July 12, 2021 Project No. 19119232

Ms. Maureen Hatfield
Industrial & Hazardous Waste Permits Section
Texas Commission on Environmental Quality
P.O. Box 13087, MC-130
Austin, Texas 78711-3087

RE: PROPOSED CITY OF HOUSTON STORM WATER SEWER ASSESSMENT WORK PLAN
UNION PACIFIC RAILROAD COMPANY – HOUSTON WOOD PRESERVING WORKS
HOUSTON, HARRIS COUNTY, TEXAS
HAZARDOUS WASTE PERMIT/COMPLIANCE PLAN NO: 50343, ISWR NO 31547
EPA IDENTIFICATION NO TXD000820266; RN100674613/CN600131098

Dear Ms. Hatfield:

Golder Associates Inc. (Golder), member of WSP, has prepared this letter on behalf of Union Pacific Railroad Company (UPRR) to describe the proposed work plan to assess the City of Houston (COH) storm water sewer along Liberty Road adjacent to the UPRR Houston Wood Preserving Works Site (the Site). Golder prepared this work plan based on discussions during an initial conference call with the Texas Commission on Environmental Quality (TCEQ) on April 22, 2021 and a series of subsequent communications with the TCEQ in May and June. As part of these communications, the TCEQ discussed certain information that the COH had provided to the TCEQ regarding a survey of the storm sewer. This information included the following files that TCEQ provided via email to UPRR:

- UPRR CCTV Presentation.pdf
- Liberty Paving and Drainage Plans.pdf
- Liberty Street Storm Sewer data.docx
- Union Pacific Transfer Station sampling and analysis report_Redacted.pdf (Terracon Report dated October 24, 2019)
- Condition of the Collingsworth Storm Sewer.pdf

The initial TCEQ conference call focused on the observations the COH provided the TCEQ from the UPRR CCTV Presentation (which did not list a date or presenter/author). Specifically, the COH reported that it had noted indications of mineralization and discoloration at some of the joints in the storm sewer line. The COH indicated that it had conducted a similar storm sewer video survey in August 2017 near the South Cavalcade Superfund Site (*Condition of the Collingsworth Storm Sewer.pdf)* where non-aqueous phase liquid (NAPL) and mineralization had been observed. The TCEQ stated during the April 22nd conference call that TCEQ had concluded that there

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were no signs of NAPL entering the storm sewer based on TCEQ's review of the COH survey presented in the *UPRR CCTV Presentation.pdf* file. However, the TCEQ requested that UPRR evaluate the files provided by the COH to assess the potential for groundwater discharge into the storm sewer.

UPRR and Golder have reviewed the information that the TCEQ provided. In addition, UPRR is in the process of obtaining the information from the City of Houston directly. Based on the information provided by the TCEQ, in conjunction with groundwater elevation data and related information for the uppermost groundwater bearing unit (GWBU) A-Transmissive Zone (A-TZ) at the Site, the potential for groundwater to seep into the COH storm sewer could not be conclusively determined. As a result, Golder, on behalf of UPRR, proposes to conduct an assessment to evaluate the potential for groundwater discharge into the storm sewer. Detailed below is the proposed work plan for conducting the assessment.

Storm Water Sewer Assessment Procedures

Golder proposes to assess the storm water sewer line through the following activities: 1) conduct a camera survey of the COH storm water sewer line along Liberty Road, and 2) conduct an evaluation of the water outside of the storm water sewer. The proposed method for the camera survey of the storm water sewer line will use a Video Pipe Inspection (VPI) camera to visually inspect the storm drain line interior. The objective of the VPI camera survey will be to assess the sewer line for visual indications of possible breaks in the line and/or seepage into the sewer line, and also to preliminarily assess the potential presence of NAPL in the storm line. The water evaluation will be conducted by using a subcontracted, licensed environmental drilling contractor to install three temporary wells as close to the storm sewer as authorized under the COH monitoring well permitting rules (no closer than 5 feet) and then to collect samples from those wells. More specifically, the objectives of the temporary wells are to:

- Evaluate the potential presence of water within soils extending to the invert of the storm sewer, and if present, collect water samples from the temporary wells using low flow sampling techniques.
- Analyze the water samples for certain indicator parameters (see below) to compare to groundwater samples collected from nearby A-TZ wells; and
- Compare the depth to groundwater in the temporary wells to the invert of the storm sewer pipe.

Details of the proposed assessment are provided below.

Video Pipe Inspection (VPI) Camera Survey

Golder proposes to conduct a VPI camera survey of the COH storm sewer pipe located under Liberty Road. The VPI camera survey will be conducted by a subcontractor with proper equipment and experience with video surveys of underground utilities. As possible and assuming no obstructions or reduced diameter constraints, the VPI camera survey will be conducted from the storm water sewer manhole at the intersection of Liberty Road and Wipprecht Street (MH-1) to the manhole at the intersection of Liberty Road and Cushing (MH-5) (Figure 1). The VPI camera survey will also attempt to survey the storm water sewer extending south under the UPRR Site just west of the Lockwood Street bridge.

Temporary Well Installation

Golder will evaluate the information gathered from the VPI survey and identify three proposed locations for the temporary wells to align where evidence of mineralization or where breaks in the storm sewer are observed. The actual locations of the temporary wells may also be modified based on access limitations and the presence of other underground utilities in the area.

The temporary wells will be completed approximately to the estimated invert elevation of the storm sewer in that area as indicated on COH design drawings (approximately 10 feet bgs) as shown on the Liberty Paving and Drainage Plans file provided by the TCEQ. The temporary wells will be screened across the height of the storm sewer (assumed to be approximately 24 inches to 36 inches in diameter). Each temporary well will be constructed as follows:

- The concrete pavement will be cored to allow the borehole to be excavated. The borehole will be excavated using hydrovac methods (there are numerous underground utilities, including 6-inch and 8-inch industrial natural gas lines, in the area and the hydrovac method will avoid potential contact with these utilities) and hand auger (for collecting a soil sample);
- 2-inch polyvinyl chloride (PVC) well casing and five (5) feet of 0.010 slotted screen will be placed in the borehole;
- Filter pack sand will be placed within the borehole annulus across the screened interval;
- Bentonite pellets will be placed in the borehole annulus above the filter pack to near ground surface; and
- A temporary surface completion consisting of a flush grade traffic rated manhole cover will be placed at the ground surface to protect the well.

Prior to installation, Golder will obtain the required permits from the COH to install the temporary wells within the City of Houston ROW. Since the proposed locations will be within Liberty Road, Golder and the environmental drilling contractor will develop traffic control plans and request lane closure permits from the City of Houston. The proposed boring locations will be delineated with white paint for underground utility clearance. Utility notifications through the Texas 811 Call Before You Dig (CBUD) will be conducted a minimum of 72 hours prior to initiating the investigation activities. Additionally, a private utility locator using ground penetrating radar (GPR) will attempt to locate subsurface utilities within the investigation area. In the event there is a conflict with a proposed location and a located underground utility, the proposed location will be moved to a location cleared of utilities.

Soil cuttings and hydrovac water from the boreholes will be containerized in 55-gallon Department of Transportation (DOT)-rated drums for temporary storage on Site. UPRR's licensed waste contractor will characterize and profile the waste and coordinate final pick-up and disposal to an authorized waste disposal facility.

Following installation of the temporary wells, the wells will be developed through pumping or bailing to remove water added during the hydrovac excavation activities (if water is present). Once the wells have been developed and allowed to recover (assumed to be about 24 hours), sampling activities will be conducted. The temporary wells will be plugged following sample collection and within 48 hours as required under the Texas Department of Licensing & Regulation Water Well Drillers and Water Well Pump Installers Rules (16 TAC Chapter 76).

Sample Collection and Analysis

Golder proposes to collect the following as part of this evaluation:

- Soil samples will be collected during the installation of the temporary wells using a hand auger or similar method from the approximate depth of the storm water pipe (from the bottom two or three feet of the boring).
- Water, if present in the temporary wells, will be collected from the temporary wells using low-flow sampling procedures; and

- Groundwater samples will be collected from nearby monitoring wells screened in the A-TZ GWBU (MW-15A, MW-17, MW-57A, and MW-58A) during the same sampling event.

Prior to sample collection of the waters (and if enough water volume is present), field measurements for pH, electrical conductivity (EC), temperature, dissolved oxygen (DO), and reduction-oxidation potential (redox) will be collected and documented. If an adequate volume of water is available for collection, the water samples will be analyzed for the following parameters:

- Site-specific VOCs by EPA Method 8260;
- Site-specific SVOCs by EPA Method 8270;
- Total Petroleum Hydrocarbons (TPH) by TX1006 Method;
- Major cations (calcium, magnesium, potassium, sodium) and arsenic by EPA Method 6020;
- Major anions (chloride, sulfate, bicarbonate, carbonate), and nitrate by Method 9056A and 2320B (alkalinity);
- Ammonia by EPA Method SM4500; and
- Total dissolved solids (TDS) by EPA Method 2540C.

The soil samples collected during the temporary well installation will be analyzed for:

- Site-specific VOCs by EPA Method 8260;
- Site-specific SVOCs by EPA Method 8270;
- TPH by TX1006 Method; and
- Arsenic by EPA Method 6020.

Site-specific VOCs and SVOCs are listed on Table 1. Samples will be placed in laboratory-supplied containers, preserved as appropriate, and immediately placed on ice. Chain-of-custody procedures will be maintained from the field through the reporting of laboratory results. Soil samples will be sent to ALS Laboratory in Houston, Texas for analysis.

Data Evaluation

The analytical data from the water samples collected from the temporary wells will be compared to the analytical data from the A-TZ groundwater samples from nearby monitoring wells. Also, concentrations of major cations and anions detected in the water samples from the temporary wells and the groundwater samples from the A-TZ wells listed above, will be compared to each other to preliminarily evaluate possible sources of water in the temporary wells.

The water sample analytical results from the temporary wells and A-TZ monitoring wells will be compared to applicable TRRP groundwater protective concentration levels (PCLs). Analytical data for the soil samples collected during the temporary well installation will be compared to the appropriate TRRP soil PCLs.

Schedule and Reporting

Upon the TCEQ's and City of Houston's concurrence with the scope of work detailed in this work plan, Golder will begin implementing the field activities associated with the COH storm water sewer assessment. The field work schedule will be affected by multiple factors including, but not limited to, obtaining permits in a timely manner from the City of Houston, availability of equipment from vendors and subcontractors, and weather conditions. We

anticipate beginning the field activities in late July or early August 2021(pending contractor availability) and project that the field activities will take approximately two weeks to complete.

Following review of the VPI camera survey and water analytical results, Golder will, on behalf of UPRR, prepare a letter report summarizing the findings of the assessment. We anticipate having the storm water sewer assessment summary ready for submittal to the TCEQ within three weeks of receiving the final laboratory analytical results and DUS. We will provide a more detailed schedule once the field work is scheduled.

Please feel free to give me or Kevin Peterburs of UPRR at 414-267-4164 a call if you have any questions or comments.

Sincerely,

Golder Associates Inc.

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

CC: Mr. Kevin Peterburs, Union Pacific Railroad

Attachments: Table 1 – Summary of Site-Specific COCs and Analytical Methods
Figure 1 – Stormwater Sewer Evaluation – Liberty Road

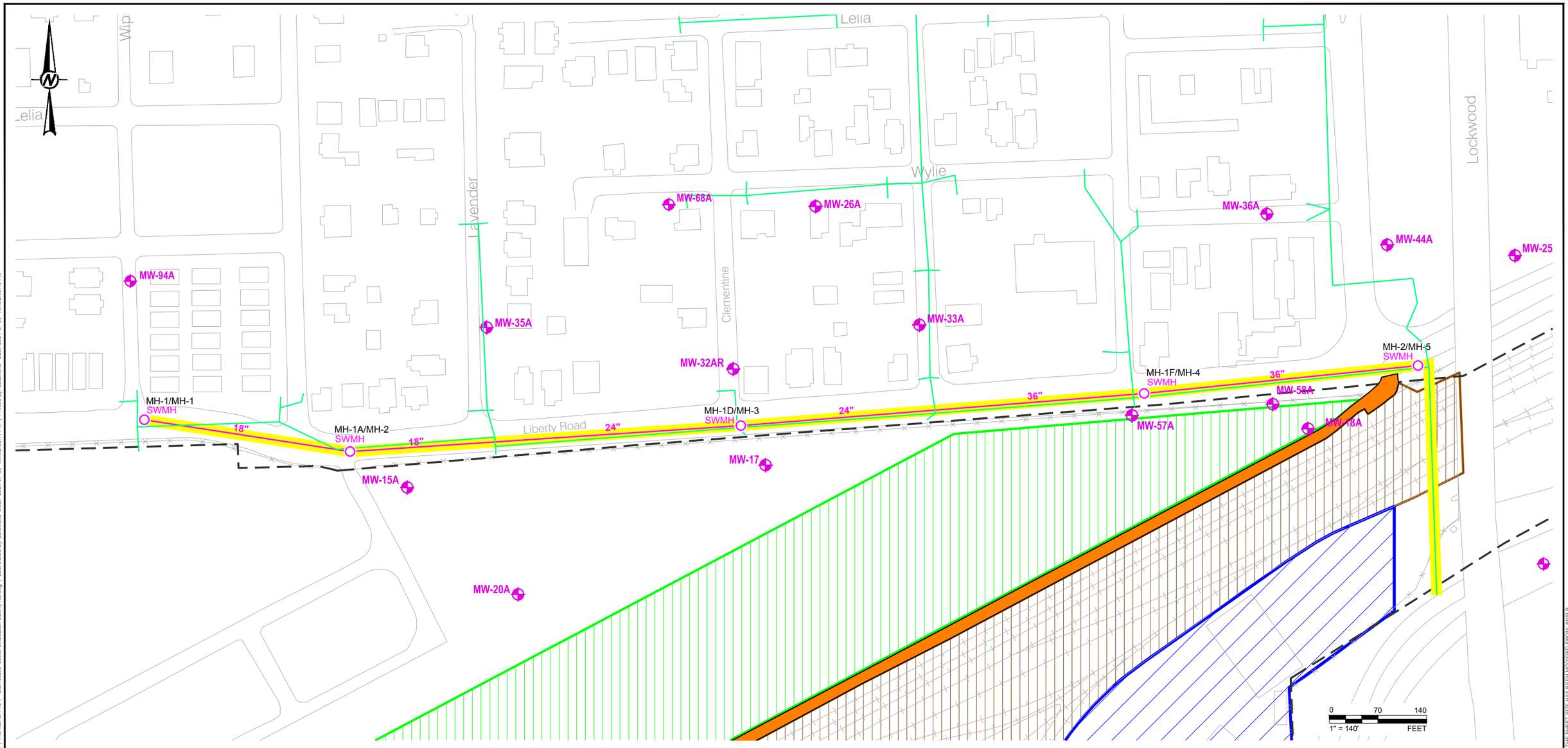
https://golderassociates.sharepoint.com/sites/116841/project files/5 technical work/coh utility maps/coh sw line evaluation/houston tx - wood preserving works - coh sw line assessment wp 20210712.docx

TABLE

TABLE 1
SUMMARY OF SITE-SPECIFIC COCS AND ANALYTICAL METHODS
UPRR HOUSTON WOOD PRESERVING WORKS, HOUSTON, TEXAS

Analytical Parameters	Analytical Method	Analyte	CAS
Site-Wide COCs			
Site-Specific VOCs	**EPA SW-846 8260**	1,2-Dichloroethane	107-06-2
		Benzene	71-43-2
		Chlorobenzene	108-90-7
		Ethylbenzene	100-41-4
		Methylene Chloride	75-09-2
		Toluene	108-88-3
		Xylenes (total)	1330-20-7
Site-Specific SVOCs	**EPA SW-846 8270C (Low Level)**	1,2-Diphenylhydrazine	122-66-7
		2,4-Dimethylphenol	105-67-9
		2,4-Dinitrotoluene	121-14-2
		2,6-Dinitrotoluene	606-20-2
		2-Chloronaphthalene	91-58-7
		2-Methyl-4,6-dinitrophenol	534-52-1
		2-Methylnaphthalene	91-57-6
		4-Nitrophenol	100-02-7
		Acenaphthene	83-32-9
		Acenaphthylene	208-96-8
		Anthracene	120-12-7
		Benzo(a)anthracene	56-55-3
		Benzo(a)pyrene	50-32-8
		bis(2-chloroethoxy)methane	111-91-1
		bis(2-ethylhexyl)phthalate	117-81-7
		Chrysene	218-01-9
		Dibenzofuran	132-64-9
		Di-n-butyl Phthalate	84-74-2
		Fluoranthene	206-44-0
		Fluorene	86-73-7
		Naphthalene	91-20-3
		Nitrobenzene	98-95-3
		n-Nitrosodiphenylamine	86-30-6
		Pentachlorophenol	87-86-5
		Phenanthrene	85-01-8
		Phenol	108-95-2
		Pyrene	129-00-0

FIGURE



LEGEND

- UPRR PROPERTY BOUNDARY
- HISTORIC STRUCTURE AND FEATURE
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- A-TZ MONITORING WELL LOCATION
- RAILROAD BALLAST CAP AREA
- ASPHALT CAP AREA
- SOIL CAP
- CONCRETE CAP AREA
- SWMH — STORMWATER MANHOLE
- STORMWATER LINE
- STORMWATER LINE (GIMS)
- MH-1/MH-1 — COH MANHOLE DESIGNATION/ TERRACON REPORT MANHOLE DESIGNATION (TERRACON, 2019)
- LINE TO BE VPI CAMERA SURVEYED

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

NOTE(S)

1. VERTICAL DATUM BASED ON CITY OF HOUSTON VERTICAL DATUM (HVD).

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
STORMWATER SEWER EVALUATION - LIBERTY ROAD

CONSULTANT
GOLDER
MEMBER OF WSP
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2021-07-09
DESIGNED	AJD
PREPARED	AJD
REVIEWED	ECM
APPROVED	ECM

PROJECT NO.	REV.	FIGURE
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