January 13, 2023

Washington State Department of Ecology
Northwest Regional Office
3190 160th Avenue Southeast
Bellevue, Washington 98008-5452

Attn: Li Ma

Transmitted via email to: *lima461@ecy.wa.gov*

Re: Status Report No. 81, October through December 2022 Activity Period
Boeing Auburn Facility
WAD 041337130, RCRA Corrective Action Agreed Order No. 01HWTRNR-3345
Auburn, Washington
Project No. 0025164.200.501

Dear Mr. Ma:

The Resource Conservation and Recovery Act (RCRA) Corrective Action Agreed Order (Auburn Agreed Order) became effective on August 14, 2002. As required under Section VI.13 of the Auburn Agreed Order, Landau Associates, Inc. (Landau) is providing Status Report No. 81 on behalf of The Boeing Company (Boeing), which covers the 3-month activity period of October through December 2022. This will be the final quarterly report under the existing Auburn Agreed Order.

References

1. October 6, 2022. Email: Additional Modifications for the EO and Permit. From Sarah Fees, Landau, to Li Ma, Washington State Department of Ecology (Ecology).
2. October 6, 2022. Email: BoA dCAP Comment. From Li Ma, Ecology, to Debbie Taege, Boeing and Sarah Fees, Landau.
3. October 17, 2022. Letter: Status Report No. 80, July through September 2022 Activity Period, Boeing Auburn Facility, WAD 041337130, RCRA Correction Action Agreed Order No. 01HWTRNR-3345, Auburn, Washington. From Sarah Fees, Landau, to Li Ma, Ecology.
4. October 17, 2022. Email: Boeing Fabrication Auburn Site – Status Report 80, July through September 2022 Activity Period. From Li Ma, Ecology, to Representatives of City of Algona, City of Auburn, City of Pacific, Ecology, and Boeing.
5. October 19, 2022. Email: RE: BoA dCAP Comment. From Sarah Fees, Landau, to Li Ma, Ecology. (Attachments: previous studies, emails, and FAQ documents to address potential issue of private groundwater usage).
6. October 27, 2022. Email: RE: BoA dCAP Comment. From Li Ma, Ecology, to Sarah Fees, Landau.

7. November 15, 2022. Email: RE: BoA dCAP Comment. From Sarah Fees, Landau, to Li Ma, Ecology. (Attachments: previous studies to address water at the surface and effectiveness of bioremediation in the Algona Focus Area).
8. November 23, 2022. Email: Boeing Auburn Response to Comments – Please Review! From Janelle Anderson, Ecology, to Debbie Taege, Boeing and Sarah Fees, Landau. (Attachment: Draft Boeing Auburn 2022 Responsiveness Summary).
9. November 30, 2022. Email: RE: Boeing Auburn Response to Comments – Please Review! From Sarah Fees, Landau, to Janelle Anderson, Ecology and Debbie Taege, Boeing. (Attachment: Boeing Comments on the Draft Boeing Auburn 2022 Responsiveness Summary).
10. November 30, 2022. Letter: Approval of dCAP and schedule for next submittals, Boeing Auburn Facility, Agreed Order No. 01HWTRNR-3345. From Li Ma, Ecology, to Debbie Taege, Boeing.
11. November 30, 2022. Report: Cleanup Action Plan, Boeing Auburn Facility, Auburn, Washington. Washington State Department of Ecology Northwest Regional Office, Hazardous Waste and Toxics Reduction Program (The Boeing Company finalized on Ecology's behalf and submitted to Ecology on December 20, 2022).
12. December 7, 2022. Email: RE: Boeing Auburn dCAP Approval and Schedule. From Debbie Taege, Boeing, to Li Ma, Ecology.
13. December 8, 2022. Email: Modifications for the EO and Permit. From Sarah Fees, Landau, to Li Ma, Ecology.
14. December 23, 2022. Email: RE: Modifications for the EO and Permit. From Li Ma, Ecology, to Sarah Fees, Landau. (Attachments: Final drafts for the EO and Permit).

Work Conducted

General Site-wide Corrective Action Activities

On October 17, 2022, Landau submitted Status Report No. 80 regarding third quarter 2022 activities to Washington State Department of Ecology (Ecology) and other stakeholders[1] for their records (Reference #3). Boeing and Ecology project managers continue to have monthly technical conference calls to discuss current project items.

Groundwater Sampling

Phase 10 semiannual groundwater sampling took place from December 5 through December 7, 2022. One location (AGW235 channel 4) was not sampled due to safety concerns related to a homeless encampment located on top of the well. The semiannual groundwater sampling data are provided in Attachment 1. The current monitoring well network is shown on Figure 1-1. A sampling matrix for the

[1] A list of stakeholders that receive copies of the quarterly status reports is provided at the end of this document. Ecology also forwards quarterly status reports via email to representatives of the cities of Algona, Auburn, and Pacific (Reference #4).

December 2022 annual sampling event is presented in Table 1-1. A complete summary of groundwater analytical results are presented in Tables 1-2 and 1-3.

Monitoring for petroleum hydrocarbons occurred at wells in Building 17-06 (AGW128, AGW277, and AGW281) during the semiannual groundwater sampling.[2] Free-phase product has been periodically detected in well AGW128; the thickness during the December 2022 monitoring event was 0.03 feet. Free-phase product has not been detected in any of the other wells in Building 17-06. Boeing maintains a sorbent sock in AGW128 to remove the product. The sorbent sock is replaced during monitoring.

Cleanup Action Plan Report and Associated Documentation

The draft cleanup action plan (dCAP) and associated documentation went through a public comment period beginning in the third quarter 2022. Associated documentation included: the cleanup action State Environmental Policy Act (SEPA) checklist and Ecology determination of non-significance (DNS), a draft Enforcement Order (EO) for implementation of the cleanup, and a draft RCRA permit updated to include the cleanup action activities. The public comment period concluded on November 11, 2022. Ecology provided approval of the Boeing Auburn dCAP, EO, SEPA Checklist, DNS, and permit on November 30, 2022 (Reference #10). This letter also provided a draft schedule for the next documents due associated with cleanup at the Site. Boeing finalized the Cleanup Action Plan on November 30, 2022 per Ecology's letter and submitted to Ecology on December 20, 2022 (Reference #11). Boeing and Ecology discussed the draft schedule for next documents (draft Compliance Monitoring Plan, draft environmental covenants, and draft Engineering Design Report) and agreed that the schedule is based on the signed effective date of the EO; however, Boeing will try to meet Ecology's requested schedule (Reference #12).

Ecology is working to finalize the SEPA DNS, EO, and RCRA permit. Boeing provided Ecology with minor revisions to the EO and RCRA permit (References #1 and #13). Ecology provided Boeing with final drafts of the EO and RCRA permit on December 23, 2022 (Reference #14). These documents are expected to be finalized in the first quarter 2023.

Public Comment Period

The public comment period began on September 12, 2022 and concluded on November 11, 2022. Ecology received three public comments on the dCAP during the public comment period. Ecology shared two of these comments with Boeing in the fourth quarter 2022 (Reference #2 and Reference #6). Boeing provided additional background information to help address these comments to Ecology (References #5 and #7). After the public comment period was concluded, Ecology prepared a responsiveness summary to respond to the comments received. Ecology provided a draft of this

[2] Boeing currently conducts semiannual monitoring (June and September) for petroleum hydrocarbons at Building 17-06. However, because the wells are currently sampled semiannually in June and December, monitoring for petroleum hydrocarbons also occurs in December.

responsiveness summary to Boeing on November 23, 2022 (Reference #8). Boeing provided Ecology with comments on the responsiveness summary on November 30, 2022 (Reference #9).

Communications

Ecology and Boeing are working together to ensure that all stakeholders are aware of the progress of investigation and cleanup activities at the Boeing Auburn Site. Status conference calls occur quarterly to provide general updates on the project schedule, reporting, and public outreach. These quarterly calls are attended by technical and communication personnel from Ecology, Boeing, Landau, City of Auburn, and the City of Algona's environmental consultant, ICF International.

Occurrence of Problems

During semiannual groundwater monitoring, AGW235 was not accessible due to a homeless encampment located on top of the well. The Outlet Collection Mall Manager and the City of Auburn were notified, and they are working together to resolve the situation.

Projected Work for 2023

Based on implementation of the cleanup action enforcement order, status reporting will change from quarterly to annual reporting. The 2023 annual report will be submitted on April 10, 2024. Activities projected for 2023 pertain to remediation planning, engineering design, and annual groundwater monitoring under the compliance monitoring plan. Tasks anticipated during 2023 include:

- Preparation and finalization of the Compliance Monitoring Plan.
- Preparation of draft Environmental Covenants for the Boeing Auburn Facility.
- Preparation and finalization of the Engineering Design Report.
- Conducting annual groundwater monitoring per schedule identified in the Compliance Monitoring Plan.
- Preparation and submittal of annual data letters for stakeholders.
- Cleanup implementation for AOC A-01 on Boeing property.
- Preparation for Enhanced *In Situ* Bioremediation activities in the Algona focus area (anticipate installation of injection wells in 2023).

Other Significant Findings, Changes, and Contacts

None to report.

If you have any questions regarding this status report, or need any other information, please do not hesitate to contact Boeing or Landau.

LANDAU ASSOCIATES, INC.

Sarah Fees

Sarah Fees, LG
Associate Geologist

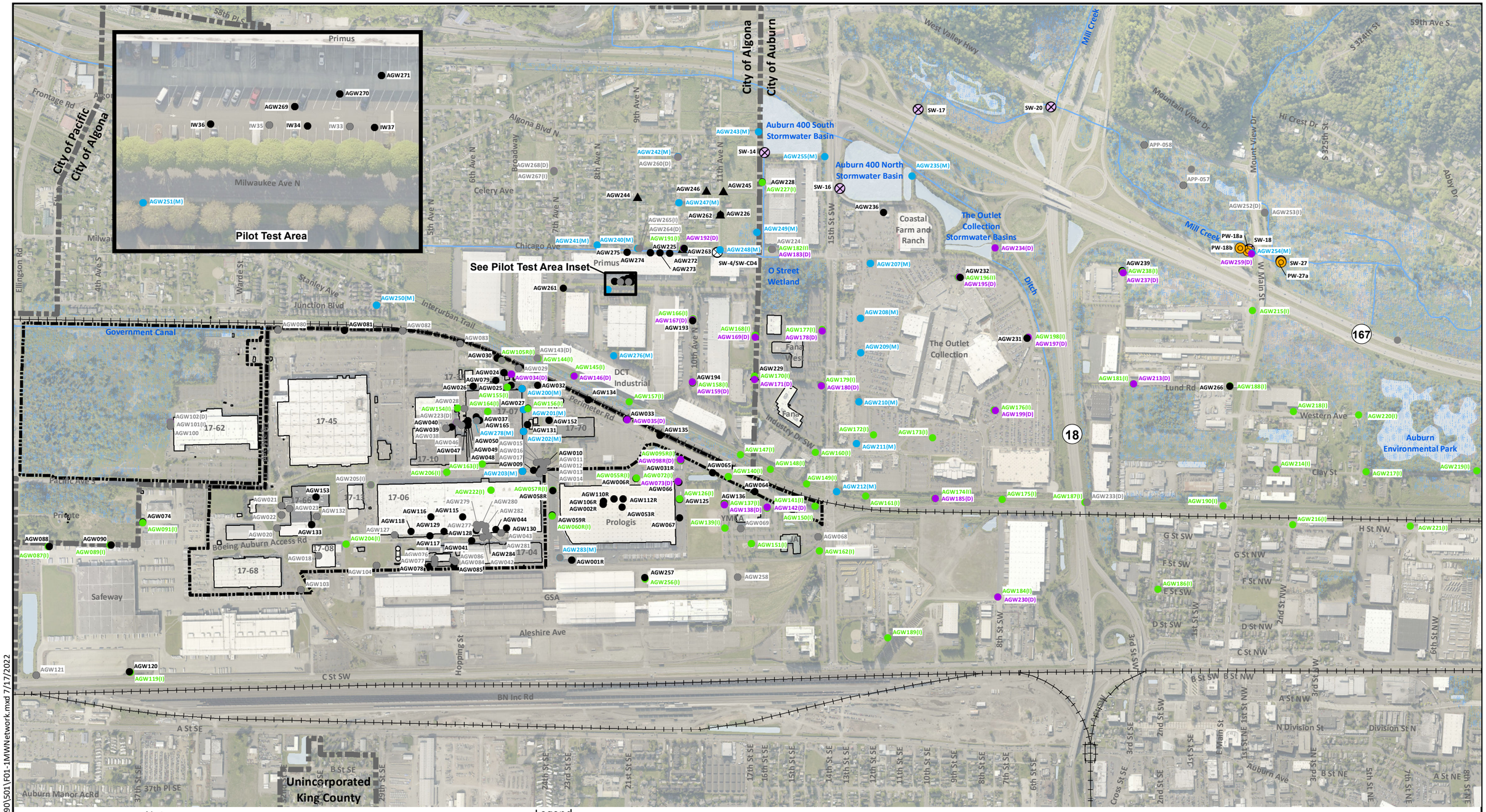
KMG/SEF/kjg
[Y:\025\164\R\QUARTERLY PROGRESS RPTS\2022\2Q22\LANDAU_BOA_2Q2022 STATUS RPT NO. 79 LETTER_DRAFT.DOCX)

cc: Debbie Taege (email only)
Thomas MacMannis, Boeing (email only)
Kamara Sams, Boeing (email only)
James Swortz, Boeing (email only)
Kathryn Moxley, Boeing (email only)
Patrick McCabe, Boeing Realty (email only)
Brett Richer, Prologis (email only)
Steve Campbell, Prologis (email only)
Jason Berry, YMCA Auburn (email only)
Christa Colouzis, Ecology (email only)
Janelle Anderson, Ecology (email only)

Attachments: Attachment 1: Groundwater Sampling Results
Attachment 2: Laboratory Data Packages

ATTACHMENT 1

Groundwater Sampling Results



Notes

1. Groundwater wells are identified by the AGW prefix. The designations behind the identifications indicate the zone. If there is no designation, the well is screened in the shallow zone. (I) = intermediate zone, (D) = deep zone, (M) = multi-level well; screens in multiple groundwater zones.
2. Well designations beginning with APP are installed and owned by WSDOT.
3. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Legend

- Offsite Water Table Well
- Shallow Monitoring Well (Water Table to 35 ft bgs)
- (I) Intermediate Monitoring Well (35 to 75 ft bgs)
- (D) Deep Monitoring Well (75 to 100 ft bgs)
- (M) Multi-Level Well
- Wells Not Currently Sampled
- Annual Stormwater/Surface Water Sample Location
- Semiannual Stormwater/Surface Water Sampling Location
- Annual Pore Water Sample Location
- Wetland Areas
- Water Bodies
- Waterways

0 1,000 2,000

Scale in Feet

N

Data Source: King County GIS.

LANDAU ASSOCIATES

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Boeing Auburn Auburn, Washington	**Current Monitoring Network**	Figure 1-1

Table 1-1
4Q2022 Groundwater Sampling Matrix
Boeing Auburn Facility
Auburn, Washington

Sample Location	Field Sample ID:	Sample Date:	Sample Type:	Laboratory SDG:	Laboratory Sample ID:	Select VOCs by SW-846 8260C-SIM (a)	BTEX by SW-846 8260C	TPH-G by NWTPH-Gx	TPH-D by NWTPH-Dx	Dissolved Metals by SW-846 6020A	Free Cyanide by ASTM D7237 (b)
AGW006R	AGW006R-20221206	12/6/2022	PDN	22L0140	22L0140-11	X					
AGW010	AGW010-20221206	12/6/2022	N	22L0140	22L0140-15		X	X	X		
AGW010	AGW900-20221206	12/6/2022	FD	22L0140	22L0140-16		X	X	X		
AGW024	AGW024-20221206	12/6/2022	PDN	22L0140	22L0140-04	X					
AGW026	AGW026-20221206	12/6/2022	PDN	22L0146	22L0146-06	X					
AGW027	AGW027-20221206	12/6/2022	PDN	22L0140	22L0140-05	X					
AGW031R	AGW031R-20221206	12/6/2022	PDN	22L0140	22L0140-12	X					
AGW032	AGW032-20221206	12/6/2022	PDN	22L0146	22L0146-07	X					
AGW033	AGW033-20221206	12/6/2022	PDN	22L0140	22L0140-03	X					
AGW049	AGW049-20221206	12/6/2022	N	22L0146	22L0146-04					X	
AGW049	AGW049-NAOH-20221206	12/6/2022	N	A2L0240	A2L0240-01						X
AGW049	AGW901-20221206	12/6/2022	FD	22L0146	22L0146-05					X	
AGW049	AGW901-NAOH-20221206	12/6/2022	FD	A2L0240	A2L0240-03						X
AGW050	AGW050-20221206	12/6/2022	N	22L0146	22L0146-03					X	
AGW050	AGW050-NAOH-20221206	12/6/2022	N	A2L0240	A2L0240-05						X
AGW085	AGW085-20221206	12/6/2022	PDN	22L0140	22L0140-07	X					
AGW112R	AGW112R-20221206	12/6/2022	PDN	22L0140	22L0140-10	X					
AGW128	AGW128-20221207	12/7/2022	N	22L0188	22L0188-01				X		
AGW129	AGW129-20221206	12/6/2022	PDN	22L0140	22L0140-08	X					
AGW130	AGW130-20221206	12/6/2022	N	22L0140	22L0140-19				X		
AGW131	AGW131-20221206	12/6/2022	PDN	22L0140	22L0140-06	X					
AGW135	AGW135-20221206	12/6/2022	PDN	22L0140	22L0140-02	X					
AGW136	AGW136-20221205	12/5/2022	PDN	22L0115	22L0115-18	X					
AGW140	AGW140-20221206	12/6/2022	PDN	22L0140	22L0140-01	X					
AGW157	AGW157-20221205	12/5/2022	PDN	22L0115	22L0115-01	X					
AGW159	AGW159-20221205	12/5/2022	PDN	22L0115	22L0115-16	X					
AGW160	AGW160-20221205	12/5/2022	PDN	22L0115	22L0115-17	X					
AGW164	AGW164-20221206	12/6/2022	PDN	22L0140	22L0140-09	X					
AGW170	AGW170-20221205	12/5/2022	PDN	22L0115	22L0115-14	X					
AGW171	AGW171-20221205	12/5/2022	PDN	22L0115	22L0115-15	X					
AGW175	AGW175-20221205	12/5/2022	N	22L0115	22L0115-03	X					
AGW179	AGW179-20221205	12/5/2022	PDN	22L0115	22L0115-10	X					
AGW180	AGW180-20221205	12/5/2022	PDN	22L0115	22L0115-11	X					
AGW181	AGW181-20221205	12/5/2022	PDN	22L0115	22L0115-07	X					
AGW187	AGW187-20221205	12/5/2022	PDN	22L0115	22L0115-02	X					
AGW201-2	AGW201-2-30-20221206	12/6/2022	N	22L0140	22L0140-18	X					
AGW202-2	AGW202-2-30-20221206	12/6/2022	N	22L0140	22L0140-17	X					
AGW207-2	AGW207-2-30-20221205	12/5/2022	N	22L0115	22L0115-05	X					
AGW207-2	AGW903-20221205	12/5/2022	FD	22L0115	22L0115-06	X					
AGW208-4	AGW208-4-49-20221205	12/5/2022	N	22L0115	22L0115-09	X					
AGW210-5	AGW210-5-60-20221205	12/5/2022	N	22L0115	22L0115-13	X					
AGW210-6	AGW210-6-80-20221205	12/5/2022	N	22L0115	22L0115-12	X					
AGW212-5	AGW212-5-30-20221205	12/5/2022	N	22L0115	22L0115-04	X					
AGW231	AGW231-20221205	12/5/2022	PDN	22L0115	22L0115-08	X					

Table 1-1
4Q2022 Groundwater Sampling Matrix
Boeing Auburn Facility
Auburn, Washington

Sample Location	Field Sample ID:	Sample Date:	Sample Type:	Laboratory SDG:	Laboratory Sample ID:	Select VOCs by SW-846 8260C-SIM (a)	BTEX by SW-846 8260C	TPH-G by NWTPH-Gx	TPH-D by NWTPH-Dx	Dissolved Metals by SW-846 6020A	Free Cyanide by ASTM D7237 (b)
AGW239	AGW239-20221205	12/5/2022	N	22L0115	22L0115-19	X					
AGW276-2	AGW276-2-25-20221206	12/6/2022	N	22L0146	22L0146-01	X					
AGW276-2	AGW904-20221206	12/6/2022	FD	22L0146	22L0146-02	X					
AGW277	AGW277-20221206	12/6/2022	N	22L0188	22L0188-02				X		
AGW281	AGW281-20221206	12/6/2022	N	22L0140	22L0140-13				X		
AGW282	AGW282-20221206	12/6/2022	N	22L0140	22L0140-14				X		

Notes:

(a) Select VOCs consist of 1,1-dichloroethene, cis-1,2-dichloroethene, tetrachloroethene, trans-1,2-dichloroethene, trichloroethene, and vinyl chloride.

(b) Samples were analyzed for cyanide by Apex Laboratories; all other analytical methods were performed by Analytical Resources, LLC.

Abbreviations/Acronyms:

BTEX = benzene, toluene, ethylbenzene, and xylenes
EPA = US Environmental Protection Agency
FD = field duplicate
ID = identification
N = primary sample
NWTPH = Northwest Total Petroleum Hydrocarbon
PDN = passive diffusion primary sample
SDG = sample delivery group
SIM = selected ion monitoring
TPH-Dx = total petroleum hydrocarbons diesel range
TPH-Gx = total petroleum hydrocarbons gasoline range
VOC = volatile organic compound

Table 1-2
4Q2022 Semiannual Groundwater Sampling Analytical Results
Volatile Organic Compounds
Boeing Auburn Facility
Auburn, Washington

Sample Location	Zone	Laboratory SDG	Sample Date	Sample Type	Select VOCs by SW-846 8260D SIM (µg/L)					
					1,1-Dichloroethene	cis-1,2-Dichloroethene	Tetrachloroethene	trans-1,2-Dichloroethene	Trichloroethene	Vinyl Chloride
AGW006R	Shallow	22L0140	12/6/2022	PDN	0.200 U	**0.782**	0.200 U	0.200 U	**0.420**	**0.0233**
AGW024	Shallow	22L0140	12/6/2022	PDN	0.200 U	**1.44**	0.200 U	0.200 U	0.200 U	**1.48**
AGW026	Shallow	22L0146	12/6/2022	PDN	0.200 U	**0.745**	0.200 U	0.200 U	**0.543**	**0.0590**
AGW027	Shallow-WT	22L0140	12/6/2022	PDN	0.200 U	**0.467**	0.200 U	0.200 U	0.200 U	**0.544**
AGW031R	Shallow	22L0140	12/6/2022	PDN	0.200 U	**2.87**	0.200 U	0.200 U	**0.534**	**0.0362**
AGW032	Shallow-WT	22L0146	12/6/2022	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	**0.110**
AGW033	Shallow-WT	22L0140	12/6/2022	PDN	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.0200 U
AGW085	Shallow-WT	22L0140	12/6/2022	PDN	0.200 U	0.200 U	0.200 U	0.200 U	**0.231**	0.0200 U
AGW112R	Shallow	22L0140	12/6/2022	PDN	0.200 U	**0.949**	0.200 U	0.200 U	**1.13**	**0.0727**
AGW129	Shallow-WT	22L0140	12/6/2022	PDN	0.200 U	0.200 U	**0.340**	0.200 U	**0.237**	0.0200 U
AGW131	Shallow	22L0140	12/6/2022	PDN	0.200 U	**0.447**	0.200 U	0.200 U	0.200 U	**4.06**
AGW135	Shallow	22L0140	12/6/2022	PDN	0.200 U	**0.292**	0.200 U	0.200 U	**0.920**	**0.0231**
AGW136	Shallow	22L0115	12/5/2022	PDN	0.200 U	**0.921**	0.200 U	0.200 U	**1.02**	0.0200 U
AGW140	Intermediate	22L0140	12/6/2022	PDN	0.200 U	**1.50**	0.200 U	0.200 U	**2.39**	**0.358**
AGW157	Intermediate	22L0115	12/5/2022	PDN	0.200 U	**2.46**	0.200 U	0.200 U	0.200 U	**0.368**
AGW159	Deep	22L0115	12/5/2022	PDN	0.200 U	**0.654**	0.200 U	0.200 U	**3.18**	**0.0528**
AGW160	Intermediate	22L0115	12/5/2022	PDN	0.200 U	**0.424**	0.200 U	0.200 U	**3.82**	**0.0246**
AGW164	Intermediate	22L0140	12/6/2022	PDN	0.200 U	**0.366**	0.200 U	0.200 U	**1.22**	**0.0402**
AGW170	Intermediate	22L0115	12/5/2022	PDN	0.200 U	**0.352**	0.200 U	0.200 U	**1.69**	0.0200 U
AGW171	Deep	22L0115	12/5/2022	PDN	0.200 U	0.200 U	0.200 U	0.200 U	**1.40**	0.0200 U
AGW175	Intermediate	22L0115	12/5/2022	N	0.200 U	**0.407**	0.200 U	0.200 U	**1.20**	**0.0201**
AGW179	Intermediate	22L0115	12/5/2022	PDN	0.200 U	**4.06**	0.200 U	0.200 U	0.200 U	**1.89**
AGW180	Deep	22L0115	12/5/2022	PDN	0.200 U	**0.597**	0.200 U	0.200 U	**2.36**	**0.0207**
AGW181	Intermediate	22L0115	12/5/2022	PDN	0.200 U	**2.48**	0.200 U	0.200 U	**2.14**	**0.0391**
AGW187	Intermediate	22L0115	12/5/2022	PDN	0.200 U	0.200 U	0.200 U	0.200 U	**1.18**	**0.0211**
AGW201-2	Shallow	22L0140	12/6/2022	N	0.200 U	**1.64**	0.200 U	0.200 U	**0.268**	**3.06**
AGW202-2	Shallow	22L0140	12/6/2022	N	0.200 U	**2.24**	0.200 U	0.200 U	**0.813**	**1.35**
AGW207-2	Shallow	22L0115	12/5/2022	N	0.200 U	**3.78**	0.200 U	0.200 U	**2.55**	**0.199**

Table 1-2
4Q2022 Semiannual Groundwater Sampling Analytical Results
Volatile Organic Compounds
Boeing Auburn Facility
Auburn, Washington

Sample Location	Zone	Laboratory SDG	Sample Date	Sample Type	Select VOCs by SW-846 8260D SIM (µg/L)					
					1,1-Dichloroethene	cis-1,2-Dichloroethene	Tetrachloroethene	trans-1,2-Dichloroethene	Trichloroethene	Vinyl Chloride
AGW207-2	Shallow	22L0115	12/5/2022	FD	0.200 U	**3.75**	0.200 U	0.200 U	**2.58**	**0.208**
AGW208-4	Intermediate	22L0115	12/5/2022	N	0.200 U	**3.07**	0.200 U	0.200 U	**1.02**	**0.0380**
AGW210-5	Intermediate	22L0115	12/5/2022	N	0.200 U	**1.58**	0.200 U	0.200 U	**0.589**	**0.0704**
AGW210-6	Deep	22L0115	12/5/2022	N	0.200 U	**0.328**	0.200 U	0.200 U	**2.52**	**0.0216**
AGW212-5	Intermediate	22L0115	12/5/2022	N	0.200 U	0.200 U	0.200 U	0.200 U	**1.05**	0.0200 U
AGW231	Shallow	22L0115	12/5/2022	PDN	0.200 U	**1.76**	0.200 U	0.200 U	0.200 U	**1.21**
AGW239	Shallow	22L0115	12/5/2022	N	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	**0.189**
AGW276-2	Off-Shallow	22L0146	12/6/2022	N	0.200 U	**1.41**	0.200 U	0.200 U	0.200 U	**1.79**
AGW276-2	Off-Shallow	22L0146	12/6/2022	FD	0.200 U	**1.38**	0.200 U	0.200 U	0.200 U	**1.75**

Notes:

Bold text indicates detected analyte.

U = The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

Abbreviations/Acronyms:

EPA = US Environmental Protection Agency
FD = field duplicate
µg/L = micrograms per liter
N = primary sample
PDN = passive diffusion primary sample
SDG = sample delivery group
SIM = selected ion monitoring
VOCs = volatile organic compounds
WT = water table

Table 1-3
4Q2022 Semiannual Groundwater Sampling Analytical Results
BTEX, Petroleum Hydrocarbons, Dissolved Metals, and Cyanide
Boeing Auburn Facility
Auburn, Washington

Sample Location	Zone	Laboratory SDG	Sample Date	Sample Type	BTEX by SW-846 8260D (µg/L)						Petroleum Hydrocarbons by NWTPH-Gx/Dx (mg/L)			Dissolved Metals by SW-846 6020B (mg/L)			Cyanide by ASTM D7237-105 (mg/L)
					Benzene	Toluene	Ethylbenzene	m,p-Xylene	o-Xylene	Total Xylenes	Gasoline Range Organics (C7-C12)	Diesel Range Organics (C12-C24)	Oil Range Organics (C24-C40)	Cadmium	Copper	Nickel	Free Cyanide
AGW010	Shallow-WT	22L0140	12/6/2022	N	**0.30**	0.20 U	0.20 U	0.40 U	0.20 U	0.60 U	0.100 U	0.100 U	0.200 U	--	--	--	--
AGW010	Shallow-WT	22L0140	12/6/2022	FD	**0.29**	0.20 U	0.20 U	0.40 U	0.20 U	0.60 U	0.100 U	0.100 U	0.200 U	--	--	--	--
AGW049	Shallow	22L0146/A2L0240	12/6/2022	N	--	--	--	--	--	--	--	--	--	**0.0301**	**0.0906**	**0.0259**	0.00500 U
AGW049	Shallow	22L0146/A2L0240	12/6/2022	FD	--	--	--	--	--	--	--	--	--	**0.0278**	**0.0857**	**0.0257**	0.00500 U
AGW050	Shallow	22L0146/A2L0240	12/6/2022	N	--	--	--	--	--	--	--	--	--	**0.00848**	--	**0.00702**	0.00500 U
AGW128	Shallow-WT	22L0188	12/7/2022	N	--	--	--	--	--	--	--	**1.77**	**2.55**	--	--	--	--
AGW130	Shallow-WT	22L0140	12/6/2022	N	--	--	--	--	--	--	--	0.100 U	0.200 U	--	--	--	--
AGW277	Shallow-WT	22L0188	12/6/2022	N	--	--	--	--	--	--	--	**0.542**	**1.27**	--	--	--	--
AGW281	Shallow-WT	22L0140	12/6/2022	N	--	--	--	--	--	--	--	**0.246**	**0.978**	--	--	--	--
AGW282	Shallow-WT	22L0140	12/6/2022	N	--	--	--	--	--	--	--	**0.153**	**0.661**	--	--	--	--

Notes:

Bold text indicates detected analyte.

U = The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

Abbreviations/Acronyms:

BTEX = benzene, toluene, ethylbenzene, and xylenes

FD = field duplicate

µg/L = micrograms per liter

mg/L = milligrams per liter

-- = not analyzed

N = primary sample

NWTPH = Northwest Total Petroleum Hydrocarbon

SDG = sample delivery group

WT = water table

ATTACHMENT 2

Laboratory Data Packages

Analytical Resources, LLC
Analytical Chemists and Consultants

08 December 2022

Jennifer Parsons
The Boeing Company
PO Box 3703 MS 2R-96
Seattle, WA 98124

RE: Boeing Auburn 4Q 2022 Regional GWM (0025164.170.101)

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

Associated Work Order(s)	Associated SDG ID(s)
22L0115	N/A

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclose Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the requirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Analytical Resources, LLC

Kelly Bottem, Client Services Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

ACCREDITED IN ACCORDANCE WITH nelac
Cert# 100006-012

LANDAU ASSOCIATES

Chain-of-Custody Record

22LAlls

☐ North Seattle (206) 631-8660 ☐ Spokane (509) 327-9737
☒ Tacoma (253) 926-2493 ☐ Portland (503) 542-1080
☐ Olympia (360) 791-3178 ☐ _____

Date 12/5/22

Page 1 of 1

Turnaround Time: (Standard) / Accelerated

Project Name Boeing of Auburn
Project No. 0252|7.002.022
Project Location/Event Auburn, WA | 4Q22
Sampler's Name SJL|SMR|JDB
Project Contact ~~Chris~~ SJL Sarah Fees
Send Results To Sarah Fees, data@landauinc.com

Special Handling Requirements:

Shipment Method:

Stored on ice: (Yes) / No

Sample I.D.	Date	Time	Matrix	No. of Containers	Testing Parameters: VOCs (8260 STM)	MS/MSD	Observations/Comments
AGW157-20221205	12/5/22	850	AQ	3	X		
AGW187-20221205	12/5/22	942	AQ	3	X		
AGW175-20221205	12/5/22	1025	AQ	3	X		
AGW217-5-30-20221205	12/5/22	1055	AQ	9 SJL JDB	X	X	
AGW207-2-30-20221205	12/5/22	1148	AQ	3	X		
AGW0903-20221205	12/5/22	1155	AQ	3	X		
AGW181-20221205	12/5/22	1123	AQ	3	X		
AGW237-20221205	12/5/22	1152	AQ	3	X		
AGW208-4-49-20221205	12/5/22	1238	AQ	3	X		
AGW179-20221205	12/5/22	1217	AQ	3	X		
AGW180-20221205	12/5/22	1220	AQ	3	X		
AGW210-6-80-20221205	12/5/22	1358	AQ	3	X		
AGW210-5-60-20221205	12/5/22	1418	AQ	3	X		
AGW170-20221205	12/5/22	1309	AQ	3	X		
AGW171-20221205	12/5/22	1313	AQ	3	X		
AGW159-20221205	12/5/22	1335	AQ	3	X		
AGW160-20221205	12/5/22	1407	AQ	3	X		
AGW136-20221205	12/5/22	1434	AQ	3	X		
AGW239-20221205	12/5/22	1547	AQ	9	X	X	

☐ Allow water samples to settle, collect aliquot from clear portion ☐

☐ NWTPH-Dx - Acid wash cleanup ☐
- Silica gel cleanup ☐

☐ Dissolved metal samples were field filtered

Other ~~A~~ preserved w/HCl

Relinquished by
Signature [signature]
Printed Name Samantha Lindstrom
Company Landau Associates
Date 12/5/22 Time 1558

Received by
Signature [signature]
Printed Name Isabelle Beasley
Company ART
Date 12/6/22 Time 1040

Relinquished by
Signature _____
Printed Name _____
Company _____
Date _____ Time _____

Received by
Signature _____
Printed Name _____
Company _____
Date _____ Time _____

WHITE COPY - Laboratory YELLOW COPY - Project File PINK COPY - Client Representative

10/2018

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	08-Dec-2022 17:15

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
AGW157-20221205	22L0115-01	Water	05-Dec-2022 08:50	06-Dec-2022 10:40
AGW187-20221205	22L0115-02	Water	05-Dec-2022 09:42	06-Dec-2022 10:40
AGW175-20221205	22L0115-03	Water	05-Dec-2022 10:25	06-Dec-2022 10:40
AGW212-5-30-20221205	22L0115-04	Water	05-Dec-2022 10:55	06-Dec-2022 10:40
AGW207-2-30-20221205	22L0115-05	Water	05-Dec-2022 11:48	06-Dec-2022 10:40
AGW903-20221205	22L0115-06	Water	05-Dec-2022 11:55	06-Dec-2022 10:40
AGW181-20221205	22L0115-07	Water	05-Dec-2022 11:23	06-Dec-2022 10:40
AGW231-20221205	22L0115-08	Water	05-Dec-2022 11:52	06-Dec-2022 10:40
AGW208-4-49-20221205	22L0115-09	Water	05-Dec-2022 12:38	06-Dec-2022 10:40
AGW179-20221205	22L0115-10	Water	05-Dec-2022 12:17	06-Dec-2022 10:40
AGW180-20221205	22L0115-11	Water	05-Dec-2022 12:20	06-Dec-2022 10:40
AGW210-6-80-20221205	22L0115-12	Water	05-Dec-2022 13:58	06-Dec-2022 10:40
AGW210-5-60-20221205	22L0115-13	Water	05-Dec-2022 14:18	06-Dec-2022 10:40
AGW170-20221205	22L0115-14	Water	05-Dec-2022 13:09	06-Dec-2022 10:40
AGW171-20221205	22L0115-15	Water	05-Dec-2022 13:13	06-Dec-2022 10:40
AGW159-20221205	22L0115-16	Water	05-Dec-2022 13:35	06-Dec-2022 10:40
AGW160-20221205	22L0115-17	Water	05-Dec-2022 14:07	06-Dec-2022 10:40
AGW136-20221205	22L0115-18	Water	05-Dec-2022 14:34	06-Dec-2022 10:40
AGW239-20221205	22L0115-19	Water	05-Dec-2022 15:47	06-Dec-2022 10:40

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	08-Dec-2022 17:15

Work Order Case Narrative

Volatiles - EPA Method 8260D-SIM (Selected Ion Monitoring)

The sample(s) were analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.

The matrix spike/matrix spike duplicate (MS/MSD) percent recoveries and relative percent difference (RPD) were within advisory control limits.

Analytical Resources, LLC
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Landav/Boeing AVB Project Name: BOA 4Q22&22

COC No(s): _____ NA Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: 22L0115 Tracking No: _____ NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of the cooler? YES NO

Were custody papers included with the cooler? ..... YES NO

Were custody papers properly filled out (ink, signed, etc.) ..... YES NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)

Time 1140 2.0

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: KOC8117

Cooler Accepted by: _____ Date: 12/6/22 Time: 1040

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? ..... YES NO

What kind of packing material was used? ... Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: _____

Was sufficient ice used (if appropriate)? ..... NA YES NO

How were bottles sealed in plastic bags? ..... Individually Grouped Not

Did all bottles arrive in good condition (unbroken)? ..... YES NO

Were all bottle labels complete and legible? ..... YES NO

Did the number of containers listed on COC match with the number of containers received? ..... YES NO

Did all bottle labels and tags agree with custody papers? ..... YES NO

Were all bottles used correct for the requested analyses? ..... YES NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) ... NA YES NO

Were all VOC vials free of air bubbles? ..... NA YES NO

Was sufficient amount of sample sent in each bottle? ..... YES NO

Date VOC Trip Blank was made at ARI..... NA _____

Were the sample(s) split by ARI? NA YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: JGM Date: 12/6/22 Time: 1256 Labels checked by: JGM

***** Notify Project Manager of discrepancies or concerns *****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: Date:

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	08-Dec-2022 17:15

AGW157-20221205

22L0115-01 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM — Sampled: 12/05/2022 08:50

Instrument: NT16 Analyst: KOTT — Analyzed: 12/07/2022 13:55

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22L0115-01 A

Preparation Batch: BKL0156 — Sample Size: 10 mL

Prepared: 12/07/2022 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.368	ug/L	
1,1-Dichloroethene	75-35-4	1	0.200	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.200	2.46	ug/L	
trans-1,2-Dichloroethene	156-60-5	1	0.200	ND	ug/L	U
Trichloroethene	79-01-6	1	0.200	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.200	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*94.5*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*88.4*	*%*	
Surrogate: 4-Bromofluorobenzene			*75-125 %*	*92.6*	*%*	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	08-Dec-2022 17:15

AGW187-20221205

22L0115-02 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM — Sampled: 12/05/2022 09:42

Instrument: NT16 Analyst: KOTT — Analyzed: 12/07/2022 14:17

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22L0115-02 A

Preparation Batch: BKL0156 — Sample Size: 10 mL

Prepared: 12/07/2022 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0211	ug/L	
1,1-Dichloroethene	75-35-4	1	0.200	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.200	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.200	ND	ug/L	U
Trichloroethene	79-01-6	1	0.200	1.18	ug/L	
Tetrachloroethene	127-18-4	1	0.200	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*95.8*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*87.0*	*%*	
Surrogate: 4-Bromofluorobenzene			*75-125 %*	*92.2*	*%*	

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	08-Dec-2022 17:15

AGW175-20221205

22L0115-03 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM — Sampled: 12/05/2022 10:25

Instrument: NT16 Analyst: KOTT — Analyzed: 12/07/2022 14:38

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22L0115-03 A

Preparation Batch: BKL0156 — Sample Size: 10 mL

Prepared: 12/07/2022 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0201	ug/L	
1,1-Dichloroethene	75-35-4	1	0.200	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.200	0.407	ug/L	
trans-1,2-Dichloroethene	156-60-5	1	0.200	ND	ug/L	U
Trichloroethene	79-01-6	1	0.200	1.20	ug/L	
Tetrachloroethene	127-18-4	1	0.200	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*96.1*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*85.9*	*%*	
Surrogate: 4-Bromofluorobenzene			*75-125 %*	*91.7*	*%*	

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	08-Dec-2022 17:15

AGW212-5-30-20221205

22L0115-04 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM — Sampled: 12/05/2022 10:55

Instrument: NT16 Analyst: KOTT — Analyzed: 12/07/2022 11:49

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22L0115-04 A

Preparation Batch: BKL0156 — Sample Size: 10 mL

Prepared: 12/07/2022 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.200	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.200	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.200	ND	ug/L	U
Trichloroethene	79-01-6	1	0.200	1.05	ug/L	
Tetrachloroethene	127-18-4	1	0.200	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*89.9*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*90.8*	*%*	
Surrogate: 4-Bromofluorobenzene			*75-125 %*	*92.8*	*%*	

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	08-Dec-2022 17:15

AGW207-2-30-20221205

22L0115-05 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM — Sampled: 12/05/2022 11:48

Instrument: NT16 Analyst: KOTT — Analyzed: 12/07/2022 14:59

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22L0115-05 A

Preparation Batch: BKL0156 — Sample Size: 10 mL

Prepared: 12/07/2022 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.199	ug/L	
1,1-Dichloroethene	75-35-4	1	0.200	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.200	3.78	ug/L	
trans-1,2-Dichloroethene	156-60-5	1	0.200	ND	ug/L	U
Trichloroethene	79-01-6	1	0.200	2.55	ug/L	
Tetrachloroethene	127-18-4	1	0.200	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*94.8*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*87.2*	*%*	
Surrogate: 4-Bromofluorobenzene			*75-125 %*	*91.5*	*%*	

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	08-Dec-2022 17:15

AGW903-20221205

22L0115-06 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM — Sampled: 12/05/2022 11:55

Instrument: NT16 Analyst: KOTT — Analyzed: 12/07/2022 15:20

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22L0115-06 A

Preparation Batch: BKL0156 — Sample Size: 10 mL

Prepared: 12/07/2022 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.208	ug/L	
1,1-Dichloroethene	75-35-4	1	0.200	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.200	3.75	ug/L	
trans-1,2-Dichloroethene	156-60-5	1	0.200	ND	ug/L	U
Trichloroethene	79-01-6	1	0.200	2.58	ug/L	
Tetrachloroethene	127-18-4	1	0.200	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*94.0*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*87.2*	*%*	
Surrogate: 4-Bromofluorobenzene			*75-125 %*	*90.5*	*%*	

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	08-Dec-2022 17:15

AGW181-20221205

22L0115-07 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM
Instrument: NT16 Analyst: KOTT

Sampled: 12/05/2022 11:23
Analyzed: 12/07/2022 15:41

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BKL0156
Prepared: 12/07/2022
Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 22L0115-07 A

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0391	ug/L	
1,1-Dichloroethene	75-35-4	1	0.200	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.200	2.48	ug/L	
trans-1,2-Dichloroethene	156-60-5	1	0.200	ND	ug/L	U
Trichloroethene	79-01-6	1	0.200	2.14	ug/L	
Tetrachloroethene	127-18-4	1	0.200	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*95.4*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*87.5*	*%*	
Surrogate: 4-Bromofluorobenzene			*75-125 %*	*90.6*	*%*	

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	08-Dec-2022 17:15

AGW231-20221205

22L0115-08 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM — Sampled: 12/05/2022 11:52

Instrument: NT16 Analyst: KOTT — Analyzed: 12/07/2022 16:02

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22L0115-08 A

Preparation Batch: BKL0156 — Sample Size: 10 mL

Prepared: 12/07/2022 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	1.21	ug/L	
1,1-Dichloroethene	75-35-4	1	0.200	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.200	1.76	ug/L	
trans-1,2-Dichloroethene	156-60-5	1	0.200	ND	ug/L	U
Trichloroethene	79-01-6	1	0.200	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.200	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*95.6*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*87.4*	*%*	
Surrogate: 4-Bromofluorobenzene			*75-125 %*	*90.9*	*%*	

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	08-Dec-2022 17:15

AGW208-4-49-20221205

22L0115-09 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM — Sampled: 12/05/2022 12:38

Instrument: NT16 Analyst: KOTT — Analyzed: 12/07/2022 16:23

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22L0115-09 A

Preparation Batch: BKL0156 — Sample Size: 10 mL

Prepared: 12/07/2022 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0380	ug/L	
1,1-Dichloroethene	75-35-4	1	0.200	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.200	3.07	ug/L	
trans-1,2-Dichloroethene	156-60-5	1	0.200	ND	ug/L	U
Trichloroethene	79-01-6	1	0.200	1.02	ug/L	
Tetrachloroethene	127-18-4	1	0.200	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*94.9*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*85.6*	*%*	
Surrogate: 4-Bromofluorobenzene			*75-125 %*	*90.8*	*%*	

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	08-Dec-2022 17:15

AGW179-20221205

22L0115-10 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM — Sampled: 12/05/2022 12:17

Instrument: NT16 Analyst: KOTT — Analyzed: 12/07/2022 16:44

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22L0115-10 A

Preparation Batch: BKL0156 — Sample Size: 10 mL

Prepared: 12/07/2022 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	1.89	ug/L	
1,1-Dichloroethene	75-35-4	1	0.200	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.200	4.06	ug/L	
trans-1,2-Dichloroethene	156-60-5	1	0.200	ND	ug/L	U
Trichloroethene	79-01-6	1	0.200	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.200	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*94.5*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*83.9*	*%*	
Surrogate: 4-Bromofluorobenzene			*75-125 %*	*90.5*	*%*	

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	08-Dec-2022 17:15

AGW180-20221205

22L0115-11 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM — Sampled: 12/05/2022 12:20

Instrument: NT16 Analyst: KOTT — Analyzed: 12/07/2022 17:06

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22L0115-11 A

Preparation Batch: BKL0156 — Sample Size: 10 mL

Prepared: 12/07/2022 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0207	ug/L	
1,1-Dichloroethene	75-35-4	1	0.200	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.200	0.597	ug/L	
trans-1,2-Dichloroethene	156-60-5	1	0.200	ND	ug/L	U
Trichloroethene	79-01-6	1	0.200	2.36	ug/L	
Tetrachloroethene	127-18-4	1	0.200	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*96.4*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*84.5*	*%*	
Surrogate: 4-Bromofluorobenzene			*75-125 %*	*89.9*	*%*	

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	08-Dec-2022 17:15

AGW210-6-80-20221205

22L0115-12 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM
Instrument: NT16 Analyst: KOTT

Sampled: 12/05/2022 13:58
Analyzed: 12/07/2022 17:27

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BKL0156
Prepared: 12/07/2022
Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 22L0115-12 A

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0216	ug/L	
1,1-Dichloroethene	75-35-4	1	0.200	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.200	0.328	ug/L	
trans-1,2-Dichloroethene	156-60-5	1	0.200	ND	ug/L	U
Trichloroethene	79-01-6	1	0.200	2.52	ug/L	
Tetrachloroethene	127-18-4	1	0.200	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*96.4*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*85.3*	*%*	
Surrogate: 4-Bromofluorobenzene			*75-125 %*	*89.7*	*%*	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	08-Dec-2022 17:15

AGW210-5-60-20221205

22L0115-13 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM — Sampled: 12/05/2022 14:18

Instrument: NT16 Analyst: KOTT — Analyzed: 12/07/2022 17:48

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22L0115-13 A

Preparation Batch: BKL0156 — Sample Size: 10 mL

Prepared: 12/07/2022 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0704	ug/L	
1,1-Dichloroethene	75-35-4	1	0.200	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.200	1.58	ug/L	
trans-1,2-Dichloroethene	156-60-5	1	0.200	ND	ug/L	U
Trichloroethene	79-01-6	1	0.200	0.589	ug/L	
Tetrachloroethene	127-18-4	1	0.200	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*95.9*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*85.9*	*%*	
Surrogate: 4-Bromofluorobenzene			*75-125 %*	*89.7*	*%*	

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	08-Dec-2022 17:15

AGW170-20221205

22L0115-14 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM — Sampled: 12/05/2022 13:09

Instrument: NT16 Analyst: KOTT — Analyzed: 12/07/2022 18:09

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22L0115-14 A

Preparation Batch: BKL0156 — Sample Size: 10 mL

Prepared: 12/07/2022 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.200	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.200	0.352	ug/L	
trans-1,2-Dichloroethene	156-60-5	1	0.200	ND	ug/L	U
Trichloroethene	79-01-6	1	0.200	1.69	ug/L	
Tetrachloroethene	127-18-4	1	0.200	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*97.0*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*86.3*	*%*	
Surrogate: 4-Bromofluorobenzene			*75-125 %*	*89.6*	*%*	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	08-Dec-2022 17:15

AGW171-20221205

22L0115-15 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM — Sampled: 12/05/2022 13:13

Instrument: NT16 Analyst: KOTT — Analyzed: 12/07/2022 18:30

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22L0115-15 A

Preparation Batch: BKL0156 — Sample Size: 10 mL

Prepared: 12/07/2022 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.200	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.200	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.200	ND	ug/L	U
Trichloroethene	79-01-6	1	0.200	1.40	ug/L	
Tetrachloroethene	127-18-4	1	0.200	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*97.2*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*85.3*	*%*	
Surrogate: 4-Bromofluorobenzene			*75-125 %*	*89.2*	*%*	

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	08-Dec-2022 17:15

AGW159-20221205

22L0115-16 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM — Sampled: 12/05/2022 13:35

Instrument: NT16 Analyst: KOTT — Analyzed: 12/07/2022 18:51

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22L0115-16 A

Preparation Batch: BKL0156 — Sample Size: 10 mL

Prepared: 12/07/2022 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0528	ug/L	
1,1-Dichloroethene	75-35-4	1	0.200	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.200	0.654	ug/L	
trans-1,2-Dichloroethene	156-60-5	1	0.200	ND	ug/L	U
Trichloroethene	79-01-6	1	0.200	3.18	ug/L	
Tetrachloroethene	127-18-4	1	0.200	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*97.1*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*84.1*	*%*	
Surrogate: 4-Bromofluorobenzene			*75-125 %*	*88.8*	*%*	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	08-Dec-2022 17:15

AGW160-20221205

22L0115-17 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM — Sampled: 12/05/2022 14:07

Instrument: NT16 Analyst: KOTT — Analyzed: 12/07/2022 19:12

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22L0115-17 A

Preparation Batch: BKL0156 — Sample Size: 10 mL

Prepared: 12/07/2022 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0246	ug/L	
1,1-Dichloroethene	75-35-4	1	0.200	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.200	0.424	ug/L	
trans-1,2-Dichloroethene	156-60-5	1	0.200	ND	ug/L	U
Trichloroethene	79-01-6	1	0.200	3.82	ug/L	
Tetrachloroethene	127-18-4	1	0.200	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*96.7*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*85.2*	*%*	
Surrogate: 4-Bromofluorobenzene			*75-125 %*	*90.0*	*%*	

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	08-Dec-2022 17:15

AGW136-20221205

22L0115-18 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM — Sampled: 12/05/2022 14:34

Instrument: NT16 Analyst: KOTT — Analyzed: 12/07/2022 19:34

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22L0115-18 A

Preparation Batch: BKL0156 — Sample Size: 10 mL

Prepared: 12/07/2022 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.200	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.200	0.921	ug/L	
trans-1,2-Dichloroethene	156-60-5	1	0.200	ND	ug/L	U
Trichloroethene	79-01-6	1	0.200	1.02	ug/L	
Tetrachloroethene	127-18-4	1	0.200	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*97.0*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*84.8*	*%*	
Surrogate: 4-Bromofluorobenzene			*75-125 %*	*90.1*	*%*	

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	08-Dec-2022 17:15

AGW239-20221205

22L0115-19 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM — Sampled: 12/05/2022 15:47

Instrument: NT16 Analyst: KOTT — Analyzed: 12/07/2022 12:52

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22L0115-19 A

Preparation Batch: BKL0156 — Sample Size: 10 mL

Prepared: 12/07/2022 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.189	ug/L	
1,1-Dichloroethene	75-35-4	1	0.200	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.200	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.200	ND	ug/L	U
Trichloroethene	79-01-6	1	0.200	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.200	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*95.3*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*87.6*	*%*	
Surrogate: 4-Bromofluorobenzene			*75-125 %*	*93.2*	*%*	

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	08-Dec-2022 17:15

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - SIM - Quality Control

Batch BKL0156 - EPA 8260D-SIM

Instrument: NT16 Analyst: KOTT

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKL0156-BLK1)			Prepared: 07-Dec-2022 Analyzed: 07-Dec-2022 10:55							
Vinyl chloride	ND	0.0200	ug/L							U
1,1-Dichloroethene	ND	0.200	ug/L							U
cis-1,2-Dichloroethene	ND	0.200	ug/L							U
trans-1,2-Dichloroethene	ND	0.200	ug/L							U
Trichloroethene	ND	0.200	ug/L							U
Tetrachloroethene	ND	0.200	ug/L							U
Surrogate: 1,2-Dichloroethane-d4	4610		ug/L	*5000*		*92.3*	*80-129*			
Surrogate: Toluene-d8	4510		ug/L	*5000*		*90.2*	*80-120*			
Surrogate: 4-Bromofluorobenzene	4680		ug/L	*5000*		*93.6*	*75-125*			
LCS (BKL0156-BS1)			Prepared: 07-Dec-2022 Analyzed: 07-Dec-2022 09:30							
Vinyl chloride	1.99	0.0200	ug/L	2.00		99.7	62-141			
1,1-Dichloroethene	1.82	0.200	ug/L	2.00		90.8	80-125			
cis-1,2-Dichloroethene	1.92	0.200	ug/L	2.00		95.9	74-120			
trans-1,2-Dichloroethene	1.83	0.200	ug/L	2.00		91.7	80-122			
Trichloroethene	1.65	0.200	ug/L	2.00		82.3	75-122			
Tetrachloroethene	1.69	0.200	ug/L	2.00		84.7	76-127			
Surrogate: 1,2-Dichloroethane-d4	4500		ug/L	*5000*		*90.0*	*80-129*			
Surrogate: Toluene-d8	4640		ug/L	*5000*		*92.9*	*80-120*			
Surrogate: 4-Bromofluorobenzene	5030		ug/L	*5000*		*101*	*75-125*			
LCS Dup (BKL0156-BSD1)			Prepared: 07-Dec-2022 Analyzed: 07-Dec-2022 10:34							
Vinyl chloride	2.11	0.0200	ug/L	2.00		105	62-141	5.49	30	
1,1-Dichloroethene	1.91	0.200	ug/L	2.00		95.6	80-125	5.11	30	
cis-1,2-Dichloroethene	1.98	0.200	ug/L	2.00		99.0	74-120	3.17	30	
trans-1,2-Dichloroethene	1.90	0.200	ug/L	2.00		94.8	80-122	3.28	30	
Trichloroethene	1.67	0.200	ug/L	2.00		83.5	75-122	1.45	30	
Tetrachloroethene	1.74	0.200	ug/L	2.00		87.1	76-127	2.76	30	
Surrogate: 1,2-Dichloroethane-d4	4560		ug/L	*5000*		*91.3*	*80-129*			
Surrogate: Toluene-d8	4650		ug/L	*5000*		*92.9*	*80-120*			
Surrogate: 4-Bromofluorobenzene	5090		ug/L	*5000*		*102*	*75-125*			
Matrix Spike (BKL0156-MS1)	**Source: 22L0115-04**		Prepared: 07-Dec-2022 Analyzed: 07-Dec-2022 12:10							
Vinyl chloride	2.31	0.0200	ug/L	2.00	ND	116	62-141			

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	08-Dec-2022 17:15

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - SIM - Quality Control

Batch BKL0156 - EPA 8260D-SIM

Instrument: NT16 Analyst: KOTT

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike (BKL0156-MS1)	**Source: 22L0115-04**		Prepared: 07-Dec-2022	Analyzed: 07-Dec-2022 12:10						
1,1-Dichloroethene	2.18	0.200	ug/L	2.00	ND	108	80-125			
cis-1,2-Dichloroethene	2.33	0.200	ug/L	2.00	ND	114	74-120			
trans-1,2-Dichloroethene	2.20	0.200	ug/L	2.00	ND	110	80-122			
Trichloroethene	3.03	0.200	ug/L	2.00	1.05	99.3	75-122			
Tetrachloroethene	2.11	0.200	ug/L	2.00	ND	104	76-127			
Surrogate: 1,2-Dichloroethane-d4	4720		ug/L	*5000*	*4490*	*94.4*	*80-129*			
Surrogate: Toluene-d8	4670		ug/L	*5000*	*4540*	*93.4*	*80-120*			
Surrogate: 4-Bromofluorobenzene	5120		ug/L	*5000*	*4640*	*102*	*75-125*			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike (BKL0156-MS2)	**Source: 22L0115-19**		Prepared: 07-Dec-2022	Analyzed: 07-Dec-2022 13:13						
Vinyl chloride	2.10	0.0200	ug/L	2.00	0.189	95.4	62-141			
1,1-Dichloroethene	1.81	0.200	ug/L	2.00	ND	89.9	80-125			
cis-1,2-Dichloroethene	2.04	0.200	ug/L	2.00	ND	95.8	74-120			
trans-1,2-Dichloroethene	1.85	0.200	ug/L	2.00	ND	90.2	80-122			
Trichloroethene	1.72	0.200	ug/L	2.00	ND	84.0	75-122			
Tetrachloroethene	1.76	0.200	ug/L	2.00	ND	87.8	76-127			
Surrogate: 1,2-Dichloroethane-d4	4670		ug/L	*5000*	*4770*	*93.5*	*80-129*			
Surrogate: Toluene-d8	4580		ug/L	*5000*	*4380*	*91.6*	*80-120*			
Surrogate: 4-Bromofluorobenzene	5080		ug/L	*5000*	*4660*	*102*	*75-125*			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike Dup (BKL0156-MSD1)	**Source: 22L0115-04**		Prepared: 07-Dec-2022	Analyzed: 07-Dec-2022 12:31						
Vinyl chloride	1.93	0.0200	ug/L	2.00	ND	96.7	62-141	17.90	30	
1,1-Dichloroethene	1.82	0.200	ug/L	2.00	ND	90.4	80-125	17.90	30	
cis-1,2-Dichloroethene	1.84	0.200	ug/L	2.00	ND	89.7	74-120	23.50	30	
trans-1,2-Dichloroethene	1.82	0.200	ug/L	2.00	ND	90.7	80-122	18.70	30	
Trichloroethene	2.75	0.200	ug/L	2.00	1.05	85.0	75-122	9.90	30	
Tetrachloroethene	1.79	0.200	ug/L	2.00	ND	87.4	76-127	16.50	30	
Surrogate: 1,2-Dichloroethane-d4	4670		ug/L	*5000*	*4490*	*93.4*	*80-129*			
Surrogate: Toluene-d8	4600		ug/L	*5000*	*4540*	*91.9*	*80-120*			
Surrogate: 4-Bromofluorobenzene	5060		ug/L	*5000*	*4640*	*101*	*75-125*			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	08-Dec-2022 17:15

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - SIM - Quality Control

Batch BKL0156 - EPA 8260D-SIM

Instrument: NT16 Analyst: KOTT

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BKL0156-MSD2)	**Source: 22L0115-19**			Prepared: 07-Dec-2022 Analyzed: 07-Dec-2022 13:34						
Vinyl chloride	2.17	0.0200	ug/L	2.00	0.189	99.0	62-141	3.34	30	
1,1-Dichloroethene	1.87	0.200	ug/L	2.00	ND	92.9	80-125	3.24	30	
cis-1,2-Dichloroethene	2.10	0.200	ug/L	2.00	ND	98.6	74-120	2.66	30	
trans-1,2-Dichloroethene	1.91	0.200	ug/L	2.00	ND	93.1	80-122	3.12	30	
Trichloroethene	1.79	0.200	ug/L	2.00	ND	87.1	75-122	3.55	30	
Tetrachloroethene	1.82	0.200	ug/L	2.00	ND	90.4	76-127	2.92	30	
Surrogate: 1,2-Dichloroethane-d4	4670		ug/L	*5000*	*4770*	*93.3*	*80-129*			
Surrogate: Toluene-d8	4570		ug/L	*5000*	*4380*	*91.4*	*80-120*			
Surrogate: 4-Bromofluorobenzene	5090		ug/L	*5000*	*4660*	*102*	*75-125*			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	08-Dec-2022 17:15

Certified Analyses included in this Report

Analyte	Certifications
EPA 8260D-SIM in Water	
Acrylonitrile	NELAP,WADOE
Vinyl chloride	NELAP,WADOE
1,1-Dichloroethene	NELAP,WADOE
cis-1,2-Dichloroethene	NELAP,WADOE
trans-1,2-Dichloroethene	NELAP,WADOE
Trichloroethene	NELAP,WADOE
Tetrachloroethene	NELAP,WADOE
1,1,2,2-Tetrachloroethane	NELAP,WADOE
1,2-Dichloroethane	NELAP,WADOE
Benzene	NELAP,WADOE

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	03/28/2023
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program	66169	02/28/2023
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2023
WADOE	WA Dept of Ecology	C558	06/30/2023
WA-DW	Ecology - Drinking Water	C558	06/30/2023

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	08-Dec-2022 17:15

Notes and Definitions

U	This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
[2C]	Indicates this result was quantified on the second column on a dual column analysis.

Analytical Resources, LLC
Analytical Chemists and Consultants

19 December 2022

Jennifer Parsons
The Boeing Company
PO Box 3703 MS 2R-96
Seattle, WA 98124

RE: Boeing Auburn 4Q 2022 Regional GWM (0025164.170.101)

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

Associated Work Order(s)	Associated SDG ID(s)
22L0140	N/A

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclose Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the requirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Analytical Resources, LLC

Kelly Bottem, Client Services Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

ACCREDITED IN ACCORDANCE WITH nelac
Cert# 100006-012

2210140

LANDAU ASSOCIATES

Chain-of-Custody Record

☐ North Seattle (206) 631-8660 ☐ Spokane (509) 327-9737
☒ Tacoma (253) 926-2493 ☐ Portland (503) 542-1080
☐ Olympia (360) 791-3178 ☐ _____

Date 12/6/2022
Page 1 of 1

Turnaround Time: (Standard) / Accelerated

Project Name Boeing Regional GWM Project No. 0025217.099.099
Project Location/Event Auburn / Semiannual 2022
Sampler's Name SMR/SJL/JBD
Project Contact C. Kimmel (LAI); J. Parsons (Boeing)
Send Results To ckimmel@landauinc.com (+ others see lims list)

Special Handling Requirements: _____
Shipment Method: _____
Stored on ice: (Yes) No

Sample I.D.	Date	Time	Matrix	No. of Containers	Boeing 6 VOCs 8260sim	NWTPH-Dx	MS/MSD	BTEX 8260	NWTPH-Gx
AGW140-20221206	12/6/22	0840	AQ	3	X				
AGW135-20221206	12/6/22	0900	AQ	3	X				
AGW033-20221206	12/6/22	0917	AQ	3	X				
AGW024-20221206	12/6/22	0942	AQ	3	X				
AGW027-20221206	12/6/22	1004	AQ	3	X				
AGW131-20221206	12/6/22	1025	AQ	3	X				
AGW085-20221206	12/6/22	1048	AQ	3	X				
AGW129-20221206	12/6/22	1125	AQ	3	X				
AGW164-20221206	12/6/22	1150	AQ	3	X				
AGW112R-20221206	12/6/22	1240	AQ	3	X				
AGW006R-20221206	12/6/22	1255	AQ	3	X				
AGW031R-20221206	12/6/22	1317	AQ	3	X				
AGW281-20221206	12/6/22	1431	AQ	2		X			
AGW282-20221206	12/6/22	1512	AQ	2		X			
AGW010-20221206	12/6/22	0908	AQ	21		X	X	X	X
AGW900-20221206	12/6/22	0916	AQ	7		X		X	X
AGW202-2-30-20221206	12/6/22	1134	AQ	3	X				
AGW201-2-30-20221206	12/6/22	1218	AQ	3	X				
AGW130-20221206	12/6/22	1424	AQ	2		X			
Trip blank 2-20221206	—	—	AQ	4	X			X	X

Testing Parameters

Observations/Comments

☐ Allow water samples to settle, collect aliquot from clear portion ☐
☒ NWTPH-Dx - Acid wash cleanup ☐
- Silica gel cleanup ☒
☐ Dissolved metal samples were field filtered

Other _____

Relinquished by
Signature _____
Printed Name Josh Burback
Company Landau Associates
Date 12/6/22 Time _____

Received by
Signature _____
Printed Name Trent Smith
Company AGAT LIC
Date 12/7/22 Time 1207

Relinquished by
Signature _____
Printed Name _____
Company _____
Date _____ Time _____

Received by
Signature _____
Printed Name _____
Company _____
Date _____ Time _____

WHITE COPY - Laboratory YELLOW COPY - Project File PINK COPY - Client Representative

10/2018

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	19-Dec-2022 09:57

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
AGW140-20221206	22L0140-01	Water	06-Dec-2022 08:40	07-Dec-2022 12:07
AGW135-20221206	22L0140-02	Water	06-Dec-2022 09:00	07-Dec-2022 12:07
AGW033-20221206	22L0140-03	Water	06-Dec-2022 09:17	07-Dec-2022 12:07
AGW024-20221206	22L0140-04	Water	06-Dec-2022 09:42	07-Dec-2022 12:07
AGW027-20221206	22L0140-05	Water	06-Dec-2022 10:04	07-Dec-2022 12:07
AGW131-20221206	22L0140-06	Water	06-Dec-2022 10:25	07-Dec-2022 12:07
AGW085-20221206	22L0140-07	Water	06-Dec-2022 10:48	07-Dec-2022 12:07
AGW129-20221206	22L0140-08	Water	06-Dec-2022 11:25	07-Dec-2022 12:07
AGW164-20221206	22L0140-09	Water	06-Dec-2022 11:50	07-Dec-2022 12:07
AGW112R-20221206	22L0140-10	Water	06-Dec-2022 12:40	07-Dec-2022 12:07
AGW006R-20221206	22L0140-11	Water	06-Dec-2022 12:55	07-Dec-2022 12:07
AGW031R-20221206	22L0140-12	Water	06-Dec-2022 13:17	07-Dec-2022 12:07
AGW281-20221206	22L0140-13	Water	06-Dec-2022 14:31	07-Dec-2022 12:07
AGW282-20221206	22L0140-14	Water	06-Dec-2022 15:12	07-Dec-2022 12:07
AGW010-20221206	22L0140-15	Water	06-Dec-2022 09:08	07-Dec-2022 12:07
AGW900-20221206	22L0140-16	Water	06-Dec-2022 09:16	07-Dec-2022 12:07
AGW202-2-30-20221206	22L0140-17	Water	06-Dec-2022 11:34	07-Dec-2022 12:07
AGW201-2-30-20221206	22L0140-18	Water	06-Dec-2022 12:18	07-Dec-2022 12:07
AGW130-20221206	22L0140-19	Water	06-Dec-2022 14:24	07-Dec-2022 12:07
Tripblank2-20221206	22L0140-20	Water	06-Dec-2022 08:40	07-Dec-2022 12:07

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	19-Dec-2022 09:57

Work Order Case Narrative

Gasoline by NWTPH-g (GC/MS)

The sample(s) were analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.

The matrix spike/matrix spike duplicate (MS/MSD) spike recoveries and relative percent difference (RPD) were within advisory control limits.

Volatiles - EPA Method SW8260D

The sample(s) were analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.

The matrix spike/matrix spike duplicate (MS/MSD) spike recoveries and relative percent difference (RPD) were within advisory control limits.

Volatiles - EPA Method 8260D-SIM (Selected Ion Monitoring)

The sample(s) were analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	19-Dec-2022 09:57

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.

The matrix spike/matrix spike duplicate (MS/MSD) percent recoveries and relative percent difference (RPD) were within advisory control limits.

Diesel/Heavy Oil Range Organics - WA-Ecology Method NW-TPHDx

The sample(s) were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike (BS/LCS) percent recoveries were within control limits.

The matrix spike (MS) percent recoveries and the duplicate (DUP) relative percent difference (RPD) were within advisory control limits.

Analytical Resources, LLC
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Boeing Auburn

Project Name: Auburn Semidrawal 2022

COC No(s): _____ (NA)

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: 220140

Tracking No: _____ (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of the cooler?	YES	NO
Were custody papers included with the cooler?	YES	NO
Were custody papers properly filled out (ink, signed, etc.)	YES	NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)

Time	12:08	4.5					

If cooler temperature is out of compliance fill out form 00070F

Temp Gun ID#: 220708

Cooler Accepted by: [signature] Date: 12/07/22 Time: 12:07

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	(NO)
What kind of packing material was used? ...	Bubble Wrap (Wet Ice) Gel Packs Baggies Foam Block Paper Other: _____		
Was sufficient ice used (if appropriate)?	NA	(YES)	NO
How were bottles sealed in plastic bags?	Individually	Grouped	(Not)
Did all bottles arrive in good condition (unbroken)?		(YES)	NO
Were all bottle labels complete and legible?		(YES)	NO
Did the number of containers listed on COC match with the number of containers received?		(YES)	NO
Did all bottle labels and tags agree with custody papers?		(YES)	NO
Were all bottles used correct for the requested analyses?		(YES)	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) ...	NA	(YES)	NO
Were all VOC vials free of air bubbles?	NA	(YES)	NO
Was sufficient amount of sample sent in each bottle?		(YES)	NO
Date VOC Trip Blank was made at ARI	NA	11/14/22	

Were the sample(s) split by ARI? (NA) YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: [signature] Date: 12/07/22 Time: 12:50 Labels checked by: PLB

*** Notify Project Manager of discrepancies or concerns ***

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: Date:

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	19-Dec-2022 09:57

AGW140-20221206

22L0140-01 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM — Sampled: 12/06/2022 08:40

Instrument: NT16 Analyst: KOTT — Analyzed: 12/08/2022 12:15

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22L0140-01 A

Preparation Batch: BKL0191 — Sample Size: 10 mL

Prepared: 12/08/2022 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.358	ug/L	
1,1-Dichloroethene	75-35-4	1	0.200	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.200	1.50	ug/L	
trans-1,2-Dichloroethene	156-60-5	1	0.200	ND	ug/L	U
Trichloroethene	79-01-6	1	0.200	2.39	ug/L	
Tetrachloroethene	127-18-4	1	0.200	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*90.4*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*88.7*	*%*	
Surrogate: 4-Bromofluorobenzene			*75-125 %*	*91.1*	*%*	

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	19-Dec-2022 09:57

AGW135-20221206

22L0140-02 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM — Sampled: 12/06/2022 09:00

Instrument: NT16 Analyst: KOTT — Analyzed: 12/08/2022 12:36

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22L0140-02 A

Preparation Batch: BKL0191 — Sample Size: 10 mL

Prepared: 12/08/2022 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0231	ug/L	
1,1-Dichloroethene	75-35-4	1	0.200	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.200	0.292	ug/L	
trans-1,2-Dichloroethene	156-60-5	1	0.200	ND	ug/L	U
Trichloroethene	79-01-6	1	0.200	0.920	ug/L	
Tetrachloroethene	127-18-4	1	0.200	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*95.3*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*89.5*	*%*	
Surrogate: 4-Bromofluorobenzene			*75-125 %*	*90.8*	*%*	

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	19-Dec-2022 09:57

AGW033-20221206

22L0140-03 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM — Sampled: 12/06/2022 09:17

Instrument: NT16 Analyst: KOTT — Analyzed: 12/08/2022 12:57

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22L0140-03 A

Preparation Batch: BKL0191 — Sample Size: 10 mL

Prepared: 12/08/2022 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.200	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.200	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.200	ND	ug/L	U
Trichloroethene	79-01-6	1	0.200	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.200	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*94.6*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*88.6*	*%*	
Surrogate: 4-Bromofluorobenzene			*75-125 %*	*90.1*	*%*	

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	19-Dec-2022 09:57

AGW024-20221206

22L0140-04 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM — Sampled: 12/06/2022 09:42

Instrument: NT16 Analyst: KOTT — Analyzed: 12/08/2022 13:18

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22L0140-04 A

Preparation Batch: BKL0191 — Sample Size: 10 mL

Prepared: 12/08/2022 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	1.48	ug/L	
1,1-Dichloroethene	75-35-4	1	0.200	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.200	1.44	ug/L	
trans-1,2-Dichloroethene	156-60-5	1	0.200	ND	ug/L	U
Trichloroethene	79-01-6	1	0.200	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.200	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*94.6*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*87.2*	*%*	
Surrogate: 4-Bromofluorobenzene			*75-125 %*	*90.7*	*%*	

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	19-Dec-2022 09:57

AGW027-20221206

22L0140-05 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM — Sampled: 12/06/2022 10:04

Instrument: NT16 Analyst: KOTT — Analyzed: 12/08/2022 13:39

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22L0140-05 A

Preparation Batch: BKL0191 — Sample Size: 10 mL

Prepared: 12/08/2022 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.544	ug/L	
1,1-Dichloroethene	75-35-4	1	0.200	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.200	0.467	ug/L	
trans-1,2-Dichloroethene	156-60-5	1	0.200	ND	ug/L	U
Trichloroethene	79-01-6	1	0.200	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.200	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*96.6*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*85.6*	*%*	
Surrogate: 4-Bromofluorobenzene			*75-125 %*	*91.1*	*%*	

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	19-Dec-2022 09:57

AGW131-20221206

22L0140-06 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM — Sampled: 12/06/2022 10:25

Instrument: NT16 Analyst: KOTT — Analyzed: 12/08/2022 14:00

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22L0140-06 A

Preparation Batch: BKL0191 — Sample Size: 10 mL

Prepared: 12/08/2022 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	4.06	ug/L	
1,1-Dichloroethene	75-35-4	1	0.200	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.200	0.447	ug/L	
trans-1,2-Dichloroethene	156-60-5	1	0.200	ND	ug/L	U
Trichloroethene	79-01-6	1	0.200	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.200	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*97.8*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*85.7*	*%*	
Surrogate: 4-Bromofluorobenzene			*75-125 %*	*90.5*	*%*	

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	19-Dec-2022 09:57

AGW085-20221206

22L0140-07 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM — Sampled: 12/06/2022 10:48

Instrument: NT16 Analyst: KOTT — Analyzed: 12/08/2022 14:21

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22L0140-07 A

Preparation Batch: BKL0191 — Sample Size: 10 mL

Prepared: 12/08/2022 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.200	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.200	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.200	ND	ug/L	U
Trichloroethene	79-01-6	1	0.200	0.231	ug/L	
Tetrachloroethene	127-18-4	1	0.200	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*98.0*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*84.6*	*%*	
Surrogate: 4-Bromofluorobenzene			*75-125 %*	*90.2*	*%*	

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	19-Dec-2022 09:57

AGW129-20221206

22L0140-08 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM — Sampled: 12/06/2022 11:25

Instrument: NT16 Analyst: KOTT — Analyzed: 12/08/2022 14:43

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22L0140-08 A

Preparation Batch: BKL0191 — Sample Size: 10 mL

Prepared: 12/08/2022 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.200	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.200	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.200	ND	ug/L	U
Trichloroethene	79-01-6	1	0.200	0.237	ug/L	
Tetrachloroethene	127-18-4	1	0.200	0.340	ug/L	
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*97.8*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*86.0*	*%*	
Surrogate: 4-Bromofluorobenzene			*75-125 %*	*90.4*	*%*	

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	19-Dec-2022 09:57

AGW164-20221206

22L0140-09 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM — Sampled: 12/06/2022 11:50

Instrument: NT16 Analyst: KOTT — Analyzed: 12/08/2022 15:04

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22L0140-09 A

Preparation Batch: BKL0191 — Sample Size: 10 mL

Prepared: 12/08/2022 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0402	ug/L	
1,1-Dichloroethene	75-35-4	1	0.200	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.200	0.366	ug/L	
trans-1,2-Dichloroethene	156-60-5	1	0.200	ND	ug/L	U
Trichloroethene	79-01-6	1	0.200	1.22	ug/L	
Tetrachloroethene	127-18-4	1	0.200	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*97.0*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*88.2*	*%*	
Surrogate: 4-Bromofluorobenzene			*75-125 %*	*89.1*	*%*	

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	19-Dec-2022 09:57

AGW112R-20221206

22L0140-10 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM — Sampled: 12/06/2022 12:40

Instrument: NT16 Analyst: KOTT — Analyzed: 12/08/2022 15:25

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22L0140-10 A

Preparation Batch: BKL0191 — Sample Size: 10 mL

Prepared: 12/08/2022 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0727	ug/L	
1,1-Dichloroethene	75-35-4	1	0.200	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.200	0.949	ug/L	
trans-1,2-Dichloroethene	156-60-5	1	0.200	ND	ug/L	U
Trichloroethene	79-01-6	1	0.200	1.13	ug/L	
Tetrachloroethene	127-18-4	1	0.200	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*97.1*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*85.1*	*%*	
Surrogate: 4-Bromofluorobenzene			*75-125 %*	*89.6*	*%*	

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	19-Dec-2022 09:57

AGW006R-20221206

22L0140-11 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM — Sampled: 12/06/2022 12:55

Instrument: NT16 Analyst: KOTT — Analyzed: 12/08/2022 15:46

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22L0140-11 A

Preparation Batch: BKL0191 — Sample Size: 10 mL

Prepared: 12/08/2022 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0233	ug/L	
1,1-Dichloroethene	75-35-4	1	0.200	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.200	0.782	ug/L	
trans-1,2-Dichloroethene	156-60-5	1	0.200	ND	ug/L	U
Trichloroethene	79-01-6	1	0.200	0.420	ug/L	
Tetrachloroethene	127-18-4	1	0.200	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*97.5*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*83.7*	*%*	
Surrogate: 4-Bromofluorobenzene			*75-125 %*	*88.8*	*%*	

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	19-Dec-2022 09:57

AGW031R-20221206

22L0140-12 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM — Sampled: 12/06/2022 13:17

Instrument: NT16 Analyst: KOTT — Analyzed: 12/08/2022 16:07

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22L0140-12 A

Preparation Batch: BKL0191 — Sample Size: 10 mL

Prepared: 12/08/2022 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0362	ug/L	
1,1-Dichloroethene	75-35-4	1	0.200	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.200	2.87	ug/L	
trans-1,2-Dichloroethene	156-60-5	1	0.200	ND	ug/L	U
Trichloroethene	79-01-6	1	0.200	0.534	ug/L	
Tetrachloroethene	127-18-4	1	0.200	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*96.8*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*83.4*	*%*	
Surrogate: 4-Bromofluorobenzene			*75-125 %*	*89.8*	*%*	

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Analytical Report

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	19-Dec-2022 09:57

AGW281-20221206

22L0140-13 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx — Sampled: 12/06/2022 14:31

Instrument: FID4 Analyst: AA — Analyzed: 12/17/2022 10:07

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF; Preparation Batch: BKL0291; Prepared: 12/13/2022; Sample Size: 500 mL; Final Volume: 1 mL — Extract ID: 22L0140-13 A 01

Sample Cleanup: Cleanup Method: Silica Gel; Cleanup Batch: CKL0180; Cleaned: 15-Dec-2022; Initial Volume: 1 uL; Final Volume: 1 uL — Extract ID: 22L0140-13 A 01

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	0.100	0.246	mg/L	
HC ID: DRO						
Motor Oil Range Organics (C24-C38)	RRO	1	0.200	0.978	mg/L	
HC ID: MOTOR OIL						
Surrogate: o-Terphenyl			*50-150 %*	*100*	*%*	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	19-Dec-2022 09:57

AGW282-20221206

22L0140-14 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx — Sampled: 12/06/2022 15:12

Instrument: FID4 Analyst: AA — Analyzed: 12/17/2022 10:27

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF; Preparation Batch: BKL0291; Prepared: 12/13/2022; Sample Size: 500 mL; Final Volume: 1 mL — Extract ID: 22L0140-14 A 01

Sample Cleanup: Cleanup Method: Silica Gel; Cleanup Batch: CKL0180; Cleaned: 15-Dec-2022; Initial Volume: 1 uL; Final Volume: 1 uL — Extract ID: 22L0140-14 A 01

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	0.100	0.153	mg/L	
HC ID: DRO						
Motor Oil Range Organics (C24-C38)	RRO	1	0.200	0.661	mg/L	
HC ID: MOTOR OIL						
Surrogate: o-Terphenyl			*50-150 %*	*101*	*%*	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	19-Dec-2022 09:57

AGW010-20221206

22L0140-15 (Water)

Volatile Organic Compounds

Method: EPA 8260D — Sampled: 12/06/2022 09:08

Instrument: NT2 Analyst: LH — Analyzed: 12/08/2022 14:26

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22L0140-15 M

Preparation Batch: BKL0187 — Sample Size: 10 mL

Prepared: 12/08/2022 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Benzene	71-43-2	1	0.20	0.30	ug/L	
Toluene	108-88-3	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.60	ND	ug/L	U
Surrogate: Toluene-d8			*80-120 %*	*99.5*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*91.7*	*%*	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	19-Dec-2022 09:57

AGW010-20221206

22L0140-15 (Water)

Volatile Organic Compounds

Method: NWTPHg — Sampled: 12/06/2022 09:08

Instrument: NT2 Analyst: LH — Analyzed: 12/08/2022 14:26

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22L0140-15 M

Preparation Batch: BKL0187 — Sample Size: 10 mL

Prepared: 12/08/2022 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
Surrogate: Toluene-d8			*80-120 %*	*99.5*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*91.7*	*%*	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	19-Dec-2022 09:57

AGW010-20221206

22L0140-15 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx — Sampled: 12/06/2022 09:08

Instrument: FID4 Analyst: AA — Analyzed: 12/17/2022 10:47

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF		Extract ID: 22L0140-15 A 01
	Preparation Batch: BKL0291	Sample Size: 500 mL	
	Prepared: 12/13/2022	Final Volume: 1 mL	
Sample Cleanup:	Cleanup Method: Silica Gel		Extract ID: 22L0140-15 A 01
	Cleanup Batch: CKL0180	Initial Volume: 1 uL	
	Cleaned: 15-Dec-2022	Final Volume: 1 uL	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	0.100	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	0.200	ND	mg/L	U
Surrogate: o-Terphenyl			*50-150 %*	*97.5*	*%*	

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	19-Dec-2022 09:57

AGW900-20221206

22L0140-16 (Water)

Volatile Organic Compounds

Method: EPA 8260D — Sampled: 12/06/2022 09:16

Instrument: NT2 Analyst: LH — Analyzed: 12/08/2022 14:46

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22L0140-16 E

Preparation Batch: BKL0187 — Sample Size: 10 mL

Prepared: 12/08/2022 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Benzene	71-43-2	1	0.20	0.29	ug/L	
Toluene	108-88-3	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.60	ND	ug/L	U
Surrogate: Toluene-d8			*80-120 %*	*98.0*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*89.5*	*%*	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	19-Dec-2022 09:57

AGW900-20221206

22L0140-16 (Water)

Volatile Organic Compounds

Method: NWTPHg — Sampled: 12/06/2022 09:16

Instrument: NT2 Analyst: LH — Analyzed: 12/08/2022 14:46

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22L0140-16 E

Preparation Batch: BKL0187 — Sample Size: 10 mL

Prepared: 12/08/2022 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
Surrogate: Toluene-d8			*80-120 %*	*98.0*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*89.5*	*%*	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	19-Dec-2022 09:57

AGW900-20221206

22L0140-16 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx — Sampled: 12/06/2022 09:16

Instrument: FID4 Analyst: AA — Analyzed: 12/17/2022 11:46

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF		Extract ID: 22L0140-16 A 01
	Preparation Batch: BKL0291	Sample Size: 500 mL	
	Prepared: 12/13/2022	Final Volume: 1 mL	
Sample Cleanup:	Cleanup Method: Silica Gel		Extract ID: 22L0140-16 A 01
	Cleanup Batch: CKL0180	Initial Volume: 1 uL	
	Cleaned: 15-Dec-2022	Final Volume: 1 uL	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	0.100	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	0.200	ND	mg/L	U
Surrogate: o-Terphenyl			*50-150 %*	*98.7*	*%*	

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	19-Dec-2022 09:57

AGW202-2-30-20221206

22L0140-17 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM — Sampled: 12/06/2022 11:34

Instrument: NT16 Analyst: KOTT — Analyzed: 12/08/2022 16:28

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22L0140-17 A

Preparation Batch: BKL0191 — Sample Size: 10 mL

Prepared: 12/08/2022 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	1.35	ug/L	
1,1-Dichloroethene	75-35-4	1	0.200	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.200	2.24	ug/L	
trans-1,2-Dichloroethene	156-60-5	1	0.200	ND	ug/L	U
Trichloroethene	79-01-6	1	0.200	0.813	ug/L	
Tetrachloroethene	127-18-4	1	0.200	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*98.4*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*84.6*	*%*	
Surrogate: 4-Bromofluorobenzene			*75-125 %*	*89.6*	*%*	

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	19-Dec-2022 09:57

AGW201-2-30-20221206

22L0140-18 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM — Sampled: 12/06/2022 12:18

Instrument: NT16 Analyst: KOTT — Analyzed: 12/08/2022 16:49

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22L0140-18 A

Preparation Batch: BKL0191 — Sample Size: 10 mL

Prepared: 12/08/2022 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	3.06	ug/L	
1,1-Dichloroethene	75-35-4	1	0.200	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.200	1.64	ug/L	
trans-1,2-Dichloroethene	156-60-5	1	0.200	ND	ug/L	U
Trichloroethene	79-01-6	1	0.200	0.268	ug/L	
Tetrachloroethene	127-18-4	1	0.200	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*98.1*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*87.7*	*%*	
Surrogate: 4-Bromofluorobenzene			*75-125 %*	*89.5*	*%*	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	19-Dec-2022 09:57

AGW130-20221206

22L0140-19 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx — Sampled: 12/06/2022 14:24

Instrument: FID4 Analyst: AA — Analyzed: 12/17/2022 12:05

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF; Preparation Batch: BKL0291; Prepared: 12/13/2022; Sample Size: 500 mL; Final Volume: 1 mL — Extract ID: 22L0140-19 A 01

Sample Cleanup: Cleanup Method: Silica Gel; Cleanup Batch: CKL0180; Cleaned: 15-Dec-2022; Initial Volume: 1 uL; Final Volume: 1 uL — Extract ID: 22L0140-19 A 01

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	0.100	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	0.200	ND	mg/L	U
Surrogate: o-Terphenyl			*50-150 %*	*94.8*	*%*	

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Seattle WA, 98124	Project Manager: Jennifer Parsons	19-Dec-2022 09:57

Tripblank2-20221206

22L0140-20 (Water)

Volatile Organic Compounds

Method: EPA 8260D — Sampled: 12/06/2022 08:40

Instrument: NT2 Analyst: LH — Analyzed: 12/08/2022 12:36

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22L0140-20 C

Preparation Batch: BKL0187 — Sample Size: 10 mL

Prepared: 12/08/2022 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Benzene	71-43-2	1	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.60	ND	ug/L	U
Surrogate: Toluene-d8			*80-120 %*	*96.4*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*92.7*	*%*	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
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Seattle WA, 98124	Project Manager: Jennifer Parsons	19-Dec-2022 09:57

Tripblank2-20221206

22L0140-20 (Water)

Volatile Organic Compounds

Method: NWTPHg — Sampled: 12/06/2022 08:40

Instrument: NT2 Analyst: LH — Analyzed: 12/08/2022 12:36

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22L0140-20 C

Preparation Batch: BKL0187 — Sample Size: 10 mL

Prepared: 12/08/2022 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
Surrogate: Toluene-d8			*80-120 %*	*96.4*	*%*	
Surrogate: 4-Bromofluorobenzene			*80-120 %*	*92.7*	*%*	

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Tripblank2-20221206

22L0140-20 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM — Sampled: 12/06/2022 08:40
Instrument: NT16 Analyst: KOTT — Analyzed: 12/08/2022 17:31

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22L0140-20 A
Preparation Batch: BKL0191 — Sample Size: 10 mL
Prepared: 12/08/2022 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.200	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.200	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.200	ND	ug/L	U
Trichloroethene	79-01-6	1	0.200	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.200	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*99.0*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*84.1*	*%*	
Surrogate: 4-Bromofluorobenzene			*75-125 %*	*89.7*	*%*	

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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKL0187 - NWTPHg

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKL0187-BLK1)				Prepared: 08-Dec-2022	Analyzed: 08-Dec-2022 08:41					
Gasoline Range Organics (Tol-Nap)	ND	100	ug/L							U
Surrogate: Toluene-d8	4.80		ug/L	*5.00*		*96.0*	*80-120*			
Surrogate: 4-Bromofluorobenzene	4.56		ug/L	*5.00*		*91.2*	*80-120*			
Blank (BKL0187-BLK2)				Prepared: 08-Dec-2022	Analyzed: 08-Dec-2022 08:41					
Benzene	ND	0.20	ug/L							U
Toluene	ND	0.20	ug/L							U
Ethylbenzene	ND	0.20	ug/L							U
m,p-Xylene	ND	0.40	ug/L							U
o-Xylene	ND	0.20	ug/L							U
Xylenes, total	ND	0.60	ug/L							U
Surrogate: Toluene-d8	4.80		ug/L	*5.00*		*96.0*	*80-120*			
Surrogate: 4-Bromofluorobenzene	4.56		ug/L	*5.00*		*91.2*	*80-120*			
LCS (BKL0187-BS1)				Prepared: 08-Dec-2022	Analyzed: 08-Dec-2022 06:38					
Gasoline Range Organics (Tol-Nap)	1140	100	ug/L	1000		114	72-128			
Surrogate: Toluene-d8	5.02		ug/L	*5.00*		*100*	*80-120*			
Surrogate: 4-Bromofluorobenzene	4.83		ug/L	*5.00*		*96.6*	*80-120*			
LCS (BKL0187-BS2)				Prepared: 08-Dec-2022	Analyzed: 08-Dec-2022 07:39					
Benzene	11.1	0.20	ug/L	10.0		111	80-120			
Toluene	11.1	0.20	ug/L	10.0		111	80-120			
Ethylbenzene	10.8	0.20	ug/L	10.0		108	80-120			
m,p-Xylene	22.0	0.40	ug/L	20.0		110	80-121			
o-Xylene	10.7	0.20	ug/L	10.0		107	80-121			
Xylenes, total	32.7	0.60	ug/L	30.0		109	76-127			
Surrogate: Toluene-d8	5.05		ug/L	*5.00*		*101*	*80-120*			
Surrogate: 4-Bromofluorobenzene	4.82		ug/L	*5.00*		*96.4*	*80-120*			
LCS Dup (BKL0187-BSD1)				Prepared: 08-Dec-2022	Analyzed: 08-Dec-2022 07:19					
Gasoline Range Organics (Tol-Nap)	999	100	ug/L	1000		99.9	72-128	13.30	30	
Surrogate: Toluene-d8	5.00		ug/L	*5.00*		*100*	*80-120*			
Surrogate: 4-Bromofluorobenzene	4.94		ug/L	*5.00*		*98.9*	*80-120*			

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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKL0187 - EPA 8260D

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BKL0187-BSD2)				Prepared: 08-Dec-2022 Analyzed: 08-Dec-2022 08:20						
Benzene	11.0	0.20	ug/L	10.0		110	80-120	1.16	30	
Toluene	10.9	0.20	ug/L	10.0		109	80-120	1.63	30	
Ethylbenzene	10.7	0.20	ug/L	10.0		107	80-120	0.72	30	
m,p-Xylene	21.9	0.40	ug/L	20.0		109	80-121	0.55	30	
o-Xylene	10.5	0.20	ug/L	10.0		105	80-121	1.23	30	
Xylenes, total	32.4	0.60	ug/L	30.0		108	76-127	0.77	30	
Surrogate: Toluene-d8	5.00		ug/L	*5.00*		*100*	*80-120*			
Surrogate: 4-Bromofluorobenzene	4.76		ug/L	*5.00*		*95.2*	*80-120*			
Matrix Spike (BKL0187-MS1)	**Source: 22L0140-15**			Prepared: 08-Dec-2022 Analyzed: 08-Dec-2022 15:51						
Gasoline Range Organics (Tol-Nap)	1050	100	ug/L	1000	ND	101	72-128			
Surrogate: Toluene-d8	4.94		ug/L	*5.00*	*4.97*	*98.9*	*80-120*			
Surrogate: 4-Bromofluorobenzene	4.76		ug/L	*5.00*	*4.59*	*95.2*	*80-120*			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										
Matrix Spike (BKL0187-MS2)	**Source: 22L0140-15**			Prepared: 08-Dec-2022 Analyzed: 08-Dec-2022 16:33						
Benzene	11.6	0.20	ug/L	10.0	0.30	113	80-120			
Toluene	11.2	0.20	ug/L	10.0	ND	112	80-120			
Ethylbenzene	10.9	0.20	ug/L	10.0	ND	109	80-120			
m,p-Xylene	22.0	0.40	ug/L	20.0	ND	110	80-121			
o-Xylene	10.7	0.20	ug/L	10.0	ND	107	80-121			
Xylenes, total	32.7	0.60	ug/L	30.0	ND	109	76-127			
Surrogate: Toluene-d8	5.00		ug/L	*5.00*	*4.97*	*100*	*80-120*			
Surrogate: 4-Bromofluorobenzene	4.80		ug/L	*5.00*	*4.59*	*96.0*	*80-120*			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										
Matrix Spike Dup (BKL0187-MSD1)	**Source: 22L0140-15**			Prepared: 08-Dec-2022 Analyzed: 08-Dec-2022 16:12						
Gasoline Range Organics (Tol-Nap)	1080	100	ug/L	1000	ND	105	72-128	3.59	30	
Surrogate: Toluene-d8	4.98		ug/L	*5.00*	*4.97*	*99.5*	*80-120*			
Surrogate: 4-Bromofluorobenzene	4.88		ug/L	*5.00*	*4.59*	*97.6*	*80-120*			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										
Matrix Spike Dup (BKL0187-MSD2)	**Source: 22L0140-15**			Prepared: 08-Dec-2022 Analyzed: 08-Dec-2022 16:53						
Benzene	11.6	0.20	ug/L	10.0	0.30	113	80-120	0.59	30	

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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKL0187 - EPA 8260D

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BKL0187-MSD2)	**Source: 22L0140-15**		Prepared: 08-Dec-2022 Analyzed: 08-Dec-2022 16:53							
Toluene	11.1	0.20	ug/L	10.0	ND	111	80-120	0.43	30	
Ethylbenzene	10.8	0.20	ug/L	10.0	ND	108	80-120	0.21	30	
m,p-Xylene	21.7	0.40	ug/L	20.0	ND	108	80-121	1.46	30	
o-Xylene	10.5	0.20	ug/L	10.0	ND	105	80-121	1.83	30	
Xylenes, total	32.2	0.60	ug/L	30.0	ND	107	76-127	1.58	30	
Surrogate: Toluene-d8	4.97		ug/L	*5.00*	*4.97*	*99.5*	*80-120*			
Surrogate: 4-Bromofluorobenzene	4.81		ug/L	*5.00*	*4.59*	*96.2*	*80-120*			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - SIM - Quality Control

Batch BKL0191 - EPA 8260D-SIM

Instrument: NT16 Analyst: KOTT

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKL0191-BLK1)				Prepared: 08-Dec-2022 Analyzed: 08-Dec-2022 11:09						
Vinyl chloride	ND	0.0200	ug/L							U
1,1-Dichloroethene	ND	0.200	ug/L							U
cis-1,2-Dichloroethene	ND	0.200	ug/L							U
trans-1,2-Dichloroethene	ND	0.200	ug/L							U
Trichloroethene	ND	0.200	ug/L							U
Tetrachloroethene	ND	0.200	ug/L							U
Surrogate: 1,2-Dichloroethane-d4	4600		ug/L	*5000*		*91.9*	*80-129*			
Surrogate: Toluene-d8	4390		ug/L	*5000*		*87.9*	*80-120*			
Surrogate: 4-Bromofluorobenzene	4590		ug/L	*5000*		*91.7*	*75-125*			
LCS (BKL0191-BS1)				Prepared: 08-Dec-2022 Analyzed: 08-Dec-2022 09:44						
Vinyl chloride	2.22	0.0200	ug/L	2.00		111	62-141			
1,1-Dichloroethene	2.09	0.200	ug/L	2.00		104	80-125			
cis-1,2-Dichloroethene	2.15	0.200	ug/L	2.00		107	74-120			
trans-1,2-Dichloroethene	2.07	0.200	ug/L	2.00		104	80-122			
Trichloroethene	1.81	0.200	ug/L	2.00		90.3	75-122			
Tetrachloroethene	1.85	0.200	ug/L	2.00		92.6	76-127			
Surrogate: 1,2-Dichloroethane-d4	4630		ug/L	*5000*		*92.6*	*80-129*			
Surrogate: Toluene-d8	4580		ug/L	*5000*		*91.6*	*80-120*			
Surrogate: 4-Bromofluorobenzene	5060		ug/L	*5000*		*101*	*75-125*			
LCS Dup (BKL0191-BSD1)				Prepared: 08-Dec-2022 Analyzed: 08-Dec-2022 10:27						
Vinyl chloride	1.81	0.0200	ug/L	2.00		90.6	62-141	20.30	30	
1,1-Dichloroethene	1.75	0.200	ug/L	2.00		87.4	80-125	17.90	30	
cis-1,2-Dichloroethene	1.85	0.200	ug/L	2.00		92.4	74-120	15.10	30	
trans-1,2-Dichloroethene	1.75	0.200	ug/L	2.00		87.4	80-122	16.90	30	
Trichloroethene	1.56	0.200	ug/L	2.00		77.9	75-122	14.60	30	
Tetrachloroethene	1.61	0.200	ug/L	2.00		80.7	76-127	13.70	30	
Surrogate: 1,2-Dichloroethane-d4	4630		ug/L	*5000*		*92.7*	*80-129*			
Surrogate: Toluene-d8	4590		ug/L	*5000*		*91.8*	*80-120*			
Surrogate: 4-Bromofluorobenzene	5090		ug/L	*5000*		*102*	*75-125*			

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Analysis by: Analytical Resources, LLC

Petroleum Hydrocarbons - Quality Control

Batch BKL0291 - NWTPH-Dx

Instrument: FID4 Analyst: AA

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKL0291-BLK1)				Prepared: 13-Dec-2022 Analyzed: 17-Dec-2022 09:09						
Diesel Range Organics (C12-C24)	ND	0.100	mg/L							U
Motor Oil Range Organics (C24-C38)	ND	0.200	mg/L							U
Surrogate: o-Terphenyl	0.213		mg/L	*0.225*		*94.6*	*50-150*			
LCS (BKL0291-BS1)				Prepared: 13-Dec-2022 Analyzed: 17-Dec-2022 09:28						
Diesel Range Organics (C12-C24)	2.70	0.100	mg/L	3.00		90.1	56-120			
Surrogate: o-Terphenyl	0.234		mg/L	*0.225*		*104*	*50-150*			
LCS Dup (BKL0291-BSD1)				Prepared: 13-Dec-2022 Analyzed: 17-Dec-2022 09:48						
Diesel Range Organics (C12-C24)	2.50	0.100	mg/L	3.00		83.4	56-120	7.74	30	
Surrogate: o-Terphenyl	0.215		mg/L	*0.225*		*95.4*	*50-150*			
Matrix Spike (BKL0291-MS1)	**Source: 22L0140-15**			Prepared: 13-Dec-2022 Analyzed: 17-Dec-2022 11:06						
Diesel Range Organics (C12-C24)	2.52	0.100	mg/L	3.00	ND	83.9	56-120			
Surrogate: o-Terphenyl	0.211		mg/L	*0.225*	*0.219*	*94.0*	*50-150*			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BKL0291-MSD1)	**Source: 22L0140-15**			Prepared: 13-Dec-2022 Analyzed: 17-Dec-2022 11:26						
Diesel Range Organics (C12-C24)	2.59	0.100	mg/L	3.00	ND	86.5	56-120	2.95	30	
Surrogate: o-Terphenyl	0.222		mg/L	*0.225*	*0.219*	*98.5*	*50-150*			

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Certified Analyses included in this Report

Analyte	Certifications
EPA 8260D in Water	
Chloromethane	DoD-ELAP,ADEC,NELAP,WADOE
Vinyl Chloride	DoD-ELAP,ADEC,NELAP,WADOE
Bromomethane	DoD-ELAP,ADEC,NELAP,WADOE
Chloroethane	DoD-ELAP,ADEC,NELAP,WADOE
Trichlorofluoromethane	DoD-ELAP,ADEC,NELAP,WADOE
Acrolein	DoD-ELAP,NELAP,WADOE
1,1,2-Trichloro-1,2,2-Trifluoroethane	DoD-ELAP,ADEC,NELAP,WADOE
Acetone	DoD-ELAP,ADEC,NELAP,WADOE
1,1-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Iodomethane	DoD-ELAP,NELAP,WADOE
Methylene Chloride	DoD-ELAP,ADEC,NELAP,WADOE
Acrylonitrile	DoD-ELAP,NELAP,WADOE
Carbon Disulfide	DoD-ELAP,NELAP,WADOE
trans-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Vinyl Acetate	DoD-ELAP,NELAP,WADOE
1,1-Dichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
2-Butanone	DoD-ELAP,NELAP,WADOE
2,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
cis-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Chloroform	DoD-ELAP,ADEC,NELAP,WADOE
Bromochloromethane	DoD-ELAP,ADEC,NELAP,WADOE
1,1,1-Trichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,1-Dichloropropene	DoD-ELAP,ADEC,NELAP,WADOE
Carbon tetrachloride	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
Benzene	DoD-ELAP,ADEC,NELAP,WADOE
Trichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
Bromodichloromethane	DoD-ELAP,ADEC,NELAP,WADOE
Dibromomethane	DoD-ELAP,ADEC,NELAP,WADOE
2-Chloroethyl vinyl ether	DoD-ELAP,ADEC,NELAP,WADOE
4-Methyl-2-Pentanone	DoD-ELAP,NELAP,WADOE
cis-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,WADOE
Toluene	DoD-ELAP,ADEC,NELAP,WADOE
trans-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,WADOE

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2-Hexanone	DoD-ELAP,NELAP,WADOE
1,1,2-Trichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,3-Dichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
Tetrachloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Dibromochloromethane	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dibromoethane	DoD-ELAP,NELAP,WADOE
Chlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
Ethylbenzene	DoD-ELAP,ADEC,NELAP,WADOE
1,1,1,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,WADOE
m,p-Xylene	DoD-ELAP,ADEC,NELAP,WADOE
o-Xylene	DoD-ELAP,ADEC,NELAP,WADOE
Styrene	DoD-ELAP,NELAP,WADOE
Bromoform	DoD-ELAP,NELAP,WADOE
1,1,2,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,2,3-Trichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
trans-1,4-Dichloro 2-Butene	DoD-ELAP,ADEC,NELAP,WADOE
n-Propylbenzene	DoD-ELAP,NELAP,WADOE
Bromobenzene	DoD-ELAP,NELAP,WADOE
Isopropyl Benzene	DoD-ELAP,NELAP,WADOE
2-Chlorotoluene	DoD-ELAP,ADEC,NELAP,WADOE
4-Chlorotoluene	DoD-ELAP,ADEC,NELAP,WADOE
t-Butylbenzene	DoD-ELAP,NELAP,WADOE
1,3,5-Trimethylbenzene	DoD-ELAP,NELAP,WADOE
1,2,4-Trimethylbenzene	DoD-ELAP,NELAP,WADOE
s-Butylbenzene	DoD-ELAP,NELAP,WADOE
4-Isopropyl Toluene	DoD-ELAP,NELAP,WADOE
1,3-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
1,4-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
n-Butylbenzene	DoD-ELAP,NELAP,WADOE
1,2-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dibromo-3-chloropropane	DoD-ELAP,ADEC,NELAP,WADOE
1,2,4-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
Hexachloro-1,3-Butadiene	DoD-ELAP,ADEC,NELAP,WADOE
Naphthalene	DoD-ELAP,ADEC,NELAP,WADOE
1,2,3-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
Dichlorodifluoromethane	DoD-ELAP,ADEC,NELAP,WADOE
Methyl tert-butyl Ether	DoD-ELAP,ADEC,NELAP,WADOE
n-Hexane	WADOE
2-Pentanone	WADOE

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	19-Dec-2022 09:57

EPA 8260D-SIM in Water

Acrylonitrile	NELAP,WADOE
Vinyl chloride	NELAP,WADOE
1,1-Dichloroethene	NELAP,WADOE
cis-1,2-Dichloroethene	NELAP,WADOE
trans-1,2-Dichloroethene	NELAP,WADOE
Trichloroethene	NELAP,WADOE
Tetrachloroethene	NELAP,WADOE
1,1,2,2-Tetrachloroethane	NELAP,WADOE
1,2-Dichloroethane	NELAP,WADOE
Benzene	NELAP,WADOE

NWTPH-Dx in Water

Diesel Range Organics (C12-C24)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (C10-C25)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (Tol-C18)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (C10-C24)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (C10-C28)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (C12-C22)	DoD-ELAP
Diesel Range Organics (C12-C25)	DoD-ELAP
Motor Oil Range Organics (C24-C38)	DoD-ELAP,NELAP,WADOE
Motor Oil Range Organics (C25-C36)	DoD-ELAP,NELAP,WADOE
Motor Oil Range Organics (C24-C40)	DoD-ELAP,NELAP,WADOE
Residual Range Organics (C23-C32)	DoD-ELAP
Mineral Spirits Range Organics (Tol-C12)	DoD-ELAP,NELAP,WADOE
Mineral Oil Range Organics (C16-C28)	DoD-ELAP,NELAP,WADOE
Kerosene Range Organics (Tol-C18)	DoD-ELAP,NELAP,WADOE
JP8 Range Organics (C8-C18)	DoD-ELAP,NELAP,WADOE
JP5 Range Organics (C10-C16)	DoD-ELAP,NELAP,WADOE
JP4 Range Organics (Tol-C14)	DoD-ELAP,NELAP,WADOE
Jet-A Range Organics (C10-C18)	DoD-ELAP,NELAP,WADOE
Creosote Range Organics (C12-C22)	DoD-ELAP,NELAP,WADOE
Bunker C Range Organics (C10-C38)	DoD-ELAP,NELAP,WADOE
Stoddard Range Organics (C8-C12)	DoD-ELAP,NELAP,WADOE
Transformer Oil Range Organics (C12-C28)	DoD-ELAP,NELAP,WADOE

NWTPHg in Water

Gasoline Range Organics (Tol-Nap)	WADOE,DoD-ELAP
Gasoline Range Organics (2MP-TMB)	WADOE,DoD-ELAP
Gasoline Range Organics (Tol-C12)	WADOE,DoD-ELAP

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	19-Dec-2022 09:57

Gasoline Range Organics (C6-C10)	WADOE,ADEC,DoD-ELAP
Gasoline Range Organics (C5-C12)	WADOE,DoD-ELAP

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	03/28/2023
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program	66169	02/28/2023
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2023
WADOE	WA Dept of Ecology	C558	06/30/2023
WA-DW	Ecology - Drinking Water	C558	06/30/2023

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	19-Dec-2022 09:57

Notes and Definitions

D	The reported value is from a dilution
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL)
Q	Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20% RSD, <20% drift or minimum RRF)
U	This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
[2C]	Indicates this result was quantified on the second column on a dual column analysis.

Analytical Resources, LLC
Analytical Chemists and Consultants

30 December 2022

Jennifer Parsons
The Boeing Company
PO Box 3703 MS 2R-96
Seattle, WA 98124

RE: Boeing Auburn 4Q 2022 Regional GWM (0025164.170.101)

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

Associated Work Order(s)	Associated SDG ID(s)
22L0146	N/A

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclose Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the requirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Analytical Resources, LLC

Kelly Bottem, Client Services Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

ACCREDITED IN ACCORDANCE WITH nelac
Cert# 100006-012

AR: 22L0146

Landau Associates — Chain-of-Custody Record

- [ ] North Seattle (206) 631-8660
- [x] Tacoma (253) 926-2493
- [ ] Olympia (360) 791-3178
- [ ] Spokane (509) 327-9737
- [ ] Portland (503) 542-1080
- [ ] _____

Date 12/6/22

Page 1 of 1

Turnaround Time: (Standard) / Accelerated

Project Name Boeing Regional GWM Project No. _____

Project Location/Event Auburn / Semiannual 2022

Sampler's Name SMR / SJL / JBD

Project Contact C. Kimmel (LAI), J. Parsons (Boeing)

Send Results To ckimmel@landauinc.com (+ others, see lims 1.37)

Special Handling Requirements: _____

Shipment Method: _____

Stored on ice: (Yes) / No

Sample I.D.	Date	Time	Matrix	No. of Containers	Boeing 6 VOCs 8260SIM	Diss Metals Cd, Ni 6020	MS/MSD	Diss Metals Cd, Cu, Ni 6020	NWTPH-Dx
AGW276-2-25-20221206	12/6/22	9:16	Aq	3	X				
AGW904-20221206		9:19	Aq	3	X				
AGW277-20221206		11:01	Aq	2				X	
AGW050-20221206		12:07	Aq	3		X			
AGW049-20221206		12:56	Aq	1			X		
~~AGW~~ AGW901-20221206		12:59	Aq	1			X		
AGW026-20221206		15:06	Aq	3	X				
AGW032-20221206		15:45	Aq	1	X				
TripBlank1-20221206	—	—	Aq	2	X				

Testing Parameters

Observations/Comments

- ___ Allow water samples to settle, collect aliquot from clear portion ☐
- ___ NWTPH-Dx - Acid wash cleanup ☐
  - Silica gel cleanup ☐
- ___ Dissolved metal samples were field filtered

Other _____

Relinquished by	Received by	Relinquished by	Received by
Signature	Signature	Signature	Signature
Printed Name Simone Rodriguez	Printed Name	Printed Name	Printed Name
Company Landau Associates Inc	Company	Company	Company
Date 12/6/22 Time 1600	Date 12/07/22 Time 1210	Date Time	Date Time

WHITE COPY - Laboratory YELLOW COPY - Project File PINK COPY - Client Representative

10/2018

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	30-Dec-2022 13:19

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
AGW276-2-25-20221206	22L0146-01	Water	06-Dec-2022 09:16	07-Dec-2022 12:00
AGW904-20221206	22L0146-02	Water	06-Dec-2022 09:19	07-Dec-2022 12:00
AGW050-20221206	22L0146-03	Water	06-Dec-2022 12:07	07-Dec-2022 12:00
AGW049-20221206	22L0146-04	Water	06-Dec-2022 12:56	07-Dec-2022 12:00
AGW901-20221206	22L0146-05	Water	06-Dec-2022 12:59	07-Dec-2022 12:00
AGW026-20221206	22L0146-06	Water	06-Dec-2022 15:06	07-Dec-2022 12:00
AGW032-20221206	22L0146-07	Water	06-Dec-2022 15:45	07-Dec-2022 12:00
Tripblank1-20221206	22L0146-08	Water	06-Dec-2022 00:00	07-Dec-2022 12:00

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	30-Dec-2022 13:19

Work Order Case Narrative

Volatiles - EPA Method 8260D-SIM (Selected Ion Monitoring)

The sample(s) were analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.

Dissolved Metals - EPA Method 6020B

The sample(s) were digested and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The method blank(s) were clean at the reporting limits.

The blank spike (BS/LCS) percent recoveries were within control limits.

Analytical Resources, LLC
Analytical Chemists and Consultants

Printed: 12/7/2022 3:27:10PM

WORK ORDER

22L0146

Samples will be discarded 90 days after submission of a final report unless other instructions are received

Client: The Boeing Company | **Project Manager:** Kelly Bottem

Project: Boeing Auburn 4Q 2022 Regional GWM | **Project Number:** 0025164.170.101

Preservation Confirmation

Container ID	Container Type	pH		
22L0146-01 A	VOA Vial, Clear, 40 mL, HCL			
22L0146-01 B	VOA Vial, Clear, 40 mL, HCL			
22L0146-01 C	VOA Vial, Clear, 40 mL, HCL			
22L0146-02 A	VOA Vial, Clear, 40 mL, HCL			
22L0146-02 B	VOA Vial, Clear, 40 mL, HCL			
22L0146-02 C	VOA Vial, Clear, 40 mL, HCL			
22L0146-03 A	HDPE NM, 500 mL, 1:1 HNO3	<2	pass	(p)
22L0146-03 B	HDPE NM, 500 mL, 1:1 HNO3	<2	p	
22L0146-03 C	HDPE NM, 500 mL, 1:1 HNO3	<2	p	
22L0146-04 A	HDPE NM, 500 mL, 1:1 HNO3	<2	p	
22L0146-05 A	HDPE NM, 500 mL, 1:1 HNO3	<2	p	
22L0146-06 A	VOA Vial, Clear, 40 mL, HCL			
22L0146-06 B	VOA Vial, Clear, 40 mL, HCL			
22L0146-06 C	VOA Vial, Clear, 40 mL, HCL			
22L0146-07 A	VOA Vial, Clear, 40 mL, HCL			
22L0146-08 A	VOA Vial, Clear, 40 mL, HCL			
22L0146-08 B	VOA Vial, Clear, 40 mL, HCL			
22L0146-08 C	VOA Vial, Clear, 40 mL, HCL			

PIB — Preservation Confirmed By

12/07/22 — Date

Reviewed By

Date

Analytical Resources, LLC
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Boeing Auburn
Project Name: Boeing Auburn / semi-annual 2022
COC No(s): _____ (NA)
Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____
Assigned ARI Job No: 22L0146
Tracking No: _____ (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of the cooler?	(YES)	NO
Were custody papers included with the cooler?	(YES)	NO
Were custody papers properly filled out (ink, signed, etc.)	(YES)	NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)

Time 12:10 — 7.4

If cooler temperature is out of compliance fill out form 00070F — Temp Gun ID#: 90908

Cooler Accepted by: [signature] Date: 12/07/22 Time: 12:10

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	(NO)
What kind of packing material was used? ... Bubble Wrap (Wet) Ice Gel Packs Baggies Foam Block Paper Other: _____			
Was sufficient ice used (if appropriate)?	NA	(YES)	NO
How were bottles sealed in plastic bags?	Individually	Grouped	(Not)
Did all bottles arrive in good condition (unbroken)?		(YES)	NO
Were all bottle labels complete and legible?		(YES)	NO
Did the number of containers listed on COC match with the number of containers received?		YES	(NO)
Did all bottle labels and tags agree with custody papers?		(YES)	NO
Were all bottles used correct for the requested analyses?		(YES)	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) ...	NA	(YES)	NO
Were all VOC vials free of air bubbles?	NA	(YES)	NO
Was sufficient amount of sample sent in each bottle?		(YES)	NO
Date VOC Trip Blank was made at ARI	NA	11/14	

Were the sample(s) split by ARI? (NA) YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: PIB Date: 12/07/22 Time: 15:08 Labels checked by: _____

*** Notify Project Manager of discrepancies or concerns ***

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

- no volume received for sample AGW277-2022-1206
- 2 trip blanks listed on COC, 3 received.
- Diss metals requested, ~~then~~ Bottles are preserved However client does not specify if ~~they're~~ field filtered.

By: PIB Date: 12/07/22

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	30-Dec-2022 13:19

AGW276-2-25-20221206

22L0146-01 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM — Sampled: 12/06/2022 09:16

Instrument: NT16 Analyst: KOTT — Analyzed: 12/08/2022 18:14

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22L0146-01 A

Preparation Batch: BKL0191 — Sample Size: 10 mL

Prepared: 12/08/2022 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	1.79	ug/L	
1,1-Dichloroethene	75-35-4	1	0.200	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.200	1.41	ug/L	
trans-1,2-Dichloroethene	156-60-5	1	0.200	ND	ug/L	U
Trichloroethene	79-01-6	1	0.200	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.200	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*98.0*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*84.2*	*%*	
Surrogate: 4-Bromofluorobenzene			*75-125 %*	*88.7*	*%*	

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	30-Dec-2022 13:19

AGW904-20221206

22L0146-02 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM — Sampled: 12/06/2022 09:19

Instrument: NT16 Analyst: KOTT — Analyzed: 12/08/2022 18:35

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22L0146-02 A

Preparation Batch: BKL0191 — Sample Size: 10 mL

Prepared: 12/08/2022 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	1.75	ug/L	
1,1-Dichloroethene	75-35-4	1	0.200	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.200	1.38	ug/L	
trans-1,2-Dichloroethene	156-60-5	1	0.200	ND	ug/L	U
Trichloroethene	79-01-6	1	0.200	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.200	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*98.5*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*83.6*	*%*	
Surrogate: 4-Bromofluorobenzene			*75-125 %*	*88.9*	*%*	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	30-Dec-2022 13:19

AGW050-20221206

22L0146-03 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED — Sampled: 12/06/2022 12:07

Instrument: ICPMS1 Analyst: MCB — Analyzed: 12/29/2022 06:56

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22L0146-03 C 01

Preparation Batch: BKL0558 — Sample Size: 25 mL

Prepared: 12/21/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Cadmium, Dissolved	7440-43-9	1	0.100	8.48	ug/L	
Nickel, Dissolved	7440-02-0	1	0.500	7.02	ug/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	30-Dec-2022 13:19

AGW049-20221206

22L0146-04 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED — Sampled: 12/06/2022 12:56

Instrument: ICPMS1 Analyst: MCB — Analyzed: 12/29/2022 05:57

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22L0146-04 A 01

Preparation Batch: BKL0558 — Sample Size: 25 mL

Prepared: 12/21/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Cadmium, Dissolved	7440-43-9	1	0.100	30.1	ug/L	
Copper, Dissolved	7440-50-8	1	0.500	90.6	ug/L	
Nickel, Dissolved	7440-02-0	1	0.500	25.9	ug/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	30-Dec-2022 13:19

AGW901-20221206

22L0146-05 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED — Sampled: 12/06/2022 12:59

Instrument: ICPMS1 Analyst: MCB — Analyzed: 12/29/2022 06:02

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22L0146-05 A 01

Preparation Batch: BKL0558 — Sample Size: 25 mL

Prepared: 12/21/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Cadmium, Dissolved	7440-43-9	1	0.100	28.7	ug/L	
Copper, Dissolved	7440-50-8	1	0.500	85.7	ug/L	
Nickel, Dissolved	7440-02-0	1	0.500	25.7	ug/L	

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	30-Dec-2022 13:19

AGW026-20221206

22L0146-06 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM — Sampled: 12/06/2022 15:06

Instrument: NT16 Analyst: KOTT — Analyzed: 12/08/2022 18:56

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22L0146-06 A

Preparation Batch: BKL0191 — Sample Size: 10 mL

Prepared: 12/08/2022 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0590	ug/L	
1,1-Dichloroethene	75-35-4	1	0.200	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.200	0.745	ug/L	
trans-1,2-Dichloroethene	156-60-5	1	0.200	ND	ug/L	U
Trichloroethene	79-01-6	1	0.200	0.543	ug/L	
Tetrachloroethene	127-18-4	1	0.200	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*97.8*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*86.3*	*%*	
Surrogate: 4-Bromofluorobenzene			*75-125 %*	*88.5*	*%*	

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	30-Dec-2022 13:19

AGW032-20221206

22L0146-07 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM — Sampled: 12/06/2022 15:45

Instrument: NT16 Analyst: KOTT — Analyzed: 12/08/2022 19:17

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22L0146-07 A

Preparation Batch: BKL0191 — Sample Size: 10 mL

Prepared: 12/08/2022 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.110	ug/L	
1,1-Dichloroethene	75-35-4	1	0.200	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.200	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.200	ND	ug/L	U
Trichloroethene	79-01-6	1	0.200	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.200	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*98.1*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*86.6*	*%*	
Surrogate: 4-Bromofluorobenzene			*75-125 %*	*88.3*	*%*	

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	30-Dec-2022 13:19

Tripblank1-20221206

22L0146-08 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM — Sampled: 12/06/2022 00:00
Instrument: NT16 Analyst: KOTT — Analyzed: 12/08/2022 17:53

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 22L0146-08 A
Preparation Batch: BKL0191 — Sample Size: 10 mL
Prepared: 12/08/2022 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.200	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.200	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.200	ND	ug/L	U
Trichloroethene	79-01-6	1	0.200	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.200	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4			*80-129 %*	*98.5*	*%*	
Surrogate: Toluene-d8			*80-120 %*	*83.8*	*%*	
Surrogate: 4-Bromofluorobenzene			*75-125 %*	*89.4*	*%*	

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	30-Dec-2022 13:19

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - SIM - Quality Control

Batch BKL0191 - EPA 8260D-SIM

Instrument: NT16 Analyst: KOTT

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKL0191-BLK1)				Prepared: 08-Dec-2022 Analyzed: 08-Dec-2022 11:09						
Vinyl chloride	ND	0.0200	ug/L							U
1,1-Dichloroethene	ND	0.200	ug/L							U
cis-1,2-Dichloroethene	ND	0.200	ug/L							U
trans-1,2-Dichloroethene	ND	0.200	ug/L							U
Trichloroethene	ND	0.200	ug/L							U
Tetrachloroethene	ND	0.200	ug/L							U
Surrogate: 1,2-Dichloroethane-d4	4600		ug/L	*5000*		*91.9*	*80-129*			
Surrogate: Toluene-d8	4390		ug/L	*5000*		*87.9*	*80-120*			
Surrogate: 4-Bromofluorobenzene	4590		ug/L	*5000*		*91.7*	*75-125*			
LCS (BKL0191-BS1)				Prepared: 08-Dec-2022 Analyzed: 08-Dec-2022 09:44						
Vinyl chloride	2.22	0.0200	ug/L	2.00		111	62-141			
1,1-Dichloroethene	2.09	0.200	ug/L	2.00		104	80-125			
cis-1,2-Dichloroethene	2.15	0.200	ug/L	2.00		107	74-120			
trans-1,2-Dichloroethene	2.07	0.200	ug/L	2.00		104	80-122			
Trichloroethene	1.81	0.200	ug/L	2.00		90.3	75-122			
Tetrachloroethene	1.85	0.200	ug/L	2.00		92.6	76-127			
Surrogate: 1,2-Dichloroethane-d4	4630		ug/L	*5000*		*92.6*	*80-129*			
Surrogate: Toluene-d8	4580		ug/L	*5000*		*91.6*	*80-120*			
Surrogate: 4-Bromofluorobenzene	5060		ug/L	*5000*		*101*	*75-125*			
LCS Dup (BKL0191-BSD1)				Prepared: 08-Dec-2022 Analyzed: 08-Dec-2022 10:27						
Vinyl chloride	1.81	0.0200	ug/L	2.00		90.6	62-141	20.30	30	
1,1-Dichloroethene	1.75	0.200	ug/L	2.00		87.4	80-125	17.90	30	
cis-1,2-Dichloroethene	1.85	0.200	ug/L	2.00		92.4	74-120	15.10	30	
trans-1,2-Dichloroethene	1.75	0.200	ug/L	2.00		87.4	80-122	16.90	30	
Trichloroethene	1.56	0.200	ug/L	2.00		77.9	75-122	14.60	30	
Tetrachloroethene	1.61	0.200	ug/L	2.00		80.7	76-127	13.70	30	
Surrogate: 1,2-Dichloroethane-d4	4630		ug/L	*5000*		*92.7*	*80-129*			
Surrogate: Toluene-d8	4590		ug/L	*5000*		*91.8*	*80-120*			
Surrogate: 4-Bromofluorobenzene	5090		ug/L	*5000*		*102*	*75-125*			

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	30-Dec-2022 13:19

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BKL0558 - EPA 6020B UCT-KED

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKL0558-BLK1)				Prepared: 21-Dec-2022 Analyzed: 29-Dec-2022 03:50							
Cadmium, Dissolved	111	ND	0.100	ug/L							U
Copper, Dissolved	63	ND	0.500	ug/L							U
Nickel, Dissolved	60	ND	0.500	ug/L							U
LCS (BKL0558-BS1)				Prepared: 21-Dec-2022 Analyzed: 29-Dec-2022 03:54							
Cadmium, Dissolved	111	25.7	0.100	ug/L	25.0		103	80-120			
Copper, Dissolved	63	26.1	0.500	ug/L	25.0		104	80-120			
Nickel, Dissolved	60	25.9	0.500	ug/L	25.0		104	80-120			
Duplicate (BKL0558-DUP1)			**Source: 22L0146-03**	Prepared: 21-Dec-2022 Analyzed: 29-Dec-2022 07:01							
Cadmium, Dissolved	111	8.80	0.100	ug/L		8.48			3.71	20	
Copper, Dissolved	63	10.6	0.500	ug/L		10.8			1.77	20	
Nickel, Dissolved	60	7.13	0.500	ug/L		7.02			1.65	20	
Matrix Spike (BKL0558-MS1)			**Source: 22L0146-03**	Prepared: 21-Dec-2022 Analyzed: 29-Dec-2022 07:06							
Cadmium, Dissolved	111	35.2	0.100	ug/L	25.0	8.48	107	75-125			
Copper, Dissolved	63	35.5	0.500	ug/L	25.0	10.8	99.0	75-125			
Nickel, Dissolved	60	32.7	0.500	ug/L	25.0	7.02	103	75-125			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike Dup (BKL0558-MSD1)			**Source: 22L0146-03**	Prepared: 21-Dec-2022 Analyzed: 29-Dec-2022 07:12							
Cadmium, Dissolved	111	33.6	0.100	ug/L	25.0	8.48	101	75-125	4.61	20	
Copper, Dissolved	63	36.2	0.500	ug/L	25.0	10.8	102	75-125	1.82	20	
Nickel, Dissolved	60	32.9	0.500	ug/L	25.0	7.02	103	75-125	0.58	20	

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	30-Dec-2022 13:19

Certified Analyses included in this Report

Analyte	Certifications
EPA 6020B UCT-KED in Water	
Cadmium-111	NELAP,WADOE,DoD-ELAP,ADEC
Cadmium-114	NELAP,WADOE,DoD-ELAP,ADEC
Copper-63	NELAP,WADOE,DoD-ELAP
Copper-65	NELAP,WADOE,DoD-ELAP
Nickel-60	NELAP,WADOE,DoD-ELAP,ADEC
Nickel-62	NELAP,WADOE,DoD-ELAP,ADEC
EPA 8260D-SIM in Water	
Acrylonitrile	NELAP,WADOE
Vinyl chloride	NELAP,WADOE
1,1-Dichloroethene	NELAP,WADOE
cis-1,2-Dichloroethene	NELAP,WADOE
trans-1,2-Dichloroethene	NELAP,WADOE
Trichloroethene	NELAP,WADOE
Tetrachloroethene	NELAP,WADOE
1,1,2,2-Tetrachloroethane	NELAP,WADOE
1,2-Dichloroethane	NELAP,WADOE
Benzene	NELAP,WADOE

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	03/28/2023
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program	66169	02/28/2023
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2023
WADOE	WA Dept of Ecology	C558	06/30/2023
WA-DW	Ecology - Drinking Water	C558	06/30/2023

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	30-Dec-2022 13:19

Notes and Definitions

D	The reported value is from a dilution
J	Estimated concentration value detected below the reporting limit.
U	This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
[2C]	Indicates this result was quantified on the second column on a dual column analysis.

Analytical Resources, LLC
Analytical Chemists and Consultants

13 December 2022

Jennifer Parsons
The Boeing Company
PO Box 3703 MS 2R-96
Seattle, WA 98124

RE: Boeing Auburn 4Q 2022 Regional GWM (0025164.170.101)

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

Associated Work Order(s)	Associated SDG ID(s)
22L0188	N/A

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclose Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the requirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Analytical Resources, LLC

Kelly Bottem, Client Services Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

ACCREDITED IN ACCORDANCE WITH nelac
Cert# 100006-012

AR: 220188

Landau Associates — Chain-of-Custody Record

- [ ] North Seattle (206) 631-8660
- [x] Tacoma (253) 926-2493
- [ ] Olympia (360) 791-3178
- [ ] Spokane (509) 327-9737
- [ ] Portland (503) 542-1080
- [ ] _____

Date 12/7/22

Page 1 of 1

Turnaround Time: Standard / Accelerated

Project Name: Boeing of Auburn
Project No.: 025217.002.022
Project Location/Event: Auburn, WA | 4Q22
Sampler's Name: SJL
Project Contact: Chris Kimmel, Sarah Fees
Send Results To: chris.kimmel, Sarah.Fees, data@landauinc.com

Special Handling Requirements: _____

Shipment Method: _____

Stored on ice: (Yes) / No

Sample I.D.	Date	Time	Matrix	No. of Containers	Testing Parameters: NWTPH-Dx
AGW128-20221207	12/7/22	1136	AQ	2	X
AGW277-20221206	12/6/22	1101	AQ	2	X

Observations/Comments

- [ ] Allow water samples to settle, collect aliquot from clear portion
- [x] NWTPH-Dx - Acid wash cleanup [ ]
  - Silica gel cleanup [x]
- [ ] Dissolved metal samples were field filtered

Other _____

Relinquished by	Received by	Relinquished by	Received by
Signature: [signature]	Signature: [signature]	Signature:	Signature:
Printed Name: Samantha Lindstrom	Printed Name: Isabelle Bracey	Printed Name:	Printed Name:
Company: Landau Associates	Company: ARI	Company:	Company:
Date: 12/7/22 Time: 1158	Date: 12/8/22 Time: 1020	Date: Time:	Date: Time:

WHITE COPY - Laboratory YELLOW COPY - Project File PINK COPY - Client Representative

10/2018

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	13-Dec-2022 12:04

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
AGW128-20221207	22L0188-01	Water	07-Dec-2022 11:36	08-Dec-2022 10:20
AGW277-20221206	22L0188-02	Water	06-Dec-2022 11:01	08-Dec-2022 10:20

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	13-Dec-2022 12:04

Work Order Case Narrative

Diesel/Heavy Oil Range Organics - WA-Ecology Method NW-TPHDx

The sample(s) were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike (BS/LCS) percent recoveries were within control limits.

Analytical Resources, LLC
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Landau / Boeing Project Name: Auburn HQ

COC No(s): _____ NA Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: 22L0188 Tracking No: _____ NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of the cooler?	YES	NO
Were custody papers included with the cooler?	YES	NO
Were custody papers properly filled out (ink, signed, etc.)	YES	NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)

Time 1122 -0.1

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: IR[illegible]117

Cooler Accepted by: _____ Date: 12/8/22 Time: 1020

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	NO
What kind of packing material was used?	Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: _____		
Was sufficient ice used (if appropriate)?	NA	YES	NO
How were bottles sealed in plastic bags?	Individually	Grouped	Not
Did all bottles arrive in good condition (unbroken)?		YES	NO
Were all bottle labels complete and legible?		YES	NO
Did the number of containers listed on COC match with the number of containers received?		YES	NO
Did all bottle labels and tags agree with custody papers?		YES	NO
Were all bottles used correct for the requested analyses?		YES	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)	NA	YES	NO
Were all VOC vials free of air bubbles?	NA	YES	NO
Was sufficient amount of sample sent in each bottle?		YES	NO
Date VOC Trip Blank was made at ARI	NA		_____

Were the sample(s) split by ARI? NA YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: PIB Date: 12/08/22 Time: 16:48 Labels checked by: _____

***** Notify Project Manager of discrepancies or concerns *****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: Date:

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	13-Dec-2022 12:04

AGW128-20221207

22L0188-01 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx — Sampled: 12/07/2022 11:36

Instrument: FID4 Analyst: AA — Analyzed: 12/12/2022 20:27

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF; Preparation Batch: BKL0225; Prepared: 12/12/2022; Sample Size: 500 mL; Final Volume: 1 mL — Extract ID: 22L0188-01 A 01

Sample Cleanup: Cleanup Method: Silica Gel; Cleanup Batch: CKL0133; Cleaned: 12-Dec-2022; Initial Volume: 1 uL; Final Volume: 1 uL — Extract ID: 22L0188-01 A 01

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	0.100	1.77	mg/L	
HC ID: DIESEL						
Motor Oil Range Organics (C24-C38)	RRO	1	0.200	2.55	mg/L	
HC ID: MOTOR OIL						
Surrogate: o-Terphenyl			*50-150 %*	*100*	*%*	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	13-Dec-2022 12:04

AGW277-20221206

22L0188-02 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx — Sampled: 12/06/2022 11:01

Instrument: FID4 Analyst: AA — Analyzed: 12/12/2022 20:46

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF; Preparation Batch: BKL0225; Prepared: 12/12/2022; Sample Size: 500 mL; Final Volume: 1 mL — Extract ID: 22L0188-02 A 01

Sample Cleanup: Cleanup Method: Silica Gel; Cleanup Batch: CKL0133; Cleaned: 12-Dec-2022; Initial Volume: 1 uL; Final Volume: 1 uL — Extract ID: 22L0188-02 A 01

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	0.100	0.542	mg/L	
HC ID: DRO						
Motor Oil Range Organics (C24-C38)	RRO	1	0.200	1.27	mg/L	
HC ID: MOTOR OIL						
Surrogate: o-Terphenyl			*50-150 %*	*110*	*%*	

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	13-Dec-2022 12:04

Analysis by: Analytical Resources, LLC

Petroleum Hydrocarbons - Quality Control

Batch BKL0225 - NWTPH-Dx

Instrument: FID4 Analyst: AA

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKL0225-BLK1)				Prepared: 12-Dec-2022 Analyzed: 12-Dec-2022 19:28						
Diesel Range Organics (C12-C24)	ND	0.100	mg/L							U
Motor Oil Range Organics (C24-C38)	ND	0.200	mg/L							U
Surrogate: o-Terphenyl	0.211		mg/L	*0.225*		*93.6*	*50-150*			
LCS (BKL0225-BS1)				Prepared: 12-Dec-2022 Analyzed: 12-Dec-2022 19:48						
Diesel Range Organics (C12-C24)	2.58	0.100	mg/L	3.00		86.0	56-120			
Surrogate: o-Terphenyl	0.228		mg/L	*0.225*		*101*	*50-150*			
LCS Dup (BKL0225-BSD1)				Prepared: 12-Dec-2022 Analyzed: 12-Dec-2022 20:07						
Diesel Range Organics (C12-C24)	2.63	0.100	mg/L	3.00		87.8	56-120	2.10	30	
Surrogate: o-Terphenyl	0.226		mg/L	*0.225*		*101*	*50-150*			

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	13-Dec-2022 12:04

Certified Analyses included in this Report

Analyte	Certifications
NWTPH-Dx in Water	
Diesel Range Organics (C12-C24)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (C10-C25)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (Tol-C18)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (C10-C24)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (C10-C28)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (C12-C22)	DoD-ELAP
Diesel Range Organics (C12-C25)	DoD-ELAP
Motor Oil Range Organics (C24-C38)	DoD-ELAP,NELAP,WADOE
Motor Oil Range Organics (C25-C36)	DoD-ELAP,NELAP,WADOE
Motor Oil Range Organics (C24-C40)	DoD-ELAP,NELAP,WADOE
Residual Range Organics (C23-C32)	DoD-ELAP
Mineral Spirits Range Organics (Tol-C12)	DoD-ELAP,NELAP,WADOE
Mineral Oil Range Organics (C16-C28)	DoD-ELAP,NELAP,WADOE
Kerosene Range Organics (Tol-C18)	DoD-ELAP,NELAP,WADOE
JP8 Range Organics (C8-C18)	DoD-ELAP,NELAP,WADOE
JP5 Range Organics (C10-C16)	DoD-ELAP,NELAP,WADOE
JP4 Range Organics (Tol-C14)	DoD-ELAP,NELAP,WADOE
Jet-A Range Organics (C10-C18)	DoD-ELAP,NELAP,WADOE
Creosote Range Organics (C12-C22)	DoD-ELAP,NELAP,WADOE
Bunker C Range Organics (C10-C38)	DoD-ELAP,NELAP,WADOE
Stoddard Range Organics (C8-C12)	DoD-ELAP,NELAP,WADOE
Transformer Oil Range Organics (C12-C28)	DoD-ELAP,NELAP,WADOE

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	03/28/2023
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program	66169	02/28/2023
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2023
WADOE	WA Dept of Ecology	C558	06/30/2023
WA-DW	Ecology - Drinking Water	C558	06/30/2023

The Boeing Company	Project: Boeing Auburn 4Q 2022 Regional GWM	
PO Box 3703 MS 2R-96	Project Number: 0025164.170.101	**Reported:**
Seattle WA, 98124	Project Manager: Jennifer Parsons	13-Dec-2022 12:04

Notes and Definitions

D	The reported value is from a dilution
U	This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
[2C]	Indicates this result was quantified on the second column on a dual column analysis.

Apex Laboratories, LLC
6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: **OR100062**

ANALYTICAL REPORT

Wednesday, December 21, 2022

Chris Kimmell
Landau Associates, Inc. (Tacoma)
2107 South C Street
Tacoma, WA 98402

RE: A2L0240 - Boeing Auburn In-line Mitigation - 0025217.002.022/In line sulfide mitigation study D7237-10 free

Thank you for using Apex Laboratories. We greatly appreciate your business and strive to provide the highest quality services to the environmental industry.

Enclosed are the results of analyses for work order A2L0240, which was received by the laboratory on 12/7/2022 at 10:44:00AM.

If you have any questions concerning this report or the services we offer, please feel free to contact me by email at: DAuvil@apex-labs.com, or by phone at 503-718-2323.

Please note: All samples will be disposed of within 30 days of sample receipt, unless prior arrangements have been made.

Cooler Receipt Information

(See Cooler Receipt Form for details)

Cooler #1	0.7 degC

This Final Report is the official version of the data results for this sample submission, unless superseded by a subsequent, labeled amended report.
All other deliverables derived from this data, including Electronic Data Deliverables (EDDs), CLP-like forms, client requested summary sheets, and all other products are considered secondary to this report.

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darrell Auvil, Client Services Manager

Apex Laboratories, LLC
6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: **OR100062**

ANALYTICAL REPORT

Landau Associates, Inc. (Tacoma)	Project: **Boeing Auburn In-line Mitigation**	
2107 South C Street	Project Number: **0025217.002.022/In line sulf**	**Report ID:**
Tacoma, WA 98402	Project Manager: **Chris Kimmell**	**A2L0240 - 12 21 22 1117**

ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Client Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
AGW049-NaOH-20221206	A2L0240-01	Water	12/06/22 12:56	12/07/22 10:44
AGW049-Unpres-20221206	A2L0240-02	Water	12/06/22 12:56	12/07/22 10:44
AGW901-NaOH-20221206	A2L0240-03	Water	12/06/22 12:59	12/07/22 10:44
AGW901-Unpres-20221206	A2L0240-04	Water	12/06/22 12:59	12/07/22 10:44
AGW050-NaOH-20221206	A2L0240-05	Water	12/06/22 12:07	12/07/22 10:44
AGW050-Unpres-20221206	A2L0240-06	Water	12/06/22 12:07	12/07/22 10:44

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ANALYTICAL SAMPLE RESULTS

Dissolved Free Cyanide Analysis Utilizing Gas Diffusion and Amperometric Detection

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
AGW049-NaOH-20221206 (A2L0240-01)				**Matrix: Water**			**Batch: 22L0400**	
Free Cyanide	ND	---	0.00500	mg/L	1	12/12/22 13:29	D7237-15A (Diss)	
AGW901-NaOH-20221206 (A2L0240-03)				**Matrix: Water**			**Batch: 22L0400**	
Free Cyanide	ND	---	0.00500	mg/L	1	12/12/22 13:30	D7237-15A (Diss)	
AGW050-NaOH-20221206 (A2L0240-05)				**Matrix: Water**			**Batch: 22L0400**	
Free Cyanide	ND	---	0.00500	mg/L	1	12/12/22 13:32	D7237-15A (Diss)	

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2107 South C Street	Project Number:	0025217.002.022/In line sulf
Tacoma, WA 98402	Project Manager:	Chris Kimmell

Report ID:
A2L0240 - 12 21 22 1117

QUALITY CONTROL (QC) SAMPLE RESULTS

Dissolved Free Cyanide Analysis Utilizing Gas Diffusion and Amperometric Detection

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 22L0400 - Method Prep: Aq									Water			
Blank (22L0400-BLK1)			Prepared: 12/12/22 11:46		Analyzed: 12/12/22 13:24							
D7237-15A (Diss)												
Free Cyanide	ND	---	0.00500	mg/L	1	---	---	---	---	---	---	
LCS (22L0400-BS1)			Prepared: 12/12/22 11:46		Analyzed: 12/12/22 13:26							
D7237-15A (Diss)												
Free Cyanide	0.0265	---	0.00500	mg/L	1	0.0250	---	106	90-118%	---	---	
Matrix Spike (22L0400-MS1)			Prepared: 12/12/22 11:46		Analyzed: 12/12/22 13:33							
QC Source Sample: AGW050-NaOH-20221206 (A2L0240-05)												
D7237-15A (Diss)												
Free Cyanide	0.0263	---	0.00503	mg/L	1	0.0251	ND	105	79-121%	---	---	
Matrix Spike Dup (22L0400-MSD1)			Prepared: 12/12/22 11:46		Analyzed: 12/12/22 13:35							
QC Source Sample: AGW050-NaOH-20221206 (A2L0240-05)												
D7237-15A (Diss)												
Free Cyanide	0.0269	---	0.00503	mg/L	1	0.0251	ND	107	79-121%	2	13%	

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SAMPLE PREPARATION INFORMATION

Dissolved Free Cyanide Analysis Utilizing Gas Diffusion and Amperometric Detection

Prep: Method Prep: Aq

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 22L0400							
A2L0240-01	Water	D7237-15A (Diss)	12/06/22 12:56	12/12/22 11:46	5mL/5mL	5mL/5mL	1.00
A2L0240-03	Water	D7237-15A (Diss)	12/06/22 12:59	12/12/22 11:46	5mL/5mL	5mL/5mL	1.00
A2L0240-05	Water	D7237-15A (Diss)	12/06/22 12:07	12/12/22 11:46	5mL/5mL	5mL/5mL	1.00

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QUALIFIER DEFINITIONS

Client Sample and Quality Control (QC) Sample Qualifier Definitions:

There are No Qualifiers on Sample or QC Data for this report

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REPORTING NOTES AND CONVENTIONS:

Abbreviations:

DET Analyte DETECTED at or above the detection or reporting limit.

ND Analyte NOT DETECTED at or above the detection or reporting limit.

NR Result Not Reported

RPD Relative Percent Difference. RPDs for Matrix Spikes and Matrix Spike Duplicates are based on concentration, not recovery.

Detection Limits: Limit of Detection (LOD)

Limits of Detection (LODs) are normally set at a level of one half the validated Limit of Quantitation (LOQ).
If no value is listed ('-----'), then the data has not been evaluated below the Reporting Limit.

Reporting Limits: Limit of Quantitation (LOQ)

Validated Limits of Quantitation (LOQs) are reported as the Reporting Limits for all analyses where the LOQ, MRL, PQL or CRL are requested. The LOQ represents a level at or above the low point of the calibration curve, that has been validated according to Apex Laboratories' comprehensive LOQ policies and procedures.

Reporting Conventions:

Basis: Results for soil samples are generally reported on a 100% dry weight basis.
The Result Basis is listed following the units as " dry", " wet", or " " (blank) designation.

" dry" Sample results and Reporting Limits are reported on a dry weight basis. (i.e. "ug/kg dry")
See Percent Solids section for details of dry weight analysis.

" wet" Sample results and Reporting Limits for this analysis are normally dry weight corrected, but have not been modified in this case.

" " Results without 'wet' or 'dry' designation are not normally dry weight corrected. These results are considered 'As Received'.

QC Source:

In cases where there is insufficient sample provided for Sample Duplicates and/or Matrix Spikes, a Lab Control Sample Duplicate (LCS Dup) may be analyzed to demonstrate accuracy and precision of the extraction batch.

Non-Client Batch QC Samples (Duplicates and Matrix Spike/Duplicates) may not be included in this report. Please request a Full QC report if this data is required.

Miscellaneous Notes:

" --- " QC results are not applicable. For example, % Recoveries for Blanks and Duplicates, % RPD for Blanks, Blank Spikes and Matrix Spikes, etc.

" *** " Used to indicate a possible discrepancy with the Sample and Sample Duplicate results when the %RPD is not available. In this case, either the Sample or the Sample Duplicate has a reportable result for this analyte, while the other is Non Detect (ND).

Blanks:

Standard practice is to evaluate the results from Blank QC Samples down to a level equal to ½ the Reporting Limit (RL).
-For Blank hits falling between ½ the RL and the RL (J flagged hits), the associated sample and QC data will receive a 'B-02' qualifier.
-For Blank hits above the RL, the associated sample and QC data will receive a 'B' qualifier, per Apex Laboratories' Blank Policy.
For further details, please request a copy of this document.

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REPORTING NOTES AND CONVENTIONS (Cont.):

Blanks (Cont.):

Sample results flagged with a 'B' or 'B-02' qualifier are potentially biased high if the sample results are less than ten times the level found in the blank for inorganic analyses, or less than five times the level found in the blank for organic analyses.

'B' and 'B-02' qualifications are only applied to sample results detected above the Reporting Level.

Preparation Notes:

Mixed Matrix Samples:

Water Samples:

Water samples containing significant amounts of sediment are decanted or separated prior to extraction, and only the water portion analyzed, unless otherwise directed by the client.

Soil and Sediment Samples:

Soil and Sediment samples containing significant amounts of water are decanted prior to extraction, and only the solid portion analyzed, unless otherwise directed by the client.

Sampling and Preservation Notes:

Certain regulatory programs, such as National Pollutant Discharge Elimination System (NPDES), require that activities such as sample filtration (for dissolved metals, orthophosphate, hexavalent chromium, etc.) and testing of short hold analytes (pH, Dissolved Oxygen, etc.) be performed in the field (on-site) within a short time window. In addition, sample matrix spikes are required for some analyses, and sufficient volume must be provided, and billable site specific QC requested, if this is required. All regulatory permits should be reviewed to ensure that these requirements are being met.

Data users should be aware of which regulations pertain to the samples they submit for testing. If related sample collection activities are not approved for a particular regulatory program, results should be considered estimates. Apex Laboratories will qualify these analytes according to the most stringent requirements, however results for samples that are for non-regulatory purposes may be acceptable.

Samples that have been filtered and preserved at Apex Laboratories per client request are listed in the preparation section of the report with the date and time of filtration listed.

Apex Laboratories maintains detailed records on sample receipt, including client label verification, cooler temperature, sample preservation, hold time compliance and field filtration. Data is qualified as necessary, and the lack of qualification indicates compliance with required parameters.

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LABORATORY ACCREDITATION INFORMATION

ORELAP Certification ID: OR100062 (Primary Accreditation) - EPA ID: OR01039

All methods and analytes reported from work performed at Apex Laboratories are included on Apex Laboratories' ORELAP Scope of Certification, with the exception of any analyte(s) listed below:

Apex Laboratories

Matrix	Analysis	TNI_ID	Analyte	TNI_ID	Accreditation

All reported analytes are included in Apex Laboratories' current ORELAP scope.

Secondary Accreditations

Apex Laboratories also maintains reciprocal accreditation with non-TNI states (Washington DOE), as well as other state specific accreditations not listed here.

Subcontract Laboratory Accreditations

Subcontracted data falls outside of Apex Laboratories' Scope of Accreditation.
Please see the Subcontract Laboratory report for full details, or contact your Project Manager for more information.

Field Testing Parameters

Results for Field Tested data are provded by the client or sampler, and fall outside of Apex Laboratories' Scope of Accreditation.

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		Report ID:
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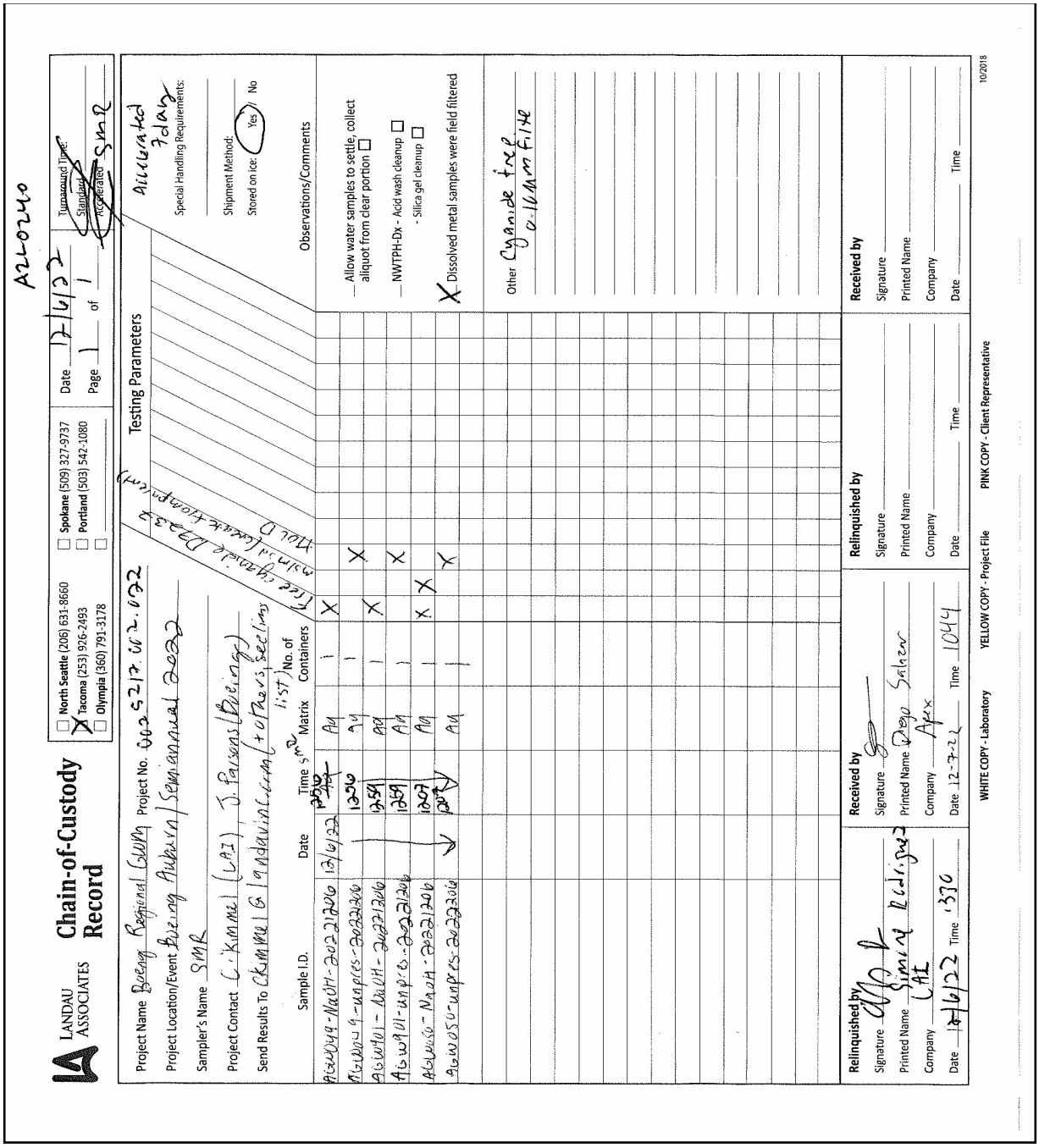

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APEX LABS COOLER RECEIPT FORM

Client: Landau Element WO#: A2L0240

Project/Project #: Boeing Regional GWM / 0025217.002.022

Delivery Info:

Date/time received: 12-7-22 @ 1044 By: DJS

Delivered by: Apex ___ Client ___ ESS ___ FedEx X UPS ___ Swift ___ Senvoy ___ SDS ___ Other ___

Cooler Inspection Date/time inspected: 12-7-22 @ 1045 By: DJS

Chain of Custody included? Yes X No ___ Custody seals? Yes ___ No X

Signed/dated by client? Yes X No ___

Signed/dated by Apex? Yes X No ___

	Cooler #1	Cooler #2	Cooler #3	Cooler #4	Cooler #5	Cooler #6	Cooler #7
Temperature (°C)	0.7						
Received on ice? (Y/N)	Y						
Temp. blanks? (Y/N)	N						
Ice type: (Gel/Real/Other)	Real						
Condition (In/Out):	In						

Cooler out of temp? (Y/(N)) Possible reason why: ___

Green dots applied to out of temperature samples? Yes/(No)

Out of temperature samples form initiated? Yes/(No)

Sample Inspection: Date/time inspected: 12-7-22 @ 1143 By: DJJ

All samples intact? Yes X No ___ Comments: ___

Bottle labels/COCs agree? Yes X No ___ Comments: client listed every container as a separate sample

COC/container discrepancies form initiated? Yes ___ No X

Containers/volumes received appropriate for analysis? Yes X No ___ Comments: ___

Do VOA vials have visible headspace? Yes ___ No ___ NA X

Comments ___

Water samples: pH checked: Yes X No ___ NA ___ pH appropriate? Yes X No ___ NA ___

Comments: ___

Additional information: 3917 6292 2992

Labeled by: DJS Witness: RMP Cooler Inspected by: DJS

Form Y-003 R-00

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