

May 17, 2022
9L-22-N410-JF-0

BY EMAIL

Julia Schwarz
Site Manager, Toxics Cleanup Program
Department of Ecology Northwest Regional Office
P.O. Box 330316
Shoreline, WA 98133

Subject: North Boeing Field 3-322 Building Pavement
Drainage Improvement and Storm Drainage
Upgrade
Technical Memorandum Submittal

Dear Ms. Schwarz:

Boeing is conducting the 3-322 Building Pavement Drainage Improvement and Storm Drainage Upgrade as an independent action at the North Boeing Field site in Seattle, Washington. As required by Ecology to conduct this work as an independent action, Boeing agrees to the following statements:

- Soil removed during the pavement drainage improvement and storm drainage upgrades does not preclude future remedial action in this area.
- The planned pavement drainage improvement and storm drainage upgrade will not substantially increase the cost of future remedial actions in this area.
- Based upon the requirements listed in the local codes and the scope of work, this project did not require permitting.

Sincerely,



Joe Flaherty
Boeing NBF Project Coordinator
Environmental Remediation M/C 46-202
206-769-5987
joseph.l.flaherty@boeing.com

Technical Memorandum

TO: Joseph Flaherty, The Boeing Company
FROM: Colette Gaona
DATE: May 17, 2022
RE: **3-322 Building Pavement Drainage Improvement and Storm Drainage Upgrade
North Boeing Field
Seattle, Washington
Project No. 025082.222.005**

Introduction

This technical memorandum, prepared by Landau Associates, Inc. (Landau), presents a work plan for soil removal and verification sampling in excavation areas associated with pavement and drainage repairs near Building 3-322 at North Boeing Field (NBF) in Seattle, Washington. The Boeing Company (Boeing) plans to excavate soils and perform asphalt and storm drain repairs near areas where soils containing polychlorinated biphenyls (PCBs) had formerly been removed (Figure 1). This technical memorandum contains information requested by the Washington State Department of Ecology (Ecology) and the US Environmental Protection Agency (EPA) regarding management of soils and verification sampling for the pavement and drainage repairs.

Background

Surface and subsurface soil cleanup activities were performed in the vicinity of Building 3-322 in 2010 to remove and dispose of accessible material with PCB concentrations greater than 0.5 milligrams per kilogram (mg/kg; Landau 2010). Boeing plans to excavate additional soils near these areas (Figure 1) to complete asphalt drainage improvements and storm drainage upgrades.

Boeing characterized soils in the excavation area in March 2022. Total PCBs were below 1 mg/kg in all samples with the exception of one—SB04 at 0.5–0.75 feet [ft] where total PCBs were detected at 2.88 mg/kg. PCB results from characterization sampling are shown on Figure 1 and in Table 1. Results of the characterization sampling were shared with Ecology and EPA (Flaherty 2022).

Asphalt Drainage Improvements and Storm Drainage Upgrades

The asphalt drainage improvements and storm drainage upgrades will include removing asphalt and shallow soil in the low-lying area adjacent to the 3-322 building,¹ installing a storm drain structure and storm drain line to connect into the current NBF stormwater drainage system, and repaving the asphalt in the low-lying area to improve stormwater drainage. Boeing estimates that approximately

¹ Anticipated depth of soil removal below asphalt is approximately 1–2 ft below ground surface.

30 cubic yards of asphalt and soil will be removed and disposed of to complete the drainage repairs and storm drain installation.

Removal of the asphalt and soil in the drainage improvement area will be conducted in a manner that minimizes the release of PCBs to the environment and allows for proper disposal of the material. Drainage improvement activities will be performed by a qualified construction contractor selected by Boeing who are familiar with such work. The contractor will work with Boeing prior to beginning removal and disposal activities to initiate procedures that will be used to reduce the potential for deposition of construction debris on nearby paved surfaces that could potentially be discharged to the stormwater drainage system.

Waste Management

All solid waste will be shipped in Department of Transportation-compliant containers and disposed of in a Subtitle C landfill (a chemical waste landfill permitted under 40 Code of Federal Regulations (CFR) § 761.75 to accept Toxic Substances Control Act-regulated waste).

Verification Sampling

Verification soil samples will be collected by Landau according to a 1.5-meter grid overlay system as defined in 40 CFR § 761 Subpart O. The proposed grid overlay is shown on Figure 2. A sample will be collected from each grid intersection in the area of soil excavation. The exact orientation of the grid (and number of confirmation samples to be collected) will be determined in the field and will be based on magnetic north.

In the event that verification samples yield total PCB concentrations greater than 0.5 mg/kg, soil excavation will proceed vertically or horizontally to the extent practicable (i.e., additional excavation of soil is possible and does not endanger utilities or building foundations) and the verification sampling procedures will be repeated. Verification soil samples will be collected using a clean, stainless-steel spoon. Soil samples will be placed into an 8-ounce glass sample jar, labeled, and stored on ice.

Each soil sample will be assigned a unique alphanumeric identifier according to the order it was collected in relation to other samples, the depth interval that it represents, and the date. For example, the first subsurface soil sample, if collected on May 20, 2022 at 2 ft below ground surface, will be identified as "3-322-V01(2)-052022". Field duplicate samples for quality assurance/quality control (QA/QC) are planned to be collected at a rate of one per every 20 samples.

A complete record of all field activities will be maintained. Documentation will include the following:

- Field logbooks
- Field sampling forms

- Photographs of sample locations, including sample number
- GPS coordinates of sample locations, where possible
- Sample labels
- Chain-of-custody (COC) forms
- Custody seals (only if not directly delivered to the laboratory)
- Project and data management file copies.

Sample container labels will be completed immediately before or immediately following sample collection. Container labels and COC forms will include the following information:

- Project name (Boeing NBF 3-322 Drainage Repairs)
- Boeing project manager's name (Joe Flaherty)
- Landau project number (0025082.222.005)
- Sample identification (ID)
- Initials of the person collecting the sample
- Date and time of collection
- Analysis requested.

Sample Analysis

Samples will be transported under standard COC procedures to Boeing's contracted analytical laboratory, Analytical Resources, Inc., (ARI) of Tukwila, Washington, within 36 hours of sample collection. All soil samples will be analyzed for PCB Aroclors by EPA Method 8082.

Schedule and Reporting

Boeing plans to proceed with the activities described in this technical memorandum upon approval by Ecology and EPA. The results of verification sampling, final excavation depths and volume of material removed, and final waste manifests will be provided to Ecology and EPA following the drainage repair activities. It is Boeing's understanding that Ecology concurs with the drainage repair activities being conducted as an independent cleanup action, and these activities will be documented in the North Boeing Field/Georgetown Steam Plant Remedial Investigation Report.

LANDAU ASSOCIATES, INC.



Colette Gaona
Senior Associate

JWM/CMG/ljl

[P:\025\082\219 PCB Activities\FileRm\R\2022 3-322 Bldg Soil Sampling\Landau NBF 3-322 Bldg Soil Sampling Work Plan_051722.docx

Attachments

Figure 1. Building 3-322 Area Total PCB Results in Soil

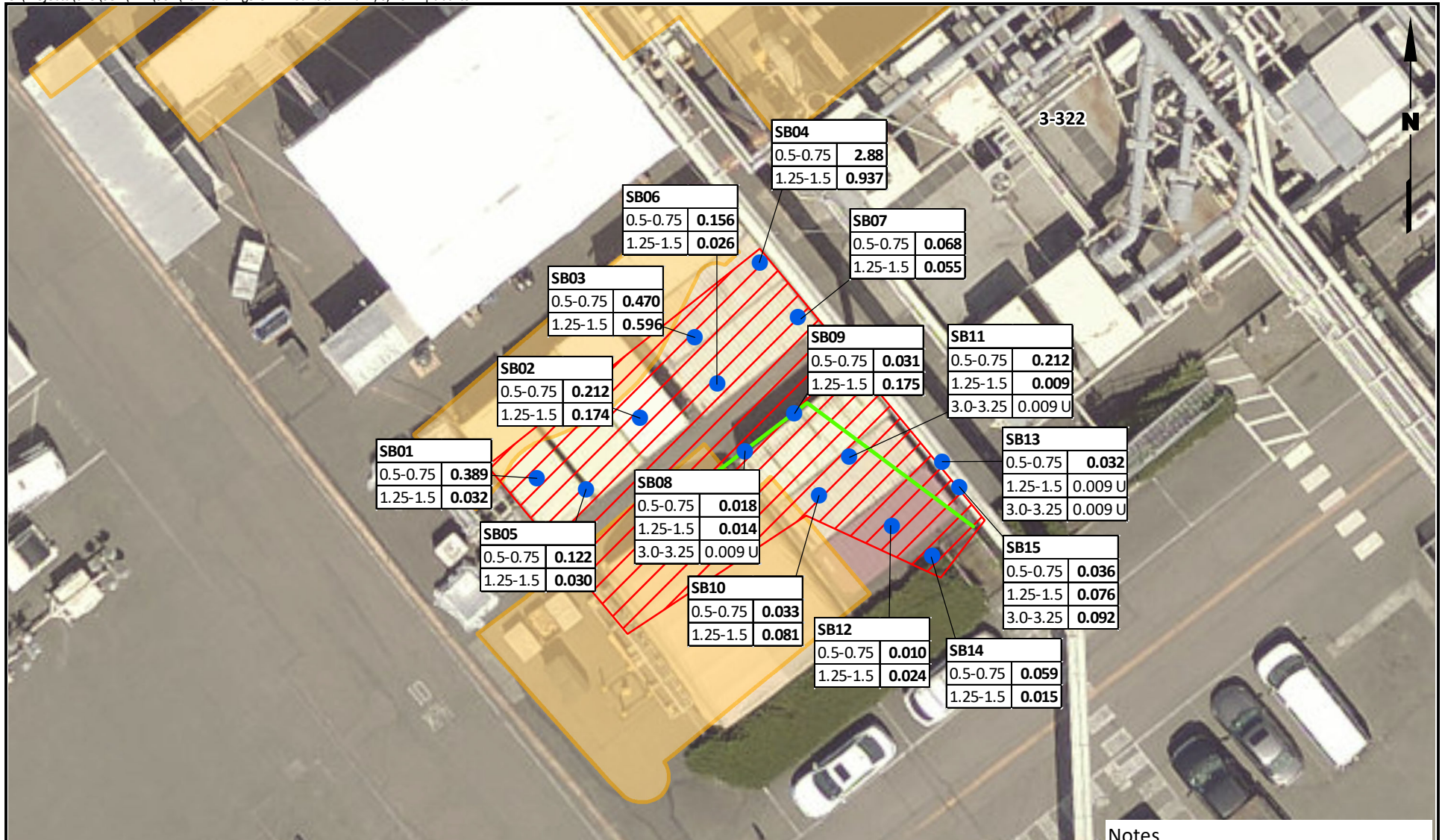
Figure 2. Building 3-322 Area Verification Sampling Locations

Table 1. Building 3-322 Total PCB Results

References

Flaherty, J. 2022. Re: NBF 3-322 Bldg Soil Sampling. From Joseph Flaherty, The Boeing Company, to Michelle Mullin, US Environmental Protection Agency, and Julia Schwarz, Washington State Department of Ecology. April 7.

Landau. 2010. Report: Storm Drain Structure and Surface Cleanup, North Boeing Field, Seattle, Washington. Landau Associates, Inc. June 18.



Legend

- Proposed Soil Sampling Location
- Storm Drain Replacement
- ▨ Current Excavation Area
- ▨ Previous Excavation Area

Sample ID	Total PCB Results in mg/kg
Sample Depth	

0 20 40
Scale in Feet

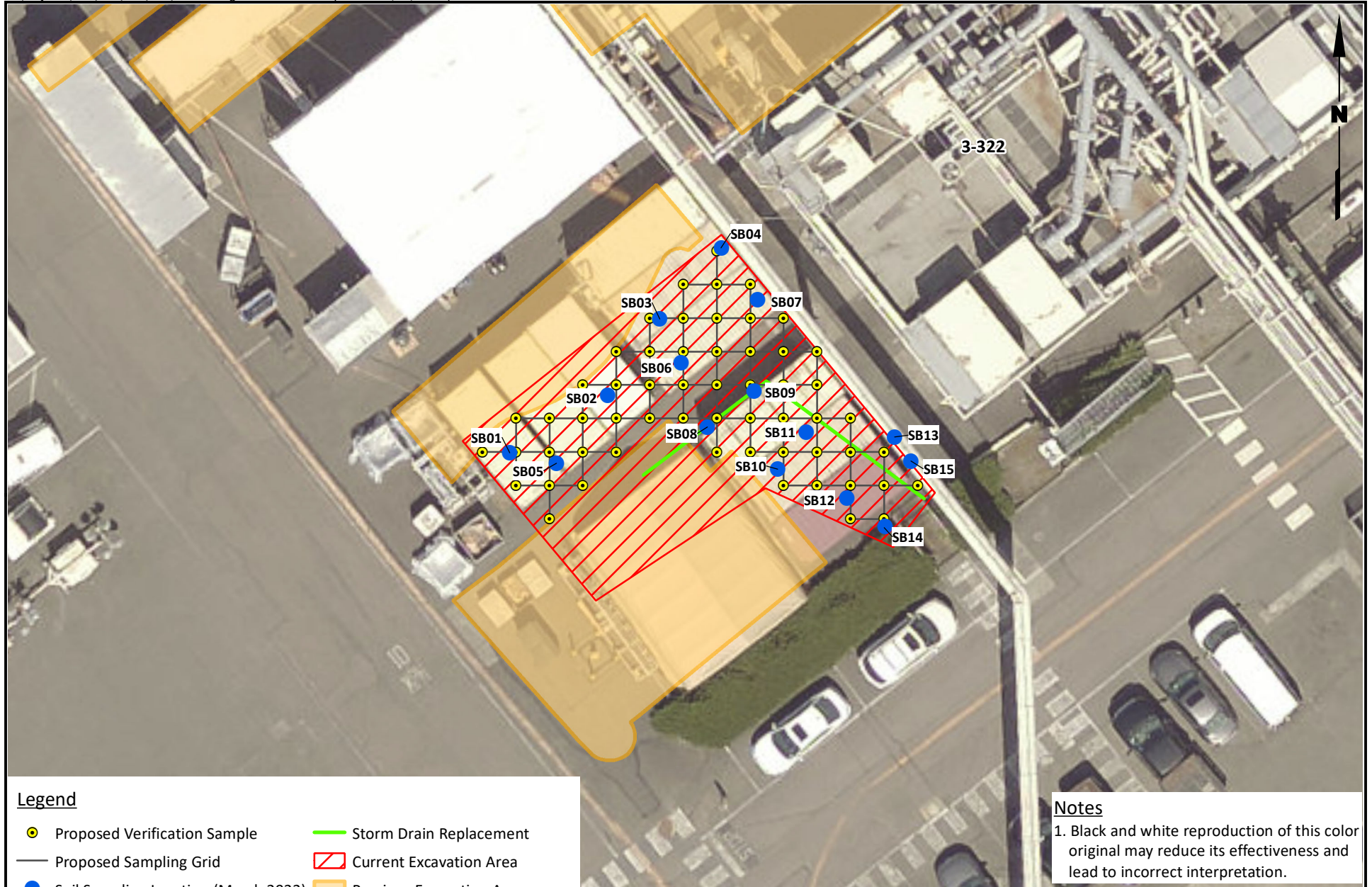
Notes

1. Results shown in mg/kg.
2. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

North Boeing Field
Seattle, Washington

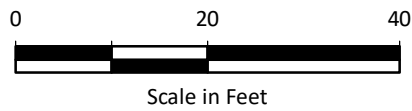
**Building 3-322 Area
Total PCB Results in Soil**

Figure **1**



Legend

- Proposed Verification Sample
- Proposed Sampling Grid
- Soil Sampling Location (March 2022)
- Storm Drain Replacement
- Current Excavation Area
- Previous Excavation Area



Notes

1. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

**Table 1
Building 3-322 Total PCB Results
Paving and Drainage Repair Project
North Boeing Field
Seattle, Washington**

Field Sample ID	Sample Date	PCBs by SW-846 8082A (mg/kg)									
		Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Aroclor 1262	Aroclor 1268	Total PCBs
3-322-SB01(.5-.75)031022	3/10/2022	0.0079 U	0.0079 U	0.0079 U	0.0079 U	0.0079 U	0.308	0.0814	0.0092 U	0.0092 U	0.3894
3-322-SB01(1.25-1.5)031022	3/10/2022	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.0124 J	0.0196 J	0.0093 U	0.0093 U	0.032
3-322-SB02(.5-.75)031022	3/10/2022	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.0978	0.0093 U	0.114	0.0093 U	0.2118
3-322-SB02(1.25-1.5)031022	3/10/2022	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.044	0.13	0.0093 U	0.0093 U	0.174
3-322-SB03(.5-.75)031022	3/10/2022	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.17	0.0092 U	0.3	0.0092 U	0.47
3-322-SB03(1.25-1.5)031022	3/10/2022	0.008 U	0.008 U	0.008 U	0.153	0.008 U	0.088	0.0092 U	0.355	0.0092 U	0.596
3-322-SB04(.5-.75)031022	3/10/2022	0.0427 U	0.0427 U	0.0427 U	0.0427 U	0.0427 U	0.67	0.0495 U	2.21	0.0495 U	2.88
3-322-SB04(1.25-1.5)031022	3/10/2022	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.234	0.0092 U	0.703	0.0092 U	0.937
3-322-SB05(.5-.75)031022	3/10/2022	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.0748	0.047	0.0093 U	0.0093 U	0.1218
3-322-DUP1(.5-.75)031022	3/10/2022	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.0818	0.0423	0.0092 U	0.0092 U	0.1241
3-322-SB05(1.25-1.5)031022	3/10/2022	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.0112 J	0.0092 U	0.0187 J	0.0092 U	0.0299
3-322-DUP1(1.25-1.5)031022	3/10/2022	0.0079 U	0.0079 U	0.0079 U	0.0079 U	0.0079 U	0.0113 J	0.0142 J	0.0092 U	0.0092 U	0.0255
3-322-SB06(.5-.75)031022	3/10/2022	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.0337	0.0093 U	0.122	0.0093 U	0.1557
3-322-SB06(1.25-1.5)031022	3/10/2022	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.0106 J	0.015 J	0.0093 U	0.0093 U	0.0256
3-322-SB07(.5-.75)031022	3/10/2022	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.0479	0.0204	0.0093 U	0.0093 U	0.0683
3-322-SB07(1.25-1.5)031022	3/10/2022	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.0313	0.0234	0.0092 U	0.0092 U	0.0547
3-322-SB09(.5-.75)031022	3/10/2022	0.0079 U	0.0079 U	0.0079 U	0.014 J	0.0079 U	0.0165 J	0.0092 U	0.0092 U	0.0092 U	0.0305
3-322-SB09(1.25-1.5)031022	3/10/2022	0.0079 U	0.0079 U	0.0079 U	0.0079 U	0.0079 U	0.0446	0.0092 U	0.13	0.0092 U	0.1746
3-322-SB10(.5-.75)031022	3/10/2022	0.008 U	0.008 U	0.008 U	0.0187 J	0.008 U	0.0144 J	0.0093 U	0.0093 U	0.0093 U	0.0331
3-322-DUP2(.5-.75)031022	3/10/2022	0.008 U	0.008 U	0.008 U	0.0231	0.008 U	0.026	0.0097 J	0.0093 U	0.0093 U	0.0588
3-322-SB10(1.25-1.5)031022	3/10/2022	0.008 U	0.008 U	0.008 U	0.019 J	0.008 U	0.0365	0.0092 U	0.0257	0.0092 U	0.0812
3-322-DUP2(1.25-1.5)031022	3/10/2022	0.008 U	0.008 U	0.008 U	0.0201	0.008 U	0.0276	0.0093 U	0.0205	0.0093 U	0.0682
3-322-SB11(.5-.75)031022	3/10/2022	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.0158 J	0.0093 U	0.0539	0.0093 U	0.0697
3-322-SB11(1.25-1.5)031022	3/10/2022	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.0093 U	0.0093 J	0.0093 U	0.0093
3-322-SB11(3-3.25)031022	3/10/2022	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.0093 U	0.0093 U	0.0093 U	0.0093 U
3-322-SB12(.5-.75)031022	3/10/2022	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.0099 J	0.0093 U	0.0093 U	0.0093 U	0.0099
3-322-SB12(1.25-1.5)031022	3/10/2022	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.0085 J	0.0093 U	0.0159 J	0.0093 U	0.0244
3-322-SB13(.5-.75)031022	3/10/2022	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.0138 J	0.0093 U	0.0186 J	0.0093 U	0.0324
3-322-SB13(1.25-1.5)031022	3/10/2022	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.0093 U	0.0093 U	0.0093 U	0.0093 U
3-322-SB13(3-3.25)031022	3/10/2022	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.0092 U	0.0092 U	0.0092 U	0.0092 U
3-322-SB14(.5-.75)031022	3/10/2022	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.0365	0.0093 U	0.0229	0.0093 U	0.0594
3-322-SB14(1.25-1.5)031022	3/10/2022	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.0092 U	0.0148 J	0.0092 U	0.0148
3-322-SB15(.5-.75)031022	3/10/2022	0.008 U	0.008 U	0.008 U	0.0243	0.008 U	0.0117 J	0.0092 U	0.0092 U	0.0092 U	0.036
3-322-SB15(1.25-1.5)031022	3/10/2022	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.0092 U	0.0758	0.0092 U	0.0758
3-322-SB15(3-3.25)031022	3/10/2022	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.0157 J	0.0093 U	0.0763	0.0093 U	0.092
3-322-SB8(.5-.75)031022	3/10/2022	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.0179 J	0.0093 U	0.0093 U	0.0093 U	0.0179
3-322-SB8(1.25-1.5)031022	3/10/2022	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.0093 U	0.0144 J	0.0093 U	0.0144
3-322-SB8(3-3.25)031022	3/10/2022	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.0093 U	0.0093 U	0.0093 U	0.0093 U
3-322-AS031022	3/10/2022	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.0124 J	0.0092 U	0.0092 U	0.0092 U	0.0124

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.

J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

Abbreviations and Acronyms:

ID = Identification

mg/kg = milligrams per kilogram

PCBs = polychlorinated biphenyls