



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

WASHINGTON, D.C. 20460

March 14, 2022

OFFICE OF
LAND AND EMERGENCY
MANAGEMENT

Office of the Chief Clerk
Texas Commission on Environmental Quality
Mail Code MC-105
P.O. Box 13087
Austin, Texas 78711-3087

RE: *EPA Comments on Draft Hazardous Industrial Waste Permit/Compliance Plan Renewal with Major Amendment, Permit/Compliance Plan No. 50343
Union Pacific Railroad Company Houston Wood Preserving Works Site
4910 Liberty Road, Houston, Texas 77026
EPA ID No. TXD000820266, TCEQ ISWR No. 31547*

Dear Ms. Gharis:

This letter is regarding the Texas Commission on Environmental Quality (TCEQ) permit renewal and major amendment of the Hazardous Waste Permit/Compliance Plan No. 50343 for Union Pacific Railroad (UPRR) Company, owner of Houston Wood Preserving Works (HWPW) located at 4910 Liberty Road, Houston, Texas 77026 in Harris County. This permit renewal will authorize the continued post-closure care and cleanup at the UPRR facility, specifically the addition of a Response Action Plan to develop cleanup options for soil and groundwater contamination. The U.S. Environmental Protection Agency (EPA) has reviewed the draft renewal and associated permit and technical files. Our concerns, comments, and recommendations are included in the attachment to this letter.

EPA is committed to advancing environmental justice (EJ) and incorporating equity considerations into all aspects of our work, including permitting, enforcement, and cleanup activities under the Resource Conservation and Recovery Act (RCRA) to ensure that historic and ongoing impacts of contamination on communities already overburdened by pollution are fully considered and appropriately addressed. To that end, EPA has been leading efforts for more than a year to improve coordination among Federal, State, and local agencies, and improve communication with the community on the cleanup of this site and health concerns in the area. EPA has facilitated several meetings with Kashmere Gardens and Fifth Ward community members to better understand their technical questions regarding the site cleanup and the recent cancer cluster studies. A virtual community meeting was held by EPA in June 2021 to help answer those questions. A second virtual community meeting to address additional questions was held in December 2021. In addition, EPA has been facilitating health coordination calls between EPA, the Agency for Toxic Substances and Disease Registry (ATSDR), the Texas Department of State Health Services (TDSHS), and the City of Houston Health Department to discuss ongoing health-related activities in the Fifth Ward area, as well as coordinating and

facilitating monthly calls with EPA, City of Houston Mayor's office and city staff, TCEQ, TDSHS, ATSDR, and Housing and Urban Development (HUD) representatives to coordinate activities associated with the concerns identified in the area.

The neighborhood around the UPRR facility ranks above the 80th percentile for all 11 EJ indices in EJSCREEN as compared to the United States, and it is at or above the 95th percentile for diesel particulate matter, Superfund site proximity, and Risk Management Plan proximity. These same communities are almost entirely populated by people of color. Sixty-five percent of households in these communities are classified as low-income (earn less than twice the federal poverty level), which is almost double the national average. Of particular concern, multiple recent health studies conducted by TDSHS have shown elevated levels of adult cancers in the area surrounding the UPRR facility. By far the most troubling, these health studies have identified elevated levels of certain childhood cancers as well.

The community and the City of Houston want to fully understand the contribution of the UPRR site contamination to these adverse impacts. EPA's leadership shares that desire. As you know, this site has garnered the attention of the EPA Administrator, Michael Regan, who visited the area and met with community members in November 2021. In addition, on September 9, 2021, I sent a letter to UPRR expressing concern with the lack of transparency of information regarding contamination and cleanup and asked that UPRR provide responses to specific questions and access to supporting data. The response to that letter, including responses to the Mayor's questions, was received on October 21, 2021. The response is available on EPA's website.¹ The response along with the supporting documentation provided by UPRR has been reviewed by EPA staff and was taken into consideration when preparing the attached comments and recommendations, which we feel are necessary to adequately protect the community and ensure transparency and accessibility to information throughout the remediation process.

While the specific causes of the critical health outcomes have not been identified by the health agencies, it is of highest priority that UPRR aggressively remediate any contamination stemming from the facility that presents a risk to human health or the environment. In addition to starting with an aggressive remediation plan, a readiness to adapt the plan as needed based on results of on-going and future health studies is critical. We understand that the City of Houston Health Department and TDSHS are actively engaged with the community to assess and address the health concerns, including a health assessment currently being conducted by TDSHS which includes an evaluation of UPRR data to assess whether there are on-going exposure risks to contaminants from the site. EPA will continue to look for opportunities to support the various health agencies in their efforts to identify sources of these adverse health outcomes. The requirements in TCEQ's final permit should fully consider the results of the ongoing health assessment, as well as any others by the health agencies when remediation activities are selected and implemented to ensure that they adequately address the exposure risks to site contaminants identified from those studies.

EPA's comments and recommendations on the proposed permit focus on the need to develop a robust Conceptual Site Model, address potential data gaps that could impact remedial alternatives, consider the results of health assessments conducted by the state and/or city health

¹ <https://www.epa.gov/up-houston-fifth-ward>

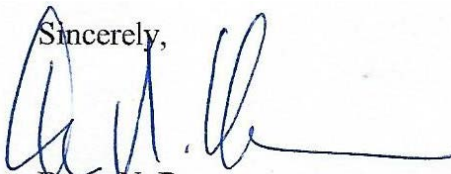
departments, and provide for meaningful involvement of the public throughout the remediation process. Meaningful engagement with the community by all parties involved, including TCEQ and UPRR, is critical to ensuring that the clean-up addresses their concerns related to the facility, such as whether the cleanup supports the potential future use for the site.

EPA acknowledges the work that TCEQ has already undertaken on this permitting action toward ensuring a robust cleanup plan, as well as the extended opportunity for public comments that TCEQ has provided along with the virtual information session and formal hearing in June 2021, and your plan to host an in-person comment session as soon as practical to ensure enhanced opportunity for public input. EPA is providing these comments as part of our Federal RCRA Program oversight responsibilities.

We understand that cleanup of this site is only one piece of the complex challenges facing this community. As we go forward, I want to assure you that U.S. EPA remains committed to working collaboratively with federal, state, and local partners to address our shared environmental priorities, advance equity, and improve the health of all residents.

If you have any questions regarding this comment letter, please contact Melissa Smith, EPA Region 6's Branch Chief for RCRA, Brownfields, and Solid Waste via e-mail at smith.melissa@epa.gov or by phone at 214-665-7357.

Sincerely,

A handwritten signature in blue ink, appearing to read "Barry N. Breen", with a long horizontal flourish extending to the right.

Barry N. Breen
Acting Assistant Administrator
Office of Land and Emergency Management

Enclosure

EPA Comments
Draft Hazardous Industrial Waste Permit/Compliance Plan Renewal No. 50343
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General Comments:

Some of the primary objectives of facility investigations are to define source areas of contamination, the potential pathways of migration, potential receptors, and associated exposure pathways. EPA considers a comprehensive Conceptual Site Model (CSM) essential to response action development, selection, and implementation. The CSM is a primary project planning and management tool, and as such, the CSM should incorporate all that is known about the site's current and potential future environmental conditions and uses, noting that it will evolve and become more focused over the project's life cycle. As a project progresses, decisions, and data needs shift to meet the specific requirements of a particular stage of a project.

EPA believes that data gaps may exist both on and off-site in some of the UPRR site investigation activities that could potentially impact the remedial alternatives being considered in the proposed permit action. Additional data collection to fill those gaps along with an updated CSM would better support future remedial decisions.

EPA also strongly supports meaningful involvement of the public regarding Resource Conservation and Recovery Act (RCRA) permitting actions and corrective action activities. One of the Agency's central goals is to provide equal access to information and an equal opportunity to participate. EPA regards public participation as an important activity that empowers people to become involved in local RCRA site related activities that affect their community.

Specific Comments:

1. Englewood Intermodal Yard

The Englewood Intermodal Yard (Yard) is used for the temporary parking of trailer-mounted intermodal container boxes and has a concrete and asphalt pavement cover which prevents exposure to surface and subsurface soils in the area.

UPRR conducts weekly inspections of the concrete/asphalt cap at the Yard and weekly Non-aqueous Phase Liquid (NAPL) recovery from: tar-like seeps within parking slots B100 to B109 for container trailers, NAPL collection sumps, and various other cracks in the cap. UPRR provides TCEQ a monthly status report on these activities. These monthly status updates were requested by TCEQ in 2018.

The seeps appear to be a result of a mass of shallow NAPL within the top 3 feet below ground surface (bgs) mobilizing during warm weather and finding preferential pathways to the surface through the concrete pavement's expansion joints and through the cracks in the asphalt pavement to relieve the subsurface pressure. The source of NAPL in the Yard

is believed to be from former above ground storage tanks (ASTs) and former lagoons identified on historical aerials and maps along the eastern side of the Yard.

In 2020, UPRR installed seven test pits in areas where historical NAPL seeps (slots A010, A021, A098, B013, B057, B096, and B108) had been observed in the Yard. The goal of the isolated hot spot excavation approach was to reduce the NAPL mass to possibly eliminate future surface seeps in those specific areas. Following the test pit pilot study, UPRR inspects the repaired concrete areas where the test pits were excavated to evaluate the effectiveness of using pits to address the seeps. Other oily and tarry seeps in cracks in the cap are scraped up weekly and/or are cleaned using a pressure sprayer, the water is collected in totes, sampled, and disposed of off-site.

Using the information gathered from the test pits, a NAPL collection system was installed by removing a section of asphalt or concrete cover, excavating the underlying soils, backfilling with high permeability fill, installing slotted pipe to allow the accumulation of NAPL and backfilling the remaining few feet with compacted selected fill and reinforced concrete. It has been noted in monthly status reports that little or no NAPL is recovered from the collection sumps probably due to its tar-like consistency. However, water does accumulate in the recovery sumps from rain and/or other sources and thousands of gallons are pumped out periodically for off-site disposal and to prevent overflow onto the cap surface.

EPA Comments and Recommendation: The concrete/asphalt cap on the Yard appears to be only partly effective in containing tarry and oily creosote substances as evidenced by ongoing surface seeps. NAPL recovery sumps appear to be minimally effective in collecting recoverable NAPL. Water collecting in NAPL sumps could potentially mobilize contaminants of concern (COCs) and enter the onsite stormwater system or overflow the sumps and migrate offsite through the storm sewers or surface water runoff. The potential for rainwater to infiltrate cracks in the cap and further mobilize contaminants is also a concern.

EPA recommends that the permit require:

- UPRR to initiate pilot testing of other more aggressive NAPL recovery technologies on the Yard to assess their effectiveness in reducing the mass of the source as an alternative to the cap and NAPL recovery sumps interim remedy.
- UPRR to assess the potential for and take necessary actions to prevent infiltration through cracks in the cap which would further mobilize contaminants.

2. Onsite and Off-site Storm Sewer System

In October 2019, the City of Houston sampled storm sewers at six manhole locations on the periphery of the Houston Wood Preserving Works (HWPW) site. Five samples were from the northern part of the site along Liberty Road just east of Lockwood Drive and one sample was from the southern part of the site at the intersection of Lee Street and Schwelkhardt Street. Benzene was detected in samples from manholes 3, 4, and 5. These concentrations exceeded the Texas Surface Water Quality Standards (TSWQS) of 0.005 mg/l for benzene. Naphthalene was detected in the sample taken from manhole 3,

which exceeded the Texas Risk Reduction Program (TRRP) Aquatic Life Surface Water Risk-Based Exposure Levels of 0.25 mg/l for naphthalene. Other VOC and SVOC constituents were detected but did not exceed the TRRP or the TSWQS concentrations. Personnel noted indications of the presence of dense non-aqueous phase liquid contamination during the sampling event.

Camera surveys were performed on the storm sewer pipes in the Englewood Intermodal Yard as part of the Englewood Yard Test Pit Evaluation in December 2020 and January and February 2021. Oily sheens and oily water were noted but no NAPL was observed at the time of the survey. The sediment in the storm water lines appears to be impacted with Total Petroleum Hydrocarbons (TPH) based on the observations when the sediment was disturbed and the analytical results of the sediment sample from the obstruction removal efforts. Only a partial survey of the storm sewer drains was possible due to blockage by accumulated sediment. Sediment removal and additional surveys of the storm sewer system are being planned.

EPA Comments and Recommendation: The Greater Fifth Ward/Kashmere Gardens neighborhood area is known for flooding.

The concentration of contaminants in the water collected from the manholes may be a function of recent rainfall conditions. Consequently, contaminant concentrations may vary widely in the water found in the storm sewer. It is recommended that variability in contaminant concentrations be established as a function of rainfall conditions and water flow in the storm sewer.

It is evident that DNAPL remains mobile at the site since it migrated into the storm sewer, where it was observed. It is unclear how the DNAPL is penetrating into the storm sewer and whether the DNAPL is being swept through the storm sewer and discharged downgradient.

EPA recommends that the permit require:

- UPRR to conduct an additional evaluation of the on-site and off-site storm sewer system to determine the nature and extent of contamination present and the potential for NAPL, contaminated sediment, and contaminated groundwater to infiltrate storm sewer system pipes and migrate off-site.
- UPRR evaluate the potential for high rainfall events to swamp the on-site storm sewer system and flow into off-site areas as surface water runoff.
- UPRR to conduct an assessment of other on-site utility corridors (water, gas, electric, etc.) as potential contaminant migration pathways.

3. Vapor Intrusion Investigation

To evaluate the vapor intrusion (VI) pathway, UPRR installed 22 shallow, single-depth, soil gas probes north of the HWPW site within the City of Houston ROW in January and February 2020, installed 6 additional probes on private property and in the City of Houston ROW in June 2020, and 4 additional soil gas probes on private property in November 2020, totaling 32 permanent soil gas wells. Thirteen of the wells were

inundated with water and couldn't be sampled, resulting in a total of 19 soil gas samples for the area. Soil gas analytical results were compared to the target soil gas assessment levels which are calculated by dividing the TRRP Residential Risk-Based Exposure Limits (RBELs) for inhalation by an attenuation factor of 0.03 (US EPA, 2015b) for soil gas. Benzene, ethylbenzene, naphthalene, and xylene concentrations in all the soil gas samples were at least an order of magnitude less than their respective target soil gas assessment levels.

During the installation of the soil gas points, an undisturbed soil sample was collected from the 0.5 to 1' interval and the 5.5 to 6' interval at each location. The samples were field screened with a Photoionization Detector (PID) for the presence of volatile organic compounds (VOCs). Soil samples were sent to a lab and analyzed for benzene, ethylbenzene, and xylenes by EPA Method 8260 and naphthalene by EPA Method 8270. Benzene, ethylbenzene, xylene, and naphthalene concentrations in the soil samples were generally non-detect and in all cases were below applicable residential Risk Assessment Levels (RALs).

UPRR further evaluated the groundwater as a potential source for the VI pathway. The shallow off-site A-TZ groundwater analytical data from the July 2019 and January-March 2020 sampling events were compared to EPA's Vapor Intrusion Screening Level (VISL) calculator values. For this evaluation, the inputs selected were: residential scenario, hazard quotient of 0.1, carcinogenic risk of 10^{-5} (consistent with the TRRP criteria), and groundwater temperature of 25°C. Groundwater COC concentrations were below the EPA VISLs by an order of magnitude or more.

In 2020, the City of Houston Health Department conducted a passive soil gas sampling study in the residential area north of the HWPW site that roughly overlays the creosote/DNAPL contamination plume in deeper Zones B and C and bordered on the south by Liberty Road. A total of 38 samplers were placed in the community. Soil gas sampling results found 13 detections of Toluene (which is non-detect in shallow off-site groundwater), and 2 detections of TPH (gasoline and diesel range) just above reporting limits.

EPA Comments and Recommendation: Although the VI pathway at the site appears to be incomplete based on a limited number of active and passive soil gas samples, distance to source screening criteria, groundwater to indoor air VISLs and soil gas to indoor air VISLs, additional investigation is warranted to address the lack of a CSM, soil vapor data near structures, temporal sampling data, and a preferential pathways evaluation.

EPA recommends that the permit require:

- UPRR develop a CSM for the VI pathway before final risk management decisions are made for the site.
- Additional active soil vapor data near structures as close as possible to the building and at depths below the respective building foundation and no less than five feet below ground surface (sample depth is dependent on site-specific conditions). EPA generally recommends that active soil gas surveys collect soil gas samples at multiple

locations and depth intervals between the vapor source and building(s) (potential "receptors"). As a result, the soil gas survey may include samples collected immediately outside the building ("exterior soil gas") at various depths or several depth intervals, as well as immediately beneath it (e.g., sub-slab soil gas sampling). The goal is to locate the soil gas concentrations outside the building footprint that best represent conditions immediately below the building. Less attenuation is expected beneath buildings with a slab (e.g., slab-on-grade or basement) due to the slab capping effect, which is a result of a concrete slab acting as a barrier or cap limiting the downward flow of ambient air and the upward venting of contaminated soil gas. Where crawl spaces are present, crawl space air sampling may also be conducted.

- Seasonal soil vapor sampling to develop an understanding of temporal variability and to ensure that final risk management decisions are based upon a consideration of a reasonable maximum vapor intrusion condition.
- UPRR to assess the potential for preferential pathways to bring soil gas directly into or near residential structures. The conventional VI CSM typically does not account for VOC migration through preferential pathways, which may occur over much greater distances. This scenario may result in higher vapor concentrations inside the building or structure than would be expected based on diffusion and advection of vapors into structures. Examples of preferential pathways include bedrock fractures, sand lenses, dry wells, sanitary sewers, storm drains, utility tunnels-corridors, fiber optic cable housing, etc. Buildings with significant preferential migration routes should be evaluated closely. Attenuation factors in such situations typically do not apply.

4. Off-site Soil Investigation

The UPRR RCRA Facility Investigation (RFI) was conducted using a phased approach. Phase 1 sampling began in January 1997. Phase 2 was broken up into 4 subphases beginning in 1997 and was completed in 2004. A Phase 2-A RFI/Extent of Contamination (EOC) Investigation Report was completed and submitted to the TCEQ on February 13, 1998, a Phase 2-B RFI/EOC Investigation Report was completed and submitted to the TCEQ on September 10, 1999, and the first APAR was completed and submitted to TCEQ on July 10, 2000. Phase 2-C and Phase 2-D investigations focused primarily off-site and were completed in March 2001 and March 2004, respectively.

According to the 2004 Revised APAR the off-site area encompasses approximately the same acreage as the on-site area. The off-site area includes one area of contamination (AOC), a portion of SWMU 2 located adjacent to the site, and the entire area outside of UPRR's property that has been investigated to date. It also includes the Inactive Wastewater Lagoon (AOC 6), a 0.28-acre area along the southwest corner of the HWPW site that is a natural topographic depression within the local drainage and tends to accumulate stormwater runoff. In addition, the off-site area includes a north-trending drainage ditch (one area of SWMU 2) located on the western boundary of the HWPW site along the city ROW.

The March 2011 Revised Updated APAR Addendum incorporated soil data collected during 2010 investigation activities with data collected as part of the original APAR (ERM, 2000), Revised APAR (ERM, 2004), and APAR Addendum (PBW, 2009) into the assessment of the Affected Property. Additional surface and subsurface soils collected at the Site in June 2010 were sampled and analyzed for the list of 34 site-specific COCs.

The updated summary of surface soil data (using data collected in June 2010) found certain COCs exceeded RALs within and along the northeast corner of the Site. The COCs, however, were delineated to RALs along the north side of Liberty Road across from SWMU Nos. 6, 7, 8, 10 and 11. One surface soil sample, SB-60 (0-0.5ft) had a benzo(a)pyrene detection at 0.733 mg/Kg above the RAL of 0.54 mg/Kg; however, UPRR believed the detection was likely from historical asphaltting of Liberty Road and not from activities at the Site. UPRR believed this conclusion was supported by the seven surface soil samples collected along the north side of Liberty Road (SB-138 through SB-142, SB-59, and SB-61) where the detections of COCs were less than RALs.

Along the Site property boundary to the north, surface soil samples from SB-123, MW-57A, SB-143, and SB-145 had benzo(a)pyrene concentrations greater than the RAL (0.56 mg/Kg), ranging from 2.6 mg/Kg for SB-123 (0.5-2.5) to 4.3 mg/Kg for SB-145 (1.5-2.5). However, based on the conceptual site model that the on-site surface soils were impacted from spills and releases from operations at the Site (PBW, 2009), surface soil impacts would not likely have migrated across Liberty Road. Therefore, the surface soil Affected Property in this area is defined by the southern edge of Liberty Road.

Subsurface soil samples from soil borings drilled in June 2010 along the northeast portion of the Site were collected and analyzed for site-specific COCs to evaluate lateral delineation of the COCs in subsurface soils off site. Of the six subsurface soil samples collected in the northeast portion of the Site SB-138 (16-16.9), SB-141 (16-17.1), SB-142 (16-16.9), SB-143 (18-18.7), SB-144 (16-16.9), and SB-145 (16-17.4), none of the site-specific COCs were detected in the samples at concentrations greater than subsurface soil RALs.

The Tier 1 PCLs for commercial/industrial and residential land use were used for the on-site and off-site properties, respectively. Off-site, surface soil is considered to extend to a depth of 15 feet bgs. Subsurface soil is the portion of the soil column between the base of the surface soil and the top of the transmissive zone. Approximately 70 surface and subsurface soil samples were collected during the RFI process, however there were data issues with one of the labs conducting the testing.

UPRR conducted additional surface soil sampling for pentachlorophenol (PCP) in February 2020. The soil sampling was requested by TCEQ during a meeting on June 12, 2019, along with additional samples requested in a September 6, 2019, TCEQ letter to UPRR. The objective was to re-evaluate PCP concentrations in surface soils along the western and northern boundary of the Tie Storage Area (SWMU No 12) near where soil samples had previously been collected in the 90s. Data issues with this earlier sampling included, the MDLs for PCP were greater than the critical protective concentration level (PCL), even though sampling found PCP concentrations to be below MDLs.

During the February 2020 sampling event, UPRR collected 15 soil samples along the northern and western property boundary. Since PCP concentrations along the boundary of the Site exceeded the Tier 1 Residential PCL in 3 of the samples, additional delineation was recommended to evaluate PCP concentrations off-site to the north and the west of the Site boundary. UPRR collected 26 additional samples off-site on June 2-5, 2020. PCP concentrations in soil samples were found to be below the Tier 1 Residential PCL for a 30-acre source area of 0.73 mg/kg, indicating that the off-site soils are protective to the residential soil exposure pathway. Delineation of PCP in soils appears to have been achieved.

The Aug 31, 2020 Response Action Plan (RAP) states that there is no off-site soil PCLE zone (no COCs in soil above residential levels) and there is no requirement for additional off-site soil sampling or remediation currently planned.

EPA Comments and Recommendations: Off-site soil sampling at the HWPW site has occurred over a number of years and during a number independent sampling events making it difficult to gain a complete picture of the off-site soil assessment activities, specifically in the Greater Fifth Ward/Kashmere Gardens neighborhood. Soil sampling appears to have been mostly limited to within the Liberty Road right of way and less than a block north of Liberty Road.

It is well known that wood-treating activities often generate airborne dust due to the use of heavy equipment moving untreated and treated timbers around the property. Although such activity is not occurring now, soils contaminated in the past from leaks, drips and spills could have spread into the Greater Fifth Ward/Kashmere Gardens neighborhoods through airborne dispersion or surface water/sediment runoff. In addition, an incinerator was formerly located on-site used for disposing of untreated lumber remnants. There is no indication that any hazardous wastes or hazardous substances were disposed in the incinerator, but again there is potential for some airborne dispersion from the incinerator.

EPA recommends that the permit require:

- UPRR to provide a summary of all soil sampling conducted in the Greater Fifth Ward/Kashmere Gardens neighborhood with maps of sample locations, sample depths, analytical results, etc. to help assess if additional sampling may be warranted.
- UPRR to conduct additional sampling to address data gaps identified from the review of off-site sampling previously conducted.
- UPRR to provide a discussion in their review on how they eliminated the need for sampling in the area.

5. Dioxin/Furan Testing

PCP was likely a wood treating compound used at the HWPW site. According to the July 2009 APAR Addendum, UPRR in response to the TCEQ comment letter dated October 8, 2004, collected two soil samples near the former process areas for Chlorinated Dibenzo Dioxins (CDDs) and Chlorinated Dibenzo Furans (CDFs) analysis. The TCEQ

Residential PCL for 2,3,7,8-TCDD at that time was 1 ppb, and the Commercial/Industrial PCL was 5 ppb (these are still TCEQ's current PCLs for dioxin and furans). The soil samples were collected within the Original Process Area (SWMU No. 5) and within the Recent Process Area (SWMU No. 4). The sample collected from the Original Process area, no CDDs or CDFs were detected above the SDL (however, the 2,3,7,8-TCDD SDL of 1.2 ppb was slightly greater than the residential PCL of 1 ppb but less than the Commercial/Industrial PCL 5 ppb). For the Recent Process Area sample, two CDDs and two CDFs were detected above SDLs, they were:

- 1,2,3,4,6,7,8-HpCDD at 14 ppb and OCDD at 280 ppb
- HpCDF at 12 ppb and OCDF at 16J ppb

Toxic equivalency factors (TEFs) have been established by the EPA for CDDs and CDFs (EPA, 1987) and the World Health Organization (WHO) 2005 relative to 2,3,7,8-TCDD. The TEF for 1,2,3,4,6,7,8-HpCDD is 0.01 and 1,2,3,4,7,8,9-HpCDF is 0.01. No TEFs were established by the EPA or for OCDD or OCDF. The toxicity for the other CDDs and CDFs were then evaluated by multiplying the detected concentrations to the TEFs for each congener, summing the results, and comparing the result to the 2,3,7,8-TCDD PCLs. The summed result was 0.14 ppb, below the equivalent PCL of 1 ppb. The conclusion was that the detected results do not present an unacceptable risk.

EPA Comments and Recommendations: Commercial PCP mixtures used to treat wood are known to contain polychlorinated dibenzo-*p*-dioxins and polychlorinated dibenzofurans (PCDDs and PCDFs) as impurities, more so from the mid-80s and earlier. EPA routinely requires or conducts PCDD and PCDF sampling at wood treating sites because these compounds are inherently toxic, as well as environmentally persistent.

EPA recommends that the permit require:

- UPRR to conduct additional on-site soil testing for dioxins and furans due to the limited number of samples that have been evaluated. EPA has established screening levels for dioxin and furan compounds for both residential and commercial/industrial exposure scenarios, the values are 4.8 parts per trillion (ppt) and 22 ppt respectively. These EPA screening values are based on default (non-adjusted) exposure factors and current cancer and non-cancer toxicity values for 2,3,7,8-tetrachlorodibenzo-*p*-dioxin (TCDD) and are typically not used as cleanup numbers, rather, cleanup levels are established through site specific risk assessments.

6. Ambient Air Sampling for Volatiles and Particulate

The City of Houston Health Department collected ambient air samples near the UPRR site at 2609 Lavender Street using their Mobile Ambient Air Monitoring Laboratory (MAAML) on November 2nd-5th, 20th, 24th, and Dec 3rd, 2020. Of the 63 VOCs analyzed, three were detected: 1,3- Butadiene, Benzene, and Hexene. 1,3- Butadiene and Benzene were detected for four of the seven monitored days. Hexene was detected one of the seven days. 1,3-Butadiene ranged (0.0-0.5 ppb; TCEQ ESL long-term is 4.5 ppb) and Benzene ranged (0.2-0.3 ppb; TCEQ ESL long-term is 1.4 ppb). Concentrations for other confirmed VOCs ranged low. No particulate matter (PM) concentrations exceeded

the EPA NAAQS 24-hour standards of 35 ug/m³ for PM_{2.5} or 150 ug/m³ for PM₁₀, respectively. The 5-min average O₃ concentrations ranged from 20.8 to 48.4 ppbV (average - 37.0 ppbV). Although the sampling period was not 8-hour, O₃ concentrations did not exceed the EPA NAAQS 8-hour standard of 75 ppbV. The 5-min average NO₂ concentrations ranged from 7.1 to 154.3 ppbV (average - 35.4 ppbV). The data indicate that some NO₂ spike concentrations exceeded the EPA NAAQS 1-hour standard of 100 ppbV.

In addition, the City of Houston Health Department collected 3 ambient air summa canister samples near the UPRR site. Canister Number 1146 was collected at the intersection of 2900 Lavender and 4900 Liberty for a 3-minute collection time. Canister Number 692 was also collected at the intersection of 2900 Lavender and 4900 Liberty for a 1-hour collection time. Canister Number 381 was collected in the proximity of Dogan elementary school located at 4202 Liberty Rd for a 1-hour collection time. All samples were analyzed for VOCs using method TO-15. Of the 3 Benzene detects, two were below the TCEQ PCL, one was above.

EPA Comments and Recommendations: There is no discussion in the draft permit or compliance plan if ambient air sampling will be conducted during remediation activities at the HWPW site. TCEQ has provided EPA copies of dust control and air monitoring plans to be implemented during the construction and excavation activities for the railroad ballast improvement project, when impacted soil may be encountered.

The State has indicated that they will require UPRR to conduct the appropriate environmental sampling i.e., air, particulate, water runoff, etc. during remedial activities with the appropriate halt work provisions.

EPA recommends that the permit require:

- All environmental sampling and monitoring plans be shared with the community and other stakeholders well ahead of any construction activity.

7. Public Participation/Community Involvement Plan

At the request of TCEQ, UPRR has set up a community information web site that contains factsheets about the facility, recent investigation and monitoring reports, permit information, etc. EPA acknowledges that this is an important resource for the community and encourages its use to share reports and sampling results including from suggested testing (discussed above).

EPA Comments and Recommendations: UPRR to develop and implement a Community Involvement/Public Outreach Plan (Plan) for the HWPW site. The Plan should specify prearranged community involvement activities to address community needs, concerns, and expectations that are identified through community interviews, meetings, and other means.

Another important tool in communicating with the community is a mailing list that contains contact information for interested parties. They typically include concerned community members; elected officials; appropriate federal, state, local, and tribal government contacts; local media; environmental groups; civic, religious, and community

organizations; facility employees; and local businesses. We emphasize not to rely on self-identification of interested persons, but combine with robust outreach, including social media and methods (such as telephone) to reach populations without internet access. This approach to fully broadcast and receive messages, should be consistent with civil right obligations.

EPA recommends that the permit require:

- UPRR to work with the community to identify concerns to include developing and implementing a Community Involvement/Public Outreach Plan (Plan) for the HWPW site. The Plan should specify prearranged community involvement activities to address community needs, concerns, and expectations that are identified through community interviews, meetings, and other means.
- UPRR to identify actions to address the community concerns identified from the community outreach activities, and to report out on actions taken to address the concerns.
- UPRR to develop and maintain a mailing list that contains contact information for interested parties.
- UPRR regularly release information and sampling results on an easily accessible website. The transparency of such data will promote public engagement and help build trust among all stakeholders.