

Memorandum

To: Ray Hoy, Oregon Department of Environmental Quality

Copies: David Lacey, Oregon Department of Environmental Quality
Benjamin Leake, U.S. Environmental Protection Agency Region X
Harrison Holzgang and Alan Sprott, Vigor Industrial LLC

From: Adia Jumper, PE, Floyd|Snider

Date: December 11, 2024

Project No: Vigor Industrial – Swan Island Upland Facility – ECSI #271

Re: **Vigor Industrial LLC—Post-Phase 1 and Phase 2 EC System Sampling Work Plan**

INTRODUCTION

This Post-Phase 1 and Phase 2 EC System Sampling Work Plan (Work Plan) has been prepared by Floyd|Snider on behalf of Vigor Industrial LLC (Vigor) for its Portland Swan Island facility (facility) pursuant to the Order on Consent (Consent Order) issued by the Oregon Department of Environmental Quality (ODEQ) on December 19, 2016 (DEQ No. OPV-NWR-16-05). This Work Plan outlines the sampling requirements and methodology that will be used to confirm compliance and efficiency of the electrocoagulation stormwater treatment system (EC system) after completion of Phase 1 and Phase 2 stormwater source control measures (SCMs).

Phase 1 and Phase 2 SCMs rerouted stormwater runoff from Substantially Similar Basin Groups G, M1, and LD1-B to the facility's existing EC system. After completion of Phase 1 and Phase 2, the EC system treats approximately 33.9 acres of the facility, which includes 12.4 acres (Group Q) routed to the EC system prior to Phase 1; 11.7 acres (Groups G and M1) rerouted to the EC system during Phase 1; and 9.8 acres (Group LD1-B) rerouted to the EC system during Phase 2.

This memorandum presents the monitoring plan required to confirm compliance and efficiency of the EC system after implementation of Phase 1 and Phase 2 SCMs.

MONITORING APPROACH

A minimum of four separate storm events will be sampled for contaminants identified in Table 1, consistent with *Portland Harbor Joint Source Control Strategy* (JSCS) guidance (ODEQ and USEPA 2005). The EC system is a batch treatment system that samples collected stormwater from on-site detention tanks; therefore, JSCS sampling guidance regarding antecedent dry period, precipitation volume, and first flush do not apply. Grab samples will be collected directly from

the EC system discharge point. In addition, Vigor will collect influent samples from the EC system feed tank prior to any additives or active treatment for comparison to the effluent sample. Paired samples will be used to evaluate the performance of the EC system.

The proposed minimum sampling frequency is consistent with sampling currently conducted by Vigor under the facility's 1200-Z Permit. The facility collects two samples between July and December and two samples between January and June for each permit cycle year.

ANALYTICAL PARAMETERS FOR STORMWATER

The EC system will be analyzed for select Consent Order parameters to confirm compliance and efficiency. Analytical compliance will be based on comparison to the screening criteria, which consist of cleanup levels (CULs) presented in Table 17 of the U.S. Environmental Protection Agency (USEPA) Portland Harbor Record of Decision (USEPA 2017) or screening level values from Table 3-1 of the JSCS (ODEQ and USEPA 2005) where a CUL does not exist. The analytical schedule is based on data collected from Group Q, Group G, Group M1, and Group LD1-B in accordance with the SCM Monitoring Plan (Floyd|Snider 2020), which was implemented after contingency SCM implementation. The EC system will be sampled for parameters that may be attributed to facility activities, as described in the SCM Monitoring Plan, detected at or greater than the screening criteria in stormwater from the basin groups collected and conveyed to the EC system. Additionally, samples were collected from the inlet and outlet of the EC System in March 2024 using standard sampling procedures for the EC system, as described in the SCM Monitoring Plan. Collected samples were analyzed for Source Control and 1200-Z analytes including polychlorinated biphenyls (PCBs) to verify the absence of PCBs in stormwater conveyed to the EC system and confirm alignment with exceedances summarized in Table 1 after implementation of Phase 2 SCMs. Analytical results confirmed PCBs were not detected in influent and effluent samples at the EC system and aligned with past exceedances summarized in Table 1. The analytical laboratory report for samples collected in March 2024 is provided as Attachment 1.

Table 1
Analytical Schedule and Exceedances, by Basin Group

Basin Group	Analyzed Parameters ⁽¹⁾	Parameters with Exceedances ⁽²⁾
Phase 1 Group Q (including Group G and Group M1)	Arsenic, ⁽³⁾ copper, zinc, BEHP, and PAHs	Copper and zinc
Group LD1-B	Copper, zinc, and BEHP	Copper, lead, ⁽⁴⁾ zinc, and BEHP
Phase 2 Group Q (including Group G, Group M1, and Group LD1-B) ⁽⁵⁾	Aluminum, arsenic, copper, iron, lead, zinc, PCBs, TSS, pH, and Nitrogen, nitrate + nitrite	Copper and zinc

Notes:

- 1 Analyzed parameters were originally identified in Table G.1 of the SCM Monitoring Plan.
- 2 Parameters with exceedances were based on data collected and reported to ODEQ since implementation of the SCM Monitoring Plan.
- 3 Although arsenic exceedances have not occurred at Phase 1 Group Q, there have only been two rounds of arsenic sampling. Arsenic will be retained for analysis in future sampling.
- 4 Lead was sampled for 1200-Z Permit compliance and exceeds the Consent Order sampling criteria. Lead will be retained for analysis in future sampling.
- 5 Phase 2 Group Q was not included in Table G.1 of the SCM Monitoring Plan and represents Group Q after completion of Phase 1 and Phase 2 SCMs to reroute stormwater from Group G, Group M1, and Group LD1-B to the EC system. In March 2024, Group Q was sampled for Consent Order and 1200-Z parameters to verify stormwater quality in preparation of this memorandum. While aluminum, iron, and nitrogen, nitrate + nitrite are not required parameters under the Consent Order, they will be analyzed at EC system under the facility's 1200-Z permit.

Abbreviations:

- BEHP Bis(2-ethylhexyl)phthalate
- PAH Polycyclic aromatic hydrocarbon
- TSS Total suspended solid

Based on the results presented in Table 1, the EC system will be sampled for arsenic, copper, lead, zinc, and BEHP to confirm it is efficiently removing contaminants previously detected at or greater than the screening criteria in each rerouted basin group. Other parameters listed in the Consent Order will not continue to be analyzed at the EC system because recent and historical data have established that the parameter is either not attributed to facility activities or is controlled by existing SCMs and best management practices.

SAMPLING AND ANALYSIS PROTOCOLS

The SCM Monitoring Plan describes sample collection procedures, sampling techniques, and sampling equipment; analytical methods to be used on the stormwater samples; and reporting protocols that will be used to collect, analyze, and report data gathered under this Work Plan.

DATA QUALITY

Field and analytical quality assurance/quality control procedures; data reduction, validation, and reporting protocols; and corrective actions will be consistent with the SCM Monitoring Plan.

REFERENCES

Floyd|Snider. 2020. "Source Control Measures Monitoring Plan." Appendix G of *Vigor Shipyards—Swan Island Revised Monitoring and Performance Evaluation Report*. Prepared for Vigor Industrial, LLC. March.

Oregon Department of Environmental Quality (ODEQ) and U.S. Environmental Protection Agency (USEPA). 2005. *Portland Harbor Joint Source Control Strategy*. Final. December.

U.S. Environmental Protection Agency (USEPA). 2017. *Record of Decision: Portland Harbor Superfund Site, Portland Oregon*. Prepared by USEPA Region 10, Seattle, Washington. 3 January.

LIST OF ATTACHMENTS

Figure 1 Phase 1 and Phase 2 Stormwater Source Control Measures

Attachment 1 March 2024 EC System Analytical Laboratory Report

Figure

Legend

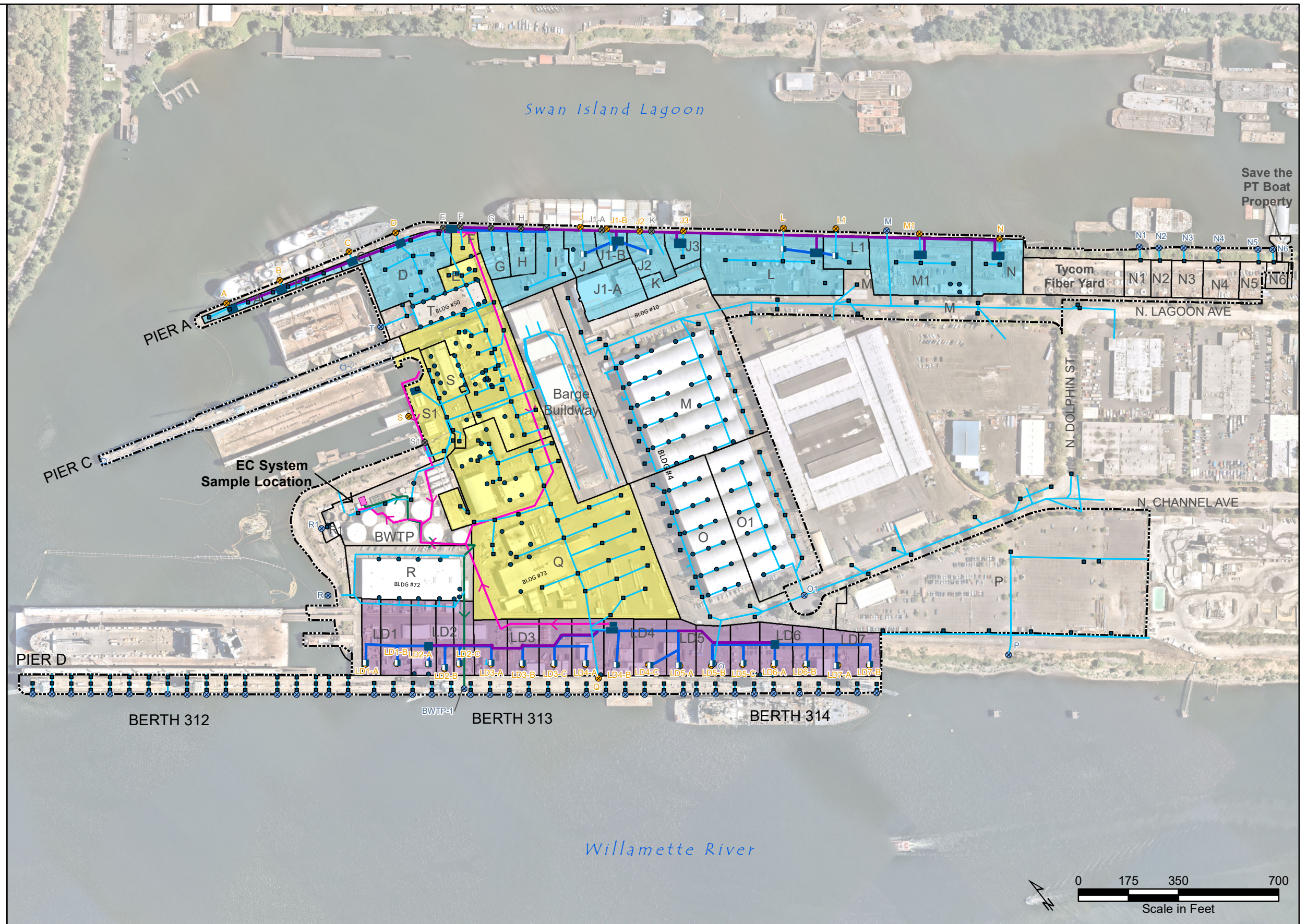
▭ Vigor Facility Boundary

Stormwater System

- ▣ Catch Basin
- ▣ Flow Splitter
- A ⊗ Outfall (active)
- S ⊗ Outfall (overflow only)
- K ⊗ Outfall (abandoned)
- Roof Drain
- Scupper
- Lift Station
- Drainage System
- New Force Main
- New Gravity Line
- Influent EC System Conveyance Piping
- Effluent EC System Discharge Piping
- EC System
- R Outfall Drainage Basin with ID

EC System Reroute Phase

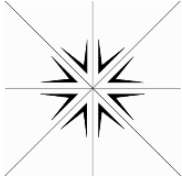
- Pre-Construction Group Q
- Phase 1 Reroute (September 2022)
- Phase 2 Reroute (January 2024)



Notes:
 · Several areas are not covered under Vigor Industrial, LLC's 1200-Z permit, including Save the PT Boat property and the Tycom Fiber Yard.
 · Catch basins in Laydown Areas LD1 through LD7 are also outfalls.
 · Orthoimagery obtained from Nearmap, 2022.

Abbreviations:
 BWTP = Ballast Water Treatment Plant
 EC = Electrocoagulation

Attachment 1
March 2024 EC System Analytical Lab Report



Specialty Analytical

9011 SE Janssen Rd
Clackamas, OR 97015
TEL: (503) 607-1331

Website: www.specialtyanalytical.com

March 29, 2024

Harrison Holzgang
Vigor Industrial LLC
5555 N Channel Ave
Portland, OR 97217
TEL: (503) 247-1974
FAX:

RE: 1200-Z Compliance/ 1396101500-61010

Order No.: 2403152

Dear Harrison Holzgang:

There were no problems with the analysis and all data for associated QC met EPA or laboratory specifications, except where noted in the Case Narrative, or as qualified with flags. Results apply only to the samples analyzed. Without approval of the laboratory, the reproduction of this report is only permitted in its entirety.

If you have any questions regarding these tests, please feel free to call.

Sincerely,

A handwritten signature in black ink, appearing to read "Marty French". The signature is written in a cursive, flowing style.

Marty French
Lab Director

Specialty Analytical

WO#: 2403152
Date Reported: 3/29/2024

CLIENT: Vigor Industrial LLC
Project: 1200-Z Compliance/ 1396101500-61010

Lab ID: 2403152-001 **Matrix:** STORM WATER
Client Sample ID Q(007)-031324-Inf **Collection Date:** 3/13/2024 12:40:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ICP/MS METALS- TOTAL RECOVERABLE						
					E200.8	E200.8 Analyst: AC
Aluminum	0.0904	0.0100		mg/L	1	3/21/2024 1:19:07 PM
Arsenic	0.000223	0.000100		mg/L	1	3/21/2024 1:19:07 PM
Copper	0.0508	0.000500	BBC	mg/L	1	3/21/2024 1:19:07 PM
Iron	2.24	0.0500		mg/L	1	3/21/2024 1:19:07 PM
Lead	0.00131	0.000100		mg/L	1	3/21/2024 1:19:07 PM
Zinc	0.418	0.0200		mg/L	10	3/29/2024 12:32:11 PM
PCB'S BY EPA 608						
					E608.3	E608.3 Analyst: BLM
Aroclor 1016	ND	0.0000211		mg/L	1	3/19/2024 8:33:00 PM
Aroclor 1221	ND	0.0000211		mg/L	1	3/19/2024 8:33:00 PM
Aroclor 1232	ND	0.0000211		mg/L	1	3/19/2024 8:33:00 PM
Aroclor 1242	ND	0.0000211		mg/L	1	3/19/2024 8:33:00 PM
Aroclor 1248	ND	0.0000211		mg/L	1	3/19/2024 8:33:00 PM
Aroclor 1254	ND	0.0000211		mg/L	1	3/19/2024 8:33:00 PM
Aroclor 1260	ND	0.0000211		mg/L	1	3/19/2024 8:33:00 PM
Total PCBs	ND	0.0000211		mg/L	1	3/19/2024 8:33:00 PM
Surr: Decachlorobiphenyl	101	22 - 135		%Rec	1	3/19/2024 8:33:00 PM
NITRATE AND NITRITE						
					SM4500-NO3-F	SM4500-NO3 Analyst: NK
Nitrogen, Nitrate+Nitrite (As N)	0.0800	0.0150		mg/L	1	3/22/2024 1:31:57 PM
TOTAL SUSPENDED SOLIDS						
					M2540 D	Analyst: AT
Total Suspended Solids	11.0	10.0		mg/L	1	3/15/2024 4:55:28 PM
FIELD PARAMETERS						
					FLD	Analyst: Clie
pH, SM4500H+ B	6.83			S.U.		3/13/2024 12:40:00 PM

Specialty Analytical

WO#: 2403152
Date Reported: 3/29/2024

CLIENT: Vigor Industrial LLC
Project: 1200-Z Compliance/ 1396101500-61010

Lab ID: 2403152-002 **Matrix:** STORM WATER
Client Sample ID Q(007)-031324-Eff **Collection Date:** 3/13/2024 12:50:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
ICP/MS METALS- TOTAL RECOVERABLE						
					E200.8	E200.8 Analyst: AC
Aluminum	0.0459	0.0100		mg/L	1	3/21/2024 1:22:27 PM
Arsenic	ND	0.000100		mg/L	1	3/21/2024 1:22:27 PM
Copper	0.0145	0.000500	BBC	mg/L	1	3/21/2024 1:22:27 PM
Iron	2.86	0.0500		mg/L	1	3/21/2024 1:22:27 PM
Lead	0.000394	0.000100		mg/L	1	3/21/2024 1:22:27 PM
Zinc	0.0958	0.00200		mg/L	1	3/21/2024 1:22:27 PM
PCB'S BY EPA 608						
					E608.3	E608.3 Analyst: BLM
Aroclor 1016	ND	0.000193		mg/L	1	3/19/2024 8:58:00 PM
Aroclor 1221	ND	0.000193		mg/L	1	3/19/2024 8:58:00 PM
Aroclor 1232	ND	0.000193		mg/L	1	3/19/2024 8:58:00 PM
Aroclor 1242	ND	0.000193		mg/L	1	3/19/2024 8:58:00 PM
Aroclor 1248	ND	0.000193		mg/L	1	3/19/2024 8:58:00 PM
Aroclor 1254	ND	0.000193		mg/L	1	3/19/2024 8:58:00 PM
Aroclor 1260	ND	0.000193		mg/L	1	3/19/2024 8:58:00 PM
Total PCBs	ND	0.000193		mg/L	1	3/19/2024 8:58:00 PM
Surr: Decachlorobiphenyl	98.4	22 - 135		%Rec	1	3/19/2024 8:58:00 PM
NITRATE AND NITRITE						
					SM4500-NO3-F	SM4500-NO3 Analyst: NK
Nitrogen, Nitrate+Nitrite (As N)	0.0860	0.0150		mg/L	1	3/22/2024 1:37:57 PM
TOTAL SUSPENDED SOLIDS						
					M2540 D	Analyst: AT
Total Suspended Solids	ND	10.0		mg/L	1	3/15/2024 4:55:28 PM
FIELD PARAMETERS						
					FLD	Analyst: Clie
pH, SM4500H+ B	6.91			S.U.		3/13/2024 12:50:00 PM

QC SUMMARY REPORT

Specialty Analytical

WO#: 2403152
3/29/2024

Client: Vigor Industrial LLC
Project: 1200-Z Compliance/ 1396101500-61010

TestCode: 200.8

Sample ID: ICV	SampType: ICV	TestCode: 200.8	Units: mg/L	Prep Date:	RunNo: 53269						
Client ID: ICV	Batch ID: 23248	TestNo: E200.8	E200.8	Analysis Date: 3/21/2024	SeqNo: 688380						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.476	0.0100	0.500	0	95.2	90	110				
Arsenic	0.0478	0.000100	0.0500	0	95.5	90	110				
Copper	0.0493	0.000500	0.0500	0	98.6	90	110				B
Iron	4.94	0.0500	5.00	0	98.9	90	110				
Lead	0.0487	0.000100	0.0500	0	97.3	90	110				
Zinc	0.0489	0.00200	0.0500	0	97.7	90	110				

Sample ID: CCB	SampType: CCB	TestCode: 200.8	Units: mg/L	Prep Date:	RunNo: 53269						
Client ID: CCB	Batch ID: 23248	TestNo: E200.8	E200.8	Analysis Date: 3/21/2024	SeqNo: 688383						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	0.0100									
Arsenic	ND	0.000100									
Copper	ND	0.000500									
Iron	ND	0.0500									
Lead	ND	0.000100									
Zinc	ND	0.00200									

Qualifiers: B Analyte detected in the associated Method Blank E Value above quantitation range H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits S Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Specialty Analytical

WO#: 2403152
3/29/2024

Client: Vigor Industrial LLC
Project: 1200-Z Compliance/ 1396101500-61010

TestCode: 200.8

Sample ID: CCV	SampType: CCV	TestCode: 200.8	Units: mg/L	Prep Date:	RunNo: 53269						
Client ID: CCV	Batch ID: 23248	TestNo: E200.8	E200.8	Analysis Date: 3/21/2024	SeqNo: 688387						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.479	0.0100	0.500	0	95.8	90	110				
Arsenic	0.0476	0.000100	0.0500	0	95.2	90	110				
Copper	0.0485	0.000500	0.0500	0	97.1	90	110				B
Iron	4.85	0.0500	5.00	0	96.9	90	110				
Lead	0.0476	0.000100	0.0500	0	95.2	90	110				
Zinc	0.0483	0.00200	0.0500	0	96.7	90	110				

Sample ID: CCB	SampType: CCB	TestCode: 200.8	Units: mg/L	Prep Date:	RunNo: 53269						
Client ID: CCB	Batch ID: 23248	TestNo: E200.8	E200.8	Analysis Date: 3/21/2024	SeqNo: 688388						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	0.0100									
Arsenic	ND	0.000100									
Copper	ND	0.000500									
Iron	ND	0.0500									
Lead	ND	0.000100									
Zinc	ND	0.00200									

Qualifiers: B Analyte detected in the associated Method Blank E Value above quantitation range H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits S Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Specialty Analytical

WO#: 2403152
3/29/2024

Client: Vigor Industrial LLC
Project: 1200-Z Compliance/ 1396101500-61010

TestCode: 200.8

Sample ID: MB-23248	SampType: MBLK	TestCode: 200.8	Units: mg/L	Prep Date: 3/19/2024	RunNo: 53269						
Client ID: PBW	Batch ID: 23248	TestNo: E200.8	E200.8	Analysis Date: 3/21/2024	SeqNo: 688389						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	0.0100									
Arsenic	ND	0.000100									
Copper	0.000892	0.000500									
Iron	ND	0.0500									
Lead	ND	0.000100									
Zinc	ND	0.00200									

Sample ID: LCS-23248	SampType: LCS	TestCode: 200.8	Units: mg/L	Prep Date: 3/19/2024	RunNo: 53269						
Client ID: LCSW	Batch ID: 23248	TestNo: E200.8	E200.8	Analysis Date: 3/21/2024	SeqNo: 688390						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.490	0.0100	0.500	0	98.0	85	115				
Arsenic	0.0462	0.000100	0.0500	0	92.4	85	115				
Copper	0.0502	0.000500	0.0500	0	100	85	115				B
Iron	4.75	0.0500	5.00	0	95.0	85	115				
Lead	0.0494	0.000100	0.0500	0	98.9	85	115				
Zinc	0.0500	0.00200	0.0500	0	100	85	115				

Qualifiers: B Analyte detected in the associated Method Blank E Value above quantitation range H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits S Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Specialty Analytical

WO#: 2403152
3/29/2024

Client: Vigor Industrial LLC
Project: 1200-Z Compliance/ 1396101500-61010

TestCode: 200.8

Sample ID: 2403188-001ADUP		SampType: DUP		TestCode: 200.8		Units: mg/L		Prep Date: 3/19/2024		RunNo: 53269	
Client ID: BatchQC		Batch ID: 23248		TestNo: E200.8		E200.8		Analysis Date: 3/21/2024		SeqNo: 688392	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.0375	0.0100						0.0363	3.06	20	
Arsenic	0.000110	0.000100						0.000227	69.4	20	RMI
Copper	0.0110	0.000500						0.0109	0.445	20	B
Iron	ND	0.0500						0	0	20	
Zinc	0.00902	0.00200						0.00889	1.44	20	

Sample ID: 2403188-001AMS		SampType: MS		TestCode: 200.8		Units: mg/L		Prep Date: 3/19/2024		RunNo: 53269	
Client ID: BatchQC		Batch ID: 23248		TestNo: E200.8		E200.8		Analysis Date: 3/21/2024		SeqNo: 688393	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.594	0.0100	0.500	0.0363	112	70	130				
Arsenic	0.0525	0.000100	0.0500	0.000227	105	70	130				
Copper	0.0562	0.000500	0.0500	0.0109	90.6	70	130				B
Iron	4.84	0.0500	5.00	0.0332	96.2	70	130				
Zinc	0.0511	0.00200	0.0500	0.00889	84.5	70	130				

Sample ID: 2403188-001AMSD		SampType: MSD		TestCode: 200.8		Units: mg/L		Prep Date: 3/19/2024		RunNo: 53269	
Client ID: BatchQC		Batch ID: 23248		TestNo: E200.8		E200.8		Analysis Date: 3/21/2024		SeqNo: 688394	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Qualifiers: B Analyte detected in the associated Method Blank E Value above quantitation range H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits S Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Specialty Analytical

WO#: 2403152
3/29/2024

Client: Vigor Industrial LLC
Project: 1200-Z Compliance/ 1396101500-61010

TestCode: 200.8

Sample ID: 2403188-001AMSD	SampType: MSD	TestCode: 200.8	Units: mg/L	Prep Date: 3/19/2024	RunNo: 53269						
Client ID: BatchQC	Batch ID: 23248	TestNo: E200.8	E200.8	Analysis Date: 3/21/2024	SeqNo: 688394						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.615	0.0100	0.500	0.0363	116	70	130	0.594	3.50	20	
Arsenic	0.0537	0.000100	0.0500	0.000227	107	70	130	0.0525	2.27	20	
Copper	0.0573	0.000500	0.0500	0.0109	92.7	70	130	0.0562	1.86	20	B
Iron	5.05	0.0500	5.00	0.0332	100	70	130	4.84	4.25	20	
Zinc	0.0524	0.00200	0.0500	0.00889	87.1	70	130	0.0511	2.54	20	

Sample ID: CCV	SampType: CCV	TestCode: 200.8	Units: mg/L	Prep Date:	RunNo: 53269						
Client ID: CCV	Batch ID: 23248	TestNo: E200.8	E200.8	Analysis Date: 3/21/2024	SeqNo: 688398						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.546	0.0100	0.500	0	109	90	110				
Arsenic	0.0530	0.000100	0.0500	0	106	90	110				
Copper	0.0504	0.000500	0.0500	0	101	90	110				B
Iron	4.94	0.0500	5.00	0	98.8	90	110				
Lead	0.0479	0.000100	0.0500	0	95.8	90	110				
Zinc	0.0485	0.00200	0.0500	0	97.0	90	110				

Qualifiers: B Analyte detected in the associated Method Blank E Value above quantitation range H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits S Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Specialty Analytical

WO#: 2403152
3/29/2024

Client: Vigor Industrial LLC
Project: 1200-Z Compliance/ 1396101500-61010

TestCode: 200.8

Sample ID: CCB	SampType: CCB	TestCode: 200.8	Units: mg/L	Prep Date:	RunNo: 53269						
Client ID: CCB	Batch ID: 23248	TestNo: E200.8	E200.8	Analysis Date: 3/21/2024	SeqNo: 688399						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	0.0100									
Arsenic	ND	0.000100									
Copper	ND	0.000500									
Iron	ND	0.0500									
Lead	ND	0.000100									
Zinc	ND	0.00200									

Sample ID: CCV	SampType: CCV	TestCode: 200.8	Units: mg/L	Prep Date:	RunNo: 53269						
Client ID: CCV	Batch ID: 23248	TestNo: E200.8	E200.8	Analysis Date: 3/21/2024	SeqNo: 688410						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	0.541	0.0100	0.500	0	108	90	110				
Arsenic	0.0530	0.000100	0.0500	0	106	90	110				
Copper	0.0499	0.000500	0.0500	0	99.8	90	110				B
Iron	4.90	0.0500	5.00	0	98.1	90	110				
Lead	0.0482	0.000100	0.0500	0	96.4	90	110				
Zinc	0.0481	0.00200	0.0500	0	96.3	90	110				

Qualifiers: B Analyte detected in the associated Method Blank E Value above quantitation range H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits S Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Specialty Analytical

WO#: 2403152
3/29/2024

Client: Vigor Industrial LLC
Project: 1200-Z Compliance/ 1396101500-61010

TestCode: 200.8

Sample ID: CCB	SampType: CCB	TestCode: 200.8	Units: mg/L	Prep Date:	RunNo: 53269						
Client ID: CCB	Batch ID: 23248	TestNo: E200.8	E200.8	Analysis Date: 3/21/2024	SeqNo: 688412						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	0.0100									
Arsenic	ND	0.000100									
Copper	ND	0.000500									
Iron	ND	0.0500									
Lead	ND	0.000100									
Zinc	ND	0.00200									

Sample ID: 2403188-001ADUP	SampType: DUP	TestCode: 200.8	Units: mg/L	Prep Date: 3/19/2024	RunNo: 53269						
Client ID: BatchQC	Batch ID: 23248	TestNo: E200.8	E200.8	Analysis Date: 3/21/2024	SeqNo: 688521						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.00100						0	0	20	

Sample ID: 2403188-001AMS	SampType: MS	TestCode: 200.8	Units: mg/L	Prep Date: 3/19/2024	RunNo: 53269						
Client ID: BatchQC	Batch ID: 23248	TestNo: E200.8	E200.8	Analysis Date: 3/21/2024	SeqNo: 688522						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.0492	0.00100	0.0500	0	98.4	70	130				

Qualifiers: B Analyte detected in the associated Method Blank E Value above quantitation range H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits S Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Specialty Analytical

WO#: 2403152
3/29/2024

Client: Vigor Industrial LLC
Project: 1200-Z Compliance/ 1396101500-61010

TestCode: 200.8

Sample ID: 2403188-001AMSD	SampType: MSD	TestCode: 200.8	Units: mg/L	Prep Date: 3/19/2024	RunNo: 53269						
Client ID: BatchQC	Batch ID: 23248	TestNo: E200.8	E200.8	Analysis Date: 3/21/2024	SeqNo: 688523						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.0507	0.00100	0.0500	0	101	70	130	0.0492	2.93	20	

Sample ID: CCV	SampType: CCV	TestCode: 200.8	Units: mg/L	Prep Date:	RunNo: 53269						
Client ID: CCV	Batch ID: 23248	TestNo: E200.8	E200.8	Analysis Date: 3/21/2024	SeqNo: 688524						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	0.0470	0.000100	0.0500	0	94.1	90	110				

Sample ID: CCB	SampType: CCB	TestCode: 200.8	Units: mg/L	Prep Date:	RunNo: 53269						
Client ID: CCB	Batch ID: 23248	TestNo: E200.8	E200.8	Analysis Date: 3/21/2024	SeqNo: 688525						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.000100									

Sample ID: ICV	SampType: ICV	TestCode: 200.8	Units: mg/L	Prep Date:	RunNo: 53269						
Client ID: ICV	Batch ID: 23248	TestNo: E200.8	E200.8	Analysis Date: 3/29/2024	SeqNo: 690025						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	0.0505	0.000500	0.0500	0	101	90	110				B

Qualifiers: B Analyte detected in the associated Method Blank E Value above quantitation range H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits S Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Specialty Analytical

WO#: 2403152
3/29/2024

Client: Vigor Industrial LLC
Project: 1200-Z Compliance/ 1396101500-61010

TestCode: 200.8

Sample ID: ICV	SampType: ICV	TestCode: 200.8	Units: mg/L	Prep Date:	RunNo: 53269						
Client ID: ICV	Batch ID: 23248	TestNo: E200.8	E200.8	Analysis Date: 3/29/2024	SeqNo: 690025						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Zinc	0.0509	0.00200	0.0500	0	102	90	110				

Sample ID: CCB	SampType: CCB	TestCode: 200.8	Units: mg/L	Prep Date:	RunNo: 53269						
Client ID: CCB	Batch ID: 23248	TestNo: E200.8	E200.8	Analysis Date: 3/29/2024	SeqNo: 690028						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	ND	0.000500									
Zinc	ND	0.00200									

Sample ID: CCV	SampType: CCV	TestCode: 200.8	Units: mg/L	Prep Date:	RunNo: 53269						
Client ID: CCV	Batch ID: 23248	TestNo: E200.8	E200.8	Analysis Date: 3/29/2024	SeqNo: 690032						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	0.0510	0.000500	0.0500	0	102	90	110				B
Zinc	0.0514	0.00200	0.0500	0	103	90	110				

Qualifiers: B Analyte detected in the associated Method Blank E Value above quantitation range H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits S Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Specialty Analytical

WO#: 2403152
3/29/2024

Client: Vigor Industrial LLC
Project: 1200-Z Compliance/ 1396101500-61010

TestCode: 200.8

Sample ID: CCB	SampType: CCB	TestCode: 200.8	Units: mg/L	Prep Date:	RunNo: 53269						
Client ID: CCB	Batch ID: 23248	TestNo: E200.8	E200.8	Analysis Date: 3/29/2024	SeqNo: 690033						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	ND	0.000500									
Zinc	ND	0.00200									

Sample ID: CCV	SampType: CCV	TestCode: 200.8	Units: mg/L	Prep Date:	RunNo: 53269						
Client ID: CCV	Batch ID: 23248	TestNo: E200.8	E200.8	Analysis Date: 3/29/2024	SeqNo: 690038						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	0.0512	0.000500	0.0500	0	102	90	110				B
Zinc	0.0514	0.00200	0.0500	0	103	90	110				

Sample ID: CCB	SampType: CCB	TestCode: 200.8	Units: mg/L	Prep Date:	RunNo: 53269						
Client ID: CCB	Batch ID: 23248	TestNo: E200.8	E200.8	Analysis Date: 3/29/2024	SeqNo: 690039						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	ND	0.000500									
Zinc	ND	0.00200									

Qualifiers: B Analyte detected in the associated Method Blank E Value above quantitation range H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits S Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Specialty Analytical

WO#: 2403152
3/29/2024

Client: Vigor Industrial LLC
Project: 1200-Z Compliance/ 1396101500-61010

TestCode: 200.8

Sample ID: CCB	SampType: CCB	TestCode: 200.8	Units: mg/L	Prep Date:	RunNo: 53269						
Client ID: CCB	Batch ID: 23248	TestNo: E200.8	E200.8	Analysis Date: 3/29/2024	SeqNo: 690043						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	ND	0.000500									
Zinc	ND	0.00200									

Sample ID: CCV	SampType: CCV	TestCode: 200.8	Units: mg/L	Prep Date:	RunNo: 53269						
Client ID: CCV	Batch ID: 23248	TestNo: E200.8	E200.8	Analysis Date: 3/29/2024	SeqNo: 690044						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	0.0519	0.000500	0.0500	0	104	90	110				B
Zinc	0.0517	0.00200	0.0500	0	103	90	110				

Qualifiers: B Analyte detected in the associated Method Blank E Value above quantitation range H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits S Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Specialty Analytical

WO#: 2403152
3/29/2024

Client: Vigor Industrial LLC
Project: 1200-Z Compliance/ 1396101500-61010

TestCode: 608PCB_W

Sample ID: CCV PS-1161	SampType: CCV	TestCode: 608PCB_W	Units: mg/L	Prep Date:	RunNo: 53239						
Client ID: CCV	Batch ID: 23251	TestNo: E608.3	E608.3	Analysis Date: 3/19/2024	SeqNo: 688030						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016/1260	0.00183	0.0000200	0.00200	0	91.5	75	125				
Total PCBs	0.0110	0.0000200									

Sample ID: MB-23251	SampType: MBLK	TestCode: 608PCB_W	Units: mg/L	Prep Date: 3/19/2024	RunNo: 53239						
Client ID: PBW	Batch ID: 23251	TestNo: E608.3	E608.3	Analysis Date: 3/19/2024	SeqNo: 688031						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016	ND	0.0000200									
Aroclor 1221	ND	0.0000200									
Aroclor 1232	ND	0.0000200									
Aroclor 1242	ND	0.0000200									
Aroclor 1248	ND	0.0000200									
Aroclor 1254	ND	0.0000200									
Aroclor 1260	ND	0.0000200									
Total PCBs	ND	0.0000200									
Surr: Decachlorobiphenyl	186		200.0		93.0	22	135				

Qualifiers: B Analyte detected in the associated Method Blank E Value above quantitation range H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits S Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Specialty Analytical

WO#: 2403152
3/29/2024

Client: Vigor Industrial LLC
Project: 1200-Z Compliance/ 1396101500-61010

TestCode: 608PCB_W

Sample ID: LCS-23251	SampType: LCS	TestCode: 608PCB_W	Units: mg/L	Prep Date: 3/19/2024	RunNo: 53239						
Client ID: LCSW	Batch ID: 23251	TestNo: E608.3	E608.3	Analysis Date: 3/19/2024	SeqNo: 688032						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016/1260	0.00151	0.0000200	0.00200	0	75.6	50	140				

Sample ID: LCSD-23251	SampType: LCSD	TestCode: 608PCB_W	Units: mg/L	Prep Date: 3/19/2024	RunNo: 53239						
Client ID: LCSS02	Batch ID: 23251	TestNo: E608.3	E608.3	Analysis Date: 3/19/2024	SeqNo: 688033						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016/1260	0.00144	0.0000200	0.00200	0	71.8	50	140	0.00151	5.16	20	

Sample ID: CCV PS-1161	SampType: CCV	TestCode: 608PCB_W	Units: mg/L	Prep Date:	RunNo: 53239						
Client ID: CCV	Batch ID: 23251	TestNo: E608.3	E608.3	Analysis Date: 3/19/2024	SeqNo: 688037						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016/1260	0.00188	0.0000200	0.00200	0	94.0	75	125				
Total PCBs	0.0113	0.0000200									

Qualifiers: B Analyte detected in the associated Method Blank E Value above quantitation range H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits S Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Specialty Analytical

WO#: 2403152
3/29/2024

Client: Vigor Industrial LLC
Project: 1200-Z Compliance/ 1396101500-61010

TestCode: N2N3_CWA

Sample ID: ICV-R53287	SampType: ICV	TestCode: N2N3_CWA	Units: mg/L	Prep Date:	RunNo: 53287						
Client ID: ICV	Batch ID: 23267	TestNo: SM4500-NO3- SM4500-NO3-	Analysis Date: 3/22/2024	SeqNo: 688755							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrate+Nitrite (As N)	0.264	0.0150	0.2500	0	106	90	110				

Sample ID: ICB-R53287	SampType: ICB	TestCode: N2N3_CWA	Units: mg/L	Prep Date:	RunNo: 53287						
Client ID: ICB	Batch ID: 23267	TestNo: SM4500-NO3- SM4500-NO3-	Analysis Date: 3/22/2024	SeqNo: 688756							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrate+Nitrite (As N)	ND	0.0150									

Sample ID: MB-R53287	SampType: MBLK	TestCode: N2N3_CWA	Units: mg/L	Prep Date:	RunNo: 53287						
Client ID: PBW	Batch ID: 23267	TestNo: SM4500-NO3- SM4500-NO3-	Analysis Date: 3/22/2024	SeqNo: 688758							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrate+Nitrite (As N)	ND	0.0150									

Sample ID: LCS-R53287	SampType: LCS	TestCode: N2N3_CWA	Units: mg/L	Prep Date:	RunNo: 53287						
Client ID: LCSW	Batch ID: 23267	TestNo: SM4500-NO3- SM4500-NO3-	Analysis Date: 3/22/2024	SeqNo: 688759							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrate+Nitrite (As N)	0.517	0.0150	0.5000	0	103	90	110				

Qualifiers: B Analyte detected in the associated Method Blank E Value above quantitation range H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits S Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Specialty Analytical

WO#: 2403152
3/29/2024

Client: Vigor Industrial LLC
Project: 1200-Z Compliance/ 1396101500-61010

TestCode: N2N3_CWA

Sample ID: LCS-R53287	SampType: LCS	TestCode: N2N3_CWA	Units: mg/L	Prep Date:	RunNo: 53287						
Client ID: LCSW	Batch ID: 23267	TestNo: SM4500-NO3- SM4500-NO3-	Analysis Date: 3/22/2024	SeqNo: 688759							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sample ID: 2403152-001CMS	SampType: MS	TestCode: N2N3_CWA	Units: mg/L	Prep Date: 3/22/2024	RunNo: 53287						
Client ID: Q(007)-031324-Inf	Batch ID: 23267	TestNo: SM4500-NO3- SM4500-NO3-	Analysis Date: 3/22/2024	SeqNo: 688762							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrate+Nitrite (As N)	0.610	0.0150	0.5000	0.08000	106	75	120				

Sample ID: 2403152-001CMSD	SampType: MSD	TestCode: N2N3_CWA	Units: mg/L	Prep Date: 3/22/2024	RunNo: 53287						
Client ID: Q(007)-031324-Inf	Batch ID: 23267	TestNo: SM4500-NO3- SM4500-NO3-	Analysis Date: 3/22/2024	SeqNo: 688763							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrate+Nitrite (As N)	0.610	0.0150	0.5000	0.08000	106	75	120	0.6100	0	20	

Sample ID: CCV1-R53287	SampType: CCV	TestCode: N2N3_CWA	Units: mg/L	Prep Date:	RunNo: 53287						
Client ID: CCV	Batch ID: 23267	TestNo: SM4500-NO3- SM4500-NO3-	Analysis Date: 3/22/2024	SeqNo: 688766							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrate+Nitrite (As N)	0.494	0.0150	0.5000	0	98.8	90	110				

Qualifiers: B Analyte detected in the associated Method Blank E Value above quantitation range H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits S Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Specialty Analytical

WO#: 2403152
3/29/2024

Client: Vigor Industrial LLC
Project: 1200-Z Compliance/ 1396101500-61010

TestCode: N2N3_CWA

Sample ID: CCB1-R53287	SampType: CCB	TestCode: N2N3_CWA	Units: mg/L	Prep Date:	RunNo: 53287
Client ID: CCB	Batch ID: 23267	TestNo: SM4500-NO3- SM4500-NO3-	Analysis Date: 3/22/2024	SeqNo: 688767	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrogen, Nitrate+Nitrite (As N)	ND	0.0150			

Sample ID: 2403209-002BMS	SampType: MS	TestCode: N2N3_CWA	Units: mg/L	Prep Date: 3/22/2024	RunNo: 53287
Client ID: BatchQC	Batch ID: 23267	TestNo: SM4500-NO3- SM4500-NO3-	Analysis Date: 3/22/2024	SeqNo: 688768	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrogen, Nitrate+Nitrite (As N)	0.886	0.0150	0.5000	0.3770	102 75 120

Sample ID: 2403209-002BMSD	SampType: MSD	TestCode: N2N3_CWA	Units: mg/L	Prep Date: 3/22/2024	RunNo: 53287
Client ID: BatchQC	Batch ID: 23267	TestNo: SM4500-NO3- SM4500-NO3-	Analysis Date: 3/22/2024	SeqNo: 688769	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrogen, Nitrate+Nitrite (As N)	0.905	0.0150	0.5000	0.3770	106 75 120 0.8860 2.12 20

Sample ID: CCV4-R53287	SampType: CCV	TestCode: N2N3_CWA	Units: mg/L	Prep Date:	RunNo: 53287
Client ID: CCV	Batch ID: 23267	TestNo: SM4500-NO3- SM4500-NO3-	Analysis Date: 3/22/2024	SeqNo: 688783	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrogen, Nitrate+Nitrite (As N)	0.497	0.0150	0.5000	0	99.4 90 110

Qualifiers: B Analyte detected in the associated Method Blank E Value above quantitation range H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits S Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Specialty Analytical

WO#: 2403152
3/29/2024

Client: Vigor Industrial LLC
Project: 1200-Z Compliance/ 1396101500-61010

TestCode: N2N3_CWA

Sample ID: CCV4-R53287	SampType: CCV	TestCode: N2N3_CWA	Units: mg/L	Prep Date:	RunNo: 53287						
Client ID: CCV	Batch ID: 23267	TestNo: SM4500-NO3- SM4500-NO3-		Analysis Date: 3/22/2024	SeqNo: 688783						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sample ID: CCB4-R53287	SampType: CCB	TestCode: N2N3_CWA	Units: mg/L	Prep Date:	RunNo: 53287						
Client ID: CCB	Batch ID: 23267	TestNo: SM4500-NO3- SM4500-NO3-		Analysis Date: 3/22/2024	SeqNo: 688784						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Nitrate+Nitrite (As N)	ND	0.0150									

Qualifiers: B Analyte detected in the associated Method Blank E Value above quantitation range H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits S Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Specialty Analytical

WO#: 2403152
3/29/2024

Client: Vigor Industrial LLC
Project: 1200-Z Compliance/ 1396101500-61010

TestCode: TSS_WW

Sample ID: MB-R53203	SampType: MBLK	TestCode: TSS_WW	Units: mg/L	Prep Date:	RunNo: 53203						
Client ID: PBW	Batch ID: R53203	TestNo: M2540 D		Analysis Date: 3/15/2024	SeqNo: 687482						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Suspended Solids	ND	10.0									

Sample ID: LCS-R53203	SampType: LCS	TestCode: TSS_WW	Units: mg/L	Prep Date:	RunNo: 53203						
Client ID: LCSW	Batch ID: R53203	TestNo: M2540 D		Analysis Date: 3/15/2024	SeqNo: 687483						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Suspended Solids	41.0	10.0	100.0	0	41.0	80	120				S

Sample ID: 2403120-001BDUP	SampType: DUP	TestCode: TSS_WW	Units: mg/L	Prep Date:	RunNo: 53203						
Client ID: BatchQC	Batch ID: R53203	TestNo: M2540 D		Analysis Date: 3/15/2024	SeqNo: 687487						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Suspended Solids	ND	10.0						0	0	20	RRF

Sample ID: 2403122-001ADUP	SampType: DUP	TestCode: TSS_WW	Units: mg/L	Prep Date:	RunNo: 53203						
Client ID: BatchQC	Batch ID: R53203	TestNo: M2540 D		Analysis Date: 3/15/2024	SeqNo: 687490						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Suspended Solids	ND	10.0						0	0	20	RRF

Qualifiers: B Analyte detected in the associated Method Blank E Value above quantitation range H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits S Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Specialty Analytical

WO#: 2403152
3/29/2024

Client: Vigor Industrial LLC
Project: 1200-Z Compliance/ 1396101500-61010

TestCode: TSS_WW

Sample ID: 2403122-001ADUP	SampType: DUP	TestCode: TSS_WW	Units: mg/L	Prep Date:	RunNo: 53203						
Client ID: BatchQC	Batch ID: R53203	TestNo: M2540 D		Analysis Date: 3/15/2024	SeqNo: 687490						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Qualifiers: B Analyte detected in the associated Method Blank E Value above quantitation range H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits S Spike Recovery outside accepted recovery limits



Specialty Analytical
 9011 SE Jannsen Rd
 Clackamas, Oregon 97015
 TEL: 503-607-1331 FAX: 503-607-1336
 Website: www.specialtyanalytical.com

Sample Receipt Checklist

Client Name VIGOR

Work Order Number 2403152

RcptNo: 1

Date and Time Receive 3/13/2024 3:20:38 PM

Received by: Julie Clay

Completed by

Reviewed by:

Completed Date: 3/13/2024 3:21:15 PM

Reviewed Date: 3/13/2024 4:20:34 PM

Carrier name: Client

- Chain of custody present? Yes No
- Chain of custody signed when relinquished and received? Yes No
- Chain of custody agrees with sample labels? Yes No Not Present
- Are matrices correctly identified on Chain of custody? Yes No
- Is it clear what analyses were requested? Yes No
- Custody seals intact on sample bottles? Yes No Not Present
- Samples in proper container/bottle? Yes No
- Were correct preservatives used and noted? Yes No NA
- Sample containers intact? Yes No
- Sufficient sample volume for indicated test? Yes No
- Were container labels complete (ID, Pres, Date)? Yes No
- All samples received within holding time? Yes No
- Was an attempt made to cool the samples? Yes No NA
- All samples received at a temp. of > 0° C to 6.0° C? Yes No NA
- Response when temperature is outside of range: Samples were collected the same day and chilled.
- Preservative added to bottles:
- Sample Temp. taken and recorded upon receipt? Yes No To 7.4 °C
- Water - Were bubbles absent in VOC vials? Yes No No Vials
- Water - Was there Chlorine Present? Yes No NA
- Water - pH acceptable upon receipt? Yes No NA
- Are Samples considered acceptable? Yes No
- Custody Seals present? Yes No
- Traffic Report or Packing Lists present? Yes No
- Airbill or Sticker? Air Bill Sticker Not Present
- Airbill No:
- Sample Tags Present? Yes No
- Sample Tags Listed on COC? Yes No
- Tag Numbers:
- Sample Condition? Intact Broken Leaking

Case Number:

SDG:

SAS:

Adjusted? _____ Checked by _____

Any No and/or NA (not applicable) response must be detailed in the comments section be



Specialty Analytical
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Clackamas, Oregon 97015
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Sample Receipt Checklist

Client Contacted? Yes No NA Person Contacted: _____ Comments: _____
Contact Mode: Phone: Fax: Email: In Person: _____
Client Instructions: _____
Date Contacted: _____ Contacted By: _____
Regarding: _____
CorrectiveAction: _____



Fremont

Analytical

An Alliance Technical Group Company

3600 Fremont Ave. N.

Seattle, WA 98103

T: (206) 352-3790

F: (206) 352-7178

info@fremontanalytical.com

Specialty Analytical
Project Manager
9011 SE Jannsen Rd
Clackamas, OR 97015

RE: 2403152
Work Order Number: 2403271

March 29, 2024

Attention Project Manager:

Fremont Analytical, Inc. received 2 sample(s) on 3/15/2024 for the analyses presented in the following report.

Polyaromatic Hydrocarbons by EPA Method 625.1(SIM)

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Brianna Barnes
Project Manager

*DoD-ELAP Accreditation #79636 by PJLA, ISO/IEC 17025:2017 and QSM 5.4 for Environmental Testing
ORELAP Certification: WA 100009 (NELAP Recognized) for Environmental Testing
Washington State Department of Ecology Accredited for Environmental Testing, Lab ID C910*

Original

www.fremontanalytical.com



CLIENT: Specialty Analytical
Project: 2403152
Work Order: 2403271

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
2403271-001	Q(007)-031324-Inf	03/13/2024 12:40 PM	03/15/2024 9:16 AM
2403271-002	Q(007)-031324-Eff	03/13/2024 12:50 PM	03/15/2024 9:16 AM

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

CLIENT: Specialty Analytical
Project: 2403152

I. SAMPLE RECEIPT:

Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:

Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:

Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Note: LCSD exhibited low recovery for all analytes, some below acceptance criteria. The sample data are necessarily qualified; however, the results are consistent with a prep error limited to the LCSD. The LCS-LL, a low-level spike prepared at the level of quantitation, also recovered slightly below 50% for some analytes; however the analyte responses exceeded 3x signal-to-noise ratio, indicating sufficient sensitivity at the concentration of interest.

Qualifiers:

- * - Associated LCS is outside of control limits
- B - Analyte detected in the associated Method Blank
- D - Dilution was required
- E - Value above quantitation range
- H - Holding times for preparation or analysis exceeded
- I - Analyte with an internal standard that does not meet established acceptance criteria
- J - Analyte detected below Reporting Limit
- N - Tentatively Identified Compound (TIC)
- Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria
- S - Spike recovery outside accepted recovery limits
- ND - Not detected at the Method Detection Limit
- R - High relative percent difference observed

Acronyms:

- %Rec - Percent Recovery
- CCB - Continued Calibration Blank
- CCV - Continued Calibration Verification
- DF - Dilution Factor
- DUP - Sample Duplicate
- HEM - Hexane Extractable Material
- ICV - Initial Calibration Verification
- LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
- MCL - Maximum Contaminant Level
- MB or MBLANK - Method Blank
- MDL - Method Detection Limit
- MS/MSD - Matrix Spike / Matrix Spike Duplicate
- PDS - Post Digestion Spike
- Ref Val - Reference Value
- REP - Sample Replicate
- RL - Reporting Limit
- RPD - Relative Percent Difference
- SD - Serial Dilution
- SGT - Silica Gel Treatment
- SPK - Spike
- Surr - Surrogate



Analytical Report

Work Order: 2403271
Date Reported: 3/29/2024

Client: Specialty Analytical

Collection Date: 3/13/2024 12:40:00 PM

Project: 2403152

Lab ID: 2403271-001

Matrix: Stormwater

Client Sample ID: Q(007)-031324-Inf

Analyses	Result	RL	MDL	Qual	Units	DF	Date Analyzed
Polyaromatic Hydrocarbons by EPA Method 625.1(SIM)			Batch ID: 43342		Analyst: RG		
Naphthalene	ND	0.00999	0.00999	*H	µg/L	1	03/25/24 12:33:36
2-Methylnaphthalene	ND	0.00999	0.00999	*H	µg/L	1	03/25/24 12:33:36
1-Methylnaphthalene	ND	0.00999	0.00999	*H	µg/L	1	03/25/24 12:33:36
Acenaphthene	ND	0.00999	0.00999	*H	µg/L	1	03/25/24 12:33:36
Acenaphthylene	ND	0.00999	0.00999	*H	µg/L	1	03/25/24 12:33:36
Fluorene	ND	0.00999	0.00999	*H	µg/L	1	03/25/24 12:33:36
Phenanthrene	ND	0.00999	0.00999	*H	µg/L	1	03/25/24 12:33:36
Anthracene	ND	0.00999	0.00999	H	µg/L	1	03/25/24 12:33:36
Fluoranthene	ND	0.00999	0.00999	*H	µg/L	1	03/25/24 12:33:36
Pyrene	ND	0.00999	0.00999	*H	µg/L	1	03/25/24 12:33:36
Benz(a)anthracene	ND	0.00999	0.00999	H	µg/L	1	03/25/24 12:33:36
Chrysene	ND	0.00999	0.00999	*H	µg/L	1	03/25/24 12:33:36
Bis(2-ethylhexyl) phthalate	ND	0.999	0.333	H	µg/L	1	03/25/24 12:33:36
Benzo(b)fluoranthene	ND	0.00999	0.00999	*H	µg/L	1	03/25/24 12:33:36
Benzo(k)fluoranthene	ND	0.00999	0.00999	*H	µg/L	1	03/25/24 12:33:36
Benzo(a)pyrene	ND	0.00999	0.00999	H	µg/L	1	03/25/24 12:33:36
Indeno(1,2,3-cd)pyrene	ND	0.00999	0.00999	H	µg/L	1	03/25/24 12:33:36
Dibenz(a,h)anthracene	ND	0.00999	0.00999	H	µg/L	1	03/25/24 12:33:36
Benzo(g,h,i)perylene	ND	0.00999	0.00999	H	µg/L	1	03/25/24 12:33:36
Surr: 2-Fluorobiphenyl	82.9	22.3 - 126		H	%Rec	1	03/25/24 12:33:36
Surr: Terphenyl-d14	94.1	20.3 - 148		H	%Rec	1	03/25/24 12:33:36

NOTES:

* - Associated LCSD is below acceptance criteria. Refer to case narrative.



Analytical Report

Work Order: **2403271**
 Date Reported: **3/29/2024**

Client: Specialty Analytical

Collection Date: 3/13/2024 12:50:00 PM

Project: 2403152

Lab ID: 2403271-002

Matrix: Stormwater

Client Sample ID: Q(007)-031324-Eff

Analyses	Result	RL	MDL	Qual	Units	DF	Date Analyzed
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Polyaromatic Hydrocarbons by EPA Method 625.1(SIM)

Batch ID: 43342

Analyst: RG

Naphthalene	ND	0.00997	0.00997	*H	µg/L	1	03/25/24 13:03:15
2-Methylnaphthalene	ND	0.00997	0.00997	*H	µg/L	1	03/25/24 13:03:15
1-Methylnaphthalene	ND	0.00997	0.00997	*H	µg/L	1	03/25/24 13:03:15
Acenaphthene	ND	0.00997	0.00997	*H	µg/L	1	03/25/24 13:03:15
Acenaphthylene	ND	0.00997	0.00997	*H	µg/L	1	03/25/24 13:03:15
Fluorene	ND	0.00997	0.00997	*H	µg/L	1	03/25/24 13:03:15
Phenanthrene	ND	0.00997	0.00997	*H	µg/L	1	03/25/24 13:03:15
Anthracene	ND	0.00997	0.00997	H	µg/L	1	03/25/24 13:03:15
Fluoranthene	ND	0.00997	0.00997	*H	µg/L	1	03/25/24 13:03:15
Pyrene	ND	0.00997	0.00997	*H	µg/L	1	03/25/24 13:03:15
Benz(a)anthracene	ND	0.00997	0.00997	H	µg/L	1	03/25/24 13:03:15
Chrysene	ND	0.00997	0.00997	*H	µg/L	1	03/25/24 13:03:15
Bis(2-ethylhexyl) phthalate	ND	0.997	0.332	H	µg/L	1	03/25/24 13:03:15
Benzo(b)fluoranthene	ND	0.00997	0.00997	*H	µg/L	1	03/25/24 13:03:15
Benzo(k)fluoranthene	ND	0.00997	0.00997	*H	µg/L	1	03/25/24 13:03:15
Benzo(a)pyrene	ND	0.00997	0.00997	H	µg/L	1	03/25/24 13:03:15
Indeno(1,2,3-cd)pyrene	ND	0.00997	0.00997	H	µg/L	1	03/25/24 13:03:15
Dibenz(a,h)anthracene	ND	0.00997	0.00997	H	µg/L	1	03/25/24 13:03:15
Benzo(g,h,i)perylene	ND	0.00997	0.00997	H	µg/L	1	03/25/24 13:03:15
Surr: 2-Fluorobiphenyl	83.6	22.3 - 126		H	%Rec	1	03/25/24 13:03:15
Surr: Terphenyl-d14	89.9	20.3 - 148		H	%Rec	1	03/25/24 13:03:15

NOTES:

* - Associated LCSD is below acceptance criteria. Refer to case narrative.

Work Order: 2403271
CLIENT: Specialty Analytical
Project: 2403152

QC SUMMARY REPORT
Polyaromatic Hydrocarbons by EPA Method 625.1(SIM)

Sample ID: MB-43342	SampType: MBLK	Units: µg/L	Prep Date: 3/21/2024	RunNo: 90615							
Client ID: MBLKW	Batch ID: 43342		Analysis Date: 3/25/2024	SeqNo: 1890009							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	ND	0.00886									*
2-Methylnaphthalene	ND	0.00886									*
1-Methylnaphthalene	ND	0.00886									*
Acenaphthene	ND	0.00886									*
Acenaphthylene	ND	0.00886									*
Fluorene	ND	0.00886									*
Phenanthrene	ND	0.00886									*
Anthracene	ND	0.00886									*
Fluoranthene	ND	0.00886									*
Pyrene	ND	0.00886									*
Benz(a)anthracene	ND	0.00886									*
Chrysene	ND	0.00886									*
Bis(2-ethylhexyl) phthalate	ND	0.886									*
Benzo(b)fluoranthene	ND	0.00886									*
Benzo(k)fluoranthene	ND	0.00886									*
Benzo(a)pyrene	ND	0.00886									*
Indeno(1,2,3-cd)pyrene	ND	0.00886									*
Dibenz(a,h)anthracene	ND	0.00886									*
Benzo(g,h,i)perylene	ND	0.00886									*
Surr: 2-Fluorobiphenyl	0.360		1.107		32.5	29	110				
Surr: Terphenyl-d14	0.583		1.107		52.7	39	124				

NOTES:

* - Associated LCS is below acceptance criteria. Result may be low-biased.

Sample ID: LCS-43342	SampType: LCS	Units: µg/L	Prep Date: 3/21/2024	RunNo: 90615							
Client ID: LCSW	Batch ID: 43342		Analysis Date: 3/25/2024	SeqNo: 1890010							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	1.19	0.00965	2.412	0	49.2	36.3	99.6				
2-Methylnaphthalene	1.21	0.00965	2.412	0	50.3	35.9	101				
1-Methylnaphthalene	1.20	0.00965	2.412	0	49.9	37.4	103				
Acenaphthene	1.30	0.00965	2.412	0	54.0	41.7	105				

Work Order: 2403271
CLIENT: Specialty Analytical
Project: 2403152

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 625.1(SIM)

Sample ID: LCS-43342	SampType: LCS	Units: µg/L			Prep Date: 3/21/2024	RunNo: 90615					
Client ID: LCSW	Batch ID: 43342				Analysis Date: 3/25/2024	SeqNo: 1890010					
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthylene	1.21	0.00965	2.412	0	50.3	41.2	108				
Fluorene	1.35	0.00965	2.412	0	55.9	46.5	109				
Phenanthrene	1.34	0.00965	2.412	0	55.5	44.7	111				
Anthracene	1.36	0.00965	2.412	0	56.4	35.4	105				
Fluoranthene	1.44	0.00965	2.412	0	59.9	48	115				
Pyrene	1.45	0.00965	2.412	0	60.1	47.3	115				
Benz(a)anthracene	1.40	0.00965	2.412	0	58.2	44.5	112				
Chrysene	1.23	0.00965	2.412	0	51.2	43.2	113				
Bis(2-ethylhexyl) phthalate	.800	0.965	2.412	0	33.2	7.52	113				J
Benzo(b)fluoranthene	1.23	0.00965	2.412	0	51.1	43.2	109				
Benzo(k)fluoranthene	0.981	0.00965	2.412	0	40.7	39.6	106				
Benzo(a)pyrene	1.10	0.00965	2.412	0	45.6	34.4	103				
Indeno(1,2,3-cd)pyrene	0.884	0.00965	2.412	0	36.7	24.4	106				
Dibenz(a,h)anthracene	0.707	0.00965	2.412	0	29.3	5.92	107				
Benzo(g,h,i)perylene	0.713	0.00965	2.412	0	29.6	15.1	105				
Surr: 2-Fluorobiphenyl	0.675		1.206		55.9	22.3	126				
Surr: Terphenyl-d14	0.791		1.206		65.6	20.3	148				

Sample ID: LCS-43342	SampType: LCS	Units: µg/L			Prep Date: 3/21/2024	RunNo: 90615					
Client ID: LCSW02	Batch ID: 43342				Analysis Date: 3/25/2024	SeqNo: 1890011					
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	0.758	0.00953	2.384	0	31.8	36.3	99.6	1.186	44.0	30	RS
2-Methylnaphthalene	0.786	0.00953	2.384	0	33.0	35.9	101	1.213	42.8	30	RS
1-Methylnaphthalene	0.781	0.00953	2.384	0	32.8	37.4	103	1.205	42.7	30	RS
Acenaphthene	0.868	0.00953	2.384	0	36.4	41.7	105	1.304	40.1	30	RS
Acenaphthylene	0.795	0.00953	2.384	0	33.4	41.2	108	1.213	41.6	30	RS
Fluorene	0.932	0.00953	2.384	0	39.1	46.5	109	1.349	36.6	30	RS
Phenanthrene	0.986	0.00953	2.384	0	41.4	44.7	111	1.339	30.3	30	RS
Anthracene	0.990	0.00953	2.384	0	41.5	35.4	105	1.360	31.4	30	R
Fluoranthene	1.07	0.00953	2.384	0	45.0	48	115	1.444	29.5	30	S

Work Order: 2403271
CLIENT: Specialty Analytical
Project: 2403152

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 625.1(SIM)

Sample ID: LCS-D-43342	SampType: LCS-D	Units: µg/L			Prep Date: 3/21/2024	RunNo: 90615					
Client ID: LCSW02	Batch ID: 43342				Analysis Date: 3/25/2024	SeqNo: 1890011					
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Pyrene	1.07	0.00953	2.384	0	45.1	47.3	115	1.450	29.7	30	S
Benz(a)anthracene	1.08	0.00953	2.384	0	45.1	44.5	112	1.403	26.5	30	
Chrysene	0.942	0.00953	2.384	0	39.5	43.2	113	1.235	26.9	30	S
Bis(2-ethylhexyl) phthalate	.568	0.953	2.384	0	23.8	7.52	113	0.7999	33.9	30	J
Benzo(b)fluoranthene	0.954	0.00953	2.384	0	40.0	43.2	109	1.233	25.5	30	S
Benzo(k)fluoranthene	0.746	0.00953	2.384	0	31.3	39.6	106	0.9808	27.2	30	S
Benzo(a)pyrene	0.832	0.00953	2.384	0	34.9	34.4	103	1.099	27.6	30	
Indeno(1,2,3-cd)pyrene	0.650	0.00953	2.384	0	27.3	24.4	106	0.8843	30.6	30	R
Dibenz(a,h)anthracene	0.493	0.00953	2.384	0	20.7	5.92	107	0.7066	35.7	30	R
Benzo(g,h,i)perylene	0.504	0.00953	2.384	0	21.1	15.1	105	0.7134	34.4	30	R
Surr: 2-Fluorobiphenyl	0.470		1.192		39.4	22.3	126		0		
Surr: Terphenyl-d14	0.643		1.192		54.0	20.3	148		0		

NOTES:

S - Outlying spike recovery observed (low bias). Samples will be qualified with a *.

R - High RPD observed.

Sample ID: LCS-LL-43342	SampType: LCS-LL	Units: µg/L			Prep Date: 3/21/2024	RunNo: 90615					
Client ID: BATCH	Batch ID: 43342				Analysis Date: 3/25/2024	SeqNo: 1890012					
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	0.00692	0	0.009603	0	72.1	50	150				
2-Methylnaphthalene	0.00484	0	0.009603	0	50.4	50	150				
1-Methylnaphthalene	0.00489	0	0.009603	0	50.9	50	150				
Acenaphthene	0.00723	0	0.009603	0	75.3	50	150				
Acenaphthylene	0.00413	0	0.009603	0	43.0	50	150				S
Fluorene	0.00482	0	0.009603	0	50.2	50	150				
Phenanthrene	0.00595	0	0.009603	0	62.0	50	150				
Anthracene	0.00448	0	0.009603	0	46.7	50	150				S
Fluoranthene	0.00642	0	0.009603	0	66.9	50	150				
Pyrene	0.00661	0	0.009603	0	68.8	50	150				
Benz(a)anthracene	0.0109	0	0.009603	0	113	50	150				
Chrysene	0.00528	0	0.009603	0	55.0	50	150				

Work Order: 2403271
CLIENT: Specialty Analytical
Project: 2403152

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 625.1(SIM)

Sample ID: LCS-LL-43342	SampType: LCS-LL	Units: µg/L			Prep Date: 3/21/2024	RunNo: 90615					
Client ID: BATCH	Batch ID: 43342				Analysis Date: 3/25/2024	SeqNo: 1890012					
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Bis(2-ethylhexyl) phthalate	0.0434	0	0.009603	0	452	50	150				S
Benzo(b)fluoranthene	0.00484	0	0.009603	0	50.4	50	150				
Benzo(k)fluoranthene	0.00510	0	0.009603	0	53.1	50	150				
Benzo(a)pyrene	0.00376	0	0.009603	0	39.2	50	150				S
Indeno(1,2,3-cd)pyrene	0.00410	0	0.009603	0	42.7	50	150				S
Dibenz(a,h)anthracene	0.00403	0	0.009603	0	42.0	50	150				S
Benzo(g,h,i)perylene	0.00429	0	0.009603	0	44.7	50	150				S
Surr: 2-Fluorobiphenyl	0.595		1.200		49.6	29	110				
Surr: Terphenyl-d14	0.859		1.200		71.6	29	124				

NOTES:

S - Outlying spike recovery observed; signal-to-noise check passes. Non-detects will be reported without qualification.

Client Name: SPECIAL	Work Order Number: 2403271
Logged by: Morgan Wilson	Date Received: 3/15/2024 9:16:00 AM

Chain of Custody

1. Is Chain of Custody complete? Yes No Not Present
2. How was the sample delivered? UPS

Log In

3. Custody Seals present on shipping container/cooler?
(Refer to comments for Custody Seals not intact) Yes No Not Present
4. Was an attempt made to cool the samples? Yes No NA
5. Were all items received at a temperature of >2°C to 6°C * Yes No NA
6. Sample(s) in proper container(s)? Yes No
7. Sufficient sample volume for indicated test(s)? Yes No
8. Are samples properly preserved? Yes No
9. Was preservative added to bottles? Yes No NA
10. Is there headspace in the VOA vials? Yes No NA
11. Did all samples containers arrive in good condition(unbroken)? Yes No
12. Does paperwork match bottle labels? Yes No
13. Are matrices correctly identified on Chain of Custody? Yes No
14. Is it clear what analyses were requested? Yes No
15. Were all hold times (except field parameters, pH e.g.) able to be met? Yes No

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes No NA

Person Notified:	<input type="text"/>	Date:	<input type="text"/>
By Whom:	<input type="text"/>	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	<input type="text"/>		
Client Instructions:	<input type="text"/>		

17. Additional remarks:

Item Information

Item #	Temp °C
Sample	2.2

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

Specialty Analytical
 9011 SE Janssen Rd
 Clackamas, OR 97015
 Phone: 503-607-1331
 Fax: 503-607-1336

Chain of Custody Record

Date: 03/13/2024 Page: 1 of 1
 Project Name: 2403152
 Laboratory Project No (Internal): 2403271
 Temperature on Receipt: °C

Client: Specialty Analytical
 Address: 9011 SE Janssen Rd
 City, State, Zip: Clackamas, OR, 97015
 Project No: PO No:
 Collected by: Client
 Shipped Via:

Telephone: 503-607-1331
 State Collected: OR WA OTHER
 Report To (PM): PM / Mandy Wehe
 Custody Seal: Y / N Intact / Broken Cooler / Bottle
 MDL TIER IV EDD
 Sample Disposal: Return to client Disposal by lab (after 60 days)

AP Email: mandy@specialtyanalytical.com
 PM Email: PM@specialtyanalytical.com / mandy@specialtyanalytical.com

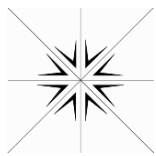
Sample Name	Sample Date	Sample Time	Sample Matrix*	# of Containers	Requested Tests	Comments
1 Q(007)-031324-Inf	3/13/24	1240	SW	1	LL 625***	*** Standard PAH List +
2 Q(007)-031324-Eff	3/13/24	1250	SW	1		Bis(2-ethylhexyl) phthalate
3						
4						
5						
6						
7						
8						
9						
10						

* Matrix: A = Air, AQ = Aqueous, L = Liquid, O = Oil, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water, M = Miscellaneous

Turn-around Time: Standard (5-7 Business): 3 Day: 2 Day: Next Day: Same Day:
 Expedited turn-around requests should be coordinated in advance

Relinquished Date/Time 3-13-24 600 Received Date/Time 2-22 3:15 9:16 AM
 Relinquished Date/Time Received Date/Time

Relinquished Date/Time Received Date/Time



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Definition Only

WO#: 2403152
Date: 3/29/2024

Definitions:

KEY TO FLAGS

- A: This sample contains a Gasoline Range Organic not identified as a specific hydrocarbon product. The result was qualified against gasoline calibration standards.
- A1: This sample contains a Diesel Range Organic not identified as a specific hydrocarbon product. The result was qualified against diesel calibration standards.
- A2: This sample contains a Lube Oil Range Organic not identified as a specific hydrocarbon product. The result was qualified against lube oil calibration standards.
- A3: The results was determined to be Non-Detect based on hydrocarbon pattern recognition. The product was carry-over from another hydrocarbon type.
- A4: The product appears to be aged or degraded.
- B: The blank exhibited a positive result greater than the reporting limit for this compound.
- BC: Sample concentration is >10x positive result in blank. Data is considered acceptable.
- CN: See Case Narrative.
- E: Result exceeds the calibration range for this compound. The result should be considered an estimate.
- F: The positive result for this hydrocarbon is due to single component contamination. The product does not match any hydrocarbon in the fuels library.
- FS: Follow-up testing is suggested.
- G: Result may be biased high due to biogenic interferences. Clean up is recommended.
- H: Sample was analyzed outside recommended holding time.
- HT: At client's request, samples was analyzed outside of recommended holding time.
- HP: Sample was analyzed outside recommended holding time due to VOA having pH >2.
-

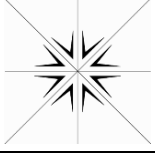


Definition Only

WO#: 2403152
Date: 3/29/2024

Definitions:

- J: The results for this analyte is between the MDL and the PQL and should be considered an estimated concentration.
- K: Diesel result is biased high due to amount of Oil contained in the sample.
- L: Diesel result is biased high due to amount of Gasoline contained in the sample.
- M: Oil result is biased high due to amount of Diesel contained in the sample.
- N: Gasoline result is biased high due to amount of Diesel contained in the sample.
- MC: Sample concentration is greater than 4x the spiked value, the spiked value is considered insignificant.
- MI: Result is outside control limits due to matrix interference.
- NH: Sample matrix is non-homogeneous
- MSA: Value determined by Method of Standard Addition.
- O: Laboratory Control Standard (LCS) exceeded laboratory control limits but meets CCV criteria. Data meets EPA requirements.
- Q: Detection levels elevated due to sample matrix.
- R: RPD control limits were exceeded
- RF: Duplicate failed due to result being at or near the method-reporting limit.
- RP: Matrix spike values exceed established QC limits; post digestion spike is in control.
- S: Recovery is outside control limits.
- SC: CCV or LCS exceeded high recovery control limits, but associated samples are non-detect. Data meets EPA requirements.
-



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Definition Only

WO#: **2403152**

Date: **3/29/2024**

Definitions:

SL: LCS exceeded recovery control limits, but associated MS/MSD passing. Data meets EPA requirements.

SV: CCV exceeded low recovery control limits. ND as reported evaluated using EPA method 8260D section 11.4.3.2

TA: Sample treated with ascorbic acid for the removal of thiocyanates.

TS: Sample treated with Sodium Sulfite for the removal of chlorine.