

December 15, 2021

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

RE: WEEKLY STATUS UPDATE – ENGLEWOOD YARD NORTH BYPASS PROJECT UNION PACIFIC RAILROAD HOUSTON WOOD PRESERVING WORKS SITE 4910 LIBERTY ROAD FACILITY, HOUSTON, TEXAS POST-CLOSURE CARE PERMIT NO. 50343, INDUSTRIAL SWR NO. 31547

Dear Ms. Hatfield:

Golder Associates USA Inc. (Golder), a member of WSP, on behalf of Union Pacific Railroad (UPRR), prepared this weekly status update for the Englewood Yard North By-Pass Project (the Project) that includes areas of construction within the UPRR Houston Wood Preserving Works (HWPW) site (the Site) (Post-Closure Care Permit No. 50343) located at 4910 Liberty Road, Houston, Texas. Below is a summary of the Project activities conducted at the Site for the reporting period:

Week Period: December 6 through December 12, 2021

- <u>Dust Control and Air Monitoring (summary taken from IHST Weekly Report of Air Monitoring</u> (Attachment A))
 - IHST conducted real time air and dust monitoring at the Site in accordance with the Air Monitoring Plan (July 8, 2021), and the results for this period are provided in Attachment A.
 - There were no events where PM 2.5 and PM 10 readings increased above the Take-Action Level or Stop-Work Level during the monitoring period. As indicated in the IHST Weekly Report (Attachment A) and detailed below, the following notable events were observed during the monitoring period:
 - On December 6, 2021, between about 08:00 and 08:45, elevations in PM 2.5 and PM 10 particulates were noted at station AMS-08, located near the south side of Liberty Road at the Liberty Road gate to the former Houston Wood Preserving Works Site. Investigation showed the source of the elevated particulate readings was from work a municipal road crew was conducting using a Gradall excavator on Liberty Road in the immediate area north of Station AMS-08. Particulate readings did not reach Take-Action or Stop-Work Levels. The same time-pattern of elevated particulate readings were observed, though to a lesser degree, at stations AMS-07 (near Liberty and Clementine) and AMS-06 (near Liberty and

Erastus). The particulate elevations in this instance did not result from site construction activities.

- On December 7, 2021, between about 13:00 and 15:00, abnormally low readings were noted at station AMS-11, on the southwest side of the former Houston Wood Preserving Works site near Quitman. Investigation found the station to fallen or been knocked over. The station was righted and resumed functioning normally.
- On December 8, 2021, from station start-up until around noon, particulate levels at all stations were elevated, though not reaching Take-Action or Stop-Work Levels. Site activities were not generating significant visible dust. An odor of trash and/or wood burning was noticeable along the northern boundary of the former Houston Wood Preserving Works site, though no visible smoke or haze was evident. No response actions were implemented, as particulate level increases were not the result of site activities but appeared to result from an unidentified burning event impacting the site.
- On December 9, 2021, from about 07:30 08:52, elevations in particulate levels were seen on the westernmost stations on the former Houston Wood Preserving Works site (AMS-09. AMS-10a, and AMS-11) and the intermodal yard (AMS-AMS-04 and AMS-13). Particulate levels did not reach Take-Action or Stop-Work Levels. Around 09:00, a dump truck was being used to off load some gravel on the west end of the North Bypass service road, near station AMS-11. However, this activity generated little significant visible dust and took place after the peak levels were reached. In addition, winds were steadily from the south and southwest that morning, placing stations on the west end of the intermodal yard (AMS-04 and AMS-13) with similar elevated particulate levels (in both time and magnitude) upwind of the gravel offloading. No soil generation activities were being conducted onsite that generated dust. These circumstances indicated the elevated particulate levels on the westerly end of the cap area and intermodal yard were not the result of construction activities. Skies were generally hazy and overcast throughout the day and no specific source of additional particulate generation could be identified. No corrective actions were implemented, but particulate levels and site activities were closely monitored until levels on the western boundaries dropped to those similar to the other stations.
- Air samples for analytical testing were collected on December 7 and 8, 2021, and submitted to the Pace National Laboratory in Mt. Juliet, TN (Pace) on December 9, 2021 for analysis.
- Analytical results for samples collected on December 7 and 8, 2021, 2021 will be validated and 0 posted to the weekly update. It is anticipated that the validated data will be available the week of December 20, 2021.
- Results of Integrated Air Samples for Metals (arsenic and lead) collected on November 16, 17, 22, 0 23, 30, and December 1, 2021, indicated that there were no exceedances of TCEQ Air Monitoring Comparison Values (AMCV) (see Attachment A for the analytical results).
- Analytical results of Integrated Air Samples for Polycyclic Aromatic Hydrocarbons (PAH) collected 0 on November 30 and December 1, 2021 have been received from the laboratory and are undergoing data validation procedures. It is anticipated that the validated data for these samples will be available the week of December 20, 2021.
- Soil Management
 - Anticipated construction activities for this reporting period included the excavation of a utility trench, 0 however excavation activities were delayed due to equipment repairs.



- Construction activities conducted within in the Project area included the removal of 15 power poles.
- Construction activities conducted during this weekly period did not result in the generation of \circ excavated soils within the Project area.

Stormwater Management

There was no rainfall during this weekly period that resulted in management of stormwater within the 0 Project area.

Planned Construction Activities for the week between December 13 and December 19, 2021:

Dust Control and Air Monitoring

- Continue to conduct air monitoring per the approved Plan. \circ
- Review and validate the analytical results for air samples collected on November 30, December 1, 0 7. and 8. 2021.

Soil Management

Manage excavated soils, in the event excavated soils are generated, per the approved Soil 0 Management Plan (SMP).

Stormwater Management

Manage stormwater, in the event of rainfall in the area, per the approved Storm Water Pollution 0 Prevention Plan (SWPPP).

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

Sincerely,

Golder Associates USA Inc.

Gacqueine M. Engel

Jacqueline M. Engel Project Geologist

att

Eric Matzner Practice Leader/ Principal



ATTACHMENT A

Weekly Report of Air Monitoring



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Weekly Report of Air Monitoring

Union Pacific Railroad North Bypass Construction Project

Former Houston Wood Preserving Works Site Houston, TX

For Period from 2021-12-06 to 2021-12-12

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Summary Results of Daily Dust Monitoring

This section provides overall summary results for perimeter dust monitoring conducted during the week specified. Dust monitoring results include the average PM 2.5 and PM 10 monitoring results over the sample period at each sample location for each day. Each day's summary provides also includes a description of the work activities performed that day, and any items, issues or occurrences of note.

The 24-hour USEPA National Ambient Air Quality Standard (NAAQS) for PM 2.5 particulate matter is 35 ug/m3, and 150 ug/m3 for PM 10 particulate matter. The Texas Department of Environmental Quality (TCEQ) has adopted these values. UPRR has established dust control levels for railroad construction activities to help ensure that particulate levels do not exceed the 24-hour NAAQS as a result of construction activities.

Overall averages provided are for the sample period specified by the start and stop times. Unless otherwise specified, the sample periods are inclusive of all potentially significant dust generating activities.

Station AMS-01 is a background reference station, continually located inside the Union Pacific Railroad (UPRR) Englewood Railyard approximately 1.1 miles from the Houston Wood Preserving Works site.

Location of air sampling stations are consistent the Dust Control and Air Monitoring Plan dated 7/8/2021 and approved by the Texas Commission on Environmental Quality (TCEQ). Minor variations in station placement may occur, based on work activities, environmental factors, observed patterns of dust dispersion and practical constraints. One sample location specified in the original plan, located on the far southwest corner of the site just southwest of Kirk Street, has not been used to date. The originally proposed location is not readily accessible for daily equipment deployment and is outside of the current excavation areas of the construction. No excavation or other dust-generating activities have taken place to date in the vicinity of this location. Construction plans include improvements to access for this location prior to the start of such activities. Air monitoring equipment will be deployed to this location once access improvements are completed and before excavation or other dust-generating activities begin in this area.

Sample Date Dec 6, 2021

Description of Work Performed

Work plan for the day included installation of power lines on new wood utility poles starting just west of the Lockwood Road overpass continuing west along the North bypass track. No air knifing or other excavation work took place on this day. Station AMS-04, located on the south side of the intermodal yard experienced network communication problems and no data was collected from this location on this day. Work hours were from approximately 07:00 – 16:00.



Station ID	Location Description	Start	Stop	Latitude	Longitude	Overall Average PM 2.5	Overall Average PM 10
AMS-01	Yard Office	24:01	23:59	29.79005	-95.29825	5 ug/m3	14.6 ug/m3
AMS-02	IMY East - Sudan and Harlem	08:58	16:51	29.78423	-95.31681	6.4 ug/m3	19.6 ug/m3
AMS-03	IMY SE - Clementine	09:10	16:52	29.78206	-95.31913	5.3 ug/m3	15.2 ug/m3
AMS-06	HWPW - Erastus	07:36	16:39	29.78761	-95.31662	5.7 ug/m3	17.6 ug/m3
AMS-07	HWPW - Clementine North	08:24	16:27	29.78751	-95.31877	5.5 ug/m3	16.5 ug/m3
AMS-08	HWPW - Solo North	08:06	16:20	29.78741	-95.3212	6.8 ug/m3	19.5 ug/m3
AMS-09	HWPW - Kashmere and Liberty	07:58	16:14	29.78754	-95.32366	4.9 ug/m3	13.5 ug/m3
AMS-10a	HWPW - Eddie and Kashmere	07:52	16:09	29.78637	-95.32373	5.5 ug/m3	15.9 ug/m3
AMS-11	HWPW - Quitman East	07:48	16:00	29.78445	-95.32408	5.5 ug/m3	16.3 ug/m3
AMS-13	IMY South - Waco and Lee	09:12	16:56	29.78213	-95.32514	5.1 ug/m3	14.7 ug/m3

Sample Date Dec 7, 2021

Description of Work Performed

Work plan for the day included installation of power lines on new wood utility poles west of the Lockwood Road overpass continuing west along the North bypass track. No air knifing or other excavation work took place on this day. Work hours were from approximately 07:00 - 17:30.



Station ID	Location Description	Start	Stop	Latitude	Longitude	Overall Average PM 2.5	Overall Average PM 10
AMS-01	Yard Office	24:01	23:58	29.79004	-95.29819	10.4 ug/m3	26.9 ug/m3
AMS-02	IMY East - Sudan and Harlem	04:20	18:36	29.78427	-95.31684	10.2 ug/m3	28 ug/m3
AMS-03	IMY SE - Clementine	04:45	18:39	29.78202	-95.31911	11 ug/m3	28.4 ug/m3
AMS-04	IMY South - Schweikhardt	04:47	18:53	29.78218	-95.3228	9.6 ug/m3	25.4 ug/m3
AMS-06	HWPW - Erastus	05:03	17:31	29.78761	-95.31663	10.6 ug/m3	30.3 ug/m3
AMS-07	HWPW - Clementine North	05:56	18:02	29.78744	-95.3191	10.7 ug/m3	30.5 ug/m3
AMS-08	HWPW - Solo North	05:28	17:54	29.78742	-95.32116	12 ug/m3	35.3 ug/m3
AMS-09	HWPW - Kashmere and Liberty	06:03	18:16	29.78755	-95.32365	10.3 ug/m3	26.4 ug/m3
AMS-10a	HWPW - Eddie and Kashmere	06:11	18:21	29.78635	-95.32377	11.1 ug/m3	29.5 ug/m3
AMS-11	HWPW - Quitman East	06:19	18:25	29.78445	-95.32408	8.5 ug/m3	23.1 ug/m3
AMS-13	IMY South - Waco and Lee	04:49	18:55	29.78204	-95.32511	10.4 ug/m3	26.8 ug/m3

Sample Date **Description of Work Performed**

Dec 8, 2021

Work plan for the day included installation of power lines on new wood utility poles along the North bypass track. Pieces of old power poles were moved by a front-end loader and staged on the west end of the former Houston Wood Preserving Works site cap area. No air knifing or other excavation work took place on this day. Work hours were from approximately 07:00 -17:00.



Station ID Loc	ation Description	Start	Stop	Latitude	Longitude	Average PM 2.5	Average PM 10
AMS-01 Yard	d Office	24:00	23:59	29.79005	-95.29824	20 ug/m3	57.5 ug/m3
AMS-02 IMY	' East - Sudan and Harlem	04:28	16:44	29.78426	-95.31686	21 ug/m3	65.5 ug/m3
AMS-03 IMY	' SE - Clementine	04:47	16:47	29.78206	-95.31912	21.1 ug/m3	59.9 ug/m3
AMS-04 IMY	′ South - Schweikhardt	04:47	16:49	29.78221	-95.32277	18.6 ug/m3	55.2 ug/m3
AMS-06 HW	′PW - Erastus	07:25	17:12	29.78762	-95.31658	20.4 ug/m3	62.2 ug/m3
AMS-07 HW	PW - Clementine North	06:15	17:59	29.78747	-95.31898	18.5 ug/m3	60.9 ug/m3
AMS-08 HW	'PW - Solo North	05:25	17:42	29.78747	-95.32119	21.9 ug/m3	66.2 ug/m3
AMS-09 HW	PW - Kashmere and Liberty	05:43	17:31	29.78756	-95.32367	20 ug/m3	56.5 ug/m3
AMS-10a HW	PW - Eddie and Kashmere	05:52	17:24	29.78639	-95.32372	20.6 ug/m3	61.3 ug/m3
AMS-11 HW	′PW - Quitman East	06:04	17:18	29.78443	-95.32411	19.4 ug/m3	60.9 ug/m3
AMS-13 IMY	' South - Waco and Lee	04:49	16:51	29.78213	-95.32508	20.1 ug/m3	58.7 ug/m3

Sample Date Dec 9, 2021

Description of Work Performed

Work plan for the day included installation of power lines on new wood utility poles west of the Lockwood Road overpass continuing west along the North bypass track. No air knifing or other excavation work took place on this day. Work hours were from approximately 07:00 - 15:40.



Station ID	Location Description	Start	Stop	Latitude	Longitude	Overall Average PM 2.5	Overall Average PM 10
AMS-01	Yard Office	24:01	23:59	29.79015	-95.29815	12.3 ug/m3	33.4 ug/m3
AMS-02	IMY East - Sudan and Harlem	05:13	16:23	29.78423	-95.31684	13.2 ug/m3	35.4 ug/m3
AMS-03	IMY SE - Clementine	05:15	16:27	29.78208	-95.31909	14.3 ug/m3	37.2 ug/m3
AMS-04	IMY South - Schweikhardt	05:17	23:59	29.78221	-95.32277	11.1 ug/m3	29 ug/m3
AMS-06	HWPW - Erastus	05:32	15:42	29.78764	-95.31658	11.3 ug/m3	33 ug/m3
AMS-07	HWPW - Clementine North	06:11	16:11	29.78749	-95.31899	12.4 ug/m3	36.7 ug/m3
AMS-08	HWPW - Solo North	05:59	16:05	29.78745	-95.32116	9.7 ug/m3	27.2 ug/m3
AMS-09	HWPW - Kashmere and Liberty	05:51	16:02	29.78756	-95.32366	13.2 ug/m3	34.1 ug/m3
AMS-10a	HWPW - Eddie and Kashmere	05:46	15:56	29.7864	-95.32378	15.7 ug/m3	40.8 ug/m3
AMS-11	HWPW - Quitman East	05:40	15:48	29.78443	-95.32413	16.2 ug/m3	43.5 ug/m3
AMS-13	IMY South - Waco and Lee	05:19	16:33	29.78221	-95.32508	15.6 ug/m3	40.8 ug/m3

Sample Date

Dec 10, 2021

Description of Work Performed

Workplan for the day included conducting overhead powerline work installing a pole transformer and removing old wood utility poles along the North bypass track. The old utility poles were removed by using a chain saw to cut off top sections of the pole and a backhoe to loosen and pull out the lower part of the poles. A front-end loader was used to move the sections of removed utility pole to a staging area west of the former Houston Wood Preserving Works site cap area. No air knifing or other excavation work took place on this day. Work hours were from approximately 07:00 - 16:00.



Station ID	Location Description	Start	Stop	Latitude	Longitude	Overall Average PM 2.5	Overall Average PM 10
AMS-01	Yard Office	24:01	23:58	29.79006	-95.29821	8.7 ug/m3	25.3 ug/m3
AMS-02	IMY East - Sudan and Harlem	05:07	15:59	29.78425	-95.31687	7.7 ug/m3	23.5 ug/m3
AMS-03	IMY SE - Clementine	05:09	16:09	29.78206	-95.3191	9 ug/m3	24.4 ug/m3
AMS-04	IMY South - Schweikhardt	24:01	16:16	29.78219	-95.3228	7.4 ug/m3	20.3 ug/m3
AMS-06	HWPW - Erastus	05:24	15:58	29.78762	-95.31659	5.6 ug/m3	17.3 ug/m3
AMS-07	HWPW - Clementine North	06:03	16:33	29.78745	-95.31898	5.5 ug/m3	16.9 ug/m3
AMS-08	HWPW - Solo North	05:56	16:26	29.78745	-95.32119	5.4 ug/m3	15.3 ug/m3
AMS-09	HWPW - Kashmere and Liberty	05:51	16:21	29.78757	-95.32367	5.1 ug/m3	13.5 ug/m3
AMS-10a	HWPW - Eddie and Kashmere	05:43	16:16	29.78639	-95.32375	7.5 ug/m3	21.3 ug/m3
AMS-11	HWPW - Quitman East	05:33	16:07	29.78437	-95.32446	8 ug/m3	22.6 ug/m3
AMS-13	IMY South - Waco and Lee	05:14	16:21	29.78215	-95.32514	8 ug/m3	22.3 ug/m3

Sample Date Dec 11, 2021

Description of Work Performed

Work plan for the day included installation work on power lines for a single wooden pole on the south side of Liberty Road, immediately east of the Lockwood overpass. This work was discontinued due to high wind speeds affecting the manlift used for the work. No air-knifing or other excavation work took place this day. Work was stopped early, due to the high winds. Work hours were from approximately 07:00 – 10:30.



Station ID	Location Description	Start	Stop	Latitude	Longitude	Average PM 2.5	Average PM 10
AMS-01	Yard Office	24:00	23:58	29.79009	-95.29825	5 ug/m3	12.1 ug/m3
AMS-02	IMY East - Sudan and Harlem	05:15	13:08	29.78424	-95.31686	3.2 ug/m3	6.8 ug/m3
AMS-03	IMY SE - Clementine	05:30	10:52	29.78206	-95.31911	3.5 ug/m3	8 ug/m3
AMS-04	IMY South - Schweikhardt	05:36	10:42	29.78219	-95.32278	3.3 ug/m3	7.4 ug/m3
AMS-06	HWPW - Erastus	06:06	11:02	29.78755	-95.31683	3.6 ug/m3	8.7 ug/m3
AMS-07	HWPW - Clementine North	06:57	12:21	29.78743	-95.31906	3.9 ug/m3	7.9 ug/m3
AMS-08	HWPW - Solo North	06:29	12:09	29.7874	-95.32117	3.7 ug/m3	7.3 ug/m3
AMS-09	HWPW - Kashmere and Liberty	06:36	11:57	29.78755	-95.32366	3.5 ug/m3	6.3 ug/m3
AMS-10a	HWPW - Eddie and Kashmere	06:43	10:10	29.78639	-95.32374	5.5 ug/m3	14.6 ug/m3
AMS-11	HWPW - Quitman East	06:17	11:18	29.78436	-95.32453	3.7 ug/m3	8.2 ug/m3
AMS-13	IMY South - Waco and Lee	05:41	10:39	29.7821	-95.32503	3.4 ug/m3	7.7 ug/m3

No air-knifing or other excavation work took place on Sunday, December 12, 2021 and air monitoring was not conducted on this day.

Summary Results of Daily Weather Conditions

This section provides charts showing wind speed, wind direction and rainfall during each day of sampling during the specified week.





Note: Rainfall did not occur on this day. Indicated rainfall is the result of movement of the rain gauge during repairs to the rain gauge base.







to weather station in response to high winds.



No air-knifing or other excavation work took place on Sunday, December 12, 2021 and air monitoring was not conducted on this day.

Daily Time History Detail for PM 2.5 and PM 10 Dust Levels

This section provides charts showing the rolling thirty-minute average concentrations of PM 2.5 and PM 10 particulates measured at each location on each sample day during the specified week.

PM 2.5 and PM 10 airborne particulate levels are measured every two minutes during the active sampling period. The charts track the average particulate concentrations over the past 30 minutes at the time of the measurement.

Union Pacific Railroad (UPRR) has established control levels for airborne particulates to help ensure that constructionrelated dust levels are adequately controlled. These levels are explained as follows:

- Take-Action Level 30-minute average dust concentrations >55 ug/m3 (PM 2.5) or >150 ug/m3 (PM 10) Additional dust control measures, as outlined in the site dust control plan, will be promptly implemented to reduce levels below the Take-Action Level.
- Stop-Work Level 30-minute average dust concentrations >85 ug/m3 (PM 2.5) or >300 ug/m3 (PM 10) Work will be stopped immediately, as outlined in the site dust control plan, and UPRR will evaluate dust control measures. Work will not resume until UPRR has implemented additional controls that will effectively prevent generation of dust levels above the Stop-Work Level.

Air monitoring stations may exhibit higher than actual readings during the first 5 - 10 minutes after startup, before the instrumentation has fully warmed up. This is a known and expected behavior of the instrumentation.

No air-knifing or other excavation work took place on Sunday, December 12, 2021 and air monitoring was not conducted on this day.

Items of Note:

- On December 6, 20201, between about 08:00 and 08:45, elevations in PM 2.5 and PM 10 particulates were
 noted at station AMS-08, located near the south side of Liberty Road at the Liberty Road gate to the former
 Houston Wood Preserving Works Site. Investigation showed the source of the elevated particulate readings to
 be a Gradall excavator used by municipal road crew working on Liberty Road in the immediate area. Elevations
 did not reach take-action or stop-work levels. The same time-pattern of elevated particulate readings were
 observed, though to a lesser degree, at stations AMS-07 (near Liberty and Clementine) and AMS-06 (near
 Liberty and Erastus). The particulate elevations in this instance did not result from site construction activities.
- On December 7, 20201, between about 13:00 and 15:00, abnormally low readings were noted at station AMS-11, on the southwest side of the former Houston Wood Preserving Works site near Quitman. Investigation found the station to fallen or been knocked over. The station was righted and resumed functioning normally.
- On December 8, 2021, from station start-up until around noon, particulate levels at all stations were elevated, though not reaching take-action or stop-work levels. Site activities were not generating significant visible dust. An odor of trash and/or wood burning was noticeable along the northern boundary of the former Houston Wood Preserving Works site, though no visible smoke or haze was evident. No response actions were implemented, as particulate level increases were not the result of site activities but appeared to result from an unidentified burning event impacting the site.
- On December 9, 2021, from about 07:30 08:52, elevations in particulate levels were seen on the westernmost stations on the former Houston Wood Preserving Works site (AMS-09, AMS-10a, and AMS-11) and the intermodal yard (AMS-AMS-04 and AMS-13). Particulate levels did not reach take-action or stop-work levels. Around 09:00, a dump truck was being used to dump some gravel on the west end of the North Bypass service road, near station AMS-11. However, this activity generated little significant visible dust and took place after the peak levels were reached. In addition, winds were steadily from the south and southwest that morning, placing stations on the west end of the intermodal yard (AMS-04 and AMS-13) with similar elevated particulate levels (in both time and magnitude) upwind of the gravel dumping. No other onsite activities were observed which were generating dust. These circumstances indicated the elevated particulate levels on the westerly end of the cap area and intermodal yard were not the result of construction activities. Skies were generally hazy and overcast

throughout the day and no specific source of additional particulate generation could be identified. No corrective actions were implemented, but particulate levels and site activities were closely monitored until levels on the western boundaries dropped to those similar to the other stations.

































































































































No air-knifing or other excavation work took place on Sunday, December 12, 2021 and air monitoring was not conducted on this day.

Results of Integrated Air Samples for Metals

This section provides results of integrated air samples collected for lead and arsenic.

Integrated air samples are air samples collected by drawing a known volume of air through filters, sorbents or other media and then submitted to a qualified independent laboratory analysis. Integrated samples for selected metals (lead and arsenic) are collected and reported for this project. Integrated air sample results lag behind real-time results, due to the time required for sample collection, shipping, analysis and data validation. Results provided in this report are the results received and validated since the last weekly report.

Data items included on this report are explained as follows:

- **Sample Number:** The unique identifier for the sample.
- Date: The date on which the sample was collected.
- **Start:** The time at which sample collection began.
- End: The time at which sample collection ended.
- Station ID: The name of the air monitoring station where the sample was collected.
- Location: The geographic coordinates and general area description, indicating the location where the sample was collected.
- **Agent:** The name of the chemical substance(s) for which the sample was analyzed.
- Airborne Concentration: The unique identifier for the sample.
- **Short-Term AMCV:** The Short-Term Air Monitoring Comparison Value (AMCV) for the agent. N/A means no short-term AMCV has been established for the specified agent.
- Long-Term AMCV: The Long-Term Air Monitoring Comparison Value (AMCV) for the agent. N/A means no long-term AMCV has been established for the specified agent.

About the Air Monitoring Comparison Values (AMCV)

Air Monitoring Comparison Values (AMCV) are chemical-specific air concentrations determined by the Texas Department of Environmental Quality (TCEQ) and intended to protect human health and welfare. Exposure to an air concentration at or below the AMCVs is not likely to cause adverse health effects in the general public, including sensitive subgroups such as children, the elderly, pregnant women, and people with preexisting health conditions. They are *not* intended for use as an indicator or threshold of harm or disease. AMCV have not been established for all chemicals. TCEQ currently has AMCV's appropriate for air monitoring for approximately 120 chemicals. Both short-term and long-term AMCVs may be established. These are explained as follows:

- Short-Term AMCV: The short-term AMCV, based on acute exposure health and welfare data, is compared to
 monitored concentrations that can be 30 minutes to 1-hour, which represent a point in time for a specific
 location.
- Long-Term AMCV: The long-term AMCV, based on chronic health and welfare data, is used to evaluate annual averaged monitored concentrations or annual concentrations averaged over multiple years (if available), which represent multiple points in time for specific locations.

Air samples for lead and arsenic are collected, based on the results of prior soil sampling at the Houston Wood Preserving Works site. However, soils from the former Houston Wood Preserving Works site are not the only sources of these agents. These agents may be produced by a variety of sources. Lead may be produced from ore and metals processing, piston-engined aircraft operating on leaded aviation fuel, waste incinerators, lead-acid battery manufacturers and recyclers and smelting operations. Arsenic may be produced from pesticides, ore and metals processing, semiconductor and LED manufacturing, and lead-acid battery manufacturers and recyclers. Both metals also occur naturally.

Results of Integrated Ai	r Samples for	^r Metals				
Sample Number	Date	Start	End	Station ID	Location	
AA-1744-M030-20211116	11/16/21	05:04	18:16 AMS-12		(29.78742, -95.32118) - HWPW - Solo North	
Agent			Airborne Cor	ncentration	Short-Term AMCV	Long-Term AMCV
Arsenic				< 0.047 ug/m3	3 N/A	0.067 ug/m3
Lead				< 0.024 ug/m3	3 N/A	0.15 ug/m3
Sample Number	Date	Start	End	Station ID	Location	
AA-1744-M031-20211116	11/16/21	04:08	17:23	AMS-06	(29.784295.31682	2) - IMY East -
					Sudan and Harlem	· · · · · · · · · · · · · · · · · · ·
Agent			Airborne Cor	ncentration	Short-Term AMCV	Long-Term AMCV
Arsenic				< 0.047 ug/m3	3 N/A	0.067 ug/m3
Lead				= 0.031 ug/m3	3 N/A	0.15 ug/m3
Sample Number	Date	Start	End	Station ID	Location	
AA-1744-M032-20211116	11/16/21	04:36	17:43	AMS-13	(29.78756, -95.3167 Erastus	'7) - HWPW -
Agent	·		Airborne Cor	ncentration	Short-Term AMCV	Long-Term AMCV
Arsenic				< 0.047 ug/m3	3 N/A	0.067 ug/m3
Lead				= 0.028 ug/m3	3 N/A	0.15 ug/m3
Sample Number	Date	Start	End	Station ID	Location	
AA-1744-M035-20211117	11/17/21	04:39	17:15	AMS-12	(29.78742, -95.3211 North	8) - HWPW - Solo
Agent	•	•	Airborne Cor	centration	Short-Term AMCV	Long-Term AMCV
Arsenic				< 0.049 ug/m3	3 N/A	0.067 ug/m3
Lead				< 0.025 ug/m3	3 N/A	0.15 ug/m3
Sample Number	Date	Start	End	Station ID	Location	J
AA-1744-M036-20211117	11/17/21	04:01	18:01	AMS-06	(29.78425, -95.3168 Sudan and Harlem	85) - IMY East -
Agent			Airborne Cor	ncentration	Short-Term AMCV	Long-Term AMCV
Arsenic				< 0.048 ug/m3	3 N/A	0.067 ug/m3
Lead				< 0.024 ug/m3	3 N/A	0.15 ug/m3
Sample Number	Date	Start	End	Station ID	Location	
AA-1744-M037-20211117	11/17/21	04:11	17:34	AMS-07	(29.78761, -95.3167 Erastus	72) - HWPW -
Agent			Airborne Cor	ncentration	Short-Term AMCV	Long-Term AMCV
Arsenic				< 0.047 ug/m3	3 N/A	0.067 ug/m3
Lead				< 0.023 ug/m3	3 N/A	0.15 ug/m3
Sample Number	Date	Start	End	Station ID	Location	
AA-1744-M038-20211122	11/22/21	04:42	17:59	AMS-03	(29.78208, -95.3191 Clementine	3) - IMY SE -
Agent			Airborne Cor	ncentration	Short-Term AMCV	Long-Term AMCV
Arsenic				< 0.047 ug/m3	3 N/A	0.067 ug/m3
Lead				< 0.023 ug/m3	3 N/A	0.15 ug/m3
Sample Number	Date	Start	End	Station ID	Location	
AA-1744-M039-20211122	11/22/21	04:20	16:57	AMS-12	(29.78748, -95.3211 North	6) - HWPW - Solo
Agent			Airborne Cor	ncentration	Short-Term AMCV	Long-Term AMCV
Arsenic				< 0.049 ug/m3	3 N/A	0.067 ug/m3
Lead				null 0.025 ug/m3	3 N/A	0.15 ug/m3
Sample Number	Date	Start	End	Station ID	Location	
AA-1744-M040-20211122	11/22/21	03:57	16:39 AMS-13		(29.78761, -95.31677) - HWPW - Erastus	
Agent			Airborne Cor	ncentration	Short-Term AMCV	Long-Term AMCV
Arsenic				< 0.049 ug/m3	3 N/A	0.067 ug/m3
Lead				< 0.024 ug/m3	3 N/A	0.15 ug/m3

Results of Integrated A	ir Samples for	Metals				
Sample Number	Date	Start	End	Station ID	Location	
AA-1744-M043-20211123	11/23/21	04:52	17:17 AMS-03		(29.78208, -95.31913) - IMY SE - Clementine	
Agent			Airborne Co	ncentration	Short-Term AMCV	Long-Term AMCV
Arsenic				< 0.056 ug/m	3 N/A	0.067 ug/m3
Lead				< 0.028 ug/m	3 N/A	0.15 ug/m3
Sample Number	Date	Start	End	Station ID	Location	
AA-1744-M044-20211123	11/23/21	05:07	16:12	AMS-13	(29.78761, -95.3167 Erastus	7) - HWPW -
Agent			Airborne Co	ncentration	Short-Term AMCV	Long-Term AMCV
Arsenic				< 0.056 ug/m	3 N/A	0.067 ug/m3
Lead				< 0.028 ug/m	3 N/A	0.15 ug/m3
Sample Number	Date	Start	End	Station ID	Location	
AA-1744-M045-20211123	11/23/21	05:27	15:56	AMS-12	(29.78748, -95.3211 North	6) - HWPW - Solo
Agent			Airborne Co	ncentration	Short-Term AMCV	Long-Term AMCV
Arsenic				< 0.056 ug/m	3 N/A	0.067 ug/m3
Lead				< 0.03 ug/m	3 N/A	0.15 ug/m3
Sample Number	Date	Start	End	Station ID	Location	
AA-1744-M046-20211130	11/30/21	04:52	18:34	AMS-02	(29.7842, -95.31684 Sudan and Harlem) - IMY East -
Agent			Airborne Co	ncentration	Short-Term AMCV	Long-Term AMCV
Arsenic				< 0.045 ug/m	3 N/A	0.067 ug/m3
Lead				< 0.023 ug/m	3 N/A	0.15 ug/m3
Sample Number	Date	Start	End	Station ID	Location	
AA-1744-M047-20211130	11/30/21	05:35	18:50 AMS-06 (/ E		(29.78759, -95.31688) - HWPW - Erastus	
Agent			Airborne Co	ncentration	Short-Term AMCV	Long-Term AMCV
Arsenic				< 0.047 ug/m	3 N/A	0.067 ug/m3
Lead				< 0.023 ug/m	3 N/A	0.15 ug/m3
Sample Number	Date	Start	End	Station ID	Location	
AA-1744-M048-20211130	11/30/21	06:22	19:08 AMS-08		(29.78746, -95.32116) - HWPW - Solo North	
Agent			Airborne Co	ncentration	Short-Term AMCV	Long-Term AMCV
Arsenic				< 0.049 ug/m	3 N/A	0.067 ug/m3
Lead				< 0.024 ug/m	3 N/A	0.15 ug/m3
Sample Number	Date	Start	End	Station ID	Location	
AA-1744-M050-20211201	12/1/21	04:44	16:57 AMS-02		(29.7842, -95.31684) - IMY East - Sudan and Harlem	
Agent			Airborne Co	ncentration	Short-Term AMCV	Long-Term AMCV
Arsenic				< 0.051 ug/m	3 N/A	0.067 ug/m3
Lead				= 0.043 ug/m	3 N/A	0.15 ug/m3
Sample Number	Date	Start	End	Station ID	Location	
AA-1744-M051-20211201	12/1/21	05:22	17:26	AMS-06	(29.78759, -95.3168 Erastus	8) - HWPW -
Agent			Airborne Co	ncentration	Short-Term AMCV	Long-Term AMCV
Arsenic				< 0.052 ug/m	3 N/A	0.067 ug/m3
Lead				= 0.08 ug/m	3 N/A	0.15 ug/m3
Sample Number	Date	Start	End	Station ID	Location	
AA-1744-M052-20211201	12/1/21	05:47	17:55	AMS-08	(29.78746, -95.3211 North	6) - HWPW - Solo
Agent			Airborne Concentration		Short-Term AMCV	Long-Term AMCV
Arsenic				< 0.051 ug/m	3 N/A	0.067 ug/m3
Load				= 0.062 ug/m	3 N/A	0.15 ug/m3

Results of Integrated Air Samples for Polynuclear Aromatic Hydrocarbons (PAH)

This section provides results of integrated air samples collected for polynuclear aromatic hydrocarbons.

Integrated air samples are air samples collected by drawing a known volume of air through filters, sorbents or other media and then submitted to a qualified independent laboratory analysis. Integrated samples for selected metals and polynuclear aromatic hydrocarbons are collected and reported for this project. Integrated air sample results lag behind real-time results, due to the time required for sample collection, shipping, analysis and data validation. Results provided in this report are the results received and validated since the last weekly report.

Data items included on this report are explained as follows:

- Sample Number: The unique identifier for the sample.
- Date: The date on which the sample was collected.
- Start: The time at which sample collection began.
- End: The time at which sample collection ended.
- Station ID: The name of the air monitoring station where the sample was collected.
- **Location:** The geographic coordinates and general area description, indicating the location where the sample was collected.
- Agent: The name of the chemical substance(s) for which the sample was analyzed.
- Airborne Concentration: The unique identifier for the sample.
- **Short-Term AMCV:** The Short-Term Air Monitoring Comparison Value (AMCV) for the agent. N/A means no short-term AMCV has been established for the specified agent.
- Long-Term AMCV: The Long-Term Air Monitoring Comparison Value (AMCV) for the agent. N/A means no long-term AMCV has been established for the specified agent.

About the Air Monitoring Comparison Values (AMCV)

Air Monitoring Comparison Values (AMCV) are chemical-specific air concentrations determined by the Texas Department of Environmental Quality (TCEQ) and intended to protect human health and welfare. Exposure to an air concentration at or below the AMCVs is not likely to cause adverse health effects in the general public, including sensitive subgroups such as children, the elderly, pregnant women, and people with preexisting health conditions. They are *not* intended for use as an indicator or threshold of harm or disease. AMCV have not been established for all chemicals. TCEQ currently has AMCV's appropriate for air monitoring for approximately 120 chemicals. Both short-term and long-term AMCVs may be established. These are explained as follows:

- **Short-Term AMCV:** The short-term AMCV, based on acute exposure health and welfare data, is compared to monitored concentrations that can be *30 minutes to 1-hour*, which represent a point in time for a specific location.
- Long-Term AMCV: The long-term AMCV, based on chronic health and welfare data, is used to evaluate annual averaged monitored concentrations or annual concentrations averaged over multiple years (if available), which represent multiple points in time for specific locations.

Air samples for polynuclear aromatic hydrocarbons (PAHs) are collected, based on the results of prior soil sampling at the Houston Wood Preserving Works site. However, soils from the former Houston Wood Preserving Works site are not the only sources of these agents. PAHs may be produced by a variety of sources, including power generation, vehicle and aircraft exhaust, burning of wood or garbage, cement manufacturing, rubber tire manufacturing and burning, various chemical manufacturing, wildfires and application of pesticides.

Results of Integrated Air Samples for Polynuclear Aromatic Hydrocarbons (PAH)

Analysis results for PAH samples collected on 11/30/2021 and 12/1/2021 have been received and are still undergoing data validation procedures. These results are anticipated to be included on the next weekly summary report.