

December 14, 2021

Project No. 19119232

Ms. Maureen Hatfield

Texas Commission on Environmental Quality
MC-127
VCP-CA Section, Team 1, Remediation Division
P.O. Box 13087
Austin, Texas 78711-3087

**Re: MONTHLY STATUS UPDATE – ENGLEWOOD INTERMODAL YARD – NAPL COLLECTION
SYSTEM/CONCRETE CAP REPAIRS
UNION PACIFIC RAILROAD HOUSTON WOOD PRESERVING WORKS FACILITY
4910 LIBERTY ROAD FACILITY, HOUSTON, TEXAS
POST-CLOSURE CARE PERMIT NO. HW-50343; INDUSTRIAL SWR NO. 31547**

Dear Ms. Hatfield:

Golder Associates USA Inc. (Golder), a member of WSP, on behalf of Union Pacific Railroad Company (UPRR), is pleased to provide this monthly status update for November 2021 for inspections conducted at the Englewood Intermodal Yard concrete cap area within the UPRR Houston Wood Preserving Works Facility (the Site). Monthly status updates were requested by the Texas Commission on Environmental Quality (TCEQ) in a letter dated March 20, 2018.

A non-aqueous phase liquid (NAPL) Collection System was installed in the Englewood Intermodal Yard in January 2019 to address the tar-like substance seeps within parking stalls B100 to B109 (for container trailers). The following is a summary of the observations from the weekly inspections of the NAPL Collection System and Englewood Intermodal Yard concrete pavement near the collection system for November 2021 (photographs from the weekly inspections are provided in Attachment A):

- The water level in NAPL Collection Sump 1 (B099/B100 stalls) was at 10 inches below the top of the sump during the November 3, 2021 inspection and increased to 7 inches by the November 24, 2021 inspection. Water levels in Sump 2 (B103/B104 stalls) and Sump 3 (B107/B108 stalls) were at 20 inches and 21 inches below the top of the sumps, respectively, during the November 3, 2021 inspection and increased to 14 inches and 13 inches, respectively, by the November 24, 2021 inspection. Weekly water levels for the sumps are available in Table 1. The water in the sumps was observed as being brown in color. On November 3, 2021, a sheen was observed on the water in Sump 1 (Photo No. 2). No sheens or odors were reported for the remaining inspections in November. The waste profile for the sump water expired in October 2021. A sample of the sump water was collected on November 10, 2021 for re-characterization. A copy of the analytical report is provided in Attachment B.
- The NAPL collection sumps have continued to be checked weekly for DNAPL using an interface probe. Even though no measurable DNAPL has been noted, a dipper tool has continued to be used to further evaluate the presence of and recover DNAPL, if present, from the bottom of each of the sumps during the

weekly inspections. No DNAPL was observed or encountered using the dipper tool during the weekly inspections in November.

- No NAPL seeps were observed near the NAPL Collection System in November 2021. For areas outside the NAPL Collection System, small amounts of tar-like material were observed on the concrete surface at the following location during November 2021:

Seep Observations Outside the NAPL Collection System Area	
Stall Number	Observation Date(s)
A011	November 10 th and 24 th

Tar-like material observed during the inspection events was recovered using a hand tool to scrape up the material. During September 2021, track marks from a container transport vehicle running over the seep in stall B102 were observed and barricades were set up surrounding the seep location to prevent further tracking. The barricades are checked and reset, as needed, during the weekly inspections. UPRR remediation contractor US Ecology pressure washed the tar-like material tracking in October 2021. Residual track marks were observed during the November inspections (Photo Nos. 6, 11, and 12). No active seeps in Stall B102 or new track marks were observed during the month of November 2021. During November, the number of tar-like material seeps observed during inspections and the total amount of material removed from the concrete surface decreased compared to the October inspections. The only tar-like material seep observed during the November inspections was the small area at stall A011. A total of approximately 0.2 gallons of tar-like material was recovered for the month and placed in a drum for disposal. The drum is staged at the Container Storage Area (CSA).

- No brown water seeping or staining was observed during November. UPRR will continue to have a remediation contractor pressure wash and/or collect the water in the areas where the brown staining and seeps are observed, as needed.
- Golder, on behalf of UPRR, submitted to the TCEQ the Englewood IM Yard Test Pit Evaluation Report dated June 2, 2021 summarizing the findings from the test pits installed in July 2020, including weekly inspections since the installation. During the weekly inspections through November 2021, no NAPL seeps have been observed at the seven test pit locations (stalls A010, A021, A098, B013, B057, B096, and B108). As discussed in the Test Pit Report, the test pit inspections were to continue through the warmer months (through September 2021). UPRR will prepare a Test Pit Evaluation Report Addendum summarizing the test pit inspections from June through September 2021. During inspections in June and July 2021 the concrete patches covering test pits in stalls A010, A021, B013, B057, B096, and B108 were observed to be damaged. UPRR contractor US Ecology removed the damaged test pit concrete on October 22, 2021 and completed installation of new rebar and concrete on October 25, 2021. The new concrete patches will be monitored during weekly inspections, no damage was observed in November.
- A follow-up video camera survey of the stormwater sewer lines in the central area of the Englewood IM Yard was conducted on August 26, 2021 to evaluate the stormwater line near the test pit locations. Details of the follow-up video survey will be provided in the Test Pit Evaluation Report Addendum.

- Weekly site inspections of the NAPL Collection System and Englewood Intermodal Yard concrete pavement near the collection system will continue to be conducted. A notation on the presence of NAPL in each sump, tabulation of depth and thickness of NAPL if detected, and a tabulation of total mass of NAPL recovered from each sump is provided on the enclosed Table 1. No measurable NAPL has been detected in the sumps using the interface probe through November 2021.

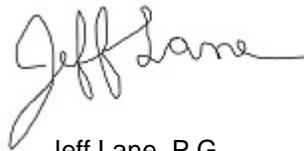
If you have any questions or need additional information, please feel free to call us at (512) 671-3434 or Mr. Kevin Peterburs of UPRR at (414) 267-4164.

Sincerely,

Golder Associates USA Inc.



Eric C. Matzner, P.G.
Principal / Program Leader



Jeff Lane, P.G.
Sr. Remediation Project Manager

CC: Mr. Kevin Peterburs, UPRR – Milwaukee, WI
Ms. Alma Jefferson, Waste Section Manager, TCEQ Region 12, Houston

Attachment Table 1 – NAPL Measurements – NAPL Collection System
Attachment A – Weekly Inspection Photolog
Attachment B – Analytical Report

TABLE

TABLE 1
NAPL Measurements - NAPL Collection System - Englewood Intermodal Yard
UPRR Houston, tx - Wood Preserving Works

Measured Date	Sump 1 (B099/B100) Freeboard (in)	Sump 2 (B103/B104) Freeboard (in)	Sump 3 (B107/B108) Freeboard (in)	Depth to DNAPL (in)	Comments
8/14/2019	2.5	28	29	Not measurable	
8/21/2019	0	27.5	26.5	Not measurable	
8/28/2019	44.5	47.9	45	Not measurable	Water from sumps pumped out
9/4/2019	19	42	41.5	Not measurable	
9/13/2019	0	39.5	38	Not measurable	
9/20/2019	0	3	2.5	Not measurable	
9/25/2019	0	42	42.5	Not measurable	Water from sumps pumped out
10/2/2019	2.5	42.5	42	Not measurable	Sheen visible in B107/B108 sump, less than 0.1 gal of DNAPL recovered
10/9/2019	3	42	41.5	Not measurable	Sheen visible in B107/B108 sump, less than 0.1 gal of DNAPL recovered
10/16/2019	0	39.5	39	Not measurable	Less than 0.1 gal of DNAPL recovered from B107/B108 Sump
10/24/2019	3	35	25	Not measurable	Less than 0.1 gal of DNAPL recovered from B107/B108 Sump
10/29/2019	0	24	23	Not measurable	Water from sumps pumped out
10/30/2019	0	40	39	Not measurable	Slight sheen visible in B107/B108 sump
11/6/2019	9	39	38.5	Not measurable	
11/13/2019	7	30	29	Not measurable	Less than 0.1 gal of DNAPL recovered from B107/B108 Sump
11/19/2019	4	26	25.5	Not measurable	
11/27/2019	0	25	23	Not measurable	
12/3/2019	2	25.5	25	Not measurable	Less than 0.1 gal of DNAPL recovered from B107/B108 Sump
12/11/2019	1.5	17	16.54	Not measurable	Less than 0.1 gal of DNAPL recovered from B107/B108 Sump
12/17/2019	5	19.5	17.5	Not measurable	
12/23/2019	10	21	20.5	Not measurable	
1/7/2020	9	13	12.5	Not measurable	
1/8/2020	9	13	12.5	Not measurable	Water from sumps pumped out
1/17/2020	0	32	31.5	Not measurable	
1/21/2020	2.5	26.5	26	Not measurable	
1/28/2020	0	0	0	Not measurable	
2/4/2020	2	11	10.5	Not measurable	
2/12/2020	0	0	0	Not measurable	
2/18/2020	1.5	11.5	10.25	Not measurable	Water from sumps pumped out on 2/20/2020
2/27/2020	2	42	36	Not measurable	
3/6/2020	1	36	36	Not measurable	
3/11/2020	2	36	35.5	Not measurable	
3/18/2020	0	35.5	35	Not measurable	
3/27/2020	0	29	28	Not measurable	
4/3/2020	1.5	29	28.5	Not measurable	
4/8/2020	0	23	22	Not measurable	
4/15/2020	0.5	23	22	Not measurable	
4/21/2020	0	21	21	Not measurable	
4/28/2020	0	23	22	Not measurable	
5/4/2020	-	-	-	Not Measured	Measurements were not taken; the inspector was unable to open the sumps
5/12/2020	0	20	19	Not measurable	
5/19/2020	0	15.75	14.25	Not measurable	Sump 1 pumped down (May 22nd)
5/27/2020	0	14	13	Not measurable	
6/1/2020	0	7	5	Not measurable	
6/10/2020	0	10	9	Not measurable	
6/17/2020	1	12	11	Not measurable	
6/25/2020	0	0	0	Not measurable	
6/30/2020	0	0	0	Not measured	
7/1/2020	48	46	47	Not measurable	Sumps 1, 2, & 3 pumped down
7/8/2020	34	24.5	24	Not measurable	Less than 0.1 gal of DNAPL recovered from B107/B108 Sump
7/15/2020	32	29.5	29	Not measurable	Sheen visible in B99/B100 sump & B107/B108 sump, less than 0.1 gal of DNAPL recovered B107/B108 sump
7/23/2020	0	23	22.5	Not measured	Less than 0.1 gal of DNAPL recovered from B107/B108 Sump
7/31/2020	0	11	10	Not measurable	
8/5/2020	0	7	5	Not measurable	
8/13/2020	1	11	10	Not measurable	
8/19/2020	0	7	6	Not measurable	
8/26/2020	0	10	9	Not measurable	
9/2/2020	43	37	38	Not measurable	Sumps 1, 2, & 3 pumped down (September 1); Sheen visible in B99/B100 sump & B107/B108 sump
9/9/2020	28	37	36	Not measurable	Sheen visible in B107/B108 sump
9/15/2020	1	35	33	Not measurable	
9/23/2020	0	0	0	Not measurable	

TABLE 1
NAPL Measurements - NAPL Collection System - Englewood Intermodal Yard
UPRR Houston, tx - Wood Preserving Works

Measured Date	Sump 1 (B099/B100) Freeboard (in)	Sump 2 (B103/B104) Freeboard (in)	Sump 3 (B107/B108) Freeboard (in)	Depth to DNAPL (in)	Comments
9/30/2020	1	10	9	Not measurable	
10/8/2020	4	12	11.5	Not measurable	
10/15/2020	0	11	10.5	Not measurable	Less than 0.1 gal of DNAPL recovered B107/B108 sump
10/21/2020	1	10.5	9.25	Not measurable	
10/28/2020	0	11	10	Not measurable	
11/4/2020	9	13	12	Not measurable	
11/11/2020	0.5	12	11	Not measurable	
11/18/2020	3.5	13	12	Not measurable	
11/24/2020	7	14	13.5	Not measurable	
11/30/2020	2	7	6	Not measurable	
12/10/2020	5	10.5	10	Not measurable	
12/18/2020	4	10	9	Not measurable	
12/23/2020	1	9	7.5	Not measurable	
12/31/2020	0	4	3.5	Not measurable	
1/6/2021	4	10.5	9	Not measurable	
1/15/2021	43	39	37.5	Not measurable	Sumps 1, 2, & 3 pumped down
1/22/2021	0	34	33	Not measurable	Sheen visible in B107/B108 sump
1/29/2021	2	31	30	Not measurable	Sheen visible in B107/B108 sump
2/4/2021	4	30	29.5	Not measurable	Sheen visible in B099/B100 sump
2/10/2021	0	27	25.5	Not measurable	
2/17/2021	0	0	0	Not measurable	
2/24/2021	2	10	9.5	Not measurable	
3/2/2021	0	0	0	Not measurable	
3/10/2021	0	10	9.75	Not measurable	
3/17/2021	0	2	1	Not measurable	
3/24/2021	0	3.5	2	Not measurable	
3/31/2021	0	6.5	7	Not measurable	
4/8/2021	0	7.5	7	Not measurable	
4/14/2021	0	6.5	6	Not measurable	Less than 0.1 gal of DNAPL recovered B107/B108 sump; Sheen visible in B103/104 and B107/B108 sumps
4/21/2021	0.5	9	8.5	Not measurable	
4/28/2021	0	8.5	8	Not measurable	
5/5/2021	0	7.5	7	Not measurable	
5/12/2021	0	8	7.5	Not measurable	
5/19/2021	0	0	0	Not measurable	
5/26/2021	0	2	0.5	Not measurable	
5/27/2021	41	32	26	Not measurable	Sumps 1,2, & 3 pumped down
6/2/2021	0	40	38	Not measurable	Sheen visible in B107/108 sump
6/9/2021	0	30	28.5	Not measurable	
6/16/2021	0	24	25	Not measurable	
6/23/2021	0	12	13	Not measurable	
6/30/2021	0	3	1	Not measurable	
7/7/2021	0	0	0	Not measurable	
7/14/2021	0	0	0	Not measurable	Sumps 1,2, & 3 pumped down (July 15)
7/21/2021	0	39	37	Not measurable	
7/29/2021	0	37	35.5	Not measurable	
8/4/2021	0	36	34	Not measurable	Sheen visible in B103/104 and B107/B108 sumps
8/11/2021	0	33	32	Not Measured	Depth to DNAPL measurements were not taken; the interface probe was not functioning properly
8/18/2021	0	25	23	Not measurable	
8/25/2021	0	20	22	Not measurable	
9/1/2021	0	20	17	Not measurable	
9/8/2021	3	14	11	Not measurable	
9/15/2021	0	3	4	Not measurable	Sumps 1,2, & 3 pumped down (September 17)
9/22/2021	31.5	46	46	Not measurable	Sheen visible in B107/B108 sump
9/29/2021	0	29	30.75	Not measurable	Sheen visible in B103/104 and B107/B108 sumps
10/7/2021	6	18	17.5	Not measurable	
10/13/2021	3.6	10.56	9.72	Not measurable	Sheen visible in B103/104 and B107/B108 sumps; brown discoloration and slight odor noted B099/B100 sump
10/20/2021	0	13.94	12.6	Not measurable	Sumps 1,2, & 3 pumped down (October 21)
10/27/2021	0	22	21	Not measurable	Sheen visible in B099/B100 sump
11/3/2021	10	20	21	Not measurable	
11/10/2021	12	16	15	Not measurable	
11/17/2021	8	16	15	Not measurable	
11/24/2021	7	14	13	Not measurable	

Note:
Freeboard in sumps is measured as depth to water from top rim of sump, measured in inches

ATTACHMENT A

Weekly Inspection Photolog



PHOTOGRAPHIC LOG

Client Name: Union Pacific Railroad	Site Location: Englewood Houston, Texas	Project No. 19119232
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Photo No. 1	Inspection Date: 11/3/2021
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Description:

Slot A021, no tar-like material seeps observed where test pit conducted (July 2020), test pit pavement repaired, looking northwest.

Lat: 29.785392,
Long: -95.318655



Photo No. 2	Inspection Date: 11/3/2021
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Description:

Sump 1 (B099/B100), 10 inches of freeboard in sump, sheen was observed on the water in the sump, no odor noted.

Lat: 29.7844000
Long: - 95.3205861





PHOTOGRAPHIC LOG

Client Name:
Union Pacific Railroad

Site Location:
Englewood Houston, Texas

Project No.
19119232

Photo No.
3

Inspection Date:
11/3/2021

Description:

Sump 2 (B103/B104), 20 inches of freeboard in sump. No sheen or odor noted.

Lat: 29.7842861
Long: - 95.3208611



Photo No.
4

Inspection Date:
11/3/2021

Description:

Slot B105, no active tar-like material seeps observed, residual staining noted, looking southwest.

Lat: 29.7841472
Long: - 95.3208777





PHOTOGRAPHIC LOG

Client Name:
Union Pacific Railroad

Site Location:
Englewood Houston, Texas

Project No.
19119232

Photo No.
5

Inspection Date:
11/3/2021

Description:

Sump 3 (B107/B108), 21 inches of freeboard in sump. No sheen or odor noted. No tar-like material recovered.

Lat: 29.784172
Long: -95.320998



Photo No.
6

Inspection Date:
11/3/2021

Description:

View of slots B097-B110, NAPL collection system visible in background, residual staining from tar-like material tracking from the B102 seep observed, looking northwest.

Lat: 29.7844000
Long: - 95.3205861





PHOTOGRAPHIC LOG

Client Name:
Union Pacific Railroad

Site Location:
Englewood Houston, Texas

Project No.
19119232

Photo No.
7

Inspection Date:
11/10/2021

Description:

Slot A011, small amount of tar-like material seeping at asphalt crack, material was removed.

Lat: 29.785467
Long: -95.318347



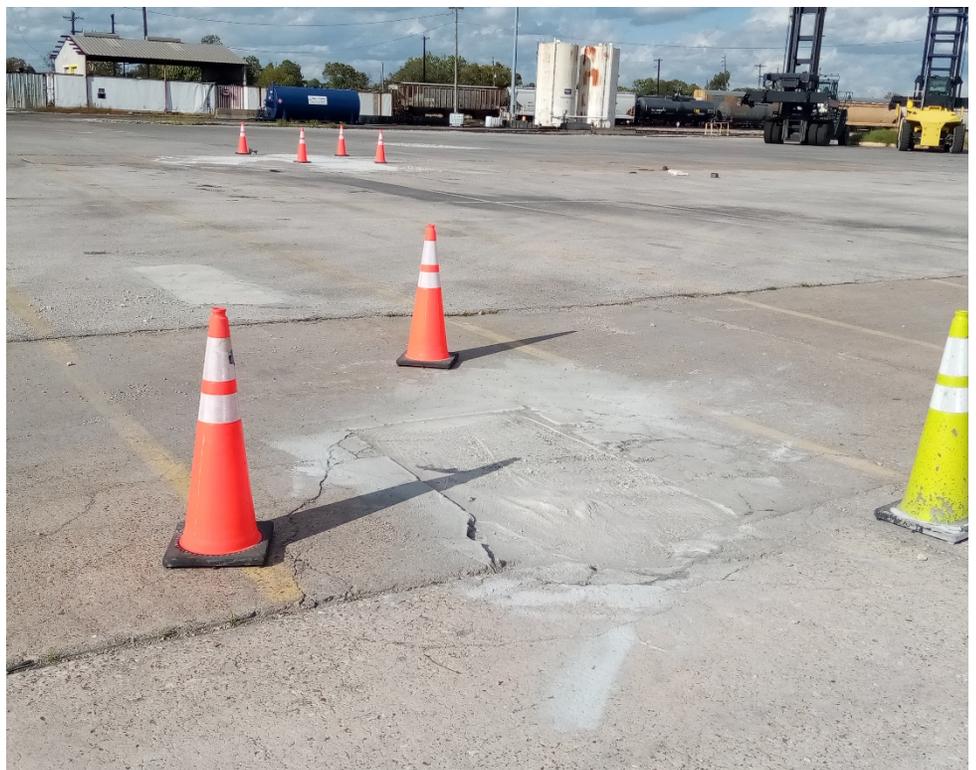
Photo No.
8

Inspection Date:
11/10/2021

Description:

Slot B013, no tar-like material seeps observed where test pit conducted (July 2020), test pit pavement repaired, looking northeast.

Lat: 29.785217
Long: - 95.318261





Client Name:
Union Pacific Railroad

Site Location:
Englewood Houston, Texas

Project No.
19119232

Photo No.
9

Inspection Date:
11/10/2021

Description:

Slot B057, no tar-like material seeps observed at historical seep location or where test pit conducted (July 2020), test pit pavement repaired, looking northwest.

Lat: 29.7847472
Long: - 95.3195417



Photo No.
10

Inspection Date:
11/10/2021

Description:

Sump 1 (B099/B100), 12 inches of freeboard in sump, no sheen or odor noted.

Lat: 29.7844000
Long: - 95.3205861





Client Name:
Union Pacific Railroad

Site Location:
Englewood Houston, Texas

Project No.
19119232

Photo No.
11

Inspection Date:
11/10/2021

Description:

Slot B102, no active tar-like material seeps observed, residual staining noted.

Lat: 29.7842203
Long: - 95.320827



Photo No.
12

Inspection Date:
11/10/2021

Description:

View of slots B110-B096, NAPL collection system visible in background, tar-like material tracking from the B102 seep observed, looking east.

Lat: 29.784358
Long: -95.320611





Client Name:
Union Pacific Railroad

Site Location:
Englewood Houston, Texas

Project No.
19119232

Photo No.
13

Inspection Date:
11/24/2021

Description:

Slots A010, no tar-like material observed, July 2020 test pit pavement repaired, looking southwest.

Lat: 29.785392,
Long: -95.318655



Photo No.
14

Inspection Date:
11/24/2021

Description:

Slot A011, small amount of tar-like material seeping at asphalt crack, material was removed.

Lat: 29.785467
Long: -95.318347





Client Name: Union Pacific Railroad	Site Location: Englewood Houston, Texas	Project No. 19119232
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Photo No. 15	Inspection Date: 11/24/2021
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Description:

Slot B096, no tar-like material seeps observed where test pit conducted (July 2020), test pit pavement repaired, looking northwest.

Lat: 29.7842528
Long: - 95.3206250



Photo No. 16	Inspection Date: 11/24/2021
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Description:

Sump 1 (B099/B100), 7 inches of freeboard in sump, no sheen or odor noted.

Lat: 29.7844000
Long: - 95.3205861





PHOTOGRAPHIC LOG

Client Name:
Union Pacific Railroad

Site Location:
Englewood Houston, Texas

Project No.
19119232

Photo No.
17

Inspection Date:
11/24/2021

Description:

Sump 2 (B103/B104), 14 inches of freeboard in sump. No sheen or odor noted.

Lat: 29.7842861
Long: - 95.3208611



Photo No.
18

Inspection Date:
11/24/2021

Description:

Sump 3 (B107/B108), 13 inches of freeboard in sump no sheen or odor noted. No tar-like material recovered.

Lat: 29.784172
Long: -95.320998



ATTACHMENT B

Analytical Report



10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

November 29, 2021

Eric Matzner
Golder Associates Inc.
2201 Double Creek Drive
Suite 4004
Round Rock, TX 78664

Work Order: **HS21110636**

Laboratory Results for: **Houston TX-Wood Preserving Works IDW**

Dear Eric Matzner,

ALS Environmental received 1 sample(s) on Nov 10, 2021 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
Dane J. Wacasey

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
Work Order: HS21110636

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS21110636-01	WW-1620-SUMP-20211110	Water		10-Nov-2021 15:15	10-Nov-2021 17:24	<input type="checkbox"/>

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
Work Order: HS21110636

CASE NARRATIVE

Work Order Comments

- Sample received outside method holding time for pH. pH is an immediate test. Sample results are flagged with an "H" qualifier.
The temperature at the time of pH is reported. Please note that all pH results are already normalized to a temperature of 25 °C.

GC Semivolatiles by Method TX1005

Batch ID: 172716

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

GCMS Semivolatiles by Method SW8270

Batch ID: 172448

Sample ID: LCSD-172448

- The RPD between the LCS and LCSD was outside of the control limit.

GCMS Volatiles by Method SW8260

Batch ID: R396370

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Metals by Method SW6020A

Batch ID: 172803

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Metals by Method SW7470A

Batch ID: 172794

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SW9040C

Batch ID: R396402

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SW1010

Batch ID: R396095

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.
-

Client: Golder Associates Inc.
 Project: Houston TX-Wood Preserving Works IDW
 Sample ID: WW-1620-SUMP-20211110
 Collection Date: 10-Nov-2021 15:15

ANALYTICAL REPORT
 WorkOrder:HS21110636
 Lab ID:HS21110636-01
 Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260					Analyst: AKP
1,1,1-Trichloroethane	< 0.00020		0.00020	0.0010	mg/L	1	24-Nov-2021 02:54
1,1,2,2-Tetrachloroethane	< 0.00050		0.00050	0.0010	mg/L	1	24-Nov-2021 02:54
1,1,2-Trichloroethane	< 0.00030		0.00030	0.0010	mg/L	1	24-Nov-2021 02:54
1,1-Dichloroethane	< 0.00020		0.00020	0.0010	mg/L	1	24-Nov-2021 02:54
1,1-Dichloroethene	< 0.00020		0.00020	0.0010	mg/L	1	24-Nov-2021 02:54
1,2-Dichlorobenzene	< 0.00050		0.00050	0.0010	mg/L	1	24-Nov-2021 02:54
1,2-Dichloroethane	< 0.00020		0.00020	0.0010	mg/L	1	24-Nov-2021 02:54
1,2-Dichloropropane	< 0.00050		0.00050	0.0010	mg/L	1	24-Nov-2021 02:54
1,3-Dichlorobenzene	< 0.00040		0.00040	0.0010	mg/L	1	24-Nov-2021 02:54
1,4-Dichlorobenzene	< 0.00040		0.00040	0.0010	mg/L	1	24-Nov-2021 02:54
2-Butanone	< 0.00050		0.00050	0.0020	mg/L	1	24-Nov-2021 02:54
2-Hexanone	< 0.0010		0.0010	0.0020	mg/L	1	24-Nov-2021 02:54
4-Methyl-2-pentanone	< 0.00070		0.00070	0.0020	mg/L	1	24-Nov-2021 02:54
Acetone	< 0.0020		0.0020	0.0020	mg/L	1	24-Nov-2021 02:54
Benzene	< 0.00020		0.00020	0.0010	mg/L	1	24-Nov-2021 02:54
Bromochloromethane	< 0.00020		0.00020	0.0010	mg/L	1	24-Nov-2021 02:54
Bromodichloromethane	< 0.00020		0.00020	0.0010	mg/L	1	24-Nov-2021 02:54
Bromoform	< 0.00040		0.00040	0.0010	mg/L	1	24-Nov-2021 02:54
Bromomethane	< 0.00040		0.00040	0.0010	mg/L	1	24-Nov-2021 02:54
Carbon disulfide	< 0.00060		0.00060	0.0020	mg/L	1	24-Nov-2021 02:54
Carbon tetrachloride	< 0.00050		0.00050	0.0010	mg/L	1	24-Nov-2021 02:54
Chlorobenzene	< 0.00030		0.00030	0.0010	mg/L	1	24-Nov-2021 02:54
Chloroethane	< 0.00030		0.00030	0.0010	mg/L	1	24-Nov-2021 02:54
Chloroform	< 0.00020		0.00020	0.0010	mg/L	1	24-Nov-2021 02:54
Chloromethane	< 0.00020		0.00020	0.0010	mg/L	1	24-Nov-2021 02:54
cis-1,2-Dichloroethene	< 0.00020		0.00020	0.0010	mg/L	1	24-Nov-2021 02:54
cis-1,3-Dichloropropene	< 0.00010		0.00010	0.0010	mg/L	1	24-Nov-2021 02:54
Dibromochloromethane	< 0.00030		0.00030	0.0010	mg/L	1	24-Nov-2021 02:54
Ethylbenzene	< 0.00030		0.00030	0.0010	mg/L	1	24-Nov-2021 02:54
m,p-Xylene	< 0.00050		0.00050	0.0020	mg/L	1	24-Nov-2021 02:54
Methylene chloride	< 0.0010		0.0010	0.0020	mg/L	1	24-Nov-2021 02:54
o-Xylene	< 0.00030		0.00030	0.0010	mg/L	1	24-Nov-2021 02:54
Styrene	< 0.00030		0.00030	0.0010	mg/L	1	24-Nov-2021 02:54
Tetrachloroethene	< 0.00030		0.00030	0.0010	mg/L	1	24-Nov-2021 02:54
Toluene	< 0.00020		0.00020	0.0010	mg/L	1	24-Nov-2021 02:54
trans-1,2-Dichloroethene	< 0.00020		0.00020	0.0010	mg/L	1	24-Nov-2021 02:54
trans-1,3-Dichloropropene	< 0.00020		0.00020	0.0010	mg/L	1	24-Nov-2021 02:54
Trichloroethene	< 0.00020		0.00020	0.0010	mg/L	1	24-Nov-2021 02:54
Vinyl acetate	< 0.00050		0.00050	0.0010	mg/L	1	24-Nov-2021 02:54

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
 Project: Houston TX-Wood Preserving Works IDW
 Sample ID: WW-1620-SUMP-20211110
 Collection Date: 10-Nov-2021 15:15

ANALYTICAL REPORT
 WorkOrder:HS21110636
 Lab ID:HS21110636-01
 Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260					Analyst: AKP
Vinyl chloride	< 0.00020		0.00020	0.0010	mg/L	1	24-Nov-2021 02:54
Xylenes, Total	< 0.00030		0.00030	0.0010	mg/L	1	24-Nov-2021 02:54
1,2-Dichloroethene, Total	< 0.00020		0.00020	0.0010	mg/L	1	24-Nov-2021 02:54
Surr: 1,2-Dichloroethane-d4	97.9			70-126	%REC	1	24-Nov-2021 02:54
Surr: 4-Bromofluorobenzene	95.2			81-113	%REC	1	24-Nov-2021 02:54
Surr: Dibromofluoromethane	96.0			77-123	%REC	1	24-Nov-2021 02:54
Surr: Toluene-d8	104			82-127	%REC	1	24-Nov-2021 02:54

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
 Project: Houston TX-Wood Preserving Works IDW
 Sample ID: WW-1620-SUMP-20211110
 Collection Date: 10-Nov-2021 15:15

ANALYTICAL REPORT
 WorkOrder:HS21110636
 Lab ID:HS21110636-01
 Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		Method:SW8270		Prep:SW3510 / 12-Nov-2021		Analyst: GEY	
1,2,4-Trichlorobenzene	< 0.000030		0.000030	0.00020	mg/L	1	26-Nov-2021 14:33
2,4,5-Trichlorophenol	< 0.000057		0.000057	0.00020	mg/L	1	26-Nov-2021 14:33
2,4,6-Trichlorophenol	< 0.000048		0.000048	0.00020	mg/L	1	26-Nov-2021 14:33
2,4-Dichlorophenol	< 0.000043		0.000043	0.00020	mg/L	1	26-Nov-2021 14:33
2,4-Dimethylphenol	< 0.000040		0.000040	0.00020	mg/L	1	26-Nov-2021 14:33
2,4-Dinitrophenol	< 0.00010		0.00010	0.0010	mg/L	1	26-Nov-2021 14:33
2,4-Dinitrotoluene	< 0.000058		0.000058	0.00020	mg/L	1	26-Nov-2021 14:33
2,6-Dinitrotoluene	< 0.000042		0.000042	0.00020	mg/L	1	26-Nov-2021 14:33
2-Chloronaphthalene	< 0.000021		0.000021	0.00020	mg/L	1	26-Nov-2021 14:33
2-Chlorophenol	< 0.000036		0.000036	0.00020	mg/L	1	26-Nov-2021 14:33
2-Methylnaphthalene	< 0.000019		0.000019	0.00010	mg/L	1	26-Nov-2021 14:33
2-Methylphenol	< 0.000045		0.000045	0.00020	mg/L	1	26-Nov-2021 14:33
2-Nitroaniline	< 0.000041		0.000041	0.00020	mg/L	1	26-Nov-2021 14:33
2-Nitrophenol	< 0.000034		0.000034	0.00020	mg/L	1	26-Nov-2021 14:33
3&4-Methylphenol	< 0.000036		0.000036	0.00020	mg/L	1	26-Nov-2021 14:33
3,3'-Dichlorobenzidine	< 0.000044		0.000044	0.00020	mg/L	1	26-Nov-2021 14:33
3-Nitroaniline	< 0.000049		0.000049	0.00020	mg/L	1	26-Nov-2021 14:33
4,6-Dinitro-2-methylphenol	< 0.000020		0.000020	0.00020	mg/L	1	26-Nov-2021 14:33
4-Bromophenyl phenyl ether	< 0.000051		0.000051	0.00020	mg/L	1	26-Nov-2021 14:33
4-Chloro-3-methylphenol	< 0.000032		0.000032	0.00020	mg/L	1	26-Nov-2021 14:33
4-Chloroaniline	< 0.000039		0.000039	0.00020	mg/L	1	26-Nov-2021 14:33
4-Chlorophenyl phenyl ether	< 0.000044		0.000044	0.00020	mg/L	1	26-Nov-2021 14:33
4-Nitroaniline	< 0.000035		0.000035	0.00020	mg/L	1	26-Nov-2021 14:33
4-Nitrophenol	< 0.000047		0.000047	0.0010	mg/L	1	26-Nov-2021 14:33
Acenaphthene	0.0013		0.000027	0.00010	mg/L	1	26-Nov-2021 14:33
Acenaphthylene	0.000018	J	0.000015	0.00010	mg/L	1	26-Nov-2021 14:33
Anthracene	< 0.000014		0.000014	0.00010	mg/L	1	26-Nov-2021 14:33
Benz(a)anthracene	< 0.000050		0.000050	0.00010	mg/L	1	26-Nov-2021 14:33
Benzidine	< 0.00010		0.00010	0.00020	mg/L	1	26-Nov-2021 14:33
Benzo(a)pyrene	< 0.000020		0.000020	0.00010	mg/L	1	26-Nov-2021 14:33
Benzo(b)fluoranthene	< 0.000023		0.000023	0.00010	mg/L	1	26-Nov-2021 14:33
Benzo(g,h,i)perylene	< 0.000014		0.000014	0.00010	mg/L	1	26-Nov-2021 14:33
Benzo(k)fluoranthene	< 0.000019		0.000019	0.00010	mg/L	1	26-Nov-2021 14:33
Benzyl alcohol	< 0.000054		0.000054	0.00020	mg/L	1	26-Nov-2021 14:33
Bis(2-chloroethoxy)methane	< 0.000030		0.000030	0.00020	mg/L	1	26-Nov-2021 14:33
Bis(2-chloroethyl)ether	< 0.000026		0.000026	0.00020	mg/L	1	26-Nov-2021 14:33
Bis(2-chloroisopropyl)ether	< 0.000070		0.000070	0.00020	mg/L	1	26-Nov-2021 14:33
Bis(2-ethylhexyl)phthalate	0.0010		0.000037	0.00020	mg/L	1	26-Nov-2021 14:33
Butyl benzyl phthalate	< 0.000019		0.000019	0.00020	mg/L	1	26-Nov-2021 14:33

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
 Project: Houston TX-Wood Preserving Works IDW
 Sample ID: WW-1620-SUMP-20211110
 Collection Date: 10-Nov-2021 15:15

ANALYTICAL REPORT
 WorkOrder:HS21110636
 Lab ID:HS21110636-01
 Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		Method:SW8270		Prep:SW3510 / 12-Nov-2021		Analyst: GEY	
Carbazole	< 0.000025		0.000025	0.00020	mg/L	1	26-Nov-2021 14:33
Chrysene	< 0.000021		0.000021	0.00010	mg/L	1	26-Nov-2021 14:33
Di-n-butyl phthalate	< 0.000020		0.000020	0.00020	mg/L	1	26-Nov-2021 14:33
Di-n-octyl phthalate	< 0.000020		0.000020	0.00020	mg/L	1	26-Nov-2021 14:33
Dibenz(a,h)anthracene	< 0.000024		0.000024	0.00010	mg/L	1	26-Nov-2021 14:33
Dibenzofuran	0.000022	J	0.000020	0.00010	mg/L	1	26-Nov-2021 14:33
Diethyl phthalate	< 0.000030		0.000030	0.00020	mg/L	1	26-Nov-2021 14:33
Dimethyl phthalate	< 0.000041		0.000041	0.00020	mg/L	1	26-Nov-2021 14:33
Fluoranthene	0.00032		0.000010	0.00010	mg/L	1	26-Nov-2021 14:33
Fluorene	< 0.000030		0.000030	0.00010	mg/L	1	26-Nov-2021 14:33
Hexachlorobenzene	< 0.000044		0.000044	0.00020	mg/L	1	26-Nov-2021 14:33
Hexachlorobutadiene	< 0.000030		0.000030	0.00020	mg/L	1	26-Nov-2021 14:33
Hexachlorocyclopentadiene	< 0.000030		0.000030	0.00020	mg/L	1	26-Nov-2021 14:33
Hexachloroethane	< 0.000059		0.000059	0.00020	mg/L	1	26-Nov-2021 14:33
Indeno(1,2,3-cd)pyrene	< 0.000022		0.000022	0.00010	mg/L	1	26-Nov-2021 14:33
Isophorone	< 0.000025		0.000025	0.00020	mg/L	1	26-Nov-2021 14:33
N-Nitrosodi-n-propylamine	< 0.000032		0.000032	0.00020	mg/L	1	26-Nov-2021 14:33
N-Nitrosodimethylamine	< 0.00010		0.00010	0.00020	mg/L	1	26-Nov-2021 14:33
N-Nitrosodiphenylamine	< 0.000025		0.000025	0.00020	mg/L	1	26-Nov-2021 14:33
Naphthalene	< 0.000020		0.000020	0.00010	mg/L	1	26-Nov-2021 14:33
Nitrobenzene	< 0.000024		0.000024	0.00020	mg/L	1	26-Nov-2021 14:33
Pentachlorophenol	< 0.000079		0.000079	0.00020	mg/L	1	26-Nov-2021 14:33
Phenanthrene	< 0.000021		0.000021	0.00010	mg/L	1	26-Nov-2021 14:33
Phenol	< 0.000035		0.000035	0.00020	mg/L	1	26-Nov-2021 14:33
Pyrene	0.000078	J	0.000019	0.00010	mg/L	1	26-Nov-2021 14:33
Pyridine	< 0.000030		0.000030	0.0010	mg/L	1	26-Nov-2021 14:33
<i>Surr: 2,4,6-Tribromophenol</i>	<i>104</i>			<i>34-129</i>	<i>%REC</i>	<i>1</i>	<i>26-Nov-2021 14:33</i>
<i>Surr: 2-Fluorobiphenyl</i>	<i>96.8</i>			<i>40-125</i>	<i>%REC</i>	<i>1</i>	<i>26-Nov-2021 14:33</i>
<i>Surr: 2-Fluorophenol</i>	<i>103</i>			<i>20-120</i>	<i>%REC</i>	<i>1</i>	<i>26-Nov-2021 14:33</i>
<i>Surr: 4-Terphenyl-d14</i>	<i>94.1</i>			<i>40-135</i>	<i>%REC</i>	<i>1</i>	<i>26-Nov-2021 14:33</i>
<i>Surr: Nitrobenzene-d5</i>	<i>84.4</i>			<i>41-120</i>	<i>%REC</i>	<i>1</i>	<i>26-Nov-2021 14:33</i>
<i>Surr: Phenol-d6</i>	<i>86.7</i>			<i>20-120</i>	<i>%REC</i>	<i>1</i>	<i>26-Nov-2021 14:33</i>
LOW-LEVEL TEXAS TPH BY TX1005		Method:TX1005		Prep:TX1005PR / 19-Nov-2021		Analyst: SAM	
nC6 to nC12	< 0.19		0.19	0.48	mg/L	1	20-Nov-2021 03:37
>nC12 to nC28	< 0.19		0.19	0.48	mg/L	1	20-Nov-2021 03:37
>nC28 to nC35	< 0.19		0.19	0.48	mg/L	1	20-Nov-2021 03:37
Total Petroleum Hydrocarbon	< 0.19		0.19	0.48	mg/L	1	20-Nov-2021 03:37
<i>Surr: 2-Fluorobiphenyl</i>	<i>82.3</i>			<i>70-130</i>	<i>%REC</i>	<i>1</i>	<i>20-Nov-2021 03:37</i>
<i>Surr: Trifluoromethyl benzene</i>	<i>95.9</i>			<i>70-130</i>	<i>%REC</i>	<i>1</i>	<i>20-Nov-2021 03:37</i>

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
 Project: Houston TX-Wood Preserving Works IDW
 Sample ID: WW-1620-SUMP-20211110
 Collection Date: 10-Nov-2021 15:15

ANALYTICAL REPORT
 WorkOrder:HS21110636
 Lab ID:HS21110636-01
 Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		Method:SW6020A		Prep:SW3010A / 22-Nov-2021		Analyst: JHD	
Antimony	0.00320		0.000400	0.00200	mg/L	1	23-Nov-2021 21:53
Arsenic	0.00957		0.000400	0.00200	mg/L	1	23-Nov-2021 21:53
Barium	0.0897		0.00190	0.00400	mg/L	1	23-Nov-2021 21:53
Beryllium	< 0.000200		0.000200	0.00200	mg/L	1	23-Nov-2021 21:53
Cadmium	0.000308	J	0.000200	0.00200	mg/L	1	23-Nov-2021 21:53
Chromium	0.00599		0.000400	0.00400	mg/L	1	23-Nov-2021 21:53
Lead	0.0366		0.000600	0.00200	mg/L	1	23-Nov-2021 21:53
Nickel	0.0109		0.000600	0.00200	mg/L	1	23-Nov-2021 21:53
Selenium	< 0.00110		0.00110	0.00200	mg/L	1	23-Nov-2021 21:53
Silver	< 0.000200		0.000200	0.00200	mg/L	1	23-Nov-2021 21:53
MERCURY BY SW7470A		Method:SW7470A		Prep:SW7470A / 22-Nov-2021		Analyst: MSC	
Mercury	< 0.0000300		0.0000300	0.000200	mg/L	1	22-Nov-2021 16:43
FLASH POINT BY PENSKEY-MARTENS SW1010A		Method:SW1010				Analyst: TH	
Ignitability	> 212		70.0	70.0	°F	1	19-Nov-2021 14:00
PH BY SW9040C		Method:SW9040C				Analyst: SH	
pH	8.54	H	0.100	0.100	pH Units	1	24-Nov-2021 13:00
Temp Deg C @pH	22.0	H	0	0	DEG C	1	24-Nov-2021 13:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Weight / Prep Log

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21110636

Batch ID: 172448 **Start Date:** 12 Nov 2021 08:30 **End Date:** 12 Nov 2021 14:30
Method: SV AQ SEP FUN EXTRACT-LOWLEV - 3510C **Prep Code:** 3510_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS21110636-01	1	1000 (mL)	1 (mL)	0.001	1-liter amber glass, Neat

Batch ID: 172716 **Start Date:** 19 Nov 2021 10:15 **End Date:** 19 Nov 2021 13:03
Method: TX 1005 PREP **Prep Code:** TX 1005_W PR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS21110636-01	1	30.97 (g)	3 (mL)	0.09687	40 mL VOA w/ HCL

Batch ID: 172794 **Start Date:** 22 Nov 2021 08:30 **End Date:** 22 Nov 2021 11:30
Method: MERCURY PREP BY 7470A- WATER **Prep Code:** HG_WPR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS21110636-01		10 (mL)	10 (mL)	1	120 plastic HNO3

Batch ID: 172803 **Start Date:** 22 Nov 2021 12:00 **End Date:** 22 Nov 2021 16:00
Method: WATER - SW3010A **Prep Code:** 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS21110636-01		10 (mL)	10 (mL)	1	120 plastic HNO3

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21110636

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 172448 (0)		Test Name : LOW-LEVEL SEMIVOLATILES BY 8270D			Matrix: Water	
HS21110636-01	WW-1620-SUMP-20211110	10 Nov 2021 15:15		12 Nov 2021 12:06	26 Nov 2021 14:33	1
Batch ID: 172716 (0)		Test Name : LOW-LEVEL TEXAS TPH BY TX1005			Matrix: Water	
HS21110636-01	WW-1620-SUMP-20211110	10 Nov 2021 15:15		19 Nov 2021 10:15	20 Nov 2021 03:37	1
Batch ID: 172794 (0)		Test Name : MERCURY BY SW7470A			Matrix: Water	
HS21110636-01	WW-1620-SUMP-20211110	10 Nov 2021 15:15		22 Nov 2021 08:30	22 Nov 2021 16:43	1
Batch ID: 172803 (0)		Test Name : ICP-MS METALS BY SW6020A			Matrix: Water	
HS21110636-01	WW-1620-SUMP-20211110	10 Nov 2021 15:15		22 Nov 2021 16:00	23 Nov 2021 21:53	1
Batch ID: R396095 (0)		Test Name : FLASH POINT BY PENSKY-MARTENS SW1010A			Matrix: Water	
HS21110636-01	WW-1620-SUMP-20211110	10 Nov 2021 15:15			19 Nov 2021 14:00	1
Batch ID: R396370 (0)		Test Name : LOW LEVEL VOLATILES BY SW8260C			Matrix: Water	
HS21110636-01	WW-1620-SUMP-20211110	10 Nov 2021 15:15			24 Nov 2021 02:54	1
Batch ID: R396402 (0)		Test Name : PH BY SW9040C			Matrix: Water	
HS21110636-01	WW-1620-SUMP-20211110	10 Nov 2021 15:15			24 Nov 2021 13:00	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21110636

QC BATCH REPORT

Batch ID: 172716 (0) **Instrument:** FID-13 **Method:** LOW-LEVEL TEXAS TPH BY TX1005

MBLK		Sample ID: MBLK-172716		Units: mg/L		Analysis Date: 19-Nov-2021 22:18				
Client ID:		Run ID: FID-13_396183		SeqNo: 6385824		PrepDate: 19-Nov-2021		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	< 0.20	0.50								
>nC12 to nC28	< 0.20	0.50								
>nC28 to nC35	< 0.20	0.50								
Total Petroleum Hydrocarbon	< 0.20	0.50								
Surr: 2-Fluorobiphenyl	2.428	0	2.5	0	97.1	70 - 130				
Surr: Trifluoromethyl benzene	2.787	0	2.5	0	111	70 - 130				

LCS		Sample ID: LCS-172716		Units: mg/L		Analysis Date: 19-Nov-2021 22:48				
Client ID:		Run ID: FID-13_396183		SeqNo: 6385825		PrepDate: 19-Nov-2021		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	20.08	0.50	25	0	80.3	75 - 125				
>nC12 to nC28	21.84	0.50	25	0	87.4	75 - 125				
Surr: 2-Fluorobiphenyl	2.268	0	2.5	0	90.7	70 - 130				
Surr: Trifluoromethyl benzene	2.345	0	2.5	0	93.8	70 - 130				

LCSD		Sample ID: LCSD-172716		Units: mg/L		Analysis Date: 19-Nov-2021 23:17				
Client ID:		Run ID: FID-13_396183		SeqNo: 6385826		PrepDate: 19-Nov-2021		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	21.89	0.50	25	0	87.6	75 - 125	20.08	8.64	20	
>nC12 to nC28	20.64	0.50	25	0	82.6	75 - 125	21.84	5.66	20	
Surr: 2-Fluorobiphenyl	2.693	0	2.5	0	108	70 - 130	2.268	17.2	20	
Surr: Trifluoromethyl benzene	2.794	0	2.5	0	112	70 - 130	2.345	17.5	20	

MS		Sample ID: HS21110841-30MS		Units: mg/L		Analysis Date: 20-Nov-2021 01:41				
Client ID:		Run ID: FID-13_396183		SeqNo: 6385829		PrepDate: 19-Nov-2021		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	19.28	0.49	24.57	0	78.5	75 - 125				
>nC12 to nC28	20.95	0.49	24.57	0	85.3	75 - 125				
Surr: 2-Fluorobiphenyl	2.394	0	2.457	0	97.5	70 - 130				
Surr: Trifluoromethyl benzene	2.339	0	2.457	0	95.2	70 - 130				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21110636

QC BATCH REPORT

Batch ID: 172716 (0) **Instrument:** FID-13 **Method:** LOW-LEVEL TEXAS TPH BY TX1005

MSD		Sample ID: HS21110841-30MSD			Units: mg/L		Analysis Date: 20-Nov-2021 02:10			
Client ID:		Run ID: FID-13_396183			SeqNo: 6385830		PrepDate: 19-Nov-2021		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	19.29	0.50	25.1	0	76.8	75 - 125	19.28	0.0278	20	
>nC12 to nC28	21.06	0.50	25.1	0	83.9	75 - 125	20.95	0.491	20	
<i>Surr: 2-Fluorobiphenyl</i>	<i>2.451</i>	<i>0</i>	<i>2.51</i>	<i>0</i>	<i>97.6</i>	<i>70 - 130</i>	<i>2.394</i>	<i>2.33</i>	<i>20</i>	
<i>Surr: Trifluoromethyl benzene</i>	<i>2.387</i>	<i>0</i>	<i>2.51</i>	<i>0</i>	<i>95.1</i>	<i>70 - 130</i>	<i>2.339</i>	<i>2.03</i>	<i>20</i>	

The following samples were analyzed in this batch: HS21110636-01

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21110636

QC BATCH REPORT

Batch ID: 172794 (0)	Instrument: HG03	Method: MERCURY BY SW7470A
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MBLK	Sample ID: MBLK-172794	Units: mg/L	Analysis Date: 22-Nov-2021 15:50							
Client ID:	Run ID: HG03_396210	SeqNo: 6387392	PrepDate: 22-Nov-2021 DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	RPD Qual

Mercury < 0.0000300 0.000200

LCS	Sample ID: LCS-172794	Units: mg/L	Analysis Date: 22-Nov-2021 15:58							
Client ID:	Run ID: HG03_396210	SeqNo: 6387393	PrepDate: 22-Nov-2021 DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	RPD Qual

Mercury 0.0051 0.000200 0.005 0 102 80 - 120

MS	Sample ID: HS21110622-12MS	Units: mg/L	Analysis Date: 22-Nov-2021 16:01							
Client ID:	Run ID: HG03_396210	SeqNo: 6387395	PrepDate: 22-Nov-2021 DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	RPD Qual

Mercury 0.00435 0.000200 0.005 0.000005 86.9 75 - 125

MSD	Sample ID: HS21110622-12MSD	Units: mg/L	Analysis Date: 22-Nov-2021 16:08							
Client ID:	Run ID: HG03_396210	SeqNo: 6387398	PrepDate: 22-Nov-2021 DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	RPD Qual

Mercury 0.00465 0.000200 0.005 0.000005 92.9 75 - 125 0.00435 6.67 20

The following samples were analyzed in this batch: HS21110636-01

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21110636

QC BATCH REPORT

Batch ID: 172803 (0)	Instrument: ICPMS06	Method: ICP-MS METALS BY SW6020A
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MBLK	Sample ID: MBLK-172803	Units: mg/L	Analysis Date: 23-Nov-2021 21:33							
Client ID:	Run ID: ICPMS06_396318	SeqNo: 6390513	PrepDate: 22-Nov-2021 DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual

Antimony < 0.000400 0.00200

MBLK	Sample ID: MBLK-172803	Units: mg/L	Analysis Date: 23-Nov-2021 20:27							
Client ID:	Run ID: ICPMS06_396318	SeqNo: 6390484	PrepDate: 22-Nov-2021 DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual

Arsenic < 0.000400 0.00200
 Barium < 0.00190 0.00400
 Beryllium < 0.000200 0.00200
 Cadmium < 0.000200 0.00200
 Chromium < 0.000400 0.00400
 Lead < 0.000600 0.00200
 Nickel < 0.000600 0.00200
 Selenium < 0.00110 0.00200
 Silver < 0.000200 0.00200

LCS	Sample ID: LCS-172803	Units: mg/L	Analysis Date: 23-Nov-2021 21:35							
Client ID:	Run ID: ICPMS06_396318	SeqNo: 6390514	PrepDate: 22-Nov-2021 DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual

Antimony 0.05138 0.00200 0.05 0 103 80 - 120

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21110636

QC BATCH REPORT

Batch ID: 172803 (0) **Instrument:** ICPMS06 **Method:** ICP-MS METALS BY SW6020A

LCS		Sample ID: LCS-172803			Units: mg/L		Analysis Date: 23-Nov-2021 20:29			
Client ID:		Run ID: ICPMS06_396318			SeqNo: 6390485		PrepDate: 22-Nov-2021		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05115	0.00200	0.05	0	102	80 - 120				
Barium	0.05281	0.00400	0.05	0	106	80 - 120				
Beryllium	0.04696	0.00200	0.05	0	93.9	80 - 120				
Cadmium	0.05309	0.00200	0.05	0	106	80 - 120				
Chromium	0.05249	0.00400	0.05	0	105	80 - 120				
Lead	0.05088	0.00200	0.05	0	102	80 - 120				
Nickel	0.05455	0.00200	0.05	0	109	80 - 120				
Selenium	0.05109	0.00200	0.05	0	102	80 - 120				
Silver	0.05186	0.00200	0.05	0	104	80 - 120				

MS		Sample ID: HS21111036-07MS			Units: mg/L		Analysis Date: 23-Nov-2021 21:41			
Client ID:		Run ID: ICPMS06_396318			SeqNo: 6390517		PrepDate: 22-Nov-2021		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Antimony	0.05308	0.00200	0.05	0.00002	106	80 - 120				

MS		Sample ID: HS21111036-07MS			Units: mg/L		Analysis Date: 23-Nov-2021 20:35			
Client ID:		Run ID: ICPMS06_396318			SeqNo: 6390488		PrepDate: 22-Nov-2021		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.0521	0.00200	0.05	-0.000014	104	80 - 120				
Barium	0.05498	0.00400	0.05	0.000754	108	80 - 120				
Beryllium	0.04853	0.00200	0.05	-0.000013	97.1	80 - 120				
Cadmium	0.05509	0.00200	0.05	0.000007	110	80 - 120				
Chromium	0.05432	0.00400	0.05	-0.000093	109	80 - 120				
Lead	0.05232	0.00200	0.05	0.000014	105	80 - 120				
Nickel	0.0564	0.00200	0.05	0.000169	112	80 - 120				
Selenium	0.05302	0.00200	0.05	-0.000328	107	80 - 120				
Silver	0.05213	0.00200	0.05	-0.000009	104	80 - 120				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21110636

QC BATCH REPORT

Batch ID: 172803 (0) **Instrument:** ICPMS06 **Method:** ICP-MS METALS BY SW6020A

MSD Sample ID: **HS21111036-07MSD** Units: **mg/L** Analysis Date: **23-Nov-2021 21:43**
 Client ID: Run ID: **ICPMS06_396318** SeqNo: **6390518** PrepDate: **22-Nov-2021** DF: **1**
 Analyte Result PQL SPK Val SPK Ref Value %REC Control Limit RPD Ref Value %RPD RPD Limit Qual

Antimony	0.05167	0.00200	0.05	0.00002	103	80 - 120	0.05695	9.71	20
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MSD Sample ID: **HS21111036-07MSD** Units: **mg/L** Analysis Date: **23-Nov-2021 20:37**
 Client ID: Run ID: **ICPMS06_396318** SeqNo: **6390489** PrepDate: **22-Nov-2021** DF: **1**
 Analyte Result PQL SPK Val SPK Ref Value %REC Control Limit RPD Ref Value %RPD RPD Limit Qual

Arsenic	0.05108	0.00200	0.05	-0.000014	102	80 - 120	0.0521	1.99	20
Barium	0.05309	0.00400	0.05	0.000754	105	80 - 120	0.05498	3.49	20
Beryllium	0.04627	0.00200	0.05	-0.000013	92.6	80 - 120	0.04853	4.78	20
Cadmium	0.05273	0.00200	0.05	0.000007	105	80 - 120	0.05509	4.38	20
Chromium	0.05268	0.00400	0.05	-0.000093	106	80 - 120	0.05432	3.06	20
Lead	0.05078	0.00200	0.05	0.000014	102	80 - 120	0.05232	2.98	20
Nickel	0.05394	0.00200	0.05	0.000169	108	80 - 120	0.0564	4.46	20
Selenium	0.05158	0.00200	0.05	-0.000328	104	80 - 120	0.05302	2.75	20
Silver	0.0517	0.00200	0.05	-0.000009	103	80 - 120	0.05213	0.824	20

PDS Sample ID: **HS21111036-07PDS** Units: **mg/L** Analysis Date: **23-Nov-2021 21:45**
 Client ID: Run ID: **ICPMS06_396318** SeqNo: **6390519** PrepDate: **22-Nov-2021** DF: **1**
 Analyte Result PQL SPK Val SPK Ref Value %REC Control Limit RPD Ref Value %RPD RPD Limit Qual

Antimony	0.1057	0.00200	0.1	0.00002	106	75 - 125			
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SD Sample ID: **HS21111036-07SD** Units: **mg/L** Analysis Date: **23-Nov-2021 21:39**
 Client ID: Run ID: **ICPMS06_396318** SeqNo: **6390516** PrepDate: **22-Nov-2021** DF: **5**
 Analyte Result PQL SPK Val SPK Ref Value %REC Control Limit RPD Ref Value %D %D Limit Qual

Antimony	< 0.00200	0.0100					0.00002	0	10
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Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21110636

QC BATCH REPORT

Batch ID: 172803 (0) **Instrument:** ICPMS06 **Method:** ICP-MS METALS BY SW6020A

SD		Sample ID: HS21111036-07SD		Units: mg/L		Analysis Date: 23-Nov-2021 20:33			
Client ID:		Run ID: ICPMS06_396318		SeqNo: 6390487		PrepDate: 22-Nov-2021		DF: 5	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	Limit Qual
Arsenic	< 0.00200	0.0100					-0.000014	0	10
Barium	< 0.00950	0.0200					0.000754	0	10
Beryllium	< 0.00100	0.0100					-0.000013	0	10
Cadmium	< 0.00100	0.0100					0.000007	0	10
Chromium	< 0.00200	0.0200					-0.000093	0	10
Lead	< 0.00300	0.0100					0.000014	0	10
Nickel	< 0.00300	0.0100					0.000169	0	10
Selenium	< 0.00550	0.0100					-0.000328	0	10
Silver	< 0.00100	0.0100					-0.000009	0	10

The following samples were analyzed in this batch: HS21110636-01

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21110636

QC BATCH REPORT

Batch ID: 172448 (0)		Instrument: SV-7		Method: LOW-LEVEL SEMIVOLATILES BY 8270D						
MBLK	Sample ID: MBLK-172448	Units: ug/L			Analysis Date: 18-Nov-2021 12:44					
Client ID:	Run ID: SV-7_396034	SeqNo: 6383371	PrepDate: 12-Nov-2021	DF: 1						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	< 0.030	0.20								
2,4,5-Trichlorophenol	< 0.057	0.20								
2,4,6-Trichlorophenol	< 0.048	0.20								
2,4-Dichlorophenol	< 0.043	0.20								
2,4-Dimethylphenol	< 0.040	0.20								
2,4-Dinitrophenol	< 0.10	1.0								
2,4-Dinitrotoluene	< 0.058	0.20								
2,6-Dinitrotoluene	< 0.042	0.20								
2-Chloronaphthalene	< 0.021	0.20								
2-Chlorophenol	< 0.036	0.20								
2-Methylnaphthalene	< 0.019	0.10								
2-Methylphenol	< 0.045	0.20								
2-Nitroaniline	< 0.041	0.20								
2-Nitrophenol	< 0.034	0.20								
3&4-Methylphenol	< 0.036	0.20								
3,3'-Dichlorobenzidine	< 0.044	0.20								
3-Nitroaniline	< 0.049	0.20								
4,6-Dinitro-2-methylphenol	< 0.020	0.20								
4-Bromophenyl phenyl ether	< 0.051	0.20								
4-Chloro-3-methylphenol	< 0.032	0.20								
4-Chloroaniline	< 0.039	0.20								
4-Chlorophenyl phenyl ether	< 0.044	0.20								
4-Nitroaniline	< 0.035	0.20								
4-Nitrophenol	< 0.047	1.0								
Acenaphthene	< 0.027	0.10								
Acenaphthylene	< 0.015	0.10								
Anthracene	< 0.014	0.10								
Benz(a)anthracene	< 0.050	0.10								
Benzidine	< 0.10	0.20								
Benzo(a)pyrene	< 0.020	0.10								
Benzo(b)fluoranthene	< 0.023	0.10								
Benzo(g,h,i)perylene	< 0.014	0.10								
Benzo(k)fluoranthene	< 0.019	0.10								
Benzyl alcohol	< 0.054	0.20								

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21110636

QC BATCH REPORT

Batch ID: 172448 (0)		Instrument: SV-7		Method: LOW-LEVEL SEMIVOLATILES BY 8270D						
MBLK	Sample ID: MBLK-172448	Units: ug/L			Analysis Date: 18-Nov-2021 12:44					
Client ID:	Run ID: SV-7_396034	SeqNo: 6383371	PrepDate: 12-Nov-2021	DF: 1						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bis(2-chloroethoxy)methane	< 0.030	0.20								
Bis(2-chloroethyl)ether	< 0.026	0.20								
Bis(2-chloroisopropyl)ether	< 0.070	0.20								
Bis(2-ethylhexyl)phthalate	< 0.037	0.20								
Butyl benzyl phthalate	< 0.019	0.20								
Carbazole	< 0.025	0.20								
Chrysene	< 0.021	0.10								
Dibenz(a,h)anthracene	< 0.024	0.10								
Dibenzofuran	< 0.020	0.10								
Diethyl phthalate	< 0.030	0.20								
Dimethyl phthalate	< 0.041	0.20								
Di-n-butyl phthalate	< 0.020	0.20								
Di-n-octyl phthalate	< 0.020	0.20								
Fluoranthene	< 0.010	0.10								
Fluorene	< 0.030	0.10								
Hexachlorobenzene	< 0.044	0.20								
Hexachlorobutadiene	< 0.030	0.20								
Hexachlorocyclopentadiene	< 0.030	0.20								
Hexachloroethane	< 0.059	0.20								
Indeno(1,2,3-cd)pyrene	< 0.022	0.10								
Isophorone	< 0.025	0.20								
Naphthalene	< 0.020	0.10								
Nitrobenzene	< 0.024	0.20								
N-Nitrosodimethylamine	< 0.10	0.20								
N-Nitrosodi-n-propylamine	< 0.032	0.20								
N-Nitrosodiphenylamine	< 0.025	0.20								
Pentachlorophenol	< 0.079	0.20								
Phenanthrene	< 0.021	0.10								
Phenol	< 0.035	0.20								
Pyrene	< 0.019	0.10								
Pyridine	< 0.030	1.0								
Surr: 2,4,6-Tribromophenol	6.412	0.20	5	0	128	34 - 129				
Surr: 2-Fluorobiphenyl	5.2	0.20	5	0	104	40 - 125				
Surr: 2-Fluorophenol	5.413	0.20	5	0	108	20 - 120				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21110636

QC BATCH REPORT

Batch ID: 172448 (0)		Instrument: SV-7		Method: LOW-LEVEL SEMIVOLATILES BY 8270D						
MBLK	Sample ID: MBLK-172448				Units: ug/L	Analysis Date: 18-Nov-2021 12:44				
Client ID:		Run ID: SV-7_396034			SeqNo: 6383371	PrepDate: 12-Nov-2021	DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
<i>Surr: 4-Terphenyl-d14</i>	5.992	0.20	5	0	120	40 - 135				
<i>Surr: Nitrobenzene-d5</i>	4.348	0.20	5	0	87.0	41 - 120				
<i>Surr: Phenol-d6</i>	4.689	0.20	5	0	93.8	20 - 120				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21110636

QC BATCH REPORT

Batch ID: 172448 (0)		Instrument: SV-7		Method: LOW-LEVEL SEMIVOLATILES BY 8270D						
LCS	Sample ID: LCS-172448	Units: ug/L			Analysis Date: 18-Nov-2021 15:21					
Client ID:	Run ID: SV-7_396034	SeqNo: 6383373	PrepDate: 12-Nov-2021	DF: 1						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	5.043	0.20	5	0	101	45 - 120				
2,4,5-Trichlorophenol	5.726	0.20	5	0	115	46 - 120				
2,4,6-Trichlorophenol	4.826	0.20	5	0	96.5	42 - 120				
2,4-Dichlorophenol	5.476	0.20	5	0	110	49 - 120				
2,4-Dimethylphenol	4.85	0.20	5	0	97.0	35 - 120				
2,4-Dinitrophenol	5.022	1.0	5	0	100	15 - 120				
2,4-Dinitrotoluene	5.506	0.20	5	0	110	50 - 122				
2,6-Dinitrotoluene	5.564	0.20	5	0	111	50 - 120				
2-Chloronaphthalene	5.616	0.20	5	0	112	50 - 120				
2-Chlorophenol	4.794	0.20	5	0	95.9	40 - 120				
2-Methylnaphthalene	5.306	0.10	5	0	106	50 - 120				
2-Methylphenol	4.829	0.20	5	0	96.6	45 - 120				
2-Nitroaniline	5.593	0.20	5	0	112	28 - 139				
2-Nitrophenol	4.829	0.20	5	0	96.6	40 - 120				
3&4-Methylphenol	5.091	0.20	5	0	102	35 - 120				
3,3'-Dichlorobenzidine	2.164	0.20	5	0	43.3	15 - 120				
3-Nitroaniline	5.925	0.20	5	0	118	30 - 120				
4,6-Dinitro-2-methylphenol	5.266	0.20	5	0	105	25 - 121				
4-Bromophenyl phenyl ether	5.529	0.20	5	0	111	45 - 120				
4-Chloro-3-methylphenol	5.606	0.20	5	0	112	47 - 120				
4-Chloroaniline	5.687	0.20	5	0	114	20 - 120				
4-Chlorophenyl phenyl ether	5.284	0.20	5	0	106	50 - 120				
4-Nitroaniline	5.742	0.20	5	0	115	30 - 133				
4-Nitrophenol	3.026	1.0	5	0	60.5	30 - 130				
Acenaphthene	4.599	0.10	5	0	92.0	45 - 120				
Acenaphthylene	5.15	0.10	5	0	103	47 - 120				
Anthracene	5.442	0.10	5	0	109	45 - 120				
Benz(a)anthracene	5.594	0.10	5	0	112	40 - 120				
Benzidine	1.469	0.20	5	0	29.4	10 - 120				
Benzo(a)pyrene	5.929	0.10	5	0	119	45 - 120				
Benzo(b)fluoranthene	5.616	0.10	5	0	112	50 - 120				
Benzo(g,h,i)perylene	5.825	0.10	5	0	117	42 - 127				
Benzo(k)fluoranthene	5.415	0.10	5	0	108	45 - 127				
Benzyl alcohol	4.534	0.20	5	0	90.7	35 - 122				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21110636

QC BATCH REPORT

Batch ID: 172448 (0)		Instrument: SV-7		Method: LOW-LEVEL SEMIVOLATILES BY 8270D						
LCS	Sample ID: LCS-172448	Units: ug/L			Analysis Date: 18-Nov-2021 15:21					
Client ID:	Run ID: SV-7_396034	SeqNo: 6383373	PrepDate: 12-Nov-2021	DF: 1						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bis(2-chloroethoxy)methane	4.724	0.20	5	0	94.5	45 - 120				
Bis(2-chloroethyl)ether	4.28	0.20	5	0	85.6	37 - 121				
Bis(2-chloroisopropyl)ether	3.604	0.20	5	0	72.1	40 - 120				
Bis(2-ethylhexyl)phthalate	5.774	0.20	5	0	115	40 - 139				
Butyl benzyl phthalate	5.712	0.20	5	0	114	47 - 123				
Carbazole	5.81	0.20	5	0	116	42 - 128				
Chrysene	5.335	0.10	5	0	107	43 - 120				
Dibenz(a,h)anthracene	5.871	0.10	5	0	117	45 - 125				
Dibenzofuran	5.18	0.10	5	0	104	50 - 120				
Diethyl phthalate	5.332	0.20	5	0	107	41 - 120				
Dimethyl phthalate	5.264	0.20	5	0	105	40 - 122				
Di-n-butyl phthalate	5.778	0.20	5	0	116	45 - 123				
Di-n-octyl phthalate	5.245	0.20	5	0	105	45 - 129				
Fluoranthene	5.901	0.10	5	0	118	45 - 125				
Fluorene	5.102	0.10	5	0	102	49 - 120				
Hexachlorobenzene	5.62	0.20	5	0	112	48 - 120				
Hexachlorobutadiene	5.221	0.20	5	0	104	40 - 120				
Hexachlorocyclopentadiene	4.333	0.20	5	0	86.7	34 - 136				
Hexachloroethane	4.624	0.20	5	0	92.5	40 - 120				
Indeno(1,2,3-cd)pyrene	5.919	0.10	5	0	118	41 - 128				
Isophorone	4.599	0.20	5	0	92.0	40 - 121				
Naphthalene	4.856	0.10	5	0	97.1	45 - 120				
Nitrobenzene	4.49	0.20	5	0	89.8	44 - 120				
N-Nitrosodimethylamine	5.234	0.20	5	0	105	30 - 121				
N-Nitrosodi-n-propylamine	4.64	0.20	5	0	92.8	40 - 120				
N-Nitrosodiphenylamine	5.533	0.20	5	0	111	40 - 125				
Pentachlorophenol	5.024	0.20	5	0	100	19 - 121				
Phenanthrene	5.281	0.10	5	0	106	45 - 121				
Phenol	4.643	0.20	5	0	92.9	20 - 124				
Pyrene	5.329	0.10	5	0	107	40 - 130				
Pyridine	4.543	1.0	5	0	90.9	15 - 120				
Surr: 2,4,6-Tribromophenol	5.87	0.20	5	0	117	34 - 129				
Surr: 2-Fluorobiphenyl	5.517	0.20	5	0	110	40 - 125				
Surr: 2-Fluorophenol	4.231	0.20	5	0	84.6	20 - 120				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21110636

QC BATCH REPORT

Batch ID: 172448 (0)		Instrument: SV-7		Method: LOW-LEVEL SEMIVOLATILES BY 8270D						
LCS	Sample ID: LCS-172448	Units: ug/L			Analysis Date: 18-Nov-2021 15:21					
Client ID:	Run ID: SV-7_396034	SeqNo: 6383373		PrepDate: 12-Nov-2021		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual	
<i>Surr: 4-Terphenyl-d14</i>	5.997	0.20	5	0	120	40 - 135				
<i>Surr: Nitrobenzene-d5</i>	4.688	0.20	5	0	93.8	41 - 120				
<i>Surr: Phenol-d6</i>	4.984	0.20	5	0	99.7	20 - 120				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21110636

QC BATCH REPORT

Batch ID: 172448 (0)		Instrument: SV-7		Method: LOW-LEVEL SEMIVOLATILES BY 8270D						
LCSD		Sample ID: LCSD-172448		Units: ug/L		Analysis Date: 18-Nov-2021 13:23				
Client ID:		Run ID: SV-7_396034		SeqNo: 6383372		PrepDate: 12-Nov-2021		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	5.183	0.20	5	0	104	45 - 120	5.043	2.72	20	
2,4,5-Trichlorophenol	5.688	0.20	5	0	114	46 - 120	5.726	0.669	20	
2,4,6-Trichlorophenol	5.169	0.20	5	0	103	42 - 120	4.826	6.87	20	
2,4-Dichlorophenol	5.488	0.20	5	0	110	49 - 120	5.476	0.208	20	
2,4-Dimethylphenol	3.878	0.20	5	0	77.6	35 - 120	4.85	22.3	20	R
2,4-Dinitrophenol	4.413	1.0	5	0	88.3	15 - 120	5.022	12.9	50	
2,4-Dinitrotoluene	5.555	0.20	5	0	111	50 - 122	5.506	0.885	20	
2,6-Dinitrotoluene	5.547	0.20	5	0	111	50 - 120	5.564	0.313	20	
2-Chloronaphthalene	4.437	0.20	5	0	88.7	50 - 120	5.616	23.5	20	R
2-Chlorophenol	5.299	0.20	5	0	106	40 - 120	4.794	10	20	
2-Methylnaphthalene	4.994	0.10	5	0	99.9	50 - 120	5.306	6.07	20	
2-Methylphenol	5.007	0.20	5	0	100	45 - 120	4.829	3.61	20	
2-Nitroaniline	5.139	0.20	5	0	103	28 - 139	5.593	8.46	20	
2-Nitrophenol	4.568	0.20	5	0	91.4	40 - 120	4.829	5.56	20	
3&4-Methylphenol	5.165	0.20	5	0	103	35 - 120	5.091	1.44	20	
3,3'-Dichlorobenzidine	2.67	0.20	5	0	53.4	15 - 120	2.164	20.9	20	R
3-Nitroaniline	5.748	0.20	5	0	115	30 - 120	5.925	3.03	20	
4,6-Dinitro-2-methylphenol	4.994	0.20	5	0	99.9	25 - 121	5.266	5.3	30	
4-Bromophenyl phenyl ether	5.759	0.20	5	0	115	45 - 120	5.529	4.08	20	
4-Chloro-3-methylphenol	5.996	0.20	5	0	120	47 - 120	5.606	6.73	20	
4-Chloroaniline	5.792	0.20	5	0	116	20 - 120	5.687	1.83	20	
4-Chlorophenyl phenyl ether	5.399	0.20	5	0	108	50 - 120	5.284	2.15	20	
4-Nitroaniline	5.555	0.20	5	0	111	30 - 133	5.742	3.31	20	
4-Nitrophenol	3.712	1.0	5	0	74.2	30 - 130	3.026	20.4	20	R
Acenaphthene	4.683	0.10	5	0	93.7	45 - 120	4.599	1.82	20	
Acenaphthylene	5.16	0.10	5	0	103	47 - 120	5.15	0.19	20	
Anthracene	5.411	0.10	5	0	108	45 - 120	5.442	0.577	20	
Benz(a)anthracene	5.261	0.10	5	0	105	40 - 120	5.594	6.14	20	
Benzidine	1.341	0.20	5	0	26.8	10 - 120	1.469	9.16	30	
Benzo(a)pyrene	5.805	0.10	5	0	116	45 - 120	5.929	2.12	20	
Benzo(b)fluoranthene	5.568	0.10	5	0	111	50 - 120	5.616	0.858	20	
Benzo(g,h,i)perylene	5.986	0.10	5	0	120	42 - 127	5.825	2.71	20	
Benzo(k)fluoranthene	5.9	0.10	5	0	118	45 - 127	5.415	8.58	20	
Benzyl alcohol	5.143	0.20	5	0	103	35 - 122	4.534	12.6	20	

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21110636

QC BATCH REPORT

Batch ID: 172448 (0)		Instrument: SV-7		Method: LOW-LEVEL SEMIVOLATILES BY 8270D						
LCSD	Sample ID: LCSD-172448	Units: ug/L			Analysis Date: 18-Nov-2021 13:23					
Client ID:	Run ID: SV-7_396034	SeqNo: 6383372		PrepDate: 12-Nov-2021		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bis(2-chloroethoxy)methane	4.392	0.20	5	0	87.8	45 - 120	4.724	7.3	20	
Bis(2-chloroethyl)ether	3.968	0.20	5	0	79.4	37 - 121	4.28	7.58	20	
Bis(2-chloroisopropyl)ether	3.627	0.20	5	0	72.5	40 - 120	3.604	0.639	20	
Bis(2-ethylhexyl)phthalate	5.584	0.20	5	0	112	40 - 139	5.774	3.34	20	
Butyl benzyl phthalate	5.647	0.20	5	0	113	47 - 123	5.712	1.16	20	
Carbazole	5.352	0.20	5	0	107	42 - 128	5.81	8.2	20	
Chrysene	5.254	0.10	5	0	105	43 - 120	5.335	1.54	20	
Dibenz(a,h)anthracene	5.807	0.10	5	0	116	45 - 125	5.871	1.1	20	
Dibenzofuran	5.306	0.10	5	0	106	50 - 120	5.18	2.41	20	
Diethyl phthalate	5.436	0.20	5	0	109	41 - 120	5.332	1.92	20	
Dimethyl phthalate	5.205	0.20	5	0	104	40 - 122	5.264	1.14	20	
Di-n-butyl phthalate	5.882	0.20	5	0	118	45 - 123	5.778	1.78	20	
Di-n-octyl phthalate	5.66	0.20	5	0	113	45 - 129	5.245	7.61	20	
Fluoranthene	6.049	0.10	5	0	121	45 - 125	5.901	2.48	20	
Fluorene	5.292	0.10	5	0	106	49 - 120	5.102	3.66	20	
Hexachlorobenzene	5.793	0.20	5	0	116	48 - 120	5.62	3.02	20	
Hexachlorobutadiene	5.522	0.20	5	0	110	40 - 120	5.221	5.59	20	
Hexachlorocyclopentadiene	3.985	0.20	5	0	79.7	34 - 136	4.333	8.38	20	
Hexachloroethane	4.768	0.20	5	0	95.4	40 - 120	4.624	3.07	20	
Indeno(1,2,3-cd)pyrene	5.713	0.10	5	0	114	41 - 128	5.919	3.53	20	
Isophorone	4.041	0.20	5	0	80.8	40 - 121	4.599	12.9	20	
Naphthalene	4.64	0.10	5	0	92.8	45 - 120	4.856	4.54	20	
Nitrobenzene	4.153	0.20	5	0	83.1	44 - 120	4.49	7.79	20	
N-Nitrosodimethylamine	5.57	0.20	5	0	111	30 - 121	5.234	6.23	20	
N-Nitrosodi-n-propylamine	4.497	0.20	5	0	89.9	40 - 120	4.64	3.12	20	
N-Nitrosodiphenylamine	5.715	0.20	5	0	114	40 - 125	5.533	3.23	20	
Pentachlorophenol	4.919	0.20	5	0	98.4	19 - 121	5.024	2.11	20	
Phenanthrene	5.405	0.10	5	0	108	45 - 121	5.281	2.32	20	
Phenol	4.226	0.20	5	0	84.5	20 - 124	4.643	9.4	20	
Pyrene	5.163	0.10	5	0	103	40 - 130	5.329	3.16	20	
Pyridine	5.078	1.0	5	0	102	15 - 120	4.543	11.1	20	
<i>Surr: 2,4,6-Tribromophenol</i>	<i>6.24</i>	<i>0.20</i>	<i>5</i>	<i>0</i>	<i>125</i>	<i>34 - 129</i>	<i>5.87</i>	<i>6.11</i>	<i>20</i>	
<i>Surr: 2-Fluorobiphenyl</i>	<i>5.655</i>	<i>0.20</i>	<i>5</i>	<i>0</i>	<i>113</i>	<i>40 - 125</i>	<i>5.517</i>	<i>2.47</i>	<i>20</i>	
<i>Surr: 2-Fluorophenol</i>	<i>5.094</i>	<i>0.20</i>	<i>5</i>	<i>0</i>	<i>102</i>	<i>20 - 120</i>	<i>4.231</i>	<i>18.5</i>	<i>20</i>	

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21110636

QC BATCH REPORT

Batch ID: 172448 (0)		Instrument: SV-7		Method: LOW-LEVEL SEMIVOLATILES BY 8270D						
LCSD	Sample ID: LCSD-172448	Units: ug/L			Analysis Date: 18-Nov-2021 13:23					
Client ID:	Run ID: SV-7_396034	SeqNo: 6383372		PrepDate: 12-Nov-2021		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

<i>Surr: 4-Terphenyl-d14</i>	5.85	0.20	5	0	117	40 - 135	5.997	2.48	20
<i>Surr: Nitrobenzene-d5</i>	4.431	0.20	5	0	88.6	41 - 120	4.688	5.63	20
<i>Surr: Phenol-d6</i>	4.862	0.20	5	0	97.2	20 - 120	4.984	2.49	20

The following samples were analyzed in this batch: HS21110636-01

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21110636

QC BATCH REPORT

Batch ID: R396370 (0)		Instrument: VOA7		Method: LOW LEVEL VOLATILES BY SW8260C						
MBLK	Sample ID: VBLKW-211123	Units: ug/L			Analysis Date: 23-Nov-2021 23:04					
Client ID:	Run ID: VOA7_396370	SeqNo: 6391172	PrepDate:	DF: 1						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	< 0.20	1.0								
1,1,2,2-Tetrachloroethane	< 0.50	1.0								
1,1,2-Trichloroethane	< 0.30	1.0								
1,1-Dichloroethane	< 0.20	1.0								
1,1-Dichloroethene	< 0.20	1.0								
1,2-Dichlorobenzene	< 0.50	1.0								
1,2-Dichloroethane	< 0.20	1.0								
1,2-Dichloropropane	< 0.50	1.0								
1,3-Dichlorobenzene	< 0.40	1.0								
1,4-Dichlorobenzene	< 0.40	1.0								
2-Butanone	< 0.50	2.0								
2-Hexanone	< 1.0	2.0								
4-Methyl-2-pentanone	< 0.70	2.0								
Acetone	< 2.0	2.0								
Benzene	< 0.20	1.0								
Bromochloromethane	< 0.20	1.0								
Bromodichloromethane	< 0.20	1.0								
Bromoform	< 0.40	1.0								
Bromomethane	< 0.40	1.0								
Carbon disulfide	< 0.60	2.0								
Carbon tetrachloride	< 0.50	1.0								
Chlorobenzene	< 0.30	1.0								
Chloroethane	< 0.30	1.0								
Chloroform	< 0.20	1.0								
Chloromethane	< 0.20	1.0								
cis-1,2-Dichloroethene	< 0.20	1.0								
cis-1,3-Dichloropropene	< 0.10	1.0								
Dibromochloromethane	< 0.30	1.0								
Ethylbenzene	< 0.30	1.0								
m,p-Xylene	< 0.50	2.0								
Methylene chloride	< 1.0	2.0								
o-Xylene	< 0.30	1.0								
Styrene	< 0.30	1.0								
Tetrachloroethene	< 0.30	1.0								

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21110636

QC BATCH REPORT

Batch ID: R396370 (0)		Instrument: VOA7		Method: LOW LEVEL VOLATILES BY SW8260C						
MBLK	Sample ID: VBLKW-211123	Units: ug/L			Analysis Date: 23-Nov-2021 23:04					
Client ID:	Run ID: VOA7_396370	SeqNo: 6391172		PrepDate:		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Toluene	< 0.20	1.0								
trans-1,2-Dichloroethene	< 0.20	1.0								
trans-1,3-Dichloropropene	< 0.20	1.0								
Trichloroethene	< 0.20	1.0								
Vinyl acetate	< 0.50	1.0								
Vinyl chloride	< 0.20	1.0								
Xylenes, Total	< 0.30	1.0								
1,2-Dichloroethene, Total	< 0.20	1.0								
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>46.41</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>92.8</i>	<i>70 - 123</i>				
<i>Surr: 4-Bromofluorobenzene</i>	<i>49.38</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>98.8</i>	<i>82 - 115</i>				
<i>Surr: Dibromofluoromethane</i>	<i>46.38</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>92.8</i>	<i>73 - 126</i>				
<i>Surr: Toluene-d8</i>	<i>50.32</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>101</i>	<i>81 - 120</i>				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21110636

QC BATCH REPORT

Batch ID: R396370 (0)		Instrument: VOA7			Method: LOW LEVEL VOLATILES BY SW8260C					
LCS	Sample ID: VLCSW-211123	Units: ug/L			Analysis Date: 23-Nov-2021 22:22					
Client ID:	Run ID: VOA7_396370	SeqNo: 6391171		PrepDate:		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	19.84	1.0	20	0	99.2	70 - 130				
1,1,2,2-Tetrachloroethane	19.64	1.0	20	0	98.2	70 - 120				
1,1,2-Trichloroethane	20.25	1.0	20	0	101	77 - 113				
1,1-Dichloroethane	17.94	1.0	20	0	89.7	71 - 122				
1,1-Dichloroethene	15.05	1.0	20	0	75.3	70 - 130				
1,2-Dichlorobenzene	18.82	1.0	20	0	94.1	77 - 113				
1,2-Dichloroethane	18.25	1.0	20	0	91.3	70 - 124				
1,2-Dichloropropane	17.26	1.0	20	0	86.3	72 - 119				
1,3-Dichlorobenzene	20.05	1.0	20	0	100	78 - 118				
1,4-Dichlorobenzene	20.05	1.0	20	0	100	79 - 113				
2-Butanone	32.35	2.0	40	0	80.9	70 - 130				
2-Hexanone	37.29	2.0	40	0	93.2	70 - 130				
4-Methyl-2-pentanone	39.69	2.0	40	0	99.2	70 - 130				
Acetone	33.8	2.0	40	0	84.5	70 - 130				
Benzene	18.46	1.0	20	0	92.3	74 - 120				
Bromochloromethane	19	1.0	20	0	95.0	76 - 124				
Bromodichloromethane	20.34	1.0	20	0	102	74 - 122				
Bromoform	18.98	1.0	20	0	94.9	73 - 128				
Bromomethane	15.37	1.0	20	0	76.8	70 - 130				
Carbon disulfide	38.88	2.0	40	0	97.2	70 - 130				
Carbon tetrachloride	19.54	1.0	20	0	97.7	71 - 125				
Chlorobenzene	18.53	1.0	20	0	92.7	76 - 113				
Chloroethane	18.99	1.0	20	0	94.9	70 - 130				
Chloroform	19.2	1.0	20	0	96.0	71 - 121				
Chloromethane	18.56	1.0	20	0	92.8	70 - 129				
cis-1,2-Dichloroethene	20.36	1.0	20	0	102	75 - 122				
cis-1,3-Dichloropropene	19.07	1.0	20	0	95.4	73 - 127				
Dibromochloromethane	19.2	1.0	20	0	96.0	77 - 122				
Ethylbenzene	18.48	1.0	20	0	92.4	77 - 117				
m,p-Xylene	36.15	2.0	40	0	90.4	77 - 122				
Methylene chloride	18.94	2.0	20	0	94.7	70 - 127				
o-Xylene	18.56	1.0	20	0	92.8	75 - 119				
Styrene	17.89	1.0	20	0	89.4	72 - 126				
Tetrachloroethene	20.81	1.0	20	0	104	76 - 119				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21110636

QC BATCH REPORT

Batch ID: R396370 (0) **Instrument:** VOA7 **Method:** LOW LEVEL VOLATILES BY SW8260C

LCS		Sample ID: VLCSW-211123			Units: ug/L		Analysis Date: 23-Nov-2021 22:22			
Client ID:		Run ID: VOA7_396370			SeqNo: 6391171		PrepDate:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Toluene	19.64	1.0	20	0	98.2	77 - 118				
trans-1,2-Dichloroethene	18.54	1.0	20	0	92.7	72 - 127				
trans-1,3-Dichloropropene	18.88	1.0	20	0	94.4	77 - 119				
Trichloroethene	19.92	1.0	20	0	99.6	77 - 121				
Vinyl acetate	34.84	1.0	40	0	87.1	70 - 130				
Vinyl chloride	15.9	1.0	20	0	79.5	70 - 130				
Xylenes, Total	54.71	1.0	60	0	91.2	75 - 122				
1,2-Dichloroethene, Total	38.89	1.0	40	0	97.2	72 - 127				
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>48.58</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>97.2</i>	<i>70 - 123</i>				
<i>Surr: 4-Bromofluorobenzene</i>	<i>50.96</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>102</i>	<i>82 - 115</i>				
<i>Surr: Dibromofluoromethane</i>	<i>48.72</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>97.4</i>	<i>73 - 126</i>				
<i>Surr: Toluene-d8</i>	<i>49.22</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>98.4</i>	<i>81 - 120</i>				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21110636

QC BATCH REPORT

Batch ID: R396370 (0)		Instrument: VOA7		Method: LOW LEVEL VOLATILES BY SW8260C						
MS	Sample ID: HS21110705-01MS	Units: ug/L			Analysis Date: 24-Nov-2021 06:33					
Client ID:	Run ID: VOA7_396370	SeqNo: 6391220	PrepDate:	DF: 1						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	20.08	1.0	20	0	100	70 - 130				
1,1,2,2-Tetrachloroethane	18.72	1.0	20	0	93.6	70 - 123				
1,1,2-Trichloroethane	19.01	1.0	20	0	95.0	70 - 117				
1,1-Dichloroethane	17.45	1.0	20	0	87.3	70 - 127				
1,1-Dichloroethene	17.1	1.0	20	0	85.5	70 - 130				
1,2-Dichlorobenzene	19.09	1.0	20	0	95.4	70 - 115				
1,2-Dichloroethane	17.84	1.0	20	0	89.2	70 - 127				
1,2-Dichloropropane	17.35	1.0	20	0	86.8	70 - 122				
1,3-Dichlorobenzene	19.5	1.0	20	0	97.5	70 - 119				
1,4-Dichlorobenzene	19.5	1.0	20	0	97.5	70 - 114				
2-Butanone	29.82	2.0	40	0	74.5	70 - 130				
2-Hexanone	32.16	2.0	40	0	80.4	70 - 130				
4-Methyl-2-pentanone	35.04	2.0	40	0	87.6	70 - 130				
Acetone	33.25	2.0	40	0	83.1	70 - 130				
Benzene	18.15	1.0	20	0	90.7	70 - 127				
Bromochloromethane	18.9	1.0	20	0	94.5	70 - 127				
Bromodichloromethane	18.85	1.0	20	0	94.3	70 - 124				
Bromoform	18.03	1.0	20	0	90.2	70 - 129				
Bromomethane	17.57	1.0	20	0	87.8	70 - 130				
Carbon disulfide	39.57	2.0	40	0	98.9	70 - 130				
Carbon tetrachloride	19.7	1.0	20	0	98.5	70 - 130				
Chlorobenzene	18.68	1.0	20	0	93.4	70 - 114				
Chloroethane	18.98	1.0	20	0	94.9	70 - 130				
Chloroform	18.95	1.0	20	0	94.7	70 - 125				
Chloromethane	18.84	1.0	20	0	94.2	70 - 130				
cis-1,2-Dichloroethene	19.35	1.0	20	0	96.7	70 - 128				
cis-1,3-Dichloropropene	16.93	1.0	20	0	84.6	70 - 125				
Dibromochloromethane	18.53	1.0	20	0	92.7	70 - 124				
Ethylbenzene	19.23	1.0	20	0	96.1	70 - 124				
m,p-Xylene	36.6	2.0	40	0	91.5	70 - 130				
Methylene chloride	18.61	2.0	20	0	93.1	70 - 128				
o-Xylene	18.45	1.0	20	0	92.2	70 - 124				
Styrene	18.23	1.0	20	0	91.2	70 - 130				
Tetrachloroethene	21.55	1.0	20	0	108	70 - 130				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21110636

QC BATCH REPORT

Batch ID: R396370 (0) **Instrument:** VOA7 **Method:** LOW LEVEL VOLATILES BY SW8260C

MS		Sample ID: HS21110705-01MS			Units: ug/L		Analysis Date: 24-Nov-2021 06:33			
Client ID:		Run ID: VOA7_396370			SeqNo: 6391220		PrepDate:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Toluene	19.71	1.0	20	0	98.5	70 - 123				
trans-1,2-Dichloroethene	19	1.0	20	0	95.0	70 - 130				
trans-1,3-Dichloropropene	17.09	1.0	20	0	85.5	70 - 121				
Trichloroethene	20.15	1.0	20	0	101	70 - 129				
Vinyl acetate	30.92	1.0	40	0	77.3	70 - 130				
Vinyl chloride	17.31	1.0	20	0	86.6	70 - 130				
Xylenes, Total	55.04	1.0	60	0	91.7	70 - 130				
1,2-Dichloroethene, Total	38.34	1.0	40	0	95.9	70 - 130				
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>45.34</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>90.7</i>	<i>70 - 126</i>				
<i>Surr: 4-Bromofluorobenzene</i>	<i>51.96</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>104</i>	<i>81 - 113</i>				
<i>Surr: Dibromofluoromethane</i>	<i>47.86</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>95.7</i>	<i>77 - 123</i>				
<i>Surr: Toluene-d8</i>	<i>50.81</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>102</i>	<i>82 - 127</i>				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21110636

QC BATCH REPORT

Batch ID: R396370 (0)		Instrument: VOA7		Method: LOW LEVEL VOLATILES BY SW8260C						
MSD	Sample ID: HS21110705-01MSD	Units: ug/L			Analysis Date: 24-Nov-2021 06:54					
Client ID:	Run ID: VOA7_396370	SeqNo: 6391221	PrepDate:	DF: 1						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	19.07	1.0	20	0	95.4	70 - 130	20.08	5.16	20	
1,1,2,2-Tetrachloroethane	17.29	1.0	20	0	86.4	70 - 123	18.72	7.95	20	
1,1,2-Trichloroethane	18.6	1.0	20	0	93.0	70 - 117	19.01	2.16	20	
1,1-Dichloroethane	17.01	1.0	20	0	85.0	70 - 127	17.45	2.57	20	
1,1-Dichloroethene	16.75	1.0	20	0	83.7	70 - 130	17.1	2.11	20	
1,2-Dichlorobenzene	17.93	1.0	20	0	89.6	70 - 115	19.09	6.29	20	
1,2-Dichloroethane	16.66	1.0	20	0	83.3	70 - 127	17.84	6.85	20	
1,2-Dichloropropane	16.41	1.0	20	0	82.0	70 - 122	17.35	5.59	20	
1,3-Dichlorobenzene	19	1.0	20	0	95.0	70 - 119	19.5	2.62	20	
1,4-Dichlorobenzene	19	1.0	20	0	95.0	70 - 114	19.5	2.62	20	
2-Butanone	28.66	2.0	40	0	71.6	70 - 130	29.82	3.97	20	
2-Hexanone	31.22	2.0	40	0	78.0	70 - 130	32.16	2.97	20	
4-Methyl-2-pentanone	31.67	2.0	40	0	79.2	70 - 130	35.04	10.1	20	
Acetone	29.24	2.0	40	0	73.1	70 - 130	33.25	12.8	20	
Benzene	18.1	1.0	20	0	90.5	70 - 127	18.15	0.268	20	
Bromochloromethane	18.81	1.0	20	0	94.0	70 - 127	18.9	0.495	20	
Bromodichloromethane	19.14	1.0	20	0	95.7	70 - 124	18.85	1.5	20	
Bromoform	17.47	1.0	20	0	87.3	70 - 129	18.03	3.19	20	
Bromomethane	16.33	1.0	20	0	81.7	70 - 130	17.57	7.26	20	
Carbon disulfide	37.35	2.0	40	0	93.4	70 - 130	39.57	5.77	20	
Carbon tetrachloride	18.98	1.0	20	0	94.9	70 - 130	19.7	3.73	20	
Chlorobenzene	17.31	1.0	20	0	86.5	70 - 114	18.68	7.63	20	
Chloroethane	17.91	1.0	20	0	89.6	70 - 130	18.98	5.76	20	
Chloroform	18.24	1.0	20	0	91.2	70 - 125	18.95	3.82	20	
Chloromethane	18.37	1.0	20	0	91.8	70 - 130	18.84	2.56	20	
cis-1,2-Dichloroethene	18.58	1.0	20	0	92.9	70 - 128	19.35	4.06	20	
cis-1,3-Dichloropropene	17.22	1.0	20	0	86.1	70 - 125	16.93	1.7	20	
Dibromochloromethane	18.25	1.0	20	0	91.3	70 - 124	18.53	1.53	20	
Ethylbenzene	17.78	1.0	20	0	88.9	70 - 124	19.23	7.81	20	
m,p-Xylene	35.28	2.0	40	0	88.2	70 - 130	36.6	3.65	20	
Methylene chloride	18.05	2.0	20	0	90.3	70 - 128	18.61	3.06	20	
o-Xylene	17.38	1.0	20	0	86.9	70 - 124	18.45	5.99	20	
Styrene	17.34	1.0	20	0	86.7	70 - 130	18.23	5.01	20	
Tetrachloroethene	19.37	1.0	20	0	96.8	70 - 130	21.55	10.7	20	

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21110636

QC BATCH REPORT

Batch ID: R396370 (0) **Instrument:** VOA7 **Method:** LOW LEVEL VOLATILES BY SW8260C

MSD		Sample ID: HS21110705-01MSD			Units: ug/L		Analysis Date: 24-Nov-2021 06:54			
Client ID:		Run ID: VOA7_396370			SeqNo: 6391221		PrepDate:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Toluene	18.63	1.0	20	0	93.2	70 - 123	19.71	5.61	20	
trans-1,2-Dichloroethene	18.48	1.0	20	0	92.4	70 - 130	19	2.73	20	
trans-1,3-Dichloropropene	17.07	1.0	20	0	85.3	70 - 121	17.09	0.139	20	
Trichloroethene	19.12	1.0	20	0	95.6	70 - 129	20.15	5.26	20	
Vinyl acetate	31.08	1.0	40	0	77.7	70 - 130	30.92	0.535	20	
Vinyl chloride	16.99	1.0	20	0	85.0	70 - 130	17.31	1.85	20	
Xylenes, Total	52.66	1.0	60	0	87.8	70 - 130	55.04	4.43	20	
1,2-Dichloroethene, Total	37.06	1.0	40	0	92.7	70 - 130	38.34	3.4	20	
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>47.02</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>94.0</i>	<i>70 - 126</i>	<i>45.34</i>	<i>3.64</i>	<i>20</i>	
<i>Surr: 4-Bromofluorobenzene</i>	<i>50.96</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>102</i>	<i>81 - 113</i>	<i>51.96</i>	<i>1.93</i>	<i>20</i>	
<i>Surr: Dibromofluoromethane</i>	<i>47.99</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>96.0</i>	<i>77 - 123</i>	<i>47.86</i>	<i>0.265</i>	<i>20</i>	
<i>Surr: Toluene-d8</i>	<i>50.38</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>101</i>	<i>82 - 127</i>	<i>50.81</i>	<i>0.853</i>	<i>20</i>	

The following samples were analyzed in this batch: HS21110636-01

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21110636

QC BATCH REPORT

Batch ID: R396095 (0) **Instrument:** WetChem_HS **Method:** FLASH POINT BY PENSKY-MARTENS SW1010A

LCS Sample ID: **LCS-R396095** Units: °F Analysis Date: **19-Nov-2021 14:00**
 Client ID: Run ID: **WetChem_HS_396095** SeqNo: **6383369** PrepDate: DF: 1
 Analyte Result PQL SPK Val SPK Ref Value %REC Control Limit RPD Ref Value %RPD RPD Limit Qual

Ignitability 81.04 70.0 81 0 100 95 - 105

DUP Sample ID: **HS21110604-01DUP** Units: °F Analysis Date: **19-Nov-2021 14:00**
 Client ID: Run ID: **WetChem_HS_396095** SeqNo: **6383370** PrepDate: DF: 1
 Analyte Result PQL SPK Val SPK Ref Value %REC Control Limit RPD Ref Value %RPD RPD Limit Qual

Ignitability > 212 70.0 0 0 20

The following samples were analyzed in this batch:

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21110636

QC BATCH REPORT

Batch ID: R396402 (0) **Instrument:** WetChem_HS **Method:** PH BY SW9040C

DUP Sample ID: **HS21110636-01DUP** Units: **pH Units** Analysis Date: **24-Nov-2021 13:00**
Client ID: **WW-1620-SUMP-20211110** Run ID: **WetChem_HS_396402** SeqNo: **6391971** PrepDate: DF: **1**
Analyte Result PQL SPK Val SPK Ref Value %REC Control Limit RPD Ref Value %RPD RPD Limit Qual

pH	8.55	0.100						8.54	0.117	10
Temp Deg C @pH	22	0						22	0	10

The following samples were analyzed in this batch:

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works IDW
WorkOrder: HS21110636

**QUALIFIERS,
ACRONYMS, UNITS**

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	21-022-0	26-Mar-2022
Dept of Defense	PJLA L20-507-R2	22-Dec-2021
Florida	E87611-33	30-Jun-2022
Illinois	2000322021-7	09-May-2022
Kansas	E-10352 2021-2022	31-Jul-2022
Kentucky	123043, 2021-2022	30-Apr-2022
Louisiana	03087, 2021-2022	30-Jun-2022
North Carolina	624-2021	31-Dec-2021
Texas	T104704231-21-28	30-Apr-2022

Sample Receipt Checklist

Work Order ID: HS21110636

Date/Time Received: **10-Nov-2021 17:24**

Client Name: PBW

Received by: **Jared R. Makan**

Completed By: <u>/S/ Pablo Martinez</u>	11-Nov-2021 12:25	Reviewed by: <u>/S/ Dane J. Wacasey</u>	18-Nov-2021 08:16
eSignature	Date/Time	eSignature	Date/Time

Matrices: **WATER**

Carrier name: **Client**

- | | | | |
|---|---|-----------------------------|---|
| Shipping container/cooler in good condition? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | Not Present <input type="checkbox"/> |
| Custody seals intact on shipping container/cooler? | Yes <input type="checkbox"/> | No <input type="checkbox"/> | Not Present <input checked="" type="checkbox"/> |
| Custody seals intact on sample bottles? | Yes <input type="checkbox"/> | No <input type="checkbox"/> | Not Present <input checked="" type="checkbox"/> |
| VOA/TX1005/TX1006 Solids in hermetically sealed vials? | Yes <input type="checkbox"/> | No <input type="checkbox"/> | Not Present <input checked="" type="checkbox"/> |
| Chain of custody present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | 1 Page(s) |
| Chain of custody signed when relinquished and received? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | COC IDs:257357 |
| Samplers name present on COC? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| Chain of custody agrees with sample labels? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| Samples in proper container/bottle? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| Sample containers intact? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| Sufficient sample volume for indicated test? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| All samples received within holding time? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| Container/Temp Blank temperature in compliance? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |

Temperature(s)/Thermometer(s):	3.2°C UC/C	IR 31
Cooler(s)/Kit(s):	46152	
Date/Time sample(s) sent to storage:	11/11/21 12:30	
Water - VOA vials have zero headspace?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/> No VOA vials submitted <input type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/> N/A <input type="checkbox"/>
pH adjusted?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/> N/A <input type="checkbox"/>
pH adjusted by:		

Login Notes:

Client Contacted: _____ Date Contacted: _____ Person Contacted: _____

Contacted By: _____ Regarding: _____

Comments:

Corrective Action:



Cincinnati, OH
+1 513 733 5336

Fort Collins, CO
+1 970 490 1511

Everett, WA
+1 425 356 2600

Holland, MI
+1 616 399 6070

Chain of Custody Form

Page ____ of ____

COC ID: 257357

HS21110636

WV

Golder Associates Inc.
Houston TX-Wood Preserving Works IDW



ALS Project Manager:

Customer Information		Project Information		
Purchase Order	4300042071/Kevin Peterburs 1620	Project Name	Houston TX-Wood Preserving Works IDWW	A
Work Order		Project Number	1620-28-Rev0 SR 92688	B
Company Name	Golder Associates Inc.	Bill To Company	Union Pacific Railroad- A/P	C
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable	D
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750	E
				F
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750	G
Phone	(512) 671-3434	Phone		H
Fax	(512) 671-3446	Fax		I
e-Mail Address	Eric_Matzner@golder.com	e-Mail Address		J

8260_LL_W (5632528 Volatile Organics IDWW)
TX1005_W_Low (5643233 TPH TX1005)
8270_LOW_W (5632532 SemiVolatiles (w/pyridine) IDWW)
ICP_TW (5652643 5652646 RCRA 8+3 Metals)
IGN_W (5652637 Ignitability - RCI)
pH_W_9040C (5632436 pH - RCI)

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	WW-1620-Sump-20211110	11/10/21	1515	Water	1,2,8	10	X	X	X	X	X	X					
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign <i>Leon St Rose</i>		Shipment Method <i>Drop off</i>		Required Turnaround Time: (Check Box)				Results Due Date:	
Relinquished by: <i>[Signature]</i>		Date: 11/10/21	Time: 17:24	<input checked="" type="checkbox"/> STD 10 Wk Days		<input type="checkbox"/> 5 Wk Days		<input type="checkbox"/> 2 Wk Days	
Relinquished by: <i>[Signature]</i>		Date: 11/10/21	Time: 17:24	Received by (Laboratory): <i>[Signature]</i>		Notes: UPRR HWPW 1620-28			
Logged by (Laboratory):		Date:	Time:	Checked by (Laboratory):		Cooler ID: 46152	Cooler Temp: 3.2°C	QC Package: (Check One Box Below)	
Preservative Key: 1-HCl 2-HNO ₃ 3-H ₂ SO ₄ 4-NaOH 5-Na ₂ S ₂ O ₃ 6-NaHSO ₄ 7-Other 8-4°C 9-5035								<input checked="" type="checkbox"/> Level II Std QC	
								<input type="checkbox"/> TRRP Checklist	
								<input type="checkbox"/> TRRP Level IV	
								<input type="checkbox"/> Level IV SW846/CLP	
								<input type="checkbox"/> Other	

1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
 2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
 3. The Chain of Custody is a legal document. All information must be completed accurately.

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