RECORD OF DECISION

(Supersedes the 2001 ROD)

For

Union Pacific Railroad Rail Yard Site

ECSI #1146

ASHLAND, OREGON

Prepared By:

OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY

Western Region Office

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TABLE OF CONTENTS

FIGURES

TABLES

ATTACHMENTS

1. INTRODUCTION

1.1 INTRODUCTION

This Record of Decision (ROD) presents the selected revised remedial action for the Union Pacific Railroad Company (UPRR) former rail yard site located at 536 A Street in Ashland, Oregon (Site). In 2001 UPRR proposed, and after significant public engagement, DEQ approved a cleanup plan and issued a Record of Decision (2001 ROD) to address contamination on parts of the rail yard. The 2001 ROD was not implemented for various reasons. In 2017 when regulatory cleanup limits were revised, and the cleanup levels for some of the contaminants of concern (COCs) were increased, which substantially decreased the quantity of soil exceeding acceptable risk criteria at the Site. As a result of the new cleanup levels, UPRR collected additional data and proposed a new cleanup plan to address the contamination at the Site. The new cleanup plan was approved by the Oregon Department of Environmental Quality (DEQ) in 2021 and is reflected in this ROD. The most significant change in the remedial action is that contaminated soil will be consolidated and capped on a portion of the Site instead of being hauled away to a landfill.

Due to historical site use, petroleum hydrocarbons, arsenic, lead, and polycyclic aromatic hydrocarbons (PAHs) impacted shallow soils across the entire 11.7-acre Site. Petroleum hydrocarbons, including Bunker C fuel, also impacted subsurface soils and groundwater beneath the eastern 3-acres of the Site. The remedial action for the Site is necessary to meet the site remedial action objectives and protect human health and the environment. as required by Oregon cleanup laws. Details regarding the remedial investigation (RI), feasibility study (FS), risk assessment are presented in the October 2022 *Staff Report, Recommended Revision to the Remedial Action*.

Two public comment periods regarding this decision were held from October 15, 2022, to January 30, 2023, and September 1 to October 31, 2023. A public meeting was held at the Ashland Public Library on September 27, 2023. UPRR and DEQ staff also presented at Ashland City Council work sessions on March 12 and October 3, 2023. During the October City Council meeting, the Council voted to support this revised remedial action approach. Details regarding the public involvement process and responses to comments are discussed in Section 9.0. A summary of comments received and DEQ's responses is included in Attachment 1.

1.2 SUMMARY OF THE REMEDIAL ACTION TO BE COMPLETED

1.2.1 Contaminated Soil Removal and Consolidation

- Soil contaminated with lead, arsenic, PAHs, and petroleum hydrocarbons exceeding site-specific cleanup goals (see Table 1) will be excavated from the upper 18 inches in various locations on the western 8.7-acre area of the Site and consolidated in the eastern 3-acre area of the Site.
- Clean backfill and topsoil will be brought to the Site via railcars to fill in the excavation areas on the west side and level the eastern 3-acre area.

1.2.2 Engineering Controls: Soil Capping

- The eastern 3 acres will be covered with 12 inches of clean top soil. This soil cap will serve to protect potential receptors from direct contact with the underlying impacted soil with

concentrations of COCs exceeding DEQ urban residential risk-based concentrations (RBCs) and site-specific cleanup goals (see Table 1).
- The entire 11.7-acre Site will then be graded and hydroseeded with native plants. This graded and vegetated Site would readily allow for annual mowing for fire suppression as required by the City of Ashland, until the property is developed.
- The eastern 3-acre area will be fenced to limit access until developed with approval by DEQ.
- An Operation and Maintenance (O&M) Plan will be developed for the eastern 3-acre area and maintained as an Institutional Control.

1.2.3 Institutional Controls

Deed restrictions will be recorded on the Site that will help limit exposures to contamination left on the eastern 3-acre area, restrict development of single-family residential, gardening/food production, underground structures, and conducting activities that would disrupt the soil cap without DEQ oversight. The restrictions will require DEQ to review and approve any development planned on the eastern 3-acre area. An Operation and Maintenance (O&M) Plan will be prepared for the eastern 3-acre area and approved by DEQ. A Site Management Plan and/or a Contaminated Media Management Plan may also be required by DEQ for the entire 11.7-acre Site. The entire 11.7-acre Site will be restricted from subdivision without additional assessment and/or approval from DEQ. A summary of planned deed restrictions includes:

- For the Western 8.7-Acre Area:
  - Restrict site use to urban-residential and/or commercial use.
  - Restrict subdivision without additional assessment and/or approval from DEQ.
- For the Eastern 3-Acre Area:
  - Restrict site use to urban-residential and/or commercial use.
  - Restrict subdivision without additional assessment and/or approval from DEQ.
  - Restrict groundwater use.
  - Restrict contact with soil underlying the vegetated cap.
  - Require inspection and maintenance of the vegetated cap.

1.3 SCOPE AND ROLE OF THE REMEDIAL ACTION

1.3.1 Property Description

The property covered under Voluntary Cleanup Agreement No. ECVC-SWR-93-02, dated March 30, 1993, between UPRR and DEQ included the original UPRR property, Parcel 3 in the City of Ashland, Jackson County, Oregon (Attachment 2). Parcel 3 was 21 acres. The City of Ashland eventually subdivided the area around and including the original UPRR property into multiple parcels. The UPRR-owned 21 acres was included in new parcels 2,3,4,5, 6 and 7 of City of Ashland Partition Plat P-32-2000 (Attachment 3).

On December 7, 2000, DEQ issued a No Further Action Letter for UPRR-owned portions of City of Ashland Partition Plat P-32-2000 Parcels 2, 3, 4 and 5. The Letter determined that no further action was required for the identified parcels unless new or previously undisclosed information that would change the finding becomes available. The property covered by the 2000 NFA included approximately 3.2 acres located along the western boundary of the original UPRR property. This finding did not include non UPRR-owned portions of Parcels 2, 3 and 4. On September 11, 2001, DEQ issued a No Further Action Letter for UPRR-owned Parcel 6 of City of Ashland Partition Plat P-32-2000.

The remaining Parcel 7 of the City of Ashland Partition Plat P-32-2000 of the original UPRR property consists of the western 11.7 acres and eastern 2.85 acres. This ROD and modification of the remedial action is for the western 11.7 acres of Parcel 7 of the City of Ashland Partition Plat P-32-2000. Based on historical site use and past investigations, the main area of concern includes the Former Car Repair Shed Area and the Locomotive Maintenance and Service Area within the Site. The remaining 2.85 acres of uninvestigated UPRR property is discussed below.

1.3.2 Uninvestigated Areas

The eastern 2.85 acres of Parcel 7 (undeveloped property) of the City of Ashland Partition Plat P-32-2000 is currently used for agricultural purposes and is not believed to have been associated with railyard-related activities. The eastern 2.85 acres has not been thoroughly investigated based on historical site use and lack of recognized environmental conditions identified on the undeveloped property. This undeveloped property is not included as part of the Site where remedial action is required.

1.3.3 2001 Record of Decision

In 2001 DEQ selected a remedial action for the western 11.7 acres of Parcel 7 of the City of Ashland Partition Plat P-32-2000. This area was referred to as the Yard in the 2001 ROD and is referred to as the Site herein.

The Site operated as a locomotive maintenance, service, and railcar repair facility between 1887 and 1986. Facility operations resulted in environmental contamination at the Site. Based on the probable sources of contamination and the findings of Site investigations, the COCs at the Site consisted of:

- Inorganic lead and arsenic in soil;
- Polynuclear aromatic hydrocarbon compounds (PAHs) in soil (associated with heavy fuels and treated wood used for railroad ties); and
- Longer carbon chain petroleum hydrocarbons, such as those associated with heavier fuels, in soil and limited areas of groundwater.

The 2001 ROD addressed potential human health risks associated with exposure to the contaminated soil and surface water. No long-term ecological risks were identified. The selected remedy in the 2001 ROD consisted of the following elements:

- Excavate soil containing contaminants above residential cleanup levels, and transport this soil off site for treatment and/or disposal;
- Remove the oil/water separator, tank saddles, and contaminated soil near the separator and saddles;
- Abandon the oil collection culverts and recovery wells, free-product observation probes, piezometer, and monitoring wells;
- Backfill man-made Ponds A and B after water and sediments have been sampled and/or removed and disposed of, if necessary;
- Excavate contaminated impacted soil in the Bunker C area and dispose of the soil off site; and
- Remove ballast and residual petroleum associated with the former Drip Slab.

1.3.4 Revised Remedial Action

The 2001 ROD was not implemented due to public comment and a change in the regulatory limits. This revised recommendation for remedial action includes the Site; the same 11.7-acre Site as the 2001 ROD, but also includes updated cleanup levels, consideration of public comments, and the results of additional investigations conducted since 2001. The Site COCs were reevaluated in the *Supplemental Remedial Investigation/Feasibility Study Risk Evaluation* (Jacobs 2019) to include:

- Arsenic, lead, Benzo(a)pyrene (BaP), TPH as diesel (TPH-d), TPH as oil (TPH-o) in shallow soil (0 to 3 feet below ground surface); and
- Arsenic, TPH-d and TPH-o in groundwater.

Based on the extent of impacts under the current and anticipated future land use scenario (Section 3.3.4), the Remedial Action Objectives (RAOs) for the remedial action have been revised as follows, with reference to the two exposure areas shaded in color on Figure 5 (west 8.7 acres and east 3 acres):

- Prevent human exposure via ingestion or inhalation to soil that exceeds the urban residential cleanup goals and background levels;
- Prevent human exposure to the contaminated soil and Bunker C/TPH impacts within the eastern 3 acres of the Site that would result in unacceptable risk; and
- Prevent human exposure to impacted groundwater on the Site that would result in unacceptable risk.

These RAOs are consistent with those presented in the 2001 ROD, however, were revised to reflect changes in anticipated future Site use from single-family residential to urban residential and to include the results of the revised risk assessment (Section 3.2.2), current DEQ guidance (DEQ 2010), and the various cleanup activities conducted since 2001 (Section 3.1.1). Achievement of the RAOs will determine the success of the remedial action and serve as the basis for potential DEQ letter(s) of No Further Action for both the 8.7-acre western and 3-acre eastern areas.

As noted in Section 3.3.4, the urban residential scenario, not single-family residential scenario, is the appropriate residential exposure scenario for the property given the current and anticipated future zoning and land use. After completion of the remedial action, additional deed restriction(s) will be required and managed by DEQ for the western 8.7-acre and the eastern 3-acre portion of the Site. These deed restriction(s) will specify that approval from DEQ will be required before any portion of the land from either area can be redeveloped in the future for a use other than urban residential and/or commercial or subdivided.

2. SITE HISTORY AND DESCRIPTION

2.1 SITE LOCATION AND LAND USE

The Site consists of approximately 11.7 acres of the former rail yard Site located at 536 A Street in the city of Ashland, Jackson County, Oregon. Ashland lies within the Bear Valley in southwestern Oregon at an elevation of approximately 2,000 feet above mean sea level. The legal description includes Parcel 7, Tax Lots 6200 and 6700 within Section 9, Township 39 South, Range 1 East of the Willamette Baseline and Meridian (Attachment 4). The Site is shown on Figure 1 as the Project Area, along with the surrounding area.

The Site is currently inactive and is being considered for sale and redevelopment for urban residential, industrial, or commercial land use. The adjacent properties to the west and north are currently under development for a mixture of residential, industrial, and commercial land use. Agricultural and residential properties border the Site to the east, and residential and commercial properties border the Site to the south. A current zoning map, including the Site and surrounding areas, is shown on Figure 2.

2.2 PHYSICAL SETTING

2.2.1 Climate

Ashland receives approximately 20 inches of precipitation annually. Most of the precipitation falls in the fall, winter, and spring, with up to about 3 inches per month being the highest, in December. Precipitation totals in summer and early fall are generally less than one inch per month. The average annual high and low temperatures are approximately 67 and 38°F, respectively.

2.2.2 Geology

The shallow geology beneath the Site has been divided into four units, each with a unique lithologic character. These units include a surface soil unit, a silt/clay unit, a discontinuous sand unit, and an underlying dense sandy silt unit. The surface soil is composed of either native sandy clay or imported fill and extends to depths of approximately 3 to 4 feet below ground surface (bgs). Underlaying the surface soil is a silt/clay unit, which extends to between approximately 20 and 25 ft bgs. A discontinuous sand unit has been encountered within the silt/clay unit. This discontinuous sand unit is typically saturated and encountered at depths between approximately 10 and 15 feet bgs and is generally 1 to 5 feet thick, although it appears to be thicker in the eastern section of the Site. Underlying the silt/clay and discontinuous sand units is a dense sandy silt unit, which is encountered at approximately 18 to 30 ft bgs. Only the top 1 to 2 feet of this unit were observed during the RI fieldwork. However, the log for a water well located approximately 200 feet south of the Site indicates that a gray siltstone was encountered from approximately 14 feet bgs to a total depth at 499 feet bgs. Granite bedrock was encountered at total depth.

2.2.3 Hydrogeology

The groundwater table beneath the Site ranges between about 8 and 12 feet bgs. The silt/clay unit discussed in Section 2.2.2 generally acts as a confining layer for water and NAPL across the Site. The discontinuous sand unit was observed to be fully saturated while the underlying dense sandy silt unit was observed to be

dry. A localized perched groundwater zone was identified around the former drip slab foundation. Groundwater flow beneath the Site is northeast under an average hydraulic gradient of 0.05 foot/foot.

2.2.4 Surface Water and Stormwater Features

One pond is present in the north-central portion of the Site. The pond consists of a topographic depression that occasionally collects surface water via precipitation. A drainage ditch originates at the southwestern corner of the Site and reportedly drains into the pond as depicted in Figure 3. There are currently no surface water drainage pathways offsite. Two former man-made wastewater retention ponds, Pond A and Pond B, are located north of the former drip slab foundation and oil-water separator. These former wastewater retention ponds are now typically dry but can accumulate some ponded water during periods of extended precipitation. No surface water drains from these bermed ponds onto other areas of the Site.

Several creeks and areas of surface water drainage originate in the upland foothills to the south and flow generally northward to Bear Creek, a tributary to the Rogue River. None of these creeks or drainages traverses the Site.

2.3 RAIL YARD OPERATIONS

The Site operated as a locomotive maintenance, service, and railcar repair facility between 1887 and 1986. Various structures (including a hotel/passenger station, a freight station, a car repair shed, a turntable, a roundhouse, and miscellaneous work and storage buildings) were once present. A steel 55,000-barrel (2.3-million-gallon) aboveground Bunker C oil tank used for fueling steam locomotives was installed at the Site in the early 1900s and removed in the late 1940s.

Development of the Site reached its peak in the early 1900s, with some additional construction performed during the 1920s. Light locomotive maintenance and car repair functions were performed by the Southern Pacific Transportation Company (SPTCo), UPRR's predecessor, from the 1900s until the early 1970s. Most locomotive maintenance and fueling facilities were decommissioned before 1960. Diesel and steam locomotive fueling operations were performed in the same location and, like car repair activities, were limited to a relatively small area of the Site. No railroad maintenance activities were performed west of the car repair shed or east of the drip slab. UPRR acquired SPTCo and many of its assets, including the former Ashland Yard, in 1997. Since the acquisition, UPRR has not operated or performed any railroad-related activities at the Site.

The only structures and features currently remaining on the Site are the former drip slab foundation, former car repair shed foundation, former roundhouse foundation, and retention Ponds A and B. An interior fence surrounds the former oil-water separator location and Ponds A and B. An outer chain-link fence surrounds the Site (Figure 3).

2.3.1 Chemical Use and Waste Generation and Management

Based on results of the environmental investigations conducted at the Site, sources of environmental impacts at the Site may be attributed to (DEQ, 2001):

- Locomotive fueling and fuel storage (both Bunker C and diesel);
- Light locomotive maintenance and light car repair, which may have included limited use of paints and solvents;
- Waste disposal;

- Wastewater retention; and
- Potential historical application of lead arsenate pesticides at the Site prior to rail yard activities.

3. RESULTS OF INVESTIGATION(S)

3.1 NATURE AND EXTENT OF CONTAMINATION

3.1.1 Summary of Environmental Investigations and Removal Actions

The Site has been the focus of multiple phases of environmental investigations conducted between 1990 and 1998. There have also been several completed focused cleanup activities and three proposed full-scale remedial actions since the original ROD was issued in 2001 that were not completed for various reasons. These proposed remedial actions have evolved based upon numerous regulatory and administrative changes and are summarized below.

Date	Investigation and Cleanup Activities
Mid-1980s	Ballast and soil impacted by former fueling operations were removed during installation of the former drip slab. Nine passive product recovery wells were installed downgradient to remove floating product from the perched groundwater zone. Additionally, an oil/water separator and two holding ponds (Ponds A and B) were installed.
1990	Phase I and Phase II Environmental Site Assessments performed. Assessments were performed near the drip slab, the oil-water separator, and ponds.
1999	Final Remedial Investigation Report (ERM 1999) submitted with COCs identified: lead and arsenic in soil, PAHs in soil, petroleum hydrocarbons from Bunker C and diesel in soil and limited areas of groundwater.
2001	Feasibility Study Report (ERM 2001) submitted. prepared by Oregon Department of Environmental Quality (DEQ) (DEQ 2001), which specified excavation of all materials exceeding residential cleanup goals and offsite disposal. The quantity of impacted soil was estimated to be approximately 29,300 cubic yards (50,000 tons).
2006	A Remedial Design/Remedial Action Work Plan was prepared by Kennedy/Jenks in June 2006 (K/J 2006) that included excavation and disposal of all 29,300 cubic yards of impacted soil by truck. However, the project did not move forward because of public resistance regarding the high volume of dump trucks required (approximately 1,700 truckloads) in a residential area.
2010	All remaining monitoring wells and product recovery wells onsite were decommissioned. A total of twelve monitoring wells and nine product recovery wells were abandoned.
2012	A total of 54 test pits were dug to depths ranging from 2 to 8 feet below ground surface to better define the extent of NAPL onsite. A survey of the Site was conducted to support a pending remedial action.
2013	All remaining free-standing structures at the Site were demolished and removed, including an oil-water separator, catwalk, storage shed, and miscellaneous debris. Remedial action was re-evaluated, and a new Remedial Action Work Plan (RAWP) was submitted to DEQ and approved in February 2013 (CH2M 2013). However, the project was not implemented because of uncertainty as to whether the City of Ashland would concur that the conditions of an existing deed restriction on the property would be achieved after cleanup using the 90 percent UCL approach.
2016	The Ashland City Council agreed to revise the deed restriction to allow for a cleanup using the 90 percent UCL approach for a single residential parcel. An updated RAWP was submitted to DEQ (CH2M 2016).

Date	Investigation and Cleanup Activities
2017	DEQ approved the cleanup plan (February). EPA updated its toxicity standards for benzo(a)pyrene (BaP). As a result of the new toxicity standards, it was determined that the areas requiring excavation were greatly reduced (May). There was also community concern about risks associated with transporting contaminated soil off site through the neighborhood. UPRR notified DEQ that it was withdrawing its cleanup plan, and that a new cleanup plan would be prepared based on current information (December).
2018	A Supplemental Remedial Investigation/Feasibility Study Work Plan (Jacobs 2018) was submitted (July). Updated groundwater and soil data collected (August).
2019	A revised risk assessment was presented in the Supplemental RI/FS Evaluation (Jacobs 2019). Data collected in 2018 replaced the historical data at the geographical locations where they were obtained. Updated toxicity standards for BaP were used to assess risk.
2021	A Supplemental Remedial Investigation/Feasibility Study Report (Jacobs 2021) was submitted and accepted by DEQ. The remedial action alternative was: 1) excavate in the western 8.7-acre area, 2) consolidate excavated soil in the eastern 3-acre area, 3) install a vegetated soil cap in the eastern area, 4) deed restrictions.

3.1.2 Groundwater

The groundwater COCs identified in the 1999 Final RI Report (ERM 1999) were petroleum hydrocarbons from Bunker C and diesel (predominately in the form of nonaqueous liquid [NAPL]). Updated groundwater samples were collected in August 2018 and were used in a revised risk assessment (Section 3.2).

3.1.3 Soil

Soil COCs identified in the 1999 Final RI Report (ERM 1999) were lead, arsenic, PAHs, and petroleum hydrocarbons from Bunker C and diesel. Three locations at the Site contain soil impacted with NAPL as Bunker C. The estimated horizontal extents of NAPL-impacted soil are shown on Figure 5 and total approximately 5,400 cubic yards, from between 2.5 feet and 9 feet below ground surface. Updated soil samples collected in August 2018 were used in a revised risk assessment (Section 3.2). Updated EPA toxicity standards for BaP were also incorporated into the revised risk assessment.

3.2 RISK ASSESSMENT

The standards for a protective cleanup are defined in the Oregon Revised Statute (ORS) and Oregon Administrative Rule (OAR). ORS 465.315 states in part:

> ***Standards for degree of cleanup required; Hazard Index; risk protocol; hot spots of contamination; exemption.*** *(1)(a) Any removal or remedial action performed under the provisions of ORS 465.200 to 465.510 and 465.900 shall attain a degree of cleanup of the hazardous substance and control of further release of the hazardous substance that assures protection of present and future public health, safety and welfare and of the environment.*
> *(b) The Director of the Department of Environmental Quality shall select or approve remedial actions that are protective of human health and the environment. The*

protectiveness of a remedial action shall be determined based on application of both of the following:

(A) The acceptable risk level for exposures. For protection of humans, the acceptable risk level for exposure to individual carcinogens shall be a lifetime excess cancer risk of one per one million people exposed, and the acceptable risk level for exposure to noncarcinogens shall be the exposure that results in a Hazard Index number equal to or less than one. "Hazard Index number" means a number equal to the sum of the noncarcinogenic risks (hazard quotient) attributable to systemic toxicants with similar toxic endpoints. For protection of ecological receptors, if a release of hazardous substances causes or is reasonably likely to cause significant adverse impacts to the health or viability of a species listed as threatened or endangered pursuant to 16 U.S.C. 1531 et seq. or ORS 496.172, or a population of plants or animals in the locality of the facility, the acceptable risk level shall be the point before such significant adverse impacts occur.

(B) *A risk assessment undertaken in accordance with the risk protocol established by the Environmental Quality Commission in accordance with subsection (2)(a) of this section.*

OAR 340-122-0084 describes the requirements for risk assessments while OAR 340-122-0115 provides additional definition of protectiveness:

(1) "Acceptable risk level" with respect to the toxicity of hazardous substances has the meaning set forth in ORS 465.315 (1)(b)(A) and (B) and is comprised of the acceptable risk level definitions provided for carcinogenic exposures, noncarcinogenic exposures, and ecological receptors in sections (2) through (6) of this rule.

(2) "Acceptable risk level for human exposure to individual carcinogens" means: (a) For deterministic risk assessments, a lifetime excess cancer risk of less than or equal to one per one million for an individual at an upper-bound exposure; or (b) For probabilistic risk assessments, a lifetime excess cancer risk for each carcinogen of less than or equal to one per one million at the 90th percentile, and less than or equal to one per one hundred thousand at the 95th percentile, each based upon the same distribution of lifetime excess cancer risks for an exposed individual.

(3) "Acceptable risk level for human exposure to multiple carcinogens" means the acceptable risk level for human exposure to individual carcinogens and: (a) For deterministic risk assessments, a cumulative lifetime excess cancer risk for multiple carcinogens and multiple exposure pathways of less than or equal to one per one hundred thousand at an upper-bound exposure; or (b) For probabilistic risk assessments, a cumulative lifetime excess cancer risk for multiple carcinogens and multiple exposure pathways of less than or equal to one per one hundred thousand at the 90th percentile and less than or equal to one per ten thousand at the 95th percentile, each based upon the same distribution of cumulative lifetime excess cancer risks for an exposed individual.

(4) "Acceptable risk level for human exposure to noncarcinogens" means: (a) For deterministic risk assessments, a hazard index less than or equal to one for an individual at an upper-bound exposure; or (b) For probabilistic risk assessments, a hazard index less than or equal to one at the 90th percentile, and less than or equal to ten at the 95th percentile, each based upon the same distribution of hazard index numbers for an exposed individual.

(5) "Acceptable risk level for individual ecological receptors" applies only to species listed as threatened or endangered pursuant to 16 USC 1531 et seq. or ORS 465.172, and means: (a) For deterministic risk assessments, a toxicity index less than or equal to one for an individual ecological receptor at an upper-bound exposure, where the toxicity index is the sum of the toxicity quotients attributable to systemic toxicants with similar endpoints for similarly-responding species and the toxicity quotient is the ratio of the exposure point value to the ecological benchmark value; or (b) For probabilistic risk assessments, a toxicity index less than or equal to one at the 90th percentile and less than or equal to 10 at the 95th percentile, each based on the same distribution of toxicity index numbers for an exposed individual ecological receptor; or (c) The probability of important

changes in such factors as growth, survival, fecundity, or reproduction related to the health and viability of an individual ecological receptor that are reasonably likely to occur as a consequence of exposure to hazardous substances is de minimis.

(6) *"Acceptable risk level for populations of ecological receptors" means a 10 percent chance, or less, that no more than 20 percent of the total local population will be exposed to an exposure point value greater than the ecological benchmark value for each contaminant of concern and no other observed significant adverse effects on the health or viability of the local population.*

Human health and ecological risk assessments were originally performed as part of the 1999 RI. A revised risk assessment was completed in the Supplemental RI/FS Risk Evaluation using new soil and groundwater data collected in 2018 at the locations shown in Figure 4 (Jacobs 2019).

The residual risk assessment for the remedial action alternative is summarized in Section 8.2 of this document. The results of the risk assessment for human health and potential ecological receptors at the Site are summarized below incorporating the results from the 2019 revised risk assessment (Jacobs 2019).

3.2.1 Conceptual Site Model

A conceptual site model (CSM) identifies the following elements:

- Sources of contamination;
- Pathways by which this contamination could reach human and ecological receptors; and
- The human and ecological receptors currently and reasonably likely affected, and the degree of their exposure.

Evaluation of human exposure to residual chemical contamination requires an assessment of the type and extent of that exposure. This is based on current and reasonably likely future use. The risk assessment for the Site developed what the acceptable risk levels are for various kinds of exposures. These levels are referred to as Risk Based Concentrations (RBCs) or Site-Specific Cleanup Goals. The sources, pathways, and receptors (both human and ecological, as applicable) are outlined in the following sections of this ROD.

3.2.2 Human Health Risk Assessment

The potential for unacceptable human health risk was identified in the risk assessment reports using the following risk thresholds established by DEQ in OAR 340-122:

- If the risk for individual carcinogenic compounds exceeds one in one million ($1x10^{-6}$) excess risk for cancer, or one in one hundred thousand ($1x10^{-5}$) for cumulative risks from all carcinogenic compounds, the major risk-contributing constituents should be evaluated as COCs;
- If the non-cancer hazard index (HI) is 1.0 or greater, the major risk-contributing constituents should be evaluated as COCs; and
- If lead concentrations in exposure media result in a predicted blood-lead level of 10 micrograms per deciliter (µg/dL) in greater than 5 percent of the potentially exposed population, lead should be identified as a COC.

This section provides a summary of the current potential risks associated with the chemicals and media at the Site. Details of the procedures and calculations of the risk assessment, along with the complete data set, can be found in the *Supplemental Remedial Investigation/Feasibility Study Risk Evaluation* (Jacobs 2019).

3.2.2.1 Chemicals of Concern (COCs).

Several chemicals of concern were identified, which are listed below:

- Arsenic, lead, Benzo(a)pyrene (BaP), TPH as diesel (TPH-d), TPH as oil (TPH-o) in shallow soil (0 to 3 feet below ground surface); and
- Arsenic, TPH-d and TPH-o in groundwater.

3.2.2.2 Areas of Unacceptable Risk.

The human health risk assessment evaluated the Site in three different ways for shallow soil:

- One exposure area: 11.7 acres (Sitewide);
- Eleven exposure areas: approximately 1 acre each; and
- Two exposure areas: 8.7 acres (west) and 3 acres (east).

These three exposure areas were assessed under three hypothetical exposure scenarios:

- Residential (single-family);
- Urban residential; and
- Occupational.

A summary of the human health risks in shallow soil identified for the three exposure areas are shown on Figure 5 and outlined below:

Two Exposure Areas: 8.7 Acres (West) and 3 Acres (East)
Western Area • The cumulative ELCR is 4 x 10^{-5} for the residential scenario, and 2 x 10^{-5} for the urban residential scenario, which exceed the DEQ cumulative risk threshold of 1 x 10^{-5}. • The primary risk driver is arsenic. The chemical specific ELCR for arsenic is 4 x 10^{-5} for the residential scenario, 2 x 10^{-5} for the urban residential scenario, and 9 x 10^{-6} for the occupational scenario, which exceed the DEQ threshold of 1 x 10^{-6} for individual chemicals. The uncertainties associated with inclusion of arsenic into the risk estimates are discussed below. • The cumulative HI is 3 for the residential scenario and 1 for the urban residential scenario. • The primary driver to the HI is TPH-d for the residential (HQ = 2) scenario. **Eastern Area** • The cumulative ELCR is 8 x 10^{-5} for the residential scenario, and 3 x 10^{-5} for the urban residential scenario, which exceed the DEQ cumulative risk threshold of 1 x 10^{-5}. • The primary risk driver is arsenic. The chemical specific ELCR for arsenic is 7 x 10^{-5} for the residential scenario, 3 x 10^{-5} for the urban residential scenario, and 2 x 10^{-5} for the occupational scenario, which exceed the DEQ threshold of 1 x 10^{-6} for individual chemicals. The uncertainties associated with inclusion of arsenic into the risk estimates are discussed below. • The cumulative HI is 6 for the residential scenario and 3 for the urban residential scenario. • The primary driver to the HI is lead for the residential (HQ = 6) scenario.
One Exposure Area: 11.7 Acres (Sitewide)
• The cumulative excess lifetime cancer risk (ELCR) is 5 x 10^{-5} for the residential scenario, and 2 x 10^{-5} for the urban residential scenario, which exceed the DEQ cumulative risk threshold of 1 x 10^{-5}. • The primary risk driver is arsenic. The chemical specific ELCR for arsenic is 4 x 10^{-5} for the residential scenario, 2 x 10^{-5} for the urban residential scenario, and 1 x 10^{-5} for the occupational scenario, which exceed the DEQ threshold of 1 x 10^{-6} for individual chemicals. The uncertainties associated with inclusion of arsenic into the risk estimates are discussed below. • The cumulative hazard index (HI) is 8 for the residential scenario and 4 for the urban residential scenario. • The primary driver to the HI is TPH-d for the residential (hazard quotient [HQ] = 7) and urban residential (HQ = 3) receptor scenarios.
Eleven Exposure Areas: Approximately 1 Acre Each
• Seven areas had unacceptable cumulative risk or HI for one or more of the three receptor scenarios. • All 11 areas had reported arsenic levels that pose risks exceeding the DEQ threshold of 1 x 10^{-6} for individual chemicals. The uncertainties associated with inclusion of arsenic into the risk estimates are discussed below.

3.2.2.3 Uncertainties Associated with Arsenic in Soil.

The cumulative risk evaluation indicates that arsenic is the primary risk driver for potential receptor exposure to Site soil for all exposure scenarios evaluated. Because arsenic detected in Site soil occurs naturally, it is important to consider the relative level of potential risk posed by naturally occurring levels when interpreting risks. It is not uncommon for natural levels of metals like arsenic to result in calculated risks exceeding DEQ regulatory thresholds. As a result, including arsenic in these risk calculations can introduce significant uncertainty for risk management decisions.

To address this uncertainty, the Site-wide data set for arsenic in soil was initially compared directly to the range of data used by DEQ to calculate background concentrations of arsenic in soil in Oregon (DEQ 2018a). This comparison indicated that Site-related releases of arsenic likely have occurred and should be further evaluated for potential remedial action.

To evaluate the extent of this potential remedial action, soil locations with arsenic concentrations above 30 mg/kg (the high end of the background data set [Klamath Mountain region]) were removed from the Sitewide data set, and the remaining data were statistically compared to the more conservative DEQ default background concentrations for metals in the Klamath Mountain region data set, (12 mg/kg). The statistical comparison was conducted using EPA's online calculation tool ProUCL Version 5.1, Form 1. The ProUCL output indicated that the residual Sitewide data set is statistically indistinguishable from the background data set for arsenic.

These results indicate that if the seven soil locations with arsenic concentrations above 30 mg/kg were addressed in a remedial action and removed from the Site data set, then Sitewide arsenic levels would be consistent with naturally occurring regional levels (12 mg/kg), thus attaining the remedial goal, as shown in the numerical Remedial Action Objectives in the following Section 5.1. Additional details of this analysis are presented in the Supplemental Remedial Investigation/Feasibility Study Report (Jacobs 2021).

3.2.2.4 Uncertainties Associated with Lead in Soil.

A site-specific RBC for lead was determined in the Supplemental RI/FS (Jacobs; 2021). The hazard quotient was rounded to 1 using one significant digit for lead under the residential and urban residential receptor scenarios. The Exposure Point Concentrations (EPCs) calculated from the 90% upper confidence limits of current lead concentrations within the western 8.7 acres indicated acceptable risk for residential, urban residential, and occupational exposure scenarios when compared to the RBC of 400 mg/kg. Some of the lead concentrations included in the EPC calculations exceeded 400 mg/kg and 1,000 mg/kg. Although the western 8.7 acres has a calculated acceptable risk for lead, DEQ commented in its review of the revised risk assessment (DEQ 2019b) that concentrations of lead above 1,000 mg/kg should still be addressed on the western 8.7 acres as part of a risk management strategy.

The Final Site-Specific Cleanup Goals should be compared to the EPCs calculated from the 90% upper confidence limits within a given exposure area if different than the evaluated western 8.7-acre area.

3.2.3 Ecological Risk Assessment

An ecological risk assessment was completed during the 1999 RI and was summarized in the 2001 ROD. The ecological screening assessment of the Site consisted of a survey by the Oregon Natural Heritage Program (ONHP) for rare, threatened, and endangered species, and comparisons of concentrations of chemicals detected in surface water and sediment to ecological preliminary remediation goals (PRGs). Although three animal species and one plant species listed by the ONHP as rare, threatened, or endangered are present within a 2-mile radius of the Site, the locations of these species are not on or adjacent to the Site. The Site is not known to serve as a habitat for any of these rare, threatened, or endangered species. The reported locations in which these species occur are unlikely to be affected by chemicals detected in soil, sediment, ground water, or surface water at the Site.

Ecological screening criteria were exceeded in some sediment and surface water samples from Ponds A and B and the sediment in the natural pond. Since the 1999 RI, Ponds A and B and the natural pond have dried out and are now typically dry. These ponds currently contain standing water briefly following periods of extended precipitation and are planned to be developed, thereby limiting or eliminating the available ecological habitat.

3.3 BENEFICIAL USE AND HOT SPOT DETERMINATION

3.3.1 Groundwater Beneficial Use Determination

A beneficial use determination for groundwater was completed during the 1999 RI. Beneficial uses were evaluated for onsite as well as offsite, considering current use and the following factors listed in OAR 340-122-0080(3)(f)(F):

- Historical land and water use;
- Anticipated future land and water uses;
- Concerns of community and nearby property owners;
- Regional and local development patterns;
- Regional and local population projections; and
- Availability of alternate water sources.

Elevated TPH-d and TPH-o have been detected in shallow groundwater at the Site, however, there are several reasons as to why beneficial use is not affected for onsite and offsite groundwater:

- Groundwater for beneficial use in the Site vicinity is drawn from a significantly deeper aquifer. There is no current or anticipated future use of shallow groundwater at or in the vicinity of the Site.
- The vertical separation between the shallow groundwater zone at the Site and the aquifer used for beneficial use is at least 40 to 60 feet thick, 20 to 40 feet of which is bedrock.
- Future land use in this area will continue to be devoted to mixed commercial and urban residential uses.
- Future property owners in this area are not likely to install wells because developments would be required to hook up to City of Ashland water lines.
- The viscous properties of Bunker C limit its mobility to transport offsite.

A search of the Oregon Water Resources Department (OWRD) database was conducted in February 2024 to establish if any new groundwater wells have been installed in the vicinity of the Site since the last beneficial use survey in 1999. The search included the Site and surrounding areas approximately 1 mile down-gradient, ½ mile up-gradient and ½ mile cross-gradient (Township/Range/Sections: 39S, 01E, Sections 3, 4, 9, 10). Several domestic wells were found to have been installed within this area since 1999. However, all wells were installed in the deeper aquifer, with the shallowest well being screened between 140 and 160 feet below ground surface, which is considerably deeper than the impacted shallow groundwater onsite and beneath the confining bedrock layer. These search results confirmed that the findings of the 1999 RI have not changed and that groundwater beneficial use in the vicinity of the Site is reasonably unlikely to be impacted by groundwater from the Site.

3.3.2 Surface Water Beneficial Use Determination

3.3.2.1 On-Site Surface Water

Ponds A and B and the natural pond have dried out and are now typically dry. These ponds currently contain standing water only briefly following periods of extended precipitation and have no current or future reasonably beneficial use. Areas of surface water drainage at the Site exist on the eastern and southeastern edges of the Site. This drainage appears to run only in response to storm water or other discharge from areas south of the Site.

3.3.2.2 Off-Site Surface Water

One irrigation canal was identified within the survey area. The intake to the canal is approximately ½-mile north of the Site near the intersection of Bear Creek and Oak Street. In addition to irrigation, likely future beneficial uses of Bear Creek include industrial water supply and livestock watering.

3.3.3 Land Use

Based on information from the City of Ashland's Department of Community Development, future land use in this area will continue to be devoted to employment, commercial, medical, and mixed-use residential uses. Current City of Ashland zoning for the Site and surrounding area is described in Figure 2, and summarized as follows:

- The Site and the adjacent property to the south and west are zoned as employment district (E-1) with residential overlay.
- The land further south and west of the Site is zoned as residential district (R-2).
- The adjacent area to the north of the Site is zoned as an employment district (E-1). The area north of the E-1 zoning and approximately 250 feet north of the Site is zoned E-1 with residential overlay.
- The area approximately 200 feet north of the northeast end of the Site is zoned as a multi-family residential district (R-2). The area approximately 100 to 150 feet north of this R-2 zone is zoned as a suburban residential district (R1-3.5).
- The land to the east is zoned as a single-family residential district (R-1-5).

Uses for land zoned E-1 with residential overlay include commercial use (i.e., retail, entertainment, offices) of at least 65 percent of first-floor space. Residential use is restricted to less than 15 units per acre, with residential use permitted on the second-floor space, and on no more than 35 percent of the first-floor space. No parks, other than the park presently at the corner of 6th and A Streets, are planned to be developed in the vicinity of the Site. Finally, there are no known structures protected at the Site, and there are no current conditional or non-confining uses existing within 350 feet of the Site boundaries.

In May of 2000, the City of Ashland restricted further development or land division on the former active railyard portion of the Site (shown as the 11.7-acre project area in Figure 1) until the property is remediated to residential standards, with written compliance provided by DEQ. This deed restriction was amended in 2016 and again in 2023 for consistency with changes in the cleanup plan. Under the current deed restriction, once the revised remedial action is complete and the property is remediated to urban residential standards, the City's deed restriction will be removed. However, at that time, a new deed restriction on any portion of the property with residual risk will be filed with Jackson County as part of the Easement and Equitable Servitudes with DEQ, which will restrict subdivision without approval by DEQ and restrict site use to urban residential or commercial.

3.3.4 Extent of Impacts Relative to a Commercial/Urban Residential Mixed Land Use Scenario

Oregon's Cleanup Law requires cleanup levels for properties that are protective of current and future likely use. Sites proposed for unrestricted multiple use are generally remediated to residential standards, which are the most restrictive. DEQ Human Health Risk Assessment Guidance (DEQ 2010) outlines two residential exposure scenarios to be considered when evaluating residential risk and cleanup alternatives, *single-family residential* or *urban residential*. DEQ's urban residential land use scenario assumes development with any combination of apartments, condos, or townhomes with minimal yard space maintained by the homeowner. Land use may also include mixed use commercial-residential buildings with residents on the first floor. Single

family residential land use is assumed to include homes on larger lots (typically greater than 5,000 square ft) where landscaping is maintained by the owner, and the expected exposure duration would be longer than urban residential. The default exposure frequency used in DEQ's human health risk assessment guidance is 175 days per year for the urban residential exposure scenario. This is half the exposure time, but the same consumption rate that is used for the single-family residential scenario. DEQ's urban residential scenario also accounts for apartment buildings with residences on first floor.

The 2010 DEQ guidance specifies that the most appropriate residential scenario should be determined based on the current and reasonably likely future uses of the Site and adjacent properties. Areas proposed for commercial or industrial use are generally remediated to less stringent standards. Deed restrictions can be placed on industrial or commercial property to prevent future residential use, thereby enabling use of the less restrictive cleanup standards.

Various hypothetical future exposure area settings and receptor exposure scenarios were evaluated in the Supplemental RI/FS as summarized in Section 3.2.2. Some of these future risk assessment scenarios or exposure area settings are not appropriate for the expected current and future uses of the Site. Therefore, the Supplemental RI/FS focused on the following land use scenario to be consistent with the 2010 DEQ guidance and produce the most achievable results:

- Two hypothetical future exposure area settings: 8.7 acres (west) and 3 acres (east).
- Urban residential hypothetical future receptor exposure scenario.

The urban residential receptor exposure scenario is most consistent with the current land use zoning designation of Employment (E-1) with Residential Overlay and with the City's Master Plan for the Site (City of Ashland 2001). The current land use zoning of the Site does not allow single-family residential homes and residential dwelling units are only allowed in conjunction with a permitted commercial or employment use. The Risk-Based Concentrations (RBCs) presented in Table 1 were developed in the Supplemental RI/FS and are applicable for unlimited future commercial/residential mixed land use.

For the two hypothetical future exposure areas (an 8.7-acre western area and a 3-acre eastern area) and an urban residential hypothetical future receptor exposure scenario, the risk assessment (Section 3.2.2) showed that arsenic was the primary contaminant risk driver, with lead being a secondary driver. Figure 6 shows the sample locations where the arsenic and lead samples exceeded 30 and 1,000 mg/kg, respectively.

Contiguous rectangular polygons were drawn around sample locations with arsenic and lead exceedances within the 8.7-acre western area to form the remedial action target areas. Each of the rectangular polygons has a minimum dimension of 50 feet in all directions from the sample location. Adjacent areas were extended and connected when there were no clean samples in between. All the arsenic and lead samples to be addressed were in the upper 1.5 feet of the 0- to 3-foot depth horizon of the surface soil. Therefore, all the target areas extend to a depth of 1.5 feet. The dimensions and volumes of each of the target areas are shown on Figure 6. The total volume of soil to be excavated in the western area is 2,710 cubic yards.

The outer boundary of the 3-acre eastern area serves as its remedial action target area. Although the arsenic and lead exceedances were primarily in the upper 1.5 feet of the 0- to 3-foot depth horizon of the surface soil, the eastern area contains extensive petroleum NAPL at depths below 1.5 feet. Therefore, the remedial action alternatives considered in Section 5.2 addressed various depths in the eastern 3-acre area, ranging from about 1.5 to 9 feet below ground surface. The volumes of contaminated soil assumed for the eastern target area are shown on Figure 6 and range from 7,500 to 12,900 cubic yards.

3.3.5 Locality of Facility

Oregon regulations use "locality of the facility" to define where a human or an ecological receptor is reasonably likely to contact facility-related hazardous substances. The locality of the facility considers the likelihood of the contamination migrating over time. Based on the soil and ground water data collected during the various phases of RI, the locality of the facility is confined to within the 11.7-acre Site boundary (Figure 1). No current or potential future offsite impacts have been identified.

3.3.6 Hot Spots

A hot spot determination requires: (1) identification of hot spots as part of the RI/FS process, and (2) treatment of hot spots, to the extent feasible, as part of the remedial action selected or approved by DEQ.

The treatment requirement of hot spots is subject to the remedy selection balancing factors and criteria listed in OAR 340-122-0090(4), which specifies that a higher threshold be applied in evaluation of the reasonableness of costs for treating hot spots of contamination. Therefore, the purpose of identifying hot spots is to provide the information needed to evaluate the feasibility of various remedial action alternatives considering the requirement to treat hot spots if feasible.

The definition of a hot spot depends upon the media that is potentially adversely impacted. Soil, NAPL, and groundwater are discussed in the following sections. A hot spot determination was conducted as part of the 2021 Supplemental RI/FS, and the results are summarized below.

3.3.6.1 Soil Hot Spot Determination

No hot spots were identified in soil for the two hypothetical future exposure areas (the 8.7-acre western area and 3-acre eastern area) and an urban residential hypothetical future receptor exposure scenario. Soil sample results were below the "highly concentrated" hot spot criteria of contaminant concentrations greater than 100 times (i.e., 1×10^{-4}) the acceptable risk level of 1×10^{-6} for human exposure to each individual carcinogen, or 10 times (i.e., HI = 10) the acceptable risk level (HI = 1) for human exposure to each individual noncarcinogen. Because the risk above acceptable levels was driven by arsenic and potentially lead, which are both strongly adsorbed to the soil particles, the hot spot criteria for "highly mobile" or "not reliably containable" contaminants are not a concern.

3.3.6.2 NAPL Hot Spot Determination

Past observations indicate that the present NAPL is from old releases, is highly weathered, and is not migrating. It is unlikely that under an urban residential use scenario people will come in direct contact with the NAPL given its generally observed depth from below about 3 feet bgs to the water table. Therefore, the NAPL-impacted regions of the Site are not considered to be hot spots. However, there is the potential for direct contact with NAPL during excavation activities, so the potential for exposure to NAPL via the construction or excavation worker receptor scenarios will be considered in the evaluation of alternatives for the 3-acre eastern area.

3.3.6.3 Groundwater Hot Spot Determination

A groundwater hot spot determination was performed for this Site in accordance with OAR 340-122-0115 (32)(a) and the DEQ Guidance for Identification of Hot Spots, (DEQ,1998b). As noted in Section 3.3.1, there are several reasons why no beneficial groundwater use exists at the Site, therefore, no groundwater hot spots are present.

4. PEER REVIEW SUMMARY

Technical documents produced during the investigation of the UPRR Ashland Site have been reviewed by a technical team at DEQ. The team consists of the project manager/engineer, a hydrogeologist, and a toxicologist. Because of the extended duration of the investigation, some team members have changed, while others have retired. The current team, some of whom have been actively working on this project for over 10 years, unanimously supports the remedial action. Refer to the technical team evaluation file for more detailed information.

5. DESCRIPTION OF REMEDIAL ACTION ALTERNATIVES

5.1 REMEDIAL ACTION OBJECTIVES

Remedial Action Objectives (RAOs) are media-specific goals for protecting human health and the environment, while providing the framework for developing and evaluating remedial action alternatives. The RAOs have been updated from those presented in the 2001 ROD.

Based on the extent of contamination under the current and anticipated future land use scenarios of commercial/urban residential mixed use (Section 3.3.4), the RAOs for this remedial action have been revised as follows, with reference to two exposure areas shaded in color on Figure 5:

- Prevent human exposure via ingestion or inhalation to soil that exceeds the urban residential cleanup goals and background levels;
- Prevent human exposure to the contaminated soil and Bunker C/TPH impacts within the eastern 3 acres of the Site that would result in unacceptable risk; and
  Prevent human exposure to impacted groundwater on the Site that would result in unacceptable risk.

These RAOs are consistent with those presented in the 2001 ROD but were revised to reflect that planned site use was updated from residential to urban residential and to include the results of the revised risk assessment (Section 3.2.2), current DEQ guidance (DEQ 2010), and the various cleanup activities conducted since 2001 (Section 3.1.1). Achievement of the RAOs will determine the success of the remedial action and serve as the basis for potential DEQ letter(s) of No Further Action for the 8.7-acre and 3-acre Site parcels, once cleanup is complete.

Upon completion of the remedy, as noted by approval of a Remedial Action Completion report by DEQ, the conditions of the existing deed restriction will have been met and the City of Ashland will remove their existing deed restriction on the property. The existing Cleanup Restriction Covenant on the property (Parcel 7) as revised on June 29, 2023, reads as follows:

> *Parcel 7 is restricted from further development or land division until Grantor obtains a determination from the Department of Environmental Quality that the property meets the cleanup standards consistent with the current and likely future land use zoning for the property, consistent with the DEQ Urban Residential exposure standard. Thereafter, development of any subdivided parcel cannot occur until Grantor obtains a determination from the Department of Environmental Quality that the property meets cleanup standards applicable to the use proposed for the subdivided parcel. This covenant will be removed from the property, and/or any subdivided parcel(s), upon the Grantor providing the City written documentation from the Department of Environmental Quality demonstrating compliance with these standards to the City.*

As noted in Section 3.3.4, the urban residential scenario, not single-family residential scenario, is the appropriate residential exposure scenario for the property given the current and anticipated future zoning and land use. After completion of the remedial action, additional deed restriction(s) will be required and managed by DEQ for the western 8.7-acre and the eastern 3-acre portions of the Site, as appropriate. These deed restriction(s) will specify that approval from DEQ will be required before any portion of the land from

either area can be redeveloped in the future for a use other than urban residential and/or commercial or subdivided.

5.1.1 Acceptable Risk Levels

Acceptable risk levels, or Site-specific Risk Based Concentrations (RBCs) were established for each of the COCs based on the results of the human health risk assessment as described in Section 3.2.2. It is important to note that the RBCs are specific to a particular exposure scenario. However, they do not necessarily represent an acceptable risk threshold within a given exposure area, because of the statistical calculations involved with multiple data points within that exposure area. Therefore, RBCs are useful for screening purposes only, and not for determination of actual risk. Specifically, RBCs are used to:

- Screen and select technologies for assembly into remedial action alternatives;
- Assess the effectiveness of individual remedial action alternatives; and
- Assess the relative progress a remedial action.

The RBCs for the COCs in soil are listed in Table 1 for the urban residential and occupational exposure scenarios via soil ingestion, dermal contact, and inhalation. Most of these values correspond to an increased excess lifetime cancer risk of 1 in 1,000,000 (1×10^{-6}), or noncancer hazard index of 1, as presented in Risk Based Concentrations (DEQ, 2018) for individual chemicals. For multiple chemicals and/or pathways, the risks are additive and acceptable cancer risk is 1 in 100,000 (1×10^{-5}). The excess lifetime cancer risk of 1 in 1,000,000 and the hazard index of 1 correspond to the acceptable risk level under OAR 340-122-0115. The target and site-specific RBCs for arsenic and lead in surface soil, (30 and 1000 mg/kg, respectively) were determined as described in Section 3.2.2.

5.2 REMEDIAL ACTION ALTERNATIVES

DEQ evaluated four remedial alternatives for the revised remedial action. Remedial action alternatives were developed in the Supplemental RI/FS Report (Jacobs 2021) and presented in the October 2022 Staff Report. The remedial action alternatives considered in the Staff Report in 2022 and described during the public involvement process for the remedy selection for the Site in 2023 included:

- Alternative 1 – No Action;
- Alternative 2 – Excavation and Offsite Disposal of Shallow Soil (Western 8.7 Acres) and Shallow and Deep Soil (Eastern 3 Acres);
- Alternative 3 – Excavation and Offsite Disposal of Shallow Soil (Western 8.7 Acres) and Shallow Soil (Eastern 3 Acres) and Institutional Controls; and
- Alternative 4 (The Selected Remedial Action) - Excavation (Western 8.7 Acres) with Consolidation and Vegetated Soil Cap (Eastern 3 Acres) and Institutional Controls.

5.2.1 Alternative 1 – No Action

A No Action alternative is required to be evaluated in the remedy selection process.

5.2.2 Alternative 2 – Excavation and Offsite Disposal of Shallow Soil (Western 8.7 Acres) and Shallow and Deep Soil (Eastern 3 Acres)

Alternative 2 involves the excavation of soils in the remedial action target areas as shown on Figure 6. This alternative most closely matched the 2001 selected alternative, except excavation areas are reduced.

Excavation areas are estimated based on concentrations of COCs in soil that exceed urban residential RBCs as opposed to residential RBCs referenced in the 2001 ROD . Approximately 2,710 cubic yards of excavated soils from the western 8.7-acre area and 12,900 cubic yards of excavated soils from the eastern 3-acre area would be disposed of offsite by rail. The excavation depth in the western 8.7-acre area would be 1.5 feet, whereas the excavation depth is expected to range from 2.5 to 9 feet over the majority of the eastern 3-acre area. The depths and extents of the excavation from the Updated RAWP (CH2M 2016) are assumed for the eastern 3-acre area to determine the volume estimates used for this alternative. After excavation, clean backfill would be purchased and delivered to the Site by rail to replace the excavated soils and fill in the former holding pond depressions. The entire 11.7-acre Site would then be graded and hydroseeded with native plants. This graded and vegetated Site would readily allow for annual mowing for fire suppression as required by the City of Ashland.

5.2.3 Alternative 3 – Excavation and Offsite Disposal of Shallow Soil (Western 8.7 Acres) and Shallow Soil (Eastern 3 Acres) and Institutional Controls

Alternative 3 involves the excavation of soils in the remedial action target areas as shown on Figure 6. Approximately 2,710 cubic yards of excavated soils from the western 8.7-acre area and 7,500 cubic yards of excavated soils from the eastern 3-acre area would be disposed of offsite by rail. The excavation depth in the western 8.7-acre area would be 1.5 feet, whereas the excavation depth in the eastern 3-acre area would need to be extended to 2.5 feet to capture all the samples with concentrations exceeding updated applicable RBCs. The horizontal extents of the excavation from the Updated RAWP (CH2M 2016) are assumed for the eastern 3-acre area, excluding the deep excavations in the NAPL areas, to determine the volume estimates used for this alternative. After excavation, clean backfill would be purchased and delivered to the Site by rail to replace the excavated soils and fill in the former holding pond depressions. The entire 11.7-acre Site would then be graded and hydroseeded with native plants. This graded and vegetated Site would readily allow for annual mowing for fire suppression as required by the City of Ashland. A deed restriction would be required for the eastern 3-acre area as part of the institutional controls.

5.2.4 Alternative 4 (The Selected Remedial Action) - Excavation (Western 8.7 Acres) with Consolidation and Vegetated Soil Cap (Eastern 3 Acres) and Institutional Controls

Alternative 4 involves the excavation of soils from the remedial action target areas shown on Figure 6. The Site risk assessment showed that arsenic was the primary contaminant risk driver, with lead being a secondary driver. Figure 6 shows the sample locations where the arsenic and lead samples exceeded 30 mg/kg and 1,000 mg/kg, respectively. Contiguous rectangular polygons were drawn around sample locations with arsenic and lead exceedances within the 8.7-acre western area to form the remedial action target areas. Each of the rectangular polygons has a minimum dimension of 50 feet in all directions from the sample location. Adjacent areas were extended and connected when there were no clean samples in between. All the arsenic and lead samples to be addressed were from the upper 1.5 feet of the 0- to 3-foot depth horizon of the surface soil, therefore, all the target areas extend to a depth of 1.5 feet. Approximately 2,710 cubic yards of excavated soils from the western 8.7-acre area would be consolidated in the lowest spots in the eastern 3-acre area. Confirmation sampling will be required after excavation and removal of contaminated soil to ensure that the site will meet the RAOs.

An additional approximately 2,870 cubic yards of clean backfill would be purchased and delivered to the Site from the existing rail siding using side-dump railcars. The clean backfill would be used to supplement the consolidated soil from the western side to fill in the former holding pond depressions. After consolidation and grading, approximately 2,640 cubic yards of additional clean backfill would be delivered

to the Site via side-dump railcars and consolidated in a 6-inch base layer on the eastern 3-acre area. This would be followed by delivery of approximately 2,640 cubic yards of clean topsoil via side-dump railcars and consolidated in a 6-inch top layer on the eastern 3-acre area. The combined base and top layers would form a 1-foot clean soil cap that would serve to protect potential receptors from contact with the underlying impacted soil. The entire 11.7-acre Site would then be graded and hydroseeded with native plants. This graded and vegetated Site would readily allow for annual mowing for fire suppression as required by the City of Ashland, until the property can be sold. The eastern 3-acre area would be fenced to limit access. The Site will carry a deed restriction requiring that future development be limited to mixed use commercial/urban residential land use and include measures to prevent receptor contact with the underlying impacted soils on the eastern 3-acre area.

6. EVALUATION OF REMEDIAL ACTION OPTIONS

6.1 EVALUATION CRITERIA

The criteria DEQ used to evaluate the remedial action alternatives described in Section 5 are defined in OAR 340-122-090 and establish a two-step approach to evaluate and select a remedial action. The first step evaluates whether a remedial action is protective; if not, the alternative is unacceptable, and the second step evaluation is not required. The remedial alternatives considered protective are evaluated and compared with each other using five balancing factors. The five balancing factors are 1) effectiveness in achieving protection, 2) long-term reliability, 3) implementability, 4) implementation risk, and 5) reasonableness of cost.

The alternative that compares most favorably against these balancing factors is selected for implementation. A residual risk assessment is then conducted for the selected alternative to document that it is protective of human health and the environment.

6.2 PROTECTIVENESS

The protectiveness of a given remedial action is evaluated by comparing its ability to mitigate the unacceptable risk due to the soil impacts as noted in Section 3.3.4. The pathways or beneficial uses for which the impacted soil results in unacceptable risk are:

- Urban residential and occupational scenarios (surface soil/0-3 feet) – 8.7-acre western area; and
- Urban residential and occupational scenarios (surface soil/0-3 feet and subsurface soil/3-15 feet) – 3-acre eastern area.

These are the pathways and beneficial uses that will be directly evaluated to establish if a given remedial alternative is protective.

OAR 340-122-090 states that protectiveness may be achieved by any of the following methods:

- Treatment;
- Excavation and off-Site disposal;
- Engineering controls;
- Institutional controls;
- Any other method of protection; or
- A combination of the above.

Except for hot spots, there is no preference for any one of the above methods for achieving protectiveness. Where a hot spot has been identified, OAR 340-122-0090(4) establishes a preference for treatment to the extent feasible, including a higher threshold for evaluating the reasonableness of costs for treatment. No hot spots have been identified at this Site.

6.2.1 Alternative 1 – No Action

Alternative 1 would not take any action to minimize potential human exposure by reducing concentrations of COCs or using engineering or institutional controls. The potential for future exposure of receptors to soil

that exceeds the acceptable risk levels would still exist. Therefore, Alternative 1 is not protective and will not be evaluated further.

6.2.2 Alternative 2 – Excavation and Offsite Disposal of Shallow Soil (Western 8.7 Acres) and Shallow and Deep Soil (Eastern 3 Acres)

Excavation of impacted soil would be protective of human health by eliminating risks associated with an urban residential exposure scenario over the entire 11.7-acre Site. Alternative 2 would enable unrestricted urban residential and occupational future use without any engineering or institutional controls. There would be no deed restrictions on any portion of the Site. Alternative 2 would be more protective than the other alternatives.

6.2.3 Alternative 3 – Excavation and Offsite Disposal of Shallow Soil (Western 8.7 Acres) and Shallow Soil (Eastern 3 Acres) and institutional Controls

Excavation of impacted soil would be protective of human health by eliminating risks associated with an urban residential exposure scenario in the western 8.7-acre area. The protectiveness of the shallow excavation in the eastern 3-acre area would depend on ent6gineering and institutional controls to protect receptors against potential contact with the NAPL-contaminated deep soil. Direct receptor exposure to impacted surface soil would be prevented by the removal of shallow soil over the entire 11.7-acre Site. A deed restriction would be required for the eastern 3-acre area as part of the institutional controls. There would be no deed restrictions or other engineering or institutional controls on the western 8.7-acre area. The protectiveness of Alternative 3 is about the same as that of Alternative 4, below.

6.2.4 Alternative 4 (The Selected Alternative) - Excavation (Western 8.7 Acres) with Consolidation and Vegetated Soil Cap (Eastern 3 Acres) and Institutional Controls

Excavation of impacted soil would be protective of human health by reducing risks associated with an urban residential exposure scenario in the western 8.7-acre area. Protectiveness in the eastern 3-acre area will be established through engineering controls, which include a vegetated soil cap and fence. Additionally, institutional controls would be used to ensure that the cap remain in place and in good condition. Direct receptor exposure to impacted soil on the eastern 3-acre area would be prevented by the soil cap, fence, and a deed restriction limiting potential future excavation activities. A deed restriction on the Site would also limit land use to urban residential, commercial, or industrial use. The protectiveness of Alternative 4 is less than that of Alternative 3.

6.3 BALANCING FACTORS

The three remedial action alternatives determined to be protective were evaluated against the following balancing factors defined in OAR 340-122-0090(3):

- **Effectiveness in achieving protection.** The evaluation of this factor includes the following components:
  - Magnitude of the residual risk from untreated waste or treatment residuals, without considering risk reduction achieved through on-Site management of exposure pathways (e.g., engineering and institutional controls). The characteristics of the residuals are considered to the degree that they remain hazardous, considering their volume, toxicity, mobility, propensity to bio-accumulate, and propensity to degrade.
  - Adequacy of any engineering and institutional controls necessary to manage residual risks.

  - The extent to which the remedial action restores or protects existing or reasonably likely future beneficial uses of water.
  - Adequacy of treatment technologies in meeting treatment objectives.
  - The time until remedial action objectives are achieved.
- **Long-term reliability.** The following components are considered when evaluating this factor, as appropriate:
  - The reliability of treatment technologies in meeting treatment objectives.
  - The reliability of engineering and institutional controls needed to manage residual risks, taking into consideration the characteristics of the hazardous substances being managed, the ability to prevent migration and manage risk, and the effectiveness and enforceability over time of the controls.
  - The nature and degree of uncertainties associated with any necessary long-term management (e.g., operations, maintenance, monitoring).
- **Implementability.** This factor includes the following components:
  - Practical, technical, legal difficulties and unknowns associated with the construction and implementation of the technologies, engineering controls, and/or institutional controls, including the potential for scheduling delays.
  - The ability to monitor the effectiveness of the remedy.
  - Consistency with regulatory requirements, activities needed to coordinate with and obtain necessary approvals and permits from other governmental bodies.
  - Availability of necessary services, materials, equipment, and specialists, including the availability of adequate treatment and disposal services.
- **Implementation Risk.** This factor includes evaluation of the potential risks and the effectiveness and reliability of protective measures related to implementation of the remedial action, including the following receptors: the community, workers involved in implementing the remedial action, and the environment; and the time until the remedial action is complete.
- **Reasonableness of Cost.** This factor assesses the reasonableness of the capital, O&M, and periodic review costs for each remedial alternative; the net present value of the preceding; and if a hot spot has been identified at this Site, the degree to which the cost is proportionate to the benefits to human health and the environment created through treatment of the hot spot.

In general, DEQ should give preference to the least expensive remedial action, unless the additional cost of a more expensive corrective action is justified by proportionately greater benefits to one or more of the other balancing factors, or the responsible party desires to implement a more expensive remedy that is as or more protective. The sensitivity and uncertainty of the costs are also considered.

6.4 EVALUATION OF BALANCING FACTORS

This section evaluates each of the remedial action alternatives that met the protectiveness criteria against the balancing factors described in Section 6.3. The table in Section 7 describes how each alternative compares to all the sub-criteria for each of the balancing factors. The sections below summarize the major conclusions of this comparison and provide additional discussion for differentiating issues at the Site.

6.4.1 Effectiveness

Alternatives 2, 3 and 4 are equally effective at achieving protection in the western 8.7-acre area since the same quantity of soil will be excavated in all cases. Alternative 2 is the most effective at achieving protection in the eastern 3-acre since the most contaminated soil would be removed. Alternative 4 would

rely on engineering and institutional controls to be effective. Alternative 3 would rely on only institutional controls so would be less effective than Alternative 4. However, all the alternatives adequately manage residual risks and meet the RAOs.

6.4.2 Long-term Reliability

Alternative 2 does not rely on institutional controls and thus it is the most reliable. The biggest reliability uncertainties are with Alternatives 3 and 4 because of their reliance on institutional controls. While institutional controls are relatively simple to implement by placing a deed restriction on the land or preparing management plans and health and safety plans, the larger challenge is making sure that the land is used appropriately and that future users are aware of the residual contamination, the plans, and restrictions; and that the plans are properly implemented. Alternative 4 will also have engineering controls in a vegetated soil cap and fence that will need to be periodically inspected and maintained until the land is developed for an appropriate use given the underlying soil contamination. For this reason, Alternative 4 is less reliable than Alternative 3. However, these types of controls are not uncommon for former industrial properties and if long term management is done properly, they all can be reliable.

6.4.3 Implementability

Alternative 4 is the easiest of the alternatives to implement, as it involves no removal of contaminated soil from the Site. Alternatives 2 and 3 would require the removal of 15,610 and 10,210 cubic yards of soil, respectively, from the Site by rail and the construction of a new rail spur on the Site to load the soil. Alternative 2 would also involve deep soil excavation and would be the most difficult of the alternatives to implement.

6.4.4 Implementation Risks

Alternative 4 has the lowest implementation risk. All the alternatives have the potential short-term risks associated with excavating surface soil, which are dust generation and risks to Site workers. These risks could be addressed with dust suppression and air monitoring procedures. Stormwater runoff associated with excavation and offsite transportation of surface soils may also pose a risk, which would be controlled with erosion prevention and sediment control measures. Risks to the community would be controlled by restricting Site access.

Alternatives 2 and 3 would require construction of a new rail spur, loading onto rail cars, and transporting the contaminated soil by rail to a landfill, all of which would come with added implementation risks. With Alternative 2, the excavation of soil deeper than 5 feet would require shoring and/or other measures to protect against collapse. Also, deep NAPL contamination could potentially end up in larger and/or deeper excavation areas than originally estimated.

6.4.5 Reasonableness of Cost

Based on the March 2021 costs from the FS, the cost estimates for Alternative 2 ($7,240,00) and Alternative 3 ($5,800,00) are significantly higher than Alternative 4 ($1,960,00). Alternatives 2 and 3 are 3.7 and 3.0 times more expensive than the estimated cost of Alternative 4, respectively.

6.5 SUSTAINABILITY/GREEN REMEDIATION

Beginning in 2011 DEQ began evaluating effects remedial actions may have on the community and the environment to advance DEQ's mission of restoring, maintaining and enhancing the quality of Oregon's air, land and water. DEQ's Green Remediation Policy supports the implementation of more sustainable practices that lessen the overall environmental impacts from investigation and remediation at cleanup projects. This includes encouraging the regulated community to implement greener approaches to remediation, such as by reducing air emissions and waste generation, limiting greenhouse gasses, and reduce energy usage.

Alternative 4 would have the least amount of greenhouse gas emissions because the soil would not need to be transported by truck or rail long distances for disposal. Also, no waste would be generated with Alternative 4, because all waste would be managed onsite.

7. COMPARATIVE ANALYSIS OF REMEDIAL ACTION ALTERNATIVES

Balancing Factors	Alt. 2	Alt. 3	Alt. 4
Effectiveness			
- Magnitude of the residual risk			
- Adequacy of any engineering and institutional controls			
- Time to achieve remedial action objectives			
Long-term Reliability			
- Meet treatment objectives			
- Reliability of engineering and institutional controls			
- Nature and degree of uncertainties			
Implementability			
- Practical, technical, legal difficulties and unknowns			
- Ability to monitor effectiveness			
- Consistency with regulatory requirements			
- Availability of necessary services, materials, equipment, and specialists			
Implementation Risk			
- Potential risk and reliability of protective measures for the community			
- Potential risk and reliability of protective measures for remediation workers			
- Potential risk and reliability of protective measures for the environment			
- Time to remedial action completion			
Reasonableness of Cost			
- Net present value of capital, O&M, and periodic review costs			
Green Remediation			
- Sustainable: lessens overall environmental impacts (lower energy use, fewer greenhouse gasses, less waste generation.			

	Performs very well against the criteria relative to the other alternatives with minor disadvantages or uncertainty.
	Performs moderately well against the criteria relative to the other alternatives with some disadvantages or uncertainty.
	Performs poorly against the criteria relative to the other alternatives with significant disadvantages or uncertainty.

8. THE REVISED REMEDIAL ACTION – ALTERNATIVE 4

Based on the detailed evaluation of the alternatives in Section 6 and 7, Alternative 4 has been selected for implementation at the UPRR Ashland Site. DEQ selected Alternative 4 because it is protective, is relatively easy to implement, is the most cost effective, and will have the lowest carbon footprint.

Under Alternative 4, deed restrictions will be required on the property to ensure that the soil cap remains intact on the eastern portion and that the future use of the entire Site remains mixed use urban residential and occupational. For the western 8.7-acre area, the parcel will be restricted from being subdivided into lots for single family residential use. For the eastern 3-acre area, the parcel will remain restricted from uses that could potentially result in exposure to the underlying contaminated soil. If the land from either area is sold, subdivided, or redeveloped in the future for a different use, then additional assessment and approval from DEQ would be required before the intended land use could be changed. The following sections detail the selected alternative, including engineering and institutional controls.

8.1 DESCRIPTION OF THE REVISED REMEDIAL ACTION

Details regarding the remedial action planning and implementation will be presented in a Remedial Design/Remedial Action (RD/RA) Work Plan, that will be prepared by UPRR and approved by DEQ before remedial action activities begin. The key elements of the remedial action are included below.

8.1.1 Excavation and Consolidation

- 2,710 cubic yards of soil will be excavated from the western 8.7-acre area of the Site and consolidated in the eastern 3-acre area as follows:
  - Surface soils in the western 8.7-acre area will be removed as shown in Figure 6 to a minimum depth of 1.5 feet.
  - The 2,710 cubic yards of excavated soil will be consolidated in the lowest spots in the eastern 3-acre area.
  - Confirmation soil samples will be collected following excavation to ensure that remaining levels of contamination meet the cleanup requirements.
  - Clean backfill will be purchased and delivered from the existing rail siding using side-dump railcars. The clean backfill will include 2,710 cubic yards to fill in the excavation areas on the west side plus an additional 2,870 cubic yards to level the eastern 3-acres by supplementing the consolidated soil on the eastern side and filling in the former holding pond depressions.

8.1.2 Engineering Controls

- A 1-foot-thick vegetated soil cap will be constructed over the eastern 3-acre area as follows:
  - Approximately 2,640 cubic yards of additional clean backfill would be delivered to the Site via side-dump railcars and consolidated in a 6-inch base layer on the eastern 3-acre area.
  - This would be followed by delivery of approximately 2,640 cubic yards of clean topsoil via side-dump railcars and consolidated in a 6-inch top layer on the eastern 3-acre area.
  - The combined base and top layers would form a 1-foot clean soil cap that would serve to protect potential receptors from direct contact with the underlying impacted soil with concentrations of COCs exceeding urban residential RBCs.

- The entire 11.7-acre Site would then be graded and hydroseeded with native plants. This graded and vegetated Site would readily allow for annual mowing for fire suppression as required by the City of Ashland, until the property can be sold.
- The eastern 3-acre area will be fenced to limit access until developed with approval by DEQ.
  - The fence will likely include a locked gate and signage. An annual inspection of the cap and fence will likely be included as part of the Operations and Maintenance (O&M) Plan for the Site after the cleanup remedy has been completed. The purpose of the fence is primarily to discourage vagrancy and prevent potential damage to the cap until the property is developed. UPRR also has a no-trespass agreement in place with the Ashland Police Department for the property.
- An O&M Plan will be developed, approved by DEQ and maintained under the Institutional Controls.

8.1.3 Intuitional Controls

- Institutional Controls (ICs) will be developed and implemented to limit exposures to residents and workers from subsurface soils, as well as to prevent exposure to NAPL should any excavation and maintenance activities need to be conducted on the eastern 3-acre parcel.
  - Such ICs may include a Site Management Plan and a Contaminated Media Management Plan.
- Deed restriction(s) consisting of an Easement and Equitable Servitudes (EES) will be developed and agreed on by UPRR and DEQ to define the controls, including the following.
  - For the Western 8.7-Acre Area:
    - Restrict site use to urban-residential and/or commercial use.
    - Restrict subdivision without additional assessment and/or approval from DEQ.
  - For the Eastern 3-Acre Area:
    - Restrict site use to urban-residential and/or commercial use.
    - Restrict subdivision without additional assessment and/or approval from DEQ.
    - Limit potential exposures to onsite workers to soils and NAPL beneath the cap by
      - Restricting groundwater use;
      - Restricting contact with soil underlying the vegetated cap.
    - Require inspection and maintenance of the vegetated cap.
    - Restrict uses that could potentially result in compromising the soil cap and/or exposure to the underlying contaminated soil. Such restricted uses may include:
      - Single-family residential development;
      - Gardening/food production;
      - Underground structures; and
      - Intentional development within and below the vegetated soil cap without DEQ oversight.
- The Site Management Plan and EES documents will dictate the level of periodic IC reviews and reporting to DEQ by UPRR to document how the ECs and ICs are working and any unforeseen circumstances or situations that may require addressing to ensure the protectiveness of the remedy.

8.1.4 Five Year Reviews

The remedy, and its protectiveness, will be reviewed every 5 years for the eastern 3-acre area. The 5-Year reviews will evaluate the effectiveness of the vegetated soil cap and fence and the performance of the ICs. The property owner, unless otherwise specified, shall conduct and provide a summary of the review to DEQ every five years after construction completion unless an alternate remedy is implemented and approved by DEQ in the future that does not require a periodic review of continued protectiveness. Five-year reviews are not needed for the western 8.7-acre area.

8.2 RESIDUAL RISK EVALUATION

OAR 340-122-0084(4)(c) requires a residual risk evaluation of the revised remedial action that demonstrates that the standards specified in OAR 340-122-0040 will be met, namely:

- Assure protection of present and future public health, safety, and welfare, and the environment;
- Achieve acceptable risk levels;
- For designated hot spots of contamination, evaluate whether treatment is reasonably likely to restore or protect a beneficial use within a reasonable time; and
- Prevent or minimize future releases and migration of hazardous substances in the environment.

After excavation of 1.5 feet soil from the western 8.7-acre area and backfill with clean soil (as shown in Figure 6), the residual risk in the western area would be reduced to acceptable levels for the urban residential and occupational exposure scenarios. The cumulative ELCR is below the threshold of 1×10^{-5} and the chemical specific ELCRs are below the threshold of 1×10^{-6} for individual chemicals. The cumulative HI is less than 1. Estimated residual arsenic and lead concentrations of 7.5 and 217 mg/kg, respectively, within a 90 percent upper confidence limit were calculated assuming soil removal (DEQ 2019b), which are below the RBCs in Table 1. The residual risk remaining after implementation of the preferred alternative will be recalculated based on the results of confirmation sampling in the western 8.7-acre area.

On the eastern 3-acre area where contaminated soil will be consolidated and capped, the residual risk will be at, or below acceptable risk levels if institutional controls and long-term Site management prevent uncontrolled exposures to contamination beneath the cap.

8.3 FINANCIAL ASSURANCE

UPRR will provide a financial assurance mechanism to cover the performance of the remedial actions described above that meets the requirements of 40 CFR §264.143(f)(1)(i) or a performance bond or letters of credit.

9. PUBLIC ENGAGEMENT

DEQ engaged the public multiple times since the Staff Report (DEQ 2022) was published. Two public comment periods were held from October 15, 2022 to January 30, 2023 and September 1 to October 31, 2023. A public meeting was held at the Ashland Public Library on September 27, 2023. UPRR and DEQ staff also presented at Ashland City Council work sessions on March 12 and October 3, 2023. During the October City Council meeting, the Council voted to support this revised remedial action approach.

Public Engagement for the Staff Report (DEQ 2022) and preparation for this ROD also included:

- Direct mailings to nearby residents and property owners;
- Signs posted at the Site;
- Announcements posted in the Ashland News and Grants Pass Daily Courier;
- Public Notice posted to the DEQ Public Notices website;
- Announcement posted on the Secretary of State Oregon Bulletin;
- Updates on the Site web page;
- Updates to the DEQ ECSI project page;
- Prepared a Frequently Asked Questions (FAQ) document; and
- DEQ representatives were interviewed on Jefferson Public Radio.

A summary of comments received during the public comment periods and DEQ's responses is included in Attachment 1.

10. PROJECT COMPLETION

After active remedial action elements are completed as described in Section 8 and the EES is recorded, UPRR shall issue a Remedial Action Completion Report (Completion Report) to DEQ for review. Once DEQ approves the Completion Report, DEQ will prepare a draft Certification of Completion letter for public comment. DEQ will also publish notice of a 30-day public comment period in the Secretary of State's Bulletin and a local paper for DEQ's recommendation of Certificate of Completion and NFA decision for the Site. After any comments are addressed, DEQ will issue the Certification of Completion. The City of Ashland will then remove their existing deed restriction on the property as discussed in Section 5.1. Thereafter, additional deed restriction(s) on the property will be managed by DEQ for the western 8.7-acre and the eastern 3-acre portions of the Site, as appropriate. These deed restriction(s) will specify that approval from DEQ will be required before any portion of the land from either area can be redeveloped for a use other than urban residential and/or commercial or subdivided.

11. SIGNATURES

MANAGEMENT APPROVAL FORM
Final Approval
Department of Environmental Quality
Western Region

REPORT/DOCUMENT TYPE:
Union Pacific Railroad Rail Yard Site
Ashland, Oregon
ECSI File #1146

Record of Decision, March 2024

Date: March 26, 2024

Please review the attached document which describes a staff recommendation regarding an environmental cleanup activity. The approved preliminary recommendation has been advertised for public comment as required by ORS 465.320. The public comment period has expired. The attached document includes a discussion of public comments received (if any) and how those comments affected the final recommendation/decision.

FINAL APPROVAL:

Brad Shultz

Brad Shultz, Section Manager
Western Region Cleanup and Emergency Response

03/26/2024
Date

State of Oregon
Department of
Environmental
Quality

PEER REVIEW COMMENTS & APPROVAL FORM

Union Pacific Railroad Rail Yard Site
Ashland, Oregon
ECSI File #1146

Date: March 26, 2024 Action: Record of Decision, March 2024

Please review and comment on the attached document. It is the Record of Decision, with /minor revisions of the staff report. Please provide comments by March 29, 2024, or sign below as approval.

Route to the following technical team members:

Donald Hanson		3/26/24
Don Hanson Lead Worker and Hydrogeologist	Signature	Date
Susan Turnblom Susan Turnblom (Mar 26, 2024 15:55 PDT)		03/26/2024
Susan Turnblom Toxicologist	Signature	Date
Margaret L Oscilia		03/27/2024
Margaret L. Oscilia, P.E. Engineer and Project Manager	Signature	Date

12. ADMINISTRATIVE RECORD INDEX

Administrative Record Index
Union Pacific Railroad Rail Yard Site

Ashland, Oregon

The Administrative Record consists of the documents on which the remedial action for the Site is based. The primary documents used in evaluating remedial action alternatives for the UPRR Ashland Site are listed below. Additional background and supporting information can be found in the UPRR Ashland project file (ECSI No. 1146) located at DEQ Western Region Office, 165 E. 7th Avenue, Suite 100, Eugene, Oregon 97401.

SITE-SPECIFIC DOCUMENTS

Cascade Earth Sciences Ltd. 1992. Phase II Environmental Site Assessment - Ashland Package - Parcel 2; Southern Pacific Transportation Company, March 10.

CH2M HILL, Inc. (CH2M). 2010. 90% UCL Soil Excavation Methodology, Ashland, OR – Former SP Yard. August 24.

CH2M HILL, Inc. (CH2M). 2013. Remedial Action Work Plan, Union Pacific Railroad Company, Ashland Oregon. February.

CH2M HILL, Inc. (CH2M). 2016. Updated Remedial Action Work Plan, Union Pacific Railroad Company, Ashland Oregon. September.

City of Ashland. 2001. Ashland Railroad Property Master Plan, A Transportation Growth Management Project. June.

Environmental Resources Management 1998. Remedial Investigation Report - Outstanding Issues, Union Pacific Railroad Company, Ashland Yard, May 29.

Environmental Resource Management (ERM). 1999. Remedial Investigation Report, Union Pacific Railroad Company, Ashland Yard, Ashland, Oregon. Final. November.

Environmental Resources Management 2000. Groundwater Monitoring Data Summary (1997 -1998), Ashland Rail Yard; October 12.

Environmental Resource Management (ERM). 2001. Feasibility Study Report, Ashland Rail Yard, Ashland, OR. February 15.

Industrial Compliance 1994. Remedial Investigation/Feasibility Study Work Plan, Ashland Rail Yard, Southern Pacific Transportation Company, January 14.

Industrial Compliance 1994. Draft Phase II Remedial Investigation/Feasibility Study Work Plan Addendum, Ashland Rail Yard, Southern Pacific Transportation Company, September 13.

Industrial Compliance 1995. February 1995 Ground Water Sampling, Ashland Rail Yard, Southern Pacific Transportation Company, April 13.

Industrial Compliance 1995. June 1995 Groundwater Sampling, Ashland Rail Yard, Southern Pacific Transportation Company, August 10.

Industrial Compliance 1996. November 1995 Ground Water Sampling, Ashland Rail Yard, Southern Pacific Transportation Company, January 26.

Jacobs Engineering Group Inc. (Jacobs). 2018. Supplemental RI/FS Work Plan, Ashland, OR – Former SP Yard. July.

Jacobs Engineering Group Inc. (Jacobs). 2019. Supplemental Remedial Investigation/Feasibility Study Preliminary Risk Evaluation (Rev. 2). June 5.

Jacobs Engineering Group Inc. (Jacobs). 2021. Supplemental Remedial Investigation/Feasibility Study Report. March.

Kennedy Jenks (K/J). 2006. Ashland Railyard Remedial Design/Remedial Action Work Plan, Union Pacific Railroad Company, Ashland Oregon. June 16.

SP Environmental Systems 1991. Preliminary Environmental Site Assessment, Ashland Package - Parcel 2, Southern Pacific Transportation Company, January 16.

SP Environmental Systems 1991. Preliminary Environmental Site Assessment, Ashland Package - Parcel l, Southern Pacific Transportation Company, January 22.

SP Environmental Systems 1991. Preliminary Environmental Site Assessment -Ashland Package - Parcel 3, Southern Pacific Transportation Company, February 6.

Terranext 1996. February 1996 Ground Water Sampling, Ashland Rail Yard, Southern Pacific Transportation Company, April 16.

STATE OF OREGON

DEQ 2000. No Further Action Required Union Pacific-Owned Portions of Parcels 2, 3, 4, and 5 Ashland Partition Plat P-32-2000. December 7.

DEQ 2001a. Remedial Action Recommendation for Union Pacific Railroad Ashland Rail Yard Site – ROD, Oregon DEQ. May 15.

DEQ 2001b. Record of Decision for Union Pacific Railroad Rail Yard Site, Ashland, Oregon. Western Region Cleanup Program. September 10.

DEQ 2001c. No Further Action Required Sale Parcel 6 - Ashland Partition Plat P-32-2000 Former Ashland Rail Yard. September 11.

DEQ 2018a. Fact Sheet: Background Levels of Metals in Soils for Cleanup. January 25. Full data set obtained from Susan Turnblom on March 5, 2019.

DEQ 2019b. Comments on the Supplemental Remedial Investigation/Feasibility Study Risk Evaluation 2nd Revision dated June 5, 2019. November 5.

DEQ 2022. Staff Report, Recommended Remedial Action Recommendation for Union Pacific Railroad Ashland Rail Yard Site, Oregon DEQ. October 2022.

Oregon's Environmental Cleanup Laws, Oregon Revised Statutes 465.200-.900, as amended by the Oregon Legislature in 1995.

Oregon's Hazardous Substance Remedial Action Rules, Oregon Administrative Rules, Chapter 340, Division 122, adopted by the Environmental Quality Commission in 1997.

Oregon's Hazardous Waste Rules, Chapter 340, Divisions 100 - 120.

Oregon's Water Quality Criteria, Chapter 340, Division 41, Willamette River Basin.

Oregon's Groundwater Protection Act, Oregon Revised Statutes, Chapter 468B.

GUIDANCE AND TECHNICAL INFORMATION

DEQ 1998. Consideration of Land Use in Environmental Remedial Actions. July.

DEQ 1998. Guidance for Conducting Beneficial Water Use Determinations at Environmental Cleanup Sites. July.

DEQ 1998. Guidance for Conducting Feasibility Studies. July.

DEQ 2001. Guidance for Ecological Risk Assessment: Levels I, II, III, IV. April 1998 (updated 12/01).

DEQ 1998. Guidance for Identification of Hot Spots. April.

DEQ 1998. Guidance for Use of Institutional Controls. April.

DEQ 2001. Cleanup Program Quality Assurance Policy. September 1990, updated April 2001.

DEQ 2010. Human Health Risk Assessment Guidance. October.

DEQ 2011. Green Remediation Policy. November.

DEQ 2013. Factsheet: Background Levels of Metals in Soils for Cleanup. Web access: http://www.deq.state.or.us/lq/pubs/docs/cu/FSbackgroundmetals.pdf

DEQ 2018b. Risk-Based Concentrations. May.

DEQ 2019a. Calculating RBCs for Total Petroleum Hydrocarbons. Web access: http://www.deq.state.or.us/Docs/cu/RBCsTPH11a.xlsm.

EPA 1989. Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual, Part A, Interim Final. Office of Solid Waste and Emergency Response. EPA/540/1-89/002. December 1989

EPA 1991. Human Health Evaluation Manual, Supplemental Guidance: Standard Default Exposure Factors. OSWER Directive No. 9285.6-03, March 1991.

EPA 1992. Supplemental guidance for Superfund Risk Assessments in Region 10. U.S. Environmental Protection Agency. August 1991.

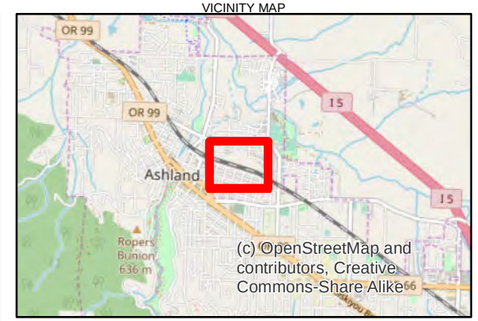
EPA 1992. Integrated Risk Information System. Office of Research and Development. Cincinnati, Ohio. 1992.

EPA 1998. Guidance for Conducting Remedial Investigations and Feasibility Studies Under Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). EPA/540/G-89/004. October.

EPA 2018. Regional Screening Levels. https://www.epa.gov/risk/regional-screening-levels-rsls. May.

FIGURES

VICINITY MAP



LEGEND

- Previous Identified Property Boundary
- Property Boundary
- Parcels

N

0 200 400

Feet

1 inch = 200 feet

Figure 1
Site Location
Supplemental Remedial Investigation/Feasibility Study, Former SP Yard, Ashland, Oregon

JACOBS

Zoning Map

C-1	Commercial	RR-1	Low Density Residential, 1 acre
C-1-D	Downtown Commercial	RR- .5	Low Density Residential, .5 acre
E-1	Employment	R-1-10	Single Family Residential, 10,000 square feet
HC	Health Care Services District	R-1-7.5	Single Family Residential, 7,500 square feet
M-1	Industrial	R-1-5	Single Family Residential, 5,000 square feet
WR	Woodland Residential	R-1-3.5	Suburban Residential
WR-20	Woodland Residential, 20-acre minimum	R-2	Multi-Family Residential
SO	Southern Oregon University District	R-3	Multi-Family Residential, High Density
		NM	North Mountain Neighborhood

- City Limits
- Urban Growth Boundary
- P-overlay
- Airport Overlay
- Freeway Overlay
- Residential Overlay
- Taxlots

- C-1
- C-1-D
- E-1
- HC
- M-1
- NM
- R-1-10
- R-1-3.5
- R-1-5
- R-1-7.5
- R-2
- R-3
- RR-.5
- RR-1
- SO
- WR
- WR-20

Mapping is schematic only and bears no warranty of accuracy. All features, structures, facilities, easement or roadway locations should be independently field verified for existence and/or location.

N Mountain Zone (see inset)

UPRR Ashland Railyard

Figure 2
City of Ashland Zoning Map

North Mountain Zone Detail

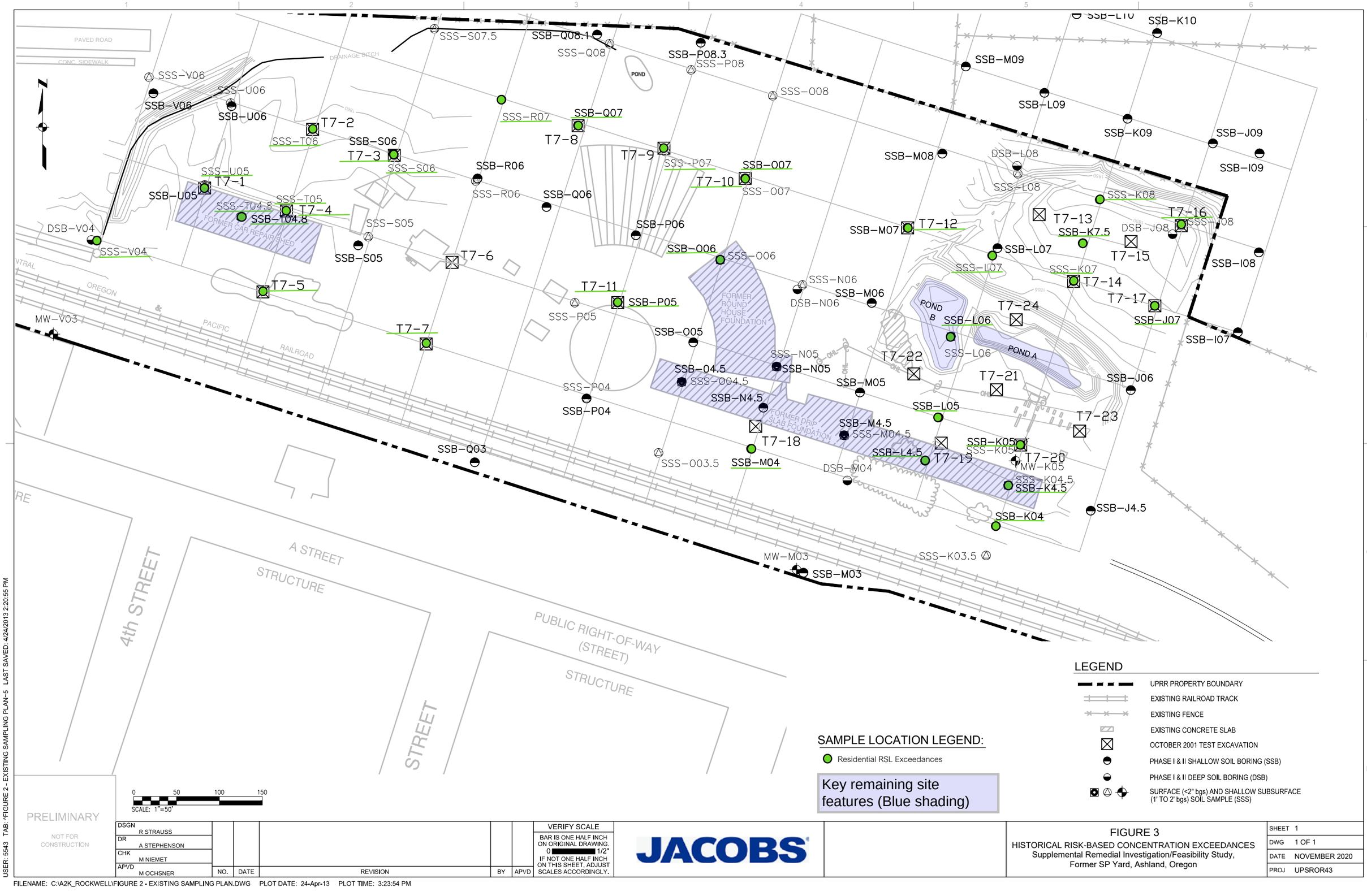
E NEVADA ST
KESTREL PARKWAY
STONERIDGE AV
FAIR OAKS AV
OVERLOOK DR
PATTON LN
CAMELOT DR
NM-C
NM-MF
NM-G
JULIAN CT
PLUM RIDGE DR
MARIPOSA CT
STONY POINT
COBBLESTONE CT
SOUTH ALLEY
N MOUNTAIN AV
NM-R 15
MOUNTAIN MEADOWS DR
GREAT OAKS DR
NM-R 17.5
NEPENTHE RD

- NM-C
- NM-G
- NM-MF
- NM-R 15
- NM-R 17.5

This is to certify that this is the Official Zoning Map referred to in Section 18.12.030 of Title 18.12 of the Ashland Municipal Code. Adopted as Ordinance No. 2951

Signed: Mayor — Date July 1, 2008

City Recorder — Date July 1, 2008



PRELIMINARY

NOT FOR CONSTRUCTION

LEGEND

- UPRR PROPERTY BOUNDARY
- EXISTING RAILROAD TRACK
- EXISTING FENCE
- EXISTING CONCRETE SLAB
- OCTOBER 2001 TEST EXCAVATION
- PHASE I & II SHALLOW SOIL BORING (SSB)
- PHASE I & II DEEP SOIL BORING (DSB)
- SURFACE (<2" bgs) AND SHALLOW SUBSURFACE (1' TO 2' bgs) SOIL SAMPLE (SSS)

SAMPLE LOCATION LEGEND:

- Residential RSL Exceedances

Key remaining site features (Blue shading)

DSGN	R STRAUSS						VERIFY SCALE
DR	A STEPHENSON						BAR IS ONE HALF INCH ON ORIGINAL DRAWING. IF NOT ONE HALF INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.
CHK	M NIEMET						
APVD	M OCHSNER	NO.	DATE	REVISION	BY	APVD	

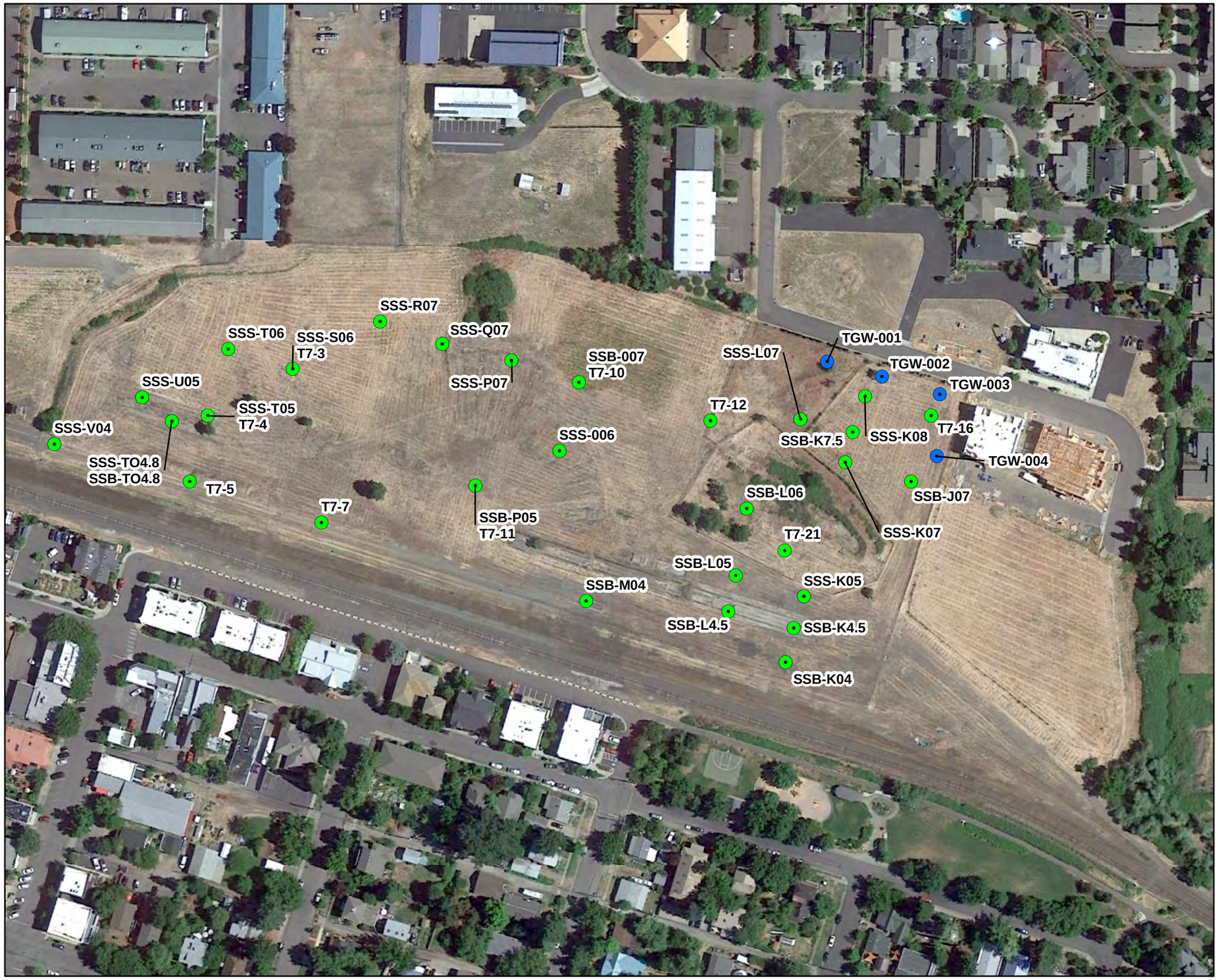
JACOBS

FIGURE 3

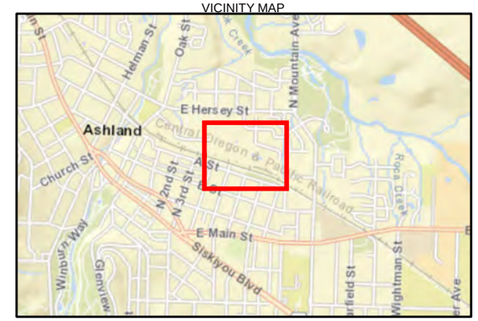
HISTORICAL RISK-BASED CONCENTRATION EXCEEDANCES
Supplemental Remedial Investigation/Feasibility Study,
Former SP Yard, Ashland, Oregon

SHEET	1
DWG	1 OF 1
DATE	NOVEMBER 2020
PROJ	UPSROR43

USER: 5543 TAB: "FIGURE 2 - EXISTING SAMPLING PLAN-5 LAST SAVED: 4/24/2013 2:20:55 PM
FILENAME: C:\A2K_ROCKWELL\FIGURE 2 - EXISTING SAMPLING PLAN.DWG PLOT DATE: 24-Apr-13 PLOT TIME: 3:23:54 PM



VICINITY MAP



LEGEND

- Residentail RSL Exceedance Location
- Temporary Groundwater Sampling Point

Location ID	Lat	Long
SSS-R07	42° 11' 58.039" N	122° 42' 20.805" W
SSS-Q07	42° 11' 57.753" N	122° 42' 19.636" W
SSS-T06	42° 11' 57.597" N	122° 42' 23.645" W
SSS-S06 & T7-3	42° 11' 57.351" N	122° 42' 22.425" W
SSS-U05	42° 11' 56.897" N	122° 42' 25.229" W
SSS-TO4.8 & SSB-TO4.8	42° 11' 56.574" N	122° 42' 24.664" W
SSS-T05 & T7-4	42° 11' 56.664" N	122° 42' 23.993" W
SSB-P05 & T7-11	42° 11' 55.785" N	122° 42' 18.943" W
SSS-006	42° 11' 56.304" N	122° 42' 17.387" W
SSB-007 & T7-10	42° 11' 57.263" N	122° 42' 17.057" W
SSB-K7.5	42° 11' 56.669" N	122° 42' 11.897" W
SSB-J07	42° 11' 56.009" N	122° 42' 10.783" W
T7-21	42° 11' 54.998" N	122° 42' 13.118" W
SSS-K05	42° 11' 54.363" N	122° 42' 12.732" W
SSB-K4.5	42° 11' 53.922" N	122° 42' 12.907" W
SSB-K04	42° 11' 53.443" N	122° 42' 13.046" W
SSB-L4.5	42° 11' 54.129" N	122° 42' 14.143" W
SSS-V04	42° 11' 56.212" N	122° 42' 26.852" W
SSS-P07	42° 11' 57.547" N	122° 42' 18.331" W
T7-5	42° 11' 55.739" N	122° 42' 24.294" W
T7-7	42° 11' 55.219" N	122° 42' 21.810" W
SSB-M04	42° 11' 54.218" N	122° 42' 16.811" W
SSB-L05	42° 11' 54.633" N	122° 42' 14.023" W
SSB-L06	42° 11' 55.566" N	122° 42' 13.851" W
SSS-K07	42° 11' 56.248" N	122° 42' 12.025" W
SSS-L07	42° 11' 56.480" N	122° 42' 13.291" W
T7-12	42° 11' 56.776" N	122° 42' 14.569" W
SSS-K08	42° 11' 57.176" N	122° 42' 11.689" W
T7-16	42° 11' 56.932" N	122° 42' 10.439" W
TGW-001	42° 11' 57.730" N	122° 42' 12.370" W
TGW-002	42° 11' 57.510" N	122° 42' 11.290" W
TGW-003	42° 11' 57.980" N	122° 42' 10.180" W
TGW-004	42° 11' 56.440" N	122° 42' 10.220" W

Projected Coordinate System: NAD_1983_UTM_Zone_10N

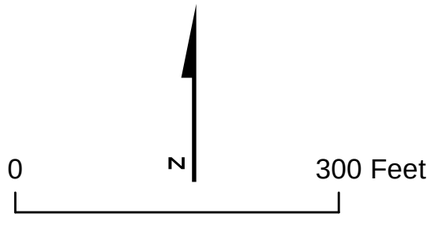
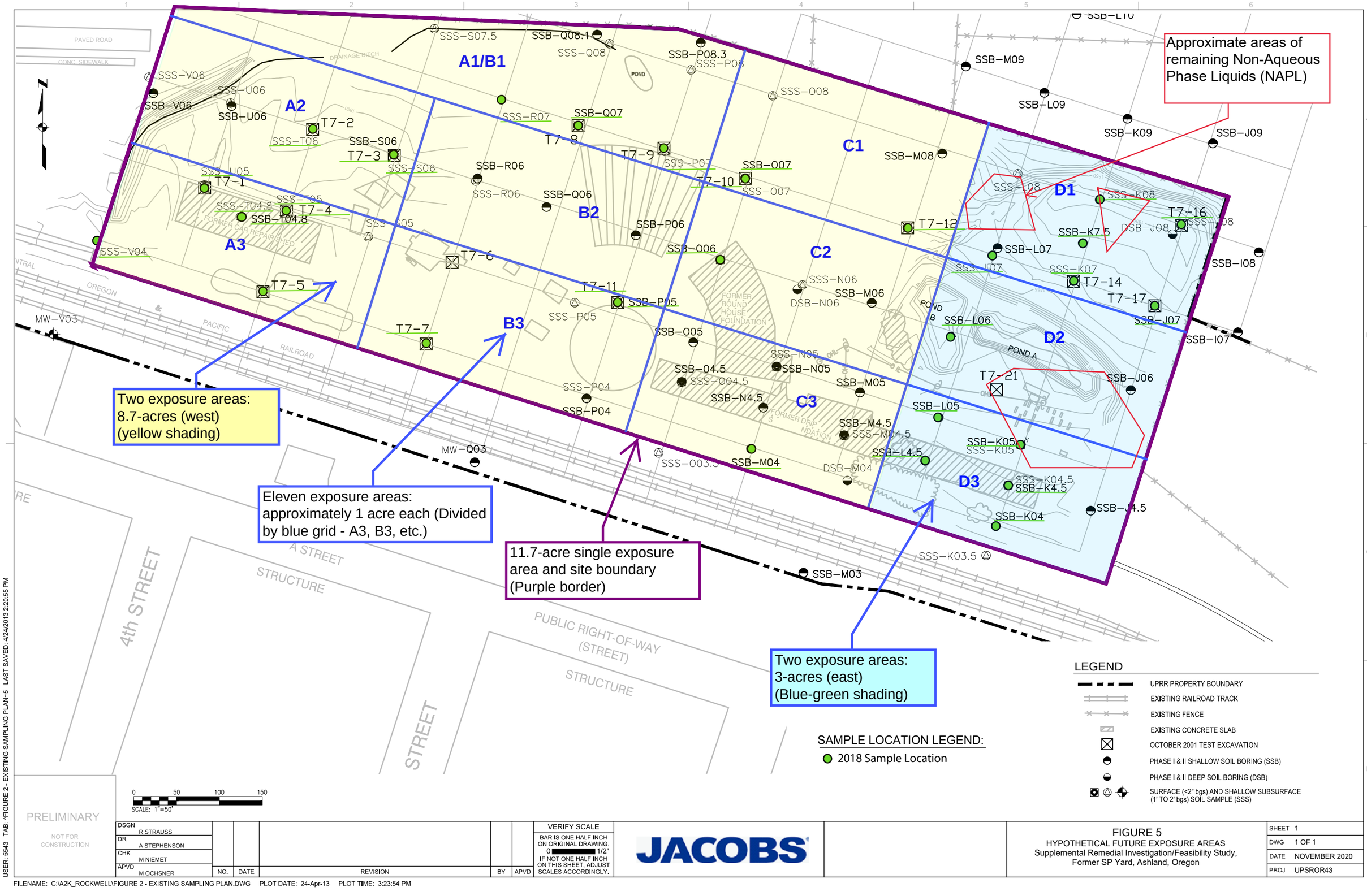


FIGURE 4
2018 Sample Locations
Supplemental Remedial Investigation/Feasibility Study, Former SP Yard, Ashland, Oregon

JACOBS



PRELIMINARY
NOT FOR CONSTRUCTION

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. 0 1/2"
IF NOT ONE HALF INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

JACOBS

FIGURE 5
HYPOTHETICAL FUTURE EXPOSURE AREAS
Supplemental Remedial Investigation/Feasibility Study, Former SP Yard, Ashland, Oregon

SHEET	1
DWG	1 OF 1
DATE	NOVEMBER 2020
PROJ	UPSROR43

USER: 5543 TAB: "FIGURE 2 - EXISTING SAMPLING PLAN-5 LAST SAVED: 4/24/2013 2:20:55 PM
FILENAME: C:\A2K_ROCKWELL\FIGURE 2 - EXISTING SAMPLING PLAN.DWG PLOT DATE: 24-Apr-13 PLOT TIME: 3:23:54 PM

50 x 150 x 1.5 feet
417 cy

50 x 250 x 1.5 feet
694 cy

Alternative 2 = 12,900 cy
Alternative 3 = 7,500 cy

150 x 50 x 1.5 feet
417 cy

50 x 425 x 1.5 feet
1181 cy

11.7-acre single exposure area and site boundary (Purple border)

Two exposure areas: 8.7-acres (west) (yellow shading)

Two exposure areas: 3-acres (east) (Blue-green shading)

A1/B1 A2 A3 B2 B3 C1 C2 C3 D1 D2 D3

SAMPLE LOCATION LEGEND:

- 2018 Sample Location
- 2018 arsenic greater than 30 mg/kg
- Any lead greater than 1000 mg/kg

LEGEND

- UPRR PROPERTY BOUNDARY
- EXISTING RAILROAD TRACK
- EXISTING FENCE
- EXISTING CONCRETE SLAB
- OCTOBER 2001 TEST EXCAVATION
- PHASE I & II SHALLOW SOIL BORING (SSB)
- PHASE I & II DEEP SOIL BORING (DSB)
- SURFACE (<2" bgs) AND SHALLOW SUBSURFACE (1' TO 2' bgs) SOIL SAMPLE (SSS)

0 50 100 150
SCALE: 1"=50'

PRELIMINARY
NOT FOR CONSTRUCTION

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. 0 1/2"
IF NOT ONE HALF INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

JACOBS

FIGURE 6
REMEDIAL ACTION TARGET AREAS
Supplemental Remedial Investigation/Feasibility Study,
Former SP Yard, Ashland, Oregon

SHEET	1
DWG	1 OF 1
DATE	NOVEMBER 2020
PROJ	UPSROR43

USER: 5543 TAB: "FIGURE 2 - EXISTING SAMPLING PLAN-5 LAST SAVED: 4/24/2013 2:20:55 PM
FILENAME: C:\A2K_ROCKWELL\FIGURE 2 - EXISTING SAMPLING PLAN.DWG PLOT DATE: 24-Apr-13 PLOT TIME: 3:23:54 PM

TABLES

Table 1. Site-Specific Cleanup Goals for Shallow Soil

Union Pacific Railroad Rail Yard Site, Ashland, Oregon

Analyte	DEQ 2018 Urban Residential RBC (mg/kg)	DEQ 2018 Occupational RBC (mg/kg)	Final Site-Specific Cleanup Goal[a] (mg/kg)	Basis
Arsenic	1.0	1.9	30	Site-specific background concentration (refer to Section 3.2.2).
Lead	400	800	1,000 [b]	Exposure Point Concentrations calculated from the 90% upper confidence limits within the western 8.7-acre area (refer to Section 3.2.2).
TPH as diesel	2,200	14,000	2,200	Oregon Department of Environmental Quality (DEQ). 2018. Risk Based Concentrations. May.
TPH as gasoline	2,500	20,000	2,500	Oregon Department of Environmental Quality (DEQ). 2018. Risk Based Concentrations. May.
TPH as oil [c]	4,600	29,000	4,600	Oregon Department of Environmental Quality (DEQ). 2019. Calculating RBCs for Total Petroleum Hydrocarbons. http://www.deq.state.or.us/Docs/cu/RBCsTPH11a.xlsm
PAHs as BaP-Equiv	0.25	2.1	0.25	Oregon Department of Environmental Quality (DEQ). 2018. Risk Based Concentrations. May.

[a] The Final Site-Specific Cleanup Goals are compared to the Exposure Point Concentrations (EPCs) calculated from the 90% upper confidence limits within a given exposure area.

[b] Concentrations of lead above 1,000 mg/kg should be addressed although the statistical calculations showed acceptable risk for some scenarios (refer to Section 3.2.2).

[c] Calculated using DEQ (2019) and default exposure assumptions for Residential and Occupational scenarios, assuming a 0%/100% mixture of high carbon range (>C21-C34) aliphatic/aromatic compounds. For the Urban Residential scenario, the default exposure frequency was changed to 175 days per year (Jacobs 2019).

mg/kg = milligram(s) per kilogram
PAHs as BaP-Equiv = polycyclic aromatic hydrocarbons, calculated as total benzo(a)pyrene equivalents
RBC = Risk-Based Concentration
TPH = total petroleum hydrocarbons

ATTACHMENTS

Attachment 1

Public Comments

Summary of Public Comments on the Staff Report and DEQ Responses

Category	General Response	General Question	Public Comment Submitted to DEQ
Current Risk	Since most of the site is covered with grass, weeds, or other vegetation, the contaminated soil is highly unlikely to become airborne in a manner that would be unhealthy for pedestrians, dog walkers, or bicyclists on or near the property. None of the contaminants of concern are volatile, so this alleviates the concern about any contamination evaporating. The railroad property is fenced to restrict access, further limiting exposure to pedestrians. The concentrations of contaminants in the soil are at concentrations that are a concern for long-term exposure (28 years), do not pose any sort of acute exposure risk and are not expected to pose a health risk to occasional visitors or recreators under the site's current use as a privately-owned, empty field. However, current contaminant concentrations do pose a risk if the site is developed, and it is assumed that people would work or live on the property on a daily basis for a long period of time. That is why cleanup is needed if the site is to be developed.	Are the site contaminants harmful to people currently walking or driving on the soil?	If the contaminants in the soil are indeed unhealthy is there any evidence that the contaminants are expelled from the soil to the atmosphere and are harmful to those walking or driving over that soil?
			If the contaminants in the soil are not volatile and not inhaled, absorbed, and/or swallowed by those walking over the site, can we not conclude the contaminants in the soil do not present a health risk?
Land Use	The active railroad is not part of the current cleanup site because it is not owned by Union Pacific and is still used as a railway. Ultimate land use of the property is up to the property owner and must be in accordance with property zoning. The property is currently zoned E-1, which allows some degree of residential occupation on the first floor of multi-floor mixed use buildings, as is currently the case adjacent to the railyard property on Clear Creek Drive. DEQ's urban residential land use scenario assumes development with any combination of apartments, condos, or townhomes with minimal yard space maintained by the homeowner. Land use may also include mixed use commercial-residential buildings with residents on the first floor.	Request any future development remove the existing railroad and/or include: housing, businesses, parking, street access, pedestrian pathways, or bike pathways.	We almost NEVER see a train on these tracks. Why is this still a viable R/R route? It is my understanding that this is a radial leg to Yreka that used to carry logs and lumber, but that has changed in the last 10-15 years. Is there a process to eliminate this R/R route in the future? And will that impact this DEQ process?
			I believe that the city should focus on developing the site in a way that creates jobs and enhances the exhisting local economy. This could include mixed-use development that includes housing, retail, entertainment, and office space. It is important to find a way to balance the need for economic development with the need to protect public health.
			The State of Oregon can enhance the quality of life of the residents of Ashland by taking steps to adequately plan development of the Union Pacific rail yard. How life is enhanced depends on decisions made for development of the site.
			I have lived in Ashland for almost 17 years. I am in favor of the newer recommendations for cleanup which would move the contaminated material to a site on the property which would be capped and then hopefully used as a parking lot. The area in question is a prime location for higher residential use, as in condos and townhouses. As the new properties on Lithia Way demonstrate, we don't need any more new retail. Residential housing is desperately needed. Getting this cleanup done as soon as possible will help. Many of us would like to live within easy walking distance to Ashland's core.
			I'm happy to see that this site will be utilized for more housing, close-in to town. We need more living spaces within walking distance to town. However, it appeared that the land where the contaminated soil will be dumped is suppose to be covered with vegetation. It would make more sense to have it become a parking area.
			I just want to ask that whatever form the work at the old railyard takes, please provide for pedestrian and bicycle transportation needs. Being able to cross from the Hersey/N. Mountain area to the A Street/Railroad District through the rail bed makes getting around by non-motorized methods efficient between these two areas of Ashland.
			The main action to be taken is constructing ready street or surface road access to the property. Most appropriate would be a rail crossing from existing 4th Street in Ashland. Tertiary access roads are now through Oak Street to Clear Creek Drive (west stem), as well as via E. Hersey Street to Williamson Way to Rogue Place to Russell Street.

Summary of Public Comments on the Staff Report and DEQ Responses

Category	General Response	General Question	Public Comment Submitted to DEQ
Other Remedial Options	Using sunflowers and other native plants would be great additions to the site. Plants and flowers can help remove trace contaminants and provide visual appeal until/if an area is developed. We would still need to remove or have clean fill soil cover the contaminated soil because current concentrations of lead and petroleum products on the property are too high for effective phytoremediation/phytoextraction. Ultimately, final groundcover and sustainable site uses, such as solar panels, is up to the property owner. DEQ's job is to ensure that site conditions are protective of human health and the environment under current or likely future site uses.	Are there more natural or sustainable remediation options (e.g. plants or solar panels?)	If I were Union Pacific I would keep the property, not clean it up, set solar panels up on cement foundations set on top of the undisturbed soil, solarizing every square foot of it. As all details and installation would be handled locally, all UPR would have to do is cash the eneration profit check every month for the next 30 yrs. Everything is really, really, completely different now. Everywhere. This particular project is interesting in that it is representative of the entire world's monster conundrum. Big problems ahead. Global warming Climate change Diminishing oil supply Increasingly expensive gas Desired Energy Transition Obsoletely educated workforce Food shortages Economic starvation Speading misery from all over the world. All at once. Where do we start? Solar everywhere is best for this valley... right away! The energy transition needs to be smooth, not retroactive. All of which requires solar everywhere first, THEN fossil burning reduction. Two questions: 1. Does Union Pacific want to contribute to the energy transition, at any cost? 2. After a forward thinking financial energy analysis, (all considered,) does Union Pacific want to stump for, and teach to the energy transition?
			I read that in some countries where they clean up illegal dumps they plant sunflowers afterwards. Sunflowers - which thrive in hot, dry climates - offer many advantages in addition to their beautiful yellow flowers. They naturally extract certain pollutants (such as zinc, copper, or cadmium) through their roots. This is called phytoextraction. Is this something that would help? After all of the contaminated soil is placed in one spot. I believe there are other plants also. Of course if it's fenced off from the deer so the plants can get a footing that would help initially too.
			I do not live in Ashland and do not know about rail yard cleanup but you may want to consult experts about use of plants to detoxify soils heavily polluted by oil and other petroleum-based chemicals. I am aware this has been done for a park in Los Angeles and several part-sites, former oil well locations in Long Beach CA and Los Angeles County near Long Beach. In the Long Beach area there were certain trees used, cut down and destroyed as they detoxified by taking up toxic materials. The corn was replanted several times in the park (now a park) in LA with a pond with water clean enough for swimming, that emerged on this land. This really should be explored for human activity areas without removal of top soils needed. Please consult Native peoples in the Ashland Area to see if they have detoxifying ideas and might be hired to work this land area for its rehabilitation. Thank you for entertaining this option or asking others to do so as part of the consideration for this site. https://www.eventbrite.com/e/exploring-native-land-cleanup-tongva-park-santa-monica-beach-tickets-522288688527
	Changes to DEQ RBCs for contaminants of concern at the Site required less cleanup to meet urban residential exposure requirements. Capping excavated soil on-site addresses community concerns about transporting the impacted soil through town. Since this cleanup is being done voluntarily by UPRR, they have significant leeway as to how they want to implement a remedial action as long as it is protective of human health. The remedy as proposed in the Staff Report is protective for urban residential and commercial use. Also, the current plan will remove pockets of high levels of contamination that previously would not have been removed from the western area.	Why was the 2017 remedial action not implemented/soil being removed from the site?	I am a building contractor and own and live at 886 "A" St for 43 years. I've watched the city of Ashland, Union Pacific, and the DEQ kick the can down the road for years. In the early 90's the city of Ashland was going to put the electrical sub station on the polluted property and the DEQ was fine with it, not even taking in consideration that was polluted, and a historical place where the golden spike was driven in 1887. The neighbors and I had to hire a lawyer to help point the historical importance of the site, and the how polluted it is, and to stop the substation from being built at that location and to build it at a safer location. "Fool me once shame on you, fool me twice shame on me". Now after years of stop and go talks about cleaning it up, in 2016 - 2018 the changes in federal regulations to lessen the standards of what is considered safe is at play. What I have learned in all my years of being a building contractor is, build it once, built it right! Don't let Union Pacific get off easy, do the right thing, do what Union Pacific agreed upon in 2012. Attached are two photos of two articles that were written, explaining how federal regulations have wrongfully changed.
			The City of Ashland should condemn this worthless land, the State of Oregon should provide the funding for the cleanup of the site and then back-charge Union Pacific Railroad, as is provided for in EPA regulations. The Oregon DOJ should file a lawsuit as necessary to recover the mitigation costs, damages, and legal fees, plus punitive damages for obvious foot-dragging on this clean up, while knowingly poisoning the water of the City of Ashland.
			I've just read about the remedial cleanup plan and would like to comment on why the decision would be to leave contaminants on the property, even if capped. This seems shortsighted and would leave the risk of future health problems to our citizens of Ashland and potentially require more expensive solutions. These kinds of decisions have been made throughout our country with disastrous results. Let's do better than that. Union Pacific's previous plan was to excavate a larger area of soil and truck that soil to a hazardous waste disposal site in Arlington, Oregon, in the Columbia Gorge. They should implement that plan, let's be honest and do things right the first time and protect our community.

Summary of Public Comments on the Staff Report and DEQ Responses

Category	General Response	General Question	Public Comment Submitted to DEQ
Other Remedial Options (Continued)	Changes to DEQ RBCs for contaminants of concern at the Site required less cleanup to meet urban residential exposure requirements. Capping excavated soil on-site addresses community concerns about transporting the impacted soil through town. Since this cleanup is being done voluntarily by UPRR, they have significant leeway as to how they want to implement a remedial action as long as it is protective of human health. The remedy as proposed in the Staff Report is protective for urban residential and commercial use. Also, the current plan will remove pockets of high levels of contamination that previously would not have been removed from the western area.	Why was the 2017 remedial action not implemented/soil being removed from the site?	I recommend that the State of Oregon use 2021-2022 Economic Recovery Act and American Recovery Act monies to remediate this railroad property. The State of Oregon may establish Public/Private partnerships to accomplish this property cleanup. The private benefit could be an extended lease of the property to a duration that would be financially valuable for a private company. The availability of Public funds to supplement remediation and development make a project more attractive to commercial developers.
			I believe that Alternative #3, which calls for the removal of toxic topsoil via rail for offsite disposal, is closest to a responsible option.
			I've lived on the corner of 8th and A for 30 years. Back in 2012 the Railroad Co was planning to remove 36,000 tons of toxic soil the right way (on rail cars). Their planned cleanup was more thorough and safer than their current "scratch the surface" approach today. The railroad is more willing to do it now because under the Trump administration, they relaxed the standards. Hold the Railroad accountable- make them clean it up the right way.
			Haul the contaminated soil away to proper disposal site.
			I attended the public meeting tonight regarding the Ashland Rail Yard Site mitigation of toxic soil project. I appreciate the opportunity to give input into the process and I hope that the DEQ, in cooperation with the railroad company, will be able to incorporate my concerns into a final plan. I live very close to the project site, and I've long been concerned that the cleanup of the rail yard site would involve moving hundreds of dump truck loads through my neighborhood, possibly exposing the community to toxic dust that would inevitably be spread by the trucks. Recently, I had heard that the railroad owners were proposing removal of the contaminated soil via covered railcars. That seemed like a logical and safer method than via dump truck, and the railroad already possesses the infrastructure to transport via rail. Tonight, the project was presented in a revised version that had the contaminated soil remain on site, but moved to the eastern portion of the site and then capped with clean soil. It makes no sense to me or my neighbors to just move the contaminated soil around on the site rather than remove it to an appropriate dump site and cap it there. I realize that the railroad seeks a plan that will be economical and accomplish the required mitigation and that retaining the contamination onsite would be cheap, but the mitigation would be, at best, the minimum required by EPA regulations. It would be far better for the community to do a more complete cleanup, including removal of the contaminated soil from the site and transporting it in covered railcars. Therefore, I strongly urge that the railroad consider "upgrading" their plan to include removal of the contaminated soil from the site via railcar. I know that this would be a more costly plan, but it would have a much better chance of being accepted by the local community, and it would leave the land parcels having more commercial value than retaining the toxic soil onsite. I'm sure that the railroad could afford some extra cost that would result in a better cleanup and better relations with the community. In addition, I ask that the DEQ be explicit, in writing, as part of any plan for mitigating the contamination at the rail yard site, regarding exactly what measures would be taken and by whom to mitigate all dust generated by the project. This should include identifying the type and location of air quality monitors around the perimeter of the site, safety equipment to be worn by workers at the site, and exactly how water and/or dust oil would be used to prevent airborne dust on and around the site. Thank you for including my comments.
			God forbid the revisions to the decades-old plans for the 21-acres located at 536 A Street Railroad Property in Ashland, Oregon. This seems like a shady deal because pre-pandemic there had been a finalized agreement between the Railroad and the city to have the condemned contaminated soil railroaded dout and fresh, clean soil trucked in on Clear Creek Drive. . . . This betrayal of what was previously already agreed upon is unethical because of the lack of enough public publicity to involve the community being affected....
			...I Certainly appreciate the thorough analysis and reporting that has been performed and presented in the "Staff Report" recommendations dated October 2022. I have great difficulty accepting the recommendations reached in the October Report as the best and most appropriate option for action. My concerns are with the concludions of the risk analysis and subsequent recommendation for action as follows: ...Balancing factors in the Comparative Analysis of Remedial Action Alternatives should not be given equal weighting...Costs should not be a consideration for the most effective solution. ...What will happen if guidelines for contaminant concentrations change back or become more stringent and development of that property places those who dwell and work on that site in what would be considered a hazardous situation? Who will bear the costs at that time?

Summary of Public Comments on the Staff Report and DEQ Responses

Category	General Response	General Question	Public Comment Submitted to DEQ
Protectiveness	1) Leaving pockets of non-mobile petroleum in-place to degrade naturally is commonplace with the redevelopment of former industrial sites. Acceptable risk for the Site has been demonstrated in the risk assessment with the Bunker C contamination remaining in-place. This is because petroleum compounds are relatively non-toxic, and the toxicity decreases over time as it degrades and weathers. DEQ will attempt to address community concerns by engaging the public to inform them of the proposed plan and gain their input. DEQ does not feel that monitoring is required for the Bunker C based on its observed immobility and age. Clearing the western 8.7 acres for urban residential and/or commercial use will offer opportunities for development. After capping, the eastern 3 acres will also be available for development, recreation or greenspace. 2) The Final Site-Specific Cleanup Goals were compared to the Exposure Point Concentrations (EPCs) calculated from the 90% upper confidence limits within a given exposure area." The EPC calculated from the 90% upper confidence limits of current lead concentrations within the western 8.7 indicated acceptable risk for residential, urban residential, and occupational exposure scenarios when compared to the RBC of 400 mg/kg. Some of the lead concentrations included in the EPC calculations exceeded 400 mg/kg and 1,000 mg/kg. Although the western 8.7 acres has a calculated acceptable risk for lead, DEQ commented in its review of the revised risk assessment that concentrations of lead above 1,000 mg/kg should still be addressed on the western 8.7 acres as part of a risk management strategy. 3) Typical deed restriction language will prevent site development for single-family residential. The exact language is recorded in an Easement and Equitable Servitude that is tied to the property deed and must be followed by anyone who owns the property. Specific language of this document is determined after the cleanup is complete. There is a current deed restriction on the UPRR property between the City and UPRR that states: "Parcel 7 is restricted from further development or land division until Grantor obtains a determination from the Department of Environmental Quality that the property meets cleanup standards consistent with the current and likely future land use zoning for the property. These land uses correspond with the Department of Environmental Quality Urban Residential and/or Occupational exposure scenarios. Thereafter, development of any subdivided parcel cannot occur until Grantor obtains a determination from the Department of Environmental Quality that the property meets cleanup standards applicable to the use proposed for the subdivided parcel. This covenant will be removed from the property, and/or any subdivided parcel(s), upon the grantor providing the City written documentation from the Department of Environmental Quality demonstrating compliance with these standards to the City." 4) Property owners and businesses are required to adhere to state and federal hazardous substance management requirements to prevent releases to the environment.	How/why is the selected remedy protective?	Thank you for your DEQ presentation of the latest clean-up proposal of the Ashland Railyard last Wednesday night 09/27/2023. I was in attendance. I understand that this is the third proposed clean-up project by the UNION PACIFIC RR CO (property owners) and the DEQ, your employer, to remove contaminated soil from the Ashland Railyard. As DEQ's Dylan Darling stated "where we're at today, this is still a property that we found to have contamination!" I am a longtime resident of Ashland, Oregon and my home is across the street from the Ashland Railyard that is now termed "the eastern 3-acre area" that would have to be fenced to limit access due to contamination after the "clean-up." NBC5 News producer and reporter, Taylar Ansures, reported September 28, 2023 "that DEQ officials say it is important to receive public input about the project to turn the property around." And that "this project would condense and contain all the contaminated soil to a portion of the property "the eastern 3-acre area", opening up the rest for urban residential development." I presented to you at the meeting my questions and immediate concerns relating to the procedure called "capping" and the verbiage of the "deed restrictions." Margaret, at the meeting you said, "there are examples of parking lots and shopping malls that have been capped," with putting a layer over a contaminated area." When I asked if I could visit or know of a property that was "capped." you could not say where these locations were or if they were even in the state of Oregon? And UPRR representative at the meeting then stated there were no examples of this "capping" in the state of Oregon. How can I approve of your cleanup when a prior "capping" project location cannot be named, researched, or visited? My further concern is "the Site" carrying undefined deed restrictions that may require that future development be limited to mixed use commercial/urban residential land use and include measures to prevent receptor contact with the underlying impacted soils on the eastern 3-acre area. (Per 00-1146-UPRRAshland-20221014-Report-StaffReport.pdf) Questions including: Are the lots sold by UPRR to private parties and developed previously on Clear Creek subject to these deed restrictions? Once UPRR sells off their contaminated parcels, will the onus be on the private parties that purchase the parcels? What about the building of underground parking garages and disturbing the contaminated soil underneath the capped dirt? According to the 00-1146-UPRRAshland-20221014-Report-StaffReport.pdf There is no reliable study that has proved beyond a reasonable doubt that the chemicals now present like polynuclear aromatic hydrocarbon compounds or Arsenic in Soil (P17 of your report: Uncertainties Associated with Arsenic in Soil) will not be exposed to people and animals! If the public comment closes today Friday, September 29 at 5 p.m. for this project. Please accept this email as my concerns, comments and questions at this time. Thank you for your time and consideration.
			As a resident near the UPRR site, I'd like to voice my objection to the change in requirements. The changes sound like they will set up the City and local residents for a long-term environmental hazard problem by concentrating the contaminated soils at one location, solely for the benefit of UPRR. Please hold UPRR to the original cleanup plan that requires removal of the contaminated soils.
			It sounds like a good plan to me, it'll be interesting to see if there's any push back.
	DEQ will review a work plan for dust control during construction. UPRR will be required to meet state and local requirements for erosion prevention and sediment control and additional requirements while implementing the approved cleanup plan. Additional measures may include constant dust monitoring and reporting along the perimeter of the site during construction.	What is DEQ's plan for dust control during implementation?	As a resident of the Railroad District, I am very concerned about the proposed digging and moving of the contaminated soil. While I would like to trust the Railroad's information, historically they do not always do things in the best interest of the public. Two summers ago they piled thousands of creosote ties by RR Park. The stench was so bad, I had to keep our windows closed and avoid outside activity. We had to complain and get the news and Pam Marsh involved to get them removed. Regarding the clean up... seems like with big equipment, digging and stirring up the contamination...it will be impossible to contain particulate matter, dust and fumes. I am very concerned about health risks, as are many of my neighbors. I hope the DEQ can help make sure this plan is not just good for the railroad, but in our best interest.
			Spread love not contamination!!!~ It seems like the proposed plan is lacking consideration of neighbors of the contaminated rail yard. Digging up contaminants with heavy machinery will definitely spread the contaminants into our air and lungs. Please reconsider. We are writing as residents of the Railroad District who are within the population of people who will be most impacted by the release of toxins and pollution with the proposed action by Union Pacific. The current plan is not an improvement on the original plan to load trains with the contaminated soil for relocation. A third plan that would prevent any toxic polluted soil from being disturbed and relocated should be considered. Clearly, the railroad company would oppose forfeiting the development of this piece of property by continuing to cordone it off from the public and leaving it forever undisturbed. As there is nothing that should take precedence over the protection of the health and welfare of Ashland residents this third option should be chosen. Monetary profits made for a company that is one of two companies (Central Pacific) responsible for causing this pollution of the railroad property is a woeful option to choose.
			I am writing as a resident of the Railroad District, likely to be impacted by the release of toxins and pollution by the proposed clean-up action by Union Pacific. I am concerned about the health and welfare of Ashland residents and I doubt that the Union Pacific proposal adequately addresses those concerns.

Summary of Public Comments on the Staff Report and DEQ Responses

Category	General Response	General Question	Public Comment Submitted to DEQ
Protectiveness (Continued)	DEQ will review a work plan for dust control during construction. UPRR will be required to meet state and local requirements for erosion prevention and sediment control and additional requirements while implementing the approved cleanup plan. Additional measures may include constant dust monitoring and reporting along the perimeter of the site during construction.	What is DEQ's plan for dust control during implementation?	We are writing as residents of the Railroad District who are within the population of people who will be most impacted by the release of toxins and pollution with the proposed action by Union Pacific. The current plan is not an improvement on the original plan to load trains with the contaminated soil for relocation. A third plan that would prevent any toxic polluted soil from being disturbed and relocated should be considered. Clearly, the railroad company would oppose forfeiting the development of this piece of property by continuing to cordone it off from the public and leaving it forever undisturbed. As there is nothing that should take precedence over the protection of the health and welfare of Ashland residents this third option should be chosen. Monetary profits made for a company that is one of two companies (Central Pacific) responsible for causing this pollution of the railroad property is a woeful option to choose.
			Transporting contaminated surface earth of the UPRR properties via truck through the City of Ashland would negatively impact: 1) Ashland City road surfaces (not constructed for weight), 2) Ashland citizens residing on the route of earth removal, 3) Ashland businesses on the route of earth removal.
			I feel strongly that since the Railroad created a toxic dump area in the center of Ashland, that they should be held fully responsible for it's removal. It does not feel safe to me to churn this toxic stuff up and relocate and compact it onto an edge site in the middle of town and create a forever toxic dump site. I'm not convinced that the toxic stuff can't loosen from soil particles and contaminate groundwater and air over time. I am not against developing this are, but I wish the toxic stuff could be removed from this city center before being developed. A toxic disposal site doesn't seem to belong there with kids & dogs playing over it. I'm sorry to hear that the mayor and city council are in favor of this toxic site, even before fully hearing back from the community. How did a few vocal critics of the prior removal plan, then DEQ allowable, have such sway over City government then, and now we seem to have little say about the current toxic relocation plan? It feels like it's a done deal and we're getting railroaded for the sake of development and future revenue.
Risk Determination	1) The main contaminants of concern in the surface soil are lead, arsenic, petroleum compounds from bunker C fuel and diesel, and polycyclic aromatic hydrocarbons. Exposure to surface soil is expected when people are working with the soil during construction and when living or working on a property. Here are some resources from EPA and DEQ that discuss risk and toxicity: - Risk Assessment Guidance for Superfund (RAGS): Part A - Human Health Risk Assessment Guidance - Oregon.gov - Integrated Risk Information System | US EPA 2) Risk also depends on anticipated future land use, which for this site includes urban-residential/multi-family housing and commercial spaces. 175 days/year is the default exposure frequency used in DEQ's human health risk assessment guidance for urban residential. Risk assessment for the urban residential scenario includes half the exposure time, but the same consumption rate as single family residential. DEQ's urban residential scenario does account for apartment buildings with residence on first floor. 3) State deed restriction(s) consisting of an EES will be applied to the western 8.7-acres and agreed on by UPRR and DEQ to define controls used to: - Restrict site use to urban-residential and/or commercial use; and - Restrict development or subdivision without additional assessment and/or approval from DEQ. DEQ would need to review and approve any request to subdivide or develop either the western 8.7-acres or the eastern 3-acres to verify that development meets allowed land use requirements and that a subdivision does not result in unacceptable risk within any of the proposed subdivided parcels. DEQ would conduct a risk evaluation similar to how the hypothetical 1-acre subdivisions were considered, but evaluation areas and locations would be based on the proposed subdivision.	How is risk determined and how will it be protective of future land use?	What is the evidence that "…these concentrations do pose a risk if the site is developed"? Since the contaminants are not aerosols I do not understand how they can be a health risk nor have I seen or read any evidence that they are or may become. Not to mention that hundreds if not thousands of people worked on that property for some 80 or 90 years with no apparent unhealthy effects.
			The State of Oregon should take whatever action is necessary to demand the immediate cleanup of this 20-acre site for "unrestricted residential use."

Summary of Public Comments on the Staff Report and DEQ Responses

Category	General Response	General Question	Public Comment Submitted to DEQ
Risk Determination	1) A beneficial water use survey has not been conducted since 2001, however changes in water use in this area are unlikely based on requirements for new developments to connect to City water. To be certain, DEQ will include an updated beneficial water use survey in the revised ROD. DEQ can also include groundwater use restrictions in the EES if there is concern about possible future use and climate change and resource demands, etc. Also, the likelihood that contaminants will migrate to off-site supply wells and affect current and/or future, reasonably likely, beneficial use is minimal. Groundwater is first encountered at the Site within the silt/clay unit and/or discontinuous sand unit at depths between approximately 6 and 20 feet below ground surface. A dense sandy silt unit (weathered bedrock) is located below this shallow water-bearing formation and above a deeper water bearing zone. Groundwater for beneficial use in the Site vicinity is drawn from the deep aquifer at depths greater than 60 to 100 feet below ground surface. Site contaminants of concern (Bunker C Oil and diesel) were detected in shallow groundwater. The likelihood that Bunker C oil and diesel will migrate to off-site supply wells and affect current and/or future, reasonably likely, beneficial use is minimal because: the viscous properties of Bunker C Oil limit its mobility; the vertical separation between the impacted shallow groundwater and the deeper aquifer utilized for beneficial use is at least 40 to 60 feet, containing at least 20 to 40 feet of bedrock; and cross-contamination of the deeper aquifer by a future installation of a well or borehole through contaminated shallow soil or groundwater is minimized through the use of Oregon well construction standards. 2) Leaving pockets of non-mobile petroleum in-place to degrade naturally is commonplace with the redevelopment of former industrial sites. Acceptable risk for the Site has been demonstrated in the risk assessment with the Bunker C contamination remaining in-place. This is because petroleum compounds are relatively non-toxic, and the toxicity decreases over time as it degrades and weathers. DEQ will attempt to address community concerns by engaging the public to inform them of the proposed plan and gain their input. DEQ does not feel that monitoring is required for the Bunker C based on its observed immobility and age. Clearing the western 8.7 acres for urban residential and/or commercial use will offer opportunities for development. After capping, the eastern 3 acres will also be available for development, recreation or greenspace.	What is the risk to and associated with groundwater?	...I am concerned that the risk of contamination of the environment through groundwater of local streams and rivers has been considerably downplayed and is not given any consideration in the risk analysis... ...What are ecological risks from the contaminants?... ...How are contaminants mobilized in the environment? From groundwater to surface water? ...Will keeping contaminated soil on site increase groundwater contamination?
	Based on DEQ's risk determination, it is not necessary to remove all impacted soil for the site to be protective of human health and the environment.	Why is ALL of the contaminated soil not being removed from the 9 acres?	Hearing the presentation and detailed explanations from DEQ, and judging the current proposal on its own merits (recognizing that this the only deal on the table), I have concluded the following: -Do nothing, leaving all of the land unusable and the contaminated soil exposed as has neen the case for 30 years, is not a good option. - The cleanup being proposed is not as unreasonable as I had first concluded - Almost 9 acres would become available to hopefully be developed as "Urban Residential" &/or "Mixed Use" development. - Based on new land use definition, "Urban Residential" allows for 1st floor residential. - We desperately need additional housing in Ashland. This property could be zoned for 15 units per acre, or even up to 30 units per acre, which could be condos or apartments, and could incorporate ground-level recreational open space. - The low volume of contaminated soil on the 9-acre site could likely go into the low places of the 3-acre parcel, as proposed, without creating a "Hill," as I had feared. However, we were told the soil analysis shows contaminates up to a 3-foot depth. Yet the DEQ report says the removal will be only 1 1/2 feet. All the contaminated soil needs to be removed from the 9 acres. - Capping both sites with 1-foot of soil and plant cover, as proposed, is certainly much better than the currently exposed contaminated soil. - Union Pacific will pay for and coordinate all of the work, and it is cheduled to proceed quickly. - DEQ will monitor the cleanup. Considering all of the above, I have reconsidered and have concluded that the current Union Pacific proposal, as presented by DEQ, is reasonable and would definitely benefit Ashland.

Oregon
Tina Kotek, Governor

Department of Environmental Quality
Western Region Salem Office
4026 Fairview Industrial Dr SE
Salem, OR 97302
(503) 378-8240
FAX (503) 373-7944
TTY 711

March 10, 2023

Brandon Goldman
20 East Main Street
Ashland, Oregon 97520

Re: Response to Comments
October 2022 Staff Report Recommended Revision of the Remedial Action
ECSI #1146 Union Pacific Railroad Ashland Rail Yard

Dear Brandon Goldman,

Thank you for providing questions and comments regarding the *Staff Report Recommended Revision of the Remedial Action* dated October 2022. Please see below questions and comments from the City of Ashland in the letter dated December 6, 2022 followed by DEQ's responses:

1) *The proposed cleanup plan relies on the assumption that the highest land use allowed for the western nine acres of the site will be an "urban residential" use scenario. Please provide a detailed plain language explanation of the "urban residential" land use scenario, including how the exposure assumptions differ from a "Single Family Residential" scenario. Note that the zone for this property (E-1) will allow some degree of residential occupation on the first floor of multi-floor mixed use buildings, as is currently the case adjacent to the railyard property on Clear Creek Drive.*

DEQ Response: DEQ's urban residential land use scenario assumes development with any combination of apartments, condos, or townhomes with minimal yard space maintained by the homeowner. Land use may also include mixed use commercial-residential buildings with residents on the first floor. Single family residential land use is assumed to include homes on larger lots (typically greater than 5,000 square ft) where landscaping is maintained by the owner, and the expected exposure duration would be longer than urban residential.

2) *How was the urban residential exposure frequency of 175 days/year established, as noted in Table 1? Can this be reconciled with the City's mixed use zoning designation for the property that allows a portion of the first floor to have residential occupation?*

DEQ Response: 175 days/year is the default exposure frequency used in DEQ's human health risk assessment guidance for urban residential. Risk assessment for the urban residential scenario includes half the exposure time, but the same consumption rate as single family residential. DEQ's urban residential scenario does account for apartment buildings with residence on first floor.

3) *It is not clear why DEQ's site specific cleanup goal for lead is indicated as 1,000 mg/kg, yet the urban residential risk-based concentration is shown in Table 1 as 400 mg/kg. The site-specific risk-based*

concentrations for all other contaminants in Table 1 are shown as being the same as urban residential RBCs.

DEQ Response: Table 1 will be revised to show 400 mg/kg as the site-specific cleanup goal for lead with a footnote added to the Final Site-Specific Goal column header that states, "The Final Site-Specific Cleanup Goals will be compared to the Exposure Point Concentrations (EPCs) calculated from the 90% upper confidence limits within a given exposure area." The EPC calculated from the 90% upper confidence limits of current lead concentrations within the western 8.7 indicated acceptable risk for residential, urban residential, and occupational exposure scenarios when compared to the RBC of 400 mg/kg. Some of the lead concentrations included in the EPC calculations exceeded 400 mg/kg and 1,000 mg/kg. Although the western 8.7 acres has a calculated acceptable risk for lead, DEQ commented in its review of the revised risk assessment[1] that concentrations of lead above 1,000 mg/kg should still be addressed on the western 8.7 acres as part of a risk management strategy.

4) Except briefly in Section 3.1.1, The draft staff report omits any explanation of the 2016/2017 cleanup plan, including total volume of contaminated soil to be excavated or that the soil was proposed to be moved off-site. We request a clear explanation and rationale for why the 2022 cleanup plan is significantly less extensive than the one proposed in 2017. The previous cleanup plan was painstakingly developed with extensive community involvement and the new plan should include a public explanation of how it provides at least an equivalent level of site mitigation and public health protection.

DEQ Response: A more thorough explanation of changes since the 2016/2017 cleanup plan will be included in the final Record of Decision (ROD). Changes to DEQ RBCs for contaminants of concern at the Site required less cleanup to meet urban residential exposure requirements. Capping excavated soil on-site addresses community concerns about transporting the impacted soil through town. Since this cleanup is being done voluntarily by UPRR, they have significant leeway as to how they want to implement a remedial action as long as it is protective of human health. The remedy as proposed in the Staff Report is protective for urban residential and commercial use. The current plan will remove pockets of high levels of contamination that previously would not have been removed.

5) Similarly, the Administrative Record included in the draft staff report omits reference to the 2008 and 2016/2017 cleanup plans. These past documents were publicly available and are expected to be an important part of the project record for community members.

DEQ Response: Reference to the 2008 and 2016/2017 cleanup plans will be included in the Administrative Record in the final ROD.

6) The draft staff report indicates that a deed restriction will be imposed by DEQ requiring its approval before any portion of the eastern three acres of the railyard be subdivided or redeveloped in the future. The staff report should explicitly state that additional site investigation and cleanup work would be required before approval of any land development or site work. How does DEQ contemplate the city's role in this process, including notification and consultation with city planning staff about proposed local

[1] Oregon Department of Environmental Quality (ODEQ). 2019. Comments on the Supplemental Remedial Investigation/Feasibility Study Risk Evaluation 2nd Revision dated June 5, 2019. November 5.

land use changes and requirements for additional environmental work? An outline of DEQ's review and approval process of a proposed subdivision or redevelopment should be provided, including a reference to DEQ's anticipated evaluation criteria and requirements for public notice and comment.

DEQ Response: DEQ anticipates that the City would be notified of a potential subdivision, development, or land use changes through the local permitting process. The requirements and process for notifying DEQ will be outlined in the Site deed restriction, also known as an Environmental Protection Easement and Equitable Servitude (EES) document, that accompanies the property deed. If DEQ determines that additional investigation or cleanup is required, then the identified responsible party would likely have to follow the usual DEQ cleanup process including a work plan review, and possible site investigation, feasibility study, public notification, ROD, remedial design, and closure. DEQ would continue our collaborative communication with the City of Ashland and follow a process similar to that outlined in the following *DRAFT Public Involvement Phases of the UPRR Ashland ROD and Remedial Action.*

7) It appears that DEQ does not contemplate any limitations (e.g., deed restrictions) for the western nine acres of the railyard as long as it is used for commercial, industrial, or urban residential purposes. Since the risk assessment evaluated human exposures of this parcel using hypothetical 1-acre polygons as shown in Figure 5, is it possible that risk assessment outcomes would be different when the western nine acres is subdivided into a different configuration, other than the one acre lots shown in Figure 5?

DEQ Response:

State deed restriction(s) consisting of an EES will be applied to the western 8.7-acres and agreed on by UPRR and DEQ to define controls used to:

- Restrict site use to urban-residential and/or commercial use; and
- Restrict development or subdivision without additional assessment and/or approval from DEQ.

DEQ would need to review and approve any request to subdivide or develop either the western 8.7-acres or the eastern 3-acres to verify that development meets allowed land use requirements and that a subdivision does not result in unacceptable risk within any of the proposed subdivided parcels. DEQ would conduct a risk evaluation similar to how the hypothetical 1-acre subdivisions were considered, but evaluation areas and locations would be based on the proposed subdivision.

8) How did DEQ establish that groundwater beneficial use has not changed since the 2001 ROD? Were Oregon Dept. of Water Resources records reviewed for possible new water wells drilled near the site since 2001? Since water supply is often a big concern to our community, possible use of groundwater for irrigation in the future might be a concern and should be acknowledged in the report.

DEQ Response: A beneficial water use survey has not been conducted since 2001, however changes in water use in this area are unlikely based on requirements for new developments to connect to City water. To be certain, DEQ will include an updated beneficial water use survey in the revised ROD. DEQ can also include groundwater use restrictions in the EES if there is concern about possible future use and climate change and resource demands, etc.

Also, the likelihood that contaminants will migrate to off-site supply wells and affect current and/or future, reasonably likely, beneficial use is minimal. Groundwater is first encountered at the Site within the silt/clay unit and/or discontinuous sand unit at depths between approximately 6 and 20 feet below ground surface. A dense sandy silt unit (weathered bedrock) is located below this shallow water-bearing formation and above a deeper water bearing zone. Groundwater for beneficial use in the Site vicinity is drawn from the deep aquifer at depths greater than 60 to 100 feet below ground surface. Site contaminants of concern (Bunker C Oil and diesel) were detected in shallow groundwater. The likelihood that Bunker C oil and diesel will migrate to off-site supply wells and affect current and/or future, reasonably likely, beneficial use is minimal because: the viscous properties of Bunker C Oil limit its mobility; the vertical separation between the impacted shallow groundwater and the deeper aquifer utilized for beneficial use is at least 40 to 60 feet, containing at least 20 to 40 feet of bedrock; and cross-contamination of the deeper aquifer by a future installation of a well or borehole through contaminated shallow soil or groundwater is minimized through the use of Oregon well construction standards.

9) Two areas with high lead concentrations are targeted for cleanup, as well as one area with high arsenic. Sample resolution in these areas was very limited in past site investigations, so how were polygons determined for the excavations shown in Fig 6? The report should acknowledge the importance of future confirmation sampling when excavation occurs, to ensure removal of soil exceeding the cleanup criteria.

DEQ Response: This information will be added to the final ROD. Confirmation sampling will be required after excavation and removal of contaminated soil. Regarding the excavation areas, the Site risk assessment showed that arsenic was the primary contaminant risk driver, with lead being a secondary driver. Figure 6 shows the sample locations where the arsenic and lead samples exceeded 30 mg/kg and 1,000 mg/kg, respectively. Contiguous rectangular polygons were drawn around sample locations with arsenic and lead exceedances within the 8.7-acre western area to form the remedial action target areas. Each of the rectangular polygons has a minimum dimension of 50 feet in all directions from the sample location. Adjacent areas were extended and connected when there were no clean samples in between. All the arsenic and lead samples to be addressed were in the upper 1.5 feet of the 0- to 3-foot depth horizon of the surface soil, therefore, all the target areas extend to a depth of 1.5 feet.

10) The report briefly acknowledges the presence of significant volumes of subsurface soil saturated with Bunker C oil (NAPL, or non-aqueous phase liquids) in the eastern parcel, and the potential for direct contact with Bunker C oil for future construction or excavation workers. Unlike the September 2016 Remedial Action Workplan, there is no acknowledgement of the estimated extent or volume of these NAPL areas, previously estimated by UP and DEQ as 5,400 cubic yards. For better transparency, shouldn't the three estimated Bunker C areas be shown graphically in Figure 5 (Hypothetical Future Exposure Areas) to address anticipated public concerns about future exposure to subsurface NAPL (similar to how they were shown in the 2016 plan)?

DEQ Response: DEQ will include the estimated extent and volume of NAPL areas in the final ROD. However, there is significant uncertainty associated with both estimates, which will be noted in any graphics or estimates.

11) Regarding the three areas of soil saturated with Bunker C oil, it is evident that the proposed capping and securing of the three eastern acres of the railyard will possibly result in entombing this contamination in perpetuity, rather than eliminating it. How will DEQ address possible community concerns about the stigma of such legacy contamination remaining in an area that will be surrounded by development at some point in the future? Should monitoring wells be required to assure the entombing is effective in protecting the community's groundwater? As a practical matter, the proposed capping of the eastern three acres would appear to add little or no value to the local community, including expansion of the local tax base, facilitating economic growth, or taking development pressures off of undeveloped, open land elsewhere in Ashland or Jackson County. This concern may be important given the City of Ashland's obligation to address State of Oregon statutory goals and policy requirements for Climate Friendly and Equitable Communities.

DEQ Response: Leaving pockets of non-mobile petroleum in-place to degrade naturally is commonplace with the redevelopment of former industrial sites. Acceptable risk for the Site has been demonstrated in the risk assessment with the Bunker C contamination remaining in-place. This is because petroleum compounds are relatively non-toxic, and the toxicity decreases over time as it degrades and weathers. DEQ will attempt to address community concerns by engaging the public to inform them of the proposed plan and gain their input. DEQ does not feel that monitoring is required for the Bunker C based on its observed immobility and age. Clearing the western 8.7 acres for urban residential and/or commercial use will offer opportunities for development. After capping, the eastern 3 acres will also be available for development, recreation or greenspace.

12) The plan states that institutional controls are not uncommon for former industrial properties and if long term management is done properly, they all can be reliable. How will this be assured, and by whom, and with what processes? This would appear to be especially relevant given the current challenges with local and state government staff turnover during these long-term projects.

DEQ Response: Sites with institutional controls are recorded in the DEQ database and property owners are required to provide DEQ environmental reviews typically every five years. This process will be detailed in an EES attached to the property deed.

13) *For the selected alternative, the staff report indicates that "…clean backfill will include 2,710 cubic yards to fill in the excavation areas on the west side plus an additional 2,870 cubic yards to supplement the consolidated soil on the eastern side and fill in the former holding pond depressions." How will the clean soil backfill be delineated from underlying contaminated soil, to facilitate the possibility of future site investigation and cleanup that might be required in the eastern capped parcel? Given the current plan does not anticipate the removal or soil from the site, what is the anticipated site elevation profile following the introduction of the required backfill in relationship to the adjacent properties?*

DEQ Response: The excavation areas in the western 8.7 acres and the pre-remediation topography of the eastern 3 acres will be surveyed. Construction barriers may be used to delineate impacted material from cap material in the eastern 3 acres. Details of the final grading elevations and the use of any construction barriers will be included in the remedial design.

14) The plan states that: "The eastern three-acre area will be fenced to limit access". The fencing installed several years ago by UP to secure the contaminated railyard area have proven to be unreliable for preventing access. How will the proposed fencing be made more secure in perpetuity to prevent unauthorized access? Will signage be posted with information and contact information for citizen inquiries? City staff request an opportunity to review and comment on UP's soil management plan, contaminated media management plan, and cap O&M plan before final DEQ approval.

DEQ Response: These details will be included in the final ROD. DEQ believes a locked gate and sign are adequate to secure the Site. An annual inspection of the cap and fence will be included as part of the Operations and Maintenance (O&M) Plan for the Site after the cleanup remedy has been completed. There is no immediate health risk to trespassers in the Site's current condition and there will be no immediate health risk to trespassers upon cleanup completion. The purpose of the fence is primarily to discourage vagrancy and prevent potential damage to the cap until the property is developed. UPRR also has a no-trespass agreement in place with the Ashland Police Department for the property.

A soil management plan/contaminated media management plan and O&M Plan are typically included in a Remedial Action Completion report and the final EES attached to the property deed. There will be a public comment period on these documents after the ROD cleanup remedy is complete and before Site closure.

15) The staff report briefly acknowledges the need for a new Record of Decision as part of this cleanup. Please include a summary of DEQ's administrative process for making environmental cleanup decisions for this property, including the likelihood of a Certificate of Completion when the cleanup is done. This summary should include DEQ's public involvement milestones as part of its cleanup process going forward.

DEQ Response: Once the public comment period has ended for the Staff Report, DEQ will prepare a final ROD to include a detailed description of the final remedial action. DEQ will then oversee implementation and documentation of the cleanup in conformance with the ROD. DEQ will enter into an RD/RA agreement with UPRR to define implementation timeline and requirements for the remedial action. DEQ will also review a remedial action and remedial design work plan before implementation for cleanup. The responsible party will submit a Remedial Action Completion Summary Report when cleanup is complete. If DEQ determines the cleanup has been performed as directed by the ROD, the regulatory process is complete. DEQ will provide public notice of cleanup completion and allow 30 days for submission of comments or questions. Then DEQ issues a document to the Site owner called a No Further Action letter/Certificate of Completion. Sites may carry long-term requirements that are recorded on their deeds, such as ongoing monitoring and development restrictions, when necessary. Below is a more detailed draft outline of the UPRR Ashland ROD and Remedial Action process with anticipated public involvement milestones:

DRAFT UPRR Ashland ROD and Remedial Action Process and Public Involvement
City Covenant
Revise City Cleanup Restriction Covenant
DEQ Staff Report
DEQ holds 30-day comment period on Staff Report (Draft ROD), including public meeting and presentation to City Council
ROD
DEQ Signs ROD – *provide CC to City*
Remedial Design/Remedial Action (RD/RA)
Enter into RD/RA Voluntary Agreement with UPRR for implementation of the ROD
RD/RA Work Plan prepared for DEQ review
DEQ approve final RD/RA work plan – *provide CC to City*
Remedial Design prepared for DEQ Review
DEQ approve final Remedial Design
Remedial Action
Remedial Action implementation (earthwork)
Remedial Action Completion Summary Report with CMMP/Cap Maintenance Plan(s) drafted for DEQ review
Easement and Equitable Servitude (EES) documents drafted by DEQ and UPRR
CMMP/Cap Maintenance Plans and EES documents reviewed and commented on by DEQ – *provide CC to City*
Public Comment
DEQ holds 30-day comment period on Remedial Action Completion, including draft CMMP/Cap Maintenance Plans and EES documents
Remedial Action Completion
DEQ responds to comments on remedial action completion – *provide CC to City*
EES documents and attachments signed and recorded
DEQ issues NFA/Cert of Completion – *provide CC to City*
City removes Cleanup Restriction Covenant

16) Before DEQ issues its Certificate of Completion when it deems the cleanup is complete, the City requests a public involvement process that is consistent with what is being planned in late 2022 and early 2023 for the proposed cleanup plan. This should include a 60-day public comment period, at least one DEQ-hosted public meeting, a presentation to the Ashland City Council, and continued collaboration with city staff on public communications.

DEQ Response: DEQ anticipates having a 30-day public comment period of the Remedial Action Completion report and follow the typical public notice process before a certificate of completion is processed or NFA is issued, including: Publication of a notice and brief description of the proposed action in a local paper of general circulation and in the Secretary of State's Bulletin, and continued collaboration with city staff on public communications.

I hope the information in this letter addresses your current questions and concerns. Please contact me at (503) 726-6522 with any additional questions. I can also be reached via e-mail at margaret.oscilia@deq.oregon.gov

Sincerely,

Margaret L Oscilia

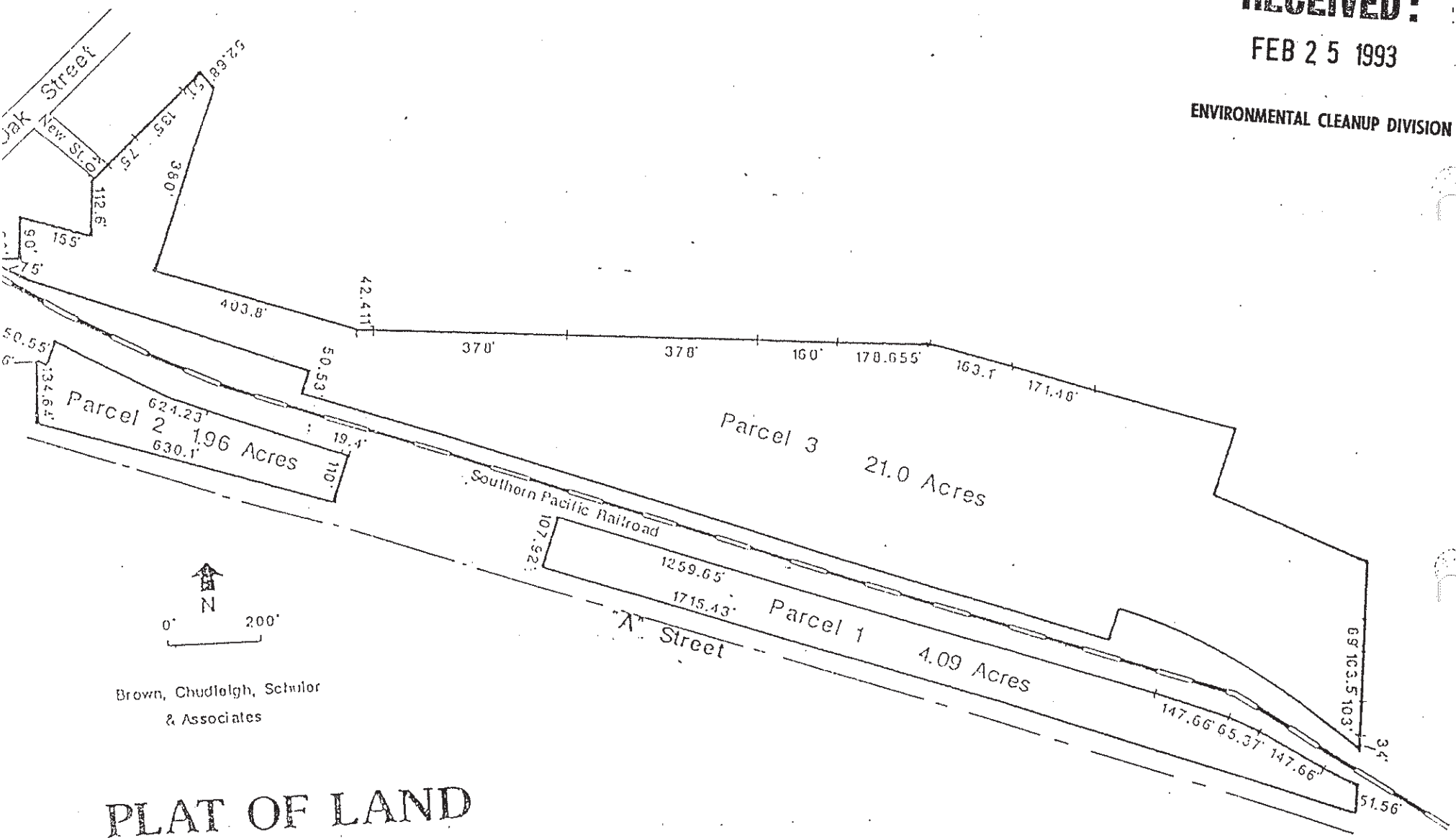
Margaret L. Oscilia, P.E.
Project Manager
Western Region Cleanup and Emergency Response

Attachment 2

Original UPRR Property, Parcel 3

DRAWING [illegible]
No. 1, DATED 11-2090

DEPT. OF ENVIRONMENTAL QUALITY
RECEIVED:
FEB 25 1993
ENVIRONMENTAL CLEANUP DIVISION



Brown, Chudleigh, Schulor
& Associates

PLAT OF LAND

"A" Street Parcels

Ashland, Oregon

Attachment 3

New Parcels 2, 3, 4, 5, 6 and 7 of City of Ashland Partition Plat P-32-2000

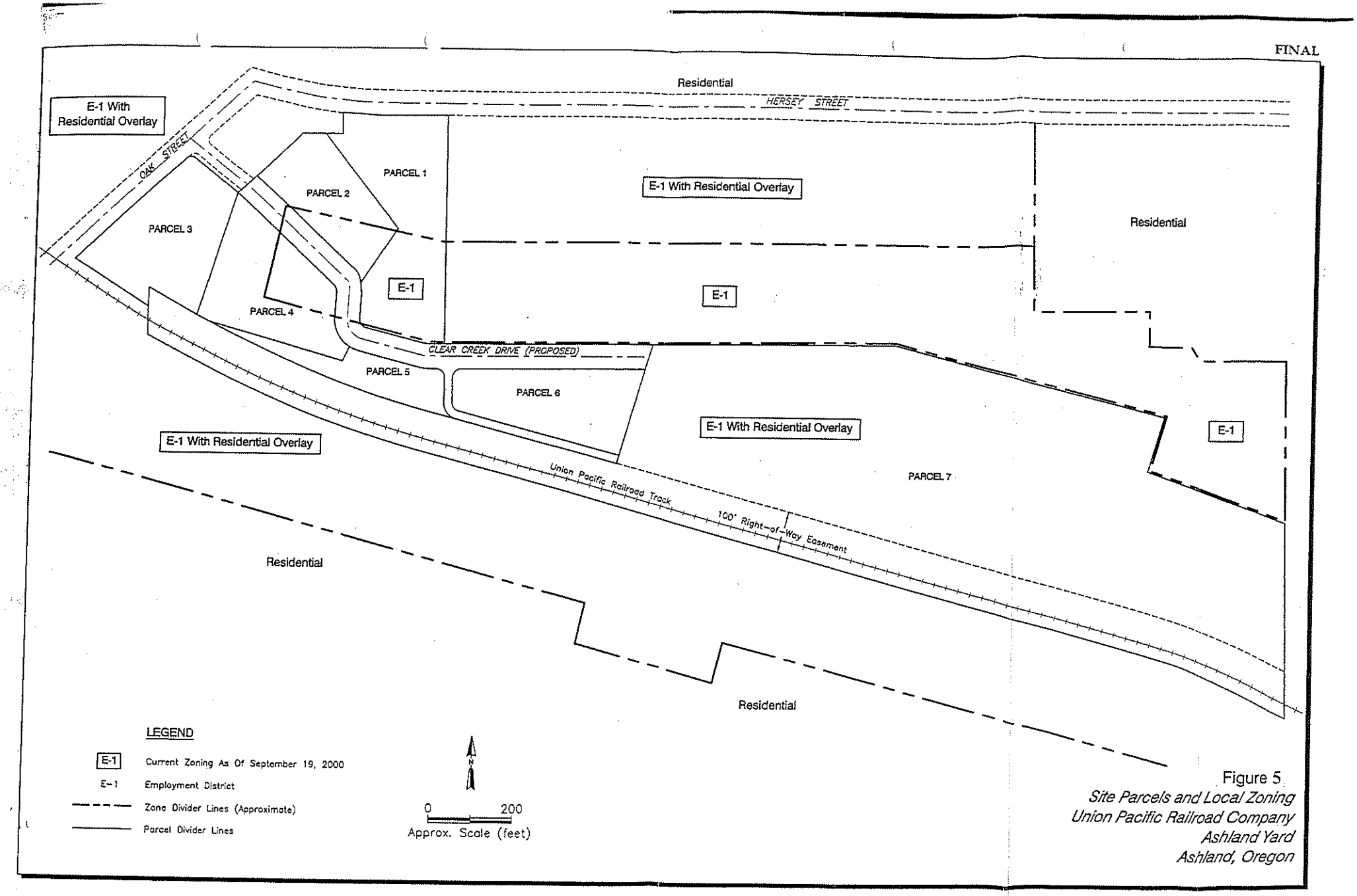


Figure 5
Site Parcels and Local Zoning
Union Pacific Railroad Company
Ashland Yard
Ashland, Oregon

Attachment 4

Parcel 7, Tax Lots 6200 and 6700

FOR ASSESSMENT AND TAXATION ONLY

N.E.1/4 N.E.1/4 SEC.9 T.39S. R.1E. W.M.
JACKSON COUNTY
1" = 100'

391E9AA
ASHLAND

CANCELLED TAX LOT NUMBERS
1800 ADDED TO 1600
200 REMAPPED TO 391E10
2000 ADDED TO 2200
2803 REMAPPED TO 90000
391E04DD-601 ADDED TO 1000

GIS DATA
04/20/2021 8:23:39 AM: yatesja

391E9AA
ASHLAND
NEW MAP January 27, 2009
REV March 29, 2021

FOR ASSESSMENT AND TAXATION ONLY

N.W.1/4 N.E.1/4 SEC.9 T.39S. R.1E. W.M.
JACKSON COUNTY
1" = 100'

39 1E 09AB
ASHLAND

CANCELLED TAX LOT NUMBERS
100-1900 REMAPPED TO 391E09AA
10000 ADDED TO 9800
10100 REMAPPED TO 90000
4801 ADDED TO 4800
6400 REMAPPED TO 391E09AA
6401 ADDED TO 6400
6500M1-6509M1
6510 REMAPPED TO 391E09AA
6600 REMAPPED TO 391E09BA
6601 REMAPPED TO 90000
6604 ADDED TO 6605
6701 REMAPPED TO 391E09AA
90000-90003 REMAPPED TO 391E09BA3
9900 ADDED TO 9800

GIS DATA
05/26/2021 9:43:34 AM: thompsam

39 1E 09AB
ASHLAND
NEW MAP January 27, 2009
REV May 18, 2021