State of Oregon
Department of Environmental Quality Memorandum

Date: December 30, 2016

To: DEQ File #1146

Through: Donald E. Hanson, Environmental Cleanup Program Manager

From: Greg Aitken, Project Manager

Subject: **Recommendation to Implement the 2016 Union Pacific Cleanup Plan Ashland Railroad Yard, Ashland**

1. Introduction

This memo supports DEQ's recommendation that Union Pacific implement its September 2016 Remedial Action Plan. The plan effectively implements the remedial action selected for soil contamination as described in DEQ's 2001 Record of Decision (ROD) dated March 2001. The cleanup proposed by Union Pacific will result in the site being protective of human health and the environment, consistent with the cleanup standards specified in Oregon Revised Statute (ORS) 465.315 and Oregon Administrative Rule (OAR) 340-122-040.

Contaminants at the Ashland railyard include lead, arsenic, polynuclear aromatic hydrocarbons, and petroleum hydrocarbons in soil. DEQ's 2001 ROD assumed future mixed commercial and residential site use, with no beneficial future use of shallow site groundwater given the availability of city water. The selected remedial alternative in the ROD was excavation and off-site disposal of all soils exceeding residential cleanup levels; removal of facility operations features including ponds, building foundations, and monitoring/product recovery wells; and backfilling excavations with clean imported soil.

In 2006, Union Pacific submitted a cleanup plan to DEQ for excavation of about 35,500 cubic yards of soil to meet the cleanup objectives specified in the ROD. After hearing significant objections from the community about the 3,300 truckloads of contaminated soil that would have to have been transported from the railyard on city streets, Union Pacific suspended further work on the project. In 2010, Union Pacific resumed planning site cleanup of the railyard, and in 2016 submitted an updated plan that included use of railcars instead of trucks for offsite hauling of contaminated soils excavated from the railyard.

This memo summarizes DEQ's review of Union Pacific's 2016 Remedial Action Plan, and provides the basis for DEQ's conclusion that the plan responds appropriately to the requirements of the 2001 ROD.

2. Site History, Contamination, and Selected Remedial Action

The Ashland railyard encompasses about 20 acres located at 536 A Street in the city of Ashland. It was used between 1887 and 1986 for fueling and repair of locomotives and railcars. The yard is currently vacant, and it was fenced in 2006 to discourage trespassing. Though no longer evident (see Figure 1), at times in the past the railyard featured several prominent structures, including a hotel, passenger station, freight station, car repair shed, turntable, roundhouse, and a 3 million gallon aboveground bunker oil tank.

Properties next to the yard include a mixture of residential and commercial land uses, and the area has undergone significant revitalization as part of the Ashland Historic Railroad District. A mainline track and rail spur operated by Central Oregon & Pacific Railroad, Inc. are located along the site's southern boundary.

Most railroad operations appear to have taken place many years ago in two main areas of the railyard (see Figure 2), as follows:

1) Locomotive fueling and service area, which included a former drip slab, roundhouse, and wastewater retention ponds. Steam locomotives were refueled from a 3,000,000 gallon bunker C oil tank in this area until diesel locomotives were brought into service in 1955. The drip slab was installed in the mid-1980s to contain diesel fuel and lubricating oils, and the roundhouse was used for welding, painting, lubricating, and cleaning of locomotive equipment. The ponds were used for retaining wastewater until they were decommissioned in 1978.

2) The car repair shed area had limited railcar maintenance activities, including welding, touch-up painting bearing replacement, and lubrication.

The environmental investigation of the site was completed in 1999 with DEQ's oversight, and it established the nature and extent of site contamination with collection and analysis of 138 soil samples, 12 groundwater samples, 6 sediment samples, and 6 surface water samples. The samples were analyzed for the chemicals known or suspected of having been used at the railyard given the nature of documented railroad operations and similarities with other railyards across the country. Sample results indicated that environmental contaminants occur in both of these two areas of the railyard, including:

- Lead and arsenic in surficial soils;
- Petroleum hydrocarbons in shallow soil and perched groundwater
- Polynuclear aromatic hydrocarbons in shallow soil

DEQ's concluded in its 2001 ROD that these site contaminants could pose a risk to human health with future residential or commercial uses of Ashland Railroad yard. As long as the site remained vacant, however, DEQ determined that no unacceptable risks occurred for local residents or passers-by. DEQ also concluded that shallow groundwater contamination at the site would not pose a threat to human health because of the availability of city water to the property and the likelihood that groundwater contaminants would not migrate offsite. Shallow groundwater underlying the site occurs within silt and clay-rich sediments at a depth of up to 20 feet below ground surface. Groundwater yields are poor, and flow directions generally follow the northeasterly topographic gradient. Weathered bedrock underlying this perched groundwater was reported as dry, and is generally reported to extend several hundred feet in depth.

The 2000 Feasibility study evaluated the cleanup of the railroad yard to address potential future risk, including engineering controls and various contaminant treatment alternatives such as in situ bioremediation, phytoremediation, soil flushing, and excavation with offsite disposal.

DEQ determined in its 2001 ROD that the best way to address site contamination would be to excavate contaminated soils from the contaminated areas of the railyard for offsite disposal at an approved landfill, and to drain the former wastewater ponds and excavate contaminated soils and sediments from the ponds.

The 2001 selected remedial action also called for:

- Removal of the oil/water separator, tank saddles, and contaminated soils near the separator and saddles;
- Abandonment of the oil collection culverts and recovery wells, free-product observation probes, piezometer, and monitoring wells;
- Backfill man-made Ponds A and B;
- Excavate contaminated impacted soil in the Bunker C areas and dispose of the soils off site; and
- Remove ballast and residual petroleum associated with the former Drip Slab.

DEQ made its final decision to select these remedial actions for the Ashland railroad yard after inviting public comments and hosting a public meeting in 2001.

3. Previous Cleanup Actions

DEQ's file indicates that oil and diesel contaminated ballast and soil at the drip slab in locomotive fueling and service area was removed to a depth of about 3.5 feet in the mid-1980s. Recovery wells were also installed at this time to extract free product in the shallow perched groundwater and transfer it to an oil/water separator. Treated water was then discharged to the two ponds for evaporation. In the 1990s, the product recovery and oil-water separator system was decommissioned after the volume of free product diminished and could no longer be effectively extracted. The oil collection culverts, recovery wells, free-product observation probes, piezometers, and monitoring wells were also decommissioned. In 2013, Union Pacific removed the oil-water separator and product recovery tank, and tank saddles near the oil-water separator.

4. Updated Evaluation of Site Risks and Cleanup Objectives

The human health risk assessment incorporated in DEQ's 2001 ROD used a standard methodology commonly followed at that time to evaluate individual contaminant concentrations detected in samples and compare them with DEQ's risk-based cleanup standards. The risk assessment divided the railroad property into four exposure areas to incorporate future development assumptions about the property. At the time the ROD was issued, a conservative approach was used that assumed removal of all soil with individual sample data exceeding cleanup levels at each individual sample location, without calculating a site-wide exposure point concentration following DEQ guidance.

In 2010, Union Pacific re-examined site risks and the residual risks that would remain after implementing the excavation remedy selected in DEQ's 2001 ROD. Union Pacific used updated cleanup standards and DEQ guidance, and they reconsidered the property as one exposure area associated with a single undivided residential tax lot rather than four individual exposure areas.

Current DEQ guidance considers that residual risk is acceptable when removal of contaminated soil results in an exposure point concentration based on the 90% Upper Confidence Limit (UCL) of the mean of the remaining samples is below the risk-based concentration for all constituents, and the cumulative risk is at or below $1x10^{-5}$.

In 2010, DEQ approved Union Pacific's updated risk evaluation that incorporated a 90% UCL methodology for determining soil excavation areas and volumes that are less than what was determined in DEQ's 2001 ROD. The updated methodology is summarized below:

- All surface soil data (0-3 feet depth) was compared to residential cleanup values. Deeper soil data (3-15 foot depth) was considered separately and compared to DEQ's risk-based concentrations applicable to excavation workers, in accordance with DEQ guidance.

- The sample points with the highest concentrations were selectively and iteratively removed one at a time representative of soil removal activities. The concentration values were replaced with those representative of clean backfill materials. The 90% UCL was re-calculated, and the process was repeated until the residual excess risk for the entire parcel under a residential setting was below the appropriate DEQ risk-based concentrations for residential exposure.

Using the approach described, approximately 17,500 cubic yards of soil were identified for excavation in order to achieve acceptable residual risk under DEQ's requirements. The updated risk evaluation and statistical examination of individual contaminant concentrations across the site resulted in re-configuration of the excavation areas as shown in Figure 3. These excavation areas are smaller than the areas anticipated in DEQ's 2001 ROD, and the volume of contaminated soil proposed for excavation is less than the 35,500 cubic yards originally estimated in DEQ's 2001 ROD. Nonetheless, DEQ believes that this modified excavation plan meets the remedial action objectives of the 2001 ROD and does not fundamentally deviate from DEQ's selected remedial alternative.

5. Proposed Cleanup Plan

DEQ recommends that Union Pacific implement the following five cleanup actions, as they propose in their 2016 plan:

Cleanup Action #1: Excavate shallow contaminated soil

About 17,500 cubic yards of soil will be excavated from the two portions of the railroad yard property that were found to have most of the site contamination that was identified during previous environmental investigations. The two large areas targeted for excavation are distinguished in the cleanup plan as the "east" and "west" areas, and they largely coincide with the former Locomotive Fueling and Service Area and the Car Repair Shed (see Figure 3). The depth of each of the two excavation areas will be 2½ feet below the present ground surface.

Cleanup Action #2: Excavate Bunker C oil residue

About 5,400 cubic yards of soil saturated in residual Bunker C oil will be excavated from three areas near the former Locomotive Fueling and Service Area, as shown on Figure 3. The depths of these excavations will range from 3½ to 9 feet below the current ground surface.

Cleanup Action #3: Eliminate two wastewater ponds

The two former wastewater ponds will be drained of residual water and contaminated soils and sediment will be excavated. The ponds will be backfilled with clean fill to prevent surface water runoff accumulation.

Cleanup Action #4: Remove asbestos-containing materials

Asbestos-containing materials will be collected from two areas within and adjacent to the east excavation area. These materials include any suspected pieces of flooring material, fibrous insulation, and cementitious pipe, and will be segregated and disposed of separately from contaminated soil dug from site excavation work. Union Pacific added this cleanup action to those selected by DEQ in 2001, after it discovered isolated asbestos-containing materials at two locations in the east excavation area on the on the property in 2012.

Cleanup Action #5: Encumber Property Deed

Until a site development plan is proposed by the property owner, there is uncertainty about how the Ashland railroad property will be developed and used in the future. To ensure that residual site contamination does not threaten human health and the environment with any new development scenario, Union Pacific will accept an encumbrance on their property deed that requires risk assessment and environmental management plans be approved by DEQ before development of the railroad property can occur.

6. Implementation of Cleanup Plan

DEQ agrees with Union Pacific's plan to pursue these cleanup actions through a sequence of five distinct phases of work to best coordinate material handling, equipment availability, and minimization of construction nuisances to the community. The five phases of work and Union Pacific's estimated schedule are summarized below:

Phase 1 – Construct temporary rail spur and stockpile clean backfill – Winter 2017

Phase 1 will include the installation of a temporary rail spur in the central portion of the Site to allow for loading railcars away from the townhouses that are close to the main rail line.

This phase will also include hauling and stockpiling of clean backfill to the railyard using trucks. The best access route to the site is from Interstate 5 is via Oak Street and Clear Creek Drive. These city streets will be tested before and after trucking of backfill, to evaluate for possible roadway damage that could be caused by the estimated 1,100 truckloads that will be mobilized on city streets.

Phase 2 – Remove Bunker C oil residue and other localized soil contamination – Fall 2017

The three areas of Bunker C-saturated soils will be excavated during Phase 2, resulting in about 5,440 cubic yards of contaminated soil. Confirmation soil sampling and analysis will be performed to document the successful removal of contaminated soils from these three areas.

Phase 2 of Union Pacific's proposed work includes excavation of petroleum-impacted shallow soils where several small abandoned structures were removed from the property in 2013. Residual water and contaminated sediments will also be excavated from the two former wastewater ponds at this time, before they are backfilled with clean fill.

The concrete foundation of the former car repair shed will be removed at this time to allow excavation of the west excavation area scheduled in Phase 4. Broken concrete from the foundation will be stockpiled. Foundations that are not within the excavation areas will be left in place, but any features that are above grade will be removed. This includes any remaining berms, piles of soil and debris, electrical supply lines and poles, fire hydrants, hose racks, and any other remaining above-ground features.

Phase 3 – Remove contaminated soil from east excavation area – Winter 2018

About 7,500 cubic yards of contaminated soil will be excavated from the east excavation area during Phase 3, and transported offsite with about 134 railcars. The depth of the excavation will be a uniform 2.5 feet below current ground surface. Vaults, pipelines, conduits, and other debris encountered within the excavation will be removed, stockpiled and disposed appropriately. Confirmation soil sampling will be performed to document residual soil contamination left in place after excavation work is completed. After excavation and confirmation sampling, the east excavation area will be backfilled with clean fill.

Phase 4 – Remove contaminated soil from west excavation area – Spring 2018

About 5,800 cubic yards of contaminated soil will be excavated from the west excavation area during Phase 4, and transported offsite with about 104 railcars. Vaults, pipelines, conduits, and other debris encountered within the excavation will be removed, stockpiled and disposed appropriately. The drainage ditch along the west boundary will be restored to drain surface water. Confirmation soil sampling will be performed to document residual soil contamination left in place after excavation work is completed. After excavation and confirmation sampling, the west excavation area will be backfilled with clean fill.

Phase 5 – Remove temporary rail spur, complete final site grading – Fall 2018

The temporary rail spur installed in Phase 1 will be removed and graded. Soil confirmation samples will be obtained from the railcar loading area after the track has been removed to verify that no contaminated soils were inadvertently released in this area. Final grading and equipment demobilization will occur at this time, along with hydroseeding of bare soil to control erosion.

7. Project Completion

After the cleanup is completed in late 2018, DEQ understands that Union Pacific will submit a project completion report for review and approval in early 2019. If DEQ believes that the cleanup is complete, DEQ will request that Union Pacific encumbers the property deed with an Easement and Equitable Servitude that requires environmental risk assessment and DEQ approval before development of the railroad property can occur.

Once this deed restriction is recorded with Jackson County, DEQ will recommend a Certification of Completion and/or a No Further Action determination. A public review and comment opportunity will

occur before DEQ makes its formal determination that no further action is necessary for the property, as long as it remains one contiguous parcel of land.

8. Recommendation

DEQ recommends that Union Pacific proceed with site cleanup as described in their 2016 Remedial Action Workplan. This cleanup satisfies the requirements of DEQ's 2001 Record of Decision and responds to community requests to use railcars rather than trucks to haul contaminated soil from the railroad yard. It will result in the permanent removal of most of the legacy contamination at the railyard and will enable Union Pacific to potentially sell all, or a portion, of the property at some point in the future.

9. Public Participation

DEQ anticipates significant community interest in the 2016 cleanup plan for the Ashland railyard, and has decided to use its regulatory discretion under OAR 340-122-0100 (5) to expand public information and comment opportunities beyond the minimum required for approving implementation of Union Pacific's plan.

DEQ will pursue the following public participation elements before formally approving implementation of the 2016 Cleanup Plan:

- 30-day formal public comment period will be offered from January 1 to January 31, 2017.
- Fact sheet will be mailed to 750 Ashland residents and businesses located close the site and along the routes to be used for trucking clean backfill to the site.
- Public information meeting to be hosted by DEQ in Ashland on January 19, 2017.
- News release will be issued to the local media.
- Public notices will be published in the local newspaper, the Oregon Bulletin, and on DEQ's website.

10. Final Decision

DEQ intends to provide formal approval to Union Pacific in February 2017, unless information is provided during the public comment period that changes the technical basis for DEQ's approval.

VICINITY MAP

LEGEND

Property Boundary

N

0 200 400

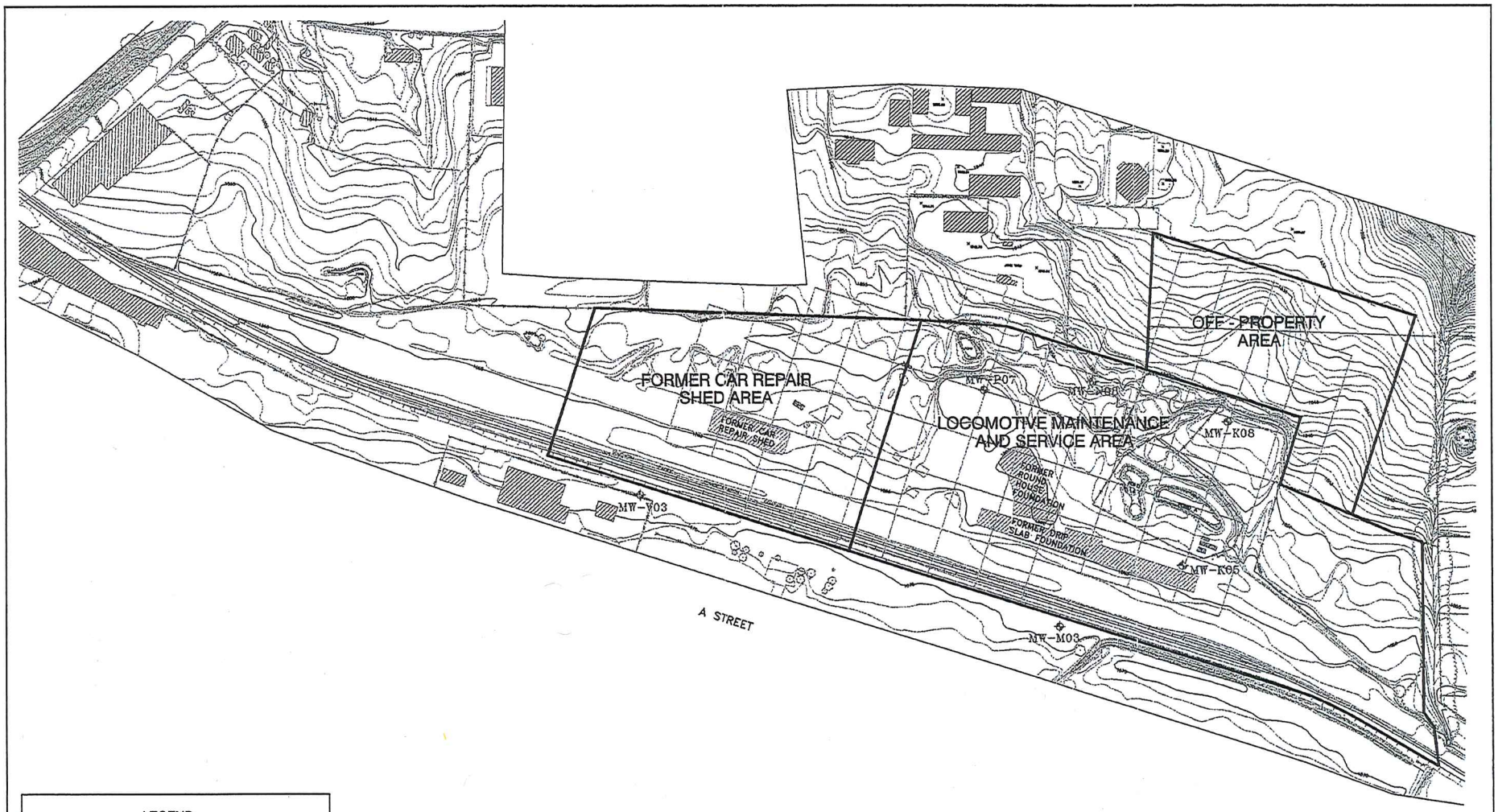
Feet

1 inch = 200 feet

FIGURE 1
Site Location
Union Pacific Railroad
Ashland, Oregon

DVR \\MNUSTRICTGFS01\PROJECTS\UPRR_ASHLAND_20001136\MAPFILES\SITELOCATION.MXD JCARR 10/25/2012 9:44:16 AM

CH2MHILL.



LEGEND

- EXISTING RAILROAD TRACK
- EXISTING FENCE
- EXISTING CONCRETE SLAB
- EXISTING ABOVE GROUND TANK
- MONITORING WELL LOCATION

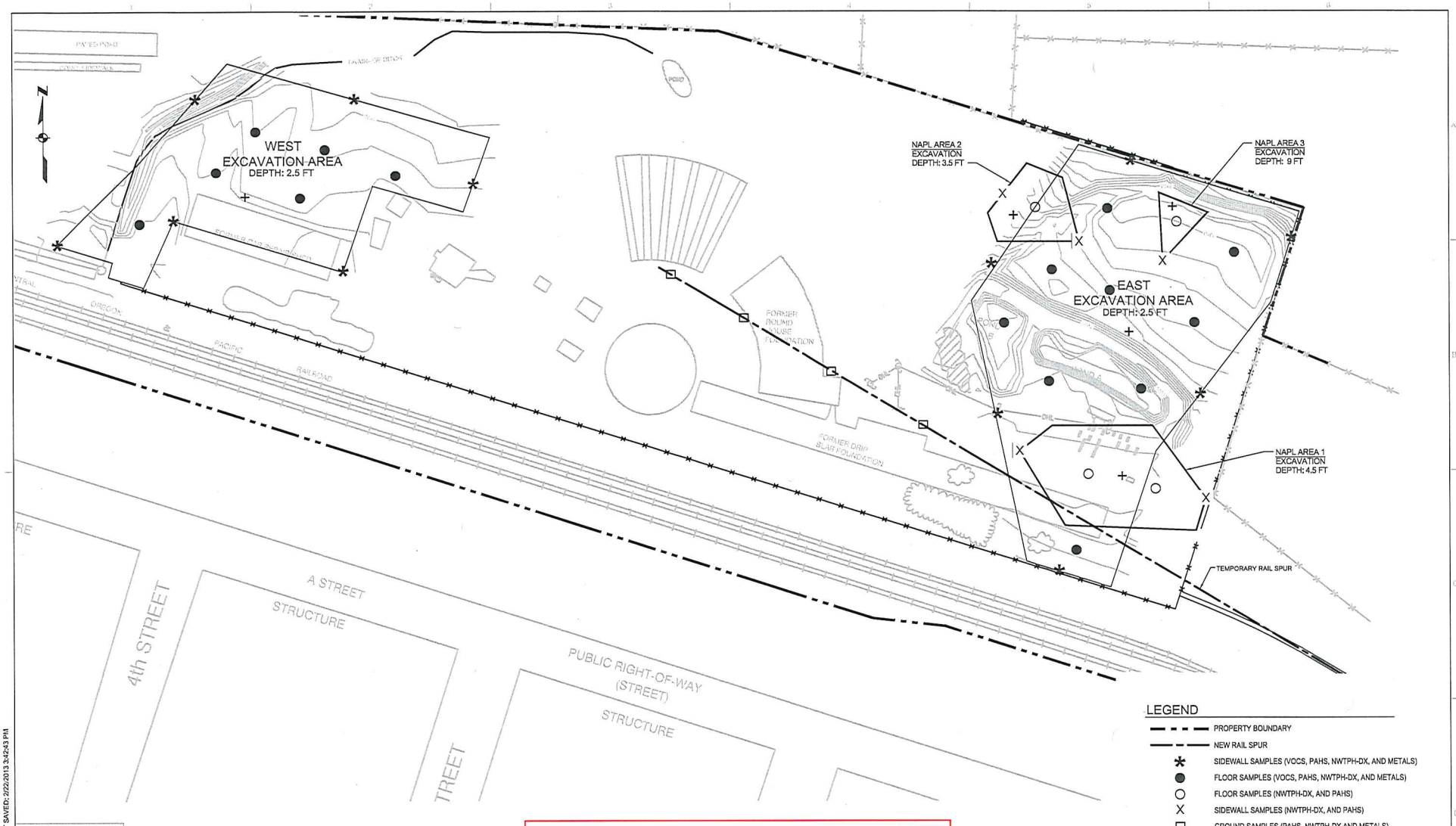
0 100 200 400

APPROXIMATE SCALE (FEET)

PROJ.# 8037.12	PAGE#
SCALE: AS SHOWN	DRAWN BY: SM
FILE NO. 80371210	DESIGNED BY:
DATE: 10/28/99	APPROVED BY:

ERM

FIGURE 2
STUDY AREA UNITBOUNDARIES
UNION PACIFIC RAILROAD COMPANY
ASHLAND YARD
ASHLAND, OREGON



Note - Some of the features shown have been removed as part of various activities conducted between 2013 and 2016.

PRELIMINARY
NOT FOR CONSTRUCTION

SCALE: 1"=50'

DSGN	R STRAUSS
DR	A STEPHENSON
CHK	M NIEMET
APVD	M OCHSNER

NO.	DATE	REVISION	BY	APVD

VERIFY SCALE
BAR IS ONE HALF INCH ON ORIGINAL DRAWING. IF NOT ONE HALF INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

CH2MHILL

ASHLAND RAIL YARD

FIGURE 2
SAMPLING PLAN

SHEET	1
DWG	1 OF 1
DATE	FEBRUARY 2013
PROJ	361427

FILENAME: \\MIDWAY\PROJ\UNIONPACIFICRAILROAD\361427ASHLAND\K-J REMEDIATION\PLANS AND SPECIFICATIONS\CURRENT SET\FIGURE 2 - SAMPLING PLAN.DWG PLOT DATE: 22-Feb-13 PLOT TIME: 3:44:30 PM

USER: 5543 TAB: PAPER LAST SAVED: 2/22/2013 3:42:43 PM