23.0	23.0			1
PCBs 50 + 53	ND	U	17.0	19.1			1
PCBs 45 + 51	ND	U	17.2	17.2			1
PCB 46	ND	U	19.4	19.4			1
PCB 52	ND	U	17.7	17.7			1
PCBs 43 + 73	ND	U	14.7	14.7			1
PCBs 49 + 69	ND	U	14.6	19.1			1
PCB 48	ND	U	16.3	16.3			1
PCBs 44 + 47 + 65	ND	U	15.0	19.1			1
PCBs 59 + 62 + 75	ND	U	12.9	19.1			1
PCB 42	ND	U	18.3	19.1			1
PCB 64	ND	U	12.9	12.9			1
PCBs 41 + 71 + 40	ND	U	18.2	19.1			1
PCB 72	ND	U	13.8	13.8			1
PCB 68	ND	U	12.5	12.5			1
PCB 57	ND	U	14.1	14.1			1
PCB 58	ND	U	12.7	12.7			1
PCB 67	ND	U	11.5	11.5			1
PCB 63	ND	U	13.6	13.6			1
PCBs 70 + 61 + 74 + 76	ND	U	12.8	38.3			1
PCB 66	ND	U	13.8	13.8			1
PCB 55	ND	U	13.6	13.6			1
PCB 56	ND	U	13.4	13.4			1
PCB 60	ND	U	12.9	12.9			1
PCB 80	ND	U	11.7	11.7			1
PCB 79	ND	U	12.8	12.8			1
PCB 78	ND	U	14.6	14.6			1
PCB 81	ND	U	22.1	22.1			1
PCB 77	ND	U	19.7	19.7			1
PCB 104	ND	U	21.0	21.0			1
PCB 96	ND	U	16.4	16.4			1
PCB 103	ND	U	19.4	19.4			1
PCB 94	ND	U	21.8	21.8			1
PCBs 95 + 93 + 100	ND	U	20.6	38.3			1

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ng/Kg
Lab Code:	EQ1700575-01	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/29/17 18:15
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	5.227g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305033	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305032

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCBs 98 + 102	ND	U	19.3	38.3			1
PCBs 88 + 91	ND	U	22.0	22.0			1
PCB 84	ND	U	24.1	24.1			1
PCB 89	ND	U	24.7	24.7			1
PCB 121	ND	U	15.8	15.8			1
PCB 92	ND	U	22.7	22.7			1
PCBs 90 + 101 + 113	ND	U	18.9	38.3			1
PCBs 83 + 99	ND	U	21.2	21.2			1
PCB 112	ND	U	15.6	15.6			1
PCBs 86 + 87 + 97 + 109 + 119 + 125	ND	U	18.3	38.3			1
PCBs 85 + 116 + 117	ND	U	17.9	19.1			1
PCBs 110 + 115	ND	U	15.7	19.1			1
PCB 82	ND	U	28.7	28.7			1
PCB 111	ND	U	16.0	16.0			1
PCB 120	ND	U	17.0	17.0			1
PCBs 108 + 124	ND	U	18.4	19.1			1
PCB 107	ND	U	19.5	19.5			1
PCB 123	ND	U	21.3	21.3			1
PCB 106	ND	U	19.0	19.0			1
PCB 118	ND	U	24.4	24.4			1
PCB 122	ND	U	21.5	21.5			1
PCB 114	ND	U	22.2	22.2			1
PCB 105	ND	U	22.6	22.6			1
PCB 127	ND	U	20.4	20.4			1
PCB 126	ND	U	25.4	25.4			1
PCB 155	ND	U	15.4	15.4			1
PCB 152	ND	U	12.0	12.0			1
PCB 150	ND	U	9.60	9.60			1
PCB 136	ND	U	11.4	11.4			1
PCB 145	ND	U	10.4	10.4			1
PCB 148	ND	U	14.8	14.8			1
PCBs 135 + 151 + 154	ND	U	13.4	19.1			1
PCB 144	ND	U	15.0	15.0			1
PCBs 147 + 149	ND	U	8.04	19.1			1
PCB 134	ND	U	13.6	19.1			1

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ng/Kg
Lab Code:	EQ1700575-01	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/29/17 18:15
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	5.227g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305033	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305032

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 143	ND	U	7.26	19.1			1
PCBs 139 + 140	ND	U	8.17	19.1			1
PCB 131	ND	U	9.61	9.61			1
PCB 142	ND	U	9.52	9.57			1
PCB 132	ND	U	9.59	9.59			1
PCB 133	ND	U	9.98	9.98			1
PCB 165	ND	U	7.07	9.57			1
PCB 146	ND	U	8.22	9.57			1
PCB 161	ND	U	7.04	9.57			1
PCBs 153 + 168	ND	U	7.26	19.1			1
PCB 141	ND	U	8.70	9.57			1
PCB 130	ND	U	10.8	10.8			1
PCB 137	ND	U	8.87	9.57			1
PCB 164	ND	U	6.95	9.57			1
PCBs 129 + 138 + 163	ND	U	9.90	38.3			1
PCB 160	ND	U	5.00	38.3			1
PCB 158	ND	U	6.20	9.57			1
PCBs 128 + 166	ND	U	8.05	19.1			1
PCB 159	ND	U	14.4	14.4			1
PCB 162	ND	U	12.9	12.9			1
PCB 167	ND	U	13.3	13.3			1
PCBs 156 + 157	ND	U	19.8	19.8			1
PCB 169	ND	U	15.0	15.0			1
PCB 188	ND	U	18.5	18.5			1
PCB 179	ND	U	13.2	13.2			1
PCB 184	ND	U	11.6	11.6			1
PCB 176	ND	U	13.5	13.5			1
PCB 186	ND	U	12.5	12.5			1
PCB 178	ND	U	17.9	17.9			1
PCB 175	ND	U	17.3	17.3			1
PCB 187	ND	U	15.1	15.1			1
PCB 182	ND	U	15.6	15.6			1
PCB 183 + 185	ND	U	20.0	20.0			1
PCB 174	ND	U	20.1	20.1			1
PCB 177	ND	U	23.1	23.1			1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ng/Kg
Lab Code:	EQ1700575-01	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/29/17 18:15
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	5.227g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305033	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305032

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 181	ND	U	19.7	19.7			1
PCBs 171 + 173	ND	U	22.2	22.2			1
PCB 172	ND	U	22.8	22.8			1
PCB 192	ND	U	16.4	16.4			1
PCBs 180 + 193	ND	U	17.1	19.1			1
PCB 191	ND	U	17.0	17.0			1
PCB 170	ND	U	23.9	23.9			1
PCB 190	ND	U	16.4	16.4			1
PCB 189	ND	U	18.6	18.6			1
PCB 202	ND	U	21.1	21.1			1
PCB 201	ND	U	17.1	17.1			1
PCB 204	ND	U	16.7	16.7			1
PCB 197	ND	U	15.6	19.1			1
PCB 200	ND	U	17.1	19.1			1
PCBs 198 + 199	ND	U	22.1	22.1			1
PCB 196	ND	U	23.0	23.0			1
PCB 203	ND	U	19.6	19.6			1
PCB 195	ND	U	24.8	24.8			1
PCB 194	ND	U	23.8	23.8			1
PCB 205	ND	U	19.1	19.1			1
PCB 208	ND	U	19.0	19.0			1
PCB 207	ND	U	18.8	18.8			1
PCB 206	ND	U	16.1	16.1			1
PCB 209	ND	U	16.3	16.3			1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ng/Kg
Lab Code:	EQ1700575-01	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/29/17 18:15
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	5.227g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305033	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305032

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total MonoCB	ND	U	18.3	18.3			1
Total DiCB	ND	U	3.92	19.1			1
Total TriCB	ND	U	15.5	15.5			1
Total TetraCB	ND	U	11.5	38.3			1
Total PentaCB	ND	U	15.6	38.3			1
Total HexaCB	ND	U	5.00	38.3			1
Total HeptaCB	ND	U	11.6	19.1			1
Total OctaCB	ND	U	15.6	19.1			1
Total NonaCB	ND	U	16.1	16.1			1
Total PCBs	ND	U	3.92	38.3			1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	Percent
Lab Code:	EQ1700575-01	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/29/17 18:15
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	5.227g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305033	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305032

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
PCB 1L	2000	1016.968	51		5-145	2.81	0.740
PCB 3L	2000	939.413	47		5-145	3.23	0.870
PCB 4L	2000	573.289	29		5-145	1.62	0.884
PCB 15L	2000	966.374	48		5-145	1.59	1.216
PCB 19L	2000	676.373	34		5-145	1.01	1.062
PCB 37L	2000	905.670	45		5-145	1.02	1.083
PCB 54L	2000	569.376	28		5-145	0.84	0.837
PCB 81L	2000	1078.724	54		10-145	0.85	1.322
PCB 77L	2000	1054.119	53		10-145	0.72	1.343
PCB 104L	2000	737.363	37		10-145	1.71	0.831
PCB 123L	2000	1555.266	78		10-145	1.64	1.133
PCB 118L	2000	1419.695	71		10-145	1.54	1.142
PCB 114L	2000	1494.955	75		10-145	1.56	1.157
PCB 105L	2000	1537.913	77		10-145	1.54	1.178
PCB 126L	2000	1565.449	78		10-145	1.73	1.265
PCB 155L	2000	706.326	35		10-145	1.33	0.805
PCB 167L	2000	1524.395	76		10-145	1.17	1.068
PCBs 156L + 157L	4000	3111.768	78		10-145	1.29	1.097
PCB 169L	2000	1676.921	84		10-145	1.37	1.171
PCB 188L	2000	919.624	46		10-145	1.19	0.736
PCB 189L	2000	1684.247	84		10-145	1.06	0.964
PCB 202L	2000	1050.570	53		10-145	1.01	0.833
PCB 205L	2000	1384.000	69		10-145	0.87	1.008
PCB 208L	2000	914.575	46		10-145	0.70	0.952
PCB 206L	2000	1748.986	87		10-145	0.82	1.039
PCB 209L	2000	1632.163	82		10-145	1.14	1.066
PCB 28L	2000	1498.060	75		5-145	0.95	0.934
PCB 111L	2000	1103.172	55		10-145	1.69	1.075
PCB 178L	2000	1030.246	52		10-145	1.14	1.008

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Analyzed:**	01/12/18
Sample Matrix:	Sediment	**Date Extracted:**	01/04/18

Duplicate Lab Control Sample Summary
Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Units:**	ng/Kg
Prep Method:	Method Soxhlet	**Basis:**	Dry
		Analysis Lot:	576975

	Lab Control Sample EQ1800009-02			Duplicate Lab Control Sample EQ1800009-03					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
1,2,3,4,6,7,8-HpCDD	89.6	94.6	95	90.1	96.8	93	70-140	<1	50
1,2,3,4,7,8-HxCDD	82.9	94.6	88	83.3	96.8	86	70-164	<1	50
1,2,3,6,7,8-HxCDD	88.9	94.6	94	91.4	96.8	94	76-134	3	50
1,2,3,7,8,9-HxCDD	86.4	94.6	91	91.1	96.8	94	64-162	5	50
1,2,3,7,8-PeCDD	94.1	94.6	99	95.6	96.8	99	70-142	2	50
2,3,7,8-TCDD	21.3	18.9	112	21.5	19.4	111	67-158	1	50
OCDD	194	189	103	200	194	103	78-144	3	50
1,2,3,4,6,7,8-HpCDF	92.5	94.6	98	93.0	96.8	96	82-122	<1	50
1,2,3,4,7,8,9-HpCDF	92.4	94.6	98	93.3	96.8	96	78-138	<1	50
1,2,3,4,7,8-HxCDF	95.3	94.6	101	98.1	96.8	101	72-134	3	50
1,2,3,6,7,8-HxCDF	95.5	94.6	101	90.4	96.8	93	84-130	5	50
1,2,3,7,8,9-HxCDF	82.9	94.6	88	85.9	96.8	89	78-130	4	50
1,2,3,7,8-PeCDF	84.3	94.6	89	82.6	96.8	85	80-134	2	50
2,3,4,6,7,8-HxCDF	92.3	94.6	98	94.0	96.8	97	70-156	2	50
2,3,4,7,8-PeCDF	87.7	94.6	93	88.7	96.8	92	68-160	1	50
2,3,7,8-TCDF	17.9	18.9	95	19.3	19.4	100	75-158	7	50
OCDF	224	189	119	228	194	118	63-170	1	50

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1800009-02	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	01/12/18 18:57
Prep Method:	Method Soxhlet	**Date Extracted:**	1/4/18
Sample Amount:	10.567g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P513697	**Blank File Name:**	P513666
ICAL Date:	07/26/17	**Cal Ver. File Name:**	P513686

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	21.3		0.276	0.473	0.75	1.001	1
1,2,3,7,8-PeCDD	94.1		0.0624	2.37	1.56	1.000	1
1,2,3,4,7,8-HxCDD	82.9		0.0806	2.37	1.22	1.000	1
1,2,3,6,7,8-HxCDD	88.9		0.0882	2.37	1.26	1.000	1
1,2,3,7,8,9-HxCDD	86.4		0.0804	2.37	1.22	1.007	1
1,2,3,4,6,7,8-HpCDD	89.6		0.0626	2.37	1.04	1.000	1
OCDD	194		0.169	4.73	0.89	1.000	1
2,3,7,8-TCDF	17.9		0.152	0.473	0.72	1.001	1
1,2,3,7,8-PeCDF	84.3		0.107	2.37	1.41	1.001	1
2,3,4,7,8-PeCDF	87.7		0.110	2.37	1.40	1.001	1
1,2,3,4,7,8-HxCDF	95.3		0.0737	2.37	1.14	1.000	1
1,2,3,6,7,8-HxCDF	95.5		0.0735	2.37	1.19	1.000	1
1,2,3,7,8,9-HxCDF	82.9		0.0877	2.37	1.08	1.000	1
2,3,4,6,7,8-HxCDF	92.3		0.0736	2.37	1.06	1.000	1
1,2,3,4,6,7,8-HpCDF	92.5		0.111	2.37	0.97	1.000	1
1,2,3,4,7,8,9-HpCDF	92.4		0.156	2.37	0.98	1.000	1
OCDF	224		0.224	4.73	0.88	1.005	1

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1800009-02	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	01/12/18 18:57
Prep Method:	Method Soxhlet	**Date Extracted:**	1/4/18
Sample Amount:	10.567g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P513697	**Blank File Name:**	P513666
ICAL Date:	07/26/17	**Cal Ver. File Name:**	P513686

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	21.3		0.276	0.473	0.75		1
Total Penta-Dioxins	94.1		0.0624	2.37	1.56		1
Total Hexa-Dioxins	258		0.0845	2.37	1.22		1
Total Hepta-Dioxins	89.6		0.0626	2.37	1.04		1
Total Tetra-Furans	18.1		0.152	0.473	0.72		1
Total Penta-Furans	173		0.108	2.37	1.41		1
Total Hexa-Furans	366		0.0768	2.37	1.14		1
Total Hepta-Furans	185		0.128	2.37	0.97		1

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	Percent
Lab Code:	EQ1800009-02	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	01/12/18 18:57
Prep Method:	Method Soxhlet	**Date Extracted:**	1/4/18
Sample Amount:	10.567g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P513697	**Blank File Name:**	P513666
ICAL Date:	07/26/17	**Cal Ver. File Name:**	P513686

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	1013.381	51		25-164	0.79	1.023
13C-1,2,3,7,8-PeCDD	2000	1349.919	67		25-181	1.57	1.199
13C-1,2,3,4,7,8-HxCDD	2000	1548.401	77		32-141	1.26	0.991
13C-1,2,3,6,7,8-HxCDD	2000	1474.265	74		28-130	1.25	0.994
13C-1,2,3,4,6,7,8-HpCDD	2000	1523.293	76		23-140	1.05	1.072
13C-OCDD	4000	2126.555	53		17-157	0.89	1.155
13C-2,3,7,8-TCDF	2000	1146.320	57		24-169	0.79	0.993
13C-1,2,3,7,8-PeCDF	2000	1266.384	63		24-185	1.53	1.153
13C-2,3,4,7,8-PeCDF	2000	1245.441	62		21-178	1.57	1.188
13C-1,2,3,4,7,8-HxCDF	2000	1278.768	64		26-152	0.51	0.969
13C-1,2,3,6,7,8-HxCDF	2000	1298.658	65		26-123	0.50	0.972
13C-1,2,3,7,8,9-HxCDF	2000	1363.045	68		29-147	0.50	1.009
13C-2,3,4,6,7,8-HxCDF	2000	1363.653	68		28-136	0.50	0.987
13C-1,2,3,4,6,7,8-HpCDF	2000	1511.966	76		28-143	0.44	1.045
13C-1,2,3,4,7,8,9-HpCDF	2000	1498.124	75		26-138	0.44	1.086
37Cl-2,3,7,8-TCDD	800	495.470	62		35-197	NA	1.024

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1800009-03	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	01/12/18 19:46
Prep Method:	Method Soxhlet	**Date Extracted:**	1/4/18
Sample Amount:	10.326g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P513698	**Blank File Name:**	P513666
ICAL Date:	07/26/17	**Cal Ver. File Name:**	P513686

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	21.5		0.657	0.657	0.82	1.001	1
1,2,3,7,8-PeCDD	95.6		0.146	2.42	1.57	1.001	1
1,2,3,4,7,8-HxCDD	83.3		0.127	2.42	1.20	1.000	1
1,2,3,6,7,8-HxCDD	91.4		0.139	2.42	1.24	1.000	1
1,2,3,7,8,9-HxCDD	91.1		0.127	2.42	1.19	1.007	1
1,2,3,4,6,7,8-HpCDD	90.1		0.105	2.42	1.04	1.000	1
OCDD	200		0.230	4.84	0.88	1.000	1
2,3,7,8-TCDF	19.3		0.452	0.484	0.66	1.001	1
1,2,3,7,8-PeCDF	82.6		0.193	2.42	1.34	1.001	1
2,3,4,7,8-PeCDF	88.7		0.189	2.42	1.41	1.001	1
1,2,3,4,7,8-HxCDF	98.1		0.0924	2.42	1.22	1.000	1
1,2,3,6,7,8-HxCDF	90.4		0.0855	2.42	1.09	1.000	1
1,2,3,7,8,9-HxCDF	85.9		0.101	2.42	1.15	1.000	1
2,3,4,6,7,8-HxCDF	94.0		0.0876	2.42	1.09	1.000	1
1,2,3,4,6,7,8-HpCDF	93.0		0.158	2.42	0.96	1.000	1
1,2,3,4,7,8,9-HpCDF	93.3		0.207	2.42	0.94	1.000	1
OCDF	228		0.335	4.84	0.87	1.005	1

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1800009-03	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	01/12/18 19:46
Prep Method:	Method Soxhlet	**Date Extracted:**	1/4/18
Sample Amount:	10.326g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P513698	**Blank File Name:**	P513666
ICAL Date:	07/26/17	**Cal Ver. File Name:**	P513686

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	21.5		0.657	0.657	0.82		1
Total Penta-Dioxins	96.2		0.146	2.42	1.57		1
Total Hexa-Dioxins	266		0.134	2.42	1.20		1
Total Hepta-Dioxins	90.1		0.105	2.42	1.04		1
Total Tetra-Furans	19.3		0.452	0.484	0.66		1
Total Penta-Furans	172		0.191	2.42	1.38		1
Total Hexa-Furans	368		0.0911	2.42	1.22		1
Total Hepta-Furans	186		0.176	2.42	0.96		1

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	Percent
Lab Code:	EQ1800009-03	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	01/12/18 19:46
Prep Method:	Method Soxhlet	**Date Extracted:**	1/4/18
Sample Amount:	10.326g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P513698	**Blank File Name:**	P513666
ICAL Date:	07/26/17	**Cal Ver. File Name:**	P513686

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	772.602	39		25-164	0.80	1.023
13C-1,2,3,7,8-PeCDD	2000	1272.785	64		25-181	1.56	1.199
13C-1,2,3,4,7,8-HxCDD	2000	1354.831	68		32-141	1.26	0.991
13C-1,2,3,6,7,8-HxCDD	2000	1297.526	65		28-130	1.24	0.994
13C-1,2,3,4,6,7,8-HpCDD	2000	1656.231	83		23-140	1.05	1.072
13C-OCDD	4000	2783.246	70		17-157	0.88	1.155
13C-2,3,7,8-TCDF	2000	826.677	41		24-169	0.76	0.993
13C-1,2,3,7,8-PeCDF	2000	1132.567	57		24-185	1.58	1.153
13C-2,3,4,7,8-PeCDF	2000	1154.639	58		21-178	1.59	1.188
13C-1,2,3,4,7,8-HxCDF	2000	1035.737	52		26-152	0.50	0.969
13C-1,2,3,6,7,8-HxCDF	2000	1128.532	56		26-123	0.50	0.972
13C-1,2,3,7,8,9-HxCDF	2000	1230.211	62		29-147	0.52	1.009
13C-2,3,4,6,7,8-HxCDF	2000	1140.224	57		28-136	0.50	0.987
13C-1,2,3,4,6,7,8-HpCDF	2000	1537.309	77		28-143	0.44	1.045
13C-1,2,3,4,7,8,9-HpCDF	2000	1670.538	84		26-138	0.43	1.086
37Cl-2,3,7,8-TCDD	800	385.081	48		35-197	NA	1.024

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Analyzed:**	12/30/17
Sample Matrix:	Sediment	**Date Extracted:**	12/27/17

Duplicate Lab Control Sample Summary
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Units:**	ng/Kg
Prep Method:	Method	**Basis:**	Dry
		Analysis Lot:	576377

	Lab Control Sample EQ1700575-02			Duplicate Lab Control Sample EQ1700575-03					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
PCB 1	217	195	111	212	181	117	60-135	2	50
PCB 2	230	195	118	210	181	116	60-135	9	50
PCB 3	227	195	116	189	181	105	60-135	18	50
PCB 10	185	195	94	178	181	99	60-135	3	50
PCB 11	206	195	105	170	181	94	60-135	19	50
PCB 14	209	195	107	195	181	108	60-135	7	50
PCB 15	214	195	109	191	181	106	60-135	11	50
PCB 4	250	195	128	201	181	112	60-135	21	50
PCB 5	188	195	96	163	181	90	60-135	15	50
PCB 6	214	195	109	184	181	102	60-135	15	50
PCB 7	195	195	100	178	181	99	60-135	9	50
PCB 8	218	195	112	203	181	112	60-135	7	50
PCB 9	213	195	109	201	181	111	60-135	6	50
PCBs 12 + 13	340	391	87	345	361	96	60-135	2	50
PCB 16	190	195	97	128	181	71	60-135	39	50
PCB 17	192	195	98	131	181	72	60-135	38	50
PCB 19	237	195	121	157	181	87	60-135	40	50
PCB 22	174 K	195	89	138	181	77	60-135	23	50
PCB 23	189	195	97	127	181	70	60-135	39	50
PCB 24	178	195	91	115	181	64	60-135	43	50
PCB 25	167	195	85	122	181	68	60-135	31	50
PCB 27	203	195	104	143	181	79	60-135	35	50
PCB 31	220	195	113	163	181	91	60-135	30	50
PCB 32	202	195	103	144	181	80	60-135	33	50
PCB 34	205	195	105	142 K	181	79	60-135	36	50
PCB 35	231	195	118	166	181	92	60-135	33	50
PCB 36	195 K	195	100	148	181	82	60-135	27	50
PCB 37	174 K	195	89	128 K	181	71	60-135	30	50
PCB 38	209	195	107	144	181	80	60-135	37	50
PCB 39	198	195	101	126	181	70	60-135	44	50
PCBs 18 + 30	390	391	100	280	361	78	60-135	33	50
PCBs 20 + 28	394	391	101	301	361	83	60-135	27	50
PCBs 21 + 33	367 K	391	94	250	361	69	60-135	38	50
PCBs 26 + 29	423	391	108	287	361	79	60-135	38	50
PCB 42	177 K	391	45 *	177	361	49 *	60-135	<1	50
PCB 46	388	391	99	357	361	99	60-135	8	50
PCB 48	277	391	71	269	361	74	60-135	3	50
PCB 52	408	391	104	318 K	361	88	60-135	25	50

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Analyzed:**	12/30/17
Sample Matrix:	Sediment	**Date Extracted:**	12/27/17

Duplicate Lab Control Sample Summary
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Units:**	ng/Kg
Prep Method:	Method	**Basis:**	Dry
		Analysis Lot:	576377

	Lab Control Sample EQ1700575-02			Duplicate Lab Control Sample EQ1700575-03					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
PCB 54	531	391	136 *	532	361	147 *	60-135	<1	50
PCB 55	279	391	71	268	361	74	60-135	4	50
PCB 56	364	391	93	321	361	89	60-135	13	50
PCB 57	194	391	50 *	184	361	51 *	60-135	5	50
PCB 58	159	391	41 *	152	361	42 *	60-135	4	50
PCB 60	338	391	87	308	361	85	60-135	9	50
PCB 63	185	391	47 *	190	361	53 *	60-135	3	50
PCB 64	194	391	50 *	142 K	361	39 *	60-135	31	50
PCB 66	317	391	81	304	361	84	60-135	4	50
PCB 67	157	391	40 *	154	361	43 *	60-135	2	50
PCB 68	159	391	41 *	149	361	41 *	60-135	6	50
PCB 72	214	391	55 *	194	361	54 *	60-135	10	50
PCB 77	478	391	122	429	361	119	60-135	11	50
PCB 78	419	391	107	368	361	102	60-135	13	50
PCB 79	403	391	103	376	361	104	60-135	7	50
PCB 80	343	391	88	319	361	88	60-135	7	50
PCB 81	476	391	122	418	361	116	60-135	13	50
PCBs 41 + 71 + 40	758	1170	65	677	1080	62	60-135	11	50
PCBs 43 + 73	676	782	87	691	722	96	60-135	2	50
PCBs 44 + 47 + 65	948	1170	81	926	1080	85	60-135	2	50
PCBs 45 + 51	755	782	97	709	722	98	60-135	6	50
PCBs 49 + 69	686	782	88	657	722	91	60-135	4	50
PCBs 50 + 53	723	782	92	692	722	96	60-135	4	50
PCBs 59 + 62 + 75	948	1170	81	890	1080	82	60-135	6	50
PCBs 70 + 61 + 74 + 76	1090	1560	70	1050	1440	73	60-135	4	50
PCB 103	395	391	101	348	361	96	60-135	13	50
PCB 104	500	391	128	493	361	137 *	60-135	1	50
PCB 105	480	391	123	449	361	124	60-135	7	50
PCB 106	413	391	106	412	361	114	60-135	<1	50
PCB 107	444	391	114	372	361	103	60-135	18	50
PCB 111	359	391	92	320	361	88	60-135	12	50
PCB 112	353	391	90	315	361	87	60-135	11	50
PCB 114	426	391	109	363	361	100	60-135	16	50
PCB 118	384	391	98	387	361	107	60-135	<1	50
PCB 120	398	391	102	362	361	100	60-135	10	50
PCB 121	320	391	82	281	361	78	60-135	13	50
PCB 122	416	391	106	421	361	116	60-135	1	50
PCB 123	388	391	99	363	361	101	60-135	6	50
PCB 126	449	391	115	420	361	116	60-135	7	50
PCB 127	451	391	115	425	361	118	60-135	6	50

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Analyzed:**	12/30/17
Sample Matrix:	Sediment	**Date Extracted:**	12/27/17

Duplicate Lab Control Sample Summary
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Units:**	ng/Kg
Prep Method:	Method	**Basis:**	Dry
		Analysis Lot:	576377

	Lab Control Sample EQ1700575-02			Duplicate Lab Control Sample EQ1700575-03					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
PCB 82	419	391	107	409	361	113	60-135	2	50
PCB 84	401	391	103	368	361	102	60-135	9	50
PCB 89	408	391	104	380	361	105	60-135	7	50
PCB 92	406	391	104	364	361	101	60-135	11	50
PCB 94	353	391	90	324	361	90	60-135	8	50
PCB 96	398	391	102	389	361	108	60-135	3	50
PCBs 108 + 124	787	782	101	714	722	99	60-135	10	50
PCBs 110 + 115	729	782	93	662	722	92	60-135	10	50
PCBs 83 + 99	720	782	92	684	722	95	60-135	5	50
PCBs 85 + 116 + 117	1090	1170	93	975	1080	90	60-135	11	50
PCBs 86 + 87 + 97 + 109 + 119 + 125	2220	2350	95	2010	2170	93	60-135	10	50
PCBs 88 + 91	749	782	96	707	722	98	60-135	6	50
PCBs 90 + 101 + 113	1100	1170	94	1020	1080	94	60-135	8	50
PCBs 95 + 93 + 100	1090	1170	93	979	1080	90	60-135	11	50
PCBs 98 + 102	672	782	86	636	722	88	60-135	6	50
PCB 130	424	391	108	410	361	113	60-135	3	50
PCB 131	368	391	94	326	361	90	60-135	12	50
PCB 132	368	391	94	342	361	95	60-135	7	50
PCB 133	420	391	108	385	361	107	60-135	9	50
PCB 134	363	391	93	518	361	143 *	60-135	35	50
PCB 136	387	391	99	381	361	105	60-135	2	50
PCB 137	322	391	82	306 K	361	85	60-135	5	50
PCB 141	379	391	97	362	361	100	60-135	5	50
PCB 142	421	391	108	378	361	105	60-135	11	50
PCB 143	373	391	96	269	361	74	60-135	32	50
PCB 144	424	391	109	375	361	104	60-135	12	50
PCB 145	331	391	85	328	361	91	60-135	1	50
PCB 146	417	391	107	358	361	99	60-135	15	50
PCB 148	371	391	95	355	361	98	60-135	4	50
PCB 150	374	391	96	322	361	89	60-135	15	50
PCB 152	371	391	95	386	361	107	60-135	4	50
PCB 155	479	391	123	460	361	127	60-135	4	50
PCB 158	388	391	99	353	361	98	60-135	10	50
PCB 159	393 K	391	101	397	361	110	60-135	<1	50
PCB 160	333	391	85	372	361	103	60-135	11	50
PCB 161	403	391	103	375	361	104	60-135	7	50
PCB 162	347	391	89	347	361	96	60-135	<1	50
PCB 164	386	391	99	342	361	95	60-135	12	50
PCB 165	364	391	93	333	361	92	60-135	9	50
PCB 167	419	391	107	355 K	361	98	60-135	17	50

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Analyzed:**	12/30/17
Sample Matrix:	Sediment	**Date Extracted:**	12/27/17

Duplicate Lab Control Sample Summary
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Units:**	ng/Kg
Prep Method:	Method	**Basis:**	Dry
		Analysis Lot:	576377

	Lab Control Sample EQ1700575-02			Duplicate Lab Control Sample EQ1700575-03					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
PCB 169	411	391	105	362 K	361	100	60-135	12	50
PCBs 128 + 166	793	782	101	724	722	100	60-135	9	50
PCBs 129 + 138 + 163	1150	1170	98	972	1080	90	60-135	17	50
PCBs 135 + 151 + 154	1090	1170	93	1020	1080	94	60-135	7	50
PCBs 139 + 140	726	782	93	679	722	94	60-135	7	50
PCBs 147 + 149	746	782	95	666	722	92	60-135	11	50
PCBs 153 + 168	773	782	99	715	722	99	60-135	8	50
PCBs 156 + 157	829	782	106	782	722	108	60-135	6	50
PCB 170	408	391	104	351	361	97	60-135	15	50
PCB 172	434	391	111	392	361	109	60-135	10	50
PCB 174	429	391	110	377	361	104	60-135	13	50
PCB 175	404	391	103	380	361	105	60-135	6	50
PCB 176	413	391	106	375	361	104	60-135	10	50
PCB 177	442	391	113	378	361	105	60-135	15	50
PCB 178	406	391	104	375	361	104	60-135	8	50
PCB 179	384	391	98	364	361	101	60-135	5	50
PCB 181	354	391	91	324	361	90	60-135	9	50
PCB 182	369	391	94	361	361	100	60-135	2	50
PCB 183 + 185	798	782	102	681	722	94		16	
PCB 184	348	391	89	308	361	85	60-135	12	50
PCB 186	338	391	86	315	361	87	60-135	7	50
PCB 187	372	391	95	331	361	92	60-135	12	50
PCB 188	492	391	126	466	361	129	60-135	5	50
PCB 189	437	391	112	375 K	361	104	60-135	15	50
PCB 190	371	391	95	344	361	95	60-135	7	50
PCB 191	415	391	106	402	361	111	60-135	3	50
PCB 192	372	391	95	327	361	90	60-135	13	50
PCBs 171 + 173	819	782	105	730	722	101	60-135	11	50
PCBs 180 + 193	747	782	96	684	722	95	60-135	9	50
PCB 194	785	586	134	743	542	137 *	60-135	5	50
PCB 195	772	586	132	682	542	126	60-135	12	50
PCB 196	727	586	124	641	542	118	60-135	13	50
PCB 197	589	586	100	519	542	96	60-135	13	50
PCB 200	683	586	117	605	542	112	60-135	12	50
PCB 201	681	586	116	610	542	113	60-135	11	50
PCB 202	719	586	123	698	542	129	60-135	3	50
PCB 203	567	586	97	528	542	97	60-135	7	50
PCB 204	685	586	117	605	542	112	60-135	12	50
PCB 205	747	586	127	669	542	123	60-135	11	50

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Analyzed:**	12/30/17
Sample Matrix:	Sediment	**Date Extracted:**	12/27/17

Duplicate Lab Control Sample Summary
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Units:**	ng/Kg
Prep Method:	Method	**Basis:**	Dry
		Analysis Lot:	576377

	Lab Control Sample EQ1700575-02			Duplicate Lab Control Sample EQ1700575-03					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
PCBs 198 + 199	1190	1170	101	1110	1080	102	60-135	7	50
PCB 206	670	586	114	595	542	110	60-135	12	50
PCB 207	670	586	114	599	542	111	60-135	11	50
PCB 208	792	586	135	711	542	131	60-135	11	50
PCB 209	731	586	125	657	542	121	60-135	11	50

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1700575-02	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 16:23
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	5.117g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305053	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 1	217		22.7	22.7	2.90	1.001	1
PCB 2	230		18.1	18.1	3.08	0.989	1
PCB 3	227		13.6	13.6	2.70	1.001	1
PCB 4	250		36.6	36.6	-	1.000	1
PCB 10	185		19.3	19.3	-	1.011	1
PCB 9	213		8.00	8.00	-	1.130	1
PCB 7	195		7.29	7.29	-	1.139	1
PCB 6	214		7.74	7.74	-	1.155	1
PCB 5	188		7.79	7.79	-	1.174	1
PCB 8	218		7.40	9.77	-	1.182	1
PCB 14	209		8.06	8.06	-	0.931	1
PCB 11	206		8.06	19.5	-	0.972	1
PCBs 12 + 13	340		7.61	9.77	-	0.986	1
PCB 15	214		8.18	8.18	-	1.001	1
PCB 19	237		28.2	28.2	1.01	1.001	1
PCBs 18 + 30	390		22.3	22.3	1.16	1.089	1
PCB 17	192		25.8	25.8	1.01	1.116	1
PCB 27	203		22.0	22.0	1.09	1.127	1
PCB 24	178		17.2	17.2	1.12	1.134	1
PCB 16	190		28.4	28.4	1.00	1.142	1
PCB 32	202		18.4	18.4	1.03	1.167	1
PCB 34	205		16.3	16.3	0.88	1.227	1
PCB 23	189		14.0	14.0	1.02	1.234	1
PCBs 26 + 29	423		14.8	14.8	0.91	1.251	1
PCB 25	167		12.2	12.2	0.95	0.844	1
PCB 31	220		14.8	14.8	1.00	0.854	1
PCBs 20 + 28	394		15.8	15.8	1.04	0.864	1
PCBs 21 + 33	367	**K**	13.9	13.9	0.83	0.872	1
PCB 22	174	**K**	15.4	15.4	0.85	0.886	1
PCB 36	195	**K**	14.8	14.8	0.84	0.937	1
PCB 39	198		13.7	13.7	0.89	0.949	1
PCB 38	209		16.8	16.8	0.96	0.969	1
PCB 35	231		17.6	17.6	0.96	0.985	1
PCB 37	174	**K**	19.7	19.7	0.84	1.001	1

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1700575-02	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 16:23
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	5.117g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305053	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 54	531		14.9	14.9	0.84	1.001	1
PCBs 50 + 53	723		11.6	19.5	0.76	1.092	1
PCBs 45 + 51	755		12.1	12.1	0.78	1.124	1
PCB 46	388		14.2	14.2	0.82	1.138	1
PCB 52	408		14.3	14.3	0.72	1.196	1
PCBs 43 + 73	676		9.95	9.95	0.75	1.200	1
PCBs 49 + 69	686		10.5	19.5	0.74	1.216	1
PCB 48	277		12.6	12.6	0.78	1.228	1
PCBs 44 + 47 + 65	948		11.0	19.5	0.80	1.239	1
PCBs 59 + 62 + 75	948		9.55	19.5	0.73	1.252	1
PCB 42	177	**K**	15.1	19.5	0.98	1.262	1
PCBs 41 + 71 + 40	758		14.1	19.5	0.87	1.284	1
PCB 64	194		10.5	10.5	0.75	1.293	1
PCB 72	214		11.0	11.0	0.72	1.325	1
PCB 68	159		9.07	9.77	0.85	1.337	1
PCB 57	194		10.8	10.8	0.73	1.356	1
PCB 58	159		9.53	9.77	0.68	1.368	1
PCB 67	157		7.73	9.77	0.80	1.373	1
PCB 63	185		9.59	9.77	0.77	1.384	1
PCBs 70 + 61 + 74 + 76	1090		8.56	39.1	0.73	1.401	1
PCB 66	317		9.85	9.85	0.81	1.414	1
PCB 55	279		8.93	9.77	0.76	1.423	1
PCB 56	364		15.4	15.4	0.73	1.445	1
PCB 60	338		14.4	14.4	0.75	1.454	1
PCB 80	343		13.0	13.0	0.73	1.466	1
PCB 79	403		14.4	14.4	0.76	1.536	1
PCB 78	419		15.6	15.6	0.76	1.559	1
PCB 81	476		20.1	20.1	0.66	1.000	1
PCB 77	478		19.9	19.9	0.73	1.001	1
PCB 104	500		16.5	16.5	1.60	1.001	1
PCB 96	398		13.9	13.9	1.67	1.017	1
PCB 103	395		15.7	15.7	1.51	1.078	1
PCB 94	353		17.6	17.6	1.66	1.088	1
PCBs 95 + 93 + 100	1090		16.5	39.1	1.56	1.106	1

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1700575-02	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 16:23
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	5.117g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305053	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCBs 98 + 102	672		15.8	39.1	1.54	1.117	1
PCBs 88 + 91	749		17.6	17.6	1.49	1.130	1
PCB 84	401		19.8	19.8	1.63	1.144	1
PCB 89	408		20.5	20.5	1.60	1.160	1
PCB 121	320		18.1	18.1	1.57	1.168	1
PCB 92	406		24.0	24.0	1.71	1.184	1
PCBs 90 + 101 + 113	1100		19.7	39.1	1.59	1.203	1
PCBs 83 + 99	720		23.1	23.1	1.69	1.222	1
PCB 112	353		15.4	15.4	1.74	1.229	1
PCBs 86 + 87 + 97 + 109 + 119 + 125	2220		18.9	39.1	1.54	1.240	1
PCBs 85 + 116 + 117	1090		18.6	19.5	1.53	1.265	1
PCBs 110 + 115	729		15.5	19.5	1.54	1.274	1
PCB 82	419		30.1	30.1	1.58	1.286	1
PCB 111	359		16.3	16.3	1.50	1.294	1
PCB 120	398		16.7	16.7	1.56	1.310	1
PCBs 108 + 124	787		44.0	44.0	1.53	1.351	1
PCB 107	444		46.1	46.1	1.54	1.359	1
PCB 123	388		47.5	47.5	1.58	1.000	1
PCB 106	413		46.1	46.1	1.63	1.368	1
PCB 118	384		47.0	47.0	1.72	1.000	1
PCB 122	416		51.2	51.2	1.53	1.387	1
PCB 114	426		47.8	47.8	1.53	1.001	1
PCB 105	480		50.6	50.6	1.48	1.000	1
PCB 127	451		48.1	48.1	1.46	1.465	1
PCB 126	449		57.1	57.1	1.53	1.000	1
PCB 155	479		8.04	8.04	1.15	1.000	1
PCB 152	371		7.28	9.77	1.21	1.011	1
PCB 150	374		6.11	9.77	1.30	1.014	1
PCB 136	387		7.06	9.77	1.30	1.028	1
PCB 145	331		6.51	9.77	1.21	1.035	1
PCB 148	371		9.00	9.77	1.36	1.074	1
PCBs 135 + 151 + 154	1090		7.89	19.5	1.25	1.098	1
PCB 144	424		8.67	9.77	1.16	1.110	1
PCBs 147 + 149	746		53.7	53.7	1.24	1.121	1
PCB 134	363		113	113	1.26	1.128	1

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1700575-02	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 16:23
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	5.117g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305053	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 143	373		42.5	42.5	1.23	1.130	1
PCBs 139 + 140	726		51.5	51.5	1.20	1.137	1
PCB 131	368		62.0	62.0	1.26	1.145	1
PCB 142	421		62.8	62.8	1.26	1.148	1
PCB 132	368		60.7	60.7	1.26	1.159	1
PCB 133	420		64.2	64.2	1.23	1.169	1
PCB 165	364		42.5	42.5	1.22	1.181	1
PCB 146	417		53.8	53.8	1.26	1.188	1
PCB 161	403		39.0	39.0	1.13	1.191	1
PCBs 153 + 168	773		42.6	42.6	1.20	1.206	1
PCB 141	379		53.0	53.0	1.15	1.213	1
PCB 130	424		66.6	66.6	1.20	1.225	1
PCB 137	322		52.0	52.0	1.15	1.230	1
PCB 164	386		39.0	39.0	1.21	1.235	1
PCBs 129 + 138 + 163	1150		59.3	59.3	1.16	1.243	1
PCB 160	333		27.6	39.1	1.18	1.246	1
PCB 158	388		36.9	36.9	1.40	1.253	1
PCBs 128 + 166	793		47.4	47.4	1.24	1.278	1
PCB 159	393	**K**	36.9	36.9	1.03	1.306	1
PCB 162	347		32.8	32.8	1.16	1.314	1
PCB 167	419		31.7	31.7	1.17	1.001	1
PCBs 156 + 157	829		45.6	45.6	1.15	1.000	1
PCB 169	411		38.8	38.8	1.10	1.000	1
PCB 188	492		8.34	8.34	1.06	1.001	1
PCB 179	384		6.40	9.77	1.04	1.011	1
PCB 184	348		5.70	9.77	1.05	1.022	1
PCB 176	413		6.44	9.77	1.11	1.033	1
PCB 186	338		5.92	9.77	1.07	1.045	1
PCB 178	406		8.58	9.77	1.11	1.076	1
PCB 175	404		8.24	9.77	1.04	1.092	1
PCB 187	372		7.42	9.77	1.10	1.098	1
PCB 182	369		7.34	9.77	1.08	1.103	1
PCB 183 + 185	798		18.5	19.5	1.03	1.113	1
PCB 174	429		18.5	18.5	1.03	1.121	1
PCB 177	442		20.3	20.3	1.01	1.132	1

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1700575-02	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 16:23
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	5.117g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305053	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 181	354		17.5	17.5	1.10	1.141	1
PCBs 171 + 173	819		19.9	19.9	1.02	1.147	1
PCB 172	434		20.4	20.4	0.99	0.906	1
PCB 192	372		14.5	14.5	1.05	0.911	1
PCBs 180 + 193	747		14.7	19.5	1.08	0.917	1
PCB 191	415		15.0	15.0	1.04	0.925	1
PCB 170	408		18.3	18.3	1.07	0.943	1
PCB 190	371		12.6	12.6	1.03	0.952	1
PCB 189	437		16.1	16.1	1.01	1.001	1
PCB 202	719		11.8	11.8	0.89	1.000	1
PCB 201	681		10.8	10.8	0.93	1.020	1
PCB 204	685		10.7	10.7	0.90	1.034	1
PCB 197	589		9.60	19.5	0.87	1.039	1
PCB 200	683		10.7	19.5	0.93	1.043	1
PCBs 198 + 199	1190		13.0	19.5	0.92	1.102	1
PCB 196	727		14.9	14.9	0.93	0.923	1
PCB 203	567		11.7	11.7	1.01	0.926	1
PCB 195	772		16.4	16.4	0.87	0.951	1
PCB 194	785		16.1	16.1	0.86	0.992	1
PCB 205	747		13.3	13.3	0.89	1.001	1
PCB 208	792		15.6	15.6	0.80	1.000	1
PCB 207	670		14.9	14.9	0.81	1.018	1
PCB 206	670		18.1	18.1	0.80	1.000	1
PCB 209	731		12.2	12.2	1.18	1.001	1

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1700575-02	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 16:23
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	5.117g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305053	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total MonoCB	674		13.6	13.6			1
Total DiCB	2430		7.29	19.5			1
Total TriCB	4740		12.2	12.2			1
Total TetraCB	13000		7.73	39.1			1
Total PentaCB	17700		13.9	39.1			1
Total HexaCB	16200		6.11	39.1			1
Total HeptaCB	8750		5.70	19.5			1
Total OctaCB	8140		9.60	19.5			1
Total NonaCB	2130		14.9	14.9			1

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	Percent
Lab Code:	EQ1700575-02	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 16:23
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	5.117g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305053	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
PCB 1L	2000	940.057	47		5-145	3.04	0.741
PCB 3L	2000	933.291	47		5-145	3.21	0.871
PCB 4L	2000	714.470	36		5-145	1.72	0.886
PCB 15L	2000	884.374	44		5-145	1.57	1.217
PCB 19L	2000	865.094	43		5-145	1.15	1.063
PCB 37L	2000	917.406	46		5-145	1.03	1.083
PCB 54L	2000	700.520	35		5-145	0.77	0.837
PCB 81L	2000	1101.592	55		10-145	0.81	1.322
PCB 77L	2000	990.609	50		10-145	0.80	1.342
PCB 104L	2000	869.167	43		10-145	1.69	0.831
PCB 123L	2000	1325.217	66		10-145	1.54	1.133
PCB 118L	2000	1234.976	62		10-145	1.55	1.142
PCB 114L	2000	1228.540	61		10-145	1.43	1.157
PCB 105L	2000	1205.981	60		10-145	1.64	1.178
PCB 126L	2000	1201.697	60		10-145	1.48	1.265
PCB 155L	2000	792.804	40		10-145	1.19	0.805
PCB 167L	2000	1201.139	60		10-145	1.40	1.068
PCBs 156L + 157L	4000	2392.094	60		10-145	1.16	1.096
PCB 169L	2000	1187.816	59		10-145	1.25	1.170
PCB 188L	2000	940.140	47		10-145	1.13	0.736
PCB 189L	2000	1401.036	70		10-145	1.05	0.963
PCB 202L	2000	1044.749	52		10-145	0.88	0.833
PCB 205L	2000	1185.315	59		10-145	0.89	1.008
PCB 208L	2000	903.152	45		10-145	0.89	0.952
PCB 206L	2000	1576.445	79		10-145	0.76	1.039
PCB 209L	2000	1458.611	73		10-145	1.26	1.067
PCB 28L	2000	1309.860	65		5-145	1.02	0.934
PCB 111L	2000	1157.606	58		10-145	1.53	1.075
PCB 178L	2000	1092.823	55		10-145	1.07	1.008

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1700575-03	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 17:26
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	5.537g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305054	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 1	212		16.2	16.2	3.03	1.002	1
PCB 2	210		12.6	12.6	3.03	0.989	1
PCB 3	189		9.29	9.29	2.94	1.001	1
PCB 4	201		31.2	31.2	-	1.002	1
PCB 10	178		16.6	16.6	-	1.012	1
PCB 9	201		4.64	4.64	-	1.131	1
PCB 7	178		4.23	4.23	-	1.140	1
PCB 6	184		4.49	4.49	-	1.156	1
PCB 5	163		4.51	4.51	-	1.175	1
PCB 8	203		4.29	9.03	-	1.183	1
PCB 14	195		4.67	4.67	-	0.931	1
PCB 11	170		4.67	18.1	-	0.972	1
PCBs 12 + 13	345		4.41	9.03	-	0.986	1
PCB 15	191		4.74	4.74	-	1.001	1
PCB 19	157		22.4	22.4	1.15	1.001	1
PCBs 18 + 30	280		16.4	16.4	1.09	1.088	1
PCB 17	131		19.0	19.0	1.10	1.115	1
PCB 27	143		16.2	16.2	1.17	1.127	1
PCB 24	115		12.6	12.6	1.10	1.134	1
PCB 16	128		20.8	20.8	1.05	1.142	1
PCB 32	144		13.5	13.5	1.02	1.167	1
PCB 34	142	**K**	14.0	14.0	0.86	1.227	1
PCB 23	127		12.0	12.0	0.94	1.234	1
PCBs 26 + 29	287		12.7	12.7	0.95	1.252	1
PCB 25	122		10.4	10.4	1.02	0.843	1
PCB 31	163		12.7	12.7	1.02	0.853	1
PCBs 20 + 28	301		13.6	13.6	0.93	0.864	1
PCBs 21 + 33	250		11.9	11.9	0.99	0.872	1
PCB 22	138		13.2	13.2	1.01	0.886	1
PCB 36	148		12.7	12.7	0.94	0.936	1
PCB 39	126		11.7	11.7	1.08	0.949	1
PCB 38	144		14.4	14.4	0.96	0.968	1
PCB 35	166		15.1	15.1	1.00	0.985	1
PCB 37	128	**K**	15.8	15.8	0.83	0.999	1

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1700575-03	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 17:26
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	5.537g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305054	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 54	532		13.0	13.0	0.86	1.001	1
PCBs 50 + 53	692		13.1	18.1	0.77	1.092	1
PCBs 45 + 51	709		13.7	13.7	0.74	1.124	1
PCB 46	357		16.0	16.0	0.74	1.137	1
PCB 52	318	**K**	16.1	16.1	0.63	1.195	1
PCBs 43 + 73	691		11.3	11.3	0.85	1.200	1
PCBs 49 + 69	657		11.8	18.1	0.77	1.211	1
PCB 48	269		14.2	14.2	0.74	1.228	1
PCBs 44 + 47 + 65	926		12.4	18.1	0.74	1.239	1
PCBs 59 + 62 + 75	890		10.8	18.1	0.78	1.251	1
PCB 42	177		17.0	18.1	0.69	1.261	1
PCBs 41 + 71 + 40	677		15.9	18.1	0.76	1.284	1
PCB 64	142	**K**	11.8	11.8	0.56	1.293	1
PCB 72	194		12.4	12.4	0.85	1.325	1
PCB 68	149		10.3	10.3	0.74	1.337	1
PCB 57	184		12.2	12.2	0.71	1.356	1
PCB 58	152		10.8	10.8	0.85	1.368	1
PCB 67	154		8.71	9.03	0.77	1.374	1
PCB 63	190		10.9	10.9	0.74	1.385	1
PCBs 70 + 61 + 74 + 76	1050		9.65	36.1	0.75	1.401	1
PCB 66	304		11.2	11.2	0.79	1.414	1
PCB 55	268		10.1	10.1	0.78	1.423	1
PCB 56	321		21.1	21.1	0.76	1.445	1
PCB 60	308		19.7	19.7	0.73	1.454	1
PCB 80	319		17.7	17.7	0.80	1.466	1
PCB 79	376		19.8	19.8	0.70	1.535	1
PCB 78	368		21.4	21.4	0.69	1.559	1
PCB 81	418		27.9	27.9	0.67	1.001	1
PCB 77	429		28.1	28.1	0.69	1.000	1
PCB 104	493		13.1	13.1	1.50	1.001	1
PCB 96	389		11.3	11.3	1.66	1.017	1
PCB 103	348		12.8	12.8	1.73	1.079	1
PCB 94	324		14.4	14.4	1.48	1.089	1
PCBs 95 + 93 + 100	979		13.5	36.1	1.53	1.106	1

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1700575-03	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 17:26
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	5.537g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305054	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCBs 98 + 102	636		12.9	36.1	1.49	1.117	1
PCBs 88 + 91	707		14.3	14.3	1.51	1.135	1
PCB 84	368		16.1	16.1	1.72	1.144	1
PCB 89	380		16.7	16.7	1.75	1.160	1
PCB 121	281		13.9	13.9	1.57	1.168	1
PCB 92	364		18.4	18.4	1.73	1.185	1
PCBs 90 + 101 + 113	1020		15.1	36.1	1.69	1.204	1
PCBs 83 + 99	684		17.7	18.1	1.58	1.223	1
PCB 112	315		11.8	11.8	1.52	1.229	1
PCBs 86 + 87 + 97 + 109 + 119 + 125	2010		14.5	36.1	1.60	1.241	1
PCBs 85 + 116 + 117	975		14.3	18.1	1.54	1.266	1
PCBs 110 + 115	662		11.9	18.1	1.65	1.274	1
PCB 82	409		23.1	23.1	1.46	1.287	1
PCB 111	320		12.5	12.5	1.53	1.295	1
PCB 120	362		12.8	12.8	1.67	1.311	1
PCBs 108 + 124	714		23.0	23.0	1.53	1.352	1
PCB 107	372		24.1	24.1	1.47	1.361	1
PCB 123	363		24.7	24.7	1.58	1.000	1
PCB 106	412		24.2	24.2	1.56	1.368	1
PCB 118	387		25.8	25.8	1.71	1.001	1
PCB 122	421		26.8	26.8	1.41	1.388	1
PCB 114	363		24.7	24.7	1.37	1.000	1
PCB 105	449		25.8	25.8	1.47	1.000	1
PCB 127	425		25.2	25.2	1.52	1.466	1
PCB 126	420		31.0	31.0	1.70	1.000	1
PCB 155	460		7.44	7.44	1.22	1.001	1
PCB 152	386		6.82	9.03	1.38	1.010	1
PCB 150	322		5.72	9.03	1.15	1.014	1
PCB 136	381		6.61	9.03	1.26	1.028	1
PCB 145	328		6.10	9.03	1.33	1.035	1
PCB 148	355		8.42	9.03	1.24	1.074	1
PCBs 135 + 151 + 154	1020		7.39	18.1	1.27	1.098	1
PCB 144	375		8.11	9.03	1.22	1.110	1
PCBs 147 + 149	666		75.0	75.0	1.14	1.121	1
PCB 134	518		158	158	1.22	1.128	1

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1700575-03	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 17:26
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	5.537g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305054	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 143	269		59.4	59.4	1.22	1.130	1
PCBs 139 + 140	679		71.9	71.9	1.20	1.137	1
PCB 131	326		86.6	86.6	1.25	1.145	1
PCB 142	378		87.7	87.7	1.16	1.148	1
PCB 132	342		84.8	84.8	1.21	1.159	1
PCB 133	385		89.7	89.7	1.20	1.169	1
PCB 165	333		59.3	59.3	1.24	1.181	1
PCB 146	358		75.2	75.2	1.09	1.188	1
PCB 161	375		54.6	54.6	1.27	1.191	1
PCBs 153 + 168	715		59.6	59.6	1.23	1.206	1
PCB 141	362		74.0	74.0	1.20	1.213	1
PCB 130	410		93.1	93.1	1.16	1.225	1
PCB 137	306	**K**	72.6	72.6	1.46	1.231	1
PCB 164	342		54.5	54.5	1.19	1.235	1
PCBs 129 + 138 + 163	972		82.9	82.9	1.22	1.243	1
PCB 160	372		38.6	38.6	1.21	1.246	1
PCB 158	353		51.6	51.6	1.19	1.253	1
PCBs 128 + 166	724		66.2	66.2	1.32	1.278	1
PCB 159	397		28.7	28.7	1.12	1.306	1
PCB 162	347		25.5	25.5	1.14	1.314	1
PCB 167	355	**K**	23.6	23.6	1.03	1.001	1
PCBs 156 + 157	782		37.1	37.1	1.24	1.000	1
PCB 169	362	**K**	30.3	30.3	0.97	1.000	1
PCB 188	466		8.72	8.72	1.00	1.001	1
PCB 179	364		6.62	9.03	1.07	1.012	1
PCB 184	308		5.89	9.03	1.06	1.022	1
PCB 176	375		6.66	9.03	1.20	1.033	1
PCB 186	315		6.12	9.03	1.07	1.045	1
PCB 178	375		8.87	9.03	1.03	1.076	1
PCB 175	380		8.52	9.03	1.01	1.092	1
PCB 187	331		7.68	9.03	1.00	1.098	1
PCB 182	361		7.59	9.03	1.09	1.103	1
PCB 183 + 185	681		30.8	30.8	1.04	1.113	1
PCB 174	377		31.0	31.0	0.97	1.121	1
PCB 177	378		33.9	33.9	1.04	1.132	1

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1700575-03	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 17:26
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	5.537g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305054	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 181	324		29.3	29.3	1.12	1.141	1
PCBs 171 + 173	730		33.2	33.2	1.04	1.147	1
PCB 172	392		34.1	34.1	1.05	0.906	1
PCB 192	327		24.1	24.1	1.12	0.911	1
PCBs 180 + 193	684		24.5	24.5	1.11	0.918	1
PCB 191	402		25.0	25.0	0.98	0.925	1
PCB 170	351		30.5	30.5	1.11	0.943	1
PCB 190	344		21.0	21.0	0.98	0.952	1
PCB 189	375	**K**	26.6	26.6	0.86	1.001	1
PCB 202	698		9.24	9.24	0.92	1.000	1
PCB 201	610		8.19	9.03	0.89	1.020	1
PCB 204	605		8.06	9.03	0.99	1.034	1
PCB 197	519		7.29	18.1	0.90	1.039	1
PCB 200	605		8.10	18.1	0.95	1.043	1
PCBs 198 + 199	1110		9.86	18.1	0.89	1.102	1
PCB 196	641		11.3	11.3	0.96	0.923	1
PCB 203	528		8.85	9.03	0.90	0.926	1
PCB 195	682		12.5	12.5	1.00	0.951	1
PCB 194	743		12.2	12.2	0.92	0.992	1
PCB 205	669		9.67	9.67	0.91	1.001	1
PCB 208	711		9.13	9.13	0.80	1.000	1
PCB 207	599		8.47	9.03	0.77	1.018	1
PCB 206	595		15.2	15.2	0.74	1.001	1
PCB 209	657		9.02	9.02	1.27	1.000	1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1700575-03	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 17:26
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	5.537g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305054	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total MonoCB	611		9.29	9.29			1
Total DiCB	2210		4.23	18.1			1
Total TriCB	3340		10.4	10.4			1
Total TetraCB	12200		8.71	36.1			1
Total PentaCB	16300		11.3	36.1			1
Total HexaCB	15100		5.72	36.1			1
Total HeptaCB	7960		5.89	18.1			1
Total OctaCB	7410		7.29	18.1			1
Total NonaCB	1910		8.47	9.03			1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1712961
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	Percent
Lab Code:	EQ1700575-03	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 17:26
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	5.537g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305054	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
PCB 1L	2000	921.731	46		5-145	3.26	0.741
PCB 3L	2000	968.662	48		5-145	3.10	0.871
PCB 4L	2000	722.030	36		5-145	1.58	0.885
PCB 15L	2000	869.201	43		5-145	1.76	1.217
PCB 19L	2000	1183.800	59		5-145	0.92	1.063
PCB 37L	2000	1053.752	53		5-145	1.08	1.083
PCB 54L	2000	577.595	29		5-145	0.71	0.837
PCB 81L	2000	908.780	45		10-145	0.78	1.321
PCB 77L	2000	892.078	45		10-145	0.79	1.343
PCB 104L	2000	840.480	42		10-145	1.69	0.831
PCB 123L	2000	1301.523	65		10-145	1.53	1.133
PCB 118L	2000	1245.650	62		10-145	1.58	1.142
PCB 114L	2000	1283.437	64		10-145	1.52	1.158
PCB 105L	2000	1259.955	63		10-145	1.55	1.178
PCB 126L	2000	1236.166	62		10-145	1.44	1.265
PCB 155L	2000	765.019	38		10-145	1.24	0.805
PCB 167L	2000	1178.558	59		10-145	1.18	1.068
PCBs 156L + 157L	4000	2316.688	58		10-145	1.27	1.096
PCB 169L	2000	1120.710	56		10-145	1.17	1.171
PCB 188L	2000	905.224	45		10-145	1.00	0.736
PCB 189L	2000	1360.051	68		10-145	0.96	0.963
PCB 202L	2000	974.489	49		10-145	0.92	0.833
PCB 205L	2000	1234.446	62		10-145	0.90	1.008
PCB 208L	2000	930.410	47		10-145	0.87	0.952
PCB 206L	2000	1617.271	81		10-145	0.73	1.039
PCB 209L	2000	1478.366	74		10-145	1.28	1.067
PCB 28L	2000	1194.354	60		5-145	1.02	0.934
PCB 111L	2000	1184.191	59		10-145	1.56	1.075
PCB 178L	2000	977.592	49		10-145	1.08	1.008

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January 29, 2018

Analytical Report for Service Request No: K1713018

Erin Carroll Hughes
GSI Water Solutions, Inc.
55 SW Yamhill, Suite 300
Portland, OR 97204

RE: URSC / 150-001-056

Dear Erin,

Enclosed are the results of the sample(s) submitted to our laboratory December 04, 2017
For your reference, these analyses have been assigned our service request number **K1713018.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3364. You may also contact me via email at howard.holmes@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Howard Holmes
Project Manager

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Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water-	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

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1317 South 13th Ave, Kelso, WA 98626 | 1-360-577-7222 | www.alsglobal.com

Client: Hart Crowser, Incorporated
Project: URSC
Sample Matrix: Sediment

Service Request: K1713018
Date Received: 12/04/2017

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt:

Sixteen sediment samples were received for analysis at ALS Environmental on 12/04/2017. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4ºC upon receipt at the laboratory.

Semivolatiles by GC/MS:

The following analytes were flagged as outside the control criterion for Continuing Calibration Verification (CCV) MS29 \0105F002.D: Pentachlorophenol and Benzo(g,h,i)perylene. In accordance with the EPA Method, 80% or more of the CCV analytes must have passed within 20% of the true value. The remaining analytes are allowed a 40% difference as per the ALS SOP. The data was flagged to indicate the issue. No further corrective action was taken.

Method 8270D, PBDE:Sample URSC-RM20.4E-COMP required dilution due to the presence of elevated levels of target analyte. The reporting limits are adjusted to reflect the dilution.
Method 8270D, PBDE :The matrix spike recovery of a few analytes for sample URSC-RM20.1W-COMP was outside control criteria. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicated the analytical batch was in control. The matrix spike outlier suggested a potential bias in this matrix. No further corrective action was appropriate.
Method 8270D, PBDE:The recovery of PBDE 209 in lab control sample KWG1711053-3 was outside the control limits listed in the results summary. The limits are default values temporarily in use until sufficient data points are generated to calculate statistical control limits. Based on the method and historic data, the recoveries observed were in the range expected for this procedure. No further corrective action was taken.

Method 8270D, PBDE:The following analyte was flagged as outside the control criterion for Continuing Calibration Verification (CCV) 1220F002: PBDE 209. In accordance with the EPA Method, 80% or more of the CCV analytes must have passed within 20% of the true value. The remaining analytes are allowed a 40% difference as per the ALS SOP. The data was flagged to indicate the issue. No further corrective action was taken.
Method 8270D, PBDE:The following analyte was flagged as outside the control criterion for Continuing Calibration Verification (CCV) 1221F002: PBDE 128. In accordance with the EPA Method, 80% or more of the CCV analytes must have passed within 20% of the true value. The remaining analytes are allowed a 40% difference as per the ALS SOP. The data was flagged to indicate the issue. No further corrective action was taken.

Method ALS SOP, 01/15/2018:The following analytes were outside the lower control criterion for Continuing Calibration Verification (CCV) 0115F0004.D: S_4,4'-DDT-d4, S_Heptachlor-13C10, and and S_Mxchlord-d6. The associated unlabeled compounds were within acceptance indicating the quality of the sample data was not significantly affected. No further corrective action was required.
Method ALS SOP, 01/15/2018:The control criteria were exceeded for S_Heptachlor-13C10 in MS KQ1718398-01, DMS . The associated matrix spike recoveries of target compounds were in control, indicating the analysis was in control. The surrogate outlier was flagged accordingly. No further corrective action was appropriate.
Method ALS SOP, 01/15/2018:The matrix spike recovery of Endosulfan II for sample URSC-RM20.1W-COMP was outside control criteria. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicated the analytical batch was in control. The matrix spike outlier suggested a potential bias in this matrix. No further corrective action was appropriate.

Approved by _____ Date 01/29/2018

Semivoa GC:

Method NWTPH-Dx:The Relative Percent Difference (RPD) criterion for the replicate analysis of all analytes in sample URSC-RM20.1W-COMP was not applicable because the analyte concentration was not significantly greater than the Method Reporting Limit (MRL). Analytical values derived from measurements close to the detection limit are not subject to the same accuracy and precision criteria as results derived from measurements higher on the calibration range for the method.

Metals:

No significant anomalies were noted with this analysis.

General Chemistry:

No significant anomalies were noted with this analysis.

Subcontracted Analytical Parameters:

Dioxins and Furans by EPA Method 1613B

The analysis for Dioxins and Furans was performed at ALS Houston, Texas Laboratory. The data for this analysis is included in the corresponding section of this report.

PCB Congeners by EPA Method 1668C

The analysis for PCB Congeners was performed at ALS Environmental, Texas Laboratory. The data for this analysis is included in the corresponding section of this report.

Approved by _____ Date 01/29/2018

Chain of Custody

ALS Environmental—Kelso Laboratory
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Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

2 of 2

GSI Water Solutions, Inc.
55 SW Yamhill St, Suite 300
Portland, Oregon 97204
971-200-8528

Chain of Custody Record

K1713018

Field Sampler(s):

Client Contact

Project Name: URSC
Project # or PO #: 150-001-056
Contracting Manager: Rick Ernst
Project Manager: Erin Hughes
Field Director: Phil Cordell
Erin Phone #:971-200-8528
Phil Phone #: 971-327-9101
Report to email: schughes@gsiws.com; phil.cordell@hartcrowser.com; Anne.Conrad@hartcrowser.com
Analysis Turnaround Time:

For Lab Use Only:
SDG:_____
Custody Seals intact?
Hand delivered?
Cooler Temp :____°C
Therm ID No.:____Therm Exp.____
Standard 21 day TAT

ALS PM
Howard Homes
360-501-3364
Howard.Holmes@alsglobal.com

Analysis Requested*

	Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	Total # of Cont.	Sieving and Homogenizing (of each increment)	ISM Subsampling and Compositing	PSEP: Total Organic Carbon	ASTM DM22M: Condensed Breakout Grain Size (on ISM Composite)	EPA 6020A: Metals and Total Solids	EPA 7471A: Mercury	NWTPH-Dx: Diesel Range Hydrocarbons (with Silica gel cleanup)	EPA 8270D-LL: PAHs, SVOCs, Phenols, and Phthalates	8270D PBDE	EPA 1699M: High Resolution Pesticides	EPA 1613B: PCDD/Fs	EPA 1668b: PCB Congeners	Frozen Archival			Sample Specific Notes
1	URSC- RM20.1W-G001	12/1/17	0800	G	SE	1													X			
2	URSC- RM20.1W-G002		0815	G	SE	1													X			
3	URSC- RM20.1W-G003		0835	G	SE	1													X			
4	URSC- RM20.1W-G004		0919	G	SE	1													X			
5	URSC- RM20.1W-G005		0932	G	SE	1													X			
6	URSC- RM20.1W-G007		10:15	G	SE	1													X			
7	URSC- RM20.1W-G008		1037	G	SE	1													X			
8	URSC- RM20.1W-G009		1053	G	SE	1													X			
9	URSC- RM20.1W-G010		1110	G	SE	1													X			
10	URSC- RM20.1W-COMP		800	C	SE	9	X	X	X	X	X	X	X	X	X	X	X	X				
11	URSC- RM20.4E-G001		12:28	G	SE	1													X			
12	URSC- RM20.4E-G002	✓	1240	G	SE	1													X			

Possible Hazard Identification:
Are samples hazardous? ☑ No
If yes, select hazard(s): ☐ Listed ☐ Ignitable ☐ Corrosive ☐ Reactive ☐ Toxic

☐ Return to Client ☐ Disposal by Lab ☑ Archive frozen for 6 months

Relinquished by: [signature] 12/4/17 @ 0930
Received by: [signature] Date/Time: 12/4/17 1037
Relinquished by:
Received by: Date/Time:
Shipped Via: ☐ UPS ☐ Fed-Ex ☐ USPS ☑ ALS Lab Courier
Received in Laboratory by: Date/Time:

Special Instructions
SE = Sediment
***See Table 2 of Work Plan for analytes included within each analytical method listed below.**
* Increments will be provided to the laboratory in a clean laboratory provided 16- or 32-ounce container (the larger container will be used in areas with an abundance of rocks and pebbles). For each composite area, the laboratory will separately process each increment by sieving out the ≥ 2 millimeter (mm) size fraction and homogenize the remaining sediment; an equal mass of sediment from each of the 5 or 10 increments will be obtained and then combined for processing, homogenizing, and subsampling for the composite sample in a manner consistent with ITRC ISM guidance and the laboratory standard operating procedure. The laboratory should gather enough mass from each container to be able to run the full analytical suite and have material left over for archival and potential future analysis. An extra container of sediment will be provided from each sample station for immediate frozen archival (no ISM processing needed).

1 of 2

GSI Water Solutions, Inc.
55 SW Yamhill St, Suite 300
Portland, Oregon 97204
971-200-8528

Chain of Custody Record

K1713018

Field Sampler(s): ECH, MS (DEQ)

Client Contact

Project Name: URSC
Project # or PO #: 150-001-056
Contracting Manager: Rick Ernst
Project Manager: Erin Hughes
Field Director: Phil Cordell
Erin Phone #: 971-200-8528
Phil Phone #: 971-327-9101
Report to email: echughes@gsiws.com; phil.cordell@hartcrowser.com; Anne.Conrad@hartcrowser.com
Analysis Turnaround Time:

For Lab Use Only:
SDG:_____
Custody Seals intact?
Hand delivered?
Cooler Temp :____°C
Therm ID No.:____Therm Exp.____
Standard 21 day TAT

ALS PM
Howard Homes
360-501-3364
Howard.Holmes@alsglobal.com

	Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	Total # of Cont.	Sieving and Homogenizing (of each increment)	ISM Subsampling and Compositing	PSEP: Total Organic Carbon	ASTM DM22M: Condensed Breakout Grain Size (on ISM Composite)	EPA 6020A: Metals and Total Solids	EPA 7471A: Mercury	NWTPH-Dx: Diesel Range Hydrocarbons (with Silica gel cleanup)	EPA 8270D-LL: PAHs, SVOCs, Phenols, and Phthalates	8270D PBDE	EPA 1699M: High Resolution Pesticides	EPA 1613B: PCDD/Fs	EPA 1668b: PCB Congeners	Frozen Archival			Sample Specific Notes
13	URSC- RM20.4E-G003	12/4/17	1310	G	SE	1													X			
14	URSC- RM20.4-G004	↓	1330	G	SE	1													X			
15	URSC- RM20.4-G005	↓	1348	G	SE	1													X			
16	URSC- RM20.4-COMP	↓	1228	C	SE	5	X	X	X	X	X	X	X	X	X	X	X	X				
	URSC-				SE																	
	URSC-				SE																	
	URSC-				SE																	
	URSC-				SE																	
	URSC-				SE																	
	URSC-				SE																	
	URSC-				SE																	
	URSC-				SE																	

Possible Hazard Identification:
Are samples hazardous? ☑ No
If yes, select hazard(s): ☐ Listed ☐ Ignitable ☐ Corrosive ☐ Reactive ☐ Toxic

☐ Return to Client ☐ Disposal by Lab ☑ Archive frozen for 6 months

Relinquished by: PJ Cordell 12/4/17 @ 0930
Received by: [signature] Date/Time: 12/4/17 1037
Relinquished by:
Received by: Date/Time:
Shipped Via: ☐ UPS ☐ Fed-Ex ☐ USPS ☑ ALS Lab Courier
Received in Laboratory by: Date/Time:

Special Instructions
SE = Sediment
***See Table 2 of Work Plan for analytes included within each analytical method listed below.**
* Increments will be provided to the laboratory in a clean laboratory provided 16- or 32-ounce container (the larger container will be used in areas with an abundance of rocks and pebbles). For each composite area, the laboratory will separately process each increment by sieving out the ≥ 2 millimeter (mm) size fraction and homogenize the remaining sediment; an equal mass of sediment from each of the 5 or 10 increments will be obtained and then combined for processing, homogenizing, and subsampling for the composite sample in a manner consistent with ITRC ISM guidance and the laboratory standard operating procedure. The laboratory should gather enough mass from each container to be able to run the full analytical suite and have material left over for archival and potential future analysis. An extra container of sediment will be provided from each sample station for immediate frozen archival (no ISM processing needed).

PC H2

Cooler Receipt and Preservation Form

Client Hart Crowser / GSI Service Request K17 13018

Received: 12/4/17 Opened: 12/4/17 By: [illegible] Unloaded: 12/4/17 By: [illegible]

1. Samples were received via? *USPS* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? 1 Front
   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
4.8	4.7			-0.1	389			
-0.3	-0.4	6.2	6.1	-0.1	351			

4. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA Y N
   If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
12. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

Total Solids

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www.alsglobal.com

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	12/1/17
Sample Matrix:	Sediment	**Date Received:**	12/4/17
Analysis Method:	PSEP TS	**Units:**	Percent
Prep Method:	None	**Basis:**	As Received

Solids, Total

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
URSC-RM20.1W-COMP	K1713018-010	**60.6**	-	-	1	12/14/17 16:54	
URSC-RM20.4E-COMP	K1713018-016	**71.3**	-	-	1	12/14/17 16:54	

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project	URSC/150-001-056	**Date Collected:**	12/01/17
Sample Matrix:	Sediment	**Date Received:**	12/04/17
		Date Analyzed:	12/14/17

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	URSC-RM20.1W-COMP	**Units:**	Percent
Lab Code:	K1713018-010	**Basis:**	As Received

Analyte Name	Analysis Method	MRL	Sample Result	Duplicate Sample K1713018-010DUP Result	Average	RPD	RPD Limit
Solids, Total	PSEP TS	-	60.6	60.1	60.4	<1	10

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General Chemistry

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	12/1/2017
Sample Matrix:	Sediment	**Date Received:**	12/4/2017
		Date Analyzed:	1/9/2018

Particle Size Determination
ASTM D422M

Sample Name: URSC-RM20.1W-COMP
Lab Code: K1713018-010

Sand Fraction: Weight (Grams)	21.3758
Sand Fraction: Weight Recovered (Grams)	21.3834
Sand Fraction: Percent Recovery	100.04

Weight as received (Grams)	46.587
Percent Solids	60.6
Weight Oven-Dried (Grams)	28.2317

Description	Sieve Size	Sieve Number	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	4.75 mm	4	0.0000	0.00
Gravel, Fine	2.00 mm	10	0.0000	0.00
Sand, Very Coarse	0.850 mm	20	0.0162	0.06
Sand, Coarse	0.425 mm	40	0.2424	0.86
Sand, Medium	0.250 mm	60	3.4575	12.25
Sand, Fine	0.106 mm	140	13.5516	48.00
Sand, Very Fine	0.075 mm	200	3.0153	10.68
Silt			6.9500	24.62
Clay			1.4283	5.06
		Total	28.6613	101.53

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	12/1/2017
Sample Matrix:	Sediment	**Date Received:**	12/4/2017
		Date Analyzed:	1/9/2018

Particle Size Determination
ASTM D422M

Sample Name: URSC-RM20.1W-COMP
Lab Code: K1713018-010DUP

Sand Fraction: Weight (Grams)	21.2861
Sand Fraction: Weight Recovered (Grams)	21.2859
Sand Fraction: Percent Recovery	100.00

Weight as received (Grams)	47.533
Percent Solids	60.6
Weight Oven-Dried (Grams)	28.8050

Description	Sieve Size	Sieve Number	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	4.75 mm	4	0.0000	0.00
Gravel, Fine	2.00 mm	10	0.0000	0.00
Sand, Very Coarse	0.850 mm	20	0.0202	0.07
Sand, Coarse	0.425 mm	40	0.2225	0.77
Sand, Medium	0.250 mm	60	3.5348	12.27
Sand, Fine	0.106 mm	140	13.7309	47.67
Sand, Very Fine	0.075 mm	200	3.0137	10.46
Silt			7.2950	25.33
Clay			1.4784	5.13
		Total	29.2955	101.70

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	12/1/2017
Sample Matrix:	Sediment	**Date Received:**	12/4/2017
		Date Analyzed:	1/9/2018

Particle Size Determination
ASTM D422M

Sample Name: URSC-RM20.4E-COMP
Lab Code: K1713018-016

Sand Fraction: Weight (Grams)	26.7957
Sand Fraction: Weight Recovered (Grams)	26.8604
Sand Fraction: Percent Recovery	100.24

Weight as received (Grams)	48.627
Percent Solids	71.3
Weight Oven-Dried (Grams)	34.6711

Description	Sieve Size	Sieve Number	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	4.75 mm	4	0.0000	0.00
Gravel, Fine	2.00 mm	10	0.0000	0.00
Sand, Very Coarse	0.850 mm	20	0.1353	0.39
Sand, Coarse	0.425 mm	40	1.6988	4.90
Sand, Medium	0.250 mm	60	7.0989	20.48
Sand, Fine	0.106 mm	140	15.6748	45.21
Sand, Very Fine	0.075 mm	200	1.8290	5.28
Silt			6.6150	19.08
Clay			2.3283	6.72
		Total	35.3802	102.06

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	12/1/17
Sample Matrix:	Sediment	**Date Received:**	12/4/17
Analysis Method:	PSEP TOC	**Units:**	Percent
Prep Method:	ALS SOP	**Basis:**	Dry, per Method

Carbon, Total Organic (TOC)

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
URSC-RM20.1W-COMP	K1713018-010	**0.922**	0.050	0.020	1	12/15/17 14:45	12/15/17	
URSC-RM20.4E-COMP	K1713018-016	**0.228**	0.050	0.020	1	12/15/17 14:45	12/15/17	
Method Blank	K1713018-MB	ND U	0.050	0.020	1	12/15/17 14:45	12/15/17	

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project	URSC/150-001-056	**Date Collected:**	12/01/17
Sample Matrix:	Sediment	**Date Received:**	12/04/17
		Date Analyzed:	12/15/17

Triplicate Sample Summary
General Chemistry Parameters

Sample Name:	URSC-RM20.1W-COMP	**Units:**	Percent
Lab Code:	K1713018-010	**Basis:**	Dry, per Method
Analysis Method:	PSEP TOC		
Prep Method:	ALS SOP		

Analyte Name	MRL	MDL	Sample Result	Duplicate K1713018-010DUP Result	Triplicate K1713018-010TRP Result	Average	RSD	RSD Limit
Carbon, Total Organic (TOC)	0.050	0.020	0.922	0.916	0.929	0.922	<1	27

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Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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SuperSet Reference:17-0000448163 rev 00

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	12/01/17
Sample Matrix:	Sediment	**Date Received:**	12/04/17
		Date Analyzed:	12/15/17
		Date Extracted:	12/15/17

Duplicate Matrix Spike Summary
Carbon, Total Organic (TOC)

Sample Name:	URSC-RM20.1W-COMP	**Units:**	Percent
Lab Code:	K1713018-010	**Basis:**	Dry, per Method
Analysis Method:	PSEP TOC		
Prep Method:	ALS SOP		

		Matrix Spike K1713018-010MS			**Duplicate Matrix Spike** K1713018-010DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Carbon, Total Organic (TOC)	0.922	4.24	3.41	97	4.19	3.20	102	69-123	5	27

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Analyzed:**	12/15/17
Sample Matrix:	Sediment	**Date Extracted:**	12/15/17

Lab Control Sample Summary
Carbon, Total Organic (TOC)

Analysis Method:	PSEP TOC	**Units:**	Percent
Prep Method:	ALS SOP	**Basis:**	Dry, per Method
		Analysis Lot:	573984

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1713018-LCS	0.608	0.603	101	74-118

Client: Hart Crowser, Incorporated **Service Request:** K1713018
Project: URSC/150-001-056

Continuing Calibration Verification (CCV) Summary

Carbon, Total Organic (TOC)

Analysis Method: PSEP TOC **Units:** Percent

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	573984	KQ1718789-01	12/15/17 14:45	20.0	19.7	99	90-110
CCV2	573984	KQ1718789-02	12/15/17 14:45	20.0	19.6	98	90-110
CCV3	573984	KQ1718789-03	12/15/17 14:45	20.0	19.7	98	90-110

Client: Hart Crowser, Incorporated **Service Request:**K1713018
Project: URSC/150-001-056

Continuing Calibration Blank (CCB) Summary
Carbon, Total Organic (TOC)

Analysis Method: PSEP TOC **Units:**Percent

	Analysis Lot	Lab Code	Date Analyzed	MRL	MDL	Result	Q
CCB1	573984	KQ1718789-04	12/15/17 14:45	0.050	0.020	ND	U
CCB2	573984	KQ1718789-05	12/15/17 14:45	0.050	0.020	ND	U
CCB3	573984	KQ1718789-06	12/15/17 14:45	0.050	0.020	ND	U

Metals

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	12/01/17 08:00
Sample Matrix:	Sediment	**Date Received:**	12/04/17 10:37
Sample Name:	URSC-RM20.1W-COMP	**Basis:**	Dry
Lab Code:	K1713018-010		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**3.58**	mg/Kg	0.53	0.04	5	12/21/17 10:15	12/20/17	
Cadmium	6020A	**0.118**	mg/Kg	0.021	0.007	5	12/21/17 10:15	12/20/17	
Chromium	6020A	**26.3**	mg/Kg	0.21	0.06	5	12/21/17 10:15	12/20/17	
Copper	6020A	**24.3**	mg/Kg	0.11	0.04	5	12/21/17 10:15	12/20/17	
Lead	6020A	**14.6**	mg/Kg	0.053	0.021	5	12/21/17 10:15	12/20/17	
Manganese	6020A	**480**	mg/Kg	0.53	0.02	5	12/21/17 10:15	12/20/17	
Mercury	7471B	**0.028**	mg/Kg	0.019	0.002	1	12/19/17 13:36	12/19/17	
Nickel	6020A	**24.7**	mg/Kg	0.21	0.03	5	12/21/17 10:15	12/20/17	
Zinc	6020A	**74.4**	mg/Kg	0.53	0.21	5	12/21/17 10:15	12/20/17	

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	12/01/17 12:28
Sample Matrix:	Sediment	**Date Received:**	12/04/17 10:37
Sample Name:	URSC-RM20.4E-COMP	**Basis:**	Dry
Lab Code:	K1713018-016		

Total Metals

Analyte Name	Analysis Method	Result		Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**3.33**		mg/Kg	0.43	0.03	5	12/21/17 10:29	12/20/17	
Cadmium	6020A	**0.074**		mg/Kg	0.017	0.006	5	12/21/17 10:29	12/20/17	
Chromium	6020A	**26.0**		mg/Kg	0.17	0.05	5	12/21/17 10:29	12/20/17	
Copper	6020A	**20.4**		mg/Kg	0.087	0.035	5	12/21/17 10:29	12/20/17	
Lead	6020A	**8.34**		mg/Kg	0.043	0.017	5	12/21/17 10:29	12/20/17	
Manganese	6020A	**352**		mg/Kg	0.43	0.02	5	12/21/17 10:29	12/20/17	
Mercury	7471B	**0.017**	**J**	mg/Kg	0.018	0.002	1	12/19/17 13:43	12/19/17	
Nickel	6020A	**23.0**		mg/Kg	0.17	0.03	5	12/21/17 10:29	12/20/17	
Zinc	6020A	**57.0**		mg/Kg	0.43	0.17	5	12/21/17 10:29	12/20/17	

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Basis:**	Dry
Lab Code:	KQ1718365-03		

Total Metals

Analyte Name	Analysis Method	Result		Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	ND	U	mg/Kg	0.5	0.04	5	12/21/17 10:09	12/20/17	
Cadmium	6020A	ND	U	mg/Kg	0.020	0.007	5	12/21/17 10:09	12/20/17	
Chromium	6020A	**0.06**	**J**	mg/Kg	0.20	0.06	5	12/21/17 10:09	12/20/17	
Copper	6020A	ND	U	mg/Kg	0.10	0.04	5	12/21/17 10:09	12/20/17	
Lead	6020A	ND	U	mg/Kg	0.05	0.020	5	12/21/17 10:09	12/20/17	
Manganese	6020A	ND	U	mg/Kg	0.5	0.02	5	12/21/17 10:09	12/20/17	
Nickel	6020A	ND	U	mg/Kg	0.20	0.03	5	12/21/17 10:09	12/20/17	
Zinc	6020A	**0.32**	**J**	mg/Kg	0.5	0.20	5	12/21/17 10:09	12/20/17	

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Basis:**	Dry
Lab Code:	KQ1718364-03		

Total Metals

Analyte Name	Analysis Method	Result		Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Mercury	7471B	ND	U	mg/Kg	0.02	0.002	1	12/19/17 13:28	12/19/17	

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project	URSC/150-001-056	**Date Collected:**	12/01/17
Sample Matrix:	Sediment	**Date Received:**	12/04/17
		Date Analyzed:	12/21/17

Replicate Sample Summary
Total Metals

Sample Name:	URSC-RM20.1W-COMP	**Units:**	mg/Kg
Lab Code:	K1713018-010	**Basis:**	Dry

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample KQ1718365-01 Result	Average	RPD	RPD Limit
Arsenic	6020A	0.54	0.04	3.58	3.72	3.65	4	20
Cadmium	6020A	0.021	0.008	0.118	0.104	0.111	13	20
Chromium	6020A	0.21	0.06	26.3	26.4	26.4	<1	20
Copper	6020A	0.11	0.04	24.3	24.3	24.3	<1	20
Lead	6020A	0.054	0.021	14.6	15.9	15.3	9	20
Manganese	6020A	0.54	0.02	480	485	483	1	20
Nickel	6020A	0.21	0.03	24.7	25.2	25.0	1	20
Zinc	6020A	0.54	0.21	74.4	73.9	74.2	<1	20

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project	URSC/150-001-056	**Date Collected:**	12/01/17
Sample Matrix:	Sediment	**Date Received:**	12/04/17
		Date Analyzed:	12/19/17

Replicate Sample Summary
Total Metals

Sample Name:	URSC-RM20.1W-COMP	**Units:**	mg/Kg
Lab Code:	K1713018-010	**Basis:**	Dry

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample KQ1718364-01 Result	Average	RPD	RPD Limit
Mercury	7471B	0.020	0.002	0.028	0.025	0.027	13	20

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Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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Superset Reference:

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
		Date Analyzed:	12/19/17

Replicate Sample Summary
Total Metals

Sample Name:	Batch QC	**Units:**	mg/Kg
Lab Code:	K1713130-006	**Basis:**	Dry

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample KQ1718364-06 Result	Average	RPD	RPD Limit
Mercury	7471B	0.017	0.002	0.020	0.020	0.020	<1	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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Superset Reference:

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	12/01/17
Sample Matrix:	Sediment	**Date Received:**	12/04/17
		Date Analyzed:	12/21/17
		Date Extracted:	12/20/17

Matrix Spike Summary
Total Metals

Sample Name:	URSC-RM20.1W-COMP	**Units:**	mg/Kg
Lab Code:	K1713018-010	**Basis:**	Dry
Analysis Method:	6020A		
Prep Method:	EPA 3050B		

Matrix Spike
KQ1718365-02

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Arsenic	3.58	112	111	98	75-125
Cadmium	0.118	11.5	11.1	103	75-125
Chromium	26.3	73.4	44.2	107	75-125
Copper	24.3	80.3	55.3	101	75-125
Lead	14.6	138	111	111	75-125
Manganese	480	678	111	180 #	75-125
Nickel	24.7	141	111	105	75-125
Zinc	74.4	182	111	97	75-125

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Printed 12/22/2017 6:13:06 PM Superset Reference:

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	12/01/17
Sample Matrix:	Sediment	**Date Received:**	12/04/17
		Date Analyzed:	12/19/17
		Date Extracted:	12/19/17

Matrix Spike Summary
Total Metals

Sample Name:	URSC-RM20.1W-COMP	**Units:**	mg/Kg
Lab Code:	K1713018-010	**Basis:**	Dry
Analysis Method:	7471B		
Prep Method:	Method		

Matrix Spike
KQ1718364-02

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Mercury	0.028	0.490	0.485	95	80-120

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Printed 12/22/2017 6:13:07 PM Superset Reference:

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	N/A
Sample Matrix:	Sediment	**Date Received:**	N/A
		Date Analyzed:	12/19/17
		Date Extracted:	12/19/17

Matrix Spike Summary
Total Metals

Sample Name:	Batch QC	**Units:**	mg/Kg
Lab Code:	K1713130-006	**Basis:**	Dry
Analysis Method:	7471B		
Prep Method:	Method		

Matrix Spike
KQ1718364-07

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Mercury	0.020	0.426	0.428	95	80-120

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Printed 12/22/2017 6:13:07 PM Superset Reference:

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056
Sample Matrix: Sediment

Service Request: K1713018
Date Analyzed: 12/21/17

Lab Control Sample Summary
Total Metals

Units:mg/Kg
Basis: Dry

Lab Control Sample
KQ1718365-04

Analyte Name	Analytical Method	Result	Spike Amount	% Rec	% Rec Limits
Arsenic	6020A	95.0	98.5	96	69-145
Cadmium	6020A	160	146	109	73-127
Chromium	6020A	184	182	101	71-130
Copper	6020A	110	106	104	75-125
Lead	6020A	130	130	100	72-127
Manganese	6020A	411	410	100	76-124
Nickel	6020A	162	149	109	73-127
Zinc	6020A	196	191	103	70-130

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Analyzed:**	12/19/17
Sample Matrix:	Sediment		

Lab Control Sample Summary
Total Metals

Units:mg/Kg
Basis: Dry

Lab Control Sample
KQ1718364-04

Analyte Name	Analytical Method	Result	Spike Amount	% Rec	% Rec Limits
Mercury	7471B	0.495	0.500	99	80-120

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Analyzed:**	12/19/17
Sample Matrix:	Sediment		

Lab Control Sample Summary
Total Metals

Units:mg/Kg
Basis: Dry

Lab Control Sample
KQ1718364-05

Analyte Name	Analytical Method	Result	Spike Amount	% Rec	% Rec Limits
Mercury	7471B	6.86	7.10	97	51-149

ALS Group USA, Corp.
dba ALS Environmental

Prep Summary Report

Client: Hart Crowser, Incorporated **Service Request:**K1713018
Project: URSC/150-001-056
Sample Matrix: Sediment

Metals

Prep Method: EPA 3050B **Extraction Lot:**305007
Analytical Method: 6020A

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Amount	Percent Solids
URSC-RM20.1W-COMP	K1713018-010	12/1/17	12/4/17	1.560 g	100 mL	
URSC-RM20.4E-COMP	K1713018-016	12/1/17	12/4/17	1.616 g	100 mL	
Duplicate	KQ1718365-01DUP	12/1/17	12/4/17	1.538 g	100 mL	
Matrix Spike	KQ1718365-02MS	12/1/17	12/4/17	1.493 g	100 mL	
Method Blank	KQ1718365-03MB	NA	NA	1.00 g	100 mL	
Lab Control Sample	KQ1718365-04LCS	NA	NA	1.0100 g	100 mL	

ALS Group USA, Corp.
dba ALS Environmental

Prep Summary Report

Client: Hart Crowser, Incorporated **Service Request:**K1713018
Project: URSC/150-001-056
Sample Matrix: Sediment

Metals

Prep Method: Method **Extraction Lot:**305006
Analytical Method: 7471B

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Amount	Percent Solids
URSC-RM20.1W-COMP	K1713018-010	12/1/17	12/4/17	0.848 g	50 mL	
URSC-RM20.4E-COMP	K1713018-016	12/1/17	12/4/17	0.786 g	50 mL	
Duplicate	KQ1718364-01DUP	12/1/17	12/4/17	0.824 g	50 mL	
Matrix Spike	KQ1718364-02MS	12/1/17	12/4/17	0.850 g	50 mL	
Method Blank	KQ1718364-03MB	NA	NA	0.500 g	50 mL	
Lab Control Sample	KQ1718364-04LCS	NA	NA	0.500 g	50 mL	
Lab Control Sample	KQ1718364-05LCS	NA	NA	0.250 g	50 mL	
Batch QC	KQ1718364-06DUP	NA	NA	0.854 g	50 mL	
Batch QC	KQ1718364-07MS	NA	NA	0.854 g	50 mL	

Client: Hart Crowser, Incorporated **Service Request:** K1713018
Project: URSC/150-001-056

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Concentration Units: ug/L

Analyte	Method	Analysis Batch	Initial Calibration			Continuing Calibration			Continuing Calibration		
			True	Found	%R (1)	True	Found	%R (1)	True	Found	%R (1)
Arsenic	6020A	574584	25.0	25.6	103	25.0	24.9	100	25.0	25.2	101
Cadmium	6020A	574584	12.5	13.5	108	25.0	25.3	101	25.0	25.4	102
Chromium	6020A	574584	10.0	10.5	105	25.0	24.8	99	25.0	25.5	102
Copper	6020A	574584	12.5	13.3	106	25.0	25.0	100	25.0	26.1	104
Lead	6020A	574584	25.0	26.6	106	25.0	25.3	101	25.0	25.3	101
Manganese	6020A	574584	25.0	26.1	104	25.0	25.1	100	25.0	25.9	103
Mercury	7471B	574347	5.00	4.90	98	5.00	5.03	101	5.00	5.09	102
Nickel	6020A	574584	25.0	27.0	108	25.0	25.4	102	25.0	25.9	103
Zinc	6020A	574584	25.0	25.6	102	25.0	26.1	105	25.0	25.6	102

Client: Hart Crowser, Incorporated **Service Request:** K1713018
Project: URSC/150-001-056

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Concentration Units: ug/L

Analyte	Method	Analysis Batch	Initial Calibration			Continuing Calibration			Continuing Calibration		
			True	Found	%R (1)	True	Found	%R (1)	True	Found	%R (1)
Arsenic	6020A	574584				25.0	25.4	102	25.0	25.3	101
Cadmium	6020A	574584				25.0	25.0	100	25.0	25.0	100
Chromium	6020A	574584				25.0	25.5	102	25.0	25.6	102
Copper	6020A	574584				25.0	25.6	102	25.0	25.6	102
Lead	6020A	574584				25.0	25.1	100	25.0	25.0	100
Manganese	6020A	574584				25.0	26.0	104	25.0	25.9	104
Mercury	7471B	574347				5.00	5.03	101			
Nickel	6020A	574584				25.0	25.7	103	25.0	25.7	103
Zinc	6020A	574584				25.0	25.5	102	25.0	26.3	105

Client: Hart Crowser, Incorporated **Service Request:** K1713018
Project: URSC/150-001-056

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Concentration Units: ug/L

Analyte	Method	Analysis Batch	Initial Calibration			Continuing Calibration			Continuing Calibration		
			True	Found	%R (1)	True	Found	%R (1)	True	Found	%R (1)
Arsenic	6020A	574584				25.0	25.0	100	25.0	25.5	102
Cadmium	6020A	574584				25.0	25.2	101	25.0	25.2	101
Chromium	6020A	574584				25.0	25.2	101	25.0	25.5	102
Copper	6020A	574584				25.0	25.6	102	25.0	25.5	102
Lead	6020A	574584				25.0	25.0	100	25.0	24.6	99
Manganese	6020A	574584				25.0	25.5	102	25.0	25.7	103
Nickel	6020A	574584				25.0	25.9	104	25.0	25.8	103
Zinc	6020A	574584				25.0	25.8	103	25.0	25.6	102

Client: Hart Crowser, Incorporated **Service Request:** K1713018
Project: URSC/150-001-056

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Concentration Units: ug/L

Analyte	Method	Analysis Batch	Initial Calibration			Continuing Calibration			Continuing Calibration		
			True	Found	%R (1)	True	Found	%R (1)	True	Found	%R (1)
Arsenic	6020A	574584				25.0	25.7	103			
Cadmium	6020A	574584				25.0	24.9	100			
Chromium	6020A	574584				25.0	25.5	102			
Copper	6020A	574584				25.0	25.5	102			
Lead	6020A	574584				25.0	24.6	98			
Manganese	6020A	574584				25.0	25.8	103			
Nickel	6020A	574584				25.0	25.7	103			
Zinc	6020A	574584				25.0	26.4	106			

Client: Hart Crowser, Incorporated **Service Request:** K1713018
Project: URSC/150-001-056

INITIAL AND CONTINUING CALIBRATION BLANK

Concentration Units: ug/L

Analyte	Method	Analysis Batch	Initial Calibration Blank		Continuing Calibration Blank		Continuing Calibration Blank		Continuing Calibration Blank	
			Result	C	Result	C	Result	C	Result	C
Arsenic	6020A	574584	0.08	U	0.08	U	0.08	U	0.08	U
Cadmium	6020A	574584	0.014	U	0.014	U	0.014	U	0.014	U
Chromium	6020A	574584	0.12	U	0.12	U	0.12	U	0.12	U
Copper	6020A	574584	0.08	U	0.08	U	0.08	U	0.08	U
Lead	6020A	574584	0.04	U	0.04	U	0.04	U	0.04	U
Manganese	6020A	574584	0.04	U	0.04	U	0.04	U	0.04	U
Mercury	7471B	574347	0.02	U	0.02	U	0.02	U	0.02	U
Nickel	6020A	574584	0.06	U	0.06	U	0.06	U	0.06	U
Zinc	6020A	574584	0.4	U	0.4	U	0.4	U	0.4	U

Client: Hart Crowser, Incorporated **Service Request:** K1713018
Project: URSC/150-001-056

INITIAL AND CONTINUING CALIBRATION BLANK

Concentration Units: ug/L

Analyte	Method	Analysis Batch	Initial Calibration Blank Result	C	Continuing Calibration Blank Result	C	Continuing Calibration Blank Result	C	Continuing Calibration Blank Result	C
Arsenic	6020A	574584			0.08	U	0.08	U	0.08	U
Cadmium	6020A	574584			0.014	U	0.014	U	0.014	U
Chromium	6020A	574584			0.12	U	0.12	U	0.12	U
Copper	6020A	574584			0.08	U	0.08	U	0.08	U
Lead	6020A	574584			0.04	U	0.04	U	0.04	U
Manganese	6020A	574584			0.04	U	0.04	J	0.04	U
Nickel	6020A	574584			0.06	U	0.06	U	0.06	U
Zinc	6020A	574584			0.4	U	0.4	U	0.4	U

Client: Hart Crowser, Incorporated **Service Request:** K1713018
Project: URSC/150-001-056

INITIAL AND CONTINUING CALIBRATION BLANK

Concentration Units: ug/L

Analyte	Method	Analysis Batch	Initial Calibration Blank Result	C	Continuing Calibration Blank Result	C	Continuing Calibration Blank Result	C	Continuing Calibration Blank Result	C
Arsenic	6020A	574584			0.08	U				
Cadmium	6020A	574584			0.014	U				
Chromium	6020A	574584			0.12	U				
Copper	6020A	574584			0.08	U				
Lead	6020A	574584			0.04	U				
Manganese	6020A	574584			0.05	J				
Nickel	6020A	574584			0.06	U				
Zinc	6020A	574584			0.4	U				

Client: Hart Crowser, Incorporated **Service Request:** K1713018
Project: URSC/150-001-056

LOW LEVEL INITIAL AND LOW LEVEL CONTINUING CALIBRATION VERIFICATION

Concentration Units: ug/L

Sample ID / Analyte	Method	Analysis Batch:	Result	True Value	% Rec	% Rec. Limits	Analysis Date
LLICV							
Mercury	7471B	574347	0.25	0.2	125	50-150	12/19/17 13:23
LLICVS							
Arsenic	6020A	574584	0.98	1.0	98	70-130	12/21/17 07:14
Cadmium	6020A	574584	0.052	0.04	130	70-130	12/21/17 07:14
Chromium	6020A	574584	0.43	0.4	108	70-130	12/21/17 07:14
Copper	6020A	574584	0.22	0.2	108	70-130	12/21/17 07:14
Lead	6020A	574584	0.11	0.1	114	70-130	12/21/17 07:14
Manganese	6020A	574584	0.12	0.1	124	70-130	12/21/17 07:14
Nickel	6020A	574584	0.43	0.4	109	70-130	12/21/17 07:14
Zinc	6020A	574584	1.2	1.0	116	70-130	12/21/17 07:14
LLCCVS							
Arsenic	6020A	574584	1.1	1.0	107	70-130	12/21/17 09:13
Cadmium	6020A	574584	0.043	0.04	108	70-130	12/21/17 09:13
Chromium	6020A	574584	0.42	0.4	106	70-130	12/21/17 09:13
Copper	6020A	574584	0.23	0.2	117	70-130	12/21/17 09:13
Lead	6020A	574584	0.11	0.1	105	70-130	12/21/17 09:13
Manganese	6020A	574584	0.11	0.1	110	70-130	12/21/17 09:13
Nickel	6020A	574584	0.36	0.4	89	70-130	12/21/17 09:13
Zinc	6020A	574584	1.2	1.0	120	70-130	12/21/17 09:13
LLCCVS							
Arsenic	6020A	574584	0.99	1.0	99	70-130	12/21/17 10:03
Cadmium	6020A	574584	0.047	0.04	118	70-130	12/21/17 10:03
Chromium	6020A	574584	0.45	0.4	112	70-130	12/21/17 10:03
Copper	6020A	574584	0.26	0.2	128	70-130	12/21/17 10:03
Lead	6020A	574584	0.10	0.1	102	70-130	12/21/17 10:03
Manganese	6020A	574584	0.11	0.1	108	70-130	12/21/17 10:03
Nickel	6020A	574584	0.41	0.4	104	70-130	12/21/17 10:03
Zinc	6020A	574584	1.1	1.0	105	70-130	12/21/17 10:03
LLCCVS							
Arsenic	6020A	574584	0.99	1.0	99	70-130	12/21/17 10:55
Cadmium	6020A	574584	0.044	0.04	111	70-130	12/21/17 10:55
Chromium	6020A	574584	0.44	0.4	110	70-130	12/21/17 10:55
Copper	6020A	574584	0.22	0.2	109	70-130	12/21/17 10:55
Lead	6020A	574584	0.10	0.1	100	70-130	12/21/17 10:55
Nickel	6020A	574584	0.40	0.4	101	70-130	12/21/17 10:55
Zinc	6020A	574584	1.1	1.0	109	70-130	12/21/17 10:55

Client: Hart Crowser, Incorporated **Service Request:** K1713018
Project: URSC/150-001-056

LOW LEVEL INITIAL AND LOW LEVEL CONTINUING CALIBRATION VERIFICATION

Concentration Units: ug/L

Sample ID / Analyte	Method	Analysis Batch:	Result	True Value	% Rec	% Rec. Limits	Analysis Date
LLCCVS							
Manganese	6020A	574584	1.2	1.0	117	70-130	12/21/17 10:58

Client: Hart Crowser, Incorporated **Service Request:** K1713018
Project: URSC/150-001-056

ICP INTERFERENCE CHECK SAMPLE

Sample ID ICSA **Concentration Units:** ug/L

Analyte	Method	Analysis Batch:	Result	True Value	% Rec	% Rec. Limits	Analysis Date
Arsenic	6020A	574584	0.08	-	-	-	12/21/17 07:23
Cadmium	6020A	574584	0.014	-	-	-	12/21/17 07:23
Chromium	6020A	574584	0.66	-	-	-	12/21/17 07:23
Copper	6020A	574584	0.69	-	-	-	12/21/17 07:23
Lead	6020A	574584	0.04	-	-	-	12/21/17 07:23
Manganese	6020A	574584	0.04	-	-	-	12/21/17 07:23
Nickel	6020A	574584	0.73	-	-	-	12/21/17 07:23
Zinc	6020A	574584	0.4	-	-	-	12/21/17 07:23

Client: Hart Crowser, Incorporated **Service Request:** K1713018
Project: URSC/150-001-056

ICP INTERFERENCE CHECK SAMPLE

Sample ID ICSAB **Concentration Units:** ug/L

Analyte	Method	Analysis Batch:	Result	True Value	% Rec	% Rec. Limits	Analysis Date
Arsenic	6020A	574584	24.8	25.0	99	80-120	12/21/17 07:26
Cadmium	6020A	574584	26.3	25.0	105	80-120	12/21/17 07:26
Chromium	6020A	574584	50.8	50.0	102	80-120	12/21/17 07:26
Copper	6020A	574584	49.4	50.0	99	80-120	12/21/17 07:26
Lead	6020A	574584	0.04	-	-	-	12/21/17 07:26
Manganese	6020A	574584	51.6	50.0	103	80-120	12/21/17 07:26
Nickel	6020A	574584	51.3	50.0	103	80-120	12/21/17 07:26
Zinc	6020A	574584	24.5	25.0	98	80-120	12/21/17 07:26

Client: Hart Crowser, Incorporated **Service Request:** K1713018
Project: URSC/150-001-056

POST SPIKE SAMPLE RECOVERY

Concentration Units: ug/L

Sample ID / Analyte	Method	Analysis Batch:	Initial Sample Result	Post Spike Result	True Value	% Rec	% Rec. Limits	Analysis Date
K1713018-010A								
Mercury	7471B	574347	0.28	4.94	5.00	93	80-120	12/19/17 13:41
K1713018-010A								
Arsenic	6020A	574584	6.8	56.6	50.0	100	80-120	12/21/17 10:23
Cadmium	6020A	574584	0.22	52.2	50.0	104	80-120	12/21/17 10:23
Chromium	6020A	574584	49.7	101	50.0	102	80-120	12/21/17 10:23
Copper	6020A	574584	45.9	95.9	50.0	100	80-120	12/21/17 10:23
Lead	6020A	574584	27.6	77.1	50.0	99	80-120	12/21/17 10:23
Nickel	6020A	574584	46.8	98.7	50.0	104	80-120	12/21/17 10:23
Zinc	6020A	574584	141	190	50.0	98	80-120	12/21/17 10:23

Results flagged with a pound (#) indicate the control criteria is not applicable.

Client: Hart Crowser, Incorporated **Service Request:** K1713018
Project: URSC/150-001-056

ICP SERIAL DILUTIONS

Concentration Units: ug/L

Sample ID / Analyte	Method	Analysis Batch:	Initial Sample Result	Serial Dillution Result	% Diff	% Diff. Limit	Analysis Date
K1713018-010SDL							
Arsenic	6020A	574584	33.8	31.5	7	10	12/21/17 10:20
Cadmium	6020A	574584	1.12	1.20	7	10	12/21/17 10:20
Chromium	6020A	574584	248	249	0	10	12/21/17 10:20
Copper	6020A	574584	229	240	5	10	12/21/17 10:20
Lead	6020A	574584	138	144	4	10	12/21/17 10:20
Manganese	6020A	574584	4530	4560	1	10	12/21/17 10:20
Nickel	6020A	574584	234	239	2	10	12/21/17 10:20
Zinc	6020A	574584	704	697	1	10	12/21/17 10:20

Client: Hart Crowser, Incorporated **Service Request:** K1713018
Project: URSC/150-001-056

Detection Limits

Matrix: Sediment

Analyte	Wavelength (nm)	Units	MRL	MDL	Method
Mercury	253	ug/L	0.2	0.02	7471B

Client: Hart Crowser, Incorporated **Service Request:** K1713018
Project: URSC/150-001-056

Detection Limits

Matrix: Sediment

Analyte	Mass	Units	MRL	MDL	Method
Arsenic	75	ug/L	1	0.08	6020A
Cadmium	111	ug/L	0.04	0.014	6020A
Chromium	52	ug/L	0.4	0.12	6020A
Copper	65	ug/L	0.2	0.08	6020A
Lead	208	ug/L	0.1	0.04	6020A
Manganese	55	ug/L	1	0.04	6020A
Nickel	60	ug/L	0.4	0.06	6020A
Zinc	66	ug/L	1	0.4	6020A

Client: Hart Crowser, Incorporated **Service Request:** K1713018
Project: URSC/150-001-056

ICP Linear Range (Quarterly)

Instrument: K-ICP-MS-05

Analyte	Concentration (ug/L)	Method
Arsenic 75	3000	6020A
Cadmium 111	3000	6020A
Chromium 52	3000	6020A
Copper 65	3000	6020A
Lead 208	3000	6020A
Manganese 55	3000	6020A
Nickel 60	3000	6020A
Zinc 66	3000	6020A

Client: Hart Crowser, Incorporated **Service Request:** K1713018
Project: URSC/150-001-056

Analysis Run Log

Instrument ID: **K-CVAA-02** **Analytical BatchID:** **574347**

Sample	Dilution Factor	Date/Time	Hg
ZZZZZZ	1	12/19/17 13:10	
ZZZZZZ	1	12/19/17 13:12	
ZZZZZZ	1	12/19/17 13:13	
ZZZZZZ	1	12/19/17 13:15	
ZZZZZZ	1	12/19/17 13:17	
ZZZZZZ	1	12/19/17 13:18	
ICV1	1	12/19/17 13:20	X
ICB1	1	12/19/17 13:22	X
LLICV1	1	12/19/17 13:23	X
CCV1	1	12/19/17 13:25	X
CCB1	1	12/19/17 13:26	X
KQ1718364-03MB	1	12/19/17 13:28	X
KQ1718364-04LCS	1	12/19/17 13:30	X
KQ1718364-05LCS1	10	12/19/17 13:31	X
ZZZZZZ	1	12/19/17 13:33	
ZZZZZZ	1	12/19/17 13:34	
K1713018-010	1	12/19/17 13:36	X
K1713018-010DUP	1	12/19/17 13:38	X
K1713018-010MS	1	12/19/17 13:39	X
K1713018-010PS	1	12/19/17 13:41	X
K1713018-016	1	12/19/17 13:43	X
CCV2	1	12/19/17 13:44	X
CCB2	1	12/19/17 13:46	X
ZZZZZZ	1	12/19/17 13:47	
K1713130-006DUP	1	12/19/17 13:49	X
K1713130-006MS	1	12/19/17 13:51	X
ZZZZZZ	1	12/19/17 13:52	
ZZZZZZ	1	12/19/17 13:54	
ZZZZZZ	1	12/19/17 13:56	
ZZZZZZ	1	12/19/17 13:57	
ZZZZZZ	1	12/19/17 13:59	
ZZZZZZ	1	12/19/17 14:00	
ZZZZZZ	1	12/19/17 14:02	
CCV3	1	12/19/17 14:04	X
CCB3	1	12/19/17 14:05	X
ZZZZZZ	1	12/19/17 14:07	
ZZZZZZ	1	12/19/17 14:08	

Client: Hart Crowser, Incorporated **Service Request:** K1713018
Project: URSC/150-001-056

Analysis Run Log

Instrument ID: **K-ICP-MS-05** **Analytical BatchID:** **574584**

Sample	Dilution Factor	Date/Time	As	Cd	Cr	Cu	Pb	Mn	Ni	Zn
ZZZZZZ	1	12/21/17 06:53								
ZZZZZZ	1	12/21/17 06:56								
ICV	1	12/21/17 06:59	X	X	X	X	X	X	X	X
CCV	1	12/21/17 07:05	X	X	X	X	X	X	X	X
ICB	1	12/21/17 07:08	X	X	X	X	X	X	X	X
CCB	1	12/21/17 07:11	X	X	X	X	X	X	X	X
LLICVS	1	12/21/17 07:14	X	X	X	X	X	X	X	X
ZZZZZZ	1	12/21/17 07:17								
ZZZZZZ	1	12/21/17 07:20								
ICSA	1	12/21/17 07:23	X	X	X	X	X	X	X	X
ICSAB	1	12/21/17 07:26	X	X	X	X	X	X	X	X
ZZZZZZ	5	12/21/17 07:29								
ZZZZZZ	20	12/21/17 07:32								
ZZZZZZ	5	12/21/17 07:35								
ZZZZZZ	25	12/21/17 07:37								
ZZZZZZ	5	12/21/17 07:40								
ZZZZZZ	5	12/21/17 07:43								
ZZZZZZ	5	12/21/17 07:46								
ZZZZZZ	5	12/21/17 07:49								
ZZZZZZ	5	12/21/17 07:52								
ZZZZZZ	1	12/21/17 07:55								
CCV	1	12/21/17 07:58	X	X	X	X	X	X	X	X
CCB	1	12/21/17 08:01	X	X	X	X	X	X	X	X
ZZZZZZ	5	12/21/17 08:04								
ZZZZZZ	5	12/21/17 08:06								
ZZZZZZ	5	12/21/17 08:09								
ZZZZZZ	5	12/21/17 08:15								
ZZZZZZ	5	12/21/17 08:18								
ZZZZZZ	5	12/21/17 08:21								
ZZZZZZ	5	12/21/17 08:24								
ZZZZZZ	5	12/21/17 08:26								
ZZZZZZ	5	12/21/17 08:29								
ZZZZZZ	1	12/21/17 08:32								
CCV	1	12/21/17 08:35	X	X	X	X	X	X	X	X
CCB	1	12/21/17 08:38	X	X	X	X	X	X	X	X
ZZZZZZ	5	12/21/17 08:41								
ZZZZZZ	5	12/21/17 08:44								

Client: Hart Crowser, Incorporated **Service Request:** K1713018
Project: URSC/150-001-056

Analysis Run Log

Instrument ID: **K-ICP-MS-05** **Analytical BatchID:** **574584**

Sample	Dilution Factor	Date/Time	As	Cd	Cr	Cu	Pb	Mn	Ni	Zn
ZZZZZZ	5	12/21/17 08:47								
ZZZZZZ	5	12/21/17 08:50								
ZZZZZZ	5	12/21/17 08:53								
ZZZZZZ	5	12/21/17 08:56								
ZZZZZZ	5	12/21/17 08:58								
ZZZZZZ	5	12/21/17 09:01								
CCV	1	12/21/17 09:07	X	X	X	X	X	X	X	X
CCB	1	12/21/17 09:10	X	X	X	X	X	X	X	X
LLCCVS	1	12/21/17 09:13	X	X	X	X	X	X	X	X
ZZZZZZ	1	12/21/17 09:16								
ZZZZZZ	1	12/21/17 09:19								
ZZZZZZ	5	12/21/17 09:22								
ZZZZZZ	20	12/21/17 09:25								
ZZZZZZ	5	12/21/17 09:28								
ZZZZZZ	25	12/21/17 09:30								
ZZZZZZ	5	12/21/17 09:33								
ZZZZZZ	5	12/21/17 09:36								
ZZZZZZ	5	12/21/17 09:39								
ZZZZZZ	5	12/21/17 09:42								
CCV	1	12/21/17 09:53	X	X	X	X	X	X	X	X
CCB	1	12/21/17 09:56	X	X	X	X	X	X	X	X
ZZZZZZ	1	12/21/17 09:59								
LLCCVS	1	12/21/17 10:03	X	X	X	X	X	X	X	X
ZZZZZZ	1	12/21/17 10:06								
KQ1718365-03MB	5	12/21/17 10:09	X	X	X	X	X	X	X	X
KQ1718365-04LCS1	20	12/21/17 10:12	X	X	X	X	X	X	X	X
K1713018-010	5	12/21/17 10:15	X	X	X	X	X	X	X	X
K1713018-010DUP	5	12/21/17 10:17	X	X	X	X	X	X	X	X
K1713018-010SDL	25	12/21/17 10:20	X	X	X	X	X	X	X	X
K1713018-010PS	5	12/21/17 10:23	X	X	X	X	X		X	X
K1713018-010MS	5	12/21/17 10:26	X	X	X	X	X	X	X	X
K1713018-016	5	12/21/17 10:29	X	X	X	X	X	X	X	X
ZZZZZZ	5	12/21/17 10:32								
ZZZZZZ	5	12/21/17 10:35								
CCV	1	12/21/17 10:38	X	X	X	X	X	X	X	X
CCB	1	12/21/17 10:41	X	X	X	X	X	X	X	X
ZZZZZZ	5	12/21/17 10:44								

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QA/QC Report

Client: Hart Crowser, Incorporated **Service Request:** K1713018
Project: URSC/150-001-056

Analysis Run Log

Instrument ID: **K-ICP-MS-05** **Analytical BatchID:** **574584**

Sample	Dilution Factor	Date/Time	As	Cd	Cr	Cu	Pb	Mn	Ni	Zn
ZZZZZZ	5	12/21/17 10:46								
CCV	1	12/21/17 10:49	X	X	X	X	X	X	X	X
CCB	1	12/21/17 10:52	X	X	X	X	X	X	X	X
LLCCVS	1	12/21/17 10:55	X	X	X	X	X		X	X
LLCCVS 1.0 ppb	1	12/21/17 10:58						X		
ZZZZZZ	5	12/21/17 11:01								
ZZZZZZ	20	12/21/17 11:04								
ZZZZZZ	5	12/21/17 11:07								
ZZZZZZ	5	12/21/17 11:10								
ZZZZZZ	25	12/21/17 11:13								
ZZZZZZ	5	12/21/17 11:16								
ZZZZZZ	5	12/21/17 11:18								
ZZZZZZ	1	12/21/17 11:21								
ZZZZZZ	1	12/21/17 11:24								
ZZZZZZ	1	12/21/17 11:27								
ZZZZZZ	1	12/21/17 11:30								
ZZZZZZ	1	12/21/17 11:34								
ZZZZZZ	5	12/21/17 11:37								
ZZZZZZ	20	12/21/17 11:40								
ZZZZZZ	5	12/21/17 11:43								
ZZZZZZ	5	12/21/17 11:46								
ZZZZZZ	25	12/21/17 11:49								
ZZZZZZ	5	12/21/17 11:52								
ZZZZZZ	5	12/21/17 11:54								
ZZZZZZ	1	12/21/17 11:57								
ZZZZZZ	1	12/21/17 12:00								
ZZZZZZ	1	12/21/17 12:03								
ZZZZZZ	1	12/21/17 12:06								

Client: Hart Crowser, Incorporated **Service Request:** K1713018
Project: URSC/150-001-056

ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Instrument ID: **K-ICP-MS-05** **Analytical BatchID:** **574584**

Sample	Date/Time	Sc45NG	Ge72He	Ge72H2	In115He	Lu175He	Li6NG
ZZZZZZ	12/21/17 06:53						
ZZZZZZ	12/21/17 06:56						
ICV	12/21/17 06:59	100	99	98	99	98	98
CCV	12/21/17 07:05	99	100	100	98	99	101
ICB	12/21/17 07:08	98	99	100	99	99	98
CCB	12/21/17 07:11	101	99	100	98	98	101
LLICVS	12/21/17 07:14	97	98	99	98	97	97
ZZZZZZ	12/21/17 07:17						
ZZZZZZ	12/21/17 07:20						
ICSA	12/21/17 07:23	92	93	93	88	94	91
ICSAB	12/21/17 07:26	95	94	94	89	95	92
ZZZZZZ	12/21/17 07:29						
ZZZZZZ	12/21/17 07:32						
ZZZZZZ	12/21/17 07:35						
ZZZZZZ	12/21/17 07:37						
ZZZZZZ	12/21/17 07:40						
ZZZZZZ	12/21/17 07:43						
ZZZZZZ	12/21/17 07:46						
ZZZZZZ	12/21/17 07:49						
ZZZZZZ	12/21/17 07:52						
ZZZZZZ	12/21/17 07:55						
CCV	12/21/17 07:58	103	101	101	99	99	102
CCB	12/21/17 08:01	102	100	100	99	98	100
ZZZZZZ	12/21/17 08:04						
ZZZZZZ	12/21/17 08:06						
ZZZZZZ	12/21/17 08:09						
ZZZZZZ	12/21/17 08:15						
ZZZZZZ	12/21/17 08:18						
ZZZZZZ	12/21/17 08:21						
ZZZZZZ	12/21/17 08:24						
ZZZZZZ	12/21/17 08:26						
ZZZZZZ	12/21/17 08:29						
ZZZZZZ	12/21/17 08:32						
CCV	12/21/17 08:35	105	104	101	101	100	103
CCB	12/21/17 08:38	104	102	101	101	98	103
ZZZZZZ	12/21/17 08:41						
ZZZZZZ	12/21/17 08:44						

Client: Hart Crowser, Incorporated **Service Request:** K1713018
Project: URSC/150-001-056

ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Instrument ID: **K-ICP-MS-05** **Analytical BatchID:** **574584**

Sample	Date/Time	Sc45NG	Ge72He	Ge72H2	In115He	Lu175He	Li6NG
ZZZZZZ	12/21/17 08:47						
ZZZZZZ	12/21/17 08:50						
ZZZZZZ	12/21/17 08:53						
ZZZZZZ	12/21/17 08:56						
ZZZZZZ	12/21/17 08:58						
ZZZZZZ	12/21/17 09:01						
CCV	12/21/17 09:07	104	103	100	100	99	104
CCB	12/21/17 09:10	104	101	99	100	98	102
LLCCVS	12/21/17 09:13	101	100	98	98	97	100
ZZZZZZ	12/21/17 09:16						
ZZZZZZ	12/21/17 09:19						
ZZZZZZ	12/21/17 09:22						
ZZZZZZ	12/21/17 09:25						
ZZZZZZ	12/21/17 09:28						
ZZZZZZ	12/21/17 09:30						
ZZZZZZ	12/21/17 09:33						
ZZZZZZ	12/21/17 09:36						
ZZZZZZ	12/21/17 09:39						
ZZZZZZ	12/21/17 09:42						
CCV	12/21/17 09:53	102	98	97	96	96	101
CCB	12/21/17 09:56	88	91	96	89	91	87
ZZZZZZ	12/21/17 09:59						
LLCCVS	12/21/17 10:03	100	96	96	93	94	97
ZZZZZZ	12/21/17 10:06						
KQ1718365-03MB	12/21/17 10:09	100	96	96	95	95	98
KQ1718365-04LCS1	12/21/17 10:12	99	96	97	91	93	97
K1713018-010	12/21/17 10:15	115	102	98	97	98	103
K1713018-010DUP	12/21/17 10:17	115	101	99	97	99	102
K1713018-010SDL	12/21/17 10:20	108	102	101	98	96	104
K1713018-010PS	12/21/17 10:23	115	102	97	97	97	106
K1713018-010MS	12/21/17 10:26	113	99	95	94	98	99
K1713018-016	12/21/17 10:29	112	102	99	97	98	103
ZZZZZZ	12/21/17 10:32						
ZZZZZZ	12/21/17 10:35						
CCV	12/21/17 10:38	107	104	100	99	98	105
CCB	12/21/17 10:41	106	103	99	99	96	103
ZZZZZZ	12/21/17 10:44						

Client: Hart Crowser, Incorporated **Service Request:** K1713018
Project: URSC/150-001-056

ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Instrument ID: **K-ICP-MS-05** **Analytical BatchID:** **574584**

Sample	Date/Time	Sc45NG	Ge72He	Ge72H2	In115He	Lu175He	Li6NG
ZZZZZZ	12/21/17 10:46						
CCV	12/21/17 10:49	106	103	100	99	97	102
CCB	12/21/17 10:52	106	102	99	99	97	101
LLCCVS	12/21/17 10:55	106	101	99	97	97	101
LLCCVS 1.0 ppb	12/21/17 10:58	106	101	99	96	97	100
ZZZZZZ	12/21/17 11:01						
ZZZZZZ	12/21/17 11:04						
ZZZZZZ	12/21/17 11:07						
ZZZZZZ	12/21/17 11:10						
ZZZZZZ	12/21/17 11:13						
ZZZZZZ	12/21/17 11:16						
ZZZZZZ	12/21/17 11:18						
ZZZZZZ	12/21/17 11:21						
ZZZZZZ	12/21/17 11:24						
ZZZZZZ	12/21/17 11:27						
ZZZZZZ	12/21/17 11:30						
ZZZZZZ	12/21/17 11:34						
ZZZZZZ	12/21/17 11:37						
ZZZZZZ	12/21/17 11:40						
ZZZZZZ	12/21/17 11:43						
ZZZZZZ	12/21/17 11:46						
ZZZZZZ	12/21/17 11:49						
ZZZZZZ	12/21/17 11:52						
ZZZZZZ	12/21/17 11:54						
ZZZZZZ	12/21/17 11:57						
ZZZZZZ	12/21/17 12:00						
ZZZZZZ	12/21/17 12:03						
ZZZZZZ	12/21/17 12:06						

Organochlorine Pesticides

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	12/01/17 08:00
Sample Matrix:	Sediment	**Date Received:**	12/04/17 10:37
Sample Name:	URSC-RM20.1W-COMP	**Units:**	ug/Kg
Lab Code:	K1713018-010	**Basis:**	Dry

Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP
Prep Method: EPA 3546

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2,4'-DDD	ND	U	0.081	0.063	1	01/15/18 20:58	12/15/17	
2,4'-DDE	ND	U	0.081	0.079	1	01/15/18 20:58	12/15/17	
2,4'-DDT	ND	U	0.094	0.094	1	01/15/18 20:58	12/15/17	
4,4'-DDD	**0.19**		0.081	0.035	1	01/15/18 20:58	12/15/17	
4,4'-DDE	**0.38**		0.081	0.070	1	01/15/18 20:58	12/15/17	
4,4'-DDT	**0.15**		0.081	0.047	1	01/15/18 20:58	12/15/17	
Aldrin	ND	U	0.081	0.079	1	01/15/18 20:58	12/15/17	
alpha-BHC	ND	U	0.081	0.041	1	01/15/18 20:58	12/15/17	
alpha-Chlordane	ND	U	0.16	0.062	1	01/15/18 20:58	12/15/17	
beta-BHC	ND	U	0.081	0.061	1	01/15/18 20:58	12/15/17	
Chlorpyrifos	**0.35**		0.081	0.077	1	01/15/18 20:58	12/15/17	
cis-Nonachlor	ND	U	0.097	0.097	1	01/15/18 20:58	12/15/17	
delta-BHC	ND	U	0.097	0.097	1	01/15/18 20:58	12/15/17	
Dieldrin	ND	U	0.20	0.077	1	01/15/18 20:58	12/15/17	
Endosulfan I	ND	U	0.20	0.088	1	01/15/18 20:58	12/15/17	
Endosulfan II	**1.4**		0.20	0.15	1	01/15/18 20:58	12/15/17	
Endosulfan Sulfate	ND	U	0.081	0.061	1	01/15/18 20:58	12/15/17	
Endrin	ND	U	0.20	0.073	1	01/15/18 20:58	12/15/17	
Endrin Aldehyde	ND	U	0.20	0.10	1	01/15/18 20:58	12/15/17	
Endrin Ketone	ND	U	0.20	0.071	1	01/15/18 20:58	12/15/17	
gamma-BHC (Lindane)	ND	U	0.081	0.031	1	01/15/18 20:58	12/15/17	
gamma-Chlordane	ND	U	0.16	0.064	1	01/15/18 20:58	12/15/17	
Heptachlor	ND	U	0.081	0.039	1	01/15/18 20:58	12/15/17	
Heptachlor Epoxide	ND	U	0.16	0.073	1	01/15/18 20:58	12/15/17	
Hexachlorobenzene	ND	U	0.092	0.092	1	01/15/18 20:58	12/15/17	
Isodrin	ND	U	0.16	0.069	1	01/15/18 20:58	12/15/17	
Methoxychlor	ND	U	0.081	0.019	1	01/15/18 20:58	12/15/17	
Mirex	ND	U	0.081	0.045	1	01/15/18 20:58	12/15/17	
Octachlorostyrene	ND	U	0.081	0.058	1	01/15/18 20:58	12/15/17	
Oxychlordane	ND	U	0.20	0.13	1	01/15/18 20:58	12/15/17	
trans-Nonachlor	ND	U	0.16	0.058	1	01/15/18 20:58	12/15/17	

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	12/01/17 08:00
Sample Matrix:	Sediment	**Date Received:**	12/04/17 10:37
Sample Name:	URSC-RM20.1W-COMP	**Units:**	ug/Kg
Lab Code:	K1713018-010	**Basis:**	Dry

Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP
Prep Method: EPA 3546

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
S_4,4'-DDT-d4	120	13 - 200	01/15/18 20:58	
S_4,4'DDD-d4	85	5 - 120	01/15/18 20:58	
S_Aldrin-13C12	106	10 - 143	01/15/18 20:58	
S_Chlorpyrifos-d10	100	39 - 135	01/15/18 20:58	
S_Endrin-13C12	96	20 - 157	01/15/18 20:58	
S_Endrinket13C12	91	12 - 140	01/15/18 20:58	
S_GBHCD6	98	5 - 124	01/15/18 20:58	
S_HXCBZ13C6	60	5 - 120	01/15/18 20:58	
S_Heptachlor-13C10	162	10 - 177	01/15/18 20:58	
S_Heptachlrepox13C10	85	8 - 146	01/15/18 20:58	
S_Isodrin-13C12	105	10 - 168	01/15/18 20:58	
S_Mirex-13C10	72	5 - 138	01/15/18 20:58	
S_Mxchlord-d6	131	10 - 178	01/15/18 20:58	
S_Ocstyrene13C8	69	31 - 124	01/15/18 20:58	
S_Oxychlordane-13C10	90	5 - 144	01/15/18 20:58	

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	12/01/17 12:28
Sample Matrix:	Sediment	**Date Received:**	12/04/17 10:37
Sample Name:	URSC-RM20.4E-COMP	**Units:**	ug/Kg
Lab Code:	K1713018-016	**Basis:**	Dry

Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP
Prep Method: EPA 3546

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2,4'-DDD	ND	U	0.069	0.063	1	01/15/18 22:21	12/15/17	
2,4'-DDE	ND	U	0.079	0.079	1	01/15/18 22:21	12/15/17	
2,4'-DDT	ND	U	0.094	0.094	1	01/15/18 22:21	12/15/17	
4,4'-DDD	**0.060**	**J**	0.069	0.035	1	01/15/18 22:21	12/15/17	
4,4'-DDE	**0.075**		0.070	0.070	1	01/15/18 22:21	12/15/17	
4,4'-DDT	**0.056**	**J**	0.069	0.047	1	01/15/18 22:21	12/15/17	
Aldrin	ND	U	0.079	0.079	1	01/15/18 22:21	12/15/17	
alpha-BHC	ND	U	0.069	0.041	1	01/15/18 22:21	12/15/17	
alpha-Chlordane	ND	U	0.14	0.062	1	01/15/18 22:21	12/15/17	
beta-BHC	ND	U	0.069	0.061	1	01/15/18 22:21	12/15/17	
Chlorpyrifos	ND	U	0.077	0.077	1	01/15/18 22:21	12/15/17	
cis-Nonachlor	ND	U	0.097	0.097	1	01/15/18 22:21	12/15/17	
delta-BHC	ND	U	0.097	0.097	1	01/15/18 22:21	12/15/17	
Dieldrin	ND	U	0.20	0.077	1	01/15/18 22:21	12/15/17	
Endosulfan I	ND	U	0.20	0.088	1	01/15/18 22:21	12/15/17	
Endosulfan II	ND	U	0.20	0.15	1	01/15/18 22:21	12/15/17	
Endosulfan Sulfate	ND	U	0.069	0.061	1	01/15/18 22:21	12/15/17	
Endrin	ND	U	0.20	0.073	1	01/15/18 22:21	12/15/17	
Endrin Aldehyde	ND	U	0.20	0.10	1	01/15/18 22:21	12/15/17	
Endrin Ketone	ND	U	0.20	0.071	1	01/15/18 22:21	12/15/17	
gamma-BHC (Lindane)	ND	U	0.069	0.031	1	01/15/18 22:21	12/15/17	
gamma-Chlordane	ND	U	0.14	0.064	1	01/15/18 22:21	12/15/17	
Heptachlor	ND	U	0.069	0.039	1	01/15/18 22:21	12/15/17	
Heptachlor Epoxide	ND	U	0.14	0.073	1	01/15/18 22:21	12/15/17	
Hexachlorobenzene	ND	U	0.092	0.092	1	01/15/18 22:21	12/15/17	
Isodrin	ND	U	0.14	0.069	1	01/15/18 22:21	12/15/17	
Methoxychlor	ND	U	0.069	0.019	1	01/15/18 22:21	12/15/17	
Mirex	ND	U	0.069	0.045	1	01/15/18 22:21	12/15/17	
Octachlorostyrene	ND	U	0.069	0.058	1	01/15/18 22:21	12/15/17	
Oxychlordane	ND	U	0.20	0.13	1	01/15/18 22:21	12/15/17	
trans-Nonachlor	ND	U	0.14	0.058	1	01/15/18 22:21	12/15/17	

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	12/01/17 12:28
Sample Matrix:	Sediment	**Date Received:**	12/04/17 10:37
Sample Name:	URSC-RM20.4E-COMP	**Units:**	ug/Kg
Lab Code:	K1713018-016	**Basis:**	Dry

Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP
Prep Method: EPA 3546

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
S_4,4'-DDT-d4	123	13 - 200	01/15/18 22:21	
S_4,4'DDD-d4	90	5 - 120	01/15/18 22:21	
S_Aldrin-13C12	86	10 - 143	01/15/18 22:21	
S_Chlorpyrifos-d10	101	39 - 135	01/15/18 22:21	
S_Endrin-13C12	102	20 - 157	01/15/18 22:21	
S_Endrinket13C12	86	12 - 140	01/15/18 22:21	
S_GBHCD6	78	5 - 124	01/15/18 22:21	
S_HXCBZ13C6	51	5 - 120	01/15/18 22:21	
S_Heptachlor-13C10	120	10 - 177	01/15/18 22:21	
S_Heptachlrepox13C10	85	8 - 146	01/15/18 22:21	
S_Isodrin-13C12	86	10 - 168	01/15/18 22:21	
S_Mirex-13C10	75	5 - 138	01/15/18 22:21	
S_Mxchlord-d6	138	10 - 178	01/15/18 22:21	
S_Ocstyrene13C8	69	31 - 124	01/15/18 22:21	
S_Oxychlordane-13C10	86	5 - 144	01/15/18 22:21	

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	KQ1718398-04	**Basis:**	Dry

Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP
Prep Method: EPA 3546

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2,4'-DDD	ND U	0.10	0.063	1	01/16/18 01:05	12/15/17	
2,4'-DDE	ND U	0.10	0.079	1	01/16/18 01:05	12/15/17	
2,4'-DDT	ND U	0.10	0.094	1	01/16/18 01:05	12/15/17	
4,4'-DDD	ND U	0.10	0.035	1	01/16/18 01:05	12/15/17	
4,4'-DDE	ND U	0.10	0.070	1	01/16/18 01:05	12/15/17	
4,4'-DDT	ND U	0.10	0.047	1	01/16/18 01:05	12/15/17	
Aldrin	ND U	0.10	0.079	1	01/16/18 01:05	12/15/17	
alpha-BHC	ND U	0.10	0.041	1	01/16/18 01:05	12/15/17	
alpha-Chlordane	ND U	0.20	0.062	1	01/16/18 01:05	12/15/17	
beta-BHC	ND U	0.10	0.061	1	01/16/18 01:05	12/15/17	
Chlorpyrifos	ND U	0.10	0.077	1	01/16/18 01:05	12/15/17	
cis-Nonachlor	ND U	0.10	0.097	1	01/16/18 01:05	12/15/17	
delta-BHC	ND U	0.10	0.097	1	01/16/18 01:05	12/15/17	
Dieldrin	ND U	0.20	0.077	1	01/16/18 01:05	12/15/17	
Endosulfan I	ND U	0.20	0.088	1	01/16/18 01:05	12/15/17	
Endosulfan II	ND U	0.20	0.15	1	01/16/18 01:05	12/15/17	
Endosulfan Sulfate	ND U	0.10	0.061	1	01/16/18 01:05	12/15/17	
Endrin	ND U	0.20	0.073	1	01/16/18 01:05	12/15/17	
Endrin Aldehyde	ND U	0.20	0.10	1	01/16/18 01:05	12/15/17	
Endrin Ketone	ND U	0.20	0.071	1	01/16/18 01:05	12/15/17	
gamma-BHC (Lindane)	ND U	0.10	0.031	1	01/16/18 01:05	12/15/17	
gamma-Chlordane	ND U	0.20	0.064	1	01/16/18 01:05	12/15/17	
Heptachlor	ND U	0.10	0.039	1	01/16/18 01:05	12/15/17	
Heptachlor Epoxide	ND U	0.20	0.073	1	01/16/18 01:05	12/15/17	
Hexachlorobenzene	ND U	0.10	0.092	1	01/16/18 01:05	12/15/17	
Isodrin	ND U	0.20	0.069	1	01/16/18 01:05	12/15/17	
Methoxychlor	ND U	0.10	0.019	1	01/16/18 01:05	12/15/17	
Mirex	ND U	0.10	0.045	1	01/16/18 01:05	12/15/17	
Octachlorostyrene	ND U	0.10	0.058	1	01/16/18 01:05	12/15/17	
Oxychlordane	ND U	0.20	0.13	1	01/16/18 01:05	12/15/17	
trans-Nonachlor	ND U	0.20	0.058	1	01/16/18 01:05	12/15/17	

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	KQ1718398-04	**Basis:**	Dry

Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP
Prep Method: EPA 3546

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
S_4,4'-DDT-d4	109	13 - 200	01/16/18 01:05	
S_4,4'DDD-d4	82	5 - 120	01/16/18 01:05	
S_Aldrin-13C12	69	10 - 143	01/16/18 01:05	
S_Chlorpyrifos-d10	88	39 - 135	01/16/18 01:05	
S_Endrin-13C12	89	20 - 157	01/16/18 01:05	
S_Endrinket13C12	82	12 - 140	01/16/18 01:05	
S_GBHCD6	67	5 - 124	01/16/18 01:05	
S_HXCBZ13C6	47	5 - 120	01/16/18 01:05	
S_Heptachlor-13C10	86	10 - 177	01/16/18 01:05	
S_Heptachlrepox13C10	67	8 - 146	01/16/18 01:05	
S_Isodrin-13C12	62	10 - 168	01/16/18 01:05	
S_Mirex-13C10	67	5 - 138	01/16/18 01:05	
S_Mxchlord-d6	116	10 - 178	01/16/18 01:05	
S_Ocstyrene13C8	59	31 - 124	01/16/18 01:05	
S_Oxychlordane-13C10	67	5 - 144	01/16/18 01:05	

Client: Hart Crowser, Incorporated **Service Request:** K1713018
Project: URSC/150-001-056
Sample Matrix: Sediment

SURROGATE RECOVERY SUMMARY
Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP
Extraction Method: EPA 3546

Sample Name	Lab Code	S_4,4'DDD-d4 5 - 120	S_4,4'-DDT-d4 13 - 200	S_Aldrin-13C12 10 - 143
URSC-RM20.1W-COMP	K1713018-010	85	120	106
URSC-RM20.4E-COMP	K1713018-016	90	123	86
URSC-RM20.1W-COMP MS	KQ1718398-01	94	135	113
URSC-RM20.1W-COMP DMS	KQ1718398-02	87	125	109
Lab Control Sample	KQ1718398-03	88	121	81
Method Blank	KQ1718398-04	82	109	69

Client: Hart Crowser, Incorporated **Service Request:** K1713018
Project: URSC/150-001-056
Sample Matrix: Sediment

SURROGATE RECOVERY SUMMARY
Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP
Extraction Method: EPA 3546

Sample Name	Lab Code	S_Chlorpyrifos-d10 39 - 135	S_Endrin-13C12 20 - 157	S_Endrinket13C12 12 - 140
URSC-RM20.1W-COMP	K1713018-010	100	96	91
URSC-RM20.4E-COMP	K1713018-016	101	102	86
URSC-RM20.1W-COMP	KQ1718398-01	109	105	90
URSC-RM20.1W-COMP	KQ1718398-02	101	98	86
Lab Control Sample	KQ1718398-03	98	93	90
Method Blank	KQ1718398-04	88	89	82

Client: Hart Crowser, Incorporated **Service Request:** K1713018
Project: URSC/150-001-056
Sample Matrix: Sediment

SURROGATE RECOVERY SUMMARY
Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP
Extraction Method: EPA 3546

Sample Name	Lab Code	S_GBHCD6 5 - 124	S_Heptachlor-13C10 10 - 177	S_Heptachlrepox13C10 8 - 146
URSC-RM20.1W-COMP	K1713018-010	98	162	85
URSC-RM20.4E-COMP	K1713018-016	78	120	85
URSC-RM20.1W-COMP	KQ1718398-01	113	181 *	95
URSC-RM20.1W-COMP	KQ1718398-02	106	175	88
Lab Control Sample	KQ1718398-03	81	110	80
Method Blank	KQ1718398-04	67	86	67

Client: Hart Crowser, Incorporated **Service Request:** K1713018
Project: URSC/150-001-056
Sample Matrix: Sediment

SURROGATE RECOVERY SUMMARY
Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP
Extraction Method: EPA 3546

Sample Name	Lab Code	S_HXCBZ13C6 5 - 120	S_Isodrin-13C12 10 - 168	S_Mirex-13C10 5 - 138
URSC-RM20.1W-COMP	K1713018-010	60	105	72
URSC-RM20.4E-COMP	K1713018-016	51	86	75
URSC-RM20.1W-COMP	KQ1718398-01	70	119	82
URSC-RM20.1W-COMP	KQ1718398-02	69	107	77
Lab Control Sample	KQ1718398-03	56	75	79
Method Blank	KQ1718398-04	47	62	67

Client: Hart Crowser, Incorporated **Service Request:** K1713018
Project: URSC/150-001-056
Sample Matrix: Sediment

SURROGATE RECOVERY SUMMARY
Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP
Extraction Method: EPA 3546

Sample Name	Lab Code	S_Mxchlord-d6 10 - 178	S_Ocstyrene13C8 31 - 124	S_Oxychlordane-13C10 5 - 144
URSC-RM20.1W-COMP	K1713018-010	131	69	90
URSC-RM20.4E-COMP	K1713018-016	138	69	86
URSC-RM20.1W-COMP	KQ1718398-01	150	77	104
URSC-RM20.1W-COMP	KQ1718398-02	134	72	96
Lab Control Sample	KQ1718398-03	131	70	84
Method Blank	KQ1718398-04	116	59	67

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QA/QC Report

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056

Service Request:K1713018
Date Analyzed:01/15/18 16:52

Internal Standard Area and RT SUMMARY
Organochlorine Pesticides by GC/MS/MS

File ID: J:\MS21\Data\011518\0115F004.D\
Instrument ID: K-MSMS-01
Analysis Method: ALS SOP

Lab Code:KQ1800767-01
Analysis Lot:577627
Signal ID:

		Pyrene-d10	
		Area	**RT**
	ICAL Result ==>	51,082	14.1523
	Upper Limit ==>	102,163	14.65
	Lower Limit ==>	25,541	13.65
Associated Analyses			
URSC-RM20.1W-COMP	K1713018-010	47929.5	14.15
URSC-RM20.1W-COMP	KQ1718398-01	47771.2	14.15
URSC-RM20.1W-COMP	KQ1718398-02	46482.8	14.15
URSC-RM20.4E-COMP	K1713018-016	48395	14.1453
Lab Control Sample	KQ1718398-03	47297.1	14.1428
Method Blank	KQ1718398-04	45328.6	14.1428

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	12/01/17
Sample Matrix:	Sediment	**Date Received:**	12/04/17
		Date Analyzed:	01/15/18
		Date Extracted:	12/15/17

Duplicate Matrix Spike Summary
Organochlorine Pesticides by GC/MS/MS

Sample Name:	URSC-RM20.1W-COMP	**Units:**	ug/Kg
Lab Code:	K1713018-010	**Basis:**	Dry
Analysis Method:	ALS SOP		
Prep Method:	EPA 3546		

		Matrix Spike KQ1718398-01			**Duplicate Matrix Spike** KQ1718398-02					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
2,4'-DDD	ND U	1.64	1.65	100	1.63	1.64	99	32-169	1	40
2,4'-DDE	ND U	1.54	1.65	93	1.51	1.64	92	43-155	2	40
2,4'-DDT	ND U	1.54	1.65	94	1.45	1.64	89	55-161	6	40
4,4'-DDD	0.19	1.87	1.65	102	1.85	1.64	101	10-190	1	40
4,4'-DDE	0.38	1.97	1.65	97	1.93	1.64	94	35-162	2	40
4,4'-DDT	0.15	1.71	1.65	95	1.62	1.64	90	24-183	5	40
Aldrin	ND U	1.70	1.65	103	1.70	1.64	104	52-151	<1	40
alpha-BHC	ND U	1.43	1.65	87	1.50	1.64	92	48-124	5	40
alpha-Chlordane	ND U	1.34	1.65	81	1.31	1.64	80	31-156	2	40
beta-BHC	ND U	1.38	1.65	84	1.33	1.64	81	19-221	4	40
Chlorpyrifos	0.35	2.05	1.65	103	2.09	1.64	106	71-131	2	40
cis-Nonachlor	ND U	1.47	1.65	89	1.39	1.64	85	27-144	5	40
delta-BHC	ND U	1.04	1.65	63	0.991	1.64	60	10-228	5	40
Dieldrin	ND U	1.27	1.65	77	1.30	1.64	79	28-150	2	40
Endosulfan I	ND U	1.39	1.65	85	1.26	1.64	77	52-154	10	40
Endosulfan II	1.4	1.26	1.65	-7 *	1.62	1.64	15	10-180	25	40
Endosulfan Sulfate	ND U	1.52	1.65	92	1.45	1.64	89	31-135	5	40
Endrin	ND U	1.51	1.65	91	1.42	1.64	87	34-160	6	40
Endrin Aldehyde	ND U	1.50	1.65	91	1.24	1.64	76	21-130	19	40
Endrin Ketone	ND U	1.65	1.65	100	1.66	1.64	101	53-136	<1	40
gamma-BHC (Lindane)	ND U	1.53	1.65	93	1.49	1.64	91	64-135	3	40
gamma-Chlordane	ND U	1.33	1.65	81	1.31	1.64	80	31-158	2	40
Heptachlor	ND U	1.65	1.65	100	1.60	1.64	98	76-117	3	40
Heptachlor Epoxide	ND U	1.68	1.65	102	1.66	1.64	101	45-146	2	40
Hexachlorobenzene	ND U	1.72	1.65	105	1.78	1.64	109	22-171	3	40
Isodrin	ND U	1.50	1.65	91	1.50	1.64	92	30-122	<1	40
Methoxychlor	ND U	1.53	1.65	93	1.56	1.64	95	73-123	2	40
Mirex	ND U	1.66	1.65	101	1.61	1.64	99	83-115	3	40
Octachlorostyrene	ND U	1.70	1.65	103	1.67	1.64	102	67-130	2	40
Oxychlordane	ND U	1.73	1.65	105	1.52	1.64	93	53-144	13	40
trans-Nonachlor	ND U	1.45	1.65	88	1.41	1.64	86	35-153	3	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Analyzed:**	01/16/18
Sample Matrix:	Sediment	**Date Extracted:**	12/15/17

Lab Control Sample Summary
Organochlorine Pesticides by GC/MS/MS

Analysis Method:	ALS SOP	**Units:**	ug/Kg
Prep Method:	EPA 3546	**Basis:**	Dry
		Analysis Lot:	577627

Lab Control Sample
KQ1718398-03

Analyte Name	Result	Spike Amount	% Rec	% Rec Limits
2,4'-DDD	1.95	2.00	97	73-122
2,4'-DDE	1.90	2.00	95	54-145
2,4'-DDT	1.83	2.00	91	77-118
4,4'-DDD	2.00	2.00	100	74-117
4,4'-DDE	1.84	2.00	92	66-132
4,4'-DDT	1.90	2.00	95	78-116
Aldrin	1.88	2.00	94	74-122
alpha-BHC	1.71	2.00	86	61-113
alpha-Chlordane	1.82	2.00	91	74-130
beta-BHC	2.00	2.00	100	60-183
Chlorpyrifos	1.93	2.00	96	74-128
cis-Nonachlor	1.97	2.00	98	69-134
delta-BHC	1.57	2.00	78	10-211
Dieldrin	1.67	2.00	84	62-131
Endosulfan I	1.46	2.00	73	61-126
Endosulfan II	1.82	2.00	91	47-135
Endosulfan Sulfate	1.83	2.00	92	57-124
Endrin	1.84	2.00	92	57-143
Endrin Aldehyde	1.57	2.00	79	45-110
Endrin Ketone	1.80	2.00	90	73-117
gamma-BHC (Lindane)	1.80	2.00	90	79-116
gamma-Chlordane	1.73	2.00	87	76-128
Heptachlor	1.91	2.00	96	81-114
Heptachlor Epoxide	1.98	2.00	99	68-126
Hexachlorobenzene	2.03	2.00	102	72-130
Isodrin	1.99	2.00	99	65-127
Methoxychlor	1.82	2.00	91	75-117
Mirex	1.97	2.00	99	85-115
Octachlorostyrene	1.98	2.00	99	53-150
Oxychlordane	1.80	2.00	90	59-141
trans-Nonachlor	1.92	2.00	96	76-124

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Analyzed:**	01/16/18 01:05
Sample Matrix:	Sediment	**Date Extracted:**	12/15/17

Method Blank Summary
Organochlorine Pesticides by GC/MS/MS

Sample Name:	Method Blank	**Instrument ID:**	K-MSMS-01
Lab Code:	KQ1718398-04	**File ID:**	J:\MS21\Data\011518\0115F022.D\
Analysis Method:	ALS SOP	**Analysis Lot:**	577627
Prep Method:	EPA 3546	**Extraction Lot:**	305037

This Method Blank applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
URSC-RM20.1W-COMP	K1713018-010	J:\MS21\Data\011518\0115F013.D\	01/15/18 20:58
URSC-RM20.1W-COMP	KQ1718398-01	J:\MS21\Data\011518\0115F014.D\	01/15/18 21:26
URSC-RM20.1W-COMP	KQ1718398-02	J:\MS21\Data\011518\0115F015.D\	01/15/18 21:53
URSC-RM20.4E-COMP	K1713018-016	J:\MS21\Data\011518\0115F016.D\	01/15/18 22:21
Lab Control Sample	KQ1718398-03	J:\MS21\Data\011518\0115F021.D\	01/16/18 00:38

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Analyzed:**	01/16/18 00:38
Sample Matrix:	Sediment	**Date Extracted:**	12/15/17

Lab Control Sample Summary
Organochlorine Pesticides by GC/MS/MS

Sample Name:	Lab Control Sample	**Instrument ID:**	K-MSMS-01
Lab Code:	KQ1718398-03	**File ID:**	J:\MS21\Data\011518\0115F021.D\
Analysis Method:	ALS SOP	**Analysis Lot:**	577627
Prep Method:	EPA 3546	**Extraction Lot:**	305037

This Lab Control Sample applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
URSC-RM20.1W-COMP	K1713018-010	J:\MS21\Data\011518\0115F013.D\	01/15/18 20:58
URSC-RM20.1W-COMP	KQ1718398-01	J:\MS21\Data\011518\0115F014.D\	01/15/18 21:26
URSC-RM20.1W-COMP	KQ1718398-02	J:\MS21\Data\011518\0115F015.D\	01/15/18 21:53
URSC-RM20.4E-COMP	K1713018-016	J:\MS21\Data\011518\0115F016.D\	01/15/18 22:21
Method Blank	KQ1718398-04	J:\MS21\Data\011518\0115F022.D\	01/16/18 01:05

ALS Group USA, Corp.
dba ALS Environmental

QC/QC Report

Client: Hart Crowser, Incorporated **Service Request:**K1713018
Project: URSC/150-001-056 **Date Analyzed:**01/15/18 16:52

Tune Summary
Organochlorine Pesticides by GC/MS/MS

File ID: J:\MS21\Data\011518\0115F004.D\ **Analytical Method:** ALS SOP
Instrument ID: K-MSMS-01 **Analysis Lot:** 577627

Sample Name	Lab Code	File ID:	Date Analyzed:	Q
Continuing Calibration Verification	KQ1800767-01	J:\MS21\Data\011518\0115F004.D\	01/15/18 16:52	
URSC-RM20.1W-COMP	K1713018-010	J:\MS21\Data\011518\0115F013.D\	01/15/18 20:58	
URSC-RM20.1W-COMP	KQ1718398-01	J:\MS21\Data\011518\0115F014.D\	01/15/18 21:26	
URSC-RM20.1W-COMP	KQ1718398-02	J:\MS21\Data\011518\0115F015.D\	01/15/18 21:53	
URSC-RM20.4E-COMP	K1713018-016	J:\MS21\Data\011518\0115F016.D\	01/15/18 22:21	
Lab Control Sample	KQ1718398-03	J:\MS21\Data\011518\0115F021.D\	01/16/18 00:38	
Method Blank	KQ1718398-04	J:\MS21\Data\011518\0115F022.D\	01/16/18 01:05	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: Hart Crowser, Incorporated **Service Request:** K1713018
Project: URSC **Calibration Date:** 1/11/2018

Initial Calibration Summary
Organochlorine Pesticides by GC/MS/MS

Calibration ID: KC1800030 **Signal ID:** 1
Instrument ID: K-MSMS-01

#	Lab Code	Sample Name	File Location	Aquisition Date
01	KC1800030-01		J:\MS21\Data\011118\0111F006.D	01/11/2018 13:10
02	KC1800030-02		J:\MS21\Data\011118\0111F007.D	01/11/2018 13:37
03	KC1800030-03		J:\MS21\Data\011118\0111F008.D	01/11/2018 14:04
04	KC1800030-04		J:\MS21\Data\011118\0111F009.D	01/11/2018 14:32
05	KC1800030-05		J:\MS21\Data\011118\0111F010.D	01/11/2018 14:59
06	KC1800030-06		J:\MS21\Data\011118\0111F011.D	01/11/2018 15:26
07	KC1800030-07		J:\MS21\Data\011118\0111F012.D	01/11/2018 15:54
08	KC1800030-08		J:\MS21\Data\011118\0111F013.D	01/11/2018 16:21
09	KC1800030-09		J:\MS21\Data\011118\0111F014.D	01/11/2018 16:49
10	KC1800030-10		J:\MS21\Data\011118\0111F015.D	01/11/2018 17:16

Analyte

2,4'-DDD

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	0.7544	02	1.0	0.697	03	2.0	0.6901	04	5.0	0.7229
05	10	0.6667	06	20	0.7006	07	40	0.7293	08	60	0.7285
09	80	0.7062	10	100	0.7221						

2,4'-DDE

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	0.6635	02	1.0	0.6268	03	2.0	0.6052	04	5.0	0.6352
05	10	0.6026	06	20	0.6222	07	40	0.642	08	60	0.6599
09	80	0.6333	10	100	0.6426						

2,4'-DDT

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	0.7628	02	1.0	0.5904	03	2.0	0.6037	04	5.0	0.6458
05	10	0.6075	06	20	0.6194	07	40	0.6221	08	60	0.6173
09	80	0.616	10	100	0.6365						

4,4'-DDD

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	0.9172	02	1.0	0.7837	03	2.0	0.6965	04	5.0	0.7624
05	10	0.6862	06	20	0.6973	07	40	0.7333	08	60	0.7362
09	80	0.726	10	100	0.7382						

4,4'-DDE

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	0.4896	02	1.0	0.464	03	2.0	0.4147	04	5.0	0.4437
05	10	0.4127	06	20	0.4239	07	40	0.4484	08	60	0.4465
09	80	0.4374	10	100	0.4439						

4,4'-DDT

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	0.7382	02	1.0	0.5423	03	2.0	0.47	04	5.0	0.4819
05	10	0.4532	06	20	0.4708	07	40	0.4962	08	60	0.4876

Client: Hart Crowser, Incorporated **Service Request:** K1713018
Project: URSC **Calibration Date:** 1/11/2018

Initial Calibration Summary
Organochlorine Pesticides by GC/MS/MS

Calibration ID: KC1800030 **Signal ID:** 1
Instrument ID: K-MSMS-01

Analyte

4,4'-DDT

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
09	80	0.4761	10	100	0.5001						

Aldrin

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.266	02	1.0	0.9392	03	2.0	1.011	04	5.0	0.9583
05	10	0.9299	06	20	0.863	07	40	1.011	08	60	0.8972
09	80	0.8853	10	100	0.9189						

alpha-BHC

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.094	02	1.0	0.9104	03	2.0	0.8291	04	5.0	0.8151
05	10	0.7444	06	20	0.7992	07	40	0.8558	08	60	0.8376
09	80	0.8493	10	100	0.912						

alpha-Chlordane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	2.403	02	1.0	2.371	03	2.0	2.255	04	5.0	2.415
05	10	2.087	06	20	2.343	07	40	2.416	08	60	2.417
09	80	2.414	10	100	2.68						

beta-BHC

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.008	02	1.0	1.112	03	2.0	0.8451	04	5.0	0.9823
05	10	0.8673	06	20	0.9804	07	40	0.9946	08	60	0.9102
09	80	0.994	10	100	1.051						

Chlorpyrifos

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.191	02	1.0	1.087	03	2.0	1.034	04	5.0	1.038
05	10	0.9699	06	20	0.9866	07	40	1.065	08	60	1.053
09	80	1.041	10	100	1.122						

cis-Nonachlor

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.493	02	1.0	1.342	03	2.0	1.395	04	5.0	1.344
05	10	1.268	06	20	1.465	07	40	1.548	08	60	1.565
09	80	1.704	10	100	1.982						

delta-BHC

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.068	02	1.0	1.032	03	2.0	0.8342	04	5.0	0.9099
05	10	0.8627	06	20	0.9546	07	40	0.9833	08	60	0.9431
09	80	1.041	10	100	1.106						

Dieldrin

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.577	02	1.0	1.132	03	2.0	0.9834	04	5.0	1.062

Client: Hart Crowser, Incorporated **Service Request:** K1713018
Project: URSC **Calibration Date:** 1/11/2018

Initial Calibration Summary
Organochlorine Pesticides by GC/MS/MS

Calibration ID: KC1800030 **Signal ID:** 1
Instrument ID: K-MSMS-01

Analyte

Dieldrin

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
05	10	0.9566	06	20	1.142	07	40	1.047	08	60	1.091
09	80	1.006	10	100	1.057						

Endosulfan I

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	1.0	0.6424	03	2.0	0.4275	04	5.0	0.577	05	10	0.4798
06	20	0.5326	07	40	0.4651	08	60	0.4692	09	80	0.4403
10	100	0.4478									

Endosulfan II

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	1.0	0.5022	03	2.0	0.5726	04	5.0	0.6274	05	10	0.5272
06	20	0.503	07	40	0.5005	08	60	0.4993	09	80	0.525

Endosulfan Sulfate

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	6.283	02	1.0	5.545	03	2.0	5.036	04	5.0	5.623
05	10	5.466	06	20	5.856	07	40	5.886	08	60	5.939
09	80	6.165	10	100	6.662						

Endrin

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.308	02	1.0	0.9688	03	2.0	0.9136	04	5.0	0.9473
05	10	0.9187	06	20	0.8665	07	40	0.8749	08	60	0.8658
09	80	0.8337	10	100	0.8658						

Endrin Aldehyde

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	1.0	0.5434	03	2.0	0.5059	04	5.0	0.388	05	10	0.526
06	20	0.6293	07	40	0.5349	08	60	0.5218	09	80	0.5761
10	100	0.6202									

Endrin Ketone

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	1.0	1.202	03	2.0	0.8066	04	5.0	0.9275	05	10	0.7796
06	20	0.7989	07	40	0.8184	08	60	0.8085	09	80	0.8085
10	100	0.8451									

gamma-BHC (Lindane)

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	0.9962	02	1.0	0.7752	03	2.0	0.7247	04	5.0	0.701
05	10	0.6206	06	20	0.6752	07	40	0.689	08	60	0.672
09	80	0.679	10	100	0.7179						

gamma-Chlordane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	3.051	02	1.0	2.801	03	2.0	2.229	04	5.0	2.495

Client: Hart Crowser, Incorporated **Service Request:** K1713018
Project: URSC **Calibration Date:** 1/11/2018

Initial Calibration Summary
Organochlorine Pesticides by GC/MS/MS

Calibration ID: KC1800030 **Signal ID:** 1
Instrument ID: K-MSMS-01

Analyte

gamma-Chlordane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
05	10	2.359	06	20	2.629	07	40	2.655	08	60	2.632
09	80	2.688	10	100	2.939						

Heptachlor

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.333	02	1.0	1.018	03	2.0	0.8798	04	5.0	0.9662
05	10	0.9558	06	20	0.9627	07	40	0.9444	08	60	0.9392
09	80	0.8984	10	100	0.9477						

Heptachlor Epoxide

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.323	02	1.0	1.197	03	2.0	1.128	04	5.0	1.084
05	10	1.075	06	20	1.079	07	40	1.124	08	60	1.113
09	80	1.04	10	100	1.106						

Hexachlorobenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.237	02	1.0	1.316	03	2.0	1.067	04	5.0	1.092
05	10	1.059	06	20	1.062	07	40	1.058	08	60	1.015
09	80	0.9474	10	100	0.9742						

Isodrin

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	1.0	1.258	03	2.0	0.9888	04	5.0	1.097	05	10	0.9876
06	20	1.003	07	40	1.068	08	60	1.048	09	80	1.005
10	100	1.067									

Methoxychlor

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.095	02	1.0	0.8758	03	2.0	0.8413	04	5.0	0.8656
05	10	0.861	06	20	0.8767	07	40	0.9113	08	60	0.9208
09	80	0.9111	10	100	0.9777						

Mirex

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.271	02	1.0	1.127	03	2.0	1.054	04	5.0	1.041
05	10	0.9652	06	20	1.011	07	40	0.9428	08	60	0.9247
09	80	0.8564	10	100	0.8516						

Octachlorostyrene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	1.0	0.7817	03	2.0	0.7101	04	5.0	0.7516	05	10	0.7182
06	20	0.7267	07	40	0.747	08	60	0.7156	09	80	0.6836
10	100	0.7186									

Client: Hart Crowser, Incorporated **Service Request:** K1713018
Project: URSC **Calibration Date:** 1/11/2018

Initial Calibration Summary
Organochlorine Pesticides by GC/MS/MS

Calibration ID: KC1800030 **Signal ID:** 1
Instrument ID: K-MSMS-01

Analyte

Oxychlordane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	1.0	0.9567	03	2.0	1.267	04	5.0	1.257	05	10	1.042
06	20	1.137	07	40	1.103	08	60	1.112	09	80	1.099
10	100	1.144									

trans-Nonachlor

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.635	02	1.0	1.866	03	2.0	1.7	04	5.0	1.701
05	10	1.567	06	20	1.799	07	40	1.777	08	60	1.772
09	80	1.858	10	100	2.087						

S_4,4'-DDT-d4

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	5	3.028	02	5	2.999	03	5	2.907	04	5	2.887
05	5	2.95	06	5	2.975	07	5	3.096	08	5	2.644
09	5	2.667	10	5	2.486						

S_4,4'DDD-d4

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	5	4.716	02	5	4.638	03	5	4.541	04	5	4.518
05	5	4.64	06	5	4.575	07	5	4.505	08	5	3.827
09	5	3.711	10	5	3.507						

S_Aldrin-13C12

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	20	0.2734	02	20	0.2763	03	20	0.2734	04	20	0.2721
05	20	0.2645	06	20	0.2721	07	20	0.2335	08	20	0.2166
09	20	0.1842	10	20	0.1614						

S_Chlorpyrifos-d10

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	20	0.8104	02	20	0.8162	03	20	0.7911	04	20	0.824
05	20	0.8184	06	20	0.8227	07	20	0.8202	08	20	0.7266
09	20	0.7033	10	20	0.6241						

S_Endrin-13C12

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	20	0.1334	02	20	0.1331	03	20	0.1292	04	20	0.1322
05	20	0.1316	06	20	0.1264	07	20	0.1308	08	20	0.113
09	20	0.1076	10	20	0.09654						

S_Endrinket13C12

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	20	0.09657	02	20	0.09094	03	20	0.09989	04	20	0.09287
05	20	0.09249	06	20	0.09517	07	20	0.09997	08	20	0.08433
09	20	0.08567	10	20	0.07947						

Client: Hart Crowser, Incorporated **Service Request:** K1713018
Project: URSC **Calibration Date:** 1/11/2018

Initial Calibration Summary
Organochlorine Pesticides by GC/MS/MS

Calibration ID: KC1800030 **Signal ID:** 1
Instrument ID: K-MSMS-01

Analyte

S_GBHCD6

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	20	0.5321	02	20	0.5256	03	20	0.5417	04	20	0.5215
05	20	0.5384	06	20	0.4824	07	20	0.4663	08	20	0.4213
09	20	0.3577	10	20	0.3073						

S_HXCBZ13C6

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	20	1.232	02	20	1.217	03	20	1.278	04	20	1.248
05	20	1.264	06	20	1.203	07	20	1.195	08	20	1.131
09	20	1.014	10	20	0.9365						

S_Heptachlor-13C10

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	20	0.5505	02	20	0.5374	03	20	0.5581	04	20	0.546
05	20	0.535	06	20	0.5252	07	20	0.5106	08	20	0.4596
09	20	0.4111	10	20	0.3592						

S_Heptachlrepox13C10

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	20	0.3063	02	20	0.3052	03	20	0.3114	04	20	0.3144
05	20	0.3078	06	20	0.3032	07	20	0.2832	08	20	0.2501
09	20	0.2309	10	20	0.1954						

S_Isodrin-13C12

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	20	0.2726	02	20	0.2578	03	20	0.2626	04	20	0.2564
05	20	0.2552	06	20	0.2427	07	20	0.2169	08	20	0.1967
09	20	0.1625	10	20	0.1364						

S_Mirex-13C10

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	5	2.275	02	5	2.242	03	5	2.252	04	5	2.343
05	5	2.42	06	5	2.383	07	5	2.619	08	5	2.302
09	5	2.437	10	5	2.404						

S_Mxchlord-d6

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	20	1.295	02	20	1.264	03	20	1.216	04	20	1.236
05	20	1.253	06	20	1.232	07	20	1.229	08	20	1.063
09	20	1.083	10	20	0.9857						

S_Ocstyrene13C8

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	20	0.7863	02	20	0.7646	03	20	0.7839	04	20	0.7941
05	20	0.8159	06	20	0.7927	07	20	0.7887	08	20	0.7163
09	20	0.6841	10	20	0.6055						

Client: Hart Crowser, Incorporated
Project: URSC

Service Request: K1713018
Calibration Date: 1/11/2018

Initial Calibration Summary
Organochlorine Pesticides by GC/MS/MS

Calibration ID: KC1800030
Instrument ID: K-MSMS-01

Signal ID: 1

Analyte

S_Oxychlordane-13C10

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	20	0.2216	02	20	0.2126	03	20	0.2118	04	20	0.2145
05	20	0.2201	06	20	0.2024	07	20	0.1934	08	20	0.1733
09	20	0.1515	10	20	0.1268						

Client: Hart Crowser, Incorporated
Project: URSC

Service Request: K1713018
Calibration Date: 1/11/2018

Initial Calibration Summary
Organochlorine Pesticides by GC/MS/MS

Calibration ID: KC1800030
Instrument ID: K-MSMS-01

Signal ID: 1

		Calibration Evaluation				Calibration Evaluation	
Analyte Name	Compound Type	Fit Type	Eval	Eval Result	Control Criteria	Average RRF	Minimum RRF
2,4'-DDD	TRG	Average RF	% RSD	3.5	≤20	0.7118	0.01
2,4'-DDE	TRG	Average RF	% RSD	3.2	≤20	0.6333	0.01
2,4'-DDT	TRG	Average RF	% RSD	7.7	≤20	0.6321	0.01
4,4'-DDD	TRG	Average RF	% RSD	8.9	≤20	0.7477	0.01
4,4'-DDE	TRG	Average RF	% RSD	5.2	≤20	0.4425	0.01
4,4'-DDT	TRG	Average RF	% RSD	16.2	≤20	0.5116	0.01
Aldrin	TRG	Average RF	% RSD	11.9	≤20	0.9679	0.01
alpha-BHC	TRG	Average RF	% RSD	10.9	≤20	0.8647	0.01
alpha-Chlordane	TRG	Average RF	% RSD	6.2	≤20	2.38	0.01
beta-BHC	TRG	Average RF	% RSD	8.3	≤20	0.9745	0.01
Chlorpyrifos	TRG	Average RF	% RSD	6.0	≤20	1.059	0.01
cis-Nonachlor	TRG	Average RF	% RSD	13.9	≤20	1.511	0.01
delta-BHC	TRG	Average RF	% RSD	9.2	≤20	0.9735	0.01
Dieldrin	TRG	Average RF	% RSD	15.9	≤20	1.105	0.01
Endosulfan I	TRG	Average RF	% RSD	14.4	≤20	0.498	0.01
Endosulfan II	TRG	Quadratic	COD	0.9988	≥	0.5322	0.01
Endosulfan Sulfate	TRG	Average RF	% RSD	7.9	≤20	5.846	0.01
Endrin	TRG	Average RF	% RSD	14.6	≤20	0.9363	0.01
Endrin Aldehyde	TRG	Average RF	% RSD	13.2	≤20	0.5384	0.01
Endrin Ketone	TRG	Average RF	% RSD	15.4	≤20	0.8661	0.01
gamma-BHC (Lindane)	TRG	Average RF	% RSD	14.3	≤20	0.7251	0.01
gamma-Chlordane	TRG	Average RF	% RSD	9.4	≤20	2.648	0.01
Heptachlor	TRG	Average RF	% RSD	13.0	≤20	0.9845	0.01
Heptachlor Epoxide	TRG	Average RF	% RSD	7.2	≤20	1.127	0.01
Hexachlorobenzene	TRG	Average RF	% RSD	10.4	≤20	1.083	0.01
Isodrin	TRG	Average RF	% RSD	8.0	≤20	1.058	0.01
Methoxychlor	TRG	Average RF	% RSD	8.2	≤20	0.9137	0.01
Mirex	TRG	Average RF	% RSD	12.7	≤20	1.004	0.01
Octachlorostyrene	TRG	Average RF	% RSD	3.9	≤20	0.7281	0.01
Oxychlordane	TRG	Average RF	% RSD	8.6	≤20	1.124	0.01
trans-Nonachlor	TRG	Average RF	% RSD	8.1	≤20	1.776	0.01
S_4,4'-DDT-d4	SURR	Average RF	% RSD	6.9	≤20	2.864	0.01
S_4,4'DDD-d4	SURR	Average RF	% RSD	10.4	≤20	4.318	0.01
S_Aldrin-13C12	SURR	Average RF	% RSD	17.4	≤20	0.2428	0.01

Client: Hart Crowser, Incorporated
Project: URSC

Service Request: K1713018
Calibration Date: 1/11/2018

Initial Calibration Summary
Organochlorine Pesticides by GC/MS/MS

Calibration ID: KC1800030
Instrument ID: K-MSMS-01

Signal ID: 1

		Calibration Evaluation				Calibration Evaluation	
Analyte Name	Compound Type	Fit Type	Eval	Eval Result	Control Criteria	Average RRF	Minimum RRF
S_Chlorpyrifos-d10	SURR	Average RF	% RSD	8.8	≤20	0.7757	0.01
S_Endrin-13C12	SURR	Average RF	% RSD	10.5	≤20	0.1234	0.01
S_Endrinket13C12	SURR	Average RF	% RSD	7.4	≤20	0.09174	0.01
S_GBHCD6	SURR	Average RF	% RSD	17.5	≤20	0.4694	0.01
S_HXCBZ13C6	SURR	Average RF	% RSD	9.6	≤20	1.172	0.01
S_Heptachlor-13C10	SURR	Average RF	% RSD	13.5	≤20	0.4993	0.01
S_Heptachlrepox13C10	SURR	Average RF	% RSD	14.7	≤20	0.2808	0.01
S_Isodrin-13C12	SURR	Average RF	% RSD	20.6	≤20	0.226	0.01
S_Mirex-13C10	SURR	Average RF	% RSD	4.8	≤20	2.368	0.01
S_Mxchlord-d6	SURR	Average RF	% RSD	8.7	≤20	1.186	0.01
S_Ocstyrene13C8	SURR	Average RF	% RSD	8.7	≤20	0.7532	0.01
S_Oxychlordane-13C10	SURR	Average RF	% RSD	16.7	≤20	0.1928	0.01

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QA/QC Report

Client: Hart Crowser, Incorporated **Service Request:** K1713018
Project: URSC **Calibration Date:** 1/11/2018

Initial Calibration Verification Summary
Organochlorine Pesticides by GC/MS/MS

Calibration ID: KC1800030 **Signal ID:** 1
Instrument ID: K-MSMS-01

#	Lab Code	Sample Name	File Location	Aquisition Date
11	KC1800030-11		J:\MS21\Data\011118\0111F016.D	01/11/2018 17:44

Analyte Name	Expected	Result	Average RF	SSV RF	% D	Criteria	Curve Fit
2,4'-DDD	20.0	18.2	7.118E-1	6.466E-1	-9.160	±25	Average RF
2,4'-DDE	20.0	18.8	6.333E-1	5.963E-1	-5.844	±25	Average RF
2,4'-DDT	20.0	16.7	6.321E-1	5.292E-1	-16.290	±25	Average RF
4,4'-DDD	20.0	18.5	7.477E-1	6.935E-1	-7.251	±25	Average RF
4,4'-DDE	20.0	19.8	4.425E-1	4.375E-1	-1.121	±25	Average RF
4,4'-DDT	20.0	17.3	5.116E-1	4.417E-1	-13.662	±25	Average RF
Aldrin	20.0	17.6	9.679E-1	8.526E-1	-11.916	±25	Average RF
alpha-BHC	20.0	17.3	8.647E-1	7.498E-1	-13.279	±25	Average RF
alpha-Chlordane	20.0	18.9	2.38E0	2.252E0	-5.370	±25	Average RF
beta-BHC	20.0	20.0	9.745E-1	9.738E-1	-0.069	±25	Average RF
Chlorpyrifos	20.0	16.4	1.059E0	8.664E-1	-18.187	±25	Average RF
cis-Nonachlor	20.0	17.7	1.511E0	1.336E0	-11.540	±25	Average RF
delta-BHC	20.0	18.7	9.735E-1	9.096E-1	-6.567	±25	Average RF
Dieldrin	20.0	17.4	1.105E0	9.619E-1	-12.978	±25	Average RF
Endosulfan I	20.0	18.6	4.98E-1	4.623E-1	-7.168	±25	Average RF
Endosulfan II	20.0	16.3	5.322E-1	4.168E-1	-18.469	±25	Quadratic
Endosulfan Sulfate	20.0	18.3	5.846E0	5.342E0	-8.624	±25	Average RF
Endrin	20.0	17.0	9.363E-1	7.97E-1	-14.875	±25	Average RF
Endrin Aldehyde	20.0	20.1	5.384E-1	5.405E-1	0.388	±25	Average RF
Endrin Ketone	20.0	19.0	8.661E-1	8.226E-1	-5.025	±25	Average RF
gamma-BHC (Lindane)	20.0	17.8	7.251E-1	6.451E-1	-11.028	±25	Average RF
gamma-Chlordane	20.0	19.2	2.648E0	2.542E0	-3.991	±25	Average RF
Heptachlor	20.0	19.3	9.845E-1	9.488E-1	-3.622	±25	Average RF
Heptachlor Epoxide	20.0	17.9	1.127E0	1.01E0	-10.353	±25	Average RF
Hexachlorobenzene	20.0	16.9	1.083E0	9.167E-1	-15.342	±25	Average RF
Isodrin	20.0	19.1	1.058E0	1.012E0	-4.315	±25	Average RF
Methoxychlor	20.0	18.4	9.137E-1	8.411E-1	-7.944	±25	Average RF
Mirex	20.0	17.8	1.004E0	8.946E-1	-10.934	±25	Average RF
Octachlorostyrene	20.0	16.1	7.281E-1	5.853E-1	-19.609	±25	Average RF
Oxychlordane	20.0	17.5	1.124E0	9.811E-1	-12.719	±25	Average RF
trans-Nonachlor	20.0	17.6	1.776E0	1.567E0	-11.776	±25	Average RF
S_4,4'-DDT-d4	5.00	5.02	2.864E0	2.877E0	0.469	±30	Average RF
S_4,4'DDD-d4	5.00	4.88	4.318E0	4.21E0	-2.497	±30	Average RF
S_Aldrin-13C12	20.0	21.2	2.428E-1	2.572E-1	5.94	±25	Average RF
S_Chlorpyrifos-d10	20.0	21.7	7.757E-1	8.428E-1	8.65	±25	Average RF

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QA/QC Report

Client: Hart Crowser, Incorporated **Service Request:** K1713018
Project: URSC **Calibration Date:** 1/11/2018

Initial Calibration Verification Summary
Organochlorine Pesticides by GC/MS/MS

Calibration ID: KC1800030 **Signal ID:** 1
Instrument ID: K-MSMS-01

#	Lab Code	Sample Name	File Location	Aquisition Date
11	KC1800030-11		J:\MS21\Data\011118\0111F016.D	01/11/2018 17:44

Analyte Name	Expected	Result	Average RF	SSV RF	% D	Criteria	Curve Fit
S_Endrin-13C12	20.0	20.9	1.234E-1	1.287E-1	4.29	±30	Average RF
S_Endrinket13C12	20.0	19.5	9.174E-2	8.967E-2	-2.250	±25	Average RF
S_GBHCD6	20.0	19.1	4.694E-1	4.478E-1	-4.600	±30	Average RF
S_HXCBZ13C6	20.0	20.2	1.172E0	1.182E0	0.870	±30	Average RF
S_Heptachlor-13C10	20.0	20.3	4.993E-1	5.068E-1	1.51	±25	Average RF
S_Heptachlrepox13C10	20.0	21.3	2.808E-1	2.996E-1	6.71	±30	Average RF
S_Isodrin-13C12	20.0	20.1	2.26E-1	2.268E-1	0.368	±25	Average RF
S_Mirex-13C10	5.00	5.25	2.368E0	2.486E0	5.01	±30	Average RF
S_Mxchlord-d6	20.0	20.1	1.186E0	1.19E0	0.332	±25	Average RF
S_Ocstyrene13C8	20.0	21.5	7.532E-1	8.101E-1	7.55	±25	Average RF
S_Oxychlordane-13C10	20.0	20.4	1.928E-1	1.962E-1	1.76	±30	Average RF

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Analyzed:**	01/15/18 16:52

Continuing Calibration Verification (CCV) Summary
Organochlorine Pesticides by GC/MS/MS

Analysis Method:	ALS SOP	**Calibration Date:**	1/11/2018
File ID:	J:\MS21\Data\011518\0115F004.D\	**Calibration ID:**	KC1800030
		Analysis Lot:	577627
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
2,4'-DDD	20.0	20.0	0.7118	0.7106	-0.2	NA	±25	Average RF
2,4'-DDE	20.0	19.4	0.6333	0.6153	-2.8	NA	±25	Average RF
2,4'-DDT	20.0	18.6	0.6321	0.5865	-7.2	NA	±25	Average RF
4,4'-DDD	20.0	19.7	0.7477	0.7376	-1.4	NA	±25	Average RF
4,4'-DDE	20.0	18.9	0.4425	0.418	-5.5	NA	±25	Average RF
4,4'-DDT	20.0	19.1	0.5116	0.4875	-4.7	NA	±25	Average RF
Aldrin	20.0	20.8	0.9679	1.0084	4.2	NA	±25	Average RF
alpha-BHC	20.0	19.9	0.8647	0.8611	-0.4	NA	±25	Average RF
alpha-Chlordane	20.0	16.8	2.3802	2.0003	-16.0	NA	±25	Average RF
beta-BHC	20.0	19.0	0.9745	0.9277	-4.8	NA	±25	Average RF
Chlorpyrifos	20.0	19.2	1.059	1.0144	-4.2	NA	±25	Average RF
cis-Nonachlor	20.0	19.5	1.5107	1.4763	-2.3	NA	±25	Average RF
delta-BHC	20.0	19.3	0.9735	0.9372	-3.7	NA	±25	Average RF
Dieldrin	20.0	16.4	1.1053	0.9048	-18.1	NA	±25	Average RF
Endosulfan I	20.0	15.9	0.498	0.3951	-20.7	NA	±25	Average RF
Endosulfan II	20.0	16.5	0.5322	0.4213	NA	-17.6	±25	Quadratic
Endosulfan Sulfate	20.0	18.3	5.8462	5.3614	-8.3	NA	±25	Average RF
Endrin	20.0	17.0	0.9363	0.7975	-14.8	NA	±25	Average RF
Endrin Aldehyde	20.0	15.4	0.5384	0.4139	-23.1	NA	±25	Average RF
Endrin Ketone	20.0	21.2	0.8661	0.9165	5.8	NA	±25	Average RF
gamma-BHC (Lindane)	20.0	19.1	0.7251	0.6933	-4.4	NA	±25	Average RF
gamma-Chlordane	20.0	16.6	2.6479	2.1942	-17.1	NA	±25	Average RF
Heptachlor	20.0	19.1	0.9845	0.9408	-4.4	NA	±25	Average RF
Heptachlor Epoxide	20.0	21.5	1.1269	1.2102	7.4	NA	±25	Average RF
Hexachlorobenzene	20.0	20.7	1.0828	1.1225	3.7	NA	±25	Average RF
Isodrin	20.0	20.6	1.0581	1.0887	2.9	NA	±25	Average RF
Methoxychlor	20.0	18.9	0.9137	0.8639	-5.4	NA	±25	Average RF
Mirex	20.0	20.0	1.0045	1.0068	0.2	NA	±25	Average RF
Octachlorostyrene	20.0	21.0	0.7281	0.764	4.9	NA	±25	Average RF
Oxychlordane	20.0	17.7	1.1241	0.9967	-11.3	NA	±25	Average RF
trans-Nonachlor	20.0	18.7	1.7762	1.6634	-6.4	NA	±25	Average RF
S_4,4'-DDT-d4	5.00	7.03	2.864	4.0293	40.7*	NA	±30	Average RF
S_4,4'DDD-d4	5.00	5.59	4.3176	4.8251	11.8	NA	±30	Average RF
S_Aldrin-13C12	20.0	21.2	0.2428	0.2569	5.8	NA	±30	Average RF
S_Chlorpyrifos-d10	20.0	24.1	0.7757	0.9359	20.6	NA	±30	Average RF
S_Endrin-13C12	20.0	24.8	0.1234	0.1527	23.8	NA	±30	Average RF
S_Endrinket13C12	20.0	21.1	0.0917	0.0967	5.4	NA	±30	Average RF
S_GBHCD6	20.0	22.9	0.4694	0.5382	14.7	NA	±30	Average RF
S_HXCBZ13C6	20.0	20.0	1.1718	1.1727	0.1	NA	±30	Average RF
S_Heptachlor-13C10	20.0	28.1	0.4993	0.7023	40.7*	NA	±30	Average RF
S_Heptachlrepox13C10	20.0	19.9	0.2808	0.2795	-0.5	NA	±30	Average RF
S_Isodrin-13C12	20.0	21.7	0.226	0.2449	8.4	NA	±30	Average RF

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056

Service Request: K1713018
Date Analyzed: 01/15/18 16:52

Continuing Calibration Verification (CCV) Summary
Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP
File ID: J:\MS21\Data\011518\0115F004.D\

Calibration Date: 1/11/2018
Calibration ID: KC1800030
Analysis Lot: 577627
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
S_Mirex-13C10	5.00	5.17	2.3678	2.4481	3.4	NA	±30	Average RF
S_Mxchlord-d6	20.0	30.2	1.1857	1.7922	51.2*	NA	±30	Average RF
S_Ocstyrene13C8	20.0	20.0	0.7532	0.7533	0.0	NA	±30	Average RF
S_Oxychlordane-13C10	20.0	23.4	0.1928	0.2253	16.9	NA	±30	Average RF

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QA/QC Report

Client: Hart Crowser, Incorporated **Service Request:**K1713018
Project: URSC/150-001-056

Analysis Run Log
Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP **Analysis Lot:**577627
Instrument ID:K-MSMS-01

Raw Data File	Sample Name	Lab Code	Date Analyzed	Time Analyzed	Q
J:\MS21\Data\011518\0115F003.D\	Continuing Calibration Verification	KQ1800767-01	1/15/2018	16:25:49	
J:\MS21\Data\011518\0115F004.D\	Continuing Calibration Verification	KQ1800767-01	1/15/2018	16:52:45	
J:\MS21\Data\011518\0115F006.D\	ZZZZZZZ	ZZZZZZZ	1/15/2018	17:47:32	
J:\MS21\Data\011518\0115F007.D\	ZZZZZZZ	ZZZZZZZ	1/15/2018	18:14:51	
J:\MS21\Data\011518\0115F008.D\	ZZZZZZZ	ZZZZZZZ	1/15/2018	18:42:09	
J:\MS21\Data\011518\0115F009.D\	ZZZZZZZ	ZZZZZZZ	1/15/2018	19:09:27	
J:\MS21\Data\011518\0115F010.D\	ZZZZZZZ	ZZZZZZZ	1/15/2018	19:36:45	
J:\MS21\Data\011518\0115F011.D\	ZZZZZZZ	ZZZZZZZ	1/15/2018	20:04:04	
J:\MS21\Data\011518\0115F012.D\	ZZZZZZZ	ZZZZZZZ	1/15/2018	20:31:31	
J:\MS21\Data\011518\0115F013.D\	URSC-RM20.1W-COMP	K1713018-010	1/15/2018	20:58:43	
J:\MS21\Data\011518\0115F014.D\	URSC-RM20.1W-COMP MS	KQ1718398-01	1/15/2018	21:26:00	
J:\MS21\Data\011518\0115F015.D\	URSC-RM20.1W-COMP DMS	KQ1718398-02	1/15/2018	21:53:23	
J:\MS21\Data\011518\0115F016.D\	URSC-RM20.4E-COMP	K1713018-016	1/15/2018	22:21:47	
J:\MS21\Data\011518\0115F017.D\	ZZZZZZZ	ZZZZZZZ	1/15/2018	22:49:05	
J:\MS21\Data\011518\0115F018.D\	ZZZZZZZ	ZZZZZZZ	1/15/2018	23:16:31	
J:\MS21\Data\011518\0115F019.D\	ZZZZZZZ	ZZZZZZZ	1/15/2018	23:43:54	
J:\MS21\Data\011518\0115F020.D\	ZZZZZZZ	ZZZZZZZ	1/16/2018	00:11:12	
J:\MS21\Data\011518\0115F021.D\	Lab Control Sample	KQ1718398-03	1/16/2018	00:38:39	
J:\MS21\Data\011518\0115F022.D\	Method Blank	KQ1718398-04	1/16/2018	01:05:57	

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Prep Summary Report

Client: Hart Crowser, Incorporated **Service Request:**K1713018
Project: URSC/150-001-056
Sample Matrix: Sediment

Organochlorine Pesticides by GC/MS/MS

Prep Method: EPA 3546 **Extraction Lot:**305037
Analytical Method: ALS SOP

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Amount	Percent Solids
URSC-RM20.1W-COMP	K1713018-010	12/1/17	12/4/17	20.471 g	1 mL	60.6
URSC-RM20.4E-COMP	K1713018-016	12/1/17	12/4/17	20.418 g	1 mL	71.3
Matrix Spike	KQ1718398-01MS	12/1/17	12/4/17	20.036 g	1 mL	60.6
Duplicate Matrix Spike	KQ1718398-02DMS	12/1/17	12/4/17	20.131 g	1 mL	60.6
Lab Control Sample	KQ1718398-03LCS	NA	NA	10 g	1 mL	
Method Blank	KQ1718398-04MB	NA	NA	10 g	1 mL	

Diesel and Residual Range Organics - Silica Gel Treated

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Client: Hart Crowser, Incorporated **Service Request:** K1713018
Project: URSC/150-001-056

Cover Page - Organic Analysis Data Package
Diesel and Residual Range Organics - Silica Gel Treated

Sample Name	Lab Code	Date Collected	Date Received
URSC-RM20.1W-COMP	K1713018-010	12/01/2017	12/04/2017
URSC-RM20.4E-COMP	K1713018-016	12/01/2017	12/04/2017
URSC-RM20.1W-COMP	KWG1711062-1	12/01/2017	12/04/2017

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Analytical Results

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	12/01/2017
Sample Matrix:	Sediment	**Date Received:**	12/04/2017

Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	URSC-RM20.1W-COMP	**Units:**	mg/Kg
Lab Code:	K1713018-010	**Basis:**	Dry
Extraction Method:	EPA 3550B	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**12**	J	42	3.0	1	12/15/17	12/18/17	KWG1711062	
Residual Range Organics (RRO)	**69**	J	170	6.5	1	12/15/17	12/18/17	KWG1711062	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	103	50-150	12/18/17	Acceptable
n-Triacontane	96	50-150	12/18/17	Acceptable

Comments:

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Analytical Results

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	12/01/2017
Sample Matrix:	Sediment	**Date Received:**	12/04/2017

Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	URSC-RM20.4E-COMP	**Units:**	mg/Kg
Lab Code:	K1713018-016	**Basis:**	Dry
Extraction Method:	EPA 3550B	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**3.7**	J	35	2.5	1	12/15/17	12/18/17	KWG1711062	
Residual Range Organics (RRO)	**15**	J	140	5.4	1	12/15/17	12/18/17	KWG1711062	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	109	50-150	12/18/17	Acceptable
n-Triacontane	100	50-150	12/18/17	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA

Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	Method Blank	**Units:**	mg/Kg
Lab Code:	KWG1711062-3	**Basis:**	Dry
Extraction Method:	EPA 3550B	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**2.3**	J	25	1.8	1	12/15/17	12/18/17	KWG1711062	
Residual Range Organics (RRO)	**7.4**	J	99	3.9	1	12/15/17	12/18/17	KWG1711062	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	105	50-150	12/18/17	Acceptable
n-Triacontane	98	50-150	12/18/17	Acceptable

Comments:

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056
Sample Matrix: Sediment
Service Request: K1713018

Surrogate Recovery Summary
Diesel and Residual Range Organics - Silica Gel Treated

Extraction Method: EPA 3550B
Analysis Method: NWTPH-Dx
Units: Percent
Level: Low

Sample Name	Lab Code	Sur1	Sur2
URSC-RM20.1W-COMP	K1713018-010	103	96
URSC-RM20.4E-COMP	K1713018-016	109	100
URSC-RM20.1W-COMPDUP	KWG1711062-1	106	99
Method Blank	KWG1711062-3	105	98
Lab Control Sample	KWG1711062-2	111	97

Surrogate Recovery Control Limits (%)

Sur1	=	o-Terphenyl	50-150
Sur2	=	n-Triacontane	50-150

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Extracted:**	12/15/2017
Sample Matrix:	Sediment	**Date Analyzed:**	12/18/2017

Duplicate Sample Summary
Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	URSC-RM20.1W-COMP	**Units:**	mg/Kg
Lab Code:	K1713018-010	**Basis:**	Dry
Extraction Method:	EPA 3550B	**Level:**	Low
Analysis Method:	NWTPH-Dx	**Extraction Lot:**	KWG1711062

				URSC-RM20.1W-COMPDUP KWG1711062-1 Duplicate Sample			
Analyte Name	**MRL**	**MDL**	**Sample Result**	**Result**	**Average**	**Relative Percent Difference**	**RPD Limit**
Diesel Range Organics (DRO)	42	3.0	12	11	12	6 #	40
Residual Range Organics (RRO)	170	6.5	69	66	67	5 #	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Extracted:**	12/15/2017
Sample Matrix:	Sediment	**Date Analyzed:**	12/18/2017

Lab Control Spike Summary
Diesel and Residual Range Organics - Silica Gel Treated

Extraction Method:	EPA 3550B	**Units:**	mg/Kg
Analysis Method:	NWTPH-Dx	**Basis:**	Dry
		Level:	Low
		Extraction Lot:	KWG1711062

	Lab Control Sample KWG1711062-2 Lab Control Spike			
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
Diesel Range Organics (DRO)	260	267	97	42-134
Residual Range Organics (RRO)	151	133	113	48-141

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Extracted:**	12/15/2017
Sample Matrix:	Sediment	**Date Analyzed:**	12/18/2017
		Time Analyzed:	15:41

Method Blank Summary
Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	Method Blank	**Instrument ID:**	GC21
Lab Code:	KWG1711062-3	**File ID:**	J:\GC21\DATA\121817F\1218021.D
Extraction Method:	EPA 3550B	**Level:**	Low
Analysis Method:	NWTPH-Dx	**Extraction Lot:**	KWG1711062

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1711062-2	J:\GC21\DATA\121817F\1218020.D	12/18/17	15:20
URSC-RM20.1W-COMP	K1713018-010	J:\GC21\DATA\121817F\1218022.D	12/18/17	16:03
URSC-RM20.1W-COMPDUP	KWG1711062-1	J:\GC21\DATA\121817F\1218023.D	12/18/17	16:25
URSC-RM20.4E-COMP	K1713018-016	J:\GC21\DATA\121817F\1218024.D	12/18/17	16:46

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Extracted:**	12/15/2017
Sample Matrix:	Sediment	**Date Analyzed:**	12/18/2017
		Time Analyzed:	15:20

Lab Control Sample Summary
Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	Lab Control Sample	**Instrument ID:**	GC21
Lab Code:	KWG1711062-2	**File ID:**	J:\GC21\DATA\121817F\1218020.D
Extraction Method:	EPA 3550B	**Level:**	Low
Analysis Method:	NWTPH-Dx	**Extraction Lot:**	KWG1711062

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1711062-3	J:\GC21\DATA\121817F\1218021.D	12/18/17	15:41
URSC-RM20.1W-COMP	K1713018-010	J:\GC21\DATA\121817F\1218022.D	12/18/17	16:03
URSC-RM20.1W-COMPDUP	KWG1711062-1	J:\GC21\DATA\121817F\1218023.D	12/18/17	16:25
URSC-RM20.4E-COMP	K1713018-016	J:\GC21\DATA\121817F\1218024.D	12/18/17	16:46

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: Hart Crowser, Incorporated **Service Request:** K1713018
Project: URSC/150-001-056 **Calibration Date:** 08/22/2017

Initial Calibration Summary
Diesel and Residual Range Organics - Silica Gel Treated

Calibration ID: CAL15584 **Column:** ZB-1
Instrument ID: GC21

Level ID	File ID	Level ID	File ID
A	J:\GC21\DATA\082217F\0822F052.D	J	J:\GC21\DATA\082317F\0823004.D
B	J:\GC21\DATA\082217F\0822F056.D	K	J:\GC21\DATA\101817F\1018206.D
C	J:\GC21\DATA\082217F\0822F058.D	L	J:\GC21\DATA\101817F\1018207.D
D	J:\GC21\DATA\082217F\0822F060.D	M	J:\GC21\DATA\101817F\1018209.D
E	J:\GC21\DATA\082217F\0822F068.D	N	J:\GC21\DATA\101817F\1018210.D
F	J:\GC21\DATA\082217F\0822F070.D	O	J:\GC21\DATA\101817F\1018211.D
G	J:\GC21\DATA\082217F\0822F072.D	P	J:\GC21\DATA\101817F\1018212.D
H	J:\GC21\DATA\082217F\0822F074.D	Q	J:\GC21\DATA\101817F\1018213.D
I	J:\GC21\DATA\082217F\0822F076.D		

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Diesel Range Organics (DRO)															
	K	20	1520	L	50	1250	M	500	1460	N	2000	1170	O	5000	1370
	P	20000	1340	Q	50000	1270									
Residual Range Organics (RRO)													E	50	802
	F	200	672	G	500	647	H	2000	635	I	5000	628			
o-Terphenyl															
	K	1.0	1590	L	2.5	1600	M	25	2040	N	100	1590	O	250	1940
n-Triacontane															
	K	1.0	1220	L	2.5	1360	M	25	1810	N	100	1430	O	250	1730

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056

Service Request: K1713018
Calibration Date: 08/22/2017

Initial Calibration Summary
Diesel and Residual Range Organics - Silica Gel Treated

Calibration ID: CAL15584
Instrument ID: GC21

Column: ZB-1

Analyte Name	Compound Type	Calibration Evaluation				
		Fit Type	Eval.	Eval. Result	Q	Control Criteria
Diesel Range Organics (DRO)	MS	AverageRF	% RSD	9.1		≤ 20
Residual Range Organics (RRO)	MS	AverageRF	% RSD	10.6		≤ 20
o-Terphenyl	SURR	AverageRF	% RSD	12.7		≤ 20
n-Triacontane	SURR	AverageRF	% RSD	16.5		≤ 20

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Calibration Date:**	08/22/2017
		Date Analyzed:	08/24/2017 - 10/18/2017

Second Source Calibration Verification
Diesel and Residual Range Organics - Silica Gel Treated

Calibration Type:	External Standard	**Calibration ID:**	CAL15584
Analysis Method:	NWTPH-Dx	**Units:**	ppm
File ID:	J:\GC21\DATA\082317F\0823005.D J:\GC21\DATA\082417F\0824004.D J:\GC21\DATA\101817F\1018215.D	**Column ID:**	ZB-1

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	1100	1340	1500	12	NA	± 15 %	AverageRF
Residual Range Organics (RRO)	1000	860	677	580	-14	NA	± 15 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Analyzed:**	12/18/2017

Continuing Calibration Verification Summary
Diesel and Residual Range Organics - Silica Gel Treated

Calibration Type:	External Standard	**Calibration Date:**	08/22/2017
Analysis Method:	NWTPH-Dx	**Calibration ID:**	CAL15584
		Analysis Lot:	KWG1711125
		Units:	ppm
File ID:	J:\GC21\DATA\121817F\1218014.D J:\GC21\DATA\121817F\1218015.D	**Column ID:**	ZB-1

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	1000	1340	1400	4	NA	± 15	AverageRF
Residual Range Organics (RRO)	1000	1100	677	712	5	NA	± 15	AverageRF
o-Terphenyl	50	54	1750	1880	7	NA	± 15	AverageRF
n-Triacontane	50	47	1510	1420	-6	NA	± 15	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Analyzed:**	12/18/2017

Continuing Calibration Verification Summary
Diesel and Residual Range Organics - Silica Gel Treated

Calibration Type:	External Standard	**Calibration Date:**	08/22/2017
Analysis Method:	NWTPH-Dx	**Calibration ID:**	CAL15584
		Analysis Lot:	KWG1711125
		Units:	ppm
File ID:	J:\GC21\DATA\121817F\1218033.D J:\GC21\DATA\121817F\1218034.D	**Column ID:**	ZB-1

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	1000	1340	1400	5	NA	± 15	AverageRF
Residual Range Organics (RRO)	1000	1000	677	697	3	NA	± 15	AverageRF
o-Terphenyl	50	54	1750	1890	8	NA	± 15	AverageRF
n-Triacontane	50	48	1510	1460	-3	NA	± 15	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: Hart Crowser, Incorporated **Service Request:** K1713018
Project: URSC/150-001-056

Analysis Run Log
Diesel and Residual Range Organics - Silica Gel Treated

Analysis Method: NWTPH-Dx **Analysis Lot:** KWG1711125
Instrument ID: GC21
Column: ZB-1

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
\1218014.D	Continuing Calibration Verification	KWG1711125-1	12/18/2017	13:10		12/18/2017	13:26
\1218015.D	Continuing Calibration Verification	KWG1711125-1	12/18/2017	13:31		12/18/2017	13:47
\1218017.D	Instrument Blank	KWG1711125-3	12/18/2017	14:15		12/18/2017	14:31
\1218020.D	Lab Control Sample	KWG1711062-2	12/18/2017	15:20		12/18/2017	15:36
\1218021.D	Method Blank	KWG1711062-3	12/18/2017	15:41		12/18/2017	15:57
\1218022.D	URSC-RM20.1W-COMP	K1713018-010	12/18/2017	16:03		12/18/2017	16:19
\1218023.D	URSC-RM20.1W-COMPDUP	KWG1711062-1	12/18/2017	16:25		12/18/2017	16:41
\1218024.D	URSC-RM20.4E-COMP	K1713018-016	12/18/2017	16:46		12/18/2017	17:02
\1218025.D	ZZZZZZ	ZZZZZZ	12/18/2017	17:08		12/18/2017	17:24
\1218026.D	ZZZZZZ	ZZZZZZ	12/18/2017	17:30		12/18/2017	17:46
\1218027.D	ZZZZZZ	ZZZZZZ	12/18/2017	17:51		12/18/2017	18:07
\1218028.D	ZZZZZZ	ZZZZZZ	12/18/2017	18:13		12/18/2017	18:29
\1218029.D	ZZZZZZ	ZZZZZZ	12/18/2017	18:35		12/18/2017	18:51
\1218030.D	ZZZZZZ	ZZZZZZ	12/18/2017	18:56		12/18/2017	19:12
\1218032.D	ZZZZZZ	ZZZZZZ	12/18/2017	19:40		12/18/2017	19:56
\1218033.D	Continuing Calibration Verification	KWG1711125-2	12/18/2017	20:02		12/18/2017	20:18
\1218034.D	Continuing Calibration Verification	KWG1711125-2	12/18/2017	20:23		12/18/2017	20:39
\1218036.D	Instrument Blank	KWG1711125-4	12/18/2017	21:07		12/18/2017	21:23

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Extracted:**	12/15/2017
Sample Matrix:	Sediment		

Extraction Prep Log
Diesel and Residual Range Organics - Silica Gel Treated

Extraction Method:	EPA 3550B	**Extraction Lot:**	KWG1711062
Analysis Method:	NWTPH-Dx	**Level:**	Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
URSC-RM20.1W-COMP	K1713018-010	12/01/17	12/04/17	30.099g	10mL	60.6	
URSC-RM20.4E-COMP	K1713018-016	12/01/17	12/04/17	30.451g	10mL	71.3	
URSC-RM20.1W-COMPDUP	KWG1711062-1	12/01/17	12/04/17	30.122g	10mL	60.6	
Method Blank	KWG1711062-3	NA	NA	30.451g	10mL	NA	
Lab Control Sample	KWG1711062-2	NA	NA	30.000g	10mL	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Polybrominated Diphenyl Ethers

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Client: Hart Crowser, Incorporated **Service Request:** K1713018
Project: URSC/150-001-056

Cover Page - Organic Analysis Data Package
Polybrominated Diphenyl Ethers by 8270C-SIM

Sample Name	Lab Code	Date Collected	Date Received
URSC-RM20.1W-COMP	K1713018-010	12/01/2017	12/04/2017
URSC-RM20.4E-COMP	K1713018-016	12/01/2017	12/04/2017
URSC-RM20.1W-COMPMS	KWG1711053-1	12/01/2017	12/04/2017
URSC-RM20.1W-COMPDMS	KWG1711053-2	12/01/2017	12/04/2017

Analytical Results

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	12/01/2017
Sample Matrix:	Sediment	**Date Received:**	12/04/2017

Polybrominated Diphenyl Ethers by 8270C-SIM

Sample Name:	URSC-RM20.1W-COMP	**Units:**	ug/Kg
Lab Code:	K1713018-010	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
PBDE 17	ND	U	0.083	0.023	1	12/15/17	12/21/17	KWG1711053	
PBDE 28	ND	U	0.083	0.024	1	12/15/17	12/21/17	KWG1711053	
PBDE 71	ND	U	0.083	0.015	1	12/15/17	12/21/17	KWG1711053	
PBDE 47	**0.29**		0.083	0.029	1	12/15/17	12/21/17	KWG1711053	
PBDE 66	ND	U	0.083	0.019	1	12/15/17	12/21/17	KWG1711053	
PBDE 100	ND	U	0.083	0.014	1	12/15/17	12/21/17	KWG1711053	
PBDE 99	ND	U	0.083	0.030	1	12/15/17	12/21/17	KWG1711053	
PBDE 85	ND	U	0.083	0.040	1	12/15/17	12/21/17	KWG1711053	
PBDE 154	ND	U	0.083	0.0078	1	12/15/17	12/21/17	KWG1711053	
PBDE 153	ND	U	0.083	0.0087	1	12/15/17	12/21/17	KWG1711053	
PBDE 138	ND	U	0.083	0.016	1	12/15/17	12/21/17	KWG1711053	
PBDE 128	ND	U	0.083	0.0099	1	12/15/17	12/21/17	KWG1711053	
PBDE 183	ND	U	0.083	0.013	1	12/15/17	12/21/17	KWG1711053	
PBDE 190	ND	U	0.083	0.020	1	12/15/17	12/21/17	KWG1711053	
PBDE 203	ND	U	0.083	0.029	1	12/15/17	12/21/17	KWG1711053	
PBDE 206	ND	U	0.83	0.031	1	12/15/17	12/21/17	KWG1711053	
PBDE 209	**4.7**		0.83	0.026	1	12/15/17	12/21/17	KWG1711053	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
PBDE 47C13	80	70-130	12/21/17	Acceptable
PBDE 99C13	101	70-130	12/21/17	Acceptable

Comments:

Analytical Results

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	12/01/2017
Sample Matrix:	Sediment	**Date Received:**	12/04/2017

Polybrominated Diphenyl Ethers by 8270C-SIM

Sample Name:	URSC-RM20.4E-COMP	**Units:**	ug/Kg
Lab Code:	K1713018-016	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
PBDE 17	ND	U	0.070	0.023	1	12/15/17	12/21/17	KWG1711053	
PBDE 28	**0.26**		0.070	0.024	1	12/15/17	12/21/17	KWG1711053	
PBDE 71	ND	U	0.070	0.015	1	12/15/17	12/21/17	KWG1711053	
PBDE 47	**1.4**		0.070	0.029	1	12/15/17	12/21/17	KWG1711053	
PBDE 66	**0.40**		0.070	0.019	1	12/15/17	12/21/17	KWG1711053	
PBDE 100	**0.23**		0.070	0.014	1	12/15/17	12/21/17	KWG1711053	
PBDE 99	**1.8**		0.070	0.030	1	12/15/17	12/21/17	KWG1711053	
PBDE 85	**0.14**		0.080	0.040	1	12/15/17	12/21/17	KWG1711053	
PBDE 154	**0.13**		0.070	0.0078	1	12/15/17	12/21/17	KWG1711053	
PBDE 153	**0.36**		0.070	0.0087	1	12/15/17	12/21/17	KWG1711053	
PBDE 138	ND	U	0.070	0.016	1	12/15/17	12/21/17	KWG1711053	
PBDE 128	ND	U	0.070	0.0099	1	12/15/17	12/21/17	KWG1711053	
PBDE 183	**0.12**		0.070	0.013	1	12/15/17	12/21/17	KWG1711053	
PBDE 190	ND	U	0.070	0.020	1	12/15/17	12/21/17	KWG1711053	
PBDE 203	ND	U	0.070	0.029	1	12/15/17	12/21/17	KWG1711053	
PBDE 206	**1.1**		0.70	0.031	1	12/15/17	12/21/17	KWG1711053	
PBDE 209	**42**	D	7.0	0.26	10	12/15/17	12/21/17	KWG1711053	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
PBDE 47C13	100	70-130	12/21/17	Acceptable
PBDE 99C13	104	70-130	12/21/17	Acceptable

Comments:

Analytical Results

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA

Polybrominated Diphenyl Ethers by 8270C-SIM

Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	KWG1711053-4	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
PBDE 17	ND	U	0.050	0.023	1	12/15/17	12/21/17	KWG1711053	
PBDE 28	ND	U	0.050	0.024	1	12/15/17	12/21/17	KWG1711053	
PBDE 71	ND	U	0.050	0.015	1	12/15/17	12/21/17	KWG1711053	
PBDE 47	ND	U	0.050	0.029	1	12/15/17	12/21/17	KWG1711053	
PBDE 66	ND	U	0.050	0.019	1	12/15/17	12/21/17	KWG1711053	
PBDE 100	ND	U	0.050	0.014	1	12/15/17	12/21/17	KWG1711053	
PBDE 99	ND	U	0.050	0.030	1	12/15/17	12/21/17	KWG1711053	
PBDE 85	ND	U	0.080	0.040	1	12/15/17	12/21/17	KWG1711053	
PBDE 154	ND	U	0.050	0.0078	1	12/15/17	12/21/17	KWG1711053	
PBDE 153	ND	U	0.050	0.0087	1	12/15/17	12/21/17	KWG1711053	
PBDE 138	ND	U	0.050	0.016	1	12/15/17	12/21/17	KWG1711053	
PBDE 128	ND	U	0.050	0.0099	1	12/15/17	12/21/17	KWG1711053	
PBDE 183	ND	U	0.050	0.013	1	12/15/17	12/21/17	KWG1711053	
PBDE 190	ND	U	0.050	0.020	1	12/15/17	12/21/17	KWG1711053	
PBDE 203	ND	U	0.050	0.029	1	12/15/17	12/21/17	KWG1711053	
PBDE 206	ND	U	0.50	0.031	1	12/15/17	12/21/17	KWG1711053	
PBDE 209	ND	U	0.50	0.026	1	12/15/17	12/21/17	KWG1711053	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
PBDE 47C13	89	70-130	12/21/17	Acceptable
PBDE 99C13	100	70-130	12/21/17	Acceptable

Comments:

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056
Sample Matrix: Sediment

Service Request: K1713018

Surrogate Recovery Summary
Polybrominated Diphenyl Ethers by 8270C-SIM

Extraction Method: EPA 3541
Analysis Method: 8270D SIM

Units: Percent
Level: Low

Sample Name	Lab Code	Sur1	Sur2
URSC-RM20.1W-COMP	K1713018-010	80	101
URSC-RM20.4E-COMP	K1713018-016	100	104
Method Blank	KWG1711053-4	89	100
URSC-RM20.1W-COMPMS	KWG1711053-1	73	89
URSC-RM20.1W-COMPDMS	KWG1711053-2	85	92
Lab Control Sample	KWG1711053-3	93	102

Surrogate Recovery Control Limits (%)

Sur1	=	PBDE 47C13	70-130
Sur2	=	PBDE 99C13	70-130

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Analyzed:**	12/20/2017
		Time Analyzed:	07:29

Internal Standard Area and RT Summary
Polybrominated Diphenyl Ethers by 8270C-SIM

File ID:	J:\MS14\DATA\122017\1220F002.D	**Lab Code:**	KWG1711185-2
Instrument ID:	MS14	**Analysis Lot:**	KWG1711185
Analysis Method:	8270D SIM		

		PCB 207	
		Area	**RT**
	Results ==>	90,003	8.15
	Upper Limit ==>	180,006	8.65
	Lower Limit ==>	45,002	7.65
	ICAL Result ==>	80,634	8.17
Associated Analyses			
Lab Control Sample	KWG1711053-3	83,501	8.15

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Analyzed:**	12/21/2017
		Time Analyzed:	06:49

Internal Standard Area and RT Summary
Polybrominated Diphenyl Ethers by 8270C-SIM

File ID:	J:\MS14\DATA\122117\1221F002.D	**Lab Code:**	KWG1711222-2
Instrument ID:	MS14	**Analysis Lot:**	KWG1711222
Analysis Method:	8270D SIM		

		PCB 207	
		Area	**RT**
	Results ==>	75,336	8.15
	Upper Limit ==>	150,672	8.65
	Lower Limit ==>	37,668	7.65
	ICAL Result ==>	80,634	8.17
Associated Analyses			
Method Blank	KWG1711053-4	77,268	8.15
URSC-RM20.4E-COMPDL	K1713018-016	74,960	8.15
URSC-RM20.1W-COMPMS	KWG1711053-1	66,100	8.16
URSC-RM20.1W-COMPDMS	KWG1711053-2	67,869	8.16
URSC-RM20.1W-COMP	K1713018-010	68,564	8.17
URSC-RM20.4E-COMP	K1713018-016	70,613	8.16

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Extracted:**	12/15/2017
Sample Matrix:	Sediment	**Date Analyzed:**	12/21/2017

Matrix Spike/Duplicate Matrix Spike Summary
Polybrominated Diphenyl Ethers by 8270C-SIM

Sample Name:	URSC-RM20.1W-COMP	**Units:**	ug/Kg
Lab Code:	K1713018-010	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM	**Extraction Lot:**	KWG1711053

		URSC-RM20.1W-COMPMS KWG1711053-1 Matrix Spike			URSC-RM20.1W-COMPDMS KWG1711053-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
PBDE 17	ND	4.01	4.08	98	4.32	4.12	105	70-130	7	40
PBDE 28	ND	3.61	4.08	88	3.71	4.12	90	70-130	3	40
PBDE 71	ND	3.31	4.08	81	3.20	4.12	78	70-130	3	40
PBDE 47	0.29	3.24	4.08	72	3.50	4.12	78	70-130	8	40
PBDE 66	ND	3.61	4.08	88	3.81	4.12	92	70-130	5	40
PBDE 100	ND	3.77	4.08	92	4.38	4.12	106	70-130	15	40
PBDE 99	ND	3.99	4.08	98	4.38	4.12	106	70-130	9	40
PBDE 85	ND	4.55	4.08	111	5.03	4.12	122	70-130	10	40
PBDE 154	ND	4.15	4.08	102	4.48	4.12	109	70-130	8	40
PBDE 153	ND	4.79	4.08	117	5.14	4.12	125	70-130	7	40
PBDE 138	ND	4.73	4.08	116	5.65	4.12	137 *	70-130	18	40
PBDE 128	ND	5.13	4.08	126	5.92	4.12	144 *	70-130	14	40
PBDE 183	ND	4.75	4.08	116	5.05	4.12	122	70-130	6	40
PBDE 190	ND	4.55	4.08	111	5.06	4.12	123	70-130	11	40
PBDE 203	ND	4.16	4.08	102	4.50	4.12	109	70-130	8	40
PBDE 206	ND	4.62	4.08	113	5.14	4.12	125	70-130	11	40
PBDE 209	4.7	6.35	4.08	40 *	9.46	4.12	115	70-130	39	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Extracted:**	12/15/2017
Sample Matrix:	Sediment	**Date Analyzed:**	12/20/2017

Lab Control Spike Summary
Polybrominated Diphenyl Ethers by 8270C-SIM

Extraction Method:	EPA 3541	**Units:**	ug/Kg
Analysis Method:	8270D SIM	**Basis:**	Dry
		Level:	Low
		Extraction Lot:	KWG1711053

	Lab Control Sample KWG1711053-3 Lab Control Spike			
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
PBDE 17	2.30	2.50	92	70-130
PBDE 28	2.29	2.50	92	70-130
PBDE 71	2.45	2.50	98	70-130
PBDE 47	2.50	2.50	100	70-130
PBDE 66	2.60	2.50	104	70-130
PBDE 100	2.59	2.50	103	70-130
PBDE 99	2.65	2.50	106	70-130
PBDE 85	2.62	2.50	105	70-130
PBDE 154	2.62	2.50	105	70-130
PBDE 153	2.78	2.50	111	70-130
PBDE 138	2.71	2.50	108	70-130
PBDE 128	2.87	2.50	115	70-130
PBDE 183	2.71	2.50	108	70-130
PBDE 190	2.66	2.50	106	70-130
PBDE 203	2.56	2.50	102	70-130
PBDE 206	2.93	2.50	117	70-130
PBDE 209	4.07	2.50	163 *	70-130

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Extracted:**	12/15/2017
Sample Matrix:	Sediment	**Date Analyzed:**	12/21/2017
		Time Analyzed:	07:29

Method Blank Summary
Polybrominated Diphenyl Ethers by 8270C-SIM

Sample Name:	Method Blank	**Instrument ID:**	MS14
Lab Code:	KWG1711053-4	**File ID:**	J:\MS14\DATA\122117\1221F004.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM	**Extraction Lot:**	KWG1711053

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1711053-3	J:\MS14\DATA\122017\1220F006.D	12/20/17	08:46
URSC-RM20.4E-COMP	K1713018-016	J:\MS14\DATA\122117\1221F005.D	12/21/17	07:47
URSC-RM20.1W-COMPMS	KWG1711053-1	J:\MS14\DATA\122117\1221F009.D	12/21/17	08:59
URSC-RM20.1W-COMPDMS	KWG1711053-2	J:\MS14\DATA\122117\1221F010.D	12/21/17	09:17
URSC-RM20.1W-COMP	K1713018-010	J:\MS14\DATA\122117\1221F011.D	12/21/17	09:35
URSC-RM20.4E-COMP	K1713018-016	J:\MS14\DATA\122117\1221F013.D	12/21/17	10:12

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Extracted:**	12/15/2017
Sample Matrix:	Sediment	**Date Analyzed:**	12/20/2017
		Time Analyzed:	08:46

Lab Control Sample Summary
Polybrominated Diphenyl Ethers by 8270C-SIM

Sample Name:	Lab Control Sample	**Instrument ID:**	MS14
Lab Code:	KWG1711053-3	**File ID:**	J:\MS14\DATA\122017\1220F006.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM	**Extraction Lot:**	KWG1711053

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1711053-4	J:\MS14\DATA\122117\1221F004.D	12/21/17	07:29
URSC-RM20.4E-COMP	K1713018-016	J:\MS14\DATA\122117\1221F005.D	12/21/17	07:47
URSC-RM20.1W-COMPMS	KWG1711053-1	J:\MS14\DATA\122117\1221F009.D	12/21/17	08:59
URSC-RM20.1W-COMPDMS	KWG1711053-2	J:\MS14\DATA\122117\1221F010.D	12/21/17	09:17
URSC-RM20.1W-COMP	K1713018-010	J:\MS14\DATA\122117\1221F011.D	12/21/17	09:35
URSC-RM20.4E-COMP	K1713018-016	J:\MS14\DATA\122117\1221F013.D	12/21/17	10:12

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056

Service Request: K1713018
Date Analyzed: 12/20/2017
Time Analyzed: 07:10

Tune Summary
Polybrominated Diphenyl Ethers by 8270C-SIM

File ID: J:\MS14\DATA\122017\1220F001.D
Instrument ID: MS14
Column:

Analysis Method: 8270D SIM
Analysis Lot: KWG1711185

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	10	80	43.3	514771	PASS
68	69	0	2	1.2	6677	PASS
69	198	0	100	45.3	538575	PASS
70	69	0	2	0.5	2660	PASS
127	198	10	80	50.8	604402	PASS
197	198	0	2	0.0	276	PASS
198	442	30	100	44.6	1190165	PASS
199	198	5	9	6.8	81512	PASS
275	198	10	60	40.6	483157	PASS
365	442	1	50	3.3	87021	PASS
441	443	0	100	75.8	396685	PASS
442	442	100	100	100.0	2666005	PASS
443	442	15	24	19.6	523349	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1711185-2	J:\MS14\DATA\122017\1220F002.D	12/20/2017	07:29	
Lab Control Sample	KWG1711053-3	J:\MS14\DATA\122017\1220F006.D	12/20/2017	08:46	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056

Service Request: K1713018
Date Analyzed: 12/21/2017
Time Analyzed: 06:29

Tune Summary
Polybrominated Diphenyl Ethers by 8270C-SIM

File ID: J:\MS14\DATA\122117\1221F001.D
Instrument ID: MS14
Column:

Analysis Method: 8270D SIM
Analysis Lot: KWG1711222

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	10	80	49.7	486866	PASS
68	69	0	2	1.3	6669	PASS
69	198	0	100	51.5	504823	PASS
70	69	0	2	0.6	3140	PASS
127	198	10	80	53.9	527693	PASS
197	198	0	2	0.0	0	PASS
198	442	30	100	46.5	979626	PASS
199	198	5	9	6.8	66370	PASS
275	198	10	60	35.1	343637	PASS
365	442	1	50	3.3	68701	PASS
441	443	0	100	76.2	318954	PASS
442	442	100	100	100.0	2106069	PASS
443	442	15	24	19.9	418709	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1711222-2	J:\MS14\DATA\122117\1221F002.D	12/21/2017	06:49	
Method Blank	KWG1711053-4	J:\MS14\DATA\122117\1221F004.D	12/21/2017	07:29	
URSC-RM20.4E-COMP	K1713018-016	J:\MS14\DATA\122117\1221F005.D	12/21/2017	07:47	
URSC-RM20.1W-COMPMS	KWG1711053-1	J:\MS14\DATA\122117\1221F009.D	12/21/2017	08:59	
URSC-RM20.1W-COMPDMS	KWG1711053-2	J:\MS14\DATA\122117\1221F010.D	12/21/2017	09:17	
URSC-RM20.1W-COMP	K1713018-010	J:\MS14\DATA\122117\1221F011.D	12/21/2017	09:35	
URSC-RM20.4E-COMP	K1713018-016	J:\MS14\DATA\122117\1221F013.D	12/21/2017	10:12	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

QA/QC Results

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056
Service Request: K1713018
Calibration Date: 12/18/2017

Initial Calibration Summary
Polybrominated Diphenyl Ethers by 8270C-SIM

Calibration ID: CAL15642
Instrument ID: MS14
Column: MS

Level ID	File ID	Level ID	File ID
A	J:\MS14\DATA\121817\1218F004.D	G	J:\MS14\DATA\121817\1218F010.D
B	J:\MS14\DATA\121817\1218F005.D	H	J:\MS14\DATA\121817\1218F011.D
C	J:\MS14\DATA\121817\1218F006.D	I	J:\MS14\DATA\121817\1218F012.D
D	J:\MS14\DATA\121817\1218F007.D	J	J:\MS14\DATA\121817\1218F013.D
E	J:\MS14\DATA\121817\1218F008.D	K	J:\MS14\DATA\121817\1218F014.D
F	J:\MS14\DATA\121817\1218F009.D		

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
PBDE 47C13	A	0.50	0.569	B	1.0	0.530	C	5.0	0.533	D	10	0.571	E	15	0.564
	F	20	0.555	G	25	0.588	H	30	0.571	I	40	0.614	J	50	0.616
	K	60	0.590												
PBDE 99C13	A	0.50	0.397	B	1.0	0.365	C	5.0	0.374	D	10	0.400	E	15	0.395
	F	20	0.400	G	25	0.431	H	30	0.422	I	40	0.451	J	50	0.449
	K	60	0.446												
PBDE 17	A	0.50	0.827	B	1.0	0.805	C	5.0	0.762	D	10	0.803	E	15	0.757
	F	20	0.787	G	25	0.805	H	30	0.806	I	40	0.834	J	50	0.828
	K	60	0.797												
PBDE 28	A	0.50	0.687	B	1.0	0.592	C	5.0	0.618	D	10	0.658	E	15	0.642
	F	20	0.660	G	25	0.677	H	30	0.667	I	40	0.708	J	50	0.704
	K	60	0.669												
PBDE 71	A	0.50	0.827	B	1.0	0.776	C	5.0	0.784	D	10	0.808	E	15	0.794
	F	20	0.826	G	25	0.878	H	30	0.843	I	40	0.902	J	50	0.911
	K	60	0.860												
PBDE 47	A	0.50	0.624	B	1.0	0.570	C	5.0	0.505	D	10	0.566	E	15	0.544
	F	20	0.555	G	25	0.585	H	30	0.580	I	40	0.617	J	50	0.601
	K	60	0.574												
PBDE 66	A	0.50	0.673	B	1.0	0.606	C	5.0	0.592	D	10	0.622	E	15	0.629
	F	20	0.627	G	25	0.653	H	30	0.650	I	40	0.692	J	50	0.677
	K	60	0.667												
PBDE 100	A	0.50	0.403	B	1.0	0.336	C	5.0	0.330	D	10	0.357	E	15	0.343
	F	20	0.362	G	25	0.373	H	30	0.365	I	40	0.389	J	50	0.383
	K	60	0.387												
PBDE 99	A	0.50	0.418	B	1.0	0.384	C	5.0	0.379	D	10	0.401	E	15	0.394
	F	20	0.404	G	25	0.435	H	30	0.428	I	40	0.455	J	50	0.446
	K	60	0.446												
PBDE 85	A	0.50	0.408	B	1.0	0.362	C	5.0	0.380	D	10	0.395	E	15	0.384
	F	20	0.392	G	25	0.435	H	30	0.411	I	40	0.453	J	50	0.444
	K	60	0.437												

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

QA/QC Results

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056
Service Request: K1713018
Calibration Date: 12/18/2017

Initial Calibration Summary
Polybrominated Diphenyl Ethers by 8270C-SIM

Calibration ID: CAL15642
Instrument ID: MS14
Column: MS

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
PBDE 154	A	0.50	0.380	B	1.0	0.353	C	5.0	0.350	D	10	0.378	E	15	0.380
	F	20	0.377	G	25	0.412	H	30	0.395	I	40	0.429	J	50	0.423
	K	60	0.415												
PBDE 153	A	0.50	0.362	B	1.0	0.346	C	5.0	0.353	D	10	0.395	E	15	0.385
	F	20	0.393	G	25	0.434	H	30	0.409	I	40	0.445	J	50	0.445
	K	60	0.449												
PBDE 138	A	0.50	0.347	B	1.0	0.301	C	5.0	0.329	D	10	0.366	E	15	0.358
	F	20	0.368	G	25	0.406	H	30	0.390	I	40	0.416	J	50	0.434
	K	60	0.437												
PBDE 128	A	0.50	0.336	B	1.0	0.316	C	5.0	0.359	D	10	0.391	E	15	0.384
	F	20	0.394	G	25	0.456	H	30	0.415	I	40	0.460	J	50	0.460
	K	60	0.484												
PBDE 183	A	0.50	0.230	B	1.0	0.231	C	5.0	0.257	D	10	0.298	E	15	0.305
	F	20	0.301	G	25	0.332	H	30	0.320	I	40	0.348	J	50	0.346
	K	60	0.345												
PBDE 190	A	0.50	0.223	B	1.0	0.255	C	5.0	0.215	D	10	0.246	E	15	0.250
	F	20	0.266	G	25	0.300	H	30	0.296	I	40	0.318	J	50	0.326
	K	60	0.332												
PBDE 203	A	0.50	0.200	B	1.0	0.167	C	5.0	0.180	D	10	0.209	E	15	0.211
	F	20	0.217	G	25	0.254	H	30	0.250	I	40	0.275	J	50	0.280
	K	60	0.285												
PBDE 206							C	5.0	0.0612	D	10	0.0755	E	15	0.0802
	F	20	0.0877	G	25	0.103	H	30	0.103	I	40	0.116	J	50	0.124
	K	60	0.129												
PBDE 209							C	5.0	0.0204	D	10	0.0276	E	15	0.0286
	F	20	0.0318	G	25	0.0367	H	30	0.0390	I	40	0.0478	J	50	0.0521
	K	60	0.0560												

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Hart Crowser, Incorporated **Service Request:** K1713018
Project: URSC/150-001-056 **Calibration Date:** 12/18/2017

Initial Calibration Summary
Polybrominated Diphenyl Ethers by 8270C-SIM

Calibration ID: CAL15642 **Column:** MS
Instrument ID: MS14

		Calibration Evaluation					RRF Evaluation		
Analyte Name	Compound Type	Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
PBDE 47C13	SURR	AverageRF	% RSD	4.9		≤ 20	0.573		0.01
PBDE 99C13	SURR	AverageRF	% RSD	7.3		≤ 20	0.412		0.01
PBDE 17	MS	AverageRF	% RSD	3.1		≤ 20	0.801		0.01
PBDE 28	MS	AverageRF	% RSD	5.3		≤ 20	0.662		0.01
PBDE 71	MS	AverageRF	% RSD	5.5		≤ 20	0.837		0.01
PBDE 47	MS	AverageRF	% RSD	5.9		≤ 20	0.575		0.01
PBDE 66	MS	AverageRF	% RSD	4.9		≤ 20	0.644		0.01
PBDE 100	MS	AverageRF	% RSD	6.4		≤ 20	0.366		0.01
PBDE 99	MS	AverageRF	% RSD	6.4		≤ 20	0.417		0.01
PBDE 85	MS	AverageRF	% RSD	7.2		≤ 20	0.409		0.01
PBDE 154	MS	AverageRF	% RSD	6.9		≤ 20	0.390		0.01
PBDE 153	MS	AverageRF	% RSD	9.6		≤ 20	0.401		0.01
PBDE 138	MS	AverageRF	% RSD	11.5		≤ 20	0.378		0.01
PBDE 128	MS	AverageRF	% RSD	13.6		≤ 20	0.405		0.01
PBDE 183	MS	AverageRF	% RSD	14.6		≤ 20	0.301		0.01
PBDE 190	MS	Quadratic(0,0)	COD	0.999		≥ 0.990	0.275		0.01
PBDE 203	MS	Quadratic(0,0)	COD	0.998		≥ 0.990	0.230		0.01
PBDE 206	MS	Quadratic(0,0)	COD	0.998		≥ 0.990	0.0979		0.01
PBDE 209	MS	Quadratic(0,0)	COD	0.998		≥ 0.990	0.0378		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

QA/QC Results

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056

Service Request: K1713018
Calibration Date: 12/18/2017
Date Analyzed: 12/18/2017

Second Source Calibration Verification
Polybrominated Diphenyl Ethers by 8270C-SIM

Calibration Type: Internal Standard
Analysis Method: 8270D SIM

Calibration ID: CAL15642
Units: ng/ml

File ID: J:\MS14\DATA\121817\1218F016.D
J:\MS14\DATA\121817\1218F017.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
PBDE 17	5.0	6.0	0.801	0.964	20	NA	± 30 %	AverageRF
PBDE 28	5.0	6.1	0.662	0.814	23	NA	± 30 %	AverageRF
PBDE 71	5.0	5.9	0.837	0.994	19	NA	± 30 %	AverageRF
PBDE 47	5.0	6.0	0.575	0.692	20	NA	± 30 %	AverageRF
PBDE 66	5.0	6.3	0.644	0.811	26	NA	± 30 %	AverageRF
PBDE 100	5.0	6.0	0.366	0.443	21	NA	± 30 %	AverageRF
PBDE 99	5.0	6.1	0.417	0.506	21	NA	± 30 %	AverageRF
PBDE 85	5.0	5.6	0.409	0.461	13	NA	± 30 %	AverageRF
PBDE 154	5.0	5.7	0.390	0.448	15	NA	± 30 %	AverageRF
PBDE 153	5.0	6.0	0.401	0.486	21	NA	± 30 %	AverageRF
PBDE 138	7.5	8.9	0.378	0.446	18	NA	± 30 %	AverageRF
PBDE 183	5.0	5.5	0.301	0.331	10	NA	± 30 %	AverageRF
PBDE 190	5.0	6.3	0.275	0.333	NA	27	± 30 %	Quadratic(0,0
PBDE 203	25	26	0.230	0.250	NA	2	± 30 %	Quadratic(0,0
PBDE 206	25	30	0.0979	0.126	NA	22	± 30 %	Quadratic(0,0
PBDE 209	25	26	0.0378	0.0396	NA	5	± 30 %	Quadratic(0,0

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056

Service Request: K1713018
Date Analyzed: 12/20/2017

Continuing Calibration Verification Summary
Polybrominated Diphenyl Ethers by 8270C-SIM

Calibration Type: Internal Standard
Analysis Method: 8270D SIM

Calibration Date: 12/18/2017
Calibration ID: CAL15642
Analysis Lot: KWG1711185
Units: ng/ml

File ID: J:\MS14\DATA\122017\1220F002.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift		Criteria	Curve Fit
PBDE 47C13	25	23	0.01	0.573	0.520	-9	NA		± 20	AverageRF
PBDE 99C13	25	24	0.01	0.412	0.392	-5	NA		± 20	AverageRF
PBDE 17	25	23	0.01	0.801	0.732	-9	NA		± 20	AverageRF
PBDE 28	25	23	0.01	0.662	0.610	-8	NA		± 20	AverageRF
PBDE 71	25	23	0.01	0.837	0.756	-10	NA		± 20	AverageRF
PBDE 47	25	23	0.01	0.575	0.533	-7	NA		± 20	AverageRF
PBDE 66	25	24	0.01	0.644	0.610	-5	NA		± 20	AverageRF
PBDE 100	25	24	0.01	0.366	0.348	-5	NA		± 20	AverageRF
PBDE 99	25	24	0.01	0.417	0.399	-4	NA		± 20	AverageRF
PBDE 85	25	25	0.01	0.409	0.408	0	NA		± 20	AverageRF
PBDE 154	25	23	0.01	0.390	0.360	-8	NA		± 20	AverageRF
PBDE 153	25	25	0.01	0.401	0.398	-1	NA		± 20	AverageRF
PBDE 138	25	25	0.01	0.378	0.384	2	NA		± 20	AverageRF
PBDE 128	25	28	0.01	0.405	0.449	11	NA		± 20	AverageRF
PBDE 183	25	25	0.01	0.301	0.303	1	NA		± 20	AverageRF
PBDE 190	25	25	0.01	0.275	0.291	NA	1		± 20	Quadratic(0,0)
PBDE 203	25	25	0.01	0.230	0.247	NA	1		± 20	Quadratic(0,0)
PBDE 206	25	28	0.01	0.0979	0.114	NA	12		± 20	Quadratic(0,0)
PBDE 209	25	30	0.01	0.0378	0.0486	NA	22	*	± 20	Quadratic(0,0)

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056

Service Request: K1713018
Date Analyzed: 12/21/2017

Continuing Calibration Verification Summary
Polybrominated Diphenyl Ethers by 8270C-SIM

Calibration Type: Internal Standard
Analysis Method: 8270D SIM

Calibration Date: 12/18/2017
Calibration ID: CAL15642
Analysis Lot: KWG1711222
Units: ng/ml

File ID: J:\MS14\DATA\122117\1221F002.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D		%Drift	Criteria	Curve Fit
PBDE 47C13	25	23	0.01	0.573	0.518	-10		NA	± 20	AverageRF
PBDE 99C13	25	25	0.01	0.412	0.413	0		NA	± 20	AverageRF
PBDE 17	25	21	0.01	0.801	0.679	-15		NA	± 20	AverageRF
PBDE 28	25	23	0.01	0.662	0.600	-9		NA	± 20	AverageRF
PBDE 71	25	23	0.01	0.837	0.755	-10		NA	± 20	AverageRF
PBDE 47	25	22	0.01	0.575	0.506	-12		NA	± 20	AverageRF
PBDE 66	25	24	0.01	0.644	0.611	-5		NA	± 20	AverageRF
PBDE 100	25	24	0.01	0.366	0.353	-4		NA	± 20	AverageRF
PBDE 99	25	24	0.01	0.417	0.408	-2		NA	± 20	AverageRF
PBDE 85	25	27	0.01	0.409	0.437	7		NA	± 20	AverageRF
PBDE 154	25	24	0.01	0.390	0.371	-5		NA	± 20	AverageRF
PBDE 153	25	25	0.01	0.401	0.409	2		NA	± 20	AverageRF
PBDE 138	25	27	0.01	0.378	0.401	6		NA	± 20	AverageRF
PBDE 128	25	31	0.01	0.405	0.497	23	*	NA	± 20	AverageRF
PBDE 183	25	26	0.01	0.301	0.310	3		NA	± 20	AverageRF
PBDE 190	25	26	0.01	0.275	0.305	NA		5	± 20	Quadratic(0,0)
PBDE 203	25	26	0.01	0.230	0.251	NA		3	± 20	Quadratic(0,0)
PBDE 206	25	26	0.01	0.0979	0.102	NA		3	± 20	Quadratic(0,0)
PBDE 209	25	25	0.01	0.0378	0.0361	NA		-2	± 20	Quadratic(0,0)

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: Hart Crowser, Incorporated **Service Request:** K1713018
Project: URSC/150-001-056

Analysis Run Log
Polybrominated Diphenyl Ethers by 8270C-SIM

Analysis Method: 8270D SIM **Analysis Lot:** KWG1711185
Instrument ID: MS14

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1220F001.D	GC/MS Tuning - Decafluorotriphenylphosph	KWG1711185-1	12/20/2017	07:10		12/20/2017	07:24
1220F002.D	Continuing Calibration Verification	KWG1711185-2	12/20/2017	07:29		12/20/2017	07:41
1220F003.D	ZZZZZZ	ZZZZZZ	12/20/2017	07:50		12/20/2017	08:02
1220F006.D	Lab Control Sample	KWG1711053-3	12/20/2017	08:46		12/20/2017	08:58
1220F007.D	ZZZZZZ	ZZZZZZ	12/20/2017	09:09		12/20/2017	09:21
1220F008.D	ZZZZZZ	ZZZZZZ	12/20/2017	09:27		12/20/2017	09:39
1220F009.D	ZZZZZZ	ZZZZZZ	12/20/2017	09:46		12/20/2017	09:58
1220F010.D	ZZZZZZ	ZZZZZZ	12/20/2017	10:04		12/20/2017	10:16
1220F011.D	ZZZZZZ	ZZZZZZ	12/20/2017	10:22		12/20/2017	10:34
1220F012.D	ZZZZZZ	ZZZZZZ	12/20/2017	10:40		12/20/2017	10:52
1220F013.D	ZZZZZZ	ZZZZZZ	12/20/2017	10:58		12/20/2017	11:10
1220F014.D	ZZZZZZ	ZZZZZZ	12/20/2017	11:17		12/20/2017	11:29
1220F015.D	ZZZZZZ	ZZZZZZ	12/20/2017	11:35		12/20/2017	11:47
1220F016.D	ZZZZZZ	ZZZZZZ	12/20/2017	11:53		12/20/2017	12:05
1220F017.D	ZZZZZZ	ZZZZZZ	12/20/2017	12:11		12/20/2017	12:23
1220F018.D	ZZZZZZ	ZZZZZZ	12/20/2017	12:29		12/20/2017	12:41
1220F019.D	ZZZZZZ	ZZZZZZ	12/20/2017	12:47		12/20/2017	12:59
1220F020.D	ZZZZZZ	ZZZZZZ	12/20/2017	13:06		12/20/2017	13:18
1220F021.D	ZZZZZZ	ZZZZZZ	12/20/2017	13:24		12/20/2017	13:36
1220F022.D	ZZZZZZ	ZZZZZZ	12/20/2017	13:42		12/20/2017	13:54
1220F023.D	ZZZZZZ	ZZZZZZ	12/20/2017	14:00		12/20/2017	14:12
1220F024.D	ZZZZZZ	ZZZZZZ	12/20/2017	14:18		12/20/2017	14:30
1220F025.D	ZZZZZZ	ZZZZZZ	12/20/2017	14:37		12/20/2017	14:49
1220F026.D	ZZZZZZ	ZZZZZZ	12/20/2017	14:55		12/20/2017	15:07
1220F027.D	ZZZZZZ	ZZZZZZ	12/20/2017	15:13		12/20/2017	15:25
1220F028.D	ZZZZZZ	ZZZZZZ	12/20/2017	15:31		12/20/2017	15:43
1220F029.D	ZZZZZZ	ZZZZZZ	12/20/2017	15:49		12/20/2017	16:01
1220F030.D	ZZZZZZ	ZZZZZZ	12/20/2017	16:08		12/20/2017	16:20
1220F031.D	ZZZZZZ	ZZZZZZ	12/20/2017	16:26		12/20/2017	16:38
1220F032.D	ZZZZZZ	ZZZZZZ	12/20/2017	16:44		12/20/2017	16:56
1220F033.D	ZZZZZZ	ZZZZZZ	12/20/2017	17:02		12/20/2017	17:14
1220F034.D	ZZZZZZ	ZZZZZZ	12/20/2017	17:20		12/20/2017	17:32
1220F035.D	ZZZZZZ	ZZZZZZ	12/20/2017	17:38		12/20/2017	17:50
1220F036.D	ZZZZZZ	ZZZZZZ	12/20/2017	17:56		12/20/2017	18:08
1220F037.D	ZZZZZZ	ZZZZZZ	12/20/2017	18:15		12/20/2017	18:27

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: Hart Crowser, Incorporated **Service Request:** K1713018
Project: URSC/150-001-056

Analysis Run Log
Polybrominated Diphenyl Ethers by 8270C-SIM

Analysis Method: 8270D SIM **Analysis Lot:** KWG1711185
Instrument ID: MS14

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1220F038.D	ZZZZZZ	ZZZZZZ	12/20/2017	18:33		12/20/2017	18:45

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: Hart Crowser, Incorporated **Service Request:** K1713018
Project: URSC/150-001-056

Analysis Run Log
Polybrominated Diphenyl Ethers by 8270C-SIM

Analysis Method: 8270D SIM **Analysis Lot:** KWG1711222
Instrument ID: MS14

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1221F001.D	GC/MS Tuning - Decafluorotriphenylphosph	KWG1711222-1	12/21/2017	06:29		12/21/2017	06:43
1221F002.D	Continuing Calibration Verification	KWG1711222-2	12/21/2017	06:49		12/21/2017	07:01
1221F004.D	Method Blank	KWG1711053-4	12/21/2017	07:29		12/21/2017	07:41
1221F005.D	URSC-RM20.4E-COMP	K1713018-016	12/21/2017	07:47		12/21/2017	07:59
1221F006.D	ZZZZZZ	ZZZZZZ	12/21/2017	08:05		12/21/2017	08:17
1221F007.D	ZZZZZZ	ZZZZZZ	12/21/2017	08:23		12/21/2017	08:35
1221F008.D	ZZZZZZ	ZZZZZZ	12/21/2017	08:41		12/21/2017	08:53
1221F009.D	URSC-RM20.1W-COMPMS	KWG1711053-1	12/21/2017	08:59		12/21/2017	09:11
1221F010.D	URSC-RM20.1W-COMPDMS	KWG1711053-2	12/21/2017	09:17		12/21/2017	09:29
1221F011.D	URSC-RM20.1W-COMP	K1713018-010	12/21/2017	09:35		12/21/2017	09:47
1221F012.D	ZZZZZZ	ZZZZZZ	12/21/2017	09:54		12/21/2017	10:06
1221F013.D	URSC-RM20.4E-COMP	K1713018-016	12/21/2017	10:12		12/21/2017	10:24
1221F014.D	ZZZZZZ	ZZZZZZ	12/21/2017	10:30		12/21/2017	10:42
1221F015.D	ZZZZZZ	ZZZZZZ	12/21/2017	10:48		12/21/2017	11:00
1221F016.D	ZZZZZZ	ZZZZZZ	12/21/2017	11:06		12/21/2017	11:18
1221F017.D	ZZZZZZ	ZZZZZZ	12/21/2017	11:24		12/21/2017	11:36
1221F018.D	ZZZZZZ	ZZZZZZ	12/21/2017	11:42		12/21/2017	11:54
1221F019.D	ZZZZZZ	ZZZZZZ	12/21/2017	12:00		12/21/2017	12:12
1221F020.D	ZZZZZZ	ZZZZZZ	12/21/2017	12:18		12/21/2017	12:30
1221F021.D	ZZZZZZ	ZZZZZZ	12/21/2017	12:36		12/21/2017	12:48

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056
Sample Matrix: Sediment

Service Request: K1713018
Date Extracted: 12/15/2017

Extraction Prep Log
Polybrominated Diphenyl Ethers by 8270C-SIM

Extraction Method: EPA 3541
Analysis Method: 8270D SIM

Extraction Lot: KWG1711053
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
URSC-RM20.1W-COMP	K1713018-010	12/01/17	12/04/17	20.048g	2mL	60.6	
URSC-RM20.4E-COMP	K1713018-016	12/01/17	12/04/17	20.120g	2mL	71.3	
URSC-RM20.4E-COMPDL	K1713018-016	12/01/17	12/04/17	20.120g	2mL	71.3	
Method Blank	KWG1711053-4	NA	NA	20.309g	2mL	NA	
URSC-RM20.1W-COMPMS	KWG1711053-1	12/01/17	12/04/17	20.204g	2mL	60.6	
URSC-RM20.1W-COMPDMS	KWG1711053-2	12/01/17	12/04/17	20.023g	2mL	60.6	
Lab Control Sample	KWG1711053-3	NA	NA	20.000g	2mL	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Semi-Volatile Organic Compounds by GC/MS

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Client: Hart Crowser, Incorporated **Service Request:** K1713018
Project: URSC/150-001-056

Cover Page - Organic Analysis Data Package
Semi-Volatile Organic Compounds by GC/MS

Sample Name	Lab Code	Date Collected	Date Received
URSC-RM20.1W-COMP	K1713018-010	12/01/2017	12/04/2017
URSC-RM20.4E-COMP	K1713018-016	12/01/2017	12/04/2017
URSC-RM20.1W-COMPMS	KWG1711057-1	12/01/2017	12/04/2017
URSC-RM20.1W-COMPDMS	KWG1711057-2	12/01/2017	12/04/2017

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	12/01/2017
Sample Matrix:	Sediment	**Date Received:**	12/04/2017

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	URSC-RM20.1W-COMP	**Units:**	ug/Kg
Lab Code:	K1713018-010	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	8.3	2.9	1	12/15/17	01/05/18	KWG1711057	
2-Methylnaphthalene	ND	U	8.3	2.8	1	12/15/17	01/05/18	KWG1711057	
Acenaphthylene	ND	U	8.3	2.6	1	12/15/17	01/05/18	KWG1711057	
Acenaphthene	ND	U	8.3	3.2	1	12/15/17	01/05/18	KWG1711057	
Fluorene	ND	U	8.3	3.3	1	12/15/17	01/05/18	KWG1711057	
Phenanthrene	**8.3**		8.3	3.6	1	12/15/17	01/05/18	KWG1711057	
Anthracene	ND	U	8.3	3.2	1	12/15/17	01/05/18	KWG1711057	
Fluoranthene	**16**		8.3	3.7	1	12/15/17	01/05/18	KWG1711057	
Pyrene	**14**		8.3	3.7	1	12/15/17	01/05/18	KWG1711057	
Benz(a)anthracene	**5.7**	J	8.3	3.6	1	12/15/17	01/05/18	KWG1711057	
Chrysene	**8.6**		8.3	4.1	1	12/15/17	01/05/18	KWG1711057	
Hexachlorobenzene	ND	U	8.3	3.3	1	12/15/17	01/05/18	KWG1711057	
Pentachlorophenol	ND	U	83	5.3	1	12/15/17	01/05/18	KWG1711057	*
Bis(2-ethylhexyl) Phthalate	**61**	J	83	8.9	1	12/15/17	01/05/18	KWG1711057	
Benzo(b)fluoranthene	**11**		8.3	3.4	1	12/15/17	01/05/18	KWG1711057	
Benzo(k)fluoranthene	ND	U	8.3	4.0	1	12/15/17	01/05/18	KWG1711057	
Benzo(a)pyrene	**13**		8.3	3.6	1	12/15/17	01/05/18	KWG1711057	
Indeno(1,2,3-cd)pyrene	**7.3**	J	8.3	3.2	1	12/15/17	01/05/18	KWG1711057	
Dibenz(a,h)anthracene	ND	U	8.3	3.0	1	12/15/17	01/05/18	KWG1711057	
Benzo(g,h,i)perylene	**9.4**		8.3	3.7	1	12/15/17	01/05/18	KWG1711057	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	74	14-85	01/05/18	Acceptable
2-Fluorobiphenyl	67	22-85	01/05/18	Acceptable
2,4,6-Tribromophenol	78	10-124	01/05/18	Acceptable
Terphenyl-d14	75	30-102	01/05/18	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	12/01/2017
Sample Matrix:	Sediment	**Date Received:**	12/04/2017

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	URSC-RM20.4E-COMP	**Units:**	ug/Kg
Lab Code:	K1713018-016	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	7.1	2.9	1	12/15/17	01/05/18	KWG1711057	
2-Methylnaphthalene	ND	U	7.1	2.8	1	12/15/17	01/05/18	KWG1711057	
Acenaphthylene	ND	U	7.1	2.6	1	12/15/17	01/05/18	KWG1711057	
Acenaphthene	ND	U	7.1	3.2	1	12/15/17	01/05/18	KWG1711057	
Fluorene	ND	U	7.1	3.3	1	12/15/17	01/05/18	KWG1711057	
Phenanthrene	ND	U	7.1	3.6	1	12/15/17	01/05/18	KWG1711057	
Anthracene	ND	U	7.1	3.2	1	12/15/17	01/05/18	KWG1711057	
Fluoranthene	ND	U	7.1	3.7	1	12/15/17	01/05/18	KWG1711057	
Pyrene	ND	U	7.1	3.7	1	12/15/17	01/05/18	KWG1711057	
Benz(a)anthracene	ND	U	7.1	3.6	1	12/15/17	01/05/18	KWG1711057	
Chrysene	ND	U	7.1	4.1	1	12/15/17	01/05/18	KWG1711057	
Hexachlorobenzene	ND	U	7.1	3.3	1	12/15/17	01/05/18	KWG1711057	
Pentachlorophenol	ND	U	71	5.3	1	12/15/17	01/05/18	KWG1711057	*
Bis(2-ethylhexyl) Phthalate	**36**	J	71	8.9	1	12/15/17	01/05/18	KWG1711057	
Benzo(b)fluoranthene	ND	U	7.1	3.4	1	12/15/17	01/05/18	KWG1711057	
Benzo(k)fluoranthene	ND	U	7.1	4.0	1	12/15/17	01/05/18	KWG1711057	
Benzo(a)pyrene	**4.8**	J	7.1	3.6	1	12/15/17	01/05/18	KWG1711057	
Indeno(1,2,3-cd)pyrene	ND	U	7.1	3.2	1	12/15/17	01/05/18	KWG1711057	
Dibenz(a,h)anthracene	ND	U	7.1	3.0	1	12/15/17	01/05/18	KWG1711057	
Benzo(g,h,i)perylene	ND	U	7.1	3.7	1	12/15/17	01/05/18	KWG1711057	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	62	14-85	01/05/18	Acceptable
2-Fluorobiphenyl	52	22-85	01/05/18	Acceptable
2,4,6-Tribromophenol	63	10-124	01/05/18	Acceptable
Terphenyl-d14	67	30-102	01/05/18	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	KWG1711057-4	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	6.0	2.9	1	12/15/17	01/05/18	KWG1711057	
2-Methylnaphthalene	ND	U	6.0	2.8	1	12/15/17	01/05/18	KWG1711057	
Acenaphthylene	ND	U	6.0	2.6	1	12/15/17	01/05/18	KWG1711057	
Acenaphthene	ND	U	6.0	3.2	1	12/15/17	01/05/18	KWG1711057	
Fluorene	ND	U	6.0	3.3	1	12/15/17	01/05/18	KWG1711057	
Phenanthrene	ND	U	6.0	3.6	1	12/15/17	01/05/18	KWG1711057	
Anthracene	ND	U	6.0	3.2	1	12/15/17	01/05/18	KWG1711057	
Fluoranthene	ND	U	6.0	3.7	1	12/15/17	01/05/18	KWG1711057	
Pyrene	ND	U	6.0	3.7	1	12/15/17	01/05/18	KWG1711057	
Benz(a)anthracene	ND	U	6.0	3.6	1	12/15/17	01/05/18	KWG1711057	
Chrysene	ND	U	6.0	4.1	1	12/15/17	01/05/18	KWG1711057	
Hexachlorobenzene	ND	U	6.0	3.3	1	12/15/17	01/05/18	KWG1711057	
Pentachlorophenol	ND	U	50	5.3	1	12/15/17	01/05/18	KWG1711057	*
Bis(2-ethylhexyl) Phthalate	**21**	J	50	8.9	1	12/15/17	01/05/18	KWG1711057	
Benzo(b)fluoranthene	ND	U	6.0	3.4	1	12/15/17	01/05/18	KWG1711057	
Benzo(k)fluoranthene	ND	U	6.0	4.0	1	12/15/17	01/05/18	KWG1711057	
Benzo(a)pyrene	ND	U	6.0	3.6	1	12/15/17	01/05/18	KWG1711057	
Indeno(1,2,3-cd)pyrene	ND	U	6.0	3.2	1	12/15/17	01/05/18	KWG1711057	
Dibenz(a,h)anthracene	ND	U	6.0	3.0	1	12/15/17	01/05/18	KWG1711057	
Benzo(g,h,i)perylene	ND	U	6.0	3.7	1	12/15/17	01/05/18	KWG1711057	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	71	14-85	01/05/18	Acceptable
2-Fluorobiphenyl	62	22-85	01/05/18	Acceptable
2,4,6-Tribromophenol	53	10-124	01/05/18	Acceptable
Terphenyl-d14	65	30-102	01/05/18	Acceptable

Comments:

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056
Sample Matrix: Sediment

Service Request: K1713018

Surrogate Recovery Summary
Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3541
Analysis Method: 8270D

Units: Percent
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3	Sur4
URSC-RM20.1W-COMP	K1713018-010	74	67	78	75
URSC-RM20.4E-COMP	K1713018-016	62	52	63	67
Method Blank	KWG1711057-4	71	62	53	65
URSC-RM20.1W-COMPMS	KWG1711057-1	69	62	72	72
URSC-RM20.1W-COMPDMS	KWG1711057-2	62	56	70	69
Lab Control Sample	KWG1711057-3	73	64	62	68

Surrogate Recovery Control Limits (%)

Sur1	=	Nitrobenzene-d5	14-85
Sur2	=	2-Fluorobiphenyl	22-85
Sur3	=	2,4,6-Tribromophenol	10-124
Sur4	=	Terphenyl-d14	30-102

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Analyzed:**	01/05/2018
		Time Analyzed:	14:03

Internal Standard Area and RT Summary
Semi-Volatile Organic Compounds by GC/MS

File ID:	J:\MS29\DATA\010518\0105F002.D	**Lab Code:**	KWG1800268-2
Instrument ID:	MS29	**Analysis Lot:**	KWG1800268
Analysis Method:	8270D		

		Naphthalene-d8		Acenaphthene-d10		Phenanthrene-d10	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Results ==>	254,011	6.25	126,392	9.64	222,477	11.98
	Upper Limit ==>	508,022	6.75	252,784	10.14	444,954	12.48
	Lower Limit ==>	127,006	5.75	63,196	9.14	111,239	11.48
	ICAL Result ==>	214,057	6.29	108,131	9.68	207,632	12.02
Associated Analyses							
Method Blank	KWG1711057-4	254,003	6.25	122,356	9.64	222,272	11.98
Lab Control Sample	KWG1711057-3	247,145	6.25	124,328	9.64	220,022	11.98
URSC-RM20.1W-COMPMS	KWG1711057-1	253,138	6.25	131,301	9.64	242,194	11.98
URSC-RM20.1W-COMPDMS	KWG1711057-2	258,756	6.25	130,460	9.64	246,886	11.98
URSC-RM20.1W-COMP	K1713018-010	255,246	6.25	126,797	9.64	238,443	11.98
URSC-RM20.4E-COMP	K1713018-016	246,835	6.25	124,167	9.64	226,621	11.98

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Report

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056

Service Request: K1713018
Date Analyzed: 01/05/2018
Time Analyzed: 14:03

Internal Standard Area and RT Summary
Semi-Volatile Organic Compounds by GC/MS

File ID: J:\MS29\DATA\010518\0105F002.D
Instrument ID: MS29
Analysis Method: 8270D

Lab Code: KWG1800268-2
Analysis Lot: KWG1800268

		Chrysene-d12		Perylene-d12	
		Area	**RT**	**Area**	**RT**
	Results ==>	208,684	15.43	227,729	18.55
	Upper Limit ==>	417,368	15.93	455,458	19.05
	Lower Limit ==>	104,342	14.93	113,865	18.05
	ICAL Result ==>	211,022	15.47	201,630	18.59
Associated Analyses					
Method Blank	KWG1711057-4	218,262	15.43	247,168	18.55
Lab Control Sample	KWG1711057-3	200,649	15.43	207,417	18.55
URSC-RM20.1W-COMPMS	KWG1711057-1	245,939	15.43	259,445	18.56
URSC-RM20.1W-COMPDMS	KWG1711057-2	262,161	15.43	272,859	18.56
URSC-RM20.1W-COMP	K1713018-010	256,468	15.43	269,087	18.56
URSC-RM20.4E-COMP	K1713018-016	229,595	15.43	262,928	18.56

Results flagged with an asterisk (*) indicate values outside control criteria.

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Extracted:**	12/15/2017
Sample Matrix:	Sediment	**Date Analyzed:**	01/05/2018

Matrix Spike/Duplicate Matrix Spike Summary
Semi-Volatile Organic Compounds by GC/MS

Sample Name:	URSC-RM20.1W-COMP	**Units:**	ug/Kg
Lab Code:	K1713018-010	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D	**Extraction Lot:**	KWG1711057

		URSC-RM20.1W-COMPMS KWG1711057-1 Matrix Spike			URSC-RM20.1W-COMPDMS KWG1711057-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Naphthalene	ND	128	204	63	115	205	56	10-109	11	40
2-Methylnaphthalene	ND	137	204	67	124	205	61	10-117	10	40
Acenaphthylene	ND	154	204	75	147	205	72	10-108	5	40
Acenaphthene	ND	144	204	70	134	205	66	10-108	7	40
Fluorene	ND	159	204	78	154	205	75	10-110	3	40
Phenanthrene	8.3	163	204	76	160	205	74	10-132	2	40
Anthracene	ND	165	204	81	162	205	79	10-119	2	40
Fluoranthene	16	188	204	84	184	205	82	10-140	2	40
Pyrene	14	174	204	78	166	205	74	10-132	5	40
Benz(a)anthracene	5.7	181	204	86	178	205	84	13-120	2	40
Chrysene	8.6	174	204	81	171	205	79	10-138	2	40
Hexachlorobenzene	ND	156	204	76	150	205	73	33-92	4	40
Pentachlorophenol	ND	154	204	75	157	205	77	10-134	2	40
Bis(2-ethylhexyl) Phthalate	61	240	204	88	254	205	94	23-123	6	40
Benzo(b)fluoranthene	11	177	204	81	177	205	81	10-128	0	40
Benzo(k)fluoranthene	ND	172	204	84	169	205	83	15-114	2	40
Benzo(a)pyrene	13	172	204	78	169	205	76	10-148	2	40
Indeno(1,2,3-cd)pyrene	7.3	202	204	95	200	205	94	10-143	1	40
Dibenz(a,h)anthracene	ND	178	204	87	180	205	88	29-102	1	40
Benzo(g,h,i)perylene	9.4	207	204	97	207	205	96	10-126	0	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Extracted:**	12/15/2017
Sample Matrix:	Sediment	**Date Analyzed:**	01/05/2018

Lab Control Spike Summary
Semi-Volatile Organic Compounds by GC/MS

Extraction Method:	EPA 3541	**Units:**	ug/Kg
Analysis Method:	8270D	**Basis:**	Dry
		Level:	Low
		Extraction Lot:	KWG1711057

	Lab Control Sample KWG1711057-3 Lab Control Spike			
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
Naphthalene	166	250	66	30-74
2-Methylnaphthalene	174	250	69	26-80
Acenaphthylene	190	250	76	30-79
Acenaphthene	177	250	71	31-77
Fluorene	186	250	74	30-81
Phenanthrene	179	250	72	36-85
Anthracene	197	250	79	36-87
Fluoranthene	194	250	78	25-115
Pyrene	199	250	79	40-99
Benz(a)anthracene	202	250	81	43-98
Chrysene	195	250	78	41-98
Hexachlorobenzene	187	250	75	36-86
Pentachlorophenol	130	250	52	19-103
Bis(2-ethylhexyl) Phthalate	253	250	101	39-113
Benzo(b)fluoranthene	197	250	79	39-99
Benzo(k)fluoranthene	200	250	80	38-93
Benzo(a)pyrene	198	250	79	43-102
Indeno(1,2,3-cd)pyrene	210	250	84	36-105
Dibenz(a,h)anthracene	197	250	79	38-101
Benzo(g,h,i)perylene	216	250	87	39-99

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Extracted:**	12/15/2017
Sample Matrix:	Sediment	**Date Analyzed:**	01/05/2018
		Time Analyzed:	19:40

Method Blank Summary
Semi-Volatile Organic Compounds by GC/MS

Sample Name:	Method Blank	**Instrument ID:**	MS29
Lab Code:	KWG1711057-4	**File ID:**	J:\MS29\DATA\010518\0105F011.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D	**Extraction Lot:**	KWG1711057

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1711057-3	J:\MS29\DATA\010518\0105F012.D	01/05/18	20:09
URSC-RM20.1W-COMPMS	KWG1711057-1	J:\MS29\DATA\010518\0105F013.D	01/05/18	20:37
URSC-RM20.1W-COMPDMS	KWG1711057-2	J:\MS29\DATA\010518\0105F014.D	01/05/18	21:06
URSC-RM20.1W-COMP	K1713018-010	J:\MS29\DATA\010518\0105F015.D	01/05/18	21:34
URSC-RM20.4E-COMP	K1713018-016	J:\MS29\DATA\010518\0105F016.D	01/05/18	22:03

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Extracted:**	12/15/2017
Sample Matrix:	Sediment	**Date Analyzed:**	01/05/2018
		Time Analyzed:	20:09

Lab Control Sample Summary
Semi-Volatile Organic Compounds by GC/MS

Sample Name:	Lab Control Sample	**Instrument ID:**	MS29
Lab Code:	KWG1711057-3	**File ID:**	J:\MS29\DATA\010518\0105F012.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D	**Extraction Lot:**	KWG1711057

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1711057-4	J:\MS29\DATA\010518\0105F011.D	01/05/18	19:40
URSC-RM20.1W-COMPMS	KWG1711057-1	J:\MS29\DATA\010518\0105F013.D	01/05/18	20:37
URSC-RM20.1W-COMPDMS	KWG1711057-2	J:\MS29\DATA\010518\0105F014.D	01/05/18	21:06
URSC-RM20.1W-COMP	K1713018-010	J:\MS29\DATA\010518\0105F015.D	01/05/18	21:34
URSC-RM20.4E-COMP	K1713018-016	J:\MS29\DATA\010518\0105F016.D	01/05/18	22:03

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056

Service Request: K1713018
Date Analyzed: 01/05/2018
Time Analyzed: 13:35

Tune Summary
Semi-Volatile Organic Compounds by GC/MS

File ID: J:\MS29\DATA\010518\0105F001.D
Instrument ID: MS29
Column:

Analysis Method: 8270D
Analysis Lot: KWG1800268

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	10	80	31.8	629226	PASS
68	69	0	2	0.0	0	PASS
69	198	0	100	36.6	723978	PASS
70	69	0	2	0.5	3579	PASS
127	198	10	80	44.4	877440	PASS
197	198	0	2	0.0	0	PASS
198	442	30	100	69.0	1975808	PASS
199	198	5	9	6.7	132136	PASS
275	198	10	60	31.0	612181	PASS
365	442	1	50	2.4	69322	PASS
441	443	0	100	84.4	468032	PASS
442	442	100	100	100.0	2863616	PASS
443	442	15	24	19.4	554560	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1800268-2	J:\MS29\DATA\010518\0105F002.D	01/05/2018	14:03	
Method Blank	KWG1711057-4	J:\MS29\DATA\010518\0105F011.D	01/05/2018	19:40	
Lab Control Sample	KWG1711057-3	J:\MS29\DATA\010518\0105F012.D	01/05/2018	20:09	
URSC-RM20.1W-COMPMS	KWG1711057-1	J:\MS29\DATA\010518\0105F013.D	01/05/2018	20:37	
URSC-RM20.1W-COMPDMS	KWG1711057-2	J:\MS29\DATA\010518\0105F014.D	01/05/2018	21:06	
URSC-RM20.1W-COMP	K1713018-010	J:\MS29\DATA\010518\0105F015.D	01/05/2018	21:34	
URSC-RM20.4E-COMP	K1713018-016	J:\MS29\DATA\010518\0105F016.D	01/05/2018	22:03	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

QA/QC Results

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056

Service Request: K1713018
Calibration Date: 12/21/2017

Initial Calibration Summary
Semi-Volatile Organic Compounds by GC/MS

Calibration ID: CAL15647
Instrument ID: MS29

Column: MS

Level ID	File ID	Level ID	File ID
A	J:\MS29\DATA\122117\1221F003.D	G	J:\MS29\DATA\122117\1221F009.D
B	J:\MS29\DATA\122117\1221F004.D	H	J:\MS29\DATA\122117\1221F010.D
C	J:\MS29\DATA\122117\1221F005.D	I	J:\MS29\DATA\122117\1221F011.D
D	J:\MS29\DATA\122117\1221F006.D	J	J:\MS29\DATA\122117\1221F012.D
E	J:\MS29\DATA\122117\1221F007.D		
F	J:\MS29\DATA\122117\1221F008.D		

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Naphthalene	A	50	1.01	B	100	0.915	C	200	0.981	D	500	0.967	E	1000	0.973
	F	2000	1.00	G	3000	0.997	H	5000	0.999	I	7000	0.985	J	10000	1.00
2-Methylnaphthalene	A	50	0.519	B	100	0.500	C	200	0.531	D	500	0.545	E	1000	0.559
	F	2000	0.579	G	3000	0.565	H	5000	0.580	I	7000	0.576	J	10000	0.586
Acenaphthylene				B	100	1.24	C	200	1.38	D	500	1.56	E	1000	1.74
	F	2000	1.88	G	3000	1.91	H	5000	1.95	I	7000	1.95	J	10000	1.98
Acenaphthene	A	50	1.13	B	100	1.10	C	200	1.14	D	500	1.12	E	1000	1.13
	F	2000	1.16	G	3000	1.17	H	5000	1.16	I	7000	1.16	J	10000	1.16
Fluorene	A	50	1.16	B	100	1.21	C	200	1.22	D	500	1.26	E	1000	1.32
	F	2000	1.38	G	3000	1.36	H	5000	1.38	I	7000	1.36	J	10000	1.41
Phenanthrene	A	50	1.06	B	100	0.987	C	200	1.07	D	500	1.05	E	1000	1.07
	F	2000	1.09	G	3000	1.06	H	5000	1.08	I	7000	1.07	J	10000	1.07
Anthracene	A	50	0.794	B	100	0.781	C	200	0.830	D	500	0.915	E	1000	0.985
	F	2000	1.05	G	3000	1.05	H	5000	1.09	I	7000	1.07	J	10000	1.09
Fluoranthene	A	50	0.954	B	100	0.943	C	200	1.01	D	500	1.12	E	1000	1.19
	F	2000	1.22	G	3000	1.21	H	5000	1.20	I	7000	1.16	J	10000	1.18
Pyrene	A	50	1.14	B	100	1.15	C	200	1.26	D	500	1.30	E	1000	1.31
	F	2000	1.30	G	3000	1.30	H	5000	1.31	I	7000	1.31	J	10000	1.30
Benz(a)anthracene	A	50	0.937	B	100	0.801	C	200	0.829	D	500	0.931	E	1000	1.02
	F	2000	1.08	G	3000	1.12	H	5000	1.19	I	7000	1.21	J	10000	1.20
Chrysene	A	50	0.967	B	100	1.01	C	200	1.10	D	500	1.06	E	1000	1.06
	F	2000	1.08	G	3000	1.07	H	5000	1.08	I	7000	1.07	J	10000	1.06
Hexachlorobenzene	A	50	0.275	B	100	0.260	C	200	0.283	D	500	0.294	E	1000	0.297
	F	2000	0.303	G	3000	0.297	H	5000	0.296	I	7000	0.297	J	10000	0.297
Pentachlorophenol										D	500	0.0978	E	1000	0.124
	F	2000	0.152	G	3000	0.156	H	5000	0.171	I	7000	0.175	J	10000	0.178
Bis(2-ethylhexyl) Phthalate										D	500	0.248	E	1000	0.346
	F	2000	0.489	G	3000	0.567	H	5000	0.662	I	7000	0.706	J	10000	0.711

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056

Service Request: K1713018
Calibration Date: 12/21/2017

Initial Calibration Summary
Semi-Volatile Organic Compounds by GC/MS

Calibration ID: CAL15647
Instrument ID: MS29

Column: MS

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Benzo(b)fluoranthene	A	50	0.861	B	100	0.805	C	200	0.819	D	500	0.967	E	1000	1.06
	F	2000	1.13	G	3000	1.12	H	5000	1.13	I	7000	1.17	J	10000	1.18
Benzo(k)fluoranthene	A	50	0.861	B	100	0.810	C	200	0.870	D	500	1.02	E	1000	1.09
	F	2000	1.20	G	3000	1.16	H	5000	1.15	I	7000	1.21	J	10000	1.16
Benzo(a)pyrene				B	100	0.607	C	200	0.566	D	500	0.697	E	1000	0.828
	F	2000	0.936	G	3000	0.956	H	5000	0.980	I	7000	1.02	J	10000	1.01
Indeno(1,2,3-cd)pyrene	A	50	0.917	B	100	0.797	C	200	0.797	D	500	0.874	E	1000	0.805
	F	2000	0.807	G	3000	0.810	H	5000	0.829	I	7000	0.874	J	10000	0.910
Dibenz(a,h)anthracene	A	50	0.941	B	100	0.797	C	200	0.932	D	500	0.989	E	1000	0.856
	F	2000	0.963	G	3000	0.927	H	5000	0.929	I	7000	0.950	J	10000	0.974
Benzo(g,h,i)perylene	A	50	0.892	B	100	0.812	C	200	0.979	D	500	0.912	E	1000	0.765
	F	2000	0.599	G	3000	0.640	H	5000	0.683	I	7000	0.708	J	10000	0.720
Nitrobenzene-d5	A	50	0.815	B	100	0.825	C	200	0.858	D	500	0.906	E	1000	0.996
	F	2000	1.04	G	3000	1.01	H	5000	1.08	I	7000	1.08	J	10000	1.08
2-Fluorobiphenyl	A	50	1.50	B	100	1.45	C	200	1.51	D	500	1.50	E	1000	1.50
	F	2000	1.53	G	3000	1.52	H	5000	1.52	I	7000	1.50	J	10000	1.51
2,4,6-Tribromophenol							C	200	0.0995	D	500	0.118	E	1000	0.141
	F	2000	0.154	G	3000	0.154	H	5000	0.162	I	7000	0.162			
Terphenyl-d14	A	50	0.923	B	100	0.855	C	200	0.938	D	500	0.905	E	1000	0.898
	F	2000	0.898	G	3000	0.916	H	5000	0.949	I	7000	0.944	J	10000	0.954

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Hart Crowser, Incorporated **Service Request:** K1713018
Project: URSC/150-001-056 **Calibration Date:** 12/21/2017

Initial Calibration Summary
Semi-Volatile Organic Compounds by GC/MS

Calibration ID: CAL15647 **Column:** MS
Instrument ID: MS29

		Calibration Evaluation					RRF Evaluation		
Analyte Name	Compound Type	Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
Naphthalene	MS	AverageRF	% RSD	2.7		≤ 20	0.982		0.700
2-Methylnaphthalene	MS	AverageRF	% RSD	5.3		≤ 20	0.554		0.300
Acenaphthylene	MS	AverageRF	% RSD	15.9		≤ 20	1.73		0.900
Acenaphthene	MS	AverageRF	% RSD	2.1		≤ 20	1.14		0.700
Fluorene	MS	AverageRF	% RSD	6.6		≤ 20	1.31		0.800
Phenanthrene	MS	AverageRF	% RSD	2.6		≤ 20	1.06		0.600
Anthracene	MS	AverageRF	% RSD	12.9		≤ 20	0.965		0.600
Fluoranthene	MS	AverageRF	% RSD	9.6		≤ 20	1.12		0.600
Pyrene	MS	AverageRF	% RSD	5.2		≤ 20	1.27		0.600
Benz(a)anthracene	MS	AverageRF	% RSD	14.8		≤ 20	1.03		0.600
Chrysene	MS	AverageRF	% RSD	3.7		≤ 20	1.06		0.600
Hexachlorobenzene	MS	AverageRF	% RSD	4.6		≤ 20	0.290		0.100
Pentachlorophenol	MS	Quadratic	COD	1.000		≥ 0.990	0.151		0.050
Bis(2-ethylhexyl) Phthalate	MS	Quadratic	COD	0.997		≥ 0.990	0.533		0.010
Benzo(b)fluoranthene	MS	AverageRF	% RSD	14.4		≤ 20	1.02		0.600
Benzo(k)fluoranthene	MS	AverageRF	% RSD	14.5		≤ 20	1.05		0.600
Benzo(a)pyrene	MS	Quadratic	COD	0.999		≥ 0.990	0.845		0.600
Indeno(1,2,3-cd)pyrene	MS	AverageRF	% RSD	5.6		≤ 20	0.842		0.500
Dibenz(a,h)anthracene	MS	AverageRF	% RSD	6.2		≤ 20	0.926		0.400
Benzo(g,h,i)perylene	MS	AverageRF	% RSD	16.2		≤ 20	0.771		0.500
Nitrobenzene-d5	SURR	AverageRF	% RSD	11.1		≤ 20	0.969		0.01
2-Fluorobiphenyl	SURR	AverageRF	% RSD	1.4		≤ 20	1.50		0.01
2,4,6-Tribromophenol	SURR	Quadratic	COD	1.000		≥ 0.990	0.141		0.01
Terphenyl-d14	SURR	AverageRF	% RSD	3.3		≤ 20	0.918		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

QA/QC Results

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056

Service Request: K1713018
Calibration Date: 12/21/2017
Date Analyzed: 12/21/2017

Second Source Calibration Verification
Semi-Volatile Organic Compounds by GC/MS

Calibration Type: Internal Standard
Analysis Method: 8270D

Calibration ID: CAL15647
Units: ng/ml

File ID: J:\MS29\DATA\122117\1221F013.D
J:\MS29\DATA\122117\1221F014.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Naphthalene	3000	3000	0.982	0.986	0	NA	± 30 %	AverageRF
2-Methylnaphthalene	3000	3400	0.554	0.623	12	NA	± 30 %	AverageRF
Acenaphthylene	3000	3000	1.73	1.74	0	NA	± 30 %	AverageRF
Acenaphthene	3000	3200	1.14	1.21	6	NA	± 30 %	AverageRF
Fluorene	3000	3200	1.31	1.40	7	NA	± 30 %	AverageRF
Phenanthrene	3000	3100	1.06	1.10	4	NA	± 30 %	AverageRF
Anthracene	3000	3500	0.965	1.11	16	NA	± 30 %	AverageRF
Fluoranthene	3000	3300	1.12	1.25	12	NA	± 30 %	AverageRF
Pyrene	3000	2900	1.27	1.23	-3	NA	± 30 %	AverageRF
Benz(a)anthracene	3000	3300	1.03	1.14	11	NA	± 30 %	AverageRF
Chrysene	3000	2900	1.06	1.03	-2	NA	± 30 %	AverageRF
Hexachlorobenzene	3000	3100	0.290	0.303	5	NA	± 30 %	AverageRF
Pentachlorophenol	3000	3700	0.151	0.204	NA	23	± 30 %	Quadratic
Bis(2-ethylhexyl) Phthalate	3000	3200	0.533	0.629	NA	7	± 30 %	Quadratic
Benzo(b)fluoranthene	3000	3300	1.02	1.11	9	NA	± 30 %	AverageRF
Benzo(k)fluoranthene	3000	3200	1.05	1.13	8	NA	± 30 %	AverageRF
Benzo(a)pyrene	3000	3300	0.845	1.04	NA	10	± 30 %	Quadratic
Indeno(1,2,3-cd)pyrene	3000	2900	0.842	0.826	-2	NA	± 30 %	AverageRF
Dibenz(a,h)anthracene	3000	3100	0.926	0.949	2	NA	± 30 %	AverageRF
Benzo(g,h,i)perylene	3000	2700	0.771	0.693	-10	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

QA/QC Results

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056

Service Request: K1713018
Date Analyzed: 01/05/2018

Continuing Calibration Verification Summary
Semi-Volatile Organic Compounds by GC/MS

Calibration Type: Internal Standard
Analysis Method: 8270D

Calibration Date: 12/21/2017
Calibration ID: CAL15647
Analysis Lot: KWG1800268
Units: ng/ml

File ID: J:\MS29\DATA\010518\0105F002.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Naphthalene	3000	2900	0.700	0.982	0.964	-2	NA	± 20	AverageRF
2-Methylnaphthalene	3000	3000	0.300	0.554	0.561	1	NA	± 20	AverageRF
Acenaphthylene	3000	3300	0.900	1.73	1.91	10	NA	± 20	AverageRF
Acenaphthene	3000	3000	0.700	1.14	1.14	0	NA	± 20	AverageRF
Fluorene	3000	3100	0.800	1.31	1.33	2	NA	± 20	AverageRF
Phenanthrene	3000	2900	0.600	1.06	1.03	-3	NA	± 20	AverageRF
Anthracene	3000	3200	0.600	0.965	1.04	8	NA	± 20	AverageRF
Fluoranthene	3000	3000	0.600	1.12	1.11	-1	NA	± 20	AverageRF
Pyrene	3000	3000	0.600	1.27	1.29	2	NA	± 20	AverageRF
Benz(a)anthracene	3000	3300	0.600	1.03	1.13	9	NA	± 20	AverageRF
Chrysene	3000	3000	0.600	1.06	1.04	-1	NA	± 20	AverageRF
Hexachlorobenzene	3000	3000	0.100	0.290	0.293	1	NA	± 20	AverageRF
Pentachlorophenol	3000	2100	0.050	0.151	0.105	NA	-32 *	± 20	Quadratic
Bis(2-ethylhexyl) Phthalate	3000	3500	0.010	0.533	0.708	NA	18	± 20	Quadratic
Benzo(b)fluoranthene	3000	3000	0.600	1.02	1.03	1	NA	± 20	AverageRF
Benzo(k)fluoranthene	3000	3100	0.600	1.05	1.09	3	NA	± 20	AverageRF
Benzo(a)pyrene	3000	3100	0.600	0.845	0.965	NA	2	± 20	Quadratic
Indeno(1,2,3-cd)pyrene	3000	2800	0.500	0.842	0.783	-7	NA	± 20	AverageRF
Dibenz(a,h)anthracene	3000	2800	0.400	0.926	0.860	-7	NA	± 20	AverageRF
Benzo(g,h,i)perylene	3000	2400	0.500	0.771	0.609	-21 *	NA	± 20	AverageRF
Nitrobenzene-d5	3000	3500	0.01	0.969	1.13	17	NA	± 20	AverageRF
2-Fluorobiphenyl	3000	3000	0.01	1.50	1.51	1	NA	± 20	AverageRF
2,4,6-Tribromophenol	3000	2800	0.01	0.141	0.147	NA	-6	± 20	Quadratic
Terphenyl-d14	3000	2800	0.01	0.918	0.869	-5	NA	± 20	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: Hart Crowser, Incorporated **Service Request:** K1713018
Project: URSC/150-001-056

Analysis Run Log
Semi-Volatile Organic Compounds by GC/MS

Analysis Method: 8270D **Analysis Lot:** KWG1800268
Instrument ID: MS29

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0105F001.D	GC/MS Tuning - Decafluorotriphenylphosph	KWG1800268-1	1/5/2018	13:35		1/5/2018	13:58
0105F002.D	Continuing Calibration Verification	KWG1800268-2	1/5/2018	14:03		1/5/2018	14:26
0105F005.D	ZZZZZZ	ZZZZZZ	1/5/2018	16:49		1/5/2018	17:12
0105F006.D	ZZZZZZ	ZZZZZZ	1/5/2018	17:17		1/5/2018	17:40
0105F007.D	ZZZZZZ	ZZZZZZ	1/5/2018	17:46		1/5/2018	18:09
0105F008.D	ZZZZZZ	ZZZZZZ	1/5/2018	18:14		1/5/2018	18:37
0105F009.D	ZZZZZZ	ZZZZZZ	1/5/2018	18:43		1/5/2018	19:06
0105F010.D	ZZZZZZ	ZZZZZZ	1/5/2018	19:11		1/5/2018	19:34
0105F011.D	Method Blank	KWG1711057-4	1/5/2018	19:40		1/5/2018	20:03
0105F012.D	Lab Control Sample	KWG1711057-3	1/5/2018	20:09		1/5/2018	20:32
0105F013.D	URSC-RM20.1W-COMPMS	KWG1711057-1	1/5/2018	20:37		1/5/2018	21:00
0105F014.D	URSC-RM20.1W-COMPDMS	KWG1711057-2	1/5/2018	21:06		1/5/2018	21:29
0105F015.D	URSC-RM20.1W-COMP	K1713018-010	1/5/2018	21:34		1/5/2018	21:57
0105F016.D	URSC-RM20.4E-COMP	K1713018-016	1/5/2018	22:03		1/5/2018	22:26
0105F017.D	ZZZZZZ	ZZZZZZ	1/5/2018	22:32		1/5/2018	22:55
0105F018.D	ZZZZZZ	ZZZZZZ	1/5/2018	23:00		1/5/2018	23:23
0105F019.D	ZZZZZZ	ZZZZZZ	1/5/2018	23:29		1/5/2018	23:52
0105F020.D	ZZZZZZ	ZZZZZZ	1/5/2018	23:57		1/6/2018	00:20

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Extracted:**	12/15/2017
Sample Matrix:	Sediment		

Extraction Prep Log
Semi-Volatile Organic Compounds by GC/MS

Extraction Method:	EPA 3541	**Extraction Lot:**	KWG1711057
Analysis Method:	8270D	**Level:**	Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
URSC-RM20.1W-COMP	K1713018-010	12/01/17	12/04/17	40.173g	2mL	60.6	
URSC-RM20.4E-COMP	K1713018-016	12/01/17	12/04/17	40.067g	2mL	71.3	
Method Blank	KWG1711057-4	NA	NA	40.366g	2mL	NA	
URSC-RM20.1W-COMPMS	KWG1711057-1	12/01/17	12/04/17	40.366g	2mL	60.6	
URSC-RM20.1W-COMPDMS	KWG1711057-2	12/01/17	12/04/17	40.266g	2mL	60.6	
Lab Control Sample	KWG1711057-3	NA	NA	20.000g	2mL	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Subcontract Lab Results

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

January 16, 2018. Service Request No K1713018

Howard Holmes.
ALS Group USA, Corp.
1317 South 13th Avenue
Kelso, WA 98626

Laboratory Results for: GSI Water Solutions, Inc.

Dear Howard,

Enclosed are the results of the samples submitted to our laboratory December 19, 2017.
For your reference these analyses have been assigned our service request number **K1713018.**

Analyses were performed according to our laboratory's NELAP approved quality assurance program The test results meet requirements of the current TNI standards where applicable and except as noted in the laboratory case narrative provided All results are intended to be considered in their entirety and ALS Environmental is not responsible for use of less than the final complete report Results apply only to the items submitted to the laboratory for analysis and individual items samples analyzed as listed in the report In accordance to the TNI 2009 Standard, a statement on the estimated uncertainty of measurement of any quantitative analysis will be supplied upon request

Respectfully submitted

ALS Group USA Corp dba ALS Environmental

Nicole Brown
Project Manager

ADDRESS Stancliff Rd Suite Houston TX
PHONE 281 530 5656 |
ALS Group USA Corp
dba ALS Environmental

Certificate of Analysis

ALS Environmental - Houston HRMS
10450 Stancliff Rd, Suite 210, Houston TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

ALS Environmental

Client:	GSI Water Solutions, Inc	**Service Request No.:**	K1713018
Project:	URSC / 150-001-056	**Date Received:**	12/19/17
Sample Matrix:	Sediment		

CASE NARRATIVE

All analyses were performed in adherence to the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Two sediment samples were received for analysis at ALS Environmental in Houston on 12/19/17.

Please note the reporting forms are currently referencing the date ALS-Kelso received the samples (12/04/17) and not the date ALS-Houston received the samples (12/19/17).

The samples were received at 1.4 °C in good condition and are consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Data Validation Notes and Discussion

B flags – Method Blanks

The Method Blank EQ1800009-01 contained low levels of various compounds below the Method Reporting Limit (MRL). The associated compounds in the samples are flagged with 'B' flags where the sample result is less than ten times the level detected in the method blank.

MS/MSD

EQ1700575: Laboratory Control Spike/Duplicate Laboratory Control Spike (LCS/DLCS) samples were analyzed and reported in lieu of an MS/MSD for this extraction batch.

Table 5 in the method for 1668A lists the native toxics/LOC PCB congener list that should be analyzed for in the MS and MSD. ALS Houston also reports the entire 209 PCB congeners for the matrix spike samples for additional accuracy and precision. The matrix spike recoveries for the table 5 list of PCB congeners were within control limits for all compounds with the exception of PCB 54 in the LCS and DLCS and 104 in the DLCS which are slightly above control limits. Various congeners outside the table 5 list were also above control limits. All relative percent differences (RPDs) were within control limits.

EQ1800009: Laboratory Control Spike/Duplicate Laboratory Control Spike (LCS/DLCS) samples were analyzed and reported in lieu of an MS/MSD for this extraction batch.

K flags

EMPC - When the ion abundance ratios associated with a particular compound are outside the QC limits, samples are flagged with a 'K' flag. A 'K' flag indicates an estimated maximum possible concentration for the associated compound.

Detection Limits

Detection limits are calculated for each congener in each sample by measuring the height of the noise level for each quantitation ion for the associated labeled standard. The concentration equivalent to 2.5 times the height of the noise is then calculated using the appropriate response factor and the weight of the sample. The calculated concentration equals the detection limit.

The TEQ Summary results for each sample have been calculated by ALS/Houston to include:

- WHO-2005 TEFs, The 2005 World Health Organization Reevaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-Like Compounds (M. Van den Berg et al., Toxicological Sciences 93(2):223-241, 2006)
- Non-detected compounds are not included in the 'Total'

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS group USA Corp dba ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.

Client: Hart Crowser, Incorporated **Service Request:**K1713018
Project: URSC/150-001-056

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
K1713018-001	URSC-RM20.1W-G001	12/1/2017	0800
K1713018-002	URSC-RM20.1W-G002	12/1/2017	0815
K1713018-003	URSC-RM20.1W-G003	12/1/2017	0835
K1713018-004	URSC-RM20.1W-G004	12/1/2017	0919
K1713018-005	URSC-RM20.1W-G005	12/1/2017	0932
K1713018-006	URSC-RM20.1W-G007	12/1/2017	1015
K1713018-007	URSC-RM20.1W-G008	12/1/2017	1037
K1713018-008	URSC-RM20.1W-G009	12/1/2017	1053
K1713018-009	URSC-RM20.1W-G010	12/1/2017	1118
K1713018-010	URSC-RM20.1W-COMP	12/1/2017	0800
K1713018-011	URSC-RM20.4E-G001	12/1/2017	1228
K1713018-012	URSC-RM20.4E-G002	12/1/2017	1240
K1713018-013	URSC-RM20.4E-G003	12/1/2017	1310
K1713018-014	URSC-RM20.4E-G004	12/1/2017	1330
K1713018-015	URSC-RM20.4E-G005	12/1/2017	1348
K1713018-016	URSC-RM20.4E-COMP	12/1/2017	1228

Service Request Summary

Folder #: **K1713018**
Client Name: GSI Water Solutions, Inc
Project Name: URSC
Project Number: 150-001-056

Report To: Erin Carroll Hughes
GSI Water Solutions, Inc.
55 SW Yamhill, Suite 300
Portland, OR 97204
USA
Phone Number: 971-200-8528
Cell Number: 503-927-4553
Fax Number: 503-239-8940
E-mail: echughes@gsiws.com

Project Chemist: Howard Holmes
Originating Lab: KELSO
Logged By: SWOLF
Date Received: 12/04/17
Internal Due Date: 12/28/2017
QAP: LAB QAP
Qualifier Set: Lab Standard
Formset: Lab Standard
Merged?: Y
Report to MDL?: N, Y
P.O. Number:
EDD: EQUIS 5.0

28 16 oz-Glass Jar WM CLEAR Teflon Liner Unpreserved
12 8 oz-Glass Jar WM CLEAR Teflon Liner Unpreserved
4 40 mL-Glass Vial VOA CLEAR Tef/Silicone Septa Unpreserved
3 32 oz-Glass Jar WM CLEAR Teflon Liner Unpreserved
1 4 oz-Glass Jar WM CLEAR Teflon Liner Unpreserved

Location: K-DELILAH, K-RENTAL-43, E-Disposed, SMO

Pressure Gas:

				KELSO		KELSO		KELSO	KELSO			HOUSTON		KELSO	
Lab Samp No.	**Client Samp No**	**Matrix**	**Collected**	PartSize ASTMCB/ASTM D422M	PSEP TOC T/PSEP TOC	Hg/7471B	Metals T/6020A	NW TPH SGT/NWTPH-Dx	OC_Pest/ALS SOP	PBDE/8270D	SVO LL/8270D	Cl Biphen Cong/1668C	Dioxins Furans/1613B	PSEP TS/PSEP TS	TS/160.3 Modified
K1713018-010	URSC-RM20.1W-COMP	Sediment	12/01/17 0800	**V**	**V**	**V**	**V**	**V**	**V**	**V**	**V**	**IV**	**IV**	**V**	**V**
K1713018-016	URSC-RM20.4E-COMP	Sediment	12/01/17 1228	**V**	**V**	**V**	**V**	**V**	**V**	**V**	**V**	**IV**	**IV**	**V**	**V**

Folder Comments:

Wet sieve samples thru 2mm sieve
ISM Wet material
Tier IV

Service Request Summary

Folder #:	**K1713018**
Client Name:	GSI Water Solutions, Inc
Project Name:	URSC
Project Number:	150-001-056
Report To:	Erin Carroll Hughes GSI Water Solutions, Inc. 55 SW Yamhill, Suite 300 Portland, OR 97204 USA
Phone Number:	971-200-8528
Cell Number:	503-927-4553
Fax Number:	503-239-8940
E-mail:	echughes@gsiws.com

Project Chemist:	Howard Holmes
Originating Lab:	KELSO
Logged By:	SWOLF
Date Received:	12/04/17
Internal Due Date:	12/28/2017
QAP:	LAB QAP
Qualifier Set:	Lab Standard
Formset:	Lab Standard
Merged?:	Y
Report to MDL?:	N, Y
P.O. Number:	
EDD:	EQUIS 5.0

28	16 oz-Glass Jar WM CLEAR Teflon Liner Unpreserved
12	8 oz-Glass Jar WM CLEAR Teflon Liner Unpreserved
4	40 mL-Glass Vial VOA CLEAR Tef/Silicone Septa Unpreserved
3	32 oz-Glass Jar WM CLEAR Teflon Liner Unpreserved
1	4 oz-Glass Jar WM CLEAR Teflon Liner Unpreserved

Location: K-DELILAH, K-RENTAL-43, E-Disposed, SMO

Pressure Gas:

Test Comments:

Group	Test/Method	Samples	Comments
Metals	Metals T/6020A	2	As,Cd,Cr,Cu,Pb,Mn,Ni,Zn
Semivoa GCMS	OC_Pest/ALS SOP	2	RL 18469
Semivoa GCMS	SVO LL/8270D	2	PAHs,SVOC,Phenols,Phthalates
SMO	Archive -20C/Archive	14	Fee is for 6 months
Soils Prep	ISM Hg/ISM Subsample	2	For 7471 Hg
Soils Prep	ISM TS/ISM Subsample	2	For PSEP TS
Soils Prep	ISM 8290/DIOXIN/ISM Subsample	2	For Dioxins by 1613B to ALS-Houston
Soils Prep	ISM 8270/ISM Subsample	2	For 8270 PBDE
Soils Prep	ISM 6000Tot Met/ISM Subsample	2	For 6020 metals
Soils Prep	ISM TOC/ISM Subsample	2	For PSEP TOC
Soils Prep	ISM 8015/ISM Subsample	2	For NWTPH-Dx + SGT
Soils Prep	ISM PEST/ISM Subsample	2	For OC Pest by GC/MS/MS
Soils Prep	ISM 8270 LL/ISM Subsample	2	For 8270D LL
Soils Prep	ISM PCB/ISM Subsample	2	For 1668 PCB Congeners to ALS-Houston
Soils Prep	Composite/Composite	2	Composite equal mass from each jar with -2mm sieved materiial to run full analytical suite. Retain material for each sample jar not used for the composite
Soils Prep	ISM Sieve/ISM Sieve	2	Wet sieve each jar separately through 2mm sieve. Retain both retained and passed material for each sample jar $25/jar
Soils Prep	ISM/ISM Subsample	2	For Butyltins

Superset Summary

Service Request: K1713018 **SuperSet Reference:** 17-0000448163 rev 00

Analytical Method: **1613B**

Calibrations: 07/26/17

Data Files:

Raw Data	Begin CCAL	Method Blank	Lab ID
P513666	P513663	P513666	EQ1800009-01
P513697	P513686	P513666	EQ1800009-02
P513698	P513686	P513666	EQ1800009-03
P513707	P513702	P513666	K1713018-010
P513708	P513702	P513666	K1713018-016

Analytical Method: **1668C**

Calibrations: 04/03/17

Data Files:

Raw Data	Begin CCAL	Method Blank	Lab ID
P305033	P305032	P305033	EQ1700575-01
P305053	P305045	P305033	EQ1700575-02
P305054	P305045	P305033	EQ1700575-03
P305039	P305032	P305033	K1713018-010
P305040	P305032	P305033	K1713018-016

Data Qualifiers

HRMS Qualifier Set

B Indicates the associated analyte was found in the method blank at >1/10th the reported value.
E Estimated value. The reported concentration is above the calibration range of the instrument.
H Sample extracted and/or analyzed out of suggested holding time.
J Estimated value. The reported concentration is below the MRL.
K The ion abundance ratio between the primary and secondary ions were outside of theoretical acceptance limits.The concentration of this analyte should be considered as an estimate.
P Chlorodiphenyl ether interference was present at the retention time of the target analyte. Reported result should be considered an estimate.
Q Monitored lock-mass indicates matrix-interference. Reported result is estimated.
S Signal saturated detector. Result reported from dilution.
U Compound was analyzed for, but was not detected (ND).
X See Case Narrative.
Y Isotopically Labeled Standard recovery outside of acceptance limits. In all cases, the signal-to-nois ratios are greater than 10:1, making the recoveries acceptable.
i The MDL/MRL have been elevated due to a matrix interference.

ALS Laboratory Group

Acronyms

Cal	Calibration
Conc	CONCentration
Dioxin(s)	Polychlorinated dibenzo-p-dioxin(s)
EDL	Estimated Detection Limit
EMPC	Estimated Maximum Possible Concentration
Flags	Data qualifiers
Furan(s)	Polychlorinated dibenzofuran(s)
g	Grams
ICAL	Initial CALibration
ID	IDentifier
Ions	Masses monitored for the analyte during data acquisition
L	Liter (s)
LCS	Laboratory Control Sample
DLCS	Duplicate Laboratory Control Sample
MB	Method Blank
MCL	Method Calibration Limit
MDL	Method Detection Limit
mL	Milliliters
MS	Matrix Spiked sample
DMS	Duplicate Matrix Spiked sample
NO	Number of peaks meeting all identification criteria
PCDD(s)	Polychlorinated dibenzo-p-dioxin(s)
PCDF(s)	Polychlorinated dibenzofuran(s)
ppb	Parts per billion
ppm	Parts per million
ppq	Parts per quadrillion
ppt	Parts per trillion
QA	Quality Assurance
QC	Quality Control
Ratio	Ratio of areas from monitored ions for an analyte
% Rec.	Percent recovery
RPD	Relative Percent Difference
RRF	Relative Response Factor
RT	Retention Time
SDG	Sample Delivery Group
S/N	Signal-to-noise ratio
TEF	Toxicity Equivalence Factor
TEQ	Toxicity Equivalence Quotient

State Certifications, Accreditations, and Licenses

Agency	Number	Expire Date
Arizona Department of Health Services	AZ0793	5/27/2018
Arkansas Department of Environmental Quality	17-027-0	3/27/2018
California Department of Health Services	2452	2/28/2018
Florida Department of Health	E87611	7/31/2018
Hawaii Department of Health	TX02694	4/30/2018
Illinois Environmental Protection Agency	004112	5/9/2018
Louisiana Department of Environmental Quality	03048	6/30/2018
Maine Center for Disease Control and Prevention	2014019	6/5/2018
Maryland Department of the Environment	343	6/30/2018
Michigan Depratment of Environmental Quality	9971	6/5/2018
Nebraska Department of Health and Human Services	NE-OS-25-13	4/30/2018
Nevada Department of Concervation and Natural Resources	TX014112013-2	7/31/2018
New Jersey Department of Environmental Protection	NLC140001	6/30/2018
New Mexico Environment Department	TX02694	4/30/2018
New York Department of Health	11707	3/31/2018
Oklahoma Department of Environmental Quality	2014 124	8/31/2018
Oregon Environmental Laboratory Accreditation Program	TX200002-009	3/24/2018
Pennsylvania Department of Environmental Protection	68-03441	6/30/2018
Tennessee Department of Environment and Concervation	04016	6/30/2018
Texas Commision on Environmental Quality	TX104704231-17-18	4/30/2018
United States Department of Agriculture	P330-14-00067	6/19/2018
Utah Department of Health Environmental Laboratory Certification	TX02694	7/31/2018
West Virginia Department of Environmental Protection	347	6/30/2018

ALS ENVIRONMENTAL – Houston
Data Processing/Form Production and Peer Review Signatures

SR# Unique ID K1713018 DB-5MSUI SPB-Octyl

First Level - Data Processing - to be filled by person generating the forms

Date:	Analyst:	Samples:
01/15/18	JC	010, 016

Second Level - Data Review – to be filled by person doing peer review

Date:	Analyst:	Samples:
01/16/18	LKL	010, 016

PEER REVIEW PAGE2015

ALS ENVIRONMENTAL – Houston
Data Processing/Form Production and Peer Review Signatures

SR# Unique ID K1713018 DB-5MSUI SPB-Octyl

First Level - Data Processing - to be filled by person generating the forms

Date:	Analyst:	Samples:
01/04/18	JL	-010, -016

Second Level - Data Review – to be filled by person doing peer review

Date:	Analyst:	Samples:
01/08/18	LKL	010, 016

PEER REVIEW PAGE2015

Chain of Custody

ALS Environmental - Houston HRMS
10450 Stancliff Rd, Suite 210, Houston TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

Intra-Network Chain of Custody

1317 South 13th Avenue • Kelso, WA 98626 • 1-360-577-7222 • FAX 1-360-636-1068

ALS Contact: Howard Holmes

Project Name: URSC
Project Number: 150-001-056
Project Manager: Erin Carroll Hughes
Company: GSI Water Solutions, Inc.
QAP: LAB QAP

Lab Code	Client Sample ID	# of Cont.	Matrix	Sample Date	Sample Time	Date Received	Send To	Cl Biphen Cong 1668C	Dioxins Furans 1613B
K1713018-010	URSC-RM20.1W-COMP	2	Sediment	12/1/17	0800	12/4/17	HOUSTON	V	V
K1713018-016	URSC-RM20.4-COMP	2	Sediment	12/1/17	1228	12/4/17	HOUSTON	V	V

K1713018 5
GSI Water Solutions, Inc.
URSC

Folder Comments:
Wet sieve samples thru 2mm sieve
ISM Wet material
Tier IV

Special Instructions/Comments
Please provide the electronic (PDF and EDD) report to the following e-mail address: ALKLS.Data@alsglobal.com.

pH Checked _____

Turnaround Requirements
_____ **RUSH** (Surcharges Apply)
PLEASE CIRCLE WORK DAYS
1 2 3 4 5
X **STANDARD**
Requested FAX Date: _____
Requested Report Date: 12/26/17

Report Requirements
____ I. Results Only
____ II. Results + QC Summaries
____ III. Results + QC and Calibration Summaries
X IV. Data Validation Report with Raw Data
PQL/MDL/J Y
EDD Y

Invoice Information
PO# 51K1713018
Bill to

Relinquished By: 12/18/17 Received By: 12/19/17 9:50 Airbill Number:

ALS Environmental

Cooler Receipt Form

Project Chemist NB

Client/Project ALS Kelso

Thermometer ID SMO 4

Date/Time Received: 12/19/17 9:50 Initials: AL Date/Time Logged in: 12/19/17 Initials AL

1. Method of delivery: ○ US Mail ✓ Fed Ex ○ UPS ○ DHL ○ Courier ○ Client
2. Samples received in: ✓ Cooler ○ Box ○ Envelope ○ Other
3. Were custody seals on coolers? ✓ Yes ○ No
   Were they intact? ✓ Yes ○ No ○ N/A
   Were they signed and dated? ✓ Yes ○ No ○ N/A
   If yes, how many and where? 1 seal
4. Packing Material: ○ Inserts ○ Baggies ✓ Bubble Wrap ✓ Gel Packs ○ Wet Ice ○ Sleeves ○ Other
5. Foreign or Regulated Soil? ○ Yes ✓ No Location of Sampling:

Cooler Tracking Number	COC ID	Date Opened	Time Opened	Opened By	Temp. °C	Temp Blank?
7227 2437 6069		12/19/17	12:59	AL	1.8/1.4	☐
						☐
						☐
						☐

6. Were custody papers properly filled out (ink, signed, dated, etc)? ✓ Yes ○ No
7. Did all bottles arrive in good condition (not broken, no signs of leakage)? ✓ Yes ○ No
8. Were all sample labels complete (i.e., sample ID, analysis, preservation, etc)? ✓ Yes ○ No
9. Were appropriate bottles/containers and volumes received for the requested tests? ✓ Yes ○ No
10. Did sample labels and tags agree with custody documents? ✓ Yes ○ No

Notes, Discrepancies, & Resolutions:

Service request Label: K1713018 GSI Water Solutions, Inc. URSC 5

10450 Stancliff Rd., Suite 210
Houston, TX 77099
T: +1 713 266 1599
F: +1 713 266 1599
www.alsglobal.com

SAMPLE ACCEPTANCE POLICY

This policy outlines the criteria samples must meet to be accepted by ALS Environmental – Houston HRMS.

Cooler Custody Seals (desirable, mandatory if specified in SAP):

- ✓ Intact on outside of cooler, signed and dated

Chain-of-Custody (COC) documentation (mandatory):

The following is required on each COC:

- ✓ Sample ID, the location, date and time of collection, collector's name, preservation type, sample type, and any other special remarks concerning the sampleThe COC must be completed in ink.
- ✓ Signature and date of relinquishing party.

In the absence of a COC at sample receipt, the COC will be requested from the client.

Sample Integrity (mandatory):

Samples are inspected upon arrival to ensure that sample integrity was not compromised during transfer to the laboratory.

- ✓ Sample containers must arrive in good condition (not broken or leaking).
- ✓ Samples must be labeled appropriately, including Sample IDs, and requested test using durable labels and indelible ink.
- ✓ The correct type of sample bottle must be used for the method requested.
- ✓ An appropriate sample volume, or weight, must be received.
- ✓ Sample IDs and number of containers must reconcile with the COC.
- ✓ Samples must be received within the method defined holding time.

Temperature Requirement (varies by sample matrix):

- ✓ Aqueous and Non-aqueous samples must be shipped and stored cold, at 0 to 6ºC.
- ✓ Tissue samples must be shipped and stored frozen, at -20 to -10ºC.
- ✓ Air samples are shipped and stored cold, at 0 to 6ºC
- ✓ The sample temperature must be recorded on the COC

All cooler inspections are documented on the Cooler Receipt Form (CRF). A separate CRF is completed for each service request. Any samples not meeting the above criteria are noted on the CRF and the Project Manager notified. The Project Manager must resolve any sample integrity issues with the client prior to proceeding with the analysis. Such resolutions are documented in writing and filed with the project folder. Data associated with samples received outside of this acceptance policy will be qualified on the case narrative of the final report

Preparation Information Benchsheets

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 210, Houston, TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

Preparation Information Benchsheet

Prep Run#: 305740 **Prep WorkFlow:** OrgExtS(365) **Status:** Prepped
Team: Semivoa GCMS/JRAMIREZ **Prep Method:** Method **Prep Date/Time:** 12/27/17 01:00 PM

#	Lab Code	Client ID	B#	Method /Test	pH	Cl	Matrix	Amt. Ext.	Sample Description
1	EQ1700575-01	MB		1668C/Cl Biphen Cong			Solid	5.227g	
2	EQ1700575-02	LCS		1668C/Cl Biphen Cong			Solid	5.117g	
3	EQ1700575-03	DLCS		1668C/Cl Biphen Cong			Solid	5.537g	
4	K1712926-001	RM16.5-G005-K	.02	1668C/Cl Biphen Cong			Sediment	5.644g	APOSEY k-balance-48 / Wet Brown Soil
5	K1712926-002	RM16.5-G010-K	.02	1668C/Cl Biphen Cong			Sediment	5.644g	APOSEY k-balance-48 / Wet Brown Soil
6	K1712928-017	RM16.5-COMP-I	.01	1668C/Cl Biphen Cong			Sediment	10.039g	DMADDEN K-Balance-54 / Wet Brown Soil
7	K1712961-006	URSC-RM20.0W-COMP	.01	1668C/Cl Biphen Cong			Sediment	10.189g	DMADDEN K-Balance-54 / Wet Brown Soil
8	K1712961-015	URSC-RM18.45E-COMP	.01	1668C/Cl Biphen Cong			Sediment	10.338g	DMADDEN K-Balance-54 / Wet Brown Soil
9	K1713018-010	URSC-RM20.1W-COMP	.01	1668C/Cl Biphen Cong			Sediment	10.446g	DMADDEN K-Balance-54 / Wet Brown Soil
10	K1713018-016	URSC-RM20.4E-COMP	.01	1668C/Cl Biphen Cong			Sediment	10.200g	DMADDEN K-Balance-54 / Wet Brown Soil
11	K1713130-006	URSC-RM18.35E-COMP	.01	1668C/Cl Biphen Cong			Sediment	10.484g	DMADDEN K-Balance-54 / Wet Brown Soil
12	K1713130-015	URSC-RM20.9W-COMP	.01	1668C/Cl Biphen Cong			Sediment	10.208g	DMADDEN K-Balance-54 / Wet Brown Soil
13	K1713130-021	URSC-RM24.7E-COMP	.01	1668C/Cl Biphen Cong			Sediment	10.218g	DMADDEN K-Balance-54 / Wet Brown Soil
14	K1713130-032	URSC-RM20.0E-COMP	.01	1668C/Cl Biphen Cong			Sediment	10.336g	DMADDEN K-Balance-54 / Wet Brown Soil
15	K1713130-033	URSC-RM25.2E-COMP	.01	1668C/Cl Biphen Cong			Sediment	10.394g	DMADDEN K-Balance-54 / Wet Brown Soil

Spiking Solutions

Name: 1668 A/C PCB Congener (209) Working Matrix Inventory ID 183026 Logbook Ref: 183026 JG 10-30 ng/mL 8/1/17 Expires On: 01/28/2018

EQ1700575-02	100.00µL	EQ1700575-03	100.00µL

Name: 1668A Clean Up Working Standard Inventory ID 185279 Logbook Ref: 185279 tw 110317 20ng/ml Expires On: 05/02/2018

EQ1700575-01	100.00µL	EQ1700575-02	100.00µL	EQ1700575-03	100.00µL	K1712926-001	100.00µL	K1712926-002	100.00µL	K1712928-017	100.00µL
K1712961-006	100.00µL	K1712961-015	100.00µL	K1713018-010	100.00µL	K1713018-016	100.00µL	K1713130-006	100.00µL	K1713130-015	100.00µL
K1713130-021	100.00µL	K1713130-032	100.00µL	K1713130-033	100.00µL						

Name: 1668A Labeled Working Standard Inventory ID 186489 Logbook Ref: 186489 AL 12/18/17 2-4 ng/mL Expires On: 05/15/2018

EQ1700575-01	1,000.00µL	EQ1700575-02	1,000.00µL	EQ1700575-03	1,000.00µL	K1712926-001	1,000.00µL	K1712926-002	1,000.00µL	K1712928-017	1,000.00µL
K1712961-006	1,000.00µL	K1712961-015	1,000.00µL	K1713018-010	1,000.00µL	K1713018-016	1,000.00µL	K1713130-006	1,000.00µL	K1713130-015	1,000.00µL
K1713130-021	1,000.00µL	K1713130-032	1,000.00µL	K1713130-033	1,000.00µL						

Preparation Information Benchsheet

Prep Run#: 305740 **Prep WorkFlow:** OrgExtS(365) **Status:** Prepped
Team: Semivoa GCMS/JRAMIREZ **Prep Method:** Method **Prep Date/Time:** 12/27/17 01:00 PM

Preparation Materials

Glass Wool	AL 12/28/17 (186762)	Hexanes 95%	AL 12/28/17 (186765)	Dichloromethane (Methylene Chloride) 99.9% MeCl2	JG 9/28/17 (184340)
Sodium Hydroxide 1N NaOH	sodium hydroxide (180303)	Sodium Sulfate Anhydrous Reagent Grade Na2SO4	AL 8/23/17 (183590)	Silica Gel	AL 12/28/17 (186767)
sulfuric acid	AL 10/11/17 (184727)	Toluene 99.9% Minimum	AL 11/11/17 (185534)		

Preparation Steps

Step:	Extraction	Step:	Acid Clean	Step:	Silica Gel Clean	Step:	Final Volume
Started:	12/27/17 13:00	Started:	12/28/17 08:00	Started:	12/29/17 09:00	Started:	12/29/17 14:00
Finished:	12/27/17 15:00	Finished:	12/28/17 09:00	Finished:	12/29/17 10:00	Finished:	12/29/17 14:30
By:	ALOPEZ	By:	ALOPEZ	By:	ALOPEZ	By:	ALOPEZ
Comments		Comments		Comments		Comments	

Comments: _____

Reviewed By: GC Date: 1/9/2018

Chain of Custody

Relinquished By: _____ Date: _____ Extracts Examined

Received By: _____ Date: _____ Yes No

Preparation Information Benchsheet

Prep Run#: 306153 **Prep WorkFlow:** OrgExtS(365) **Status:** Prepped
Team: Semivoa GCMS/JRAMIREZ **Prep Method:** Method Soxhlet **Prep Date/Time:** 1/4/18 03:00 PM

#	Lab Code	Client ID	B#	Method /Test	pH	Cl	Matrix	Amt. Ext.	Sample Description
1	EQ1800009-01	MB		1613B/Dioxins Furans			Solid	10.365g	
2	EQ1800009-02	LCS		1613B/Dioxins Furans			Solid	10.567g	
3	EQ1800009-03	DLCS		1613B/Dioxins Furans			Solid	10.326g	
4	J1708532-001	CTR Cups	.03	1613B/Dioxins Furans			Paperboard	5.970g	Plastic Filter Cup
5	K1712961-006	URSC-RM20.0W-COMP	.01	1613B/Dioxins Furans			Sediment	10.397g	DMADDEN K-Balance-54 / Wet Brown Gravel
6	K1712961-015	URSC-RM18.45E-COMP	.01	1613B/Dioxins Furans			Sediment	10.462g	DMADDEN K-Balance-54 / Wet Brown Gravel
7	K1713018-010	URSC-RM20.1W-COMP	.01	1613B/Dioxins Furans			Sediment	10.291g	DMADDEN K-Balance-54 / Wet Brown Gravel
8	K1713018-016	URSC-RM20.4E-COMP	.01	1613B/Dioxins Furans			Sediment	10.368g	DMADDEN K-Balance-54 / Wet Brown Gravel
9	K1713130-006	URSC-RM18.35E-COMP	.01	1613B/Dioxins Furans			Sediment	10.251g	DMADDEN K-Balance-54 / Wet Brown Gravel
10	K1713130-015	URSC-RM20.9W-COMP	.01	1613B/Dioxins Furans			Sediment	10.315g	DMADDEN K-Balance-54 / Wet Brown Gravel
11	K1713130-021	URSC-RM24.7E-COMP	.01	1613B/Dioxins Furans			Sediment	10.175g	DMADDEN K-Balance-54 / Wet Brown Gravel
12	K1713130-032	URSC-RM20.0E-COMP	.01	1613B/Dioxins Furans			Sediment	10.228g	DMADDEN K-Balance-54 / Wet Brown Gravel
13	K1713130-033	URSC-RM25.2E-COMP	.01	1613B/Dioxins Furans			Sediment	10.277g	DMADDEN K-Balance-54 / Wet Brown Gravel

Spiking Solutions

Name: 1613B Matrix Working Standard Inventory ID 186237 Logbook Ref: 186237 JR 2-20 ng/mL 12717 Expires On: 06/05/2018

EQ1800009-02	100.00µL	EQ1800009-03	100.00µL

Name: 8290/1613B Cleanup Working Standard Inventory ID 186645 Logbook Ref: 186645 JG 122217 8 ng/mL Expires On: 04/28/2018

EQ1800009-01	100.00µL	EQ1800009-02	100.00µL	EQ1800009-03	100.00µL	J1708532-001	100.00µL	K1712961-006	100.00µL	K1712961-015	100.00µL
K1713018-010	100.00µL	K1713018-016	100.00µL	K1713130-006	100.00µL	K1713130-015	100.00µL	K1713130-021	100.00µL	K1713130-032	100.00µL
K1713130-033	100.00µL										

Name: 1613B Labeled Working Standard Inventory ID 186916 Logbook Ref: 186916 JR 1/4/18 2-4ng/ml Expires On: 06/25/2018

EQ1800009-01	1,000.00µL	EQ1800009-02	1,000.00µL	EQ1800009-03	1,000.00µL	J1708532-001	1,000.00µL	K1712961-006	1,000.00µL	K1712961-015	1,000.00µL
K1713018-010	1,000.00µL	K1713018-016	1,000.00µL	K1713130-006	1,000.00µL	K1713130-015	1,000.00µL	K1713130-021	1,000.00µL	K1713130-032	1,000.00µL
K1713130-033	1,000.00µL										

Preparation Materials

Carbon, High Purity	JG 12/27/17 (186784)	Ethyl Acetate 99.9% Minimum EtOAc	AL 3/3/17 (179750)	Glass Wool	AL 12/28/17 (186762)
Hexanes 95%	AL 12/28/17 (186765)	Dichloromethane (Methylene Chloride) 99.9% MeCl2	JG 9/28/17 (184340)	Sodium Hydroxide 1N NaOH	sodium hydroxide (180303)
Sodium Sulfate Anhydrous Reagent Grade Na2SO4	JG 1/3/18 (186882)	Tridecane (n-Tridecane)	AL 9/27/17 (184312)	Silica Gel	AL 10/9/17 (184623)
sulfuric acid	AL 10/11/17 (184727)	Toluene 99.9% Minimum	AL 12/28/17 (186763)		

Preparation Information Benchsheet

Prep Run#: 306153 **Prep WorkFlow:** OrgExtS(365) **Status:** Prepped
Team: Semivoa GCMS/JRAMIREZ **Prep Method:** Method Soxhlet **Prep Date/Time:** 1/4/18 03:00 PM

Preparation Steps

Step:	Extraction	Step:	Acid Clean	Step:	Silica Gel Clean	Step:	Final Volume
Started:	1/4/18 15:00	Started:	1/5/18 15:00	Started:	1/10/18 09:45	Started:	1/10/18 19:30
Finished:	1/4/18 16:00	Finished:	1/5/18 16:00	Finished:	1/10/18 12:30	Finished:	1/10/18 20:30
By:	JRAMIREZ	By:	JRAMIREZ	By:	JRAMIREZ	By:	JRAMIREZ
Comments		Comments		Comments		Comments	

Comments: _____

Reviewed By: GC Date: 1/12/2018

Chain of Custody

Relinquished By: _____ Date: _____

Received By: _____ Date: _____

Extracts Examined

Yes No

Analytical Results

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 210, Houston, TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	12/01/17 08:00
Sample Matrix:	Sediment	**Date Received:**	12/04/17 10:37
Sample Name:	URSC-RM20.1W-COMP	**Units:**	ng/Kg
Lab Code:	K1713018-010	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	01/13/18 03:19
Prep Method:	Method Soxhlet	**Date Extracted:**	1/4/18
Sample Amount:	10.291g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P513707	**Blank File Name:**	P513666
ICAL Date:	07/26/17	**Cal Ver. File Name:**	P513702

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	0.193	0.802			1
1,2,3,7,8-PeCDD	0.133**BJK**		0.0757	4.01	1.28	1.001	1
1,2,3,4,7,8-HxCDD	ND	U	0.106	4.01			1
1,2,3,6,7,8-HxCDD	0.414**JK**		0.120	4.01	0.87	1.000	1
1,2,3,7,8,9-HxCDD	0.293**BJ**		0.108	4.01	1.28	1.007	1
1,2,3,4,6,7,8-HpCDD	9.36		0.105	4.01	1.01	1.000	1
OCDD	94.2		0.252	8.02	0.91	1.000	1
2,3,7,8-TCDF	ND	U	0.176	0.802			1
1,2,3,7,8-PeCDF	ND	U	0.132	4.01			1
2,3,4,7,8-PeCDF	ND	U	0.143	4.01			1
1,2,3,4,7,8-HxCDF	0.244**BJ**		0.0894	4.01	1.33	1.000	1
1,2,3,6,7,8-HxCDF	0.143**BJK**		0.0870	4.01	0.89	1.000	1
1,2,3,7,8,9-HxCDF	ND	U	0.0916	4.01			1
2,3,4,6,7,8-HxCDF	0.145**BJK**		0.0866	4.01	1.56	1.000	1
1,2,3,4,6,7,8-HpCDF	1.96**BJ**		0.0695	4.01	1.01	1.000	1
1,2,3,4,7,8,9-HpCDF	0.116**J**		0.112	4.01	0.91	1.000	1
OCDF	6.45**JK**		0.283	8.02	0.72	1.005	1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	12/01/17 08:00
Sample Matrix:	Sediment	**Date Received:**	12/04/17 10:37
Sample Name:	URSC-RM20.1W-COMP	**Units:**	ng/Kg
Lab Code:	K1713018-010	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	01/13/18 03:19
Prep Method:	Method Soxhlet	**Date Extracted:**	1/4/18
Sample Amount:	10.291g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P513707	**Blank File Name:**	P513666
ICAL Date:	07/26/17	**Cal Ver. File Name:**	P513702

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	ND	U	0.193	0.802			1
Total Penta-Dioxins	ND	U	0.0757	4.01			1
Total Hexa-Dioxins	1.36**J**		0.113	4.01	1.21		1
Total Hepta-Dioxins	9.36		0.105	4.01	1.01		1
Total Tetra-Furans	ND	U	0.176	0.802			1
Total Penta-Furans	ND	U	0.137	4.01			1
Total Hexa-Furans	1.19**J**		0.0886	4.01	1.10		1
Total Hepta-Furans	5.79		0.0871	4.01	1.01		1

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	12/01/17 08:00
Sample Matrix:	Sediment	**Date Received:**	12/04/17 10:37
Sample Name:	URSC-RM20.1W-COMP	**Units:**	Percent
Lab Code:	K1713018-010	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	01/13/18 03:19
Prep Method:	Method Soxhlet	**Date Extracted:**	1/4/18
Sample Amount:	10.291g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P513707	**Blank File Name:**	P513666
ICAL Date:	07/26/17	**Cal Ver. File Name:**	P513702

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	1042.736	52		25-164	0.79	1.023
13C-1,2,3,7,8-PeCDD	2000	1413.682	71		25-181	1.58	1.198
13C-1,2,3,4,7,8-HxCDD	2000	1540.895	77		32-141	1.24	0.990
13C-1,2,3,6,7,8-HxCDD	2000	1437.348	72		28-130	1.29	0.993
13C-1,2,3,4,6,7,8-HpCDD	2000	1484.062	74		23-140	1.05	1.071
13C-OCDD	4000	2004.136	50		17-157	0.88	1.154
13C-2,3,7,8-TCDF	2000	1195.598	60		24-169	0.79	0.993
13C-1,2,3,7,8-PeCDF	2000	1332.209	67		24-185	1.59	1.153
13C-2,3,4,7,8-PeCDF	2000	1314.764	66		21-178	1.55	1.189
13C-1,2,3,4,7,8-HxCDF	2000	1326.639	66		26-152	0.50	0.969
13C-1,2,3,6,7,8-HxCDF	2000	1325.722	66		26-123	0.51	0.972
13C-1,2,3,7,8,9-HxCDF	2000	1489.132	74		29-147	0.50	1.008
13C-2,3,4,6,7,8-HxCDF	2000	1353.550	68		28-136	0.49	0.986
13C-1,2,3,4,6,7,8-HpCDF	2000	1453.571	73		28-143	0.44	1.044
13C-1,2,3,4,7,8,9-HpCDF	2000	1548.828	77		26-138	0.44	1.086
37Cl-2,3,7,8-TCDD	800	526.592	66		35-197	NA	1.024

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	12/01/17 08:00
Sample Matrix:	Sediment	**Date Received:**	12/04/17 10:37
Sample Name:	URSC-RM20.1W-COMP	**Units:**	ng/Kg
Lab Code:	K1713018-010	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 1613B

Prep Method: Method Soxhlet

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	ND	0.193	0.802	1	1	
1,2,3,7,8-PeCDD	**0.133**	0.0757	4.01	1	1	0.133
1,2,3,4,7,8-HxCDD	ND	0.106	4.01	1	0.1	
1,2,3,6,7,8-HxCDD	**0.414**	0.120	4.01	1	0.1	0.0414
1,2,3,7,8,9-HxCDD	**0.293**	0.108	4.01	1	0.1	0.0293
1,2,3,4,6,7,8-HpCDD	**9.36**	0.105	4.01	1	0.01	0.0936
OCDD	**94.2**	0.252	8.02	1	0.0003	0.0283
2,3,7,8-TCDF	ND	0.176	0.802	1	0.1	
1,2,3,7,8-PeCDF	ND	0.132	4.01	1	0.03	
2,3,4,7,8-PeCDF	ND	0.143	4.01	1	0.3	
1,2,3,4,7,8-HxCDF	**0.244**	0.0894	4.01	1	0.1	0.0244
1,2,3,6,7,8-HxCDF	**0.143**	0.0870	4.01	1	0.1	0.0143
1,2,3,7,8,9-HxCDF	ND	0.0916	4.01	1	0.1	
2,3,4,6,7,8-HxCDF	**0.145**	0.0866	4.01	1	0.1	0.0145
1,2,3,4,6,7,8-HpCDF	**1.96**	0.0695	4.01	1	0.01	0.0196
1,2,3,4,7,8,9-HpCDF	**0.116**	0.112	4.01	1	0.01	0.00116
OCDF	**6.45**	0.283	8.02	1	0.0003	0.00194
		Total TEQ				0.402

2005 WHO TEFs, ND = 0

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	12/01/17 08:00
Sample Matrix:	Sediment	**Date Received:**	12/04/17 10:37
Sample Name:	URSC-RM20.1W-COMP	**Units:**	ng/Kg
Lab Code:	K1713018-010	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 00:40
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	10.446g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305039	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305032

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 1	ND	U	5.84	5.84			1
PCB 2	ND	U	5.62	5.62			1
PCB 3	ND	U	6.98	6.98			1
PCB 4	ND	U	7.97	7.97			1
PCB 10	ND	U	4.42	7.90			1
PCB 9	ND	U	2.57	3.16			1
PCB 7	ND	U	2.37	3.16			1
PCB 6	ND	U	2.61	3.16			1
PCB 5	ND	U	2.61	3.16			1
PCB 8	ND	U	2.45	7.90			1
PCB 14	ND	U	2.62	3.16			1
PCB 11	12.9**J**		2.67	15.8	-	0.972	1
PCBs 12 + 13	ND	U	2.58	7.90			1
PCB 15	ND	U	3.24	3.24			1
PCB 19	ND	U	26.2	26.2			1
PCBs 18 + 30	ND	U	17.2	17.2			1
PCB 17	ND	U	19.9	19.9			1
PCB 27	ND	U	16.1	16.1			1
PCB 24	ND	U	14.7	14.7			1
PCB 16	ND	U	23.5	23.5			1
PCB 32	ND	U	14.9	14.9			1
PCB 34	ND	U	15.9	15.9			1
PCB 23	ND	U	14.3	14.3			1
PCBs 26 + 29	ND	U	14.7	14.7			1
PCB 25	ND	U	12.7	12.7			1
PCB 31	ND	U	15.1	15.1			1
PCBs 20 + 28	ND	U	14.5	14.5			1
PCBs 21 + 33	ND	U	14.1	14.1			1
PCB 22	ND	U	14.5	14.5			1
PCB 36	ND	U	14.5	14.5			1
PCB 39	ND	U	13.8	13.8			1
PCB 38	ND	U	16.4	16.4			1
PCB 35	ND	U	17.7	17.7			1
PCB 37	ND	U	19.6	19.6			1

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	12/01/17 08:00
Sample Matrix:	Sediment	**Date Received:**	12/04/17 10:37
Sample Name:	URSC-RM20.1W-COMP	**Units:**	ng/Kg
Lab Code:	K1713018-010	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 00:40
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	10.446g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305039	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305032

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 54	ND	U	12.0	12.0			1
PCBs 50 + 53	ND	U	12.9	15.8			1
PCBs 45 + 51	ND	U	13.1	13.1			1
PCB 46	ND	U	14.7	14.7			1
PCB 52	20.3		13.4	13.4	0.70	1.195	1
PCBs 43 + 73	ND	U	11.1	11.1			1
PCBs 49 + 69	ND	U	11.0	15.8			1
PCB 48	ND	U	12.4	12.4			1
PCBs 44 + 47 + 65	16.4		11.4	15.8	0.83	1.241	1
PCBs 59 + 62 + 75	ND	U	9.77	15.8			1
PCB 42	ND	U	13.9	15.8			1
PCBs 41 + 71 + 40	ND	U	13.8	15.8			1
PCB 64	ND	U	9.77	9.77			1
PCB 72	ND	U	10.5	10.5			1
PCB 68	ND	U	9.43	9.43			1
PCB 57	ND	U	10.7	10.7			1
PCB 58	ND	U	9.62	9.62			1
PCB 67	ND	U	8.68	8.68			1
PCB 63	ND	U	10.3	10.3			1
PCBs 70 + 61 + 74 + 76	17.5**J**		9.66	31.6	0.77	1.403	1
PCB 66	ND	U	10.5	10.5			1
PCB 55	ND	U	10.3	10.3			1
PCB 56	ND	U	7.48	7.90			1
PCB 60	ND	U	7.21	7.90			1
PCB 80	ND	U	6.54	7.90			1
PCB 79	ND	U	7.17	7.90			1
PCB 78	ND	U	8.19	8.19			1
PCB 81	ND	U	10.9	10.9			1
PCB 77	ND	U	11.6	11.6			1
PCB 104	ND	U	15.1	15.1			1
PCB 96	ND	U	11.6	11.6			1
PCB 103	ND	U	13.7	13.7			1
PCB 94	ND	U	15.4	15.4			1
PCBs 95 + 93 + 100	ND	U	14.5	31.6			1

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	12/01/17 08:00
Sample Matrix:	Sediment	**Date Received:**	12/04/17 10:37
Sample Name:	URSC-RM20.1W-COMP	**Units:**	ng/Kg
Lab Code:	K1713018-010	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 00:40
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	10.446g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305039	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305032

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCBs 98 + 102	ND	U	13.6	31.6			1
PCBs 88 + 91	ND	U	15.5	15.5			1
PCB 84	ND	U	17.0	17.0			1
PCB 89	ND	U	17.4	17.4			1
PCB 121	ND	U	10.7	10.7			1
PCB 92	ND	U	15.3	15.3			1
PCBs 90 + 101 + 113	ND	U	12.8	31.6			1
PCBs 83 + 99	ND	U	14.3	15.8			1
PCB 112	ND	U	10.5	10.5			1
PCBs 86 + 87 + 97 + 109 + 119 + 125	ND	U	12.4	31.6			1
PCBs 85 + 116 + 117	ND	U	12.1	15.8			1
PCBs 110 + 115	26.1		10.6	15.8	1.61	1.274	1
PCB 82	ND	U	19.4	19.4			1
PCB 111	ND	U	10.8	10.8			1
PCB 120	ND	U	11.5	11.5			1
PCBs 108 + 124	ND	U	10.7	15.8			1
PCB 107	ND	U	11.3	11.3			1
PCB 123	ND	U	13.2	13.2			1
PCB 106	ND	U	11.0	11.0			1
PCB 118	20.5		12.9	12.9	1.63	1.001	1
PCB 122	ND	U	12.5	12.5			1
PCB 114	ND	U	13.0	13.0			1
PCB 105	ND	U	14.5	14.5			1
PCB 127	ND	U	11.8	11.8			1
PCB 126	ND	U	17.3	17.3			1
PCB 155	ND	U	7.77	7.77			1
PCB 152	ND	U	8.17	8.17			1
PCB 150	ND	U	6.58	7.90			1
PCB 136	ND	U	7.78	7.90			1
PCB 145	ND	U	7.08	7.90			1
PCB 148	ND	U	10.2	10.2			1
PCBs 135 + 151 + 154	ND	U	9.18	15.8			1
PCB 144	ND	U	10.3	10.3			1
PCBs 147 + 149	17.9**K**		9.63	15.8	0.89	1.121	1
PCB 134	ND	U	16.2	16.2			1

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	12/01/17 08:00
Sample Matrix:	Sediment	**Date Received:**	12/04/17 10:37
Sample Name:	URSC-RM20.1W-COMP	**Units:**	ng/Kg
Lab Code:	K1713018-010	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 00:40
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	10.446g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305039	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305032

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 143	ND	U	8.70	15.8			1
PCBs 139 + 140	ND	U	9.79	15.8			1
PCB 131	ND	U	11.6	11.6			1
PCB 142	ND	U	11.4	11.4			1
PCB 132	ND	U	11.5	11.5			1
PCB 133	ND	U	12.0	12.0			1
PCB 165	ND	U	8.47	8.47			1
PCB 146	ND	U	9.84	9.84			1
PCB 161	ND	U	8.44	8.44			1
PCBs 153 + 168	21.5		8.70	15.8	1.28	1.205	1
PCB 141	ND	U	10.5	10.5			1
PCB 130	ND	U	12.9	12.9			1
PCB 137	ND	U	10.7	10.7			1
PCB 164	ND	U	8.33	8.33			1
PCBs 129 + 138 + 163	28.5**JK**		11.9	31.6	0.84	1.243	1
PCB 160	ND	U	5.99	31.6			1
PCB 158	ND	U	7.43	7.90			1
PCBs 128 + 166	ND	U	9.65	15.8			1
PCB 159	ND	U	7.36	7.90			1
PCB 162	ND	U	6.56	7.90			1
PCB 167	ND	U	7.48	7.48			1
PCBs 156 + 157	ND	U	11.1	11.1			1
PCB 169	ND	U	8.00	8.00			1
PCB 188	ND	U	9.94	9.94			1
PCB 179	ND	U	8.14	8.14			1
PCB 184	ND	U	7.16	7.90			1
PCB 176	ND	U	8.29	8.29			1
PCB 186	ND	U	7.69	7.90			1
PCB 178	ND	U	11.1	11.1			1
PCB 175	ND	U	10.7	10.7			1
PCB 187	ND	U	9.30	9.30			1
PCB 182	ND	U	9.60	9.60			1
PCB 183 + 185	ND	U	10.4	15.8			1
PCB 174	ND	U	10.4	10.4			1
PCB 177	ND	U	12.0	12.0			1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	12/01/17 08:00
Sample Matrix:	Sediment	**Date Received:**	12/04/17 10:37
Sample Name:	URSC-RM20.1W-COMP	**Units:**	ng/Kg
Lab Code:	K1713018-010	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 00:40
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	10.446g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305039	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305032

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 181	ND	U	10.2	10.2			1
PCBs 171 + 173	ND	U	11.6	15.8			1
PCB 172	ND	U	11.9	11.9			1
PCB 192	ND	U	8.48	8.48			1
PCBs 180 + 193	15.2**J**		8.87	15.8	1.17	0.918	1
PCB 191	ND	U	8.81	8.81			1
PCB 170	ND	U	12.4	12.4			1
PCB 190	ND	U	8.49	8.49			1
PCB 189	ND	U	11.2	11.2			1
PCB 202	ND	U	8.29	8.29			1
PCB 201	ND	U	7.20	7.90			1
PCB 204	ND	U	7.05	7.90			1
PCB 197	ND	U	6.56	15.8			1
PCB 200	ND	U	7.21	15.8			1
PCBs 198 + 199	ND	U	9.34	15.8			1
PCB 196	ND	U	9.69	9.69			1
PCB 203	ND	U	8.27	8.27			1
PCB 195	ND	U	10.5	10.5			1
PCB 194	ND	U	10.1	10.1			1
PCB 205	ND	U	8.64	8.64			1
PCB 208	ND	U	9.89	9.89			1
PCB 207	ND	U	10.5	10.5			1
PCB 206	ND	U	17.5	17.5			1
PCB 209	16.3**K**		7.45	7.45	0.98	1.001	1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	12/01/17 08:00
Sample Matrix:	Sediment	**Date Received:**	12/04/17 10:37
Sample Name:	URSC-RM20.1W-COMP	**Units:**	ng/Kg
Lab Code:	K1713018-010	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 00:40
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	10.446g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305039	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305032

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total MonoCB	ND	U	5.62	7.90			1
Total DiCB	12.9**J**		2.37	15.8			1
Total TriCB	ND	U	12.7	12.7			1
Total TetraCB	54.2		6.54	31.6			1
Total PentaCB	46.6		10.5	31.6			1
Total HexaCB	67.9		5.99	31.6			1
Total HeptaCB	15.2**J**		7.16	15.8			1
Total OctaCB	ND	U	6.56	15.8			1
Total NonaCB	ND	U	9.89	9.89			1
Total PCBs	213		2.37	31.6			1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	12/01/17 08:00
Sample Matrix:	Sediment	**Date Received:**	12/04/17 10:37
Sample Name:	URSC-RM20.1W-COMP	**Units:**	Percent
Lab Code:	K1713018-010	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 00:40
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	10.446g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305039	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305032

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
PCB 1L	2000	1144.326	57		5-145	2.81	0.744
PCB 3L	2000	1123.807	56		5-145	3.21	0.873
PCB 4L	2000	738.290	37		5-145	1.54	0.888
PCB 15L	2000	1042.689	52		5-145	1.57	1.223
PCB 19L	2000	771.563	39		5-145	1.03	1.068
PCB 37L	2000	1238.737	62		5-145	1.14	1.083
PCB 54L	2000	710.618	36		5-145	0.86	0.837
PCB 81L	2000	1348.609	67		10-145	0.87	1.321
PCB 77L	2000	1332.251	67		10-145	0.74	1.343
PCB 104L	2000	766.819	38		10-145	1.53	0.831
PCB 123L	2000	1480.823	74		10-145	1.63	1.133
PCB 118L	2000	1445.497	72		10-145	1.45	1.142
PCB 114L	2000	1541.746	77		10-145	1.76	1.158
PCB 105L	2000	1284.884	64		10-145	1.57	1.178
PCB 126L	2000	1261.760	63		10-145	1.63	1.265
PCB 155L	2000	916.942	46		10-145	1.36	0.805
PCB 167L	2000	1485.954	74		10-145	1.26	1.068
PCBs 156L + 157L	4000	2889.531	72		10-145	1.19	1.097
PCB 169L	2000	1491.008	75		10-145	1.24	1.171
PCB 188L	2000	1087.705	54		10-145	1.01	0.736
PCB 189L	2000	1512.861	76		10-145	0.98	0.964
PCB 202L	2000	1117.436	56		10-145	0.83	0.833
PCB 205L	2000	1432.162	72		10-145	0.89	1.009
PCB 208L	2000	1045.319	52		10-145	0.88	0.952
PCB 206L	2000	1792.927	90		10-145	0.84	1.039
PCB 209L	2000	1665.591	83		10-145	1.27	1.067
PCB 28L	2000	1485.813	74		5-145	1.14	0.934
PCB 111L	2000	1119.450	56		10-145	1.61	1.075
PCB 178L	2000	1063.560	53		10-145	0.96	1.008

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	12/01/17 08:00
Sample Matrix:	Sediment	**Date Received:**	12/04/17 10:37
Sample Name:	URSC-RM20.1W-COMP	**Units:**	ng/Kg
Lab Code:	K1713018-010	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method: 1668C

Prep Method: Method

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
PCB 81	ND	10.9	10.9	1	0.0003	
PCB 77	ND	11.6	11.6	1	0.0001	
PCB 123	ND	13.2	13.2	1	0.00003	
PCB 118	**20.5**	12.9	12.9	1	0.00003	0.000615
PCB 114	ND	13.0	13.0	1	0.00003	
PCB 105	ND	14.5	14.5	1	0.00003	
PCB 126	ND	17.3	17.3	1	0.1	
PCB 167	ND	7.48	7.48	1	0.00003	
PCBs 156 + 157	ND	11.1	11.1	1	0.00003	
PCB 169	ND	8.00	8.00	1	0.03	
PCB 189	ND	11.2	11.2	1	0.00003	
	Total TEQ					0.000615

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	12/01/17 12:28
Sample Matrix:	Sediment	**Date Received:**	12/04/17 10:37
Sample Name:	URSC-RM20.4E-COMP	**Units:**	ng/Kg
Lab Code:	K1713018-016	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	01/13/18 04:07
Prep Method:	Method Soxhlet	**Date Extracted:**	1/4/18
Sample Amount:	10.368g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P513708	**Blank File Name:**	P513666
ICAL Date:	07/26/17	**Cal Ver. File Name:**	P513702

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	0.771	0.771			1
1,2,3,7,8-PeCDD	ND	U	0.212	3.38			1
1,2,3,4,7,8-HxCDD	ND	U	0.128	3.38			1
1,2,3,6,7,8-HxCDD	ND	U	0.141	3.38			1
1,2,3,7,8,9-HxCDD	0.187**BJK**		0.128	3.38	0.78	1.006	1
1,2,3,4,6,7,8-HpCDD	2.11**BJ**		0.133	3.38	0.98	1.000	1
OCDD	24.5		0.458	6.76	0.95	1.000	1
2,3,7,8-TCDF	ND	U	0.544	0.676			1
1,2,3,7,8-PeCDF	ND	U	0.272	3.38			1
2,3,4,7,8-PeCDF	ND	U	0.267	3.38			1
1,2,3,4,7,8-HxCDF	ND	U	0.155	3.38			1
1,2,3,6,7,8-HxCDF	ND	U	0.148	3.38			1
1,2,3,7,8,9-HxCDF	ND	U	0.156	3.38			1
2,3,4,6,7,8-HxCDF	ND	U	0.155	3.38			1
1,2,3,4,6,7,8-HpCDF	0.322**BJK**		0.0843	3.38	0.87	1.000	1
1,2,3,4,7,8,9-HpCDF	ND	U	0.109	3.38			1
OCDF	0.886**JK**		0.432	6.76	0.72	1.005	1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	12/01/17 12:28
Sample Matrix:	Sediment	**Date Received:**	12/04/17 10:37
Sample Name:	URSC-RM20.4E-COMP	**Units:**	ng/Kg
Lab Code:	K1713018-016	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	01/13/18 04:07
Prep Method:	Method Soxhlet	**Date Extracted:**	1/4/18
Sample Amount:	10.368g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P513708	**Blank File Name:**	P513666
ICAL Date:	07/26/17	**Cal Ver. File Name:**	P513702

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	ND	U	0.771	0.771			1
Total Penta-Dioxins	ND	U	0.212	3.38			1
Total Hexa-Dioxins	ND	U	0.135	3.38			1
Total Hepta-Dioxins	2.11**J**		0.133	3.38	0.98		1
Total Tetra-Furans	ND	U	0.544	0.676			1
Total Penta-Furans	ND	U	0.270	3.38			1
Total Hexa-Furans	ND	U	0.153	3.38			1
Total Hepta-Furans	0.472**J**		0.0934	3.38	1.01		1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	12/01/17 12:28
Sample Matrix:	Sediment	**Date Received:**	12/04/17 10:37
Sample Name:	URSC-RM20.4E-COMP	**Units:**	Percent
Lab Code:	K1713018-016	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	01/13/18 04:07
Prep Method:	Method Soxhlet	**Date Extracted:**	1/4/18
Sample Amount:	10.368g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P513708	**Blank File Name:**	P513666
ICAL Date:	07/26/17	**Cal Ver. File Name:**	P513702

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	963.667	48		25-164	0.79	1.023
13C-1,2,3,7,8-PeCDD	2000	1645.180	82		25-181	1.58	1.199
13C-1,2,3,4,7,8-HxCDD	2000	1380.466	69		32-141	1.23	0.991
13C-1,2,3,6,7,8-HxCDD	2000	1342.448	67		28-130	1.25	0.994
13C-1,2,3,4,6,7,8-HpCDD	2000	1860.942	93		23-140	1.06	1.072
13C-OCDD	4000	3274.472	82		17-157	0.89	1.153
13C-2,3,7,8-TCDF	2000	1050.930	53		24-169	0.77	0.993
13C-1,2,3,7,8-PeCDF	2000	1470.315	74		24-185	1.55	1.153
13C-2,3,4,7,8-PeCDF	2000	1518.266	76		21-178	1.60	1.188
13C-1,2,3,4,7,8-HxCDF	2000	1093.956	55		26-152	0.51	0.969
13C-1,2,3,6,7,8-HxCDF	2000	1195.272	60		26-123	0.50	0.972
13C-1,2,3,7,8,9-HxCDF	2000	1291.153	65		29-147	0.51	1.008
13C-2,3,4,6,7,8-HxCDF	2000	1162.016	58		28-136	0.51	0.987
13C-1,2,3,4,6,7,8-HpCDF	2000	1748.332	87		28-143	0.44	1.045
13C-1,2,3,4,7,8,9-HpCDF	2000	1929.911	96		26-138	0.44	1.084
37Cl-2,3,7,8-TCDD	800	474.750	59		35-197	NA	1.024

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	12/01/17 12:28
Sample Matrix:	Sediment	**Date Received:**	12/04/17 10:37
Sample Name:	URSC-RM20.4E-COMP	**Units:**	ng/Kg
Lab Code:	K1713018-016	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 1613B

Prep Method: Method Soxhlet

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	ND	0.771	0.771	1	1	
1,2,3,7,8-PeCDD	ND	0.212	3.38	1	1	
1,2,3,4,7,8-HxCDD	ND	0.128	3.38	1	0.1	
1,2,3,6,7,8-HxCDD	ND	0.141	3.38	1	0.1	
1,2,3,7,8,9-HxCDD	**0.187**	0.128	3.38	1	0.1	0.0187
1,2,3,4,6,7,8-HpCDD	**2.11**	0.133	3.38	1	0.01	0.0211
OCDD	**24.5**	0.458	6.76	1	0.0003	0.00735
2,3,7,8-TCDF	ND	0.544	0.676	1	0.1	
1,2,3,7,8-PeCDF	ND	0.272	3.38	1	0.03	
2,3,4,7,8-PeCDF	ND	0.267	3.38	1	0.3	
1,2,3,4,7,8-HxCDF	ND	0.155	3.38	1	0.1	
1,2,3,6,7,8-HxCDF	ND	0.148	3.38	1	0.1	
1,2,3,7,8,9-HxCDF	ND	0.156	3.38	1	0.1	
2,3,4,6,7,8-HxCDF	ND	0.155	3.38	1	0.1	
1,2,3,4,6,7,8-HpCDF	**0.322**	0.0843	3.38	1	0.01	0.00322
1,2,3,4,7,8,9-HpCDF	ND	0.109	3.38	1	0.01	
OCDF	**0.886**	0.432	6.76	1	0.0003	0.000266
		Total TEQ				0.0506

2005 WHO TEFs, ND = 0

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	12/01/17 12:28
Sample Matrix:	Sediment	**Date Received:**	12/04/17 10:37
Sample Name:	URSC-RM20.4E-COMP	**Units:**	ng/Kg
Lab Code:	K1713018-016	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 01:44
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	10.200g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305040	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305032

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 1	ND	U	4.66	4.66			1
PCB 2	ND	U	4.26	4.26			1
PCB 3	ND	U	5.05	5.05			1
PCB 4	ND	U	7.27	7.27			1
PCB 10	ND	U	3.30	6.88			1
PCB 9	ND	U	1.82	2.75			1
PCB 7	ND	U	1.68	2.75			1
PCB 6	ND	U	1.85	2.75			1
PCB 5	ND	U	1.86	2.75			1
PCB 8	ND	U	1.74	6.88			1
PCB 14	ND	U	1.86	2.75			1
PCB 11	ND	U	1.90	13.8			1
PCBs 12 + 13	ND	U	1.83	6.88			1
PCB 15	ND	U	1.87	2.75			1
PCB 19	ND	U	15.3	15.3			1
PCBs 18 + 30	ND	U	11.9	11.9			1
PCB 17	ND	U	13.8	13.8			1
PCB 27	ND	U	11.2	11.2			1
PCB 24	ND	U	10.2	10.2			1
PCB 16	ND	U	16.3	16.3			1
PCB 32	ND	U	10.4	10.4			1
PCB 34	ND	U	6.27	6.27			1
PCB 23	ND	U	5.63	5.63			1
PCBs 26 + 29	ND	U	5.78	6.88			1
PCB 25	ND	U	5.00	5.00			1
PCB 31	ND	U	5.95	6.88			1
PCBs 20 + 28	ND	U	5.69	6.88			1
PCBs 21 + 33	ND	U	5.57	6.88			1
PCB 22	ND	U	5.71	5.71			1
PCB 36	ND	U	5.70	5.70			1
PCB 39	ND	U	5.44	5.44			1
PCB 38	ND	U	6.46	6.46			1
PCB 35	ND	U	6.96	6.96			1
PCB 37	ND	U	8.58	8.58			1

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	12/01/17 12:28
Sample Matrix:	Sediment	**Date Received:**	12/04/17 10:37
Sample Name:	URSC-RM20.4E-COMP	**Units:**	ng/Kg
Lab Code:	K1713018-016	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 01:44
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	10.200g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305040	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305032

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 54	ND	U	5.44	5.44			1
PCBs 50 + 53	ND	U	5.22	13.8			1
PCBs 45 + 51	ND	U	5.28	6.88			1
PCB 46	ND	U	5.96	5.96			1
PCB 52	ND	U	5.43	6.88			1
PCBs 43 + 73	ND	U	4.50	6.88			1
PCBs 49 + 69	ND	U	4.46	13.8			1
PCB 48	ND	U	5.00	6.88			1
PCBs 44 + 47 + 65	ND	U	4.61	13.8			1
PCBs 59 + 62 + 75	ND	U	3.96	13.8			1
PCB 42	ND	U	5.61	13.8			1
PCB 64	ND	U	3.96	6.88			1
PCBs 41 + 71 + 40	ND	U	5.57	13.8			1
PCB 72	ND	U	4.23	6.88			1
PCB 68	ND	U	3.82	6.88			1
PCB 57	ND	U	4.32	6.88			1
PCB 58	ND	U	3.90	6.88			1
PCB 67	ND	U	3.52	6.88			1
PCB 63	ND	U	4.17	6.88			1
PCBs 70 + 61 + 74 + 76	ND	U	3.92	27.5			1
PCB 66	ND	U	4.22	6.88			1
PCB 55	ND	U	4.17	6.88			1
PCB 56	ND	U	3.68	6.88			1
PCB 60	ND	U	3.54	6.88			1
PCB 80	ND	U	3.22	6.88			1
PCB 79	ND	U	3.53	6.88			1
PCB 78	ND	U	4.03	6.88			1
PCB 81	ND	U	5.51	5.51			1
PCB 77	ND	U	6.16	6.16			1
PCB 104	ND	U	5.42	5.42			1
PCB 96	ND	U	5.20	6.88			1
PCB 103	ND	U	6.14	6.88			1
PCB 94	ND	U	6.91	6.91			1
PCBs 95 + 93 + 100	ND	U	6.52	27.5			1

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	12/01/17 12:28
Sample Matrix:	Sediment	**Date Received:**	12/04/17 10:37
Sample Name:	URSC-RM20.4E-COMP	**Units:**	ng/Kg
Lab Code:	K1713018-016	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 01:44
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	10.200g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305040	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305032

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCBs 98 + 102	ND	U	6.12	27.5			1
PCBs 88 + 91	ND	U	6.95	6.95			1
PCB 84	ND	U	7.62	7.62			1
PCB 89	ND	U	7.82	7.82			1
PCB 121	ND	U	4.34	6.88			1
PCB 92	ND	U	6.25	6.88			1
PCBs 90 + 101 + 113	ND	U	5.21	27.5			1
PCBs 83 + 99	ND	U	5.83	13.8			1
PCB 112	ND	U	4.29	6.88			1
PCBs 86 + 87 + 97 + 109 + 119 + 125	ND	U	5.04	27.5			1
PCBs 85 + 116 + 117	ND	U	4.93	13.8			1
PCBs 110 + 115	ND	U	4.33	13.8			1
PCB 82	ND	U	7.91	7.91			1
PCB 111	ND	U	4.41	6.88			1
PCB 120	ND	U	4.68	6.88			1
PCBs 108 + 124	ND	U	4.44	13.8			1
PCB 107	ND	U	4.70	6.88			1
PCB 123	ND	U	5.71	5.71			1
PCB 106	ND	U	4.59	6.88			1
PCB 118	ND	U	5.80	5.80			1
PCB 122	ND	U	5.19	6.88			1
PCB 114	ND	U	5.62	5.62			1
PCB 105	ND	U	5.61	5.61			1
PCB 127	ND	U	4.91	6.88			1
PCB 126	ND	U	6.30	6.30			1
PCB 155	ND	U	4.27	4.27			1
PCB 152	ND	U	4.14	6.88			1
PCB 150	ND	U	3.34	6.88			1
PCB 136	ND	U	3.95	6.88			1
PCB 145	ND	U	3.59	6.88			1
PCB 148	ND	U	5.13	6.88			1
PCBs 135 + 151 + 154	ND	U	4.66	13.8			1
PCB 144	ND	U	5.21	6.88			1
PCBs 147 + 149	ND	U	4.49	13.8			1
PCB 134	ND	U	7.54	13.8			1

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	12/01/17 12:28
Sample Matrix:	Sediment	**Date Received:**	12/04/17 10:37
Sample Name:	URSC-RM20.4E-COMP	**Units:**	ng/Kg
Lab Code:	K1713018-016	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 01:44
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	10.200g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305040	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305032

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 143	ND	U	4.05	13.8			1
PCBs 139 + 140	ND	U	4.57	13.8			1
PCB 131	ND	U	5.37	6.88			1
PCB 142	ND	U	5.32	6.88			1
PCB 132	ND	U	5.35	6.88			1
PCB 133	ND	U	5.57	6.88			1
PCB 165	ND	U	3.95	6.88			1
PCB 146	ND	U	4.59	6.88			1
PCB 161	ND	U	3.93	6.88			1
PCBs 153 + 168	ND	U	4.06	13.8			1
PCB 141	ND	U	4.86	6.88			1
PCB 130	ND	U	5.99	6.88			1
PCB 137	ND	U	4.95	6.88			1
PCB 164	ND	U	3.88	6.88			1
PCBs 129 + 138 + 163	ND	U	5.53	27.5			1
PCB 160	ND	U	2.79	27.5			1
PCB 158	ND	U	3.47	6.88			1
PCBs 128 + 166	ND	U	4.50	13.8			1
PCB 159	ND	U	4.24	6.88			1
PCB 162	ND	U	3.78	6.88			1
PCB 167	ND	U	4.15	4.15			1
PCBs 156 + 157	ND	U	5.95	5.95			1
PCB 169	ND	U	4.97	4.97			1
PCB 188	ND	U	6.07	6.07			1
PCB 179	ND	U	4.50	6.88			1
PCB 184	ND	U	3.96	6.88			1
PCB 176	ND	U	4.58	6.88			1
PCB 186	ND	U	4.25	6.88			1
PCB 178	ND	U	6.09	6.88			1
PCB 175	ND	U	5.91	6.88			1
PCB 187	ND	U	5.14	6.88			1
PCB 182	ND	U	5.31	6.88			1
PCB 183 + 185	ND	U	5.75	13.8			1
PCB 174	ND	U	5.77	6.88			1
PCB 177	ND	U	6.65	6.88			1

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	12/01/17 12:28
Sample Matrix:	Sediment	**Date Received:**	12/04/17 10:37
Sample Name:	URSC-RM20.4E-COMP	**Units:**	ng/Kg
Lab Code:	K1713018-016	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 01:44
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	10.200g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305040	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305032

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 181	ND	U	5.66	6.88			1
PCBs 171 + 173	ND	U	6.39	13.8			1
PCB 172	ND	U	6.56	6.88			1
PCB 192	ND	U	4.71	6.88			1
PCBs 180 + 193	ND	U	4.93	13.8			1
PCB 191	ND	U	4.89	6.88			1
PCB 170	ND	U	6.88	6.88			1
PCB 190	ND	U	4.71	6.88			1
PCB 189	ND	U	5.52	5.52			1
PCB 202	ND	U	4.64	4.64			1
PCB 201	ND	U	3.98	6.88			1
PCB 204	ND	U	3.90	6.88			1
PCB 197	ND	U	3.63	13.8			1
PCB 200	ND	U	3.99	13.8			1
PCBs 198 + 199	ND	U	5.16	13.8			1
PCB 196	ND	U	5.36	6.88			1
PCB 203	ND	U	4.57	6.88			1
PCB 195	ND	U	5.77	6.88			1
PCB 194	ND	U	5.54	6.88			1
PCB 205	ND	U	4.72	4.72			1
PCB 208	ND	U	5.19	5.19			1
PCB 207	ND	U	5.51	6.88			1
PCB 206	ND	U	7.52	7.52			1
PCB 209	ND	U	5.50	5.50			1

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	12/01/17 12:28
Sample Matrix:	Sediment	**Date Received:**	12/04/17 10:37
Sample Name:	URSC-RM20.4E-COMP	**Units:**	ng/Kg
Lab Code:	K1713018-016	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 01:44
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	10.200g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305040	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305032

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total MonoCB	ND	U	4.26	6.88			1
Total DiCB	ND	U	1.68	13.8			1
Total TriCB	ND	U	5.00	6.88			1
Total TetraCB	ND	U	3.22	27.5			1
Total PentaCB	ND	U	4.29	27.5			1
Total HexaCB	ND	U	2.79	27.5			1
Total HeptaCB	ND	U	3.96	13.8			1
Total OctaCB	ND	U	3.63	13.8			1
Total NonaCB	ND	U	5.19	6.88			1
Total PCBs	ND	U	1.68	27.5			1

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	12/01/17 12:28
Sample Matrix:	Sediment	**Date Received:**	12/04/17 10:37
Sample Name:	URSC-RM20.4E-COMP	**Units:**	Percent
Lab Code:	K1713018-016	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 01:44
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	10.200g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305040	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305032

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
PCB 1L	2000	839.913	42		5-145	2.90	0.740
PCB 3L	2000	863.257	43		5-145	3.16	0.870
PCB 4L	2000	651.688	33		5-145	1.70	0.884
PCB 15L	2000	943.960	47		5-145	1.59	1.216
PCB 19L	2000	687.457	34		5-145	0.96	1.063
PCB 37L	2000	1042.124	52		5-145	0.91	1.083
PCB 54L	2000	604.054	30		5-145	0.85	0.837
PCB 81L	2000	1084.181	54		10-145	0.89	1.321
PCB 77L	2000	966.480	48		10-145	0.71	1.343
PCB 104L	2000	861.717	43		10-145	1.75	0.831
PCB 123L	2000	1405.086	70		10-145	1.60	1.133
PCB 118L	2000	1350.595	68		10-145	1.48	1.142
PCB 114L	2000	1421.203	71		10-145	1.48	1.157
PCB 105L	2000	1480.966	74		10-145	1.59	1.178
PCB 126L	2000	1449.927	72		10-145	1.60	1.265
PCB 155L	2000	806.097	40		10-145	1.39	0.804
PCB 167L	2000	1297.055	65		10-145	1.29	1.068
PCBs 156L + 157L	4000	2829.883	71		10-145	1.23	1.096
PCB 169L	2000	1373.312	69		10-145	1.17	1.170
PCB 188L	2000	999.801	50		10-145	1.03	0.736
PCB 189L	2000	1508.483	75		10-145	0.96	0.963
PCB 202L	2000	1042.845	52		10-145	0.93	0.833
PCB 205L	2000	1362.966	68		10-145	0.87	1.009
PCB 208L	2000	976.031	49		10-145	0.81	0.952
PCB 206L	2000	1649.191	82		10-145	0.81	1.039
PCB 209L	2000	1723.934	86		10-145	1.14	1.067
PCB 28L	2000	1307.340	65		5-145	1.11	0.934
PCB 111L	2000	1292.834	65		10-145	1.69	1.075
PCB 178L	2000	1215.034	61		10-145	1.05	1.008

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	12/01/17 12:28
Sample Matrix:	Sediment	**Date Received:**	12/04/17 10:37
Sample Name:	URSC-RM20.4E-COMP	**Units:**	ng/Kg
Lab Code:	K1713018-016	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method: 1668C

Prep Method: Method

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
PCB 81	ND	5.51	5.51	1	0.0003	
PCB 77	ND	6.16	6.16	1	0.0001	
PCB 123	ND	5.71	5.71	1	0.00003	
PCB 118	ND	5.80	5.80	1	0.00003	
PCB 114	ND	5.62	5.62	1	0.00003	
PCB 105	ND	5.61	5.61	1	0.00003	
PCB 126	ND	6.30	6.30	1	0.1	
PCB 167	ND	4.15	4.15	1	0.00003	
PCBs 156 + 157	ND	5.95	5.95	1	0.00003	
PCB 169	ND	4.97	4.97	1	0.03	
PCB 189	ND	5.52	5.52	1	0.00003	
	Total TEQ					0.00

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ng/Kg
Lab Code:	EQ1800009-01	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	01/11/18 08:48
Prep Method:	Method Soxhlet	**Date Extracted:**	1/4/18
Sample Amount:	10.365g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P513666	**Blank File Name:**	P513666
ICAL Date:	07/26/17	**Cal Ver. File Name:**	P513663

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	0.214	0.482			1
1,2,3,7,8-PeCDD	0.120**JK**		0.0815	2.41	2.33	1.001	1
1,2,3,4,7,8-HxCDD	0.0985**JK**		0.0557	2.41	0.95	1.000	1
1,2,3,6,7,8-HxCDD	ND	U	0.0613	2.41			1
1,2,3,7,8,9-HxCDD	0.113**JK**		0.0557	2.41	0.76	1.007	1
1,2,3,4,6,7,8-HpCDD	0.251**J**		0.103	2.41	1.18	1.000	1
OCDD	0.526**JK**		0.334	4.82	1.11	1.000	1
2,3,7,8-TCDF	ND	U	0.151	0.482			1
1,2,3,7,8-PeCDF	ND	U	0.141	2.41			1
2,3,4,7,8-PeCDF	0.408**JK**		0.145	2.41	1.20	1.001	1
1,2,3,4,7,8-HxCDF	0.336**J**		0.0531	2.41	1.43	1.000	1
1,2,3,6,7,8-HxCDF	0.346**JK**		0.0515	2.41	0.93	1.000	1
1,2,3,7,8,9-HxCDF	0.175**JK**		0.0636	2.41	0.88	1.000	1
2,3,4,6,7,8-HxCDF	0.371**JK**		0.0532	2.41	1.53	1.000	1
1,2,3,4,6,7,8-HpCDF	1.02**J**		0.0747	2.41	1.00	1.000	1
1,2,3,4,7,8,9-HpCDF	ND	U	0.107	2.41			1
OCDF	ND	U	0.442	4.82			1

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ng/Kg
Lab Code:	EQ1800009-01	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	01/11/18 08:48
Prep Method:	Method Soxhlet	**Date Extracted:**	1/4/18
Sample Amount:	10.365g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P513666	**Blank File Name:**	P513666
ICAL Date:	07/26/17	**Cal Ver. File Name:**	P513663

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	ND	U	0.214	0.482			1
Total Penta-Dioxins	ND	U	0.0815	2.41			1
Total Hexa-Dioxins	ND	U	0.0586	2.41			1
Total Hepta-Dioxins	0.632**J**		0.103	2.41	1.04		1
Total Tetra-Furans	ND	U	0.151	0.482			1
Total Penta-Furans	0.402**J**		0.143	2.41	1.34		1
Total Hexa-Furans	1.83**J**		0.0550	2.41	1.27		1
Total Hepta-Furans	1.02**J**		0.0872	2.41	1.00		1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	Percent
Lab Code:	EQ1800009-01	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	01/11/18 08:48
Prep Method:	Method Soxhlet	**Date Extracted:**	1/4/18
Sample Amount:	10.365g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P513666	**Blank File Name:**	P513666
ICAL Date:	07/26/17	**Cal Ver. File Name:**	P513663

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	905.971	45		25-164	0.78	1.022
13C-1,2,3,7,8-PeCDD	2000	1197.411	60		25-181	1.58	1.195
13C-1,2,3,4,7,8-HxCDD	2000	1365.706	68		32-141	1.28	0.991
13C-1,2,3,6,7,8-HxCDD	2000	1277.283	64		28-130	1.28	0.994
13C-1,2,3,4,6,7,8-HpCDD	2000	1189.305	59		23-140	1.07	1.072
13C-OCDD	4000	1486.079	37		17-157	0.91	1.154
13C-2,3,7,8-TCDF	2000	1105.168	55		24-169	0.79	0.993
13C-1,2,3,7,8-PeCDF	2000	1215.379	61		24-185	1.58	1.151
13C-2,3,4,7,8-PeCDF	2000	1202.253	60		21-178	1.58	1.185
13C-1,2,3,4,7,8-HxCDF	2000	1357.241	68		26-152	0.51	0.970
13C-1,2,3,6,7,8-HxCDF	2000	1363.059	68		26-123	0.53	0.973
13C-1,2,3,7,8,9-HxCDF	2000	1408.561	70		29-147	0.51	1.009
13C-2,3,4,6,7,8-HxCDF	2000	1396.272	70		28-136	0.51	0.987
13C-1,2,3,4,6,7,8-HpCDF	2000	1256.908	63		28-143	0.44	1.045
13C-1,2,3,4,7,8,9-HpCDF	2000	1254.034	63		26-138	0.45	1.085
37Cl-2,3,7,8-TCDD	800	460.880	58		35-197	NA	1.023

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ng/Kg
Lab Code:	EQ1700575-01	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/29/17 18:15
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	5.227g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305033	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305032

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 1	ND	U	22.5	22.5			1
PCB 2	ND	U	18.3	18.3			1
PCB 3	ND	U	19.2	19.2			1
PCB 4	ND	U	69.1	69.1			1
PCB 10	ND	U	28.8	28.8			1
PCB 9	ND	U	4.25	4.25			1
PCB 7	ND	U	3.92	3.92			1
PCB 6	ND	U	4.31	4.31			1
PCB 5	ND	U	4.32	4.32			1
PCB 8	ND	U	4.05	9.57			1
PCB 14	ND	U	4.33	4.33			1
PCB 11	ND	U	4.42	19.1			1
PCBs 12 + 13	ND	U	4.26	9.57			1
PCB 15	ND	U	4.21	4.21			1
PCB 19	ND	U	43.7	43.7			1
PCBs 18 + 30	ND	U	38.4	38.4			1
PCB 17	ND	U	44.4	44.4			1
PCB 27	ND	U	36.0	36.0			1
PCB 24	ND	U	32.8	32.8			1
PCB 16	ND	U	52.4	52.4			1
PCB 32	ND	U	33.3	33.3			1
PCB 34	ND	U	19.5	19.5			1
PCB 23	ND	U	17.5	17.5			1
PCBs 26 + 29	ND	U	18.0	18.0			1
PCB 25	ND	U	15.5	15.5			1
PCB 31	ND	U	18.5	18.5			1
PCBs 20 + 28	ND	U	17.7	17.7			1
PCBs 21 + 33	ND	U	17.3	17.3			1
PCB 22	ND	U	17.7	17.7			1
PCB 36	ND	U	17.7	17.7			1
PCB 39	ND	U	16.9	16.9			1
PCB 38	ND	U	20.1	20.1			1
PCB 35	ND	U	21.6	21.6			1
PCB 37	ND	U	28.9	28.9			1

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ng/Kg
Lab Code:	EQ1700575-01	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/29/17 18:15
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	5.227g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305033	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305032

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 54	ND	U	23.0	23.0			1
PCBs 50 + 53	ND	U	17.0	19.1			1
PCBs 45 + 51	ND	U	17.2	17.2			1
PCB 46	ND	U	19.4	19.4			1
PCB 52	ND	U	17.7	17.7			1
PCBs 43 + 73	ND	U	14.7	14.7			1
PCBs 49 + 69	ND	U	14.6	19.1			1
PCB 48	ND	U	16.3	16.3			1
PCBs 44 + 47 + 65	ND	U	15.0	19.1			1
PCBs 59 + 62 + 75	ND	U	12.9	19.1			1
PCB 42	ND	U	18.3	19.1			1
PCB 64	ND	U	12.9	12.9			1
PCBs 41 + 71 + 40	ND	U	18.2	19.1			1
PCB 72	ND	U	13.8	13.8			1
PCB 68	ND	U	12.5	12.5			1
PCB 57	ND	U	14.1	14.1			1
PCB 58	ND	U	12.7	12.7			1
PCB 67	ND	U	11.5	11.5			1
PCB 63	ND	U	13.6	13.6			1
PCBs 70 + 61 + 74 + 76	ND	U	12.8	38.3			1
PCB 66	ND	U	13.8	13.8			1
PCB 55	ND	U	13.6	13.6			1
PCB 56	ND	U	13.4	13.4			1
PCB 60	ND	U	12.9	12.9			1
PCB 80	ND	U	11.7	11.7			1
PCB 79	ND	U	12.8	12.8			1
PCB 78	ND	U	14.6	14.6			1
PCB 81	ND	U	22.1	22.1			1
PCB 77	ND	U	19.7	19.7			1
PCB 104	ND	U	21.0	21.0			1
PCB 96	ND	U	16.4	16.4			1
PCB 103	ND	U	19.4	19.4			1
PCB 94	ND	U	21.8	21.8			1
PCBs 95 + 93 + 100	ND	U	20.6	38.3			1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ng/Kg
Lab Code:	EQ1700575-01	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/29/17 18:15
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	5.227g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305033	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305032

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCBs 98 + 102	ND	U	19.3	38.3			1
PCBs 88 + 91	ND	U	22.0	22.0			1
PCB 84	ND	U	24.1	24.1			1
PCB 89	ND	U	24.7	24.7			1
PCB 121	ND	U	15.8	15.8			1
PCB 92	ND	U	22.7	22.7			1
PCBs 90 + 101 + 113	ND	U	18.9	38.3			1
PCBs 83 + 99	ND	U	21.2	21.2			1
PCB 112	ND	U	15.6	15.6			1
PCBs 86 + 87 + 97 + 109 + 119 + 125	ND	U	18.3	38.3			1
PCBs 85 + 116 + 117	ND	U	17.9	19.1			1
PCBs 110 + 115	ND	U	15.7	19.1			1
PCB 82	ND	U	28.7	28.7			1
PCB 111	ND	U	16.0	16.0			1
PCB 120	ND	U	17.0	17.0			1
PCBs 108 + 124	ND	U	18.4	19.1			1
PCB 107	ND	U	19.5	19.5			1
PCB 123	ND	U	21.3	21.3			1
PCB 106	ND	U	19.0	19.0			1
PCB 118	ND	U	24.4	24.4			1
PCB 122	ND	U	21.5	21.5			1
PCB 114	ND	U	22.2	22.2			1
PCB 105	ND	U	22.6	22.6			1
PCB 127	ND	U	20.4	20.4			1
PCB 126	ND	U	25.4	25.4			1
PCB 155	ND	U	15.4	15.4			1
PCB 152	ND	U	12.0	12.0			1
PCB 150	ND	U	9.60	9.60			1
PCB 136	ND	U	11.4	11.4			1
PCB 145	ND	U	10.4	10.4			1
PCB 148	ND	U	14.8	14.8			1
PCBs 135 + 151 + 154	ND	U	13.4	19.1			1
PCB 144	ND	U	15.0	15.0			1
PCBs 147 + 149	ND	U	8.04	19.1			1
PCB 134	ND	U	13.6	19.1			1

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ng/Kg
Lab Code:	EQ1700575-01	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/29/17 18:15
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	5.227g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305033	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305032

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 143	ND	U	7.26	19.1			1
PCBs 139 + 140	ND	U	8.17	19.1			1
PCB 131	ND	U	9.61	9.61			1
PCB 142	ND	U	9.52	9.57			1
PCB 132	ND	U	9.59	9.59			1
PCB 133	ND	U	9.98	9.98			1
PCB 165	ND	U	7.07	9.57			1
PCB 146	ND	U	8.22	9.57			1
PCB 161	ND	U	7.04	9.57			1
PCBs 153 + 168	ND	U	7.26	19.1			1
PCB 141	ND	U	8.70	9.57			1
PCB 130	ND	U	10.8	10.8			1
PCB 137	ND	U	8.87	9.57			1
PCB 164	ND	U	6.95	9.57			1
PCBs 129 + 138 + 163	ND	U	9.90	38.3			1
PCB 160	ND	U	5.00	38.3			1
PCB 158	ND	U	6.20	9.57			1
PCBs 128 + 166	ND	U	8.05	19.1			1
PCB 159	ND	U	14.4	14.4			1
PCB 162	ND	U	12.9	12.9			1
PCB 167	ND	U	13.3	13.3			1
PCBs 156 + 157	ND	U	19.8	19.8			1
PCB 169	ND	U	15.0	15.0			1
PCB 188	ND	U	18.5	18.5			1
PCB 179	ND	U	13.2	13.2			1
PCB 184	ND	U	11.6	11.6			1
PCB 176	ND	U	13.5	13.5			1
PCB 186	ND	U	12.5	12.5			1
PCB 178	ND	U	17.9	17.9			1
PCB 175	ND	U	17.3	17.3			1
PCB 187	ND	U	15.1	15.1			1
PCB 182	ND	U	15.6	15.6			1
PCB 183 + 185	ND	U	20.0	20.0			1
PCB 174	ND	U	20.1	20.1			1
PCB 177	ND	U	23.1	23.1			1

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ng/Kg
Lab Code:	EQ1700575-01	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/29/17 18:15
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	5.227g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305033	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305032

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 181	ND	U	19.7	19.7			1
PCBs 171 + 173	ND	U	22.2	22.2			1
PCB 172	ND	U	22.8	22.8			1
PCB 192	ND	U	16.4	16.4			1
PCBs 180 + 193	ND	U	17.1	19.1			1
PCB 191	ND	U	17.0	17.0			1
PCB 170	ND	U	23.9	23.9			1
PCB 190	ND	U	16.4	16.4			1
PCB 189	ND	U	18.6	18.6			1
PCB 202	ND	U	21.1	21.1			1
PCB 201	ND	U	17.1	17.1			1
PCB 204	ND	U	16.7	16.7			1
PCB 197	ND	U	15.6	19.1			1
PCB 200	ND	U	17.1	19.1			1
PCBs 198 + 199	ND	U	22.1	22.1			1
PCB 196	ND	U	23.0	23.0			1
PCB 203	ND	U	19.6	19.6			1
PCB 195	ND	U	24.8	24.8			1
PCB 194	ND	U	23.8	23.8			1
PCB 205	ND	U	19.1	19.1			1
PCB 208	ND	U	19.0	19.0			1
PCB 207	ND	U	18.8	18.8			1
PCB 206	ND	U	16.1	16.1			1
PCB 209	ND	U	16.3	16.3			1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ng/Kg
Lab Code:	EQ1700575-01	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/29/17 18:15
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	5.227g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305033	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305032

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total MonoCB	ND	U	18.3	18.3			1
Total DiCB	ND	U	3.92	19.1			1
Total TriCB	ND	U	15.5	15.5			1
Total TetraCB	ND	U	11.5	38.3			1
Total PentaCB	ND	U	15.6	38.3			1
Total HexaCB	ND	U	5.00	38.3			1
Total HeptaCB	ND	U	11.6	19.1			1
Total OctaCB	ND	U	15.6	19.1			1
Total NonaCB	ND	U	16.1	16.1			1
Total PCBs	ND	U	3.92	38.3			1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	Percent
Lab Code:	EQ1700575-01	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/29/17 18:15
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	5.227g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305033	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305032

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
PCB 1L	2000	1016.968	51		5-145	2.81	0.740
PCB 3L	2000	939.413	47		5-145	3.23	0.870
PCB 4L	2000	573.289	29		5-145	1.62	0.884
PCB 15L	2000	966.374	48		5-145	1.59	1.216
PCB 19L	2000	676.373	34		5-145	1.01	1.062
PCB 37L	2000	905.670	45		5-145	1.02	1.083
PCB 54L	2000	569.376	28		5-145	0.84	0.837
PCB 81L	2000	1078.724	54		10-145	0.85	1.322
PCB 77L	2000	1054.119	53		10-145	0.72	1.343
PCB 104L	2000	737.363	37		10-145	1.71	0.831
PCB 123L	2000	1555.266	78		10-145	1.64	1.133
PCB 118L	2000	1419.695	71		10-145	1.54	1.142
PCB 114L	2000	1494.955	75		10-145	1.56	1.157
PCB 105L	2000	1537.913	77		10-145	1.54	1.178
PCB 126L	2000	1565.449	78		10-145	1.73	1.265
PCB 155L	2000	706.326	35		10-145	1.33	0.805
PCB 167L	2000	1524.395	76		10-145	1.17	1.068
PCBs 156L + 157L	4000	3111.768	78		10-145	1.29	1.097
PCB 169L	2000	1676.921	84		10-145	1.37	1.171
PCB 188L	2000	919.624	46		10-145	1.19	0.736
PCB 189L	2000	1684.247	84		10-145	1.06	0.964
PCB 202L	2000	1050.570	53		10-145	1.01	0.833
PCB 205L	2000	1384.000	69		10-145	0.87	1.008
PCB 208L	2000	914.575	46		10-145	0.70	0.952
PCB 206L	2000	1748.986	87		10-145	0.82	1.039
PCB 209L	2000	1632.163	82		10-145	1.14	1.066
PCB 28L	2000	1498.060	75		5-145	0.95	0.934
PCB 111L	2000	1103.172	55		10-145	1.69	1.075
PCB 178L	2000	1030.246	52		10-145	1.14	1.008

Accuracy & Precision

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Analyzed:**	01/12/18
Sample Matrix:	Sediment	**Date Extracted:**	01/04/18

Duplicate Lab Control Sample Summary
Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Units:**	ng/Kg
Prep Method:	Method Soxhlet	**Basis:**	Dry
		Analysis Lot:	576975

	Lab Control Sample EQ1800009-02			Duplicate Lab Control Sample EQ1800009-03					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
1,2,3,4,6,7,8-HpCDD	89.6	94.6	95	90.1	96.8	93	70-140	<1	50
1,2,3,4,7,8-HxCDD	82.9	94.6	88	83.3	96.8	86	70-164	<1	50
1,2,3,6,7,8-HxCDD	88.9	94.6	94	91.4	96.8	94	76-134	3	50
1,2,3,7,8,9-HxCDD	86.4	94.6	91	91.1	96.8	94	64-162	5	50
1,2,3,7,8-PeCDD	94.1	94.6	99	95.6	96.8	99	70-142	2	50
2,3,7,8-TCDD	21.3	18.9	112	21.5	19.4	111	67-158	1	50
OCDD	194	189	103	200	194	103	78-144	3	50
1,2,3,4,6,7,8-HpCDF	92.5	94.6	98	93.0	96.8	96	82-122	<1	50
1,2,3,4,7,8,9-HpCDF	92.4	94.6	98	93.3	96.8	96	78-138	<1	50
1,2,3,4,7,8-HxCDF	95.3	94.6	101	98.1	96.8	101	72-134	3	50
1,2,3,6,7,8-HxCDF	95.5	94.6	101	90.4	96.8	93	84-130	5	50
1,2,3,7,8,9-HxCDF	82.9	94.6	88	85.9	96.8	89	78-130	4	50
1,2,3,7,8-PeCDF	84.3	94.6	89	82.6	96.8	85	80-134	2	50
2,3,4,6,7,8-HxCDF	92.3	94.6	98	94.0	96.8	97	70-156	2	50
2,3,4,7,8-PeCDF	87.7	94.6	93	88.7	96.8	92	68-160	1	50
2,3,7,8-TCDF	17.9	18.9	95	19.3	19.4	100	75-158	7	50
OCDF	224	189	119	228	194	118	63-170	1	50

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1800009-02	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	01/12/18 18:57
Prep Method:	Method Soxhlet	**Date Extracted:**	1/4/18
Sample Amount:	10.567g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P513697	**Blank File Name:**	P513666
ICAL Date:	07/26/17	**Cal Ver. File Name:**	P513686

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	21.3		0.276	0.473	0.75	1.001	1
1,2,3,7,8-PeCDD	94.1		0.0624	2.37	1.56	1.000	1
1,2,3,4,7,8-HxCDD	82.9		0.0806	2.37	1.22	1.000	1
1,2,3,6,7,8-HxCDD	88.9		0.0882	2.37	1.26	1.000	1
1,2,3,7,8,9-HxCDD	86.4		0.0804	2.37	1.22	1.007	1
1,2,3,4,6,7,8-HpCDD	89.6		0.0626	2.37	1.04	1.000	1
OCDD	194		0.169	4.73	0.89	1.000	1
2,3,7,8-TCDF	17.9		0.152	0.473	0.72	1.001	1
1,2,3,7,8-PeCDF	84.3		0.107	2.37	1.41	1.001	1
2,3,4,7,8-PeCDF	87.7		0.110	2.37	1.40	1.001	1
1,2,3,4,7,8-HxCDF	95.3		0.0737	2.37	1.14	1.000	1
1,2,3,6,7,8-HxCDF	95.5		0.0735	2.37	1.19	1.000	1
1,2,3,7,8,9-HxCDF	82.9		0.0877	2.37	1.08	1.000	1
2,3,4,6,7,8-HxCDF	92.3		0.0736	2.37	1.06	1.000	1
1,2,3,4,6,7,8-HpCDF	92.5		0.111	2.37	0.97	1.000	1
1,2,3,4,7,8,9-HpCDF	92.4		0.156	2.37	0.98	1.000	1
OCDF	224		0.224	4.73	0.88	1.005	1

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1800009-02	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	01/12/18 18:57
Prep Method:	Method Soxhlet	**Date Extracted:**	1/4/18
Sample Amount:	10.567g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P513697	**Blank File Name:**	P513666
ICAL Date:	07/26/17	**Cal Ver. File Name:**	P513686

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	21.3		0.276	0.473	0.75		1
Total Penta-Dioxins	94.1		0.0624	2.37	1.56		1
Total Hexa-Dioxins	258		0.0845	2.37	1.22		1
Total Hepta-Dioxins	89.6		0.0626	2.37	1.04		1
Total Tetra-Furans	18.1		0.152	0.473	0.72		1
Total Penta-Furans	173		0.108	2.37	1.41		1
Total Hexa-Furans	366		0.0768	2.37	1.14		1
Total Hepta-Furans	185		0.128	2.37	0.97		1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	Percent
Lab Code:	EQ1800009-02	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	01/12/18 18:57
Prep Method:	Method Soxhlet	**Date Extracted:**	1/4/18
Sample Amount:	10.567g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P513697	**Blank File Name:**	P513666
ICAL Date:	07/26/17	**Cal Ver. File Name:**	P513686

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	1013.381	51		25-164	0.79	1.023
13C-1,2,3,7,8-PeCDD	2000	1349.919	67		25-181	1.57	1.199
13C-1,2,3,4,7,8-HxCDD	2000	1548.401	77		32-141	1.26	0.991
13C-1,2,3,6,7,8-HxCDD	2000	1474.265	74		28-130	1.25	0.994
13C-1,2,3,4,6,7,8-HpCDD	2000	1523.293	76		23-140	1.05	1.072
13C-OCDD	4000	2126.555	53		17-157	0.89	1.155
13C-2,3,7,8-TCDF	2000	1146.320	57		24-169	0.79	0.993
13C-1,2,3,7,8-PeCDF	2000	1266.384	63		24-185	1.53	1.153
13C-2,3,4,7,8-PeCDF	2000	1245.441	62		21-178	1.57	1.188
13C-1,2,3,4,7,8-HxCDF	2000	1278.768	64		26-152	0.51	0.969
13C-1,2,3,6,7,8-HxCDF	2000	1298.658	65		26-123	0.50	0.972
13C-1,2,3,7,8,9-HxCDF	2000	1363.045	68		29-147	0.50	1.009
13C-2,3,4,6,7,8-HxCDF	2000	1363.653	68		28-136	0.50	0.987
13C-1,2,3,4,6,7,8-HpCDF	2000	1511.966	76		28-143	0.44	1.045
13C-1,2,3,4,7,8,9-HpCDF	2000	1498.124	75		26-138	0.44	1.086
37Cl-2,3,7,8-TCDD	800	495.470	62		35-197	NA	1.024

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1800009-03	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	01/12/18 19:46
Prep Method:	Method Soxhlet	**Date Extracted:**	1/4/18
Sample Amount:	10.326g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P513698	**Blank File Name:**	P513666
ICAL Date:	07/26/17	**Cal Ver. File Name:**	P513686

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	21.5		0.657	0.657	0.82	1.001	1
1,2,3,7,8-PeCDD	95.6		0.146	2.42	1.57	1.001	1
1,2,3,4,7,8-HxCDD	83.3		0.127	2.42	1.20	1.000	1
1,2,3,6,7,8-HxCDD	91.4		0.139	2.42	1.24	1.000	1
1,2,3,7,8,9-HxCDD	91.1		0.127	2.42	1.19	1.007	1
1,2,3,4,6,7,8-HpCDD	90.1		0.105	2.42	1.04	1.000	1
OCDD	200		0.230	4.84	0.88	1.000	1
2,3,7,8-TCDF	19.3		0.452	0.484	0.66	1.001	1
1,2,3,7,8-PeCDF	82.6		0.193	2.42	1.34	1.001	1
2,3,4,7,8-PeCDF	88.7		0.189	2.42	1.41	1.001	1
1,2,3,4,7,8-HxCDF	98.1		0.0924	2.42	1.22	1.000	1
1,2,3,6,7,8-HxCDF	90.4		0.0855	2.42	1.09	1.000	1
1,2,3,7,8,9-HxCDF	85.9		0.101	2.42	1.15	1.000	1
2,3,4,6,7,8-HxCDF	94.0		0.0876	2.42	1.09	1.000	1
1,2,3,4,6,7,8-HpCDF	93.0		0.158	2.42	0.96	1.000	1
1,2,3,4,7,8,9-HpCDF	93.3		0.207	2.42	0.94	1.000	1
OCDF	228		0.335	4.84	0.87	1.005	1

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1800009-03	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	01/12/18 19:46
Prep Method:	Method Soxhlet	**Date Extracted:**	1/4/18
Sample Amount:	10.326g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P513698	**Blank File Name:**	P513666
ICAL Date:	07/26/17	**Cal Ver. File Name:**	P513686

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	21.5		0.657	0.657	0.82		1
Total Penta-Dioxins	96.2		0.146	2.42	1.57		1
Total Hexa-Dioxins	266		0.134	2.42	1.20		1
Total Hepta-Dioxins	90.1		0.105	2.42	1.04		1
Total Tetra-Furans	19.3		0.452	0.484	0.66		1
Total Penta-Furans	172		0.191	2.42	1.38		1
Total Hexa-Furans	368		0.0911	2.42	1.22		1
Total Hepta-Furans	186		0.176	2.42	0.96		1

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	Percent
Lab Code:	EQ1800009-03	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	01/12/18 19:46
Prep Method:	Method Soxhlet	**Date Extracted:**	1/4/18
Sample Amount:	10.326g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P513698	**Blank File Name:**	P513666
ICAL Date:	07/26/17	**Cal Ver. File Name:**	P513686

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	772.602	39		25-164	0.80	1.023
13C-1,2,3,7,8-PeCDD	2000	1272.785	64		25-181	1.56	1.199
13C-1,2,3,4,7,8-HxCDD	2000	1354.831	68		32-141	1.26	0.991
13C-1,2,3,6,7,8-HxCDD	2000	1297.526	65		28-130	1.24	0.994
13C-1,2,3,4,6,7,8-HpCDD	2000	1656.231	83		23-140	1.05	1.072
13C-OCDD	4000	2783.246	70		17-157	0.88	1.155
13C-2,3,7,8-TCDF	2000	826.677	41		24-169	0.76	0.993
13C-1,2,3,7,8-PeCDF	2000	1132.567	57		24-185	1.58	1.153
13C-2,3,4,7,8-PeCDF	2000	1154.639	58		21-178	1.59	1.188
13C-1,2,3,4,7,8-HxCDF	2000	1035.737	52		26-152	0.50	0.969
13C-1,2,3,6,7,8-HxCDF	2000	1128.532	56		26-123	0.50	0.972
13C-1,2,3,7,8,9-HxCDF	2000	1230.211	62		29-147	0.52	1.009
13C-2,3,4,6,7,8-HxCDF	2000	1140.224	57		28-136	0.50	0.987
13C-1,2,3,4,6,7,8-HpCDF	2000	1537.309	77		28-143	0.44	1.045
13C-1,2,3,4,7,8,9-HpCDF	2000	1670.538	84		26-138	0.43	1.086
37Cl-2,3,7,8-TCDD	800	385.081	48		35-197	NA	1.024

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Analyzed:**	12/30/17
Sample Matrix:	Sediment	**Date Extracted:**	12/27/17

Duplicate Lab Control Sample Summary
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Units:**	ng/Kg
Prep Method:	Method	**Basis:**	Dry
		Analysis Lot:	576377

	Lab Control Sample EQ1700575-02			Duplicate Lab Control Sample EQ1700575-03					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
PCB 1	217	195	111	212	181	117	60-135	2	50
PCB 2	230	195	118	210	181	116	60-135	9	50
PCB 3	227	195	116	189	181	105	60-135	18	50
PCB 10	185	195	94	178	181	99	60-135	3	50
PCB 11	206	195	105	170	181	94	60-135	19	50
PCB 14	209	195	107	195	181	108	60-135	7	50
PCB 15	214	195	109	191	181	106	60-135	11	50
PCB 4	250	195	128	201	181	112	60-135	21	50
PCB 5	188	195	96	163	181	90	60-135	15	50
PCB 6	214	195	109	184	181	102	60-135	15	50
PCB 7	195	195	100	178	181	99	60-135	9	50
PCB 8	218	195	112	203	181	112	60-135	7	50
PCB 9	213	195	109	201	181	111	60-135	6	50
PCBs 12 + 13	340	391	87	345	361	96	60-135	2	50
PCB 16	190	195	97	128	181	71	60-135	39	50
PCB 17	192	195	98	131	181	72	60-135	38	50
PCB 19	237	195	121	157	181	87	60-135	40	50
PCB 22	174 K	195	89	138	181	77	60-135	23	50
PCB 23	189	195	97	127	181	70	60-135	39	50
PCB 24	178	195	91	115	181	64	60-135	43	50
PCB 25	167	195	85	122	181	68	60-135	31	50
PCB 27	203	195	104	143	181	79	60-135	35	50
PCB 31	220	195	113	163	181	91	60-135	30	50
PCB 32	202	195	103	144	181	80	60-135	33	50
PCB 34	205	195	105	142 K	181	79	60-135	36	50
PCB 35	231	195	118	166	181	92	60-135	33	50
PCB 36	195 K	195	100	148	181	82	60-135	27	50
PCB 37	174 K	195	89	128 K	181	71	60-135	30	50
PCB 38	209	195	107	144	181	80	60-135	37	50
PCB 39	198	195	101	126	181	70	60-135	44	50
PCBs 18 + 30	390	391	100	280	361	78	60-135	33	50
PCBs 20 + 28	394	391	101	301	361	83	60-135	27	50
PCBs 21 + 33	367 K	391	94	250	361	69	60-135	38	50
PCBs 26 + 29	423	391	108	287	361	79	60-135	38	50
PCB 42	177 K	391	45 *	177	361	49 *	60-135	<1	50
PCB 46	388	391	99	357	361	99	60-135	8	50
PCB 48	277	391	71	269	361	74	60-135	3	50
PCB 52	408	391	104	318 K	361	88	60-135	25	50

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Analyzed:**	12/30/17
Sample Matrix:	Sediment	**Date Extracted:**	12/27/17

Duplicate Lab Control Sample Summary
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Units:**	ng/Kg
Prep Method:	Method	**Basis:**	Dry
		Analysis Lot:	576377

	Lab Control Sample EQ1700575-02			Duplicate Lab Control Sample EQ1700575-03					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
PCB 54	531	391	136 *	532	361	147 *	60-135	<1	50
PCB 55	279	391	71	268	361	74	60-135	4	50
PCB 56	364	391	93	321	361	89	60-135	13	50
PCB 57	194	391	50 *	184	361	51 *	60-135	5	50
PCB 58	159	391	41 *	152	361	42 *	60-135	4	50
PCB 60	338	391	87	308	361	85	60-135	9	50
PCB 63	185	391	47 *	190	361	53 *	60-135	3	50
PCB 64	194	391	50 *	142 K	361	39 *	60-135	31	50
PCB 66	317	391	81	304	361	84	60-135	4	50
PCB 67	157	391	40 *	154	361	43 *	60-135	2	50
PCB 68	159	391	41 *	149	361	41 *	60-135	6	50
PCB 72	214	391	55 *	194	361	54 *	60-135	10	50
PCB 77	478	391	122	429	361	119	60-135	11	50
PCB 78	419	391	107	368	361	102	60-135	13	50
PCB 79	403	391	103	376	361	104	60-135	7	50
PCB 80	343	391	88	319	361	88	60-135	7	50
PCB 81	476	391	122	418	361	116	60-135	13	50
PCBs 41 + 71 + 40	758	1170	65	677	1080	62	60-135	11	50
PCBs 43 + 73	676	782	87	691	722	96	60-135	2	50
PCBs 44 + 47 + 65	948	1170	81	926	1080	85	60-135	2	50
PCBs 45 + 51	755	782	97	709	722	98	60-135	6	50
PCBs 49 + 69	686	782	88	657	722	91	60-135	4	50
PCBs 50 + 53	723	782	92	692	722	96	60-135	4	50
PCBs 59 + 62 + 75	948	1170	81	890	1080	82	60-135	6	50
PCBs 70 + 61 + 74 + 76	1090	1560	70	1050	1440	73	60-135	4	50
PCB 103	395	391	101	348	361	96	60-135	13	50
PCB 104	500	391	128	493	361	137 *	60-135	1	50
PCB 105	480	391	123	449	361	124	60-135	7	50
PCB 106	413	391	106	412	361	114	60-135	<1	50
PCB 107	444	391	114	372	361	103	60-135	18	50
PCB 111	359	391	92	320	361	88	60-135	12	50
PCB 112	353	391	90	315	361	87	60-135	11	50
PCB 114	426	391	109	363	361	100	60-135	16	50
PCB 118	384	391	98	387	361	107	60-135	<1	50
PCB 120	398	391	102	362	361	100	60-135	10	50
PCB 121	320	391	82	281	361	78	60-135	13	50
PCB 122	416	391	106	421	361	116	60-135	1	50
PCB 123	388	391	99	363	361	101	60-135	6	50
PCB 126	449	391	115	420	361	116	60-135	7	50
PCB 127	451	391	115	425	361	118	60-135	6	50

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Analyzed:**	12/30/17
Sample Matrix:	Sediment	**Date Extracted:**	12/27/17

Duplicate Lab Control Sample Summary
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Units:**	ng/Kg
Prep Method:	Method	**Basis:**	Dry
		Analysis Lot:	576377

	Lab Control Sample EQ1700575-02			Duplicate Lab Control Sample EQ1700575-03					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
PCB 82	419	391	107	409	361	113	60-135	2	50
PCB 84	401	391	103	368	361	102	60-135	9	50
PCB 89	408	391	104	380	361	105	60-135	7	50
PCB 92	406	391	104	364	361	101	60-135	11	50
PCB 94	353	391	90	324	361	90	60-135	8	50
PCB 96	398	391	102	389	361	108	60-135	3	50
PCBs 108 + 124	787	782	101	714	722	99	60-135	10	50
PCBs 110 + 115	729	782	93	662	722	92	60-135	10	50
PCBs 83 + 99	720	782	92	684	722	95	60-135	5	50
PCBs 85 + 116 + 117	1090	1170	93	975	1080	90	60-135	11	50
PCBs 86 + 87 + 97 + 109 + 119 + 125	2220	2350	95	2010	2170	93	60-135	10	50
PCBs 88 + 91	749	782	96	707	722	98	60-135	6	50
PCBs 90 + 101 + 113	1100	1170	94	1020	1080	94	60-135	8	50
PCBs 95 + 93 + 100	1090	1170	93	979	1080	90	60-135	11	50
PCBs 98 + 102	672	782	86	636	722	88	60-135	6	50
PCB 130	424	391	108	410	361	113	60-135	3	50
PCB 131	368	391	94	326	361	90	60-135	12	50
PCB 132	368	391	94	342	361	95	60-135	7	50
PCB 133	420	391	108	385	361	107	60-135	9	50
PCB 134	363	391	93	518	361	143 *	60-135	35	50
PCB 136	387	391	99	381	361	105	60-135	2	50
PCB 137	322	391	82	306 K	361	85	60-135	5	50
PCB 141	379	391	97	362	361	100	60-135	5	50
PCB 142	421	391	108	378	361	105	60-135	11	50
PCB 143	373	391	96	269	361	74	60-135	32	50
PCB 144	424	391	109	375	361	104	60-135	12	50
PCB 145	331	391	85	328	361	91	60-135	1	50
PCB 146	417	391	107	358	361	99	60-135	15	50
PCB 148	371	391	95	355	361	98	60-135	4	50
PCB 150	374	391	96	322	361	89	60-135	15	50
PCB 152	371	391	95	386	361	107	60-135	4	50
PCB 155	479	391	123	460	361	127	60-135	4	50
PCB 158	388	391	99	353	361	98	60-135	10	50
PCB 159	393 K	391	101	397	361	110	60-135	<1	50
PCB 160	333	391	85	372	361	103	60-135	11	50
PCB 161	403	391	103	375	361	104	60-135	7	50
PCB 162	347	391	89	347	361	96	60-135	<1	50
PCB 164	386	391	99	342	361	95	60-135	12	50
PCB 165	364	391	93	333	361	92	60-135	9	50
PCB 167	419	391	107	355 K	361	98	60-135	17	50

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Analyzed:**	12/30/17
Sample Matrix:	Sediment	**Date Extracted:**	12/27/17

Duplicate Lab Control Sample Summary
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Units:**	ng/Kg
Prep Method:	Method	**Basis:**	Dry
		Analysis Lot:	576377

	Lab Control Sample EQ1700575-02			Duplicate Lab Control Sample EQ1700575-03					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
PCB 169	411	391	105	362 K	361	100	60-135	12	50
PCBs 128 + 166	793	782	101	724	722	100	60-135	9	50
PCBs 129 + 138 + 163	1150	1170	98	972	1080	90	60-135	17	50
PCBs 135 + 151 + 154	1090	1170	93	1020	1080	94	60-135	7	50
PCBs 139 + 140	726	782	93	679	722	94	60-135	7	50
PCBs 147 + 149	746	782	95	666	722	92	60-135	11	50
PCBs 153 + 168	773	782	99	715	722	99	60-135	8	50
PCBs 156 + 157	829	782	106	782	722	108	60-135	6	50
PCB 170	408	391	104	351	361	97	60-135	15	50
PCB 172	434	391	111	392	361	109	60-135	10	50
PCB 174	429	391	110	377	361	104	60-135	13	50
PCB 175	404	391	103	380	361	105	60-135	6	50
PCB 176	413	391	106	375	361	104	60-135	10	50
PCB 177	442	391	113	378	361	105	60-135	15	50
PCB 178	406	391	104	375	361	104	60-135	8	50
PCB 179	384	391	98	364	361	101	60-135	5	50
PCB 181	354	391	91	324	361	90	60-135	9	50
PCB 182	369	391	94	361	361	100	60-135	2	50
PCB 183 + 185	798	782	102	681	722	94		16	
PCB 184	348	391	89	308	361	85	60-135	12	50
PCB 186	338	391	86	315	361	87	60-135	7	50
PCB 187	372	391	95	331	361	92	60-135	12	50
PCB 188	492	391	126	466	361	129	60-135	5	50
PCB 189	437	391	112	375 K	361	104	60-135	15	50
PCB 190	371	391	95	344	361	95	60-135	7	50
PCB 191	415	391	106	402	361	111	60-135	3	50
PCB 192	372	391	95	327	361	90	60-135	13	50
PCBs 171 + 173	819	782	105	730	722	101	60-135	11	50
PCBs 180 + 193	747	782	96	684	722	95	60-135	9	50
PCB 194	785	586	134	743	542	137 *	60-135	5	50
PCB 195	772	586	132	682	542	126	60-135	12	50
PCB 196	727	586	124	641	542	118	60-135	13	50
PCB 197	589	586	100	519	542	96	60-135	13	50
PCB 200	683	586	117	605	542	112	60-135	12	50
PCB 201	681	586	116	610	542	113	60-135	11	50
PCB 202	719	586	123	698	542	129	60-135	3	50
PCB 203	567	586	97	528	542	97	60-135	7	50
PCB 204	685	586	117	605	542	112	60-135	12	50
PCB 205	747	586	127	669	542	123	60-135	11	50

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Analyzed:**	12/30/17
Sample Matrix:	Sediment	**Date Extracted:**	12/27/17

Duplicate Lab Control Sample Summary
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Units:**	ng/Kg
Prep Method:	Method	**Basis:**	Dry
		Analysis Lot:	576377

	Lab Control Sample EQ1700575-02			Duplicate Lab Control Sample EQ1700575-03					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
PCBs 198 + 199	1190	1170	101	1110	1080	102	60-135	7	50
PCB 206	670	586	114	595	542	110	60-135	12	50
PCB 207	670	586	114	599	542	111	60-135	11	50
PCB 208	792	586	135	711	542	131	60-135	11	50
PCB 209	731	586	125	657	542	121	60-135	11	50

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1700575-02	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 16:23
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	5.117g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305053	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 1	217		22.7	22.7	2.90	1.001	1
PCB 2	230		18.1	18.1	3.08	0.989	1
PCB 3	227		13.6	13.6	2.70	1.001	1
PCB 4	250		36.6	36.6	-	1.000	1
PCB 10	185		19.3	19.3	-	1.011	1
PCB 9	213		8.00	8.00	-	1.130	1
PCB 7	195		7.29	7.29	-	1.139	1
PCB 6	214		7.74	7.74	-	1.155	1
PCB 5	188		7.79	7.79	-	1.174	1
PCB 8	218		7.40	9.77	-	1.182	1
PCB 14	209		8.06	8.06	-	0.931	1
PCB 11	206		8.06	19.5	-	0.972	1
PCBs 12 + 13	340		7.61	9.77	-	0.986	1
PCB 15	214		8.18	8.18	-	1.001	1
PCB 19	237		28.2	28.2	1.01	1.001	1
PCBs 18 + 30	390		22.3	22.3	1.16	1.089	1
PCB 17	192		25.8	25.8	1.01	1.116	1
PCB 27	203		22.0	22.0	1.09	1.127	1
PCB 24	178		17.2	17.2	1.12	1.134	1
PCB 16	190		28.4	28.4	1.00	1.142	1
PCB 32	202		18.4	18.4	1.03	1.167	1
PCB 34	205		16.3	16.3	0.88	1.227	1
PCB 23	189		14.0	14.0	1.02	1.234	1
PCBs 26 + 29	423		14.8	14.8	0.91	1.251	1
PCB 25	167		12.2	12.2	0.95	0.844	1
PCB 31	220		14.8	14.8	1.00	0.854	1
PCBs 20 + 28	394		15.8	15.8	1.04	0.864	1
PCBs 21 + 33	367	**K**	13.9	13.9	0.83	0.872	1
PCB 22	174	**K**	15.4	15.4	0.85	0.886	1
PCB 36	195	**K**	14.8	14.8	0.84	0.937	1
PCB 39	198		13.7	13.7	0.89	0.949	1
PCB 38	209		16.8	16.8	0.96	0.969	1
PCB 35	231		17.6	17.6	0.96	0.985	1
PCB 37	174	**K**	19.7	19.7	0.84	1.001	1

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1700575-02	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 16:23
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	5.117g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305053	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 54	531		14.9	14.9	0.84	1.001	1
PCBs 50 + 53	723		11.6	19.5	0.76	1.092	1
PCBs 45 + 51	755		12.1	12.1	0.78	1.124	1
PCB 46	388		14.2	14.2	0.82	1.138	1
PCB 52	408		14.3	14.3	0.72	1.196	1
PCBs 43 + 73	676		9.95	9.95	0.75	1.200	1
PCBs 49 + 69	686		10.5	19.5	0.74	1.216	1
PCB 48	277		12.6	12.6	0.78	1.228	1
PCBs 44 + 47 + 65	948		11.0	19.5	0.80	1.239	1
PCBs 59 + 62 + 75	948		9.55	19.5	0.73	1.252	1
PCB 42	177	**K**	15.1	19.5	0.98	1.262	1
PCBs 41 + 71 + 40	758		14.1	19.5	0.87	1.284	1
PCB 64	194		10.5	10.5	0.75	1.293	1
PCB 72	214		11.0	11.0	0.72	1.325	1
PCB 68	159		9.07	9.77	0.85	1.337	1
PCB 57	194		10.8	10.8	0.73	1.356	1
PCB 58	159		9.53	9.77	0.68	1.368	1
PCB 67	157		7.73	9.77	0.80	1.373	1
PCB 63	185		9.59	9.77	0.77	1.384	1
PCBs 70 + 61 + 74 + 76	1090		8.56	39.1	0.73	1.401	1
PCB 66	317		9.85	9.85	0.81	1.414	1
PCB 55	279		8.93	9.77	0.76	1.423	1
PCB 56	364		15.4	15.4	0.73	1.445	1
PCB 60	338		14.4	14.4	0.75	1.454	1
PCB 80	343		13.0	13.0	0.73	1.466	1
PCB 79	403		14.4	14.4	0.76	1.536	1
PCB 78	419		15.6	15.6	0.76	1.559	1
PCB 81	476		20.1	20.1	0.66	1.000	1
PCB 77	478		19.9	19.9	0.73	1.001	1
PCB 104	500		16.5	16.5	1.60	1.001	1
PCB 96	398		13.9	13.9	1.67	1.017	1
PCB 103	395		15.7	15.7	1.51	1.078	1
PCB 94	353		17.6	17.6	1.66	1.088	1
PCBs 95 + 93 + 100	1090		16.5	39.1	1.56	1.106	1

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1700575-02	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 16:23
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	5.117g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305053	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCBs 98 + 102	672		15.8	39.1	1.54	1.117	1
PCBs 88 + 91	749		17.6	17.6	1.49	1.130	1
PCB 84	401		19.8	19.8	1.63	1.144	1
PCB 89	408		20.5	20.5	1.60	1.160	1
PCB 121	320		18.1	18.1	1.57	1.168	1
PCB 92	406		24.0	24.0	1.71	1.184	1
PCBs 90 + 101 + 113	1100		19.7	39.1	1.59	1.203	1
PCBs 83 + 99	720		23.1	23.1	1.69	1.222	1
PCB 112	353		15.4	15.4	1.74	1.229	1
PCBs 86 + 87 + 97 + 109 + 119 + 125	2220		18.9	39.1	1.54	1.240	1
PCBs 85 + 116 + 117	1090		18.6	19.5	1.53	1.265	1
PCBs 110 + 115	729		15.5	19.5	1.54	1.274	1
PCB 82	419		30.1	30.1	1.58	1.286	1
PCB 111	359		16.3	16.3	1.50	1.294	1
PCB 120	398		16.7	16.7	1.56	1.310	1
PCBs 108 + 124	787		44.0	44.0	1.53	1.351	1
PCB 107	444		46.1	46.1	1.54	1.359	1
PCB 123	388		47.5	47.5	1.58	1.000	1
PCB 106	413		46.1	46.1	1.63	1.368	1
PCB 118	384		47.0	47.0	1.72	1.000	1
PCB 122	416		51.2	51.2	1.53	1.387	1
PCB 114	426		47.8	47.8	1.53	1.001	1
PCB 105	480		50.6	50.6	1.48	1.000	1
PCB 127	451		48.1	48.1	1.46	1.465	1
PCB 126	449		57.1	57.1	1.53	1.000	1
PCB 155	479		8.04	8.04	1.15	1.000	1
PCB 152	371		7.28	9.77	1.21	1.011	1
PCB 150	374		6.11	9.77	1.30	1.014	1
PCB 136	387		7.06	9.77	1.30	1.028	1
PCB 145	331		6.51	9.77	1.21	1.035	1
PCB 148	371		9.00	9.77	1.36	1.074	1
PCBs 135 + 151 + 154	1090		7.89	19.5	1.25	1.098	1
PCB 144	424		8.67	9.77	1.16	1.110	1
PCBs 147 + 149	746		53.7	53.7	1.24	1.121	1
PCB 134	363		113	113	1.26	1.128	1

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1700575-02	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 16:23
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	5.117g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305053	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 143	373		42.5	42.5	1.23	1.130	1
PCBs 139 + 140	726		51.5	51.5	1.20	1.137	1
PCB 131	368		62.0	62.0	1.26	1.145	1
PCB 142	421		62.8	62.8	1.26	1.148	1
PCB 132	368		60.7	60.7	1.26	1.159	1
PCB 133	420		64.2	64.2	1.23	1.169	1
PCB 165	364		42.5	42.5	1.22	1.181	1
PCB 146	417		53.8	53.8	1.26	1.188	1
PCB 161	403		39.0	39.0	1.13	1.191	1
PCBs 153 + 168	773		42.6	42.6	1.20	1.206	1
PCB 141	379		53.0	53.0	1.15	1.213	1
PCB 130	424		66.6	66.6	1.20	1.225	1
PCB 137	322		52.0	52.0	1.15	1.230	1
PCB 164	386		39.0	39.0	1.21	1.235	1
PCBs 129 + 138 + 163	1150		59.3	59.3	1.16	1.243	1
PCB 160	333		27.6	39.1	1.18	1.246	1
PCB 158	388		36.9	36.9	1.40	1.253	1
PCBs 128 + 166	793		47.4	47.4	1.24	1.278	1
PCB 159	393	**K**	36.9	36.9	1.03	1.306	1
PCB 162	347		32.8	32.8	1.16	1.314	1
PCB 167	419		31.7	31.7	1.17	1.001	1
PCBs 156 + 157	829		45.6	45.6	1.15	1.000	1
PCB 169	411		38.8	38.8	1.10	1.000	1
PCB 188	492		8.34	8.34	1.06	1.001	1
PCB 179	384		6.40	9.77	1.04	1.011	1
PCB 184	348		5.70	9.77	1.05	1.022	1
PCB 176	413		6.44	9.77	1.11	1.033	1
PCB 186	338		5.92	9.77	1.07	1.045	1
PCB 178	406		8.58	9.77	1.11	1.076	1
PCB 175	404		8.24	9.77	1.04	1.092	1
PCB 187	372		7.42	9.77	1.10	1.098	1
PCB 182	369		7.34	9.77	1.08	1.103	1
PCB 183 + 185	798		18.5	19.5	1.03	1.113	1
PCB 174	429		18.5	18.5	1.03	1.121	1
PCB 177	442		20.3	20.3	1.01	1.132	1

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1700575-02	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 16:23
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	5.117g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305053	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 181	354		17.5	17.5	1.10	1.141	1
PCBs 171 + 173	819		19.9	19.9	1.02	1.147	1
PCB 172	434		20.4	20.4	0.99	0.906	1
PCB 192	372		14.5	14.5	1.05	0.911	1
PCBs 180 + 193	747		14.7	19.5	1.08	0.917	1
PCB 191	415		15.0	15.0	1.04	0.925	1
PCB 170	408		18.3	18.3	1.07	0.943	1
PCB 190	371		12.6	12.6	1.03	0.952	1
PCB 189	437		16.1	16.1	1.01	1.001	1
PCB 202	719		11.8	11.8	0.89	1.000	1
PCB 201	681		10.8	10.8	0.93	1.020	1
PCB 204	685		10.7	10.7	0.90	1.034	1
PCB 197	589		9.60	19.5	0.87	1.039	1
PCB 200	683		10.7	19.5	0.93	1.043	1
PCBs 198 + 199	1190		13.0	19.5	0.92	1.102	1
PCB 196	727		14.9	14.9	0.93	0.923	1
PCB 203	567		11.7	11.7	1.01	0.926	1
PCB 195	772		16.4	16.4	0.87	0.951	1
PCB 194	785		16.1	16.1	0.86	0.992	1
PCB 205	747		13.3	13.3	0.89	1.001	1
PCB 208	792		15.6	15.6	0.80	1.000	1
PCB 207	670		14.9	14.9	0.81	1.018	1
PCB 206	670		18.1	18.1	0.80	1.000	1
PCB 209	731		12.2	12.2	1.18	1.001	1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1700575-02	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 16:23
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	5.117g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305053	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total MonoCB	674		13.6	13.6			1
Total DiCB	2430		7.29	19.5			1
Total TriCB	4740		12.2	12.2			1
Total TetraCB	13000		7.73	39.1			1
Total PentaCB	17700		13.9	39.1			1
Total HexaCB	16200		6.11	39.1			1
Total HeptaCB	8750		5.70	19.5			1
Total OctaCB	8140		9.60	19.5			1
Total NonaCB	2130		14.9	14.9			1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	Percent
Lab Code:	EQ1700575-02	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 16:23
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	5.117g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305053	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
PCB 1L	2000	940.057	47		5-145	3.04	0.741
PCB 3L	2000	933.291	47		5-145	3.21	0.871
PCB 4L	2000	714.470	36		5-145	1.72	0.886
PCB 15L	2000	884.374	44		5-145	1.57	1.217
PCB 19L	2000	865.094	43		5-145	1.15	1.063
PCB 37L	2000	917.406	46		5-145	1.03	1.083
PCB 54L	2000	700.520	35		5-145	0.77	0.837
PCB 81L	2000	1101.592	55		10-145	0.81	1.322
PCB 77L	2000	990.609	50		10-145	0.80	1.342
PCB 104L	2000	869.167	43		10-145	1.69	0.831
PCB 123L	2000	1325.217	66		10-145	1.54	1.133
PCB 118L	2000	1234.976	62		10-145	1.55	1.142
PCB 114L	2000	1228.540	61		10-145	1.43	1.157
PCB 105L	2000	1205.981	60		10-145	1.64	1.178
PCB 126L	2000	1201.697	60		10-145	1.48	1.265
PCB 155L	2000	792.804	40		10-145	1.19	0.805
PCB 167L	2000	1201.139	60		10-145	1.40	1.068
PCBs 156L + 157L	4000	2392.094	60		10-145	1.16	1.096
PCB 169L	2000	1187.816	59		10-145	1.25	1.170
PCB 188L	2000	940.140	47		10-145	1.13	0.736
PCB 189L	2000	1401.036	70		10-145	1.05	0.963
PCB 202L	2000	1044.749	52		10-145	0.88	0.833
PCB 205L	2000	1185.315	59		10-145	0.89	1.008
PCB 208L	2000	903.152	45		10-145	0.89	0.952
PCB 206L	2000	1576.445	79		10-145	0.76	1.039
PCB 209L	2000	1458.611	73		10-145	1.26	1.067
PCB 28L	2000	1309.860	65		5-145	1.02	0.934
PCB 111L	2000	1157.606	58		10-145	1.53	1.075
PCB 178L	2000	1092.823	55		10-145	1.07	1.008

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1700575-03	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 17:26
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	5.537g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305054	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 1	212		16.2	16.2	3.03	1.002	1
PCB 2	210		12.6	12.6	3.03	0.989	1
PCB 3	189		9.29	9.29	2.94	1.001	1
PCB 4	201		31.2	31.2	-	1.002	1
PCB 10	178		16.6	16.6	-	1.012	1
PCB 9	201		4.64	4.64	-	1.131	1
PCB 7	178		4.23	4.23	-	1.140	1
PCB 6	184		4.49	4.49	-	1.156	1
PCB 5	163		4.51	4.51	-	1.175	1
PCB 8	203		4.29	9.03	-	1.183	1
PCB 14	195		4.67	4.67	-	0.931	1
PCB 11	170		4.67	18.1	-	0.972	1
PCBs 12 + 13	345		4.41	9.03	-	0.986	1
PCB 15	191		4.74	4.74	-	1.001	1
PCB 19	157		22.4	22.4	1.15	1.001	1
PCBs 18 + 30	280		16.4	16.4	1.09	1.088	1
PCB 17	131		19.0	19.0	1.10	1.115	1
PCB 27	143		16.2	16.2	1.17	1.127	1
PCB 24	115		12.6	12.6	1.10	1.134	1
PCB 16	128		20.8	20.8	1.05	1.142	1
PCB 32	144		13.5	13.5	1.02	1.167	1
PCB 34	142	**K**	14.0	14.0	0.86	1.227	1
PCB 23	127		12.0	12.0	0.94	1.234	1
PCBs 26 + 29	287		12.7	12.7	0.95	1.252	1
PCB 25	122		10.4	10.4	1.02	0.843	1
PCB 31	163		12.7	12.7	1.02	0.853	1
PCBs 20 + 28	301		13.6	13.6	0.93	0.864	1
PCBs 21 + 33	250		11.9	11.9	0.99	0.872	1
PCB 22	138		13.2	13.2	1.01	0.886	1
PCB 36	148		12.7	12.7	0.94	0.936	1
PCB 39	126		11.7	11.7	1.08	0.949	1
PCB 38	144		14.4	14.4	0.96	0.968	1
PCB 35	166		15.1	15.1	1.00	0.985	1
PCB 37	128	**K**	15.8	15.8	0.83	0.999	1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1700575-03	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 17:26
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	5.537g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305054	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 54	532		13.0	13.0	0.86	1.001	1
PCBs 50 + 53	692		13.1	18.1	0.77	1.092	1
PCBs 45 + 51	709		13.7	13.7	0.74	1.124	1
PCB 46	357		16.0	16.0	0.74	1.137	1
PCB 52	318	**K**	16.1	16.1	0.63	1.195	1
PCBs 43 + 73	691		11.3	11.3	0.85	1.200	1
PCBs 49 + 69	657		11.8	18.1	0.77	1.211	1
PCB 48	269		14.2	14.2	0.74	1.228	1
PCBs 44 + 47 + 65	926		12.4	18.1	0.74	1.239	1
PCBs 59 + 62 + 75	890		10.8	18.1	0.78	1.251	1
PCB 42	177		17.0	18.1	0.69	1.261	1
PCBs 41 + 71 + 40	677		15.9	18.1	0.76	1.284	1
PCB 64	142	**K**	11.8	11.8	0.56	1.293	1
PCB 72	194		12.4	12.4	0.85	1.325	1
PCB 68	149		10.3	10.3	0.74	1.337	1
PCB 57	184		12.2	12.2	0.71	1.356	1
PCB 58	152		10.8	10.8	0.85	1.368	1
PCB 67	154		8.71	9.03	0.77	1.374	1
PCB 63	190		10.9	10.9	0.74	1.385	1
PCBs 70 + 61 + 74 + 76	1050		9.65	36.1	0.75	1.401	1
PCB 66	304		11.2	11.2	0.79	1.414	1
PCB 55	268		10.1	10.1	0.78	1.423	1
PCB 56	321		21.1	21.1	0.76	1.445	1
PCB 60	308		19.7	19.7	0.73	1.454	1
PCB 80	319		17.7	17.7	0.80	1.466	1
PCB 79	376		19.8	19.8	0.70	1.535	1
PCB 78	368		21.4	21.4	0.69	1.559	1
PCB 81	418		27.9	27.9	0.67	1.001	1
PCB 77	429		28.1	28.1	0.69	1.000	1
PCB 104	493		13.1	13.1	1.50	1.001	1
PCB 96	389		11.3	11.3	1.66	1.017	1
PCB 103	348		12.8	12.8	1.73	1.079	1
PCB 94	324		14.4	14.4	1.48	1.089	1
PCBs 95 + 93 + 100	979		13.5	36.1	1.53	1.106	1

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1700575-03	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 17:26
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	5.537g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305054	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCBs 98 + 102	636		12.9	36.1	1.49	1.117	1
PCBs 88 + 91	707		14.3	14.3	1.51	1.135	1
PCB 84	368		16.1	16.1	1.72	1.144	1
PCB 89	380		16.7	16.7	1.75	1.160	1
PCB 121	281		13.9	13.9	1.57	1.168	1
PCB 92	364		18.4	18.4	1.73	1.185	1
PCBs 90 + 101 + 113	1020		15.1	36.1	1.69	1.204	1
PCBs 83 + 99	684		17.7	18.1	1.58	1.223	1
PCB 112	315		11.8	11.8	1.52	1.229	1
PCBs 86 + 87 + 97 + 109 + 119 + 125	2010		14.5	36.1	1.60	1.241	1
PCBs 85 + 116 + 117	975		14.3	18.1	1.54	1.266	1
PCBs 110 + 115	662		11.9	18.1	1.65	1.274	1
PCB 82	409		23.1	23.1	1.46	1.287	1
PCB 111	320		12.5	12.5	1.53	1.295	1
PCB 120	362		12.8	12.8	1.67	1.311	1
PCBs 108 + 124	714		23.0	23.0	1.53	1.352	1
PCB 107	372		24.1	24.1	1.47	1.361	1
PCB 123	363		24.7	24.7	1.58	1.000	1
PCB 106	412		24.2	24.2	1.56	1.368	1
PCB 118	387		25.8	25.8	1.71	1.001	1
PCB 122	421		26.8	26.8	1.41	1.388	1
PCB 114	363		24.7	24.7	1.37	1.000	1
PCB 105	449		25.8	25.8	1.47	1.000	1
PCB 127	425		25.2	25.2	1.52	1.466	1
PCB 126	420		31.0	31.0	1.70	1.000	1
PCB 155	460		7.44	7.44	1.22	1.001	1
PCB 152	386		6.82	9.03	1.38	1.010	1
PCB 150	322		5.72	9.03	1.15	1.014	1
PCB 136	381		6.61	9.03	1.26	1.028	1
PCB 145	328		6.10	9.03	1.33	1.035	1
PCB 148	355		8.42	9.03	1.24	1.074	1
PCBs 135 + 151 + 154	1020		7.39	18.1	1.27	1.098	1
PCB 144	375		8.11	9.03	1.22	1.110	1
PCBs 147 + 149	666		75.0	75.0	1.14	1.121	1
PCB 134	518		158	158	1.22	1.128	1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1700575-03	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 17:26
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	5.537g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305054	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 143	269		59.4	59.4	1.22	1.130	1
PCBs 139 + 140	679		71.9	71.9	1.20	1.137	1
PCB 131	326		86.6	86.6	1.25	1.145	1
PCB 142	378		87.7	87.7	1.16	1.148	1
PCB 132	342		84.8	84.8	1.21	1.159	1
PCB 133	385		89.7	89.7	1.20	1.169	1
PCB 165	333		59.3	59.3	1.24	1.181	1
PCB 146	358		75.2	75.2	1.09	1.188	1
PCB 161	375		54.6	54.6	1.27	1.191	1
PCBs 153 + 168	715		59.6	59.6	1.23	1.206	1
PCB 141	362		74.0	74.0	1.20	1.213	1
PCB 130	410		93.1	93.1	1.16	1.225	1
PCB 137	306	**K**	72.6	72.6	1.46	1.231	1
PCB 164	342		54.5	54.5	1.19	1.235	1
PCBs 129 + 138 + 163	972		82.9	82.9	1.22	1.243	1
PCB 160	372		38.6	38.6	1.21	1.246	1
PCB 158	353		51.6	51.6	1.19	1.253	1
PCBs 128 + 166	724		66.2	66.2	1.32	1.278	1
PCB 159	397		28.7	28.7	1.12	1.306	1
PCB 162	347		25.5	25.5	1.14	1.314	1
PCB 167	355	**K**	23.6	23.6	1.03	1.001	1
PCBs 156 + 157	782		37.1	37.1	1.24	1.000	1
PCB 169	362	**K**	30.3	30.3	0.97	1.000	1
PCB 188	466		8.72	8.72	1.00	1.001	1
PCB 179	364		6.62	9.03	1.07	1.012	1
PCB 184	308		5.89	9.03	1.06	1.022	1
PCB 176	375		6.66	9.03	1.20	1.033	1
PCB 186	315		6.12	9.03	1.07	1.045	1
PCB 178	375		8.87	9.03	1.03	1.076	1
PCB 175	380		8.52	9.03	1.01	1.092	1
PCB 187	331		7.68	9.03	1.00	1.098	1
PCB 182	361		7.59	9.03	1.09	1.103	1
PCB 183 + 185	681		30.8	30.8	1.04	1.113	1
PCB 174	377		31.0	31.0	0.97	1.121	1
PCB 177	378		33.9	33.9	1.04	1.132	1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1700575-03	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 17:26
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	5.537g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305054	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 181	324		29.3	29.3	1.12	1.141	1
PCBs 171 + 173	730		33.2	33.2	1.04	1.147	1
PCB 172	392		34.1	34.1	1.05	0.906	1
PCB 192	327		24.1	24.1	1.12	0.911	1
PCBs 180 + 193	684		24.5	24.5	1.11	0.918	1
PCB 191	402		25.0	25.0	0.98	0.925	1
PCB 170	351		30.5	30.5	1.11	0.943	1
PCB 190	344		21.0	21.0	0.98	0.952	1
PCB 189	375	**K**	26.6	26.6	0.86	1.001	1
PCB 202	698		9.24	9.24	0.92	1.000	1
PCB 201	610		8.19	9.03	0.89	1.020	1
PCB 204	605		8.06	9.03	0.99	1.034	1
PCB 197	519		7.29	18.1	0.90	1.039	1
PCB 200	605		8.10	18.1	0.95	1.043	1
PCBs 198 + 199	1110		9.86	18.1	0.89	1.102	1
PCB 196	641		11.3	11.3	0.96	0.923	1
PCB 203	528		8.85	9.03	0.90	0.926	1
PCB 195	682		12.5	12.5	1.00	0.951	1
PCB 194	743		12.2	12.2	0.92	0.992	1
PCB 205	669		9.67	9.67	0.91	1.001	1
PCB 208	711		9.13	9.13	0.80	1.000	1
PCB 207	599		8.47	9.03	0.77	1.018	1
PCB 206	595		15.2	15.2	0.74	1.001	1
PCB 209	657		9.02	9.02	1.27	1.000	1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1700575-03	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 17:26
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	5.537g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305054	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total MonoCB	611		9.29	9.29			1
Total DiCB	2210		4.23	18.1			1
Total TriCB	3340		10.4	10.4			1
Total TetraCB	12200		8.71	36.1			1
Total PentaCB	16300		11.3	36.1			1
Total HexaCB	15100		5.72	36.1			1
Total HeptaCB	7960		5.89	18.1			1
Total OctaCB	7410		7.29	18.1			1
Total NonaCB	1910		8.47	9.03			1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713018
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	Percent
Lab Code:	EQ1700575-03	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 17:26
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	5.537g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305054	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
PCB 1L	2000	921.731	46		5-145	3.26	0.741
PCB 3L	2000	968.662	48		5-145	3.10	0.871
PCB 4L	2000	722.030	36		5-145	1.58	0.885
PCB 15L	2000	869.201	43		5-145	1.76	1.217
PCB 19L	2000	1183.800	59		5-145	0.92	1.063
PCB 37L	2000	1053.752	53		5-145	1.08	1.083
PCB 54L	2000	577.595	29		5-145	0.71	0.837
PCB 81L	2000	908.780	45		10-145	0.78	1.321
PCB 77L	2000	892.078	45		10-145	0.79	1.343
PCB 104L	2000	840.480	42		10-145	1.69	0.831
PCB 123L	2000	1301.523	65		10-145	1.53	1.133
PCB 118L	2000	1245.650	62		10-145	1.58	1.142
PCB 114L	2000	1283.437	64		10-145	1.52	1.158
PCB 105L	2000	1259.955	63		10-145	1.55	1.178
PCB 126L	2000	1236.166	62		10-145	1.44	1.265
PCB 155L	2000	765.019	38		10-145	1.24	0.805
PCB 167L	2000	1178.558	59		10-145	1.18	1.068
PCBs 156L + 157L	4000	2316.688	58		10-145	1.27	1.096
PCB 169L	2000	1120.710	56		10-145	1.17	1.171
PCB 188L	2000	905.224	45		10-145	1.00	0.736
PCB 189L	2000	1360.051	68		10-145	0.96	0.963
PCB 202L	2000	974.489	49		10-145	0.92	0.833
PCB 205L	2000	1234.446	62		10-145	0.90	1.008
PCB 208L	2000	930.410	47		10-145	0.87	0.952
PCB 206L	2000	1617.271	81		10-145	0.73	1.039
PCB 209L	2000	1478.366	74		10-145	1.28	1.067
PCB 28L	2000	1194.354	60		5-145	1.02	0.934
PCB 111L	2000	1184.191	59		10-145	1.56	1.075
PCB 178L	2000	977.592	49		10-145	1.08	1.008

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January 29, 2018

Analytical Report for Service Request No: K1713130

Erin Carroll Hughes
GSI Water Solutions, Inc.
55 SW Yamhill, Suite 300
Portland, OR 97204

RE: URSC / 150-001-056

Dear Erin,

Enclosed are the results of the sample(s) submitted to our laboratory December 06, 2017
For your reference, these analyses have been assigned our service request number **K1713130.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3364. You may also contact me via email at howard.holmes@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Howard Holmes
Project Manager

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Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water-	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

1317 South 13th Ave, Kelso, WA 98626 | 1-360-577-7222 | www.alsglobal.com

Client: Hart Crowser, Incorporated
Project: URSC
Sample Matrix: Sediment

Service Request: K1713130
Date Received: 12/06/2017

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt:

Thirty three sediment samples were received for analysis at ALS Environmental on 12/06/2017. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4ºC upon receipt at the laboratory.

Semivolatiles by GC/MS:

The following analytes were flagged as outside the control criterion for Continuing Calibration Verification (CCV) MS29 \0105F002.D: Pentachlorophenol and Benzo(g,h,i)perylene. In accordance with the EPA Method, 80% or more of the CCV analytes must have passed within 20% of the true value. The remaining analytes are allowed a 40% difference as per the ALS SOP. The data was flagged to indicate the issue. No further corrective action was taken.

Method 8270D:The ALS minimum relative response factor criterion for Pentachlorophenol was not met in Continuing Calibration Verification (CCV) MS29\0102F015.D. In accordance with ALS standard operating procedures, a Method Reporting Limit (MRL) check standard containing the analyte of concern was analyzed each day of analysis. The MRL check standard verified instrument sensitivity was adequate to detect the analyte at the MRL on the day of analysis. Because the sensitivity was shown to be adequate to detect the compound in question and the compound was not detected in the field sample, the data quality was not significantly affected. No further corrective action was appropriate.
Method 8270D, PBDE:A couple of samples required dilution due to the presence of elevated levels of target analyte. The reporting limits are adjusted to reflect the dilution.
Method 8270D, PBDE :The matrix spike recovery of a few analytes for sample URSC-RM18.35E-COMP and Batch QC was outside control criteria. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicated the analytical batch was in control. The matrix spike outlier suggested a potential bias in this matrix. No further corrective action was appropriate.
Method 8270D, PBDE:The recovery of PBDE 209 in lab control sample KWG1711053-3 was outside the control limits listed in the results summary. The limits are default values temporarily in use until sufficient data points are generated to calculate statistical control limits. Based on the method and historic data, the recoveries observed were in the range expected for this procedure. No further corrective action was taken.

Method 8270D, PBDE:The following analyte was flagged as outside the control criterion for Continuing Calibration Verification (CCV) 1220F002: PBDE 209. In accordance with the EPA Method, 80% or more of the CCV analytes must have passed within 20% of the true value. The remaining analytes are allowed a 40% difference as per the ALS SOP. The data was flagged to indicate the issue. No further corrective action was taken.
Method 8270D, PBDE:The following analyte was flagged as outside the control criterion for Continuing Calibration Verification (CCV) 1221F002: PBDE 128. In accordance with the EPA Method, 80% or more of the CCV analytes must have passed within 20% of the true value. The remaining analytes are allowed a 40% difference as per the ALS SOP. The data was flagged to indicate the issue. No further corrective action was taken.

Method ALS SOP, 01/15/2018:The following analytes were outside the lower control criterion for Continuing Calibration Verification (CCV) 0115F0004.D: S_4,4'-DDT-d4, S_Heptachlor-13C10, and and S_Mxchlord-d6. The associated unlabeled compounds were within acceptance indicating the quality of the sample data was not significantly affected. No further corrective action was required.
Method ALS SOP, 01/15/2018:The control criteria were exceeded for S_Heptachlor-13C10 in MS KQ1718398-01. The associated matrix spike recoveries of target compounds were in control, indicating the analysis was in control. The surrogate outlier was flagged accordingly. No further corrective action was appropriate.

Approved by _____ Date 01/29/2018

Semivoa GC:

Method NWTPH-Dx:The Relative Percent Difference (RPD) criterion for the replicate analysis of all analytes in sample URSC-RM18.35E-COMP and Batch QC was not applicable because the analyte concentration was not significantly greater than the Method Reporting Limit (MRL). Analytical values derived from measurements close to the detection limit are not subject to the same accuracy and precision criteria as results derived from measurements higher on the calibration range for the method.

Metals:

Method 6020A :The Relative Percent Difference (RPD) for the replicate analysis of Lead in sample URSC-RM18.35E-COMP was outside the normal ALS control limits. The variability in the results was attributed to the heterogeneous character of the sample. Standard mixing techniques were used, but were not sufficient for complete homogenization of this sample.

General Chemistry:

No significant anomalies were noted with this analysis.

Subcontracted Analytical Parameters:

Dioxins and Furans by EPA Method 1613B

The analysis for Dioxins and Furans was performed at ALS Houston, Texas Laboratory. The data for this analysis is included in the corresponding section of this report.

PCB Congeners by EPA Method 1668C

The analysis for PCB Congeners was performed at ALS Environmental, Texas Laboratory. The data for this analysis is included in the corresponding section of this report.

Approved by _____ Date 01/29/2018

Chain of Custody

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

1 of 5 K1713130

GSI Water Solutions, Inc.
55 SW Yamhill St, Suite 300
Portland, Oregon 97204
971-200-8528

Chain of Custody Record

Field Sampler(s): ECH / MH

Client Contact

Project Name: URSC
Project # or PO #: 150-001-056
Contracting Manager: Rick Ernst
Project Manager: Erin Hughes
Field Director: Phil Cordell
Erin Phone #:971-200-8528
Phil Phone #: 971-327-9101
Report to email: echughes@gsiws.com; phil.cordell@hartcrowser.com; Anne.Conrad@hartcrowser.com
Analysis Turnaround Time:

For Lab Use Only:
SDG:_____
Custody Seals intact?
Hand delivered?
Cooler Temp :____°C
Therm ID No.:____Therm Exp.____
Standard 21 day TAT

ALS PM
Howard Homes
360-501-3364
Howard.Holmes@alsglobal.com

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	Total # of Cont.	Sieving and Homogenizing (of each increment)	ISM Subsampling and Compositing	PSEP: Total Organic Carbon	ASTM DM22M: Condensed Breakout Grain Size (on ISM Composite)	EPA 6020A: Metals and Total Solids	EPA 7471A: Mercury	NWTPH-Dx: Diesel Range Hydrocarbons (with Silica gel cleanup)	EPA 8270D-LL: PAHs, SVOCs, Phenols, and Phthalates	8270D PBDE	EPA 1699M: High Resolution Pesticides	EPA 1613B: PCDD/Fs	EPA 1668b: PCB Congeners	Frozen Archival			Sample Specific Notes
URSC- RM18.35-G008	11/29/17	1440	G	SE	1													X			
URSC- RM18.35-G005	11/29/17	1534	G	SE	1													X			
URSC- RM18.35E-G011	12/5/17	1210	G	SE	1													X			
URSC- RM18.35E-G012	12/5/17	1230	G	SE	1													X			
URSC- RM18.35E-G013	12/5/17	1300	G	SE	1													X			
URSC- RM18.35E-COMP	11/29/17	1448	C	SE	5	X	X	X	X	X	X	X	X	X	X	X	X				
URSC- RM20.9W-G001	12/1/17	1413	G	SE	1													X			
URSC- RM20.9W-G002	12/1/17	1440	G	SE	1													X			
URSC- RM20.9W-G003	12/1/17	1500	G	SE	1													X			
URSC- RM20.9W-G004	12/1/17	1515	G	SE	1													X			
URSC- RM20.9W-G005	12/1/17	1532	G	SE	1													X			
URSC- RM20.9W-G007	12/4/17	0815	G	SE	1													X			

Possible Hazard Identification:
Are samples hazardous? ☑ No
If yes, select hazard(s): ☐ Listed ☐ Ignitable ☐ Corrosive ☐ Reactive ☐ Toxic

☐ Return to Client ☐ Disposal by Lab ☑ Archive frozen for 6 months

Relinquished by: PWCordell 12/6/17 @ 0900
Received by: Cody Conner Date/Time: 12/6/17 1430
Relinquished by:
Received by: Date/Time:
Shipped Via: ☐ UPS ☐ Fed-Ex ☐ USPS ☑ ALS Lab Courier
Received in Laboratory by: Date/Time:

Special Instructions
SE = Sediment
***See Table 2 of Work Plan for analytes included within each analytical method listed below.**
* Increments will be provided to the laboratory in a clean laboratory provided 16- or 32-ounce container (the larger container will be used in areas with an abundance of rocks and pebbles). For each composite area, the laboratory will separately process each increment by sieving out the ≥ 2 millimeter (mm) size fraction and homogenize the remaining sediment; an equal mass of sediment from each of the 5 or 10 increments will be obtained and then combined for processing, homogenizing, and subsampling for the composite sample in a manner consistent with ITRC ISM guidance and the laboratory standard operating procedure. The laboratory should gather enough mass from each container to be able to run the full analytical suite and have material left over for archival and potential future analysis. An extra container of sediment will be provided from each sample station for immediate frozen archival (no ISM processing needed).

Lot 5 K1713130

55 SW Yamhill St, Suite 300
Portland, Oregon 97204
971-200-8528

Chain of Custody Record

Field Sampler(s):

Client Contact

Project Name: URSC
Project # or PO #: 150-001-056
Contracting Manager: Rick Ernst
Project Manager: Erin Hughes
Field Director: Phil Cordell
Erin Phone #:971-200-8528
Phil Phone #: 971-327-9101
Report to email: echughes@gslws.com; phil.cordell@hartcrowser.com; Anne.Conrad@hartcrowser.com
Analysis Turnaround Time:

For Lab Use Only:
SDG:_____
Custody Seals intact?
Hand delivered?
Cooler Temp :____°C
Therm ID No.:____Therm Exp.____
Standard 21 day TAT

ALS PM
Howard Homes
360-501-3364
Howard.Holmes@alsglobal.com

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	Total # of Cont.	Sieving and Homogenizing (of each increment)	ISM Subsampling and Compositing	PSEP: Total Organic Carbon	ASTM DM22M: Condensed Breakout Grain Size (on ISM Composite)	EPA 6020A: Metals and Total Solids	EPA 7471A: Mercury	NWTPH-Dx: Diesel Range Hydrocarbons (with Silica gel cleanup)	EPA 8270D-LL: PAHs, SVOCs, Phenols, and Phthalates	8270D PBDE	EPA 1699M: High Resolution Pesticides	EPA 1613B: PCDD/Fs	EPA 1668b: PCB Congeners	Frozen Archival			Sample Specific Notes
URSC- RM20.9-G008	12/4/17	0835	G	SE	1													X			
URSC- RM20.9-G010	12/4/17	0928	G	SE	1													X			
URSC- RM20.9-COMP	12/1/17	1413	C	SE	8	X	X	X	X	X	X	X	X	X	X	X	X				
URSC- RM24.7E-G001	12/4/17	1042	G	SE	1													X			
URSC- RM24.7E-G002	12/4/17	1100	G	SE	1													X			
URSC- RM24.7E-G003	12/4/17	1120	G	SE	1													X			
URSC- RM24.7E-G004	12/4/17	1148	G	SE	1													X			
URSC- RM24.7E-G005	12/4/17	1206	G	SE	1													X			PC 12/5/17
URSC- RM24.7E-COMP	12/4/17	1042	C	SE	5	X	X	X	X	X	X	X	X	X	X	X	X	~~X~~	~~X~~		
URSC- RM25.2E-G001	12/4/17	1300	G	SE	1													X		X	
URSC- RM25.2E-G003	12/4/17	1335	G	SE	1													X		X	
URSC- RM25.2E-G004	12/4/17	1420	G	SE	1													X		X	

Possible Hazard Identification:
Are samples hazardous? ☑ No
If yes, select hazard(s): ☐ Listed ☐ Ignitable ☐ Corrosive ☐ Reactive ☐ Toxic

☐ Return to Client ☐ Disposal by Lab ☑ Archive frozen for 6 months

Relinquished by: [signature] 12/6/17 @ 0900
Received by: [signature] Date/Time: 12/6/17 1430
Relinquished by:
Received by: Date/Time:
Shipped Via: ☐ UPS ☐ Fed-Ex ☐ USPS ☑ ALS Lab Courier
Received in Laboratory by: Date/Time:

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An extra container of sediment will be provided from each sample station for immediate frozen archival (no ISM processing needed).

2 of 5 K1713130

55 SW Yamhill St, Suite 300
Portland, Oregon 97204
971-200-8528

Chain of Custody Record

Field Sampler(s):

Client Contact

Project Name: URSC
Project # or PO #: 150-001-056
Contracting Manager: Rick Ernst
Project Manager: Erin Hughes
Field Director: Phil Cordell
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Phil Phone #: 971-327-9101
Report to email: echughes@gslws.com; phil.cordell@hartcrowser.com; Anne.Conrad@hartcrowser.com
Analysis Turnaround Time:

For Lab Use Only:
SDG:_____
Custody Seals intact?
Hand delivered?
Cooler Temp :____°C
Therm ID No.:____Therm Exp.____
Standard 21 day TAT

ALS PM
Howard Homes
360-501-3364
Howard.Holmes@alsglobal.com

Analysis Requested*

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	Total # of Cont.	Sieving and Homogenizing (of each increment)	ISM Subsampling and Compositing	PSEP: Total Organic Carbon	ASTM DM22M: Condensed Breakout Grain Size (on ISM Composite)	EPA 6020A: Metals and Total Solids	EPA 7471A: Mercury	NWTPH-Dx: Diesel Range Hydrocarbons (with Silica gel cleanup)	EPA 8270D-LL: PAHs, SVOCs, Phenols, and Phthalates	8270D PBDE	EPA 1699M: High Resolution Pesticides	EPA 1613B: PCDD/Fs	EPA 1668b: PCB Congeners	Frozen Archival			Sample Specific Notes
URSC- RM25.2E-G010	12/5/17	809	G	SE	1													X			
URSC- RM25.2E-G002	12/5/17	843	G	SE	1													X			
~~URSC- RM25.2E-G001~~	~~12/5/17~~	~~1035~~	~~G~~	~~SE~~	~~1~~																
~~URSC- RM25.2E~~		~~1125~~		~~SE~~																	
URSC- RM20.0E-G001	12/5/17	1035	G	SE	1													X			
URSC- RM20.0E-G002		1125	G	SE	1													X			
URSC- RM20.0E-G003		1110	G	SE	1													X			
URSC- RM20.0E-G004		1035	G	SE	1													X			
URSC- RM20.0E-G005		1055	G	SE	1													X			
URSC- RM20.0E-COMP		1035	C	SE	5	X	X	X	X	X	X	X	X	X	X	X	X				
URSC- RM25.2E-COMP		1300	C	SE	5	X	X	X	X	X	X	X	X	X	X	X	X				
URSC-				SE																	

Possible Hazard Identification:
Are samples hazardous? ☑ No
If yes, select hazard(s): ☐ Listed ☐ Ignitable ☐ Corrosive ☐ Reactive ☐ Toxic

☐ Return to Client ☐ Disposal by Lab ☑ Archive frozen for 6 months

Relinquished by: [signature] 12/6/17 @ 0900
Received by: [signature] Date/Time: 12/6/17 1430
Relinquished by:
Received by: Date/Time:
Shipped Via: ☐ UPS ☐ Fed-Ex ☐ USPS ☑ ALS Lab Courier
Received in Laboratory by: Date/Time:

Special Instructions
SE = Sediment
***See Table 2 of Work Plan for analytes included within each analytical method listed below.**
* Increments will be provided to the laboratory in a clean laboratory provided 16- or 32-ounce container (the larger container will be used in areas with an abundance of rocks and pebbles). For each composite area, the laboratory will separately process each increment by sieving out the ≥ 2 millimeter (mm) size fraction and homogenize the remaining sediment; an equal mass of sediment from each of the 5 or 10 increments will be obtained and then combined for processing, homogenizing, and subsampling for the composite sample in a manner consistent with ITRC ISM guidance and the laboratory standard operating procedure. The laboratory should gather enough mass from each container to be able to run the full analytical suite and have material left over for archival and potential future analysis. An extra container of sediment will be provided from each sample station for immediate frozen archival (no ISM processing needed).

PC HH

Cooler Receipt and Preservation Form

Client HART CROWSER Service Request K17 13130

Received: 12/ /17 Opened: 12/ /17 By: CG Unloaded: 12/ /17 By: CG

1. Samples were received via? *USPS* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? _____

   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
-0.2	-0.3	5.2	5.1	-0.1	389			
2.6	2.5	3.7	3.6	-0.1	392			
1.5	1.5	2.5	2.5	0.0	385			

4. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA Y N

   If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
12. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

7/25/16 *Page* ____ *of* ____

Total Solids

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	11/29/17 - 12/05/17
Sample Matrix:	Sediment	**Date Received:**	12/6/17
Analysis Method:	PSEP TS	**Units:**	Percent
Prep Method:	None	**Basis:**	As Received

Solids, Total

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
URSC-RM18.35E-COMP	K1713130-006	**68.5**	-	-	1	12/12/17 16:48	
URSC-RM20.9W-COMP	K1713130-015	**69.5**	-	-	1	12/14/17 16:54	
URSC-RM24.7E-COMP	K1713130-021	**70.7**	-	-	1	12/14/17 16:54	
URSC-RM20.0E-COMP	K1713130-032	**74.7**	-	-	1	12/14/17 16:54	
URSC-RM25.2E-COMP	K1713130-033	**65.1**	-	-	1	12/14/17 16:54	

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project	URSC/150-001-056	**Date Collected:**	11/29/17
Sample Matrix:	Sediment	**Date Received:**	12/06/17
		Date Analyzed:	12/12/17

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	URSC-RM18.35E-COMP	**Units:**	Percent
Lab Code:	K1713130-006	**Basis:**	As Received

Analyte Name	Analysis Method	MRL	Sample Result	Duplicate Sample K1713130-006DUP Result	Average	RPD	RPD Limit
Solids, Total	PSEP TS	-	68.5	68.6	68.6	<1	10

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Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

General Chemistry

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	11/29/2017
Sample Matrix:	Sediment	**Date Received:**	12/6/2017
		Date Analyzed:	1/9/2018

Particle Size Determination
ASTM D422M

Sample Name: URSC-RM18.35E-COMP
Lab Code: K1713130-006

Sand Fraction: Weight (Grams)	26.5188
Sand Fraction: Weight Recovered (Grams)	26.4738
Sand Fraction: Percent Recovery	99.83

Weight as received (Grams)	50.837
Percent Solids	68.5
Weight Oven-Dried (Grams)	34.8233

Description	Sieve Size	Sieve Number	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	4.75 mm	4	0.0000	0.00
Gravel, Fine	2.00 mm	10	0.0234	0.07
Sand, Very Coarse	0.850 mm	20	3.0295	8.70
Sand, Coarse	0.425 mm	40	3.0322	8.71
Sand, Medium	0.250 mm	60	4.6476	13.35
Sand, Fine	0.106 mm	140	12.5606	36.07
Sand, Very Fine	0.075 mm	200	2.5234	7.25
Silt			7.6100	21.85
Clay			1.6284	4.68
		Total	35.0550	100.68

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	11/29/2017
Sample Matrix:	Sediment	**Date Received:**	12/6/2017
		Date Analyzed:	1/9/2018

Particle Size Determination
ASTM D422M

Sample Name: URSC-RM18.35E-COMP
Lab Code: K1713130-006DUP

Sand Fraction: Weight (Grams)	26.5531
Sand Fraction: Weight Recovered (Grams)	26.5901
Sand Fraction: Percent Recovery	100.14

Weight as received (Grams)	50.635
Percent Solids	68.5
Weight Oven-Dried (Grams)	34.6850

Description	Sieve Size	Sieve Number	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	4.75 mm	4	0.0000	0.00
Gravel, Fine	2.00 mm	10	0.0000	0.00
Sand, Very Coarse	0.850 mm	20	2.9683	8.56
Sand, Coarse	0.425 mm	40	3.0473	8.79
Sand, Medium	0.250 mm	60	4.1284	11.90
Sand, Fine	0.106 mm	140	13.1839	38.01
Sand, Very Fine	0.075 mm	200	2.5808	7.44
Silt			7.7600	22.37
Clay			1.6184	4.67
		Total	35.2871	101.74

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/1/2017
Sample Matrix:	Sediment	**Date Received:**	12/6/2017
		Date Analyzed:	1/9/2018

Particle Size Determination
ASTM D422M

Sample Name: URSC-RM20.9W-COMP
Lab Code: K1713130-015

Sand Fraction: Weight (Grams)	27.4220
Sand Fraction: Weight Recovered (Grams)	27.4628
Sand Fraction: Percent Recovery	100.15

Weight as received (Grams)	44.645
Percent Solids	69.5
Weight Oven-Dried (Grams)	31.0283

Description	Sieve Size	Sieve Number	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	4.75 mm	4	0.0000	0.00
Gravel, Fine	2.00 mm	10	0.0000	0.00
Sand, Very Coarse	0.850 mm	20	0.1616	0.52
Sand, Coarse	0.425 mm	40	3.7707	12.15
Sand, Medium	0.250 mm	60	11.4331	36.85
Sand, Fine	0.106 mm	140	10.4624	33.72
Sand, Very Fine	0.075 mm	200	1.3190	4.25
Silt			3.3100	10.67
Clay			0.6334	2.04
		Total	31.0902	100.20

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/4/2017
Sample Matrix:	Sediment	**Date Received:**	12/6/2017
		Date Analyzed:	1/9/2018

Particle Size Determination
ASTM D422M

Sample Name: URSC-RM24.7E-COMP
Lab Code: K1713130-021

Sand Fraction: Weight (Grams)	32.6619
Sand Fraction: Weight Recovered (Grams)	32.7237
Sand Fraction: Percent Recovery	100.19

Weight as received (Grams)	50.577
Percent Solids	70.7
Weight Oven-Dried (Grams)	35.7579

Description	Sieve Size	Sieve Number	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	4.75 mm	4	0.0000	0.00
Gravel, Fine	2.00 mm	10	0.0000	0.00
Sand, Very Coarse	0.850 mm	20	0.0905	0.25
Sand, Coarse	0.425 mm	40	1.2174	3.40
Sand, Medium	0.250 mm	60	10.2758	28.74
Sand, Fine	0.106 mm	140	19.4792	54.48
Sand, Very Fine	0.075 mm	200	1.2994	3.63
Silt			2.6900	7.52
Clay			1.1534	3.23
		Total	36.2057	101.25

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/5/2017
Sample Matrix:	Sediment	**Date Received:**	12/6/2017
		Date Analyzed:	1/9/2018

Particle Size Determination
ASTM D422M

Sample Name: URSC-RM20.0E-COMP
Lab Code: K1713130-032

Sand Fraction: Weight (Grams)	34.7978
Sand Fraction: Weight Recovered (Grams)	34.8285
Sand Fraction: Percent Recovery	100.09

Weight as received (Grams)	54.632
Percent Solids	74.7
Weight Oven-Dried (Grams)	40.8101

Description	Sieve Size	Sieve Number	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	4.75 mm	4	0.0000	0.00
Gravel, Fine	2.00 mm	10	0.0000	0.00
Sand, Very Coarse	0.850 mm	20	0.0631	0.15
Sand, Coarse	0.425 mm	40	0.9978	2.44
Sand, Medium	0.250 mm	60	13.3776	32.78
Sand, Fine	0.106 mm	140	17.5659	43.04
Sand, Very Fine	0.075 mm	200	2.3074	5.65
Silt			5.1550	12.63
Clay			1.6033	3.93
		Total	41.0702	100.62

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/4/2017
Sample Matrix:	Sediment	**Date Received:**	12/6/2017
		Date Analyzed:	1/9/2018

Particle Size Determination
ASTM D422M

Sample Name: URSC-RM25.2E-COMP
Lab Code: K1713130-033

Sand Fraction: Weight (Grams)	25.0747
Sand Fraction: Weight Recovered (Grams)	25.0556
Sand Fraction: Percent Recovery	99.92

Weight as received (Grams)	50.557
Percent Solids	65.1
Weight Oven-Dried (Grams)	32.9126

Description	Sieve Size	Sieve Number	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel, Medium	4.75 mm	4	0.0000	0.00
Gravel, Fine	2.00 mm	10	0.0000	0.00
Sand, Very Coarse	0.850 mm	20	0.7505	2.28
Sand, Coarse	0.425 mm	40	3.3233	10.10
Sand, Medium	0.250 mm	60	5.6134	17.06
Sand, Fine	0.106 mm	140	11.4056	34.65
Sand, Very Fine	0.075 mm	200	2.6938	8.18
Silt			7.4250	22.56
Clay			1.5183	4.61
		Total	32.7299	99.44

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	11/29/17 - 12/05/17
Sample Matrix:	Sediment	**Date Received:**	12/6/17
Analysis Method:	PSEP TOC	**Units:**	Percent
Prep Method:	ALS SOP	**Basis:**	Dry, per Method

Carbon, Total Organic (TOC)

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
URSC-RM18.35E-COMP	K1713130-006	**0.881**	0.050	0.020	1	12/13/17 14:30	12/13/17	
URSC-RM20.9W-COMP	K1713130-015	**0.485**	0.050	0.020	1	12/15/17 14:45	12/15/17	
URSC-RM24.7E-COMP	K1713130-021	**0.255**	0.050	0.020	1	12/15/17 14:45	12/15/17	
URSC-RM20.0E-COMP	K1713130-032	**0.343**	0.050	0.020	1	12/15/17 14:45	12/15/17	
URSC-RM25.2E-COMP	K1713130-033	**0.866**	0.050	0.020	1	12/15/17 14:45	12/15/17	
Method Blank	K1713130-MB1	ND U	0.050	0.020	1	12/13/17 14:30	12/13/17	
Method Blank	K1713130-MB2	ND U	0.050	0.020	1	12/15/17 14:45	12/15/17	

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
		Date Analyzed:	12/13/17

Triplicate Sample Summary
General Chemistry Parameters

Sample Name:	Batch QC	**Units:**	Percent
Lab Code:	K1712926-001	**Basis:**	Dry, per Method
Analysis Method:	PSEP TOC		
Prep Method:	ALS SOP		

Analyte Name	MRL	MDL	Sample Result	Duplicate K1712926-001DUP Result	Triplicate K1712926-001TRP Result	Average	RSD	RSD Limit
Carbon, Total Organic (TOC)	0.050	0.020	0.821	0.832	0.828	0.827	<1	27

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
		Date Analyzed:	12/15/17

Triplicate Sample Summary
General Chemistry Parameters

Sample Name:	Batch QC	**Units:**	Percent
Lab Code:	K1713018-010	**Basis:**	Dry, per Method
Analysis Method:	PSEP TOC		
Prep Method:	ALS SOP		

Analyte Name	MRL	MDL	Sample Result	Duplicate K1713018-010DUP1 Result	Triplicate K1713018-010TRP1 Result	Average	RSD	RSD Limit
Carbon, Total Organic (TOC)	0.050	0.020	0.922	0.916	0.929	0.922	<1	27

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SuperSet Reference:17-0000448016 rev 00

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	N/A
Sample Matrix:	Sediment	**Date Received:**	N/A
		Date Analyzed:	12/13/17
		Date Extracted:	12/13/17

Duplicate Matrix Spike Summary
Carbon, Total Organic (TOC)

Sample Name:	Batch QC	**Units:**	Percent
Lab Code:	K1712926-001	**Basis:**	Dry, per Method
Analysis Method:	PSEP TOC		
Prep Method:	ALS SOP		

		Matrix Spike K1712926-001MS			**Duplicate Matrix Spike** K1712926-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Carbon, Total Organic (TOC)	0.821	4.31	3.41	102	4.15	3.28	102	69-123	<1	27

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	N/A
Sample Matrix:	Sediment	**Date Received:**	N/A
		Date Analyzed:	12/15/17
		Date Extracted:	12/15/17

Duplicate Matrix Spike Summary
Carbon, Total Organic (TOC)

Sample Name:	Batch QC	**Units:**	Percent
Lab Code:	K1713018-010	**Basis:**	Dry, per Method
Analysis Method:	PSEP TOC		
Prep Method:	ALS SOP		

		Matrix Spike K1713018-010MS			**Duplicate Matrix Spike** K1713018-010DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Carbon, Total Organic (TOC)	0.922	4.24	3.41	97	4.19	3.20	102	69-123	5	27

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Results flagged with a pound (#) indicate the control criteria is not applicable.

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Analyzed:**	12/13/17
Sample Matrix:	Sediment	**Date Extracted:**	12/13/17

Lab Control Sample Summary
Carbon, Total Organic (TOC)

Analysis Method:	PSEP TOC	**Units:**	Percent
Prep Method:	ALS SOP	**Basis:**	Dry, per Method
		Analysis Lot:	573691

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1713130-LCS1	0.581	0.603	96	74-118

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Analyzed:**	12/15/17
Sample Matrix:	Sediment	**Date Extracted:**	12/15/17

Lab Control Sample Summary
Carbon, Total Organic (TOC)

Analysis Method:	PSEP TOC	**Units:**	Percent
Prep Method:	ALS SOP	**Basis:**	Dry, per Method
		Analysis Lot:	573984

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1713130-LCS2	0.608	0.603	101	74-118

Client: Hart Crowser, Incorporated **Service Request:** K1713130
Project: URSC/150-001-056

Continuing Calibration Verification (CCV) Summary

Carbon, Total Organic (TOC)

Analysis Method: PSEP TOC **Units:** Percent

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	573691	KQ1718788-01	12/13/17 14:30	20.0	19.8	99	90-110
CCV2	573691	KQ1718788-02	12/13/17 14:30	20.0	19.6	98	90-110
CCV3	573691	KQ1718788-03	12/13/17 14:30	20.0	19.8	99	90-110
CCV4	573984	KQ1718789-01	12/15/17 14:45	20.0	19.7	99	90-110
CCV5	573984	KQ1718789-02	12/15/17 14:45	20.0	19.6	98	90-110
CCV6	573984	KQ1718789-03	12/15/17 14:45	20.0	19.7	98	90-110

Client: Hart Crowser, Incorporated **Service Request:**K1713130
Project: URSC/150-001-056

Continuing Calibration Blank (CCB) Summary
Carbon, Total Organic (TOC)

Analysis Method: PSEP TOC **Units:**Percent

	Analysis Lot	Lab Code	Date Analyzed	MRL	MDL	Result	Q
CCB1	573691	KQ1718788-04	12/13/17 14:30	0.050	0.020	ND	U
CCB2	573691	KQ1718788-05	12/13/17 14:30	0.050	0.020	ND	U
CCB3	573691	KQ1718788-06	12/13/17 14:30	0.050	0.020	ND	U
CCB4	573984	KQ1718789-04	12/15/17 14:45	0.050	0.020	ND	U
CCB5	573984	KQ1718789-05	12/15/17 14:45	0.050	0.020	ND	U
CCB6	573984	KQ1718789-06	12/15/17 14:45	0.050	0.020	ND	U

Metals

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	11/29/17 14:48
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM18.35E-COMP	**Basis:**	Dry
Lab Code:	K1713130-006		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**3.61**	mg/Kg	0.51	0.04	5	12/18/17 10:55	12/12/17	
Cadmium	6020A	**0.105**	mg/Kg	0.020	0.007	5	12/18/17 10:55	12/12/17	
Chromium	6020A	**23.2**	mg/Kg	0.20	0.06	5	12/18/17 10:55	12/12/17	
Copper	6020A	**24.4**	mg/Kg	0.10	0.04	5	12/18/17 10:55	12/12/17	
Lead	6020A	**26.7**	mg/Kg	0.051	0.020	5	12/18/17 10:55	12/12/17	
Manganese	6020A	**456**	mg/Kg	0.51	0.02	5	12/18/17 10:55	12/12/17	
Mercury	7471B	**0.020**	mg/Kg	0.019	0.002	1	12/19/17 13:47	12/19/17	
Nickel	6020A	**23.3**	mg/Kg	0.20	0.03	5	12/18/17 10:55	12/12/17	
Zinc	6020A	**80.7**	mg/Kg	0.51	0.20	5	12/18/17 10:55	12/12/17	

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/01/17 14:13
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM20.9W-COMP	**Basis:**	Dry
Lab Code:	K1713130-015		

Total Metals

Analyte Name	Analysis Method	Result		Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**3.30**		mg/Kg	0.45	0.04	5	12/21/17 10:32	12/20/17	
Cadmium	6020A	**0.067**		mg/Kg	0.018	0.006	5	12/21/17 10:32	12/20/17	
Chromium	6020A	**18.8**		mg/Kg	0.18	0.05	5	12/21/17 10:32	12/20/17	
Copper	6020A	**17.3**		mg/Kg	0.089	0.036	5	12/21/17 10:32	12/20/17	
Lead	6020A	**8.31**		mg/Kg	0.045	0.018	5	12/21/17 10:32	12/20/17	
Manganese	6020A	**366**		mg/Kg	0.45	0.02	5	12/21/17 10:32	12/20/17	
Mercury	7471B	**0.015**	**J**	mg/Kg	0.020	0.002	1	12/19/17 13:52	12/19/17	
Nickel	6020A	**19.2**		mg/Kg	0.18	0.03	5	12/21/17 10:32	12/20/17	
Zinc	6020A	**56.8**		mg/Kg	0.45	0.18	5	12/21/17 10:32	12/20/17	

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/04/17 10:42
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM24.7E-COMP	**Basis:**	Dry
Lab Code:	K1713130-021		

Total Metals

Analyte Name	Analysis Method	Result		Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**2.68**		mg/Kg	0.48	0.04	5	12/21/17 10:35	12/20/17	
Cadmium	6020A	**0.049**		mg/Kg	0.019	0.007	5	12/21/17 10:35	12/20/17	
Chromium	6020A	**20.9**		mg/Kg	0.19	0.06	5	12/21/17 10:35	12/20/17	
Copper	6020A	**17.1**		mg/Kg	0.096	0.038	5	12/21/17 10:35	12/20/17	
Lead	6020A	**6.45**		mg/Kg	0.048	0.019	5	12/21/17 10:35	12/20/17	
Manganese	6020A	**308**		mg/Kg	0.48	0.02	5	12/21/17 10:35	12/20/17	
Mercury	7471B	**0.015**	**J**	mg/Kg	0.020	0.002	1	12/19/17 13:54	12/19/17	
Nickel	6020A	**18.7**		mg/Kg	0.19	0.03	5	12/21/17 10:35	12/20/17	
Zinc	6020A	**48.0**		mg/Kg	0.48	0.19	5	12/21/17 10:35	12/20/17	

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/05/17 10:35
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM20.0E-COMP	**Basis:**	Dry
Lab Code:	K1713130-032		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**2.93**	mg/Kg	0.42	0.03	5	12/21/17 10:44	12/20/17	
Cadmium	6020A	**0.070**	mg/Kg	0.017	0.006	5	12/21/17 10:44	12/20/17	
Chromium	6020A	**27.7**	mg/Kg	0.17	0.05	5	12/21/17 10:44	12/20/17	
Copper	6020A	**18.3**	mg/Kg	0.085	0.034	5	12/21/17 10:44	12/20/17	
Lead	6020A	**12.3**	mg/Kg	0.042	0.017	5	12/21/17 10:44	12/20/17	
Manganese	6020A	**356**	mg/Kg	0.42	0.02	5	12/21/17 10:44	12/20/17	
Mercury	7471B	**0.016**	mg/Kg	0.016	0.002	1	12/19/17 13:56	12/19/17	**J**
Nickel	6020A	**27.5**	mg/Kg	0.17	0.03	5	12/21/17 10:44	12/20/17	
Zinc	6020A	**61.7**	mg/Kg	0.42	0.17	5	12/21/17 10:44	12/20/17	

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/04/17 13:00
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM25.2E-COMP	**Basis:**	Dry
Lab Code:	K1713130-033		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**4.06**	mg/Kg	0.48	0.04	5	12/21/17 10:46	12/20/17	
Cadmium	6020A	**0.102**	mg/Kg	0.019	0.007	5	12/21/17 10:46	12/20/17	
Chromium	6020A	**25.0**	mg/Kg	0.19	0.06	5	12/21/17 10:46	12/20/17	
Copper	6020A	**18.5**	mg/Kg	0.097	0.039	5	12/21/17 10:46	12/20/17	
Lead	6020A	**16.9**	mg/Kg	0.048	0.019	5	12/21/17 10:46	12/20/17	
Manganese	6020A	**410**	mg/Kg	0.48	0.02	5	12/21/17 10:46	12/20/17	
Mercury	7471B	**0.026**	mg/Kg	0.018	0.002	1	12/19/17 13:57	12/19/17	
Nickel	6020A	**21.3**	mg/Kg	0.19	0.03	5	12/21/17 10:46	12/20/17	
Zinc	6020A	**72.8**	mg/Kg	0.48	0.19	5	12/21/17 10:46	12/20/17	

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Basis:**	Dry
Lab Code:	KQ1718249-03		

Total Metals

Analyte Name	Analysis Method	Result		Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	ND	U	mg/Kg	0.5	0.04	5	12/18/17 10:47	12/12/17	
Cadmium	6020A	ND	U	mg/Kg	0.020	0.007	5	12/18/17 10:47	12/12/17	
Chromium	6020A	ND	U	mg/Kg	0.20	0.06	5	12/18/17 10:47	12/12/17	
Copper	6020A	ND	U	mg/Kg	0.10	0.04	5	12/18/17 10:47	12/12/17	
Lead	6020A	**0.021**	**J**	mg/Kg	0.05	0.020	5	12/18/17 10:47	12/12/17	
Manganese	6020A	**0.30**	**J**	mg/Kg	0.5	0.02	5	12/18/17 10:47	12/12/17	
Nickel	6020A	**0.03**	**J**	mg/Kg	0.20	0.03	5	12/18/17 10:47	12/12/17	
Zinc	6020A	ND	U	mg/Kg	0.5	0.20	5	12/18/17 10:47	12/12/17	

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Basis:**	Dry
Lab Code:	KQ1718365-03		

Total Metals

Analyte Name	Analysis Method	Result		Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	ND	U	mg/Kg	0.5	0.04	5	12/21/17 10:09	12/20/17	
Cadmium	6020A	ND	U	mg/Kg	0.020	0.007	5	12/21/17 10:09	12/20/17	
Chromium	6020A	**0.06**	**J**	mg/Kg	0.20	0.06	5	12/21/17 10:09	12/20/17	
Copper	6020A	ND	U	mg/Kg	0.10	0.04	5	12/21/17 10:09	12/20/17	
Lead	6020A	ND	U	mg/Kg	0.05	0.020	5	12/21/17 10:09	12/20/17	
Manganese	6020A	ND	U	mg/Kg	0.5	0.02	5	12/21/17 10:09	12/20/17	
Nickel	6020A	ND	U	mg/Kg	0.20	0.03	5	12/21/17 10:09	12/20/17	
Zinc	6020A	**0.32**	**J**	mg/Kg	0.5	0.20	5	12/21/17 10:09	12/20/17	

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Basis:**	Dry
Lab Code:	KQ1718364-03		

Total Metals

Analyte Name	Analysis Method	Result		Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Mercury	7471B	ND	U	mg/Kg	0.02	0.002	1	12/19/17 13:28	12/19/17	

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project	URSC/150-001-056	**Date Collected:**	11/29/17
Sample Matrix:	Sediment	**Date Received:**	12/06/17
		Date Analyzed:	12/18/17

Replicate Sample Summary
Total Metals

Sample Name:	URSC-RM18.35E-COMP	**Units:**	mg/Kg
Lab Code:	K1713130-006	**Basis:**	Dry

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample KQ1718249-01 Result	Average	RPD	RPD Limit
Arsenic	6020A	0.48	0.04	3.61	4.01	3.81	11	20
Cadmium	6020A	0.019	0.007	0.105	0.124	0.115	17	20
Chromium	6020A	0.19	0.06	23.2	23.6	23.4	2	20
Copper	6020A	0.097	0.039	24.4	26.2	25.3	7	20
Lead	6020A	0.048	0.019	26.7	35.4	31.1	28 *	20
Manganese	6020A	0.48	0.02	456	495	476	8	20
Nickel	6020A	0.19	0.03	23.3	26.1	24.7	11	20
Zinc	6020A	0.48	0.19	80.7	85.3	83.0	5	20

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Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
		Date Analyzed:	12/21/17

Replicate Sample Summary
Total Metals

Sample Name:	Batch QC	**Units:**	mg/Kg
Lab Code:	K1713018-010	**Basis:**	Dry

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample KQ1718365-01 Result	Average	RPD	RPD Limit
Arsenic	6020A	0.54	0.04	3.58	3.72	3.65	4	20
Cadmium	6020A	0.021	0.008	0.118	0.104	0.111	13	20
Chromium	6020A	0.21	0.06	26.3	26.4	26.4	<1	20
Copper	6020A	0.11	0.04	24.3	24.3	24.3	<1	20
Lead	6020A	0.054	0.021	14.6	15.9	15.3	9	20
Manganese	6020A	0.54	0.02	480	485	483	1	20
Nickel	6020A	0.21	0.03	24.7	25.2	25.0	1	20
Zinc	6020A	0.54	0.21	74.4	73.9	74.2	<1	20

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Superset Reference:

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
		Date Analyzed:	12/19/17

Replicate Sample Summary
Total Metals

Sample Name:	Batch QC	**Units:**	mg/Kg
Lab Code:	K1713018-010	**Basis:**	Dry

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample KQ1718364-01 Result	Average	RPD	RPD Limit
Mercury	7471B	0.020	0.002	0.028	0.025	0.027	13	20

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Superset Reference:

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project	URSC/150-001-056	**Date Collected:**	11/29/17
Sample Matrix:	Sediment	**Date Received:**	12/06/17
		Date Analyzed:	12/19/17

Replicate Sample Summary
Total Metals

Sample Name:	URSC-RM18.35E-COMP	**Units:**	mg/Kg
Lab Code:	K1713130-006	**Basis:**	Dry

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample KQ1718364-06 Result	Average	RPD	RPD Limit
Mercury	7471B	0.017	0.002	0.020	0.020	0.020	<1	20

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Superset Reference:

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	11/29/17
Sample Matrix:	Sediment	**Date Received:**	12/06/17
		Date Analyzed:	12/18/17
		Date Extracted:	12/12/17

Matrix Spike Summary
Total Metals

Sample Name:	URSC-RM18.35E-COMP	**Units:**	mg/Kg
Lab Code:	K1713130-006	**Basis:**	Dry
Analysis Method:	6020A		
Prep Method:	EPA 3050B		

Matrix Spike
KQ1718249-02

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Arsenic	3.61	94.2	94.7	96	75-125
Cadmium	0.105	9.46	9.47	99	75-125
Chromium	23.2	60.8	38.0	99	75-125
Copper	24.4	69.4	47.3	95	75-125
Lead	26.7	131	94.7	110	75-125
Manganese	456	623	94.7	177 #	75-125
Nickel	23.3	115	94.7	96	75-125
Zinc	80.7	174	94.7	98	75-125

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	N/A
Sample Matrix:	Sediment	**Date Received:**	N/A
		Date Analyzed:	12/21/17
		Date Extracted:	12/20/17

Matrix Spike Summary
Total Metals

Sample Name:	Batch QC	**Units:**	mg/Kg
Lab Code:	K1713018-010	**Basis:**	Dry
Analysis Method:	6020A		
Prep Method:	EPA 3050B		

Matrix Spike
KQ1718365-02

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Arsenic	3.58	112	111	98	75-125
Cadmium	0.118	11.5	11.1	103	75-125
Chromium	26.3	73.4	44.2	107	75-125
Copper	24.3	80.3	55.3	101	75-125
Lead	14.6	138	111	111	75-125
Manganese	480	678	111	180 #	75-125
Nickel	24.7	141	111	105	75-125
Zinc	74.4	182	111	97	75-125

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Superset Reference:

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	N/A
Sample Matrix:	Sediment	**Date Received:**	N/A
		Date Analyzed:	12/19/17
		Date Extracted:	12/19/17

Matrix Spike Summary
Total Metals

Sample Name:	Batch QC	**Units:**	mg/Kg
Lab Code:	K1713018-010	**Basis:**	Dry
Analysis Method:	7471B		
Prep Method:	Method		

Matrix Spike
KQ1718364-02

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Mercury	0.028	0.490	0.485	95	80-120

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Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	11/29/17
Sample Matrix:	Sediment	**Date Received:**	12/06/17
		Date Analyzed:	12/19/17
		Date Extracted:	12/19/17

Matrix Spike Summary
Total Metals

Sample Name:	URSC-RM18.35E-COMP	**Units:**	mg/Kg
Lab Code:	K1713130-006	**Basis:**	Dry
Analysis Method:	7471B		
Prep Method:	Method		

Matrix Spike
KQ1718364-07

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Mercury	0.020	0.426	0.428	95	80-120

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056
Sample Matrix: Sediment

Service Request: K1713130
Date Analyzed: 12/18/17

Lab Control Sample Summary
Total Metals

Units:mg/Kg
Basis: Dry

Lab Control Sample
KQ1718249-04

Analyte Name	Analytical Method	Result	Spike Amount	% Rec	% Rec Limits
Arsenic	6020A	99.5	100	100	80-120
Cadmium	6020A	10.2	10.0	102	80-120
Chromium	6020A	41.0	40.0	102	80-120
Copper	6020A	50.5	50.0	101	80-120
Lead	6020A	101	100	101	80-120
Manganese	6020A	98.3	100	98	80-120
Nickel	6020A	104	100	104	80-120
Zinc	6020A	98.7	100	99	80-120

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QA/QC Report

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056
Sample Matrix: Sediment

Service Request: K1713130
Date Analyzed: 12/21/17

Lab Control Sample Summary
Total Metals

Units:mg/Kg
Basis: Dry

Lab Control Sample
KQ1718365-04

Analyte Name	Analytical Method	Result	Spike Amount	% Rec	% Rec Limits
Arsenic	6020A	95.0	98.5	96	69-145
Cadmium	6020A	160	146	109	73-127
Chromium	6020A	184	182	101	71-130
Copper	6020A	110	106	104	75-125
Lead	6020A	130	130	100	72-127
Manganese	6020A	411	410	100	76-124
Nickel	6020A	162	149	109	73-127
Zinc	6020A	196	191	103	70-130

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Analyzed:**	12/19/17
Sample Matrix:	Sediment		

Lab Control Sample Summary
Total Metals

Units:mg/Kg
Basis: Dry

Lab Control Sample
KQ1718364-04

Analyte Name	Analytical Method	Result	Spike Amount	% Rec	% Rec Limits
Mercury	7471B	0.495	0.500	99	80-120

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Analyzed:**	12/19/17
Sample Matrix:	Sediment		

Lab Control Sample Summary
Total Metals

Units:mg/Kg
Basis: Dry

Lab Control Sample
KQ1718364-05

Analyte Name	Analytical Method	Result	Spike Amount	% Rec	% Rec Limits
Mercury	7471B	6.86	7.10	97	51-149

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Prep Summary Report

Client: Hart Crowser, Incorporated **Service Request:**K1713130
Project: URSC/150-001-056
Sample Matrix: Sediment

Metals

Prep Method: EPA 3050B **Extraction Lot:**304809
Analytical Method: 6020A

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Amount	Percent Solids
URSC-RM18.35E-COMP	K1713130-006	11/29/17	12/6/17	1.431 g	100 mL	
Duplicate	KQ1718249-01DUP	11/29/17	12/6/17	1.509 g	100 mL	
Matrix Spike	KQ1718249-02MS	11/29/17	12/6/17	1.541 g	100 mL	
Method Blank	KQ1718249-03MB	NA	NA	1.00 g	100 mL	
Lab Control Sample	KQ1718249-04LCS	NA	NA	1.00 g	100 mL	

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Prep Summary Report

Client: Hart Crowser, Incorporated **Service Request:**K1713130
Project: URSC/150-001-056
Sample Matrix: Sediment

Metals

Prep Method: EPA 3050B **Extraction Lot:**305007
Analytical Method: 6020A

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Amount	Percent Solids
URSC-RM20.9W-COMP	K1713130-015	12/1/17	12/6/17	1.609 g	100 mL	
URSC-RM24.7E-COMP	K1713130-021	12/4/17	12/6/17	1.475 g	100 mL	
URSC-RM20.0E-COMP	K1713130-032	12/5/17	12/6/17	1.583 g	100 mL	
URSC-RM25.2E-COMP	K1713130-033	12/4/17	12/6/17	1.584 g	100 mL	
Batch QC	KQ1718365-01DUP	NA	NA	1.538 g	100 mL	
Batch QC	KQ1718365-02MS	NA	NA	1.493 g	100 mL	
Method Blank	KQ1718365-03MB	NA	NA	1.00 g	100 mL	
Lab Control Sample	KQ1718365-04LCS	NA	NA	1.0100 g	100 mL	

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Prep Summary Report

Client: Hart Crowser, Incorporated **Service Request:**K1713130
Project: URSC/150-001-056
Sample Matrix: Sediment

Metals

Prep Method: Method **Extraction Lot:**305006
Analytical Method: 7471B

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Amount	Percent Solids
URSC-RM18.35E-COMP	K1713130-006	11/29/17	12/6/17	0.750 g	50 mL	
URSC-RM20.9W-COMP	K1713130-015	12/1/17	12/6/17	0.721 g	50 mL	
URSC-RM24.7E-COMP	K1713130-021	12/4/17	12/6/17	0.725 g	50 mL	
URSC-RM20.0E-COMP	K1713130-032	12/5/17	12/6/17	0.821 g	50 mL	
URSC-RM25.2E-COMP	K1713130-033	12/4/17	12/6/17	0.852 g	50 mL	
Batch QC	KQ1718364-01DUP	NA	NA	0.824 g	50 mL	
Batch QC	KQ1718364-02MS	NA	NA	0.850 g	50 mL	
Method Blank	KQ1718364-03MB	NA	NA	0.500 g	50 mL	
Lab Control Sample	KQ1718364-04LCS	NA	NA	0.500 g	50 mL	
Lab Control Sample	KQ1718364-05LCS	NA	NA	0.250 g	50 mL	
Duplicate	KQ1718364-06DUP	11/29/17	12/6/17	0.854 g	50 mL	
Matrix Spike	KQ1718364-07MS	11/29/17	12/6/17	0.854 g	50 mL	

Client: Hart Crowser, Incorporated **Service Request:** K1713130
Project: URSC/150-001-056

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Concentration Units: ug/L

Analyte	Method	Analysis Batch	Initial Calibration			Continuing Calibration			Continuing Calibration		
			True	Found	%R (1)	True	Found	%R (1)	True	Found	%R (1)
Arsenic	6020A	574584	25.0	25.6	103	25.0	24.9	100	25.0	25.2	101
Arsenic	6020A	574087	25.0	25.2	101	25.0	25.6	102	25.0	25.2	101
Cadmium	6020A	574584	12.5	13.5	108	25.0	25.3	101	25.0	25.4	102
Cadmium	6020A	574087	12.5	12.7	101	25.0	25.3	101	25.0	25.1	100
Chromium	6020A	574584	10.0	10.5	105	25.0	24.8	99	25.0	25.5	102
Chromium	6020A	574087	10.0	10.1	101	25.0	25.2	101	25.0	25.3	101
Copper	6020A	574584	12.5	13.3	106	25.0	25.0	100	25.0	26.1	104
Copper	6020A	574087	12.5	12.4	99	25.0	24.9	99	25.0	24.9	100
Lead	6020A	574584	25.0	26.6	106	25.0	25.3	101	25.0	25.3	101
Lead	6020A	574087	25.0	25.1	100	25.0	25.2	101	25.0	25.0	100
Manganese	6020A	574584	25.0	26.1	104	25.0	25.1	100	25.0	25.9	103
Manganese	6020A	574087	25.0	25.3	101	25.0	24.7	99	25.0	24.3	97
Mercury	7471B	574347	5.00	4.90	98	5.00	5.03	101	5.00	5.09	102
Nickel	6020A	574584	25.0	27.0	108	25.0	25.4	102	25.0	25.9	103
Nickel	6020A	574087	25.0	25.7	103	25.0	25.5	102	25.0	25.6	102
Zinc	6020A	574584	25.0	25.6	102	25.0	26.1	105	25.0	25.6	102
Zinc	6020A	574087	25.0	25.4	101	25.0	24.9	99	25.0	25.3	101

Client: Hart Crowser, Incorporated **Service Request:** K1713130
Project: URSC/150-001-056

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Concentration Units: ug/L

Analyte	Method	Analysis Batch	Initial Calibration			Continuing Calibration			Continuing Calibration		
			True	Found	%R (1)	True	Found	%R (1)	True	Found	%R (1)
Arsenic	6020A	574584				25.0	25.4	102	25.0	25.3	101
Arsenic	6020A	574087				25.0	25.5	102	25.0	25.6	102
Cadmium	6020A	574584				25.0	25.0	100	25.0	25.0	100
Cadmium	6020A	574087				25.0	24.9	100	25.0	25.2	101
Chromium	6020A	574584				25.0	25.5	102	25.0	25.6	102
Chromium	6020A	574087				25.0	25.4	102	25.0	25.6	102
Copper	6020A	574584				25.0	25.6	102	25.0	25.6	102
Copper	6020A	574087				25.0	25.2	101	25.0	25.0	100
Lead	6020A	574584				25.0	25.1	100	25.0	25.0	100
Lead	6020A	574087				25.0	24.7	99	25.0	24.9	100
Manganese	6020A	574584				25.0	26.0	104	25.0	25.9	104
Manganese	6020A	574087				25.0	24.7	99	25.0	25.2	101
Mercury	7471B	574347				5.00	5.03	101			
Nickel	6020A	574584				25.0	25.7	103	25.0	25.7	103
Nickel	6020A	574087				25.0	25.9	104	25.0	25.7	103
Zinc	6020A	574584				25.0	25.5	102	25.0	26.3	105
Zinc	6020A	574087				25.0	25.4	102	25.0	25.2	101

Client: Hart Crowser, Incorporated **Service Request:** K1713130
Project: URSC/150-001-056

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Concentration Units: ug/L

Analyte	Method	Analysis Batch	Initial Calibration			Continuing Calibration			Continuing Calibration		
			True	Found	%R (1)	True	Found	%R (1)	True	Found	%R (1)
Arsenic	6020A	574584				25.0	25.0	100	25.0	25.5	102
Cadmium	6020A	574584				25.0	25.2	101	25.0	25.2	101
Chromium	6020A	574584				25.0	25.2	101	25.0	25.5	102
Copper	6020A	574584				25.0	25.6	102	25.0	25.5	102
Lead	6020A	574584				25.0	25.0	100	25.0	24.6	99
Manganese	6020A	574584				25.0	25.5	102	25.0	25.7	103
Nickel	6020A	574584				25.0	25.9	104	25.0	25.8	103
Zinc	6020A	574584				25.0	25.8	103	25.0	25.6	102

Client: Hart Crowser, Incorporated **Service Request:** K1713130
Project: URSC/150-001-056

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Concentration Units: ug/L

Analyte	Method	Analysis Batch	Initial Calibration			Continuing Calibration			Continuing Calibration		
			True	Found	%R (1)	True	Found	%R (1)	True	Found	%R (1)
Arsenic	6020A	574584				25.0	25.7	103			
Cadmium	6020A	574584				25.0	24.9	100			
Chromium	6020A	574584				25.0	25.5	102			
Copper	6020A	574584				25.0	25.5	102			
Lead	6020A	574584				25.0	24.6	98			
Manganese	6020A	574584				25.0	25.8	103			
Nickel	6020A	574584				25.0	25.7	103			
Zinc	6020A	574584				25.0	26.4	106			

Client: Hart Crowser, Incorporated **Service Request:** K1713130
Project: URSC/150-001-056

INITIAL AND CONTINUING CALIBRATION BLANK

Concentration Units: ug/L

Analyte	Method	Analysis Batch	Initial Calibration Blank		Continuing Calibration Blank		Continuing Calibration Blank		Continuing Calibration Blank	
			Result	C	Result	C	Result	C	Result	C
Arsenic	6020A	574584	0.08	U	0.08	U	0.08	U	0.08	U
Arsenic	6020A	574087	0.08	U	0.08	U	0.08	U	0.08	U
Cadmium	6020A	574584	0.014	U	0.014	U	0.014	U	0.014	U
Cadmium	6020A	574087	0.014	U	0.014	U	0.014	U	0.014	U
Chromium	6020A	574584	0.12	U	0.12	U	0.12	U	0.12	U
Chromium	6020A	574087	0.12	U	0.12	U	0.12	U	0.12	U
Copper	6020A	574584	0.08	U	0.08	U	0.08	U	0.08	U
Copper	6020A	574087	0.08	U	0.08	U	0.08	U	0.08	U
Lead	6020A	574584	0.04	U	0.04	U	0.04	U	0.04	U
Lead	6020A	574087	0.04	U	0.04	U	0.04	U	0.04	U
Manganese	6020A	574584	0.04	U	0.04	U	0.04	U	0.04	U
Manganese	6020A	574087	0.04	U	0.04	U	0.04	U	0.04	U
Mercury	7471B	574347	0.02	U	0.02	U	0.02	U	0.02	U
Nickel	6020A	574584	0.06	U	0.06	U	0.06	U	0.06	U
Nickel	6020A	574087	0.06	U	0.06	U	0.06	U	0.06	U
Zinc	6020A	574584	0.4	U	0.4	U	0.4	U	0.4	U
Zinc	6020A	574087	0.4	U	0.4	U	0.4	U	0.4	U

Client: Hart Crowser, Incorporated **Service Request:** K1713130
Project: URSC/150-001-056

INITIAL AND CONTINUING CALIBRATION BLANK

Concentration Units: ug/L

Analyte	Method	Analysis Batch	Initial Calibration Blank Result	C	Continuing Calibration Blank Result	C	Continuing Calibration Blank Result	C	Continuing Calibration Blank Result	C
Arsenic	6020A	574584			0.08	U	0.08	U	0.08	U
Arsenic	6020A	574087			0.08	U				
Cadmium	6020A	574584			0.014	U	0.014	U	0.014	U
Cadmium	6020A	574087			0.017	J				
Chromium	6020A	574584			0.12	U	0.12	U	0.12	U
Chromium	6020A	574087			0.12	U				
Copper	6020A	574584			0.08	U	0.08	U	0.08	U
Copper	6020A	574087			0.08	U				
Lead	6020A	574584			0.04	U	0.04	U	0.04	U
Lead	6020A	574087			0.04	U				
Manganese	6020A	574584			0.04	U	0.04	J	0.04	U
Manganese	6020A	574087			0.04	U				
Nickel	6020A	574584			0.06	U	0.06	U	0.06	U
Nickel	6020A	574087			0.06	U				
Zinc	6020A	574584			0.4	U	0.4	U	0.4	U
Zinc	6020A	574087			0.4	U				

Client: Hart Crowser, Incorporated **Service Request:** K1713130
Project: URSC/150-001-056

INITIAL AND CONTINUING CALIBRATION BLANK

Concentration Units: ug/L

Analyte	Method	Analysis Batch	Initial Calibration Blank Result	C	Continuing Calibration Blank Result	C	Continuing Calibration Blank Result	C	Continuing Calibration Blank Result	C
Arsenic	6020A	574584			0.08	U				
Cadmium	6020A	574584			0.014	U				
Chromium	6020A	574584			0.12	U				
Copper	6020A	574584			0.08	U				
Lead	6020A	574584			0.04	U				
Manganese	6020A	574584			0.05	J				
Nickel	6020A	574584			0.06	U				
Zinc	6020A	574584			0.4	U				

Client: Hart Crowser, Incorporated **Service Request:** K1713130
Project: URSC/150-001-056

LOW LEVEL INITIAL AND LOW LEVEL CONTINUING CALIBRATION VERIFICATION

Concentration Units: ug/L

Sample ID / Analyte	Method	Analysis Batch:	Result	True Value	% Rec	% Rec. Limits	Analysis Date
LLICVS							
Arsenic	6020A	574087	0.96	1.0	96	70-130	12/18/17 10:04
Cadmium	6020A	574087	0.039	0.04	98	70-130	12/18/17 10:04
Chromium	6020A	574087	0.37	0.4	92	70-130	12/18/17 10:04
Copper	6020A	574087	0.20	0.2	100	70-130	12/18/17 10:04
Lead	6020A	574087	0.096	0.1	96	70-130	12/18/17 10:04
Manganese	6020A	574087	0.098	0.1	98	70-130	12/18/17 10:04
Nickel	6020A	574087	0.39	0.4	97	70-130	12/18/17 10:04
Zinc	6020A	574087	0.87	1.0	87	70-130	12/18/17 10:04
LLCCVS							
Arsenic	6020A	574087	0.91	1.0	91	70-130	12/18/17 11:33
Cadmium	6020A	574087	0.041	0.04	102	70-130	12/18/17 11:33
Chromium	6020A	574087	0.39	0.4	97	70-130	12/18/17 11:33
Copper	6020A	574087	0.21	0.2	104	70-130	12/18/17 11:33
Lead	6020A	574087	0.10	0.1	100	70-130	12/18/17 11:33
Nickel	6020A	574087	0.40	0.4	101	70-130	12/18/17 11:33
Zinc	6020A	574087	0.83	1.0	83	70-130	12/18/17 11:33
LLCCVS							
Manganese	6020A	574087	1.1	1.0	108	70-130	12/18/17 11:35
LLICV							
Mercury	7471B	574347	0.25	0.2	125	50-150	12/19/17 13:23
LLICVS							
Arsenic	6020A	574584	0.98	1.0	98	70-130	12/21/17 07:14
Cadmium	6020A	574584	0.052	0.04	130	70-130	12/21/17 07:14
Chromium	6020A	574584	0.43	0.4	108	70-130	12/21/17 07:14
Copper	6020A	574584	0.22	0.2	108	70-130	12/21/17 07:14
Lead	6020A	574584	0.11	0.1	114	70-130	12/21/17 07:14
Manganese	6020A	574584	0.12	0.1	124	70-130	12/21/17 07:14
Nickel	6020A	574584	0.43	0.4	109	70-130	12/21/17 07:14
Zinc	6020A	574584	1.2	1.0	116	70-130	12/21/17 07:14
LLCCVS							
Arsenic	6020A	574584	1.1	1.0	107	70-130	12/21/17 09:13
Cadmium	6020A	574584	0.043	0.04	108	70-130	12/21/17 09:13
Chromium	6020A	574584	0.42	0.4	106	70-130	12/21/17 09:13
Copper	6020A	574584	0.23	0.2	117	70-130	12/21/17 09:13
Lead	6020A	574584	0.11	0.1	105	70-130	12/21/17 09:13
Manganese	6020A	574584	0.11	0.1	110	70-130	12/21/17 09:13

Client: Hart Crowser, Incorporated **Service Request:** K1713130
Project: URSC/150-001-056

LOW LEVEL INITIAL AND LOW LEVEL CONTINUING CALIBRATION VERIFICATION

Concentration Units: ug/L

Sample ID / Analyte	Method	Analysis Batch:	Result	True Value	% Rec	% Rec. Limits	Analysis Date
LLCCVS							
Nickel	6020A	574584	0.36	0.4	89	70-130	12/21/17 09:13
Zinc	6020A	574584	1.2	1.0	120	70-130	12/21/17 09:13
LLCCVS							
Arsenic	6020A	574584	0.99	1.0	99	70-130	12/21/17 10:03
Cadmium	6020A	574584	0.047	0.04	118	70-130	12/21/17 10:03
Chromium	6020A	574584	0.45	0.4	112	70-130	12/21/17 10:03
Copper	6020A	574584	0.26	0.2	128	70-130	12/21/17 10:03
Lead	6020A	574584	0.10	0.1	102	70-130	12/21/17 10:03
Manganese	6020A	574584	0.11	0.1	108	70-130	12/21/17 10:03
Nickel	6020A	574584	0.41	0.4	104	70-130	12/21/17 10:03
Zinc	6020A	574584	1.1	1.0	105	70-130	12/21/17 10:03
LLCCVS							
Arsenic	6020A	574584	0.99	1.0	99	70-130	12/21/17 10:55
Cadmium	6020A	574584	0.044	0.04	111	70-130	12/21/17 10:55
Chromium	6020A	574584	0.44	0.4	110	70-130	12/21/17 10:55
Copper	6020A	574584	0.22	0.2	109	70-130	12/21/17 10:55
Lead	6020A	574584	0.10	0.1	100	70-130	12/21/17 10:55
Nickel	6020A	574584	0.40	0.4	101	70-130	12/21/17 10:55
Zinc	6020A	574584	1.1	1.0	109	70-130	12/21/17 10:55
LLCCVS							
Manganese	6020A	574584	1.2	1.0	117	70-130	12/21/17 10:58

Client: Hart Crowser, Incorporated **Service Request:** K1713130
Project: URSC/150-001-056

ICP INTERFERENCE CHECK SAMPLE

Sample ID ICSA **Concentration Units:** ug/L

Analyte	Method	Analysis Batch:	Result	True Value	% Rec	% Rec. Limits	Analysis Date
Arsenic	6020A	574087	0.08	-	-	-	12/18/17 10:07
Cadmium	6020A	574087	0.029	-	-	-	12/18/17 10:07
Chromium	6020A	574087	0.59	-	-	-	12/18/17 10:07
Copper	6020A	574087	0.69	-	-	-	12/18/17 10:07
Lead	6020A	574087	0.08	-	-	-	12/18/17 10:07
Manganese	6020A	574087	0.8	-	-	-	12/18/17 10:07
Nickel	6020A	574087	0.62	-	-	-	12/18/17 10:07
Zinc	6020A	574087	0.4	-	-	-	12/18/17 10:07

Client: Hart Crowser, Incorporated **Service Request:** K1713130
Project: URSC/150-001-056

ICP INTERFERENCE CHECK SAMPLE

Sample ID ICSAB **Concentration Units:** ug/L

Analyte	Method	Analysis Batch:	Result	True Value	% Rec	% Rec. Limits	Analysis Date
Arsenic	6020A	574087	24.6	25.0	98	80-120	12/18/17 10:09
Cadmium	6020A	574087	25.0	25.0	100	80-120	12/18/17 10:09
Chromium	6020A	574087	48.9	50.0	98	80-120	12/18/17 10:09
Copper	6020A	574087	45.5	50.0	91	80-120	12/18/17 10:09
Lead	6020A	574087	0.08	-	-	-	12/18/17 10:09
Manganese	6020A	574087	48.0	50.0	96	80-120	12/18/17 10:09
Nickel	6020A	574087	47.2	50.0	94	80-120	12/18/17 10:09
Zinc	6020A	574087	23.4	25.0	94	80-120	12/18/17 10:09

Client: Hart Crowser, Incorporated **Service Request:** K1713130
Project: URSC/150-001-056

ICP INTERFERENCE CHECK SAMPLE

Sample ID ICSA **Concentration Units:** ug/L

Analyte	Method	Analysis Batch:	Result	True Value	% Rec	% Rec. Limits	Analysis Date
Arsenic	6020A	574584	0.08	-	-	-	12/21/17 07:23
Cadmium	6020A	574584	0.014	-	-	-	12/21/17 07:23
Chromium	6020A	574584	0.66	-	-	-	12/21/17 07:23
Copper	6020A	574584	0.69	-	-	-	12/21/17 07:23
Lead	6020A	574584	0.04	-	-	-	12/21/17 07:23
Manganese	6020A	574584	0.04	-	-	-	12/21/17 07:23
Nickel	6020A	574584	0.73	-	-	-	12/21/17 07:23
Zinc	6020A	574584	0.4	-	-	-	12/21/17 07:23

Client: Hart Crowser, Incorporated **Service Request:** K1713130
Project: URSC/150-001-056

ICP INTERFERENCE CHECK SAMPLE

Sample ID ICSAB **Concentration Units:** ug/L

Analyte	Method	Analysis Batch:	Result	True Value	% Rec	% Rec. Limits	Analysis Date
Arsenic	6020A	574584	24.8	25.0	99	80-120	12/21/17 07:26
Cadmium	6020A	574584	26.3	25.0	105	80-120	12/21/17 07:26
Chromium	6020A	574584	50.8	50.0	102	80-120	12/21/17 07:26
Copper	6020A	574584	49.4	50.0	99	80-120	12/21/17 07:26
Lead	6020A	574584	0.04	-	-	-	12/21/17 07:26
Manganese	6020A	574584	51.6	50.0	103	80-120	12/21/17 07:26
Nickel	6020A	574584	51.3	50.0	103	80-120	12/21/17 07:26
Zinc	6020A	574584	24.5	25.0	98	80-120	12/21/17 07:26

Client: Hart Crowser, Incorporated **Service Request:** K1713130
Project: URSC/150-001-056

POST SPIKE SAMPLE RECOVERY

Concentration Units: ug/L

Sample ID / Analyte	Method	Analysis Batch:	Initial Sample Result	Post Spike Result	True Value	% Rec	% Rec. Limits	Analysis Date
K1713130-006A								
Arsenic	6020A	574087	7.1	55.8	50.0	98	80-120	12/18/17 11:07
Cadmium	6020A	574087	0.21	50.0	50.0	99	80-120	12/18/17 11:07
Chromium	6020A	574087	45.4	92.8	50.0	95	80-120	12/18/17 11:07
Copper	6020A	574087	47.9	94.4	50.0	93	80-120	12/18/17 11:07
Lead	6020A	574087	52.3	100	50.0	96	80-120	12/18/17 11:07
Manganese	6020A	574087	893	939	50.0	90	80-120	12/18/17 11:07
Nickel	6020A	574087	45.7	94.8	50.0	98	80-120	12/18/17 11:07
Zinc	6020A	574087	158	205	50.0	93	80-120	12/18/17 11:07
K1713018-010A								
Mercury	7471B	574347	0.28	4.94	5.00	93	80-120	12/19/17 13:41
K1713018-010A								
Arsenic	6020A	574584	6.8	56.6	50.0	100	80-120	12/21/17 10:23
Cadmium	6020A	574584	0.22	52.2	50.0	104	80-120	12/21/17 10:23
Chromium	6020A	574584	49.7	101	50.0	102	80-120	12/21/17 10:23
Copper	6020A	574584	45.9	95.9	50.0	100	80-120	12/21/17 10:23
Lead	6020A	574584	27.6	77.1	50.0	99	80-120	12/21/17 10:23
Nickel	6020A	574584	46.8	98.7	50.0	104	80-120	12/21/17 10:23
Zinc	6020A	574584	141	190	50.0	98	80-120	12/21/17 10:23

Results flagged with a pound (#) indicate the control criteria is not applicable.

Client: Hart Crowser, Incorporated **Service Request:** K1713130
Project: URSC/150-001-056

ICP SERIAL DILUTIONS

Concentration Units: ug/L

Sample ID / Analyte	Method	Analysis Batch:	Initial Sample Result	Serial Dillution Result	% Diff	% Diff. Limit	Analysis Date
K1713130-006SDL							
Arsenic	6020A	574087	35.4	35.6	0	10	12/18/17 11:00
Cadmium	6020A	574087	1.03	1.15	12	10	12/18/17 11:00
Chromium	6020A	574087	227	230	1	10	12/18/17 11:00
Copper	6020A	574087	239	252	5	10	12/18/17 11:00
Lead	6020A	574087	262	278	6	10	12/18/17 11:00
Manganese	6020A	574087	4470	4580	3	10	12/18/17 11:00
Nickel	6020A	574087	228	242	6	10	12/18/17 11:00
Zinc	6020A	574087	791	829	5	10	12/18/17 11:00
K1713018-010SDL							
Arsenic	6020A	574584	33.8	31.5	7	10	12/21/17 10:20
Cadmium	6020A	574584	1.12	1.20	7	10	12/21/17 10:20
Chromium	6020A	574584	248	249	0	10	12/21/17 10:20
Copper	6020A	574584	229	240	5	10	12/21/17 10:20
Lead	6020A	574584	138	144	4	10	12/21/17 10:20
Manganese	6020A	574584	4530	4560	1	10	12/21/17 10:20
Nickel	6020A	574584	234	239	2	10	12/21/17 10:20
Zinc	6020A	574584	704	697	1	10	12/21/17 10:20

Client: Hart Crowser, Incorporated **Service Request:** K1713130
Project: URSC/150-001-056

Detection Limits

Matrix: Sediment

Analyte	Wavelength (nm)	Units	MRL	MDL	Method
Mercury	253	ug/L	0.2	0.02	7471B

Client: Hart Crowser, Incorporated **Service Request:** K1713130
Project: URSC/150-001-056

Detection Limits

Matrix: Sediment

Analyte	Mass	Units	MRL	MDL	Method
Arsenic	75	ug/L	1	0.08	6020A
Cadmium	111	ug/L	0.04	0.014	6020A
Chromium	52	ug/L	0.4	0.12	6020A
Copper	65	ug/L	0.2	0.08	6020A
Lead	208	ug/L	0.1	0.04	6020A
Manganese	55	ug/L	1.0	0.04	6020A
Nickel	60	ug/L	0.4	0.06	6020A
Zinc	66	ug/L	1	0.4	6020A

Client: Hart Crowser, Incorporated **Service Request:** K1713130
Project: URSC/150-001-056

ICP Linear Range (Quarterly)

Instrument: K-CVAA-02

Analyte	Concentration (ug/L)	Method
Mercury	10	7471B

Client: Hart Crowser, Incorporated **Service Request:** K1713130
Project: URSC/150-001-056

ICP Linear Range (Quarterly)

Instrument: K-ICP-MS-05

Analyte	Concentration (ug/L)	Method
Arsenic 75	3000	6020A
Cadmium 111	3000	6020A
Chromium 52	3000	6020A
Copper 65	3000	6020A
Lead 208	3000	6020A
Manganese 55	3000	6020A
Nickel 60	3000	6020A
Zinc 66	3000	6020A

Client: Hart Crowser, Incorporated **Service Request:** K1713130
Project: URSC/150-001-056

Analysis Run Log

Instrument ID: **K-ICP-MS-05** **Analytical BatchID:** **574087**

Sample	Dilution Factor	Date/Time	As	Cd	Cr	Cu	Pb	Mn	Ni	Zn
ZZZZZZ	1	12/18/17 09:50								
ZZZZZZ	1	12/18/17 09:52								
ICV	1	12/18/17 09:54	X	X	X	X	X	X	X	X
CCV	1	12/18/17 09:57	X	X	X	X	X	X	X	X
ICB	1	12/18/17 09:59	X	X	X	X	X	X	X	X
CCB	1	12/18/17 10:02	X	X	X	X	X	X	X	X
LLICVS	1	12/18/17 10:04	X	X	X	X	X	X	X	X
ICSA	1	12/18/17 10:07	X	X	X	X	X	X	X	X
ICSAB	1	12/18/17 10:09	X	X	X	X	X	X	X	X
ZZZZZZ	5	12/18/17 10:11								
ZZZZZZ	20	12/18/17 10:14								
ZZZZZZ	5	12/18/17 10:16								
ZZZZZZ	5	12/18/17 10:18								
ZZZZZZ	25	12/18/17 10:21								
ZZZZZZ	5	12/18/17 10:23								
ZZZZZZ	5	12/18/17 10:26								
ZZZZZZ	5	12/18/17 10:28								
ZZZZZZ	5	12/18/17 10:30								
ZZZZZZ	5	12/18/17 10:33								
CCV	1	12/18/17 10:35	X	X	X	X	X	X	X	X
CCB	1	12/18/17 10:38	X	X	X	X	X	X	X	X
ZZZZZZ	5	12/18/17 10:40								
ZZZZZZ	5	12/18/17 10:42								
ZZZZZZ	5	12/18/17 10:44								
KQ1718249-03MB	5	12/18/17 10:47	X	X	X	X	X	X	X	X
KQ1718249-04LCS	20	12/18/17 10:49	X	X	X	X	X	X	X	X
ZZZZZZ	5	12/18/17 10:51								
ZZZZZZ	5	12/18/17 10:53								
K1713130-006	5	12/18/17 10:55	X	X	X	X	X	X	X	X
K1713130-006DUP	5	12/18/17 10:58	X	X	X	X	X	X	X	X
K1713130-006SDL	25	12/18/17 11:00	X	X	X	X	X	X	X	X
CCV	1	12/18/17 11:02	X	X	X	X	X	X	X	X
CCB	1	12/18/17 11:04	X	X	X	X	X	X	X	X
K1713130-006PS	5	12/18/17 11:07	X	X	X	X	X	X	X	X
K1713130-006MS	5	12/18/17 11:09	X	X	X	X	X	X	X	X
ZZZZZZ	5	12/18/17 11:11								
ZZZZZZ	20	12/18/17 11:13								

Client: Hart Crowser, Incorporated **Service Request:** K1713130
Project: URSC/150-001-056

Analysis Run Log

Instrument ID: **K-ICP-MS-05** **Analytical BatchID:** **574087**

Sample	Dilution Factor	Date/Time	As	Cd	Cr	Cu	Pb	Mn	Ni	Zn
ZZZZZZ	5	12/18/17 11:15								
ZZZZZZ	5	12/18/17 11:18								
ZZZZZZ	25	12/18/17 11:20								
ZZZZZZ	5	12/18/17 11:22								
ZZZZZZ	5	12/18/17 11:24								
ZZZZZZ	5	12/18/17 11:26								
CCV	1	12/18/17 11:29	X	X	X	X	X	X	X	X
CCB	1	12/18/17 11:31	X	X	X	X	X	X	X	X
LLCCVS	1	12/18/17 11:33	X	X	X	X	X		X	X
LLCCVS 1.0 ppb	1	12/18/17 11:35						X		
ZZZZZZ	20	12/18/17 11:38								
ZZZZZZ	20	12/18/17 11:40								
ZZZZZZ	20	12/18/17 11:42								
ZZZZZZ	20	12/18/17 11:44								
ZZZZZZ	100	12/18/17 11:46								
ZZZZZZ	20	12/18/17 11:49								
ZZZZZZ	1	12/18/17 11:51								
ZZZZZZ	1	12/18/17 11:53								
ZZZZZZ	20	12/18/17 11:55								
ZZZZZZ	20	12/18/17 11:58								
ZZZZZZ	20	12/18/17 12:00								
ZZZZZZ	20	12/18/17 12:02								
ZZZZZZ	20	12/18/17 12:04								
ZZZZZZ	20	12/18/17 12:06								
ZZZZZZ	20	12/18/17 12:09								
ZZZZZZ	1	12/18/17 12:11								
ZZZZZZ	1	12/18/17 12:13								
ZZZZZZ	1	12/18/17 12:15								

Client: Hart Crowser, Incorporated **Service Request:** K1713130
Project: URSC/150-001-056

Analysis Run Log

Instrument ID: **K-CVAA-02** **Analytical BatchID:** **574347**

Sample	Dilution Factor	Date/Time	Hg
ZZZZZZ	1	12/19/17 13:10	
ZZZZZZ	1	12/19/17 13:12	
ZZZZZZ	1	12/19/17 13:13	
ZZZZZZ	1	12/19/17 13:15	
ZZZZZZ	1	12/19/17 13:17	
ZZZZZZ	1	12/19/17 13:18	
ICV1	1	12/19/17 13:20	X
ICB1	1	12/19/17 13:22	X
LLICV1	1	12/19/17 13:23	X
CCV1	1	12/19/17 13:25	X
CCB1	1	12/19/17 13:26	X
KQ1718364-03MB	1	12/19/17 13:28	X
KQ1718364-04LCS	1	12/19/17 13:30	X
KQ1718364-05LCS1	10	12/19/17 13:31	X
ZZZZZZ	1	12/19/17 13:33	
ZZZZZZ	1	12/19/17 13:34	
ZZZZZZ	1	12/19/17 13:36	
K1713018-010DUP	1	12/19/17 13:38	X
K1713018-010MS	1	12/19/17 13:39	X
K1713018-010PS	1	12/19/17 13:41	X
ZZZZZZ	1	12/19/17 13:43	
CCV2	1	12/19/17 13:44	X
CCB2	1	12/19/17 13:46	X
K1713130-006	1	12/19/17 13:47	X
K1713130-006DUP	1	12/19/17 13:49	X
K1713130-006MS	1	12/19/17 13:51	X
K1713130-015	1	12/19/17 13:52	X
K1713130-021	1	12/19/17 13:54	X
K1713130-032	1	12/19/17 13:56	X
K1713130-033	1	12/19/17 13:57	X
ZZZZZZ	1	12/19/17 13:59	
ZZZZZZ	1	12/19/17 14:00	
ZZZZZZ	1	12/19/17 14:02	
CCV3	1	12/19/17 14:04	X
CCB3	1	12/19/17 14:05	X
ZZZZZZ	1	12/19/17 14:07	
ZZZZZZ	1	12/19/17 14:08	

Client: Hart Crowser, Incorporated **Service Request:** K1713130
Project: URSC/150-001-056

Analysis Run Log

Instrument ID: **K-CVAA-02** **Analytical BatchID:** **574347**

Sample	Dilution Factor	Date/Time	Hg
ZZZZZZ	1	12/19/17 14:10	
ZZZZZZ	1	12/19/17 14:12	
ZZZZZZ	1	12/19/17 14:13	
ZZZZZZ	1	12/19/17 14:15	
ZZZZZZ	1	12/19/17 14:17	
ZZZZZZ	1	12/19/17 14:18	
ZZZZZZ	1	12/19/17 14:21	
ZZZZZZ	1	12/19/17 14:22	
ZZZZZZ	1	12/19/17 14:24	
ZZZZZZ	1	12/19/17 14:25	

Client: Hart Crowser, Incorporated **Service Request:** K1713130
Project: URSC/150-001-056

Analysis Run Log

Instrument ID: **K-ICP-MS-05** **Analytical BatchID:** **574584**

Sample	Dilution Factor	Date/Time	As	Cd	Cr	Cu	Pb	Mn	Ni	Zn
ZZZZZZ	1	12/21/17 06:53								
ZZZZZZ	1	12/21/17 06:56								
ICV	1	12/21/17 06:59	X	X	X	X	X	X	X	X
CCV	1	12/21/17 07:05	X	X	X	X	X	X	X	X
ICB	1	12/21/17 07:08	X	X	X	X	X	X	X	X
CCB	1	12/21/17 07:11	X	X	X	X	X	X	X	X
LLICVS	1	12/21/17 07:14	X	X	X	X	X	X	X	X
ZZZZZZ	1	12/21/17 07:17								
ZZZZZZ	1	12/21/17 07:20								
ICSA	1	12/21/17 07:23	X	X	X	X	X	X	X	X
ICSAB	1	12/21/17 07:26	X	X	X	X	X	X	X	X
ZZZZZZ	5	12/21/17 07:29								
ZZZZZZ	20	12/21/17 07:32								
ZZZZZZ	5	12/21/17 07:35								
ZZZZZZ	25	12/21/17 07:37								
ZZZZZZ	5	12/21/17 07:40								
ZZZZZZ	5	12/21/17 07:43								
ZZZZZZ	5	12/21/17 07:46								
ZZZZZZ	5	12/21/17 07:49								
ZZZZZZ	5	12/21/17 07:52								
ZZZZZZ	1	12/21/17 07:55								
CCV	1	12/21/17 07:58	X	X	X	X	X	X	X	X
CCB	1	12/21/17 08:01	X	X	X	X	X	X	X	X
ZZZZZZ	5	12/21/17 08:04								
ZZZZZZ	5	12/21/17 08:06								
ZZZZZZ	5	12/21/17 08:09								
ZZZZZZ	5	12/21/17 08:15								
ZZZZZZ	5	12/21/17 08:18								
ZZZZZZ	5	12/21/17 08:21								
ZZZZZZ	5	12/21/17 08:24								
ZZZZZZ	5	12/21/17 08:26								
ZZZZZZ	5	12/21/17 08:29								
ZZZZZZ	1	12/21/17 08:32								
CCV	1	12/21/17 08:35	X	X	X	X	X	X	X	X
CCB	1	12/21/17 08:38	X	X	X	X	X	X	X	X
ZZZZZZ	5	12/21/17 08:41								
ZZZZZZ	5	12/21/17 08:44								

Client: Hart Crowser, Incorporated **Service Request:** K1713130
Project: URSC/150-001-056

Analysis Run Log

Instrument ID: **K-ICP-MS-05** **Analytical BatchID:** **574584**

Sample	Dilution Factor	Date/Time	As	Cd	Cr	Cu	Pb	Mn	Ni	Zn
ZZZZZZ	5	12/21/17 08:47								
ZZZZZZ	5	12/21/17 08:50								
ZZZZZZ	5	12/21/17 08:53								
ZZZZZZ	5	12/21/17 08:56								
ZZZZZZ	5	12/21/17 08:58								
ZZZZZZ	5	12/21/17 09:01								
CCV	1	12/21/17 09:07	X	X	X	X	X	X	X	X
CCB	1	12/21/17 09:10	X	X	X	X	X	X	X	X
LLCCVS	1	12/21/17 09:13	X	X	X	X	X	X	X	X
ZZZZZZ	1	12/21/17 09:16								
ZZZZZZ	1	12/21/17 09:19								
ZZZZZZ	5	12/21/17 09:22								
ZZZZZZ	20	12/21/17 09:25								
ZZZZZZ	5	12/21/17 09:28								
ZZZZZZ	25	12/21/17 09:30								
ZZZZZZ	5	12/21/17 09:33								
ZZZZZZ	5	12/21/17 09:36								
ZZZZZZ	5	12/21/17 09:39								
ZZZZZZ	5	12/21/17 09:42								
CCV	1	12/21/17 09:53	X	X	X	X	X	X	X	X
CCB	1	12/21/17 09:56	X	X	X	X	X	X	X	X
ZZZZZZ	1	12/21/17 09:59								
LLCCVS	1	12/21/17 10:03	X	X	X	X	X	X	X	X
ZZZZZZ	1	12/21/17 10:06								
KQ1718365-03MB	5	12/21/17 10:09	X	X	X	X	X	X	X	X
KQ1718365-04LCS1	20	12/21/17 10:12	X	X	X	X	X	X	X	X
ZZZZZZ	5	12/21/17 10:15								
K1713018-010DUP	5	12/21/17 10:17	X	X	X	X	X	X	X	X
K1713018-010SDL	25	12/21/17 10:20	X	X	X	X	X	X	X	X
K1713018-010PS	5	12/21/17 10:23	X	X	X	X	X		X	X
K1713018-010MS	5	12/21/17 10:26	X	X	X	X	X	X	X	X
ZZZZZZ	5	12/21/17 10:29								
K1713130-015	5	12/21/17 10:32	X	X	X	X	X	X	X	X
K1713130-021	5	12/21/17 10:35	X	X	X	X	X	X	X	X
CCV	1	12/21/17 10:38	X	X	X	X	X	X	X	X
CCB	1	12/21/17 10:41	X	X	X	X	X	X	X	X
K1713130-032	5	12/21/17 10:44	X	X	X	X	X	X	X	X

Client: Hart Crowser, Incorporated **Service Request:** K1713130
Project: URSC/150-001-056

Analysis Run Log

Instrument ID: **K-ICP-MS-05** **Analytical BatchID:** **574584**

Sample	Dilution Factor	Date/Time	As	Cd	Cr	Cu	Pb	Mn	Ni	Zn
K1713130-033	5	12/21/17 10:46	X	X	X	X	X	X	X	X
CCV	1	12/21/17 10:49	X	X	X	X	X	X	X	X
CCB	1	12/21/17 10:52	X	X	X	X	X	X	X	X
LLCCVS	1	12/21/17 10:55	X	X	X	X	X		X	X
LLCCVS 1.0 ppb	1	12/21/17 10:58						X		
ZZZZZZ	5	12/21/17 11:01								
ZZZZZZ	20	12/21/17 11:04								
ZZZZZZ	5	12/21/17 11:07								
ZZZZZZ	5	12/21/17 11:10								
ZZZZZZ	25	12/21/17 11:13								
ZZZZZZ	5	12/21/17 11:16								
ZZZZZZ	5	12/21/17 11:18								
ZZZZZZ	1	12/21/17 11:21								
ZZZZZZ	1	12/21/17 11:24								
ZZZZZZ	1	12/21/17 11:27								
ZZZZZZ	1	12/21/17 11:30								
ZZZZZZ	1	12/21/17 11:34								
ZZZZZZ	5	12/21/17 11:37								
ZZZZZZ	20	12/21/17 11:40								
ZZZZZZ	5	12/21/17 11:43								
ZZZZZZ	5	12/21/17 11:46								
ZZZZZZ	25	12/21/17 11:49								
ZZZZZZ	5	12/21/17 11:52								
ZZZZZZ	5	12/21/17 11:54								
ZZZZZZ	1	12/21/17 11:57								
ZZZZZZ	1	12/21/17 12:00								
ZZZZZZ	1	12/21/17 12:03								
ZZZZZZ	1	12/21/17 12:06								

Client: Hart Crowser, Incorporated **Service Request:** K1713130
Project: URSC/150-001-056

ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Instrument ID: **K-ICP-MS-05** **Analytical BatchID:** **574087**

Sample	Date/Time	Ge72He	Ge72H2	In115He	Lu175He
ZZZZZZ	12/18/17 09:50				
ZZZZZZ	12/18/17 09:52				
ICV	12/18/17 09:54	98	99	98	100
CCV	12/18/17 09:57	97	98	97	98
ICB	12/18/17 09:59	97	98	98	99
CCB	12/18/17 10:02	97	98	99	97
LLICVS	12/18/17 10:04	96	97	98	100
ICSA	12/18/17 10:07	93	93	88	92
ICSAB	12/18/17 10:09	94	93	90	94
ZZZZZZ	12/18/17 10:11				
ZZZZZZ	12/18/17 10:14				
ZZZZZZ	12/18/17 10:16				
ZZZZZZ	12/18/17 10:18				
ZZZZZZ	12/18/17 10:21				
ZZZZZZ	12/18/17 10:23				
ZZZZZZ	12/18/17 10:26				
ZZZZZZ	12/18/17 10:28				
ZZZZZZ	12/18/17 10:30				
ZZZZZZ	12/18/17 10:33				
CCV	12/18/17 10:35	99	99	99	100
CCB	12/18/17 10:38	99	99	100	100
ZZZZZZ	12/18/17 10:40				
ZZZZZZ	12/18/17 10:42				
ZZZZZZ	12/18/17 10:44				
KQ1718249-03MB	12/18/17 10:47	100	100	102	101
KQ1718249-04LCS	12/18/17 10:49	98	98	97	98
ZZZZZZ	12/18/17 10:51				
ZZZZZZ	12/18/17 10:53				
K1713130-006	12/18/17 10:55	100	99	99	101
K1713130-006DUP	12/18/17 10:58	101	98	99	101
K1713130-006SDL	12/18/17 11:00	100	100	99	99
CCV	12/18/17 11:02	99	100	101	101
CCB	12/18/17 11:04	100	100	102	102
K1713130-006PS	12/18/17 11:07	101	99	99	101
K1713130-006MS	12/18/17 11:09	99	98	96	99
ZZZZZZ	12/18/17 11:11				
ZZZZZZ	12/18/17 11:13				

Client: Hart Crowser, Incorporated **Service Request:** K1713130
Project: URSC/150-001-056

ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Instrument ID: **K-ICP-MS-05** **Analytical BatchID:** **574087**

Sample	Date/Time	Ge72He	Ge72H2	In115He	Lu175He
ZZZZZZ	12/18/17 11:15				
ZZZZZZ	12/18/17 11:18				
ZZZZZZ	12/18/17 11:20				
ZZZZZZ	12/18/17 11:22				
ZZZZZZ	12/18/17 11:24				
ZZZZZZ	12/18/17 11:26				
CCV	12/18/17 11:29	95	95	97	100
CCB	12/18/17 11:31	95	95	99	99
LLCCVS	12/18/17 11:33	97	95	98	99
LLCCVS 1.0 ppb	12/18/17 11:35	95	95	97	98
ZZZZZZ	12/18/17 11:38				
ZZZZZZ	12/18/17 11:40				
ZZZZZZ	12/18/17 11:42				
ZZZZZZ	12/18/17 11:44				
ZZZZZZ	12/18/17 11:46				
ZZZZZZ	12/18/17 11:49				
ZZZZZZ	12/18/17 11:51				
ZZZZZZ	12/18/17 11:53				
ZZZZZZ	12/18/17 11:55				
ZZZZZZ	12/18/17 11:58				
ZZZZZZ	12/18/17 12:00				
ZZZZZZ	12/18/17 12:02				
ZZZZZZ	12/18/17 12:04				
ZZZZZZ	12/18/17 12:06				
ZZZZZZ	12/18/17 12:09				
ZZZZZZ	12/18/17 12:11				
ZZZZZZ	12/18/17 12:13				
ZZZZZZ	12/18/17 12:15				

Client: Hart Crowser, Incorporated **Service Request:** K1713130
Project: URSC/150-001-056

ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Instrument ID: **K-ICP-MS-05** **Analytical BatchID:** **574584**

Sample	Date/Time	Sc45NG	Ge72He	Ge72H2	In115He	Lu175He	Li6NG
ZZZZZZ	12/21/17 06:53						
ZZZZZZ	12/21/17 06:56						
ICV	12/21/17 06:59	100	99	98	99	98	98
CCV	12/21/17 07:05	99	100	100	98	99	101
ICB	12/21/17 07:08	98	99	100	99	99	98
CCB	12/21/17 07:11	101	99	100	98	98	101
LLICVS	12/21/17 07:14	97	98	99	98	97	97
ZZZZZZ	12/21/17 07:17						
ZZZZZZ	12/21/17 07:20						
ICSA	12/21/17 07:23	92	93	93	88	94	91
ICSAB	12/21/17 07:26	95	94	94	89	95	92
ZZZZZZ	12/21/17 07:29						
ZZZZZZ	12/21/17 07:32						
ZZZZZZ	12/21/17 07:35						
ZZZZZZ	12/21/17 07:37						
ZZZZZZ	12/21/17 07:40						
ZZZZZZ	12/21/17 07:43						
ZZZZZZ	12/21/17 07:46						
ZZZZZZ	12/21/17 07:49						
ZZZZZZ	12/21/17 07:52						
ZZZZZZ	12/21/17 07:55						
CCV	12/21/17 07:58	103	101	101	99	99	102
CCB	12/21/17 08:01	102	100	100	99	98	100
ZZZZZZ	12/21/17 08:04						
ZZZZZZ	12/21/17 08:06						
ZZZZZZ	12/21/17 08:09						
ZZZZZZ	12/21/17 08:15						
ZZZZZZ	12/21/17 08:18						
ZZZZZZ	12/21/17 08:21						
ZZZZZZ	12/21/17 08:24						
ZZZZZZ	12/21/17 08:26						
ZZZZZZ	12/21/17 08:29						
ZZZZZZ	12/21/17 08:32						
CCV	12/21/17 08:35	105	104	101	101	100	103
CCB	12/21/17 08:38	104	102	101	101	98	103
ZZZZZZ	12/21/17 08:41						
ZZZZZZ	12/21/17 08:44						

Client: Hart Crowser, Incorporated **Service Request:** K1713130
Project: URSC/150-001-056

ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Instrument ID: **K-ICP-MS-05** **Analytical BatchID:** **574584**

Sample	Date/Time	Sc45NG	Ge72He	Ge72H2	In115He	Lu175He	Li6NG
ZZZZZZ	12/21/17 08:47						
ZZZZZZ	12/21/17 08:50						
ZZZZZZ	12/21/17 08:53						
ZZZZZZ	12/21/17 08:56						
ZZZZZZ	12/21/17 08:58						
ZZZZZZ	12/21/17 09:01						
CCV	12/21/17 09:07	104	103	100	100	99	104
CCB	12/21/17 09:10	104	101	99	100	98	102
LLCCVS	12/21/17 09:13	101	100	98	98	97	100
ZZZZZZ	12/21/17 09:16						
ZZZZZZ	12/21/17 09:19						
ZZZZZZ	12/21/17 09:22						
ZZZZZZ	12/21/17 09:25						
ZZZZZZ	12/21/17 09:28						
ZZZZZZ	12/21/17 09:30						
ZZZZZZ	12/21/17 09:33						
ZZZZZZ	12/21/17 09:36						
ZZZZZZ	12/21/17 09:39						
ZZZZZZ	12/21/17 09:42						
CCV	12/21/17 09:53	102	98	97	96	96	101
CCB	12/21/17 09:56	88	91	96	89	91	87
ZZZZZZ	12/21/17 09:59						
LLCCVS	12/21/17 10:03	100	96	96	93	94	97
ZZZZZZ	12/21/17 10:06						
KQ1718365-03MB	12/21/17 10:09	100	96	96	95	95	98
KQ1718365-04LCS1	12/21/17 10:12	99	96	97	91	93	97
ZZZZZZ	12/21/17 10:15						
K1713018-010DUP	12/21/17 10:17	115	101	99	97	99	102
K1713018-010SDL	12/21/17 10:20	108	102	101	98	96	104
K1713018-010PS	12/21/17 10:23	115	102	97	97	97	106
K1713018-010MS	12/21/17 10:26	113	99	95	94	98	99
ZZZZZZ	12/21/17 10:29						
K1713130-015	12/21/17 10:32	114	103	98	98	99	105
K1713130-021	12/21/17 10:35	113	103	98	98	100	105
CCV	12/21/17 10:38	107	104	100	99	98	105
CCB	12/21/17 10:41	106	103	99	99	96	103
K1713130-032	12/21/17 10:44	116	102	97	97	99	105

Client: Hart Crowser, Incorporated **Service Request:** K1713130
Project: URSC/150-001-056

ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY

Instrument ID: **K-ICP-MS-05** **Analytical BatchID:** **574584**

Sample	Date/Time	Sc45NG	Ge72He	Ge72H2	In115He	Lu175He	Li6NG
K1713130-033	12/21/17 10:46	115	101	98	97	99	105
CCV	12/21/17 10:49	106	103	100	99	97	102
CCB	12/21/17 10:52	106	102	99	99	97	101
LLCCVS	12/21/17 10:55	106	101	99	97	97	101
LLCCVS 1.0 ppb	12/21/17 10:58	106	101	99	96	97	100
ZZZZZZ	12/21/17 11:01						
ZZZZZZ	12/21/17 11:04						
ZZZZZZ	12/21/17 11:07						
ZZZZZZ	12/21/17 11:10						
ZZZZZZ	12/21/17 11:13						
ZZZZZZ	12/21/17 11:16						
ZZZZZZ	12/21/17 11:18						
ZZZZZZ	12/21/17 11:21						
ZZZZZZ	12/21/17 11:24						
ZZZZZZ	12/21/17 11:27						
ZZZZZZ	12/21/17 11:30						
ZZZZZZ	12/21/17 11:34						
ZZZZZZ	12/21/17 11:37						
ZZZZZZ	12/21/17 11:40						
ZZZZZZ	12/21/17 11:43						
ZZZZZZ	12/21/17 11:46						
ZZZZZZ	12/21/17 11:49						
ZZZZZZ	12/21/17 11:52						
ZZZZZZ	12/21/17 11:54						
ZZZZZZ	12/21/17 11:57						
ZZZZZZ	12/21/17 12:00						
ZZZZZZ	12/21/17 12:03						
ZZZZZZ	12/21/17 12:06						

Organochlorine Pesticides

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	11/29/17 14:48
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM18.35E-COMP	**Units:**	ug/Kg
Lab Code:	K1713130-006	**Basis:**	Dry

Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP
Prep Method: EPA 3541

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2,4'-DDD	**0.074**		0.072	0.063	1	01/15/18 18:42	12/12/17	
2,4'-DDE	ND	U	0.079	0.079	1	01/15/18 18:42	12/12/17	
2,4'-DDT	**0.10**		0.094	0.094	1	01/15/18 18:42	12/12/17	
4,4'-DDD	**0.35**		0.072	0.035	1	01/15/18 18:42	12/12/17	
4,4'-DDE	**0.72**		0.072	0.070	1	01/15/18 18:42	12/12/17	
4,4'-DDT	**1.6**		0.072	0.047	1	01/15/18 18:42	12/12/17	
Aldrin	ND	U	0.079	0.079	1	01/15/18 18:42	12/12/17	
alpha-BHC	ND	U	0.072	0.041	1	01/15/18 18:42	12/12/17	
alpha-Chlordane	**0.093**	**J**	0.14	0.062	1	01/15/18 18:42	12/12/17	
beta-BHC	ND	U	0.072	0.061	1	01/15/18 18:42	12/12/17	
Chlorpyrifos	**0.45**		0.077	0.077	1	01/15/18 18:42	12/12/17	
cis-Nonachlor	ND	U	0.097	0.097	1	01/15/18 18:42	12/12/17	
delta-BHC	ND	U	0.097	0.097	1	01/15/18 18:42	12/12/17	
Dieldrin	**0.21**		0.20	0.077	1	01/15/18 18:42	12/12/17	
Endosulfan I	ND	U	0.20	0.088	1	01/15/18 18:42	12/12/17	
Endosulfan II	**0.56**		0.20	0.15	1	01/15/18 18:42	12/12/17	
Endosulfan Sulfate	ND	U	0.072	0.061	1	01/15/18 18:42	12/12/17	
Endrin	ND	U	0.20	0.073	1	01/15/18 18:42	12/12/17	
Endrin Aldehyde	ND	U	0.20	0.10	1	01/15/18 18:42	12/12/17	
Endrin Ketone	ND	U	0.20	0.071	1	01/15/18 18:42	12/12/17	
gamma-BHC (Lindane)	**0.035**	**J**	0.072	0.031	1	01/15/18 18:42	12/12/17	
gamma-Chlordane	**0.12**	**J**	0.14	0.064	1	01/15/18 18:42	12/12/17	
Heptachlor	ND	U	0.072	0.039	1	01/15/18 18:42	12/12/17	
Heptachlor Epoxide	ND	U	0.14	0.073	1	01/15/18 18:42	12/12/17	
Hexachlorobenzene	**0.85**		0.092	0.092	1	01/15/18 18:42	12/12/17	
Isodrin	ND	U	0.14	0.069	1	01/15/18 18:42	12/12/17	
Methoxychlor	**0.073**		0.072	0.019	1	01/15/18 18:42	12/12/17	
Mirex	ND	U	0.072	0.045	1	01/15/18 18:42	12/12/17	
Octachlorostyrene	ND	U	0.072	0.058	1	01/15/18 18:42	12/12/17	
Oxychlordane	ND	U	0.20	0.13	1	01/15/18 18:42	12/12/17	
trans-Nonachlor	**0.11**	**J**	0.14	0.058	1	01/15/18 18:42	12/12/17	

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	11/29/17 14:48
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM18.35E-COMP	**Units:**	ug/Kg
Lab Code:	K1713130-006	**Basis:**	Dry

Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP
Prep Method: EPA 3541

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
S_4,4'-DDT-d4	116	13 - 200	01/15/18 18:42	
S_4,4'DDD-d4	80	5 - 120	01/15/18 18:42	
S_Aldrin-13C12	101	10 - 143	01/15/18 18:42	
S_Chlorpyrifos-d10	93	39 - 135	01/15/18 18:42	
S_Endrin-13C12	92	20 - 157	01/15/18 18:42	
S_Endrinket13C12	81	12 - 140	01/15/18 18:42	
S_GBHCD6	94	5 - 124	01/15/18 18:42	
S_HXCBZ13C6	59	5 - 120	01/15/18 18:42	
S_Heptachlor-13C10	149	10 - 177	01/15/18 18:42	
S_Heptachlrepox13C10	80	8 - 146	01/15/18 18:42	
S_Isodrin-13C12	99	10 - 168	01/15/18 18:42	
S_Mirex-13C10	67	5 - 138	01/15/18 18:42	
S_Mxchlord-d6	128	10 - 178	01/15/18 18:42	
S_Ocstyrene13C8	65	31 - 124	01/15/18 18:42	
S_Oxychlordane-13C10	100	5 - 144	01/15/18 18:42	

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/01/17 14:13
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM20.9W-COMP	**Units:**	ug/Kg
Lab Code:	K1713130-015	**Basis:**	Dry

Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP
Prep Method: EPA 3546

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2,4'-DDD	ND	U	0.071	0.063	1	01/15/18 22:49	12/15/17	
2,4'-DDE	ND	U	0.079	0.079	1	01/15/18 22:49	12/15/17	
2,4'-DDT	ND	U	0.094	0.094	1	01/15/18 22:49	12/15/17	
4,4'-DDD	**0.10**		0.071	0.035	1	01/15/18 22:49	12/15/17	
4,4'-DDE	**0.19**		0.071	0.070	1	01/15/18 22:49	12/15/17	
4,4'-DDT	**0.068**	**J**	0.071	0.047	1	01/15/18 22:49	12/15/17	
Aldrin	ND	U	0.079	0.079	1	01/15/18 22:49	12/15/17	
alpha-BHC	ND	U	0.071	0.041	1	01/15/18 22:49	12/15/17	
alpha-Chlordane	ND	U	0.14	0.062	1	01/15/18 22:49	12/15/17	
beta-BHC	ND	U	0.071	0.061	1	01/15/18 22:49	12/15/17	
Chlorpyrifos	**0.18**		0.077	0.077	1	01/15/18 22:49	12/15/17	
cis-Nonachlor	ND	U	0.097	0.097	1	01/15/18 22:49	12/15/17	
delta-BHC	ND	U	0.097	0.097	1	01/15/18 22:49	12/15/17	
Dieldrin	ND	U	0.20	0.077	1	01/15/18 22:49	12/15/17	
Endosulfan I	ND	U	0.20	0.088	1	01/15/18 22:49	12/15/17	
Endosulfan II	ND	U	0.20	0.15	1	01/15/18 22:49	12/15/17	
Endosulfan Sulfate	ND	U	0.071	0.061	1	01/15/18 22:49	12/15/17	
Endrin	ND	U	0.20	0.073	1	01/15/18 22:49	12/15/17	
Endrin Aldehyde	ND	U	0.20	0.10	1	01/15/18 22:49	12/15/17	
Endrin Ketone	ND	U	0.20	0.071	1	01/15/18 22:49	12/15/17	
gamma-BHC (Lindane)	ND	U	0.071	0.031	1	01/15/18 22:49	12/15/17	
gamma-Chlordane	ND	U	0.14	0.064	1	01/15/18 22:49	12/15/17	
Heptachlor	ND	U	0.071	0.039	1	01/15/18 22:49	12/15/17	
Heptachlor Epoxide	ND	U	0.14	0.073	1	01/15/18 22:49	12/15/17	
Hexachlorobenzene	ND	U	0.092	0.092	1	01/15/18 22:49	12/15/17	
Isodrin	ND	U	0.14	0.069	1	01/15/18 22:49	12/15/17	
Methoxychlor	ND	U	0.071	0.019	1	01/15/18 22:49	12/15/17	
Mirex	ND	U	0.071	0.045	1	01/15/18 22:49	12/15/17	
Octachlorostyrene	ND	U	0.071	0.058	1	01/15/18 22:49	12/15/17	
Oxychlordane	ND	U	0.20	0.13	1	01/15/18 22:49	12/15/17	
trans-Nonachlor	ND	U	0.14	0.058	1	01/15/18 22:49	12/15/17	

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/01/17 14:13
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM20.9W-COMP	**Units:**	ug/Kg
Lab Code:	K1713130-015	**Basis:**	Dry

Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP
Prep Method: EPA 3546

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
S_4,4'-DDT-d4	105	13 - 200	01/15/18 22:49	
S_4,4'DDD-d4	75	5 - 120	01/15/18 22:49	
S_Aldrin-13C12	80	10 - 143	01/15/18 22:49	
S_Chlorpyrifos-d10	87	39 - 135	01/15/18 22:49	
S_Endrin-13C12	86	20 - 157	01/15/18 22:49	
S_Endrinket13C12	72	12 - 140	01/15/18 22:49	
S_GBHCD6	80	5 - 124	01/15/18 22:49	
S_HXCBZ13C6	50	5 - 120	01/15/18 22:49	
S_Heptachlor-13C10	127	10 - 177	01/15/18 22:49	
S_Heptachlrepox13C10	71	8 - 146	01/15/18 22:49	
S_Isodrin-13C12	86	10 - 168	01/15/18 22:49	
S_Mirex-13C10	62	5 - 138	01/15/18 22:49	
S_Mxchlord-d6	115	10 - 178	01/15/18 22:49	
S_Ocstyrene13C8	59	31 - 124	01/15/18 22:49	
S_Oxychlordane-13C10	74	5 - 144	01/15/18 22:49	

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/04/17 10:42
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM24.7E-COMP	**Units:**	ug/Kg
Lab Code:	K1713130-021	**Basis:**	Dry

Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP
Prep Method: EPA 3546

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2,4'-DDD	ND	U	0.070	0.063	1	01/15/18 23:16	12/15/17	
2,4'-DDE	ND	U	0.079	0.079	1	01/15/18 23:16	12/15/17	
2,4'-DDT	ND	U	0.094	0.094	1	01/15/18 23:16	12/15/17	
4,4'-DDD	**0.061**	**J**	0.070	0.035	1	01/15/18 23:16	12/15/17	
4,4'-DDE	**0.10**		0.070	0.070	1	01/15/18 23:16	12/15/17	
4,4'-DDT	**0.074**		0.070	0.047	1	01/15/18 23:16	12/15/17	
Aldrin	ND	U	0.079	0.079	1	01/15/18 23:16	12/15/17	
alpha-BHC	ND	U	0.070	0.041	1	01/15/18 23:16	12/15/17	
alpha-Chlordane	ND	U	0.14	0.062	1	01/15/18 23:16	12/15/17	
beta-BHC	ND	U	0.070	0.061	1	01/15/18 23:16	12/15/17	
Chlorpyrifos	ND	U	0.077	0.077	1	01/15/18 23:16	12/15/17	
cis-Nonachlor	ND	U	0.097	0.097	1	01/15/18 23:16	12/15/17	
delta-BHC	ND	U	0.097	0.097	1	01/15/18 23:16	12/15/17	
Dieldrin	ND	U	0.20	0.077	1	01/15/18 23:16	12/15/17	
Endosulfan I	ND	U	0.20	0.088	1	01/15/18 23:16	12/15/17	
Endosulfan II	ND	U	0.20	0.15	1	01/15/18 23:16	12/15/17	
Endosulfan Sulfate	ND	U	0.070	0.061	1	01/15/18 23:16	12/15/17	
Endrin	ND	U	0.20	0.073	1	01/15/18 23:16	12/15/17	
Endrin Aldehyde	ND	U	0.20	0.10	1	01/15/18 23:16	12/15/17	
Endrin Ketone	ND	U	0.20	0.071	1	01/15/18 23:16	12/15/17	
gamma-BHC (Lindane)	ND	U	0.070	0.031	1	01/15/18 23:16	12/15/17	
gamma-Chlordane	ND	U	0.14	0.064	1	01/15/18 23:16	12/15/17	
Heptachlor	ND	U	0.070	0.039	1	01/15/18 23:16	12/15/17	
Heptachlor Epoxide	ND	U	0.14	0.073	1	01/15/18 23:16	12/15/17	
Hexachlorobenzene	**0.12**		0.092	0.092	1	01/15/18 23:16	12/15/17	
Isodrin	ND	U	0.14	0.069	1	01/15/18 23:16	12/15/17	
Methoxychlor	ND	U	0.070	0.019	1	01/15/18 23:16	12/15/17	
Mirex	ND	U	0.070	0.045	1	01/15/18 23:16	12/15/17	
Octachlorostyrene	ND	U	0.070	0.058	1	01/15/18 23:16	12/15/17	
Oxychlordane	ND	U	0.20	0.13	1	01/15/18 23:16	12/15/17	
trans-Nonachlor	ND	U	0.14	0.058	1	01/15/18 23:16	12/15/17	

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/04/17 10:42
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM24.7E-COMP	**Units:**	ug/Kg
Lab Code:	K1713130-021	**Basis:**	Dry

Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP
Prep Method: EPA 3546

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
S_4,4'-DDT-d4	119	13 - 200	01/15/18 23:16	
S_4,4'DDD-d4	85	5 - 120	01/15/18 23:16	
S_Aldrin-13C12	86	10 - 143	01/15/18 23:16	
S_Chlorpyrifos-d10	94	39 - 135	01/15/18 23:16	
S_Endrin-13C12	93	20 - 157	01/15/18 23:16	
S_Endrinket13C12	88	12 - 140	01/15/18 23:16	
S_GBHCD6	75	5 - 124	01/15/18 23:16	
S_HXCBZ13C6	51	5 - 120	01/15/18 23:16	
S_Heptachlor-13C10	114	10 - 177	01/15/18 23:16	
S_Heptachlrepox13C10	75	8 - 146	01/15/18 23:16	
S_Isodrin-13C12	79	10 - 168	01/15/18 23:16	
S_Mirex-13C10	72	5 - 138	01/15/18 23:16	
S_Mxchlord-d6	126	10 - 178	01/15/18 23:16	
S_Ocstyrene13C8	67	31 - 124	01/15/18 23:16	
S_Oxychlordane-13C10	83	5 - 144	01/15/18 23:16	

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/05/17 10:35
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM20.0E-COMP	**Units:**	ug/Kg
Lab Code:	K1713130-032	**Basis:**	Dry

Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP
Prep Method: EPA 3546

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2,4'-DDD	ND	U	0.065	0.063	1	01/15/18 23:43	12/15/17	
2,4'-DDE	ND	U	0.079	0.079	1	01/15/18 23:43	12/15/17	
2,4'-DDT	ND	U	0.094	0.094	1	01/15/18 23:43	12/15/17	
4,4'-DDD	**0.074**		0.065	0.035	1	01/15/18 23:43	12/15/17	
4,4'-DDE	**0.15**		0.070	0.070	1	01/15/18 23:43	12/15/17	
4,4'-DDT	**0.062**	**J**	0.065	0.047	1	01/15/18 23:43	12/15/17	
Aldrin	ND	U	0.079	0.079	1	01/15/18 23:43	12/15/17	
alpha-BHC	ND	U	0.065	0.041	1	01/15/18 23:43	12/15/17	
alpha-Chlordane	ND	U	0.13	0.062	1	01/15/18 23:43	12/15/17	
beta-BHC	ND	U	0.065	0.061	1	01/15/18 23:43	12/15/17	
Chlorpyrifos	ND	U	0.077	0.077	1	01/15/18 23:43	12/15/17	
cis-Nonachlor	ND	U	0.097	0.097	1	01/15/18 23:43	12/15/17	
delta-BHC	ND	U	0.097	0.097	1	01/15/18 23:43	12/15/17	
Dieldrin	**0.12**	**J**	0.20	0.077	1	01/15/18 23:43	12/15/17	
Endosulfan I	ND	U	0.20	0.088	1	01/15/18 23:43	12/15/17	
Endosulfan II	ND	U	0.20	0.15	1	01/15/18 23:43	12/15/17	
Endosulfan Sulfate	ND	U	0.065	0.061	1	01/15/18 23:43	12/15/17	
Endrin	ND	U	0.20	0.073	1	01/15/18 23:43	12/15/17	
Endrin Aldehyde	ND	U	0.20	0.10	1	01/15/18 23:43	12/15/17	
Endrin Ketone	ND	U	0.20	0.071	1	01/15/18 23:43	12/15/17	
gamma-BHC (Lindane)	ND	U	0.065	0.031	1	01/15/18 23:43	12/15/17	
gamma-Chlordane	ND	U	0.13	0.064	1	01/15/18 23:43	12/15/17	
Heptachlor	ND	U	0.065	0.039	1	01/15/18 23:43	12/15/17	
Heptachlor Epoxide	ND	U	0.13	0.073	1	01/15/18 23:43	12/15/17	
Hexachlorobenzene	ND	U	0.092	0.092	1	01/15/18 23:43	12/15/17	
Isodrin	ND	U	0.13	0.069	1	01/15/18 23:43	12/15/17	
Methoxychlor	ND	U	0.065	0.019	1	01/15/18 23:43	12/15/17	
Mirex	ND	U	0.065	0.045	1	01/15/18 23:43	12/15/17	
Octachlorostyrene	ND	U	0.065	0.058	1	01/15/18 23:43	12/15/17	
Oxychlordane	ND	U	0.20	0.13	1	01/15/18 23:43	12/15/17	
trans-Nonachlor	ND	U	0.13	0.058	1	01/15/18 23:43	12/15/17	

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/05/17 10:35
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM20.0E-COMP	**Units:**	ug/Kg
Lab Code:	K1713130-032	**Basis:**	Dry

Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP
Prep Method: EPA 3546

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
S_4,4'-DDT-d4	123	13 - 200	01/15/18 23:43	
S_4,4'DDD-d4	90	5 - 120	01/15/18 23:43	
S_Aldrin-13C12	95	10 - 143	01/15/18 23:43	
S_Chlorpyrifos-d10	101	39 - 135	01/15/18 23:43	
S_Endrin-13C12	100	20 - 157	01/15/18 23:43	
S_Endrinket13C12	87	12 - 140	01/15/18 23:43	
S_GBHCD6	89	5 - 124	01/15/18 23:43	
S_HXCBZ13C6	56	5 - 120	01/15/18 23:43	
S_Heptachlor-13C10	133	10 - 177	01/15/18 23:43	
S_Heptachlrepox13C10	84	8 - 146	01/15/18 23:43	
S_Isodrin-13C12	94	10 - 168	01/15/18 23:43	
S_Mirex-13C10	75	5 - 138	01/15/18 23:43	
S_Mxchlord-d6	135	10 - 178	01/15/18 23:43	
S_Ocstyrene13C8	71	31 - 124	01/15/18 23:43	
S_Oxychlordane-13C10	87	5 - 144	01/15/18 23:43	

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/04/17 13:00
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM25.2E-COMP	**Units:**	ug/Kg
Lab Code:	K1713130-033	**Basis:**	Dry

Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP
Prep Method: EPA 3546

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2,4'-DDD	ND	U	0.075	0.063	1	01/16/18 00:11	12/15/17	
2,4'-DDE	ND	U	0.079	0.079	1	01/16/18 00:11	12/15/17	
2,4'-DDT	ND	U	0.094	0.094	1	01/16/18 00:11	12/15/17	
4,4'-DDD	**0.21**		0.075	0.035	1	01/16/18 00:11	12/15/17	
4,4'-DDE	**0.34**		0.075	0.070	1	01/16/18 00:11	12/15/17	
4,4'-DDT	**0.15**		0.075	0.047	1	01/16/18 00:11	12/15/17	
Aldrin	ND	U	0.079	0.079	1	01/16/18 00:11	12/15/17	
alpha-BHC	ND	U	0.075	0.041	1	01/16/18 00:11	12/15/17	
alpha-Chlordane	ND	U	0.15	0.062	1	01/16/18 00:11	12/15/17	
beta-BHC	ND	U	0.075	0.061	1	01/16/18 00:11	12/15/17	
Chlorpyrifos	**0.44**		0.077	0.077	1	01/16/18 00:11	12/15/17	
cis-Nonachlor	ND	U	0.097	0.097	1	01/16/18 00:11	12/15/17	
delta-BHC	ND	U	0.097	0.097	1	01/16/18 00:11	12/15/17	
Dieldrin	ND	U	0.20	0.077	1	01/16/18 00:11	12/15/17	
Endosulfan I	ND	U	0.20	0.088	1	01/16/18 00:11	12/15/17	
Endosulfan II	**0.39**		0.20	0.15	1	01/16/18 00:11	12/15/17	
Endosulfan Sulfate	ND	U	0.075	0.061	1	01/16/18 00:11	12/15/17	
Endrin	ND	U	0.20	0.073	1	01/16/18 00:11	12/15/17	
Endrin Aldehyde	ND	U	0.20	0.10	1	01/16/18 00:11	12/15/17	
Endrin Ketone	ND	U	0.20	0.071	1	01/16/18 00:11	12/15/17	
gamma-BHC (Lindane)	ND	U	0.075	0.031	1	01/16/18 00:11	12/15/17	
gamma-Chlordane	ND	U	0.15	0.064	1	01/16/18 00:11	12/15/17	
Heptachlor	ND	U	0.075	0.039	1	01/16/18 00:11	12/15/17	
Heptachlor Epoxide	ND	U	0.15	0.073	1	01/16/18 00:11	12/15/17	
Hexachlorobenzene	ND	U	0.092	0.092	1	01/16/18 00:11	12/15/17	
Isodrin	ND	U	0.15	0.069	1	01/16/18 00:11	12/15/17	
Methoxychlor	ND	U	0.075	0.019	1	01/16/18 00:11	12/15/17	
Mirex	ND	U	0.075	0.045	1	01/16/18 00:11	12/15/17	
Octachlorostyrene	ND	U	0.075	0.058	1	01/16/18 00:11	12/15/17	
Oxychlordane	ND	U	0.20	0.13	1	01/16/18 00:11	12/15/17	
trans-Nonachlor	**0.060**	**J**	0.15	0.058	1	01/16/18 00:11	12/15/17	

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/04/17 13:00
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM25.2E-COMP	**Units:**	ug/Kg
Lab Code:	K1713130-033	**Basis:**	Dry

Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP
Prep Method: EPA 3546

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
S_4,4'-DDT-d4	122	13 - 200	01/16/18 00:11	
S_4,4'DDD-d4	83	5 - 120	01/16/18 00:11	
S_Aldrin-13C12	109	10 - 143	01/16/18 00:11	
S_Chlorpyrifos-d10	99	39 - 135	01/16/18 00:11	
S_Endrin-13C12	94	20 - 157	01/16/18 00:11	
S_Endrinket13C12	86	12 - 140	01/16/18 00:11	
S_GBHCD6	101	5 - 124	01/16/18 00:11	
S_HXCBZ13C6	67	5 - 120	01/16/18 00:11	
S_Heptachlor-13C10	169	10 - 177	01/16/18 00:11	
S_Heptachlrepox13C10	88	8 - 146	01/16/18 00:11	
S_Isodrin-13C12	105	10 - 168	01/16/18 00:11	
S_Mirex-13C10	69	5 - 138	01/16/18 00:11	
S_Mxchlord-d6	130	10 - 178	01/16/18 00:11	
S_Ocstyrene13C8	68	31 - 124	01/16/18 00:11	
S_Oxychlordane-13C10	91	5 - 144	01/16/18 00:11	

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	KQ1718251-04	**Basis:**	Dry

Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP
Prep Method: EPA 3541

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2,4'-DDD	ND	U	0.10	0.063	1	01/15/18 20:31	12/12/17	
2,4'-DDE	ND	U	0.10	0.079	1	01/15/18 20:31	12/12/17	
2,4'-DDT	ND	U	0.10	0.094	1	01/15/18 20:31	12/12/17	
4,4'-DDD	ND	U	0.10	0.035	1	01/15/18 20:31	12/12/17	
4,4'-DDE	ND	U	0.10	0.070	1	01/15/18 20:31	12/12/17	
4,4'-DDT	ND	U	0.10	0.047	1	01/15/18 20:31	12/12/17	
Aldrin	ND	U	0.10	0.079	1	01/15/18 20:31	12/12/17	
alpha-BHC	ND	U	0.10	0.041	1	01/15/18 20:31	12/12/17	
alpha-Chlordane	ND	U	0.20	0.062	1	01/15/18 20:31	12/12/17	
beta-BHC	ND	U	0.10	0.061	1	01/15/18 20:31	12/12/17	
Chlorpyrifos	ND	U	0.10	0.077	1	01/15/18 20:31	12/12/17	
cis-Nonachlor	ND	U	0.10	0.097	1	01/15/18 20:31	12/12/17	
delta-BHC	ND	U	0.10	0.097	1	01/15/18 20:31	12/12/17	
Dieldrin	ND	U	0.20	0.077	1	01/15/18 20:31	12/12/17	
Endosulfan I	ND	U	0.20	0.088	1	01/15/18 20:31	12/12/17	
Endosulfan II	ND	U	0.20	0.15	1	01/15/18 20:31	12/12/17	
Endosulfan Sulfate	ND	U	0.10	0.061	1	01/15/18 20:31	12/12/17	
Endrin	ND	U	0.20	0.073	1	01/15/18 20:31	12/12/17	
Endrin Aldehyde	ND	U	0.20	0.10	1	01/15/18 20:31	12/12/17	
Endrin Ketone	ND	U	0.20	0.071	1	01/15/18 20:31	12/12/17	
gamma-BHC (Lindane)	ND	U	0.10	0.031	1	01/15/18 20:31	12/12/17	
gamma-Chlordane	ND	U	0.20	0.064	1	01/15/18 20:31	12/12/17	
Heptachlor	ND	U	0.10	0.039	1	01/15/18 20:31	12/12/17	
Heptachlor Epoxide	ND	U	0.20	0.073	1	01/15/18 20:31	12/12/17	
Hexachlorobenzene	ND	U	0.10	0.092	1	01/15/18 20:31	12/12/17	
Isodrin	ND	U	0.20	0.069	1	01/15/18 20:31	12/12/17	
Methoxychlor	ND	U	0.10	0.019	1	01/15/18 20:31	12/12/17	
Mirex	ND	U	0.10	0.045	1	01/15/18 20:31	12/12/17	
Octachlorostyrene	ND	U	0.10	0.058	1	01/15/18 20:31	12/12/17	
Oxychlordane	ND	U	0.20	0.13	1	01/15/18 20:31	12/12/17	
trans-Nonachlor	ND	U	0.20	0.058	1	01/15/18 20:31	12/12/17	

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	KQ1718251-04	**Basis:**	Dry

Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP
Prep Method: EPA 3541

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
S_4,4'-DDT-d4	101	13 - 200	01/15/18 20:31	
S_4,4'DDD-d4	73	5 - 120	01/15/18 20:31	
S_Aldrin-13C12	51	10 - 143	01/15/18 20:31	
S_Chlorpyrifos-d10	78	39 - 135	01/15/18 20:31	
S_Endrin-13C12	78	20 - 157	01/15/18 20:31	
S_Endrinket13C12	71	12 - 140	01/15/18 20:31	
S_GBHCD6	63	5 - 124	01/15/18 20:31	
S_HXCBZ13C6	42	5 - 120	01/15/18 20:31	
S_Heptachlor-13C10	78	10 - 177	01/15/18 20:31	
S_Heptachlrepox13C10	62	8 - 146	01/15/18 20:31	
S_Isodrin-13C12	58	10 - 168	01/15/18 20:31	
S_Mirex-13C10	61	5 - 138	01/15/18 20:31	
S_Mxchlord-d6	109	10 - 178	01/15/18 20:31	
S_Ocstyrene13C8	54	31 - 124	01/15/18 20:31	
S_Oxychlordane-13C10	68	5 - 144	01/15/18 20:31	

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	KQ1718398-04	**Basis:**	Dry

Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP
Prep Method: EPA 3546

Analyte Name	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2,4'-DDD	ND	U	0.10	0.063	1	01/16/18 01:05	12/15/17	
2,4'-DDE	ND	U	0.10	0.079	1	01/16/18 01:05	12/15/17	
2,4'-DDT	ND	U	0.10	0.094	1	01/16/18 01:05	12/15/17	
4,4'-DDD	ND	U	0.10	0.035	1	01/16/18 01:05	12/15/17	
4,4'-DDE	ND	U	0.10	0.070	1	01/16/18 01:05	12/15/17	
4,4'-DDT	ND	U	0.10	0.047	1	01/16/18 01:05	12/15/17	
Aldrin	ND	U	0.10	0.079	1	01/16/18 01:05	12/15/17	
alpha-BHC	ND	U	0.10	0.041	1	01/16/18 01:05	12/15/17	
alpha-Chlordane	ND	U	0.20	0.062	1	01/16/18 01:05	12/15/17	
beta-BHC	ND	U	0.10	0.061	1	01/16/18 01:05	12/15/17	
Chlorpyrifos	ND	U	0.10	0.077	1	01/16/18 01:05	12/15/17	
cis-Nonachlor	ND	U	0.10	0.097	1	01/16/18 01:05	12/15/17	
delta-BHC	ND	U	0.10	0.097	1	01/16/18 01:05	12/15/17	
Dieldrin	ND	U	0.20	0.077	1	01/16/18 01:05	12/15/17	
Endosulfan I	ND	U	0.20	0.088	1	01/16/18 01:05	12/15/17	
Endosulfan II	ND	U	0.20	0.15	1	01/16/18 01:05	12/15/17	
Endosulfan Sulfate	ND	U	0.10	0.061	1	01/16/18 01:05	12/15/17	
Endrin	ND	U	0.20	0.073	1	01/16/18 01:05	12/15/17	
Endrin Aldehyde	ND	U	0.20	0.10	1	01/16/18 01:05	12/15/17	
Endrin Ketone	ND	U	0.20	0.071	1	01/16/18 01:05	12/15/17	
gamma-BHC (Lindane)	ND	U	0.10	0.031	1	01/16/18 01:05	12/15/17	
gamma-Chlordane	ND	U	0.20	0.064	1	01/16/18 01:05	12/15/17	
Heptachlor	ND	U	0.10	0.039	1	01/16/18 01:05	12/15/17	
Heptachlor Epoxide	ND	U	0.20	0.073	1	01/16/18 01:05	12/15/17	
Hexachlorobenzene	ND	U	0.10	0.092	1	01/16/18 01:05	12/15/17	
Isodrin	ND	U	0.20	0.069	1	01/16/18 01:05	12/15/17	
Methoxychlor	ND	U	0.10	0.019	1	01/16/18 01:05	12/15/17	
Mirex	ND	U	0.10	0.045	1	01/16/18 01:05	12/15/17	
Octachlorostyrene	ND	U	0.10	0.058	1	01/16/18 01:05	12/15/17	
Oxychlordane	ND	U	0.20	0.13	1	01/16/18 01:05	12/15/17	
trans-Nonachlor	ND	U	0.20	0.058	1	01/16/18 01:05	12/15/17	

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	KQ1718398-04	**Basis:**	Dry

Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP
Prep Method: EPA 3546

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
S_4,4'-DDT-d4	109	13 - 200	01/16/18 01:05	
S_4,4'DDD-d4	82	5 - 120	01/16/18 01:05	
S_Aldrin-13C12	69	10 - 143	01/16/18 01:05	
S_Chlorpyrifos-d10	88	39 - 135	01/16/18 01:05	
S_Endrin-13C12	89	20 - 157	01/16/18 01:05	
S_Endrinket13C12	82	12 - 140	01/16/18 01:05	
S_GBHCD6	67	5 - 124	01/16/18 01:05	
S_HXCBZ13C6	47	5 - 120	01/16/18 01:05	
S_Heptachlor-13C10	86	10 - 177	01/16/18 01:05	
S_Heptachlrepox13C10	67	8 - 146	01/16/18 01:05	
S_Isodrin-13C12	62	10 - 168	01/16/18 01:05	
S_Mirex-13C10	67	5 - 138	01/16/18 01:05	
S_Mxchlord-d6	116	10 - 178	01/16/18 01:05	
S_Ocstyrene13C8	59	31 - 124	01/16/18 01:05	
S_Oxychlordane-13C10	67	5 - 144	01/16/18 01:05	

Client: Hart Crowser, Incorporated **Service Request:** K1713130
Project: URSC/150-001-056
Sample Matrix: Sediment

SURROGATE RECOVERY SUMMARY
Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP
Extraction Method: EPA 3546

Sample Name	Lab Code	S_4,4'DDD-d4 5 - 120	S_4,4'-DDT-d4 13 - 200	S_Aldrin-13C12 10 - 143
Batch QC	K1713018-010	85	120	106
URSC-RM18.35E-COMP	K1713130-006	80	116	101
URSC-RM20.9W-COMP	K1713130-015	75	105	80
URSC-RM24.7E-COMP	K1713130-021	85	119	86
URSC-RM20.0E-COMP	K1713130-032	90	123	95
URSC-RM25.2E-COMP	K1713130-033	83	122	109
URSC-RM18.35E-COMP MS	KQ1718251-01	75	109	96
URSC-RM18.35E-COMP DMS	KQ1718251-02	77	111	89
Lab Control Sample	KQ1718251-03	76	107	61
Method Blank	KQ1718251-04	73	101	51
Batch QC MS	KQ1718398-01	94	135	113
Batch QC DMS	KQ1718398-02	87	125	109
Lab Control Sample	KQ1718398-03	88	121	81
Method Blank	KQ1718398-04	82	109	69

Client: Hart Crowser, Incorporated **Service Request:** K1713130
Project: URSC/150-001-056
Sample Matrix: Sediment

SURROGATE RECOVERY SUMMARY
Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP
Extraction Method: EPA 3546

Sample Name	Lab Code	S_Chlorpyrifos-d10 39 - 135	S_Endrin-13C12 20 - 157	S_Endrinket13C12 12 - 140
Batch QC	K1713018-010	100	96	91
URSC-RM18.35E-COMP	K1713130-006	93	92	81
URSC-RM20.9W-COMP	K1713130-015	87	86	72
URSC-RM24.7E-COMP	K1713130-021	94	93	88
URSC-RM20.0E-COMP	K1713130-032	101	100	87
URSC-RM25.2E-COMP	K1713130-033	99	94	86
URSC-RM18.35E-COMP	KQ1718251-01	90	93	78
URSC-RM18.35E-COMP	KQ1718251-02	89	89	80
Lab Control Sample	KQ1718251-03	83	86	76
Method Blank	KQ1718251-04	78	78	71
Batch QC	KQ1718398-01	109	105	90
Batch QC	KQ1718398-02	101	98	86
Lab Control Sample	KQ1718398-03	98	93	90
Method Blank	KQ1718398-04	88	89	82

Client: Hart Crowser, Incorporated **Service Request:** K1713130
Project: URSC/150-001-056
Sample Matrix: Sediment

SURROGATE RECOVERY SUMMARY
Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP
Extraction Method: EPA 3546

Sample Name	Lab Code	S_GBHCD6 5 - 124	S_Heptachlor-13C10 10 - 177	S_Heptachlrepox13C10 8 - 146
Batch QC	K1713018-010	98	162	85
URSC-RM18.35E-COMP	K1713130-006	94	149	80
URSC-RM20.9W-COMP	K1713130-015	80	127	71
URSC-RM24.7E-COMP	K1713130-021	75	114	75
URSC-RM20.0E-COMP	K1713130-032	89	133	84
URSC-RM25.2E-COMP	K1713130-033	101	169	88
URSC-RM18.35E-COMP	KQ1718251-01	90	148	78
URSC-RM18.35E-COMP	KQ1718251-02	88	144	74
Lab Control Sample	KQ1718251-03	59	83	67
Method Blank	KQ1718251-04	63	78	62
Batch QC	KQ1718398-01	113	181 *	95
Batch QC	KQ1718398-02	106	175	88
Lab Control Sample	KQ1718398-03	81	110	80
Method Blank	KQ1718398-04	67	86	67

Client: Hart Crowser, Incorporated **Service Request:** K1713130
Project: URSC/150-001-056
Sample Matrix: Sediment

SURROGATE RECOVERY SUMMARY
Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP
Extraction Method: EPA 3546

Sample Name	Lab Code	S_HXCBZ13C6 5 - 120	S_Isodrin-13C12 10 - 168	S_Mirex-13C10 5 - 138
Batch QC	K1713018-010	60	105	72
URSC-RM18.35E-COMP	K1713130-006	59	99	67
URSC-RM20.9W-COMP	K1713130-015	50	86	62
URSC-RM24.7E-COMP	K1713130-021	51	79	72
URSC-RM20.0E-COMP	K1713130-032	56	94	75
URSC-RM25.2E-COMP	K1713130-033	67	105	69
URSC-RM18.35E-COMP	KQ1718251-01	59	95	67
URSC-RM18.35E-COMP	KQ1718251-02	58	88	69
Lab Control Sample	KQ1718251-03	42	63	67
Method Blank	KQ1718251-04	42	58	61
Batch QC	KQ1718398-01	70	119	82
Batch QC	KQ1718398-02	69	107	77
Lab Control Sample	KQ1718398-03	56	75	79
Method Blank	KQ1718398-04	47	62	67

Client: Hart Crowser, Incorporated **Service Request:** K1713130
Project: URSC/150-001-056
Sample Matrix: Sediment

SURROGATE RECOVERY SUMMARY
Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP
Extraction Method: EPA 3546

Sample Name	Lab Code	S_Mxchlord-d6 10 - 178	S_Ocstyrene13C8 31 - 124	S_Oxychlordane-13C10 5 - 144
Batch QC	K1713018-010	131	69	90
URSC-RM18.35E-COMP	K1713130-006	128	65	100
URSC-RM20.9W-COMP	K1713130-015	115	59	74
URSC-RM24.7E-COMP	K1713130-021	126	67	83
URSC-RM20.0E-COMP	K1713130-032	135	71	87
URSC-RM25.2E-COMP	K1713130-033	130	68	91
URSC-RM18.35E-COMP	KQ1718251-01	120	64	96
URSC-RM18.35E-COMP	KQ1718251-02	123	63	93
Lab Control Sample	KQ1718251-03	114	57	69
Method Blank	KQ1718251-04	109	54	68
Batch QC	KQ1718398-01	150	77	104
Batch QC	KQ1718398-02	134	72	96
Lab Control Sample	KQ1718398-03	131	70	84
Method Blank	KQ1718398-04	116	59	67

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QA/QC Report

Client: Hart Crowser, Incorporated **Service Request:**K1713130
Project: URSC/150-001-056 **Date Analyzed:**01/15/18 16:52

Internal Standard Area and RT SUMMARY
Organochlorine Pesticides by GC/MS/MS

File ID: J:\MS21\Data\011518\0115F004.D\ **Lab Code:**KQ1800767-01
Instrument ID: K-MSMS-01 **Analysis Lot:**577627
Analysis Method: ALS SOP **Signal ID:**

		Pyrene-d10	
		Area	**RT**
	ICAL Result ==>	51,082	14.1523
	Upper Limit ==>	102,163	14.65
	Lower Limit ==>	25,541	13.65
Associated Analyses			
URSC-RM18.35E-COMP	K1713130-006	45965.9	14.1546
URSC-RM18.35E-COMP	KQ1718251-01	47428.6	14.1546
URSC-RM18.35E-COMP	KQ1718251-02	44816.9	14.1546
Lab Control Sample	KQ1718251-03	47825.1	14.15
Method Blank	KQ1718251-04	47217.9	14.1476
Batch QC	K1713018-010	47929.5	14.15
Batch QCMS	KQ1718398-01	47771.2	14.15
Batch QCDMS	KQ1718398-02	46482.8	14.15
URSC-RM20.9W-COMP	K1713130-015	44956.9	14.1453
URSC-RM24.7E-COMP	K1713130-021	45429.4	14.1453
URSC-RM20.0E-COMP	K1713130-032	43691.3	14.1428
URSC-RM25.2E-COMP	K1713130-033	46942.6	14.1453
Lab Control Sample	KQ1718398-03	47297.1	14.1428
Method Blank	KQ1718398-04	45328.6	14.1428

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	11/29/17
Sample Matrix:	Sediment	**Date Received:**	12/06/17
		Date Analyzed:	01/15/18
		Date Extracted:	12/12/17

Duplicate Matrix Spike Summary
Organochlorine Pesticides by GC/MS/MS

Sample Name:	URSC-RM18.35E-COMP	**Units:**	ug/Kg
Lab Code:	K1713130-006	**Basis:**	Dry
Analysis Method:	ALS SOP		
Prep Method:	EPA 3541		

		Matrix Spike KQ1718251-01			**Duplicate Matrix Spike** KQ1718251-02					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
2,4'-DDD	0.074	1.67	1.46	109	1.55	1.43	103	32-169	7	40
2,4'-DDE	ND U	1.48	1.46	102	1.36	1.43	95	43-155	8	40
2,4'-DDT	0.10	1.50	1.46	96	1.43	1.43	93	55-161	4	40
4,4'-DDD	0.35	2.09	1.46	119	1.84	1.43	104	10-190	13	40
4,4'-DDE	0.72	2.23	1.46	104	2.11	1.43	97	35-162	6	40
4,4'-DDT	1.6	2.12	1.46	36	2.04	1.43	32	24-183	4	40
Aldrin	ND U	1.47	1.46	101	1.52	1.43	106	52-151	3	40
alpha-BHC	ND U	1.39	1.46	95	1.34	1.43	93	48-124	4	40
alpha-Chlordane	0.093 J	1.18	1.46	74	1.11	1.43	71	31-156	6	40
beta-BHC	ND U	1.35	1.46	92	1.29	1.43	90	19-221	4	40
Chlorpyrifos	0.45	1.93	1.46	101	1.84	1.43	97	71-131	4	40
cis-Nonachlor	ND U	1.23	1.46	84	1.18	1.43	83	27-144	4	40
delta-BHC	ND U	1.06	1.46	73	0.976	1.43	68	10-228	8	40
Dieldrin	0.21	1.31	1.46	76	1.25	1.43	72	28-150	5	40
Endosulfan I	ND U	1.07	1.46	74	1.15	1.43	80	52-154	7	40
Endosulfan II	0.56	1.33	1.46	53	1.27	1.43	49	10-180	5	40
Endosulfan Sulfate	ND U	1.28	1.46	87	1.24	1.43	86	31-135	3	40
Endrin	ND U	1.28	1.46	88	1.32	1.43	92	34-160	3	40
Endrin Aldehyde	ND U	1.15	1.46	79	1.19	1.43	83	21-130	3	40
Endrin Ketone	ND U	1.40	1.46	96	1.39	1.43	97	53-136	1	40
gamma-BHC (Lindane)	0.035 J	1.44	1.46	97	1.36	1.43	92	64-135	6	40
gamma-Chlordane	0.12 J	1.14	1.46	70	1.13	1.43	71	31-158	<1	40
Heptachlor	ND U	1.48	1.46	101	1.44	1.43	100	76-117	3	40
Heptachlor Epoxide	ND U	1.54	1.46	106	1.59	1.43	111	45-146	3	40
Hexachlorobenzene	0.85	2.31	1.46	100	2.17	1.43	92	22-171	6	40
Isodrin	ND U	1.37	1.46	94	1.38	1.43	96	30-122	<1	40
Methoxychlor	0.073	1.51	1.46	98	1.45	1.43	96	73-123	4	40
Mirex	ND U	1.59	1.46	109	1.46	1.43	102	83-115	9	40
Octachlorostyrene	ND U	1.56	1.46	107	1.52	1.43	106	67-130	2	40
Oxychlordane	ND U	1.24	1.46	85	1.28	1.43	89	53-144	3	40
trans-Nonachlor	0.11 J	1.26	1.46	79	1.25	1.43	80	35-153	<1	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Analyzed:**	01/15/18
Sample Matrix:	Sediment	**Date Extracted:**	12/12/17

Lab Control Sample Summary
Organochlorine Pesticides by GC/MS/MS

Analysis Method:	ALS SOP	**Units:**	ug/Kg
Prep Method:	EPA 3541	**Basis:**	Dry
		Analysis Lot:	577627

Lab Control Sample
KQ1718251-03

Analyte Name	Result	Spike Amount	% Rec	% Rec Limits
2,4'-DDD	2.06	2.00	103	73-122
2,4'-DDE	1.90	2.00	95	54-145
2,4'-DDT	1.84	2.00	92	77-118
4,4'-DDD	2.10	2.00	105	74-117
4,4'-DDE	1.91	2.00	95	66-132
4,4'-DDT	1.92	2.00	96	78-116
Aldrin	2.02	2.00	101	74-122
alpha-BHC	1.91	2.00	95	61-113
alpha-Chlordane	1.87	2.00	94	74-130
beta-BHC	2.38	2.00	119	60-183
Chlorpyrifos	2.02	2.00	101	74-128
cis-Nonachlor	2.14	2.00	107	69-134
delta-BHC	1.89	2.00	95	10-211
Dieldrin	1.54	2.00	77	62-131
Endosulfan I	1.44	2.00	72	61-126
Endosulfan II	1.74	2.00	87	47-135
Endosulfan Sulfate	1.80	2.00	90	57-124
Endrin	1.83	2.00	92	57-143
Endrin Aldehyde	1.79	2.00	89	45-110
Endrin Ketone	2.15	2.00	108	73-117
gamma-BHC (Lindane)	2.03	2.00	101	79-116
gamma-Chlordane	1.79	2.00	90	76-128
Heptachlor	2.08	2.00	104	81-114
Heptachlor Epoxide	2.00	2.00	100	68-126
Hexachlorobenzene	2.11	2.00	106	72-130
Isodrin	2.05	2.00	102	65-127
Methoxychlor	1.97	2.00	98	75-117
Mirex	2.09	2.00	105	85-115
Octachlorostyrene	2.09	2.00	105	53-150
Oxychlordane	2.07	2.00	104	59-141
trans-Nonachlor	1.99	2.00	99	76-124

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Analyzed:**	01/16/18
Sample Matrix:	Sediment	**Date Extracted:**	12/15/17

Lab Control Sample Summary
Organochlorine Pesticides by GC/MS/MS

Analysis Method:	ALS SOP	**Units:**	ug/Kg
Prep Method:	EPA 3546	**Basis:**	Dry
		Analysis Lot:	577627

Lab Control Sample
KQ1718398-03

Analyte Name	Result	Spike Amount	% Rec	% Rec Limits
2,4'-DDD	1.95	2.00	97	73-122
2,4'-DDE	1.90	2.00	95	54-145
2,4'-DDT	1.83	2.00	91	77-118
4,4'-DDD	2.00	2.00	100	74-117
4,4'-DDE	1.84	2.00	92	66-132
4,4'-DDT	1.90	2.00	95	78-116
Aldrin	1.88	2.00	94	74-122
alpha-BHC	1.71	2.00	86	61-113
alpha-Chlordane	1.82	2.00	91	74-130
beta-BHC	2.00	2.00	100	60-183
Chlorpyrifos	1.93	2.00	96	74-128
cis-Nonachlor	1.97	2.00	98	69-134
delta-BHC	1.57	2.00	78	10-211
Dieldrin	1.67	2.00	84	62-131
Endosulfan I	1.46	2.00	73	61-126
Endosulfan II	1.82	2.00	91	47-135
Endosulfan Sulfate	1.83	2.00	92	57-124
Endrin	1.84	2.00	92	57-143
Endrin Aldehyde	1.57	2.00	79	45-110
Endrin Ketone	1.80	2.00	90	73-117
gamma-BHC (Lindane)	1.80	2.00	90	79-116
gamma-Chlordane	1.73	2.00	87	76-128
Heptachlor	1.91	2.00	96	81-114
Heptachlor Epoxide	1.98	2.00	99	68-126
Hexachlorobenzene	2.03	2.00	102	72-130
Isodrin	1.99	2.00	99	65-127
Methoxychlor	1.82	2.00	91	75-117
Mirex	1.97	2.00	99	85-115
Octachlorostyrene	1.98	2.00	99	53-150
Oxychlordane	1.80	2.00	90	59-141
trans-Nonachlor	1.92	2.00	96	76-124

ALS Group USA, Corp.
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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Analyzed:**	01/15/18 20:31
Sample Matrix:	Sediment	**Date Extracted:**	12/12/17

Method Blank Summary
Organochlorine Pesticides by GC/MS/MS

Sample Name:	Method Blank	**Instrument ID:**	K-MSMS-01
Lab Code:	KQ1718251-04	**File ID:**	J:\MS21\Data\011518\0115F012.D\
Analysis Method:	ALS SOP	**Analysis Lot:**	577627
Prep Method:	EPA 3541	**Extraction Lot:**	304811

This Method Blank applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
URSC-RM18.35E-COMP	K1713130-006	J:\MS21\Data\011518\0115F008.D\	01/15/18 18:42
URSC-RM18.35E-COMP	KQ1718251-01	J:\MS21\Data\011518\0115F009.D\	01/15/18 19:09
URSC-RM18.35E-COMP	KQ1718251-02	J:\MS21\Data\011518\0115F010.D\	01/15/18 19:36
Lab Control Sample	KQ1718251-03	J:\MS21\Data\011518\0115F011.D\	01/15/18 20:04

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Analyzed:**	01/16/18 01:05
Sample Matrix:	Sediment	**Date Extracted:**	12/15/17

Method Blank Summary
Organochlorine Pesticides by GC/MS/MS

Sample Name:	Method Blank	**Instrument ID:**	K-MSMS-01
Lab Code:	KQ1718398-04	**File ID:**	J:\MS21\Data\011518\0115F022.D\
Analysis Method:	ALS SOP	**Analysis Lot:**	577627
Prep Method:	EPA 3546	**Extraction Lot:**	305037

This Method Blank applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Batch QC	K1713018-010	J:\MS21\Data\011518\0115F013.D\	01/15/18 20:58
Batch QC	KQ1718398-01	J:\MS21\Data\011518\0115F014.D\	01/15/18 21:26
Batch QC	KQ1718398-02	J:\MS21\Data\011518\0115F015.D\	01/15/18 21:53
URSC-RM20.9W-COMP	K1713130-015	J:\MS21\Data\011518\0115F017.D\	01/15/18 22:49
URSC-RM24.7E-COMP	K1713130-021	J:\MS21\Data\011518\0115F018.D\	01/15/18 23:16
URSC-RM20.0E-COMP	K1713130-032	J:\MS21\Data\011518\0115F019.D\	01/15/18 23:43
URSC-RM25.2E-COMP	K1713130-033	J:\MS21\Data\011518\0115F020.D\	01/16/18 00:11
Lab Control Sample	KQ1718398-03	J:\MS21\Data\011518\0115F021.D\	01/16/18 00:38

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Analyzed:**	01/15/18 20:31
Sample Matrix:	Sediment	**Date Extracted:**	12/12/17

Method Blank Summary
Organochlorine Pesticides by GC/MS/MS

Sample Name:	Method Blank	**Instrument ID:**	K-MSMS-01
Lab Code:	KQ1718251-04	**File ID:**	J:\MS21\Data\011518\0115F012.D\
Analysis Method:	ALS SOP	**Analysis Lot:**	577627
Prep Method:	EPA 3541	**Extraction Lot:**	304811

This Method Blank applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
URSC-RM18.35E-COMP	K1713130-006	J:\MS21\Data\011518\0115F008.D\	01/15/18 18:42
URSC-RM18.35E-COMP	KQ1718251-01	J:\MS21\Data\011518\0115F009.D\	01/15/18 19:09
URSC-RM18.35E-COMP	KQ1718251-02	J:\MS21\Data\011518\0115F010.D\	01/15/18 19:36
Lab Control Sample	KQ1718251-03	J:\MS21\Data\011518\0115F011.D\	01/15/18 20:04

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Analyzed:**	01/16/18 01:05
Sample Matrix:	Sediment	**Date Extracted:**	12/15/17

Method Blank Summary
Organochlorine Pesticides by GC/MS/MS

Sample Name:	Method Blank	**Instrument ID:**	K-MSMS-01
Lab Code:	KQ1718398-04	**File ID:**	J:\MS21\Data\011518\0115F022.D\
Analysis Method:	ALS SOP	**Analysis Lot:**	577627
Prep Method:	EPA 3546	**Extraction Lot:**	305037

This Method Blank applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Batch QC	K1713018-010	J:\MS21\Data\011518\0115F013.D\	01/15/18 20:58
Batch QC	KQ1718398-01	J:\MS21\Data\011518\0115F014.D\	01/15/18 21:26
Batch QC	KQ1718398-02	J:\MS21\Data\011518\0115F015.D\	01/15/18 21:53
URSC-RM20.9W-COMP	K1713130-015	J:\MS21\Data\011518\0115F017.D\	01/15/18 22:49
URSC-RM24.7E-COMP	K1713130-021	J:\MS21\Data\011518\0115F018.D\	01/15/18 23:16
URSC-RM20.0E-COMP	K1713130-032	J:\MS21\Data\011518\0115F019.D\	01/15/18 23:43
URSC-RM25.2E-COMP	K1713130-033	J:\MS21\Data\011518\0115F020.D\	01/16/18 00:11
Lab Control Sample	KQ1718398-03	J:\MS21\Data\011518\0115F021.D\	01/16/18 00:38

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Analyzed:**	01/15/18 20:04
Sample Matrix:	Sediment	**Date Extracted:**	12/12/17

Lab Control Sample Summary
Organochlorine Pesticides by GC/MS/MS

Sample Name:	Lab Control Sample	**Instrument ID:**	K-MSMS-01
Lab Code:	KQ1718251-03	**File ID:**	J:\MS21\Data\011518\0115F011.D\
Analysis Method:	ALS SOP	**Analysis Lot:**	577627
Prep Method:	EPA 3541	**Extraction Lot:**	304811

This Lab Control Sample applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
URSC-RM18.35E-COMP	K1713130-006	J:\MS21\Data\011518\0115F008.D\	01/15/18 18:42
URSC-RM18.35E-COMP	KQ1718251-01	J:\MS21\Data\011518\0115F009.D\	01/15/18 19:09
URSC-RM18.35E-COMP	KQ1718251-02	J:\MS21\Data\011518\0115F010.D\	01/15/18 19:36
Method Blank	KQ1718251-04	J:\MS21\Data\011518\0115F012.D\	01/15/18 20:31

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Analyzed:**	01/16/18 00:38
Sample Matrix:	Sediment	**Date Extracted:**	12/15/17

Lab Control Sample Summary
Organochlorine Pesticides by GC/MS/MS

Sample Name:	Lab Control Sample	**Instrument ID:**	K-MSMS-01
Lab Code:	KQ1718398-03	**File ID:**	J:\MS21\Data\011518\0115F021.D\
Analysis Method:	ALS SOP	**Analysis Lot:**	577627
Prep Method:	EPA 3546	**Extraction Lot:**	305037

This Lab Control Sample applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Batch QC	K1713018-010	J:\MS21\Data\011518\0115F013.D\	01/15/18 20:58
Batch QC	KQ1718398-01	J:\MS21\Data\011518\0115F014.D\	01/15/18 21:26
Batch QC	KQ1718398-02	J:\MS21\Data\011518\0115F015.D\	01/15/18 21:53
URSC-RM20.9W-COMP	K1713130-015	J:\MS21\Data\011518\0115F017.D\	01/15/18 22:49
URSC-RM24.7E-COMP	K1713130-021	J:\MS21\Data\011518\0115F018.D\	01/15/18 23:16
URSC-RM20.0E-COMP	K1713130-032	J:\MS21\Data\011518\0115F019.D\	01/15/18 23:43
URSC-RM25.2E-COMP	K1713130-033	J:\MS21\Data\011518\0115F020.D\	01/16/18 00:11
Method Blank	KQ1718398-04	J:\MS21\Data\011518\0115F022.D\	01/16/18 01:05

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Analyzed:**	01/15/18 20:04
Sample Matrix:	Sediment	**Date Extracted:**	12/12/17

Lab Control Sample Summary
Organochlorine Pesticides by GC/MS/MS

Sample Name:	Lab Control Sample	**Instrument ID:**	K-MSMS-01
Lab Code:	KQ1718251-03	**File ID:**	J:\MS21\Data\011518\0115F011.D\
Analysis Method:	ALS SOP	**Analysis Lot:**	577627
Prep Method:	EPA 3541	**Extraction Lot:**	304811

This Lab Control Sample applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
URSC-RM18.35E-COMP	K1713130-006	J:\MS21\Data\011518\0115F008.D\	01/15/18 18:42
URSC-RM18.35E-COMP	KQ1718251-01	J:\MS21\Data\011518\0115F009.D\	01/15/18 19:09
URSC-RM18.35E-COMP	KQ1718251-02	J:\MS21\Data\011518\0115F010.D\	01/15/18 19:36
Method Blank	KQ1718251-04	J:\MS21\Data\011518\0115F012.D\	01/15/18 20:31

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dba ALS Environmental

QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Analyzed:**	01/16/18 00:38
Sample Matrix:	Sediment	**Date Extracted:**	12/15/17

Lab Control Sample Summary
Organochlorine Pesticides by GC/MS/MS

Sample Name:	Lab Control Sample	**Instrument ID:**	K-MSMS-01
Lab Code:	KQ1718398-03	**File ID:**	J:\MS21\Data\011518\0115F021.D\
Analysis Method:	ALS SOP	**Analysis Lot:**	577627
Prep Method:	EPA 3546	**Extraction Lot:**	305037

This Lab Control Sample applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Batch QC	K1713018-010	J:\MS21\Data\011518\0115F013.D\	01/15/18 20:58
Batch QC	KQ1718398-01	J:\MS21\Data\011518\0115F014.D\	01/15/18 21:26
Batch QC	KQ1718398-02	J:\MS21\Data\011518\0115F015.D\	01/15/18 21:53
URSC-RM20.9W-COMP	K1713130-015	J:\MS21\Data\011518\0115F017.D\	01/15/18 22:49
URSC-RM24.7E-COMP	K1713130-021	J:\MS21\Data\011518\0115F018.D\	01/15/18 23:16
URSC-RM20.0E-COMP	K1713130-032	J:\MS21\Data\011518\0115F019.D\	01/15/18 23:43
URSC-RM25.2E-COMP	K1713130-033	J:\MS21\Data\011518\0115F020.D\	01/16/18 00:11
Method Blank	KQ1718398-04	J:\MS21\Data\011518\0115F022.D\	01/16/18 01:05

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056

Service Request: K1713130
Date Analyzed: 01/15/18 16:52

Tune Summary
Organochlorine Pesticides by GC/MS/MS

File ID: J:\MS21\Data\011518\0115F004.D\
Instrument ID: K-MSMS-01

Analytical Method: ALS SOP
Analysis Lot: 577627

Sample Name	Lab Code	File ID:	Date Analyzed:	Q
Continuing Calibration Verification	KQ1800767-01	J:\MS21\Data\011518\0115F004.D\	01/15/18 16:52	
URSC-RM18.35E-COMP	K1713130-006	J:\MS21\Data\011518\0115F008.D\	01/15/18 18:42	
URSC-RM18.35E-COMP	KQ1718251-01	J:\MS21\Data\011518\0115F009.D\	01/15/18 19:09	
URSC-RM18.35E-COMP	KQ1718251-02	J:\MS21\Data\011518\0115F010.D\	01/15/18 19:36	
Lab Control Sample	KQ1718251-03	J:\MS21\Data\011518\0115F011.D\	01/15/18 20:04	
Method Blank	KQ1718251-04	J:\MS21\Data\011518\0115F012.D\	01/15/18 20:31	
Batch QC	K1713018-010	J:\MS21\Data\011518\0115F013.D\	01/15/18 20:58	
Batch QC	KQ1718398-01	J:\MS21\Data\011518\0115F014.D\	01/15/18 21:26	
Batch QC	KQ1718398-02	J:\MS21\Data\011518\0115F015.D\	01/15/18 21:53	
URSC-RM20.9W-COMP	K1713130-015	J:\MS21\Data\011518\0115F017.D\	01/15/18 22:49	
URSC-RM24.7E-COMP	K1713130-021	J:\MS21\Data\011518\0115F018.D\	01/15/18 23:16	
URSC-RM20.0E-COMP	K1713130-032	J:\MS21\Data\011518\0115F019.D\	01/15/18 23:43	
URSC-RM25.2E-COMP	K1713130-033	J:\MS21\Data\011518\0115F020.D\	01/16/18 00:11	
Lab Control Sample	KQ1718398-03	J:\MS21\Data\011518\0115F021.D\	01/16/18 00:38	
Method Blank	KQ1718398-04	J:\MS21\Data\011518\0115F022.D\	01/16/18 01:05	

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QA/QC Report

Client: Hart Crowser, Incorporated
Project: URSC

Service Request: K1713130
Calibration Date: 1/11/2018

Initial Calibration Summary
Organochlorine Pesticides by GC/MS/MS

Calibration ID: KC1800030
Instrument ID: K-MSMS-01

Signal ID: 1

#	Lab Code	Sample Name	File Location	Aquisition Date
01	KC1800030-01		J:\MS21\Data\011118\0111F006.D	01/11/2018 13:10
02	KC1800030-02		J:\MS21\Data\011118\0111F007.D	01/11/2018 13:37
03	KC1800030-03		J:\MS21\Data\011118\0111F008.D	01/11/2018 14:04
04	KC1800030-04		J:\MS21\Data\011118\0111F009.D	01/11/2018 14:32
05	KC1800030-05		J:\MS21\Data\011118\0111F010.D	01/11/2018 14:59
06	KC1800030-06		J:\MS21\Data\011118\0111F011.D	01/11/2018 15:26
07	KC1800030-07		J:\MS21\Data\011118\0111F012.D	01/11/2018 15:54
08	KC1800030-08		J:\MS21\Data\011118\0111F013.D	01/11/2018 16:21
09	KC1800030-09		J:\MS21\Data\011118\0111F014.D	01/11/2018 16:49
10	KC1800030-10		J:\MS21\Data\011118\0111F015.D	01/11/2018 17:16

Analyte

2,4'-DDD

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	0.7544	02	1.0	0.697	03	2.0	0.6901	04	5.0	0.7229
05	10	0.6667	06	20	0.7006	07	40	0.7293	08	60	0.7285
09	80	0.7062	10	100	0.7221						

2,4'-DDE

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	0.6635	02	1.0	0.6268	03	2.0	0.6052	04	5.0	0.6352
05	10	0.6026	06	20	0.6222	07	40	0.642	08	60	0.6599
09	80	0.6333	10	100	0.6426						

2,4'-DDT

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	0.7628	02	1.0	0.5904	03	2.0	0.6037	04	5.0	0.6458
05	10	0.6075	06	20	0.6194	07	40	0.6221	08	60	0.6173
09	80	0.616	10	100	0.6365						

4,4'-DDD

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	0.9172	02	1.0	0.7837	03	2.0	0.6965	04	5.0	0.7624
05	10	0.6862	06	20	0.6973	07	40	0.7333	08	60	0.7362
09	80	0.726	10	100	0.7382						

4,4'-DDE

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	0.4896	02	1.0	0.464	03	2.0	0.4147	04	5.0	0.4437
05	10	0.4127	06	20	0.4239	07	40	0.4484	08	60	0.4465
09	80	0.4374	10	100	0.4439						

4,4'-DDT

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	0.7382	02	1.0	0.5423	03	2.0	0.47	04	5.0	0.4819
05	10	0.4532	06	20	0.4708	07	40	0.4962	08	60	0.4876

Client: Hart Crowser, Incorporated **Service Request:** K1713130
Project: URSC **Calibration Date:** 1/11/2018

Initial Calibration Summary
Organochlorine Pesticides by GC/MS/MS

Calibration ID: KC1800030 **Signal ID:** 1
Instrument ID: K-MSMS-01

Analyte

4,4'-DDT

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
09	80	0.4761	10	100	0.5001						

Aldrin

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.266	02	1.0	0.9392	03	2.0	1.011	04	5.0	0.9583
05	10	0.9299	06	20	0.863	07	40	1.011	08	60	0.8972
09	80	0.8853	10	100	0.9189						

alpha-BHC

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.094	02	1.0	0.9104	03	2.0	0.8291	04	5.0	0.8151
05	10	0.7444	06	20	0.7992	07	40	0.8558	08	60	0.8376
09	80	0.8493	10	100	0.912						

alpha-Chlordane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	2.403	02	1.0	2.371	03	2.0	2.255	04	5.0	2.415
05	10	2.087	06	20	2.343	07	40	2.416	08	60	2.417
09	80	2.414	10	100	2.68						

beta-BHC

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.008	02	1.0	1.112	03	2.0	0.8451	04	5.0	0.9823
05	10	0.8673	06	20	0.9804	07	40	0.9946	08	60	0.9102
09	80	0.994	10	100	1.051						

Chlorpyrifos

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.191	02	1.0	1.087	03	2.0	1.034	04	5.0	1.038
05	10	0.9699	06	20	0.9866	07	40	1.065	08	60	1.053
09	80	1.041	10	100	1.122						

cis-Nonachlor

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.493	02	1.0	1.342	03	2.0	1.395	04	5.0	1.344
05	10	1.268	06	20	1.465	07	40	1.548	08	60	1.565
09	80	1.704	10	100	1.982						

delta-BHC

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.068	02	1.0	1.032	03	2.0	0.8342	04	5.0	0.9099
05	10	0.8627	06	20	0.9546	07	40	0.9833	08	60	0.9431
09	80	1.041	10	100	1.106						

Dieldrin

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.577	02	1.0	1.132	03	2.0	0.9834	04	5.0	1.062

Client: Hart Crowser, Incorporated
Project: URSC

Service Request: K1713130
Calibration Date: 1/11/2018

Initial Calibration Summary
Organochlorine Pesticides by GC/MS/MS

Calibration ID: KC1800030
Instrument ID: K-MSMS-01

Signal ID: 1

Analyte

Dieldrin

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
05	10	0.9566	06	20	1.142	07	40	1.047	08	60	1.091
09	80	1.006	10	100	1.057						

Endosulfan I

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	1.0	0.6424	03	2.0	0.4275	04	5.0	0.577	05	10	0.4798
06	20	0.5326	07	40	0.4651	08	60	0.4692	09	80	0.4403
10	100	0.4478									

Endosulfan II

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	1.0	0.5022	03	2.0	0.5726	04	5.0	0.6274	05	10	0.5272
06	20	0.503	07	40	0.5005	08	60	0.4993	09	80	0.525

Endosulfan Sulfate

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	6.283	02	1.0	5.545	03	2.0	5.036	04	5.0	5.623
05	10	5.466	06	20	5.856	07	40	5.886	08	60	5.939
09	80	6.165	10	100	6.662						

Endrin

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.308	02	1.0	0.9688	03	2.0	0.9136	04	5.0	0.9473
05	10	0.9187	06	20	0.8665	07	40	0.8749	08	60	0.8658
09	80	0.8337	10	100	0.8658						

Endrin Aldehyde

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	1.0	0.5434	03	2.0	0.5059	04	5.0	0.388	05	10	0.526
06	20	0.6293	07	40	0.5349	08	60	0.5218	09	80	0.5761
10	100	0.6202									

Endrin Ketone

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	1.0	1.202	03	2.0	0.8066	04	5.0	0.9275	05	10	0.7796
06	20	0.7989	07	40	0.8184	08	60	0.8085	09	80	0.8085
10	100	0.8451									

gamma-BHC (Lindane)

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	0.9962	02	1.0	0.7752	03	2.0	0.7247	04	5.0	0.701
05	10	0.6206	06	20	0.6752	07	40	0.689	08	60	0.672
09	80	0.679	10	100	0.7179						

gamma-Chlordane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	3.051	02	1.0	2.801	03	2.0	2.229	04	5.0	2.495

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QA/QC Report

Client: Hart Crowser, Incorporated **Service Request:** K1713130
Project: URSC **Calibration Date:** 1/11/2018

Initial Calibration Summary
Organochlorine Pesticides by GC/MS/MS

Calibration ID: KC1800030 **Signal ID:** 1
Instrument ID: K-MSMS-01

Analyte

gamma-Chlordane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
05	10	2.359	06	20	2.629	07	40	2.655	08	60	2.632
09	80	2.688	10	100	2.939						

Heptachlor

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.333	02	1.0	1.018	03	2.0	0.8798	04	5.0	0.9662
05	10	0.9558	06	20	0.9627	07	40	0.9444	08	60	0.9392
09	80	0.8984	10	100	0.9477						

Heptachlor Epoxide

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.323	02	1.0	1.197	03	2.0	1.128	04	5.0	1.084
05	10	1.075	06	20	1.079	07	40	1.124	08	60	1.113
09	80	1.04	10	100	1.106						

Hexachlorobenzene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.237	02	1.0	1.316	03	2.0	1.067	04	5.0	1.092
05	10	1.059	06	20	1.062	07	40	1.058	08	60	1.015
09	80	0.9474	10	100	0.9742						

Isodrin

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	1.0	1.258	03	2.0	0.9888	04	5.0	1.097	05	10	0.9876
06	20	1.003	07	40	1.068	08	60	1.048	09	80	1.005
10	100	1.067									

Methoxychlor

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.095	02	1.0	0.8758	03	2.0	0.8413	04	5.0	0.8656
05	10	0.861	06	20	0.8767	07	40	0.9113	08	60	0.9208
09	80	0.9111	10	100	0.9777						

Mirex

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.271	02	1.0	1.127	03	2.0	1.054	04	5.0	1.041
05	10	0.9652	06	20	1.011	07	40	0.9428	08	60	0.9247
09	80	0.8564	10	100	0.8516						

Octachlorostyrene

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	1.0	0.7817	03	2.0	0.7101	04	5.0	0.7516	05	10	0.7182
06	20	0.7267	07	40	0.747	08	60	0.7156	09	80	0.6836
10	100	0.7186									

Client: Hart Crowser, Incorporated **Service Request:** K1713130
Project: URSC **Calibration Date:** 1/11/2018

Initial Calibration Summary
Organochlorine Pesticides by GC/MS/MS

Calibration ID: KC1800030 **Signal ID:** 1
Instrument ID: K-MSMS-01

Analyte

Oxychlordane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	1.0	0.9567	03	2.0	1.267	04	5.0	1.257	05	10	1.042
06	20	1.137	07	40	1.103	08	60	1.112	09	80	1.099
10	100	1.144									

trans-Nonachlor

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.635	02	1.0	1.866	03	2.0	1.7	04	5.0	1.701
05	10	1.567	06	20	1.799	07	40	1.777	08	60	1.772
09	80	1.858	10	100	2.087						

S_4,4'-DDT-d4

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	5	3.028	02	5	2.999	03	5	2.907	04	5	2.887
05	5	2.95	06	5	2.975	07	5	3.096	08	5	2.644
09	5	2.667	10	5	2.486						

S_4,4'DDD-d4

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	5	4.716	02	5	4.638	03	5	4.541	04	5	4.518
05	5	4.64	06	5	4.575	07	5	4.505	08	5	3.827
09	5	3.711	10	5	3.507						

S_Aldrin-13C12

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	20	0.2734	02	20	0.2763	03	20	0.2734	04	20	0.2721
05	20	0.2645	06	20	0.2721	07	20	0.2335	08	20	0.2166
09	20	0.1842	10	20	0.1614						

S_Chlorpyrifos-d10

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	20	0.8104	02	20	0.8162	03	20	0.7911	04	20	0.824
05	20	0.8184	06	20	0.8227	07	20	0.8202	08	20	0.7266
09	20	0.7033	10	20	0.6241						

S_Endrin-13C12

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	20	0.1334	02	20	0.1331	03	20	0.1292	04	20	0.1322
05	20	0.1316	06	20	0.1264	07	20	0.1308	08	20	0.113
09	20	0.1076	10	20	0.09654						

S_Endrinket13C12

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	20	0.09657	02	20	0.09094	03	20	0.09989	04	20	0.09287
05	20	0.09249	06	20	0.09517	07	20	0.09997	08	20	0.08433
09	20	0.08567	10	20	0.07947						

Client: Hart Crowser, Incorporated **Service Request:** K1713130
Project: URSC **Calibration Date:** 1/11/2018

Initial Calibration Summary
Organochlorine Pesticides by GC/MS/MS

Calibration ID: KC1800030 **Signal ID:** 1
Instrument ID: K-MSMS-01

Analyte

S_GBHCD6

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	20	0.5321	02	20	0.5256	03	20	0.5417	04	20	0.5215
05	20	0.5384	06	20	0.4824	07	20	0.4663	08	20	0.4213
09	20	0.3577	10	20	0.3073						

S_HXCBZ13C6

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	20	1.232	02	20	1.217	03	20	1.278	04	20	1.248
05	20	1.264	06	20	1.203	07	20	1.195	08	20	1.131
09	20	1.014	10	20	0.9365						

S_Heptachlor-13C10

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	20	0.5505	02	20	0.5374	03	20	0.5581	04	20	0.546
05	20	0.535	06	20	0.5252	07	20	0.5106	08	20	0.4596
09	20	0.4111	10	20	0.3592						

S_Heptachlrepox13C10

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	20	0.3063	02	20	0.3052	03	20	0.3114	04	20	0.3144
05	20	0.3078	06	20	0.3032	07	20	0.2832	08	20	0.2501
09	20	0.2309	10	20	0.1954						

S_Isodrin-13C12

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	20	0.2726	02	20	0.2578	03	20	0.2626	04	20	0.2564
05	20	0.2552	06	20	0.2427	07	20	0.2169	08	20	0.1967
09	20	0.1625	10	20	0.1364						

S_Mirex-13C10

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	5	2.275	02	5	2.242	03	5	2.252	04	5	2.343
05	5	2.42	06	5	2.383	07	5	2.619	08	5	2.302
09	5	2.437	10	5	2.404						

S_Mxchlord-d6

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	20	1.295	02	20	1.264	03	20	1.216	04	20	1.236
05	20	1.253	06	20	1.232	07	20	1.229	08	20	1.063
09	20	1.083	10	20	0.9857						

S_Ocstyrene13C8

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	20	0.7863	02	20	0.7646	03	20	0.7839	04	20	0.7941
05	20	0.8159	06	20	0.7927	07	20	0.7887	08	20	0.7163
09	20	0.6841	10	20	0.6055						

Client: Hart Crowser, Incorporated
Project: URSC

Service Request: K1713130
Calibration Date: 1/11/2018

Initial Calibration Summary
Organochlorine Pesticides by GC/MS/MS

Calibration ID: KC1800030
Instrument ID: K-MSMS-01

Signal ID: 1

Analyte

S_Oxychlordane-13C10

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	20	0.2216	02	20	0.2126	03	20	0.2118	04	20	0.2145
05	20	0.2201	06	20	0.2024	07	20	0.1934	08	20	0.1733
09	20	0.1515	10	20	0.1268						

Client: Hart Crowser, Incorporated
Project: URSC

Service Request: K1713130
Calibration Date: 1/11/2018

Initial Calibration Summary
Organochlorine Pesticides by GC/MS/MS

Calibration ID: KC1800030
Instrument ID: K-MSMS-01

Signal ID: 1

		Calibration Evaluation				Calibration Evaluation	
Analyte Name	Compound Type	Fit Type	Eval	Eval Result	Control Criteria	Average RRF	Minimum RRF
2,4'-DDD	TRG	Average RF	% RSD	3.5	≤20	0.7118	0.01
2,4'-DDE	TRG	Average RF	% RSD	3.2	≤20	0.6333	0.01
2,4'-DDT	TRG	Average RF	% RSD	7.7	≤20	0.6321	0.01
4,4'-DDD	TRG	Average RF	% RSD	8.9	≤20	0.7477	0.01
4,4'-DDE	TRG	Average RF	% RSD	5.2	≤20	0.4425	0.01
4,4'-DDT	TRG	Average RF	% RSD	16.2	≤20	0.5116	0.01
Aldrin	TRG	Average RF	% RSD	11.9	≤20	0.9679	0.01
alpha-BHC	TRG	Average RF	% RSD	10.9	≤20	0.8647	0.01
alpha-Chlordane	TRG	Average RF	% RSD	6.2	≤20	2.38	0.01
beta-BHC	TRG	Average RF	% RSD	8.3	≤20	0.9745	0.01
Chlorpyrifos	TRG	Average RF	% RSD	6.0	≤20	1.059	0.01
cis-Nonachlor	TRG	Average RF	% RSD	13.9	≤20	1.511	0.01
delta-BHC	TRG	Average RF	% RSD	9.2	≤20	0.9735	0.01
Dieldrin	TRG	Average RF	% RSD	15.9	≤20	1.105	0.01
Endosulfan I	TRG	Average RF	% RSD	14.4	≤20	0.498	0.01
Endosulfan II	TRG	Quadratic	COD	0.9988	≥	0.5322	0.01
Endosulfan Sulfate	TRG	Average RF	% RSD	7.9	≤20	5.846	0.01
Endrin	TRG	Average RF	% RSD	14.6	≤20	0.9363	0.01
Endrin Aldehyde	TRG	Average RF	% RSD	13.2	≤20	0.5384	0.01
Endrin Ketone	TRG	Average RF	% RSD	15.4	≤20	0.8661	0.01
gamma-BHC (Lindane)	TRG	Average RF	% RSD	14.3	≤20	0.7251	0.01
gamma-Chlordane	TRG	Average RF	% RSD	9.4	≤20	2.648	0.01
Heptachlor	TRG	Average RF	% RSD	13.0	≤20	0.9845	0.01
Heptachlor Epoxide	TRG	Average RF	% RSD	7.2	≤20	1.127	0.01
Hexachlorobenzene	TRG	Average RF	% RSD	10.4	≤20	1.083	0.01
Isodrin	TRG	Average RF	% RSD	8.0	≤20	1.058	0.01
Methoxychlor	TRG	Average RF	% RSD	8.2	≤20	0.9137	0.01
Mirex	TRG	Average RF	% RSD	12.7	≤20	1.004	0.01
Octachlorostyrene	TRG	Average RF	% RSD	3.9	≤20	0.7281	0.01
Oxychlordane	TRG	Average RF	% RSD	8.6	≤20	1.124	0.01
trans-Nonachlor	TRG	Average RF	% RSD	8.1	≤20	1.776	0.01
S_4,4'-DDT-d4	SURR	Average RF	% RSD	6.9	≤20	2.864	0.01
S_4,4'DDD-d4	SURR	Average RF	% RSD	10.4	≤20	4.318	0.01
S_Aldrin-13C12	SURR	Average RF	% RSD	17.4	≤20	0.2428	0.01

Client: Hart Crowser, Incorporated
Project: URSC
Service Request: K1713130
Calibration Date: 1/11/2018

Initial Calibration Summary
Organochlorine Pesticides by GC/MS/MS

Calibration ID: KC1800030
Instrument ID: K-MSMS-01
Signal ID: 1

		Calibration Evaluation				Calibration Evaluation	
Analyte Name	Compound Type	Fit Type	Eval	Eval Result	Control Criteria	Average RRF	Minimum RRF
S_Chlorpyrifos-d10	SURR	Average RF	% RSD	8.8	≤20	0.7757	0.01
S_Endrin-13C12	SURR	Average RF	% RSD	10.5	≤20	0.1234	0.01
S_Endrinket13C12	SURR	Average RF	% RSD	7.4	≤20	0.09174	0.01
S_GBHCD6	SURR	Average RF	% RSD	17.5	≤20	0.4694	0.01
S_HXCBZ13C6	SURR	Average RF	% RSD	9.6	≤20	1.172	0.01
S_Heptachlor-13C10	SURR	Average RF	% RSD	13.5	≤20	0.4993	0.01
S_Heptachlrepox13C10	SURR	Average RF	% RSD	14.7	≤20	0.2808	0.01
S_Isodrin-13C12	SURR	Average RF	% RSD	20.6	≤20	0.226	0.01
S_Mirex-13C10	SURR	Average RF	% RSD	4.8	≤20	2.368	0.01
S_Mxchlord-d6	SURR	Average RF	% RSD	8.7	≤20	1.186	0.01
S_Ocstyrene13C8	SURR	Average RF	% RSD	8.7	≤20	0.7532	0.01
S_Oxychlordane-13C10	SURR	Average RF	% RSD	16.7	≤20	0.1928	0.01

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QA/QC Report

Client: Hart Crowser, Incorporated **Service Request:** K1713130
Project: URSC **Calibration Date:** 1/11/2018

Initial Calibration Verification Summary
Organochlorine Pesticides by GC/MS/MS

Calibration ID: KC1800030 **Signal ID:** 1
Instrument ID: K-MSMS-01

#	Lab Code	Sample Name	File Location	Aquisition Date
11	KC1800030-11		J:\MS21\Data\011118\0111F016.D	01/11/2018 17:44

Analyte Name	Expected	Result	Average RF	SSV RF	% D	Criteria	Curve Fit
2,4'-DDD	20.0	18.2	7.118E-1	6.466E-1	-9.160	±25	Average RF
2,4'-DDE	20.0	18.8	6.333E-1	5.963E-1	-5.844	±25	Average RF
2,4'-DDT	20.0	16.7	6.321E-1	5.292E-1	-16.290	±25	Average RF
4,4'-DDD	20.0	18.5	7.477E-1	6.935E-1	-7.251	±25	Average RF
4,4'-DDE	20.0	19.8	4.425E-1	4.375E-1	-1.121	±25	Average RF
4,4'-DDT	20.0	17.3	5.116E-1	4.417E-1	-13.662	±25	Average RF
Aldrin	20.0	17.6	9.679E-1	8.526E-1	-11.916	±25	Average RF
alpha-BHC	20.0	17.3	8.647E-1	7.498E-1	-13.279	±25	Average RF
alpha-Chlordane	20.0	18.9	2.38E0	2.252E0	-5.370	±25	Average RF
beta-BHC	20.0	20.0	9.745E-1	9.738E-1	-0.069	±25	Average RF
Chlorpyrifos	20.0	16.4	1.059E0	8.664E-1	-18.187	±25	Average RF
cis-Nonachlor	20.0	17.7	1.511E0	1.336E0	-11.540	±25	Average RF
delta-BHC	20.0	18.7	9.735E-1	9.096E-1	-6.567	±25	Average RF
Dieldrin	20.0	17.4	1.105E0	9.619E-1	-12.978	±25	Average RF
Endosulfan I	20.0	18.6	4.98E-1	4.623E-1	-7.168	±25	Average RF
Endosulfan II	20.0	16.3	5.322E-1	4.168E-1	-18.469	±25	Quadratic
Endosulfan Sulfate	20.0	18.3	5.846E0	5.342E0	-8.624	±25	Average RF
Endrin	20.0	17.0	9.363E-1	7.97E-1	-14.875	±25	Average RF
Endrin Aldehyde	20.0	20.1	5.384E-1	5.405E-1	0.388	±25	Average RF
Endrin Ketone	20.0	19.0	8.661E-1	8.226E-1	-5.025	±25	Average RF
gamma-BHC (Lindane)	20.0	17.8	7.251E-1	6.451E-1	-11.028	±25	Average RF
gamma-Chlordane	20.0	19.2	2.648E0	2.542E0	-3.991	±25	Average RF
Heptachlor	20.0	19.3	9.845E-1	9.488E-1	-3.622	±25	Average RF
Heptachlor Epoxide	20.0	17.9	1.127E0	1.01E0	-10.353	±25	Average RF
Hexachlorobenzene	20.0	16.9	1.083E0	9.167E-1	-15.342	±25	Average RF
Isodrin	20.0	19.1	1.058E0	1.012E0	-4.315	±25	Average RF
Methoxychlor	20.0	18.4	9.137E-1	8.411E-1	-7.944	±25	Average RF
Mirex	20.0	17.8	1.004E0	8.946E-1	-10.934	±25	Average RF
Octachlorostyrene	20.0	16.1	7.281E-1	5.853E-1	-19.609	±25	Average RF
Oxychlordane	20.0	17.5	1.124E0	9.811E-1	-12.719	±25	Average RF
trans-Nonachlor	20.0	17.6	1.776E0	1.567E0	-11.776	±25	Average RF
S_4,4'-DDT-d4	5.00	5.02	2.864E0	2.877E0	0.469	±30	Average RF
S_4,4'DDD-d4	5.00	4.88	4.318E0	4.21E0	-2.497	±30	Average RF
S_Aldrin-13C12	20.0	21.2	2.428E-1	2.572E-1	5.94	±25	Average RF
S_Chlorpyrifos-d10	20.0	21.7	7.757E-1	8.428E-1	8.65	±25	Average RF

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QA/QC Report

Client: Hart Crowser, Incorporated **Service Request:** K1713130
Project: URSC **Calibration Date:** 1/11/2018

Initial Calibration Verification Summary
Organochlorine Pesticides by GC/MS/MS

Calibration ID: KC1800030 **Signal ID:** 1
Instrument ID: K-MSMS-01

#	Lab Code	Sample Name	File Location	Aquisition Date
11	KC1800030-11		J:\MS21\Data\011118\0111F016.D	01/11/2018 17:44

Analyte Name	Expected	Result	Average RF	SSV RF	% D	Criteria	Curve Fit
S_Endrin-13C12	20.0	20.9	1.234E-1	1.287E-1	4.29	±30	Average RF
S_Endrinket13C12	20.0	19.5	9.174E-2	8.967E-2	-2.250	±25	Average RF
S_GBHCD6	20.0	19.1	4.694E-1	4.478E-1	-4.600	±30	Average RF
S_HXCBZ13C6	20.0	20.2	1.172E0	1.182E0	0.870	±30	Average RF
S_Heptachlor-13C10	20.0	20.3	4.993E-1	5.068E-1	1.51	±25	Average RF
S_Heptachlrepox13C10	20.0	21.3	2.808E-1	2.996E-1	6.71	±30	Average RF
S_Isodrin-13C12	20.0	20.1	2.26E-1	2.268E-1	0.368	±25	Average RF
S_Mirex-13C10	5.00	5.25	2.368E0	2.486E0	5.01	±30	Average RF
S_Mxchlord-d6	20.0	20.1	1.186E0	1.19E0	0.332	±25	Average RF
S_Ocstyrene13C8	20.0	21.5	7.532E-1	8.101E-1	7.55	±25	Average RF
S_Oxychlordane-13C10	20.0	20.4	1.928E-1	1.962E-1	1.76	±30	Average RF

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056

Service Request: K1713130
Date Analyzed: 01/15/18 16:52

Continuing Calibration Verification (CCV) Summary
Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP
File ID: J:\MS21\Data\011518\0115F004.D\

Calibration Date: 1/11/2018
Calibration ID: KC1800030
Analysis Lot: 577627
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
2,4'-DDD	20.0	20.0	0.7118	0.7106	-0.2	NA	±25	Average RF
2,4'-DDE	20.0	19.4	0.6333	0.6153	-2.8	NA	±25	Average RF
2,4'-DDT	20.0	18.6	0.6321	0.5865	-7.2	NA	±25	Average RF
4,4'-DDD	20.0	19.7	0.7477	0.7376	-1.4	NA	±25	Average RF
4,4'-DDE	20.0	18.9	0.4425	0.418	-5.5	NA	±25	Average RF
4,4'-DDT	20.0	19.1	0.5116	0.4875	-4.7	NA	±25	Average RF
Aldrin	20.0	20.8	0.9679	1.0084	4.2	NA	±25	Average RF
alpha-BHC	20.0	19.9	0.8647	0.8611	-0.4	NA	±25	Average RF
alpha-Chlordane	20.0	16.8	2.3802	2.0003	-16.0	NA	±25	Average RF
beta-BHC	20.0	19.0	0.9745	0.9277	-4.8	NA	±25	Average RF
Chlorpyrifos	20.0	19.2	1.059	1.0144	-4.2	NA	±25	Average RF
cis-Nonachlor	20.0	19.5	1.5107	1.4763	-2.3	NA	±25	Average RF
delta-BHC	20.0	19.3	0.9735	0.9372	-3.7	NA	±25	Average RF
Dieldrin	20.0	16.4	1.1053	0.9048	-18.1	NA	±25	Average RF
Endosulfan I	20.0	15.9	0.498	0.3951	-20.7	NA	±25	Average RF
Endosulfan II	20.0	16.5	0.5322	0.4213	NA	-17.6	±25	Quadratic
Endosulfan Sulfate	20.0	18.3	5.8462	5.3614	-8.3	NA	±25	Average RF
Endrin	20.0	17.0	0.9363	0.7975	-14.8	NA	±25	Average RF
Endrin Aldehyde	20.0	15.4	0.5384	0.4139	-23.1	NA	±25	Average RF
Endrin Ketone	20.0	21.2	0.8661	0.9165	5.8	NA	±25	Average RF
gamma-BHC (Lindane)	20.0	19.1	0.7251	0.6933	-4.4	NA	±25	Average RF
gamma-Chlordane	20.0	16.6	2.6479	2.1942	-17.1	NA	±25	Average RF
Heptachlor	20.0	19.1	0.9845	0.9408	-4.4	NA	±25	Average RF
Heptachlor Epoxide	20.0	21.5	1.1269	1.2102	7.4	NA	±25	Average RF
Hexachlorobenzene	20.0	20.7	1.0828	1.1225	3.7	NA	±25	Average RF
Isodrin	20.0	20.6	1.0581	1.0887	2.9	NA	±25	Average RF
Methoxychlor	20.0	18.9	0.9137	0.8639	-5.4	NA	±25	Average RF
Mirex	20.0	20.0	1.0045	1.0068	0.2	NA	±25	Average RF
Octachlorostyrene	20.0	21.0	0.7281	0.764	4.9	NA	±25	Average RF
Oxychlordane	20.0	17.7	1.1241	0.9967	-11.3	NA	±25	Average RF
trans-Nonachlor	20.0	18.7	1.7762	1.6634	-6.4	NA	±25	Average RF
S_4,4'-DDT-d4	5.00	7.03	2.864	4.0293	40.7*	NA	±30	Average RF
S_4,4'DDD-d4	5.00	5.59	4.3176	4.8251	11.8	NA	±30	Average RF
S_Aldrin-13C12	20.0	21.2	0.2428	0.2569	5.8	NA	±30	Average RF
S_Chlorpyrifos-d10	20.0	24.1	0.7757	0.9359	20.6	NA	±30	Average RF
S_Endrin-13C12	20.0	24.8	0.1234	0.1527	23.8	NA	±30	Average RF
S_Endrinket13C12	20.0	21.1	0.0917	0.0967	5.4	NA	±30	Average RF
S_GBHCD6	20.0	22.9	0.4694	0.5382	14.7	NA	±30	Average RF
S_HXCBZ13C6	20.0	20.0	1.1718	1.1727	0.1	NA	±30	Average RF
S_Heptachlor-13C10	20.0	28.1	0.4993	0.7023	40.7*	NA	±30	Average RF
S_Heptachlrepox13C10	20.0	19.9	0.2808	0.2795	-0.5	NA	±30	Average RF
S_Isodrin-13C12	20.0	21.7	0.226	0.2449	8.4	NA	±30	Average RF

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056

Service Request: K1713130
Date Analyzed: 01/15/18 16:52

Continuing Calibration Verification (CCV) Summary
Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP
File ID: J:\MS21\Data\011518\0115F004.D\

Calibration Date: 1/11/2018
Calibration ID: KC1800030
Analysis Lot: 577627
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
S_Mirex-13C10	5.00	5.17	2.3678	2.4481	3.4	NA	±30	Average RF
S_Mxchlord-d6	20.0	30.2	1.1857	1.7922	51.2*	NA	±30	Average RF
S_Ocstyrene13C8	20.0	20.0	0.7532	0.7533	0.0	NA	±30	Average RF
S_Oxychlordane-13C10	20.0	23.4	0.1928	0.2253	16.9	NA	±30	Average RF

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QA/QC Report

Client: Hart Crowser, Incorporated **Service Request:**K1713130
Project: URSC/150-001-056

Analysis Run Log
Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP **Analysis Lot:**577627
Instrument ID:K-MSMS-01

Raw Data File	Sample Name	Lab Code	Date Analyzed	Time Analyzed	Q
J:\MS21\Data\011518\0115F003.D\	Continuing Calibration Verification	KQ1800767-01	1/15/2018	16:25:49	
J:\MS21\Data\011518\0115F004.D\	Continuing Calibration Verification	KQ1800767-01	1/15/2018	16:52:45	
J:\MS21\Data\011518\0115F006.D\	ZZZZZZZ	ZZZZZZZ	1/15/2018	17:47:32	
J:\MS21\Data\011518\0115F007.D\	ZZZZZZZ	ZZZZZZZ	1/15/2018	18:14:51	
J:\MS21\Data\011518\0115F008.D\	URSC-RM18.35E-COMP	K1713130-006	1/15/2018	18:42:09	
J:\MS21\Data\011518\0115F009.D\	URSC-RM18.35E-COMP MS	KQ1718251-01	1/15/2018	19:09:27	
J:\MS21\Data\011518\0115F010.D\	URSC-RM18.35E-COMP DMS	KQ1718251-02	1/15/2018	19:36:45	
J:\MS21\Data\011518\0115F011.D\	Lab Control Sample	KQ1718251-03	1/15/2018	20:04:04	
J:\MS21\Data\011518\0115F012.D\	Method Blank	KQ1718251-04	1/15/2018	20:31:31	
J:\MS21\Data\011518\0115F013.D\	Batch QC	K1713018-010	1/15/2018	20:58:43	
J:\MS21\Data\011518\0115F014.D\	Batch QC MS	KQ1718398-01	1/15/2018	21:26:00	
J:\MS21\Data\011518\0115F015.D\	Batch QC DMS	KQ1718398-02	1/15/2018	21:53:23	
J:\MS21\Data\011518\0115F016.D\	ZZZZZZZ	ZZZZZZZ	1/15/2018	22:21:47	
J:\MS21\Data\011518\0115F017.D\	URSC-RM20.9W-COMP	K1713130-015	1/15/2018	22:49:05	
J:\MS21\Data\011518\0115F018.D\	URSC-RM24.7E-COMP	K1713130-021	1/15/2018	23:16:31	
J:\MS21\Data\011518\0115F019.D\	URSC-RM20.0E-COMP	K1713130-032	1/15/2018	23:43:54	
J:\MS21\Data\011518\0115F020.D\	URSC-RM25.2E-COMP	K1713130-033	1/16/2018	00:11:12	
J:\MS21\Data\011518\0115F021.D\	Lab Control Sample	KQ1718398-03	1/16/2018	00:38:39	
J:\MS21\Data\011518\0115F022.D\	Method Blank	KQ1718398-04	1/16/2018	01:05:57	

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Prep Summary Report

Client: Hart Crowser, Incorporated **Service Request:**K1713130
Project: URSC/150-001-056
Sample Matrix: Sediment

Organochlorine Pesticides by GC/MS/MS

Prep Method: EPA 3546 **Extraction Lot:**305037
Analytical Method: ALS SOP

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Amount	Percent Solids
Batch QC	K1713018-010	NA	NA	20.471 g	1 mL	60.6
URSC-RM20.9W-COMP	K1713130-015	12/1/17	12/6/17	20.240 g	1 mL	69.5
URSC-RM24.7E-COMP	K1713130-021	12/4/17	12/6/17	20.231 g	1 mL	70.7
URSC-RM20.0E-COMP	K1713130-032	12/5/17	12/6/17	20.468 g	1 mL	74.7
URSC-RM25.2E-COMP	K1713130-033	12/4/17	12/6/17	20.419 g	1 mL	65.1
Batch QC	KQ1718398-01MS	NA	NA	20.036 g	1 mL	60.6
Batch QC	KQ1718398-02DMS	NA	NA	20.131 g	1 mL	60.6
Lab Control Sample	KQ1718398-03LCS	NA	NA	10 g	1 mL	
Method Blank	KQ1718398-04MB	NA	NA	10 g	1 mL	

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Prep Summary Report

Client: Hart Crowser, Incorporated **Service Request:**K1713130
Project: URSC/150-001-056
Sample Matrix: Sediment

Organochlorine Pesticides by GC/MS/MS

Prep Method: EPA 3541 **Extraction Lot:**304811
Analytical Method: ALS SOP

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Amount	Percent Solids
URSC-RM18.35E-COMP	K1713130-006	11/29/17	12/6/17	20.260 g	1 mL	68.5
Matrix Spike	KQ1718251-01MS	11/29/17	12/6/17	20.028 g	1 mL	68.5
Duplicate Matrix Spike	KQ1718251-02DMS	11/29/17	12/6/17	20.374 g	1 mL	68.5
Lab Control Sample	KQ1718251-03LCS	NA	NA	10 g	1 mL	
Method Blank	KQ1718251-04MB	NA	NA	10 g	1 mL	

Diesel and Residual Range Organics - Silica Gel Treated

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Client: Hart Crowser, Incorporated **Service Request:** K1713130
Project: URSC/150-001-056

Cover Page - Organic Analysis Data Package
Diesel and Residual Range Organics - Silica Gel Treated

Sample Name	Lab Code	Date Collected	Date Received
URSC-RM18.35E-COMP	K1713130-006	11/29/2017	12/06/2017
URSC-RM20.9W-COMP	K1713130-015	12/01/2017	12/06/2017
URSC-RM24.7E-COMP	K1713130-021	12/04/2017	12/06/2017
URSC-RM20.0E-COMP	K1713130-032	12/05/2017	12/06/2017
URSC-RM25.2E-COMP	K1713130-033	12/04/2017	12/06/2017
URSC-RM18.35E-COMP	KWG1710978-1	11/29/2017	12/06/2017

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Analytical Results

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	11/29/2017
Sample Matrix:	Sediment	**Date Received:**	12/06/2017

Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	URSC-RM18.35E-COMP	**Units:**	mg/Kg
Lab Code:	K1713130-006	**Basis:**	Dry
Extraction Method:	EPA 3550B	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**7.7**	J	36	2.6	1	12/13/17	12/13/17	KWG1710978	
Residual Range Organics (RRO)	**49**	J	150	5.7	1	12/13/17	12/13/17	KWG1710978	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	105	50-150	12/13/17	Acceptable
n-Triacontane	95	50-150	12/13/17	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/01/2017
Sample Matrix:	Sediment	**Date Received:**	12/06/2017

Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	URSC-RM20.9W-COMP	**Units:**	mg/Kg
Lab Code:	K1713130-015	**Basis:**	Dry
Extraction Method:	EPA 3550B	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**5.6**	J	36	2.6	1	12/15/17	12/18/17	KWG1711062	
Residual Range Organics (RRO)	**38**	J	150	5.6	1	12/15/17	12/18/17	KWG1711062	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	108	50-150	12/18/17	Acceptable
n-Triacontane	100	50-150	12/18/17	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/04/2017
Sample Matrix:	Sediment	**Date Received:**	12/06/2017

Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	URSC-RM24.7E-COMP	**Units:**	mg/Kg
Lab Code:	K1713130-021	**Basis:**	Dry
Extraction Method:	EPA 3550B	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**4.2**	J	36	2.6	1	12/15/17	12/18/17	KWG1711062	
Residual Range Organics (RRO)	**15**	J	150	5.6	1	12/15/17	12/18/17	KWG1711062	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	106	50-150	12/18/17	Acceptable
n-Triacontane	97	50-150	12/18/17	Acceptable

Comments:

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Analytical Results

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/05/2017
Sample Matrix:	Sediment	**Date Received:**	12/06/2017

Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	URSC-RM20.0E-COMP	**Units:**	mg/Kg
Lab Code:	K1713130-032	**Basis:**	Dry
Extraction Method:	EPA 3550B	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**4.8**	J	34	2.4	1	12/15/17	12/18/17	KWG1711062	
Residual Range Organics (RRO)	**22**	J	140	5.2	1	12/15/17	12/18/17	KWG1711062	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	105	50-150	12/18/17	Acceptable
n-Triacontane	97	50-150	12/18/17	Acceptable

Comments:

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Analytical Results

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/04/2017
Sample Matrix:	Sediment	**Date Received:**	12/06/2017

Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	URSC-RM25.2E-COMP	**Units:**	mg/Kg
Lab Code:	K1713130-033	**Basis:**	Dry
Extraction Method:	EPA 3550B	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**18**	J	39	2.8	1	12/15/17	12/18/17	KWG1711062	
Residual Range Organics (RRO)	**120**	J	160	6.0	1	12/15/17	12/18/17	KWG1711062	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	103	50-150	12/18/17	Acceptable
n-Triacontane	98	50-150	12/18/17	Acceptable

Comments:

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Analytical Results

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA

Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	Method Blank	**Units:**	mg/Kg
Lab Code:	KWG1710978-3	**Basis:**	Dry
Extraction Method:	EPA 3550B	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**3.6**	J	25	1.8	1	12/13/17	12/13/17	KWG1710978	
Residual Range Organics (RRO)	**12**	J	99	3.9	1	12/13/17	12/13/17	KWG1710978	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	106	50-150	12/13/17	Acceptable
n-Triacontane	96	50-150	12/13/17	Acceptable

Comments:

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Analytical Results

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA

Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	Method Blank	**Units:**	mg/Kg
Lab Code:	KWG1711062-3	**Basis:**	Dry
Extraction Method:	EPA 3550B	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**2.3**	J	25	1.8	1	12/15/17	12/18/17	KWG1711062	
Residual Range Organics (RRO)	**7.4**	J	99	3.9	1	12/15/17	12/18/17	KWG1711062	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	105	50-150	12/18/17	Acceptable
n-Triacontane	98	50-150	12/18/17	Acceptable

Comments:

Client: Hart Crowser, Incorporated **Service Request:** K1713130
Project: URSC/150-001-056
Sample Matrix: Sediment

Surrogate Recovery Summary
Diesel and Residual Range Organics - Silica Gel Treated

Extraction Method: EPA 3550B **Units:** Percent
Analysis Method: NWTPH-Dx **Level:** Low

Sample Name	Lab Code	Sur1	Sur2
Batch QC	K1713018-010	103	96
URSC-RM18.35E-COMP	K1713130-006	105	95
URSC-RM20.9W-COMP	K1713130-015	108	100
URSC-RM24.7E-COMP	K1713130-021	106	97
URSC-RM20.0E-COMP	K1713130-032	105	97
URSC-RM25.2E-COMP	K1713130-033	103	98
URSC-RM18.35E-COMPDUP	KWG1710978-1	103	94
Batch QCDUP	KWG1711062-1	106	99
Method Blank	KWG1710978-3	106	96
Method Blank	KWG1711062-3	105	98
Lab Control Sample	KWG1710978-2	108	97
Lab Control Sample	KWG1711062-2	111	97

Surrogate Recovery Control Limits (%)

Sur1	=	o-Terphenyl	50-150
Sur2	=	n-Triacontane	50-150

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Extracted:**	12/13/2017
Sample Matrix:	Sediment	**Date Analyzed:**	12/13/2017

Duplicate Sample Summary
Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	URSC-RM18.35E-COMP	**Units:**	mg/Kg
Lab Code:	K1713130-006	**Basis:**	Dry
Extraction Method:	EPA 3550B	**Level:**	Low
Analysis Method:	NWTPH-Dx	**Extraction Lot:**	KWG1710978

				URSC-RM18.35E-COMPDUP KWG1710978-1 Duplicate Sample			
Analyte Name	**MRL**	**MDL**	**Sample Result**	**Result**	**Average**	**Relative Percent Difference**	**RPD Limit**
Diesel Range Organics (DRO)	37	2.6	7.7	7.8	7.8	1 #	40
Residual Range Organics (RRO)	150	5.7	49	57	53	15 #	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Extracted:**	12/15/2017
Sample Matrix:	Sediment	**Date Analyzed:**	12/18/2017

Duplicate Sample Summary
Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	Batch QC	**Units:**	mg/Kg
Lab Code:	K1713018-010	**Basis:**	Dry
Extraction Method:	EPA 3550B	**Level:**	Low
Analysis Method:	NWTPH-Dx	**Extraction Lot:**	KWG1711062

				Batch QCDUP KWG1711062-1 Duplicate Sample			
Analyte Name	**MRL**	**MDL**	**Sample Result**	**Result**	**Average**	**Relative Percent Difference**	**RPD Limit**
Diesel Range Organics (DRO)	42	3.0	12	11	12	6 #	40
Residual Range Organics (RRO)	170	6.5	69	66	67	5 #	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Extracted:**	12/13/2017
Sample Matrix:	Sediment	**Date Analyzed:**	12/13/2017

Lab Control Spike Summary
Diesel and Residual Range Organics - Silica Gel Treated

Extraction Method:	EPA 3550B	**Units:**	mg/Kg
Analysis Method:	NWTPH-Dx	**Basis:**	Dry
		Level:	Low
		Extraction Lot:	KWG1710978

	Lab Control Sample KWG1710978-2 Lab Control Spike			
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
Diesel Range Organics (DRO)	269	267	101	42-134
Residual Range Organics (RRO)	174	133	131	48-141

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Extracted:**	12/15/2017
Sample Matrix:	Sediment	**Date Analyzed:**	12/18/2017

Lab Control Spike Summary
Diesel and Residual Range Organics - Silica Gel Treated

Extraction Method:	EPA 3550B	**Units:**	mg/Kg
Analysis Method:	NWTPH-Dx	**Basis:**	Dry
		Level:	Low
		Extraction Lot:	KWG1711062

	Lab Control Sample KWG1711062-2 Lab Control Spike			
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
Diesel Range Organics (DRO)	260	267	97	42-134
Residual Range Organics (RRO)	151	133	113	48-141

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Extracted:**	12/13/2017
Sample Matrix:	Sediment	**Date Analyzed:**	12/13/2017
		Time Analyzed:	13:27

Method Blank Summary
Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	Method Blank	**Instrument ID:**	GC21
Lab Code:	KWG1710978-3	**File ID:**	J:\GC21\DATA\121317F\1213210.D
Extraction Method:	EPA 3550B	**Level:**	Low
Analysis Method:	NWTPH-Dx	**Extraction Lot:**	KWG1710978

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1710978-2	J:\GC21\DATA\121317F\1213209.D	12/13/17	13:05
URSC-RM18.35E-COMP	K1713130-006	J:\GC21\DATA\121317F\1213211.D	12/13/17	13:48
URSC-RM18.35E-COMPDUP	KWG1710978-1	J:\GC21\DATA\121317F\1213212.D	12/13/17	14:10

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Extracted:**	12/15/2017
Sample Matrix:	Sediment	**Date Analyzed:**	12/18/2017
		Time Analyzed:	15:41

Method Blank Summary
Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	Method Blank	**Instrument ID:**	GC21
Lab Code:	KWG1711062-3	**File ID:**	J:\GC21\DATA\121817F\1218021.D
Extraction Method:	EPA 3550B	**Level:**	Low
Analysis Method:	NWTPH-Dx	**Extraction Lot:**	KWG1711062

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1711062-2	J:\GC21\DATA\121817F\1218020.D	12/18/17	15:20
Batch QC	K1713018-010	J:\GC21\DATA\121817F\1218022.D	12/18/17	16:03
Batch QCDUP	KWG1711062-1	J:\GC21\DATA\121817F\1218023.D	12/18/17	16:25
URSC-RM20.9W-COMP	K1713130-015	J:\GC21\DATA\121817F\1218025.D	12/18/17	17:08
URSC-RM24.7E-COMP	K1713130-021	J:\GC21\DATA\121817F\1218026.D	12/18/17	17:30
URSC-RM20.0E-COMP	K1713130-032	J:\GC21\DATA\121817F\1218027.D	12/18/17	17:51
URSC-RM25.2E-COMP	K1713130-033	J:\GC21\DATA\121817F\1218028.D	12/18/17	18:13

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Extracted:**	12/13/2017
Sample Matrix:	Sediment	**Date Analyzed:**	12/13/2017
		Time Analyzed:	13:05

Lab Control Sample Summary
Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	Lab Control Sample	**Instrument ID:**	GC21
Lab Code:	KWG1710978-2	**File ID:**	J:\GC21\DATA\121317F\1213209.D
Extraction Method:	EPA 3550B	**Level:**	Low
Analysis Method:	NWTPH-Dx	**Extraction Lot:**	KWG1710978

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1710978-3	J:\GC21\DATA\121317F\1213210.D	12/13/17	13:27
URSC-RM18.35E-COMP	K1713130-006	J:\GC21\DATA\121317F\1213211.D	12/13/17	13:48
URSC-RM18.35E-COMPDUP	KWG1710978-1	J:\GC21\DATA\121317F\1213212.D	12/13/17	14:10

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Extracted:**	12/15/2017
Sample Matrix:	Sediment	**Date Analyzed:**	12/18/2017
		Time Analyzed:	15:20

Lab Control Sample Summary
Diesel and Residual Range Organics - Silica Gel Treated

Sample Name:	Lab Control Sample	**Instrument ID:**	GC21
Lab Code:	KWG1711062-2	**File ID:**	J:\GC21\DATA\121817F\1218020.D
Extraction Method:	EPA 3550B	**Level:**	Low
Analysis Method:	NWTPH-Dx	**Extraction Lot:**	KWG1711062

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1711062-3	J:\GC21\DATA\121817F\1218021.D	12/18/17	15:41
Batch QC	K1713018-010	J:\GC21\DATA\121817F\1218022.D	12/18/17	16:03
Batch QCDUP	KWG1711062-1	J:\GC21\DATA\121817F\1218023.D	12/18/17	16:25
URSC-RM20.9W-COMP	K1713130-015	J:\GC21\DATA\121817F\1218025.D	12/18/17	17:08
URSC-RM24.7E-COMP	K1713130-021	J:\GC21\DATA\121817F\1218026.D	12/18/17	17:30
URSC-RM20.0E-COMP	K1713130-032	J:\GC21\DATA\121817F\1218027.D	12/18/17	17:51
URSC-RM25.2E-COMP	K1713130-033	J:\GC21\DATA\121817F\1218028.D	12/18/17	18:13

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QA/QC Results

Client: Hart Crowser, Incorporated **Service Request:** K1713130
Project: URSC/150-001-056 **Calibration Date:** 08/22/2017

Initial Calibration Summary
Diesel and Residual Range Organics - Silica Gel Treated

Calibration ID: CAL15584 **Column:** ZB-1
Instrument ID: GC21

Level ID	File ID	Level ID	File ID
A	J:\GC21\DATA\082217F\0822F052.D	J	J:\GC21\DATA\082317F\0823004.D
B	J:\GC21\DATA\082217F\0822F056.D	K	J:\GC21\DATA\101817F\1018206.D
C	J:\GC21\DATA\082217F\0822F058.D	L	J:\GC21\DATA\101817F\1018207.D
D	J:\GC21\DATA\082217F\0822F060.D	M	J:\GC21\DATA\101817F\1018209.D
E	J:\GC21\DATA\082217F\0822F068.D	N	J:\GC21\DATA\101817F\1018210.D
F	J:\GC21\DATA\082217F\0822F070.D	O	J:\GC21\DATA\101817F\1018211.D
G	J:\GC21\DATA\082217F\0822F072.D	P	J:\GC21\DATA\101817F\1018212.D
H	J:\GC21\DATA\082217F\0822F074.D	Q	J:\GC21\DATA\101817F\1018213.D
I	J:\GC21\DATA\082217F\0822F076.D		

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Diesel Range Organics (DRO)															
	K	20	1520	L	50	1250	M	500	1460	N	2000	1170	O	5000	1370
	P	20000	1340	Q	50000	1270									
Residual Range Organics (RRO)													E	50	802
	F	200	672	G	500	647	H	2000	635	I	5000	628			
o-Terphenyl															
	K	1.0	1590	L	2.5	1600	M	25	2040	N	100	1590	O	250	1940
n-Triacontane															
	K	1.0	1220	L	2.5	1360	M	25	1810	N	100	1430	O	250	1730

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056

Service Request: K1713130
Calibration Date: 08/22/2017

Initial Calibration Summary
Diesel and Residual Range Organics - Silica Gel Treated

Calibration ID: CAL15584
Instrument ID: GC21

Column: ZB-1

Analyte Name	Compound Type	Calibration Evaluation				
		Fit Type	Eval.	Eval. Result	Q	Control Criteria
Diesel Range Organics (DRO)	MS	AverageRF	% RSD	9.1		≤ 20
Residual Range Organics (RRO)	MS	AverageRF	% RSD	10.6		≤ 20
o-Terphenyl	SURR	AverageRF	% RSD	12.7		≤ 20
n-Triacontane	SURR	AverageRF	% RSD	16.5		≤ 20

Results flagged with an asterisk (*) indicate values outside control criteria.

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QA/QC Results

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Calibration Date:**	08/22/2017
		Date Analyzed:	08/24/2017 - 10/18/2017

Second Source Calibration Verification
Diesel and Residual Range Organics - Silica Gel Treated

Calibration Type:	External Standard	**Calibration ID:**	CAL15584
Analysis Method:	NWTPH-Dx	**Units:**	ppm
File ID:	J:\GC21\DATA\082317F\0823005.D J:\GC21\DATA\082417F\0824004.D J:\GC21\DATA\101817F\1018215.D	**Column ID:**	ZB-1

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	1100	1340	1500	12	NA	± 15 %	AverageRF
Residual Range Organics (RRO)	1000	860	677	580	-14	NA	± 15 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Analyzed:**	12/13/2017

Continuing Calibration Verification Summary
Diesel and Residual Range Organics - Silica Gel Treated

Calibration Type:	External Standard	**Calibration Date:**	08/22/2017
Analysis Method:	NWTPH-Dx	**Calibration ID:**	CAL15584
		Analysis Lot:	KWG1711038
		Units:	ppm
File ID:	J:\GC21\DATA\121317F\1213202.D J:\GC21\DATA\121317F\1213203.D	**Column ID:**	ZB-1

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	1000	1340	1390	4	NA	± 15	AverageRF
Residual Range Organics (RRO)	1000	980	677	665	-2	NA	± 15	AverageRF
o-Terphenyl	50	51	1750	1790	2	NA	± 15	AverageRF
n-Triacontane	50	44	1510	1340	-11	NA	± 15	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056

Service Request: K1713130
Date Analyzed: 12/13/2017

Continuing Calibration Verification Summary
Diesel and Residual Range Organics - Silica Gel Treated

Calibration Type: External Standard
Analysis Method: NWTPH-Dx

Calibration Date: 08/22/2017
Calibration ID: CAL15584
Analysis Lot: KWG1711038
Units: ppm

File ID: J:\GC21\DATA\121317F\1213215.D
J:\GC21\DATA\121317F\1213216.D

Column ID: ZB-1

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	1100	1340	1440	8	NA	± 15	AverageRF
Residual Range Organics (RRO)	1000	1000	677	696	3	NA	± 15	AverageRF
o-Terphenyl	50	53	1750	1860	6	NA	± 15	AverageRF
n-Triacontane	50	47	1510	1430	-5	NA	± 15	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056

Service Request: K1713130
Date Analyzed: 12/18/2017

Continuing Calibration Verification Summary
Diesel and Residual Range Organics - Silica Gel Treated

Calibration Type: External Standard
Analysis Method: NWTPH-Dx

Calibration Date: 08/22/2017
Calibration ID: CAL15584
Analysis Lot: KWG1711125
Units: ppm

File ID: J:\GC21\DATA\121817F\1218014.D
J:\GC21\DATA\121817F\1218015.D

Column ID: ZB-1

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	1000	1340	1400	4	NA	± 15	AverageRF
Residual Range Organics (RRO)	1000	1100	677	712	5	NA	± 15	AverageRF
o-Terphenyl	50	54	1750	1880	7	NA	± 15	AverageRF
n-Triacontane	50	47	1510	1420	-6	NA	± 15	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056

Service Request: K1713130
Date Analyzed: 12/18/2017

Continuing Calibration Verification Summary
Diesel and Residual Range Organics - Silica Gel Treated

Calibration Type: External Standard
Analysis Method: NWTPH-Dx

Calibration Date: 08/22/2017
Calibration ID: CAL15584
Analysis Lot: KWG1711125
Units: ppm

File ID: J:\GC21\DATA\121817F\1218033.D
J:\GC21\DATA\121817F\1218034.D

Column ID: ZB-1

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	1000	1340	1400	5	NA	± 15	AverageRF
Residual Range Organics (RRO)	1000	1000	677	697	3	NA	± 15	AverageRF
o-Terphenyl	50	54	1750	1890	8	NA	± 15	AverageRF
n-Triacontane	50	48	1510	1460	-3	NA	± 15	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: Hart Crowser, Incorporated **Service Request:** K1713130
Project: URSC/150-001-056

Analysis Run Log
Diesel and Residual Range Organics - Silica Gel Treated

Analysis Method: NWTPH-Dx **Analysis Lot:** KWG1711038
Instrument ID: GC21
Column: ZB-1

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
\1213202.D	Continuing Calibration Verification	KWG1711038-1	12/13/2017	10:34		12/13/2017	10:50
\1213203.D	Continuing Calibration Verification	KWG1711038-1	12/13/2017	10:55		12/13/2017	11:11
\1213204.D	Instrument Blank	KWG1711038-4	12/13/2017	11:17		12/13/2017	11:33
\1213207.D	ZZZZZZ	ZZZZZZ	12/13/2017	12:22		12/13/2017	12:38
\1213208.D	ZZZZZZ	ZZZZZZ	12/13/2017	12:43		12/13/2017	12:59
\1213209.D	Lab Control Sample	KWG1710978-2	12/13/2017	13:05		12/13/2017	13:21
\1213210.D	Method Blank	KWG1710978-3	12/13/2017	13:27		12/13/2017	13:43
\1213211.D	URSC-RM18.35E-COMP	K1713130-006	12/13/2017	13:48		12/13/2017	14:04
\1213212.D	URSC-RM18.35E-COMPDUP	KWG1710978-1	12/13/2017	14:10		12/13/2017	14:26
\1213213.D	ZZZZZZ	ZZZZZZ	12/13/2017	14:32		12/13/2017	14:48
\1213214.D	ZZZZZZ	ZZZZZZ	12/13/2017	14:53		12/13/2017	15:09
\1213215.D	Continuing Calibration Verification	KWG1711038-2	12/13/2017	15:15		12/13/2017	15:31
\1213216.D	Continuing Calibration Verification	KWG1711038-2	12/13/2017	15:37		12/13/2017	15:53
\1213218.D	Instrument Blank	KWG1711038-5	12/13/2017	16:20		12/13/2017	16:36
\1213219.D	ZZZZZZ	ZZZZZZ	12/13/2017	16:41		12/13/2017	16:57
\1213220.D	ZZZZZZ	ZZZZZZ	12/13/2017	17:03		12/13/2017	17:19
\1213221.D	ZZZZZZ	ZZZZZZ	12/13/2017	17:25		12/13/2017	17:41
\1213222.D	ZZZZZZ	ZZZZZZ	12/13/2017	17:46		12/13/2017	18:02
\1213223.D	ZZZZZZ	ZZZZZZ	12/13/2017	18:08		12/13/2017	18:24
\1213224.D	ZZZZZZ	ZZZZZZ	12/13/2017	18:30		12/13/2017	18:46
\1213225.D	ZZZZZZ	ZZZZZZ	12/13/2017	18:51		12/13/2017	19:07
\1213226.D	ZZZZZZ	ZZZZZZ	12/13/2017	19:13		12/13/2017	19:29
\1213227.D	Continuing Calibration Verification	KWG1711038-3	12/13/2017	19:35		12/13/2017	19:51
\1213229.D	Instrument Blank	KWG1711038-6	12/13/2017	20:18		12/13/2017	20:34

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: Hart Crowser, Incorporated **Service Request:** K1713130
Project: URSC/150-001-056

Analysis Run Log
Diesel and Residual Range Organics - Silica Gel Treated

Analysis Method: NWTPH-Dx **Analysis Lot:** KWG1711125
Instrument ID: GC21
Column: ZB-1

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
\1218014.D	Continuing Calibration Verification	KWG1711125-1	12/18/2017	13:10		12/18/2017	13:26
\1218015.D	Continuing Calibration Verification	KWG1711125-1	12/18/2017	13:31		12/18/2017	13:47
\1218017.D	Instrument Blank	KWG1711125-3	12/18/2017	14:15		12/18/2017	14:31
\1218020.D	Lab Control Sample	KWG1711062-2	12/18/2017	15:20		12/18/2017	15:36
\1218021.D	Method Blank	KWG1711062-3	12/18/2017	15:41		12/18/2017	15:57
\1218022.D	Batch QC	K1713018-010	12/18/2017	16:03		12/18/2017	16:19
\1218023.D	Batch QCDUP	KWG1711062-1	12/18/2017	16:25		12/18/2017	16:41
\1218024.D	ZZZZZZ	ZZZZZZ	12/18/2017	16:46		12/18/2017	17:02
\1218025.D	URSC-RM20.9W-COMP	K1713130-015	12/18/2017	17:08		12/18/2017	17:24
\1218026.D	URSC-RM24.7E-COMP	K1713130-021	12/18/2017	17:30		12/18/2017	17:46
\1218027.D	URSC-RM20.0E-COMP	K1713130-032	12/18/2017	17:51		12/18/2017	18:07
\1218028.D	URSC-RM25.2E-COMP	K1713130-033	12/18/2017	18:13		12/18/2017	18:29
\1218029.D	ZZZZZZ	ZZZZZZ	12/18/2017	18:35		12/18/2017	18:51
\1218030.D	ZZZZZZ	ZZZZZZ	12/18/2017	18:56		12/18/2017	19:12
\1218032.D	ZZZZZZ	ZZZZZZ	12/18/2017	19:40		12/18/2017	19:56
\1218033.D	Continuing Calibration Verification	KWG1711125-2	12/18/2017	20:02		12/18/2017	20:18
\1218034.D	Continuing Calibration Verification	KWG1711125-2	12/18/2017	20:23		12/18/2017	20:39
\1218036.D	Instrument Blank	KWG1711125-4	12/18/2017	21:07		12/18/2017	21:23

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Extracted:**	12/13/2017
Sample Matrix:	Sediment		

Extraction Prep Log
Diesel and Residual Range Organics - Silica Gel Treated

Extraction Method:	EPA 3550B	**Extraction Lot:**	KWG1710978
Analysis Method:	NWTPH-Dx	**Level:**	Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
URSC-RM18.35E-COMP	K1713130-006	11/29/17	12/06/17	30.431g	10mL	68.5	
URSC-RM18.35E-COMPDUP	KWG1710978-1	11/29/17	12/06/17	30.404g	10mL	68.5	
Method Blank	KWG1710978-3	NA	NA	30.431g	10mL	NA	
Lab Control Sample	KWG1710978-2	NA	NA	30.000g	10mL	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Extracted:**	12/15/2017
Sample Matrix:	Sediment		

Extraction Prep Log
Diesel and Residual Range Organics - Silica Gel Treated

Extraction Method:	EPA 3550B	**Extraction Lot:**	KWG1711062
Analysis Method:	NWTPH-Dx	**Level:**	Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
URSC-RM20.9W-COMP	K1713130-015	12/01/17	12/06/17	30.253g	10mL	69.5	
URSC-RM24.7E-COMP	K1713130-021	12/04/17	12/06/17	30.033g	10mL	70.7	
URSC-RM20.0E-COMP	K1713130-032	12/05/17	12/06/17	30.288g	10mL	74.7	
URSC-RM25.2E-COMP	K1713130-033	12/04/17	12/06/17	30.072g	10mL	65.1	
Batch QCDUP	KWG1711062-1	NA	NA	30.122g	10mL	60.6	
Method Blank	KWG1711062-3	NA	NA	30.451g	10mL	NA	
Batch QC	K1713018-010	NA	NA	30.099g	10mL	60.6	
Lab Control Sample	KWG1711062-2	NA	NA	30.000g	10mL	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Polybrominated Diphenyl Ethers

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Client: Hart Crowser, Incorporated **Service Request:** K1713130
Project: URSC/150-001-056

Cover Page - Organic Analysis Data Package
Polybrominated Diphenyl Ethers by 8270C-SIM

Sample Name	Lab Code	Date Collected	Date Received
URSC-RM18.35E-COMP	K1713130-006	11/29/2017	12/06/2017
URSC-RM20.9W-COMP	K1713130-015	12/01/2017	12/06/2017
URSC-RM24.7E-COMP	K1713130-021	12/04/2017	12/06/2017
URSC-RM20.0E-COMP	K1713130-032	12/05/2017	12/06/2017
URSC-RM25.2E-COMP	K1713130-033	12/04/2017	12/06/2017
URSC-RM18.35E-COMPMS	KWG1710980-1	11/29/2017	12/06/2017
URSC-RM18.35E-COMPDMS	KWG1710980-2	11/29/2017	12/06/2017

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	11/29/2017
Sample Matrix:	Sediment	**Date Received:**	12/06/2017

Polybrominated Diphenyl Ethers by 8270C-SIM

Sample Name:	URSC-RM18.35E-COMP	**Units:**	ug/Kg
Lab Code:	K1713130-006	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
PBDE 17	ND	U	0.15	0.046	2	12/13/17	12/19/17	KWG1710980	
PBDE 28	ND	U	0.15	0.048	2	12/13/17	12/19/17	KWG1710980	
PBDE 71	**0.29**	D	0.15	0.030	2	12/13/17	12/19/17	KWG1710980	
PBDE 47	**1.1**	D	0.15	0.058	2	12/13/17	12/19/17	KWG1710980	
PBDE 66	**0.27**	D	0.15	0.038	2	12/13/17	12/19/17	KWG1710980	
PBDE 100	ND	U	0.15	0.028	2	12/13/17	12/19/17	KWG1710980	
PBDE 99	**1.1**	D	0.15	0.060	2	12/13/17	12/19/17	KWG1710980	
PBDE 85	ND	U	0.16	0.080	2	12/13/17	12/19/17	KWG1710980	
PBDE 154	ND	U	0.15	0.016	2	12/13/17	12/19/17	KWG1710980	
PBDE 153	**0.37**	D	0.15	0.018	2	12/13/17	12/19/17	KWG1710980	
PBDE 138	ND	U	0.15	0.032	2	12/13/17	12/19/17	KWG1710980	
PBDE 128	ND	U	0.15	0.020	2	12/13/17	12/19/17	KWG1710980	
PBDE 183	ND	U	0.15	0.026	2	12/13/17	12/19/17	KWG1710980	
PBDE 190	ND	U	0.15	0.040	2	12/13/17	12/19/17	KWG1710980	
PBDE 203	ND	U	0.15	0.058	2	12/13/17	12/19/17	KWG1710980	
PBDE 206	**1.7**	D	1.5	0.062	2	12/13/17	12/19/17	KWG1710980	
PBDE 209	**39**	D	15	0.52	20	12/13/17	12/19/17	KWG1710980	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
PBDE 47C13	75	70-130	12/19/17	Acceptable
PBDE 99C13	94	70-130	12/19/17	Acceptable

Comments:

Analytical Results

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/01/2017
Sample Matrix:	Sediment	**Date Received:**	12/06/2017

Polybrominated Diphenyl Ethers by 8270C-SIM

Sample Name:	URSC-RM20.9W-COMP	**Units:**	ug/Kg
Lab Code:	K1713130-015	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
PBDE 17	ND	U	0.072	0.023	1	12/15/17	12/21/17	KWG1711053	
PBDE 28	ND	U	0.072	0.024	1	12/15/17	12/21/17	KWG1711053	
PBDE 71	ND	U	0.072	0.015	1	12/15/17	12/21/17	KWG1711053	
PBDE 47	**0.17**		0.072	0.029	1	12/15/17	12/21/17	KWG1711053	
PBDE 66	ND	U	0.072	0.019	1	12/15/17	12/21/17	KWG1711053	
PBDE 100	ND	U	0.072	0.014	1	12/15/17	12/21/17	KWG1711053	
PBDE 99	ND	U	0.072	0.030	1	12/15/17	12/21/17	KWG1711053	
PBDE 85	ND	U	0.080	0.040	1	12/15/17	12/21/17	KWG1711053	
PBDE 154	ND	U	0.072	0.0078	1	12/15/17	12/21/17	KWG1711053	
PBDE 153	ND	U	0.072	0.0087	1	12/15/17	12/21/17	KWG1711053	
PBDE 138	ND	U	0.072	0.016	1	12/15/17	12/21/17	KWG1711053	
PBDE 128	ND	U	0.072	0.0099	1	12/15/17	12/21/17	KWG1711053	
PBDE 183	ND	U	0.072	0.013	1	12/15/17	12/21/17	KWG1711053	
PBDE 190	ND	U	0.072	0.020	1	12/15/17	12/21/17	KWG1711053	
PBDE 203	ND	U	0.072	0.029	1	12/15/17	12/21/17	KWG1711053	
PBDE 206	ND	U	0.72	0.031	1	12/15/17	12/21/17	KWG1711053	
PBDE 209	**2.9**		0.72	0.026	1	12/15/17	12/21/17	KWG1711053	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
PBDE 47C13	76	70-130	12/21/17	Acceptable
PBDE 99C13	91	70-130	12/21/17	Acceptable

Comments:

Analytical Results

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/04/2017
Sample Matrix:	Sediment	**Date Received:**	12/06/2017

Polybrominated Diphenyl Ethers by 8270C-SIM

Sample Name:	URSC-RM24.7E-COMP	**Units:**	ug/Kg
Lab Code:	K1713130-021	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
PBDE 17	ND	U	0.070	0.023	1	12/15/17	12/21/17	KWG1711053	
PBDE 28	ND	U	0.070	0.024	1	12/15/17	12/21/17	KWG1711053	
PBDE 71	ND	U	0.070	0.015	1	12/15/17	12/21/17	KWG1711053	
PBDE 47	ND	U	0.070	0.029	1	12/15/17	12/21/17	KWG1711053	
PBDE 66	ND	U	0.070	0.019	1	12/15/17	12/21/17	KWG1711053	
PBDE 100	ND	U	0.070	0.014	1	12/15/17	12/21/17	KWG1711053	
PBDE 99	ND	U	0.070	0.030	1	12/15/17	12/21/17	KWG1711053	
PBDE 85	ND	U	0.080	0.040	1	12/15/17	12/21/17	KWG1711053	
PBDE 154	ND	U	0.070	0.0078	1	12/15/17	12/21/17	KWG1711053	
PBDE 153	ND	U	0.070	0.0087	1	12/15/17	12/21/17	KWG1711053	
PBDE 138	ND	U	0.070	0.016	1	12/15/17	12/21/17	KWG1711053	
PBDE 128	ND	U	0.070	0.0099	1	12/15/17	12/21/17	KWG1711053	
PBDE 183	ND	U	0.070	0.013	1	12/15/17	12/21/17	KWG1711053	
PBDE 190	ND	U	0.070	0.020	1	12/15/17	12/21/17	KWG1711053	
PBDE 203	ND	U	0.070	0.029	1	12/15/17	12/21/17	KWG1711053	
PBDE 206	ND	U	0.70	0.031	1	12/15/17	12/21/17	KWG1711053	
PBDE 209	**0.89**		0.70	0.026	1	12/15/17	12/21/17	KWG1711053	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
PBDE 47C13	96	70-130	12/21/17	Acceptable
PBDE 99C13	95	70-130	12/21/17	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/05/2017
Sample Matrix:	Sediment	**Date Received:**	12/06/2017

Polybrominated Diphenyl Ethers by 8270C-SIM

Sample Name:	URSC-RM20.0E-COMP	**Units:**	ug/Kg
Lab Code:	K1713130-032	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
PBDE 17	**0.43**		0.067	0.023	1	12/15/17	12/21/17	KWG1711053	
PBDE 28	**0.63**		0.067	0.024	1	12/15/17	12/21/17	KWG1711053	
PBDE 71	**0.059**	J	0.067	0.015	1	12/15/17	12/21/17	KWG1711053	
PBDE 47	**3.7**		0.067	0.029	1	12/15/17	12/21/17	KWG1711053	
PBDE 66	**1.2**		0.067	0.019	1	12/15/17	12/21/17	KWG1711053	
PBDE 100	**0.31**		0.067	0.014	1	12/15/17	12/21/17	KWG1711053	
PBDE 99	**4.0**		0.067	0.030	1	12/15/17	12/21/17	KWG1711053	
PBDE 85	**0.30**		0.080	0.040	1	12/15/17	12/21/17	KWG1711053	
PBDE 154	**0.26**		0.067	0.0078	1	12/15/17	12/21/17	KWG1711053	
PBDE 153	**0.97**		0.067	0.0087	1	12/15/17	12/21/17	KWG1711053	
PBDE 138	**0.15**		0.067	0.016	1	12/15/17	12/21/17	KWG1711053	
PBDE 128	**0.17**		0.067	0.0099	1	12/15/17	12/21/17	KWG1711053	
PBDE 183	**0.39**		0.067	0.013	1	12/15/17	12/21/17	KWG1711053	
PBDE 190	ND	U	0.067	0.020	1	12/15/17	12/21/17	KWG1711053	
PBDE 203	**0.094**		0.067	0.029	1	12/15/17	12/21/17	KWG1711053	
PBDE 206	**3.1**		0.67	0.031	1	12/15/17	12/21/17	KWG1711053	
PBDE 209	**120**	D	34	1.3	50	12/15/17	12/20/17	KWG1711053	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
PBDE 47C13	88	70-130	12/21/17	Acceptable
PBDE 99C13	93	70-130	12/21/17	Acceptable

Comments:

Analytical Results

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/04/2017
Sample Matrix:	Sediment	**Date Received:**	12/06/2017

Polybrominated Diphenyl Ethers by 8270C-SIM

Sample Name:	URSC-RM25.2E-COMP	**Units:**	ug/Kg
Lab Code:	K1713130-033	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
PBDE 17	ND	U	0.077	0.023	1	12/15/17	12/21/17	KWG1711053	
PBDE 28	ND	U	0.077	0.024	1	12/15/17	12/21/17	KWG1711053	
PBDE 71	ND	U	0.077	0.015	1	12/15/17	12/21/17	KWG1711053	
PBDE 47	ND	U	0.077	0.029	1	12/15/17	12/21/17	KWG1711053	
PBDE 66	ND	U	0.077	0.019	1	12/15/17	12/21/17	KWG1711053	
PBDE 100	ND	U	0.077	0.014	1	12/15/17	12/21/17	KWG1711053	
PBDE 99	ND	U	0.077	0.030	1	12/15/17	12/21/17	KWG1711053	
PBDE 85	ND	U	0.080	0.040	1	12/15/17	12/21/17	KWG1711053	
PBDE 154	ND	U	0.077	0.0078	1	12/15/17	12/21/17	KWG1711053	
PBDE 153	ND	U	0.077	0.0087	1	12/15/17	12/21/17	KWG1711053	
PBDE 138	ND	U	0.077	0.016	1	12/15/17	12/21/17	KWG1711053	
PBDE 128	ND	U	0.077	0.0099	1	12/15/17	12/21/17	KWG1711053	
PBDE 183	ND	U	0.077	0.013	1	12/15/17	12/21/17	KWG1711053	
PBDE 190	ND	U	0.077	0.020	1	12/15/17	12/21/17	KWG1711053	
PBDE 203	ND	U	0.077	0.029	1	12/15/17	12/21/17	KWG1711053	
PBDE 206	ND	U	0.77	0.031	1	12/15/17	12/21/17	KWG1711053	
PBDE 209	ND	U	0.77	0.026	1	12/15/17	12/21/17	KWG1711053	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
PBDE 47C13	77	70-130	12/21/17	Acceptable
PBDE 99C13	93	70-130	12/21/17	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA

Polybrominated Diphenyl Ethers by 8270C-SIM

Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	KWG1710980-4	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
PBDE 17	ND	U	0.050	0.023	1	12/13/17	12/20/17	KWG1710980	
PBDE 28	ND	U	0.050	0.024	1	12/13/17	12/20/17	KWG1710980	
PBDE 71	ND	U	0.050	0.015	1	12/13/17	12/20/17	KWG1710980	
PBDE 47	ND	U	0.050	0.029	1	12/13/17	12/20/17	KWG1710980	
PBDE 66	ND	U	0.050	0.019	1	12/13/17	12/20/17	KWG1710980	
PBDE 100	ND	U	0.050	0.014	1	12/13/17	12/20/17	KWG1710980	
PBDE 99	ND	U	0.050	0.030	1	12/13/17	12/20/17	KWG1710980	
PBDE 85	ND	U	0.080	0.040	1	12/13/17	12/20/17	KWG1710980	
PBDE 154	ND	U	0.050	0.0078	1	12/13/17	12/20/17	KWG1710980	
PBDE 153	ND	U	0.050	0.0087	1	12/13/17	12/20/17	KWG1710980	
PBDE 138	ND	U	0.050	0.016	1	12/13/17	12/20/17	KWG1710980	
PBDE 128	ND	U	0.050	0.0099	1	12/13/17	12/20/17	KWG1710980	
PBDE 183	ND	U	0.050	0.013	1	12/13/17	12/20/17	KWG1710980	
PBDE 190	ND	U	0.050	0.020	1	12/13/17	12/20/17	KWG1710980	
PBDE 203	ND	U	0.050	0.029	1	12/13/17	12/20/17	KWG1710980	
PBDE 206	ND	U	0.50	0.031	1	12/13/17	12/20/17	KWG1710980	
PBDE 209	ND	U	0.50	0.026	1	12/13/17	12/20/17	KWG1710980	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
PBDE 47C13	89	70-130	12/20/17	Acceptable
PBDE 99C13	99	70-130	12/20/17	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA

Polybrominated Diphenyl Ethers by 8270C-SIM

Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	KWG1711053-4	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
PBDE 17	ND	U	0.050	0.023	1	12/15/17	12/21/17	KWG1711053	
PBDE 28	ND	U	0.050	0.024	1	12/15/17	12/21/17	KWG1711053	
PBDE 71	ND	U	0.050	0.015	1	12/15/17	12/21/17	KWG1711053	
PBDE 47	ND	U	0.050	0.029	1	12/15/17	12/21/17	KWG1711053	
PBDE 66	ND	U	0.050	0.019	1	12/15/17	12/21/17	KWG1711053	
PBDE 100	ND	U	0.050	0.014	1	12/15/17	12/21/17	KWG1711053	
PBDE 99	ND	U	0.050	0.030	1	12/15/17	12/21/17	KWG1711053	
PBDE 85	ND	U	0.080	0.040	1	12/15/17	12/21/17	KWG1711053	
PBDE 154	ND	U	0.050	0.0078	1	12/15/17	12/21/17	KWG1711053	
PBDE 153	ND	U	0.050	0.0087	1	12/15/17	12/21/17	KWG1711053	
PBDE 138	ND	U	0.050	0.016	1	12/15/17	12/21/17	KWG1711053	
PBDE 128	ND	U	0.050	0.0099	1	12/15/17	12/21/17	KWG1711053	
PBDE 183	ND	U	0.050	0.013	1	12/15/17	12/21/17	KWG1711053	
PBDE 190	ND	U	0.050	0.020	1	12/15/17	12/21/17	KWG1711053	
PBDE 203	ND	U	0.050	0.029	1	12/15/17	12/21/17	KWG1711053	
PBDE 206	ND	U	0.50	0.031	1	12/15/17	12/21/17	KWG1711053	
PBDE 209	ND	U	0.50	0.026	1	12/15/17	12/21/17	KWG1711053	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
PBDE 47C13	89	70-130	12/21/17	Acceptable
PBDE 99C13	100	70-130	12/21/17	Acceptable

Comments:

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056
Sample Matrix: Sediment

Service Request: K1713130

Surrogate Recovery Summary
Polybrominated Diphenyl Ethers by 8270C-SIM

Extraction Method: EPA 3541
Analysis Method: 8270D SIM

Units: Percent
Level: Low

Sample Name	Lab Code	Sur1	Sur2
Batch QC	K1713018-010	80	101
URSC-RM18.35E-COMP	K1713130-006	75 D	94 D
URSC-RM20.9W-COMP	K1713130-015	76	91
URSC-RM24.7E-COMP	K1713130-021	96	95
URSC-RM20.0E-COMP	K1713130-032	88	93
URSC-RM25.2E-COMP	K1713130-033	77	93
Method Blank	KWG1710980-4	89	99
Method Blank	KWG1711053-4	89	100
URSC-RM18.35E-COMPMS	KWG1710980-1	79 D	92 D
URSC-RM18.35E-COMPDMS	KWG1710980-2	75 D	99 D
Batch QCMS	KWG1711053-1	73	89
Batch QCDMS	KWG1711053-2	85	92
Lab Control Sample	KWG1710980-3	80	86
Lab Control Sample	KWG1711053-3	93	102

Surrogate Recovery Control Limits (%)

Sur1	=	PBDE 47C13	70-130
Sur2	=	PBDE 99C13	70-130

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Analyzed:**	12/19/2017
		Time Analyzed:	05:25

Internal Standard Area and RT Summary
Polybrominated Diphenyl Ethers by 8270C-SIM

File ID:	J:\MS14\DATA\121917\1219F002.D	**Lab Code:**	KWG1711159-2
Instrument ID:	MS14	**Analysis Lot:**	KWG1711159
Analysis Method:	8270D SIM		

		PCB 207	
		Area	**RT**
	Results ==>	88,473	8.18
	Upper Limit ==>	176,946	8.68
	Lower Limit ==>	44,237	7.68
	ICAL Result ==>	80,634	8.17
Associated Analyses			
Lab Control Sample	KWG1710980-3	81,614	8.18
URSC-RM18.35E-COMPDL	K1713130-006	80,710	8.18
URSC-RM18.35E-COMP	K1713130-006	67,353	8.19
URSC-RM18.35E-COMPMS	KWG1710980-1	69,236	8.20
URSC-RM18.35E-COMPDMS	KWG1710980-2	70,581	8.20

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Analyzed:**	12/20/2017
		Time Analyzed:	07:29

Internal Standard Area and RT Summary
Polybrominated Diphenyl Ethers by 8270C-SIM

File ID:	J:\MS14\DATA\122017\1220F002.D	**Lab Code:**	KWG1711185-2
Instrument ID:	MS14	**Analysis Lot:**	KWG1711185
Analysis Method:	8270D SIM		

		PCB 207	
		Area	**RT**
	Results ==>	90,003	8.15
	Upper Limit ==>	180,006	8.65
	Lower Limit ==>	45,002	7.65
	ICAL Result ==>	80,634	8.17
Associated Analyses			
Method Blank	KWG1710980-4	82,032	8.15
Lab Control Sample	KWG1711053-3	83,501	8.15
URSC-RM20.0E-COMPDL	K1713130-032	77,912	8.15

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Analyzed:**	12/21/2017
		Time Analyzed:	06:49

Internal Standard Area and RT Summary
Polybrominated Diphenyl Ethers by 8270C-SIM

File ID:	J:\MS14\DATA\122117\1221F002.D	**Lab Code:**	KWG1711222-2
Instrument ID:	MS14	**Analysis Lot:**	KWG1711222
Analysis Method:	8270D SIM		

		PCB 207	
		Area	**RT**
	Results ==>	75,336	8.15
	Upper Limit ==>	150,672	8.65
	Lower Limit ==>	37,668	7.65
	ICAL Result ==>	80,634	8.17
Associated Analyses			
Method Blank	KWG1711053-4	77,268	8.15
Batch QCMS	KWG1711053-1	66,100	8.16
Batch QCDMS	KWG1711053-2	67,869	8.16
Batch QC	K1713018-010	68,564	8.17
URSC-RM20.9W-COMP	K1713130-015	68,495	8.16
URSC-RM24.7E-COMP	K1713130-021	67,273	8.16
URSC-RM20.0E-COMP	K1713130-032	72,850	8.16
URSC-RM25.2E-COMP	K1713130-033	67,168	8.18

Results flagged with an asterisk (*) indicate values outside control criteria.

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Extracted:**	12/13/2017
Sample Matrix:	Sediment	**Date Analyzed:**	12/19/2017

Matrix Spike/Duplicate Matrix Spike Summary
Polybrominated Diphenyl Ethers by 8270C-SIM

Sample Name:	URSC-RM18.35E-COMP	**Units:**	ug/Kg
Lab Code:	K1713130-006	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM	**Extraction Lot:**	KWG1710980

		URSC-RM18.35E-COMPMS KWG1710980-1 Matrix Spike			URSC-RM18.35E-COMPDMS KWG1710980-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
PBDE 17	ND	3.72	3.65	102	3.71	3.59	104	70-130	0	40
PBDE 28	ND	4.16	3.65	114	3.98	3.59	111	70-130	4	40
PBDE 71	0.29	3.06	3.65	76	2.95	3.59	74	70-130	4	40
PBDE 47	1.1	4.11	3.65	84	4.03	3.59	83	70-130	2	40
PBDE 66	0.27	3.87	3.65	99	3.52	3.59	91	70-130	9	40
PBDE 100	ND	3.90	3.65	107	3.76	3.59	105	70-130	4	40
PBDE 99	1.1	4.64	3.65	97	4.69	3.59	100	70-130	1	40
PBDE 85	ND	4.49	3.65	123	4.26	3.59	119	70-130	5	40
PBDE 154	ND	4.01	3.65	110	3.71	3.59	104	70-130	8	40
PBDE 153	0.37	5.00	3.65	127	4.99	3.59	129	70-130	0	40
PBDE 138	ND	4.73	3.65	130	4.66	3.59	130	70-130	2	40
PBDE 128	ND	4.84	3.65	133 *	5.91	3.59	165 *	70-130	20	40
PBDE 183	ND	4.89	3.65	134 *	4.97	3.59	139 *	70-130	2	40
PBDE 190	ND	5.26	3.65	144 *	5.44	3.59	152 *	70-130	3	40
PBDE 203	ND	5.10	3.65	140 *	5.47	3.59	153 *	70-130	7	40
PBDE 206	1.7	7.46	3.65	159 *	8.29	3.59	185 *	70-130	11	40
PBDE 209	39	36.8E	3.65	-69 #	41.7E	3.59	67 #	70-130	13	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Extracted:**	12/15/2017
Sample Matrix:	Sediment	**Date Analyzed:**	12/21/2017

Matrix Spike/Duplicate Matrix Spike Summary
Polybrominated Diphenyl Ethers by 8270C-SIM

Sample Name:	Batch QC	**Units:**	ug/Kg
Lab Code:	K1713018-010	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM	**Extraction Lot:**	KWG1711053

		Batch QCMS KWG1711053-1 Matrix Spike			Batch QCDMS KWG1711053-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
PBDE 17	ND	4.01	4.08	98	4.32	4.12	105	70-130	7	40
PBDE 28	ND	3.61	4.08	88	3.71	4.12	90	70-130	3	40
PBDE 71	ND	3.31	4.08	81	3.20	4.12	78	70-130	3	40
PBDE 47	0.29	3.24	4.08	72	3.50	4.12	78	70-130	8	40
PBDE 66	ND	3.61	4.08	88	3.81	4.12	92	70-130	5	40
PBDE 100	ND	3.77	4.08	92	4.38	4.12	106	70-130	15	40
PBDE 99	ND	3.99	4.08	98	4.38	4.12	106	70-130	9	40
PBDE 85	ND	4.55	4.08	111	5.03	4.12	122	70-130	10	40
PBDE 154	ND	4.15	4.08	102	4.48	4.12	109	70-130	8	40
PBDE 153	ND	4.79	4.08	117	5.14	4.12	125	70-130	7	40
PBDE 138	ND	4.73	4.08	116	5.65	4.12	137 *	70-130	18	40
PBDE 128	ND	5.13	4.08	126	5.92	4.12	144 *	70-130	14	40
PBDE 183	ND	4.75	4.08	116	5.05	4.12	122	70-130	6	40
PBDE 190	ND	4.55	4.08	111	5.06	4.12	123	70-130	11	40
PBDE 203	ND	4.16	4.08	102	4.50	4.12	109	70-130	8	40
PBDE 206	ND	4.62	4.08	113	5.14	4.12	125	70-130	11	40
PBDE 209	4.7	6.35	4.08	40 *	9.46	4.12	115	70-130	39	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Extracted:**	12/13/2017
Sample Matrix:	Sediment	**Date Analyzed:**	12/19/2017

Lab Control Spike Summary
Polybrominated Diphenyl Ethers by 8270C-SIM

Extraction Method:	EPA 3541	**Units:**	ug/Kg
Analysis Method:	8270D SIM	**Basis:**	Dry
		Level:	Low
		Extraction Lot:	KWG1710980

	Lab Control Sample KWG1710980-3 Lab Control Spike			
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
PBDE 17	2.05	2.50	82	70-130
PBDE 28	2.00	2.50	80	70-130
PBDE 71	2.12	2.50	85	70-130
PBDE 47	2.12	2.50	85	70-130
PBDE 66	2.20	2.50	88	70-130
PBDE 100	2.25	2.50	90	70-130
PBDE 99	2.27	2.50	91	70-130
PBDE 85	2.25	2.50	90	70-130
PBDE 154	2.31	2.50	92	70-130
PBDE 153	2.37	2.50	95	70-130
PBDE 138	2.35	2.50	94	70-130
PBDE 128	2.37	2.50	95	70-130
PBDE 183	2.38	2.50	95	70-130
PBDE 190	2.34	2.50	94	70-130
PBDE 203	2.28	2.50	91	70-130
PBDE 206	2.59	2.50	104	70-130
PBDE 209	3.10	2.50	124	70-130

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Extracted:**	12/15/2017
Sample Matrix:	Sediment	**Date Analyzed:**	12/20/2017

Lab Control Spike Summary
Polybrominated Diphenyl Ethers by 8270C-SIM

Extraction Method:	EPA 3541	**Units:**	ug/Kg
Analysis Method:	8270D SIM	**Basis:**	Dry
		Level:	Low
		Extraction Lot:	KWG1711053

	Lab Control Sample KWG1711053-3 Lab Control Spike			
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
PBDE 17	2.30	2.50	92	70-130
PBDE 28	2.29	2.50	92	70-130
PBDE 71	2.45	2.50	98	70-130
PBDE 47	2.50	2.50	100	70-130
PBDE 66	2.60	2.50	104	70-130
PBDE 100	2.59	2.50	103	70-130
PBDE 99	2.65	2.50	106	70-130
PBDE 85	2.62	2.50	105	70-130
PBDE 154	2.62	2.50	105	70-130
PBDE 153	2.78	2.50	111	70-130
PBDE 138	2.71	2.50	108	70-130
PBDE 128	2.87	2.50	115	70-130
PBDE 183	2.71	2.50	108	70-130
PBDE 190	2.66	2.50	106	70-130
PBDE 203	2.56	2.50	102	70-130
PBDE 206	2.93	2.50	117	70-130
PBDE 209	4.07	2.50	163 *	70-130

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Extracted:**	12/13/2017
Sample Matrix:	Sediment	**Date Analyzed:**	12/20/2017
		Time Analyzed:	07:50

Method Blank Summary
Polybrominated Diphenyl Ethers by 8270C-SIM

Sample Name:	Method Blank	**Instrument ID:**	MS14
Lab Code:	KWG1710980-4	**File ID:**	J:\MS14\DATA\122017\1220F003.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM	**Extraction Lot:**	KWG1710980

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1710980-3	J:\MS14\DATA\121917\1219F006.D	12/19/17	06:57
URSC-RM18.35E-COMP	K1713130-006	J:\MS14\DATA\121917\1219F010.D	12/19/17	08:20
URSC-RM18.35E-COMP	K1713130-006	J:\MS14\DATA\121917\1219F030.D	12/19/17	14:26
URSC-RM18.35E-COMPMS	KWG1710980-1	J:\MS14\DATA\121917\1219F032.D	12/19/17	15:02
URSC-RM18.35E-COMPDMS	KWG1710980-2	J:\MS14\DATA\121917\1219F033.D	12/19/17	15:21

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Extracted:**	12/15/2017
Sample Matrix:	Sediment	**Date Analyzed:**	12/21/2017
		Time Analyzed:	07:29

Method Blank Summary
Polybrominated Diphenyl Ethers by 8270C-SIM

Sample Name:	Method Blank	**Instrument ID:**	MS14
Lab Code:	KWG1711053-4	**File ID:**	J:\MS14\DATA\122117\1221F004.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM	**Extraction Lot:**	KWG1711053

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1711053-3	J:\MS14\DATA\122017\1220F006.D	12/20/17	08:46
URSC-RM20.0E-COMP	K1713130-032	J:\MS14\DATA\122017\1220F012.D	12/20/17	10:40
Batch QCMS	KWG1711053-1	J:\MS14\DATA\122117\1221F009.D	12/21/17	08:59
Batch QCDMS	KWG1711053-2	J:\MS14\DATA\122117\1221F010.D	12/21/17	09:17
Batch QC	K1713018-010	J:\MS14\DATA\122117\1221F011.D	12/21/17	09:35
URSC-RM20.9W-COMP	K1713130-015	J:\MS14\DATA\122117\1221F014.D	12/21/17	10:30
URSC-RM24.7E-COMP	K1713130-021	J:\MS14\DATA\122117\1221F016.D	12/21/17	11:06
URSC-RM20.0E-COMP	K1713130-032	J:\MS14\DATA\122117\1221F017.D	12/21/17	11:24
URSC-RM25.2E-COMP	K1713130-033	J:\MS14\DATA\122117\1221F018.D	12/21/17	11:42

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Extracted:**	12/13/2017
Sample Matrix:	Sediment	**Date Analyzed:**	12/19/2017
		Time Analyzed:	06:57

Lab Control Sample Summary
Polybrominated Diphenyl Ethers by 8270C-SIM

Sample Name:	Lab Control Sample	**Instrument ID:**	MS14
Lab Code:	KWG1710980-3	**File ID:**	J:\MS14\DATA\121917\1219F006.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM	**Extraction Lot:**	KWG1710980

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
URSC-RM18.35E-COMP	K1713130-006	J:\MS14\DATA\121917\1219F010.D	12/19/17	08:20
URSC-RM18.35E-COMP	K1713130-006	J:\MS14\DATA\121917\1219F030.D	12/19/17	14:26
URSC-RM18.35E-COMPMS	KWG1710980-1	J:\MS14\DATA\121917\1219F032.D	12/19/17	15:02
URSC-RM18.35E-COMPDMS	KWG1710980-2	J:\MS14\DATA\121917\1219F033.D	12/19/17	15:21
Method Blank	KWG1710980-4	J:\MS14\DATA\122017\1220F003.D	12/20/17	07:50

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Extracted:**	12/15/2017
Sample Matrix:	Sediment	**Date Analyzed:**	12/20/2017
		Time Analyzed:	08:46

Lab Control Sample Summary
Polybrominated Diphenyl Ethers by 8270C-SIM

Sample Name:	Lab Control Sample	**Instrument ID:**	MS14
Lab Code:	KWG1711053-3	**File ID:**	J:\MS14\DATA\122017\1220F006.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM	**Extraction Lot:**	KWG1711053

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
URSC-RM20.0E-COMP	K1713130-032	J:\MS14\DATA\122017\1220F012.D	12/20/17	10:40
Method Blank	KWG1711053-4	J:\MS14\DATA\122117\1221F004.D	12/21/17	07:29
Batch QCMS	KWG1711053-1	J:\MS14\DATA\122117\1221F009.D	12/21/17	08:59
Batch QCDMS	KWG1711053-2	J:\MS14\DATA\122117\1221F010.D	12/21/17	09:17
Batch QC	K1713018-010	J:\MS14\DATA\122117\1221F011.D	12/21/17	09:35
URSC-RM20.9W-COMP	K1713130-015	J:\MS14\DATA\122117\1221F014.D	12/21/17	10:30
URSC-RM24.7E-COMP	K1713130-021	J:\MS14\DATA\122117\1221F016.D	12/21/17	11:06
URSC-RM20.0E-COMP	K1713130-032	J:\MS14\DATA\122117\1221F017.D	12/21/17	11:24
URSC-RM25.2E-COMP	K1713130-033	J:\MS14\DATA\122117\1221F018.D	12/21/17	11:42

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056

Service Request: K1713130
Date Analyzed: 12/19/2017
Time Analyzed: 05:05

Tune Summary
Polybrominated Diphenyl Ethers by 8270C-SIM

File ID: J:\MS14\DATA\121917\1219F001.D
Instrument ID: MS14
Column:

Analysis Method: 8270D SIM
Analysis Lot: KWG1711159

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	10	80	48.9	228658	PASS
68	69	0	2	0.9	1988	PASS
69	198	0	100	47.8	223649	PASS
70	69	0	2	0.0	0	PASS
127	198	10	80	51.9	242839	PASS
197	198	0	2	0.2	1033	PASS
198	442	30	100	59.8	467698	PASS
199	198	5	9	6.7	31146	PASS
275	198	10	60	37.3	174386	PASS
365	442	1	50	4.1	32092	PASS
441	443	0	100	74.6	116405	PASS
442	442	100	100	100.0	782458	PASS
443	442	15	24	19.9	156100	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1711159-2	J:\MS14\DATA\121917\1219F002.D	12/19/2017	05:25	
Lab Control Sample	KWG1710980-3	J:\MS14\DATA\121917\1219F006.D	12/19/2017	06:57	
URSC-RM18.35E-COMP	K1713130-006	J:\MS14\DATA\121917\1219F010.D	12/19/2017	08:20	
URSC-RM18.35E-COMP	K1713130-006	J:\MS14\DATA\121917\1219F030.D	12/19/2017	14:26	
URSC-RM18.35E-COMPMS	KWG1710980-1	J:\MS14\DATA\121917\1219F032.D	12/19/2017	15:02	
URSC-RM18.35E-COMPDMS	KWG1710980-2	J:\MS14\DATA\121917\1219F033.D	12/19/2017	15:21	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056

Service Request: K1713130
Date Analyzed: 12/20/2017
Time Analyzed: 07:10

Tune Summary
Polybrominated Diphenyl Ethers by 8270C-SIM

File ID: J:\MS14\DATA\122017\1220F001.D
Instrument ID: MS14
Column:

Analysis Method: 8270D SIM
Analysis Lot: KWG1711185

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	10	80	43.3	514771	PASS
68	69	0	2	1.2	6677	PASS
69	198	0	100	45.3	538575	PASS
70	69	0	2	0.5	2660	PASS
127	198	10	80	50.8	604402	PASS
197	198	0	2	0.0	276	PASS
198	442	30	100	44.6	1190165	PASS
199	198	5	9	6.8	81512	PASS
275	198	10	60	40.6	483157	PASS
365	442	1	50	3.3	87021	PASS
441	443	0	100	75.8	396685	PASS
442	442	100	100	100.0	2666005	PASS
443	442	15	24	19.6	523349	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1711185-2	J:\MS14\DATA\122017\1220F002.D	12/20/2017	07:29	
Method Blank	KWG1710980-4	J:\MS14\DATA\122017\1220F003.D	12/20/2017	07:50	
Lab Control Sample	KWG1711053-3	J:\MS14\DATA\122017\1220F006.D	12/20/2017	08:46	
URSC-RM20.0E-COMP	K1713130-032	J:\MS14\DATA\122017\1220F012.D	12/20/2017	10:40	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056

Service Request: K1713130
Date Analyzed: 12/21/2017
Time Analyzed: 06:29

Tune Summary
Polybrominated Diphenyl Ethers by 8270C-SIM

File ID: J:\MS14\DATA\122117\1221F001.D
Instrument ID: MS14
Column:

Analysis Method: 8270D SIM
Analysis Lot: KWG1711222

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	10	80	49.7	486866	PASS
68	69	0	2	1.3	6669	PASS
69	198	0	100	51.5	504823	PASS
70	69	0	2	0.6	3140	PASS
127	198	10	80	53.9	527693	PASS
197	198	0	2	0.0	0	PASS
198	442	30	100	46.5	979626	PASS
199	198	5	9	6.8	66370	PASS
275	198	10	60	35.1	343637	PASS
365	442	1	50	3.3	68701	PASS
441	443	0	100	76.2	318954	PASS
442	442	100	100	100.0	2106069	PASS
443	442	15	24	19.9	418709	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1711222-2	J:\MS14\DATA\122117\1221F002.D	12/21/2017	06:49	
Method Blank	KWG1711053-4	J:\MS14\DATA\122117\1221F004.D	12/21/2017	07:29	
Batch QCMS	KWG1711053-1	J:\MS14\DATA\122117\1221F009.D	12/21/2017	08:59	
Batch QCDMS	KWG1711053-2	J:\MS14\DATA\122117\1221F010.D	12/21/2017	09:17	
Batch QC	K1713018-010	J:\MS14\DATA\122117\1221F011.D	12/21/2017	09:35	
URSC-RM20.9W-COMP	K1713130-015	J:\MS14\DATA\122117\1221F014.D	12/21/2017	10:30	
URSC-RM24.7E-COMP	K1713130-021	J:\MS14\DATA\122117\1221F016.D	12/21/2017	11:06	
URSC-RM20.0E-COMP	K1713130-032	J:\MS14\DATA\122117\1221F017.D	12/21/2017	11:24	
URSC-RM25.2E-COMP	K1713130-033	J:\MS14\DATA\122117\1221F018.D	12/21/2017	11:42	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

QA/QC Results

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056
Service Request: K1713130
Calibration Date: 12/18/2017

Initial Calibration Summary
Polybrominated Diphenyl Ethers by 8270C-SIM

Calibration ID: CAL15642
Instrument ID: MS14
Column: MS

Level ID	File ID	Level ID	File ID
A	J:\MS14\DATA\121817\1218F004.D	G	J:\MS14\DATA\121817\1218F010.D
B	J:\MS14\DATA\121817\1218F005.D	H	J:\MS14\DATA\121817\1218F011.D
C	J:\MS14\DATA\121817\1218F006.D	I	J:\MS14\DATA\121817\1218F012.D
D	J:\MS14\DATA\121817\1218F007.D	J	J:\MS14\DATA\121817\1218F013.D
E	J:\MS14\DATA\121817\1218F008.D	K	J:\MS14\DATA\121817\1218F014.D
F	J:\MS14\DATA\121817\1218F009.D		

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
PBDE 47C13	A	0.50	0.569	B	1.0	0.530	C	5.0	0.533	D	10	0.571	E	15	0.564
	F	20	0.555	G	25	0.588	H	30	0.571	I	40	0.614	J	50	0.616
	K	60	0.590												
PBDE 99C13	A	0.50	0.397	B	1.0	0.365	C	5.0	0.374	D	10	0.400	E	15	0.395
	F	20	0.400	G	25	0.431	H	30	0.422	I	40	0.451	J	50	0.449
	K	60	0.446												
PBDE 17	A	0.50	0.827	B	1.0	0.805	C	5.0	0.762	D	10	0.803	E	15	0.757
	F	20	0.787	G	25	0.805	H	30	0.806	I	40	0.834	J	50	0.828
	K	60	0.797												
PBDE 28	A	0.50	0.687	B	1.0	0.592	C	5.0	0.618	D	10	0.658	E	15	0.642
	F	20	0.660	G	25	0.677	H	30	0.667	I	40	0.708	J	50	0.704
	K	60	0.669												
PBDE 71	A	0.50	0.827	B	1.0	0.776	C	5.0	0.784	D	10	0.808	E	15	0.794
	F	20	0.826	G	25	0.878	H	30	0.843	I	40	0.902	J	50	0.911
	K	60	0.860												
PBDE 47	A	0.50	0.624	B	1.0	0.570	C	5.0	0.505	D	10	0.566	E	15	0.544
	F	20	0.555	G	25	0.585	H	30	0.580	I	40	0.617	J	50	0.601
	K	60	0.574												
PBDE 66	A	0.50	0.673	B	1.0	0.606	C	5.0	0.592	D	10	0.622	E	15	0.629
	F	20	0.627	G	25	0.653	H	30	0.650	I	40	0.692	J	50	0.677
	K	60	0.667												
PBDE 100	A	0.50	0.403	B	1.0	0.336	C	5.0	0.330	D	10	0.357	E	15	0.343
	F	20	0.362	G	25	0.373	H	30	0.365	I	40	0.389	J	50	0.383
	K	60	0.387												
PBDE 99	A	0.50	0.418	B	1.0	0.384	C	5.0	0.379	D	10	0.401	E	15	0.394
	F	20	0.404	G	25	0.435	H	30	0.428	I	40	0.455	J	50	0.446
	K	60	0.446												
PBDE 85	A	0.50	0.408	B	1.0	0.362	C	5.0	0.380	D	10	0.395	E	15	0.384
	F	20	0.392	G	25	0.435	H	30	0.411	I	40	0.453	J	50	0.444
	K	60	0.437												

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Hart Crowser, Incorporated **Service Request:** K1713130
Project: URSC/150-001-056 **Calibration Date:** 12/18/2017

Initial Calibration Summary
Polybrominated Diphenyl Ethers by 8270C-SIM

Calibration ID: CAL15642 **Column:** MS
Instrument ID: MS14

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
PBDE 154	A	0.50	0.380	B	1.0	0.353	C	5.0	0.350	D	10	0.378	E	15	0.380
	F	20	0.377	G	25	0.412	H	30	0.395	I	40	0.429	J	50	0.423
	K	60	0.415												
PBDE 153	A	0.50	0.362	B	1.0	0.346	C	5.0	0.353	D	10	0.395	E	15	0.385
	F	20	0.393	G	25	0.434	H	30	0.409	I	40	0.445	J	50	0.445
	K	60	0.449												
PBDE 138	A	0.50	0.347	B	1.0	0.301	C	5.0	0.329	D	10	0.366	E	15	0.358
	F	20	0.368	G	25	0.406	H	30	0.390	I	40	0.416	J	50	0.434
	K	60	0.437												
PBDE 128	A	0.50	0.336	B	1.0	0.316	C	5.0	0.359	D	10	0.391	E	15	0.384
	F	20	0.394	G	25	0.456	H	30	0.415	I	40	0.460	J	50	0.460
	K	60	0.484												
PBDE 183	A	0.50	0.230	B	1.0	0.231	C	5.0	0.257	D	10	0.298	E	15	0.305
	F	20	0.301	G	25	0.332	H	30	0.320	I	40	0.348	J	50	0.346
	K	60	0.345												
PBDE 190	A	0.50	0.223	B	1.0	0.255	C	5.0	0.215	D	10	0.246	E	15	0.250
	F	20	0.266	G	25	0.300	H	30	0.296	I	40	0.318	J	50	0.326
	K	60	0.332												
PBDE 203	A	0.50	0.200	B	1.0	0.167	C	5.0	0.180	D	10	0.209	E	15	0.211
	F	20	0.217	G	25	0.254	H	30	0.250	I	40	0.275	J	50	0.280
	K	60	0.285												
PBDE 206							C	5.0	0.0612	D	10	0.0755	E	15	0.0802
	F	20	0.0877	G	25	0.103	H	30	0.103	I	40	0.116	J	50	0.124
	K	60	0.129												
PBDE 209							C	5.0	0.0204	D	10	0.0276	E	15	0.0286
	F	20	0.0318	G	25	0.0367	H	30	0.0390	I	40	0.0478	J	50	0.0521
	K	60	0.0560												

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Hart Crowser, Incorporated **Service Request:** K1713130
Project: URSC/150-001-056 **Calibration Date:** 12/18/2017

Initial Calibration Summary
Polybrominated Diphenyl Ethers by 8270C-SIM

Calibration ID: CAL15642 **Column:** MS
Instrument ID: MS14

		Calibration Evaluation					RRF Evaluation		
Analyte Name	Compound Type	Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
PBDE 47C13	SURR	AverageRF	% RSD	4.9		≤ 20	0.573		0.01
PBDE 99C13	SURR	AverageRF	% RSD	7.3		≤ 20	0.412		0.01
PBDE 17	MS	AverageRF	% RSD	3.1		≤ 20	0.801		0.01
PBDE 28	MS	AverageRF	% RSD	5.3		≤ 20	0.662		0.01
PBDE 71	MS	AverageRF	% RSD	5.5		≤ 20	0.837		0.01
PBDE 47	MS	AverageRF	% RSD	5.9		≤ 20	0.575		0.01
PBDE 66	MS	AverageRF	% RSD	4.9		≤ 20	0.644		0.01
PBDE 100	MS	AverageRF	% RSD	6.4		≤ 20	0.366		0.01
PBDE 99	MS	AverageRF	% RSD	6.4		≤ 20	0.417		0.01
PBDE 85	MS	AverageRF	% RSD	7.2		≤ 20	0.409		0.01
PBDE 154	MS	AverageRF	% RSD	6.9		≤ 20	0.390		0.01
PBDE 153	MS	AverageRF	% RSD	9.6		≤ 20	0.401		0.01
PBDE 138	MS	AverageRF	% RSD	11.5		≤ 20	0.378		0.01
PBDE 128	MS	AverageRF	% RSD	13.6		≤ 20	0.405		0.01
PBDE 183	MS	AverageRF	% RSD	14.6		≤ 20	0.301		0.01
PBDE 190	MS	Quadratic(0,0)	COD	0.999		≥ 0.990	0.275		0.01
PBDE 203	MS	Quadratic(0,0)	COD	0.998		≥ 0.990	0.230		0.01
PBDE 206	MS	Quadratic(0,0)	COD	0.998		≥ 0.990	0.0979		0.01
PBDE 209	MS	Quadratic(0,0)	COD	0.998		≥ 0.990	0.0378		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

QA/QC Results

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056

Service Request: K1713130
Calibration Date: 12/18/2017
Date Analyzed: 12/18/2017

Second Source Calibration Verification
Polybrominated Diphenyl Ethers by 8270C-SIM

Calibration Type: Internal Standard
Analysis Method: 8270D SIM

Calibration ID: CAL15642
Units: ng/ml

File ID: J:\MS14\DATA\121817\1218F016.D
J:\MS14\DATA\121817\1218F017.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
PBDE 17	5.0	6.0	0.801	0.964	20	NA	± 30 %	AverageRF
PBDE 28	5.0	6.1	0.662	0.814	23	NA	± 30 %	AverageRF
PBDE 71	5.0	5.9	0.837	0.994	19	NA	± 30 %	AverageRF
PBDE 47	5.0	6.0	0.575	0.692	20	NA	± 30 %	AverageRF
PBDE 66	5.0	6.3	0.644	0.811	26	NA	± 30 %	AverageRF
PBDE 100	5.0	6.0	0.366	0.443	21	NA	± 30 %	AverageRF
PBDE 99	5.0	6.1	0.417	0.506	21	NA	± 30 %	AverageRF
PBDE 85	5.0	5.6	0.409	0.461	13	NA	± 30 %	AverageRF
PBDE 154	5.0	5.7	0.390	0.448	15	NA	± 30 %	AverageRF
PBDE 153	5.0	6.0	0.401	0.486	21	NA	± 30 %	AverageRF
PBDE 138	7.5	8.9	0.378	0.446	18	NA	± 30 %	AverageRF
PBDE 183	5.0	5.5	0.301	0.331	10	NA	± 30 %	AverageRF
PBDE 190	5.0	6.3	0.275	0.333	NA	27	± 30 %	Quadratic(0,0
PBDE 203	25	26	0.230	0.250	NA	2	± 30 %	Quadratic(0,0
PBDE 206	25	30	0.0979	0.126	NA	22	± 30 %	Quadratic(0,0
PBDE 209	25	26	0.0378	0.0396	NA	5	± 30 %	Quadratic(0,0

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056

Service Request: K1713130
Date Analyzed: 12/19/2017

Continuing Calibration Verification Summary
Polybrominated Diphenyl Ethers by 8270C-SIM

Calibration Type: Internal Standard
Analysis Method: 8270D SIM

Calibration Date: 12/18/2017
Calibration ID: CAL15642
Analysis Lot: KWG1711159
Units: ng/ml

File ID: J:\MS14\DATA\121917\1219F002.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
PBDE 47C13	25	23	0.01	0.573	0.521	-9	NA	± 20	AverageRF
PBDE 99C13	25	24	0.01	0.412	0.402	-2	NA	± 20	AverageRF
PBDE 17	25	22	0.01	0.801	0.720	-10	NA	± 20	AverageRF
PBDE 28	25	23	0.01	0.662	0.617	-7	NA	± 20	AverageRF
PBDE 71	25	23	0.01	0.837	0.774	-8	NA	± 20	AverageRF
PBDE 47	25	23	0.01	0.575	0.523	-9	NA	± 20	AverageRF
PBDE 66	25	24	0.01	0.644	0.617	-4	NA	± 20	AverageRF
PBDE 100	25	23	0.01	0.366	0.335	-8	NA	± 20	AverageRF
PBDE 99	25	24	0.01	0.417	0.400	-4	NA	± 20	AverageRF
PBDE 85	25	26	0.01	0.409	0.420	3	NA	± 20	AverageRF
PBDE 154	25	24	0.01	0.390	0.380	-3	NA	± 20	AverageRF
PBDE 153	25	26	0.01	0.401	0.418	4	NA	± 20	AverageRF
PBDE 138	25	27	0.01	0.378	0.402	6	NA	± 20	AverageRF
PBDE 128	25	28	0.01	0.405	0.450	11	NA	± 20	AverageRF
PBDE 183	25	26	0.01	0.301	0.307	2	NA	± 20	AverageRF
PBDE 190	25	25	0.01	0.275	0.288	NA	0	± 20	Quadratic(0,0)
PBDE 203	25	25	0.01	0.230	0.245	NA	0	± 20	Quadratic(0,0)
PBDE 206	25	26	0.01	0.0979	0.104	NA	5	± 20	Quadratic(0,0)
PBDE 209	25	27	0.01	0.0378	0.0416	NA	9	± 20	Quadratic(0,0)

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

QA/QC Results

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056

Service Request: K1713130
Date Analyzed: 12/20/2017

Continuing Calibration Verification Summary
Polybrominated Diphenyl Ethers by 8270C-SIM

Calibration Type: Internal Standard
Analysis Method: 8270D SIM

Calibration Date: 12/18/2017
Calibration ID: CAL15642
Analysis Lot: KWG1711185
Units: ng/ml

File ID: J:\MS14\DATA\122017\1220F002.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift		Criteria	Curve Fit
PBDE 47C13	25	23	0.01	0.573	0.520	-9	NA		± 20	AverageRF
PBDE 99C13	25	24	0.01	0.412	0.392	-5	NA		± 20	AverageRF
PBDE 17	25	23	0.01	0.801	0.732	-9	NA		± 20	AverageRF
PBDE 28	25	23	0.01	0.662	0.610	-8	NA		± 20	AverageRF
PBDE 71	25	23	0.01	0.837	0.756	-10	NA		± 20	AverageRF
PBDE 47	25	23	0.01	0.575	0.533	-7	NA		± 20	AverageRF
PBDE 66	25	24	0.01	0.644	0.610	-5	NA		± 20	AverageRF
PBDE 100	25	24	0.01	0.366	0.348	-5	NA		± 20	AverageRF
PBDE 99	25	24	0.01	0.417	0.399	-4	NA		± 20	AverageRF
PBDE 85	25	25	0.01	0.409	0.408	0	NA		± 20	AverageRF
PBDE 154	25	23	0.01	0.390	0.360	-8	NA		± 20	AverageRF
PBDE 153	25	25	0.01	0.401	0.398	-1	NA		± 20	AverageRF
PBDE 138	25	25	0.01	0.378	0.384	2	NA		± 20	AverageRF
PBDE 128	25	28	0.01	0.405	0.449	11	NA		± 20	AverageRF
PBDE 183	25	25	0.01	0.301	0.303	1	NA		± 20	AverageRF
PBDE 190	25	25	0.01	0.275	0.291	NA	1		± 20	Quadratic(0,0)
PBDE 203	25	25	0.01	0.230	0.247	NA	1		± 20	Quadratic(0,0)
PBDE 206	25	28	0.01	0.0979	0.114	NA	12		± 20	Quadratic(0,0)
PBDE 209	25	30	0.01	0.0378	0.0486	NA	22	*	± 20	Quadratic(0,0)

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

QA/QC Results

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056

Service Request: K1713130
Date Analyzed: 12/21/2017

Continuing Calibration Verification Summary
Polybrominated Diphenyl Ethers by 8270C-SIM

Calibration Type: Internal Standard
Analysis Method: 8270D SIM

Calibration Date: 12/18/2017
Calibration ID: CAL15642
Analysis Lot: KWG1711222
Units: ng/ml

File ID: J:\MS14\DATA\122117\1221F002.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D		%Drift	Criteria	Curve Fit
PBDE 47C13	25	23	0.01	0.573	0.518	-10		NA	± 20	AverageRF
PBDE 99C13	25	25	0.01	0.412	0.413	0		NA	± 20	AverageRF
PBDE 17	25	21	0.01	0.801	0.679	-15		NA	± 20	AverageRF
PBDE 28	25	23	0.01	0.662	0.600	-9		NA	± 20	AverageRF
PBDE 71	25	23	0.01	0.837	0.755	-10		NA	± 20	AverageRF
PBDE 47	25	22	0.01	0.575	0.506	-12		NA	± 20	AverageRF
PBDE 66	25	24	0.01	0.644	0.611	-5		NA	± 20	AverageRF
PBDE 100	25	24	0.01	0.366	0.353	-4		NA	± 20	AverageRF
PBDE 99	25	24	0.01	0.417	0.408	-2		NA	± 20	AverageRF
PBDE 85	25	27	0.01	0.409	0.437	7		NA	± 20	AverageRF
PBDE 154	25	24	0.01	0.390	0.371	-5		NA	± 20	AverageRF
PBDE 153	25	25	0.01	0.401	0.409	2		NA	± 20	AverageRF
PBDE 138	25	27	0.01	0.378	0.401	6		NA	± 20	AverageRF
PBDE 128	25	31	0.01	0.405	0.497	23	*	NA	± 20	AverageRF
PBDE 183	25	26	0.01	0.301	0.310	3		NA	± 20	AverageRF
PBDE 190	25	26	0.01	0.275	0.305	NA		5	± 20	Quadratic(0,0)
PBDE 203	25	26	0.01	0.230	0.251	NA		3	± 20	Quadratic(0,0)
PBDE 206	25	26	0.01	0.0979	0.102	NA		3	± 20	Quadratic(0,0)
PBDE 209	25	25	0.01	0.0378	0.0361	NA		-2	± 20	Quadratic(0,0)

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: Hart Crowser, Incorporated **Service Request:** K1713130
Project: URSC/150-001-056

Analysis Run Log
Polybrominated Diphenyl Ethers by 8270C-SIM

Analysis Method: 8270D SIM **Analysis Lot:** KWG1711159
Instrument ID: MS14

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1219F001.D	GC/MS Tuning - Decafluorotriphenylphosph	KWG1711159-1	12/19/2017	05:05		12/19/2017	05:19
1219F002.D	Continuing Calibration Verification	KWG1711159-2	12/19/2017	05:25		12/19/2017	05:37
1219F006.D	Lab Control Sample	KWG1710980-3	12/19/2017	06:57		12/19/2017	07:09
1219F007.D	ZZZZZZ	ZZZZZZ	12/19/2017	07:16		12/19/2017	07:28
1219F010.D	URSC-RM18.35E-COMP	K1713130-006	12/19/2017	08:20		12/19/2017	08:32
1219F011.D	ZZZZZZ	ZZZZZZ	12/19/2017	08:38		12/19/2017	08:50
1219F012.D	ZZZZZZ	ZZZZZZ	12/19/2017	08:57		12/19/2017	09:09
1219F013.D	ZZZZZZ	ZZZZZZ	12/19/2017	09:15		12/19/2017	09:27
1219F014.D	ZZZZZZ	ZZZZZZ	12/19/2017	09:33		12/19/2017	09:45
1219F015.D	ZZZZZZ	ZZZZZZ	12/19/2017	09:52		12/19/2017	10:04
1219F016.D	ZZZZZZ	ZZZZZZ	12/19/2017	10:10		12/19/2017	10:22
1219F017.D	ZZZZZZ	ZZZZZZ	12/19/2017	10:28		12/19/2017	10:40
1219F018.D	ZZZZZZ	ZZZZZZ	12/19/2017	10:46		12/19/2017	10:58
1219F019.D	ZZZZZZ	ZZZZZZ	12/19/2017	11:05		12/19/2017	11:17
1219F020.D	ZZZZZZ	ZZZZZZ	12/19/2017	11:23		12/19/2017	11:35
1219F021.D	ZZZZZZ	ZZZZZZ	12/19/2017	11:41		12/19/2017	11:53
1219F022.D	ZZZZZZ	ZZZZZZ	12/19/2017	11:59		12/19/2017	12:11
1219F023.D	ZZZZZZ	ZZZZZZ	12/19/2017	12:18		12/19/2017	12:30
1219F024.D	ZZZZZZ	ZZZZZZ	12/19/2017	12:36		12/19/2017	12:48
1219F025.D	ZZZZZZ	ZZZZZZ	12/19/2017	12:54		12/19/2017	13:06
1219F026.D	ZZZZZZ	ZZZZZZ	12/19/2017	13:13		12/19/2017	13:25
1219F027.D	ZZZZZZ	ZZZZZZ	12/19/2017	13:31		12/19/2017	13:43
1219F028.D	ZZZZZZ	ZZZZZZ	12/19/2017	13:49		12/19/2017	14:01
1219F029.D	ZZZZZZ	ZZZZZZ	12/19/2017	14:07		12/19/2017	14:19
1219F030.D	URSC-RM18.35E-COMP	K1713130-006	12/19/2017	14:26		12/19/2017	14:38
1219F031.D	ZZZZZZ	ZZZZZZ	12/19/2017	14:44		12/19/2017	14:56
1219F032.D	URSC-RM18.35E-COMPMS	KWG1710980-1	12/19/2017	15:02		12/19/2017	15:14
1219F033.D	URSC-RM18.35E-COMPDMS	KWG1710980-2	12/19/2017	15:21		12/19/2017	15:33
1219F034.D	ZZZZZZ	ZZZZZZ	12/19/2017	15:39		12/19/2017	15:51
1219F035.D	ZZZZZZ	ZZZZZZ	12/19/2017	15:57		12/19/2017	16:09
1219F036.D	ZZZZZZ	ZZZZZZ	12/19/2017	16:15		12/19/2017	16:27
1219F037.D	ZZZZZZ	ZZZZZZ	12/19/2017	16:34		12/19/2017	16:46
1219F038.D	ZZZZZZ	ZZZZZZ	12/19/2017	16:52		12/19/2017	17:04

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: Hart Crowser, Incorporated **Service Request:** K1713130
Project: URSC/150-001-056

Analysis Run Log
Polybrominated Diphenyl Ethers by 8270C-SIM

Analysis Method: 8270D SIM **Analysis Lot:** KWG1711185
Instrument ID: MS14

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1220F001.D	GC/MS Tuning - Decafluorotriphenylphosph	KWG1711185-1	12/20/2017	07:10		12/20/2017	07:24
1220F002.D	Continuing Calibration Verification	KWG1711185-2	12/20/2017	07:29		12/20/2017	07:41
1220F003.D	Method Blank	KWG1710980-4	12/20/2017	07:50		12/20/2017	08:02
1220F006.D	Lab Control Sample	KWG1711053-3	12/20/2017	08:46		12/20/2017	08:58
1220F007.D	ZZZZZZ	ZZZZZZ	12/20/2017	09:09		12/20/2017	09:21
1220F008.D	ZZZZZZ	ZZZZZZ	12/20/2017	09:27		12/20/2017	09:39
1220F009.D	ZZZZZZ	ZZZZZZ	12/20/2017	09:46		12/20/2017	09:58
1220F010.D	ZZZZZZ	ZZZZZZ	12/20/2017	10:04		12/20/2017	10:16
1220F011.D	ZZZZZZ	ZZZZZZ	12/20/2017	10:22		12/20/2017	10:34
1220F012.D	URSC-RM20.0E-COMP	K1713130-032	12/20/2017	10:40		12/20/2017	10:52
1220F013.D	ZZZZZZ	ZZZZZZ	12/20/2017	10:58		12/20/2017	11:10
1220F014.D	ZZZZZZ	ZZZZZZ	12/20/2017	11:17		12/20/2017	11:29
1220F015.D	ZZZZZZ	ZZZZZZ	12/20/2017	11:35		12/20/2017	11:47
1220F016.D	ZZZZZZ	ZZZZZZ	12/20/2017	11:53		12/20/2017	12:05
1220F017.D	ZZZZZZ	ZZZZZZ	12/20/2017	12:11		12/20/2017	12:23
1220F018.D	ZZZZZZ	ZZZZZZ	12/20/2017	12:29		12/20/2017	12:41
1220F019.D	ZZZZZZ	ZZZZZZ	12/20/2017	12:47		12/20/2017	12:59
1220F020.D	ZZZZZZ	ZZZZZZ	12/20/2017	13:06		12/20/2017	13:18
1220F021.D	ZZZZZZ	ZZZZZZ	12/20/2017	13:24		12/20/2017	13:36
1220F022.D	ZZZZZZ	ZZZZZZ	12/20/2017	13:42		12/20/2017	13:54
1220F023.D	ZZZZZZ	ZZZZZZ	12/20/2017	14:00		12/20/2017	14:12
1220F024.D	ZZZZZZ	ZZZZZZ	12/20/2017	14:18		12/20/2017	14:30
1220F025.D	ZZZZZZ	ZZZZZZ	12/20/2017	14:37		12/20/2017	14:49
1220F026.D	ZZZZZZ	ZZZZZZ	12/20/2017	14:55		12/20/2017	15:07
1220F027.D	ZZZZZZ	ZZZZZZ	12/20/2017	15:13		12/20/2017	15:25
1220F028.D	ZZZZZZ	ZZZZZZ	12/20/2017	15:31		12/20/2017	15:43
1220F029.D	ZZZZZZ	ZZZZZZ	12/20/2017	15:49		12/20/2017	16:01
1220F030.D	ZZZZZZ	ZZZZZZ	12/20/2017	16:08		12/20/2017	16:20
1220F031.D	ZZZZZZ	ZZZZZZ	12/20/2017	16:26		12/20/2017	16:38
1220F032.D	ZZZZZZ	ZZZZZZ	12/20/2017	16:44		12/20/2017	16:56
1220F033.D	ZZZZZZ	ZZZZZZ	12/20/2017	17:02		12/20/2017	17:14
1220F034.D	ZZZZZZ	ZZZZZZ	12/20/2017	17:20		12/20/2017	17:32
1220F035.D	ZZZZZZ	ZZZZZZ	12/20/2017	17:38		12/20/2017	17:50
1220F036.D	ZZZZZZ	ZZZZZZ	12/20/2017	17:56		12/20/2017	18:08
1220F037.D	ZZZZZZ	ZZZZZZ	12/20/2017	18:15		12/20/2017	18:27

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: Hart Crowser, Incorporated **Service Request:** K1713130
Project: URSC/150-001-056

Analysis Run Log
Polybrominated Diphenyl Ethers by 8270C-SIM

Analysis Method: 8270D SIM **Analysis Lot:** KWG1711185
Instrument ID: MS14

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1220F038.D	ZZZZZZ	ZZZZZZ	12/20/2017	18:33		12/20/2017	18:45

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: Hart Crowser, Incorporated **Service Request:** K1713130
Project: URSC/150-001-056

Analysis Run Log
Polybrominated Diphenyl Ethers by 8270C-SIM

Analysis Method: 8270D SIM **Analysis Lot:** KWG1711222
Instrument ID: MS14

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1221F001.D	GC/MS Tuning - Decafluorotriphenylphosph	KWG1711222-1	12/21/2017	06:29		12/21/2017	06:43
1221F002.D	Continuing Calibration Verification	KWG1711222-2	12/21/2017	06:49		12/21/2017	07:01
1221F004.D	Method Blank	KWG1711053-4	12/21/2017	07:29		12/21/2017	07:41
1221F005.D	ZZZZZZ	ZZZZZZ	12/21/2017	07:47		12/21/2017	07:59
1221F006.D	ZZZZZZ	ZZZZZZ	12/21/2017	08:05		12/21/2017	08:17
1221F007.D	ZZZZZZ	ZZZZZZ	12/21/2017	08:23		12/21/2017	08:35
1221F008.D	ZZZZZZ	ZZZZZZ	12/21/2017	08:41		12/21/2017	08:53
1221F009.D	Batch QCMS	KWG1711053-1	12/21/2017	08:59		12/21/2017	09:11
1221F010.D	Batch QCDMS	KWG1711053-2	12/21/2017	09:17		12/21/2017	09:29
1221F011.D	Batch QC	K1713018-010	12/21/2017	09:35		12/21/2017	09:47
1221F012.D	ZZZZZZ	ZZZZZZ	12/21/2017	09:54		12/21/2017	10:06
1221F013.D	ZZZZZZ	ZZZZZZ	12/21/2017	10:12		12/21/2017	10:24
1221F014.D	URSC-RM20.9W-COMP	K1713130-015	12/21/2017	10:30		12/21/2017	10:42
1221F015.D	ZZZZZZ	ZZZZZZ	12/21/2017	10:48		12/21/2017	11:00
1221F016.D	URSC-RM24.7E-COMP	K1713130-021	12/21/2017	11:06		12/21/2017	11:18
1221F017.D	URSC-RM20.0E-COMP	K1713130-032	12/21/2017	11:24		12/21/2017	11:36
1221F018.D	URSC-RM25.2E-COMP	K1713130-033	12/21/2017	11:42		12/21/2017	11:54
1221F019.D	ZZZZZZ	ZZZZZZ	12/21/2017	12:00		12/21/2017	12:12
1221F020.D	ZZZZZZ	ZZZZZZ	12/21/2017	12:18		12/21/2017	12:30
1221F021.D	ZZZZZZ	ZZZZZZ	12/21/2017	12:36		12/21/2017	12:48

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Extracted:**	12/13/2017
Sample Matrix:	Sediment		

Extraction Prep Log
Polybrominated Diphenyl Ethers by 8270C-SIM

Extraction Method:	EPA 3541	**Extraction Lot:**	KWG1710980
Analysis Method:	8270D SIM	**Level:**	Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
URSC-RM18.35E-COMP	K1713130-006	11/29/17	12/06/17	20.244g	2mL	68.5	
URSC-RM18.35E-COMPDL	K1713130-006	11/29/17	12/06/17	20.244g	2mL	68.5	
Method Blank	KWG1710980-4	NA	NA	20.353g	2mL	NA	
URSC-RM18.35E-COMPMS	KWG1710980-1	11/29/17	12/06/17	20.022g	2mL	68.5	
URSC-RM18.35E-COMPDMS	KWG1710980-2	11/29/17	12/06/17	20.353g	2mL	68.5	
Lab Control Sample	KWG1710980-3	NA	NA	20.000g	2mL	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056
Sample Matrix: Sediment

Service Request: K1713130
Date Extracted: 12/15/2017

Extraction Prep Log
Polybrominated Diphenyl Ethers by 8270C-SIM

Extraction Method: EPA 3541
Analysis Method: 8270D SIM

Extraction Lot: KWG1711053
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
URSC-RM20.9W-COMP	K1713130-015	12/01/17	12/06/17	20.163g	2mL	69.5	
URSC-RM24.7E-COMP	K1713130-021	12/04/17	12/06/17	20.309g	2mL	70.7	
URSC-RM20.0E-COMP	K1713130-032	12/05/17	12/06/17	20.127g	2mL	74.7	
URSC-RM20.0E-COMPDL	K1713130-032	12/05/17	12/06/17	20.127g	2mL	74.7	
URSC-RM25.2E-COMP	K1713130-033	12/04/17	12/06/17	20.081g	2mL	65.1	
Method Blank	KWG1711053-4	NA	NA	20.309g	2mL	NA	
Batch QC	K1713018-010	NA	NA	20.048g	2mL	60.6	
Batch QCMS	KWG1711053-1	NA	NA	20.204g	2mL	60.6	
Batch QCDMS	KWG1711053-2	NA	NA	20.023g	2mL	60.6	
Lab Control Sample	KWG1711053-3	NA	NA	20.000g	2mL	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Semi-Volatile Organic Compounds by GC/MS

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Client: Hart Crowser, Incorporated **Service Request:** K1713130
Project: URSC/150-001-056

Cover Page - Organic Analysis Data Package
Semi-Volatile Organic Compounds by GC/MS

Sample Name	Lab Code	Date Collected	Date Received
URSC-RM18.35E-COMP	K1713130-006	11/29/2017	12/06/2017
URSC-RM20.9W-COMP	K1713130-015	12/01/2017	12/06/2017
URSC-RM24.7E-COMP	K1713130-021	12/04/2017	12/06/2017
URSC-RM20.0E-COMP	K1713130-032	12/05/2017	12/06/2017
URSC-RM25.2E-COMP	K1713130-033	12/04/2017	12/06/2017
URSC-RM18.35E-COMPMS	KWG1710979-1	11/29/2017	12/06/2017
URSC-RM18.35E-COMPDMS	KWG1710979-2	11/29/2017	12/06/2017

Analytical Results

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	11/29/2017
Sample Matrix:	Sediment	**Date Received:**	12/06/2017

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	URSC-RM18.35E-COMP	**Units:**	ug/Kg
Lab Code:	K1713130-006	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	7.3	2.9	1	12/13/17	01/03/18	KWG1710979	
2-Methylnaphthalene	ND	U	7.3	2.8	1	12/13/17	01/03/18	KWG1710979	
Acenaphthylene	ND	U	7.3	2.6	1	12/13/17	01/03/18	KWG1710979	
Acenaphthene	ND	U	7.3	3.2	1	12/13/17	01/03/18	KWG1710979	
Fluorene	ND	U	7.3	3.3	1	12/13/17	01/03/18	KWG1710979	
Phenanthrene	**10**		7.3	3.6	1	12/13/17	01/03/18	KWG1710979	
Anthracene	ND	U	7.3	3.2	1	12/13/17	01/03/18	KWG1710979	
Fluoranthene	**25**		7.3	3.7	1	12/13/17	01/03/18	KWG1710979	
Pyrene	**24**		7.3	3.7	1	12/13/17	01/03/18	KWG1710979	
Benz(a)anthracene	**9.7**		7.3	3.6	1	12/13/17	01/03/18	KWG1710979	
Chrysene	**13**		7.3	4.1	1	12/13/17	01/03/18	KWG1710979	
Hexachlorobenzene	ND	U	7.3	3.3	1	12/13/17	01/03/18	KWG1710979	
Pentachlorophenol	ND	U	73	5.3	1	12/13/17	01/03/18	KWG1710979	*
Bis(2-ethylhexyl) Phthalate	**46**	J	73	8.9	1	12/13/17	01/03/18	KWG1710979	
Benzo(b)fluoranthene	**15**		7.3	3.4	1	12/13/17	01/03/18	KWG1710979	
Benzo(k)fluoranthene	**5.1**	J	7.3	4.0	1	12/13/17	01/03/18	KWG1710979	
Benzo(a)pyrene	**18**		7.3	3.6	1	12/13/17	01/03/18	KWG1710979	
Indeno(1,2,3-cd)pyrene	**12**		7.3	3.2	1	12/13/17	01/03/18	KWG1710979	
Dibenz(a,h)anthracene	ND	U	7.3	3.0	1	12/13/17	01/03/18	KWG1710979	
Benzo(g,h,i)perylene	**17**		7.3	3.7	1	12/13/17	01/03/18	KWG1710979	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	57	14-85	01/03/18	Acceptable
2-Fluorobiphenyl	50	22-85	01/03/18	Acceptable
2,4,6-Tribromophenol	51	10-124	01/03/18	Acceptable
Terphenyl-d14	57	30-102	01/03/18	Acceptable

Comments:

Analytical Results

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/01/2017
Sample Matrix:	Sediment	**Date Received:**	12/06/2017

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	URSC-RM20.9W-COMP	**Units:**	ug/Kg
Lab Code:	K1713130-015	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	7.2	2.9	1	12/15/17	01/05/18	KWG1711057	
2-Methylnaphthalene	ND	U	7.2	2.8	1	12/15/17	01/05/18	KWG1711057	
Acenaphthylene	ND	U	7.2	2.6	1	12/15/17	01/05/18	KWG1711057	
Acenaphthene	ND	U	7.2	3.2	1	12/15/17	01/05/18	KWG1711057	
Fluorene	ND	U	7.2	3.3	1	12/15/17	01/05/18	KWG1711057	
Phenanthrene	ND	U	7.2	3.6	1	12/15/17	01/05/18	KWG1711057	
Anthracene	ND	U	7.2	3.2	1	12/15/17	01/05/18	KWG1711057	
Fluoranthene	**5.4**	J	7.2	3.7	1	12/15/17	01/05/18	KWG1711057	
Pyrene	**5.3**	J	7.2	3.7	1	12/15/17	01/05/18	KWG1711057	
Benz(a)anthracene	ND	U	7.2	3.6	1	12/15/17	01/05/18	KWG1711057	
Chrysene	ND	U	7.2	4.1	1	12/15/17	01/05/18	KWG1711057	
Hexachlorobenzene	ND	U	7.2	3.3	1	12/15/17	01/05/18	KWG1711057	
Pentachlorophenol	ND	U	72	5.3	1	12/15/17	01/05/18	KWG1711057	*
Bis(2-ethylhexyl) Phthalate	**44**	J	72	8.9	1	12/15/17	01/05/18	KWG1711057	
Benzo(b)fluoranthene	**3.7**	J	7.2	3.4	1	12/15/17	01/05/18	KWG1711057	
Benzo(k)fluoranthene	ND	U	7.2	4.0	1	12/15/17	01/05/18	KWG1711057	
Benzo(a)pyrene	**7.4**		7.2	3.6	1	12/15/17	01/05/18	KWG1711057	
Indeno(1,2,3-cd)pyrene	ND	U	7.2	3.2	1	12/15/17	01/05/18	KWG1711057	
Dibenz(a,h)anthracene	ND	U	7.2	3.0	1	12/15/17	01/05/18	KWG1711057	
Benzo(g,h,i)perylene	**3.9**	J	7.2	3.7	1	12/15/17	01/05/18	KWG1711057	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	66	14-85	01/05/18	Acceptable
2-Fluorobiphenyl	56	22-85	01/05/18	Acceptable
2,4,6-Tribromophenol	67	10-124	01/05/18	Acceptable
Terphenyl-d14	70	30-102	01/05/18	Acceptable

Comments:

Analytical Results

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/04/2017
Sample Matrix:	Sediment	**Date Received:**	12/06/2017

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	URSC-RM24.7E-COMP	**Units:**	ug/Kg
Lab Code:	K1713130-021	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	7.1	2.9	1	12/15/17	01/05/18	KWG1711057	
2-Methylnaphthalene	ND	U	7.1	2.8	1	12/15/17	01/05/18	KWG1711057	
Acenaphthylene	ND	U	7.1	2.6	1	12/15/17	01/05/18	KWG1711057	
Acenaphthene	ND	U	7.1	3.2	1	12/15/17	01/05/18	KWG1711057	
Fluorene	ND	U	7.1	3.3	1	12/15/17	01/05/18	KWG1711057	
Phenanthrene	ND	U	7.1	3.6	1	12/15/17	01/05/18	KWG1711057	
Anthracene	ND	U	7.1	3.2	1	12/15/17	01/05/18	KWG1711057	
Fluoranthene	ND	U	7.1	3.7	1	12/15/17	01/05/18	KWG1711057	
Pyrene	ND	U	7.1	3.7	1	12/15/17	01/05/18	KWG1711057	
Benz(a)anthracene	ND	U	7.1	3.6	1	12/15/17	01/05/18	KWG1711057	
Chrysene	ND	U	7.1	4.1	1	12/15/17	01/05/18	KWG1711057	
Hexachlorobenzene	ND	U	7.1	3.3	1	12/15/17	01/05/18	KWG1711057	
Pentachlorophenol	ND	U	71	5.3	1	12/15/17	01/05/18	KWG1711057	*
Bis(2-ethylhexyl) Phthalate	**34**	J	71	8.9	1	12/15/17	01/05/18	KWG1711057	
Benzo(b)fluoranthene	**4.8**	J	7.1	3.4	1	12/15/17	01/05/18	KWG1711057	
Benzo(k)fluoranthene	ND	U	7.1	4.0	1	12/15/17	01/05/18	KWG1711057	
Benzo(a)pyrene	**8.3**		7.1	3.6	1	12/15/17	01/05/18	KWG1711057	
Indeno(1,2,3-cd)pyrene	**4.3**	J	7.1	3.2	1	12/15/17	01/05/18	KWG1711057	
Dibenz(a,h)anthracene	ND	U	7.1	3.0	1	12/15/17	01/05/18	KWG1711057	
Benzo(g,h,i)perylene	**6.2**	J	7.1	3.7	1	12/15/17	01/05/18	KWG1711057	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	64	14-85	01/05/18	Acceptable
2-Fluorobiphenyl	55	22-85	01/05/18	Acceptable
2,4,6-Tribromophenol	65	10-124	01/05/18	Acceptable
Terphenyl-d14	70	30-102	01/05/18	Acceptable

Comments:

Analytical Results

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/05/2017
Sample Matrix:	Sediment	**Date Received:**	12/06/2017

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	URSC-RM20.0E-COMP	**Units:**	ug/Kg
Lab Code:	K1713130-032	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	6.7	2.9	1	12/15/17	01/05/18	KWG1711057	
2-Methylnaphthalene	ND	U	6.7	2.8	1	12/15/17	01/05/18	KWG1711057	
Acenaphthylene	ND	U	6.7	2.6	1	12/15/17	01/05/18	KWG1711057	
Acenaphthene	ND	U	6.7	3.2	1	12/15/17	01/05/18	KWG1711057	
Fluorene	ND	U	6.7	3.3	1	12/15/17	01/05/18	KWG1711057	
Phenanthrene	**40**		6.7	3.6	1	12/15/17	01/05/18	KWG1711057	
Anthracene	**15**		6.7	3.2	1	12/15/17	01/05/18	KWG1711057	
Fluoranthene	**270**		6.7	3.7	1	12/15/17	01/05/18	KWG1711057	
Pyrene	**200**		6.7	3.7	1	12/15/17	01/05/18	KWG1711057	
Benz(a)anthracene	**180**		6.7	3.6	1	12/15/17	01/05/18	KWG1711057	
Chrysene	**180**		6.7	4.1	1	12/15/17	01/05/18	KWG1711057	
Hexachlorobenzene	ND	U	6.7	3.3	1	12/15/17	01/05/18	KWG1711057	
Pentachlorophenol	ND	U	67	5.3	1	12/15/17	01/05/18	KWG1711057	*
Bis(2-ethylhexyl) Phthalate	**38**	J	67	8.9	1	12/15/17	01/05/18	KWG1711057	
Benzo(b)fluoranthene	**190**		6.7	3.4	1	12/15/17	01/05/18	KWG1711057	
Benzo(k)fluoranthene	**65**		6.7	4.0	1	12/15/17	01/05/18	KWG1711057	
Benzo(a)pyrene	**130**		6.7	3.6	1	12/15/17	01/05/18	KWG1711057	
Indeno(1,2,3-cd)pyrene	**81**		6.7	3.2	1	12/15/17	01/05/18	KWG1711057	
Dibenz(a,h)anthracene	**20**		6.7	3.0	1	12/15/17	01/05/18	KWG1711057	
Benzo(g,h,i)perylene	**77**		6.7	3.7	1	12/15/17	01/05/18	KWG1711057	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	64	14-85	01/05/18	Acceptable
2-Fluorobiphenyl	55	22-85	01/05/18	Acceptable
2,4,6-Tribromophenol	65	10-124	01/05/18	Acceptable
Terphenyl-d14	70	30-102	01/05/18	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/04/2017
Sample Matrix:	Sediment	**Date Received:**	12/06/2017

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	URSC-RM25.2E-COMP	**Units:**	ug/Kg
Lab Code:	K1713130-033	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**3.1**	J	7.7	2.9	1	12/15/17	01/05/18	KWG1711057	
2-Methylnaphthalene	**3.6**	J	7.7	2.8	1	12/15/17	01/05/18	KWG1711057	
Acenaphthylene	ND	U	7.7	2.6	1	12/15/17	01/05/18	KWG1711057	
Acenaphthene	ND	U	7.7	3.2	1	12/15/17	01/05/18	KWG1711057	
Fluorene	ND	U	7.7	3.3	1	12/15/17	01/05/18	KWG1711057	
Phenanthrene	**8.1**		7.7	3.6	1	12/15/17	01/05/18	KWG1711057	
Anthracene	ND	U	7.7	3.2	1	12/15/17	01/05/18	KWG1711057	
Fluoranthene	**12**		7.7	3.7	1	12/15/17	01/05/18	KWG1711057	
Pyrene	**12**		7.7	3.7	1	12/15/17	01/05/18	KWG1711057	
Benz(a)anthracene	**4.6**	J	7.7	3.6	1	12/15/17	01/05/18	KWG1711057	
Chrysene	**6.9**	J	7.7	4.1	1	12/15/17	01/05/18	KWG1711057	
Hexachlorobenzene	ND	U	7.7	3.3	1	12/15/17	01/05/18	KWG1711057	
Pentachlorophenol	ND	U	77	5.3	1	12/15/17	01/05/18	KWG1711057	*
Bis(2-ethylhexyl) Phthalate	**100**		77	8.9	1	12/15/17	01/05/18	KWG1711057	
Benzo(b)fluoranthene	**7.9**		7.7	3.4	1	12/15/17	01/05/18	KWG1711057	
Benzo(k)fluoranthene	ND	U	7.7	4.0	1	12/15/17	01/05/18	KWG1711057	
Benzo(a)pyrene	**10**		7.7	3.6	1	12/15/17	01/05/18	KWG1711057	
Indeno(1,2,3-cd)pyrene	**4.2**	J	7.7	3.2	1	12/15/17	01/05/18	KWG1711057	
Dibenz(a,h)anthracene	ND	U	7.7	3.0	1	12/15/17	01/05/18	KWG1711057	
Benzo(g,h,i)perylene	**9.5**		7.7	3.7	1	12/15/17	01/05/18	KWG1711057	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	69	14-85	01/05/18	Acceptable
2-Fluorobiphenyl	63	22-85	01/05/18	Acceptable
2,4,6-Tribromophenol	72	10-124	01/05/18	Acceptable
Terphenyl-d14	77	30-102	01/05/18	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	KWG1710979-4	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	50	15	1	12/13/17	01/02/18	KWG1710979	
2-Methylnaphthalene	ND	U	50	14	1	12/13/17	01/02/18	KWG1710979	
Acenaphthylene	ND	U	50	13	1	12/13/17	01/02/18	KWG1710979	
Acenaphthene	ND	U	50	16	1	12/13/17	01/02/18	KWG1710979	
Fluorene	ND	U	50	17	1	12/13/17	01/02/18	KWG1710979	
Phenanthrene	ND	U	50	18	1	12/13/17	01/02/18	KWG1710979	
Anthracene	ND	U	50	16	1	12/13/17	01/02/18	KWG1710979	
Fluoranthene	ND	U	50	19	1	12/13/17	01/02/18	KWG1710979	
Pyrene	ND	U	50	19	1	12/13/17	01/02/18	KWG1710979	
Benz(a)anthracene	ND	U	50	18	1	12/13/17	01/02/18	KWG1710979	
Chrysene	ND	U	50	21	1	12/13/17	01/02/18	KWG1710979	
Hexachlorobenzene	ND	U	50	17	1	12/13/17	01/02/18	KWG1710979	
Pentachlorophenol	ND	U	500	27	1	12/13/17	01/02/18	KWG1710979	*
Bis(2-ethylhexyl) Phthalate	**240**	J	500	45	1	12/13/17	01/02/18	KWG1710979	
Benzo(b)fluoranthene	ND	U	50	17	1	12/13/17	01/02/18	KWG1710979	
Benzo(k)fluoranthene	ND	U	50	20	1	12/13/17	01/02/18	KWG1710979	
Benzo(a)pyrene	ND	U	50	18	1	12/13/17	01/02/18	KWG1710979	
Indeno(1,2,3-cd)pyrene	ND	U	50	16	1	12/13/17	01/02/18	KWG1710979	
Dibenz(a,h)anthracene	ND	U	50	15	1	12/13/17	01/02/18	KWG1710979	
Benzo(g,h,i)perylene	ND	U	50	19	1	12/13/17	01/02/18	KWG1710979	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	68	14-85	01/02/18	Acceptable
2-Fluorobiphenyl	62	22-85	01/02/18	Acceptable
2,4,6-Tribromophenol	49	10-124	01/02/18	Acceptable
Terphenyl-d14	64	30-102	01/02/18	Acceptable

Comments:

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	KWG1711057-4	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	6.0	2.9	1	12/15/17	01/05/18	KWG1711057	
2-Methylnaphthalene	ND	U	6.0	2.8	1	12/15/17	01/05/18	KWG1711057	
Acenaphthylene	ND	U	6.0	2.6	1	12/15/17	01/05/18	KWG1711057	
Acenaphthene	ND	U	6.0	3.2	1	12/15/17	01/05/18	KWG1711057	
Fluorene	ND	U	6.0	3.3	1	12/15/17	01/05/18	KWG1711057	
Phenanthrene	ND	U	6.0	3.6	1	12/15/17	01/05/18	KWG1711057	
Anthracene	ND	U	6.0	3.2	1	12/15/17	01/05/18	KWG1711057	
Fluoranthene	ND	U	6.0	3.7	1	12/15/17	01/05/18	KWG1711057	
Pyrene	ND	U	6.0	3.7	1	12/15/17	01/05/18	KWG1711057	
Benz(a)anthracene	ND	U	6.0	3.6	1	12/15/17	01/05/18	KWG1711057	
Chrysene	ND	U	6.0	4.1	1	12/15/17	01/05/18	KWG1711057	
Hexachlorobenzene	ND	U	6.0	3.3	1	12/15/17	01/05/18	KWG1711057	
Pentachlorophenol	ND	U	50	5.3	1	12/15/17	01/05/18	KWG1711057	*
Bis(2-ethylhexyl) Phthalate	**21**	J	50	8.9	1	12/15/17	01/05/18	KWG1711057	
Benzo(b)fluoranthene	ND	U	6.0	3.4	1	12/15/17	01/05/18	KWG1711057	
Benzo(k)fluoranthene	ND	U	6.0	4.0	1	12/15/17	01/05/18	KWG1711057	
Benzo(a)pyrene	ND	U	6.0	3.6	1	12/15/17	01/05/18	KWG1711057	
Indeno(1,2,3-cd)pyrene	ND	U	6.0	3.2	1	12/15/17	01/05/18	KWG1711057	
Dibenz(a,h)anthracene	ND	U	6.0	3.0	1	12/15/17	01/05/18	KWG1711057	
Benzo(g,h,i)perylene	ND	U	6.0	3.7	1	12/15/17	01/05/18	KWG1711057	*

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Nitrobenzene-d5	71	14-85	01/05/18	Acceptable
2-Fluorobiphenyl	62	22-85	01/05/18	Acceptable
2,4,6-Tribromophenol	53	10-124	01/05/18	Acceptable
Terphenyl-d14	65	30-102	01/05/18	Acceptable

Comments:

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056
Sample Matrix: Sediment

Service Request: K1713130

Surrogate Recovery Summary
Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3541
Analysis Method: 8270D

Units: Percent
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3	Sur4
Batch QC	K1713018-010	74	67	78	75
URSC-RM18.35E-COMP	K1713130-006	57	50	51	57
URSC-RM20.9W-COMP	K1713130-015	66	56	67	70
URSC-RM24.7E-COMP	K1713130-021	64	55	65	70
URSC-RM20.0E-COMP	K1713130-032	64	55	65	70
URSC-RM25.2E-COMP	K1713130-033	69	63	72	77
Method Blank	KWG1710979-4	68	62	49	64
Method Blank	KWG1711057-4	71	62	53	65
URSC-RM18.35E-COMPMS	KWG1710979-1	59	55	60	62
URSC-RM18.35E-COMPDMS	KWG1710979-2	57	51	57	58
Batch QCMS	KWG1711057-1	69	62	72	72
Batch QCDMS	KWG1711057-2	62	56	70	69
Lab Control Sample	KWG1710979-3	63	56	56	65
Lab Control Sample	KWG1711057-3	73	64	62	68

Surrogate Recovery Control Limits (%)

Sur1	=	Nitrobenzene-d5	14-85
Sur2	=	2-Fluorobiphenyl	22-85
Sur3	=	2,4,6-Tribromophenol	10-124
Sur4	=	Terphenyl-d14	30-102

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Analyzed:**	01/02/2018
		Time Analyzed:	17:15

Internal Standard Area and RT Summary
Semi-Volatile Organic Compounds by GC/MS

File ID:	J:\MS29\DATA\010218\0102F015.D	**Lab Code:**	KWG1800134-2
Instrument ID:	MS29	**Analysis Lot:**	KWG1800134
Analysis Method:	8270D		

		Naphthalene-d8		Acenaphthene-d10		Phenanthrene-d10	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Results ==>	305,037	6.29	154,088	9.69	274,191	12.02
	Upper Limit ==>	610,074	6.79	308,176	10.19	548,382	12.52
	Lower Limit ==>	152,519	5.79	77,044	9.19	137,096	11.52
	ICAL Result ==>	214,057	6.29	108,131	9.68	207,632	12.02
Associated Analyses							
Method Blank	KWG1710979-4	287,431	6.29	135,854	9.69	240,522	12.02
Lab Control Sample	KWG1710979-3	289,123	6.29	143,619	9.68	260,455	12.02
URSC-RM18.35E-COMPMS	KWG1710979-1	291,462	6.29	147,713	9.69	275,066	12.02
URSC-RM18.35E-COMPDMS	KWG1710979-2	287,793	6.29	148,116	9.69	271,971	12.02
URSC-RM18.35E-COMP	K1713130-006	286,014	6.29	146,646	9.69	269,762	12.02

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Analyzed:**	01/02/2018
		Time Analyzed:	17:15

Internal Standard Area and RT Summary
Semi-Volatile Organic Compounds by GC/MS

File ID:	J:\MS29\DATA\010218\0102F015.D	**Lab Code:**	KWG1800134-2
Instrument ID:	MS29	**Analysis Lot:**	KWG1800134
Analysis Method:	8270D		

		Chrysene-d12		Perylene-d12	
		Area	**RT**	**Area**	**RT**
	Results ==>	267,850	15.48	288,062	18.60
	Upper Limit ==>	535,700	15.98	576,124	19.10
	Lower Limit ==>	133,925	14.98	144,031	18.10
	ICAL Result ==>	211,022	15.47	201,630	18.59
Associated Analyses					
Method Blank	KWG1710979-4	246,066	15.47	273,795	18.60
Lab Control Sample	KWG1710979-3	235,445	15.47	254,711	18.60
URSC-RM18.35E-COMPMS	KWG1710979-1	302,580	15.48	312,645	18.60
URSC-RM18.35E-COMPDMS	KWG1710979-2	274,254	15.48	284,628	18.60
URSC-RM18.35E-COMP	K1713130-006	297,225	15.48	317,350	18.60

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Analyzed:**	01/05/2018
		Time Analyzed:	14:03

Internal Standard Area and RT Summary
Semi-Volatile Organic Compounds by GC/MS

File ID:	J:\MS29\DATA\010518\0105F002.D	**Lab Code:**	KWG1800268-2
Instrument ID:	MS29	**Analysis Lot:**	KWG1800268
Analysis Method:	8270D		

		Naphthalene-d8		Acenaphthene-d10		Phenanthrene-d10	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Results ==>	254,011	6.25	126,392	9.64	222,477	11.98
	Upper Limit ==>	508,022	6.75	252,784	10.14	444,954	12.48
	Lower Limit ==>	127,006	5.75	63,196	9.14	111,239	11.48
	ICAL Result ==>	214,057	6.29	108,131	9.68	207,632	12.02
Associated Analyses							
Method Blank	KWG1711057-4	254,003	6.25	122,356	9.64	222,272	11.98
Lab Control Sample	KWG1711057-3	247,145	6.25	124,328	9.64	220,022	11.98
Batch QCMS	KWG1711057-1	253,138	6.25	131,301	9.64	242,194	11.98
Batch QCDMS	KWG1711057-2	258,756	6.25	130,460	9.64	246,886	11.98
Batch QC	K1713018-010	255,246	6.25	126,797	9.64	238,443	11.98
URSC-RM20.9W-COMP	K1713130-015	252,760	6.25	128,886	9.64	231,618	11.98
URSC-RM24.7E-COMP	K1713130-021	251,465	6.25	126,908	9.64	226,002	11.98
URSC-RM20.0E-COMP	K1713130-032	248,964	6.25	123,782	9.64	231,926	11.98
URSC-RM25.2E-COMP	K1713130-033	254,379	6.25	130,416	9.64	245,742	11.98

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Report

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056

Service Request: K1713130
Date Analyzed: 01/05/2018
Time Analyzed: 14:03

Internal Standard Area and RT Summary
Semi-Volatile Organic Compounds by GC/MS

File ID: J:\MS29\DATA\010518\0105F002.D
Instrument ID: MS29
Analysis Method: 8270D

Lab Code: KWG1800268-2
Analysis Lot: KWG1800268

		Chrysene-d12		Perylene-d12	
		Area	**RT**	**Area**	**RT**
	Results ==>	208,684	15.43	227,729	18.55
	Upper Limit ==>	417,368	15.93	455,458	19.05
	Lower Limit ==>	104,342	14.93	113,865	18.05
	ICAL Result ==>	211,022	15.47	201,630	18.59
Associated Analyses					
Method Blank	KWG1711057-4	218,262	15.43	247,168	18.55
Lab Control Sample	KWG1711057-3	200,649	15.43	207,417	18.55
Batch QCMS	KWG1711057-1	245,939	15.43	259,445	18.56
Batch QCDMS	KWG1711057-2	262,161	15.43	272,859	18.56
Batch QC	K1713018-010	256,468	15.43	269,087	18.56
URSC-RM20.9W-COMP	K1713130-015	239,808	15.43	262,126	18.56
URSC-RM24.7E-COMP	K1713130-021	239,303	15.43	264,129	18.55
URSC-RM20.0E-COMP	K1713130-032	238,316	15.43	260,444	18.56
URSC-RM25.2E-COMP	K1713130-033	249,582	15.43	259,595	18.56

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Extracted:**	12/13/2017
Sample Matrix:	Sediment	**Date Analyzed:**	01/02/2018

Matrix Spike/Duplicate Matrix Spike Summary
Semi-Volatile Organic Compounds by GC/MS

Sample Name:	URSC-RM18.35E-COMP	**Units:**	ug/Kg
Lab Code:	K1713130-006	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D	**Extraction Lot:**	KWG1710979

		URSC-RM18.35E-COMPMS KWG1710979-1 Matrix Spike			URSC-RM18.35E-COMPDMS KWG1710979-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Naphthalene	ND	110	181	61	101	182	56	10-109	8	40
2-Methylnaphthalene	ND	118	181	65	108	182	59	10-117	9	40
Acenaphthylene	ND	134	181	74	119	182	65	10-108	12	40
Acenaphthene	ND	126	181	70	111	182	61	10-108	13	40
Fluorene	ND	141	181	78	123	182	68	10-110	13	40
Phenanthrene	10	153	181	79	123	182	62	10-132	22	40
Anthracene	ND	136	181	75	120	182	66	10-119	13	40
Fluoranthene	25	201	181	97	135	182	60	10-140	39	40
Pyrene	24	184	181	88	127	182	57	10-132	36	40
Benz(a)anthracene	9.7	172	181	90	135	182	69	13-120	24	40
Chrysene	13	175	181	90	130	182	64	10-138	30	40
Hexachlorobenzene	ND	140	181	77	125	182	69	33-92	11	40
Pentachlorophenol	ND	127	181	70	115	182	63	10-134	10	40
Bis(2-ethylhexyl) Phthalate	46	200	181	85	191	182	80	23-123	5	40
Benzo(b)fluoranthene	15	187	181	95	142	182	70	10-128	28	40
Benzo(k)fluoranthene	5.1	164	181	88	132	182	70	15-114	21	40
Benzo(a)pyrene	18	178	181	89	132	182	63	10-148	30	40
Indeno(1,2,3-cd)pyrene	12	214	181	111	158	182	80	10-143	30	40
Dibenz(a,h)anthracene	ND	168	181	93	141	182	78	29-102	18	40
Benzo(g,h,i)perylene	17	225	181	115	164	182	81	10-126	32	40

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Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Extracted:**	12/15/2017
Sample Matrix:	Sediment	**Date Analyzed:**	01/05/2018

Matrix Spike/Duplicate Matrix Spike Summary
Semi-Volatile Organic Compounds by GC/MS

Sample Name:	Batch QC	**Units:**	ug/Kg
Lab Code:	K1713018-010	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D	**Extraction Lot:**	KWG1711057

		Batch QCMS KWG1711057-1 Matrix Spike			Batch QCDMS KWG1711057-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Naphthalene	ND	128	204	63	115	205	56	10-109	11	40
2-Methylnaphthalene	ND	137	204	67	124	205	61	10-117	10	40
Acenaphthylene	ND	154	204	75	147	205	72	10-108	5	40
Acenaphthene	ND	144	204	70	134	205	66	10-108	7	40
Fluorene	ND	159	204	78	154	205	75	10-110	3	40
Phenanthrene	8.3	163	204	76	160	205	74	10-132	2	40
Anthracene	ND	165	204	81	162	205	79	10-119	2	40
Fluoranthene	16	188	204	84	184	205	82	10-140	2	40
Pyrene	14	174	204	78	166	205	74	10-132	5	40
Benz(a)anthracene	5.7	181	204	86	178	205	84	13-120	2	40
Chrysene	8.6	174	204	81	171	205	79	10-138	2	40
Hexachlorobenzene	ND	156	204	76	150	205	73	33-92	4	40
Pentachlorophenol	ND	154	204	75	157	205	77	10-134	2	40
Bis(2-ethylhexyl) Phthalate	61	240	204	88	254	205	94	23-123	6	40
Benzo(b)fluoranthene	11	177	204	81	177	205	81	10-128	0	40
Benzo(k)fluoranthene	ND	172	204	84	169	205	83	15-114	2	40
Benzo(a)pyrene	13	172	204	78	169	205	76	10-148	2	40
Indeno(1,2,3-cd)pyrene	7.3	202	204	95	200	205	94	10-143	1	40
Dibenz(a,h)anthracene	ND	178	204	87	180	205	88	29-102	1	40
Benzo(g,h,i)perylene	9.4	207	204	97	207	205	96	10-126	0	40

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Extracted:**	12/13/2017
Sample Matrix:	Sediment	**Date Analyzed:**	01/02/2018

Lab Control Spike Summary
Semi-Volatile Organic Compounds by GC/MS

Extraction Method:	EPA 3541	**Units:**	ug/Kg
Analysis Method:	8270D	**Basis:**	Dry
		Level:	Low
		Extraction Lot:	KWG1710979

	Lab Control Sample KWG1710979-3 Lab Control Spike			
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
Naphthalene	152	250	61	30-74
2-Methylnaphthalene	157	250	63	26-80
Acenaphthylene	172	250	69	30-79
Acenaphthene	158	250	63	31-77
Fluorene	166	250	66	30-81
Phenanthrene	169	250	67	36-85
Anthracene	186	250	74	36-87
Fluoranthene	184	250	74	25-115
Pyrene	193	250	77	40-99
Benz(a)anthracene	203	250	81	43-98
Chrysene	193	250	77	41-98
Hexachlorobenzene	174	250	70	36-86
Pentachlorophenol	111	250	44	19-103
Bis(2-ethylhexyl) Phthalate	248	250	99	39-113
Benzo(b)fluoranthene	198	250	79	39-99
Benzo(k)fluoranthene	192	250	77	38-93
Benzo(a)pyrene	192	250	77	43-102
Indeno(1,2,3-cd)pyrene	212	250	85	36-105
Dibenz(a,h)anthracene	203	250	81	38-101
Benzo(g,h,i)perylene	214	250	86	39-99

Results flagged with an asterisk (*) indicate values outside control criteria.

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Extracted:**	12/15/2017
Sample Matrix:	Sediment	**Date Analyzed:**	01/05/2018

Lab Control Spike Summary
Semi-Volatile Organic Compounds by GC/MS

Extraction Method:	EPA 3541	**Units:**	ug/Kg
Analysis Method:	8270D	**Basis:**	Dry
		Level:	Low
		Extraction Lot:	KWG1711057

	Lab Control Sample KWG1711057-3 Lab Control Spike			
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
Naphthalene	166	250	66	30-74
2-Methylnaphthalene	174	250	69	26-80
Acenaphthylene	190	250	76	30-79
Acenaphthene	177	250	71	31-77
Fluorene	186	250	74	30-81
Phenanthrene	179	250	72	36-85
Anthracene	197	250	79	36-87
Fluoranthene	194	250	78	25-115
Pyrene	199	250	79	40-99
Benz(a)anthracene	202	250	81	43-98
Chrysene	195	250	78	41-98
Hexachlorobenzene	187	250	75	36-86
Pentachlorophenol	130	250	52	19-103
Bis(2-ethylhexyl) Phthalate	253	250	101	39-113
Benzo(b)fluoranthene	197	250	79	39-99
Benzo(k)fluoranthene	200	250	80	38-93
Benzo(a)pyrene	198	250	79	43-102
Indeno(1,2,3-cd)pyrene	210	250	84	36-105
Dibenz(a,h)anthracene	197	250	79	38-101
Benzo(g,h,i)perylene	216	250	87	39-99

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Extracted:**	12/13/2017
Sample Matrix:	Sediment	**Date Analyzed:**	01/02/2018
		Time Analyzed:	22:34

Method Blank Summary
Semi-Volatile Organic Compounds by GC/MS

Sample Name:	Method Blank	**Instrument ID:**	MS29
Lab Code:	KWG1710979-4	**File ID:**	J:\MS29\DATA\010218\0102F026.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D	**Extraction Lot:**	KWG1710979

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1710979-3	J:\MS29\DATA\010218\0102F027.D	01/02/18	23:02
URSC-RM18.35E-COMPMS	KWG1710979-1	J:\MS29\DATA\010218\0102F028.D	01/02/18	23:31
URSC-RM18.35E-COMPDMS	KWG1710979-2	J:\MS29\DATA\010218\0102F029.D	01/02/18	23:59
URSC-RM18.35E-COMP	K1713130-006	J:\MS29\DATA\010218\0102F030.D	01/03/18	00:28

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Extracted:**	12/15/2017
Sample Matrix:	Sediment	**Date Analyzed:**	01/05/2018
		Time Analyzed:	19:40

Method Blank Summary
Semi-Volatile Organic Compounds by GC/MS

Sample Name:	Method Blank	**Instrument ID:**	MS29
Lab Code:	KWG1711057-4	**File ID:**	J:\MS29\DATA\010518\0105F011.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D	**Extraction Lot:**	KWG1711057

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1711057-3	J:\MS29\DATA\010518\0105F012.D	01/05/18	20:09
Batch QCMS	KWG1711057-1	J:\MS29\DATA\010518\0105F013.D	01/05/18	20:37
Batch QCDMS	KWG1711057-2	J:\MS29\DATA\010518\0105F014.D	01/05/18	21:06
Batch QC	K1713018-010	J:\MS29\DATA\010518\0105F015.D	01/05/18	21:34
URSC-RM20.9W-COMP	K1713130-015	J:\MS29\DATA\010518\0105F017.D	01/05/18	22:32
URSC-RM24.7E-COMP	K1713130-021	J:\MS29\DATA\010518\0105F018.D	01/05/18	23:00
URSC-RM20.0E-COMP	K1713130-032	J:\MS29\DATA\010518\0105F019.D	01/05/18	23:29
URSC-RM25.2E-COMP	K1713130-033	J:\MS29\DATA\010518\0105F020.D	01/05/18	23:57

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Extracted:**	12/13/2017
Sample Matrix:	Sediment	**Date Analyzed:**	01/02/2018
		Time Analyzed:	23:02

Lab Control Sample Summary
Semi-Volatile Organic Compounds by GC/MS

Sample Name:	Lab Control Sample	**Instrument ID:**	MS29
Lab Code:	KWG1710979-3	**File ID:**	J:\MS29\DATA\010218\0102F027.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D	**Extraction Lot:**	KWG1710979

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1710979-4	J:\MS29\DATA\010218\0102F026.D	01/02/18	22:34
URSC-RM18.35E-COMPMS	KWG1710979-1	J:\MS29\DATA\010218\0102F028.D	01/02/18	23:31
URSC-RM18.35E-COMPDMS	KWG1710979-2	J:\MS29\DATA\010218\0102F029.D	01/02/18	23:59
URSC-RM18.35E-COMP	K1713130-006	J:\MS29\DATA\010218\0102F030.D	01/03/18	00:28

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Extracted:**	12/15/2017
Sample Matrix:	Sediment	**Date Analyzed:**	01/05/2018
		Time Analyzed:	20:09

Lab Control Sample Summary
Semi-Volatile Organic Compounds by GC/MS

Sample Name:	Lab Control Sample	**Instrument ID:**	MS29
Lab Code:	KWG1711057-3	**File ID:**	J:\MS29\DATA\010518\0105F012.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D	**Extraction Lot:**	KWG1711057

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1711057-4	J:\MS29\DATA\010518\0105F011.D	01/05/18	19:40
Batch QCMS	KWG1711057-1	J:\MS29\DATA\010518\0105F013.D	01/05/18	20:37
Batch QCDMS	KWG1711057-2	J:\MS29\DATA\010518\0105F014.D	01/05/18	21:06
Batch QC	K1713018-010	J:\MS29\DATA\010518\0105F015.D	01/05/18	21:34
URSC-RM20.9W-COMP	K1713130-015	J:\MS29\DATA\010518\0105F017.D	01/05/18	22:32
URSC-RM24.7E-COMP	K1713130-021	J:\MS29\DATA\010518\0105F018.D	01/05/18	23:00
URSC-RM20.0E-COMP	K1713130-032	J:\MS29\DATA\010518\0105F019.D	01/05/18	23:29
URSC-RM25.2E-COMP	K1713130-033	J:\MS29\DATA\010518\0105F020.D	01/05/18	23:57

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056

Service Request: K1713130
Date Analyzed: 01/02/2018
Time Analyzed: 16:47

Tune Summary
Semi-Volatile Organic Compounds by GC/MS

File ID: J:\MS29\DATA\010218\0102F014.D
Instrument ID: MS29
Column:

Analysis Method: 8270D
Analysis Lot: KWG1800134

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
365	442	1	50	2.2	76002	PASS
441	443	0	100	83.6	548885	PASS
442	442	100	100	100.0	3445077	PASS
443	442	15	24	19.0	656213	PASS
51	198	10	80	27.1	513749	PASS
68	69	0	2	0.0	0	PASS
69	198	0	100	31.6	599629	PASS
70	69	0	2	0.5	3170	PASS
127	198	10	80	41.2	781717	PASS
197	198	0	2	0.0	0	PASS
198	442	30	100	55.1	1898154	PASS
199	198	5	9	6.6	125082	PASS
275	198	10	60	33.5	635349	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1800134-2	J:\MS29\DATA\010218\0102F015.D	01/02/2018	17:15	
Method Blank	KWG1710979-4	J:\MS29\DATA\010218\0102F026.D	01/02/2018	22:34	
Lab Control Sample	KWG1710979-3	J:\MS29\DATA\010218\0102F027.D	01/02/2018	23:02	
URSC-RM18.35E-COMPMS	KWG1710979-1	J:\MS29\DATA\010218\0102F028.D	01/02/2018	23:31	
URSC-RM18.35E-COMPDMS	KWG1710979-2	J:\MS29\DATA\010218\0102F029.D	01/02/2018	23:59	
URSC-RM18.35E-COMP	K1713130-006	J:\MS29\DATA\010218\0102F030.D	01/03/2018	00:28	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056

Service Request: K1713130
Date Analyzed: 01/05/2018
Time Analyzed: 13:35

Tune Summary
Semi-Volatile Organic Compounds by GC/MS

File ID: J:\MS29\DATA\010518\0105F001.D
Instrument ID: MS29
Column:

Analysis Method: 8270D
Analysis Lot: KWG1800268

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	10	80	31.8	629226	PASS
68	69	0	2	0.0	0	PASS
69	198	0	100	36.6	723978	PASS
70	69	0	2	0.5	3579	PASS
127	198	10	80	44.4	877440	PASS
197	198	0	2	0.0	0	PASS
198	442	30	100	69.0	1975808	PASS
199	198	5	9	6.7	132136	PASS
275	198	10	60	31.0	612181	PASS
365	442	1	50	2.4	69322	PASS
441	443	0	100	84.4	468032	PASS
442	442	100	100	100.0	2863616	PASS
443	442	15	24	19.4	554560	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1800268-2	J:\MS29\DATA\010518\0105F002.D	01/05/2018	14:03	
Method Blank	KWG1711057-4	J:\MS29\DATA\010518\0105F011.D	01/05/2018	19:40	
Lab Control Sample	KWG1711057-3	J:\MS29\DATA\010518\0105F012.D	01/05/2018	20:09	
Batch QCMS	KWG1711057-1	J:\MS29\DATA\010518\0105F013.D	01/05/2018	20:37	
Batch QCDMS	KWG1711057-2	J:\MS29\DATA\010518\0105F014.D	01/05/2018	21:06	
Batch QC	K1713018-010	J:\MS29\DATA\010518\0105F015.D	01/05/2018	21:34	
URSC-RM20.9W-COMP	K1713130-015	J:\MS29\DATA\010518\0105F017.D	01/05/2018	22:32	
URSC-RM24.7E-COMP	K1713130-021	J:\MS29\DATA\010518\0105F018.D	01/05/2018	23:00	
URSC-RM20.0E-COMP	K1713130-032	J:\MS29\DATA\010518\0105F019.D	01/05/2018	23:29	
URSC-RM25.2E-COMP	K1713130-033	J:\MS29\DATA\010518\0105F020.D	01/05/2018	23:57	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

QA/QC Results

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056

Service Request: K1713130
Calibration Date: 12/21/2017

Initial Calibration Summary
Semi-Volatile Organic Compounds by GC/MS

Calibration ID: CAL15647
Instrument ID: MS29

Column: MS

Level ID	File ID	Level ID	File ID
A	J:\MS29\DATA\122117\1221F003.D	G	J:\MS29\DATA\122117\1221F009.D
B	J:\MS29\DATA\122117\1221F004.D	H	J:\MS29\DATA\122117\1221F010.D
C	J:\MS29\DATA\122117\1221F005.D	I	J:\MS29\DATA\122117\1221F011.D
D	J:\MS29\DATA\122117\1221F006.D	J	J:\MS29\DATA\122117\1221F012.D
E	J:\MS29\DATA\122117\1221F007.D		
F	J:\MS29\DATA\122117\1221F008.D		

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Naphthalene	A	50	1.01	B	100	0.915	C	200	0.981	D	500	0.967	E	1000	0.973
	F	2000	1.00	G	3000	0.997	H	5000	0.999	I	7000	0.985	J	10000	1.00
2-Methylnaphthalene	A	50	0.519	B	100	0.500	C	200	0.531	D	500	0.545	E	1000	0.559
	F	2000	0.579	G	3000	0.565	H	5000	0.580	I	7000	0.576	J	10000	0.586
Acenaphthylene				B	100	1.24	C	200	1.38	D	500	1.56	E	1000	1.74
	F	2000	1.88	G	3000	1.91	H	5000	1.95	I	7000	1.95	J	10000	1.98
Acenaphthene	A	50	1.13	B	100	1.10	C	200	1.14	D	500	1.12	E	1000	1.13
	F	2000	1.16	G	3000	1.17	H	5000	1.16	I	7000	1.16	J	10000	1.16
Fluorene	A	50	1.16	B	100	1.21	C	200	1.22	D	500	1.26	E	1000	1.32
	F	2000	1.38	G	3000	1.36	H	5000	1.38	I	7000	1.36	J	10000	1.41
Phenanthrene	A	50	1.06	B	100	0.987	C	200	1.07	D	500	1.05	E	1000	1.07
	F	2000	1.09	G	3000	1.06	H	5000	1.08	I	7000	1.07	J	10000	1.07
Anthracene	A	50	0.794	B	100	0.781	C	200	0.830	D	500	0.915	E	1000	0.985
	F	2000	1.05	G	3000	1.05	H	5000	1.09	I	7000	1.07	J	10000	1.09
Fluoranthene	A	50	0.954	B	100	0.943	C	200	1.01	D	500	1.12	E	1000	1.19
	F	2000	1.22	G	3000	1.21	H	5000	1.20	I	7000	1.16	J	10000	1.18
Pyrene	A	50	1.14	B	100	1.15	C	200	1.26	D	500	1.30	E	1000	1.31
	F	2000	1.30	G	3000	1.30	H	5000	1.31	I	7000	1.31	J	10000	1.30
Benz(a)anthracene	A	50	0.937	B	100	0.801	C	200	0.829	D	500	0.931	E	1000	1.02
	F	2000	1.08	G	3000	1.12	H	5000	1.19	I	7000	1.21	J	10000	1.20
Chrysene	A	50	0.967	B	100	1.01	C	200	1.10	D	500	1.06	E	1000	1.06
	F	2000	1.08	G	3000	1.07	H	5000	1.08	I	7000	1.07	J	10000	1.06
Hexachlorobenzene	A	50	0.275	B	100	0.260	C	200	0.283	D	500	0.294	E	1000	0.297
	F	2000	0.303	G	3000	0.297	H	5000	0.296	I	7000	0.297	J	10000	0.297
Pentachlorophenol										D	500	0.0978	E	1000	0.124
	F	2000	0.152	G	3000	0.156	H	5000	0.171	I	7000	0.175	J	10000	0.178
Bis(2-ethylhexyl) Phthalate										D	500	0.248	E	1000	0.346
	F	2000	0.489	G	3000	0.567	H	5000	0.662	I	7000	0.706	J	10000	0.711

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056

Service Request: K1713130
Calibration Date: 12/21/2017

Initial Calibration Summary
Semi-Volatile Organic Compounds by GC/MS

Calibration ID: CAL15647
Instrument ID: MS29

Column: MS

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Benzo(b)fluoranthene	A	50	0.861	B	100	0.805	C	200	0.819	D	500	0.967	E	1000	1.06
	F	2000	1.13	G	3000	1.12	H	5000	1.13	I	7000	1.17	J	10000	1.18
Benzo(k)fluoranthene	A	50	0.861	B	100	0.810	C	200	0.870	D	500	1.02	E	1000	1.09
	F	2000	1.20	G	3000	1.16	H	5000	1.15	I	7000	1.21	J	10000	1.16
Benzo(a)pyrene				B	100	0.607	C	200	0.566	D	500	0.697	E	1000	0.828
	F	2000	0.936	G	3000	0.956	H	5000	0.980	I	7000	1.02	J	10000	1.01
Indeno(1,2,3-cd)pyrene	A	50	0.917	B	100	0.797	C	200	0.797	D	500	0.874	E	1000	0.805
	F	2000	0.807	G	3000	0.810	H	5000	0.829	I	7000	0.874	J	10000	0.910
Dibenz(a,h)anthracene	A	50	0.941	B	100	0.797	C	200	0.932	D	500	0.989	E	1000	0.856
	F	2000	0.963	G	3000	0.927	H	5000	0.929	I	7000	0.950	J	10000	0.974
Benzo(g,h,i)perylene	A	50	0.892	B	100	0.812	C	200	0.979	D	500	0.912	E	1000	0.765
	F	2000	0.599	G	3000	0.640	H	5000	0.683	I	7000	0.708	J	10000	0.720
Nitrobenzene-d5	A	50	0.815	B	100	0.825	C	200	0.858	D	500	0.906	E	1000	0.996
	F	2000	1.04	G	3000	1.01	H	5000	1.08	I	7000	1.08	J	10000	1.08
2-Fluorobiphenyl	A	50	1.50	B	100	1.45	C	200	1.51	D	500	1.50	E	1000	1.50
	F	2000	1.53	G	3000	1.52	H	5000	1.52	I	7000	1.50	J	10000	1.51
2,4,6-Tribromophenol							C	200	0.0995	D	500	0.118	E	1000	0.141
	F	2000	0.154	G	3000	0.154	H	5000	0.162	I	7000	0.162			
Terphenyl-d14	A	50	0.923	B	100	0.855	C	200	0.938	D	500	0.905	E	1000	0.898
	F	2000	0.898	G	3000	0.916	H	5000	0.949	I	7000	0.944	J	10000	0.954

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Hart Crowser, Incorporated **Service Request:** K1713130
Project: URSC/150-001-056 **Calibration Date:** 12/21/2017

Initial Calibration Summary
Semi-Volatile Organic Compounds by GC/MS

Calibration ID: CAL15647 **Column:** MS
Instrument ID: MS29

		Calibration Evaluation					RRF Evaluation		
Analyte Name	Compound Type	Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
Naphthalene	MS	AverageRF	% RSD	2.7		≤ 20	0.982		0.700
2-Methylnaphthalene	MS	AverageRF	% RSD	5.3		≤ 20	0.554		0.300
Acenaphthylene	MS	AverageRF	% RSD	15.9		≤ 20	1.73		0.900
Acenaphthene	MS	AverageRF	% RSD	2.1		≤ 20	1.14		0.700
Fluorene	MS	AverageRF	% RSD	6.6		≤ 20	1.31		0.800
Phenanthrene	MS	AverageRF	% RSD	2.6		≤ 20	1.06		0.600
Anthracene	MS	AverageRF	% RSD	12.9		≤ 20	0.965		0.600
Fluoranthene	MS	AverageRF	% RSD	9.6		≤ 20	1.12		0.600
Pyrene	MS	AverageRF	% RSD	5.2		≤ 20	1.27		0.600
Benz(a)anthracene	MS	AverageRF	% RSD	14.8		≤ 20	1.03		0.600
Chrysene	MS	AverageRF	% RSD	3.7		≤ 20	1.06		0.600
Hexachlorobenzene	MS	AverageRF	% RSD	4.6		≤ 20	0.290		0.100
Pentachlorophenol	MS	Quadratic	COD	1.000		≥ 0.990	0.151		0.050
Bis(2-ethylhexyl) Phthalate	MS	Quadratic	COD	0.997		≥ 0.990	0.533		0.010
Benzo(b)fluoranthene	MS	AverageRF	% RSD	14.4		≤ 20	1.02		0.600
Benzo(k)fluoranthene	MS	AverageRF	% RSD	14.5		≤ 20	1.05		0.600
Benzo(a)pyrene	MS	Quadratic	COD	0.999		≥ 0.990	0.845		0.600
Indeno(1,2,3-cd)pyrene	MS	AverageRF	% RSD	5.6		≤ 20	0.842		0.500
Dibenz(a,h)anthracene	MS	AverageRF	% RSD	6.2		≤ 20	0.926		0.400
Benzo(g,h,i)perylene	MS	AverageRF	% RSD	16.2		≤ 20	0.771		0.500
Nitrobenzene-d5	SURR	AverageRF	% RSD	11.1		≤ 20	0.969		0.01
2-Fluorobiphenyl	SURR	AverageRF	% RSD	1.4		≤ 20	1.50		0.01
2,4,6-Tribromophenol	SURR	Quadratic	COD	1.000		≥ 0.990	0.141		0.01
Terphenyl-d14	SURR	AverageRF	% RSD	3.3		≤ 20	0.918		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

QA/QC Results

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056

Service Request: K1713130
Calibration Date: 12/21/2017
Date Analyzed: 12/21/2017

Second Source Calibration Verification
Semi-Volatile Organic Compounds by GC/MS

Calibration Type: Internal Standard
Analysis Method: 8270D

Calibration ID: CAL15647
Units: ng/ml

File ID: J:\MS29\DATA\122117\1221F013.D
J:\MS29\DATA\122117\1221F014.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Naphthalene	3000	3000	0.982	0.986	0	NA	± 30 %	AverageRF
2-Methylnaphthalene	3000	3400	0.554	0.623	12	NA	± 30 %	AverageRF
Acenaphthylene	3000	3000	1.73	1.74	0	NA	± 30 %	AverageRF
Acenaphthene	3000	3200	1.14	1.21	6	NA	± 30 %	AverageRF
Fluorene	3000	3200	1.31	1.40	7	NA	± 30 %	AverageRF
Phenanthrene	3000	3100	1.06	1.10	4	NA	± 30 %	AverageRF
Anthracene	3000	3500	0.965	1.11	16	NA	± 30 %	AverageRF
Fluoranthene	3000	3300	1.12	1.25	12	NA	± 30 %	AverageRF
Pyrene	3000	2900	1.27	1.23	-3	NA	± 30 %	AverageRF
Benz(a)anthracene	3000	3300	1.03	1.14	11	NA	± 30 %	AverageRF
Chrysene	3000	2900	1.06	1.03	-2	NA	± 30 %	AverageRF
Hexachlorobenzene	3000	3100	0.290	0.303	5	NA	± 30 %	AverageRF
Pentachlorophenol	3000	3700	0.151	0.204	NA	23	± 30 %	Quadratic
Bis(2-ethylhexyl) Phthalate	3000	3200	0.533	0.629	NA	7	± 30 %	Quadratic
Benzo(b)fluoranthene	3000	3300	1.02	1.11	9	NA	± 30 %	AverageRF
Benzo(k)fluoranthene	3000	3200	1.05	1.13	8	NA	± 30 %	AverageRF
Benzo(a)pyrene	3000	3300	0.845	1.04	NA	10	± 30 %	Quadratic
Indeno(1,2,3-cd)pyrene	3000	2900	0.842	0.826	-2	NA	± 30 %	AverageRF
Dibenz(a,h)anthracene	3000	3100	0.926	0.949	2	NA	± 30 %	AverageRF
Benzo(g,h,i)perylene	3000	2700	0.771	0.693	-10	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056

Service Request: K1713130
Date Analyzed: 01/02/2018

Continuing Calibration Verification Summary
Semi-Volatile Organic Compounds by GC/MS

Calibration Type: Internal Standard
Analysis Method: 8270D

Calibration Date: 12/21/2017
Calibration ID: CAL15647
Analysis Lot: KWG1800134
Units: ng/ml

File ID: J:\MS29\DATA\010218\0102F015.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift		Criteria	Curve Fit
Naphthalene	3000	3000	0.700	0.982	0.972	-1	NA		± 20	AverageRF
2-Methylnaphthalene	3000	3100	0.300	0.554	0.572	3	NA		± 20	AverageRF
Acenaphthylene	3000	3400	0.900	1.73	1.94	12	NA		± 20	AverageRF
Acenaphthene	3000	3000	0.700	1.14	1.14	0	NA		± 20	AverageRF
Fluorene	3000	3100	0.800	1.31	1.36	4	NA		± 20	AverageRF
Phenanthrene	3000	2900	0.600	1.06	1.04	-2	NA		± 20	AverageRF
Anthracene	3000	3300	0.600	0.965	1.05	9	NA		± 20	AverageRF
Fluoranthene	3000	2900	0.600	1.12	1.08	-4	NA		± 20	AverageRF
Pyrene	3000	2800	0.600	1.27	1.19	-6	NA		± 20	AverageRF
Benz(a)anthracene	3000	3200	0.600	1.03	1.09	5	NA		± 20	AverageRF
Chrysene	3000	3000	0.600	1.06	1.06	0	NA		± 20	AverageRF
Hexachlorobenzene	3000	3100	0.100	0.290	0.303	4	NA		± 20	AverageRF
Pentachlorophenol	3000	1800	0.050	0.151	0.0895	NA	-40	*	± 20	Quadratic
Bis(2-ethylhexyl) Phthalate	3000	3200	0.010	0.533	0.632	NA	7		± 20	Quadratic
Benzo(b)fluoranthene	3000	2900	0.600	1.02	0.997	-3	NA		± 20	AverageRF
Benzo(k)fluoranthene	3000	2900	0.600	1.05	1.02	-3	NA		± 20	AverageRF
Benzo(a)pyrene	3000	2900	0.600	0.845	0.908	NA	-4		± 20	Quadratic
Indeno(1,2,3-cd)pyrene	3000	3100	0.500	0.842	0.872	4	NA		± 20	AverageRF
Dibenz(a,h)anthracene	3000	3000	0.400	0.926	0.926	0	NA		± 20	AverageRF
Benzo(g,h,i)perylene	3000	2800	0.500	0.771	0.722	-6	NA		± 20	AverageRF
Nitrobenzene-d5	3000	3400	0.01	0.969	1.10	14	NA		± 20	AverageRF
2-Fluorobiphenyl	3000	3000	0.01	1.50	1.51	1	NA		± 20	AverageRF
2,4,6-Tribromophenol	3000	2900	0.01	0.141	0.151	NA	-3		± 20	Quadratic
Terphenyl-d14	3000	2600	0.01	0.918	0.800	-13	NA		± 20	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056

Service Request: K1713130
Date Analyzed: 01/05/2018

Continuing Calibration Verification Summary
Semi-Volatile Organic Compounds by GC/MS

Calibration Type: Internal Standard
Analysis Method: 8270D

Calibration Date: 12/21/2017
Calibration ID: CAL15647
Analysis Lot: KWG1800268
Units: ng/ml

File ID: J:\MS29\DATA\010518\0105F002.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Naphthalene	3000	2900	0.700	0.982	0.964	-2	NA	± 20	AverageRF
2-Methylnaphthalene	3000	3000	0.300	0.554	0.561	1	NA	± 20	AverageRF
Acenaphthylene	3000	3300	0.900	1.73	1.91	10	NA	± 20	AverageRF
Acenaphthene	3000	3000	0.700	1.14	1.14	0	NA	± 20	AverageRF
Fluorene	3000	3100	0.800	1.31	1.33	2	NA	± 20	AverageRF
Phenanthrene	3000	2900	0.600	1.06	1.03	-3	NA	± 20	AverageRF
Anthracene	3000	3200	0.600	0.965	1.04	8	NA	± 20	AverageRF
Fluoranthene	3000	3000	0.600	1.12	1.11	-1	NA	± 20	AverageRF
Pyrene	3000	3000	0.600	1.27	1.29	2	NA	± 20	AverageRF
Benz(a)anthracene	3000	3300	0.600	1.03	1.13	9	NA	± 20	AverageRF
Chrysene	3000	3000	0.600	1.06	1.04	-1	NA	± 20	AverageRF
Hexachlorobenzene	3000	3000	0.100	0.290	0.293	1	NA	± 20	AverageRF
Pentachlorophenol	3000	2100	0.050	0.151	0.105	NA	-32 *	± 20	Quadratic
Bis(2-ethylhexyl) Phthalate	3000	3500	0.010	0.533	0.708	NA	18	± 20	Quadratic
Benzo(b)fluoranthene	3000	3000	0.600	1.02	1.03	1	NA	± 20	AverageRF
Benzo(k)fluoranthene	3000	3100	0.600	1.05	1.09	3	NA	± 20	AverageRF
Benzo(a)pyrene	3000	3100	0.600	0.845	0.965	NA	2	± 20	Quadratic
Indeno(1,2,3-cd)pyrene	3000	2800	0.500	0.842	0.783	-7	NA	± 20	AverageRF
Dibenz(a,h)anthracene	3000	2800	0.400	0.926	0.860	-7	NA	± 20	AverageRF
Benzo(g,h,i)perylene	3000	2400	0.500	0.771	0.609	-21 *	NA	± 20	AverageRF
Nitrobenzene-d5	3000	3500	0.01	0.969	1.13	17	NA	± 20	AverageRF
2-Fluorobiphenyl	3000	3000	0.01	1.50	1.51	1	NA	± 20	AverageRF
2,4,6-Tribromophenol	3000	2800	0.01	0.141	0.147	NA	-6	± 20	Quadratic
Terphenyl-d14	3000	2800	0.01	0.918	0.869	-5	NA	± 20	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† **SPCC Compound** ‡ **CCC Compound**

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: Hart Crowser, Incorporated **Service Request:** K1713130
Project: URSC/150-001-056

Analysis Run Log
Semi-Volatile Organic Compounds by GC/MS

Analysis Method: 8270D **Analysis Lot:** KWG1800134
Instrument ID: MS29

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0102F014.D	GC/MS Tuning - Decafluorotriphenylphosph	KWG1800134-1	1/2/2018	16:47		1/2/2018	17:10
0102F015.D	Continuing Calibration Verification	KWG1800134-2	1/2/2018	17:15		1/2/2018	17:38
0102F017.D	ZZZZZZ	ZZZZZZ	1/2/2018	18:18		1/2/2018	18:41
0102F018.D	ZZZZZZ	ZZZZZZ	1/2/2018	18:47		1/2/2018	19:10
0102F019.D	ZZZZZZ	ZZZZZZ	1/2/2018	19:15		1/2/2018	19:38
0102F020.D	ZZZZZZ	ZZZZZZ	1/2/2018	19:43		1/2/2018	20:06
0102F021.D	ZZZZZZ	ZZZZZZ	1/2/2018	20:12		1/2/2018	20:35
0102F022.D	ZZZZZZ	ZZZZZZ	1/2/2018	20:40		1/2/2018	21:03
0102F023.D	ZZZZZZ	ZZZZZZ	1/2/2018	21:09		1/2/2018	21:32
0102F024.D	ZZZZZZ	ZZZZZZ	1/2/2018	21:37		1/2/2018	22:00
0102F025.D	ZZZZZZ	ZZZZZZ	1/2/2018	22:06		1/2/2018	22:29
0102F026.D	Method Blank	KWG1710979-4	1/2/2018	22:34		1/2/2018	22:57
0102F027.D	Lab Control Sample	KWG1710979-3	1/2/2018	23:02		1/2/2018	23:25
0102F028.D	URSC-RM18.35E-COMPMS	KWG1710979-1	1/2/2018	23:31		1/2/2018	23:54
0102F029.D	URSC-RM18.35E-COMPDMS	KWG1710979-2	1/2/2018	23:59		1/3/2018	00:22
0102F030.D	URSC-RM18.35E-COMP	K1713130-006	1/3/2018	00:28		1/3/2018	00:51
0102F031.D	ZZZZZZ	ZZZZZZ	1/3/2018	00:56		1/3/2018	01:19
0102F032.D	ZZZZZZ	ZZZZZZ	1/3/2018	01:25		1/3/2018	01:48
0102F033.D	ZZZZZZ	ZZZZZZ	1/3/2018	01:53		1/3/2018	02:16
0102F034.D	ZZZZZZ	ZZZZZZ	1/3/2018	02:22		1/3/2018	02:45
0102F035.D	ZZZZZZ	ZZZZZZ	1/3/2018	02:50		1/3/2018	03:13
0102F036.D	ZZZZZZ	ZZZZZZ	1/3/2018	03:18		1/3/2018	03:41
0102F037.D	ZZZZZZ	ZZZZZZ	1/3/2018	03:47		1/3/2018	04:10

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

ALS Group USA, Corp. dba ALS Environmental

QA/QC Results

Client: Hart Crowser, Incorporated **Service Request:** K1713130
Project: URSC/150-001-056

Analysis Run Log
Semi-Volatile Organic Compounds by GC/MS

Analysis Method: 8270D **Analysis Lot:** KWG1800268
Instrument ID: MS29

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0105F001.D	GC/MS Tuning - Decafluorotriphenylphosph	KWG1800268-1	1/5/2018	13:35		1/5/2018	13:58
0105F002.D	Continuing Calibration Verification	KWG1800268-2	1/5/2018	14:03		1/5/2018	14:26
0105F005.D	ZZZZZZ	ZZZZZZ	1/5/2018	16:49		1/5/2018	17:12
0105F006.D	ZZZZZZ	ZZZZZZ	1/5/2018	17:17		1/5/2018	17:40
0105F007.D	ZZZZZZ	ZZZZZZ	1/5/2018	17:46		1/5/2018	18:09
0105F008.D	ZZZZZZ	ZZZZZZ	1/5/2018	18:14		1/5/2018	18:37
0105F009.D	ZZZZZZ	ZZZZZZ	1/5/2018	18:43		1/5/2018	19:06
0105F010.D	ZZZZZZ	ZZZZZZ	1/5/2018	19:11		1/5/2018	19:34
0105F011.D	Method Blank	KWG1711057-4	1/5/2018	19:40		1/5/2018	20:03
0105F012.D	Lab Control Sample	KWG1711057-3	1/5/2018	20:09		1/5/2018	20:32
0105F013.D	Batch QCMS	KWG1711057-1	1/5/2018	20:37		1/5/2018	21:00
0105F014.D	Batch QCDMS	KWG1711057-2	1/5/2018	21:06		1/5/2018	21:29
0105F015.D	Batch QC	K1713018-010	1/5/2018	21:34		1/5/2018	21:57
0105F016.D	ZZZZZZ	ZZZZZZ	1/5/2018	22:03		1/5/2018	22:26
0105F017.D	URSC-RM20.9W-COMP	K1713130-015	1/5/2018	22:32		1/5/2018	22:55
0105F018.D	URSC-RM24.7E-COMP	K1713130-021	1/5/2018	23:00		1/5/2018	23:23
0105F019.D	URSC-RM20.0E-COMP	K1713130-032	1/5/2018	23:29		1/5/2018	23:52
0105F020.D	URSC-RM25.2E-COMP	K1713130-033	1/5/2018	23:57		1/6/2018	00:20

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056
Sample Matrix: Sediment

Service Request: K1713130
Date Extracted: 12/13/2017

Extraction Prep Log
Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3541
Analysis Method: 8270D

Extraction Lot: KWG1710979
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
URSC-RM18.35E-COMP	K1713130-006	11/29/17	12/06/17	40.132g	2mL	68.5	
Method Blank	KWG1710979-4	NA	NA	4.0445g	2mL	NA	
URSC-RM18.35E-COMPMS	KWG1710979-1	11/29/17	12/06/17	40.399g	2mL	68.5	
URSC-RM18.35E-COMPDMS	KWG1710979-2	11/29/17	12/06/17	40.208g	2mL	68.5	
Lab Control Sample	KWG1710979-3	NA	NA	20.000g	2mL	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: Hart Crowser, Incorporated
Project: URSC/150-001-056
Sample Matrix: Sediment

Service Request: K1713130
Date Extracted: 12/15/2017

Extraction Prep Log
Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3541
Analysis Method: 8270D

Extraction Lot: KWG1711057
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
URSC-RM20.9W-COMP	K1713130-015	12/01/17	12/06/17	40.205g	2mL	69.5	
URSC-RM24.7E-COMP	K1713130-021	12/04/17	12/06/17	40.295g	2mL	70.7	
URSC-RM20.0E-COMP	K1713130-032	12/05/17	12/06/17	40.357g	2mL	74.7	
URSC-RM25.2E-COMP	K1713130-033	12/04/17	12/06/17	40.219g	2mL	65.1	
Method Blank	KWG1711057-4	NA	NA	40.366g	2mL	NA	
Batch QC	K1713018-010	NA	NA	40.173g	2mL	60.6	
Batch QCMS	KWG1711057-1	NA	NA	40.366g	2mL	60.6	
Batch QCDMS	KWG1711057-2	NA	NA	40.266g	2mL	60.6	
Lab Control Sample	KWG1711057-3	NA	NA	20.000g	2mL	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Subcontract Lab Results

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

January 17, 2018. Service Request No K1713130

Howard Holmes.
ALS Group USA, Corp.
1317 South 13th Avenue
Kelso, WA 98626

Laboratory Results for: GSI Water Solutions, Inc.

Dear Howard,

Enclosed are the results of the samples submitted to our laboratory December 19, 2017.
For your reference these analyses have been assigned our service request number **K1713130.**

Analyses were performed according to our laboratory's NELAP approved quality assurance program The test results meet requirements of the current TNI standards where applicable and except as noted in the laboratory case narrative provided All results are intended to be considered in their entirety and ALS Environmental is not responsible for use of less than the final complete report Results apply only to the items submitted to the laboratory for analysis and individual items samples analyzed as listed in the report In accordance to the TNI 2009 Standard, a statement on the estimated uncertainty of measurement of any quantitative analysis will be supplied upon request

Respectfully submitted

ALS Group USA Corp dba ALS Environmental

Nicole Brown
Project Manager

ADDRESS Stancliff Rd Suite Houston TX
PHONE 281 530 5656 |
ALS Group USA Corp
dba ALS Environmental

Certificate of Analysis

ALS Environmental - Houston HRMS
10450 Stancliff Rd, Suite 210, Houston TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

ALS Environmental

Client:	GSI Water Solutions, Inc	**Service Request No.:**	K1713130
Project:	URSC / 150-001-056	**Date Received:**	12/19/17
Sample Matrix:	Sediment		

CASE NARRATIVE

All analyses were performed in adherence to the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Five sediment samples were received for analysis at ALS Environmental in Houston on 12/19/17.

Please note the reporting forms are currently referencing the date ALS-Kelso received the samples (12/06/17) and not the date ALS-Houston received the samples (12/19/17).

The samples were received at 1.4 °C in good condition and are consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Data Validation Notes and Discussion

B flags – Method Blanks

The Method Blank EQ1800009-01 contained low levels of various compounds below the Method Reporting Limit (MRL). The associated compounds in the samples are flagged with 'B' flags where the sample result is less than ten times the level detected in the method blank.

MS/MSD

EQ1700575: Laboratory Control Spike/Duplicate Laboratory Control Spike (LCS/DLCS) samples were analyzed and reported in lieu of an MS/MSD for this extraction batch.

Table 5 in the method for 1668A lists the native toxics/LOC PCB congener list that should be analyzed for in the MS and MSD. ALS Houston also reports the entire 209 PCB congeners for the matrix spike samples for additional accuracy and precision. The matrix spike recoveries for the table 5 list of PCB congeners were within control limits for all compounds with the exception of PCB 54 in the LCS and DLCS and 104 in the DLCS which are slightly above control limits. Various congeners outside the table 5 list were also above control limits. All relative percent differences (RPDs) were within control limits.

EQ1800009: Laboratory Control Spike/Duplicate Laboratory Control Spike (LCS/DLCS) samples were analyzed and reported in lieu of an MS/MSD for this extraction batch.

K flags

EMPC - When the ion abundance ratios associated with a particular compound are outside the QC limits, samples are flagged with a 'K' flag. A 'K' flag indicates an estimated maximum possible concentration for the associated compound.

Detection Limits

Detection limits are calculated for each congener in each sample by measuring the height of the noise level for each quantitation ion for the associated labeled standard. The concentration equivalent to 2.5 times the height of the noise is then calculated using the appropriate response factor and the weight of the sample. The calculated concentration equals the detection limit.

The TEQ Summary results for each sample have been calculated by ALS/Houston to include:

- WHO-2005 TEFs, The 2005 World Health Organization Reevaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-Like Compounds (M. Van den Berg et al., Toxicological Sciences 93(2):223-241, 2006)
- Non-detected compounds are not included in the 'Total'

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS group USA Corp dba ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.

Client: Hart Crowser, Incorporated **Service Request:**K1713130
Project: URSC/150-001-056

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
K1713130-001	URSC-RM18.35E-G008	11/29/2017	1440
K1713130-002	URSC-RM18.35E-G005	11/29/2017	1539
K1713130-003	URSC-RM18.35E-G011	12/5/2017	1210
K1713130-004	URSC-RM18.35E-G012	12/5/2017	1230
K1713130-005	URSC-RM18.35E-G013	12/5/2017	1300
K1713130-006	URSC-RM18.35E-COMP	11/29/2017	1448
K1713130-007	URSC-RM20.9W-G001	12/1/2017	1413
K1713130-008	URSC-RM20.9W-G002	12/1/2017	1440
K1713130-009	URSC-RM20.9W-G003	12/1/2017	1500
K1713130-010	URSC-RM20.9W-G004	12/1/2017	1515
K1713130-011	URSC-RM20.9W-G005	12/1/2017	1532
K1713130-012	URSC-RM20.9W-G007	12/4/2017	0815
K1713130-013	URSC-RM20.9W-G008	12/4/2017	0835
K1713130-014	URSC-RM20.9W-G010	12/4/2017	0928
K1713130-015	URSC-RM20.9W-COMP	12/1/2017	1413
K1713130-016	URSC-RM24.7E-G001	12/4/2017	1042
K1713130-017	URSC-RM24.7E-G002	12/4/2017	1100
K1713130-018	URSC-RM24.7E-G003	12/4/2017	1120
K1713130-019	URSC-RM24.7E-G004	12/4/2017	1148
K1713130-020	URSC-RM24.7E-G005	12/4/2017	1206
K1713130-021	URSC-RM24.7E-COMP	12/4/2017	1042
K1713130-022	URSC-RM25.2E-G001	12/4/2017	1300
K1713130-023	URSC-RM25.2E-G003	12/4/2017	1335
K1713130-024	URSC-RM25.2E-G004	12/4/2017	1420
K1713130-025	URSC-RM25.2E-G010	12/5/2017	0809
K1713130-026	URSC-RM25.2E-G002	12/5/2017	0843
K1713130-027	URSC-RM20.0E-G001	12/5/2017	1035
K1713130-028	URSC-RM20.0E-G002	12/5/2017	1125
K1713130-029	URSC-RM20.0E-G003	12/5/2017	1110
K1713130-030	URSC-RM20.0E-G004	12/5/2017	1035
K1713130-031	URSC-RM20.0E-G005	12/5/2017	1055
K1713130-032	URSC-RM20.0E-COMP	12/5/2017	1035
K1713130-033	URSC-RM25.2E-COMP	12/4/2017	1300

Service Request Summary

Folder #: **K1713130**
Client Name: GSI Water Solutions, Inc
Project Name: URSC
Project Number: 150-001-056

Report To: Erin Carroll Hughes
GSI Water Solutions, Inc.
55 SW Yamhill, Suite 300
Portland, OR 97204
USA
Phone Number: 971-200-8528
Cell Number: 503-927-4553
Fax Number: 503-239-8940
E-mail: echughes@gsiws.com

Project Chemist: Howard Holmes
Originating Lab: KELSO
Logged By: CGRAVES
Date Received: 12/06/17
Internal Due Date: 12/29/2017
QAP: LAB QAP
Qualifier Set: Lab Standard
Formset: Lab Standard
Merged?: Y
Report to MDL?: Y
P.O. Number: 150-001-056
EDD: EQUIS 5.0

28 8 oz-Glass Jar WM CLEAR Teflon Liner Unpreserved
52 16 oz-Glass Jar WM CLEAR Teflon Liner Unpreserved
10 40 mL-Glass Vial VOA CLEAR Tef/Silicone Septa Unpreserved
9 32 oz-Glass Jar WM CLEAR Teflon Liner Unpreserved
1 4 oz-Glass Jar WM CLEAR Teflon Liner Unpreserved

Location: K-DELILAH, K-RENTAL-16, E-Disposed, SMO

Pressure Gas:

				KELSO		KELSO		KELSO	KELSO			HOUSTON		KELSO	
Lab Samp No.	**Client Samp No**	**Matrix**	**Collected**	PartSize ASTMCB/ASTM D422M	PSEP TOC T/PSEP TOC	Hg/7471B	Metals T/6020A	NW TPH SGT/NWTPH-Dx	OC_Pest/ALS SOP	PBDE/8270D	SVO LL/8270D	Cl Biphen Cong/1668C	Dioxins Furans/1613B	PSEP TS/PSEP TS	TS/160.3 Modified
K1713130-006	URSC-RM18.35E-COMP	Sediment	11/29/17 1448	**V**	**V**	**V**	**V**	**V**	**V**	**V**	**V**	**IV**	**IV**	**V**	**V**
K1713130-015	URSC-RM20.9W-COMP	Sediment	12/01/17 1413	**V**	**V**	**V**	**V**	**V**	**V**	**V**	**V**	**IV**	**IV**	**V**	**V**
K1713130-021	URSC-RM24.7E-COMP	Sediment	12/04/17 1042	**V**	**V**	**V**	**V**	**V**	**V**	**V**	**V**	**IV**	**IV**	**V**	**V**
K1713130-032	URSC-RM20.0E-COMP	Sediment	12/05/17 1035	**V**	**V**	**V**	**V**	**V**	**V**	**V**	**V**	**IV**	**IV**	**V**	**V**
K1713130-033	URSC-RM25.2E-COMP	Sediment	12/04/17 1300	**V**	**V**	**V**	**V**	**V**	**V**	**V**	**V**	**IV**	**IV**	**V**	**V**

Folder Comments:

Wet sieve samples thru 2mm sieve
ISM Wet material
Tier IV

Service Request Summary

Folder #:	**K1713130**
Client Name:	GSI Water Solutions, Inc
Project Name:	URSC
Project Number:	150-001-056
Report To:	Erin Carroll Hughes GSI Water Solutions, Inc. 55 SW Yamhill, Suite 300 Portland, OR 97204 USA
Phone Number:	971-200-8528
Cell Number:	503-927-4553
Fax Number:	503-239-8940
E-mail:	echughes@gsiws.com

Project Chemist:	Howard Holmes
Originating Lab:	KELSO
Logged By:	CGRAVES
Date Received:	12/06/17
Internal Due Date:	12/29/2017
QAP:	LAB QAP
Qualifier Set:	Lab Standard
Formset:	Lab Standard
Merged?:	Y
Report to MDL?:	Y
P.O. Number:	150-001-056
EDD:	EQUIS 5.0

28	8 oz-Glass Jar WM CLEAR Teflon Liner Unpreserved
52	16 oz-Glass Jar WM CLEAR Teflon Liner Unpreserved
10	40 mL-Glass Vial VOA CLEAR Tef/Silicone Septa Unpreserved
9	32 oz-Glass Jar WM CLEAR Teflon Liner Unpreserved
1	4 oz-Glass Jar WM CLEAR Teflon Liner Unpreserved

Location: K-DELILAH, K-RENTAL-16, E-Disposed, SMO

Pressure Gas:

Test Comments:

Group	Test/Method	Samples	Comments
GenChem	PartSize ASTMCB/ASTM D422M	5	use -2mm material,ISM subsample
Metals	Metals T/6020A	5	As,Cd,Cr,Cu,Pb,Mn,Ni,Zn
Semivoa GCMS	OC_Pest/ALS SOP	5	RL 18469
Semivoa GCMS	SVO LL/8270D	5	PAHs,SVOC,Phenols,Phthalates
SMO	Archive -20C/Archive	28	Fee is for 6 months
Soils Prep	Composite/Composite	5	Composite equal mass from each jar with -2mm sieved materiial to run full analytical suite. Retain material for each sample jar not used for the composite
Soils Prep	ISM PCB/ISM Subsample	5	For 1668 PCB Congeners to ALS-Houston
Soils Prep	ISM 6000Tot Met/ISM Subsample	5	For 6020 metals
Soils Prep	ISM 8270/ISM Subsample	5	For 8270 PBDE
Soils Prep	ISM 8015/ISM Subsample	5	For NWTPH-Dx + SGT
Soils Prep	ISM TOC/ISM Subsample	5	For PSEP TOC
Soils Prep	ISM 8290/DIOXIN/ISM Subsample	5	For Dioxins by 1613B to ALS-Houston
Soils Prep	ISM PEST/ISM Subsample	5	For OC Pest by GC/MS/MS
Soils Prep	ISM 8270 LL/ISM Subsample	5	For 8270D LL
Soils Prep	ISM TS/ISM Subsample	5	For PSEP TS
Soils Prep	ISM/ISM Subsample	5	For Grain Size
Soils Prep	ISM Sieve/ISM Sieve	5	Wet sieve each jar separately through 2mm sieve. Retain both retained and passed material for each sample jar $25/jar

Service Request Summary

Folder #:	**K1713130**
Client Name:	GSI Water Solutions, Inc
Project Name:	URSC
Project Number:	150-001-056
Report To:	Erin Carroll Hughes GSI Water Solutions, Inc. 55 SW Yamhill, Suite 300 Portland, OR 97204 USA
Phone Number:	971-200-8528
Cell Number:	503-927-4553
Fax Number:	503-239-8940
E-mail:	echughes@gsiws.com

Project Chemist:	Howard Holmes
Originating Lab:	KELSO
Logged By:	CGRAVES
Date Received:	12/06/17
Internal Due Date:	12/29/2017
QAP:	LAB QAP
Qualifier Set:	Lab Standard
Formset:	Lab Standard
Merged?:	Y
Report to MDL?:	Y
P.O. Number:	150-001-056
EDD:	EQUIS 5.0

28	8 oz-Glass Jar WM CLEAR Teflon Liner Unpreserved
52	16 oz-Glass Jar WM CLEAR Teflon Liner Unpreserved
10	40 mL-Glass Vial VOA CLEAR Tef/Silicone Septa Unpreserved
9	32 oz-Glass Jar WM CLEAR Teflon Liner Unpreserved
1	4 oz-Glass Jar WM CLEAR Teflon Liner Unpreserved

Location: K-DELILAH, K-RENTAL-16, E-Disposed, SMO

Pressure Gas:

Test Comments:

Group	Test/Method	Samples	Comments
Soils Prep	ISM Hg/ISM Subsample	5	For 7471 Hg

Superset Summary

Service Request: K1713130 **SuperSet Reference:** 17-0000448016 rev 00

Analytical Method: **1613B**

Calibrations: 07/26/17

Data Files:

Raw Data	Begin CCAL	Method Blank	Lab ID
P513666	P513663	P513666	EQ1800009-01
P513697	P513686	P513666	EQ1800009-02
P513698	P513686	P513666	EQ1800009-03
P513711	P513702	P513666	K1713130-006
P513712	P513702	P513666	K1713130-015
P513713	P513702	P513666	K1713130-021
P513714	P513702	P513666	K1713130-032
P513715	P513702	P513666	K1713130-033

Analytical Method: **1668C**

Calibrations: 04/03/17

Data Files:

Raw Data	Begin CCAL	Method Blank	Lab ID
P305033	P305032	P305033	EQ1700575-01
P305053	P305045	P305033	EQ1700575-02
P305054	P305045	P305033	EQ1700575-03
P305047	P305045	P305033	K1713130-006
P305048	P305045	P305033	K1713130-015
P305049	P305045	P305033	K1713130-021
P305050	P305045	P305033	K1713130-032
P305051	P305045	P305033	K1713130-033

Data Qualifiers

HRMS Qualifier Set

B Indicates the associated analyte was found in the method blank at >1/10th the reported value.
E Estimated value. The reported concentration is above the calibration range of the instrument.
H Sample extracted and/or analyzed out of suggested holding time.
J Estimated value. The reported concentration is below the MRL.
K The ion abundance ratio between the primary and secondary ions were outside of theoretical acceptance limits.The concentration of this analyte should be considered as an estimate.
P Chlorodiphenyl ether interference was present at the retention time of the target analyte. Reported result should be considered an estimate.
Q Monitored lock-mass indicates matrix-interference. Reported result is estimated.
S Signal saturated detector. Result reported from dilution.
U Compound was analyzed for, but was not detected (ND).
X See Case Narrative.
Y Isotopically Labeled Standard recovery outside of acceptance limits. In all cases, the signal-to-nois ratios are greater than 10:1, making the recoveries acceptable.
i The MDL/MRL have been elevated due to a matrix interference.

ALS Laboratory Group

Acronyms

Cal	Calibration
Conc	CONCentration
Dioxin(s)	Polychlorinated dibenzo-p-dioxin(s)
EDL	Estimated Detection Limit
EMPC	Estimated Maximum Possible Concentration
Flags	Data qualifiers
Furan(s)	Polychlorinated dibenzofuran(s)
g	Grams
ICAL	Initial CALibration
ID	IDentifier
Ions	Masses monitored for the analyte during data acquisition
L	Liter (s)
LCS	Laboratory Control Sample
DLCS	Duplicate Laboratory Control Sample
MB	Method Blank
MCL	Method Calibration Limit
MDL	Method Detection Limit
mL	Milliliters
MS	Matrix Spiked sample
DMS	Duplicate Matrix Spiked sample
NO	Number of peaks meeting all identification criteria
PCDD(s)	Polychlorinated dibenzo-p-dioxin(s)
PCDF(s)	Polychlorinated dibenzofuran(s)
ppb	Parts per billion
ppm	Parts per million
ppq	Parts per quadrillion
ppt	Parts per trillion
QA	Quality Assurance
QC	Quality Control
Ratio	Ratio of areas from monitored ions for an analyte
% Rec.	Percent recovery
RPD	Relative Percent Difference
RRF	Relative Response Factor
RT	Retention Time
SDG	Sample Delivery Group
S/N	Signal-to-noise ratio
TEF	Toxicity Equivalence Factor
TEQ	Toxicity Equivalence Quotient

State Certifications, Accreditations, and Licenses

Agency	Number	Expire Date
Arizona Department of Health Services	AZ0793	5/27/2018
Arkansas Department of Environmental Quality	17-027-0	3/27/2018
California Department of Health Services	2452	2/28/2018
Florida Department of Health	E87611	7/31/2018
Hawaii Department of Health	TX02694	4/30/2018
Illinois Environmental Protection Agency	004112	5/9/2018
Louisiana Department of Environmental Quality	03048	6/30/2018
Maine Center for Disease Control and Prevention	2014019	6/5/2018
Maryland Department of the Environment	343	6/30/2018
Michigan Depratment of Environmental Quality	9971	6/5/2018
Nebraska Department of Health and Human Services	NE-OS-25-13	4/30/2018
Nevada Department of Concervation and Natural Resources	TX014112013-2	7/31/2018
New Jersey Department of Environmental Protection	NLC140001	6/30/2018
New Mexico Environment Department	TX02694	4/30/2018
New York Department of Health	11707	3/31/2018
Oklahoma Department of Environmental Quality	2014 124	8/31/2018
Oregon Environmental Laboratory Accreditation Program	TX200002-009	3/24/2018
Pennsylvania Department of Environmental Protection	68-03441	6/30/2018
Tennessee Department of Environment and Concervation	04016	6/30/2018
Texas Commision on Environmental Quality	TX104704231-17-18	4/30/2018
United States Department of Agriculture	P330-14-00067	6/19/2018
Utah Department of Health Environmental Laboratory Certification	TX02694	7/31/2018
West Virginia Department of Environmental Protection	347	6/30/2018

ALS ENVIRONMENTAL – Houston
Data Processing/Form Production and Peer Review Signatures

SR# Unique ID K1713130 DB-5MSUI SPB-Octyl

First Level - Data Processing - to be filled by person generating the forms

Date:	Analyst:	Samples:
01/10/18	Cfc	006, 015, 021, 032, 033

Second Level - Data Review – to be filled by person doing peer review

Date:	Analyst:	Samples:
01/16/18	LKL	006, 015, 021, 032, 033

PEER REVIEW PAGE2015

ALS ENVIRONMENTAL – Houston
Data Processing/Form Production and Peer Review Signatures

SR# Unique ID K1713130 DB-5MSUI SPB-Octyl

First Level - Data Processing - to be filled by person generating the forms

Date:	Analyst:	Samples:
01/04/18	TC	-006, -015, -021, -032, -033

Second Level - Data Review – to be filled by person doing peer review

Date:	Analyst:	Samples:
01/09/18	LKL	006, 015, 021, 032, 033

PEER REVIEW PAGE2015

Chain of Custody

ALS Environmental - Houston HRMS
10450 Stancliff Rd, Suite 210, Houston TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

Intra-Network Chain of Custody

1317 South 13th Avenue • Kelso, WA 98626 • 1-360-577-7222 • FAX 1-360-636-1068

ALS Contact: Howard Holmes

Project Name: URSC
Project Number: 150-001-056
Project Manager: Erin Carroll Hughes
Company: GSI Water Solutions, Inc.
QAP: LAB QAP

Lab Code	Client Sample ID	# of Cont.	Matrix	Sample Date	Sample Time	Date Received	Send To	Cl Biphen Cong 1668C	Dioxins Furans 1613B
K1713130-006	URSC-RM18.35E-COMP	2	Sediment	11/29/17	1448	12/6/17	HOUSTON	V	V
K1713130-015	URSC-RM20.9-COMP		Sediment	12/1/17	1413	12/6/17	HOUSTON	V	V
K1713130-021	URSC-RM24.7E-COMP		Sediment	12/4/17	1042	12/6/17	HOUSTON	V	V
K1713130-032	URSC-RM20.0E-COMP		Sediment	12/5/17	1035	12/6/17	HOUSTON	V	V
K1713130-033	URSC-RM25.2E-COMP		Sediment	12/4/17	1300	12/6/17	HOUSTON	V	V

Folder Comments:
Wet sieve samples thru 2mm sieve
ISM Wet material
Tier IV

K1713130
GSI Water Solutions, Inc.
URSC
5

Special Instructions/Comments
Please provide the electronic (PDF and EDD) report to the following e-mail address: ALKLS.Data@alsglobal.com.

pH Checked _____

Turnaround Requirements
____ **RUSH** (Surcharges Apply)
PLEASE CIRCLE WORK DAYS
1 2 3 4 5
X **STANDARD**
Requested FAX Date: _____
Requested Report Date: 12/29/17

Report Requirements
____ I. Results Only
____ II. Results + QC Summaries
____ III. Results + QC and Calibration Summaries
X IV. Data Validation Report with Raw Data
PQL/MDL/J Y
EDD Y

Invoice Information
PO# 51K1713130
Bill to

Relinquished By: 12/18/17
Received By: 12/19/17 9:50
Airbill Number:

ALS Environmental

Cooler Receipt Form

Project Chemist NB

Client/Project ALS Kelso

Thermometer ID SMO 4

Date/Time Received: 12/19/17 9:50 Initials: AL

Date/Time Logged in: 12/19/17 Initials AL

1. Method of delivery: ○ US Mail ✓ Fed Ex ○ UPS ○ DHL ○ Courier ○ Client
2. Samples received in: ✓ Cooler ○ Box ○ Envelope ○ Other
3. Were custody seals on coolers? ✓ Yes ○ No
   Were they intact? ✓ Yes ○ No ○ N/A
   Were they signed and dated? ✓ Yes ○ No ○ N/A
   If yes, how many and where? 1 seal
4. Packing Material: ○ Inserts ○ Baggies ✓ Bubble Wrap ✓ Gel Packs ○ Wet Ice ○ Sleeves ○ Other
5. Foreign or Regulated Soil? ○ Yes ✓ No Location of Sampling:

Cooler Tracking Number	COC ID	Date Opened	Time Opened	Opened By	Temp. °C	Temp Blank?
7227 2437 6069		12/19/17	12:59	AL	1.8/1.4	☐
						☐
						☐
						☐

6. Were custody papers properly filled out (ink, signed, dated, etc)? ✓ Yes ○ No
7. Did all bottles arrive in good condition (not broken, no signs of leakage)? ✓ Yes ○ No
8. Were all sample labels complete (i.e., sample ID, analysis, preservation, etc)? ✓ Yes ○ No
9. Were appropriate bottles/containers and volumes received for the requested tests? ✓ Yes ○ No
10. Did sample labels and tags agree with custody documents? ✓ Yes ○ No

Notes, Discrepancies, & Resolutions:

Service request Label: K1713130 5
GSI Water Solutions, Inc.
URSC

10450 Stancliff Rd., Suite 210
Houston, TX 77099
T: +1 713 266 1599
F: +1 713 266 1599
www.alsglobal.com

SAMPLE ACCEPTANCE POLICY

This policy outlines the criteria samples must meet to be accepted by ALS Environmental – Houston HRMS.

Cooler Custody Seals (desirable, mandatory if specified in SAP):

- ✓ Intact on outside of cooler, signed and dated

Chain-of-Custody (COC) documentation (mandatory):

The following is required on each COC:

- ✓ Sample ID, the location, date and time of collection, collector's name, preservation type, sample type, and any other special remarks concerning the sampleThe COC must be completed in ink.
- ✓ Signature and date of relinquishing party.

In the absence of a COC at sample receipt, the COC will be requested from the client.

Sample Integrity (mandatory):

Samples are inspected upon arrival to ensure that sample integrity was not compromised during transfer to the laboratory.

- ✓ Sample containers must arrive in good condition (not broken or leaking).
- ✓ Samples must be labeled appropriately, including Sample IDs, and requested test using durable labels and indelible ink.
- ✓ The correct type of sample bottle must be used for the method requested.
- ✓ An appropriate sample volume, or weight, must be received.
- ✓ Sample IDs and number of containers must reconcile with the COC.
- ✓ Samples must be received within the method defined holding time.

Temperature Requirement (varies by sample matrix):

- ✓ Aqueous and Non-aqueous samples must be shipped and stored cold, at 0 to 6ºC.
- ✓ Tissue samples must be shipped and stored frozen, at -20 to -10ºC.
- ✓ Air samples are shipped and stored cold, at 0 to 6ºC
- ✓ The sample temperature must be recorded on the COC

All cooler inspections are documented on the Cooler Receipt Form (CRF). A separate CRF is completed for each service request. Any samples not meeting the above criteria are noted on the CRF and the Project Manager notified. The Project Manager must resolve any sample integrity issues with the client prior to proceeding with the analysis. Such resolutions are documented in writing and filed with the project folder. Data associated with samples received outside of this acceptance policy will be qualified on the case narrative of the final report

Preparation Information Benchsheets

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 210, Houston, TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

Preparation Information Benchsheet

Prep Run#: 305740 **Prep WorkFlow:** OrgExtS(365) **Status:** Prepped
Team: Semivoa GCMS/JRAMIREZ **Prep Method:** Method **Prep Date/Time:** 12/27/17 01:00 PM

#	Lab Code	Client ID	B#	Method /Test	pH	Cl	Matrix	Amt. Ext.	Sample Description
1	EQ1700575-01	MB		1668C/Cl Biphen Cong			Solid	5.227g	
2	EQ1700575-02	LCS		1668C/Cl Biphen Cong			Solid	5.117g	
3	EQ1700575-03	DLCS		1668C/Cl Biphen Cong			Solid	5.537g	
4	K1712926-001	RM16.5-G005-K	.02	1668C/Cl Biphen Cong			Sediment	5.644g	APOSEY k-balance-48 / Wet Brown Soil
5	K1712926-002	RM16.5-G010-K	.02	1668C/Cl Biphen Cong			Sediment	5.644g	APOSEY k-balance-48 / Wet Brown Soil
6	K1712928-017	RM16.5-COMP-I	.01	1668C/Cl Biphen Cong			Sediment	10.039g	DMADDEN K-Balance-54 / Wet Brown Soil
7	K1712961-006	URSC-RM20.0W-COMP	.01	1668C/Cl Biphen Cong			Sediment	10.189g	DMADDEN K-Balance-54 / Wet Brown Soil
8	K1712961-015	URSC-RM18.45E-COMP	.01	1668C/Cl Biphen Cong			Sediment	10.338g	DMADDEN K-Balance-54 / Wet Brown Soil
9	K1713018-010	URSC-RM20.1W-COMP	.01	1668C/Cl Biphen Cong			Sediment	10.446g	DMADDEN K-Balance-54 / Wet Brown Soil
10	K1713018-016	URSC-RM20.4E-COMP	.01	1668C/Cl Biphen Cong			Sediment	10.200g	DMADDEN K-Balance-54 / Wet Brown Soil
11	K1713130-006	URSC-RM18.35E-COMP	.01	1668C/Cl Biphen Cong			Sediment	10.484g	DMADDEN K-Balance-54 / Wet Brown Soil
12	K1713130-015	URSC-RM20.9W-COMP	.01	1668C/Cl Biphen Cong			Sediment	10.208g	DMADDEN K-Balance-54 / Wet Brown Soil
13	K1713130-021	URSC-RM24.7E-COMP	.01	1668C/Cl Biphen Cong			Sediment	10.218g	DMADDEN K-Balance-54 / Wet Brown Soil
14	K1713130-032	URSC-RM20.0E-COMP	.01	1668C/Cl Biphen Cong			Sediment	10.336g	DMADDEN K-Balance-54 / Wet Brown Soil
15	K1713130-033	URSC-RM25.2E-COMP	.01	1668C/Cl Biphen Cong			Sediment	10.394g	DMADDEN K-Balance-54 / Wet Brown Soil

Spiking Solutions

Name: 1668 A/C PCB Congener (209) Working Matrix Inventory ID 183026 Logbook Ref: 183026 JG 10-30 ng/mL 8/1/17 Expires On: 01/28/2018

EQ1700575-02	100.00µL	EQ1700575-03	100.00µL

Name: 1668A Clean Up Working Standard Inventory ID 185279 Logbook Ref: 185279 tw 110317 20ng/ml Expires On: 05/02/2018

EQ1700575-01	100.00µL	EQ1700575-02	100.00µL	EQ1700575-03	100.00µL	K1712926-001	100.00µL	K1712926-002	100.00µL	K1712928-017	100.00µL
K1712961-006	100.00µL	K1712961-015	100.00µL	K1713018-010	100.00µL	K1713018-016	100.00µL	K1713130-006	100.00µL	K1713130-015	100.00µL
K1713130-021	100.00µL	K1713130-032	100.00µL	K1713130-033	100.00µL						

Name: 1668A Labeled Working Standard Inventory ID 186489 Logbook Ref: 186489 AL 12/18/17 2-4 ng/mL Expires On: 05/15/2018

EQ1700575-01	1,000.00µL	EQ1700575-02	1,000.00µL	EQ1700575-03	1,000.00µL	K1712926-001	1,000.00µL	K1712926-002	1,000.00µL	K1712928-017	1,000.00µL
K1712961-006	1,000.00µL	K1712961-015	1,000.00µL	K1713018-010	1,000.00µL	K1713018-016	1,000.00µL	K1713130-006	1,000.00µL	K1713130-015	1,000.00µL
K1713130-021	1,000.00µL	K1713130-032	1,000.00µL	K1713130-033	1,000.00µL						

Preparation Information Benchsheet

Prep Run#: 305740 **Prep WorkFlow:** OrgExtS(365) **Status:** Prepped
Team: Semivoa GCMS/JRAMIREZ **Prep Method:** Method **Prep Date/Time:** 12/27/17 01:00 PM

Preparation Materials

Glass Wool	AL 12/28/17 (186762)	Hexanes 95%	AL 12/28/17 (186765)	Dichloromethane (Methylene Chloride) 99.9% MeCl2	JG 9/28/17 (184340)
Sodium Hydroxide 1N NaOH	sodium hydroxide (180303)	Sodium Sulfate Anhydrous Reagent Grade Na2SO4	AL 8/23/17 (183590)	Silica Gel	AL 12/28/17 (186767)
sulfuric acid	AL 10/11/17 (184727)	Toluene 99.9% Minimum	AL 11/11/17 (185534)		

Preparation Steps

Step:	Extraction	Step:	Acid Clean	Step:	Silica Gel Clean	Step:	Final Volume
Started:	12/27/17 13:00	Started:	12/28/17 08:00	Started:	12/29/17 09:00	Started:	12/29/17 14:00
Finished:	12/27/17 15:00	Finished:	12/28/17 09:00	Finished:	12/29/17 10:00	Finished:	12/29/17 14:30
By:	ALOPEZ	By:	ALOPEZ	By:	ALOPEZ	By:	ALOPEZ
Comments		Comments		Comments		Comments	

Comments: _____

Reviewed By: GC Date: 1/9/2018

Chain of Custody

Relinquished By: _____ Date: _____ Extracts Examined

Received By: _____ Date: _____ Yes No

Preparation Information Benchsheet

Prep Run#: 306153 **Prep WorkFlow:** OrgExtS(365) **Status:** Prepped
Team: Semivoa GCMS/JRAMIREZ **Prep Method:** Method Soxhlet **Prep Date/Time:** 1/4/18 03:00 PM

#	Lab Code	Client ID	B#	Method /Test	pH	Cl	Matrix	Amt. Ext.	Sample Description
1	EQ1800009-01	MB		1613B/Dioxins Furans			Solid	10.365g	
2	EQ1800009-02	LCS		1613B/Dioxins Furans			Solid	10.567g	
3	EQ1800009-03	DLCS		1613B/Dioxins Furans			Solid	10.326g	
4	J1708532-001	CTR Cups	.03	1613B/Dioxins Furans			Paperboard	5.970g	Plastic Filter Cup
5	K1712961-006	URSC-RM20.0W-COMP	.01	1613B/Dioxins Furans			Sediment	10.397g	DMADDEN K-Balance-54 / Wet Brown Gravel
6	K1712961-015	URSC-RM18.45E-COMP	.01	1613B/Dioxins Furans			Sediment	10.462g	DMADDEN K-Balance-54 / Wet Brown Gravel
7	K1713018-010	URSC-RM20.1W-COMP	.01	1613B/Dioxins Furans			Sediment	10.291g	DMADDEN K-Balance-54 / Wet Brown Gravel
8	K1713018-016	URSC-RM20.4E-COMP	.01	1613B/Dioxins Furans			Sediment	10.368g	DMADDEN K-Balance-54 / Wet Brown Gravel
9	K1713130-006	URSC-RM18.35E-COMP	.01	1613B/Dioxins Furans			Sediment	10.251g	DMADDEN K-Balance-54 / Wet Brown Gravel
10	K1713130-015	URSC-RM20.9W-COMP	.01	1613B/Dioxins Furans			Sediment	10.315g	DMADDEN K-Balance-54 / Wet Brown Gravel
11	K1713130-021	URSC-RM24.7E-COMP	.01	1613B/Dioxins Furans			Sediment	10.175g	DMADDEN K-Balance-54 / Wet Brown Gravel
12	K1713130-032	URSC-RM20.0E-COMP	.01	1613B/Dioxins Furans			Sediment	10.228g	DMADDEN K-Balance-54 / Wet Brown Gravel
13	K1713130-033	URSC-RM25.2E-COMP	.01	1613B/Dioxins Furans			Sediment	10.277g	DMADDEN K-Balance-54 / Wet Brown Gravel

Spiking Solutions

Name: 1613B Matrix Working Standard Inventory ID 186237 Logbook Ref: 186237 JR 2-20 ng/mL 12717 Expires On: 06/05/2018

EQ1800009-02	100.00µL	EQ1800009-03	100.00µL

Name: 8290/1613B Cleanup Working Standard Inventory ID 186645 Logbook Ref: 186645 JG 122217 8 ng/mL Expires On: 04/28/2018

EQ1800009-01	100.00µL	EQ1800009-02	100.00µL	EQ1800009-03	100.00µL	J1708532-001	100.00µL	K1712961-006	100.00µL	K1712961-015	100.00µL
K1713018-010	100.00µL	K1713018-016	100.00µL	K1713130-006	100.00µL	K1713130-015	100.00µL	K1713130-021	100.00µL	K1713130-032	100.00µL
K1713130-033	100.00µL										

Name: 1613B Labeled Working Standard Inventory ID 186916 Logbook Ref: 186916 JR 1/4/18 2-4ng/ml Expires On: 06/25/2018

EQ1800009-01	1,000.00µL	EQ1800009-02	1,000.00µL	EQ1800009-03	1,000.00µL	J1708532-001	1,000.00µL	K1712961-006	1,000.00µL	K1712961-015	1,000.00µL
K1713018-010	1,000.00µL	K1713018-016	1,000.00µL	K1713130-006	1,000.00µL	K1713130-015	1,000.00µL	K1713130-021	1,000.00µL	K1713130-032	1,000.00µL
K1713130-033	1,000.00µL										

Preparation Materials

Carbon, High Purity	JG 12/27/17 (186784)	Ethyl Acetate 99.9% Minimum EtOAc	AL 3/3/17 (179750)	Glass Wool	AL 12/28/17 (186762)
Hexanes 95%	AL 12/28/17 (186765)	Dichloromethane (Methylene Chloride) 99.9% MeCl2	JG 9/28/17 (184340)	Sodium Hydroxide 1N NaOH	sodium hydroxide (180303)
Sodium Sulfate Anhydrous Reagent Grade Na2SO4	JG 1/3/18 (186882)	Tridecane (n-Tridecane)	AL 9/27/17 (184312)	Silica Gel	AL 10/9/17 (184623)
sulfuric acid	AL 10/11/17 (184727)	Toluene 99.9% Minimum	AL 12/28/17 (186763)		

Preparation Information Benchsheet

Prep Run#: 306153 **Prep WorkFlow:** OrgExtS(365) **Status:** Prepped
Team: Semivoa GCMS/JRAMIREZ **Prep Method:** Method Soxhlet **Prep Date/Time:** 1/4/18 03:00 PM

Preparation Steps

Step:	Extraction	Step:	Acid Clean	Step:	Silica Gel Clean	Step:	Final Volume
Started:	1/4/18 15:00	Started:	1/5/18 15:00	Started:	1/10/18 09:45	Started:	1/10/18 19:30
Finished:	1/4/18 16:00	Finished:	1/5/18 16:00	Finished:	1/10/18 12:30	Finished:	1/10/18 20:30
By:	JRAMIREZ	By:	JRAMIREZ	By:	JRAMIREZ	By:	JRAMIREZ
Comments		Comments		Comments		Comments	

Comments: _____

Reviewed By: GC Date: 1/12/2018

Chain of Custody

Relinquished By: _____ Date: _____

Received By: _____ Date: _____

Extracts Examined
Yes No

Analytical Results

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 210, Houston, TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	11/29/17 14:48
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM18.35E-COMP	**Units:**	ng/Kg
Lab Code:	K1713130-006	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	01/13/18 06:33
Prep Method:	Method Soxhlet	**Date Extracted:**	1/4/18
Sample Amount:	10.251g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P513711	**Blank File Name:**	P513666
ICAL Date:	07/26/17	**Cal Ver. File Name:**	P513702

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	0.453	0.712			1
1,2,3,7,8-PeCDD	0.193**BJK**		0.154	3.56	1.23	1.001	1
1,2,3,4,7,8-HxCDD	0.144**BJ**		0.0920	3.56	1.43	1.000	1
1,2,3,6,7,8-HxCDD	0.779**J**		0.0985	3.56	1.36	1.000	1
1,2,3,7,8,9-HxCDD	0.307**BJK**		0.0908	3.56	0.78	1.006	1
1,2,3,4,6,7,8-HpCDD	14.1		0.117	3.56	1.10	1.000	1
OCDD	148		0.366	7.12	0.90	1.000	1
2,3,7,8-TCDF	ND	U	0.279	0.712			1
1,2,3,7,8-PeCDF	ND	U	0.182	3.56			1
2,3,4,7,8-PeCDF	ND	U	0.182	3.56			1
1,2,3,4,7,8-HxCDF	ND	U	0.145	3.56			1
1,2,3,6,7,8-HxCDF	ND	U	0.144	3.56			1
1,2,3,7,8,9-HxCDF	ND	U	0.175	3.56			1
2,3,4,6,7,8-HxCDF	ND	U	0.159	3.56			1
1,2,3,4,6,7,8-HpCDF	2.76**BJ**		0.141	3.56	1.12	1.000	1
1,2,3,4,7,8,9-HpCDF	0.217**J**		0.187	3.56	1.19	1.000	1
OCDF	11.0		0.412	7.12	0.86	1.005	1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	11/29/17 14:48
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM18.35E-COMP	**Units:**	ng/Kg
Lab Code:	K1713130-006	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	01/13/18 06:33
Prep Method:	Method Soxhlet	**Date Extracted:**	1/4/18
Sample Amount:	10.251g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P513711	**Blank File Name:**	P513666
ICAL Date:	07/26/17	**Cal Ver. File Name:**	P513702

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	ND	U	0.453	0.712			1
Total Penta-Dioxins	ND	U	0.154	3.56			1
Total Hexa-Dioxins	2.61**J**		0.0953	3.56	1.34		1
Total Hepta-Dioxins	28.0		0.117	3.56	1.03		1
Total Tetra-Furans	ND	U	0.279	0.712			1
Total Penta-Furans	ND	U	0.182	3.56			1
Total Hexa-Furans	1.65**J**		0.155	3.56	1.31		1
Total Hepta-Furans	8.76		0.158	3.56	1.12		1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	11/29/17 14:48
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM18.35E-COMP	**Units:**	Percent
Lab Code:	K1713130-006	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	01/13/18 06:33
Prep Method:	Method Soxhlet	**Date Extracted:**	1/4/18
Sample Amount:	10.251g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P513711	**Blank File Name:**	P513666
ICAL Date:	07/26/17	**Cal Ver. File Name:**	P513702

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	964.276	48		25-164	0.79	1.023
13C-1,2,3,7,8-PeCDD	2000	1567.982	78		25-181	1.55	1.199
13C-1,2,3,4,7,8-HxCDD	2000	1410.479	71		32-141	1.26	0.992
13C-1,2,3,6,7,8-HxCDD	2000	1333.042	67		28-130	1.30	0.994
13C-1,2,3,4,6,7,8-HpCDD	2000	1589.160	79		23-140	1.06	1.073
13C-OCDD	4000	2516.448	63		17-157	0.90	1.156
13C-2,3,7,8-TCDF	2000	1078.619	54		24-169	0.78	0.993
13C-1,2,3,7,8-PeCDF	2000	1453.454	73		24-185	1.58	1.153
13C-2,3,4,7,8-PeCDF	2000	1448.840	72		21-178	1.56	1.188
13C-1,2,3,4,7,8-HxCDF	2000	1134.758	57		26-152	0.49	0.970
13C-1,2,3,6,7,8-HxCDF	2000	1166.485	58		26-123	0.49	0.973
13C-1,2,3,7,8,9-HxCDF	2000	1318.341	66		29-147	0.51	1.010
13C-2,3,4,6,7,8-HxCDF	2000	1178.490	59		28-136	0.50	0.988
13C-1,2,3,4,6,7,8-HpCDF	2000	1530.449	77		28-143	0.44	1.045
13C-1,2,3,4,7,8,9-HpCDF	2000	1654.968	83		26-138	0.44	1.088
37Cl-2,3,7,8-TCDD	800	493.876	62		35-197	NA	1.024

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	11/29/17 14:48
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM18.35E-COMP	**Units:**	ng/Kg
Lab Code:	K1713130-006	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 1613B

Prep Method: Method Soxhlet

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	ND	0.453	0.712	1	1	
1,2,3,7,8-PeCDD	**0.193**	0.154	3.56	1	1	0.193
1,2,3,4,7,8-HxCDD	**0.144**	0.0920	3.56	1	0.1	0.0144
1,2,3,6,7,8-HxCDD	**0.779**	0.0985	3.56	1	0.1	0.0779
1,2,3,7,8,9-HxCDD	**0.307**	0.0908	3.56	1	0.1	0.0307
1,2,3,4,6,7,8-HpCDD	**14.1**	0.117	3.56	1	0.01	0.141
OCDD	**148**	0.366	7.12	1	0.0003	0.0444
2,3,7,8-TCDF	ND	0.279	0.712	1	0.1	
1,2,3,7,8-PeCDF	ND	0.182	3.56	1	0.03	
2,3,4,7,8-PeCDF	ND	0.182	3.56	1	0.3	
1,2,3,4,7,8-HxCDF	ND	0.145	3.56	1	0.1	
1,2,3,6,7,8-HxCDF	ND	0.144	3.56	1	0.1	
1,2,3,7,8,9-HxCDF	ND	0.175	3.56	1	0.1	
2,3,4,6,7,8-HxCDF	ND	0.159	3.56	1	0.1	
1,2,3,4,6,7,8-HpCDF	**2.76**	0.141	3.56	1	0.01	0.0276
1,2,3,4,7,8,9-HpCDF	**0.217**	0.187	3.56	1	0.01	0.00217
OCDF	**11.0**	0.412	7.12	1	0.0003	0.00330
		Total TEQ				0.534

2005 WHO TEFs, ND = 0

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	11/29/17 14:48
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM18.35E-COMP	**Units:**	ng/Kg
Lab Code:	K1713130-006	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 09:35
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	10.484g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305047	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 1	ND	U	9.72	9.72			1
PCB 2	ND	U	11.2	11.2			1
PCB 3	ND	U	12.7	12.7			1
PCB 4	ND	U	13.6	13.6			1
PCB 10	ND	U	7.01	7.01			1
PCB 9	ND	U	3.23	3.23			1
PCB 7	ND	U	2.94	2.94			1
PCB 6	ND	U	3.12	3.12			1
PCB 5	ND	U	3.14	3.14			1
PCB 8	ND	U	2.99	6.96			1
PCB 14	ND	U	3.25	3.25			1
PCB 11	42.9		3.26	13.9	-	0.970	1
PCBs 12 + 13	ND	U	3.07	6.96			1
PCB 15	6.04		3.29	3.29	-	1.000	1
PCB 19	ND	U	23.9	23.9			1
PCBs 18 + 30	ND	U	15.5	15.5			1
PCB 17	ND	U	18.0	18.0			1
PCB 27	ND	U	15.3	15.3			1
PCB 24	ND	U	12.0	12.0			1
PCB 16	ND	U	19.8	19.8			1
PCB 32	ND	U	12.8	12.8			1
PCB 34	ND	U	20.4	20.4			1
PCB 23	ND	U	17.5	17.5			1
PCBs 26 + 29	ND	U	18.5	18.5			1
PCB 25	ND	U	15.2	15.2			1
PCB 31	ND	U	18.5	18.5			1
PCBs 20 + 28	ND	U	19.8	19.8			1
PCBs 21 + 33	ND	U	17.3	17.3			1
PCB 22	ND	U	19.3	19.3			1
PCB 36	ND	U	18.5	18.5			1
PCB 39	ND	U	17.1	17.1			1
PCB 38	ND	U	20.9	20.9			1
PCB 35	ND	U	22.0	22.0			1
PCB 37	ND	U	21.2	21.2			1

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	11/29/17 14:48
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM18.35E-COMP	**Units:**	ng/Kg
Lab Code:	K1713130-006	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 09:35
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	10.484g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305047	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 54	ND	U	20.2	20.2			1
PCBs 50 + 53	ND	U	13.2	13.9			1
PCBs 45 + 51	ND	U	13.8	13.8			1
PCB 46	ND	U	16.1	16.1			1
PCB 52	85.9		16.2	16.2	0.72	1.196	1
PCBs 43 + 73	ND	U	11.4	11.4			1
PCBs 49 + 69	19.5		11.9	13.9	0.65	1.219	1
PCB 48	ND	U	14.3	14.3			1
PCBs 44 + 47 + 65	33.3		12.5	13.9	0.80	1.242	1
PCBs 59 + 62 + 75	ND	U	10.9	13.9			1
PCB 42	ND	U	17.1	17.1			1
PCBs 41 + 71 + 40	ND	U	16.1	16.1			1
PCB 64	13.0**K**		11.9	11.9	1.16	1.295	1
PCB 72	ND	U	12.5	12.5			1
PCB 68	ND	U	10.4	10.4			1
PCB 57	ND	U	12.3	12.3			1
PCB 58	ND	U	10.9	10.9			1
PCB 67	ND	U	8.79	8.79			1
PCB 63	ND	U	11.0	11.0			1
PCBs 70 + 61 + 74 + 76	67.5		9.74	27.8	0.74	1.403	1
PCB 66	36.4		11.3	11.3	0.78	1.416	1
PCB 55	ND	U	10.2	10.2			1
PCB 56	ND	U	16.8	16.8			1
PCB 60	ND	U	15.6	15.6			1
PCB 80	ND	U	14.1	14.1			1
PCB 79	ND	U	15.7	15.7			1
PCB 78	ND	U	17.0	17.0			1
PCB 81	ND	U	20.0	20.0			1
PCB 77	ND	U	22.7	22.7			1
PCB 104	ND	U	14.2	14.2			1
PCB 96	ND	U	11.6	11.6			1
PCB 103	ND	U	13.2	13.2			1
PCB 94	ND	U	14.8	14.8			1
PCBs 95 + 93 + 100	151		13.9	27.8	1.74	1.105	1

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	11/29/17 14:48
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM18.35E-COMP	**Units:**	ng/Kg
Lab Code:	K1713130-006	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 09:35
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	10.484g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305047	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCBs 98 + 102	ND	U	13.3	27.8			1
PCBs 88 + 91	35.6		14.7	14.7	1.53	1.134	1
PCB 84	36.4		16.6	16.6	1.35	1.144	1
PCB 89	ND	U	17.2	17.2			1
PCB 121	ND	U	13.3	13.3			1
PCB 92	49.5		17.7	17.7	1.34	1.184	1
PCBs 90 + 101 + 113	194		14.5	27.8	1.52	1.204	1
PCBs 83 + 99	119		17.0	17.0	1.70	1.224	1
PCB 112	ND	U	11.3	11.3			1
PCBs 86 + 87 + 97 + 109 + 119 + 125	109		14.0	27.8	1.56	1.247	1
PCBs 85 + 116 + 117	41.0		13.7	13.9	1.46	1.268	1
PCBs 110 + 115	294		11.4	13.9	1.60	1.274	1
PCB 82	ND	U	22.2	22.2			1
PCB 111	ND	U	12.0	12.0			1
PCB 120	ND	U	12.3	12.3			1
PCBs 108 + 124	ND	U	14.8	14.8			1
PCB 107	ND	U	15.5	15.5			1
PCB 123	ND	U	16.5	16.5			1
PCB 106	ND	U	15.6	15.6			1
PCB 118	164		16.1	16.1	1.32	1.001	1
PCB 122	ND	U	17.3	17.3			1
PCB 114	ND	U	15.4	15.4			1
PCB 105	40.9**K**		15.7	15.7	2.29	1.000	1
PCB 127	ND	U	16.2	16.2			1
PCB 126	ND	U	17.4	17.4			1
PCB 155	ND	U	10.1	10.1			1
PCB 152	ND	U	8.39	8.39			1
PCB 150	ND	U	7.04	7.04			1
PCB 136	32.2		8.13	8.13	1.12	1.028	1
PCB 145	ND	U	7.50	7.50			1
PCB 148	ND	U	10.4	10.4			1
PCBs 135 + 151 + 154	72.1		9.09	13.9	1.25	1.094	1
PCB 144	ND	U	9.98	9.98			1
PCBs 147 + 149	170**K**		17.5	17.5	1.01	1.121	1
PCB 134	ND	U	36.6	36.6			1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	11/29/17 14:48
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM18.35E-COMP	**Units:**	ng/Kg
Lab Code:	K1713130-006	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 09:35
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	10.484g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305047	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 143	ND	U	13.8	13.9			1
PCBs 139 + 140	ND	U	16.8	16.8			1
PCB 131	ND	U	20.2	20.2			1
PCB 142	ND	U	20.4	20.4			1
PCB 132	114		19.8	19.8	1.19	1.159	1
PCB 133	ND	U	20.9	20.9			1
PCB 165	ND	U	13.8	13.8			1
PCB 146	30.2		17.5	17.5	1.19	1.188	1
PCB 161	ND	U	12.7	12.7			1
PCBs 153 + 168	211		13.9	13.9	1.19	1.205	1
PCB 141	36.0**K**		17.2	17.2	1.84	1.213	1
PCB 130	ND	U	21.7	21.7			1
PCB 137	ND	U	16.9	16.9			1
PCB 164	20.9**K**		12.7	12.7	0.91	1.235	1
PCBs 129 + 138 + 163	399		19.3	27.8	1.19	1.243	1
PCB 160	ND	U	8.96	27.8			1
PCB 158	25.7**K**		12.0	12.0	1.49	1.253	1
PCBs 128 + 166	65.8		15.4	15.4	1.35	1.281	1
PCB 159	ND	U	11.3	11.3			1
PCB 162	ND	U	9.97	9.97			1
PCB 167	17.1		9.34	9.34	1.15	1.000	1
PCBs 156 + 157	25.4**K**		13.7	13.7	0.95	0.999	1
PCB 169	ND	U	11.6	11.6			1
PCB 188	ND	U	11.2	11.2			1
PCB 179	11.0**K**		8.46	8.46	0.63	1.013	1
PCB 184	ND	U	7.53	7.53			1
PCB 176	ND	U	8.50	8.50			1
PCB 186	ND	U	7.82	7.82			1
PCB 178	ND	U	11.4	11.4			1
PCB 175	ND	U	10.9	10.9			1
PCB 187	46.2		9.80	9.80	1.06	1.099	1
PCB 182	ND	U	9.70	9.70			1
PCB 183 + 185	34.3		18.4	18.4	1.15	1.113	1
PCB 174	48.8		18.4	18.4	1.06	1.122	1
PCB 177	23.3		20.2	20.2	0.92	1.132	1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	11/29/17 14:48
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM18.35E-COMP	**Units:**	ng/Kg
Lab Code:	K1713130-006	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 09:35
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	10.484g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305047	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 181	ND	U	17.4	17.4			1
PCBs 171 + 173	ND	U	19.7	19.7			1
PCB 172	ND	U	20.3	20.3			1
PCB 192	ND	U	14.4	14.4			1
PCBs 180 + 193	81.3		14.6	14.6	1.06	0.919	1
PCB 191	ND	U	14.9	14.9			1
PCB 170	40.3**K**		18.2	18.2	1.29	0.943	1
PCB 190	ND	U	12.5	12.5			1
PCB 189	ND	U	15.8	15.8			1
PCB 202	ND	U	13.2	13.2			1
PCB 201	ND	U	12.2	12.2			1
PCB 204	ND	U	12.0	12.0			1
PCB 197	ND	U	10.9	13.9			1
PCB 200	ND	U	12.1	13.9			1
PCBs 198 + 199	16.1**K**		14.7	14.7	1.13	1.103	1
PCB 196	ND	U	16.8	16.8			1
PCB 203	ND	U	13.2	13.2			1
PCB 195	ND	U	18.5	18.5			1
PCB 194	ND	U	18.1	18.1			1
PCB 205	ND	U	15.1	15.1			1
PCB 208	ND	U	11.7	11.7			1
PCB 207	ND	U	11.5	11.5			1
PCB 206	ND	U	13.4	13.4			1
PCB 209	12.0		10.8	10.8	1.00	1.000	1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	11/29/17 14:48
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM18.35E-COMP	**Units:**	ng/Kg
Lab Code:	K1713130-006	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 09:35
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	10.484g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305047	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total MonoCB	ND	U	9.72	9.72			1
Total DiCB	48.9		2.94	13.9			1
Total TriCB	ND	U	12.0	12.0			1
Total TetraCB	256		8.79	27.8			1
Total PentaCB	1230		11.3	27.8			1
Total HexaCB	1220		7.04	27.8			1
Total HeptaCB	251		7.53	13.9			1
Total OctaCB	16.1		10.9	13.9			1
Total NonaCB	ND	U	11.5	11.5			1
Total PCBs	3070		2.94	27.8			1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	11/29/17 14:48
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM18.35E-COMP	**Units:**	Percent
Lab Code:	K1713130-006	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 09:35
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	10.484g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305047	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
PCB 1L	2000	1128.157	56		5-145	3.20	0.744
PCB 3L	2000	1018.975	51		5-145	3.50	0.874
PCB 4L	2000	771.535	39		5-145	1.60	0.888
PCB 15L	2000	1038.712	52		5-145	1.48	1.224
PCB 19L	2000	909.050	45		5-145	1.18	1.068
PCB 37L	2000	1225.043	61		5-145	1.07	1.082
PCB 54L	2000	594.596	30		5-145	0.69	0.836
PCB 81L	2000	1221.105	61		10-145	0.73	1.322
PCB 77L	2000	1038.963	52		10-145	0.85	1.343
PCB 104L	2000	889.893	44		10-145	1.57	0.831
PCB 123L	2000	1490.272	75		10-145	1.51	1.133
PCB 118L	2000	1448.163	72		10-145	1.43	1.142
PCB 114L	2000	1574.429	79		10-145	1.60	1.158
PCB 105L	2000	1555.981	78		10-145	1.77	1.178
PCB 126L	2000	1482.079	74		10-145	1.48	1.266
PCB 155L	2000	886.563	44		10-145	1.36	0.805
PCB 167L	2000	1462.761	73		10-145	1.20	1.069
PCBs 156L + 157L	4000	2961.295	74		10-145	1.29	1.097
PCB 169L	2000	1468.299	73		10-145	1.29	1.171
PCB 188L	2000	991.140	50		10-145	1.14	0.736
PCB 189L	2000	1507.880	75		10-145	1.10	0.963
PCB 202L	2000	1113.720	56		10-145	0.91	0.833
PCB 205L	2000	1264.174	63		10-145	0.82	1.008
PCB 208L	2000	992.644	50		10-145	0.88	0.952
PCB 206L	2000	1639.892	82		10-145	0.78	1.039
PCB 209L	2000	1627.312	81		10-145	1.14	1.067
PCB 28L	2000	1626.375	81		5-145	1.07	0.934
PCB 111L	2000	1236.549	62		10-145	1.53	1.075
PCB 178L	2000	1166.946	58		10-145	1.20	1.008

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	11/29/17 14:48
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM18.35E-COMP	**Units:**	ng/Kg
Lab Code:	K1713130-006	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method: 1668C

Prep Method: Method

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
PCB 81	ND	20.0	20.0	1	0.0003	
PCB 77	ND	22.7	22.7	1	0.0001	
PCB 123	ND	16.5	16.5	1	0.00003	
PCB 118	**164**	16.1	16.1	1	0.00003	0.00492
PCB 114	ND	15.4	15.4	1	0.00003	
PCB 105	**40.9**	15.7	15.7	1	0.00003	0.00123
PCB 126	ND	17.4	17.4	1	0.1	
PCB 167	**17.1**	9.34	9.34	1	0.00003	0.000513
PCBs 156 + 157	**25.4**	13.7	13.7	1	0.00003	0.000762
PCB 169	ND	11.6	11.6	1	0.03	
PCB 189	ND	15.8	15.8	1	0.00003	
	Total TEQ					0.00743

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/01/17 14:13
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM20.9W-COMP	**Units:**	ng/Kg
Lab Code:	K1713130-015	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	01/13/18 07:22
Prep Method:	Method Soxhlet	**Date Extracted:**	1/4/18
Sample Amount:	10.315g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P513712	**Blank File Name:**	P513666
ICAL Date:	07/26/17	**Cal Ver. File Name:**	P513702

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	0.249	0.697			1
1,2,3,7,8-PeCDD	ND	U	0.116	3.49			1
1,2,3,4,7,8-HxCDD	ND	U	0.0868	3.49			1
1,2,3,6,7,8-HxCDD	0.383**JK**		0.0991	3.49	1.50	1.000	1
1,2,3,7,8,9-HxCDD	0.217**BJK**		0.0883	3.49	0.99	1.007	1
1,2,3,4,6,7,8-HpCDD	7.31		0.117	3.49	1.07	1.000	1
OCDD	57.6		0.267	6.97	0.89	1.000	1
2,3,7,8-TCDF	ND	U	0.137	0.697			1
1,2,3,7,8-PeCDF	ND	U	0.117	3.49			1
2,3,4,7,8-PeCDF	ND	U	0.112	3.49			1
1,2,3,4,7,8-HxCDF	0.253**BJK**		0.0660	3.49	1.00	1.001	1
1,2,3,6,7,8-HxCDF	0.126**BJ**		0.0669	3.49	1.31	1.000	1
1,2,3,7,8,9-HxCDF	ND	U	0.0770	3.49			1
2,3,4,6,7,8-HxCDF	ND	U	0.0717	3.49			1
1,2,3,4,6,7,8-HpCDF	1.05**BJK**		0.0805	3.49	0.85	1.000	1
1,2,3,4,7,8,9-HpCDF	ND	U	0.134	3.49			1
OCDF	3.44**J**		0.308	6.97	0.89	1.005	1

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/01/17 14:13
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM20.9W-COMP	**Units:**	ng/Kg
Lab Code:	K1713130-015	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	01/13/18 07:22
Prep Method:	Method Soxhlet	**Date Extracted:**	1/4/18
Sample Amount:	10.315g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P513712	**Blank File Name:**	P513666
ICAL Date:	07/26/17	**Cal Ver. File Name:**	P513702

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	ND	U	0.249	0.697			1
Total Penta-Dioxins	ND	U	0.116	3.49			1
Total Hexa-Dioxins	1.85**J**		0.0930	3.49	1.28		1
Total Hepta-Dioxins	7.31		0.117	3.49	1.07		1
Total Tetra-Furans	ND	U	0.137	0.697			1
Total Penta-Furans	ND	U	0.114	3.49			1
Total Hexa-Furans	0.416**J**		0.0702	3.49	1.30		1
Total Hepta-Furans	ND	U	0.103	3.49			1

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/01/17 14:13
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM20.9W-COMP	**Units:**	Percent
Lab Code:	K1713130-015	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	01/13/18 07:22
Prep Method:	Method Soxhlet	**Date Extracted:**	1/4/18
Sample Amount:	10.315g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P513712	**Blank File Name:**	P513666
ICAL Date:	07/26/17	**Cal Ver. File Name:**	P513702

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	677.930	34		25-164	0.78	1.023
13C-1,2,3,7,8-PeCDD	2000	1011.225	51		25-181	1.59	1.200
13C-1,2,3,4,7,8-HxCDD	2000	1156.743	58		32-141	1.27	0.990
13C-1,2,3,6,7,8-HxCDD	2000	1039.157	52		28-130	1.26	0.993
13C-1,2,3,4,6,7,8-HpCDD	2000	1115.232	56		23-140	1.06	1.071
13C-OCDD	4000	1605.803	40		17-157	0.90	1.155
13C-2,3,7,8-TCDF	2000	823.222	41		24-169	0.77	0.993
13C-1,2,3,7,8-PeCDF	2000	929.245	46		24-185	1.57	1.154
13C-2,3,4,7,8-PeCDF	2000	967.607	48		21-178	1.58	1.189
13C-1,2,3,4,7,8-HxCDF	2000	941.453	47		26-152	0.49	0.969
13C-1,2,3,6,7,8-HxCDF	2000	986.325	49		26-123	0.51	0.972
13C-1,2,3,7,8,9-HxCDF	2000	1037.800	52		29-147	0.51	1.008
13C-2,3,4,6,7,8-HxCDF	2000	959.081	48		28-136	0.51	0.986
13C-1,2,3,4,6,7,8-HpCDF	2000	1135.653	57		28-143	0.44	1.045
13C-1,2,3,4,7,8,9-HpCDF	2000	1161.893	58		26-138	0.44	1.087
37Cl-2,3,7,8-TCDD	800	349.501	44		35-197	NA	1.024

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/01/17 14:13
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM20.9W-COMP	**Units:**	ng/Kg
Lab Code:	K1713130-015	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 1613B

Prep Method: Method Soxhlet

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	ND	0.249	0.697	1	1	
1,2,3,7,8-PeCDD	ND	0.116	3.49	1	1	
1,2,3,4,7,8-HxCDD	ND	0.0868	3.49	1	0.1	
1,2,3,6,7,8-HxCDD	**0.383**	0.0991	3.49	1	0.1	0.0383
1,2,3,7,8,9-HxCDD	**0.217**	0.0883	3.49	1	0.1	0.0217
1,2,3,4,6,7,8-HpCDD	**7.31**	0.117	3.49	1	0.01	0.0731
OCDD	**57.6**	0.267	6.97	1	0.0003	0.0173
2,3,7,8-TCDF	ND	0.137	0.697	1	0.1	
1,2,3,7,8-PeCDF	ND	0.117	3.49	1	0.03	
2,3,4,7,8-PeCDF	ND	0.112	3.49	1	0.3	
1,2,3,4,7,8-HxCDF	**0.253**	0.0660	3.49	1	0.1	0.0253
1,2,3,6,7,8-HxCDF	**0.126**	0.0669	3.49	1	0.1	0.0126
1,2,3,7,8,9-HxCDF	ND	0.0770	3.49	1	0.1	
2,3,4,6,7,8-HxCDF	ND	0.0717	3.49	1	0.1	
1,2,3,4,6,7,8-HpCDF	**1.05**	0.0805	3.49	1	0.01	0.0105
1,2,3,4,7,8,9-HpCDF	ND	0.134	3.49	1	0.01	
OCDF	**3.44**	0.308	6.97	1	0.0003	0.00103
		Total TEQ				0.200

2005 WHO TEFs, ND = 0

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/01/17 14:13
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM20.9W-COMP	**Units:**	ng/Kg
Lab Code:	K1713130-015	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 10:39
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	10.208g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305048	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 1	ND	U	5.24	5.24			1
PCB 2	ND	U	5.87	5.87			1
PCB 3	ND	U	6.55	6.55			1
PCB 4	ND	U	10.9	10.9			1
PCB 10	ND	U	5.68	7.05			1
PCB 9	ND	U	3.61	3.61			1
PCB 7	ND	U	3.29	3.29			1
PCB 6	ND	U	3.49	3.49			1
PCB 5	ND	U	3.52	3.52			1
PCB 8	ND	U	3.34	7.05			1
PCB 14	ND	U	3.64	3.64			1
PCB 11	ND	U	3.64	14.1			1
PCBs 12 + 13	ND	U	3.44	7.05			1
PCB 15	ND	U	3.73	3.73			1
PCB 19	ND	U	19.3	19.3			1
PCBs 18 + 30	ND	U	11.1	11.1			1
PCB 17	ND	U	12.9	12.9			1
PCB 27	ND	U	11.0	11.0			1
PCB 24	ND	U	8.52	8.52			1
PCB 16	ND	U	14.1	14.1			1
PCB 32	ND	U	9.13	9.13			1
PCB 34	ND	U	18.1	18.1			1
PCB 23	ND	U	15.5	15.5			1
PCBs 26 + 29	ND	U	16.4	16.4			1
PCB 25	ND	U	13.5	13.5			1
PCB 31	ND	U	16.4	16.4			1
PCBs 20 + 28	ND	U	17.5	17.5			1
PCBs 21 + 33	ND	U	15.4	15.4			1
PCB 22	ND	U	17.1	17.1			1
PCB 36	ND	U	16.4	16.4			1
PCB 39	ND	U	15.2	15.2			1
PCB 38	ND	U	18.6	18.6			1
PCB 35	ND	U	19.5	19.5			1
PCB 37	ND	U	17.6	17.6			1

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/01/17 14:13
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM20.9W-COMP	**Units:**	ng/Kg
Lab Code:	K1713130-015	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 10:39
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	10.208g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305048	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 54	ND	U	15.5	15.5			1
PCBs 50 + 53	ND	U	10.4	14.1			1
PCBs 45 + 51	ND	U	10.9	10.9			1
PCB 46	ND	U	12.8	12.8			1
PCB 52	ND	U	12.8	12.8			1
PCBs 43 + 73	ND	U	8.95	8.95			1
PCBs 49 + 69	ND	U	9.40	14.1			1
PCB 48	ND	U	11.3	11.3			1
PCBs 44 + 47 + 65	ND	U	9.87	14.1			1
PCBs 59 + 62 + 75	ND	U	8.59	14.1			1
PCB 42	ND	U	13.5	14.1			1
PCBs 41 + 71 + 40	ND	U	12.7	14.1			1
PCB 64	ND	U	9.37	9.37			1
PCB 72	ND	U	9.83	9.83			1
PCB 68	ND	U	8.16	8.16			1
PCB 57	ND	U	9.66	9.66			1
PCB 58	ND	U	8.57	8.57			1
PCB 67	ND	U	6.95	7.05			1
PCB 63	ND	U	8.62	8.62			1
PCBs 70 + 61 + 74 + 76	ND	U	7.70	28.2			1
PCB 66	ND	U	8.86	8.86			1
PCB 55	ND	U	8.03	8.03			1
PCB 56	ND	U	9.76	9.76			1
PCB 60	ND	U	9.08	9.08			1
PCB 80	ND	U	8.19	8.19			1
PCB 79	ND	U	9.13	9.13			1
PCB 78	ND	U	9.87	9.87			1
PCB 81	ND	U	11.4	11.4			1
PCB 77	ND	U	12.9	12.9			1
PCB 104	ND	U	13.9	13.9			1
PCB 96	ND	U	9.75	9.75			1
PCB 103	ND	U	11.1	11.1			1
PCB 94	ND	U	12.5	12.5			1
PCBs 95 + 93 + 100	ND	U	11.7	28.2			1

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/01/17 14:13
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM20.9W-COMP	**Units:**	ng/Kg
Lab Code:	K1713130-015	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 10:39
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	10.208g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305048	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCBs 98 + 102	ND	U	11.2	28.2			1
PCBs 88 + 91	ND	U	12.4	12.4			1
PCB 84	ND	U	14.0	14.0			1
PCB 89	ND	U	14.5	14.5			1
PCB 121	ND	U	7.58	7.58			1
PCB 92	ND	U	10.1	10.1			1
PCBs 90 + 101 + 113	15.1**J**		8.26	28.2	1.39	1.204	1
PCBs 83 + 99	ND	U	9.69	14.1			1
PCB 112	ND	U	6.44	7.05			1
PCBs 86 + 87 + 97 + 109 + 119 + 125	ND	U	7.94	28.2			1
PCBs 85 + 116 + 117	ND	U	7.80	14.1			1
PCBs 110 + 115	21.1		6.51	14.1	1.38	1.275	1
PCB 82	ND	U	12.7	12.7			1
PCB 111	ND	U	6.82	7.05			1
PCB 120	ND	U	7.00	7.05			1
PCBs 108 + 124	ND	U	8.29	14.1			1
PCB 107	ND	U	8.69	8.69			1
PCB 123	ND	U	8.57	8.57			1
PCB 106	ND	U	8.70	8.70			1
PCB 118	14.8		8.68	8.68	1.76	1.001	1
PCB 122	ND	U	9.65	9.65			1
PCB 114	ND	U	8.50	8.50			1
PCB 105	ND	U	8.27	8.27			1
PCB 127	ND	U	9.07	9.07			1
PCB 126	ND	U	9.26	9.26			1
PCB 155	ND	U	6.73	6.73			1
PCB 152	ND	U	5.13	7.05			1
PCB 150	ND	U	4.31	7.05			1
PCB 136	ND	U	4.98	7.05			1
PCB 145	ND	U	4.59	7.05			1
PCB 148	ND	U	6.34	7.05			1
PCBs 135 + 151 + 154	9.29**JK**		5.56	14.1	0.95	1.094	1
PCB 144	ND	U	6.11	7.05			1
PCBs 147 + 149	22.9**K**		4.10	14.1	1.03	1.121	1
PCB 134	ND	U	8.60	14.1			1

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/01/17 14:13
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM20.9W-COMP	**Units:**	ng/Kg
Lab Code:	K1713130-015	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 10:39
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	10.208g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305048	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 143	ND	U	3.25	14.1			1
PCBs 139 + 140	ND	U	3.93	14.1			1
PCB 131	ND	U	4.73	7.05			1
PCB 142	ND	U	4.79	7.05			1
PCB 132	7.72**K**		4.64	7.05	1.64	1.159	1
PCB 133	ND	U	4.90	7.05			1
PCB 165	ND	U	3.24	7.05			1
PCB 146	6.34**J**		4.11	7.05	1.20	1.188	1
PCB 161	ND	U	2.98	7.05			1
PCBs 153 + 168	28.9		3.26	14.1	1.17	1.206	1
PCB 141	7.65		4.05	7.05	1.24	1.212	1
PCB 130	ND	U	5.09	7.05			1
PCB 137	ND	U	3.97	7.05			1
PCB 164	ND	U	2.98	7.05			1
PCBs 129 + 138 + 163	42.1		4.53	28.2	1.13	1.243	1
PCB 160	ND	U	2.11	28.2			1
PCB 158	ND	U	2.82	7.05			1
PCBs 128 + 166	ND	U	3.62	14.1			1
PCB 159	ND	U	6.54	7.05			1
PCB 162	ND	U	5.81	7.05			1
PCB 167	ND	U	5.93	5.93			1
PCBs 156 + 157	ND	U	7.65	7.65			1
PCB 169	ND	U	6.10	6.10			1
PCB 188	ND	U	8.28	8.28			1
PCB 179	ND	U	6.10	7.05			1
PCB 184	ND	U	5.43	7.05			1
PCB 176	ND	U	6.13	7.05			1
PCB 186	ND	U	5.64	7.05			1
PCB 178	ND	U	8.17	8.17			1
PCB 175	ND	U	7.85	7.85			1
PCB 187	11.1**K**		7.07	7.07	1.48	1.099	1
PCB 182	ND	U	6.99	7.05			1
PCB 183 + 185	ND	U	9.27	14.1			1
PCB 174	ND	U	9.31	9.31			1
PCB 177	ND	U	10.2	10.2			1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/01/17 14:13
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM20.9W-COMP	**Units:**	ng/Kg
Lab Code:	K1713130-015	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 10:39
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	10.208g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305048	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 181	ND	U	8.81	8.81			1
PCBs 171 + 173	ND	U	9.97	14.1			1
PCB 172	ND	U	10.3	10.3			1
PCB 192	ND	U	7.26	7.26			1
PCBs 180 + 193	ND	U	7.37	14.1			1
PCB 191	ND	U	7.52	7.52			1
PCB 170	ND	U	9.18	9.18			1
PCB 190	ND	U	6.30	7.05			1
PCB 189	ND	U	7.73	7.73			1
PCB 202	ND	U	6.19	6.19			1
PCB 201	ND	U	5.53	7.05			1
PCB 204	ND	U	5.44	7.05			1
PCB 197	ND	U	4.92	14.1			1
PCB 200	ND	U	5.47	14.1			1
PCBs 198 + 199	ND	U	6.66	14.1			1
PCB 196	ND	U	7.62	7.62			1
PCB 203	ND	U	5.98	7.05			1
PCB 195	ND	U	8.40	8.40			1
PCB 194	ND	U	8.23	8.23			1
PCB 205	ND	U	6.59	6.59			1
PCB 208	ND	U	4.94	4.94			1
PCB 207	ND	U	4.77	7.05			1
PCB 206	ND	U	13.4	13.4			1
PCB 209	ND	U	7.89	7.89			1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/01/17 14:13
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM20.9W-COMP	**Units:**	ng/Kg
Lab Code:	K1713130-015	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 10:39
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	10.208g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305048	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total MonoCB	ND	U	5.24	7.05			1
Total DiCB	ND	U	3.29	14.1			1
Total TriCB	ND	U	8.52	8.52			1
Total TetraCB	ND	U	6.95	28.2			1
Total PentaCB	51.0		6.44	28.2			1
Total HexaCB	125		2.11	28.2			1
Total HeptaCB	11.1**J**		5.43	14.1			1
Total OctaCB	ND	U	4.92	14.1			1
Total NonaCB	ND	U	4.77	7.05			1
Total PCBs	187		2.11	28.2			1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/01/17 14:13
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM20.9W-COMP	**Units:**	Percent
Lab Code:	K1713130-015	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 10:39
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	10.208g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305048	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
PCB 1L	2000	872.482	44		5-145	3.14	0.744
PCB 3L	2000	802.445	40		5-145	3.59	0.874
PCB 4L	2000	643.286	32		5-145	1.70	0.888
PCB 15L	2000	863.724	43		5-145	1.60	1.223
PCB 19L	2000	771.797	39		5-145	1.15	1.068
PCB 37L	2000	1108.072	55		5-145	1.12	1.082
PCB 54L	2000	458.894	23		5-145	0.80	0.836
PCB 81L	2000	957.423	48		10-145	0.66	1.321
PCB 77L	2000	913.237	46		10-145	0.78	1.343
PCB 104L	2000	840.333	42		10-145	1.70	0.831
PCB 123L	2000	1555.605	78		10-145	1.57	1.133
PCB 118L	2000	1524.936	76		10-145	1.57	1.142
PCB 114L	2000	1626.077	81		10-145	1.51	1.157
PCB 105L	2000	1680.629	84		10-145	1.63	1.178
PCB 126L	2000	1651.621	83		10-145	1.54	1.266
PCB 155L	2000	748.915	37		10-145	1.37	0.805
PCB 167L	2000	1421.550	71		10-145	1.27	1.069
PCBs 156L + 157L	4000	3022.694	76		10-145	1.19	1.097
PCB 169L	2000	1612.492	81		10-145	1.23	1.171
PCB 188L	2000	982.439	49		10-145	1.17	0.736
PCB 189L	2000	1527.935	76		10-145	1.10	0.963
PCB 202L	2000	1126.301	56		10-145	0.88	0.833
PCB 205L	2000	1391.912	70		10-145	0.94	1.008
PCB 208L	2000	1026.038	51		10-145	0.81	0.952
PCB 206L	2000	1804.228	90		10-145	0.76	1.038
PCB 209L	2000	1626.754	81		10-145	1.13	1.067
PCB 28L	2000	1222.357	61		5-145	0.96	0.934
PCB 111L	2000	1352.956	68		10-145	1.72	1.075
PCB 178L	2000	1165.165	58		10-145	1.15	1.008

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/01/17 14:13
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM20.9W-COMP	**Units:**	ng/Kg
Lab Code:	K1713130-015	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method: 1668C

Prep Method: Method

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
PCB 81	ND	11.4	11.4	1	0.0003	
PCB 77	ND	12.9	12.9	1	0.0001	
PCB 123	ND	8.57	8.57	1	0.00003	
PCB 118	**14.8**	8.68	8.68	1	0.00003	0.000444
PCB 114	ND	8.50	8.50	1	0.00003	
PCB 105	ND	8.27	8.27	1	0.00003	
PCB 126	ND	9.26	9.26	1	0.1	
PCB 167	ND	5.93	5.93	1	0.00003	
PCBs 156 + 157	ND	7.65	7.65	1	0.00003	
PCB 169	ND	6.10	6.10	1	0.03	
PCB 189	ND	7.73	7.73	1	0.00003	
	Total TEQ					0.000444

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/04/17 10:42
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM24.7E-COMP	**Units:**	ng/Kg
Lab Code:	K1713130-021	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	01/13/18 08:11
Prep Method:	Method Soxhlet	**Date Extracted:**	1/4/18
Sample Amount:	10.175g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P513713	**Blank File Name:**	P513666
ICAL Date:	07/26/17	**Cal Ver. File Name:**	P513702

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	0.197	0.695			1
1,2,3,7,8-PeCDD	ND	U	0.0879	3.48			1
1,2,3,4,7,8-HxCDD	ND	U	0.0511	3.48			1
1,2,3,6,7,8-HxCDD	0.202**J**		0.0584	3.48	1.05	1.000	1
1,2,3,7,8,9-HxCDD	0.241**BJK**		0.0520	3.48	1.03	1.007	1
1,2,3,4,6,7,8-HpCDD	3.79		0.109	3.48	1.02	1.000	1
OCDD	41.6		0.212	6.95	0.92	1.000	1
2,3,7,8-TCDF	ND	U	0.130	0.695			1
1,2,3,7,8-PeCDF	ND	U	0.0771	3.48			1
2,3,4,7,8-PeCDF	ND	U	0.0810	3.48			1
1,2,3,4,7,8-HxCDF	ND	U	0.0633	3.48			1
1,2,3,6,7,8-HxCDF	ND	U	0.0609	3.48			1
1,2,3,7,8,9-HxCDF	ND	U	0.0693	3.48			1
2,3,4,6,7,8-HxCDF	ND	U	0.0651	3.48			1
1,2,3,4,6,7,8-HpCDF	0.442**BJ**		0.0701	3.48	1.03	1.000	1
1,2,3,4,7,8,9-HpCDF	ND	U	0.0954	3.48			1
OCDF	1.58**JK**		0.390	6.95	0.67	1.005	1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/04/17 10:42
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM24.7E-COMP	**Units:**	ng/Kg
Lab Code:	K1713130-021	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	01/13/18 08:11
Prep Method:	Method Soxhlet	**Date Extracted:**	1/4/18
Sample Amount:	10.175g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P513713	**Blank File Name:**	P513666
ICAL Date:	07/26/17	**Cal Ver. File Name:**	P513702

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	ND	U	0.197	0.695			1
Total Penta-Dioxins	ND	U	0.0879	3.48			1
Total Hexa-Dioxins	1.78**J**		0.0548	3.48	1.13		1
Total Hepta-Dioxins	11.0		0.109	3.48	1.09		1
Total Tetra-Furans	ND	U	0.130	0.695			1
Total Penta-Furans	ND	U	0.0789	3.48			1
Total Hexa-Furans	0.407**J**		0.0646	3.48	1.14		1
Total Hepta-Furans	1.40**J**		0.0800	3.48	1.03		1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/04/17 10:42
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM24.7E-COMP	**Units:**	Percent
Lab Code:	K1713130-021	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	01/13/18 08:11
Prep Method:	Method Soxhlet	**Date Extracted:**	1/4/18
Sample Amount:	10.175g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P513713	**Blank File Name:**	P513666
ICAL Date:	07/26/17	**Cal Ver. File Name:**	P513702

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	912.562	46		25-164	0.79	1.023
13C-1,2,3,7,8-PeCDD	2000	1198.854	60		25-181	1.58	1.199
13C-1,2,3,4,7,8-HxCDD	2000	1339.601	67		32-141	1.25	0.991
13C-1,2,3,6,7,8-HxCDD	2000	1205.891	60		28-130	1.23	0.994
13C-1,2,3,4,6,7,8-HpCDD	2000	1259.233	63		23-140	1.06	1.072
13C-OCDD	4000	1702.928	43		17-157	0.90	1.155
13C-2,3,7,8-TCDF	2000	1053.452	53		24-169	0.77	0.993
13C-1,2,3,7,8-PeCDF	2000	1156.868	58		24-185	1.58	1.154
13C-2,3,4,7,8-PeCDF	2000	1127.659	56		21-178	1.55	1.189
13C-1,2,3,4,7,8-HxCDF	2000	1128.205	56		26-152	0.50	0.969
13C-1,2,3,6,7,8-HxCDF	2000	1122.358	56		26-123	0.49	0.972
13C-1,2,3,7,8,9-HxCDF	2000	1236.529	62		29-147	0.51	1.009
13C-2,3,4,6,7,8-HxCDF	2000	1126.356	56		28-136	0.51	0.987
13C-1,2,3,4,6,7,8-HpCDF	2000	1229.404	61		28-143	0.43	1.045
13C-1,2,3,4,7,8,9-HpCDF	2000	1307.947	65		26-138	0.44	1.086
37Cl-2,3,7,8-TCDD	800	459.295	57		35-197	NA	1.024

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/04/17 10:42
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM24.7E-COMP	**Units:**	ng/Kg
Lab Code:	K1713130-021	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 1613B

Prep Method: Method Soxhlet

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	ND	0.197	0.695	1	1	
1,2,3,7,8-PeCDD	ND	0.0879	3.48	1	1	
1,2,3,4,7,8-HxCDD	ND	0.0511	3.48	1	0.1	
1,2,3,6,7,8-HxCDD	**0.202**	0.0584	3.48	1	0.1	0.0202
1,2,3,7,8,9-HxCDD	**0.241**	0.0520	3.48	1	0.1	0.0241
1,2,3,4,6,7,8-HpCDD	**3.79**	0.109	3.48	1	0.01	0.0379
OCDD	**41.6**	0.212	6.95	1	0.0003	0.0125
2,3,7,8-TCDF	ND	0.130	0.695	1	0.1	
1,2,3,7,8-PeCDF	ND	0.0771	3.48	1	0.03	
2,3,4,7,8-PeCDF	ND	0.0810	3.48	1	0.3	
1,2,3,4,7,8-HxCDF	ND	0.0633	3.48	1	0.1	
1,2,3,6,7,8-HxCDF	ND	0.0609	3.48	1	0.1	
1,2,3,7,8,9-HxCDF	ND	0.0693	3.48	1	0.1	
2,3,4,6,7,8-HxCDF	ND	0.0651	3.48	1	0.1	
1,2,3,4,6,7,8-HpCDF	**0.442**	0.0701	3.48	1	0.01	0.00442
1,2,3,4,7,8,9-HpCDF	ND	0.0954	3.48	1	0.01	
OCDF	**1.58**	0.390	6.95	1	0.0003	0.000474
		Total TEQ				0.0996

2005 WHO TEFs, ND = 0

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/04/17 10:42
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM24.7E-COMP	**Units:**	ng/Kg
Lab Code:	K1713130-021	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 11:44
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	10.218g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305049	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 1	ND	U	43.2	43.2			1
PCB 2	ND	U	26.1	26.1			1
PCB 3	ND	U	12.4	12.4			1
PCB 4	ND	U	30.7	30.7			1
PCB 10	ND	U	15.3	15.3			1
PCB 9	ND	U	4.90	4.90			1
PCB 7	ND	U	4.47	4.47			1
PCB 6	ND	U	4.74	4.74			1
PCB 5	ND	U	4.77	4.77			1
PCB 8	ND	U	4.54	6.92			1
PCB 14	ND	U	4.94	4.94			1
PCB 11	44.6		4.94	13.8	-	0.971	1
PCBs 12 + 13	ND	U	4.67	6.92			1
PCB 15	ND	U	4.80	4.80			1
PCB 19	ND	U	26.5	26.5			1
PCBs 18 + 30	ND	U	21.2	21.2			1
PCB 17	ND	U	24.6	24.6			1
PCB 27	ND	U	20.9	20.9			1
PCB 24	ND	U	16.3	16.3			1
PCB 16	ND	U	27.0	27.0			1
PCB 32	ND	U	17.5	17.5			1
PCB 34	ND	U	16.3	16.3			1
PCB 23	ND	U	14.0	14.0			1
PCBs 26 + 29	ND	U	14.8	14.8			1
PCB 25	ND	U	12.2	12.2			1
PCB 31	ND	U	14.8	14.8			1
PCBs 20 + 28	ND	U	15.8	15.8			1
PCBs 21 + 33	ND	U	13.9	13.9			1
PCB 22	ND	U	15.4	15.4			1
PCB 36	ND	U	14.8	14.8			1
PCB 39	ND	U	13.7	13.7			1
PCB 38	ND	U	16.8	16.8			1
PCB 35	ND	U	17.6	17.6			1
PCB 37	ND	U	19.7	19.7			1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/04/17 10:42
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM24.7E-COMP	**Units:**	ng/Kg
Lab Code:	K1713130-021	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 11:44
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	10.218g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305049	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 54	ND	U	17.2	17.2			1
PCBs 50 + 53	ND	U	16.9	16.9			1
PCBs 45 + 51	ND	U	17.7	17.7			1
PCB 46	ND	U	20.7	20.7			1
PCB 52	ND	U	20.8	20.8			1
PCBs 43 + 73	ND	U	14.6	14.6			1
PCBs 49 + 69	ND	U	15.3	15.3			1
PCB 48	ND	U	18.4	18.4			1
PCBs 44 + 47 + 65	ND	U	16.1	16.1			1
PCBs 59 + 62 + 75	ND	U	14.0	14.0			1
PCB 42	ND	U	22.0	22.0			1
PCB 64	ND	U	15.3	15.3			1
PCBs 41 + 71 + 40	ND	U	20.6	20.6			1
PCB 72	ND	U	16.0	16.0			1
PCB 68	ND	U	13.3	13.3			1
PCB 57	ND	U	15.7	15.7			1
PCB 58	ND	U	14.0	14.0			1
PCB 67	ND	U	11.3	11.3			1
PCB 63	ND	U	14.1	14.1			1
PCBs 70 + 61 + 74 + 76	ND	U	12.6	27.7			1
PCB 66	ND	U	14.4	14.4			1
PCB 55	ND	U	13.1	13.1			1
PCB 56	ND	U	14.0	14.0			1
PCB 60	ND	U	13.0	13.0			1
PCB 80	ND	U	11.7	11.7			1
PCB 79	ND	U	13.1	13.1			1
PCB 78	ND	U	14.1	14.1			1
PCB 81	ND	U	33.5	33.5			1
PCB 77	ND	U	14.0	14.0			1
PCB 104	ND	U	14.1	14.1			1
PCB 96	ND	U	11.5	11.5			1
PCB 103	ND	U	13.1	13.1			1
PCB 94	ND	U	14.6	14.6			1
PCBs 95 + 93 + 100	ND	U	13.7	27.7			1

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/04/17 10:42
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM24.7E-COMP	**Units:**	ng/Kg
Lab Code:	K1713130-021	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 11:44
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	10.218g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305049	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCBs 98 + 102	ND	U	13.1	27.7			1
PCBs 88 + 91	ND	U	14.6	14.6			1
PCB 84	ND	U	16.4	16.4			1
PCB 89	ND	U	17.0	17.0			1
PCB 121	ND	U	15.1	15.1			1
PCB 92	ND	U	20.0	20.0			1
PCBs 90 + 101 + 113	ND	U	16.4	27.7			1
PCBs 83 + 99	ND	U	19.3	19.3			1
PCB 112	ND	U	12.8	12.8			1
PCBs 86 + 87 + 97 + 109 + 119 + 125	ND	U	15.8	27.7			1
PCBs 85 + 116 + 117	ND	U	15.5	15.5			1
PCBs 110 + 115	ND	U	12.9	13.8			1
PCB 82	ND	U	25.1	25.1			1
PCB 111	ND	U	13.6	13.6			1
PCB 120	ND	U	13.9	13.9			1
PCBs 108 + 124	ND	U	11.1	13.8			1
PCB 107	ND	U	11.6	11.6			1
PCB 123	ND	U	16.7	16.7			1
PCB 106	ND	U	11.6	11.6			1
PCB 118	ND	U	9.15	9.15			1
PCB 122	ND	U	12.9	12.9			1
PCB 114	ND	U	10.3	10.3			1
PCB 105	ND	U	10.4	10.4			1
PCB 127	ND	U	12.1	12.1			1
PCB 126	ND	U	13.2	13.2			1
PCB 155	ND	U	11.6	11.6			1
PCB 152	ND	U	9.64	9.64			1
PCB 150	ND	U	8.08	8.08			1
PCB 136	ND	U	9.34	9.34			1
PCB 145	ND	U	8.62	8.62			1
PCB 148	ND	U	11.9	11.9			1
PCBs 135 + 151 + 154	ND	U	10.5	13.8			1
PCB 144	ND	U	11.5	11.5			1
PCBs 147 + 149	ND	U	11.8	13.8			1
PCB 134	ND	U	24.7	24.7			1

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/04/17 10:42
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM24.7E-COMP	**Units:**	ng/Kg
Lab Code:	K1713130-021	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 11:44
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	10.218g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305049	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 143	ND	U	9.33	13.8			1
PCBs 139 + 140	ND	U	11.3	13.8			1
PCB 131	ND	U	13.6	13.6			1
PCB 142	ND	U	13.8	13.8			1
PCB 132	ND	U	13.4	13.4			1
PCB 133	ND	U	14.1	14.1			1
PCB 165	ND	U	9.31	9.31			1
PCB 146	ND	U	11.8	11.8			1
PCB 161	ND	U	8.56	8.56			1
PCBs 153 + 168	ND	U	9.35	13.8			1
PCB 141	ND	U	11.7	11.7			1
PCB 130	ND	U	14.7	14.7			1
PCB 137	ND	U	11.4	11.4			1
PCB 164	ND	U	8.55	8.55			1
PCBs 129 + 138 + 163	15.1	**JK**	13.1	27.7	0.78	1.244	1
PCB 160	ND	U	6.05	27.7			1
PCB 158	ND	U	8.09	8.09			1
PCBs 128 + 166	ND	U	10.4	13.8			1
PCB 159	ND	U	9.21	9.21			1
PCB 162	ND	U	8.19	8.19			1
PCB 167	ND	U	7.88	7.88			1
PCBs 156 + 157	ND	U	11.6	11.6			1
PCB 169	ND	U	8.58	8.58			1
PCB 188	ND	U	10.8	10.8			1
PCB 179	ND	U	8.34	8.34			1
PCB 184	ND	U	7.42	7.42			1
PCB 176	ND	U	8.38	8.38			1
PCB 186	ND	U	7.71	7.71			1
PCB 178	ND	U	11.2	11.2			1
PCB 175	ND	U	10.8	10.8			1
PCB 187	ND	U	9.67	9.67			1
PCB 182	ND	U	9.56	9.56			1
PCB 183 + 185	ND	U	14.9	14.9			1
PCB 174	ND	U	15.0	15.0			1
PCB 177	ND	U	16.4	16.4			1

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/04/17 10:42
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM24.7E-COMP	**Units:**	ng/Kg
Lab Code:	K1713130-021	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 11:44
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	10.218g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305049	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 181	ND	U	14.2	14.2			1
PCBs 171 + 173	ND	U	16.0	16.0			1
PCB 172	ND	U	16.4	16.4			1
PCB 192	ND	U	11.7	11.7			1
PCBs 180 + 193	ND	U	11.9	13.8			1
PCB 191	ND	U	12.1	12.1			1
PCB 170	ND	U	14.8	14.8			1
PCB 190	ND	U	10.1	10.1			1
PCB 189	ND	U	13.1	13.1			1
PCB 202	ND	U	14.1	14.1			1
PCB 201	ND	U	11.3	11.3			1
PCB 204	ND	U	11.1	11.1			1
PCB 197	ND	U	10.1	13.8			1
PCB 200	ND	U	11.2	13.8			1
PCBs 198 + 199	ND	U	13.6	13.8			1
PCB 196	ND	U	15.5	15.5			1
PCB 203	ND	U	12.2	12.2			1
PCB 195	ND	U	17.1	17.1			1
PCB 194	ND	U	16.8	16.8			1
PCB 205	ND	U	12.1	12.1			1
PCB 208	ND	U	11.4	11.4			1
PCB 207	ND	U	11.1	11.1			1
PCB 206	ND	U	20.7	20.7			1
PCB 209	ND	U	9.14	9.14			1

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/04/17 10:42
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM24.7E-COMP	**Units:**	ng/Kg
Lab Code:	K1713130-021	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 11:44
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	10.218g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305049	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total MonoCB	ND	U	12.4	12.4			1
Total DiCB	44.6		4.47	13.8			1
Total TriCB	ND	U	12.2	12.2			1
Total TetraCB	ND	U	11.3	27.7			1
Total PentaCB	ND	U	9.15	27.7			1
Total HexaCB	15.1**J**		6.05	27.7			1
Total HeptaCB	ND	U	7.42	13.8			1
Total OctaCB	ND	U	10.1	13.8			1
Total NonaCB	ND	U	11.1	11.1			1
Total PCBs	59.7		4.47	27.7			1

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/04/17 10:42
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM24.7E-COMP	**Units:**	Percent
Lab Code:	K1713130-021	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 11:44
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	10.218g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305049	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
PCB 1L	2000	802.959	40		5-145	2.86	0.737
PCB 3L	2000	962.300	48		5-145	3.13	0.871
PCB 4L	2000	651.768	33		5-145	1.70	0.884
PCB 15L	2000	856.169	43		5-145	1.53	1.210
PCB 19L	2000	1006.195	50		5-145	1.06	1.060
PCB 37L	2000	1402.825	70		5-145	1.14	1.083
PCB 54L	2000	735.085	37		5-145	0.87	0.838
PCB 81L	2000	462.470	23		10-145	0.77	1.322
PCB 77L	2000	1298.678	65		10-145	0.80	1.345
PCB 104L	2000	787.486	39		10-145	1.52	0.831
PCB 123L	2000	1154.233	58		10-145	1.58	1.134
PCB 118L	2000	1266.745	63		10-145	1.60	1.143
PCB 114L	2000	1268.331	63		10-145	1.64	1.158
PCB 105L	2000	1334.293	67		10-145	1.45	1.178
PCB 126L	2000	1253.869	63		10-145	1.47	1.265
PCB 155L	2000	719.590	36		10-145	1.31	0.804
PCB 167L	2000	1128.503	56		10-145	1.25	1.067
PCBs 156L + 157L	4000	2229.473	56		10-145	1.23	1.096
PCB 169L	2000	1255.959	63		10-145	1.16	1.170
PCB 188L	2000	880.331	44		10-145	1.05	0.737
PCB 189L	2000	1358.900	68		10-145	1.15	0.963
PCB 202L	2000	871.692	44		10-145	0.98	0.833
PCB 205L	2000	1297.229	65		10-145	0.81	1.009
PCB 208L	2000	847.985	42		10-145	0.85	0.952
PCB 206L	2000	1425.413	71		10-145	0.70	1.039
PCB 209L	2000	1462.167	73		10-145	1.25	1.067
PCB 28L	2000	1304.445	65		5-145	1.20	0.935
PCB 111L	2000	1210.318	61		10-145	1.62	1.076
PCB 178L	2000	1091.413	55		10-145	1.03	1.008

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/04/17 10:42
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM24.7E-COMP	**Units:**	ng/Kg
Lab Code:	K1713130-021	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method: 1668C

Prep Method: Method

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
PCB 81	ND	33.5	33.5	1	0.0003	
PCB 77	ND	14.0	14.0	1	0.0001	
PCB 123	ND	16.7	16.7	1	0.00003	
PCB 118	ND	9.15	9.15	1	0.00003	
PCB 114	ND	10.3	10.3	1	0.00003	
PCB 105	ND	10.4	10.4	1	0.00003	
PCB 126	ND	13.2	13.2	1	0.1	
PCB 167	ND	7.88	7.88	1	0.00003	
PCBs 156 + 157	ND	11.6	11.6	1	0.00003	
PCB 169	ND	8.58	8.58	1	0.03	
PCB 189	ND	13.1	13.1	1	0.00003	
	Total TEQ					0.00

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/05/17 10:35
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM20.0E-COMP	**Units:**	ng/Kg
Lab Code:	K1713130-032	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	01/13/18 09:00
Prep Method:	Method Soxhlet	**Date Extracted:**	1/4/18
Sample Amount:	10.228g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P513714	**Blank File Name:**	P513666
ICAL Date:	07/26/17	**Cal Ver. File Name:**	P513702

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	0.233	0.654			1
1,2,3,7,8-PeCDD	ND	U	0.0830	3.27			1
1,2,3,4,7,8-HxCDD	0.0992**BJK**		0.0593	3.27	0.76	1.000	1
1,2,3,6,7,8-HxCDD	0.320**J**		0.0651	3.27	1.22	1.000	1
1,2,3,7,8,9-HxCDD	0.142**BJK**		0.0592	3.27	0.95	1.007	1
1,2,3,4,6,7,8-HpCDD	5.51		0.107	3.27	1.01	1.000	1
OCDD	60.3		0.252	6.54	0.89	1.000	1
2,3,7,8-TCDF	ND	U	0.124	0.654			1
1,2,3,7,8-PeCDF	ND	U	0.103	3.27			1
2,3,4,7,8-PeCDF	ND	U	0.104	3.27			1
1,2,3,4,7,8-HxCDF	ND	U	0.0777	3.27			1
1,2,3,6,7,8-HxCDF	ND	U	0.0744	3.27			1
1,2,3,7,8,9-HxCDF	ND	U	0.0871	3.27			1
2,3,4,6,7,8-HxCDF	ND	U	0.0812	3.27			1
1,2,3,4,6,7,8-HpCDF	1.03**BJ**		0.105	3.27	1.08	1.000	1
1,2,3,4,7,8,9-HpCDF	ND	U	0.140	3.27			1
OCDF	4.96**J**		0.320	6.54	0.89	1.005	1

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/05/17 10:35
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM20.0E-COMP	**Units:**	ng/Kg
Lab Code:	K1713130-032	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	01/13/18 09:00
Prep Method:	Method Soxhlet	**Date Extracted:**	1/4/18
Sample Amount:	10.228g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P513714	**Blank File Name:**	P513666
ICAL Date:	07/26/17	**Cal Ver. File Name:**	P513702

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	ND	U	0.233	0.654			1
Total Penta-Dioxins	ND	U	0.0830	3.27			1
Total Hexa-Dioxins	2.02**J**		0.0622	3.27	1.38		1
Total Hepta-Dioxins	13.1		0.107	3.27	1.07		1
Total Tetra-Furans	ND	U	0.124	0.654			1
Total Penta-Furans	ND	U	0.104	3.27			1
Total Hexa-Furans	0.485**J**		0.0799	3.27	1.35		1
Total Hepta-Furans	3.72		0.119	3.27	1.08		1

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/05/17 10:35
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM20.0E-COMP	**Units:**	Percent
Lab Code:	K1713130-032	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	01/13/18 09:00
Prep Method:	Method Soxhlet	**Date Extracted:**	1/4/18
Sample Amount:	10.228g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P513714	**Blank File Name:**	P513666
ICAL Date:	07/26/17	**Cal Ver. File Name:**	P513702

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	971.695	49		25-164	0.81	1.024
13C-1,2,3,7,8-PeCDD	2000	1233.039	62		25-181	1.59	1.200
13C-1,2,3,4,7,8-HxCDD	2000	1399.395	70		32-141	1.28	0.991
13C-1,2,3,6,7,8-HxCDD	2000	1268.218	63		28-130	1.29	0.994
13C-1,2,3,4,6,7,8-HpCDD	2000	1271.359	64		23-140	1.06	1.072
13C-OCDD	4000	1649.392	41		17-157	0.89	1.155
13C-2,3,7,8-TCDF	2000	1134.541	57		24-169	0.78	0.993
13C-1,2,3,7,8-PeCDF	2000	1187.214	59		24-185	1.57	1.154
13C-2,3,4,7,8-PeCDF	2000	1152.422	58		21-178	1.57	1.189
13C-1,2,3,4,7,8-HxCDF	2000	1165.927	58		26-152	0.51	0.969
13C-1,2,3,6,7,8-HxCDF	2000	1183.530	59		26-123	0.51	0.972
13C-1,2,3,7,8,9-HxCDF	2000	1266.697	63		29-147	0.51	1.009
13C-2,3,4,6,7,8-HxCDF	2000	1150.970	58		28-136	0.51	0.987
13C-1,2,3,4,6,7,8-HpCDF	2000	1242.087	62		28-143	0.44	1.045
13C-1,2,3,4,7,8,9-HpCDF	2000	1364.342	68		26-138	0.43	1.086
37Cl-2,3,7,8-TCDD	800	488.215	61		35-197	NA	1.024

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/05/17 10:35
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM20.0E-COMP	**Units:**	ng/Kg
Lab Code:	K1713130-032	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 1613B

Prep Method: Method Soxhlet

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	ND	0.233	0.654	1	1	
1,2,3,7,8-PeCDD	ND	0.0830	3.27	1	1	
1,2,3,4,7,8-HxCDD	**0.0992**	0.0593	3.27	1	0.1	0.00992
1,2,3,6,7,8-HxCDD	**0.320**	0.0651	3.27	1	0.1	0.0320
1,2,3,7,8,9-HxCDD	**0.142**	0.0592	3.27	1	0.1	0.0142
1,2,3,4,6,7,8-HpCDD	**5.51**	0.107	3.27	1	0.01	0.0551
OCDD	**60.3**	0.252	6.54	1	0.0003	0.0181
2,3,7,8-TCDF	ND	0.124	0.654	1	0.1	
1,2,3,7,8-PeCDF	ND	0.103	3.27	1	0.03	
2,3,4,7,8-PeCDF	ND	0.104	3.27	1	0.3	
1,2,3,4,7,8-HxCDF	ND	0.0777	3.27	1	0.1	
1,2,3,6,7,8-HxCDF	ND	0.0744	3.27	1	0.1	
1,2,3,7,8,9-HxCDF	ND	0.0871	3.27	1	0.1	
2,3,4,6,7,8-HxCDF	ND	0.0812	3.27	1	0.1	
1,2,3,4,6,7,8-HpCDF	**1.03**	0.105	3.27	1	0.01	0.0103
1,2,3,4,7,8,9-HpCDF	ND	0.140	3.27	1	0.01	
OCDF	**4.96**	0.320	6.54	1	0.0003	0.00149
		Total TEQ				0.141

2005 WHO TEFs, ND = 0

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/05/17 10:35
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM20.0E-COMP	**Units:**	ng/Kg
Lab Code:	K1713130-032	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 12:48
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	10.336g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305050	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 1	ND	U	10.2	10.2			1
PCB 2	ND	U	10.8	10.8			1
PCB 3	ND	U	11.5	11.5			1
PCB 4	ND	U	24.9	24.9			1
PCB 10	ND	U	9.00	9.00			1
PCB 9	ND	U	3.72	3.72			1
PCB 7	ND	U	3.39	3.39			1
PCB 6	ND	U	3.60	3.60			1
PCB 5	ND	U	3.62	3.62			1
PCB 8	ND	U	3.44	6.48			1
PCB 14	ND	U	3.75	3.75			1
PCB 11	15.8		3.75	13.0	-	0.970	1
PCBs 12 + 13	ND	U	3.54	6.48			1
PCB 15	ND	U	2.46	2.59			1
PCB 19	ND	U	12.2	12.2			1
PCBs 18 + 30	ND	U	9.04	9.04			1
PCB 17	ND	U	10.5	10.5			1
PCB 27	ND	U	8.91	8.91			1
PCB 24	ND	U	6.95	6.95			1
PCB 16	ND	U	11.5	11.5			1
PCB 32	ND	U	7.45	7.45			1
PCB 34	ND	U	11.6	11.6			1
PCB 23	ND	U	9.95	9.95			1
PCBs 26 + 29	ND	U	10.6	10.6			1
PCB 25	ND	U	8.65	8.65			1
PCB 31	ND	U	10.6	10.6			1
PCBs 20 + 28	ND	U	11.3	11.3			1
PCBs 21 + 33	ND	U	9.86	9.86			1
PCB 22	ND	U	11.0	11.0			1
PCB 36	ND	U	10.6	10.6			1
PCB 39	ND	U	9.72	9.72			1
PCB 38	ND	U	12.0	12.0			1
PCB 35	ND	U	12.6	12.6			1
PCB 37	ND	U	13.3	13.3			1

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/05/17 10:35
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM20.0E-COMP	**Units:**	ng/Kg
Lab Code:	K1713130-032	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 12:48
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	10.336g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305050	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 54	ND	U	10.1	10.1			1
PCBs 50 + 53	ND	U	6.72	13.0			1
PCBs 45 + 51	ND	U	7.01	7.01			1
PCB 46	ND	U	8.20	8.20			1
PCB 52	34.0		8.26	8.26	0.74	1.196	1
PCBs 43 + 73	ND	U	5.78	6.48			1
PCBs 49 + 69	11.5**JK**		6.06	13.0	0.90	1.217	1
PCB 48	ND	U	7.29	7.29			1
PCBs 44 + 47 + 65	19.6		6.37	13.0	0.73	1.241	1
PCBs 59 + 62 + 75	ND	U	5.54	13.0			1
PCB 42	ND	U	8.71	13.0			1
PCB 64	ND	U	6.05	6.48			1
PCBs 41 + 71 + 40	ND	U	8.18	13.0			1
PCB 72	ND	U	6.34	6.48			1
PCB 68	ND	U	5.27	6.48			1
PCB 57	ND	U	6.24	6.48			1
PCB 58	ND	U	5.53	6.48			1
PCB 67	ND	U	4.49	6.48			1
PCB 63	ND	U	5.57	6.48			1
PCBs 70 + 61 + 74 + 76	37.7		4.97	25.9	0.76	1.401	1
PCB 66	20.9		5.72	6.48	0.79	1.415	1
PCB 55	ND	U	5.19	6.48			1
PCB 56	ND	U	10.7	10.7			1
PCB 60	ND	U	9.92	9.92			1
PCB 80	ND	U	8.94	8.94			1
PCB 79	ND	U	9.97	9.97			1
PCB 78	ND	U	10.8	10.8			1
PCB 81	ND	U	13.3	13.3			1
PCB 77	ND	U	13.7	13.7			1
PCB 104	ND	U	8.33	8.33			1
PCB 96	ND	U	6.72	6.72			1
PCB 103	ND	U	7.65	7.65			1
PCB 94	ND	U	8.56	8.56			1
PCBs 95 + 93 + 100	38.5		8.03	25.9	1.61	1.105	1

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/05/17 10:35
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM20.0E-COMP	**Units:**	ng/Kg
Lab Code:	K1713130-032	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 12:48
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	10.336g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305050	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCBs 98 + 102	ND	U	7.69	25.9			1
PCBs 88 + 91	ND	U	8.54	8.54			1
PCB 84	ND	U	9.60	9.60			1
PCB 89	ND	U	9.97	9.97			1
PCB 121	ND	U	8.89	8.89			1
PCB 92	18.6		11.9	11.9	1.41	1.184	1
PCBs 90 + 101 + 113	71.7		9.69	25.9	1.76	1.204	1
PCBs 83 + 99	53.1**K**		11.4	13.0	1.90	1.224	1
PCB 112	ND	U	7.56	7.56			1
PCBs 86 + 87 + 97 + 109 + 119 + 125	49.7		9.31	25.9	1.60	1.247	1
PCBs 85 + 116 + 117	ND	U	9.15	13.0			1
PCBs 110 + 115	84.3**K**		7.63	13.0	1.82	1.274	1
PCB 82	ND	U	14.9	14.9			1
PCB 111	ND	U	8.00	8.00			1
PCB 120	ND	U	8.21	8.21			1
PCBs 108 + 124	ND	U	11.9	13.0			1
PCB 107	ND	U	12.4	12.4			1
PCB 123	ND	U	12.4	12.4			1
PCB 106	ND	U	12.5	12.5			1
PCB 118	133		13.1	13.1	1.68	1.000	1
PCB 122	ND	U	13.8	13.8			1
PCB 114	ND	U	12.6	12.6			1
PCB 105	39.9**K**		12.4	12.4	1.19	1.000	1
PCB 127	ND	U	13.0	13.0			1
PCB 126	ND	U	14.5	14.5			1
PCB 155	ND	U	5.51	5.51			1
PCB 152	ND	U	4.55	6.48			1
PCB 150	ND	U	3.82	6.48			1
PCB 136	16.9**K**		4.41	6.48	1.04	1.028	1
PCB 145	ND	U	4.07	6.48			1
PCB 148	ND	U	5.62	6.48			1
PCBs 135 + 151 + 154	65.1		4.93	13.0	1.23	1.094	1
PCB 144	7.52**K**		5.42	6.48	1.46	1.110	1
PCBs 147 + 149	141		6.52	13.0	1.18	1.121	1
PCB 134	ND	U	13.7	13.7			1

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/05/17 10:35
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM20.0E-COMP	**Units:**	ng/Kg
Lab Code:	K1713130-032	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 12:48
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	10.336g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305050	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 143	ND	U	5.16	13.0			1
PCBs 139 + 140	ND	U	6.25	13.0			1
PCB 131	ND	U	7.52	7.52			1
PCB 142	ND	U	7.62	7.62			1
PCB 132	46.3		7.37	7.37	1.32	1.159	1
PCB 133	ND	U	7.79	7.79			1
PCB 165	ND	U	5.15	6.48			1
PCB 146	45.8		6.53	6.53	1.14	1.188	1
PCB 161	ND	U	4.74	6.48			1
PCBs 153 + 168	274		5.18	13.0	1.15	1.205	1
PCB 141	43.9		6.43	6.48	1.22	1.213	1
PCB 130	9.57**K**		8.08	8.08	0.91	1.226	1
PCB 137	8.67**K**		6.31	6.48	1.57	1.231	1
PCB 164	12.1**K**		4.73	6.48	0.88	1.236	1
PCBs 129 + 138 + 163	342		7.20	25.9	1.22	1.244	1
PCB 160	ND	U	3.35	25.9			1
PCB 158	19.1**K**		4.48	6.48	1.62	1.254	1
PCBs 128 + 166	50.5		5.75	13.0	1.30	1.281	1
PCB 159	ND	U	9.15	9.15			1
PCB 162	ND	U	8.13	8.13			1
PCB 167	12.9**K**		8.06	8.06	1.56	1.000	1
PCBs 156 + 157	27.1**K**		11.1	11.1	0.86	1.000	1
PCB 169	ND	U	9.00	9.00			1
PCB 188	ND	U	6.68	6.68			1
PCB 179	81.4		5.12	6.48	1.04	1.012	1
PCB 184	ND	U	4.56	6.48			1
PCB 176	22.9		5.15	6.48	1.06	1.033	1
PCB 186	ND	U	4.73	6.48			1
PCB 178	44.5		6.86	6.86	1.12	1.076	1
PCB 175	ND	U	6.59	6.59			1
PCB 187	287		5.93	6.48	1.03	1.099	1
PCB 182	ND	U	5.87	6.48			1
PCB 183 + 185	139		9.23	13.0	1.09	1.114	1
PCB 174	201		9.27	9.27	1.09	1.122	1
PCB 177	96.2		10.2	10.2	1.05	1.132	1

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/05/17 10:35
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM20.0E-COMP	**Units:**	ng/Kg
Lab Code:	K1713130-032	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 12:48
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	10.336g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305050	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 181	ND	U	8.77	8.77			1
PCBs 171 + 173	42.7		9.93	13.0	1.10	1.148	1
PCB 172	35.7		10.2	10.2	1.10	0.906	1
PCB 192	ND	U	7.23	7.23			1
PCBs 180 + 193	433		7.34	13.0	1.04	0.918	1
PCB 191	ND	U	7.49	7.49			1
PCB 170	127		9.14	9.14	1.17	0.943	1
PCB 190	36.2**K**		6.27	6.48	1.24	0.952	1
PCB 189	ND	U	8.05	8.05			1
PCB 202	57.0		9.80	9.80	0.80	1.000	1
PCB 201	ND	U	8.74	8.74			1
PCB 204	ND	U	8.60	8.60			1
PCB 197	ND	U	7.78	13.0			1
PCB 200	37.4		8.65	13.0	0.98	1.043	1
PCBs 198 + 199	252		10.6	13.0	0.94	1.103	1
PCB 196	102		12.1	12.1	0.98	0.923	1
PCB 203	159		9.44	9.44	0.98	0.926	1
PCB 195	90.9		13.3	13.3	0.78	0.951	1
PCB 194	252		13.0	13.0	0.88	0.992	1
PCB 205	ND	U	10.4	10.4			1
PCB 208	21.4**K**		7.72	7.72	0.94	1.000	1
PCB 207	ND	U	8.04	8.04			1
PCB 206	105		9.19	9.19	0.65	1.000	1
PCB 209	13.8		4.90	4.90	1.15	1.001	1

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/05/17 10:35
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM20.0E-COMP	**Units:**	ng/Kg
Lab Code:	K1713130-032	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 12:48
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	10.336g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305050	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total MonoCB	ND	U	10.2	10.2			1
Total DiCB	15.8		2.46	13.0			1
Total TriCB	ND	U	6.95	6.95			1
Total TetraCB	124		4.49	25.9			1
Total PentaCB	489		6.72	25.9			1
Total HexaCB	1120		3.35	25.9			1
Total HeptaCB	1410		4.56	13.0			1
Total OctaCB	951		7.78	13.0			1
Total NonaCB	127		7.72	7.72			1
Total PCBs	4390		2.46	25.9			1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/05/17 10:35
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM20.0E-COMP	**Units:**	Percent
Lab Code:	K1713130-032	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 12:48
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	10.336g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305050	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
PCB 1L	2000	912.411	46		5-145	3.19	0.737
PCB 3L	2000	903.752	45		5-145	3.15	0.868
PCB 4L	2000	666.886	33		5-145	1.54	0.882
PCB 15L	2000	958.476	48		5-145	1.57	1.213
PCB 19L	2000	935.957	47		5-145	1.15	1.061
PCB 37L	2000	1181.366	59		5-145	1.12	1.082
PCB 54L	2000	669.560	33		5-145	0.75	0.837
PCB 81L	2000	1111.019	56		10-145	0.71	1.321
PCB 77L	2000	1080.485	54		10-145	0.85	1.343
PCB 104L	2000	839.517	42		10-145	1.71	0.831
PCB 123L	2000	1372.420	69		10-145	1.68	1.133
PCB 118L	2000	1285.798	64		10-145	1.67	1.143
PCB 114L	2000	1388.483	69		10-145	1.59	1.158
PCB 105L	2000	1423.308	71		10-145	1.54	1.178
PCB 126L	2000	1436.027	72		10-145	1.62	1.266
PCB 155L	2000	853.202	43		10-145	1.33	0.805
PCB 167L	2000	1384.036	69		10-145	1.24	1.068
PCBs 156L + 157L	4000	3024.649	76		10-145	1.24	1.097
PCB 169L	2000	1526.016	76		10-145	1.19	1.171
PCB 188L	2000	1002.174	50		10-145	1.11	0.736
PCB 189L	2000	1388.855	69		10-145	1.10	0.963
PCB 202L	2000	1047.155	52		10-145	0.88	0.833
PCB 205L	2000	1292.214	65		10-145	0.94	1.008
PCB 208L	2000	992.563	50		10-145	0.78	0.952
PCB 206L	2000	1581.305	79		10-145	0.80	1.039
PCB 209L	2000	1642.068	82		10-145	1.13	1.067
PCB 28L	2000	1597.176	80		5-145	1.14	0.935
PCB 111L	2000	1199.191	60		10-145	1.49	1.075
PCB 178L	2000	1118.191	56		10-145	1.14	1.008

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/05/17 10:35
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM20.0E-COMP	**Units:**	ng/Kg
Lab Code:	K1713130-032	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method: 1668C

Prep Method: Method

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
PCB 81	ND	13.3	13.3	1	0.0003	
PCB 77	ND	13.7	13.7	1	0.0001	
PCB 123	ND	12.4	12.4	1	0.00003	
PCB 118	**133**	13.1	13.1	1	0.00003	0.00399
PCB 114	ND	12.6	12.6	1	0.00003	
PCB 105	**39.9**	12.4	12.4	1	0.00003	0.00120
PCB 126	ND	14.5	14.5	1	0.1	
PCB 167	**12.9**	8.06	8.06	1	0.00003	0.000387
PCBs 156 + 157	**27.1**	11.1	11.1	1	0.00003	0.000813
PCB 169	ND	9.00	9.00	1	0.03	
PCB 189	ND	8.05	8.05	1	0.00003	
	Total TEQ					0.00639

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/04/17 13:00
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM25.2E-COMP	**Units:**	ng/Kg
Lab Code:	K1713130-033	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	01/13/18 09:48
Prep Method:	Method Soxhlet	**Date Extracted:**	1/4/18
Sample Amount:	10.277g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P513715	**Blank File Name:**	P513666
ICAL Date:	07/26/17	**Cal Ver. File Name:**	P513702

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	0.290**JK**		0.256	0.747	0.36	1.001	1
1,2,3,7,8-PeCDD	0.404**BJ**		0.112	3.74	1.59	1.001	1
1,2,3,4,7,8-HxCDD	0.294**BJK**		0.119	3.74	0.86	1.000	1
1,2,3,6,7,8-HxCDD	1.50**J**		0.134	3.74	1.17	1.000	1
1,2,3,7,8,9-HxCDD	0.854**BJ**		0.121	3.74	1.22	1.007	1
1,2,3,4,6,7,8-HpCDD	43.6		0.176	3.74	1.05	1.000	1
OCDD	662		0.252	7.47	0.89	1.000	1
2,3,7,8-TCDF	ND	U	0.179	0.747			1
1,2,3,7,8-PeCDF	0.195**JK**		0.112	3.74	1.07	1.001	1
2,3,4,7,8-PeCDF	0.507**BJ**		0.116	3.74	1.64	1.000	1
1,2,3,4,7,8-HxCDF	0.560**BJ**		0.152	3.74	1.12	1.000	1
1,2,3,6,7,8-HxCDF	0.625**BJ**		0.143	3.74	1.20	1.000	1
1,2,3,7,8,9-HxCDF	0.244**BJ**		0.153	3.74	1.37	1.000	1
2,3,4,6,7,8-HxCDF	0.398**BJK**		0.154	3.74	0.66	1.001	1
1,2,3,4,6,7,8-HpCDF	6.44**B**		0.121	3.74	0.93	1.000	1
1,2,3,4,7,8,9-HpCDF	0.662**J**		0.159	3.74	0.95	1.000	1
OCDF	26.5		0.395	7.47	0.84	1.005	1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/04/17 13:00
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM25.2E-COMP	**Units:**	ng/Kg
Lab Code:	K1713130-033	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	01/13/18 09:48
Prep Method:	Method Soxhlet	**Date Extracted:**	1/4/18
Sample Amount:	10.277g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P513715	**Blank File Name:**	P513666
ICAL Date:	07/26/17	**Cal Ver. File Name:**	P513702

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	ND	U	0.256	0.747			1
Total Penta-Dioxins	0.999**J**		0.112	3.74	1.52		1
Total Hexa-Dioxins	13.6		0.127	3.74	1.24		1
Total Hepta-Dioxins	92.1		0.176	3.74	1.03		1
Total Tetra-Furans	ND	U	0.179	0.747			1
Total Penta-Furans	1.38**J**		0.114	3.74	1.36		1
Total Hexa-Furans	6.26		0.150	3.74	1.28		1
Total Hepta-Furans	24.0		0.136	3.74	0.93		1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/04/17 13:00
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM25.2E-COMP	**Units:**	Percent
Lab Code:	K1713130-033	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	01/13/18 09:48
Prep Method:	Method Soxhlet	**Date Extracted:**	1/4/18
Sample Amount:	10.277g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P513715	**Blank File Name:**	P513666
ICAL Date:	07/26/17	**Cal Ver. File Name:**	P513702

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	931.539	47		25-164	0.80	1.024
13C-1,2,3,7,8-PeCDD	2000	1163.561	58		25-181	1.57	1.200
13C-1,2,3,4,7,8-HxCDD	2000	1246.459	62		32-141	1.25	0.991
13C-1,2,3,6,7,8-HxCDD	2000	1187.060	59		28-130	1.23	0.993
13C-1,2,3,4,6,7,8-HpCDD	2000	1204.915	60		23-140	1.05	1.072
13C-OCDD	4000	1739.086	43		17-157	0.89	1.155
13C-2,3,7,8-TCDF	2000	1060.970	53		24-169	0.79	0.993
13C-1,2,3,7,8-PeCDF	2000	1138.175	57		24-185	1.58	1.154
13C-2,3,4,7,8-PeCDF	2000	1088.256	54		21-178	1.56	1.189
13C-1,2,3,4,7,8-HxCDF	2000	1053.193	53		26-152	0.50	0.969
13C-1,2,3,6,7,8-HxCDF	2000	1053.518	53		26-123	0.51	0.972
13C-1,2,3,7,8,9-HxCDF	2000	1204.699	60		29-147	0.51	1.009
13C-2,3,4,6,7,8-HxCDF	2000	1056.803	53		28-136	0.50	0.987
13C-1,2,3,4,6,7,8-HpCDF	2000	1168.789	58		28-143	0.44	1.045
13C-1,2,3,4,7,8,9-HpCDF	2000	1281.330	64		26-138	0.44	1.086
37Cl-2,3,7,8-TCDD	800	463.599	58		35-197	NA	1.024

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/04/17 13:00
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM25.2E-COMP	**Units:**	ng/Kg
Lab Code:	K1713130-033	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method: 1613B

Prep Method: Method Soxhlet

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
2,3,7,8-TCDD	**0.290**	0.256	0.747	1	1	0.290
1,2,3,7,8-PeCDD	**0.404**	0.112	3.74	1	1	0.404
1,2,3,4,7,8-HxCDD	**0.294**	0.119	3.74	1	0.1	0.0294
1,2,3,6,7,8-HxCDD	**1.50**	0.134	3.74	1	0.1	0.150
1,2,3,7,8,9-HxCDD	**0.854**	0.121	3.74	1	0.1	0.0854
1,2,3,4,6,7,8-HpCDD	**43.6**	0.176	3.74	1	0.01	0.436
OCDD	**662**	0.252	7.47	1	0.0003	0.199
2,3,7,8-TCDF	ND	0.179	0.747	1	0.1	
1,2,3,7,8-PeCDF	**0.195**	0.112	3.74	1	0.03	0.00585
2,3,4,7,8-PeCDF	**0.507**	0.116	3.74	1	0.3	0.152
1,2,3,4,7,8-HxCDF	**0.560**	0.152	3.74	1	0.1	0.0560
1,2,3,6,7,8-HxCDF	**0.625**	0.143	3.74	1	0.1	0.0625
1,2,3,7,8,9-HxCDF	**0.244**	0.153	3.74	1	0.1	0.0244
2,3,4,6,7,8-HxCDF	**0.398**	0.154	3.74	1	0.1	0.0398
1,2,3,4,6,7,8-HpCDF	**6.44**	0.121	3.74	1	0.01	0.0644
1,2,3,4,7,8,9-HpCDF	**0.662**	0.159	3.74	1	0.01	0.00662
OCDF	**26.5**	0.395	7.47	1	0.0003	0.00795
		Total TEQ				2.01

2005 WHO TEFs, ND = 0

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/04/17 13:00
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM25.2E-COMP	**Units:**	ng/Kg
Lab Code:	K1713130-033	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 13:52
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	10.394g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305051	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 1	ND	U	6.71	6.71			1
PCB 2	ND	U	7.15	7.15			1
PCB 3	ND	U	7.59	7.59			1
PCB 4	ND	U	9.93	9.93			1
PCB 10	ND	U	5.11	7.39			1
PCB 9	ND	U	3.59	3.59			1
PCB 7	ND	U	3.27	3.27			1
PCB 6	ND	U	3.47	3.47			1
PCB 5	ND	U	3.49	3.49			1
PCB 8	10.6		3.32	7.39	-	1.185	1
PCB 14	ND	U	3.62	3.62			1
PCB 11	12.3**J**		3.62	14.8	-	0.971	1
PCBs 12 + 13	ND	U	3.42	7.39			1
PCB 15	10.7		3.68	3.68	-	1.000	1
PCB 19	ND	U	21.4	21.4			1
PCBs 18 + 30	ND	U	12.8	12.8			1
PCB 17	ND	U	14.8	14.8			1
PCB 27	ND	U	12.6	12.6			1
PCB 24	ND	U	9.82	9.82			1
PCB 16	ND	U	16.3	16.3			1
PCB 32	ND	U	10.6	10.6			1
PCB 34	ND	U	16.2	16.2			1
PCB 23	ND	U	13.9	13.9			1
PCBs 26 + 29	ND	U	14.7	14.7			1
PCB 25	ND	U	12.1	12.1			1
PCB 31	19.5**K**		14.7	14.7	0.75	0.854	1
PCBs 20 + 28	22.1**K**		15.7	15.7	0.66	0.864	1
PCBs 21 + 33	ND	U	13.8	13.8			1
PCB 22	ND	U	15.3	15.3			1
PCB 36	ND	U	14.7	14.7			1
PCB 39	ND	U	13.6	13.6			1
PCB 38	ND	U	16.6	16.6			1
PCB 35	ND	U	17.4	17.4			1
PCB 37	ND	U	16.1	16.1			1

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/04/17 13:00
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM25.2E-COMP	**Units:**	ng/Kg
Lab Code:	K1713130-033	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 13:52
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	10.394g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305051	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 54	ND	U	13.9	13.9			1
PCBs 50 + 53	ND	U	10.2	14.8			1
PCBs 45 + 51	ND	U	10.6	10.6			1
PCB 46	ND	U	12.4	12.4			1
PCB 52	93.8		12.5	12.5	0.72	1.195	1
PCBs 43 + 73	ND	U	8.69	8.69			1
PCBs 49 + 69	35.2		9.13	14.8	0.85	1.216	1
PCB 48	ND	U	11.0	11.0			1
PCBs 44 + 47 + 65	56.0		9.59	14.8	0.85	1.240	1
PCBs 59 + 62 + 75	ND	U	8.34	14.8			1
PCB 42	ND	U	13.2	14.8			1
PCBs 41 + 71 + 40	24.4		12.4	14.8	0.88	1.285	1
PCB 64	23.2**K**		9.10	9.10	0.56	1.294	1
PCB 72	ND	U	9.55	9.55			1
PCB 68	ND	U	7.92	7.92			1
PCB 57	ND	U	9.39	9.39			1
PCB 58	ND	U	8.32	8.32			1
PCB 67	ND	U	6.75	7.39			1
PCB 63	ND	U	8.38	8.38			1
PCBs 70 + 61 + 74 + 76	126		7.48	29.6	0.72	1.401	1
PCB 66	75.3		8.60	8.60	0.76	1.414	1
PCB 55	ND	U	7.80	7.80			1
PCB 56	27.3		12.0	12.0	0.68	1.446	1
PCB 60	ND	U	11.2	11.2			1
PCB 80	ND	U	10.1	10.1			1
PCB 79	ND	U	11.2	11.2			1
PCB 78	ND	U	12.1	12.1			1
PCB 81	ND	U	14.1	14.1			1
PCB 77	ND	U	15.2	15.2			1
PCB 104	ND	U	9.91	9.91			1
PCB 96	ND	U	8.12	8.12			1
PCB 103	ND	U	9.23	9.23			1
PCB 94	ND	U	10.4	10.4			1
PCBs 95 + 93 + 100	118		9.69	29.6	1.74	1.106	1

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/04/17 13:00
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM25.2E-COMP	**Units:**	ng/Kg
Lab Code:	K1713130-033	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 13:52
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	10.394g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305051	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCBs 98 + 102	ND	U	9.29	29.6			1
PCBs 88 + 91	27.9**K**		10.4	10.4	1.01	1.134	1
PCB 84	51.0		11.6	11.6	1.50	1.144	1
PCB 89	ND	U	12.1	12.1			1
PCB 121	ND	U	7.90	7.90			1
PCB 92	31.9**K**		10.5	10.5	2.19	1.184	1
PCBs 90 + 101 + 113	184		8.60	29.6	1.67	1.204	1
PCBs 83 + 99	121		10.1	14.8	1.77	1.224	1
PCB 112	ND	U	6.71	7.39			1
PCBs 86 + 87 + 97 + 109 + 119 + 125	128		8.27	29.6	1.74	1.247	1
PCBs 85 + 116 + 117	36.2		8.12	14.8	1.39	1.268	1
PCBs 110 + 115	209		6.77	14.8	1.55	1.274	1
PCB 82	ND	U	13.2	13.2			1
PCB 111	ND	U	7.10	7.39			1
PCB 120	ND	U	7.29	7.39			1
PCBs 108 + 124	ND	U	12.8	14.8			1
PCB 107	ND	U	13.4	13.4			1
PCB 123	ND	U	14.1	14.1			1
PCB 106	ND	U	13.5	13.5			1
PCB 118	201		13.7	13.7	1.61	1.001	1
PCB 122	ND	U	14.9	14.9			1
PCB 114	ND	U	13.6	13.6			1
PCB 105	94.0		14.5	14.5	1.38	1.000	1
PCB 127	ND	U	14.0	14.0			1
PCB 126	ND	U	17.2	17.2			1
PCB 155	ND	U	6.32	6.32			1
PCB 152	ND	U	5.51	7.39			1
PCB 150	ND	U	4.62	7.39			1
PCB 136	18.2**K**		5.34	7.39	1.00	1.028	1
PCB 145	ND	U	4.92	7.39			1
PCB 148	ND	U	6.80	7.39			1
PCBs 135 + 151 + 154	54.8		5.96	14.8	1.37	1.094	1
PCB 144	ND	U	6.55	7.39			1
PCBs 147 + 149	129		10.3	14.8	1.15	1.121	1
PCB 134	ND	U	21.5	21.5			1

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/04/17 13:00
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM25.2E-COMP	**Units:**	ng/Kg
Lab Code:	K1713130-033	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 13:52
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	10.394g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305051	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 143	ND	U	8.09	14.8			1
PCBs 139 + 140	ND	U	9.79	14.8			1
PCB 131	ND	U	11.8	11.8			1
PCB 142	ND	U	12.0	12.0			1
PCB 132	69.0		11.6	11.6	1.09	1.159	1
PCB 133	ND	U	12.3	12.3			1
PCB 165	ND	U	8.07	8.07			1
PCB 146	35.0		10.3	10.3	1.37	1.188	1
PCB 161	ND	U	7.42	7.42			1
PCBs 153 + 168	151		8.11	14.8	1.27	1.205	1
PCB 141	34.5		10.1	10.1	1.17	1.213	1
PCB 130	ND	U	12.7	12.7			1
PCB 137	ND	U	9.89	9.89			1
PCB 164	11.5**K**		7.42	7.42	1.46	1.235	1
PCBs 129 + 138 + 163	237		11.3	29.6	1.20	1.244	1
PCB 160	ND	U	5.25	29.6			1
PCB 158	17.5**K**		7.02	7.39	1.60	1.253	1
PCBs 128 + 166	37.2		9.01	14.8	1.34	1.281	1
PCB 159	ND	U	8.04	8.04			1
PCB 162	ND	U	7.14	7.39			1
PCB 167	ND	U	7.23	7.23			1
PCBs 156 + 157	26.2		9.85	9.85	1.31	0.999	1
PCB 169	ND	U	7.87	7.87			1
PCB 188	ND	U	6.98	6.98			1
PCB 179	18.5**K**		5.08	7.39	0.85	1.011	1
PCB 184	ND	U	4.52	7.39			1
PCB 176	ND	U	5.11	7.39			1
PCB 186	ND	U	4.70	7.39			1
PCB 178	ND	U	6.81	7.39			1
PCB 175	ND	U	6.54	7.39			1
PCB 187	55.3		5.89	7.39	1.01	1.099	1
PCB 182	ND	U	5.82	7.39			1
PCB 183 + 185	24.4**K**		14.5	14.8	0.87	1.114	1
PCB 174	34.6**K**		14.5	14.5	0.87	1.122	1
PCB 177	20.2**K**		15.9	15.9	1.30	1.132	1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/04/17 13:00
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM25.2E-COMP	**Units:**	ng/Kg
Lab Code:	K1713130-033	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 13:52
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	10.394g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305051	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 181	ND	U	13.8	13.8			1
PCBs 171 + 173	ND	U	15.6	15.6			1
PCB 172	ND	U	16.0	16.0			1
PCB 192	ND	U	11.3	11.3			1
PCBs 180 + 193	64.8**K**		11.5	14.8	0.87	0.918	1
PCB 191	ND	U	11.8	11.8			1
PCB 170	27.2**K**		14.3	14.3	0.82	0.943	1
PCB 190	ND	U	9.81	9.81			1
PCB 189	ND	U	11.9	11.9			1
PCB 202	ND	U	8.05	8.05			1
PCB 201	ND	U	7.26	7.39			1
PCB 204	ND	U	7.14	7.39			1
PCB 197	ND	U	6.46	14.8			1
PCB 200	ND	U	7.18	14.8			1
PCBs 198 + 199	29.4		8.74	14.8	0.90	1.103	1
PCB 196	ND	U	10.0	10.0			1
PCB 203	ND	U	7.84	7.84			1
PCB 195	ND	U	11.1	11.1			1
PCB 194	23.2		10.8	10.8	0.82	0.991	1
PCB 205	ND	U	8.77	8.77			1
PCB 208	ND	U	9.18	9.18			1
PCB 207	ND	U	9.31	9.31			1
PCB 206	ND	U	18.0	18.0			1
PCB 209	12.1		8.81	8.81	1.08	1.000	1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/04/17 13:00
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM25.2E-COMP	**Units:**	ng/Kg
Lab Code:	K1713130-033	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 13:52
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	10.394g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305051	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total MonoCB	ND	U	6.71	7.39			1
Total DiCB	33.7		3.27	14.8			1
Total TriCB	41.6		9.82	9.82			1
Total TetraCB	461		6.75	29.6			1
Total PentaCB	1200		6.71	29.6			1
Total HexaCB	821		4.62	29.6			1
Total HeptaCB	221		4.52	14.8			1
Total OctaCB	52.6		6.46	14.8			1
Total NonaCB	ND	U	9.18	9.18			1
Total PCBs	2870		3.27	29.6			1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/04/17 13:00
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM25.2E-COMP	**Units:**	Percent
Lab Code:	K1713130-033	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 13:52
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	10.394g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305051	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
PCB 1L	2000	815.928	41		5-145	2.86	0.744
PCB 3L	2000	798.074	40		5-145	3.29	0.874
PCB 4L	2000	619.250	31		5-145	1.62	0.888
PCB 15L	2000	886.295	44		5-145	1.66	1.224
PCB 19L	2000	781.785	39		5-145	1.04	1.068
PCB 37L	2000	1198.563	60		5-145	0.95	1.082
PCB 54L	2000	572.232	29		5-145	0.66	0.837
PCB 81L	2000	1221.442	61		10-145	0.84	1.321
PCB 77L	2000	1226.377	61		10-145	0.83	1.343
PCB 104L	2000	876.962	44		10-145	1.72	0.831
PCB 123L	2000	1393.176	70		10-145	1.63	1.133
PCB 118L	2000	1377.738	69		10-145	1.60	1.142
PCB 114L	2000	1427.283	71		10-145	1.52	1.158
PCB 105L	2000	1391.770	70		10-145	1.63	1.178
PCB 126L	2000	1323.772	66		10-145	1.65	1.266
PCB 155L	2000	905.738	45		10-145	1.25	0.805
PCB 167L	2000	1424.138	71		10-145	1.23	1.068
PCBs 156L + 157L	4000	2924.898	73		10-145	1.25	1.097
PCB 169L	2000	1520.282	76		10-145	1.25	1.171
PCB 188L	2000	912.885	46		10-145	1.00	0.736
PCB 189L	2000	1433.750	72		10-145	1.04	0.963
PCB 202L	2000	1086.908	54		10-145	0.80	0.833
PCB 205L	2000	1268.767	63		10-145	0.93	1.009
PCB 208L	2000	959.788	48		10-145	0.86	0.952
PCB 206L	2000	1569.205	78		10-145	0.76	1.039
PCB 209L	2000	1586.202	79		10-145	1.11	1.067
PCB 28L	2000	1358.017	68		5-145	0.91	0.934
PCB 111L	2000	1276.769	64		10-145	1.70	1.075
PCB 178L	2000	1197.861	60		10-145	0.97	1.008

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	12/04/17 13:00
Sample Matrix:	Sediment	**Date Received:**	12/06/17 14:30
Sample Name:	URSC-RM25.2E-COMP	**Units:**	ng/Kg
Lab Code:	K1713130-033	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method: 1668C

Prep Method: Method

Toxicity Equivalency Quotient

Analyte Name	Result	DL	MRL	Dilution Factor	TEF	TEF - Adjusted Concentration
PCB 81	ND	14.1	14.1	1	0.0003	
PCB 77	ND	15.2	15.2	1	0.0001	
PCB 123	ND	14.1	14.1	1	0.00003	
PCB 118	**201**	13.7	13.7	1	0.00003	0.00603
PCB 114	ND	13.6	13.6	1	0.00003	
PCB 105	**94.0**	14.5	14.5	1	0.00003	0.00282
PCB 126	ND	17.2	17.2	1	0.1	
PCB 167	ND	7.23	7.23	1	0.00003	
PCBs 156 + 157	**26.2**	9.85	9.85	1	0.00003	0.000786
PCB 169	ND	7.87	7.87	1	0.03	
PCB 189	ND	11.9	11.9	1	0.00003	
	Total TEQ					0.00964

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ng/Kg
Lab Code:	EQ1800009-01	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	01/11/18 08:48
Prep Method:	Method Soxhlet	**Date Extracted:**	1/4/18
Sample Amount:	10.365g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P513666	**Blank File Name:**	P513666
ICAL Date:	07/26/17	**Cal Ver. File Name:**	P513663

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	ND	U	0.214	0.482			1
1,2,3,7,8-PeCDD	0.120**JK**		0.0815	2.41	2.33	1.001	1
1,2,3,4,7,8-HxCDD	0.0985**JK**		0.0557	2.41	0.95	1.000	1
1,2,3,6,7,8-HxCDD	ND	U	0.0613	2.41			1
1,2,3,7,8,9-HxCDD	0.113**JK**		0.0557	2.41	0.76	1.007	1
1,2,3,4,6,7,8-HpCDD	0.251**J**		0.103	2.41	1.18	1.000	1
OCDD	0.526**JK**		0.334	4.82	1.11	1.000	1
2,3,7,8-TCDF	ND	U	0.151	0.482			1
1,2,3,7,8-PeCDF	ND	U	0.141	2.41			1
2,3,4,7,8-PeCDF	0.408**JK**		0.145	2.41	1.20	1.001	1
1,2,3,4,7,8-HxCDF	0.336**J**		0.0531	2.41	1.43	1.000	1
1,2,3,6,7,8-HxCDF	0.346**JK**		0.0515	2.41	0.93	1.000	1
1,2,3,7,8,9-HxCDF	0.175**JK**		0.0636	2.41	0.88	1.000	1
2,3,4,6,7,8-HxCDF	0.371**JK**		0.0532	2.41	1.53	1.000	1
1,2,3,4,6,7,8-HpCDF	1.02**J**		0.0747	2.41	1.00	1.000	1
1,2,3,4,7,8,9-HpCDF	ND	U	0.107	2.41			1
OCDF	ND	U	0.442	4.82			1

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ng/Kg
Lab Code:	EQ1800009-01	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	01/11/18 08:48
Prep Method:	Method Soxhlet	**Date Extracted:**	1/4/18
Sample Amount:	10.365g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P513666	**Blank File Name:**	P513666
ICAL Date:	07/26/17	**Cal Ver. File Name:**	P513663

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	ND	U	0.214	0.482			1
Total Penta-Dioxins	ND	U	0.0815	2.41			1
Total Hexa-Dioxins	ND	U	0.0586	2.41			1
Total Hepta-Dioxins	0.632**J**		0.103	2.41	1.04		1
Total Tetra-Furans	ND	U	0.151	0.482			1
Total Penta-Furans	0.402**J**		0.143	2.41	1.34		1
Total Hexa-Furans	1.83**J**		0.0550	2.41	1.27		1
Total Hepta-Furans	1.02**J**		0.0872	2.41	1.00		1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	Percent
Lab Code:	EQ1800009-01	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	01/11/18 08:48
Prep Method:	Method Soxhlet	**Date Extracted:**	1/4/18
Sample Amount:	10.365g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P513666	**Blank File Name:**	P513666
ICAL Date:	07/26/17	**Cal Ver. File Name:**	P513663

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	905.971	45		25-164	0.78	1.022
13C-1,2,3,7,8-PeCDD	2000	1197.411	60		25-181	1.58	1.195
13C-1,2,3,4,7,8-HxCDD	2000	1365.706	68		32-141	1.28	0.991
13C-1,2,3,6,7,8-HxCDD	2000	1277.283	64		28-130	1.28	0.994
13C-1,2,3,4,6,7,8-HpCDD	2000	1189.305	59		23-140	1.07	1.072
13C-OCDD	4000	1486.079	37		17-157	0.91	1.154
13C-2,3,7,8-TCDF	2000	1105.168	55		24-169	0.79	0.993
13C-1,2,3,7,8-PeCDF	2000	1215.379	61		24-185	1.58	1.151
13C-2,3,4,7,8-PeCDF	2000	1202.253	60		21-178	1.58	1.185
13C-1,2,3,4,7,8-HxCDF	2000	1357.241	68		26-152	0.51	0.970
13C-1,2,3,6,7,8-HxCDF	2000	1363.059	68		26-123	0.53	0.973
13C-1,2,3,7,8,9-HxCDF	2000	1408.561	70		29-147	0.51	1.009
13C-2,3,4,6,7,8-HxCDF	2000	1396.272	70		28-136	0.51	0.987
13C-1,2,3,4,6,7,8-HpCDF	2000	1256.908	63		28-143	0.44	1.045
13C-1,2,3,4,7,8,9-HpCDF	2000	1254.034	63		26-138	0.45	1.085
37Cl-2,3,7,8-TCDD	800	460.880	58		35-197	NA	1.023

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ng/Kg
Lab Code:	EQ1700575-01	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/29/17 18:15
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	5.227g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305033	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305032

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 1	ND	U	22.5	22.5			1
PCB 2	ND	U	18.3	18.3			1
PCB 3	ND	U	19.2	19.2			1
PCB 4	ND	U	69.1	69.1			1
PCB 10	ND	U	28.8	28.8			1
PCB 9	ND	U	4.25	4.25			1
PCB 7	ND	U	3.92	3.92			1
PCB 6	ND	U	4.31	4.31			1
PCB 5	ND	U	4.32	4.32			1
PCB 8	ND	U	4.05	9.57			1
PCB 14	ND	U	4.33	4.33			1
PCB 11	ND	U	4.42	19.1			1
PCBs 12 + 13	ND	U	4.26	9.57			1
PCB 15	ND	U	4.21	4.21			1
PCB 19	ND	U	43.7	43.7			1
PCBs 18 + 30	ND	U	38.4	38.4			1
PCB 17	ND	U	44.4	44.4			1
PCB 27	ND	U	36.0	36.0			1
PCB 24	ND	U	32.8	32.8			1
PCB 16	ND	U	52.4	52.4			1
PCB 32	ND	U	33.3	33.3			1
PCB 34	ND	U	19.5	19.5			1
PCB 23	ND	U	17.5	17.5			1
PCBs 26 + 29	ND	U	18.0	18.0			1
PCB 25	ND	U	15.5	15.5			1
PCB 31	ND	U	18.5	18.5			1
PCBs 20 + 28	ND	U	17.7	17.7			1
PCBs 21 + 33	ND	U	17.3	17.3			1
PCB 22	ND	U	17.7	17.7			1
PCB 36	ND	U	17.7	17.7			1
PCB 39	ND	U	16.9	16.9			1
PCB 38	ND	U	20.1	20.1			1
PCB 35	ND	U	21.6	21.6			1
PCB 37	ND	U	28.9	28.9			1

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ng/Kg
Lab Code:	EQ1700575-01	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/29/17 18:15
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	5.227g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305033	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305032

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 54	ND	U	23.0	23.0			1
PCBs 50 + 53	ND	U	17.0	19.1			1
PCBs 45 + 51	ND	U	17.2	17.2			1
PCB 46	ND	U	19.4	19.4			1
PCB 52	ND	U	17.7	17.7			1
PCBs 43 + 73	ND	U	14.7	14.7			1
PCBs 49 + 69	ND	U	14.6	19.1			1
PCB 48	ND	U	16.3	16.3			1
PCBs 44 + 47 + 65	ND	U	15.0	19.1			1
PCBs 59 + 62 + 75	ND	U	12.9	19.1			1
PCB 42	ND	U	18.3	19.1			1
PCB 64	ND	U	12.9	12.9			1
PCBs 41 + 71 + 40	ND	U	18.2	19.1			1
PCB 72	ND	U	13.8	13.8			1
PCB 68	ND	U	12.5	12.5			1
PCB 57	ND	U	14.1	14.1			1
PCB 58	ND	U	12.7	12.7			1
PCB 67	ND	U	11.5	11.5			1
PCB 63	ND	U	13.6	13.6			1
PCBs 70 + 61 + 74 + 76	ND	U	12.8	38.3			1
PCB 66	ND	U	13.8	13.8			1
PCB 55	ND	U	13.6	13.6			1
PCB 56	ND	U	13.4	13.4			1
PCB 60	ND	U	12.9	12.9			1
PCB 80	ND	U	11.7	11.7			1
PCB 79	ND	U	12.8	12.8			1
PCB 78	ND	U	14.6	14.6			1
PCB 81	ND	U	22.1	22.1			1
PCB 77	ND	U	19.7	19.7			1
PCB 104	ND	U	21.0	21.0			1
PCB 96	ND	U	16.4	16.4			1
PCB 103	ND	U	19.4	19.4			1
PCB 94	ND	U	21.8	21.8			1
PCBs 95 + 93 + 100	ND	U	20.6	38.3			1

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ng/Kg
Lab Code:	EQ1700575-01	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/29/17 18:15
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	5.227g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305033	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305032

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCBs 98 + 102	ND	U	19.3	38.3			1
PCBs 88 + 91	ND	U	22.0	22.0			1
PCB 84	ND	U	24.1	24.1			1
PCB 89	ND	U	24.7	24.7			1
PCB 121	ND	U	15.8	15.8			1
PCB 92	ND	U	22.7	22.7			1
PCBs 90 + 101 + 113	ND	U	18.9	38.3			1
PCBs 83 + 99	ND	U	21.2	21.2			1
PCB 112	ND	U	15.6	15.6			1
PCBs 86 + 87 + 97 + 109 + 119 + 125	ND	U	18.3	38.3			1
PCBs 85 + 116 + 117	ND	U	17.9	19.1			1
PCBs 110 + 115	ND	U	15.7	19.1			1
PCB 82	ND	U	28.7	28.7			1
PCB 111	ND	U	16.0	16.0			1
PCB 120	ND	U	17.0	17.0			1
PCBs 108 + 124	ND	U	18.4	19.1			1
PCB 107	ND	U	19.5	19.5			1
PCB 123	ND	U	21.3	21.3			1
PCB 106	ND	U	19.0	19.0			1
PCB 118	ND	U	24.4	24.4			1
PCB 122	ND	U	21.5	21.5			1
PCB 114	ND	U	22.2	22.2			1
PCB 105	ND	U	22.6	22.6			1
PCB 127	ND	U	20.4	20.4			1
PCB 126	ND	U	25.4	25.4			1
PCB 155	ND	U	15.4	15.4			1
PCB 152	ND	U	12.0	12.0			1
PCB 150	ND	U	9.60	9.60			1
PCB 136	ND	U	11.4	11.4			1
PCB 145	ND	U	10.4	10.4			1
PCB 148	ND	U	14.8	14.8			1
PCBs 135 + 151 + 154	ND	U	13.4	19.1			1
PCB 144	ND	U	15.0	15.0			1
PCBs 147 + 149	ND	U	8.04	19.1			1
PCB 134	ND	U	13.6	19.1			1

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ng/Kg
Lab Code:	EQ1700575-01	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/29/17 18:15
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	5.227g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305033	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305032

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 143	ND	U	7.26	19.1			1
PCBs 139 + 140	ND	U	8.17	19.1			1
PCB 131	ND	U	9.61	9.61			1
PCB 142	ND	U	9.52	9.57			1
PCB 132	ND	U	9.59	9.59			1
PCB 133	ND	U	9.98	9.98			1
PCB 165	ND	U	7.07	9.57			1
PCB 146	ND	U	8.22	9.57			1
PCB 161	ND	U	7.04	9.57			1
PCBs 153 + 168	ND	U	7.26	19.1			1
PCB 141	ND	U	8.70	9.57			1
PCB 130	ND	U	10.8	10.8			1
PCB 137	ND	U	8.87	9.57			1
PCB 164	ND	U	6.95	9.57			1
PCBs 129 + 138 + 163	ND	U	9.90	38.3			1
PCB 160	ND	U	5.00	38.3			1
PCB 158	ND	U	6.20	9.57			1
PCBs 128 + 166	ND	U	8.05	19.1			1
PCB 159	ND	U	14.4	14.4			1
PCB 162	ND	U	12.9	12.9			1
PCB 167	ND	U	13.3	13.3			1
PCBs 156 + 157	ND	U	19.8	19.8			1
PCB 169	ND	U	15.0	15.0			1
PCB 188	ND	U	18.5	18.5			1
PCB 179	ND	U	13.2	13.2			1
PCB 184	ND	U	11.6	11.6			1
PCB 176	ND	U	13.5	13.5			1
PCB 186	ND	U	12.5	12.5			1
PCB 178	ND	U	17.9	17.9			1
PCB 175	ND	U	17.3	17.3			1
PCB 187	ND	U	15.1	15.1			1
PCB 182	ND	U	15.6	15.6			1
PCB 183 + 185	ND	U	20.0	20.0			1
PCB 174	ND	U	20.1	20.1			1
PCB 177	ND	U	23.1	23.1			1

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ng/Kg
Lab Code:	EQ1700575-01	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/29/17 18:15
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	5.227g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305033	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305032

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 181	ND	U	19.7	19.7			1
PCBs 171 + 173	ND	U	22.2	22.2			1
PCB 172	ND	U	22.8	22.8			1
PCB 192	ND	U	16.4	16.4			1
PCBs 180 + 193	ND	U	17.1	19.1			1
PCB 191	ND	U	17.0	17.0			1
PCB 170	ND	U	23.9	23.9			1
PCB 190	ND	U	16.4	16.4			1
PCB 189	ND	U	18.6	18.6			1
PCB 202	ND	U	21.1	21.1			1
PCB 201	ND	U	17.1	17.1			1
PCB 204	ND	U	16.7	16.7			1
PCB 197	ND	U	15.6	19.1			1
PCB 200	ND	U	17.1	19.1			1
PCBs 198 + 199	ND	U	22.1	22.1			1
PCB 196	ND	U	23.0	23.0			1
PCB 203	ND	U	19.6	19.6			1
PCB 195	ND	U	24.8	24.8			1
PCB 194	ND	U	23.8	23.8			1
PCB 205	ND	U	19.1	19.1			1
PCB 208	ND	U	19.0	19.0			1
PCB 207	ND	U	18.8	18.8			1
PCB 206	ND	U	16.1	16.1			1
PCB 209	ND	U	16.3	16.3			1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ng/Kg
Lab Code:	EQ1700575-01	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/29/17 18:15
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	5.227g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305033	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305032

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total MonoCB	ND	U	18.3	18.3			1
Total DiCB	ND	U	3.92	19.1			1
Total TriCB	ND	U	15.5	15.5			1
Total TetraCB	ND	U	11.5	38.3			1
Total PentaCB	ND	U	15.6	38.3			1
Total HexaCB	ND	U	5.00	38.3			1
Total HeptaCB	ND	U	11.6	19.1			1
Total OctaCB	ND	U	15.6	19.1			1
Total NonaCB	ND	U	16.1	16.1			1
Total PCBs	ND	U	3.92	38.3			1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	Percent
Lab Code:	EQ1700575-01	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/29/17 18:15
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	5.227g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305033	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305032

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
PCB 1L	2000	1016.968	51		5-145	2.81	0.740
PCB 3L	2000	939.413	47		5-145	3.23	0.870
PCB 4L	2000	573.289	29		5-145	1.62	0.884
PCB 15L	2000	966.374	48		5-145	1.59	1.216
PCB 19L	2000	676.373	34		5-145	1.01	1.062
PCB 37L	2000	905.670	45		5-145	1.02	1.083
PCB 54L	2000	569.376	28		5-145	0.84	0.837
PCB 81L	2000	1078.724	54		10-145	0.85	1.322
PCB 77L	2000	1054.119	53		10-145	0.72	1.343
PCB 104L	2000	737.363	37		10-145	1.71	0.831
PCB 123L	2000	1555.266	78		10-145	1.64	1.133
PCB 118L	2000	1419.695	71		10-145	1.54	1.142
PCB 114L	2000	1494.955	75		10-145	1.56	1.157
PCB 105L	2000	1537.913	77		10-145	1.54	1.178
PCB 126L	2000	1565.449	78		10-145	1.73	1.265
PCB 155L	2000	706.326	35		10-145	1.33	0.805
PCB 167L	2000	1524.395	76		10-145	1.17	1.068
PCBs 156L + 157L	4000	3111.768	78		10-145	1.29	1.097
PCB 169L	2000	1676.921	84		10-145	1.37	1.171
PCB 188L	2000	919.624	46		10-145	1.19	0.736
PCB 189L	2000	1684.247	84		10-145	1.06	0.964
PCB 202L	2000	1050.570	53		10-145	1.01	0.833
PCB 205L	2000	1384.000	69		10-145	0.87	1.008
PCB 208L	2000	914.575	46		10-145	0.70	0.952
PCB 206L	2000	1748.986	87		10-145	0.82	1.039
PCB 209L	2000	1632.163	82		10-145	1.14	1.066
PCB 28L	2000	1498.060	75		5-145	0.95	0.934
PCB 111L	2000	1103.172	55		10-145	1.69	1.075
PCB 178L	2000	1030.246	52		10-145	1.14	1.008

Accuracy & Precision

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Analyzed:**	01/12/18
Sample Matrix:	Sediment	**Date Extracted:**	01/04/18

Duplicate Lab Control Sample Summary
Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Units:**	ng/Kg
Prep Method:	Method Soxhlet	**Basis:**	Dry
		Analysis Lot:	576975

	Lab Control Sample EQ1800009-02			Duplicate Lab Control Sample EQ1800009-03					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
1,2,3,4,6,7,8-HpCDD	89.6	94.6	95	90.1	96.8	93	70-140	<1	50
1,2,3,4,7,8-HxCDD	82.9	94.6	88	83.3	96.8	86	70-164	<1	50
1,2,3,6,7,8-HxCDD	88.9	94.6	94	91.4	96.8	94	76-134	3	50
1,2,3,7,8,9-HxCDD	86.4	94.6	91	91.1	96.8	94	64-162	5	50
1,2,3,7,8-PeCDD	94.1	94.6	99	95.6	96.8	99	70-142	2	50
2,3,7,8-TCDD	21.3	18.9	112	21.5	19.4	111	67-158	1	50
OCDD	194	189	103	200	194	103	78-144	3	50
1,2,3,4,6,7,8-HpCDF	92.5	94.6	98	93.0	96.8	96	82-122	<1	50
1,2,3,4,7,8,9-HpCDF	92.4	94.6	98	93.3	96.8	96	78-138	<1	50
1,2,3,4,7,8-HxCDF	95.3	94.6	101	98.1	96.8	101	72-134	3	50
1,2,3,6,7,8-HxCDF	95.5	94.6	101	90.4	96.8	93	84-130	5	50
1,2,3,7,8,9-HxCDF	82.9	94.6	88	85.9	96.8	89	78-130	4	50
1,2,3,7,8-PeCDF	84.3	94.6	89	82.6	96.8	85	80-134	2	50
2,3,4,6,7,8-HxCDF	92.3	94.6	98	94.0	96.8	97	70-156	2	50
2,3,4,7,8-PeCDF	87.7	94.6	93	88.7	96.8	92	68-160	1	50
2,3,7,8-TCDF	17.9	18.9	95	19.3	19.4	100	75-158	7	50
OCDF	224	189	119	228	194	118	63-170	1	50

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1800009-02	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	01/12/18 18:57
Prep Method:	Method Soxhlet	**Date Extracted:**	1/4/18
Sample Amount:	10.567g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P513697	**Blank File Name:**	P513666
ICAL Date:	07/26/17	**Cal Ver. File Name:**	P513686

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	21.3		0.276	0.473	0.75	1.001	1
1,2,3,7,8-PeCDD	94.1		0.0624	2.37	1.56	1.000	1
1,2,3,4,7,8-HxCDD	82.9		0.0806	2.37	1.22	1.000	1
1,2,3,6,7,8-HxCDD	88.9		0.0882	2.37	1.26	1.000	1
1,2,3,7,8,9-HxCDD	86.4		0.0804	2.37	1.22	1.007	1
1,2,3,4,6,7,8-HpCDD	89.6		0.0626	2.37	1.04	1.000	1
OCDD	194		0.169	4.73	0.89	1.000	1
2,3,7,8-TCDF	17.9		0.152	0.473	0.72	1.001	1
1,2,3,7,8-PeCDF	84.3		0.107	2.37	1.41	1.001	1
2,3,4,7,8-PeCDF	87.7		0.110	2.37	1.40	1.001	1
1,2,3,4,7,8-HxCDF	95.3		0.0737	2.37	1.14	1.000	1
1,2,3,6,7,8-HxCDF	95.5		0.0735	2.37	1.19	1.000	1
1,2,3,7,8,9-HxCDF	82.9		0.0877	2.37	1.08	1.000	1
2,3,4,6,7,8-HxCDF	92.3		0.0736	2.37	1.06	1.000	1
1,2,3,4,6,7,8-HpCDF	92.5		0.111	2.37	0.97	1.000	1
1,2,3,4,7,8,9-HpCDF	92.4		0.156	2.37	0.98	1.000	1
OCDF	224		0.224	4.73	0.88	1.005	1

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1800009-02	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	01/12/18 18:57
Prep Method:	Method Soxhlet	**Date Extracted:**	1/4/18
Sample Amount:	10.567g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P513697	**Blank File Name:**	P513666
ICAL Date:	07/26/17	**Cal Ver. File Name:**	P513686

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	21.3		0.276	0.473	0.75		1
Total Penta-Dioxins	94.1		0.0624	2.37	1.56		1
Total Hexa-Dioxins	258		0.0845	2.37	1.22		1
Total Hepta-Dioxins	89.6		0.0626	2.37	1.04		1
Total Tetra-Furans	18.1		0.152	0.473	0.72		1
Total Penta-Furans	173		0.108	2.37	1.41		1
Total Hexa-Furans	366		0.0768	2.37	1.14		1
Total Hepta-Furans	185		0.128	2.37	0.97		1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	Percent
Lab Code:	EQ1800009-02	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	01/12/18 18:57
Prep Method:	Method Soxhlet	**Date Extracted:**	1/4/18
Sample Amount:	10.567g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P513697	**Blank File Name:**	P513666
ICAL Date:	07/26/17	**Cal Ver. File Name:**	P513686

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	1013.381	51		25-164	0.79	1.023
13C-1,2,3,7,8-PeCDD	2000	1349.919	67		25-181	1.57	1.199
13C-1,2,3,4,7,8-HxCDD	2000	1548.401	77		32-141	1.26	0.991
13C-1,2,3,6,7,8-HxCDD	2000	1474.265	74		28-130	1.25	0.994
13C-1,2,3,4,6,7,8-HpCDD	2000	1523.293	76		23-140	1.05	1.072
13C-OCDD	4000	2126.555	53		17-157	0.89	1.155
13C-2,3,7,8-TCDF	2000	1146.320	57		24-169	0.79	0.993
13C-1,2,3,7,8-PeCDF	2000	1266.384	63		24-185	1.53	1.153
13C-2,3,4,7,8-PeCDF	2000	1245.441	62		21-178	1.57	1.188
13C-1,2,3,4,7,8-HxCDF	2000	1278.768	64		26-152	0.51	0.969
13C-1,2,3,6,7,8-HxCDF	2000	1298.658	65		26-123	0.50	0.972
13C-1,2,3,7,8,9-HxCDF	2000	1363.045	68		29-147	0.50	1.009
13C-2,3,4,6,7,8-HxCDF	2000	1363.653	68		28-136	0.50	0.987
13C-1,2,3,4,6,7,8-HpCDF	2000	1511.966	76		28-143	0.44	1.045
13C-1,2,3,4,7,8,9-HpCDF	2000	1498.124	75		26-138	0.44	1.086
37Cl-2,3,7,8-TCDD	800	495.470	62		35-197	NA	1.024

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1800009-03	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	01/12/18 19:46
Prep Method:	Method Soxhlet	**Date Extracted:**	1/4/18
Sample Amount:	10.326g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P513698	**Blank File Name:**	P513666
ICAL Date:	07/26/17	**Cal Ver. File Name:**	P513686

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
2,3,7,8-TCDD	21.5		0.657	0.657	0.82	1.001	1
1,2,3,7,8-PeCDD	95.6		0.146	2.42	1.57	1.001	1
1,2,3,4,7,8-HxCDD	83.3		0.127	2.42	1.20	1.000	1
1,2,3,6,7,8-HxCDD	91.4		0.139	2.42	1.24	1.000	1
1,2,3,7,8,9-HxCDD	91.1		0.127	2.42	1.19	1.007	1
1,2,3,4,6,7,8-HpCDD	90.1		0.105	2.42	1.04	1.000	1
OCDD	200		0.230	4.84	0.88	1.000	1
2,3,7,8-TCDF	19.3		0.452	0.484	0.66	1.001	1
1,2,3,7,8-PeCDF	82.6		0.193	2.42	1.34	1.001	1
2,3,4,7,8-PeCDF	88.7		0.189	2.42	1.41	1.001	1
1,2,3,4,7,8-HxCDF	98.1		0.0924	2.42	1.22	1.000	1
1,2,3,6,7,8-HxCDF	90.4		0.0855	2.42	1.09	1.000	1
1,2,3,7,8,9-HxCDF	85.9		0.101	2.42	1.15	1.000	1
2,3,4,6,7,8-HxCDF	94.0		0.0876	2.42	1.09	1.000	1
1,2,3,4,6,7,8-HpCDF	93.0		0.158	2.42	0.96	1.000	1
1,2,3,4,7,8,9-HpCDF	93.3		0.207	2.42	0.94	1.000	1
OCDF	228		0.335	4.84	0.87	1.005	1

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1800009-03	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	01/12/18 19:46
Prep Method:	Method Soxhlet	**Date Extracted:**	1/4/18
Sample Amount:	10.326g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P513698	**Blank File Name:**	P513666
ICAL Date:	07/26/17	**Cal Ver. File Name:**	P513686

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total Tetra-Dioxins	21.5		0.657	0.657	0.82		1
Total Penta-Dioxins	96.2		0.146	2.42	1.57		1
Total Hexa-Dioxins	266		0.134	2.42	1.20		1
Total Hepta-Dioxins	90.1		0.105	2.42	1.04		1
Total Tetra-Furans	19.3		0.452	0.484	0.66		1
Total Penta-Furans	172		0.191	2.42	1.38		1
Total Hexa-Furans	368		0.0911	2.42	1.22		1
Total Hepta-Furans	186		0.176	2.42	0.96		1

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	Percent
Lab Code:	EQ1800009-03	**Basis:**	Dry

Polychlorinated Dibenzodioxins and Polychlorinated Dibenzofurans by HRGC/HRMS

Analysis Method:	1613B	**Date Analyzed:**	01/12/18 19:46
Prep Method:	Method Soxhlet	**Date Extracted:**	1/4/18
Sample Amount:	10.326g	**Instrument Name:**	E-HRMS-07
		GC Column:	DB-5MSUI
Data File Name:	P513698	**Blank File Name:**	P513666
ICAL Date:	07/26/17	**Cal Ver. File Name:**	P513686

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
13C-2,3,7,8-TCDD	2000	772.602	39		25-164	0.80	1.023
13C-1,2,3,7,8-PeCDD	2000	1272.785	64		25-181	1.56	1.199
13C-1,2,3,4,7,8-HxCDD	2000	1354.831	68		32-141	1.26	0.991
13C-1,2,3,6,7,8-HxCDD	2000	1297.526	65		28-130	1.24	0.994
13C-1,2,3,4,6,7,8-HpCDD	2000	1656.231	83		23-140	1.05	1.072
13C-OCDD	4000	2783.246	70		17-157	0.88	1.155
13C-2,3,7,8-TCDF	2000	826.677	41		24-169	0.76	0.993
13C-1,2,3,7,8-PeCDF	2000	1132.567	57		24-185	1.58	1.153
13C-2,3,4,7,8-PeCDF	2000	1154.639	58		21-178	1.59	1.188
13C-1,2,3,4,7,8-HxCDF	2000	1035.737	52		26-152	0.50	0.969
13C-1,2,3,6,7,8-HxCDF	2000	1128.532	56		26-123	0.50	0.972
13C-1,2,3,7,8,9-HxCDF	2000	1230.211	62		29-147	0.52	1.009
13C-2,3,4,6,7,8-HxCDF	2000	1140.224	57		28-136	0.50	0.987
13C-1,2,3,4,6,7,8-HpCDF	2000	1537.309	77		28-143	0.44	1.045
13C-1,2,3,4,7,8,9-HpCDF	2000	1670.538	84		26-138	0.43	1.086
37Cl-2,3,7,8-TCDD	800	385.081	48		35-197	NA	1.024

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Analyzed:**	12/30/17
Sample Matrix:	Sediment	**Date Extracted:**	12/27/17

Duplicate Lab Control Sample Summary
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Units:**	ng/Kg
Prep Method:	Method	**Basis:**	Dry
		Analysis Lot:	576377

	Lab Control Sample EQ1700575-02			Duplicate Lab Control Sample EQ1700575-03					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
PCB 1	217	195	111	212	181	117	60-135	2	50
PCB 2	230	195	118	210	181	116	60-135	9	50
PCB 3	227	195	116	189	181	105	60-135	18	50
PCB 10	185	195	94	178	181	99	60-135	3	50
PCB 11	206	195	105	170	181	94	60-135	19	50
PCB 14	209	195	107	195	181	108	60-135	7	50
PCB 15	214	195	109	191	181	106	60-135	11	50
PCB 4	250	195	128	201	181	112	60-135	21	50
PCB 5	188	195	96	163	181	90	60-135	15	50
PCB 6	214	195	109	184	181	102	60-135	15	50
PCB 7	195	195	100	178	181	99	60-135	9	50
PCB 8	218	195	112	203	181	112	60-135	7	50
PCB 9	213	195	109	201	181	111	60-135	6	50
PCBs 12 + 13	340	391	87	345	361	96	60-135	2	50
PCB 16	190	195	97	128	181	71	60-135	39	50
PCB 17	192	195	98	131	181	72	60-135	38	50
PCB 19	237	195	121	157	181	87	60-135	40	50
PCB 22	174 K	195	89	138	181	77	60-135	23	50
PCB 23	189	195	97	127	181	70	60-135	39	50
PCB 24	178	195	91	115	181	64	60-135	43	50
PCB 25	167	195	85	122	181	68	60-135	31	50
PCB 27	203	195	104	143	181	79	60-135	35	50
PCB 31	220	195	113	163	181	91	60-135	30	50
PCB 32	202	195	103	144	181	80	60-135	33	50
PCB 34	205	195	105	142 K	181	79	60-135	36	50
PCB 35	231	195	118	166	181	92	60-135	33	50
PCB 36	195 K	195	100	148	181	82	60-135	27	50
PCB 37	174 K	195	89	128 K	181	71	60-135	30	50
PCB 38	209	195	107	144	181	80	60-135	37	50
PCB 39	198	195	101	126	181	70	60-135	44	50
PCBs 18 + 30	390	391	100	280	361	78	60-135	33	50
PCBs 20 + 28	394	391	101	301	361	83	60-135	27	50
PCBs 21 + 33	367 K	391	94	250	361	69	60-135	38	50
PCBs 26 + 29	423	391	108	287	361	79	60-135	38	50
PCB 42	177 K	391	45 *	177	361	49 *	60-135	<1	50
PCB 46	388	391	99	357	361	99	60-135	8	50
PCB 48	277	391	71	269	361	74	60-135	3	50
PCB 52	408	391	104	318 K	361	88	60-135	25	50

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Analyzed:**	12/30/17
Sample Matrix:	Sediment	**Date Extracted:**	12/27/17

Duplicate Lab Control Sample Summary
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Units:**	ng/Kg
Prep Method:	Method	**Basis:**	Dry
		Analysis Lot:	576377

	Lab Control Sample EQ1700575-02			Duplicate Lab Control Sample EQ1700575-03					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
PCB 54	531	391	136 *	532	361	147 *	60-135	<1	50
PCB 55	279	391	71	268	361	74	60-135	4	50
PCB 56	364	391	93	321	361	89	60-135	13	50
PCB 57	194	391	50 *	184	361	51 *	60-135	5	50
PCB 58	159	391	41 *	152	361	42 *	60-135	4	50
PCB 60	338	391	87	308	361	85	60-135	9	50
PCB 63	185	391	47 *	190	361	53 *	60-135	3	50
PCB 64	194	391	50 *	142 K	361	39 *	60-135	31	50
PCB 66	317	391	81	304	361	84	60-135	4	50
PCB 67	157	391	40 *	154	361	43 *	60-135	2	50
PCB 68	159	391	41 *	149	361	41 *	60-135	6	50
PCB 72	214	391	55 *	194	361	54 *	60-135	10	50
PCB 77	478	391	122	429	361	119	60-135	11	50
PCB 78	419	391	107	368	361	102	60-135	13	50
PCB 79	403	391	103	376	361	104	60-135	7	50
PCB 80	343	391	88	319	361	88	60-135	7	50
PCB 81	476	391	122	418	361	116	60-135	13	50
PCBs 41 + 71 + 40	758	1170	65	677	1080	62	60-135	11	50
PCBs 43 + 73	676	782	87	691	722	96	60-135	2	50
PCBs 44 + 47 + 65	948	1170	81	926	1080	85	60-135	2	50
PCBs 45 + 51	755	782	97	709	722	98	60-135	6	50
PCBs 49 + 69	686	782	88	657	722	91	60-135	4	50
PCBs 50 + 53	723	782	92	692	722	96	60-135	4	50
PCBs 59 + 62 + 75	948	1170	81	890	1080	82	60-135	6	50
PCBs 70 + 61 + 74 + 76	1090	1560	70	1050	1440	73	60-135	4	50
PCB 103	395	391	101	348	361	96	60-135	13	50
PCB 104	500	391	128	493	361	137 *	60-135	1	50
PCB 105	480	391	123	449	361	124	60-135	7	50
PCB 106	413	391	106	412	361	114	60-135	<1	50
PCB 107	444	391	114	372	361	103	60-135	18	50
PCB 111	359	391	92	320	361	88	60-135	12	50
PCB 112	353	391	90	315	361	87	60-135	11	50
PCB 114	426	391	109	363	361	100	60-135	16	50
PCB 118	384	391	98	387	361	107	60-135	<1	50
PCB 120	398	391	102	362	361	100	60-135	10	50
PCB 121	320	391	82	281	361	78	60-135	13	50
PCB 122	416	391	106	421	361	116	60-135	1	50
PCB 123	388	391	99	363	361	101	60-135	6	50
PCB 126	449	391	115	420	361	116	60-135	7	50
PCB 127	451	391	115	425	361	118	60-135	6	50

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Analyzed:**	12/30/17
Sample Matrix:	Sediment	**Date Extracted:**	12/27/17

Duplicate Lab Control Sample Summary
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Units:**	ng/Kg
Prep Method:	Method	**Basis:**	Dry
		Analysis Lot:	576377

	Lab Control Sample EQ1700575-02			Duplicate Lab Control Sample EQ1700575-03					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
PCB 82	419	391	107	409	361	113	60-135	2	50
PCB 84	401	391	103	368	361	102	60-135	9	50
PCB 89	408	391	104	380	361	105	60-135	7	50
PCB 92	406	391	104	364	361	101	60-135	11	50
PCB 94	353	391	90	324	361	90	60-135	8	50
PCB 96	398	391	102	389	361	108	60-135	3	50
PCBs 108 + 124	787	782	101	714	722	99	60-135	10	50
PCBs 110 + 115	729	782	93	662	722	92	60-135	10	50
PCBs 83 + 99	720	782	92	684	722	95	60-135	5	50
PCBs 85 + 116 + 117	1090	1170	93	975	1080	90	60-135	11	50
PCBs 86 + 87 + 97 + 109 + 119 + 125	2220	2350	95	2010	2170	93	60-135	10	50
PCBs 88 + 91	749	782	96	707	722	98	60-135	6	50
PCBs 90 + 101 + 113	1100	1170	94	1020	1080	94	60-135	8	50
PCBs 95 + 93 + 100	1090	1170	93	979	1080	90	60-135	11	50
PCBs 98 + 102	672	782	86	636	722	88	60-135	6	50
PCB 130	424	391	108	410	361	113	60-135	3	50
PCB 131	368	391	94	326	361	90	60-135	12	50
PCB 132	368	391	94	342	361	95	60-135	7	50
PCB 133	420	391	108	385	361	107	60-135	9	50
PCB 134	363	391	93	518	361	143 *	60-135	35	50
PCB 136	387	391	99	381	361	105	60-135	2	50
PCB 137	322	391	82	306 K	361	85	60-135	5	50
PCB 141	379	391	97	362	361	100	60-135	5	50
PCB 142	421	391	108	378	361	105	60-135	11	50
PCB 143	373	391	96	269	361	74	60-135	32	50
PCB 144	424	391	109	375	361	104	60-135	12	50
PCB 145	331	391	85	328	361	91	60-135	1	50
PCB 146	417	391	107	358	361	99	60-135	15	50
PCB 148	371	391	95	355	361	98	60-135	4	50
PCB 150	374	391	96	322	361	89	60-135	15	50
PCB 152	371	391	95	386	361	107	60-135	4	50
PCB 155	479	391	123	460	361	127	60-135	4	50
PCB 158	388	391	99	353	361	98	60-135	10	50
PCB 159	393 K	391	101	397	361	110	60-135	<1	50
PCB 160	333	391	85	372	361	103	60-135	11	50
PCB 161	403	391	103	375	361	104	60-135	7	50
PCB 162	347	391	89	347	361	96	60-135	<1	50
PCB 164	386	391	99	342	361	95	60-135	12	50
PCB 165	364	391	93	333	361	92	60-135	9	50
PCB 167	419	391	107	355 K	361	98	60-135	17	50

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Analyzed:**	12/30/17
Sample Matrix:	Sediment	**Date Extracted:**	12/27/17

Duplicate Lab Control Sample Summary
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Units:**	ng/Kg
Prep Method:	Method	**Basis:**	Dry
		Analysis Lot:	576377

	Lab Control Sample EQ1700575-02			Duplicate Lab Control Sample EQ1700575-03					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
PCB 169	411	391	105	362 K	361	100	60-135	12	50
PCBs 128 + 166	793	782	101	724	722	100	60-135	9	50
PCBs 129 + 138 + 163	1150	1170	98	972	1080	90	60-135	17	50
PCBs 135 + 151 + 154	1090	1170	93	1020	1080	94	60-135	7	50
PCBs 139 + 140	726	782	93	679	722	94	60-135	7	50
PCBs 147 + 149	746	782	95	666	722	92	60-135	11	50
PCBs 153 + 168	773	782	99	715	722	99	60-135	8	50
PCBs 156 + 157	829	782	106	782	722	108	60-135	6	50
PCB 170	408	391	104	351	361	97	60-135	15	50
PCB 172	434	391	111	392	361	109	60-135	10	50
PCB 174	429	391	110	377	361	104	60-135	13	50
PCB 175	404	391	103	380	361	105	60-135	6	50
PCB 176	413	391	106	375	361	104	60-135	10	50
PCB 177	442	391	113	378	361	105	60-135	15	50
PCB 178	406	391	104	375	361	104	60-135	8	50
PCB 179	384	391	98	364	361	101	60-135	5	50
PCB 181	354	391	91	324	361	90	60-135	9	50
PCB 182	369	391	94	361	361	100	60-135	2	50
PCB 183 + 185	798	782	102	681	722	94		16	
PCB 184	348	391	89	308	361	85	60-135	12	50
PCB 186	338	391	86	315	361	87	60-135	7	50
PCB 187	372	391	95	331	361	92	60-135	12	50
PCB 188	492	391	126	466	361	129	60-135	5	50
PCB 189	437	391	112	375 K	361	104	60-135	15	50
PCB 190	371	391	95	344	361	95	60-135	7	50
PCB 191	415	391	106	402	361	111	60-135	3	50
PCB 192	372	391	95	327	361	90	60-135	13	50
PCBs 171 + 173	819	782	105	730	722	101	60-135	11	50
PCBs 180 + 193	747	782	96	684	722	95	60-135	9	50
PCB 194	785	586	134	743	542	137 *	60-135	5	50
PCB 195	772	586	132	682	542	126	60-135	12	50
PCB 196	727	586	124	641	542	118	60-135	13	50
PCB 197	589	586	100	519	542	96	60-135	13	50
PCB 200	683	586	117	605	542	112	60-135	12	50
PCB 201	681	586	116	610	542	113	60-135	11	50
PCB 202	719	586	123	698	542	129	60-135	3	50
PCB 203	567	586	97	528	542	97	60-135	7	50
PCB 204	685	586	117	605	542	112	60-135	12	50
PCB 205	747	586	127	669	542	123	60-135	11	50

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QA/QC Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Analyzed:**	12/30/17
Sample Matrix:	Sediment	**Date Extracted:**	12/27/17

Duplicate Lab Control Sample Summary
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Units:**	ng/Kg
Prep Method:	Method	**Basis:**	Dry
		Analysis Lot:	576377

	Lab Control Sample EQ1700575-02			Duplicate Lab Control Sample EQ1700575-03					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
PCBs 198 + 199	1190	1170	101	1110	1080	102	60-135	7	50
PCB 206	670	586	114	595	542	110	60-135	12	50
PCB 207	670	586	114	599	542	111	60-135	11	50
PCB 208	792	586	135	711	542	131	60-135	11	50
PCB 209	731	586	125	657	542	121	60-135	11	50

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1700575-02	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 16:23
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	5.117g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305053	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 1	217		22.7	22.7	2.90	1.001	1
PCB 2	230		18.1	18.1	3.08	0.989	1
PCB 3	227		13.6	13.6	2.70	1.001	1
PCB 4	250		36.6	36.6	-	1.000	1
PCB 10	185		19.3	19.3	-	1.011	1
PCB 9	213		8.00	8.00	-	1.130	1
PCB 7	195		7.29	7.29	-	1.139	1
PCB 6	214		7.74	7.74	-	1.155	1
PCB 5	188		7.79	7.79	-	1.174	1
PCB 8	218		7.40	9.77	-	1.182	1
PCB 14	209		8.06	8.06	-	0.931	1
PCB 11	206		8.06	19.5	-	0.972	1
PCBs 12 + 13	340		7.61	9.77	-	0.986	1
PCB 15	214		8.18	8.18	-	1.001	1
PCB 19	237		28.2	28.2	1.01	1.001	1
PCBs 18 + 30	390		22.3	22.3	1.16	1.089	1
PCB 17	192		25.8	25.8	1.01	1.116	1
PCB 27	203		22.0	22.0	1.09	1.127	1
PCB 24	178		17.2	17.2	1.12	1.134	1
PCB 16	190		28.4	28.4	1.00	1.142	1
PCB 32	202		18.4	18.4	1.03	1.167	1
PCB 34	205		16.3	16.3	0.88	1.227	1
PCB 23	189		14.0	14.0	1.02	1.234	1
PCBs 26 + 29	423		14.8	14.8	0.91	1.251	1
PCB 25	167		12.2	12.2	0.95	0.844	1
PCB 31	220		14.8	14.8	1.00	0.854	1
PCBs 20 + 28	394		15.8	15.8	1.04	0.864	1
PCBs 21 + 33	367	**K**	13.9	13.9	0.83	0.872	1
PCB 22	174	**K**	15.4	15.4	0.85	0.886	1
PCB 36	195	**K**	14.8	14.8	0.84	0.937	1
PCB 39	198		13.7	13.7	0.89	0.949	1
PCB 38	209		16.8	16.8	0.96	0.969	1
PCB 35	231		17.6	17.6	0.96	0.985	1
PCB 37	174	**K**	19.7	19.7	0.84	1.001	1

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1700575-02	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 16:23
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	5.117g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305053	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 54	531		14.9	14.9	0.84	1.001	1
PCBs 50 + 53	723		11.6	19.5	0.76	1.092	1
PCBs 45 + 51	755		12.1	12.1	0.78	1.124	1
PCB 46	388		14.2	14.2	0.82	1.138	1
PCB 52	408		14.3	14.3	0.72	1.196	1
PCBs 43 + 73	676		9.95	9.95	0.75	1.200	1
PCBs 49 + 69	686		10.5	19.5	0.74	1.216	1
PCB 48	277		12.6	12.6	0.78	1.228	1
PCBs 44 + 47 + 65	948		11.0	19.5	0.80	1.239	1
PCBs 59 + 62 + 75	948		9.55	19.5	0.73	1.252	1
PCB 42	177	**K**	15.1	19.5	0.98	1.262	1
PCBs 41 + 71 + 40	758		14.1	19.5	0.87	1.284	1
PCB 64	194		10.5	10.5	0.75	1.293	1
PCB 72	214		11.0	11.0	0.72	1.325	1
PCB 68	159		9.07	9.77	0.85	1.337	1
PCB 57	194		10.8	10.8	0.73	1.356	1
PCB 58	159		9.53	9.77	0.68	1.368	1
PCB 67	157		7.73	9.77	0.80	1.373	1
PCB 63	185		9.59	9.77	0.77	1.384	1
PCBs 70 + 61 + 74 + 76	1090		8.56	39.1	0.73	1.401	1
PCB 66	317		9.85	9.85	0.81	1.414	1
PCB 55	279		8.93	9.77	0.76	1.423	1
PCB 56	364		15.4	15.4	0.73	1.445	1
PCB 60	338		14.4	14.4	0.75	1.454	1
PCB 80	343		13.0	13.0	0.73	1.466	1
PCB 79	403		14.4	14.4	0.76	1.536	1
PCB 78	419		15.6	15.6	0.76	1.559	1
PCB 81	476		20.1	20.1	0.66	1.000	1
PCB 77	478		19.9	19.9	0.73	1.001	1
PCB 104	500		16.5	16.5	1.60	1.001	1
PCB 96	398		13.9	13.9	1.67	1.017	1
PCB 103	395		15.7	15.7	1.51	1.078	1
PCB 94	353		17.6	17.6	1.66	1.088	1
PCBs 95 + 93 + 100	1090		16.5	39.1	1.56	1.106	1

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1700575-02	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 16:23
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	5.117g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305053	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCBs 98 + 102	672		15.8	39.1	1.54	1.117	1
PCBs 88 + 91	749		17.6	17.6	1.49	1.130	1
PCB 84	401		19.8	19.8	1.63	1.144	1
PCB 89	408		20.5	20.5	1.60	1.160	1
PCB 121	320		18.1	18.1	1.57	1.168	1
PCB 92	406		24.0	24.0	1.71	1.184	1
PCBs 90 + 101 + 113	1100		19.7	39.1	1.59	1.203	1
PCBs 83 + 99	720		23.1	23.1	1.69	1.222	1
PCB 112	353		15.4	15.4	1.74	1.229	1
PCBs 86 + 87 + 97 + 109 + 119 + 125	2220		18.9	39.1	1.54	1.240	1
PCBs 85 + 116 + 117	1090		18.6	19.5	1.53	1.265	1
PCBs 110 + 115	729		15.5	19.5	1.54	1.274	1
PCB 82	419		30.1	30.1	1.58	1.286	1
PCB 111	359		16.3	16.3	1.50	1.294	1
PCB 120	398		16.7	16.7	1.56	1.310	1
PCBs 108 + 124	787		44.0	44.0	1.53	1.351	1
PCB 107	444		46.1	46.1	1.54	1.359	1
PCB 123	388		47.5	47.5	1.58	1.000	1
PCB 106	413		46.1	46.1	1.63	1.368	1
PCB 118	384		47.0	47.0	1.72	1.000	1
PCB 122	416		51.2	51.2	1.53	1.387	1
PCB 114	426		47.8	47.8	1.53	1.001	1
PCB 105	480		50.6	50.6	1.48	1.000	1
PCB 127	451		48.1	48.1	1.46	1.465	1
PCB 126	449		57.1	57.1	1.53	1.000	1
PCB 155	479		8.04	8.04	1.15	1.000	1
PCB 152	371		7.28	9.77	1.21	1.011	1
PCB 150	374		6.11	9.77	1.30	1.014	1
PCB 136	387		7.06	9.77	1.30	1.028	1
PCB 145	331		6.51	9.77	1.21	1.035	1
PCB 148	371		9.00	9.77	1.36	1.074	1
PCBs 135 + 151 + 154	1090		7.89	19.5	1.25	1.098	1
PCB 144	424		8.67	9.77	1.16	1.110	1
PCBs 147 + 149	746		53.7	53.7	1.24	1.121	1
PCB 134	363		113	113	1.26	1.128	1

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1700575-02	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 16:23
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	5.117g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305053	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 143	373		42.5	42.5	1.23	1.130	1
PCBs 139 + 140	726		51.5	51.5	1.20	1.137	1
PCB 131	368		62.0	62.0	1.26	1.145	1
PCB 142	421		62.8	62.8	1.26	1.148	1
PCB 132	368		60.7	60.7	1.26	1.159	1
PCB 133	420		64.2	64.2	1.23	1.169	1
PCB 165	364		42.5	42.5	1.22	1.181	1
PCB 146	417		53.8	53.8	1.26	1.188	1
PCB 161	403		39.0	39.0	1.13	1.191	1
PCBs 153 + 168	773		42.6	42.6	1.20	1.206	1
PCB 141	379		53.0	53.0	1.15	1.213	1
PCB 130	424		66.6	66.6	1.20	1.225	1
PCB 137	322		52.0	52.0	1.15	1.230	1
PCB 164	386		39.0	39.0	1.21	1.235	1
PCBs 129 + 138 + 163	1150		59.3	59.3	1.16	1.243	1
PCB 160	333		27.6	39.1	1.18	1.246	1
PCB 158	388		36.9	36.9	1.40	1.253	1
PCBs 128 + 166	793		47.4	47.4	1.24	1.278	1
PCB 159	393	**K**	36.9	36.9	1.03	1.306	1
PCB 162	347		32.8	32.8	1.16	1.314	1
PCB 167	419		31.7	31.7	1.17	1.001	1
PCBs 156 + 157	829		45.6	45.6	1.15	1.000	1
PCB 169	411		38.8	38.8	1.10	1.000	1
PCB 188	492		8.34	8.34	1.06	1.001	1
PCB 179	384		6.40	9.77	1.04	1.011	1
PCB 184	348		5.70	9.77	1.05	1.022	1
PCB 176	413		6.44	9.77	1.11	1.033	1
PCB 186	338		5.92	9.77	1.07	1.045	1
PCB 178	406		8.58	9.77	1.11	1.076	1
PCB 175	404		8.24	9.77	1.04	1.092	1
PCB 187	372		7.42	9.77	1.10	1.098	1
PCB 182	369		7.34	9.77	1.08	1.103	1
PCB 183 + 185	798		18.5	19.5	1.03	1.113	1
PCB 174	429		18.5	18.5	1.03	1.121	1
PCB 177	442		20.3	20.3	1.01	1.132	1

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1700575-02	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 16:23
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	5.117g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305053	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 181	354		17.5	17.5	1.10	1.141	1
PCBs 171 + 173	819		19.9	19.9	1.02	1.147	1
PCB 172	434		20.4	20.4	0.99	0.906	1
PCB 192	372		14.5	14.5	1.05	0.911	1
PCBs 180 + 193	747		14.7	19.5	1.08	0.917	1
PCB 191	415		15.0	15.0	1.04	0.925	1
PCB 170	408		18.3	18.3	1.07	0.943	1
PCB 190	371		12.6	12.6	1.03	0.952	1
PCB 189	437		16.1	16.1	1.01	1.001	1
PCB 202	719		11.8	11.8	0.89	1.000	1
PCB 201	681		10.8	10.8	0.93	1.020	1
PCB 204	685		10.7	10.7	0.90	1.034	1
PCB 197	589		9.60	19.5	0.87	1.039	1
PCB 200	683		10.7	19.5	0.93	1.043	1
PCBs 198 + 199	1190		13.0	19.5	0.92	1.102	1
PCB 196	727		14.9	14.9	0.93	0.923	1
PCB 203	567		11.7	11.7	1.01	0.926	1
PCB 195	772		16.4	16.4	0.87	0.951	1
PCB 194	785		16.1	16.1	0.86	0.992	1
PCB 205	747		13.3	13.3	0.89	1.001	1
PCB 208	792		15.6	15.6	0.80	1.000	1
PCB 207	670		14.9	14.9	0.81	1.018	1
PCB 206	670		18.1	18.1	0.80	1.000	1
PCB 209	731		12.2	12.2	1.18	1.001	1

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1700575-02	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 16:23
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	5.117g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305053	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total MonoCB	674		13.6	13.6			1
Total DiCB	2430		7.29	19.5			1
Total TriCB	4740		12.2	12.2			1
Total TetraCB	13000		7.73	39.1			1
Total PentaCB	17700		13.9	39.1			1
Total HexaCB	16200		6.11	39.1			1
Total HeptaCB	8750		5.70	19.5			1
Total OctaCB	8140		9.60	19.5			1
Total NonaCB	2130		14.9	14.9			1

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	Percent
Lab Code:	EQ1700575-02	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 16:23
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	5.117g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305053	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
PCB 1L	2000	940.057	47		5-145	3.04	0.741
PCB 3L	2000	933.291	47		5-145	3.21	0.871
PCB 4L	2000	714.470	36		5-145	1.72	0.886
PCB 15L	2000	884.374	44		5-145	1.57	1.217
PCB 19L	2000	865.094	43		5-145	1.15	1.063
PCB 37L	2000	917.406	46		5-145	1.03	1.083
PCB 54L	2000	700.520	35		5-145	0.77	0.837
PCB 81L	2000	1101.592	55		10-145	0.81	1.322
PCB 77L	2000	990.609	50		10-145	0.80	1.342
PCB 104L	2000	869.167	43		10-145	1.69	0.831
PCB 123L	2000	1325.217	66		10-145	1.54	1.133
PCB 118L	2000	1234.976	62		10-145	1.55	1.142
PCB 114L	2000	1228.540	61		10-145	1.43	1.157
PCB 105L	2000	1205.981	60		10-145	1.64	1.178
PCB 126L	2000	1201.697	60		10-145	1.48	1.265
PCB 155L	2000	792.804	40		10-145	1.19	0.805
PCB 167L	2000	1201.139	60		10-145	1.40	1.068
PCBs 156L + 157L	4000	2392.094	60		10-145	1.16	1.096
PCB 169L	2000	1187.816	59		10-145	1.25	1.170
PCB 188L	2000	940.140	47		10-145	1.13	0.736
PCB 189L	2000	1401.036	70		10-145	1.05	0.963
PCB 202L	2000	1044.749	52		10-145	0.88	0.833
PCB 205L	2000	1185.315	59		10-145	0.89	1.008
PCB 208L	2000	903.152	45		10-145	0.89	0.952
PCB 206L	2000	1576.445	79		10-145	0.76	1.039
PCB 209L	2000	1458.611	73		10-145	1.26	1.067
PCB 28L	2000	1309.860	65		5-145	1.02	0.934
PCB 111L	2000	1157.606	58		10-145	1.53	1.075
PCB 178L	2000	1092.823	55		10-145	1.07	1.008

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1700575-03	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 17:26
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	5.537g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305054	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 1	212		16.2	16.2	3.03	1.002	1
PCB 2	210		12.6	12.6	3.03	0.989	1
PCB 3	189		9.29	9.29	2.94	1.001	1
PCB 4	201		31.2	31.2	-	1.002	1
PCB 10	178		16.6	16.6	-	1.012	1
PCB 9	201		4.64	4.64	-	1.131	1
PCB 7	178		4.23	4.23	-	1.140	1
PCB 6	184		4.49	4.49	-	1.156	1
PCB 5	163		4.51	4.51	-	1.175	1
PCB 8	203		4.29	9.03	-	1.183	1
PCB 14	195		4.67	4.67	-	0.931	1
PCB 11	170		4.67	18.1	-	0.972	1
PCBs 12 + 13	345		4.41	9.03	-	0.986	1
PCB 15	191		4.74	4.74	-	1.001	1
PCB 19	157		22.4	22.4	1.15	1.001	1
PCBs 18 + 30	280		16.4	16.4	1.09	1.088	1
PCB 17	131		19.0	19.0	1.10	1.115	1
PCB 27	143		16.2	16.2	1.17	1.127	1
PCB 24	115		12.6	12.6	1.10	1.134	1
PCB 16	128		20.8	20.8	1.05	1.142	1
PCB 32	144		13.5	13.5	1.02	1.167	1
PCB 34	142	**K**	14.0	14.0	0.86	1.227	1
PCB 23	127		12.0	12.0	0.94	1.234	1
PCBs 26 + 29	287		12.7	12.7	0.95	1.252	1
PCB 25	122		10.4	10.4	1.02	0.843	1
PCB 31	163		12.7	12.7	1.02	0.853	1
PCBs 20 + 28	301		13.6	13.6	0.93	0.864	1
PCBs 21 + 33	250		11.9	11.9	0.99	0.872	1
PCB 22	138		13.2	13.2	1.01	0.886	1
PCB 36	148		12.7	12.7	0.94	0.936	1
PCB 39	126		11.7	11.7	1.08	0.949	1
PCB 38	144		14.4	14.4	0.96	0.968	1
PCB 35	166		15.1	15.1	1.00	0.985	1
PCB 37	128	**K**	15.8	15.8	0.83	0.999	1

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Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1700575-03	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 17:26
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	5.537g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305054	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 54	532		13.0	13.0	0.86	1.001	1
PCBs 50 + 53	692		13.1	18.1	0.77	1.092	1
PCBs 45 + 51	709		13.7	13.7	0.74	1.124	1
PCB 46	357		16.0	16.0	0.74	1.137	1
PCB 52	318	**K**	16.1	16.1	0.63	1.195	1
PCBs 43 + 73	691		11.3	11.3	0.85	1.200	1
PCBs 49 + 69	657		11.8	18.1	0.77	1.211	1
PCB 48	269		14.2	14.2	0.74	1.228	1
PCBs 44 + 47 + 65	926		12.4	18.1	0.74	1.239	1
PCBs 59 + 62 + 75	890		10.8	18.1	0.78	1.251	1
PCB 42	177		17.0	18.1	0.69	1.261	1
PCBs 41 + 71 + 40	677		15.9	18.1	0.76	1.284	1
PCB 64	142	**K**	11.8	11.8	0.56	1.293	1
PCB 72	194		12.4	12.4	0.85	1.325	1
PCB 68	149		10.3	10.3	0.74	1.337	1
PCB 57	184		12.2	12.2	0.71	1.356	1
PCB 58	152		10.8	10.8	0.85	1.368	1
PCB 67	154		8.71	9.03	0.77	1.374	1
PCB 63	190		10.9	10.9	0.74	1.385	1
PCBs 70 + 61 + 74 + 76	1050		9.65	36.1	0.75	1.401	1
PCB 66	304		11.2	11.2	0.79	1.414	1
PCB 55	268		10.1	10.1	0.78	1.423	1
PCB 56	321		21.1	21.1	0.76	1.445	1
PCB 60	308		19.7	19.7	0.73	1.454	1
PCB 80	319		17.7	17.7	0.80	1.466	1
PCB 79	376		19.8	19.8	0.70	1.535	1
PCB 78	368		21.4	21.4	0.69	1.559	1
PCB 81	418		27.9	27.9	0.67	1.001	1
PCB 77	429		28.1	28.1	0.69	1.000	1
PCB 104	493		13.1	13.1	1.50	1.001	1
PCB 96	389		11.3	11.3	1.66	1.017	1
PCB 103	348		12.8	12.8	1.73	1.079	1
PCB 94	324		14.4	14.4	1.48	1.089	1
PCBs 95 + 93 + 100	979		13.5	36.1	1.53	1.106	1

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Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCBs 98 + 102	636		12.9	36.1	1.49	1.117	1
PCBs 88 + 91	707		14.3	14.3	1.51	1.135	1
PCB 84	368		16.1	16.1	1.72	1.144	1
PCB 89	380		16.7	16.7	1.75	1.160	1
PCB 121	281		13.9	13.9	1.57	1.168	1
PCB 92	364		18.4	18.4	1.73	1.185	1
PCBs 90 + 101 + 113	1020		15.1	36.1	1.69	1.204	1
PCBs 83 + 99	684		17.7	18.1	1.58	1.223	1
PCB 112	315		11.8	11.8	1.52	1.229	1
PCBs 86 + 87 + 97 + 109 + 119 + 125	2010		14.5	36.1	1.60	1.241	1
PCBs 85 + 116 + 117	975		14.3	18.1	1.54	1.266	1
PCBs 110 + 115	662		11.9	18.1	1.65	1.274	1
PCB 82	409		23.1	23.1	1.46	1.287	1
PCB 111	320		12.5	12.5	1.53	1.295	1
PCB 120	362		12.8	12.8	1.67	1.311	1
PCBs 108 + 124	714		23.0	23.0	1.53	1.352	1
PCB 107	372		24.1	24.1	1.47	1.361	1
PCB 123	363		24.7	24.7	1.58	1.000	1
PCB 106	412		24.2	24.2	1.56	1.368	1
PCB 118	387		25.8	25.8	1.71	1.001	1
PCB 122	421		26.8	26.8	1.41	1.388	1
PCB 114	363		24.7	24.7	1.37	1.000	1
PCB 105	449		25.8	25.8	1.47	1.000	1
PCB 127	425		25.2	25.2	1.52	1.466	1
PCB 126	420		31.0	31.0	1.70	1.000	1
PCB 155	460		7.44	7.44	1.22	1.001	1
PCB 152	386		6.82	9.03	1.38	1.010	1
PCB 150	322		5.72	9.03	1.15	1.014	1
PCB 136	381		6.61	9.03	1.26	1.028	1
PCB 145	328		6.10	9.03	1.33	1.035	1
PCB 148	355		8.42	9.03	1.24	1.074	1
PCBs 135 + 151 + 154	1020		7.39	18.1	1.27	1.098	1
PCB 144	375		8.11	9.03	1.22	1.110	1
PCBs 147 + 149	666		75.0	75.0	1.14	1.121	1
PCB 134	518		158	158	1.22	1.128	1

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Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
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Lab Code:	EQ1700575-03	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

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		GC Column:	SPB-OCTYL
Data File Name:	P305054	**Blank File Name:**	P305033
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Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 143	269		59.4	59.4	1.22	1.130	1
PCBs 139 + 140	679		71.9	71.9	1.20	1.137	1
PCB 131	326		86.6	86.6	1.25	1.145	1
PCB 142	378		87.7	87.7	1.16	1.148	1
PCB 132	342		84.8	84.8	1.21	1.159	1
PCB 133	385		89.7	89.7	1.20	1.169	1
PCB 165	333		59.3	59.3	1.24	1.181	1
PCB 146	358		75.2	75.2	1.09	1.188	1
PCB 161	375		54.6	54.6	1.27	1.191	1
PCBs 153 + 168	715		59.6	59.6	1.23	1.206	1
PCB 141	362		74.0	74.0	1.20	1.213	1
PCB 130	410		93.1	93.1	1.16	1.225	1
PCB 137	306	**K**	72.6	72.6	1.46	1.231	1
PCB 164	342		54.5	54.5	1.19	1.235	1
PCBs 129 + 138 + 163	972		82.9	82.9	1.22	1.243	1
PCB 160	372		38.6	38.6	1.21	1.246	1
PCB 158	353		51.6	51.6	1.19	1.253	1
PCBs 128 + 166	724		66.2	66.2	1.32	1.278	1
PCB 159	397		28.7	28.7	1.12	1.306	1
PCB 162	347		25.5	25.5	1.14	1.314	1
PCB 167	355	**K**	23.6	23.6	1.03	1.001	1
PCBs 156 + 157	782		37.1	37.1	1.24	1.000	1
PCB 169	362	**K**	30.3	30.3	0.97	1.000	1
PCB 188	466		8.72	8.72	1.00	1.001	1
PCB 179	364		6.62	9.03	1.07	1.012	1
PCB 184	308		5.89	9.03	1.06	1.022	1
PCB 176	375		6.66	9.03	1.20	1.033	1
PCB 186	315		6.12	9.03	1.07	1.045	1
PCB 178	375		8.87	9.03	1.03	1.076	1
PCB 175	380		8.52	9.03	1.01	1.092	1
PCB 187	331		7.68	9.03	1.00	1.098	1
PCB 182	361		7.59	9.03	1.09	1.103	1
PCB 183 + 185	681		30.8	30.8	1.04	1.113	1
PCB 174	377		31.0	31.0	0.97	1.121	1
PCB 177	378		33.9	33.9	1.04	1.132	1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

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Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1700575-03	**Basis:**	Dry

Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS

Analysis Method:	1668C	**Date Analyzed:**	12/30/17 17:26
Prep Method:	Method	**Date Extracted:**	12/27/17
Sample Amount:	5.537g	**Instrument Name:**	E-HRMS-05
		GC Column:	SPB-OCTYL
Data File Name:	P305054	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 181	324		29.3	29.3	1.12	1.141	1
PCBs 171 + 173	730		33.2	33.2	1.04	1.147	1
PCB 172	392		34.1	34.1	1.05	0.906	1
PCB 192	327		24.1	24.1	1.12	0.911	1
PCBs 180 + 193	684		24.5	24.5	1.11	0.918	1
PCB 191	402		25.0	25.0	0.98	0.925	1
PCB 170	351		30.5	30.5	1.11	0.943	1
PCB 190	344		21.0	21.0	0.98	0.952	1
PCB 189	375	**K**	26.6	26.6	0.86	1.001	1
PCB 202	698		9.24	9.24	0.92	1.000	1
PCB 201	610		8.19	9.03	0.89	1.020	1
PCB 204	605		8.06	9.03	0.99	1.034	1
PCB 197	519		7.29	18.1	0.90	1.039	1
PCB 200	605		8.10	18.1	0.95	1.043	1
PCBs 198 + 199	1110		9.86	18.1	0.89	1.102	1
PCB 196	641		11.3	11.3	0.96	0.923	1
PCB 203	528		8.85	9.03	0.90	0.926	1
PCB 195	682		12.5	12.5	1.00	0.951	1
PCB 194	743		12.2	12.2	0.92	0.992	1
PCB 205	669		9.67	9.67	0.91	1.001	1
PCB 208	711		9.13	9.13	0.80	1.000	1
PCB 207	599		8.47	9.03	0.77	1.018	1
PCB 206	595		15.2	15.2	0.74	1.001	1
PCB 209	657		9.02	9.02	1.27	1.000	1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

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Project:	URSC/150-001-056	**Date Collected:**	NA
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Sample Name:	Duplicate Lab Control Sample	**Units:**	ng/Kg
Lab Code:	EQ1700575-03	**Basis:**	Dry

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		GC Column:	SPB-OCTYL
Data File Name:	P305054	**Blank File Name:**	P305033
ICAL Date:	04/03/17	**Cal Ver. File Name:**	P305045

Native Analyte Results

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
Total MonoCB	611		9.29	9.29			1
Total DiCB	2210		4.23	18.1			1
Total TriCB	3340		10.4	10.4			1
Total TetraCB	12200		8.71	36.1			1
Total PentaCB	16300		11.3	36.1			1
Total HexaCB	15100		5.72	36.1			1
Total HeptaCB	7960		5.89	18.1			1
Total OctaCB	7410		7.29	18.1			1
Total NonaCB	1910		8.47	9.03			1

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Hart Crowser, Incorporated	**Service Request:**	K1713130
Project:	URSC/150-001-056	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	Percent
Lab Code:	EQ1700575-03	**Basis:**	Dry

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Labeled Standard Results

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	% Rec	Q	Control Limits	Ion Ratio	RRT
PCB 1L	2000	921.731	46		5-145	3.26	0.741
PCB 3L	2000	968.662	48		5-145	3.10	0.871
PCB 4L	2000	722.030	36		5-145	1.58	0.885
PCB 15L	2000	869.201	43		5-145	1.76	1.217
PCB 19L	2000	1183.800	59		5-145	0.92	1.063
PCB 37L	2000	1053.752	53		5-145	1.08	1.083
PCB 54L	2000	577.595	29		5-145	0.71	0.837
PCB 81L	2000	908.780	45		10-145	0.78	1.321
PCB 77L	2000	892.078	45		10-145	0.79	1.343
PCB 104L	2000	840.480	42		10-145	1.69	0.831
PCB 123L	2000	1301.523	65		10-145	1.53	1.133
PCB 118L	2000	1245.650	62		10-145	1.58	1.142
PCB 114L	2000	1283.437	64		10-145	1.52	1.158
PCB 105L	2000	1259.955	63		10-145	1.55	1.178
PCB 126L	2000	1236.166	62		10-145	1.44	1.265
PCB 155L	2000	765.019	38		10-145	1.24	0.805
PCB 167L	2000	1178.558	59		10-145	1.18	1.068
PCBs 156L + 157L	4000	2316.688	58		10-145	1.27	1.096
PCB 169L	2000	1120.710	56		10-145	1.17	1.171
PCB 188L	2000	905.224	45		10-145	1.00	0.736
PCB 189L	2000	1360.051	68		10-145	0.96	0.963
PCB 202L	2000	974.489	49		10-145	0.92	0.833
PCB 205L	2000	1234.446	62		10-145	0.90	1.008
PCB 208L	2000	930.410	47		10-145	0.87	0.952
PCB 206L	2000	1617.271	81		10-145	0.73	1.039
PCB 209L	2000	1478.366	74		10-145	1.28	1.067
PCB 28L	2000	1194.354	60		5-145	1.02	0.934
PCB 111L	2000	1184.191	59		10-145	1.56	1.075
PCB 178L	2000	977.592	49		10-145	1.08	1.008

APPENDIX E
QUALITY ASSURANCE REVIEW

APPENDIX E

Analytical Laboratory Testing Program and Documentation

This appendix documents the results of a quality assurance (QA) review of the analytical data for sediment samples collected during the December 2017 investigation activities on the Upriver Reach Sediment Characterization (URSC) of the Lower Willamette River in Oregon. ALS Group USA (ALS) of Kelso, Washington, under their Price Agreement with the State of Oregon, performed analyses on sediment samples from the site. Samples for PCDD/Fs and PCB congeners were subcontracted to ALS in Houston, Texas. Copies of the analytical laboratory reports are included in Appendix E and are referenced as Sample Delivery Group (SDG) numbers K1712961, K1713018, and K1713130.

The laboratory performed ongoing QA/QC reviews of laboratory procedures, and provided Level IV data packages and summary reports. Hart Crowser reviewed the data, using laboratory QC results summary sheets and raw data, as required, to check that they met data quality objectives for the project. Data review followed the procedures described in the Upriver Reach Sediment Characterization (URSC) Work Plan (DEQ 2017). Validation of the analytical data was completed generally following EPA CLP National Functional Guidelines for Organic Data Review (EPA, 2008), Inorganic Data Review (EPA, 2010), EPA National Functional Guidelines for Chlorinated Dioxins (CDDs) and Chlorinated Dibenzofurans (CDFs) Data Review (EPA, 2011), and EPA Region 10 standard operating practices for validation of PCB Congener data (EPA, 1995), modified to include criteria specific to the individual analytical methods and laboratory performance based control limits. The QA review included examination and validation of the laboratory's summary reports, including:

- Case narratives;
- Chain-of-custody (COC) documentation;
- Sample receiving condition;
- Holding times;
- Analytical methods, detection limits, and reporting limits;
- Instrument tuning, initial calibrations, and continuing calibration verifications;
- Method blanks;
- Internal standards performance;
- Surrogate recoveries;
- Laboratory control sample/laboratory control sample duplicate (LCS/LCSD) recoveries;
- Matrix spike and matrix spike duplicate (MS/MSD) recoveries; and
- Laboratory duplicate relative percent difference (RPD), where applicable.

1.0 Analytical Methods and Reporting Limits

This section describes the analytical methods and detection/reporting limits for the chemical analyses.

1.1 Analytical Methods

A total of 55 grab sediment samples and nine composite sediment samples were submitted to ALS. The composite sediment samples were dried, sieved, and homogenized prior to ISM subsampling and compositing. An additional volume of sediment from each grab sample location was frozen and archived upon receipt at the laboratory. The composited sediment samples were analyzed for one or more of the following:

- Polybrominated Diphenyl Ethers (PBDE) by EPA Method 8270C-SIM;
- Semivolatile Organic Compounds (SVOCs) by EPA Method 8270D;
- Polychlorinated Dibenzo-p-dioxins and Polychlorinated Dibenzofurans (PCDD/Fs) by EPA Method 1613B;
- Polychlorinated biphenyl (PCB) congeners by EPA Method 1668C;
- Organochlorine Pesticides by EPA Method 1699M;
- Diesel Range Organics (DRO) and Residual Range Organics (RRO) by NWTPH-Dx method with silica gel treatment (SGT);
- Total Organic Carbon (TOC) by Puget Sound Estuarine Protocols (PSEP) method;
- Grain Size by ASTM D422M;
- Total metals (arsenic, cadmium, chromium, copper, lead, manganese, nickel, and zinc) by EPA Method 6020A;
- Total mercury by EPA Method 7471B; and
- Total solids by Puget Sound Estuarine Protocols (PSEP).

The analytical test methods used by ALS were the same as specified in the URSC Work Plan (DEQ, 2017) with the following exceptions:

- Total mercury was to be analyzed by EPA Method 7471A, but was analyzed by EPA Method 7471B, which is an updated method.
- PCB congeners were to be analyzed by EPA Method 1668B, but were analyzed by EPA Method 1668C, which is an updated method.
- PBDE were to be analyzed by EPA Method 8270D, but were analyzed by EPA Method 8270C-SIM, which uses the GC/MS in the selected ion mode for lower reporting limits.

1.2 Method Detection and Reporting Limits

Method detection limits (MDLs) are the minimum concentration of a chemical compound that can be measured and reported that the compound is present, and is based on instrumentation abilities and

sample matrix. Method reporting limits (MRLs) are set by the laboratory and are based on the low standard of the initial calibration curve or low-level calibration check standard, and represent the concentration that can be accurately quantified. In some cases, the MRL and MDL is raised due to dilutions or matrix interferences.

The laboratory reported sample results to the MDL. Analytical results that fell between the MRL and MDL are qualified as estimated and are "J" flagged in the report tables. Non-detected results are reported at the associated MDL and are "U" flagged in report tables. Non-detected results in the PCDD/Fs and PCB congeners were reported to the Estimated Detection Limit (EDL).

MDLs and MRLs are generally consistent with QAPP requirements with the following exceptions:

- **URSC-RM18.35E-COMP.** The sample was analyzed at 2-fold and 20-fold dilutions in the PBDE analysis due to high levels of target analytes. The reporting limits were raised due to the dilution. The laboratory flagged detected results with D, and the D flag was removed.
- **URSC-RM20.0E-COMP.** The sample was analyzed undiluted and at a 50-fold dilution in the PBDE analysis due to high levels of target analytes. The laboratory flagged detected results with D, and the D flag was removed.
- **URSC-RM20.0W-COMP.** The sample was analyzed at 2-fold and 20-fold dilutions in the PBDE analysis due to high levels of target analytes. The reporting limits were raised due to the dilution. The laboratory flagged detected results with D, and the D flag was removed.
- **URSC-RM20.4E-COMP**. The sample was analyzed undiluted and at a 10-fold dilution in the PBDE analysis due to high levels of target analytes. The laboratory flagged detected results with D, and the D flag was removed.

2.0 Chain of Custody and Sample Receiving Condition

The following provides a summary of the review of COC procedures and sample receiving conditions.

2.1 Chain of Custody

The COCs were pre-printed with requested analyses. The samples were collected on multiple days and transferred via a laboratory courier to ALS-Kelso on three COCs. ALS-Kelso subcontracted the samples to ALS-Houston on multiple days. The following COC discrepancies were noted.

- **K1713018:** Sample URSC-RM20.4E-COMP was incorrectly identified on the COC as URSC-RM20.4-COMP. The sample was logged correctly into the laboratory system and laboratory reports and EDDs were correct. The COC was not modified. Sample quality was not affected by this issue, and no sample results were qualified.
- **K1713030:** Sample URSC-RM20.9W-COMP was incorrectly identified on the COC as URSC-RM20.9-COMP. The sample was logged correctly into the laboratory system and laboratory reports and EDDs were correct. The COC was not modified. Sample quality was not affected by this issue, and no sample results were qualified.

2.2 Sample Receiving Conditions

Sample/Cooler Temperatures. The receiving temperatures were within 2 to 6°C acceptance criteria, or were below 2°C. As low temperatures would not significantly affect sample quality, no sample results were qualified.

Sample Preservation. All samples were properly preserved.

3.0 Data Quality Assurance

Data quality is indicated by assessing their completeness, representativeness, accuracy, precision, and comparability. An evaluation of the data follows.

3.1 Completeness

Completeness is defined as the percentage of measurements made that are judged to be valid. The completeness goal is essentially a sufficient amount of valid data that is generated to meet the objectives of the data. Three laboratory reports were received and are included in Appendix B. No sample results were rejected based on the data validation. The data completeness for the samples is 100 percent for all requested analyses.

3.2 Representativeness

Representativeness is a measure of how closely the results reflect the actual concentration of the parameters in the medium sampled. It is not possible to measure this directly, so representativeness is controlled and ensured by using standard protocols for sample handling and custody, analyzing samples within prescribed holding times, and analyzing blank samples.

Sample Handling and Custody. Samples were collected in general accordance with industry standards. These included requirements for collection, containers, labeling, packaging, shipping, and storage. Compliance with these procedures has been documented on chain of custody forms. Copies of the chain of custody forms are included with the laboratory reports in Appendix B.

Holding Times. Collection dates for all samples submitted are documented on the chain of custody form. Collection and analyses dates are indicated in the laboratory reports. Holding times were met for all samples with the following exception:

- **URSC-RM18.45E-COMP.** The sample for PBDE was extracted past the 14 day holding time due to equipment malfunction at the laboratory. PBDE results were qualified as estimated (J).

Sample Qualifiers.

- **PCDD/F and PCB Congeners.** The laboratory assigned “K” flags to values when a peak was detected but did not meet identification criteria. These values cannot be considered positive identifications, but are Estimated Maximum Possible Concentrations (EMPCs). When this occurred, the results were considered false positives. The “K” qualifiers were reported as estimated (J) for individual analytes.

Total PCB congener homolog groups (e.g. Total DiCB) or PCDD/F homolog groups were qualified as estimated (J) when one, or more, of the individual target PCB congeners or PCDD/F analytes within that homolog group was also qualified as estimated (J).

- **URSC-RM20.0W-COMP**. The result for 1,2,3,4,6,7,8-HpCDF was flagged with P due to chlorodiphenyl ether interferences. The P flag was changed to J (estimate).

Method Blanks. Method blanks are prepared by the laboratory and analyzed to check for the possibility that the sample may become contaminated during the analysis process. Blanks were analyzed for all analytical tests requested. All method blank data were acceptable with the following exceptions:

- **SVOC.** The method blank (batch KWG1710979) contained bis(2-ethylhexyl)phthalate between the MDL and the MRL. The results for bis(2-ethylhexyl)phthalate in the associated samples (URSC-RM18.35E-COMP, URSC-RM20.0W-COMP, and URSC-RM18.45E-COMP) fell between the MDL and the MRL and were flagged as non-detect (U).
- **SVOC.** The method blank (batch KWG1711057) contained bis(2-ethylhexyl)phthalate between the MDL and the MRL. The results for bis(2-ethylhexyl)phthalate in the associated samples (URSC-RM20.9W-COMP, URSC-RM24.7E-COMP, URSC-RM20.0E-COMP, URSC-RM25.2E-COMP, URSC-RM20.1W-COMP, and URSC-RM20.4E-COMP) were evaluated thus:
  - Bis(2-ethylhexyl)phthalate results that fell between the MDL and the MRL were flagged as non-detect (U) (URSC-RM20.9W-COMP, URSC-RM24.7E-COMP, URSC-RM20.0E-COMP, URSC-RM20.1W-COMP, and URSC-RM20.4E-COMP).
  - The bis(2-ethylhexyl)phthalate result in sample URSC-RM25.2E-COMP was above the MRL, but less than five times the amount in the method blank, and was flagged as non-detect (U).
- **DRO and RRO**.
  - The method blank (batch KWG1710978) contained DRO and RRO between the MDL and the MRL. The DRO and RRO results in the associated samples, (URSC-RM18.35E-COMP, URSC-RM20.0W-COMP and URSC-RM18.45E-COMP), fell between the MDL and the MRL, and were flagged as non-detect (U).
  - The method blank (batch KWG1711062) contained DRO and RRO between the MDL and the MRL. The DRO and RRO results in the associated samples, (URSC-RM20.9W-COMP, URSC-RM24.7E-COMP, URSC-RM20.0E-COMP, URSC-RM25.2E-COMP, URSC-RM20.1W-COMP, and URSC-RM20.4E-COMP), fell between the MDL and the MRL, and were flagged as non-detect (U).
- **Metals**.
  - The method blank (batch KQ1718249) contained lead, manganese, and nickel between the MDL and the MRL. Results for those metals in the associated samples, (URSC-RM20.0W-

COMP, URSC-RM18.45E-COMP, and URSC-RM18.35E-COMP) were greater than five times the amount in the method blank, and no results were qualified.

- The method blank (batch KQ1718365) contained chromium and zinc between the MDL and the MRL. Results for those metals in the associated samples, (URSC-RM20.9W-COMP, URSC-RM24.7E-COMP, URSC-RM20.0E-COMP, URSC-RM25.2E-COMP, URSC-RM20.1W-COMP and URSC-RM20.4E-COMP) were greater than five times the amount in the method blank, and no results were qualified.

- **PCDD/F.** The method blank (batch EQ1800009) associated with samples URSC-RM18.35E-COMP, URSC-RM18.45E-COMP, URSC-RM20.9W-COMP, URSC-RM24.7E-COMP, URSC-RM20.0E-COMP, URSC-RM25.2E-COMP, URSC-RM20.0W-COMP, URSC-RM20.1W-COMP, and URSC-RM20.4E-COMP, had detections for the analytes listed in the table below:

Analyte	Blank Concentration (ng/Kg)
1,2,3,7,8-PeCDD	0.120 J K
1,2,3,4,7,8-HxCDD	0.0985 J K
1,2,3,7,8,9-HxCDD	0.113 J K
1,2,3,4,6,7,8-HpCDD	0.251 J
OCDD	0.526 J K
2,3,4,7,8-PeCDF	0.408 J K
1,2,3,4,7,8-HxCDF	0.336 J
1,2,3,6,7,8-HxCDF	0.346 J K
1,2,3,7,8,9-HxCDF	0.175 J K
2,3,4,6,7,8-HxCDF	0.371 J K
1,2,3,4,6,7,8-HpCDF	1.02 J

The laboratory qualified detections in the associated samples that were less than ten times the level in the method blank with “B”. The associated samples were evaluated thus:

- Results below the EDL were not qualified.
- If the concentration for the analyte in the sample was below two times the concentration in the method blank, the analyte was qualified as non-detect (U) at the reported concentration, and the B flag was removed.
- If the concentration for the analyte in the sample was greater than two times the concentration in the method blank, but less than five times the concentration in the method blank, the analyte was qualified as estimated (J) at the reported concentration, and the B flag was removed.
- If the concentration for the analyte in the sample was greater than five times the concentration in the method blank, the analyte was not qualified, and the B flag was removed.

The data in the table below were qualified due to method blank (MB) contamination or EMPC qualifications.

Sample	Analyte	Value	Validation Data Qualifier	Reason
URSC-RM20.4E-COMP	1,2,3,7,8,9-HxCDD	0.187 B J K	U	Result < 2x MB, EMPC
	1,2,3,4,6,7,8-HpCDD	2.11 B J	J	Result > 5x MB, >EDL<MRL
	1,2,3,4,6,7,8-HpCDF	0.322 B J K	U	Result < 2x MB, EMPC
	OCDF	0.886 J K	J	EMPC, >EDL<MRL
URSC-RM20.0E-COMP	1,2,3,4,7,8-HxCDD	0.0992 B J K	U	Result < 2x MB, EMPC
	1,2,3,7,8,9-HxCDD	0.142 B J K	U	Result < 2x MB, EMPC
	1,2,3,4,6,7,8-HpCDF	1.03 B J	U	Result < 2x MB
URSC-RM24.7E-COMP	1,2,3,7,8,9-HxCDD	0.241 B J K	U	Result < 2x MB, EMPC
	1,2,3,4,6,7,8-HpCDF	0.442 B J	U	Result < 2x MB
	OCDF	1.58 J K	J	EMPC, >EDL<MRL
URSC-RM25.2E-COMP	2,3,7,8-TCDD	0.290 J K	J	EMPC, >EDL<MRL
	1,2,3,7,8-PeCDD	0.404 B J	J	Result > 2x MB, <5x MB, >EDL<MRL
	1,2,3,4,7,8-HxCDD	0.294 B J K	J	Result > 2x MB, <5x MB, >EDL<MRL, EMPC
	1,2,3,7,8,9-HxCDD	0.854 B J	J	Result > 2x MB, <5x MB, >EDL<MRL
	1,2,3,7,8-PeCDF	0.195 J K	J	EMPC, >EDL<MRL
	2,3,4,7,8-PeCDF	0.507 B J	U	Result < 2x MB
	1,2,3,4,7,8-HxCDF	0.560 B J	U	Result < 2x MB
	1,2,3,6,7,8-HxCDF	0.625 B J	U	Result < 2x MB
	1,2,3,7,8,9-HxCDF	0.244 B J	U	Result < 2x MB
	2,3,4,6,7,8-HxCDF	0.398 B J K	U	Result < 2x MB, EMPC
	1,2,3,4,6,7,8-HpCDF	6.44 B		Result > 5x MB
URSC-RM20.9W-COMP	1,2,3,6,7,8-HxCDD	0.383 J K	J	EMPC, >EDL<MRL
	1,2,3,7,8,9-HxCDD	0.217 B J K	U	Result < 2x MB, EMPC
	1,2,3,4,7,8-HxCDF	0.253 B J K	U	Result < 2x MB, EMPC
	1,2,3,6,7,8-HxCDF	0.126 B J	U	Result < 2x MB
	1,2,3,4,6,7,8-HpCDF	1.05 B J K	U	Result < 2x MB, EMPC
URSC-RM18.35E-COMP	1,2,3,7,8-PeCDD	0.193 B J K	U	Result < 2x MB, EMPC
	1,2,3,4,7,8-HxCDD	0.144 B J	U	Result < 2x MB
	1,2,3,7,8,9-HxCDD	0.307 B J K	J	Result > 2x MB, <5x MB, >EDL<MRL, EMPC
	1,2,3,4,6,7,8-HpCDF	2.76 B J	J	Result > 5x MB, >EDL<MRL
URSC-RM20.1W-COMP	1,2,3,7,8-PeCDD	0.133 B J K	U	Result < 2x MB, EMPC
	1,2,3,6,7,8-HxCDD	0.414 J K	J	EMPC, >EDL<MRL
	1,2,3,7,8,9-HxCDD	0.293 B J	U	Result < 2x MB
	1,2,3,4,7,8-HxCDF	0.244 B J	U	Result < 2x MB
	1,2,3,6,7,8-HxCDF	0.143 B J K	U	Result < 2x MB, EMPC
	2,3,4,6,7,8-HxCDF	0.145 B J K	U	Result < 2x MB, EMPC
	1,2,3,4,6,7,8-HpCDF	1.96 B J	U	Result < 2x MB

Sample	Analyte	Value	Validation Data Qualifier	Reason
	OCDF	6.45 J K	J	EMPC, >EDL<MRL
URSC-RM20.0W-COMP	1,2,3,7,8-PeCDD	0.226 B J K	U	Result < 2x MB, EMPC
	1,2,3,4,7,8-HxCDD	0.239 B J	J	Result > 2x MB, <5x MB, >EDL<MRL
	1,2,3,7,8,9-HxCDD	0.326 B J K	J	Result > 2x MB, <5x MB, >EDL<MRL, EMPC
	1,2,3,7,8-PeCDF	0.195 J K	J	EMPC, >EDL<MRL
	2,3,4,7,8-PeCDF	0.287 B J	U	Result < 2x MB
	1,2,3,4,7,8-HxCDF	0.338 B J K	U	Result < 2x MB, EMPC
	1,2,3,6,7,8-HxCDF	0.290 B J	U	Result < 2x MB
	1,2,3,7,8,9-HxCDF	0.185 B J	U	Result < 2x MB
	2,3,4,6,7,8-HxCDF	0.218 B J K	U	Result < 2x MB, EMPC
	1,2,3,4,6,7,8-HpCDF	2.18 B J P	J	Result > 2x MB, <5x MB, >EDL<MRL, interferences
URSC-RM18.45E-COMP	1,2,3,7,8-PeCDD	0.245 B J K	J	Result > 2x MB, <5x MB, >EDL<MRL, EMPC
	1,2,3,4,7,8-HxCDD	0.134 B J K	U	Result < 2x MB, EMPC
	1,2,3,7,8,9-HxCDD	0.337 B J	J	Result > 2x MB, <5x MB, >EDL<MRL
	1,2,3,7,8-PeCDF	0.213 J K	J	EMPC, >EDL<MRL
	2,3,4,7,8-PeCDF	0.268 B J	U	Result < 2x MB
	1,2,3,4,7,8-HxCDF	0.392 B J	U	Result < 2x MB
	1,2,3,6,7,8-HxCDF	0.285 B J	U	Result < 2x MB
	2,3,4,6,7,8-HxCDF	0.261 B J	U	Result < 2x MB
	1,2,3,4,6,7,8-HpCDF	2.14 B J	U	Result < 2x MB

Calibration Blanks. No analytes were found in the initial calibration blanks (ICB) or continuing calibration blanks (CCBs), with the following exceptions.

- **Total Metals**.
  - Analysis batch 574087. CCB4 had a detection for cadmium between the MDL and the MRL. No project samples were associated with this CCB, and no results were qualified.
  - Analysis batch 574584. CCB5 and CCB7 had detections for manganese between the MDL and the MRL. The associated samples, (URSC-RM25.2E-COMP, URSC-RM20.0E-COMP, URSC-RM24.7E-COMP, URSC-RM20.9W-COMP, URSC-RM20.1W-COMP, and URSC-RM20.4E-COMP), had detections for manganese greater than five times the amount in the CCBs, and no results were qualified.

3.3 Accuracy

Accuracy or bias measures the closeness of the measured value to the true value. Accuracy is the agreement between a measured value and its true or accepted value. While it is not possible to

determine absolute accuracy for environmental samples, the analyses of standards and spiked samples provides an indirect assessment of accuracy.

Surrogates. In a surrogate analysis, a known amount of a compound similar to the constituent of interest is added to a sample and measured. The surrogate analysis assesses the accuracy of a chemical measurement by comparing the measured value to the actual spiked value. Up to 15 surrogates are added to each sample. Surrogate recoveries were within control limits with the following exceptions:

- **Pesticides**. URSC-RM20.1W-COMP MS. The recovery for the surrogate Heptachlor-$^{13}C_{10}$ exceeded the laboratory control limits. The recoveries for the remaining surrogates were in control, and no qualifications were made.

Matrix Spike Samples. Matrix spike (MS) analyses are performed on samples submitted to the laboratory that are of the same matrix as the actual sample. This is spiked with known levels of the constituents of interest. These analyses are used to assess the potential for matrix interference with recovery or detection of the constituents of interest and the accuracy of the determination. The spiked sample results are compared to the expected result (i.e., sample concentration plus spike amount) and are reported as percent recovery. Matrix spikes were prepared for all organic and inorganic methods except NWTPH-Dx, EPA 1668C, and EPA 1613B; matrix spike analyses are not required for those methods. MS analytical results were all within acceptable ranges with the following exceptions:

- **PBDE**.
  - KWG1710980 Batch QC MS/MSD. The recoveries for PBDE-128, PBDE-183, PBDE-190, PBDE-203, and PBDE-206 exceeded the default laboratory control limits. The recoveries for PBDE-209 fell below the default laboratory control limits. Project samples are not qualified due to Batch QC failures.
  - URSC-RM20.1W-COMP MS/MSD. The recoveries for PBDE-128 and PBDE-183 exceeded the default laboratory control limits in the MSD, but were within control in the MS. The recovery for PBDE-209 fell below the default laboratory control limits in the MS, but was within control in the MSD. High levels of PBDE-209 were present in the source sample compared to the spiking amount, and the sample was not qualified. The results for PBDE-128 and PBDE-183 were not qualified as those analytes were not found in the source sample, and the recoveries were biased high.
  - URSC-RM18.35E-COMP MS/MSD. The recoveries for PBDE-128, PBDE-183, PBDE-190, PBDE-203, and PBDE-206 exceeded the default laboratory control limits in the MS and MSD. The recovery for PBDE-209 fell below the default laboratory control limits in the MS and MSD. High levels of PBDE-209 were present in the source sample compared to the spiking amount, and the sample was not qualified. The results for PBDE-128, PBDE-183, PBDE-190, and PBDE-203 were not qualified as those analytes were not found in the source sample, and the recoveries were biased high. The results for PBDE-206 was qualified as estimated (J) in the source sample.

- **Metals**.
  - URSC-RM18.35E-COMP MS/MSD. The recovery for manganese exceeded the control limit due to high levels of manganese in the source sample compared to the spiking amount. No qualifications were made.
  - URSC-RM201.W-COMP MS/MSD. The recovery for manganese exceeded the control limit due to high levels of manganese in the source sample compared to the spiking amount. No qualifications were made.

- **Pesticides**. URSC-RM20.1W-COMP MS/MSD. The recovery for Endosulfan II fell below ten percent in the MS, but was within control limits in the MSD. The result for Endosulfan II was qualified as estimated (J) in the source sample.

Laboratory Control Samples. Laboratory control samples (LCS) were used by the laboratory to assess the accuracy of the analytical equipment in analyzing all requested analytes. The sample is prepared from the analyte-free matrix, which is then spiked with known levels of the constituents of interest (i.e., a standard). The concentrations are measured, and the results are compared to the known spiked levels. This comparison is expressed as percent recovery. All LCS results were within acceptable limits with the following exceptions:

- **PBDE**. KWG1711053 LCS. The recovery of PBDE-209 exceeded the default laboratory control limit. The results for PBDE-209 in the associated samples, (URSC-RM20.9W-COMP, URSC-RM24.7E-COMP, URSC-RM20.0E-COMP, URSC-RM25.2E-COMP, URSC-RM18.45E-COMP, URSC-RM20.1W-COMP, and URSC-RM20.4E-COMP) were flagged by the laboratory with *. The * was changed to J (estimated). The case narrative stated that the samples were not reextracted as the recovery limits were default values used until sufficient data points were generated to calculate statistical control limits.

- **PCB Congeners.** EQ1700575 LCS/LCSD. The recoveries for PCB54 failed high in the LCS and LCSD. The recoveries for PCB42, PCB57, PCB58, PCB63, PCB64, PCB67, PCB68, and PCB72 failed low in the LCS and LCSD. The recoveries for PCB104, PCB134 and PCB194 failed high in the LCSD, but were in control in the LCS. The results for PCB42, PCB57, PCB58, PCB63, PCB64, PCB67, PCB68, and PCB72 were qualified as estimated (J/UJ) in the associated samples (URSC-RM18.35E-COMP, URSC-RM18.45E-COMP, URSC-RM20.9W-COMP, URSC-RM24.7E-COMP, URSC-RM20.0E-COMP, URSC-RM25.2E-COMP, URSC-RM20.0W-COMP, URSC-RM20.1W-COMP, and URSC-RM20.4E-COMP). The results for PCB54 were not qualified as that congener was not detected in the samples. The results for PCB104, PCB134, and PCB194 were not qualified as the recoveries were in control in the LCS.

Calibration Criteria. Initial calibration curves (ICAL) and continuing calibration verification checks (CCVs) are prepared and analyzed on each instrument. The ICALs and CCVs were reviewed and were within acceptance criteria with the following exceptions.

- **PBDE**.
  - CCV 1220F002. The recovery of PBDE-209 failed high. The results for PBDE-209 in the associated sample, URSC-RM20.0E-COMP, was qualified as estimated (J).

- CCV 1221F002. The recovery of PBDE-128 failed high. The results for PBDE-128 in the associated samples (URSC-RM20.9W-COMP, URSC-RM24.7E-COMP, URSC-RM25.2E-COMP, URSC-RM20.1W-COMP, and URSC-RM20.4-COMP) were not qualified as the analyte was not detected in the samples and the bias was high. The result for PBDE-128 in URSC-RM20.0E-COMP was qualified as estimated (J).

- **SVOC**.
  - CCV 0102F015. The recovery of Pentachlorophenol failed low. The results for Pentachlorophenol in the associated samples, (URSC-RM18.35E-COMP, URSC-RM20.0W-COMP, and URSC-RM18.45E-COMP), were flagged by the laboratory with *. The * was changed to J (estimated).
  - CCV 0105F002. The recoveries of Pentachlorophenol and benzo(ghi)perylene failed low. The results for those analytes in the associated samples, (URSC-RM20.9W-COMP, URSC-RM24.7E-COMP, URSC-RM20.0E-COMP, URSC-RM25.2E-COMP, URSC-RM20.1W-COMP, and URSC-RM20.4E-COMP), were flagged by the laboratory with *. The * was changed to J (estimated).

- **Pesticides**. CCV 0115F004. The recoveries for surrogates 4,4'-DDT-d4, Heptachlor-$^{13}C_{10}$, and Mxchlord-d6 failed high. The recoveries of the surrogates in the associated samples (URSC-RM18.35E-COMP, URSC-RM20.9W-COMP, URSC-RM24.7E-COMP, URSC-RM20.0E-COMP, URSC-RM25.2E-COMP, URSC-RM20.1W-COMP, URSC-RM20.4E-COMP, URSC-RM20.0W-COMP, and URSC-RM18.45E-COMP) were in control, and no project samples were qualified.

3.4 Precision

Precision is the degree of reproducibility or agreement between independent or repeated measurements. Analytical variability is expressed as the relative percent difference (RPD) between field or laboratory replicates and between the primary and duplicate MS and LCS analyses.

Laboratory Sample Duplicates. A laboratory duplicate is a second analysis of a sample. A second bottle or aliquot of a sample is prepared along with the original. It is analyzed and compared to the first to assess the precision of the analytical method. The laboratory duplicate sample RPDs were within the acceptability criteria with the following exceptions:

- **Metals.** URSC-RM18.35E-COMP. The RPD for lead exceeded the control limit. The result for lead in URSC-RM18.35E-COMP was qualified as estimated (J).

Matrix Spike Sample Duplicate. A second MS sample (a.k.a., the MS duplicate [MSD]) is prepared as above and analyzed. This is compared to the initial MS to assess the precision of the analytical method by calculating the RPD. The MSD RPDs were within the acceptability criteria.

Laboratory Control Sample Duplicate. A duplicate is a second analysis of an LCS. The duplicate is then prepared along with the original. It is analyzed and compared to the first to assess the precision of the analytical method. The LCS RPDs were within the acceptability criteria.

3.5 Comparability

All samples were analyzed in accordance with accepted methods of the EPA or DEQ. The analytical test methods used by the laboratory were generally the same or equivalent analytical methods specified in the Work Plan (DEQ 2017). The following parameters were analyzed by different but equivalent analytical methods to those specified in the Work Plan:

- Total mercury;
- PCB congeners; and
- PBDE.

4.0 References

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APPENDIX F
DATA FILE
(PROVIDED ON CD ONLY)