



PASTOR, BEHLING & WHEELER, LLC
ENGINEERING & ENVIRONMENTAL CONSULTING SERVICES

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January 17, 2018
PBW Project No. 1358

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

Re: Response to Texas Commission on Environmental Quality (TCEQ) Comments on
Post-Response Action Care Report, dated September 29, 2017
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
CN600131098; RN100674613

Dear Ms. Hatfield:

Pastor, Behling & Wheeler, LLC (PBW), on behalf of Union Pacific Railroad Company (UPRR), is pleased to provide the attached response to Texas Commission on Environmental Quality (TCEQ) comment letter dated October 20, 2017 on the Post-Response Action Care Report (PRACR) dated September 29, 2017 for the UPRR Houston Wood Preserving Works Facility (the Site). The responses are structured in Comment-Response manner for your review, and an extra copy is provided as requested. Also enclosed with this response letter is the Updated PRACR prepared by PBW on behalf of UPRR that includes responses to TCEQ comments.

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

Sincerely,

PASTOR, BEHLING & WHEELER, LLC

Eric C. Matzner, P.G.
Associate Hydrogeologist

cc: Mr. Jason Ybarra, Waste Section Manager, TCEQ Region 12, Houston
Ms. Karen Scott, TCEQ IHW Permits (MC130)
Mr. Aaron H. Vargas, TCEQ Environmental Law (MC173)
Mr. Kevin Peterburs, UPRR – Milwaukee, WI

HAND DELIVERED



Response to TCEQ Comments on the PRACR dated September 29, 2017
UPRR Houston Wood Preserving Works
4910 Liberty Road, Houston, Texas

1. *Focus of the inspection appears to be mainly on the soil cap. However, the Draft RAP identifies four capped areas which serve as a physical barrier or engineering control to prevent exposure to affected soil. These capped areas include: (1) the soil cap for the Former UPRR Houston Wood Preserving Works Operational area; (2) the concrete sidewalk cap in the City of Houston Right-of-Way; (3) the concrete cap in the Englewood Intermodal Yard area; and (4) the existing ballast and asphalt roadway cap at UPRR Main lines Ballast area. Revise the PRACR to include more detailed discussion on the condition of all four caps listed above.*

Response to Comment No. 1:

The focus of the inspection following Hurricane Harvey was on the areas most likely to have erosion issues as a result of a large precipitation event. The other cap areas were checked during the inspection; however, the emphasis was placed on the soil cap area. UPRR had conducted quarterly site inspections in the 3rd and 4th Quarters of 2017 in July and October, respectively. Those inspections included evaluations of all of the capped areas. To address the TCEQ comment, the updated PRACR has been amended to include the quarterly inspections conducted during the 3rd and 4th Quarters in addition to the Post-Harvey inspection. The photographic logs for the 3rd and 4th Quarter events are provided in the updated PRACR under Attachments B and C, respectively.

2. *These four capped areas should be labeled on the photographic log.*

Response to Comment No. 2:

The four areas are noted on the photographic logs provided in Attachments A (Post-Harvey Inspection), B (3rd Quarter 2017 Inspection), and C (4th Quarter Inspection).

3. *The PRACR should include a key map that identifies the location of the photographs taken during the cap inspection so any deficiencies noted from the inspection the can be easily identified.*

Response to Comment No. 3:

Maps showing the locations of the photographs included in the photographic logs are provided in Attachment A, B and C.

4. *Furthermore, any deficiencies noted by UPRR should include GPS coordinates.*

Response to Comment No. 4:

GPS coordinates for the photographs have been posted on the photographic log (Attachments A, B, and C).

5. *UPRR should develop an inspection checklist to accompany the photographic log for each capped area noting any deficiencies, and repairs needed or completed, etc.*

Response to Comment No. 5:

PBW incorporated a site inspection checklist prior to the 3rd Quarter (July 2017) inspection. Copies of the inspection records for the July, August, and October inspections are provided in Attachment A, B, and C, respectively.

6. *The following deficiencies were noted by UPRR in the PRACR which UPRR proposed to monitor and make repairs as necessary. However, based on our review of the PRACR, the TCEQ concludes that the deficiencies should be corrected:*
- a. *Photos 3 through 6 showed very tall grass and overgrown vegetation with large shrubs. The tall grass should be mowed and overgrown vegetation and large shrubs should be removed to maintain integrity of the cover. High vegetation around the monitoring wells should be trimmed back or removed.*
 - b. *Photo 9 showed loose silt fencing which should be replaced or removed if it is not needed. Other debris should be removed and any damaged signs replaced.*
 - c. *Photos 6 and 7 showed ruts/rills that should be repaired to prevent ponding of water.*
 - d. *Photos 7 and 10 showed bare patches or minor erosion that should be repaired and re-seeded.*

Response to Comment No. 6:

- a. The heavy vegetation shown on Photos 3 through 6 is located outside of the soil capped area. The soil cap area was mowed in early October 2017 (see Photolog in Attachment C). However, it is important to note that given the soil cap area was planted with pollinator plants, it is necessary to not cut or mow the pollinator plants during pollination. As stated in the Response Action Plan (RAP) Section 5.0, “*Mowing will be performed as needed but less frequently than a grass covered cap and only periodically to promote the growth of desired vegetation and to block the growth of trees or shrubs which could penetrate the cover soil with their roots.*” Therefore, there will be times throughout the year where the vegetation appears tall, but that is necessary to ensure healthy growth of the pollinator plants. UPRR will continue to monitor the vegetation to restrict woody plants or plants with deeper root structures from damaging the capped area.
- b. Silt fencing that is no longer needed for stormwater or sediment control will be removed from the Site.
- c. UPRR is in the process of conducting minor repairs to the capped area where the ruts/rills have been observed. Once the minor repairs are completed, documentation on the repairs will be submitted to the TCEQ in a follow-up submittal.
- d. Similar to the previous comment, UPRR is in the process of conducting minor repairs for the bare patches and minor erosion noted around the soil cap area. Re-establishment of vegetation may take a few months given the dormancy of the vegetation during the winter time until later in the spring. Once the minor repairs are completed, documentation on the repairs will be submitted to the TCEQ in a follow-up submittal.

In addition to the minor repairs noted above, UPRR is evaluating responses to address the tar-like seeps noted in the Englewood Intermodal Yard. During the routine quarterly inspection on July 17, 2017, a tar-like substance was observed surfacing through the joints and cracks in the concrete and asphalt surfaces in the area shown in the attached Figure 1.

Since the initial observation of the tar-like substance at the surface, weekly inspections of the affected area have been conducted. The amount of tar which surfaces each week varies. It generally varies in accordance with the ambient temperature (i.e., greater amounts of the tar-like substance surfaces during warm weather). More recently, the seeps have become dormant with the cooler weather. When significant amounts of the tar-like substance surfaces, a remediation contractor (United States Environmental Services (USES)) is notified to mobilize to the Site to remove and properly dispose of the material. To date, USES has conducted four separate removal operations. All of the recovered tar material is currently being stored in a 55-gallon steel drum.

Currently, the plan is to remove areas of the concrete pavement where the seeps have been identified, excavate impacted soils underneath the area, and repair and replace the subgrade and pavement in the area. UPRR plans to implement the response over the next two months. Following the repairs to the pavement, UPRR will submit to the TCEQ documentation on the repairs.

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
Post-Response Action Care Report (PRACR)

Cover Page

Submittal date: September 27, 2017
(updated January 15, 2018) Regulatory ID No.: SWR 31547 TCEQ Region No.: 12

TCEQ Program (check one)

- Corrective Action (Mail Code 127)
- Voluntary Cleanup Program (Mail Code 221)
- Petroleum Storage Tank Program (Mail Code 137)
- Superfund PRP Lead (Mail Code 143)
- Municipal Solid Waste Permits (Mail Code 124)

On-Site Property Information

On-Site Property Name: Union Pacific Railroad Houston Wood Preserving Works Site
Physical Address:
Street no. 4910 Pre dir: Street name Liberty Street type: Rd Post dir:
City: Houston County: Harris County Code: 101 Zip: 77007
Nearest street intersection or location description: Site is located south of Liberty Rd. between Kashmere and Lockwood St., and north of Lee St.
Latitude: Degrees, Minutes, Seconds OR Decimal Degrees (circle one) North 29.787413
Longitude: Degrees, Minutes, Seconds OR Decimal Degrees (circle one) West 95.321062

Off-Site Affected Property Information

Off-Site Affected Property Name:
Physical Address:
Street no. Pre dir: Street name: Street type: Post dir:
City: County: County Code: Zip:
 Check if no off-site properties affected

Contact Person Information and Acknowledgement

Person (or company) Name: Union Pacific Railroad
Contact Person: Kevin Peterburs Title: Manager, Site Remediation
Mailing Address: 4823 N 119th Street
City: Milwaukee State: WI Zip: 53225 E-mail address: kipeterb@up.com
Phone: 414-267-4164 Fax: 402-659-1496

By my signature below, I acknowledge the requirement of 30 TAC §350.2(a) that no person shall submit information to the executive director or to parties who are required to be provided information under this chapter which they know or reasonably should have known to be false or intentionally misleading, or fail to submit available information which is critical to the understanding of the matter at hand or to the basis of critical decisions which reasonably would have been influenced by that information. Violation of this rule may subject a person to the imposition of civil, criminal, or administrative penalties.

Signature of Person  Name, print: Kevin Peterburs Date: 1-16-18

PRACR Executive Summary	ID No: SWR No. 31547
	Report Date: September 27, 2017/ Updated January 15, 2018

Affected Property Name/Number: UPRR Houston Wood Preserving Works Site

Date of RAP approval: Not Approved, currently under TCEQ review (Rap Rev 3 – June 2017)

Date of RACR approval: Not Approved, currently under TCEQ review (Rap Rev 3 – June 2017)

Length of approved PRAC period (default 30 yrs.): Not Approved, currently under TCEQ review (RAP Rev 3 – June 2017)

Check if this is the final report

If this is the final report, provide documentation in Worksheet 4.0 that the applicable provisions of §350.33(i) have been met.

This reporting period: Start date: July 2017 End date: December 2017

On-site land use for basis of RACR approval Residential Commercial/industrial
 Current on-site land use classification: Residential Commercial/industrial

During this reporting period, have there been any unexpected events or new conditions at the affected property that required an additional response action? Yes No

If yes, provide a brief explanation:

If physical control inspection occurred during this reporting period, what is the status of the physical control?

In response to Hurricane/Tropical Storm Harvey hitting the Houston area, Pastor, Behling & Wheeler, LLC (PBW) on behalf of UPRR conducted a post-storm inspection of the soil cap at the UPRR Houston Wood Preserving Works Site on August 31/September 1, 2017. The soil cap area did not appear to have any significant damage (a few minor erosion rills were noted) as a result of the tropical storm and associated flooding. The other cap areas (concrete sidewalk cap, asphalt road cap, railroad ballast cap, and the concrete cap area in the Englewood Intermodal Yard) also did not appear to have any damage as a result of the significant storm event.

Quarterly inspections had been conducted at the Site of the four main cap areas during the 3rd and 4th Quarters of 2017 in July and October, respectively.

- Soil Cap –The soil cap area continues to function as designed with minor areas of erosion rills and bare spots. UPRR is in the process of conducting the minor repairs to the soil cap area as previously noted.
- Concrete Sidewalk Cap - Sidewalk cap area appeared to be in good condition and functioning as intended.
- Asphalt Road Cap – Asphalt road cap appeared to be in good condition and functioning as designed. A small oil stain was noted during the October 2017 inspection, and will continue to be monitored.
- Railroad Ballast Cap – The railroad ballast cap area appeared to be in good shape, with some vegetation growth within the ballast area. UPRR will continue to remove and control the

PRACR Executive Summary	ID No: SWR No. 31547
	Report Date: September 27, 2017/ Updated January 15, 2018

vegetation within the railroad ballast cap area.

- Concrete Cap (Englewood Intermodal Yard) – The concrete cap area in the Englewood Intermodal Yard continues to function as intended. Response actions for the areas where the tar-like substance has seeped to the surface are currently being evaluated as discussed in Worksheet 2.0. Weekly inspections of the affected area have continued to be conducted, with the remediation contractor scraping the material when a sufficient amount of tar has seeped to the surface.

Have any changes occurred in the person's status during this reporting period to warrant changes in the financial assurance for this affected property? (For example, a change in "small business" status as defined in §350.33(n)(2).) X
___ Yes ___ No

If yes, describe the changes that occurred and the changes in financial assurance that have been or will be taken.

Checklist for Report Completeness

ID No. SWR No. 31547

Report Date: September 27, 2017/
Updated January 15, 2018

Checklist for Report Completeness

Use this checklist to determine the portions of the form that must be submitted for this report. Answer all questions by checking Yes or No. If the answer is Yes include that portion of the report. If the answer is No, do not complete or submit that portion of the report. All form contents that are marked "Required" must be submitted. Form contents marked with an asterisk (*) are not included in the blank form and are to be provided by the person.

Report Contents

	Required	Cover Page	<input checked="" type="checkbox"/>
	Required	Executive Summary	<input checked="" type="checkbox"/>
	Required	Checklist for Report Completeness	<input checked="" type="checkbox"/>
No <input checked="" type="checkbox"/>	<input type="checkbox"/> Yes	Worksheet 1.0 Monitoring Activities	<input type="checkbox"/>
		Attachment 1A* Monitoring Locations Map	<input type="checkbox"/>
No <input type="checkbox"/>	<input type="checkbox"/> Yes	Attachment 1B* Groundwater Gradient Maps	<input type="checkbox"/>
No <input type="checkbox"/>	<input checked="" type="checkbox"/> Yes	Worksheet 2.0 Physical Control Inspection, Operation, and Maintenance	<input checked="" type="checkbox"/>
No <input checked="" type="checkbox"/>	<input type="checkbox"/> Yes	Worksheet 3.0 COC Status	<input type="checkbox"/>
		Attachment 3A* Time Series Graphs	<input type="checkbox"/>
		Attachment 3B* Concentration versus Distance Graphs	<input type="checkbox"/>
		Attachment 3C* PCLE Zone Maps and Cross Sections	<input type="checkbox"/>
		Attachment 3D* Data Summary	<input type="checkbox"/>
No <input checked="" type="checkbox"/>	<input type="checkbox"/> Yes	Worksheet 4.0 Response Action Objectives	<input type="checkbox"/>
No <input checked="" type="checkbox"/>	<input type="checkbox"/> Yes	Appendix 1* Analytical Data	<input type="checkbox"/>
		Appendix 2* Disposition of Derived Waste	<input type="checkbox"/>
	Required	Appendix 3* Chronology	<input type="checkbox"/>

¹ See §350.33(i) to see if conditions are met to justify termination of post-response action care.
TCEQ-10329/PRACR February 2005

Complete this worksheet if a physical control is used as part of the response action.

Provide a detailed description of post-response action care activities during this reporting period related to the inspection, operation, and maintenance of physical controls during this reporting period. Specifically note any differences from the plan documented in the approved RAP and the justification for the variances.

As detailed in the RAP Worksheet 5.0 (pending TCEQ approval), visual inspections will be performed on a quarterly basis and after all major storms. The inspections will focus on the following major issues:

- 1) Erosion of the cap (gullies, rills, or other erosional features on the cap surface or in drainages)
- 2) Sideslope sloughing (slippage)
- 3) Settling/subsidence
- 4) Vegetation deterioration
- 5) Damage from animals (i.e., rodents)
- 6) Groundwater monitoring equipment (wells) (semi-annual basis)

Locations where deficiencies are found shall be marked and repaired as soon as practicable.

Post-Hurricane/Tropical Storm Harvey Inspection

In response to flooding from Hurricane/Tropical Storm Harvey in the Houston area from August 25 through 29, 2017, PBW conducted a post-storm inspection of the soil cap at the UPRR Houston Wood Preserving Works Site on August 31/September 1, 2017.

The soil cap area did not appear to have any significant erosion, sloughing, or subsidence as a result of the tropical storm and associated flooding. Some minor erosion rills were noted along the slopes of the soil cap and will continue to be monitored. Photographs from the soil cap inspection, Quarterly Site Inspection Record, and site map showing the approximate locations for the inspection photos are provided in Attachment A.

Quarterly Inspections, 3rd and 4th Quarters 2017

Quarterly inspections of the four cap areas were conducted during the 3rd and 4th Quarters in July and October 2017, respectively. Results of the site inspections are provided below.

3rd Quarter, 2017 – Inspection Date: 07/20/17

- Soil Cap - During the inspection, the soil cap area did not appear to have any significant erosion, sloughing, or subsidence. Some minor erosion rills (see Photo No. 1 (Lat: 29.78689444, Long: -95.31981667)) and a few bare spots (Photo No. 2 (Lat: 29.78674722, Long: -95.32021389) and Photo No. 5 (Lat: 29.78676667, Long: -95.3201)) were noted along the slopes of the soil cap, but the cap appeared to be functioning as designed.
- Concrete Sidewalk Cap - Sidewalk cap area appeared to be in good condition and functioning as intended.
- Asphalt Road Cap – Asphalt road cap appeared to be in good condition.
- Railroad Ballast Cap – The railroad ballast cap area appeared to be in good shape, with some vegetation growth within the ballast area (Photo No. 26 (Lat: 29.78741389, Long: -

95.32005278)). A contractor was contacted to remove the vegetation by physical means or applying herbicides on the vegetation.

- Concrete Cap (Englewood Intermodal Yard) – Cracks in the pavement were noted, but no soil appeared to be exposed (Photo No. 28 (Lat: 29.78485, Long: -95.31995278)). In the area of parking slots B100 to B109, a tar-like substance was observed surfacing through the joints and cracks in the concrete and asphalt surfaces in the area shown in the attached Figure 1 (Attachment B) (Photo Nos 29 (Lat: 29.78413889, Long: -95.32093056), 30 (Lat: 29.78421667, Long: -95.32085556), and 31(Lat: 29.78422222, Long: -95.32102222)). Since the initial observation of the tar-like substance at the surface, weekly inspections of the affected area have been conducted. The amount of tar which surfaces each week varies. It generally varies in accordance with the ambient temperature (i.e., greater amounts of the tar-like substance surfaces during warm weather). When significant amounts of the tar-like substance surfaces, a remediation contractor (United States Environmental Services (USES)) is notified to mobilize to the Site to remove and properly dispose of the material. To date, USES has conducted four separate removal operations.

Photographs from the 3rd Quarter 2017 cap inspection, Quarterly Site Inspection Record, and site map showing the approximate locations for the inspection photos are provided in Attachment B.

4th Quarter, 2017 – Inspection Date: 10/18/17

- Soil Cap – The soil cap had been mowed in early October 2017. The soil cap area did not appear to have any significant erosion, sloughing, or subsidence noted. Some minor erosion rills (Photo No. 16 (Lat: 29.78736667, Long: -95.31867222)) and a few bare spots (Photo No. 12 (Lat: 29.78735278, Long: -95.31870278) and Photo No. 13 (Lat: 29.787575, Long: -95.31664167)) were observed along the slopes of the soil cap, but the cap appeared to be functioning as designed.
- Concrete Sidewalk Cap - Sidewalk cap area appeared to be in good condition and functioning as intended.
- Asphalt Road Cap – Asphalt road cap appeared to be in good condition. A small oil stain noted on the asphalt (Photo Nos. 31 (Lat: 29.78536389, Long: -95.32168611) and 32 (Lat: 29.78533056, Long: -95.32170833)). UPRR will monitor the oil stain areas.
- Railroad Ballast Cap – The railroad ballast cap area appeared to be in good shape, with some vegetation growth within the ballast area (Photo Nos. 28 (Lat: 29.787525, Long: -95.31661111) and 29 (Lat: 29.78668611, Long: -95.318275)).
- Concrete Cap (Englewood Intermodal Yard) – The tar-like substance was observed surfacing through the joints and cracks in the concrete and asphalt surfaces in the area shown in the attached Figure 1 in Attachment C (Photo Nos. 36 (Lat: 29.78151389, Long: -95.3196027799999), 37 (Lat: 29.78415, Long: -95.3208), 38 (Lat: 29.78415, Long: -95.32079444), and 39 (Lat: 29.78413889, Long: -95.32085556)). The amount of tar surfacing was relatively less compared to the July 2017 inspection. The weekly inspections and scraping of the material by the remediation contractor appears to be controlling the material. However, UPRR is in the process of evaluating a permanent response to address the seep areas.

Physical Control Inspection, Operation, and Maintenance	PRACR Worksheet 2.0 Page <u>3</u> of <u>5</u>	
	ID No: SWR No. 31547	Report Date:09/27/17 Updated 01/15/18

Photographs from the 4th Quarter 2017 cap inspection, Quarterly Site Inspection Record, and site map showing the approximate locations for the inspection photos are provided in Attachment C.

Has the physical control proved to be effective in meeting the response objectives during this reporting period? Yes No

If yes, explain how it was determined that the physical control is effective. If no, explain the actions taken, or that will be taken, to ensure effectiveness of the physical control.

- Soil Cap – Following the post-Harvey inspection, the physical controls were effective against erosion during a major storm event. The soil cap area continues to function as designed with minor areas of erosion rills and bare spots. UPRR is in the process of conducting the minor repairs to the soil cap area as previously noted.
- Concrete Sidewalk Cap - sidewalk cap area appeared to be in good condition and functioning as intended.
- Asphalt Road Cap – Asphalt road cap appeared to be in good condition and functioning as designed. A small oil stain was noted during the October 2017 inspection, and will continue to be monitored.
- Railroad Ballast Cap – The railroad ballast cap area appeared to be in good shape, with some vegetation growth within the ballast area. UPRR will continue to remove and control the vegetation within the railroad ballast cap area.
- Concrete Cap (Englewood Intermodal Yard) – The concrete cap area in the Englewood Intermodal Yard continues to function as intended. Response actions for the areas where the tar-like substance has seeped to the surface are currently being evaluated. Weekly inspections of the affected area have continued to be conducted, with the remediation contractor scraping the material when a sufficient amount of tar has seeped to the surface.

In order to prevent future surfacing of tar substance within the affected area, PBW suggests the following actions:

1. Remove the existing pavement areas as described in Figure 2;
2. Excavate and properly dispose of the affected soils underneath the pavement where the seeps have been noted;
3. Backfill the lower 3 vertical feet (VF) of the excavations with high permeability fill;
4. Install a vault to capture potential tar material that may collect in the excavated area;
5. Place an HDPE liner and compacted structural fill over the high permeability fill;
6. Replace the concrete and asphalt pavement systems; and
7. Return the area into service.

This action is proposed to achieve three goals:

1. Due to the low viscosity of tar, the removal of a large volume of tar-impacted material under the immediate vicinity of the surfacing locations will eliminate the surfacing issue at this location for a significant amount of time;
2. It will simultaneously allow the economic installation of a capture system (i.e., vault) for future tar migration into the affected area; and
3. Allow a thorough evaluation of the subsurface conditions; thereby greatly enhancing UPRR's ability to plan to avoid and/or to directly address the root causes of potential surfacing events at the Intermodal Yard.

In accordance with the approved response action plan, this action would reliably contain the tar within and/or derived from the surface soil and subsurface soil PCLE zone materials; and allow tar to be collected in this area before it can surface, thereby restoring the physical barrier such that on-site worker protection will be ensured.

**Physical Control Inspection,
Operation, and Maintenance**

PRACR Worksheet 2.0 Page 5 of 5

ID No: SWR No. 31547

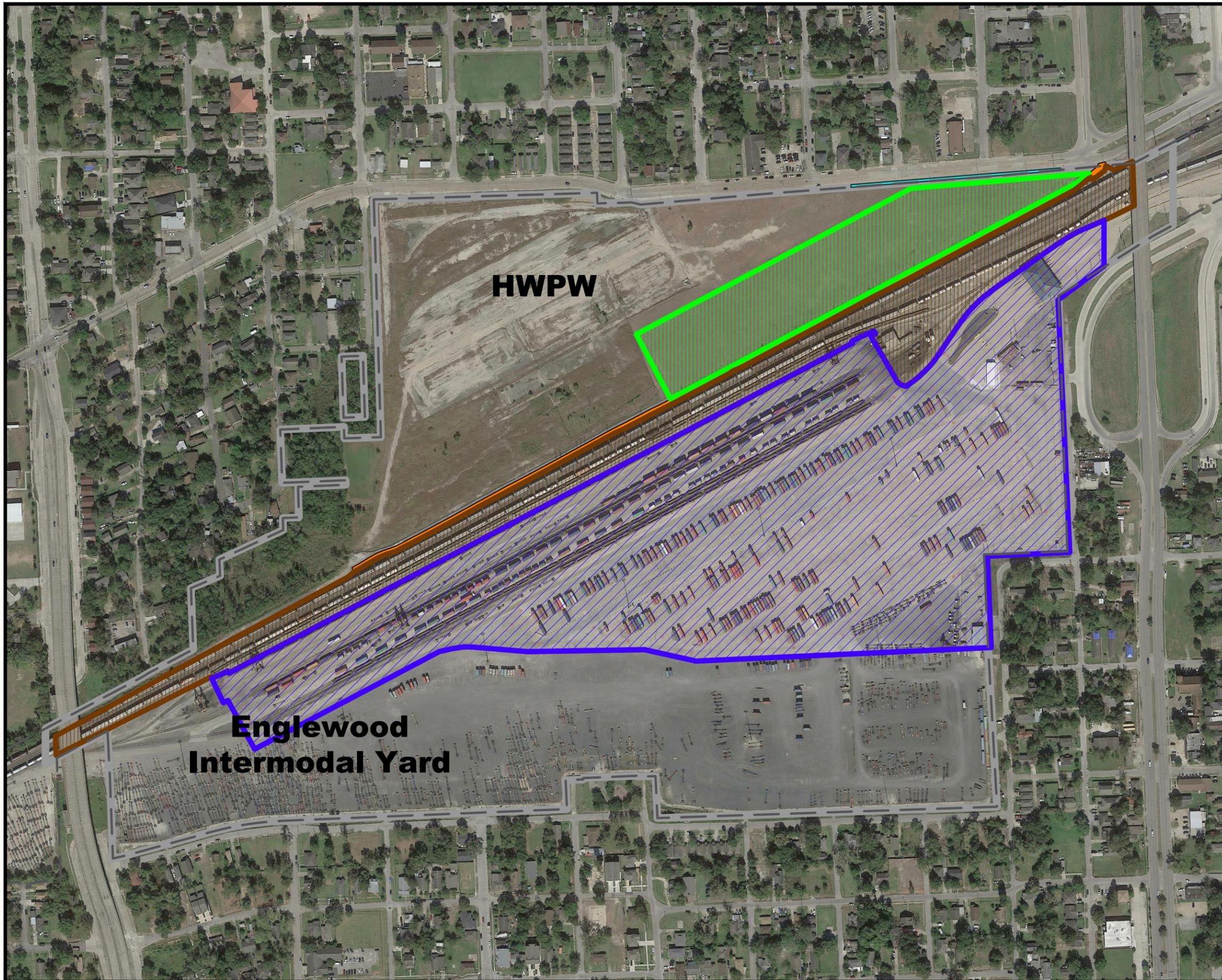
Report Date:09/27/17
Updated 01/15/18

Discuss any unexpected events or new conditions that developed on-site (and off-site, if applicable) during this reporting period and the resulting responses or modifications made to the monitoring plan. Indicate the date the event or condition occurred, the date discovered, the actions taken, and the dates of those actions. Include this information in the chronology in Appendix 3.

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If the physical control is a containment system (e.g., hydraulic containment), what percentage of the time was the system effectively operational?

--



EXPLANATION

-  UPRR Property Boundary
-  Railroad Ballast Cap Area
-  Asphalt Cap Area
-  Soil Cap
-  Concrete Cap Area



Approx. Scale in Feet
 0 160 320

Source:
 Parcel Boundaries: City of Houston Geographic Information & Management Systems (GIMS).
 Aerial: Google Earth, photography dated 10/28/17.

 **UNION PACIFIC RAILROAD CO.**

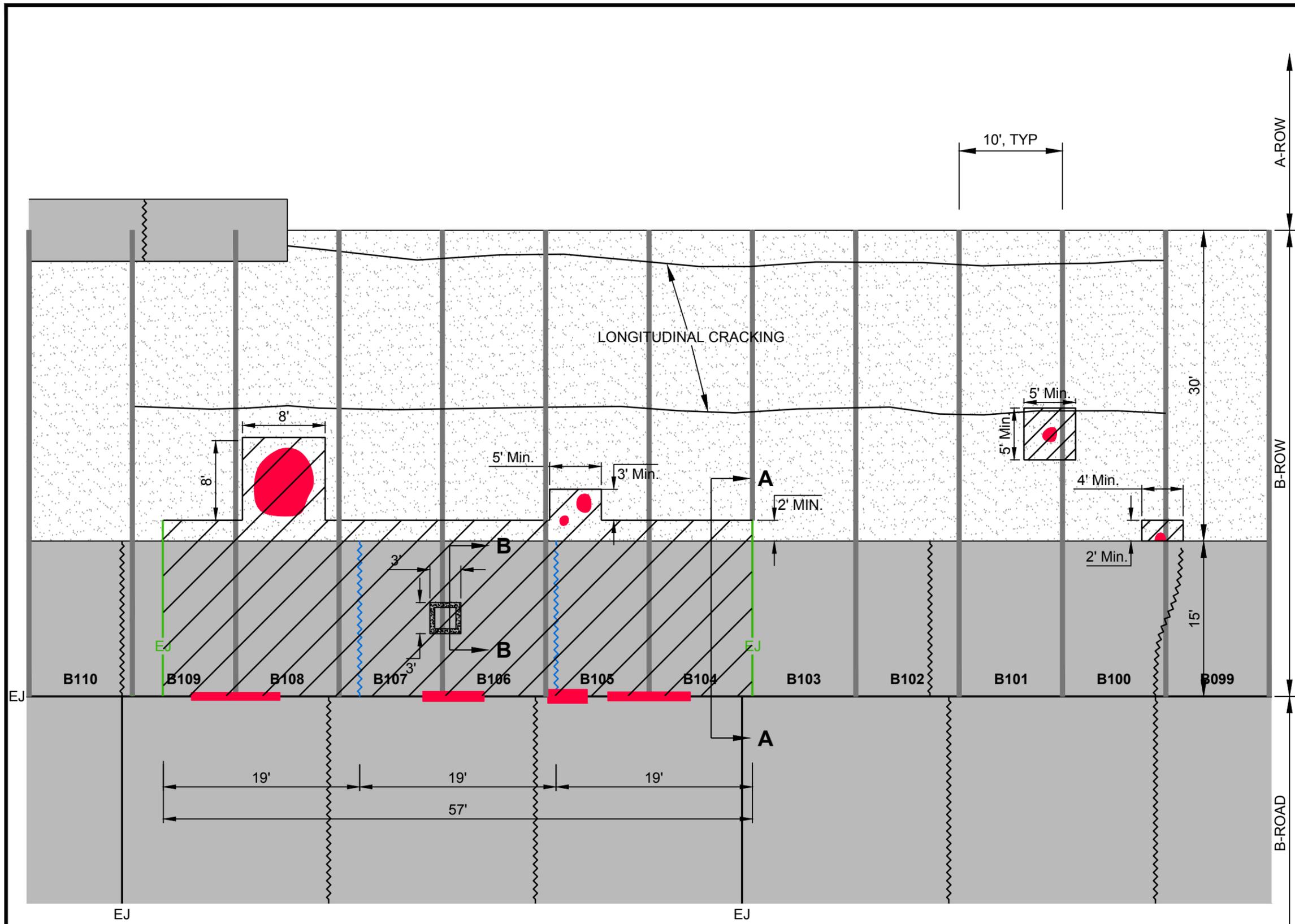
HOUSTON WOOD PRESERVING WORKS

Figure 1

CAPPED AREAS

PROJECT: 1358	BY: BZH	REVISIONS
DATE: JAN., 2018	CHECKED: ECM	

PASTOR, BEHLING & WHEELER, LLC
 CONSULTING ENGINEERS AND SCIENTISTS



EXPLANATION

- Reinforced Concrete Pavement (Typ. 8")
- Asphalt Pavement/Road Base (Typ. 24")
- Existing Expansion/Construction Joint
- Existing Contraction/Control Joint
- Parking Stall Yellow Line (5" Wide)
- Existing Seep Location
- Proposed Area of Excavation
- Proposed Expansion/Construction Joint
- Proposed Contraction/Control Joint
- Proposed Vault (3' x 3')

N
Approx. Scale in Feet
0 5 10

UNION PACIFIC RAILROAD CO.
ENGLEWOOD INTERMODAL YARD

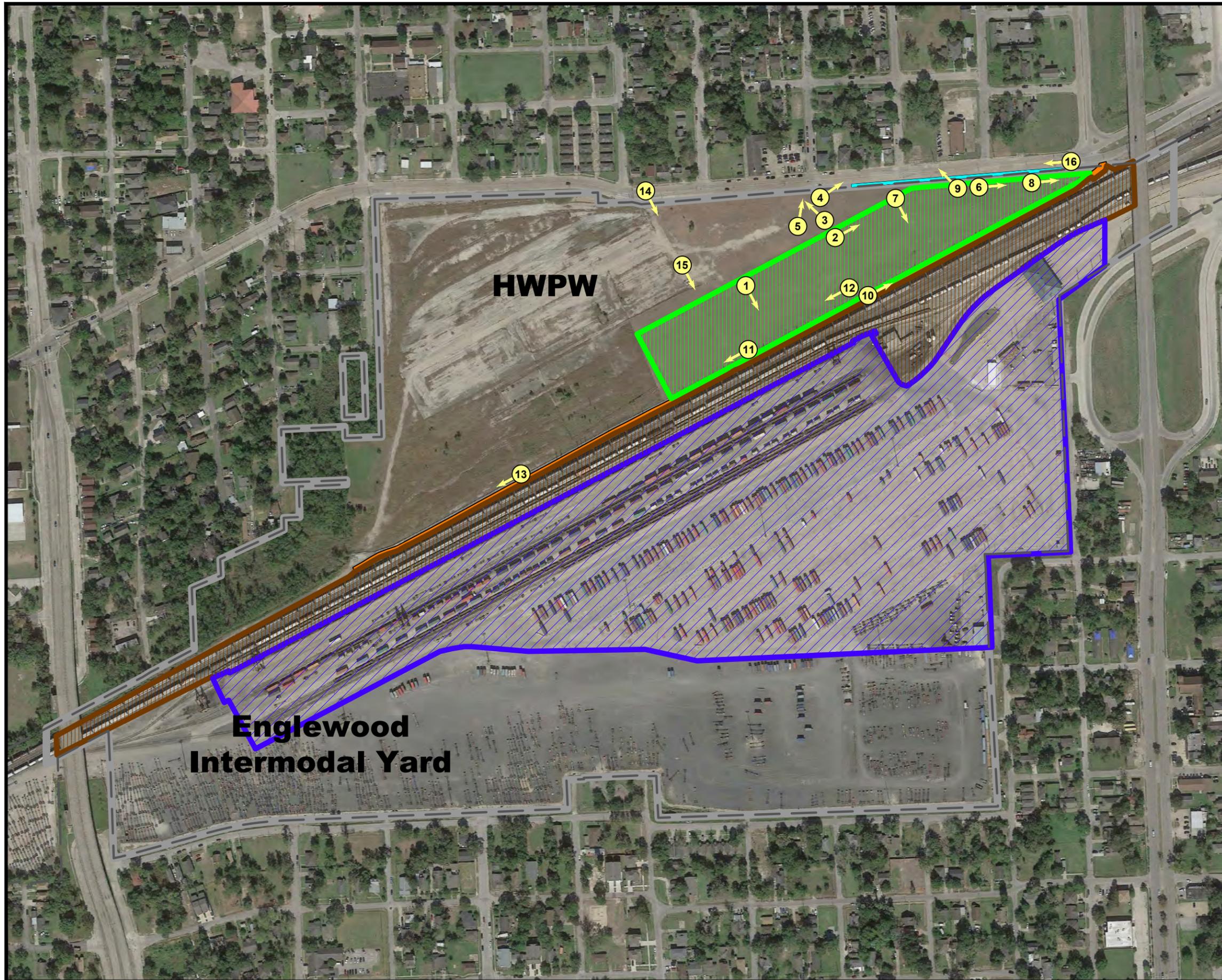
Figure 2
PROPOSED REMEDIAL EXCAVATION

PROJECT: 1358-640	BY: BZH	REVISIONS
DATE: JAN., 2018	CHECKED: ECM	

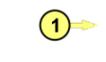
PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS

ATTACHMENT A

POST-HARVEY SOIL CAP INSPECTION RECORD, PHOTOLOG, AND FIGURE



EXPLANATION

-  UPRR Property Boundary
-  Railroad Ballast Cap Area
-  Asphalt Cap Area
-  Soil Cap
-  Concrete Cap Area
-  Photograph Location and Viewing Direction (See Attachment A for photos)



Approx. Scale in Feet
 0 160 320

Source:
 Parcel Boundaries: City of Houston Geographic Information & Management Systems (GIMS).
 Aerial: Google Earth, photography dated 10/28/17.

 **UNION PACIFIC RAILROAD CO.**
 HOUSTON WOOD PRESERVING WORKS

Figure 1
**POST-HURRICANE HARVEY
 INSPECTION PHOTOGRAPH LOCATIONS
 AUGUST 31, 2017**

PROJECT: 1358	BY: AJD	REVISIONS
DATE: JAN., 2018	CHECKED: ECM	

PASTOR, BEHLING & WHEELER, LLC
 CONSULTING ENGINEERS AND SCIENTISTS

ATTACHMENT A - POST-HURRICANE HARVEY INSPECTION

<h1>PBW</h1>		<h2>PHOTOGRAPHIC LOG</h2>	
Client Name: Union Pacific Railroad		Site Location: Houston Wood Preserving Works, 4910 Liberty Road, Houston, Texas	Project No.: 1358-603
Photo No. 1	Date: 8/31/17		
Description: Soil Cap Area: Bare patch in vegetation in the Northeastern soil cap area. Lat: 29.78674444 Long: -95.32016111			
Photo No. 2	Date: 8/31/17		
Description: Soil Cap Area: Healthy vegetation cover on soil cap, looking north-northeast toward Lockwood Bridge. Lat: 29.78717778 Long: -95.31906944			

ATTACHMENT A - POST-HURRICANE HARVEY INSPECTION

PBW

PHOTOGRAPHIC LOG

Client Name: Union Pacific Railroad		Site Location: Houston Wood Preserving Works, 4910 Liberty Road, Houston, Texas	Project No. 1358-603
Photo No. 3	Date: 8/31/17		
Description: Soil Cap Area: Healthy vegetation cover on soil cap looking north-northwest. Some overgrown vegetation along northern fence.			
Lat: 29.78720556 Long: -95.31913889			
Photo No. 4	Date: 8/31/17		
Description: Soil Cap Area: Overgrown vegetation along 80 linear feet of the northern fence line approximately 100 feet from the main HWPW entrance.			
Lat: 29.78748056 Long: -95.31935			

ATTACHMENT A - POST-HURRICANE HARVEY INSPECTION

<h1 style="font-size: 2em; margin: 0;">PBW</h1>		<h2 style="font-size: 1.2em; margin: 0;">PHOTOGRAPHIC LOG</h2>
Client Name: Union Pacific Railroad		Site Location: Houston Wood Preserving Works, 4910 Liberty Road, Houston, Texas
Project No. 1358-603		
Photo No. 5	Date: 8/31/17	
Description: Soil Cap Area: Heavy vegetation along northern fence. Lat: 29.78730556 Long: -95.31932778		
Photo No. 6	Date: 8/31/17	
Description: Soil Cap Area: Rut along northern fence line (outside of capped area) caused by a mower. Facing east toward Lockwood bridge. Lat: 29.78756944 Long: -95.31758056		

ATTACHMENT A - POST-HURRICANE HARVEY INSPECTION

<h1>PBW</h1>		<h2>PHOTOGRAPHIC LOG</h2>	
Client Name: Union Pacific Railroad		Site Location: Houston Wood Preserving Works, 4910 Liberty Road, Houston, Texas	Project No. 1358-603
Photo No. 7	Date: 8/31/17		
Description: Soil Cap Area: Small rill and bare patch with very minor amounts of erosion in north-northeastern area of soil cap. Looking south toward the Englewood Yard shop. Lat: 29.78740278 Long: -95.31867222			
Photo No. 8	Date: 8/31/17		
Description: Soil Cap Area: Loose silt fence on northern fence along Liberty Road. Lat: 29.78758056 Long: -95.31716111			

ATTACHMENT A - POST-HURRICANE HARVEY INSPECTION

<h1 style="font-size: 2em; margin: 0;">PBW</h1>	<h2 style="font-size: 1.2em; margin: 0;">PHOTOGRAPHIC LOG</h2>
---	--

Client Name: Union Pacific Railroad	Site Location: Houston Wood Preserving Works, 4910 Liberty Road, Houston, Texas	Project No. 1358-603
--	--	--------------------------------

Photo No. <b style="font-size: 1.2em;">9	Date: 8/31/17
Description: Soil Cap Area: Silt fence around storm water drain, Liberty Road in the background Lat: 29.78757222 Long: -95.31780278	



Photo No. <b style="font-size: 1.2em;">10	Date: 8/31/17
Description: Asphalt Cap/Soil Cap Areas: Grass cut too short along southern concrete barrier causing the vegetation to die. Facing east toward Lockwood Bridge. Lat: 29.78653611 Long: -95.318925	



ATTACHMENT A - POST-HURRICANE HARVEY INSPECTION

<h1>PBW</h1>		<h2>PHOTOGRAPHIC LOG</h2>	
Client Name: Union Pacific Railroad		Site Location: Houston Wood Preserving Works, 4910 Liberty Road, Houston, Texas	
		Project No. 1358-640	
Photo No. 11	Date: 8/31/17		
Description: Ballast Cap Area: View of railroad ballast, in good shape. Lat: 29.78579444 Long: -95.32003889			
Photo No. 12	Date: 8/31/17		
Description: Ballast Cap Area: Minor amounts of debris and water in ballast cap, facing west. Lat: 29.78648333 Long: -95.31883889			

ATTACHMENT A - POST-HURRICANE HARVEY INSPECTION

<h1>PBW</h1>		<h2>PHOTOGRAPHIC LOG</h2>
Client Name: Union Pacific Railroad		Site Location: Houston Wood Preserving Works, 4910 Liberty Road, Houston, Texas
		Project No. 1358-603
Photo No. 13	Date: 8/31/17	
Description: Ballast Cap Area: Damaged sign along southwestern area of asphalt road. Lat: 29.78525833 Long: -95.32198333		
Photo No. 14	Date: 8/31/17	
Description: Perimeter Fence Area: Furniture dumped on HWPW driveway. Lat: 29.78754167 Long: -95.321075		

ATTACHMENT A - POST-HURRICANE HARVEY INSPECTION

<h1 style="margin: 0;">PBW</h1>	<h2 style="margin: 0;">PHOTOGRAPHIC LOG</h2>
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Client Name: Union Pacific Railroad	Site Location: Houston Wood Preserving Works, 4910 Liberty Road, Houston, Texas	Project No.: 1358-603
--	--	---------------------------------

Photo No.: 15	Date: 9/1/2017
--------------------------------	--------------------------

Description:

Container Storage Area:
 Container storage area with minor amounts of algae inside.

Lat: 29.786775
 Long: -95.32066389



Photo No.: 16	Date: 9/1/17
--------------------------------	------------------------

Description:

Concrete Sidewalk Cap Area:
 Concrete sidewalk in good shape, south side of Liberty Road facing west.

Lat: 29.78766389
 Long: -95.31681111



UPRR HWPW - Quarterly Site Inspection Record

Date: 8/31/17

Time Started: 11:00

Time Ended: 14:30

Weather Conditions: Partly cloudy, hot (upper 80's), humid

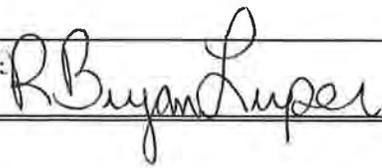
Observations/Comments:

AREA	ITEM	CONDITIONS		COMMENTS, CORRECTIVE ACTIONS NEEDED, COORECTIVE ACTIONS IMPLEMENTED (WITH DATE)
		Normal	Abnormal	
Soil Cap	Erosion	X		Very minor.
	Settlement	X		
	Animal Damage	X		
	Intrusive Shrubs/Trees	X		
	Vegetation Coverage	X		Some bare spots along southern concrete barrier to due vegetation being cut too short by mowers. Some bare spots along NE fence.
	Stressed Vegetation	X		None observed.
	Monitoring Wells Condition	X		Good, some unlocked.
Security Fence	Damaged Posts or Wire		X	Missing two posts in fence along Liberty Road roughly 100 feet west of entrance.
	Functioning Properly	X		Excessive vegetation along 80 linear feet of fence approximately 100 feet east of main entrance.
Asphalt Roadway	Surface Damage	X		
	Settlement	X		
Concrete Barriers	In place	X		
	Damage	X		
Ballast Cap	Surface Damage	X		
	Signs of Soils	X		
	Intrusive Vegetation	X		Some dead grass in ballast.
Concrete Cap (Intermodal Yard)	Surface Damage		X	Puncture in asphalt in parking spot B105, tar seep areas noted.
	Cracking	X		See previous photolog (July 2017).
	Joint Damage		X	See previous photolog (July 2017).
Excavated Areas	Surface Damage	X		Standing water in some locations (swale in SW corner of site).
	Settlement	X		
	Vegetation Coverage	X		
Container Storage Area	Valve Position (Closed)	X		
	Holding Water	X		
	Sheen/Floating Solids	X		

Additional Comments or Observations:

Inspector: Bryan Luper/Jacob Geesin

Inspectors Signature:



PASTOR, BEHLING & WHEELER, LLC

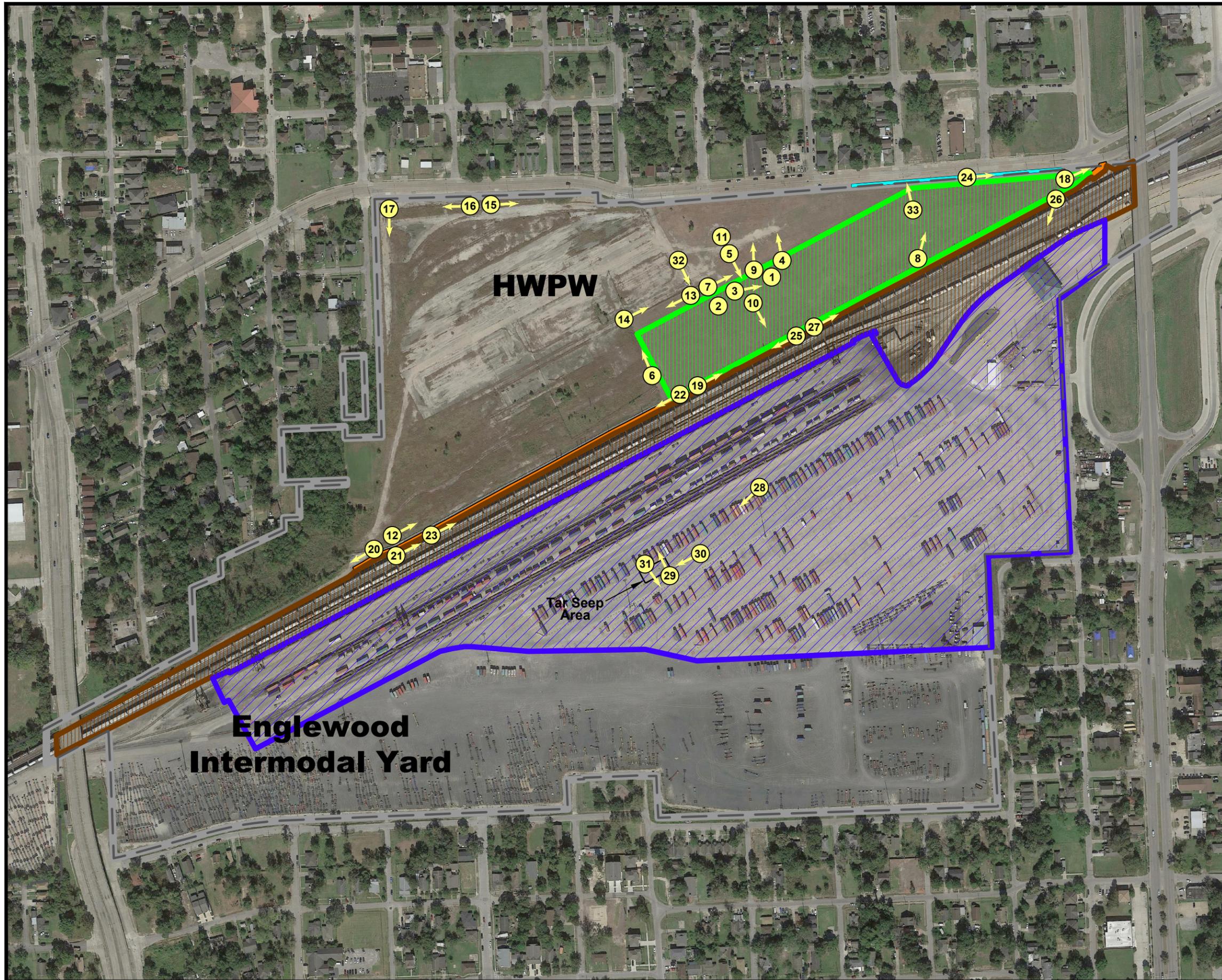
2201 Double Creek Dr., Suite 4004

Round Rock, Texas 78664

Phone: 512-671-3434 Fax: 512-671-3446

ATTACHMENT B

3RD QUARTER 2017 SOIL CAP INSPECTION RECORD, PHOTOLOG, AND FIGURE



EXPLANATION

- UPRR Property Boundary
- Railroad Ballast Cap Area
- Asphalt Cap Area
- Soil Cap
- Concrete Cap Area
- Photograph Location and Viewing Direction (See Attachment B for photos)



Approx. Scale in Feet
 0 160 320

Source:
 Parcel Boundaries: City of Houston Geographic Information & Management Systems (GIMS).
 Aerial: Google Earth, photography dated 10/28/17.

UNION PACIFIC RAILROAD CO.
 HOUSTON WOOD PRESERVING WORKS

Figure 1
JULY 2017
INSPECTION PHOTOGRAPH LOCATIONS

PROJECT: 1358	BY: AJD	REVISIONS
DATE: JAN., 2018	CHECKED: ECM	

PASTOR, BEHLING & WHEELER, LLC
 CONSULTING ENGINEERS AND SCIENTISTS

Client Name:
Union Pacific Railroad

Site Location:
Houston Wood Preserving Works, 4910 Liberty Road,
Houston, Texas

Project No.
1358-603

Photo No.
1

Date:
7/17/17

Description:

Soil Cap Area:

Soil Cap-Erosion-Deep
Rill on north slope of
soil cap

Lat: 29.78689444

Long: -95.31981667



Photo No.
2

Date:
7/17/17

Description:

Soil Cap Area:

Soil Cap-Settlement-
Minor settlement and
small bare area

Lat: 29.78674722

Long: -95.32021389



Client Name: Union Pacific Railroad	Site Location: Houston Wood Preserving Works, 4910 Liberty Road, Houston, Texas	Project No. 1358-603
--	--	--------------------------------

Photo No. 3	Date: 7/17/17
Description: Soil Cap Area: Soil Cap-Intrusive Plants-Tall sunflower seeds along north slope Lat: 29.78673056 Long: -95.32012222	



Photo No. 4	Date: 7/17/17
Description: Soil Cap Area: Soil Cap-Intrusive Plants-Tall vegetation along north slope Lat: 29.78687778 Long: -95.319625	



Client Name:
Union Pacific Railroad

Site Location:
Houston Wood Preserving Works, 4910 Liberty Road,
Houston, Texas

Project No.
1358-603

Photo No.
5

Date:
7/17/17

Description:

Soil Cap Area:

Soil Cap-Vegetative
Coverage-Bare area on
portion of North Slope

Lat: 29.78676667

Long: -95.3201



Photo No.
6

Date:
7/17/17

Description:

Soil Cap Area:

Soil Cap-Vegetative
Coverage- Good cover
along west slope

Lat: 29.78589722

Long: -95.320975



Client Name: Union Pacific Railroad	Site Location: Houston Wood Preserving Works, 4910 Liberty Road, Houston, Texas	Project No. 1358-603
--	--	--------------------------------

Photo No. 7	Date: 7/17/17
------------------------------	-------------------------

Description:

Soil Cap Area:
 Soil Cap-Vegetative Coverage- cover and warning sign

Lat: 29.78676111
 Long: -95.32042778



Photo No. 8	Date: 7/17/17
------------------------------	-------------------------

Description:

Soil Cap Area:
 Soil Cap-Vegetative Coverage- good coverage along top of cap-facing north

Lat: 29.78693611
 Long: -95.31829167



Client Name:
CES Griggs Road PRP Group

Site Location:
Houston Wood Preserving Works, 4910 Liberty Road,
Houston, Texas

Project No.
1358-603

Photo No.
9

Date:
7/17/17

Description:

Soil Cap Area:
Soil Cap-Vegetative
Coverage – pollinator
plants attracting
pollinators.

Lat: 29.78687222
Long: -95.31986111



Photo No.
10

Date:
7/17/17

Description:

Soil Cap Area:
Soil Cap-Vegetative
Coverage- excellent
cover along top of cap
facing south

Lat: 29.78675556
Long: -95.32013056



Client Name:
Union Pacific Railroad

Site Location:
Houston Wood Preserving Works, 4910 Liberty Road,
Houston, Texas

Project No.
1358-640

Photo No.
11

Date:
7/17/17

Description:

Soil Cap Area:

Soil Cap-Vegetative
Coverage- generally
good cover along north
slope of cap-facing west

Lat: 29.78676389

Long: -95.32013611



Photo No.
12

Date:
7/17/17

Description:

Soil Cap Area:

Soil Cap-Vegetative
Coverage- generally
good vegetative
coverage on south side
of sol cap

Lat: 29.78445833

Long: -95.323875



Client Name:
Union Pacific Railroad

Site Location:
Houston Wood Preserving Works, 4910 Liberty Road,
Houston, Texas

Project No.
1358-603

Photo No.
13

Date:
7/17/17

Description:

Soil Cap Area:
Soil Cap-Vegetative
Coverage- good cover
along north slope-facing
west

Lat: 29.78671944
Long: -95.32049444



Photo No.
14

Date:
7/17/17

Description:

Soil Cap Area:
Soil Cap-Vegetative
Coverage- good cover
on north slope facing
east

Lat: 29.786425
Long: -95.32121389



Client Name:
Union Pacific Railroad

Site Location:
Houston Wood Preserving Works, 4910 Liberty Road,
Houston, Texas

Project No.
1358-603

Photo No.
15

Date:
7/17/17

Description:

Perimeter Fence:
Security fence- north
security fence and
Liberty Road

Lat: 29.78756944
Long: -95.32279167



Photo No.
16

Date:
7/17/17

Description:

Perimeter Fence:
Security fence-North
security fence

Lat: 29.78758889
Long: -95.32279167



Client Name: Union Pacific Railroad		Site Location: Houston Wood Preserving Works, 4910 Liberty Road, Houston, Texas	Project No. 1358-603
Photo No. 17	Date: 7/17/17		
Description: Perimeter Fence: Security fence- significant vegetation on West fence Lat: 29.78749722 Long: -95.32383611			
Photo No. 18	Date: 7/17/17		
Description: Perimeter Fence: Security fence-Repaired northeast corner Lat: 29.78759722 Long: -95.31665			

Client Name:
Union Pacific Railroad

Site Location:
Houston Wood Preserving Works, 4910 Liberty Road,
Houston, Texas

Project No.
1358-603

Photo No.
19

Date:
7/17/17

Description:

Asphalt Road/Ballast Cap:

Asphalt Roadway-No surface damage

Lat: 29.7858

Long: -95.32058611



Photo No.
20

Date:
7/17/17

Description:

Asphalt Road Cap:

Asphalt Roadway-West end of asphalt roadway

Lat: 29.78441111

Long: -95.32402778



Client Name:
Union Pacific Railroad

Site Location:
Houston Wood Preserving Works, 4910 Liberty Road,
Houston, Texas

Project No.
1358-603

Photo No.
21

Date:
7/17/17

Description:

Asphalt Road Cap:
Asphalt Roadway-No
surface damage

Lat: 29.78442222
Long: -95.32375278



Photo No.
22

Date:
7/17/17

Description:

**Asphalt Road/Ballast
Cap:**
Concrete Barriers-
Significant vegetative
intrusion underneath
barriers

Lat: 29.78569722
Long: -95.320825



Client Name:
Union Pacific Railroad

Site Location:
Houston Wood Preserving Works, 4910 Liberty Road,
Houston, Texas

Project No.
1358-603

Photo No.
23

Date:
7/17/17

Description:

Asphalt Road/Ballast

Cap:

Concrete barriers-
significant vegetation
protruding under
barriers

Lat: 29.78446944

Long: -95.32368333



Photo No.
24

Date:
7/17/17

Description:

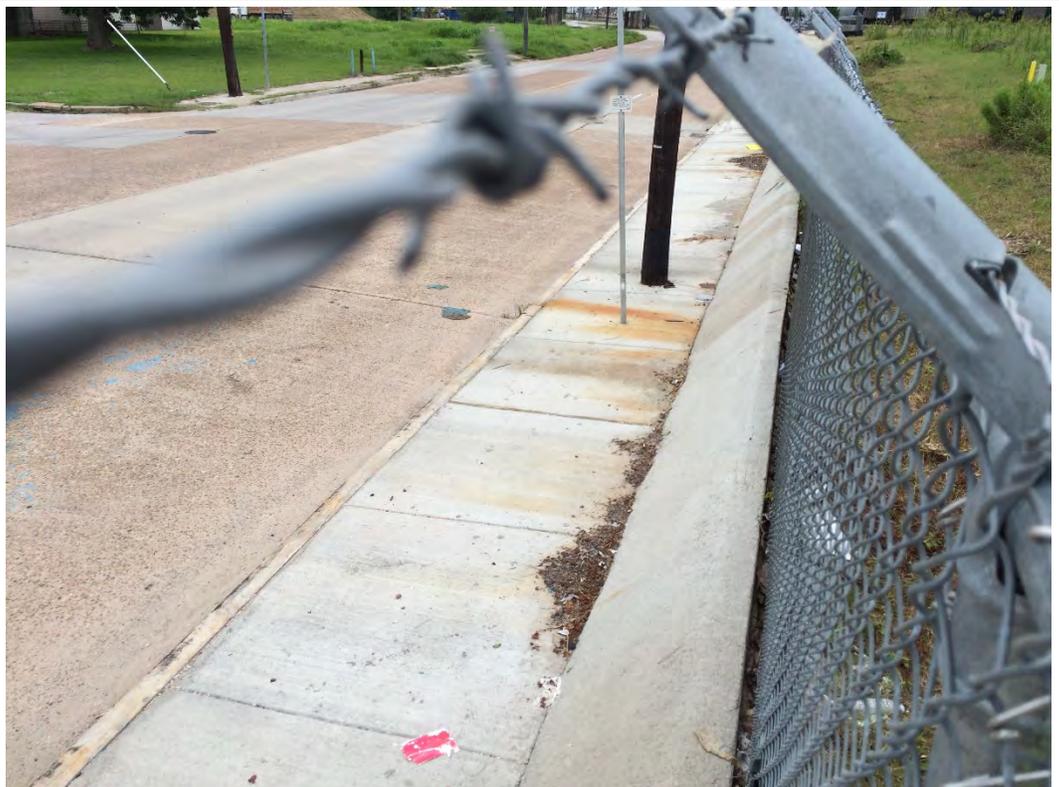
Concrete Sidewalk

Cap Area:

Concrete Sidewalk Cap
Area – looking east

Lat: 29.78760278

Long: -95.31768889



Client Name:
Union Pacific Railroad

Site Location:
 Houston Wood Preserving Works, 4910 Liberty Road,
 Houston, Texas

Project No.
 1358-603

Photo No.
25

Date:
 7/17/17

Description:

Asphalt Road/Ballast
Cap:
 Ballast Cap- Negligible
 vegetation

Lat: 29.78601944
 Long: -95.32004444



Photo No.
26

Date:
 7/17/17

Description:

Asphalt Road/Ballast
Cap:
 Ballast Cap-Some
 areas of significant
 vegetation, note
 warning sign posted for
 cap area.

Lat: 29.78741389
 Long: -95.32005278



Client Name:
Union Pacific Railroad

Site Location:
Houston Wood Preserving Works, 4910 Liberty Road,
Houston, Texas

Project No.
1358-603

Photo No.
27

Date:
7/17/17

Description:

Asphalt Road/Ballast

Cap:

Ballast Cap- Some
vegetation in the cap

Lat: 29.78602222

Long: -95.32005278



Photo No.
28

Date:
7/17/17

Description:

Concrete Cap Area –
Englewood Intermodal
Yard:

Englewood Intermodal
Yard Concrete Cap
Area – cracked
concrete, no soil
exposed.

Lat: 29.78485

Long: -95.31995278



Client Name:
Union Pacific Railroad

Site Location:
Houston Wood Preserving Works, 4910 Liberty Road,
Houston, Texas

Project No.
1358-603

Photo No.
29

Date:
7/17/17

Description:

**Concrete Cap Area –
Englewood Intermodal
Yard:**

Englewood Intermodal
Yard Concrete Cap
Area – cracked
concrete, no soil
exposed.

Lat: 29.78413889
Long: -95.32093056



Photo No.
30

Date:
7/17/17

Description:

**Concrete Cap Area –
Englewood Intermodal
Yard:**

Englewood Intermodal
Yard Concrete Cap
Area – tar-like
substance seeping from
concrete joint.

Lat: 29.78421667
Long: -95.32085556



Client Name:
Union Pacific Railroad

Site Location:
 Houston Wood Preserving Works, 4910 Liberty Road,
 Houston, Texas

Project No.
 1358-603

Photo No.
31

Date:
 7/17/17

Description:

**Concrete Cap Area –
 Englewood Intermodal
 Yard:**

Englewood Intermodal
 Yard Concrete Cap
 Area – tar-like
 substance seeping from
 asphalt area.

Lat: 29.78422222
 Long: -95.32102222



Photo No.
32

Date:
 7/17/17

Description:

**Container Storage
 Area:**

Container Storage
 Area-Valve closed and
 holding water

Lat: 29.78683333
 Long: -95.32066389



Client Name: Union Pacific Railroad	Site Location: Houston Wood Preserving Works, 4910 Liberty Road, Houston, Texas	Project No. 1358-603
--	--	--------------------------------

Photo No. 33	Date: 7/17/17
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Description:

Soil Cap Area:
Monitoring well

Lat: 29.78731667
Long: -95.31830556



Photo No.	Date:
------------------	--------------

Description:

UPRR HWPW - Quarterly Site Inspection Record

Date: 7-20-2017

Time Started: 1130

Time Ended: 1330

Weather Conditions: Partly Cloudy, Light Drizzle at times

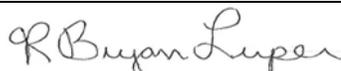
Observations/Comments: Site in generally good condition, seeps noted in intermodal yard (See Photo Log).

AREA	ITEM	CONDITIONS		COMMENTS, CORRECTIVE ACTIONS NEEDED, COORECTIVE ACTIONS IMPLEMENTED (WITH DATE)
		Normal	Abnormal	
Soil Cap	Erosion	X		Some very minor erosion observed in some locations along the north slope of the cap. See Photo 1.
	Settlement	X		Some very minor settlement observed in some locations along the north slope of the cap. See Photo 2.
	Animal Damage	X		None observed
	Intrusive Shrubs/Trees	X		None observed, but mowing is recommended. See Photos 3 & 4.
	Vegetation Coverage	X		Good coverage in most areas. See Photos 5 through 14.
	Stressed Vegetation	X		None observed.
	Monitoring Wells Condition	X		MWs in good condition. See Photo 33.
Security Fence	Damaged Posts or Wire	X		Perimeter fence surrounding property is in good condition (two poles on north side of property are in need of replacement). See Photos 15 through 18.
	Functioning Properly	X		Fence is sufficient to keep out vehicles and to keep pedestrians from entering facility from Liberty Road.
Asphalt Roadway	Surface Damage	X		None observed. See Photos 19 through 21.
	Settlement	X		None observed.
Concrete Sidewalk Cap	Surface Damage	X		None observed. See Photo 24.
	Cracking	X		None observed.
Ballast Cap	Surface Damage	X		None observed.
	Signs of Soils	X		None observed.
	Intrusive Vegetation	X		Some vegetation observed. See Photos 25 through 27.
Concrete Cap (Intermodal Yard)	Surface Damage		X	Parking row B (B100-B109) evidence of tar-like substance seeping to surface (See Photos 29 through 31).
	Cracking	X		Cracks noted in areas of the concrete pavement, no indication of soils exposed.
	Joint Damage		X	Joint sealer missing in areas near B100-B109
Container Storage Area	Valve Position (Closed)	X		Valve in closed position and functioning. See Photo 32.
	Holding Water	X		Containment System 80% full with rainwater.
	Sheen/Floating Solids	X		None observed. See Photo 32.

Additional Comments or Observations:

Inspectors: R Bryan Luper and Eric Matzner

Inspector Signature:



PASTOR, BEHLING & WHEELER, LLC

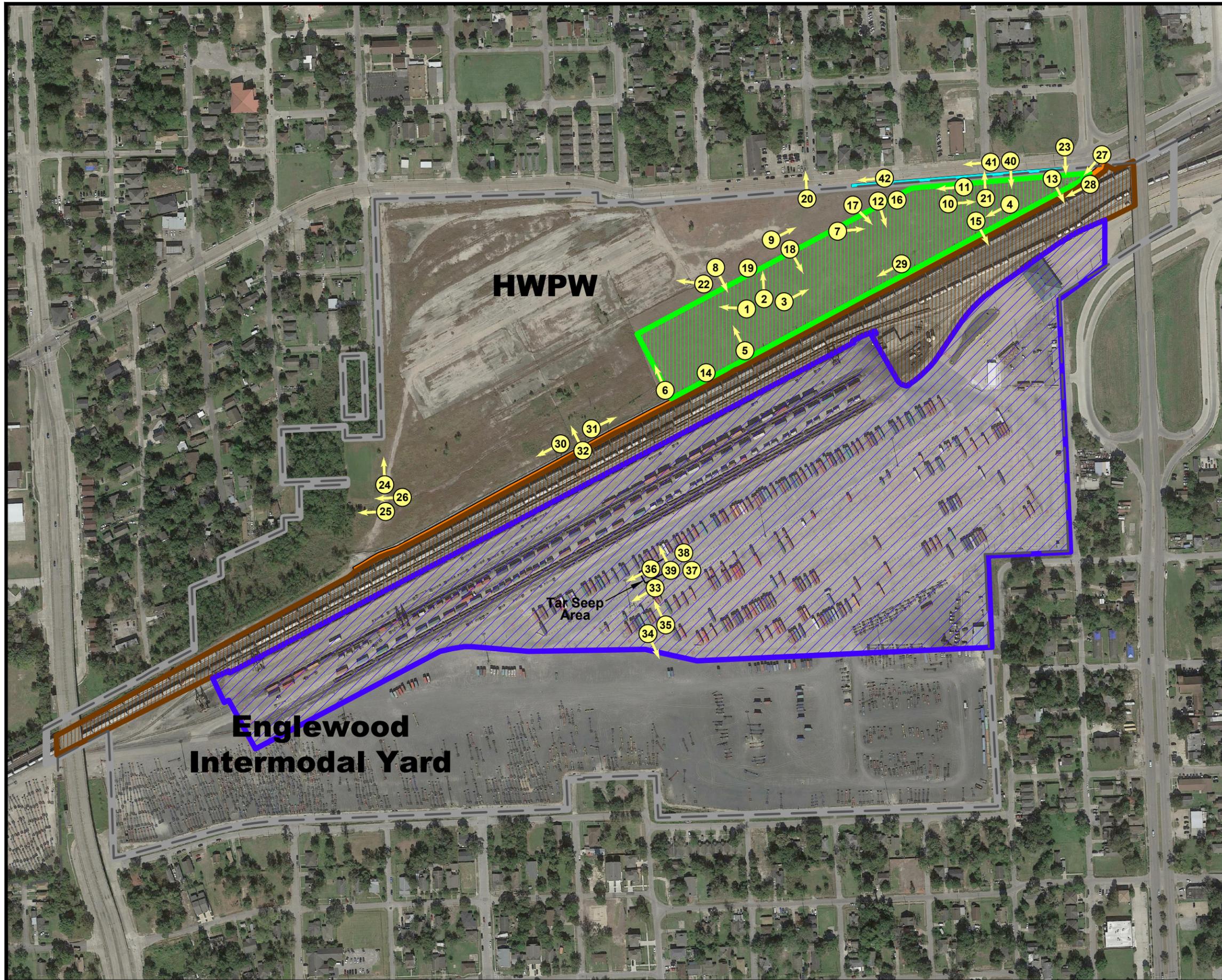
2201 Double Creek Dr., Suite 4004

Round Rock, Texas 78664

Phone: 512-671-3434 Fax: 512-671-3446

ATTACHMENT C

4TH QUARTER 2017 SOIL CAP INSPECTION RECORD, PHOTOLOG, AND FIGURE



EXPLANATION

- UPRR Property Boundary
- Railroad Ballast Cap Area
- Asphalt Cap Area
- Soil Cap
- Concrete Cap Area
- Photograph Location and Viewing Direction (See Attachment B for photos)



Approx. Scale in Feet
 0 160 320

Source:
 Parcel Boundaries: City of Houston Geographic Information & Management Systems (GIMS).
 Aerial: Google Earth, photography dated 10/28/17.

UNION PACIFIC RAILROAD CO.
 HOUSTON WOOD PRESERVING WORKS

Figure 1
OCTOBER 2017
INSPECTION PHOTOGRAPH LOCATIONS

PROJECT: 1358	BY: AJD	REVISIONS
DATE: JAN., 2018	CHECKED: ECM	

PASTOR, BEHLING & WHEELER, LLC
 CONSULTING ENGINEERS AND SCIENTISTS

Client Name: Union Pacific Railroad	Site Location: Houston Wood Preserving Works, 4910 Liberty Road, Houston, Texas	Project No. 1358-603
--	--	--------------------------------

Photo No. 1	Date: 10/18/17
------------------------------	--------------------------

Description:

Soil Cap Area:
 Soil cap facing
 northeast toward CSA

Lat: 29.78648889,
 Long: -95.32003056



Photo No. 2	Date: 10/18/17
------------------------------	--------------------------

Description:

Soil Cap Area:
 Soil cap, facing north

Lat: 29.78649444,
 Long: -95.32003056



Client Name:
Union Pacific Railroad

Site Location:
Houston Wood Preserving Works, 4910 Liberty Road,
Houston, Texas

Project No.
1358-603

Photo No.
3

Date:
10/18/17

Description:

Soil Cap Area:

Soil cap looking west
toward Lockwood
bridge

Lat: 29.78643889,
Long: -95.32006111



Photo No.
4

Date:
10/18/17

Description:

Soil Cap Area:

Soil cap looking east

Lat: 29.78737222,
Long: -95.317191669



Client Name: Union Pacific Railroad	Site Location: Houston Wood Preserving Works, 4910 Liberty Road, Houston, Texas	Project No. 1358-603
--	--	--------------------------------

Photo No. 5	Date: 10/18/17
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Description:

Soil Cap Area:
 Western portion of soil cap, looking north

Lat: 29.78598056,
 Long: -95.32039722



Photo No. 6	Date: 10/18/17
------------------------------	--------------------------

Description:

Soil Cap Area:
 Western toe of soil cap looking north

Lat: 29.78573889,
 Long: -95.32090833



Client Name: Union Pacific Railroad		Site Location: Houston Wood Preserving Works, 4910 Liberty Road, Houston, Texas	Project No. 1358-603
Photo No. 7	Date: 10/18/17		
Description: Soil Cap Area: Eastern toe of soil cap, facing east toward Lockwood bridge Lat: 29.78715833, Long: -95.31896944			
Photo No. 8	Date: 10/18/17		
Description: Soil Cap Area: Soil cap and warning sign, looking south Lat: 29.78672778, Long: -95.3205638899			

Client Name: Union Pacific Railroad	Site Location: Houston Wood Preserving Works, 4910 Liberty Road, Houston, Texas	Project No. 1358-603
--	--	--------------------------------

Photo No. 9	Date: 10/18/17
------------------------------	--------------------------

Description:

Soil Cap Area:
 Northern toe of soil cap,
 looking east

Lat: 29.78696111,
 Long: -95.31979444



Photo No. 10	Date: 10/18/17
-------------------------------	--------------------------

Description:

Soil Cap Area:
 Northeastern part of the
 soil cap and monitoring
 wells, looking east,
 Liberty Road to the left
 of the photo.

Lat: 29.78753333,
 Long: -95.31768889



Client Name: Union Pacific Railroad		Site Location: Houston Wood Preserving Works, 4910 Liberty Road, Houston, Texas	Project No. 1358-603
Photo No. 11	Date: 10/18/17		
Description: Soil Cap Area: Northern toe of soil cap, looking west, Liberty Road to the right of the photo. Lat: 29.78756667, Long: -95.31767222			
Photo No. 12	Date: 10/18/17		
Description: Soil Cap Area: Bare area on northeastern toe of cap, facing south-southeast Lat: 29.78735278, Long: -95.31870278			

Client Name: Union Pacific Railroad	Site Location: Houston Wood Preserving Works, 4910 Liberty Road, Houston, Texas	Project No. 1358-603
--	--	--------------------------------

Photo No. 13	Date: 10/18/17
Description: Soil Cap Area: Large bare area along southern concrete barrier Lat: 29.787575, Long: -95.31664167	



Photo No. 14	Date: 10/18/17
Description: Soil Cap Area: View of pollinator plants along the southern portion of the soil cap area. Lat: 29.78581944, Long: -95.320625	



Client Name:
Union Pacific Railroad

Site Location:
Houston Wood Preserving Works, 4910 Liberty Road,
Houston, Texas

Project No.
1358-603

Photo No.
15

Date:
10/18/17

Description:

Soil Cap Area:

Large bare areas in the main body of cap, looking south.

Lat: 29.78727222,
Long: -95.31748333



Photo No.
16

Date:
10/18/17

Description:

Soil Cap Area:

Settlement and erosion in northern toe of cap, sharpie for scale

Lat: 29.78736667,
Long: -95.31867222



Client Name: Union Pacific Railroad		Site Location: Houston Wood Preserving Works, 4910 Liberty Road, Houston, Texas	Project No. 1358-603
Photo No. 17	Date: 10/18/17		
Description: Soil Cap Area: Bare area in main body of soil cap, facing southeast Lat: 29.78728056, Long: -95.3189			
Photo No. 18	Date: 10/18/17		
Description: Soil Cap Area: Minor erosion and bare area along northern toe of cap, looking south Lat: 29.78693889, Long: -95.319725			

Client Name:
Union Pacific Railroad

Site Location:
Houston Wood Preserving Works, 4910 Liberty Road,
Houston, Texas

Project No.
1358-603

Photo No.
19

Date:
10/18/17

Description:

Soil Cap Area:

Minor bare area and erosion along northern toe of cap. Sharpie for scale

Lat: 29.78678056,
Long: -95.3201



Photo No.
20

Date:
10/18/17

Description:

Perimeter Fence Area:

Silt fencing along northern perimeter fence, no longer required with vegetation established, looking north across Liberty Road

Lat: 29.78745833,
Long: -95.31930559



Client Name:
Union Pacific Railroad

Site Location:
Houston Wood Preserving Works, 4910 Liberty Road,
Houston, Texas

Project No.
1358-603

Photo No.
21

Date:
10/18
/17

Description:

Perimeter Fence Area:

Monitoring wells near northern perimeter fence.

Lat: 29.78757222,
Long: -95.3175361



Photo No.
22

Date:
10/18
/17

Description:

Container Storage Area:

Container storage area with no standing water and a closed valve

Lat: 29.7867,
Long: -95.3205805



Client Name: Union Pacific Railroad	Site Location: Houston Wood Preserving Works, 4910 Liberty Road, Houston, Texas	Project No.: 1358-603
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Photo No. 23	Date: 10/18/17
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Description:

Soil Cap Area:
Cut grass near the entrance to HWPW

Lat: 29.78773889,
Long: -95.316658329



Photo No. 24	Date: 10/18/17
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Description:

SWMU 1:
Cut grass outside the entrance to SWMU-1.

Lat: 29.78481667,
Long: -95.32388333



Client Name:
Union Pacific Railroad

Site Location:
Houston Wood Preserving Works, 4910 Liberty Road,
Houston, Texas

Project No.
1358-603

Photo No.
25

Date:
10/18/17

Description:

SWMU 1:
Southern fence of
SWMU-1

Lat: 29.78481667,
Long: -95.32388333



Photo No.
26

Date:
10/18/17

Description:

SWMU 1:
SWMU-1

Lat: 29.7849,
Long: -95.32389722



Client Name: Union Pacific Railroad	Site Location: Houston Wood Preserving Works, 4910 Liberty Road, Houston, Texas	Project No. 1358-603
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Photo No. 27	Date: 10/18/17
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Description:

Asphalt Cap Area:
 View of asphalt cap area from near Liberty Road looking west

Lat: 29.78768056,
 Long: -95.31634444



Photo No. 28	Date: 10/18/17
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Description:

Asphalt Cap Area:
 Asphalt road, looking west.

Lat: 29.787525,
 Long: -95.31661111



Client Name:
Union Pacific Railroad

Site Location:
Houston Wood Preserving Works, 4910 Liberty Road,
Houston, Texas

Project No.
1358-603

Photo No.
29

Date:
10/18/17

Description:

**Asphalt Cap/Ballast
Cap Area:**

Vegetation growing
inside of ballast cap
area.

Lat: 29.78668611,
Long: -95.318275



Photo No.
30

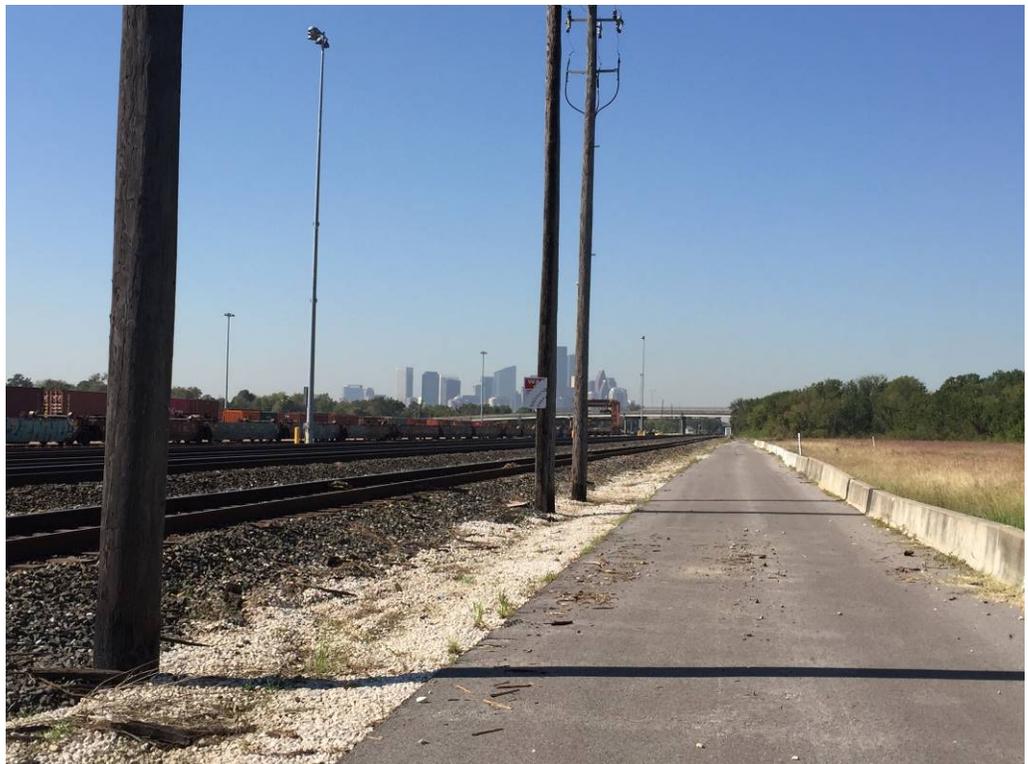
Date:
10/18/17

Description:

**Asphalt Cap/Ballast
Cap Area:**

View of ballast cap and
asphalt road areas,
damaged warning sign
along asphalt road

Lat: 29.78536389,
Long: -95.32168611



Client Name:
Union Pacific Railroad

Site Location:
Houston Wood Preserving Works, 4910 Liberty Road,
Houston, Texas

Project No.
1358-603

Photo No.
31

Date:
10/18/17

Description:

**Asphalt Cap/Ballast
Cap Area:**

View of asphalt cap
area and ballast cap
area, looking northeast.
Note small oily stains
on pavement.

Lat: 29.78536389,
Long: -95.32168611



Photo No.
32

Date:
10/18/17

Description:

Asphalt Cap Area:

View of asphalt cap
area. Note small oily
stains on pavement
(pen for scale).

Lat: 29.78533056,
Long: -95.32170833



Client Name:
Union Pacific Railroad

Site Location:
Houston Wood Preserving Works, 4910 Liberty Road,
Houston, Texas

Project No.
1358-603

Photo No.
33

Date:
10/18/17

Description:

Concrete Cap Area:
Concrete cap near parking spot C129, note cracks in concrete but no soil exposed.

Lat: 29.784,
Long: -95.32106669



Photo No.
34

Date:
10/18/17

Description:

Concrete Cap Area:
Joint damage near D130 but no soil exposed.

Lat: 29.78373333,
Long: -95.32101389



Client Name:
Union Pacific Railroad

Site Location:
Houston Wood Preserving Works, 4910 Liberty Road,
Houston, Texas

Project No.
1358-603

Photo No.
35

Date:
10/18/17

Description:

Concrete Cap Area:
Joint damage but no
soil exposed.

Lat: 29.78372222,
Long: -95.32103056



Photo No.
36

Date:
10/18/17

Description:

Concrete Cap Area:
Tar-like material seeps
near B108, along joint.

Lat: 29.78151389,
Long: -95.319602779



Client Name:
Union Pacific Railroad

Site Location:
Houston Wood Preserving Works, 4910 Liberty Road,
Houston, Texas

Project No.
1358-603

Photo No.
37

Date:
10/18/17

Description:

Concrete Cap Area:
Tar-like material seeps
near B104, along joint.

Lat: 29.78415,
Long: -95.3208



Photo No.
38

Date:
10/18/17

Description:

Concrete Cap Area:
Tar-like material seeps
near B102, along joint.

Lat: 29.78415,
Long: -95.32079444



Client Name:
Union Pacific Railroad

Site Location:
 Houston Wood Preserving Works, 4910 Liberty Road,
 Houston, Texas

Project No.
 1358-603

Photo No.
39

Date:
 10/18/17

Description:

Concrete Cap Area:
 Tar-like material seeps
 near B105, along joint.

Lat: 29.78413889,
 Long: -95.32085556



Photo No.
40

Date:
 10/18/17

Description:

**Perimeter Fence/
 Concrete Sidewalk
 Cap Area:**
 Warning sign on the
 northern perimeter
 fence.

Lat: 29.78764167,
 Long: -95.31747499



Client Name:
Union Pacific Railroad

Site Location:
Houston Wood Preserving Works, 4910 Liberty Road,
Houston, Texas

Project No.
1358-603

Photo No.
41

Date:
10/18/17

Description:

**Perimeter Fence/
Concrete Sidewalk
Cap Area:**

View of the sidewalk
cap area, looking west
along Liberty Road.

Lat: 29.78765278,
Long: -95.317458329



Photo No.
42

Date:
10/18/17

Description:

**Perimeter Fence/
Concrete Sidewalk
Cap Area:**

View of the sidewalk
cap area, looking west
along Liberty Road

Lat: 29.78749722,
Long: -95.31861944



UPRR HWPW - Quarterly Site Inspection Record

Date: 10/18/17

Time Started: 10:30

Time Ended: 12:30

Weather Conditions: Sunny, clear, mid 70's to 80's

Observations/Comments:

AREA	ITEM	CONDITIONS		COMMENTS, CORRECTIVE ACTIONS NEEDED, COORECTIVE ACTIONS IMPLEMENTED (WITH DATE)
		Normal	Abnormal	
Soil Cap	Erosion	X		Some erosion at northern the northern toe of the cap, see photos.
	Settlement	X		
	Animal Damage	X		
	Intrusive Shrubs/Trees	X		
	Vegetation Coverage	X		Good overall coverage, some minor bare areas. Prominent bare areas along southern concrete barriers.
	Stressed Vegetation	X		Signs of little recent rainfall.
	Monitoring Wells Condition	X		
Security Fence	Damaged Posts or Wire		X	Two missing posts approximately 150' west of the main entrance.
	Functioning Properly	X		
Asphalt Roadway	Surface Damage	X		
	Settlement	X		
Concrete Sidewalk Cap	Surface Damage	X		
	Cracking	X		
Ballast Cap	Surface Damage	X		
	Signs of Soils	X		
	Intrusive Vegetation		X	Grass and weeds growing through the ballast, see photos.
Concrete Cap (Intermodal Yard)	Surface Damage		X	Tar seeps near B100 - B109 slots, USES called out to scrape up material, see photos.
	Cracking	X		Minor cracking at the west end of the A/B row. See photos
	Joint Damage	X		Some damage along B row and at D130.
Excavated Areas	Surface Damage	X		
	Settlement	X		
	Vegetation Coverage	X		Good vegetation coverage
Container Storage Area	Valve Position (Closed)	X		
	Holding Water	X		No standing water
	Sheen/Floating Solids	X		None

Additional Comments or Observations: Heavy vegetation along northern fence approximately 100' from the main entrance. It may damage the fence if it continues to grow. There is a warning sign along the asphalt road that has broken in half.

Inspector: *Jacob Geesin*

Inspectors Signature: *[Signature]*

PASTOR, BEHLING & WHEELER, LLC

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