SCREENING LEVEL ECOLOGICAL RISK ASSESSMENT

FORMER WESTERN STATES PLYWOOD COOPERATIVE MILL

Prepared for

WILD RIVERS LAND TRUST

PORT ORFORD, OREGON

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Prepared by

Maul Foster & Alongi, Inc.

1329 N State Street, Suite 301, Bellingham, WA 98225

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The material and data in this report were prepared under the supervision and direction of the undersigned.

MAUL FOSTER & ALONGI, INC.

Phil Wiescher, PhD
Principal Environmental Scientist

Carolyn Wise, RG
Project Hydrogeologist

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ACRONYMS AND ABBREVIATIONS

bgs	below ground surface
BSAF	biota-sediment accumulation factor
BTEX	benzene, toluene, ethylbenzene, and total xylenes
COC	ecological chemicals of concern
COI	chemicals of interest
CPEC	chemicals of potential ecological concern
CSM	conceptual site model
CTL	critical tissue level
DEQ	Department of Environmental Quality (Oregon)
DRO	diesel range organics
EPA	U.S. Environmental Protection Agency
EPC	exposure point concentration
ERA	ecological risk assessment
ERP	Elk River Partners LLC
ESA	environmental site assessment
GRO	gasoline range organics
HAI	Hahn and Associates, Inc.
ISM	incremental sampling methodology
JJW	JJW Sustainable Land Trust, LLC
LANL	Los Alamos National Laboratory
LOF	locality of facility
mg/kg	milligrams per kilogram
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
ODFW	Oregon Department of Fish and Wildlife
ORO	oil range organics
PAH	polycyclic aromatic hydrocarbons
PCBs	polychlorinated biphenyls
PCP	pentachlorophenol
PEC	probable effects concentrations
pg/g	picograms per gram
RBC	risk-based concentration
Site	tax lots 104, 900, and 901 in Curry County, Oregon
SL	screening level
SVOCs	semivolatile organic compounds
TBA	targeted brownfields assessment
TEF	toxic equivalency factors
TEQ	toxicity equivalents
TOC	total organic carbon
TRV	toxicity reference value
UCL	upper confidence limits
USFWS	U.S. Fish and Wildlife Service

ACRONYMS AND ABBREVIATIONS (CONTINUED)

UST	Underground storage tank
WRLT	Wild Rivers Land Trust
WSP	WSP USA, Inc.

1 INTRODUCTION

On behalf of Wild Rivers Land Trust (WRLT), Maul Foster & Alongi, Inc. has prepared this Screening Level Ecological Risk Assessment (ERA) for the Former Western States Plywood Cooperative Mill site (ECSI Site ID: 556) located at Elk River Road, in Port Orford, Oregon (see Figure 1-1) (the Site). The Site is comprised of three separate tax lots (tax lots 104, 900, and 901) in Curry County, Oregon. WRLT has identified Bagley Creek, which traverses the Site, as an important historic fisheries habitat that has been compromised by the previous operation of a plywood mill on the Site. WRLT and its partners are currently in the process of acquiring parcels associated with the former mill, such that fisheries habitat can be reestablished on the Site, and this habitat can be reconnected to the creek's forested headwaters.

The purpose of this ERA is to determine whether the Site currently poses, or is reasonably likely to pose in the future, unacceptable risks to ecological receptors. The procedures, methodologies, and reporting of this ERA are generally consistent with the Oregon Department of Environmental Quality (DEQ) and U.S. Environmental Protection Agency (EPA) guidance (DEQ 2007, 2020; EPA 1992, 1997, 2004). This ERA includes scoping, Tier I generic screening, and Tier II refined screening consistent with DEQ (2020) ERA guidance.

The ERA process consists of two major components: scoping and risk assessment (DEQ 2020). The first step in this process is a Level I Scoping ERA, the objective of which is to determine the potential for exposure of important ecological receptors to site-related chemicals that may be present. WSP USA, Inc., (WSP) conducted a Level I Scoping ERA for the Site as part of the December 2020 Targeted Brownfields Assessment (TBA) prepared for EPA (WSP 2020). The WSP Level I ERA is further discussed and expanded in Section 3 below and provided as Appendix A. More complex and higher-tiered risk assessment evaluations were performed sequentially as needed to identify ecological chemicals of concern (COCs) and risks to ecological receptors. This ERA includes Tier I and II screening level assessments which includes the standard assessment framework of comparing site concentrations to risk-based concentrations (RBCs) (Tier I), and allows for refined development of exposure point concentrations (EPCs) and adjustments to RBCs to account for site-specific conditions or receptors (Tier II) (DEQ 2020).

2 SITE SETTING

2.1 Site Location and Background

The Site is located in section 27 of township 32 south, range 15 west of the Willamette Meridian and includes Curry County tax lots 104, 900, and 901 (see Figure 1-1). The Site is currently vacant and covered with vegetation and disturbed ground from former plywood mill operations. Two ponds are present on the Site: the former log pond and the former fire suppression pond (see Figure 2-1). According to the USFWS and WSP, the former log pond comprises approximately 4.4 acres of freshwater Palustrine emergent (PEM) wetland , primarily within tax lot 901, and is currently an overgrown low-lying marshy area (see Appendix B; WSP 2020). The former fire suppression pond occupies the northwest corner of Tax Lot 900. Bagley Creek crosses the Site in a southwest-to-northeast direction, through the former fire suppression pond and former log pond and enters the Elk River near the northeast corner of the Site. A concrete fortified dam with an intrinsic spillway, an earthen dam, and seasonal beaver dams constrains the water along Bagley Creek into the two ponds. Most of the Site is relatively flat at an elevation of approximately 80 feet above mean sea level. The eastern portion of tax lot 104 contains a slight topographic slope to Elk River. The Site is bordered by agricultural land to the west and north and rural residences to the east and south (see Figure 2-1). Elk River flows along the northeast perimeter of the Site. (HAI 2008; WSP 2020)

The Site, as well as the adjacent Curry County tax lots 902 and 903, were formerly developed and operated as a plywood mill owned by Western States Plywood Cooperative. The plywood manufacturing facility operated on the Site between the 1950s until 1975. Prior to construction of the mill, the Site was vacant, undeveloped forestland. Historical features associated with the former mill are shown on Figure 2-1. The land has been largely vacant since a fire destroyed the mill in 1976. (HAI 2018; WSP 2020).

The main structure of the former plywood mill building was primarily present on an adjacent tax parcel to the east of the Site. The northwest portion of the mill building likely housed the debarking operations of the mill while the southwest portion may have been used to heat the logs prior to peeling into veneers. The locations of the gluing operations and where the phenolic resins were stored is not known. North of the debarking area in tax lot 104 was the former stud mill. Stud mills during this period commonly treated lumber with pentachlorophenol (PCP) for anti-sap staining purposes; however, it is unknown whether PCP was used at the Site. Additional details on the historical features and operational activities are provided in the 2020 TBA and 2018 Phase II environmental site assessment (ESA) (HAI 2018; WSP 2020).

2.2 Geology, Hydrogeology, and Surface Water

The Site is located on an alluvial plain of the Elk River, surrounded to the north and south by lowland hills of Oregon's coastal range. According to WSP's review of light detection and ranging imagery, there is a relatively steep slope at the northern margin of the Site consistent with an ancestral alluvial bench rather than artificial fill placement imported to raise the grade of the Site. (WSP 2020)

During previous investigations, subsurface drilling observations at the Site identified a mixture of sands, silts, and gravel to the maximum exploration depth of 25 feet below ground surface (bgs). Groundwater was typically encountered between 7 to 15 feet bgs, exceptions being the areas near the southern and northern margins of the former log pond, where groundwater was encountered approximately 7.5 and 17 feet bgs, respectively. Based on topography, HAI inferred that the groundwater flow direction ranged from an easterly to a northwesterly direction, and likely was subject to seasonal variation (HAI 2018; WSP 2020).

Bagley Creek intersects the Site through the former log pond and former fire suppression pond that were constructed as part of the former plywood mill operations. The presence of the ponds through Bagley Creek has prevented fish access to upstream portions of Bagley Creek from Elk River. National Wetlands Inventory maps depicts several wetlands at low spots on the Site (see Appendix B). These include freshwater emergent and freshwater forest/shrub wetlands within the former log pond, and a freshwater emergent wetland on adjacent tax lots 902 and 903.

2.3 Previous Investigations

Previous environmental investigations at the Site have included the following:

- July 2017: Phase I ESAs for tax lots 900 and 901 of the Site prepared for WRLT by PBS Engineering and Environmental, Inc. (PBS 2017a,b)
- December 2018: Phase II ESA for tax lots 104 and 900 of the Site on behalf of WRLT and Elk River Partners LLC (ERP) by Hahn and Associates, Inc., (HAI) (HAI 2018). The Phase II ESA included the following:
  - Targeted geophysical survey work to assess three areas of the Site. Four anomalies were identified during the survey, including one potential underground storage tank (UST) near the former office (see Figure 2-1)
  - Advancement of 16 borings for soil and groundwater sampling
  - Collection of six surface soil samples (three 3-point composite samples, and three discrete samples) within one-foot bgs across the Site
- January 2019: Supplemental surface soil investigation for dioxins/furans by HAI (HAI 2019a). This investigation included sampling eight discrete locations (SS-1 through SS-8) within one-foot bgs across the Site.
- March 2019: Phase I ESA for tax lots 104 and 901 by HAI on behalf of WRLT and ERP (HAI 2019b).
- July 2020: Phase I ESA for tax lot 900 and an adjacent tax lot to the east, Curry County tax lot 3215-27-00902 by HAI on behalf of ERP and JJW Sustainable Land Trust, LLC (JJW) (HAI 2020).
- December 2020: TBA for the Site prepared by WSP on behalf of the EPA (WSP 2020). This assessment included a Level 1 ERA. This investigation included the following:
  - Collection of eight 30-point surface soil samples via incremental sampling methodology (ISM) from eight decision units. This included one background decision unit (DU-8) and the remaining seven decision units centered around the former northern and southern wigwam burners and the former stud mill.
  - Collection of subsurface soil and groundwater samples from temporary direct-push borings across the Site.

- Collection of groundwater samples from two permanent wells on the Site, a domestic well with a downhole pump and hose spigot and an approximately 30-inch-diameter concrete cased well.
- Collection of grab surface sediment samples from the top 10 centimeters of the sediment along Bagley Creek and within the former ponds on the Site.
- Collection of surface water along Bagley Creek and within the former ponds on the Site.

The results of these investigations and assessments have identified known and suspected releases of contaminants on the Site as described below.

2.4 Known or Suspected Hazardous Substance Releases

Previous investigations identified the operation of industrial machinery and vehicles onsite, leaks or spills from oil filled transformers, leaks or spills of maintenance shop-related materials stored in containers, and releases of wood treatment chemicals such as PCP as possible sources of contamination to the Site (WSP 2020). Potential contaminants associated with these sources included:

- Metals (including mercury)
- Diesel Range Organics (DRO)
- Oil Range Organics (ORO)
- Gasoline Range Organics (GRO)
- Semivolatile organic compounds (SVOCs) including PCP and polycyclic aromatic hydrocarbons (PAHs)
- Polychlorinated biphenyls (PCBs)
- Benzene, toluene, ethylbenzene, and xylene (BTEX)
- Formaldehyde
- Dioxins/furans

Dioxin/furans in soil and sediment were identified across most of the Site (WSP 2020). Multiple metals were identified in surface and subsurface soils, sediment, and surface water.

2.5 Locality of Facility

The locality of facility (LOF) is defined in Oregon Administrative Rule (OAR) 340-122-115(35) as any point where a human or an ecological receptor contacts, or is reasonably likely to come into contact with, facility-related hazardous substances.

For purposes of this evaluation, the LOF for soil, surface water, and groundwater encompasses the entire Site and adjacent tax lots 902 and 903. Groundwater on the Site has been incompletely characterized, but likely discharges to both Bagley Creek and Elk River. The spatial distribution of available data suggests that groundwater discharging to Elk River from the Site is unlikely to be impacted by chemical constituents from Site, however in the absence of more complete groundwater characterization Elk River adjacent to the Site is included in the LOF for the purposes of this conservative evaluation.

A description of the LOF for the Site is provided in the beneficial land and water use determination include as Appendix C.

2.6 Land and Water Use

The current, reasonably likely, and future uses of land and water determine the types of ecological receptors that could potentially contact impacted environmental media. A beneficial use study is provided in Appendix C.

2.7 Sensitive Environments

Sensitive environments, as defined in OAR 340-122-115(50), are areas of particular environmental value where a hazardous substance could pose a greater threat than in other, non-sensitive areas. According to the OAR, sensitive environments include but are not limited to: critical habitat for federally listed endangered or threatened species; national parks; monuments; national marine sanctuaries; national recreational areas; national wildlife refuges; national forest campgrounds; recreational areas; game management areas; wildlife management areas; designated federal wilderness areas; wetlands (freshwater, estuarine, or coastal); wild and scenic rivers; state parks; state wildlife refuges; habitat designated for state-listed endangered species; fishery resources; state-designated natural areas; county or municipal parks; and other significant open spaces and natural resources protected under Goal 5 of Oregon's Statewide Planning Goals.

The following sensitive environments have been identified at the Site (WSP 2020):

- The Elk River is designated as a Wild and Scenic River under the National Wild and Scenic Rivers Act as well as Essential Salmonid Habitat by the Oregon Department of State Lands.
- Bagley Creek is designated as Essential Salmonid Habitat by the Oregon Department of State Lands.
- The former log pond on tax lots 104 and 901 contains freshwater emergent and freshwater forest/shrub wetlands as identified in the U.S. Fish and Wildlife National Wetlands Inventory.
- The bank of the Elk River on tax lot 104 is defined as freshwater forest/shrub wetlands in the U.S. Fish and Wildlife National Wetlands Inventory.
- The banks of the Elk River and Bagley Creek are identified as Riparian Habitat by the Oregon Department of Fish and Wildlife (ODFW) Strategy Habitats Database.

2.8 Species of Special Concern

According to DEQ guidance, the known or suspected presence of threatened and/or endangered species or their habitat in the locality of the site must be identified (DEQ 2020). Species that are classified as "threatened" or "endangered" receive special protection under the state and federal Endangered Species Act and are evaluated at the individual level (as opposed to the population level) in ERAs (DEQ 2020). State threatened and endangered species classifications are made by the Oregon Department of Fish and Wildlife. Federal threatened and endangered species classifications are made by both the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS). The NMFS typically determines the status of marine and anadromous species. The federal status of other species, including plants, insects, birds, and mammals, is determined by the USFWS.

Threatened or endangered species that may occur in the area were identified by utilizing the USFWS information for planning and consultation (IPaC) database, provided as Appendix D; the Oregon Biodiversity Information Center database; ODFW[1] and USFWS[2] species information. The Oregon Explorer Database (maintained by Oregon State University) and the National Oceanic and Atmospheric Administration (NOAA) Protected Resources App were also used to identify potential fish species present in Elk River.[3] The results of these reviews are discussed below.

Four fish species may occur in the section of Elk River adjacent to the site but are unlikely to spend a substantial portion of their life cycles in Bagley Creek on the Site due to current fish barriers associated with the former log pond and fire suppression pond:

- Chinook salmon (*Oncorhynchus tshawytscha)*: The Oregon Explorer database indicates that the section of Elk River adjacent to the Site may be utilized by coho salmon in summer/fall months.
- Coho salmon (*Oncorhynchus kisutch*): The Oregon Explorer database indicates that the section of Elk River adjacent to the Site and Bagley Creek may be utilized by coho salmon in summer/fall months. In the level 1 ERA prepared by WSP, it was noted that Elk River Coho salmon, a federally listed threatened species, is present in Elk River, but is not currently present on the Site (WSP 2020).
- Steelhead (*Oncorhynchus mykiss*): The Oregon Explorer database indicates that the section of Elk River adjacent to the Site and Bagley Creek may be included in the migration pathway for winter steelhead.
- Coastal cutthroat trout (*Oncorhynchus clarki clarki):* The Oregon Explorer database indicates that the section of Elk River adjacent to the Site may be habitat for resident coastal cutthroat trout.

One listed mammal species may occur in the region but is unlikely to utilize the site:

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[1] https://www.fws.gov/species

[2] https://www.fws.gov/species/search

[3] https://tools.oregonexplorer.info/OE_HtmlViewer/Index.html?viewer=oe

- Pacific Marten, Coastal Distinct Population Segment (*Martes caurina)*: The IPaC database identified the pacific marten as potentially present. The pacific marten is listed by the federal government and the State of Oregon as threatened. Pacific martens live in forested areas with particularly dense shrubbery along the Pacific coast, which are not present at the Site. According to the IPaC database, designated critical habitat for this species is not present within or adjacent to the Site.

Three listed bird species may occur in the region but are unlikely to utilize the site:

- Marbled murrelet (*Brachyramphus marmoratus*): The IPaC database identified the marbled murrelet as potentially present. The marbled murrelet is listed by the federal government and the State of Oregon as threatened. Marbled murrelets range along the entire Pacific coast from Alaska to California. They feed primarily on fish and invertebrates in nearshore marine waters and nest in mature and old-growth coastal forests, which are not present at the Site. According to the IPaC database, designated critical habitat for this species is not present within or adjacent to the Site.

- Northern spotted owl (*Strix occidentalis caurina*): The IPaC database identified the northern spotted owl as potentially present. The northern spotted owl is listed by the federal government and the State of Oregon as threatened. Northern spotted owls range along the Pacific coast from northern California to Canada. They nest primarily in mature and old-growth forests, which are not present at the Site. According to the IPaC database, designated critical habitat for this species is not present within or adjacent to the Site.

- Western snowy plover (*Charadrius nivosus nivosus)*: The IPaC database identified the western snowy plover as potentially present. The western snowy plover is listed by the federal government and the State of Oregon as threatened. Western snowy plovers breeds along the Pacific coast. Their habitat consists of barren to sparsely vegetated sand beaches, dry salt flats in lagoons, dredge spoils deposited on beach or dune habitat, levees and flats at salt-evaporation ponds, river bars, along alkaline or saline lakes, reservoirs, and ponds, which are not present at the Site. Nests are a natural or scraped depression on dry ground usually lined with pebbles, shell fragments, fish bones, mud chips, vegetation fragments, or invertebrate skeletons. According to the IPaC database, designated critical habitat for this species is not present within or adjacent to the Site.

Other ecologically important species include migratory birds that may utilize the surrounding area for breeding. This includes the bald eagle (*Haliaeetus leucocephalus*), protected under the Bald and Golden Eagle Protection Act, the black oystercatcher (*Haematopus bachmani*), the black turnstone (*Arenaria melanocephala),* the Clark's grebe (*Aechmophorus clarkia*), and the wrentit (*Chamaea fasciata*).

One listed plant species may occur in the region:

- Western lily (*Lilium occidentale)*: The IPaC database identified the western lily as potentially present. The western lily is listed by the federal government and the State of Oregon as endangered. The western lily is often found near the ocean in freshwater fens and on the edges of bogs and in coastal prairie and scrub along the southern Oregon and northern California coastline. Suitable habitat may be present near the Site. However, according to observations from the level 1 ERA, the Site is largely dominated by weedy, invasive species including grasses, gorse (*Ulex europaeus*), and Himalayan blackberry (*Rubs discolor*) and terrestrial ruderal habitat from the remains of dilapidated building foundations (WSP 2020). According to the IPaC database, designated critical habitat for this species is not currently available for this species.

The monarch butterfly (*Danaus plexippus)* was listed as a candidate listed species by the federal government and was listed as potentially present on the Site. Monarch butterfly lay their eggs on milkweed host plant and rely on the presence of milkweed to reproduce. According to the IPaC database, designated critical habitat for this species is not currently available for this species.

In summary, federally listed threatened and endangered species in the Site have not been observed and are not expected to be present. One listed salmonid (coho salmon) may be present in the adjacent Elk River during certain times of the year (e.g., while migrating); resident listed species are not present.

Anticipating that proposed habitat restoration of Bagley Creek may reintroduce Coho salmon, a federally listed threatened species, to the Site, this ERA also considers threatened salmon related exposures for future Bagley Creek conditions.

3 LEVEL 1 SCOPING SUMMARY

This section describes the results of the 2020 Level I ERA prepared by WSP. The Level I ERA included site visits to evaluate ecological features, including habitat types, ecologically important species and habitats, and exposure pathways. The Level I ERA is provided as Appendix A. The Level I ERA scoping checklist is provided as an appendix to the Level 1 ERA.

The purpose of the scoping evaluation was to gather basic site information in order to describe ecological features and evaluate exposure pathways between site-related contaminants and ecological receptors (DEQ 2020). WSP USA Inc. conducted a Level I ERA of the Site including an evaluation of existing data, a site visit, and an exposure pathways assessment as part of the 2020 TBA (WSP 2020). The information presented by WSP in their Level I ERA is summarized below. Descriptions of the location, history, known or suspected hazardous substance releases, land and water use, sensitive environments, and species of special concern are presented in Section 2 above.

3.1 Site Visit

WSP conducted a site walk on the Site from September 8, 2020 through September 13, 2020 to assess the presence or potential presence of ecological receptors and/or exposure pathways at or in the vicinity of the Site. Site photographs were included in the Level 1 ERA (see Appendix A).

3.2 Chemicals of Interest

Chemical analysis of samples collected during the 2020 TBA identified multiple COIs in soil, sediment, and surface water at concentrations above the most restrictive (i.e., lowest) ecological RBC (WSP 2020). This included dioxins/furans; various metals; GRO, DRO, ORO; bis(2-ethylhexyl)phthalate, benzo(a)anthracene, and phenanthrene.

3.3 Site Habitat

The Level I ERA identified the following habitats on the Site:

- Lentic (non-flowing) aquatic environment comprised of the former fire suppression pond (approximately 0.14 acre or 0.5 percent of Site). The vegetation in this habitat consists of hornwort, duck weed, and water lilies.
- Wetland aquatic environment, including former log pond and a couple smaller wetland areas (approximately 7.2 acres or 25.6 percent of Site). The vegetation in this habitat consists of cattail, juncus, phalaris, skunk cabbage, juncus and grass species, and willows along with dead tree stands.
- Lotic (flowing) aquatic environment comprised of Bagley Creek and Elk River, both perennial streams (approximately 0.3 acres or 1.1 percent of Site). The bed and bank within this reach of Bagley Creek is steep with undercut banks and scrub-shrub dominated riparian areas. The bed and banks of Elk River on the Site consist of gravel and cobbles and gravel floodplain and grasses.
- Terrestrial scrub/scrub/grasses dominated by weedy, invasive species including grasses, gorse (*Ulex europaeus*), and Himalayan blackberry (*Rubs discolor*) (approximately 48.8 percent of Site).
- Terrestrial ruderal consisting of remains of dilapidated industrial buildings from the former mill operations (approximately 24 percent).

Additional description of habitats and observations on the Site are provided in the Level I ERA in Appendix A.

3.4 Ecologically Important Species and Habitats

According to the USFWS and WSP, the former log pond comprises approximately 4.4 acres of freshwater Palustrine emergent wetland (see Appendix B; WSP 2020). During the Level I ERA site walk, it was observed that the pond supports a high percent coverage of invasive species; however, the habitat provides moderate quality habitat for a variety of species.

No aquatic or terrestrial species were observed within the wetland areas of the Site during the site visit. Bird species were observed throughout the wetland understory and within trees, including one raptor; however, no nests were observed.

Potential bat roosting trees and habitat, including cracks, crevices, and sloughing bark, were observed near the former fire suppression pond and within and adjacent to the former log pond. However, no bats were observed during the site walk.

Additional description of ecologically important species and habitats on the Site are provided in the Level I ERA in Appendix A.

3.5 Preliminary Exposure Pathways

The Level I scoping checklist provides a summary of potential receptor-pathway interactions (see Appendix A). COIs are currently present in soils, surface water/sediment, and groundwater at the Site. Groundwater at the Site is deeper than typical burrowing and rooting depths of up to 3 feet. Sediment samples were collected in the former log pond and former fire suppression pond to evaluate conditions adjacent to the river; surface water is often not considered a significant exposure pathway because of the nature of contaminants (preferentially partition to sediments/lipids) and because collective risk assessment experience demonstrates that risk, if present, would be driven by sediment/porewater conditions.

Therefore, the preliminary potential exposure pathways evaluated are associated with exposure to soils and sediments in the former log pond and former fire suppression pond:

- Plant, soil invertebrate, bird, and mammal direct contact and/or ingestion of surface soils
- Bird and mammal ingestion of biota (plants or prey) that has been in contact with surface soils
- Aquatic-dependent receptor sediment direct contact (ingestion) and indirect contact (ingestion of biota) in the former log pond and former fire suppression pond.

Exposure pathways are further evaluated and described as part of the ecological conceptual site model (CSM) developed in Section 4.

3.6 Recommendations

The Level I scoping ERA assessed whether important ecological receptors are present at the Site and whether there is potential for exposure to site-related chemicals. No ecologically important species (e.g., threatened and endangered species) or habitats were observed and are not expected to be currently present within the Site. Therefore, WSP concluded that no further work was necessary to assess the potential for adverse ecological impacts to threatened or endangered terrestrial ecological receptors at the Site currently (WSP 2020).

However, sampling at the Site has identified COIs in site soils above one or more ecological RBCs and dioxin/furans in sediment above the default freshwater sediment ecological screening level value.

Future restoration plans for the Site may introduce ecologically important species and potentially complete pathways for exposure to soil and sediment/porewater. Therefore, additional assessment is recommended for these areas to determine potential for unacceptable adverse impacts to future ecological receptors. These assessments are provided in Sections 4 and 5.

4 ECOLOGICAL CONCEPTUAL SITE MODEL

For exposure to chemicals and potential risks to occur, a complete exposure pathway must exist. A complete pathway requires a source and mechanism for release of constituents, a transport or retention medium, a potential environmental contact (exposure point) with the affected medium, and an exposure route at the exposure point (EPA 1997). The ecological CSM (see Figure 4-1) presents potential exposure pathways by which representative ecological receptors may come into contact with site-related chemicals. These pathways indicate how the ecological resources can co-occur or come into contact with chemicals, and include sources, fate and transport processes, and exposure routes.

4.1 Ecological Stressors

Ecological stressors include physical, chemical, and biological conditions that have the potential to adversely affect ecological receptors directly or indirectly. This ERA focuses on the potential ecological effects to populations associated with soil, sediment, and surface water. Other chemical stressors (i.e., background levels) and physical (nonchemical) stressors, such as habitat disturbance and degradation, may also contribute to adverse ecological effects.

4.2 Ecological Receptors and Assessment Endpoints

Ecological receptors that may have significant exposure to soil, sediment, or impacted biota include plants, soil invertebrates, birds, mammals, and aquatic-dependent receptors (benthic invertebrates, fish, and aquatic predators) (see Figure 4-1). OAR 340-122-115(7) states that an assessment endpoint is an explicit expression of a value deemed important to protect, operationally defined by an entity and one or more of that entity's measurable attributes. Ecologically appropriate assessment endpoints can be defined upon selection of species: (1) that are representative of the types of ecological receptors present or likely to be present at or near the site; (2) that may be exposed to or sensitive to contamination; and (3) for which toxicological and biological data are available. This approach is considered protective of less sensitive or less exposed species not selected (DEQ 2001; EPA 1997). The following have been selected as assessment endpoints:

- Protecting the survival, growth, and reproduction of local populations of plants and soil invertebrates that may be exposed to chemicals in surface soil

- Protecting the survival, growth, and reproduction of local populations of avian ground insectivores, herbivores, and carnivores exposed via ingestion of prey and incidental ingestion of surface soil

- Protecting the survival, growth, and reproduction of local populations of mammalian ground insectivores, herbivores, and carnivores exposed via ingestion of prey and incidental ingestion of surface soil

- Protecting the survival, growth, and reproduction of aquatic species and aquatic-dependent wildlife that may be exposed to chemicals in surface sediment, including salmonid individuals to account for potential future Bagley Creek conditions

4.3 Potential Exposure Pathways

Primary exposure media include surface soil, sediment, and biota (i.e., plant and prey items). Exposure pathways consist of a source, its transport, and a route of exposure at an exposure point; exposure pathways for receptor types are summarized in Figure 4-1.

It is assumed that plants and animals can contact surface soils (up to 3 feet bgs) and biota on the Site. Chemicals have the potential to impact sediment/pore water in Bagley Creek. Aquatic plants, benthic organisms, fish, piscivorous mammals, and predatory birds are ecological receptors most likely to be exposed.[4] Specifically, plants and benthic organisms may be exposed to chemicals through direct contact with and uptake from sediment. Fish may be exposed to chemicals through direct contact with sediment and through incidental ingestion (e.g., during filter feeding); chemicals also may bioaccumulate in tissue. Based on the transitory nature of salmonids and on their large ranges, assessment and protection of resident, smaller-home-range fish populations are assumed to account for protection of salmonids if these are introduced in the future. Aquatic-dependent birds, as well as mammals, may ingest chemicals in sediment; dermal exposure routes are considered insignificant because of infrequent contact and external protection, such as fur and feathers. Surface water is not considered a significant exposure pathway because of the nature of the COIs (preferentially partition to sediments/lipids) and because collective risk assessment experience demonstrates that risk, if present, would be driven by sediment/porewater conditions. Relevant exposure media include aquatic biota for receptors at higher trophic levels. Fish, birds, and mammals may accrue chemicals in tissue if they consume prey that has accumulated chemicals from sediment.

Groundwater is present starting at approximately 7 to 10 feet bgs. This is below the typical depth of plant root systems and mammal burrows (DEQ 1998), and direct exposure to groundwater is considered an incomplete pathway.

[4] For amphibians and reptiles, there is a lack of consensus-based wildlife exposure factors and toxicity reference values (TRVs) and these groups are not typically evaluated.

5 DATA TREATMENT RULES

5.1 Summation

Some chemical groups are reported as sums of individual compounds or as toxicity equivalents (TEQs). For purposes of totaling concentrations, calculated totals are the sum of all detected concentrations and non-detect results at one-half the detection limit (or estimated detection limit, in the case of dioxins) for analytes detected at least once in the RA dataset for a given medium. If none of the analytes are detected for a given sample, then the highest detection limit is the selected value for the calculated total, and a "U" qualifier is added to indicate the lack of detected values.

5.2 Toxicity Equivalent Calculations

Toxic equivalency factors (TEFs) are used in calculating dioxin TEQs. In 2005, the World Health Organization published TEFs for mammals (see Van den Berg et al. 2006) and for fish and birds (see Van den Berg et al., 1998). Relevant congener concentrations are multiplied by their associated TEFs to estimate toxicity relative to 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD). The resulting concentrations are summed. The dioxin TEQ is the sum of 17 dioxin and furan congeners weighted based on their toxicity relative to 2,3,7,8-TCDD. Dioxins are commonly regulated as dioxin TEQs, not as individual congeners. TEFs are applied to scale toxicity of other congeners, relative to the most toxic congener 2,3,7,8-TCDD, since much of the toxicological literature is based on 2,3,7,8-TCDD exposures. The use of dioxin TEQ concentrations for comparison with 2,3,7,8-TCDD screening criteria is therefore appropriate for developing risk estimates where applicable.

6 TIER I SCREENING

The purpose of the Tier I screening is to compare Site concentrations to the default ecological RBCs developed by DEQ to determine chemicals of potential ecological concern (CPECs) for further evaluation to determine ecological COCs. The approach used generally follows DEQ guidance (DEQ, 2020).

6.1 Chemicals of Interest

COIs were previously identified for evaluation at the Site and include metals, DRO, ORO, GRO, SVOCs including PCP and PAHs, PCBs, BTEX, formaldehyde, and dioxins/furans, as described in the 2020 Level I ERA (WSP 2020). The list of COIs are those that are known or suspected to be present based on prior investigations, and are identified based on site-specific sources of contamination. All data available for the Site were included in the Tier I screening assessment described in the next section.

6.2 Tier I Screening Assessment (CPEC Identification)

The screening assessment evaluates COIs that have the potential to result in unacceptable risks to the environment. CPECs are identified on the basis of background concentrations and chemical concentrations relative to conservative risk-based screening, as described below.

Background concentration—If the maximum detected concentration of a naturally occurring metal is less than the background value, the metal will not be selected as a CPEC regardless of whether its concentration exceeds an RBC. Soil concentrations are compared to the DEQ-developed background levels for the Klamath Mountains (DEQ 2013); a value was unavailable for cobalt and therefore a different literature source was used (Shacklette and Boergnen 1984). Concentrations are also compared to site-specific soil background concentrations determined by WSP using ISM samples for soil (DU8SS), and a discrete background sediment sample (PD09SD) collected by WSP upstream of the Site in Bagley Creek (WSP 2020). Metal and dioxin/furan concentrations from the site-specific soil background concentration sample were used to inform evaluations of concentrations relative to background conditions; however, if a concentration exceeded a site-specific concentration and not a regional background concentration, it was not considered an exceedance of the natural background since background sampling was limited.

Concentration-based risk screen—Ecological risk screening compares concentrations of chemicals to applicable ecological soil screening criteria. Chemicals which exceed an RBC at any location in soil or sediment are selected as CPECs for further evaluation.

Depth criteria—It is assumed that plants and animals can contact surface soils (up to 3 feet bgs) and biota on the Site consistent with DEQ ERA guidance; therefore, soil data collected from the surface to approximately 3 feet bgs were included for screening. In some cases, soil data were collected from 0 to 4 feet bgs and these data were included for evaluation.

Ecological screening criteria—RBCs identified in DEQ (2020) for soil, sediment, and surface water are applied. In addition, default bioaccumulation criteria identified in DEQ (2007) are applied for sediment.

Results—Table 6-1 provides the screening results for soil for discrete and three-point composite samples and Table 6-2 provides the screening results for soil ISM samples. Table 6-1 shows metals (antimony, barium, copper, lead, mercury, selenium, and zinc) and dioxins exceed RBCs at multiple locations. Some metals exceed RBCs but are consistent with background at all locations (e.g., chromium, cobalt, manganese, nickel, and vanadium). TPH (diesel+oil) exceed RBCs at one location (SL06GP01). Other COIs are below RBCs and are infrequently detected. All soil data are provided in Appendix E.

Table 6-2 shows ISM results for decision units developed for specific areas of interest at the Site. The results show metals and dioxins exceed RBCs at multiple locations. Some metals exceed RBCs but are consistent with background at all locations (e.g., chromium, cobalt, manganese, nickel, and vanadium). Dioxin TEQ exceeds the lowest available RBC and the site-specific background value of 2.97 picograms per gram (pg/g) in all decision units sampled.

Table 6-3 provides the screening results for sediment. Lead, mercury, and zinc exceed the sediment RBCs or background criteria protective of bioaccumulative effects in the former log pond at one to three locations. Dioxin TEQ exceeds the sediment RBC by more than ten times at three locations in the former log pond and all locations exceed bioaccumulative effects criteria. Total LPAHs marginally exceed the sediment RBC at two locations in the former log pond. Other SVOCs were largely non-detect or did not exceed RBCs.

Table 6-4 provides the screening results for surface water. Aluminum and iron total concentrations exceeded RBCs at one location (PD01SW), however, dissolved concentrations which represent the more bioavailable portion to receptors were below RBCs at all locations. Metals are therefore not further considered for surface water. Dioxin TEQ exceeded at multiple locations based on low-level detections. Other chemicals were non-detect or did not exceed RBCs.

In summary, the following CPECs are identified:

- **Soil:** metals (antimony, arsenic, barium, copper, lead, mercury, selenium, zinc), dioxins, and TPH (diesel+oil).
- **Sediment:** lead, mercury, zinc, dioxins, total LPAHs
- **Surface Water:** dioxins. Surface water is not further evaluated in this ERA. Detections of dioxins are likely related to concentrations observed in soils/sediments, and addressing these media is anticipated to account for surface water given the hydrophobic nature of these compounds. However, dioxins are considered an ecological COC for surface water.

7 TIER II SCREENING

The objective of this Tier II screening is to determine whether an area currently poses, or is reasonably likely to pose in the future, unacceptable risks to endpoint species. CPECs are further evaluated, using refined EPCs and RBCs, as appropriate, to identify ecological COCs from among the CPECs. This Tier II screening refines the conservative assumptions used in the Tier I screening assessment to provide more confident estimations of risk, provides information that supports development of any remedial actions that may be necessary, and serves as a scientific basis for regulatory actions for the site. The main components of this evaluation are problem formulation, exposure assessment, effects assessment, risk characterization, and uncertainty analysis.

7.1 Problem Formulation

Problem formulation typically identifies potential ecological stressors, ecological resources potentially at risk, and assessment endpoints for groups of ecological receptors (see Sections 3 and 4). Problem formulation supports the ecological CSM, which describes the relationship between potential exposure pathways and assessment endpoints (see Section 4).

7.2 Exposure Assessment

An exposure assessment estimates the type and magnitude of ecological exposure to CPECs. Exposure assessments include an evaluation of potential exposure pathways and the combination of EPCs and exposure factors for analysis of CPECs as discussed below.

7.2.1 Exposure Point Concentrations

EPCs should reflect the chemical exposure that ecological receptors are most likely to experience. For protection of populations, the upper-bound estimates of the mean (e.g., 90 percent upper confidence limits [UCLs]) can represent EPCs. EPCs used in soil exposure scenarios are based on 90 percent UCLs for discrete samples collected throughout Site soils. UCL outputs are provided in Appendix F.

Because discrete and ISM data cannot be effectively combined for analysis, EPCs were also developed for areas characterized using ISM. These EPCs represent average concentrations throughout the decision units sampled in specific areas of interest for the Site (i.e., where potentially significant historical operations occurred). EPCs are based on the ISM concentrations in each decision unit, wherein decision units are area-weighted based on their acreage to determine the EPCs for the areas of interest. Area-weighted concentrations are determined by calculating the product of a decision unit's relative area percentage and the analyte concentrations. The results for each decision unit are then summed to determine the overall area-weighted concentrations. In cases where ISM triplicates were collected, the average concentration is calculated for use in the area-weighted average.

EPCs used in sediment exposure scenarios are the 90 percent UCL.

EPCs calculated are summarized in Tables 7-1 and 7-2.

7.2.2 Background Screen

Based on the EPCs calculated, an initial soil and sediment background screen was conducted prior to further assessment. EPCs and background criteria are shown in Tables 7-1 and 7-2. Based on these results, EPCs for arsenic, barium, and selenium in soil are below natural background concentrations and are not further considered. Based on these results, antimony, copper, lead, mercury, zinc, dioxins, and TPH (diesel+oil) were carried forward for further evaluation for soil.

For sediment, the EPCs for lead is below natural background concentrations and is not further considered. Mercury, zinc, dioxins, and total LPAHs are further evaluated.

7.2.3 Exposure Factors

A receptor population is characterized by a number of factors, including frequency of contact with contaminated media, duration of exposure, and site use. For example, sediment direct-toxicity criteria developed for protection of benthos inherently assume that frequency of contact with impacted sediments is 100 percent, and do not account for changing conditions over time (e.g., deposition of clean sediments, biodegradation). Exposure factors for soil and sediment that are media- and receptor-specific inform refined RBCs, as further described in the following section.

7.3 Effects Assessment

Effects assessment includes an evaluation of data sources and types, and presents receptor-specific ecological effects concentrations for CPECs. Site-specific studies using site soils/sediments or resident or representative species tissue can provide most useful data on potential toxicity but are unavailable. Instead, RBCs appropriate for assessing soil and sediment toxicity and bioaccumulation potential are identified. Given the uncertainty inherent in the data and models used, multiple soil or sediment RBCs are often used to estimate adverse ecological effects. For example, lower-bound sediment criteria based on conservative (i.e., no-effects or threshold effects) toxicity criteria were applied in the Tier I screening. The direct toxicity and bioaccumulation RBCs applied here reflect more realistic predictions for ecological impacts and are considered more applicable for risk-management decisions.

7.3.1 Soil

Soil Tier II RBCs for plants, invertebrates, birds, and mammals were developed for the same receptor endpoints (plants, invertebrates, birds [American robin], mammals [shrew]) identified by DEQ (2020) for default RBC development, based on the following process. Tier II RBCs may be used for each assessment endpoint relevant to the site. If RBCs are refined, parameters modified to reflect site-specific conditions or receptors should be presented, along with documentation to support the refinement (DEQ 2020). The DEQ 2020 guidance aligns with Los Alamos National Laboratory (LANL) risk assessment procedures for RBC development, as discussed in DEQ (2020). For metals and dioxins, the default DEQ Tier I RBC for non-T&E species is based on the same methodologies for developing the Tier I RBC[5] presented in LANL (2019). LANL also provides for the development of a refined Tier II RBC as described in LANL (2017).[6] The LANL Tier II RBCs include the use of site-specific studies (bioassays, bioaccumulation) for plants, soil, invertebrates, and wildlife and the application of area use factors that are the fraction of a terrestrial animal's assessment population area potentially affected by a contaminated site to determine concentrations protective of wildlife populations.[7] LANL also provides a spreadsheet to calculate the Tier II RBCs. Based on the default assumptions provided in the spreadsheet, and an upland Site area of 2.9 hectares[8], the Tier II RBCs were calculated using the LANL-provided spreadsheet (see Appendix G).

As noted in LANL (2017), the protective assumptions used when applying Tier I RBCs are generally not characteristic of realistic wildlife population exposure or reflective of population toxicant susceptibility and these protective assumptions are inappropriate for determining cleanup goals. Cleanup goals generally correspond to chemical concentrations expected to cause minimal effects on

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5 These are termed ecological screening levels (ESLs) in LANL (2019). For example, the DEQ Tier I RBC of 0.25 ng/kg (for non-T&E species) for dioxin TEQ is based on the shrew (ground-feeding mammal) and is nearly equivalent to the lowest available LANL ESL of 0.29 ng/kg developed for the shrew.

6 These are termed ecological preliminary remediation goals (EcoPRGs) in LANL (2017).

7 See equation 2 in LANL (2017).

8 The upland site area was calculated based on upland areas encompassing sampled soil locations. For example, the ponds were not included in the calculation.

populations and communities and therefore the population-based Tier II RBCs are considered appropriate and sufficiently protective.

LANL does not provide Tier II RBCs for TPH (diesel+oil). The Washington Department of Ecology developed gasoline and diesel soil concentrations that are predicted to be protective of plants and soil biota, and the diesel criteria (which apply to the sum of diesel fuels and heavy oils) were adopted for the Tier II screening. Specifically, the criteria protective of plants is 1,600 mg/kg and the criteria protective of soil invertebrates is 260 mg/kg (Ecology, 2017).

7.3.2 Sediment Direct Toxicity

Benthic criteria account for chemical toxicity related to porewater uptake and direct or inadvertent ingestion of sediments. The Tier II sediment direct-toxicity criteria applied are MacDonald, Ingersoll, and Berger (2000) probable effects concentrations (PECs), which reflect concentrations above which adverse effects in sediments are probable.[9] The PEC values are based on extensive evaluations of the predictive ability of concentrations published in other commonly used data sources. Where PECs are unavailable, NOAA freshwater sediment screening criteria based on the probable effects level are often applied (Buchman, 2008). For dioxins and LPAHs, PECs are unavailable and the NOAA probable effects level and upper effects level, respectively, were available and selected to evaluate freshwater sediment toxicity. It is assumed that direct toxicity criteria account for less mobile or immobile aquatic organisms such as benthic invertebrates and early salmonid life-history stages where close contact with sediments is more common.

7.3.3 Sediment Bioaccumulation

Benthic criteria account for direct chemical toxicity and do not consider long-term bioaccumulative effects. Bioaccumulation is typically assessed in one of two ways: (1) direct measurement through the collection and analysis of tissue, or (2) modeling expected concentrations in tissue, applying default or site-specific assumptions. Appropriate tissue data are not available; therefore, RBCs for sediment based on site-specific and default assumptions are developed using standard models for organic chemicals (DEQ 2007; EPA 1997). Model assumptions include body weight, home range, and physical data (e.g., total organic carbon [TOC]), which are needed to estimate more accurately the percentage of time an animal would spend in a contaminated area and to estimate chemical bioavailability (DEQ 2007). Site-specific and receptor-specific exposure parameters are used to develop realistic exposure assumptions and to calculate bioaccumulation RBCs, describes as screening levels (SLs) in this section. Consistent with DEQ (2007), models are not developed for metals and RBCs are based on background concentrations. Consistent with DEQ (2007), mercury and dioxins are the only sediment CPECs identified as bioacummulatives for further evaluation.

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[9] The MacDonald, Ingersoll, and Berger (2000) threshold effects concentration criteria account for the threshold concentration or lower limit at which sediment toxicity to benthic invertebrates may occur.

7.3.3.1 Fish

The SL represents concentrations in sediment at and below which concentrations would not be expected to accumulate in fish tissue above acceptable tissue levels. The SL was calculated consistent with DEQ (2007) methodology as follows:

$SL_F = (f_{OC} * CTL) / (BSAF * f_L * SU)$

where:

SL_F is the fish screening level (milligrams per kilogram [mg/kg]).

f_{OC} is the fraction of total organic carbon in surface sediment (unitless). The f_{OC} is based on the 10^{th} percentile concentration detected in Site sediments, 6.43 percent TOC (WSP, 2020).

CTL is the critical tissue level for fish (mg/kg). CTLs presented in DEQ (2007) are applied and are protective of fish populations as well as individuals of threatened or endangered species. For dioxin congeners, the CTL is calculated as the DEQ (2007) reported CTL for 2,3,7,8-TCDD weighted by the congener-associated TEF for fish.

BSAF is the biota-sediment accumulation factor (kg sediment carbon/kg organism lipid). BSAFs presented in DEQ (2007) are applied.

f_L is the fraction of whole-body lipid content (unitless). Smallmouth bass lipid content was measured as part of the Lower Willamette Group's Portland Harbor remedial investigation/feasibility study (LWG 2016) and is applied as representative of resident fish. The average reported lipid content of 5.4 percent was applied (LWG 2016, Appendix G, Attachment 4b).

SU is the site use factor (unitless). SU is calculated based on the section of Bagley Creek and the ponds through the Site (approximately 1500 feet) relative to the assumed foraging range of the smallmouth bass (1.4 miles) for a ratio of 0.2, based on the median of the maximum distance traveled by smallmouth bass (LWG, 2016).

The SL development includes use of CTLs that are protective of threatened or endangered species and parameters that are expected to account for salmonids, if reintroduced to the Site. In addition, benthic criteria that account for chemical toxicity related to porewater uptake and direct or inadvertent ingestion of sediments are described in section 7.3.2. Values used in SL development and the model outputs are presented in Table 7-3.

7.3.3.2 Great Blue Heron

The SLs for the heron represent dioxin concentrations in sediment above which tissue residue levels in prey could adversely affect the health of birds that prey on fish or other aquatic organisms. Based on species presence in the general area and available toxicity and biological data, the great blue heron was the selected receptor for determining protection of piscivorous birds. Because no special-status bird species reside in the area of concern, LOAEL-based TRVs were used in SL development. SLs were calculated as follows:

$SL_B = (f_{OC} * ATL_B) / (BSAF * f_L * SU)$

where:

SL_B is the sediment bioaccumulation screening levels for piscivorous bird receptors (mg/kg).

f_{OC} is the fraction of total organic carbon in surface sediment (unitless). The f_{OC} is based on the 10^{th} percentile concentration detected in Site sediments, 6.43 percent TOC (WSP, 2020).

BSAF is the biota-sediment accumulation factor (kg sediment carbon/kg organism lipid). BSAFs presented in DEQ (2007) are applied.

f_L is the fraction of organism lipid content of whole-body wet weight (unitless). The default value (0.05) reported in DEQ (2007) is applied.

SU is the site use factor for the heron (unitless). SU is calculated as the ratio of the Bagley Creek and ponds area at the Site (approximately 5 hectares) to the heron home range. The home range reported in Butler (1991) of 1,000 hectares, is divided by an uncertainty factor of ten to arrive at a conservative home range of 100 hectares. Consideration of SU is appropriate for site-specific calculations (DEQ, 2007).

ATL_B is the acceptable tissue levels in diet (mg/kg). ATL_B represents the concentration of a chemical that a bird could consume that would result in a dose equal to a given LOAEL-based TRV (mg/kg-day) at or below which the population of bird receptors would be protected. ATL_B was calculated as follows:

$$ATL_B = LOAEL / (IR / BW)$$

where IR is the daily food ingestion rate (0.42 kg/day) and BW is body weight (2.39 kg) of the selected receptor bird (great blue heron) as reported in DEQ (2007). LOAEL-based TRVs presented for bird populations in DEQ (2007) were applied. This calculation is inherently conservative in that it assumes that herons are active year-round and that the diet consists entirely of fish.

For birds, the developing embryos are most sensitive to the effects of chemicals, including polychlorinated biphenyls and dioxins (DEQ, 2007). For these chemicals, an $ATL_{B\text{-}egg}$ (in mg/kg-egg) is developed using the population-based LOAELs for bird egg development (in mg/kg-day), based on osprey, as reported in DEQ (2007):

$$ATL_{B\text{-}egg} = LOAEL / BMF$$

where $ATL_{B\text{-}egg}$ is the acceptable tissue level in fish for protection of eggs of fish-eating birds (mg/kg) and BMF is the biomagnification factor from fish tissue to bird eggs (10 for dioxins), as reported in DEQ (2007).

Values used in SL development and the model outputs are presented in Table 7-4.

7.3.3.3 American Mink

The SLs for mammals represent concentrations in sediment above which tissue residue levels in prey could adversely affect the health of mammals that prey on fish or other aquatic organisms.

Thus, chemicals present in prey items at or below the SLs are predicted not to harm the most sensitive life stage of mammal predators. Mink was the selected receptor, based on available toxicity and biological data, for determining protection of piscivorous mammals. Because no ESA-listed mammal species reside in the area of concern, LOAEL-based TRVs were used in SL development. Their diet was assumed to consist entirely of fish. SLs were calculated as follows:

$$SL_M = (f_{OC} * ATL_M) / (BSAF * f_L * SU)$$

where:

SL_M is the sediment bioaccumulation SLs for piscivorous mammal receptors (mg/kg).

f_{OC} is the fraction of total organic carbon in surface sediment (unitless). The f_{OC} is based on the 10th percentile concentration detected in Site sediments, 6.43 percent TOC (WSP 2020).

BSAF is the biota-sediment accumulation factor for organic chemicals (kg sediment carbon/kg organism lipid); BSAFs presented in DEQ (2007) are applied.

f_L is the fraction of organism lipid content of whole-body wet weight (unitless). The default value (0.05) reported in DEQ (2007) is applied.

SU is the site use factor for the mink (unitless). SU is calculated based on the section of Bagley Creek and the ponds through the Site (approximately 1500 feet) relative to the lower-bound linear foraging distance of mink (1.85 km, or equivalently 6,070 feet) (Sample and Suter 1994).

ATL_M is the acceptable tissue levels in diet for mammals (mg/kg). ATL_M represents the concentration of a chemical that a mammal could consume that would result in a dose equal to a given LOAEL (mg/kg-day) at or below which the population of mammal receptors would be protected.

ATL_M was calculated as follows:

$$ATL_M = LOAEL / (IR / BW)$$

where IR is the daily food ingestion rate (0.137 kg/day) and BW is the body weight (1 kg) of the selected receptor mammal (mink) reported in DEQ (2007). This calculation is inherently conservative in that it assumes that mink are active year-round that the diet consists entirely of fish.

Values used in SL development and the model outputs are presented in Table 7-5.

7.4 Risk Characterization

Risk characterization integrates information from the exposure and effects assessments to estimate risks to representative species. Ecological COCs are identified using the following general equation for the two types of evaluations conducted, direct-toxicity-based screening and bioaccumulation-based screening:

$$RS_i = EPC_i / SL_i$$

where:

RS_i is the risk score for chemical "i" (unitless).

EPC_i is the exposure point concentration for chemical "i" in soil or sediment.

SL_i is the RBC or screening level for chemical "i" in soil or sediment.

Note that higher RSs are not necessarily reflective of severity of impacts but instead suggest greater likelihood of adverse impacts.

7.4.1 Ecological COC Selection

Risk-based ecological COCs are selected under the following conditions (DEQ 2007, 2020):

- Chemicals for which RS exceeds 1 in soil are selected as COCs for exposures to populations of species.
- Chemicals for which RS exceeds 1 in sediment are selected as COCs for exposures to individual receptors or populations of species.
- The sum of the RS for chemicals exceeds 1 and the individual RS for the chemical exceeds 0.1, to account for potential cumulative effects. Note that DEQ's preference is to retain chemicals with scores greater than 0.1 for evaluation due to potential unacceptable cumulative risk, unless another approach is acceptable to the department. Chemicals that screen in for cumulative risk, but where the RS is less than 1 on an individual basis, should be retained for any future site characterization or monitoring events, and considered within the lines of evidence evaluation in risk characterization.

7.4.2 Risk Characterization Results

Risk characterization results for CPECs are described below by area, exposure media, and receptor groups. Uncertainties associated with the evaluations are discussed in Section 7.5.

7.4.3 Soil

Risk estimates are summarized in Tables 7-6 through 7-9 for terrestrial plants, invertebrates, birds, and mammals, respectively. Based on these results, dioxins are identified as an ecological soil COC for mammals. RS for other chemicals and receptors do not exceed 1.0, and these are not identified as COCs based on individual or cumulative risk potential.

EPCs are based on the area-wide concentrations for discrete samples throughout the Site and ISM samples collected in areas of interest. These results show that for dioxins, the potential for unacceptable risk is primarily driven by the elevated concentrations observed near the south wigwam burner (e.g., decision units 5 through 7; SS-7), which represents a localized area with more elevated concentrations.

7.4.4 Sediment

Risk estimates are summarized in Tables 7-10 through 7-13 for sediments.

7.4.4.1 Direct-Contact Toxicity

The RS based on the EPC for dioxin TEQ in surface sediment exceeds 1.0 (see Table 7-10). These results indicate that there is potential for adverse effects to relatively immobile receptors such as benthic individuals. These results are driven by elevated concentrations in the northern end of the former log pond (PD01SD-03SD). In contrast, concentrations in the southern portion of the pond and the former fire suppression pond are well below the PEC as well as the default DEQ RBC. These results suggest that dioxins, should not be expected to result in unacceptable risk to the local benthic community and other immobile receptors in these areas. RS for mercury and zinc are less than 1.0, but are retained as COCs to account for potential cumulative risks (RS greater than 0.1).

7.4.4.2 Bioaccumulation

The RS based on EPCs for protection of fish do not exceed 1.0, and the cumulative RS is less than 1.0[10] (see Table 7-11). These results indicate that associated adverse effects should not be expected, particularly since locations other than the northern portion of the former log pond showed lower concentrations and fish are not expected to reside in a particular location for extended periods of time.

Evaluation of bioaccumulation risks to bird (see Table 7-12) and mammal (see Table 7-13) populations show qualitatively similar results. Risk estimates do not exceed 1.0, cumulative RS does not exceed 1.0, and unacceptable adverse effects to birds (including developing embryos) and mammals are not expected. As noted above, more elevated concentrations occur in the northern portion of the former log pond and birds and mammals are not expected to consume prey from a particular location for extended periods of time.

7.5 Uncertainty Evaluation

Uncertainty is inherent in all ERAs, and is often related to uncertainties in exposure assessment and effects assessment. Sampling and analysis were conducted for soil and, for the purposes of this ERA, it is assumed that the samples collected adequately represent exposure conditions typically encountered by ecological receptors. Effects data can contribute to overall uncertainty in risk characterization. The use of toxicity data that are not site-specific and the absence of site-specific data (e.g., toxicity or tissue tests) provide uncertainty with regard to risk characterization conclusions, as site-specific conditions (e.g., TOC) can play a significant role in controlling organic contaminant bioavailability and uptake. TOC at the Site is somewhat elevated, likely reflecting historical operations. At higher concentrations, TOC-based modelling may overestimate chemical binding to carbon. To help mitigate underestimates of risk, a low-end 10th percentile TOC value was used in models.

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[10] Note that mercury RS was not included in the cumulative RS, since the RS is not based on risk-based criteria but rather on natural background concentration.

One source of potential uncertainty is the food web model. All modeling approaches are inherently uncertain because of the variability of values associated with input parameters such as the literature-derived uptake factors and TRVs. Because these parameters do not necessarily correlate to the site of investigation, results of the risk calculations are themselves uncertain. For example, the uptake factors tend to be species-specific and affected by environmental factors such as soil characteristics. TRVs are typically derived using 2,3,7,8-TCDD in test organisms, and it is assumed that the TEQ approach (i.e., scaling other congeners relative to 2,3,7,8-TCDD toxicity) adequately represents potential toxicity. In addition, TRVs are typically based on a relatively small number of studies and species and thus there is some uncertainty regarding the actual sensitivities of the representative species. Other assumptions, including year-round species presence, likely lead to overestimates of risk when assessing population-based effects. Selection of representative species and associated parameters (e.g., body weight, home range) provide additional uncertainty. For example, the food and soil ingestion rates that were used to estimate receptor exposure are derived from the scientific literature, rather than from site-specific studies.

Effects data can further contribute to overall uncertainty in risk characterization. Selected sediment toxicity criteria for benthic invertebrates are derived based on multiple test results for various species; however, certain organisms may be more or less sensitive than indicated by the criteria, and assessment of direct toxicity to more immobile benthic fish such as early-life stage salmonids provides some uncertainty. Use of toxicity data that are not site-specific and the absence of site-specific data (e.g., toxicity or tissue tests) provide some uncertainty with regard to risk characterization conclusions, as site-specific conditions (e.g., TOC) can play a significant role in controlling organic chemical bioavailability and uptake.

Another source of potential uncertainty is the bioaccumulation SLs. Uncertainty is also associated with use of literature-derived BSAFs, toxicity values (i.e., LOAELs), and CTLs. Because these parameters do not necessarily correlate to the site of investigation, results of the risk calculations are themselves uncertain. For example, the BSAF tends to be species-specific and affected by environmental factors such as grain size and organic carbon. However, site-specific organic carbon results were applied. For fish, the BSAF can vary as a result of food web trophic transfer, lack of equilibrium between the sediments and the water column, variation in benthic-pelagic coupling, and metabolic breakdown of chemicals. Similarly, LOAELs and CTLs are based on lower-bound toxicity thresholds, which may lead to overestimates of risk. However, the use of CTLs that are protective of individual fish were applied to help account for potential introduction of Coho under restored conditions. Other assumptions, including 100 percent fish dietary intake and year-round species presence, may lead to overestimates. Certain types of tissue data (e.g., pertaining to benthic invertebrates, fish) that can be used to further parameterize bioaccumulation models and reduce model uncertainty are unavailable; however, site-specific data were incorporated as available to reduce uncertainty.

7.6 Future Conditions

Future conditions at the Site will include restoration of fish habitat along Bagley Creek and in the vicinity of the former log pond and former fire suppression pond. Proposed habitat restoration may reintroduce Coho salmon to the Site. Based on discussions with WRLT, current plans include soil and sediment removal along the perimeter of the former log pond and removal of a beaver dam along the northern side of the former log pond (se Appendix H). Sediment and soil that are removed from these areas may be placed on upland portions of the Site to allow for restoration of the creek.

This restoration activity will result exposing subsurface soil to the surface. Based on a preliminary review of subsurface data (soil collected at depths greater than 3 feet bgs), concentrations of dioxin/furans largely decrease with depth, as observed in the data from boring locations along the northern perimeter of the former log pond (SL23TP, SL24TP, SL25TP). These results suggest that the current risk observed would not be increased by restoration activities. However, it is recommended data are reviewed once restoration plans are further refined.

Based on the results of this ERA for current conditions, it is observed that restoration activities that could mitigate elevated concentrations in localized areas (e.g., the southern wigwam upland, as well as the northern portion of the former log pond) should be considered.

8 ECOLOGICAL HOT SPOT IDENTIFICATION

Potential hot spots are defined as those ecological COCs present in concentrations exceeding RBCs corresponding to 10x the acceptable risk level for exposure to individual hazardous substances. COCs with sample locations exceeding an RS of 10 should be identified as potential hot spots in the ERA. A final determination of hot spots, for which there is a preference for removal or treatment, is typically made in a feasibility study. This determination is made after considering factors other than toxicity, such as how likely COCs are to migrate, and the extent to which they may be reliably contained. However, it is noted that sediment concentrations do not exceed 10x the sediment toxicity RBC identified (215 pg/g dioxin TEQ), and soil concentrations exceed 10x the upland soil RBC identified (110 pg/g) in limited locations at the former wigwam burner and near vicinity (SS-2 and SS-7).

9 SUMMARY

Ecological COCs identified in this ERA are summarized as follows:

- **Soil:** Dioxin TEQ for mammal populations. Dioxins are most significantly elevated near the elevated concentrations observed near the south wigwam burner and near vicinity. A point-by-point screening of Tier II dioxin TEQ soil exceedance results is shown in Figure 9-1.
- **Sediment:** Dioxin TEQ for sediment direct toxicity. Dioxins are most significantly elevated in the northern end of the former log pond (PD01SD-03SD). In contrast, concentrations in the southern portion of the pond and the former fire suppression pond are at concentrations not be expected to result in unacceptable risk to the local benthic community and other immobile receptors in these areas. Mercury and zinc are retained as

COCs to account for potential cumulative risks. A point-by-point screening of Tier II dioxin TEQ sediment exceedance results is shown in Figure 9-1.

- **Surface Water:** Dioxin TEQ. Detections of dioxins in surface water are likely related to concentrations observed in soils/sediments, and addressing these media is anticipated to account for surface water given the hydrophobic nature of these compounds.

LIMITATIONS

The services undertaken in completing this report were performed consistent with generally accepted professional consulting principles and practices. No other warranty, express or implied, is made. These services were performed consistent with our agreement with our client. This report is solely for the use and information of our client unless otherwise noted. Any reliance on this report by a third party is at such party's sole risk.

Opinions and recommendations contained in this report apply to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. We do not warrant the accuracy of information supplied by others, or the use of segregated portions of this report.

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TABLES

MAUL FOSTER ALONGI

Table 6-1
Ecological Soil Analytical Results
Wild River Land Trust
Port Orford, Oregon

Location:	DEQ Ecological RBC, Soil, Direct Toxicity[1]		DEQ Ecological RBC, Soil, Ground Feeding[1]		DEQ Ecological RBC, Soil, Top Consumer[1]		DEQ Background Metals, Klamath Mountains[2]	Site-specific Background	OP02TP01	S13_S14_S15-COMP	S16_S17_S18-COMP	S19_S20_S21-COMP	S22	S23	S24
Sample Name:								DU08SS	JLTR9	9358-181113-COMP-01	9358-181113-COMP-02	9358-181115-COMP-03	9358-181115-021	9358-181115-016	9358-181115-017
Collection Date:	Invertebrates	Plants	Bird, Non-TE	Mammal, Non-TE	Bird, Non-TE	Mammal, Non-TE		9/12/2020	9/11/2020	11/13/2018	11/13/2018	11/15/2018	11/15/2018	11/15/2018	11/15/2018
Collection Depth (ft bgs):								0-4 cm	1-2	0-1	0-1	0-1	0-1	0-1	0-1
Total Metals (mg/kg)															
Aluminum	(a)	(a)	(a)	(a)	(a)	(a)	NV	22,200	24,200	--	--	--	--	--	--
Antimony	78	11	NV	2.7	NV	49	0.59	0.094	0.9 U	0.755 J	0.973 J	1.11 J	3 U	1.29 U	2.46 U
Arsenic	6.8	18	32	31	1,000	290	12	4.18	3.4	1.39	0.853 J	2.75	2.76 U	1.18 U	2.27 U
Barium	330	110	1,200	8,700	13,000	44,000	630	81.3	142	--	--	--	--	--	--
Beryllium	40	2.5	NV	42	NV	110	1.4	0.35	0.6	0.0824 U	0.0869 U	0.0831 U	0.42 U	0.18 U	0.345 U
Cadmium	140	32	1.6	4	7.7	1,700	0.52	0.375	0.17 J*	0.0824 U	0.118 J	0.0831 U	1.49	0.18 U	0.345 U
Calcium	NV	NV	NV	NV	NV	NV	NV	4340	6220	--	--	--	--	--	--
Chromium	NV	NV	73	1,600	560	10,000	890	67.1	70.5	58.5	81.7	64.2	73.7	86.9	42.5
Cobalt	NV	13	170	640	1,400	3,300	3 - 50	23.1	17	--	--	--	--	--	--
Copper	80	70	43	70	240	1,600	110	57.3	73.7	57.3	80.3	70.5	459	52.6	44.7
Iron	NV	NV	NV	NV	NV	NV	NV	30300	30,900	--	--	--	--	--	--
Lead	1,700	120	23	170	160	1,600	36	15.2	25.4 J	11	31.5	56.6	330	9.05	42.6
Magnesium	NV	NV	NV	NV	NV	NV	NV	11700	9,600	--	--	--	--	--	--
Manganese	450	220	2,700	5,400	50,000	34,000	3,000	1140	744	--	--	--	--	--	--
Mercury	0.05	34	0.13	17	0.58	130	0.17	0.066	0.1 U	0.0534	0.119	0.149	0.818 J*	0.083	0.092 J
Nickel	280	38	81	21	440	580	630	69.8	78	75.2	83.3	71.5	91.5	76.7	30.2
Potassium	NV	NV	NV	NV	NV	NV	NV	1060	2570	--	--	--	--	--	--
Selenium	4.1	0.52	1.4	1	7.5	33	0.8	NV	2.2 U	0.73 U	0.77 U	0.736 U	3.72 U	1.6 U	3.05 U
Silver	NV	560	26	140	130	10,000	0.16	0.067	0.84 J*	0.141 U	0.149 U	0.142 U	0.826 J	0.309 U	0.591 U
Sodium	NV	NV	NV	NV	NV	NV	NV	174	362 J*	--	--	--	--	--	--
Thallium	NV	0.05	45	4.2	480	50	0.31	0.076	0.45 U	0.589 U	0.621 U	0.594 U	3 U	1.29 U	2.46 U
Vanadium	NV	60	9.5	610	110	1,600	290	75.8	58 J	--	--	--	--	--	--
Zinc	120	160	120	980	590	30,000	140	93.1	171	84.7	131	162	899	93.1	49.6
PCB Aroclors (mg/kg)															
Total PCBs[b]	NV	160	0.24	0.073	1.9	6.9	NV	NV	--	0.00632 U	0.00667 U	0.00637 U	0.0507	0.0138 U	0.0265 U
Dioxins (pg/g)															
1,2,3,4,6,7,8-HpCDD	NV	NV	1,500	7	15,000	11	NV	41	72	--	--	--	--	--	--
1,2,3,4,6,7,8-HpCDF	NV	NV	230	11	2,300	17	NV	10.4	8	--	--	--	--	--	--
1,2,3,4,7,8,9-HpCDF	NV	NV	230	11	2,300	17	NV	0.73 J	0.94 J*	--	--	--	--	--	--
1,2,3,4,7,8-HxCDD	NV	NV	51	1.2	500	1.8	NV	0.811 J	5.5	--	--	--	--	--	--
1,2,3,4,7,8-HxCDF	NV	NV	23	1.1	230	1.7	NV	0.868 J	1.3 J*	--	--	--	--	--	--
1,2,3,6,7,8-HxCDD	NV	NV	190	0.89	1,900	1.4	NV	2.09 J	11	--	--	--	--	--	--
1,2,3,6,7,8-HxCDF	NV	NV	23	1.1	230	1.7	NV	0.679 J	1.5 J*	--	--	--	--	--	--
1,2,3,7,8,9-HxCDD	NV	NV	19	0.89	190	1.4	NV	1.54 J	15	--	--	--	--	--	--
1,2,3,7,8,9-HxCDF	NV	NV	30	1.4	300	2.2	NV	0.33 U	0.71 J*	--	--	--	--	--	--
1,2,3,7,8-PeCDD	NV	NV	5.9	0.28	59	0.43	NV	0.61 J	7.9	--	--	--	--	--	--
1,2,3,7,8-PeCDF	NV	NV	41	6.5	400	9.8	NV	0.353 J	0.71 J*	--	--	--	--	--	--
2,3,4,6,7,8-HxCDF	NV	NV	23	1.1	230	1.7	NV	1.01 J	2.2 J*	--	--	--	--	--	--
2,3,4,7,8-PeCDF	NV	NV	4.1	0.65	40	0.98	NV	0.878 J	1.6 J*	--	--	--	--	--	--
2,3,7,8-TCDD	5,000,000	NV	5.2	0.25	52	0.38	NV	0.669	3.3	--	--	--	--	--	--
2,3,7,8-TCDF	NV	NV	6.4	3	63	4.6	NV	0.424 J	0.75 J*	--	--	--	--	--	--
OCDD	NV	NV	19,000	300	190,000	460	NV	364	200	--	--	--	--	--	--
OCDF	NV	NV	14,000	220	140,000	340	NV	36	9.4 J*	--	--	--	--	--	--
Dioxin/furan TEQ (avian)[c][3]	5,000,000	NV	5.2	NV	52	NV	NV	3.31	16 J*	--	--	--	--	--	--

Location:	DEQ Ecological RBC, Soil, Direct Toxicity(1)		DEQ Ecological RBC, Soil, Ground Feeding(1)		DEQ Ecological RBC, Soil, Top Consumer(1)		DEQ Background Metals, Klamath Mountains(2)	Site-specific Background	OP02TP01	S13_S14_S15-COMP	S16_S17_S18-COMP	S19_S20_S21-COMP	S22	S23	S24
Sample Name:								DU08SS	JLTR9	9358-181113-COMP-01	9358-181113-COMP-02	9358-181115-COMP-03	9358-181115-021	9358-181115-016	9358-181115-017
Collection Date:	Invertebrates	Plants	Bird, Non-TE	Mammal, Non-TE	Bird, Non-TE	Mammal, Non-TE		9/12/2020	9/11/2020	11/13/2018	11/13/2018	11/15/2018	11/15/2018	11/15/2018	11/15/2018
Collection Depth (ft bgs):								0-4 cm	1-2	0-1	0-1	0-1	0-1	0-1	0-1
Dioxin/furan TEQ (mammal)(d)(4)	5,000,000	NV	NV	0.25	NV	0.38	NV	2.97	16 J*	--	--	--	--	--	--
TPH (mg/kg)															
Gasoline-Range Hydrocarbons	120	120	5,000	5,000	5,000	5,000	NV	NV	--	15.7 U	1.63 J*	1.59 J*	15.9 U	3.75 J	13.2 U
Diesel-Range Hydrocarbons	NV	NV	NV	NV	NV	NV	NV	NV	--	17.3	--	--	15.9 U	--	15.7
Lube-Oil-Range Hydrocarbons	NV	NV	NV	NV	NV	NV	NV	NV	--	94.8	--	--	79.3	--	42.4
Total Diesel+Oil(e)	260	260	6,000	6,000	6,000	6,000	NV	NV	--	112	--	--	87	--	58.1
TPH with Silica-Gel Treatment (mg/kg)															
Diesel-Range Hydrocarbons	NV	NV	NV	NV	NV	NV	NV	NV	--	--	22.4 J*	14.6 J	--	3.42 U	--
Lube-Oil-Range Hydrocarbons	NV	NV	NV	NV	NV	NV	NV	NV	--	--	224 J*	121	--	14.9 J	--
Total Diesel+Oil(e)	260	260	6,000	6,000	6,000	6,000	NV	NV	--	--	246 J*	136 J	--	16.6 J	--
SVOCs (mg/kg)															
1,1'-Biphenyl	NV	NV	NV	NV	NV	NV	NV	NV	0.21 UJ	--	--	--	--	--	--
1,2,4,5-Tetrachlorobenzene	NV	NV	NV	NV	NV	NV	NV	NV	0.21 UJ	--	--	--	--	--	--
1,4-Dioxane	NV	NV	NV	3.6	NV	180	NV	NV	0.081 UJ	--	--	--	--	--	--
2,3,4,6-Tetrachlorophenol	NV	NV	NV	NV	NV	NV	NV	NV	0.21 UJ	--	--	--	--	--	--
2,4,5-Trichlorophenol	NV	NV	NV	NV	NV	NV	NV	NV	0.21 UJ	0.122 U	0.129 U	0.123 U	0.125 U	0.268 U	0.512 U
2,4,6-Trichlorophenol	NV	NV	NV	NV	NV	NV	NV	NV	0.21 UJ	0.0917 U	0.0967 U	0.0925 U	0.0934 U	0.201 U	0.384 U
2,4-Dichlorophenol	NV	NV	NV	NV	NV	NV	NV	NV	0.21 UJ	0.0878 U	0.0926 U	0.0886 U	0.0895 U	0.192 U	0.367 U
2,4-Dimethylphenol	NV	NV	NV	NV	NV	NV	NV	NV	0.21 UJ	0.555 U	0.585 U	0.559 U	0.565 U	1.21 U	2.32 U
2,4-Dinitrophenol	NV	NV	NV	NV	NV	NV	NV	NV	0.4 UJ	1.15 U	1.22 U	1.16 U	1.18 U	2.52 U	4.83 U
2,4-Dinitrotoluene	NV	NV	NV	NV	NV	NV	NV	NV	0.21 UJ	--	--	--	--	--	--
2,6-Dinitrotoluene	NV	NV	NV	NV	NV	NV	NV	NV	0.21 UJ	--	--	--	--	--	--
2-Chloronaphthalene	NV	NV	NV	NV	NV	NV	NV	NV	0.21 UJ	--	--	--	--	--	--
2-Chlorophenol	NV	NV	3.9	5.4	140	3,400	NV	NV	0.21 UJ	0.0979 U	0.103 U	0.0986 U	0.0997 U	0.214 U	0.409 U
2-Methylnaphthalene	NV	NV	NV	160	NV	49,000	NV	NV	0.21 R	--	--	--	--	--	--
2-Methylphenol	NV	0.67	NV	5,800	NV	190,000	NV	NV	0.4 UJ	0.116 U	0.122 U	0.117 U	0.118 U	0.254 U	0.486 U
2-Nitroaniline	NV	NV	NV	10	NV	4,400	NV	NV	0.21 UJ	--	--	--	--	--	--
2-Nitrophenol	NV	NV	NV	NV	NV	NV	NV	NV	0.21 UJ	0.153 U	0.161 U	0.154 U	0.156 U	0.335 U	0.64 U
3- & 4-Methylphenol (m,p-Cresol)	NV	NV	NV	NV	NV	NV	NV	NV	--	0.0922 U	0.0972 U	0.093 U	0.0939 U	0.202 U	0.386 U
3,3-Dichlorobenzidine	NV	NV	NV	NV	NV	NV	NV	NV	0.4 UJ	--	--	--	--	--	--
3-Nitroaniline	NV	NV	NV	NV	NV	NV	NV	NV	0.4 UJ	--	--	--	--	--	--
4,6-Dinitro-2-methylphenol	NV	NV	NV	NV	NV	NV	NV	NV	0.4 UJ	1.46 U	1.54 U	1.47 U	1.49 U	3.19 U	6.11 U
4-Bromophenylphenyl ether	NV	NV	NV	NV	NV	NV	NV	NV	0.21 UJ	--	--	--	--	--	--
4-Chloro-3-methylphenol	NV	NV	NV	NV	NV	NV	NV	NV	0.21 UJ	0.0562 U	0.0592 U	0.0566 U	0.0572 U	0.123 U	0.235 U
4-Chloroaniline	1.8	1	NV	NV	NV	NV	NV	NV	0.4 UJ	--	--	--	--	--	--
4-Chlorophenylphenyl ether	NV	NV	NV	NV	NV	NV	NV	NV	0.21 UJ	--	--	--	--	--	--
4-Methylphenol	NV	NV	NV	NV	NV	NV	NV	NV	0.4 UJ	--	--	--	--	--	--
4-Nitroaniline	NV	NV	NV	NV	NV	NV	NV	NV	0.4 UJ	--	--	--	--	--	--
4-Nitrophenol	NV	NV	NV	NV	NV	NV	NV	NV	0.4 UJ	0.618 U	0.652 U	0.623 U	0.63 U	1.35 U	2.59 U
Acenaphthene	NV	0.25	NV	1,300	NV	290,000	NV	NV	0.21 R	--	--	--	--	--	--
Acenaphthylene	NV	NV	NV	1,200	NV	280,000	NV	NV	0.21 R	--	--	--	--	--	--
Acetophenone	NV	NV	NV	NV	NV	NV	NV	NV	0.4 UJ	--	--	--	--	--	--
Anthracene	NV	6.8	NV	2,100	NV	380,000	NV	NV	0.21 R	--	--	--	--	--	--
Atrazine	NV	NV	NV	NV	NV	NV	NV	NV	0.4 UJ	--	--	--	--	--	--
Benzaldehyde	NV	NV	NV	NV	NV	NV	NV	NV	0.4 UJ	--	--	--	--	--	--

Location:	DEQ Ecological RBC, Soil, Direct Toxicity[1]		DEQ Ecological RBC, Soil, Ground Feeding[1]		DEQ Ecological RBC, Soil, Top Consumer[1]		DEQ Background Metals, Klamath Mountains[2]	Site-specific Background	OP02TP01	S13_S14_S15-COMP	S16_S17_S18-COMP	S19_S20_S21-COMP	S22	S23	S24
Sample Name:								DU08SS	JLTR9	9358-181113-COMP-01	9358-181113-COMP-02	9358-181115-COMP-03	9358-181115-021	9358-181115-016	9358-181115-017
Collection Date:	Invertebrates	Plants	Bird, Non-TE	Mammal, Non-TE	Bird, Non-TE	Mammal, Non-TE		9/12/2020	9/11/2020	11/13/2018	11/13/2018	11/15/2018	11/15/2018	11/15/2018	11/15/2018
Collection Depth (ft bgs):								0-4 cm	1-2	0-1	0-1	0-1	0-1	0-1	0-1
Benzo(a)anthracene	NV	18	7.3	34	64	1,100	NV	NV	0.21 R	--	--	--	--	--	--
Benzo(a)pyrene	NV	NV	NV	190	NV	11,000	NV	NV	0.21 R	--	--	--	--	--	--
Benzo(b)fluoranthene	NV	18	NV	440	NV	24,000	NV	NV	0.21 R	--	--	--	--	--	--
Benzo(ghi)perylene	NV	NV	NV	250	NV	36,000	NV	NV	0.21 R	--	--	--	--	--	--
Benzo(k)fluoranthene	NV	NV	NV	NV	NV	NV	NV	NV	0.21 R	--	--	--	--	--	--
Bis(2-chloro-1-methylethyl)ether	NV	NV	NV	NV	NV	NV	NV	NV	0.4 UJ	--	--	--	--	--	--
Bis(2-chloroethoxy)methane	NV	NV	NV	NV	NV	NV	NV	NV	0.21 UJ	--	--	--	--	--	--
Bis(2-chloroethyl)ether	NV	NV	NV	NV	NV	NV	NV	NV	0.4 UJ	--	--	--	--	--	--
Bis(2-ethylhexyl)phthalate	NV	NV	0.2	6	0.96	1,700	NV	NV	0.21 UJ	--	--	--	--	--	--
Butylbenzylphthalate	NV	NV	NV	900	NV	74,000	NV	NV	0.21 UJ	--	--	--	--	--	--
Caprolactam	NV	NV	NV	NV	NV	NV	NV	NV	0.4 UJ	--	--	--	--	--	--
Carbazole	NV	NV	NV	790	NV	130,000	NV	NV	0.4 UJ	--	--	--	--	--	--
Chrysene	NV	NV	NV	31	NV	1,100	NV	NV	0.21 R	--	--	--	--	--	--
Dibenzo(a,h)anthracene	NV	NV	NV	140	NV	8,500	NV	NV	0.21 R	--	--	--	--	--	--
Dibenzofuran	NV	6.1	NV	NV	NV	NV	NV	NV	0.21 UJ	--	--	--	--	--	--
Diethyl phthalate	NV	100	NV	18,000	NV	3,200,000	NV	NV	0.21 UJ	--	--	--	--	--	--
Dimethyl phthalate	10	NV	NV	400	NV	57,000	NV	NV	0.21 UJ	--	--	--	--	--	--
Di-n-butyl phthalate	NV	160	0.11	450	0.52	50,000	NV	NV	0.21 UJ	--	--	--	--	--	--
Di-n-octyl phthalate	NV	NV	NV	4.6	NV	2,300	NV	NV	0.4 UJ	--	--	--	--	--	--
Fluoranthene	10	NV	NV	220	NV	39,000	NV	NV	0.4 R	--	--	--	--	--	--
Fluorene	3.7	NV	NV	510	NV	100,000	NV	NV	0.21 R	--	--	--	--	--	--
Hexachlorobenzene	10	10	0.79	2	3.7	590	NV	NV	0.21 UJ	--	--	--	--	--	--
Hexachlorobutadiene	NV	NV	NV	NV	NV	NV	NV	NV	0.21 UJ	--	--	--	--	--	--
Hexachlorocyclopentadiene	NV	NV	NV	NV	NV	NV	NV	NV	0.4 UJ	--	--	--	--	--	--
Hexachloroethane	NV	NV	NV	NV	NV	NV	NV	NV	0.21 UJ	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	NV	NV	NV	710	NV	46,000	NV	NV	0.21 R	--	--	--	--	--	--
Isophorone	NV	NV	NV	NV	NV	NV	NV	NV	0.21 UJ	--	--	--	--	--	--
Naphthalene	NV	1	34	27	780	16,000	NV	NV	0.21 R	--	--	--	--	--	--
Nitrobenzene	2.2	NV	NV	48	NV	41,000	NV	NV	0.21 UJ	--	--	--	--	--	--
N-Nitrosodiphenylamine	NV	NV	NV	NV	NV	NV	NV	NV	0.21 UJ	--	--	--	--	--	--
N-Nitrosodipropylamine	NV	NV	NV	NV	NV	NV	NV	NV	0.21 UJ	--	--	--	--	--	--
Pentachlorophenol	31	5	3.6	8.1	17	85	NV	NV	0.4 R	0.565 U	0.596 U	0.57 U	0.576 U	1.24 U	2.36 U
Phenanthrene	5.5	NV	NV	110	NV	19,000	NV	NV	0.21 R	--	--	--	--	--	--
Phenol	1.8	0.79	NV	370	NV	430,000	NV	NV	0.4 UJ	0.0818 U	0.0863 U	0.0825 U	0.0833 U	0.179 U	0.342 U
Pyrene	10	NV	330	230	1,600	31,000	NV	NV	0.21 R	--	--	--	--	--	--
SVOCs by SIM (mg/kg)															
1-Methylnaphthalene	NV	NV	NV	NV	NV	NV	NV	NV		0.00293 J	0.00248 U	0.00284 J	0.00498 J	0.00515 U	0.00985 U
2-Chloronaphthalene	NV	NV	NV	NV	NV	NV	NV	NV		0.00236 U	0.00248 U	0.00237 U	0.0024 U	0.00515 U	0.00985 U
2-Methylnaphthalene	NV	NV	NV	160	NV	49,000	NV	NV	0.0012 J*	0.00413 J	0.00365 J	0.00508 J	0.00514 J	0.00515 U	0.00985 U
Acenaphthene	NV	0.25	NV	1,300	NV	290,000	NV	NV	0.004 U	0.000707 U	0.000745 U	0.000712 U	0.00072 U	0.00155 U	0.00296 U
Acenaphthylene	NV	NV	NV	1,200	NV	280,000	NV	NV	0.004 U	0.000707 U	0.000745 U	0.000712 U	0.00072 U	0.00155 U	0.00296 U
Anthracene	NV	6.8	NV	2,100	NV	380,000	NV	NV	0.004 U	0.000707 U	0.000745 U	0.000992 J	0.000899 J	0.00155 U	0.00296 U
Benzo(a)anthracene	NV	18	7.3	34	64	1,100	NV	NV	0.0035 J*	0.00139 J	0.00116 J	0.00254 J	0.00186 J	0.00155 U	0.00296 U
Benzo(a)pyrene	NV	NV	NV	190	NV	11,000	NV	NV	0.0018 J*	0.000809 J	0.00106 J	0.00212 J	0.00259 J	0.00155 U	0.00296 U
Benzo(b)fluoranthene	NV	18	NV	440	NV	24,000	NV	NV	0.0078 J	0.0026 J	0.00302 J	0.00388 J	0.00512 J	0.00155 U	0.00296 U
Benzo(ghi)perylene	NV	NV	NV	250	NV	36,000	NV	NV	0.0021 J*	0.00151 J	0.00176 J	0.00192 J	0.00411 J	0.00155 U	0.00296 U

Table 6-1
Ecological Soil Analytical Results
Wild River Land Trust
Port Orford, Oregon

Location:	DEQ Ecological RBC, Soil, Direct Toxicity[1]		DEQ Ecological RBC, Soil, Ground Feeding[1]		DEQ Ecological RBC, Soil, Top Consumer[1]		DEQ Background Metals, Klamath Mountains[2]	Site-specific Background	OP02TP01	S13_S14_S15-COMP	S16_S17_S18-COMP	S19_S20_S21-COMP	S22	S23	S24
Sample Name:								DU08SS	JLTR9	9358-181113-COMP-01	9358-181113-COMP-02	9358-181115-COMP-03	9358-181115-021	9358-181115-016	9358-181115-017
Collection Date:	Invertebrates	Plants	Bird, Non-TE	Mammal, Non-TE	Bird, Non-TE	Mammal, Non-TE		9/12/2020	9/11/2020	11/13/2018	11/13/2018	11/15/2018	11/15/2018	11/15/2018	11/15/2018
Collection Depth (ft bgs):								0-4 cm	1-2	0-1	0-1	0-1	0-1	0-1	0-1
Benzo(k)fluoranthene	NV	NV	NV	NV	NV	NV	NV	NV	0.004 U	0.000707 U	0.000745 U	0.00118 J	0.00121 J	0.00155 U	0.00296 U
Chrysene	NV	NV	NV	31	NV	1,100	NV	NV	0.0095 J	0.00353 J	0.00359 J	0.00438 J	0.00194 J	0.00155 U	0.0129 J
Dibenzo(a,h)anthracene	NV	NV	NV	140	NV	8,500	NV	NV	0.004 U	0.000707 U	0.000745 U	0.000712 U	0.0011 J	0.00155 U	0.00296 U
Fluoranthene	10	NV	NV	220	NV	39,000	NV	NV	0.0088 J	0.00343 J	0.00469 J	0.00648 J	0.0041 J	0.00155 U	0.00296 U
Fluorene	3.7	NV	NV	510	NV	100,000	NV	NV	0.004 U	0.000804 J	0.000745 U	0.000712 U	0.000768 J	0.00155 U	0.00296 U
Indeno(1,2,3-cd)pyrene	NV	NV	NV	710	NV	46,000	NV	NV	0.0018 J*	0.000763 J	0.000924 J	0.00119 J	0.00263 J	0.00155 U	0.00296 U
Naphthalene	NV	1	34	27	780	16,000	NV	NV	0.0026 J*	0.00656 J	0.00526 J	0.00723 J	0.0103 J	0.00548 J	0.0101 J
Pentachlorophenol	31	5	3.6	8.1	17	85	NV	NV	0.008 U	--	--	--	--	--	--
Phenanthrene	5.5	NV	NV	110	NV	19,000	NV	NV	0.014	0.00824	0.00847	0.0128	0.00923	0.00155 U	0.00695 J
Pyrene	10	NV	330	230	1,600	31,000	NV	NV	0.0075 J	0.00252 J	0.00293 J	0.00398 J	0.00242 J	0.00155 U	0.00542 J
Total LPAH[f][5]	29	NV	67	540	37,000	59,000	NV	NV	0.026 J*	0.021 J	0.019 J	0.027 J	0.027 J	0.012 J	0.028 J
Total HPAH[g][5]	18	NV	0.55	5.9	64	550	NV	NV	0.047 J*	0.017 J	0.02 J	0.028 J	0.027 J	0.0078 J	0.03 J
VOCs (mg/kg)															
1,1,1,2-Tetrachloroethane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.000739 UJ*	--	--	0.00155 U	--
1,1,1-Trichloroethane	NV	NV	NV	1,300	NV	450,000	NV	NV	--	--	0.000406 UJ*	--	--	0.00085 U	--
1,1,2,2-Tetrachloroethane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.000576 UJ*	--	--	0.00121 U	--
1,1,2-Trichloroethane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.0013 UJ*	--	--	0.00273 U	--
1,1-Dichloroethane	NV	NV	NV	2,100	NV	2,500,000	NV	NV	--	--	0.000849 UJ*	--	--	0.00178 U	--
1,1-Dichloroethene	NV	NV	NV	60	NV	1,600	NV	NV	--	--	0.000739 UJ*	--	--	0.00155 U	--
1,1-Dichloropropene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.00103 UJ*	--	--	0.00216 U	--
1,2,3-Trichlorobenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.000924 UJ*	--	--	0.00193 U	--
1,2,3-Trichloropropane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.00754 UJ*	--	--	0.0158 U	--
1,2,3-Trimethylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.0017 UJ*	--	--	0.00355 U	--
1,2,4-Trichlorobenzene	1.2	NV	NV	2.7	NV	1,100	NV	NV	--	--	0.00713 UJ*	--	--	0.0149 U	--
1,2,4-Trimethylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.00204 J*	--	--	0.00358 U	--
1,2-Dibromo-3-chloropropane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.00754 UJ*	--	--	0.0158 U	--
1,2-Dibromoethane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.000776 UJ*	--	--	0.00162 U	--
1,2-Dichlorobenzene	NV	NV	NV	9.2	NV	4,800	NV	NV	--	--	0.00214 UJ*	--	--	0.00448 U	--
1,2-Dichloroethane	NV	NV	1.6	270	44	84,000	NV	NV	--	--	0.000702 UJ*	--	--	0.00147 U	--
1,2-Dichloropropane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.00188 UJ*	--	--	0.00391 U	--
1,3,5-Trimethylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.00159 UJ*	--	--	0.00335 U	--
1,3-Dichlorobenzene	NV	NV	NV	7.4	NV	3,800	NV	NV	--	--	0.00251 UJ*	--	--	0.00525 U	--
1,3-Dichloropropane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.00258 UJ*	--	--	0.00541 U	--
1,4-Dichlorobenzene	1.2	NV	NV	3.5	NV	1,800	NV	NV	--	--	0.00291 UJ*	--	--	0.00608 U	--
2,2-Dichloropropane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.00117 UJ*	--	--	0.00245 U	--
2-Butanone	NV	NV	NV	920	NV	3,500,000	NV	NV	--	--	0.0185 UJ*	--	--	0.0676 J	--
2-Chlorotoluene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.00135 UJ*	--	--	0.00283 U	--
2-Hexanone	NV	NV	3.6	20	17	22,000	NV	NV	--	--	--	--	--	--	--
4-Chlorotoluene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.00166 UJ*	--	--	0.0035 U	--
4-Isopropyltoluene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.047 J*	--	--	0.0184	--
4-Methyl-2-pentanone	NV	NV	NV	97	NV	180,000	NV	NV	--	--	0.0148 UJ*	--	--	0.0309 U	--
Acetone	NV	NV	75	6.3	8,400	8,900	NV	NV	--	--	0.0202 UJ*	--	--	0.162	--
Acrylonitrile	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.00281 UJ*	--	--	0.00587 U	--
Benzene	NV	NV	NV	240	NV	43,000	NV	NV	--	--	0.000591 UJ*	--	--	0.00659	--
Bromobenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.00155 UJ*	--	--	0.00324 U	--

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Table 6-1
Ecological Soil Analytical Results
Wild River Land Trust
Port Orford, Oregon

Location:	DEQ Ecological RBC, Soil, Direct Toxicity[1]		DEQ Ecological RBC, Soil, Ground Feeding[1]		DEQ Ecological RBC, Soil, Top Consumer[1]		DEQ Background Metals, Klamath Mountains[2]	Site-specific Background	OP02TP01	S13_S14_S15-COMP	S16_S17_S18-COMP	S19_S20_S21-COMP	S22	S23	S24
Sample Name:								DU08SS	JLTR9	9358-181113-COMP-01	9358-181113-COMP-02	9358-181115-COMP-03	9358-181115-021	9358-181115-016	9358-181115-017
Collection Date:	Invertebrates	Plants	Bird, Non-TE	Mammal, Non-TE	Bird, Non-TE	Mammal, Non-TE		9/12/2020	9/11/2020	11/13/2018	11/13/2018	11/15/2018	11/15/2018	11/15/2018	11/15/2018
Collection Depth (ft bgs):								0-4 cm	1-2	0-1	0-1	0-1	0-1	0-1	0-1
Bromodichloromethane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.00116 UJ*	--	--	0.00244 U	--
Bromoform	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.00884 UJ*	--	--	0.0185 U	--
Bromomethane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.00546 UJ*	--	--	0.0114 U	--
Carbon disulfide	NV	NV	NV	8.1	NV	1,900	NV	NV	--	--	--	--	--	--	--
Carbon tetrachloride	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.00159 UJ*	--	--	0.00335 U	--
Chlorobenzene	2.4	NV	NV	430	NV	250,000	NV	NV	--	--	0.000847 UJ*	--	--	0.00177 U	--
Chlorobromomethane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
Chloroethane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.00159 UJ*	--	--	0.00335 U	--
Chloroform	NV	NV	NV	21	NV	6,000	NV	NV	--	--	0.000613 UJ*	--	--	0.00128 U	--
Chloromethane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.00205 UJ*	--	--	0.0043 UJ*	--
cis-1,2-Dichloroethene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.00102 UJ*	--	--	0.00213 U	--
cis-1,3-Dichloropropene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.001 UJ*	--	--	0.0021 U	--
Cyclohexane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
Dibromochloromethane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.000666 UJ*	--	--	0.00139 U	--
Dibromomethane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.00148 UJ*	--	--	0.00309 U	--
Dichlorodifluoromethane (Freon 12	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.00121 UJ*	--	--	0.00253 U	--
Diisopropyl Ether	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.000517 UJ*	--	--	0.00108 U	--
Ethylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.00177 J*	--	--	0.00164 U	--
Freon 113	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.000997 UJ*	--	--	0.00209 U	--
Hexachlorobutadiene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.0188 UJ*	--	--	0.0391 U	--
Isopropylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.00128 UJ*	--	--	0.00268 U	--
m,p-Xylene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.00707 UJ*	--	--	0.0148 U	--
Methyl acetate	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
Methyl tert-butyl ether	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.000436 UJ*	--	--	0.000912 U	--
Methylcyclohexane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
Methylene chloride	NV	1,600	NV	22	NV	8,500	NV	NV	--	--	0.00981 UJ*	--	--	0.0205 U	--
Naphthalene	NV	1	34	27	780	16,000	NV	NV	--	--	0.00461 UJ*	--	--	0.00963 U	--
n-Butylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.00567 UJ*	--	--	0.0119 U	--
n-Propylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.00174 UJ*	--	--	0.00366 U	--
o-Xylene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
sec-Butylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.00374 UJ*	--	--	0.00783 U	--
Styrene	1.2	3.2	NV	NV	NV	NV	NV	NV	--	--	0.00404 UJ*	--	--	0.00845 U	--
tert-Butylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.00228 UJ*	--	--	0.00479 U	--
Tetrachloroethene	NV	10	NV	0.94	NV	210	NV	NV	--	--	0.00184 J*	--	--	0.00216 U	--
Toluene	NV	200	NV	230	NV	33,000	NV	NV	--	--	0.0187 J*	--	--	0.0522	--
trans-1,2-Dichloroethene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.00211 UJ*	--	--	0.00443 U	--
trans-1,3-Dichloropropene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	0.00226 UJ*	--	--	0.00474 U	--
Trichloroethene	NV	NV	NV	420	NV	110,000	NV	NV	--	--	0.000591 UJ*	--	--	0.00124 U	--
Trichlorofluoromethane (Freon 11)	NV	NV	NV	350	NV	420,000	NV	NV	--	--	0.000739 UJ*	--	--	0.00155 U	--
Vinyl chloride	NV	NV	NV	1.2	NV	280	NV	NV	--	--	0.00101 UJ*	--	--	0.00211 U	--
Xylenes, total[h]	NV	100	410	1.8	1,900	260	NV	NV	--	--	0.00707 UJ*	--	--	0.0148 U	--

Table 6-1
Ecological Soil Analytical Results
Wild River Land Trust
Port Orford, Oregon

Location:	DEQ Ecological RBC, Soil, Direct Toxicity[1]		DEQ Ecological RBC, Soil, Ground Feeding[1]		DEQ Ecological RBC, Soil, Top Consumer[1]		DEQ Background Metals, Klamath Mountains[2]	Site-specific Background	SL01GP01	SL02GP01	SL03TP01	SL04TP01	SL05GP01	SL06GP01	SL07GP01
Sample Name:								DU08SS	JLTQ0	JLTQ2	JLTQ4	JLTQ6	JLTQ8	JLTR0	JLTR2
Collection Date:	Invertebrates	Plants	Bird, Non-TE	Mammal, Non-TE	Bird, Non-TE	Mammal, Non-TE		9/12/2020	9/9/2020	9/9/2020	9/9/2020	9/10/2020	9/9/2020	9/9/2020	9/10/2020
Collection Depth (ft bgs):								0-4 cm	0-4	0-4	1-2	1-2	0-4	0-4	0-4
Total Metals (mg/kg)															
Aluminum	(a)	(a)	(a)	(a)	(a)	(a)	NV	22,200	35,800	30,600	17,900	20,300	42,300	26,800	21,400
Antimony	78	11	NV	2.7	NV	49	0.59	0.094	0.9 UJ	0.89 UJ	0.79 UJ	0.79 U	1 UJ	0.83 UJ	0.85 UJ
Arsenic	6.8	18	32	31	1,000	290	12	4.18	3.7	3.6	2.6	1.8	2.8	3.4	3
Barium	330	110	1,200	8,700	13,000	44,000	630	81.3	39.5	33.9	73.2	54.6	59.4	66.4	78.9
Beryllium	40	2.5	NV	42	NV	110	1.4	0.35	0.74	0.65	0.61	0.6	0.93	0.82	0.69
Cadmium	140	32	1.6	4	7.7	1,700	0.52	0.375	0.5 U	0.41 U	0.43 U	0.038 J*	0.58 U	0.5 U	0.43 U
Calcium	NV	NV	NV	NV	NV	NV	NV	4340	184 J*	1430	3910	3460	1840	3290	4040
Chromium	NV	NV	73	1,600	560	10,000	890	67.1	78.7	71.1	56.4	63.3	105	73.2	59.3
Cobalt	NV	13	170	640	1,400	3,300	3 - 50	23.1	7.6	10.2	19	16.6	12.7	15.4	20.3
Copper	80	70	43	70	240	1,600	110	57.3	46.7	68.9	43.3	51.9	45	45.4	47.8
Iron	NV	NV	NV	NV	NV	NV	NV	30300	42,200	36,800	28,000	27,100	57,900	41,900	31,400
Lead	1,700	120	23	170	160	1,600	36	15.2	10.5	11.7	11.1	7.6 J	11.9	25.2	11.1
Magnesium	NV	NV	NV	NV	NV	NV	NV	11700	6,380	9,400	9,600	11,400	9,000	9,620	9,970
Manganese	450	220	2,700	5,400	50,000	34,000	3,000	1140	152	228	616	400	193	423	648
Mercury	0.05	34	0.13	17	0.58	130	0.17	0.066	0.14	0.14	0.11 U	0.11 U	0.23	0.12 U	0.11 U
Nickel	280	38	81	21	440	580	630	69.8	49.6	64.4	66.2	77.9	79.8	67.8	72.3
Potassium	NV	NV	NV	NV	NV	NV	NV	1060	299 J*	458	405 J*	600	576 U	486 J*	657
Selenium	4.1	0.52	1.4	1	7.5	33	0.8	NV	2.2 U	2.2 U	2 U	0.42 J*	2.6 U	0.47 J*	2.1 U
Silver	NV	560	26	140	130	10,000	0.16	0.067	0.49 J*	0.47 J*	0.33 J*	0.7 J*	0.92 J*	0.51 J*	0.38 J*
Sodium	NV	NV	NV	NV	NV	NV	NV	174	499 U	411 U	434 U	37 J*	576 U	42.7 J*	60 J*
Thallium	NV	0.05	45	4.2	480	50	0.31	0.076	0.45 U	0.44 U	0.4 U	0.4 U	0.51 U	0.42 U	0.42 U
Vanadium	NV	60	9.5	610	110	1,600	290	75.8	70.4	64.1	54.1	48.3 J	101	73	61.2
Zinc	120	160	120	980	590	30,000	140	93.1	61.5	72.4	72.7	65.2	73.6	161	70.8
PCB Aroclors (mg/kg)															
Total PCBs[b]	NV	160	0.24	0.073	1.9	6.9	NV	NV	--	--	--	--	--	--	--
Dioxins (pg/g)															
1,2,3,4,6,7,8-HpCDD	NV	NV	1,500	7	15,000	11	NV	41	--	--	--	--	3.1 J*	620	46
1,2,3,4,6,7,8-HpCDF	NV	NV	230	11	2,300	17	NV	10.4	--	--	--	--	0.98 J*	140	12
1,2,3,4,7,8,9-HpCDF	NV	NV	230	11	2,300	17	NV	0.73 J	--	--	--	--	0.46 U	9.9	0.88 J*
1,2,3,4,7,8-HxCDD	NV	NV	51	1.2	500	1.8	NV	0.811 J	--	--	--	--	0.47 U	6.9	0.94 J*
1,2,3,4,7,8-HxCDF	NV	NV	23	1.1	230	1.7	NV	0.868 J	--	--	--	--	0.4 U	13	0.91 J*
1,2,3,6,7,8-HxCDD	NV	NV	190	0.89	1,900	1.4	NV	2.09 J	--	--	--	--	0.5 U	33	2.4 J*
1,2,3,6,7,8-HxCDF	NV	NV	23	1.1	230	1.7	NV	0.679 J	--	--	--	--	0.47 U	6.2	0.55 J*
1,2,3,7,8,9-HxCDD	NV	NV	19	0.89	190	1.4	NV	1.54 J	--	--	--	--	0.34 U	10	1.5 J*
1,2,3,7,8,9-HxCDF	NV	NV	30	1.4	300	2.2	NV	0.33 U	--	--	--	--	0.44 U	3.3 J*	0.44 U
1,2,3,7,8-PeCDD	NV	NV	5.9	0.28	59	0.43	NV	0.61 J	--	--	--	--	0.35 U	2.5 J*	0.51 J*
1,2,3,7,8-PeCDF	NV	NV	41	6.5	400	9.8	NV	0.353 J	--	--	--	--	0.38 U	2.2 J*	0.38 U
2,3,4,6,7,8-HxCDF	NV	NV	23	1.1	230	1.7	NV	1.01 J	--	--	--	--	0.41 U	9	0.87 J*
2,3,4,7,8-PeCDF	NV	NV	4.1	0.65	40	0.98	NV	0.878 J	--	--	--	--	0.43 U	7.4	0.61 J*
2,3,7,8-TCDD	5,000,000	NV	5.2	0.25	52	0.38	NV	0.669	--	--	--	--	0.13 U	0.36 J*	0.88 J*
2,3,7,8-TCDF	NV	NV	6.4	3	63	4.6	NV	0.424 J	--	--	--	--	0.11 U	0.67 J*	0.2 J*
OCDD	NV	NV	19,000	300	190,000	460	NV	364	--	--	--	--	39	5100	410
OCDF	NV	NV	14,000	220	140,000	340	NV	36	--	--	--	--	3.6 J*	410	33
Dioxin/furan TEQ (avian)[c][3]	5,000,000	NV	5.2	NV	52	NV	NV	3.31	--	--	--	--	0.67 J*	19 J*	2.9 J*

Location:	DEQ Ecological RBC, Soil, Direct Toxicity[1]		DEQ Ecological RBC, Soil, Ground Feeding[1]		DEQ Ecological RBC, Soil, Top Consumer[1]		DEQ Background Metals, Klamath Mountains[2]	Site-specific Background	SL01GP01	SL02GP01	SL03TP01	SL04TP01	SL05GP01	SL06GP01	SL07GP01
Sample Name:								DU08SS	JLTQ0	JLTQ2	JLTQ4	JLTQ6	JLTQ8	JLTR0	JLTR2
Collection Date:	Invertebrates	Plants	Bird, Non-TE	Mammal, Non-TE	Bird, Non-TE	Mammal, Non-TE		9/12/2020	9/9/2020	9/9/2020	9/9/2020	9/10/2020	9/9/2020	9/9/2020	9/10/2020
Collection Depth (ft bgs):								0-4 cm	0-4	0-4	1-2	1-2	0-4	0-4	0-4
Dioxin/furan TEQ (mammal)[(d)(4)]	5,000,000	NV	NV	0.25	NV	0.38	NV	2.97	--	--	--	--	0.52 J*	23 J*	3.1 J*
TPH (mg/kg)															
Gasoline-Range Hydrocarbons	120	120	5,000	5,000	5,000	5,000	NV	NV	8.1 U	6.9 U	--	--	8.6 U	8.2 U	9.3 U
Diesel-Range Hydrocarbons	NV	NV	NV	NV	NV	NV	NV	NV	49 U	47 U	--	--	55 U	270	46 U
Lube-Oil-Range Hydrocarbons	NV	NV	NV	NV	NV	NV	NV	NV	120 U	120 U	--	--	140 U	150	110 U
Total Diesel+Oil[(e)]	260	260	6,000	6,000	6,000	6,000	NV	NV	120 U	120 U	--	--	140 U	420	110 U
TPH with Silica-Gel Treatment (mg/kg)															
Diesel-Range Hydrocarbons	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
Lube-Oil-Range Hydrocarbons	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
Total Diesel+Oil[(e)]	260	260	6,000	6,000	6,000	6,000	NV	NV	--	--	--	--	--	--	--
SVOCs (mg/kg)															
1,1'-Biphenyl	NV	NV	NV	NV	NV	NV	NV	NV	0.21 U	0.2 U	0.19 U	0.19 UJ	0.24 U	0.2 U	0.18 U
1,2,4,5-Tetrachlorobenzene	NV	NV	NV	NV	NV	NV	NV	NV	0.21 U	0.2 U	0.19 U	0.19 UJ	0.24 U	0.2 U	0.18 U
1,4-Dioxane	NV	NV	NV	3.6	NV	180	NV	NV	0.082 U	0.08 U	0.073 U	0.074 UJ	0.093 U	0.077 UJ	0.073 UJ
2,3,4,6-Tetrachlorophenol	NV	NV	NV	NV	NV	NV	NV	NV	0.21 U	0.2 U	0.19 U	0.19 UJ	0.24 U	0.2 U	0.18 U
2,4,5-Trichlorophenol	NV	NV	NV	NV	NV	NV	NV	NV	0.21 U	0.2 U	0.19 U	0.19 UJ	0.24 U	0.2 U	0.18 U
2,4,6-Trichlorophenol	NV	NV	NV	NV	NV	NV	NV	NV	0.21 U	0.2 U	0.19 U	0.19 UJ	0.24 U	0.2 U	0.18 U
2,4-Dichlorophenol	NV	NV	NV	NV	NV	NV	NV	NV	0.21 U	0.2 U	0.19 U	0.19 UJ	0.24 U	0.2 U	0.18 U
2,4-Dimethylphenol	NV	NV	NV	NV	NV	NV	NV	NV	0.21 U	0.2 U	0.19 U	0.19 UJ	0.24 U	0.2 U	0.18 U
2,4-Dinitrophenol	NV	NV	NV	NV	NV	NV	NV	NV	0.4 U	0.39 U	0.36 U	0.36 UJ	0.46 U	0.38 U	0.36 U
2,4-Dinitrotoluene	NV	NV	NV	NV	NV	NV	NV	NV	0.21 U	0.2 U	0.19 U	0.19 UJ	0.24 U	0.2 U	0.18 U
2,6-Dinitrotoluene	NV	NV	NV	NV	NV	NV	NV	NV	0.21 U	0.2 U	0.19 U	0.19 UJ	0.24 U	0.2 U	0.18 U
2-Chloronaphthalene	NV	NV	NV	NV	NV	NV	NV	NV	0.21 U	0.2 U	0.19 U	0.19 UJ	0.24 U	0.2 U	0.18 U
2-Chlorophenol	NV	NV	3.9	5.4	140	3,400	NV	NV	0.21 U	0.2 U	0.19 U	0.19 UJ	0.24 U	0.2 U	0.18 U
2-Methylnaphthalene	NV	NV	NV	160	NV	49,000	NV	NV	0.21 R	0.2 R	0.19 R	0.19 R	0.24 R	0.2 R	0.18 R
2-Methylphenol	NV	0.67	NV	5,800	NV	190,000	NV	NV	0.4 U	0.39 U	0.36 U	0.36 UJ	0.46 U	0.38 U	0.36 U
2-Nitroaniline	NV	NV	NV	10	NV	4,400	NV	NV	0.21 UJ	0.2 UJ	0.19 UJ	0.19 UJ	0.24 UJ	0.2 UJ	0.18 UJ
2-Nitrophenol	NV	NV	NV	NV	NV	NV	NV	NV	0.21 U	0.2 U	0.19 U	0.19 UJ	0.24 U	0.2 U	0.18 U
3- & 4-Methylphenol (m,p-Cresol)	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
3,3-Dichlorobenzidine	NV	NV	NV	NV	NV	NV	NV	NV	0.4 U	0.39 U	0.36 U	0.36 UJ	0.46 U	0.38 U	0.36 U
3-Nitroaniline	NV	NV	NV	NV	NV	NV	NV	NV	0.4 U	0.39 U	0.36 U	0.36 UJ	0.46 U	0.38 U	0.36 U
4,6-Dinitro-2-methylphenol	NV	NV	NV	NV	NV	NV	NV	NV	0.4 U	0.39 U	0.36 U	0.36 UJ	0.46 U	0.38 U	0.36 U
4-Bromophenylphenyl ether	NV	NV	NV	NV	NV	NV	NV	NV	0.21 U	0.2 U	0.19 U	0.19 UJ	0.24 U	0.2 U	0.18 U
4-Chloro-3-methylphenol	NV	NV	NV	NV	NV	NV	NV	NV	0.21 U	0.2 U	0.19 U	0.19 UJ	0.24 U	0.2 U	0.18 U
4-Chloroaniline	1.8	1	NV	NV	NV	NV	NV	NV	0.4 U	0.39 U	0.36 U	0.36 UJ	0.46 U	0.38 U	0.36 U
4-Chlorophenylphenyl ether	NV	NV	NV	NV	NV	NV	NV	NV	0.21 U	0.2 U	0.19 U	0.19 UJ	0.24 U	0.2 U	0.18 U
4-Methylphenol	NV	NV	NV	NV	NV	NV	NV	NV	0.4 U	0.39 U	0.36 U	0.36 UJ	0.46 U	0.38 U	0.36 U
4-Nitroaniline	NV	NV	NV	NV	NV	NV	NV	NV	0.4 U	0.39 U	0.36 U	0.36 UJ	0.46 U	0.38 U	0.36 U
4-Nitrophenol	NV	NV	NV	NV	NV	NV	NV	NV	0.4 U	0.39 U	0.36 U	0.36 UJ	0.46 U	0.38 U	0.36 U
Acenaphthene	NV	0.25	NV	1,300	NV	290,000	NV	NV	0.21 R	0.2 R	0.19 R	0.19 R	0.24 R	0.2 R	0.18 R
Acenaphthylene	NV	NV	NV	1,200	NV	280,000	NV	NV	0.21 R	0.2 R	0.19 R	0.19 R	0.24 R	0.2 R	0.18 R
Acetophenone	NV	NV	NV	NV	NV	NV	NV	NV	0.4 U	0.39 U	0.36 U	0.36 UJ	0.46 U	0.38 U	0.36 U
Anthracene	NV	6.8	NV	2,100	NV	380,000	NV	NV	0.21 R	0.2 R	0.19 R	0.19 R	0.24 R	0.2 R	0.18 R
Atrazine	NV	NV	NV	NV	NV	NV	NV	NV	0.4 U	0.39 U	0.36 U	0.36 UJ	0.46 U	0.38 U	0.36 U
Benzaldehyde	NV	NV	NV	NV	NV	NV	NV	NV	0.4 U	0.39 U	0.36 U	0.36 UJ	0.46 U	0.38 U	0.36 U

Location:	DEQ Ecological RBC, Soil, Direct Toxicity[1]		DEQ Ecological RBC, Soil, Ground Feeding[1]		DEQ Ecological RBC, Soil, Top Consumer[1]		DEQ Background Metals, Klamath Mountains[2]	Site-specific Background	SL01GP01	SL02GP01	SL03TP01	SL04TP01	SL05GP01	SL06GP01	SL07GP01
Sample Name:								DU08SS	JLTQ0	JLTQ2	JLTQ4	JLTQ6	JLTQ8	JLTR0	JLTR2
Collection Date:	Invertebrates	Plants	Bird, Non-TE	Mammal, Non-TE	Bird, Non-TE	Mammal, Non-TE		9/12/2020	9/9/2020	9/9/2020	9/9/2020	9/10/2020	9/9/2020	9/9/2020	9/10/2020
Collection Depth (ft bgs):								0-4 cm	0-4	0-4	1-2	1-2	0-4	0-4	0-4
Benzo(a)anthracene	NV	18	7.3	34	64	1,100	NV	NV	0.21 R	0.2 R	0.19 R	0.19 R	0.24 R	0.2 R	0.18 R
Benzo(a)pyrene	NV	NV	NV	190	NV	11,000	NV	NV	0.21 R	0.2 R	0.19 R	0.19 R	0.24 R	0.2 R	0.18 R
Benzo(b)fluoranthene	NV	18	NV	440	NV	24,000	NV	NV	0.21 R	0.2 R	0.19 R	0.19 R	0.24 R	0.2 R	0.18 R
Benzo(ghi)perylene	NV	NV	NV	250	NV	36,000	NV	NV	0.21 R	0.2 R	0.19 R	0.19 R	0.24 R	0.2 R	0.18 R
Benzo(k)fluoranthene	NV	NV	NV	NV	NV	NV	NV	NV	0.21 R	0.2 R	0.19 R	0.19 R	0.24 R	0.2 R	0.18 R
Bis(2-chloro-1-methylethyl)ether	NV	NV	NV	NV	NV	NV	NV	NV	0.4 U	0.39 U	0.36 U	0.36 UJ	0.46 U	0.38 U	0.36 U
Bis(2-chloroethoxy)methane	NV	NV	NV	NV	NV	NV	NV	NV	0.21 U	0.2 U	0.19 U	0.19 UJ	0.24 U	0.2 U	0.18 U
Bis(2-chloroethyl)ether	NV	NV	NV	NV	NV	NV	NV	NV	0.4 U	0.39 U	0.36 U	0.36 UJ	0.46 U	0.38 U	0.36 U
Bis(2-ethylhexyl)phthalate	NV	NV	0.2	6	0.96	1,700	NV	NV	0.21 U	0.047 J*	0.19 U	0.19 UJ	0.24 U	0.037 J*	0.18 U
Butylbenzylphthalate	NV	NV	NV	900	NV	74,000	NV	NV	0.21 U	0.2 U	0.19 U	0.19 UJ	0.24 U	0.2 U	0.18 U
Caprolactam	NV	NV	NV	NV	NV	NV	NV	NV	0.4 U	0.39 U	0.36 U	0.36 UJ	0.46 U	0.38 U	0.36 U
Carbazole	NV	NV	NV	790	NV	130,000	NV	NV	0.4 U	0.39 U	0.36 U	0.36 UJ	0.46 U	0.38 U	0.36 U
Chrysene	NV	NV	NV	31	NV	1,100	NV	NV	0.21 R	0.2 R	0.19 R	0.19 R	0.24 R	0.2 R	0.18 R
Dibenzo(a,h)anthracene	NV	NV	NV	140	NV	8,500	NV	NV	0.21 R	0.2 R	0.19 R	0.19 R	0.24 R	0.2 R	0.18 R
Dibenzofuran	NV	6.1	NV	NV	NV	NV	NV	NV	0.21 U	0.2 U	0.19 U	0.19 UJ	0.24 U	0.2 U	0.18 U
Diethyl phthalate	NV	100	NV	18,000	NV	3,200,000	NV	NV	0.21 U	0.2 U	0.19 U	0.19 UJ	0.24 U	0.2 U	0.18 U
Dimethyl phthalate	10	NV	NV	400	NV	57,000	NV	NV	0.21 U	0.2 U	0.19 U	0.19 UJ	0.24 U	0.2 U	0.18 U
Di-n-butyl phthalate	NV	160	0.11	450	0.52	50,000	NV	NV	0.21 U	0.2 U	0.19 U	0.19 UJ	0.24 U	0.2 U	0.18 U
Di-n-octyl phthalate	NV	NV	NV	4.6	NV	2,300	NV	NV	0.4 U	0.39 U	0.36 U	0.36 UJ	0.46 U	0.38 U	0.36 U
Fluoranthene	10	NV	NV	220	NV	39,000	NV	NV	0.4 R	0.39 R	0.36 R	0.36 R	0.46 R	0.38 R	0.36 R
Fluorene	3.7	NV	NV	510	NV	100,000	NV	NV	0.21 R	0.2 R	0.19 R	0.19 R	0.24 R	0.2 R	0.18 R
Hexachlorobenzene	10	10	0.79	2	3.7	590	NV	NV	0.21 U	0.2 U	0.19 U	0.19 UJ	0.24 U	0.2 U	0.18 U
Hexachlorobutadiene	NV	NV	NV	NV	NV	NV	NV	NV	0.21 U	0.2 U	0.19 U	0.19 UJ	0.24 U	0.2 U	0.18 U
Hexachlorocyclopentadiene	NV	NV	NV	NV	NV	NV	NV	NV	0.4 U	0.39 U	0.36 U	0.36 UJ	0.46 U	0.38 U	0.36 U
Hexachloroethane	NV	NV	NV	NV	NV	NV	NV	NV	0.21 U	0.2 U	0.19 U	0.19 UJ	0.24 U	0.2 U	0.18 U
Indeno(1,2,3-cd)pyrene	NV	NV	NV	710	NV	46,000	NV	NV	0.21 R	0.2 R	0.19 R	0.19 R	0.24 R	0.2 R	0.18 R
Isophorone	NV	NV	NV	NV	NV	NV	NV	NV	0.21 U	0.2 U	0.19 U	0.19 UJ	0.24 U	0.2 U	0.18 U
Naphthalene	NV	1	34	27	780	16,000	NV	NV	0.21 R	0.2 R	0.19 R	0.19 R	0.24 R	0.2 R	0.18 R
Nitrobenzene	2.2	NV	NV	48	NV	41,000	NV	NV	0.21 U	0.2 U	0.19 U	0.19 UJ	0.24 U	0.2 U	0.18 U
N-Nitrosodiphenylamine	NV	NV	NV	NV	NV	NV	NV	NV	0.21 U	0.2 U	0.19 U	0.19 UJ	0.24 U	0.2 U	0.18 U
N-Nitrosodipropylamine	NV	NV	NV	NV	NV	NV	NV	NV	0.21 U	0.2 U	0.19 U	0.19 UJ	0.24 U	0.2 U	0.18 U
Pentachlorophenol	31	5	3.6	8.1	17	85	NV	NV	0.4 R	0.39 R	0.36 R	0.36 R	0.46 R	0.38 R	0.36 R
Phenanthrene	5.5	NV	NV	110	NV	19,000	NV	NV	0.21 R	0.2 R	0.19 R	0.19 R	0.24 R	0.2 R	0.18 R
Phenol	1.8	0.79	NV	370	NV	430,000	NV	NV	0.4 U	0.39 U	0.36 U	0.36 UJ	0.46 U	0.38 U	0.36 U
Pyrene	10	NV	330	230	1,600	31,000	NV	NV	0.21 R	0.2 R	0.19 R	0.19 R	0.24 R	0.2 R	0.18 R
SVOCs by SIM (mg/kg)															
1-Methylnaphthalene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
2-Chloronaphthalene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
2-Methylnaphthalene	NV	NV	NV	160	NV	49,000	NV	NV	0.0005 J*	0.00075 J*	0.0019 J*	0.0031 J*	0.0005 J*	0.0052	0.0027 J*
Acenaphthene	NV	0.25	NV	1,300	NV	290,000	NV	NV	0.004 U	0.0039 U	0.0036 U	0.00048 J*	0.0046 U	0.0038 U	0.0036 U
Acenaphthylene	NV	NV	NV	1,200	NV	280,000	NV	NV	0.004 U	0.0039 U	0.0036 U	0.001 J*	0.0046 U	0.0038 U	0.0036 U
Anthracene	NV	6.8	NV	2,100	NV	380,000	NV	NV	0.004 U	0.0039 U	0.00045 J*	0.0036 U	0.0046 U	0.0038 U	0.0036 U
Benzo(a)anthracene	NV	18	7.3	34	64	1,100	NV	NV	0.004 U	0.0039 U	0.0067	0.0036 U	0.0046 U	0.0016 J*	0.013 J
Benzo(a)pyrene	NV	NV	NV	190	NV	11,000	NV	NV	0.004 U	0.0039 U	0.0036 U	0.00053 J*	0.0046 U	0.0038 U	0.0036 U
Benzo(b)fluoranthene	NV	18	NV	440	NV	24,000	NV	NV	0.004 U	0.00072 J*	0.0028 J*	0.0052 J	0.0046 U	0.0046	0.0073
Benzo(ghi)perylene	NV	NV	NV	250	NV	36,000	NV	NV	0.004 U	0.0039 U	0.0036 U	0.0025 J*	0.0046 U	0.0038 U	0.0036 U

Table 6-1
Ecological Soil Analytical Results
Wild River Land Trust
Port Orford, Oregon

Location:	DEQ Ecological RBC, Soil, Direct Toxicity[1]		DEQ Ecological RBC, Soil, Ground Feeding[1]		DEQ Ecological RBC, Soil, Top Consumer[1]		DEQ Background Metals, Klamath Mountains[2]	Site-specific Background	SL01GP01	SL02GP01	SL03TP01	SL04TP01	SL05GP01	SL06GP01	SL07GP01
Sample Name:								DU08SS	JLTQ0	JLTQ2	JLTQ4	JLTQ6	JLTQ8	JLTR0	JLTR2
Collection Date:	Invertebrates	Plants	Bird, Non-TE	Mammal, Non-TE	Bird, Non-TE	Mammal, Non-TE		9/12/2020	9/9/2020	9/9/2020	9/9/2020	9/10/2020	9/9/2020	9/9/2020	9/10/2020
Collection Depth (ft bgs):								0-4 cm	0-4	0-4	1-2	1-2	0-4	0-4	0-4
Benzo(k)fluoranthene	NV	NV	NV	NV	NV	NV	NV	NV	0.004 U	0.0039 U	0.0036 U	0.0036 U	0.0046 U	0.0006 J*	0.0036 U
Chrysene	NV	NV	NV	31	NV	1,100	NV	NV	0.004 U	0.00062 J*	0.0023 J*	0.0036 J	0.0046 U	0.0073	0.0039 J
Dibenzo(a,h)anthracene	NV	NV	NV	140	NV	8,500	NV	NV	0.004 U	0.0039 U	0.0036 U	0.0036 U	0.0046 U	0.0038 U	0.0036 U
Fluoranthene	10	NV	NV	220	NV	39,000	NV	NV	0.004 U	0.0039 U	0.0053	0.0066 J	0.0046 U	0.0038 U	0.0044
Fluorene	3.7	NV	NV	510	NV	100,000	NV	NV	0.004 U	0.0039 U	0.0036 U	0.00089 J*	0.0046 U	0.0038 U	0.00069 J*
Indeno(1,2,3-cd)pyrene	NV	NV	NV	710	NV	46,000	NV	NV	0.004 U	0.0039 U	0.0036 U	0.0036 U	0.0046 U	0.0038 U	0.0036 U
Naphthalene	NV	1	34	27	780	16,000	NV	NV	0.0011 J*	0.0011 J*	0.0017 J*	0.0025 J*	0.00096 J*	0.0035 J*	0.0026 J*
Pentachlorophenol	31	5	3.6	8.1	17	85	NV	NV	0.0082 U	0.008 U	0.0073 U	0.0074 U	0.0093 U	0.0077 U	0.0073 U
Phenanthrene	5.5	NV	NV	110	NV	19,000	NV	NV	0.00065 J*	0.0017 J*	0.0052	0.023	0.00064 J*	0.012	0.013
Pyrene	10	NV	330	230	1,600	31,000	NV	NV	0.004 U	0.0039 U	0.0011 J*	0.0057 J	0.0046 U	0.009	0.0015 J*
Total LPAH[f][5]	29	NV	67	540	37,000	59,000	NV	NV	0.01 J*	0.011 J*	0.015 J*	0.033 J*	0.011 J*	0.028 J*	0.024 J*
Total HPAH[g][5]	18	NV	0.55	5.9	64	550	NV	NV	0.02 J*	0.017 J*	0.027 J*	0.031 J*	0.023 J*	0.033 J*	0.039 J*
VOCs (mg/kg)															
1,1,1,2-Tetrachloroethane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
1,1,1-Trichloroethane	NV	NV	NV	1,300	NV	450,000	NV	NV	0.0055 U	0.0075 U	--	--	0.007 U	0.0069 U	0.011 U
1,1,2,2-Tetrachloroethane	NV	NV	NV	NV	NV	NV	NV	NV	0.0055 U	0.0075 U	--	--	0.007 U	0.0069 U	0.011 U
1,1,2-Trichloroethane	NV	NV	NV	NV	NV	NV	NV	NV	0.0055 U	0.0075 U	--	--	0.007 U	0.0069 U	0.011 U
1,1-Dichloroethane	NV	NV	NV	2,100	NV	2,500,000	NV	NV	0.0055 U	0.0075 U	--	--	0.007 U	0.0069 U	0.011 U
1,1-Dichloroethene	NV	NV	NV	60	NV	1,600	NV	NV	0.0055 U	0.0075 U	--	--	0.007 U	0.0069 U	0.011 U
1,1-Dichloropropene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
1,2,3-Trichlorobenzene	NV	NV	NV	NV	NV	NV	NV	NV	0.0055 U	0.0075 U	--	--	0.007 U	0.0069 U	0.011 U
1,2,3-Trichloropropane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
1,2,3-Trimethylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
1,2,4-Trichlorobenzene	1.2	NV	NV	2.7	NV	1,100	NV	NV	0.0055 U	0.0075 U	--	--	0.007 U	0.0069 U	0.011 U
1,2,4-Trimethylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
1,2-Dibromo-3-chloropropane	NV	NV	NV	NV	NV	NV	NV	NV	0.0055 U	0.0075 U	--	--	0.007 U	0.0069 U	0.011 U
1,2-Dibromoethane	NV	NV	NV	NV	NV	NV	NV	NV	0.0055 U	0.0075 U	--	--	0.007 U	0.0069 U	0.011 U
1,2-Dichlorobenzene	NV	NV	NV	9.2	NV	4,800	NV	NV	0.0055 U	0.0075 U	--	--	0.007 U	0.0069 U	0.011 U
1,2-Dichloroethane	NV	NV	1.6	270	44	84,000	NV	NV	0.0055 U	0.0075 U	--	--	0.007 U	0.0069 U	0.011 U
1,2-Dichloropropane	NV	NV	NV	NV	NV	NV	NV	NV	0.0055 U	0.0075 U	--	--	0.007 U	0.0069 U	0.011 U
1,3,5-Trimethylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
1,3-Dichlorobenzene	NV	NV	NV	7.4	NV	3,800	NV	NV	0.0055 U	0.0075 U	--	--	0.007 U	0.0069 U	0.011 U
1,3-Dichloropropane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
1,4-Dichlorobenzene	1.2	NV	NV	3.5	NV	1,800	NV	NV	0.0055 U	0.0075 U	--	--	0.007 U	0.0069 U	0.011 U
2,2-Dichloropropane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
2-Butanone	NV	NV	NV	920	NV	3,500,000	NV	NV	0.011 U	0.0075 J*	--	--	0.014 U	0.014 U	0.023 U
2-Chlorotoluene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
2-Hexanone	NV	NV	3.6	20	17	22,000	NV	NV	0.011 U	0.015 U	--	--	0.014 U	0.014 U	0.023 U
4-Chlorotoluene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
4-Isopropyltoluene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
4-Methyl-2-pentanone	NV	NV	NV	97	NV	180,000	NV	NV	0.011 U	0.015 U	--	--	0.014 U	0.014 U	0.023 U
Acetone	NV	NV	75	6.3	8,400	8,900	NV	NV	0.01 J*	0.069	--	--	0.039	0.014	0.1
Acrylonitrile	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
Benzene	NV	NV	NV	240	NV	43,000	NV	NV	0.0055 U	0.0013 J*	--	--	0.007 U	0.0069 U	0.024
Bromobenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--

Table 6-1
Ecological Soil Analytical Results
Wild River Land Trust
Port Orford, Oregon

Location:	DEQ Ecological RBC, Soil, Direct Toxicity[1]		DEQ Ecological RBC, Soil, Ground Feeding[1]		DEQ Ecological RBC, Soil, Top Consumer[1]		DEQ Background Metals, Klamath Mountains[2]	Site-specific Background	SL01GP01	SL02GP01	SL03TP01	SL04TP01	SL05GP01	SL06GP01	SL07GP01
Sample Name:								DU08SS	JLTQ0	JLTQ2	JLTQ4	JLTQ6	JLTQ8	JLTR0	JLTR2
Collection Date:	Invertebrates	Plants	Bird, Non-TE	Mammal, Non-TE	Bird, Non-TE	Mammal, Non-TE		9/12/2020	9/9/2020	9/9/2020	9/9/2020	9/10/2020	9/9/2020	9/9/2020	9/10/2020
Collection Depth (ft bgs):								0-4 cm	0-4	0-4	1-2	1-2	0-4	0-4	0-4
Bromodichloromethane	NV	NV	NV	NV	NV	NV	NV	NV	0.0055 U	0.0075 U	--	--	0.007 U	0.0069 U	0.011 U
Bromoform	NV	NV	NV	NV	NV	NV	NV	NV	0.0055 U	0.0075 U	--	--	0.007 U	0.0069 U	0.011 U
Bromomethane	NV	NV	NV	NV	NV	NV	NV	NV	0.0055 U	0.0075 U	--	--	0.007 U	0.0069 U	0.011 U
Carbon disulfide	NV	NV	NV	8.1	NV	1,900	NV	NV	0.0055 U	0.0075 U	--	--	0.007 U	0.0069 U	0.011 U
Carbon tetrachloride	NV	NV	NV	NV	NV	NV	NV	NV	0.0055 U	0.0075 U	--	--	0.007 U	0.0069 U	0.011 U
Chlorobenzene	2.4	NV	NV	430	NV	250,000	NV	NV	0.0055 U	0.0075 U	--	--	0.007 U	0.0069 U	0.011 U
Chlorobromomethane	NV	NV	NV	NV	NV	NV	NV	NV	0.0055 U	0.0075 U	--	--	0.007 U	0.0069 U	0.011 U
Chloroethane	NV	NV	NV	NV	NV	NV	NV	NV	0.0055 U	0.0075 U	--	--	0.007 U	0.0069 U	0.011 U
Chloroform	NV	NV	NV	21	NV	6,000	NV	NV	0.0055 U	0.0075 U	--	--	0.007 U	0.0069 U	0.011 U
Chloromethane	NV	NV	NV	NV	NV	NV	NV	NV	0.0055 U	0.0075 U	--	--	0.007 U	0.0069 U	0.011 U
cis-1,2-Dichloroethene	NV	NV	NV	NV	NV	NV	NV	NV	0.0055 U	0.0075 U	--	--	0.007 U	0.0069 U	0.011 U
cis-1,3-Dichloropropene	NV	NV	NV	NV	NV	NV	NV	NV	0.0055 U	0.0075 U	--	--	0.007 U	0.0069 U	0.011 U
Cyclohexane	NV	NV	NV	NV	NV	NV	NV	NV	0.0055 U	0.0075 U	--	--	0.007 U	0.0069 U	0.011 U
Dibromochloromethane	NV	NV	NV	NV	NV	NV	NV	NV	0.0055 U	0.0075 U	--	--	0.007 U	0.0069 U	0.011 U
Dibromomethane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
Dichlorodifluoromethane (Freon 12	NV	NV	NV	NV	NV	NV	NV	NV	0.0055 U	0.0075 U	--	--	0.007 U	0.0069 U	0.011 U
Diisopropyl Ether	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
Ethylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	0.0055 U	0.0075 U	--	--	0.007 U	0.0069 U	0.011 U
Freon 113	NV	NV	NV	NV	NV	NV	NV	NV	0.0055 U	0.0075 U	--	--	0.007 U	0.0069 U	0.011 U
Hexachlorobutadiene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
Isopropylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	0.0055 U	0.0075 U	--	--	0.007 U	0.0069 U	0.011 U
m,p-Xylene	NV	NV	NV	NV	NV	NV	NV	NV	0.0055 U	0.0075 U	--	--	0.007 U	0.0069 U	0.011 U
Methyl acetate	NV	NV	NV	NV	NV	NV	NV	NV	0.0055 U	0.0075 U	--	--	0.007 U	0.0069 U	0.011 U
Methyl tert-butyl ether	NV	NV	NV	NV	NV	NV	NV	NV	0.0055 U	0.0075 U	--	--	0.007 U	0.0069 U	0.011 U
Methylcyclohexane	NV	NV	NV	NV	NV	NV	NV	NV	0.0055 U	0.0075 U	--	--	0.007 U	0.0069 U	0.011 U
Methylene chloride	NV	1,600	NV	22	NV	8,500	NV	NV	0.0055 U	0.0075 U	--	--	0.007 U	0.0069 U	0.011 U
Naphthalene	NV	1	34	27	780	16,000	NV	NV	--	--	--	--	--	--	--
n-Butylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
n-Propylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
o-Xylene	NV	NV	NV	NV	NV	NV	NV	NV	0.0055 U	0.0075 U	--	--	0.007 U	0.0069 U	0.011 U
sec-Butylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
Styrene	1.2	3.2	NV	NV	NV	NV	NV	NV	0.0055 U	0.0075 U	--	--	0.007 U	0.0069 U	0.011 U
tert-Butylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
Tetrachloroethene	NV	10	NV	0.94	NV	210	NV	NV	0.0055 U	0.0075 U	--	--	0.007 U	0.0069 U	0.011 U
Toluene	NV	200	NV	230	NV	33,000	NV	NV	0.0055 U	0.0075 U	--	--	0.007 U	0.0069 U	0.0077 J*
trans-1,2-Dichloroethene	NV	NV	NV	NV	NV	NV	NV	NV	0.0055 U	0.0075 U	--	--	0.007 U	0.0069 U	0.011 U
trans-1,3-Dichloropropene	NV	NV	NV	NV	NV	NV	NV	NV	0.0055 U	0.0075 U	--	--	0.007 U	0.0069 U	0.011 U
Trichloroethene	NV	NV	NV	420	NV	110,000	NV	NV	0.0055 U	0.0075 U	--	--	0.007 U	0.0069 U	0.011 U
Trichlorofluoromethane (Freon 11)	NV	NV	NV	350	NV	420,000	NV	NV	0.0055 U	0.0075 U	--	--	0.007 U	0.0069 U	0.011 U
Vinyl chloride	NV	NV	NV	1.2	NV	280	NV	NV	0.0055 U	0.0075 U	--	--	0.007 U	0.0069 U	0.011 U
Xylenes, total[h]	NV	100	410	1.8	1,900	260	NV	NV	0.0055 U	0.0075 U	--	--	0.007 U	0.0069 U	0.011 U

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Table 6-1
Ecological Soil Analytical Results
Wild River Land Trust
Port Orford, Oregon

Location:	DEQ Ecological RBC, Soil, Direct Toxicity[1]		DEQ Ecological RBC, Soil, Ground Feeding[1]		DEQ Ecological RBC, Soil, Top Consumer[1]		DEQ Background Metals, Klamath Mountains[2]	Site-specific Background	SL09GP01	SL14GP01	SL15GP01	SL16TP01	SL16TP02	SL16TP03	SL20GP01
Sample Name:								DU08SS	JLTR6	JLTS6	JLTS8	JLTT0	JLTT1	JLTY3	JLTJT8
Collection Date:	Invertebrates	Plants	Bird, Non-TE	Mammal, Non-TE	Bird, Non-TE	Mammal, Non-TE		9/12/2020	9/10/2020	9/10/2020	9/11/2020	9/10/2020	9/10/2020	9/10/2020	9/11/2020
Collection Depth (ft bgs):								0-4 cm	0-4	0-4	0-4	0.833-1	1.0833-1.5	1.5-3	0-4
Total Metals (mg/kg)															
Aluminum	(a)	(a)	(a)	(a)	(a)	(a)	NV	22,200	23,000	18,100	36,400	17,400	27,100	35,200	27,600
Antimony	78	11	NV	2.7	NV	49	0.59	0.094	0.84 U	0.9 U	0.96 U	1.2 J	4.4 J	1 UJ	0.92 U
Arsenic	6.8	18	32	31	1,000	290	12	4.18	3.8	2.9	3.8	3.9	8.6	1.8	3.9
Barium	330	110	1,200	8,700	13,000	44,000	630	81.3	78.8	108	44.8	668	922	71.4	66.9
Beryllium	40	2.5	NV	42	NV	110	1.4	0.35	0.74	0.56	0.78	0.4 J*	0.48	0.81	0.65
Cadmium	140	32	1.6	4	7.7	1,700	0.52	0.375	0.11 J*	0.45 U	0.43 U	0.51 U	0.47 U	0.5 U	0.47 U
Calcium	NV	NV	NV	NV	NV	NV	NV	4340	3800	5980	1850	54000	58200	4010	3450
Chromium	NV	NV	73	1,600	560	10,000	890	67.1	65.2	59.1	114	40	37	109	82.7
Cobalt	NV	13	170	640	1,400	3,300	3 - 50	23.1	33.6	15.4	17.7	7.1	6.2	9	10.7
Copper	80	70	43	70	240	1,600	110	57.3	58.5	52.5	54.2	123	88.5	30.8	70.3
Iron	NV	NV	NV	NV	NV	NV	NV	30300	36,400	27,800	43,400	19,000	19,900	48,100	38,300
Lead	1,700	120	23	170	160	1,600	36	15.2	13.4 J	14.5 J	10.3 J	9.2	18.1	9.1	26 J
Magnesium	NV	NV	NV	NV	NV	NV	NV	11700	11,800	10,800	12,900	4,970	5,950	4,430	6,760
Manganese	450	220	2,700	5,400	50,000	34,000	3,000	1140	827	529	377	1110	1630	234	308
Mercury	0.05	34	0.13	17	0.58	130	0.17	0.066	0.11 U	0.11 U	0.12 U	0.13 U	0.12 U	0.13 U	0.14
Nickel	280	38	81	21	440	580	630	69.8	86.5	67.5	123	45.3	34.5	66.1	61.3
Potassium	NV	NV	NV	NV	NV	NV	NV	1060	519	945	329 J*	3830	5370	1670	377 J*
Selenium	4.1	0.52	1.4	1	7.5	33	0.8	NV	2.1 U	2.2 U	2.4 U	1 J*	2.3 U	2.6 U	0.48 J*
Silver	NV	560	26	140	130	10,000	0.16	0.067	0.96	0.78 J*	1	0.33 J*	0.38 J*	0.6 J*	0.98
Sodium	NV	NV	NV	NV	NV	NV	NV	174	45.5 J*	481	31.4 J*	2310	4190	494 J*	42 J*
Thallium	NV	0.05	45	4.2	480	50	0.31	0.076	0.42 U	0.45 U	0.48 U	0.49 U	0.46 U	0.51 U	0.46 U
Vanadium	NV	60	9.5	610	110	1,600	290	75.8	72.7 J	51.3 J	77.8 J	36	60	75.9	72.1 J
Zinc	120	160	120	980	590	30,000	140	93.1	97.6	104	74.7	92.6	108	45.1	169
PCB Aroclors (mg/kg)															
Total PCBs[b]	NV	160	0.24	0.073	1.9	6.9	NV	NV	0.011 U	--	--	--	--	--	--
Dioxins (pg/g)															
1,2,3,4,6,7,8-HpCDD	NV	NV	1,500	7	15,000	11	NV	41	--	30	69	82	34	1.3 J*	450
1,2,3,4,6,7,8-HpCDF	NV	NV	230	11	2,300	17	NV	10.4	--	8.2	5.5	6.3	4.7 J*	0.44 U	55
1,2,3,4,7,8,9-HpCDF	NV	NV	230	11	2,300	17	NV	0.73 J	--	0.68 J*	0.46 J*	0.64 J*	0.46 U	0.46 U	3.5 J*
1,2,3,4,7,8-HxCDD	NV	NV	51	1.2	500	1.8	NV	0.811 J	--	0.89 J*	1.7 J*	1.3 J*	0.64 J*	0.47 U	3.7 J*
1,2,3,4,7,8-HxCDF	NV	NV	23	1.1	230	1.7	NV	0.868 J	--	0.73 J*	0.4 J*	0.7 J*	0.42 J*	0.4 U	2.9 J*
1,2,3,6,7,8-HxCDD	NV	NV	190	0.89	1,900	1.4	NV	2.09 J	--	1.5 J*	3.3 J*	3.7 J*	1.7 J*	0.5 U	13
1,2,3,6,7,8-HxCDF	NV	NV	23	1.1	230	1.7	NV	0.679 J	--	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	1.7 J*
1,2,3,7,8,9-HxCDD	NV	NV	19	0.89	190	1.4	NV	1.54 J	--	1.1 J*	2.9 J*	2.7 J*	1.1 J*	0.34 U	7.3
1,2,3,7,8,9-HxCDF	NV	NV	30	1.4	300	2.2	NV	0.33 U	--	0.44 U	0.44 U	0.44 U	0.44 U	0.44 U	0.89 J*
1,2,3,7,8-PeCDD	NV	NV	5.9	0.28	59	0.43	NV	0.61 J	--	0.35 U	0.94 J*	0.92 J*	0.39 J*	0.35 U	2.2 J*
1,2,3,7,8-PeCDF	NV	NV	41	6.5	400	9.8	NV	0.353 J	--	0.38 U	0.38 U	0.38 U	0.38 U	0.38 U	0.62 J*
2,3,4,6,7,8-HxCDF	NV	NV	23	1.1	230	1.7	NV	1.01 J	--	0.69 J*	0.41 U	0.47 J*	0.41 U	0.41 U	2.7 J*
2,3,4,7,8-PeCDF	NV	NV	4.1	0.65	40	0.98	NV	0.878 J	--	0.43 U	0.43 U	0.43 U	0.43 U	0.43 U	1.3 J*
2,3,7,8-TCDD	5,000,000	NV	5.2	0.25	52	0.38	NV	0.669	--	0.18 J*	0.26 J*	0.25 J*	0.15 J*	0.11 U	0.84 J*
2,3,7,8-TCDF	NV	NV	6.4	3	63	4.6	NV	0.424 J	--	0.16 J*	0.11 U	0.15 J*	0.12 U	0.11 U	0.45 J*
OCDD	NV	NV	19,000	300	190,000	460	NV	364	--	250	350	450	220	7.2 J*	4,700 J
OCDF	NV	NV	14,000	220	140,000	340	NV	36	--	23	20	26	17	0.87 U	220
Dioxin/furan TEQ (avian)[c][3]	5,000,000	NV	5.2	NV	52	NV	NV	3.31	--	1.3 J*	2.2 J*	2.3 J*	1.2 J*	0.64 J*	8.2 J*

Table 6-1
Ecological Soil Analytical Results
Wild River Land Trust
Port Orford, Oregon

Location:	DEQ Ecological RBC, Soil, Direct Toxicity[1]		DEQ Ecological RBC, Soil, Ground Feeding[1]		DEQ Ecological RBC, Soil, Top Consumer[1]		DEQ Background Metals, Klamath Mountains[2]	Site-specific Background
Sample Name:								DU08SS
Collection Date:	Invertebrates	Plants	Bird, Non-TE	Mammal, Non-TE	Bird, Non-TE	Mammal, Non-TE		9/12/2020
Collection Depth (ft bgs):								0-4 cm
Dioxin/furan TEQ (mammal)[d][4]	5,000,000	NV	NV	0.25	NV	0.38	NV	2.97
TPH (mg/kg)								
Gasoline-Range Hydrocarbons	120	120	5,000	5,000	5,000	5,000	NV	NV
Diesel-Range Hydrocarbons	NV	NV	NV	NV	NV	NV	NV	NV
Lube-Oil-Range Hydrocarbons	NV	NV	NV	NV	NV	NV	NV	NV
Total Diesel+Oil[e]	260	260	6,000	6,000	6,000	6,000	NV	NV
TPH with Silica-Gel Treatment (mg/kg)								
Diesel-Range Hydrocarbons	NV	NV	NV	NV	NV	NV	NV	NV
Lube-Oil-Range Hydrocarbons	NV	NV	NV	NV	NV	NV	NV	NV
Total Diesel+Oil[e]	260	260	6,000	6,000	6,000	6,000	NV	NV
SVOCs (mg/kg)								
1,1'-Biphenyl	NV	NV	NV	NV	NV	NV	NV	NV
1,2,4,5-Tetrachlorobenzene	NV	NV	NV	NV	NV	NV	NV	NV
1,4-Dioxane	NV	NV	NV	3.6	NV	180	NV	NV
2,3,4,6-Tetrachlorophenol	NV	NV	NV	NV	NV	NV	NV	NV
2,4,5-Trichlorophenol	NV	NV	NV	NV	NV	NV	NV	NV
2,4,6-Trichlorophenol	NV	NV	NV	NV	NV	NV	NV	NV
2,4-Dichlorophenol	NV	NV	NV	NV	NV	NV	NV	NV
2,4-Dimethylphenol	NV	NV	NV	NV	NV	NV	NV	NV
2,4-Dinitrophenol	NV	NV	NV	NV	NV	NV	NV	NV
2,4-Dinitrotoluene	NV	NV	NV	NV	NV	NV	NV	NV
2,6-Dinitrotoluene	NV	NV	NV	NV	NV	NV	NV	NV
2-Chloronaphthalene	NV	NV	NV	NV	NV	NV	NV	NV
2-Chlorophenol	NV	NV	3.9	5.4	140	3,400	NV	NV
2-Methylnaphthalene	NV	NV	NV	160	NV	49,000	NV	NV
2-Methylphenol	NV	0.67	NV	5,800	NV	190,000	NV	NV
2-Nitroaniline	NV	NV	NV	10	NV	4,400	NV	NV
2-Nitrophenol	NV	NV	NV	NV	NV	NV	NV	NV
3- & 4-Methylphenol (m,p-Cresol)	NV	NV	NV	NV	NV	NV	NV	NV
3,3-Dichlorobenzidine	NV	NV	NV	NV	NV	NV	NV	NV
3-Nitroaniline	NV	NV	NV	NV	NV	NV	NV	NV
4,6-Dinitro-2-methylphenol	NV	NV	NV	NV	NV	NV	NV	NV
4-Bromophenylphenyl ether	NV	NV	NV	NV	NV	NV	NV	NV
4-Chloro-3-methylphenol	NV	NV	NV	NV	NV	NV	NV	NV
4-Chloroaniline	1.8	1	NV	NV	NV	NV	NV	NV
4-Chlorophenylphenyl ether	NV	NV	NV	NV	NV	NV	NV	NV
4-Methylphenol	NV	NV	NV	NV	NV	NV	NV	NV
4-Nitroaniline	NV	NV	NV	NV	NV	NV	NV	NV
4-Nitrophenol	NV	NV	NV	NV	NV	NV	NV	NV
Acenaphthene	NV	0.25	NV	1,300	NV	290,000	NV	NV
Acenaphthylene	NV	NV	NV	1,200	NV	280,000	NV	NV
Acetophenone	NV	NV	NV	NV	NV	NV	NV	NV
Anthracene	NV	6.8	NV	2,100	NV	380,000	NV	NV
Atrazine	NV	NV	NV	NV	NV	NV	NV	NV
Benzaldehyde	NV	NV	NV	NV	NV	NV	NV	NV

Location:	SL09GP01	SL14GP01	SL15GP01	SL16TP01	SL16TP02	SL16TP03	SL20GP01
Sample Name:	JLTR6	JLTS6	JLTS8	JLTT0	JLTT1	JLTY3	JLTJT8
Collection Date:	9/10/2020	9/10/2020	9/11/2020	9/10/2020	9/10/2020	9/10/2020	9/11/2020
Collection Depth (ft bgs):	0-4	0-4	0-4	0.833-1	1.0833-1.5	1.5-3	0-4
Dioxin/furan TEQ (mammal)[d][4]	--	1.4 J*	3.0 J*	3.2 J*	1.5 J*	0.48 J*	13 J*
TPH (mg/kg)							
Gasoline-Range Hydrocarbons	--	9.4 U	10 U	20 U	10 U	9.3 U	9.8 U
Diesel-Range Hydrocarbons	45 U	47 U	50 U	54 U	51 U	55 U	49 U
Lube-Oil-Range Hydrocarbons	160	220	120 U	130 U	130 U	140 U	120 U
Total Diesel+Oil[e]	180	240	120 U	130 U	130 U	140 U	120 U
TPH with Silica-Gel Treatment (mg/kg)							
Diesel-Range Hydrocarbons	--	--	--	--	--	--	--
Lube-Oil-Range Hydrocarbons	--	--	--	--	--	--	--
Total Diesel+Oil[e]	--	--	--	--	--	--	--
SVOCs (mg/kg)							
1,1'-Biphenyl	0.19 U	0.19 U	0.21 U	0.22 U	0.21 U	0.23 U	0.21 U
1,2,4,5-Tetrachlorobenzene	0.19 U	0.19 U	0.21 U	0.22 U	0.21 U	0.23 U	0.21 U
1,4-Dioxane	0.076 U	0.075 U	0.083 U	0.088 U	0.084 U	0.092 UJ	0.084 U
2,3,4,6-Tetrachlorophenol	0.19 U	0.19 U	0.21 U	0.22 U	0.21 U	0.23 U	0.21 U
2,4,5-Trichlorophenol	0.19 U	0.19 U	0.21 U	0.22 U	0.21 U	0.23 U	0.21 U
2,4,6-Trichlorophenol	0.19 U	0.19 U	0.21 U	0.22 U	0.21 U	0.23 U	0.21 U
2,4-Dichlorophenol	0.19 U	0.19 U	0.21 U	0.22 U	0.21 U	0.23 U	0.21 U
2,4-Dimethylphenol	0.19 U	0.19 U	0.21 U	0.22 UJ	0.21 U	0.23 U	0.21 U
2,4-Dinitrophenol	0.37 U	0.37 U	0.41 U	0.44 U	0.41 U	0.46 U	0.41 U
2,4-Dinitrotoluene	0.19 U	0.19 U	0.21 U	0.22 U	0.21 U	0.23 U	0.21 U
2,6-Dinitrotoluene	0.19 U	0.19 U	0.21 U	0.22 U	0.21 U	0.23 U	0.21 U
2-Chloronaphthalene	0.19 U	0.19 U	0.21 U	0.22 U	0.21 U	0.23 U	0.21 U
2-Chlorophenol	0.19 U	0.19 U	0.21 U	0.22 U	0.21 U	0.23 U	0.21 U
2-Methylnaphthalene	0.19 R	0.19 R	0.21 R	0.22 R	0.21 R	0.23 R	0.21 R
2-Methylphenol	0.37 U	0.37 U	0.41 U	0.44 UJ	0.41 U	0.46 U	0.41 U
2-Nitroaniline	0.19 U	0.19 UJ	0.21 UJ	0.22 UJ	0.21 UJ	0.23 UJ	0.21 UJ
2-Nitrophenol	0.19 U	0.19 U	0.21 U	0.22 U	0.21 U	0.23 U	0.21 U
3- & 4-Methylphenol (m,p-Cresol)	--	--	--	--	--	--	--
3,3-Dichlorobenzidine	0.37 U	0.37 U	0.41 U	0.44 U	0.41 U	0.46 U	0.41 U
3-Nitroaniline	0.37 U	0.37 U	0.41 U	0.44 U	0.41 U	0.46 U	0.41 U
4,6-Dinitro-2-methylphenol	0.37 U	0.37 U	0.41 U	0.44 UJ	0.41 U	0.46 U	0.41 U
4-Bromophenylphenyl ether	0.19 U	0.19 U	0.21 U	0.22 U	0.21 U	0.23 U	0.21 U
4-Chloro-3-methylphenol	0.19 U	0.19 U	0.21 U	0.22 U	0.21 U	0.23 U	0.21 U
4-Chloroaniline	0.37 U	0.37 U	0.41 U	0.44 U	0.41 U	0.46 U	0.41 U
4-Chlorophenylphenyl ether	0.19 U	0.19 U	0.21 U	0.22 U	0.21 U	0.23 U	0.21 U
4-Methylphenol	0.37 U	0.37 U	0.41 U	0.44 UJ	0.41 U	0.46 U	0.41 U
4-Nitroaniline	0.37 U	0.37 U	0.41 U	0.44 U	0.41 U	0.46 U	0.41 U
4-Nitrophenol	0.37 U	0.37 U	0.41 U	0.44 U	0.41 U	0.46 U	0.41 U
Acenaphthene	0.19 R	0.19 R	0.21 R	0.22 R	0.21 R	0.23 R	0.21 R
Acenaphthylene	0.19 R	0.19 R	0.21 R	0.22 R	0.21 R	0.23 R	0.21 R
Acetophenone	0.37 U	0.37 U	0.41 U	0.44 U	0.41 U	0.46 U	0.41 U
Anthracene	0.19 R	0.19 R	0.21 R	0.22 R	0.21 R	0.23 R	0.21 R
Atrazine	0.37 U	0.37 U	0.41 U	0.44 U	0.41 U	0.46 U	0.41 U
Benzaldehyde	0.37 U	0.37 U	0.41 U	0.44 U	0.41 U	0.46 U	0.41 U

Location:	DEQ Ecological RBC, Soil, Direct Toxicity[1]		DEQ Ecological RBC, Soil, Ground Feeding[1]		DEQ Ecological RBC, Soil, Top Consumer[1]		DEQ Background Metals, Klamath Mountains[2]	Site-specific Background	SL09GP01	SL14GP01	SL15GP01	SL16TP01	SL16TP02	SL16TP03	SL20GP01
Sample Name:								DU08SS	JLTR6	JLTS6	JLTS8	JLTT0	JLTT1	JLTY3	JLTJT8
Collection Date:	Invertebrates	Plants	Bird, Non-TE	Mammal, Non-TE	Bird, Non-TE	Mammal, Non-TE		9/12/2020	9/10/2020	9/10/2020	9/11/2020	9/10/2020	9/10/2020	9/10/2020	9/11/2020
Collection Depth (ft bgs):								0-4 cm	0-4	0-4	0-4	0.833-1	1.0833-1.5	1.5-3	0-4
Benzo(a)anthracene	NV	18	7.3	34	64	1,100	NV	NV	0.19 R	0.19 R	0.21 R	0.22 R	0.21 R	0.23 R	0.21 R
Benzo(a)pyrene	NV	NV	NV	190	NV	11,000	NV	NV	0.19 R	0.19 R	0.21 R	0.22 R	0.21 R	0.23 R	0.21 R
Benzo(b)fluoranthene	NV	18	NV	440	NV	24,000	NV	NV	0.19 R	0.19 R	0.21 R	0.22 R	0.21 R	0.23 R	0.21 R
Benzo(ghi)perylene	NV	NV	NV	250	NV	36,000	NV	NV	0.19 R	0.19 R	0.21 R	0.22 R	0.21 R	0.23 R	0.21 R
Benzo(k)fluoranthene	NV	NV	NV	NV	NV	NV	NV	NV	0.19 R	0.19 R	0.21 R	0.22 R	0.21 R	0.23 R	0.21 R
Bis(2-chloro-1-methylethyl)ether	NV	NV	NV	NV	NV	NV	NV	NV	0.37 U	0.37 U	0.41 U	0.44 U	0.41 U	0.46 U	0.41 U
Bis(2-chloroethoxy)methane	NV	NV	NV	NV	NV	NV	NV	NV	0.19 U	0.19 U	0.21 U	0.22 U	0.21 U	0.23 U	0.21 U
Bis(2-chloroethyl)ether	NV	NV	NV	NV	NV	NV	NV	NV	0.37 U	0.37 U	0.41 U	0.44 U	0.41 U	0.46 U	0.41 U
Bis(2-ethylhexyl)phthalate	NV	NV	0.2	6	0.96	1,700	NV	NV	0.19 U	0.19 U	0.21 U	0.22 U	0.21 U	0.23 U	0.21 U
Butylbenzylphthalate	NV	NV	NV	900	NV	74,000	NV	NV	0.19 U	0.19 U	0.21 U	0.22 U	0.21 U	0.23 U	0.21 U
Caprolactam	NV	NV	NV	NV	NV	NV	NV	NV	0.37 U	0.37 U	0.41 U	0.44 U	0.41 U	0.46 U	0.41 U
Carbazole	NV	NV	NV	790	NV	130,000	NV	NV	0.37 U	0.37 U	0.41 U	0.44 U	0.41 U	0.46 U	0.41 U
Chrysene	NV	NV	NV	31	NV	1,100	NV	NV	0.19 R	0.19 R	0.21 R	0.22 R	0.21 R	0.23 R	0.21 R
Dibenzo(a,h)anthracene	NV	NV	NV	140	NV	8,500	NV	NV	0.19 R	0.19 R	0.21 R	0.22 R	0.21 R	0.23 R	0.21 R
Dibenzofuran	NV	6.1	NV	NV	NV	NV	NV	NV	0.19 U	0.19 U	0.21 U	0.22 U	0.21 U	0.23 U	0.21 U
Diethyl phthalate	NV	100	NV	18,000	NV	3,200,000	NV	NV	0.19 U	0.19 U	0.21 U	0.22 U	0.21 U	0.23 U	0.21 U
Dimethyl phthalate	10	NV	NV	400	NV	57,000	NV	NV	0.19 U	0.19 U	0.21 U	0.22 U	0.21 U	0.23 U	0.21 U
Di-n-butyl phthalate	NV	160	0.11	450	0.52	50,000	NV	NV	0.19 U	0.19 U	0.21 U	0.22 U	0.21 U	0.23 U	0.21 U
Di-n-octyl phthalate	NV	NV	NV	4.6	NV	2,300	NV	NV	0.37 U	0.37 U	0.41 U	0.44 U	0.41 U	0.46 U	0.41 U
Fluoranthene	10	NV	NV	220	NV	39,000	NV	NV	0.37 R	0.37 R	0.41 R	0.44 R	0.41 R	0.46 R	0.41 R
Fluorene	3.7	NV	NV	510	NV	100,000	NV	NV	0.19 R	0.19 R	0.21 R	0.22 R	0.21 R	0.23 R	0.21 R
Hexachlorobenzene	10	10	0.79	2	3.7	590	NV	NV	0.19 U	0.19 U	0.21 U	0.22 U	0.21 U	0.23 U	0.21 U
Hexachlorobutadiene	NV	NV	NV	NV	NV	NV	NV	NV	0.19 U	0.19 U	0.21 U	0.22 U	0.21 U	0.23 U	0.21 U
Hexachlorocyclopentadiene	NV	NV	NV	NV	NV	NV	NV	NV	0.37 U	0.37 U	0.41 U	0.44 U	0.41 U	0.46 U	0.41 U
Hexachloroethane	NV	NV	NV	NV	NV	NV	NV	NV	0.19 U	0.19 U	0.21 U	0.22 U	0.21 U	0.23 U	0.21 U
Indeno(1,2,3-cd)pyrene	NV	NV	NV	710	NV	46,000	NV	NV	0.19 R	0.19 R	0.21 R	0.22 R	0.21 R	0.23 R	0.21 R
Isophorone	NV	NV	NV	NV	NV	NV	NV	NV	0.19 U	0.19 U	0.21 U	0.22 U	0.21 U	0.23 U	0.21 U
Naphthalene	NV	1	34	27	780	16,000	NV	NV	0.19 R	0.19 R	0.21 R	0.22 R	0.21 R	0.23 R	0.21 R
Nitrobenzene	2.2	NV	NV	48	NV	41,000	NV	NV	0.19 U	0.19 U	0.21 U	0.22 U	0.21 U	0.23 U	0.21 U
N-Nitrosodiphenylamine	NV	NV	NV	NV	NV	NV	NV	NV	0.19 U	0.19 U	0.21 U	0.22 U	0.21 U	0.23 U	0.21 U
N-Nitrosodipropylamine	NV	NV	NV	NV	NV	NV	NV	NV	0.19 U	0.19 U	0.21 U	0.22 U	0.21 U	0.23 U	0.21 U
Pentachlorophenol	31	5	3.6	8.1	17	85	NV	NV	0.37 R	0.37 R	0.41 R	0.44 R	0.41 R	0.46 R	0.41 R
Phenanthrene	5.5	NV	NV	110	NV	19,000	NV	NV	0.19 R	0.19 R	0.21 R	0.22 R	0.21 R	0.23 R	0.21 R
Phenol	1.8	0.79	NV	370	NV	430,000	NV	NV	0.37 U	0.37 U	0.41 U	0.44 U	0.41 U	0.46 U	0.41 U
Pyrene	10	NV	330	230	1,600	31,000	NV	NV	0.19 R	0.19 R	0.21 R	0.22 R	0.21 R	0.23 R	0.21 R
SVOCs by SIM (mg/kg)															
1-Methylnaphthalene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
2-Chloronaphthalene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
2-Methylnaphthalene	NV	NV	NV	160	NV	49,000	NV	NV	0.011 J	0.037 U	0.0041 U	0.0044 U	0.0041 U	0.0046 U	0.0022 J*
Acenaphthene	NV	0.25	NV	1,300	NV	290,000	NV	NV	0.0011 J*	0.037 U	0.0041 U	0.0044 U	0.0041 U	0.0046 U	0.0041 U
Acenaphthylene	NV	NV	NV	1,200	NV	280,000	NV	NV	0.0008 J*	0.037 U	0.0041 U	0.0044 U	0.0041 U	0.0046 U	0.00053 J*
Anthracene	NV	6.8	NV	2,100	NV	380,000	NV	NV	0.0037 U	0.0094 J*	0.0041 U	0.0044 U	0.0041 U	0.0046 U	0.0041 U
Benzo(a)anthracene	NV	18	7.3	34	64	1,100	NV	NV	0.029 J	0.037 U	0.0041 U	0.0044 UJ	0.0041 U	0.0046 U	0.00046 J*
Benzo(a)pyrene	NV	NV	NV	190	NV	11,000	NV	NV	0.0037 U	0.037 U	0.0041 U	0.0044 UJ	0.0041 U	0.0046 U	0.0041 U
Benzo(b)fluoranthene	NV	18	NV	440	NV	24,000	NV	NV	0.012	0.037 U	0.0041 U	0.0044 UJ	0.0041 U	0.0046 U	0.0026 J*
Benzo(ghi)perylene	NV	NV	NV	250	NV	36,000	NV	NV	0.0037 U	0.037 U	0.0041 U	0.0044 UJ	0.0041 U	0.0046 U	0.0041 U

Table 6-1
Ecological Soil Analytical Results
Wild River Land Trust
Port Orford, Oregon

Location:	DEQ Ecological RBC, Soil, Direct Toxicity[1]		DEQ Ecological RBC, Soil, Ground Feeding[1]		DEQ Ecological RBC, Soil, Top Consumer[1]		DEQ Background Metals, Klamath Mountains[2]	Site-specific Background	SL09GP01	SL14GP01	SL15GP01	SL16TP01	SL16TP02	SL16TP03	SL20GP01
Sample Name:								DU08SS	JLTR6	JLTS6	JLTS8	JLTT0	JLTT1	JLTY3	JLTJT8
Collection Date:	Invertebrates	Plants	Bird, Non-TE	Mammal, Non-TE	Bird, Non-TE	Mammal, Non-TE		9/12/2020	9/10/2020	9/10/2020	9/11/2020	9/10/2020	9/10/2020	9/10/2020	9/11/2020
Collection Depth (ft bgs):								0-4 cm	0-4	0-4	0-4	0.833-1	1.0833-1.5	1.5-3	0-4
Benzo(k)fluoranthene	NV	NV	NV	NV	NV	NV	NV	NV	0.0037 U	0.037 U	0.0041 U	0.0044 UJ	0.0041 U	0.0046 U	0.0041 U
Chrysene	NV	NV	NV	31	NV	1,100	NV	NV	0.0037 U	0.037 U	0.0041 U	0.0044 UJ	0.00053 J*	0.0046 U	0.0015 J*
Dibenzo(a,h)anthracene	NV	NV	NV	140	NV	8,500	NV	NV	0.0037 U	0.037 U	0.0041 U	0.0044 UJ	0.0041 U	0.0046 U	0.0041 U
Fluoranthene	10	NV	NV	220	NV	39,000	NV	NV	0.0044	0.037 U	0.0041 U	0.0044 UJ	0.0005 J*	0.0046 U	0.0049
Fluorene	3.7	NV	NV	510	NV	100,000	NV	NV	0.0037 U	0.037 U	0.0041 U	0.0044 U	0.0041 U	0.0046 U	0.0041 U
Indeno(1,2,3-cd)pyrene	NV	NV	NV	710	NV	46,000	NV	NV	0.0037 U	0.037 U	0.0041 U	0.0044 UJ	0.0041 U	0.0046 U	0.0041 U
Naphthalene	NV	1	34	27	780	16,000	NV	NV	0.0071 J	0.037 U	0.0041 U	0.0021 J*	0.0041 U	0.0046 U	0.0024 J*
Pentachlorophenol	31	5	3.6	8.1	17	85	NV	NV	0.0033 J*	0.075 U	0.0083 U	0.0088 U	0.0084 U	0.0092 U	0.0028 J*
Phenanthrene	5.5	NV	NV	110	NV	19,000	NV	NV	0.023 J	0.0098 J*	0.00059 J*	0.0016 J*	0.00083 J*	0.0046 U	0.0044
Pyrene	10	NV	330	230	1,600	31,000	NV	NV	0.0037 U	0.037 U	0.0041 U	0.0044 UJ	0.0041 U	0.0046 U	0.0038 J*
Total LPAH(f)(5)	29	NV	67	540	37,000	59,000	NV	NV	0.047 J*	0.11 J*	0.013 J*	0.015 J*	0.013 J*	0.0023 U	0.016 J*
Total HPAH(g)(5)	18	NV	0.55	5.9	64	550	NV	NV	0.047 J	0.0185 U	0.00205 U	0.0022 UJ	0.017 J*	0.0023 U	0.024 J*
VOCs (mg/kg)															
1,1,1,2-Tetrachloroethane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
1,1,1-Trichloroethane	NV	NV	NV	1,300	NV	450,000	NV	NV	--	0.0093 U	0.0076 U	0.02 UJ	0.011 U	0.0073 U	0.0089 U
1,1,2,2-Tetrachloroethane	NV	NV	NV	NV	NV	NV	NV	NV	--	0.0093 U	0.0076 U	0.02 UJ	0.011 U	0.0073 U	0.0089 U
1,1,2-Trichloroethane	NV	NV	NV	NV	NV	NV	NV	NV	--	0.0093 U	0.0076 U	0.02 U	0.011 U	0.0073 U	0.0089 U
1,1-Dichloroethane	NV	NV	NV	2,100	NV	2,500,000	NV	NV	--	0.0093 U	0.0076 U	0.02 UJ	0.011 U	0.0073 U	0.0089 U
1,1-Dichloroethene	NV	NV	NV	60	NV	1,600	NV	NV	--	0.0093 U	0.0076 U	0.02 UJ	0.011 U	0.0073 U	0.0089 UJ
1,1-Dichloropropene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
1,2,3-Trichlorobenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	0.0093 U	0.0076 U	0.02 UJ	0.011 UJ	0.0073 U	0.0089 UJ
1,2,3-Trichloropropane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
1,2,3-Trimethylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
1,2,4-Trichlorobenzene	1.2	NV	NV	2.7	NV	1,100	NV	NV	--	0.0093 U	0.0076 U	0.02 UJ	0.011 UJ	0.0073 U	0.0089 UJ
1,2,4-Trimethylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
1,2-Dibromo-3-chloropropane	NV	NV	NV	NV	NV	NV	NV	NV	--	0.0093 U	0.0076 U	0.02 UJ	0.011 U	0.0073 U	0.0089 U
1,2-Dibromoethane	NV	NV	NV	NV	NV	NV	NV	NV	--	0.0093 U	0.0076 U	0.02 U	0.011 U	0.0073 U	0.0089 U
1,2-Dichlorobenzene	NV	NV	NV	9.2	NV	4,800	NV	NV	--	0.0093 U	0.0076 U	0.02 UJ	0.011 UJ	0.0073 U	0.0089 UJ
1,2-Dichloroethane	NV	NV	1.6	270	44	84,000	NV	NV	--	0.0093 U	0.0076 U	0.02 UJ	0.011 U	0.0073 U	0.0089 U
1,2-Dichloropropane	NV	NV	NV	NV	NV	NV	NV	NV	--	0.0093 U	0.0076 U	0.02 U	0.011 U	0.0073 U	0.0089 U
1,3,5-Trimethylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
1,3-Dichlorobenzene	NV	NV	NV	7.4	NV	3,800	NV	NV	--	0.0093 U	0.0076 U	0.02 UJ	0.011 UJ	0.0073 U	0.0089 UJ
1,3-Dichloropropane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
1,4-Dichlorobenzene	1.2	NV	NV	3.5	NV	1,800	NV	NV	--	0.0093 U	0.0076 U	0.02 UJ	0.011 UJ	0.0073 U	0.0089 UJ
2,2-Dichloropropane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
2-Butanone	NV	NV	NV	920	NV	3,500,000	NV	NV	--	0.01 J*	0.015 U	0.041 UJ	0.022 U	0.015 U	0.018 U
2-Chlorotoluene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
2-Hexanone	NV	NV	3.6	20	17	22,000	NV	NV	--	0.019 U	0.015 U	0.041 U	0.022 U	0.015 U	0.018 U
4-Chlorotoluene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
4-Isopropyltoluene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
4-Methyl-2-pentanone	NV	NV	NV	97	NV	180,000	NV	NV	--	0.019 U	0.015 U	0.041 U	0.022 U	0.015 U	0.018 U
Acetone	NV	NV	75	6.3	8,400	8,900	NV	NV	--	0.088	0.0086 J*	0.32 J	0.053	0.041	0.029
Acrylonitrile	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
Benzene	NV	NV	NV	240	NV	43,000	NV	NV	--	0.01	0.0054 J*	0.074 J	0.0059 J*	0.0013 J*	0.0089 U
Bromobenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--

Table 6-1
Ecological Soil Analytical Results
Wild River Land Trust
Port Orford, Oregon

Location:	DEQ Ecological RBC, Soil, Direct Toxicity[1]		DEQ Ecological RBC, Soil, Ground Feeding[1]		DEQ Ecological RBC, Soil, Top Consumer[1]		DEQ Background Metals, Klamath Mountains[2]	Site-specific Background	SL09GP01	SL14GP01	SL15GP01	SL16TP01	SL16TP02	SL16TP03	SL20GP01
Sample Name:								DU08SS	JLTR6	JLTS6	JLTS8	JLTT0	JLTT1	JLTY3	JLTJT8
Collection Date:	Invertebrates	Plants	Bird, Non-TE	Mammal, Non-TE	Bird, Non-TE	Mammal, Non-TE		9/12/2020	9/10/2020	9/10/2020	9/11/2020	9/10/2020	9/10/2020	9/10/2020	9/11/2020
Collection Depth (ft bgs):								0-4 cm	0-4	0-4	0-4	0.833-1	1.0833-1.5	1.5-3	0-4
Bromodichloromethane	NV	NV	NV	NV	NV	NV	NV	NV	--	0.0093 U	0.0076 U	0.02 U	0.011 U	0.0073 U	0.0089 U
Bromoform	NV	NV	NV	NV	NV	NV	NV	NV	--	0.0093 U	0.0076 U	0.02 UJ	0.011 U	0.0073 U	0.0089 U
Bromomethane	NV	NV	NV	NV	NV	NV	NV	NV	--	0.0093 U	0.0076 U	0.02 UJ	0.011 U	0.0073 U	0.0089 U
Carbon disulfide	NV	NV	NV	8.1	NV	1,900	NV	NV	--	0.0093 U	0.0076 U	0.02 UJ	0.011 U	0.0073 U	0.0089 U
Carbon tetrachloride	NV	NV	NV	NV	NV	NV	NV	NV	--	0.0093 U	0.0076 U	0.02 U	0.011 U	0.0073 U	0.0089 U
Chlorobenzene	2.4	NV	NV	430	NV	250,000	NV	NV	--	0.0093 U	0.0076 U	0.02 UJ	0.011 UJ	0.0073 U	0.0089 UJ
Chlorobromomethane	NV	NV	NV	NV	NV	NV	NV	NV	--	0.0093 U	0.0076 U	0.02 UJ	0.011 U	0.0073 U	0.0089 U
Chloroethane	NV	NV	NV	NV	NV	NV	NV	NV	--	0.0093 U	0.0076 U	0.02 UJ	0.011 U	0.0073 U	0.0089 U
Chloroform	NV	NV	NV	21	NV	6,000	NV	NV	--	0.0093 U	0.0076 U	0.02 UJ	0.011 U	0.0073 U	0.0089 U
Chloromethane	NV	NV	NV	NV	NV	NV	NV	NV	--	0.0093 U	0.0076 U	0.02 UJ	0.011 U	0.0073 U	0.0089 U
cis-1,2-Dichloroethene	NV	NV	NV	NV	NV	NV	NV	NV	--	0.0093 U	0.0076 U	0.02 UJ	0.011 U	0.0073 U	0.0089 UJ
cis-1,3-Dichloropropene	NV	NV	NV	NV	NV	NV	NV	NV	--	0.0093 U	0.0076 U	0.02 U	0.011 U	0.0073 U	0.0089 U
Cyclohexane	NV	NV	NV	NV	NV	NV	NV	NV	--	0.0093 U	0.0076 U	0.02 UJ	0.011 U	0.0073 U	0.0089 U
Dibromochloromethane	NV	NV	NV	NV	NV	NV	NV	NV	--	0.0093 U	0.0076 U	0.02 U	0.011 U	0.0073 U	0.0089 U
Dibromomethane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
Dichlorodifluoromethane (Freon 12	NV	NV	NV	NV	NV	NV	NV	NV	--	0.0093 U	0.0076 U	0.02 UJ	0.011 U	0.0073 U	0.0089 U
Diisopropyl Ether	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
Ethylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	0.013	0.0076 U	0.02 U	0.011 U	0.0073 U	0.0089 U
Freon 113	NV	NV	NV	NV	NV	NV	NV	NV	--	0.0093 U	0.0076 U	0.02 UJ	0.011 U	0.0073 U	0.0089 U
Hexachlorobutadiene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
Isopropylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	0.0093 U	0.0076 U	0.02 U	0.011 U	0.0073 U	0.0089 U
m,p-Xylene	NV	NV	NV	NV	NV	NV	NV	NV	--	0.0095	0.0012 J*	0.02 U	0.011 U	0.0073 U	0.0089 U
Methyl acetate	NV	NV	NV	NV	NV	NV	NV	NV	--	0.009 J*	0.016	0.02 UJ	0.011 U	0.0042 J*	0.0089 U
Methyl tert-butyl ether	NV	NV	NV	NV	NV	NV	NV	NV	--	0.0093 U	0.0076 U	0.02 UJ	0.011 U	0.0073 U	0.0089 U
Methylcyclohexane	NV	NV	NV	NV	NV	NV	NV	NV	--	0.0093 U	0.0076 U	0.02 U	0.011 U	0.0073 U	0.0089 U
Methylene chloride	NV	1,600	NV	22	NV	8,500	NV	NV	--	0.0093 U	0.0076 U	0.02 UJ	0.011 U	0.0073 U	0.0089 U
Naphthalene	NV	1	34	27	780	16,000	NV	NV	--	--	--	--	--	--	--
n-Butylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
n-Propylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
o-Xylene	NV	NV	NV	NV	NV	NV	NV	NV	--	0.0034 J*	0.0076 U	0.02 U	0.011 U	0.0073 U	0.0089 U
sec-Butylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
Styrene	1.2	3.2	NV	NV	NV	NV	NV	NV	--	0.0093 U	0.0076 U	0.02 U	0.011 U	0.0073 U	0.0089 U
tert-Butylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
Tetrachloroethene	NV	10	NV	0.94	NV	210	NV	NV	--	0.0093 U	0.0076 U	0.02 U	0.011 U	0.0073 U	0.0089 U
Toluene	NV	200	NV	230	NV	33,000	NV	NV	--	0.013	0.0025 J*	0.0057 J*	0.011 U	0.0073 U	0.0089 U
trans-1,2-Dichloroethene	NV	NV	NV	NV	NV	NV	NV	NV	--	0.0093 U	0.0076 U	0.02 UJ	0.011 U	0.0073 U	0.0089 UJ
trans-1,3-Dichloropropene	NV	NV	NV	NV	NV	NV	NV	NV	--	0.0093 U	0.0076 U	0.02 UJ	0.011 U	0.0073 U	0.0089 U
Trichloroethene	NV	NV	NV	420	NV	110,000	NV	NV	--	0.0093 U	0.0076 U	0.02 U	0.011 U	0.0073 U	0.0089 U
Trichlorofluoromethane (Freon 11)	NV	NV	NV	350	NV	420,000	NV	NV	--	0.0093 U	0.0076 U	0.02 UJ	0.011 U	0.0073 U	0.0089 U
Vinyl chloride	NV	NV	NV	1.2	NV	280	NV	NV	--	0.0093 U	0.0076 U	0.02 UJ	0.011 U	0.0073 U	0.0089 UJ
Xylenes, total[h]	NV	100	410	1.8	1,900	260	NV	NV	--	0.0129 J*	0.005 J*	0.02 U	0.011 U	0.0073 U	0.0089 U

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Table 6-1
Ecological Soil Analytical Results
Wild River Land Trust
Port Orford, Oregon

Location:	DEQ Ecological RBC, Soil, Direct Toxicity[1]		DEQ Ecological RBC, Soil, Ground Feeding[1]		DEQ Ecological RBC, Soil, Top Consumer[1]		DEQ Background Metals, Klamath Mountains[2]	Site-specific Background	SL21GP01	SL22GP01	SL23TP01	SL25TP01	SL26TP01	SS-1	SS-2
Sample Name:								DU08SS	JLTW0	JLTW2	JLTW4	JLTW8	JLTX0	9358-190122-SS-1	9358-190122-SS-2
Collection Date:	Invertebrates	Plants	Bird, Non-TE	Mammal, Non-TE	Bird, Non-TE	Mammal, Non-TE		9/12/2020	9/12/2020	9/12/2020	9/10/2020	9/10/2020	9/10/2020	1/22/2019	1/22/2019
Collection Depth (ft bgs):								0-4 cm	0-4	0-4	2-3	2-3	2-3	0-1	0-1
Total Metals (mg/kg)															
Aluminum	(a)	(a)	(a)	(a)	(a)	(a)	NV	22,200	32,200	37,600	47,200	24,600	20,500	--	--
Antimony	78	11	NV	2.7	NV	49	0.59	0.094	0.16 J*	0.19 J*	1 U	0.21 J*	0.16 J*	--	--
Arsenic	6.8	18	32	31	1,000	290	12	4.18	3	4.5	5.1	3.3	3.1	--	--
Barium	330	110	1,200	8,700	13,000	44,000	630	81.3	42.3	56.3	45.7	86.2	84	--	--
Beryllium	40	2.5	NV	42	NV	110	1.4	0.35	0.69	0.82	0.84	0.7	0.66	--	--
Cadmium	140	32	1.6	4	7.7	1,700	0.52	0.375	0.44 U	0.47 U	0.45 U	0.5 U	0.49 U	--	--
Calcium	NV	NV	NV	NV	NV	NV	NV	4340	2480	3290	1570	4680	4640	--	--
Chromium	NV	NV	73	1,600	560	10,000	890	67.1	82.1	107	113	71.5	79.4	--	--
Cobalt	NV	13	170	640	1,400	3,300	3 - 50	23.1	13.3	14.6	9.1	24	15.4	--	--
Copper	80	70	43	70	240	1,600	110	57.3	49.8	53.7	47.1	56.4	39.4	--	--
Iron	NV	NV	NV	NV	NV	NV	NV	30300	37,400	47,900	54,200	33,800	31,800	--	--
Lead	1,700	120	23	170	160	1,600	36	15.2	12.5	11.8	13.2 J	12.6	17.3	--	--
Magnesium	NV	NV	NV	NV	NV	NV	NV	11700	10,600	9,950	6,120	11,100	10,400	--	--
Manganese	450	220	2,700	5,400	50,000	34,000	3,000	1140	346	380	188	666	519	--	--
Mercury	0.05	34	0.13	17	0.58	130	0.17	0.066	0.14	0.16	0.16	0.13	0.15	--	--
Nickel	280	38	81	21	440	580	630	69.8	98.3	96.5	71.8	88.5	87.8	--	--
Potassium	NV	NV	NV	NV	NV	NV	NV	1060	464	574	452 U	615	572	--	--
Selenium	4.1	0.52	1.4	1	7.5	33	0.8	NV	0.54 J*	0.52 J*	0.65 J*	0.54 J*	2.3 UJ	--	--
Silver	NV	560	26	140	130	10,000	0.16	0.067	0.54 J*	0.71 J*	0.81 J*	0.55 J*	0.41 J*	--	--
Sodium	NV	NV	NV	NV	NV	NV	NV	174	44.4 J*	32.5 J*	452 U	30 J*	489 U	--	--
Thallium	NV	0.05	45	4.2	480	50	0.31	0.076	0.43 U	0.49 U	0.51 U	0.46 U	0.45 U	--	--
Vanadium	NV	60	9.5	610	110	1,600	290	75.8	70.6	90.3	106 J	65.9	61.6	--	--
Zinc	120	160	120	980	590	30,000	140	93.1	74.9	73.7	55.8	80.6	69.3	--	--
PCB Aroclors (mg/kg)															
Total PCBs[b]	NV	160	0.24	0.073	1.9	6.9	NV	NV	--	--	--	--	--	--	--
Dioxins (pg/g)															
1,2,3,4,6,7,8-HpCDD	NV	NV	1,500	7	15,000	11	NV	41	70	55	3.2 J*	400	59	195	199
1,2,3,4,6,7,8-HpCDF	NV	NV	230	11	2,300	17	NV	10.4	13	7.3	0.5 J*	89	8.3	38.2	537
1,2,3,4,7,8,9-HpCDF	NV	NV	230	11	2,300	17	NV	0.73 J	0.95 J*	0.5 J*	0.46 U	7.7	0.55 J*	3.21	18.2
1,2,3,4,7,8-HxCDD	NV	NV	51	1.2	500	1.8	NV	0.811 J	1 J*	0.66 J*	0.47 U	5.2	0.6 J*	3.99	9.99
1,2,3,4,7,8-HxCDF	NV	NV	23	1.1	230	1.7	NV	0.868 J	1 J*	0.47 J*	0.4 U	12	0.46 J*	6.39	273
1,2,3,6,7,8-HxCDD	NV	NV	190	0.89	1,900	1.4	NV	2.09 J	3 J*	2.3 J*	0.5 U	20	2.1 J*	8.67	24.3
1,2,3,6,7,8-HxCDF	NV	NV	23	1.1	230	1.7	NV	0.679 J	0.59 J*	0.47 U	0.47 U	4.8 J*	0.47 U	3.22	127
1,2,3,7,8,9-HxCDD	NV	NV	19	0.89	190	1.4	NV	1.54 J	1.9 J*	1.8 J*	0.36 J*	14	1.4 J*	6.04	34.1
1,2,3,7,8,9-HxCDF	NV	NV	30	1.4	300	2.2	NV	0.33 U	0.48 J*	0.44 U	0.44 U	3.5 J*	0.44 U	0.877 U	4.22
1,2,3,7,8-PeCDD	NV	NV	5.9	0.28	59	0.43	NV	0.61 J	0.63 J*	0.41 J*	0.35 U	2.9 J*	0.4 J*	2.07 J	17.5
1,2,3,7,8-PeCDF	NV	NV	41	6.5	400	9.8	NV	0.353 J	0.38 U	0.38 U	0.38 U	1.6 J*	0.38 U	0.853 U	63.2
2,3,4,6,7,8-HxCDF	NV	NV	23	1.1	230	1.7	NV	1.01 J	0.8 J*	0.61 J*	0.41 U	6.5	0.49 J*	3.08	145
2,3,4,7,8-PeCDF	NV	NV	4.1	0.65	40	0.98	NV	0.878 J	0.54 J*	0.43 U	0.43 U	3.9 J*	0.45 J*	0.8 U	106
2,3,7,8-TCDD	5,000,000	NV	5.2	0.25	52	0.38	NV	0.669	0.23 J*	0.28 J*	0.084 U	2.4	0.22 J*	3.97	9.26
2,3,7,8-TCDF	NV	NV	6.4	3	63	4.6	NV	0.424 J	0.2 J*	0.13 U	0.11 U	0.69 J*	0.17 J*	0.47 U	42.2
OCDD	NV	NV	19,000	300	190,000	460	NV	364	680	410	20	4,500 J	370	1830	845
OCDF	NV	NV	14,000	220	140,000	340	NV	36	41	29	1.4 J*	200	32	131	115
Dioxin/furan TEQ (avian)[c][3]	5,000,000	NV	5.2	NV	52	NV	NV	3.31	2.5 J*	1.6 J*	0.65 J*	16 J*	1.8 J*	9.73 J	246

Location:	DEQ Ecological RBC, Soil, Direct Toxicity[1]		DEQ Ecological RBC, Soil, Ground Feeding[1]		DEQ Ecological RBC, Soil, Top Consumer[1]		DEQ Background Metals, Klamath Mountains[2]	Site-specific Background	SL21GP01	SL22GP01	SL23TP01	SL25TP01	SL26TP01	SS-1	SS-2
Sample Name:								DU08SS	JLTW0	JLTW2	JLTW4	JLTW8	JLTX0	9358-190122-SS-1	9358-190122-SS-2
Collection Date:	Invertebrates	Plants	Bird, Non-TE	Mammal, Non-TE	Bird, Non-TE	Mammal, Non-TE		9/12/2020	9/12/2020	9/12/2020	9/10/2020	9/10/2020	9/10/2020	1/22/2019	1/22/2019
Collection Depth (ft bgs):								0-4 cm	0-4	0-4	2-3	2-3	2-3	0-1	0-1
Dioxin/furan TEQ (mammal)[(d)(4)]	5,000,000	NV	NV	0.25	NV	0.38	NV	2.97	3.0 J*	2.2 J*	0.51 J*	20 J*	2.1 J*	12.3 J	134
TPH (mg/kg)															
Gasoline-Range Hydrocarbons	120	120	5,000	5,000	5,000	5,000	NV	NV	11 U	13 U	--	--	--	--	--
Diesel-Range Hydrocarbons	NV	NV	NV	NV	NV	NV	NV	NV	49 U	52 U	--	--	--	--	--
Lube-Oil-Range Hydrocarbons	NV	NV	NV	NV	NV	NV	NV	NV	120 U	130 U	--	--	--	--	--
Total Diesel+Oil[(e)]	260	260	6,000	6,000	6,000	6,000	NV	NV	120 U	130 U	--	--	--	--	--
TPH with Silica-Gel Treatment (mg/kg)															
Diesel-Range Hydrocarbons	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
Lube-Oil-Range Hydrocarbons	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
Total Diesel+Oil[(e)]	260	260	6,000	6,000	6,000	6,000	NV	NV	--	--	--	--	--	--	--
SVOCs (mg/kg)															
1,1'-Biphenyl	NV	NV	NV	NV	NV	NV	NV	NV	0.21 U	0.22 U	0.23 UJ	0.2 UJ	0.21 UJ	--	--
1,2,4,5-Tetrachlorobenzene	NV	NV	NV	NV	NV	NV	NV	NV	0.21 U	0.22 U	0.23 UJ	0.2 UJ	0.21 UJ	--	--
1,4-Dioxane	NV	NV	NV	3.6	NV	180	NV	NV	0.081 U	0.085 U	0.089 UJ	0.078 UJ	0.081 UJ	--	--
2,3,4,6-Tetrachlorophenol	NV	NV	NV	NV	NV	NV	NV	NV	0.21 U	0.22 U	0.23 UJ	0.2 UJ	0.21 UJ	--	--
2,4,5-Trichlorophenol	NV	NV	NV	NV	NV	NV	NV	NV	0.21 U	0.22 U	0.23 UJ	0.2 UJ	0.21 UJ	--	--
2,4,6-Trichlorophenol	NV	NV	NV	NV	NV	NV	NV	NV	0.21 U	0.22 U	0.23 UJ	0.2 UJ	0.21 UJ	--	--
2,4-Dichlorophenol	NV	NV	NV	NV	NV	NV	NV	NV	0.21 U	0.22 U	0.23 UJ	0.2 UJ	0.21 UJ	--	--
2,4-Dimethylphenol	NV	NV	NV	NV	NV	NV	NV	NV	0.21 U	0.22 U	0.23 UJ	0.2 UJ	0.21 UJ	--	--
2,4-Dinitrophenol	NV	NV	NV	NV	NV	NV	NV	NV	0.4 U	0.42 U	0.44 UJ	0.38 UJ	0.4 UJ	--	--
2,4-Dinitrotoluene	NV	NV	NV	NV	NV	NV	NV	NV	0.21 U	0.22 U	0.23 UJ	0.2 UJ	0.21 UJ	--	--
2,6-Dinitrotoluene	NV	NV	NV	NV	NV	NV	NV	NV	0.21 U	0.22 U	0.23 UJ	0.2 UJ	0.21 UJ	--	--
2-Chloronaphthalene	NV	NV	NV	NV	NV	NV	NV	NV	0.21 U	0.22 U	0.23 UJ	0.2 UJ	0.21 UJ	--	--
2-Chlorophenol	NV	NV	3.9	5.4	140	3,400	NV	NV	0.21 U	0.22 U	0.23 UJ	0.2 UJ	0.21 UJ	--	--
2-Methylnaphthalene	NV	NV	NV	160	NV	49,000	NV	NV	0.21 R	0.22 R	0.23 R	0.2 R	0.21 R	--	--
2-Methylphenol	NV	0.67	NV	5,800	NV	190,000	NV	NV	0.4 U	0.42 U	0.44 UJ	0.38 UJ	0.4 UJ		
2-Nitroaniline	NV	NV	NV	10	NV	4,400	NV	NV	0.21 UJ	0.22 UJ	0.23 UJ	0.2 UJ	0.21 UJ	--	--
2-Nitrophenol	NV	NV	NV	NV	NV	NV	NV	NV	0.21 U	0.22 U	0.23 UJ	0.2 UJ	0.21 UJ		
3- & 4-Methylphenol (m,p-Cresol)	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
3,3-Dichlorobenzidine	NV	NV	NV	NV	NV	NV	NV	NV	0.4 U	0.42 U	0.44 UJ	0.38 UJ	0.4 UJ	--	--
3-Nitroaniline	NV	NV	NV	NV	NV	NV	NV	NV	0.4 U	0.42 U	0.44 UJ	0.38 UJ	0.4 UJ	--	--
4,6-Dinitro-2-methylphenol	NV	NV	NV	NV	NV	NV	NV	NV	0.4 U	0.42 U	0.44 UJ	0.38 UJ	0.4 UJ		
4-Bromophenylphenyl ether	NV	NV	NV	NV	NV	NV	NV	NV	0.21 U	0.22 U	0.23 UJ	0.2 UJ	0.21 UJ	--	--
4-Chloro-3-methylphenol	NV	NV	NV	NV	NV	NV	NV	NV	0.21 U	0.22 U	0.23 UJ	0.2 UJ	0.21 UJ		
4-Chloroaniline	1.8	1	NV	NV	NV	NV	NV	NV	0.4 U	0.42 U	0.44 UJ	0.38 UJ	0.4 UJ	--	--
4-Chlorophenylphenyl ether	NV	NV	NV	NV	NV	NV	NV	NV	0.21 U	0.22 U	0.23 UJ	0.2 UJ	0.21 UJ	--	--
4-Methylphenol	NV	NV	NV	NV	NV	NV	NV	NV	0.4 U	0.42 U	0.44 UJ	0.38 UJ	0.4 UJ	--	--
4-Nitroaniline	NV	NV	NV	NV	NV	NV	NV	NV	0.4 U	0.42 U	0.44 UJ	0.38 UJ	0.4 UJ	--	--
4-Nitrophenol	NV	NV	NV	NV	NV	NV	NV	NV	0.4 U	0.42 U	0.44 UJ	0.38 UJ	0.4 UJ		
Acenaphthene	NV	0.25	NV	1,300	NV	290,000	NV	NV	0.21 R	0.22 R	0.23 R	0.2 R	0.21 R	--	--
Acenaphthylene	NV	NV	NV	1,200	NV	280,000	NV	NV	0.21 R	0.22 R	0.23 R	0.2 R	0.21 R	--	--
Acetophenone	NV	NV	NV	NV	NV	NV	NV	NV	0.4 U	0.42 U	0.44 UJ	0.38 UJ	0.4 UJ	--	--
Anthracene	NV	6.8	NV	2,100	NV	380,000	NV	NV	0.21 R	0.22 R	0.23 R	0.2 R	0.21 R	--	--
Atrazine	NV	NV	NV	NV	NV	NV	NV	NV	0.4 U	0.42 U	0.44 UJ	0.38 UJ	0.4 UJ	--	--
Benzaldehyde	NV	NV	NV	NV	NV	NV	NV	NV	0.4 U	0.42 U	0.44 UJ	0.38 UJ	0.4 UJ	--	--

Location:	DEQ Ecological RBC, Soil, Direct Toxicity[1]		DEQ Ecological RBC, Soil, Ground Feeding[1]		DEQ Ecological RBC, Soil, Top Consumer[1]		DEQ Background Metals, Klamath Mountains[2]	Site-specific Background	SL21GP01	SL22GP01	SL23TP01	SL25TP01	SL26TP01	SS-1	SS-2
Sample Name:								DU08SS	JLTW0	JLTW2	JLTW4	JLTW8	JLTX0	9358-190122-SS-1	9358-190122-SS-2
Collection Date:	Invertebrates	Plants	Bird, Non-TE	Mammal, Non-TE	Bird, Non-TE	Mammal, Non-TE		9/12/2020	9/12/2020	9/12/2020	9/10/2020	9/10/2020	9/10/2020	1/22/2019	1/22/2019
Collection Depth (ft bgs):								0-4 cm	0-4	0-4	2-3	2-3	2-3	0-1	0-1
Benzo(a)anthracene	NV	18	7.3	34	64	1,100	NV	NV	0.21 R	0.22 R	0.23 R	0.2 R	0.21 R	--	--
Benzo(a)pyrene	NV	NV	NV	190	NV	11,000	NV	NV	0.21 R	0.22 R	0.23 R	0.2 R	0.21 R	--	--
Benzo(b)fluoranthene	NV	18	NV	440	NV	24,000	NV	NV	0.21 R	0.22 R	0.23 R	0.2 R	0.21 R	--	--
Benzo(ghi)perylene	NV	NV	NV	250	NV	36,000	NV	NV	0.21 R	0.22 R	0.23 R	0.2 R	0.21 R	--	--
Benzo(k)fluoranthene	NV	NV	NV	NV	NV	NV	NV	NV	0.21 R	0.22 R	0.23 R	0.2 R	0.21 R	--	--
Bis(2-chloro-1-methylethyl)ether	NV	NV	NV	NV	NV	NV	NV	NV	0.4 U	0.42 U	0.44 UJ	0.38 UJ	0.4 UJ	--	--
Bis(2-chloroethoxy)methane	NV	NV	NV	NV	NV	NV	NV	NV	0.21 U	0.22 U	0.23 UJ	0.2 UJ	0.21 UJ	--	--
Bis(2-chloroethyl)ether	NV	NV	NV	NV	NV	NV	NV	NV	0.4 U	0.42 U	0.44 UJ	0.38 UJ	0.4 UJ	--	--
Bis(2-ethylhexyl)phthalate	NV	NV	0.2	6	0.96	1,700	NV	NV	0.21 U	0.22 U	0.23 UJ	0.2 UJ	0.21 UJ	--	--
Butylbenzylphthalate	NV	NV	NV	900	NV	74,000	NV	NV	0.21 U	0.22 U	0.23 UJ	0.2 UJ	0.21 UJ	--	--
Caprolactam	NV	NV	NV	NV	NV	NV	NV	NV	0.4 U	0.42 U	0.44 UJ	0.38 UJ	0.4 UJ	--	--
Carbazole	NV	NV	NV	790	NV	130,000	NV	NV	0.4 U	0.42 U	0.44 UJ	0.38 UJ	0.4 UJ	--	--
Chrysene	NV	NV	NV	31	NV	1,100	NV	NV	0.21 R	0.22 R	0.23 R	0.2 R	0.21 R	--	--
Dibenzo(a,h)anthracene	NV	NV	NV	140	NV	8,500	NV	NV	0.21 R	0.22 R	0.23 R	0.2 R	0.21 R	--	--
Dibenzofuran	NV	6.1	NV	NV	NV	NV	NV	NV	0.21 U	0.22 U	0.23 UJ	0.2 UJ	0.21 UJ	--	--
Diethyl phthalate	NV	100	NV	18,000	NV	3,200,000	NV	NV	0.21 U	0.22 U	0.23 UJ	0.2 UJ	0.21 UJ	--	--
Dimethyl phthalate	10	NV	NV	400	NV	57,000	NV	NV	0.21 U	0.22 U	0.23 UJ	0.2 UJ	0.21 UJ	--	--
Di-n-butyl phthalate	NV	160	0.11	450	0.52	50,000	NV	NV	0.21 U	0.22 U	0.23 UJ	0.2 UJ	0.21 UJ	--	--
Di-n-octyl phthalate	NV	NV	NV	4.6	NV	2,300	NV	NV	0.4 U	0.42 U	0.44 UJ	0.38 UJ	0.4 UJ	--	--
Fluoranthene	10	NV	NV	220	NV	39,000	NV	NV	0.4 R	0.42 R	0.44 R	0.38 R	0.4 R	--	--
Fluorene	3.7	NV	NV	510	NV	100,000	NV	NV	0.21 R	0.22 R	0.23 R	0.2 R	0.21 R	--	--
Hexachlorobenzene	10	10	0.79	2	3.7	590	NV	NV	0.21 U	0.22 U	0.23 UJ	0.2 UJ	0.21 UJ	--	--
Hexachlorobutadiene	NV	NV	NV	NV	NV	NV	NV	NV	0.21 U	0.22 U	0.23 UJ	0.2 UJ	0.21 UJ	--	--
Hexachlorocyclopentadiene	NV	NV	NV	NV	NV	NV	NV	NV	0.4 U	0.42 U	0.44 UJ	0.38 UJ	0.4 UJ	--	--
Hexachloroethane	NV	NV	NV	NV	NV	NV	NV	NV	0.21 U	0.22 U	0.23 UJ	0.2 UJ	0.21 UJ	--	--
Indeno(1,2,3-cd)pyrene	NV	NV	NV	710	NV	46,000	NV	NV	0.21 R	0.22 R	0.23 R	0.2 R	0.21 R	--	--
Isophorone	NV	NV	NV	NV	NV	NV	NV	NV	0.21 U	0.22 U	0.23 UJ	0.2 UJ	0.21 UJ	--	--
Naphthalene	NV	1	34	27	780	16,000	NV	NV	0.21 R	0.22 R	0.23 R	0.2 R	0.21 R	--	--
Nitrobenzene	2.2	NV	NV	48	NV	41,000	NV	NV	0.21 U	0.22 U	0.23 UJ	0.2 UJ	0.21 UJ	--	--
N-Nitrosodiphenylamine	NV	NV	NV	NV	NV	NV	NV	NV	0.21 U	0.22 U	0.23 UJ	0.2 UJ	0.21 UJ	--	--
N-Nitrosodipropylamine	NV	NV	NV	NV	NV	NV	NV	NV	0.21 U	0.22 U	0.23 UJ	0.2 UJ	0.21 UJ	--	--
Pentachlorophenol	31	5	3.6	8.1	17	85	NV	NV	0.4 R	0.42 R	0.44 R	0.38 R	0.4 R	--	--
Phenanthrene	5.5	NV	NV	110	NV	19,000	NV	NV	0.21 R	0.22 R	0.23 R	0.2 R	0.21 R	--	--
Phenol	1.8	0.79	NV	370	NV	430,000	NV	NV	0.4 U	0.42 U	0.44 UJ	0.38 UJ	0.4 UJ	--	--
Pyrene	10	NV	330	230	1,600	31,000	NV	NV	0.21 R	0.22 R	0.23 R	0.2 R	0.21 R	--	--
SVOCs by SIM (mg/kg)															
1-Methylnaphthalene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
2-Chloronaphthalene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
2-Methylnaphthalene	NV	NV	NV	160	NV	49,000	NV	NV	0.00064 J*	0.00052 J*	0.0044 U	0.0008 J*	0.002 J*	--	--
Acenaphthene	NV	0.25	NV	1,300	NV	290,000	NV	NV	0.004 U	0.0042 U	0.0044 U	0.0037 U	0.004 U	--	--
Acenaphthylene	NV	NV	NV	1,200	NV	280,000	NV	NV	0.004 U	0.0042 U	0.0044 U	0.0037 U	0.004 U	--	--
Anthracene	NV	6.8	NV	2,100	NV	380,000	NV	NV	0.004 U	0.0042 U	0.0044 U	0.0037 U	0.004 U	--	--
Benzo(a)anthracene	NV	18	7.3	34	64	1,100	NV	NV	0.004 U	0.0042 U	0.0044 U	0.0028 J*	0.004 U	--	--
Benzo(a)pyrene	NV	NV	NV	190	NV	11,000	NV	NV	0.004 U	0.0042 U	0.0044 U	0.0037 U	0.00064 J*	--	--
Benzo(b)fluoranthene	NV	18	NV	440	NV	24,000	NV	NV	0.004 U	0.0042 U	0.00063 J*	0.0024 J*	0.0049 J	--	--
Benzo(ghi)perylene	NV	NV	NV	250	NV	36,000	NV	NV	0.004 U	0.0042 U	0.0044 U	0.0037 U	0.004 U	--	--

Location:	DEQ Ecological RBC, Soil, Direct Toxicity[1]		DEQ Ecological RBC, Soil, Ground Feeding[1]		DEQ Ecological RBC, Soil, Top Consumer[1]		DEQ Background Metals, Klamath Mountains[2]	Site-specific Background	SL21GP01	SL22GP01	SL23TP01	SL25TP01	SL26TP01	SS-1	SS-2
Sample Name:								DU08SS	JLTW0	JLTW2	JLTW4	JLTW8	JLTX0	9358-190122-SS-1	9358-190122-SS-2
Collection Date:	Invertebrates	Plants	Bird, Non-TE	Mammal, Non-TE	Bird, Non-TE	Mammal, Non-TE		9/12/2020	9/12/2020	9/12/2020	9/10/2020	9/10/2020	9/10/2020	1/22/2019	1/22/2019
Collection Depth (ft bgs):								0-4 cm	0-4	0-4	2-3	2-3	2-3	0-1	0-1
Benzo(k)fluoranthene	NV	NV	NV	NV	NV	NV	NV	NV	0.0009 J*	0.00072 J*	0.0044 U	0.0037 U	0.004 U	--	--
Chrysene	NV	NV	NV	31	NV	1,100	NV	NV	0.00069 J*	0.00049 J*	0.0044 U	0.0039 J	0.004 U	--	--
Dibenzo(a,h)anthracene	NV	NV	NV	140	NV	8,500	NV	NV	0.004 U	0.0042 U	0.0044 U	0.0037 U	0.004 U	--	--
Fluoranthene	10	NV	NV	220	NV	39,000	NV	NV	0.001 J*	0.0017 J*	0.00062 J*	0.0021 J*	0.0078 J	--	--
Fluorene	3.7	NV	NV	510	NV	100,000	NV	NV	0.004 U	0.0042 U	0.0044 U	0.0037 U	0.004 U	--	--
Indeno(1,2,3-cd)pyrene	NV	NV	NV	710	NV	46,000	NV	NV	0.004 U	0.0042 U	0.0044 U	0.0037 U	0.004 U	--	--
Naphthalene	NV	1	34	27	780	16,000	NV	NV	0.00084 J*	0.0042 U	0.0044 U	0.00097 J*	0.0025 J*	--	--
Pentachlorophenol	31	5	3.6	8.1	17	85	NV	NV	0.0081 U	0.0085 U	0.0089 U	0.0076 U	0.0081 U	--	--
Phenanthrene	5.5	NV	NV	110	NV	19,000	NV	NV	0.0018 J*	0.0015 J*	0.00057 J*	0.0051	0.0094	--	--
Pyrene	10	NV	330	230	1,600	31,000	NV	NV	0.004 U	0.0042 U	0.0044 U	0.0014 J*	0.0071 J	--	--
Total LPAH[f][5]	29	NV	67	540	37,000	59,000	NV	NV	0.011 J*	0.013 J*	0.014 J*	0.014 J*	0.022 J*	--	--
Total HPAH[g][5]	18	NV	0.55	5.9	64	550	NV	NV	0.017 J*	0.018 J*	0.019 J*	0.022 J*	0.032 J*	--	--
VOCs (mg/kg)															
1,1,1,2-Tetrachloroethane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
1,1,1-Trichloroethane	NV	NV	NV	1,300	NV	450,000	NV	NV	0.0091 U	0.0084 U	--	--	--	--	--
1,1,2,2-Tetrachloroethane	NV	NV	NV	NV	NV	NV	NV	NV	0.0091 U	0.0084 U	--	--	--	--	--
1,1,2-Trichloroethane	NV	NV	NV	NV	NV	NV	NV	NV	0.0091 U	0.0084 U	--	--	--	--	--
1,1-Dichloroethane	NV	NV	NV	2,100	NV	2,500,000	NV	NV	0.0091 U	0.0084 U	--	--	--	--	--
1,1-Dichloroethene	NV	NV	NV	60	NV	1,600	NV	NV	0.0091 UJ	0.0084 UJ	--	--	--	--	--
1,1-Dichloropropene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
1,2,3-Trichlorobenzene	NV	NV	NV	NV	NV	NV	NV	NV	0.0091 UJ	0.0084 UJ	--	--	--	--	--
1,2,3-Trichloropropane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
1,2,3-Trimethylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
1,2,4-Trichlorobenzene	1.2	NV	NV	2.7	NV	1,100	NV	NV	0.0091 UJ	0.0084 UJ	--	--	--	--	--
1,2,4-Trimethylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
1,2-Dibromo-3-chloropropane	NV	NV	NV	NV	NV	NV	NV	NV	0.0091 U	0.0084 U	--	--	--	--	--
1,2-Dibromoethane	NV	NV	NV	NV	NV	NV	NV	NV	0.0091 U	0.0084 U	--	--	--	--	--
1,2-Dichlorobenzene	NV	NV	NV	9.2	NV	4,800	NV	NV	0.0091 UJ	0.0084 UJ	--	--	--	--	--
1,2-Dichloroethane	NV	NV	1.6	270	44	84,000	NV	NV	0.0091 U	0.0084 U	--	--	--	--	--
1,2-Dichloropropane	NV	NV	NV	NV	NV	NV	NV	NV	0.0091 U	0.0084 U	--	--	--	--	--
1,3,5-Trimethylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
1,3-Dichlorobenzene	NV	NV	NV	7.4	NV	3,800	NV	NV	0.0091 UJ	0.0084 UJ	--	--	--	--	--
1,3-Dichloropropane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
1,4-Dichlorobenzene	1.2	NV	NV	3.5	NV	1,800	NV	NV	0.0091 UJ	0.0084 UJ	--	--	--	--	--
2,2-Dichloropropane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
2-Butanone	NV	NV	NV	920	NV	3,500,000	NV	NV	0.018 U	0.017 U	--	--	--	--	--
2-Chlorotoluene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
2-Hexanone	NV	NV	3.6	20	17	22,000	NV	NV	0.018 U	0.017 U	--	--	--	--	--
4-Chlorotoluene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
4-Isopropyltoluene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
4-Methyl-2-pentanone	NV	NV	NV	97	NV	180,000	NV	NV	0.018 U	0.017 U	--	--	--	--	--
Acetone	NV	NV	75	6.3	8,400	8,900	NV	NV	0.008 J*	0.012 J*	--	--	--	--	--
Acrylonitrile	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
Benzene	NV	NV	NV	240	NV	43,000	NV	NV	0.0042 J*	0.0054 J*	--	--	--	--	--
Bromobenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--

MAUL FOSTER ALONGI

Table 6-1
Ecological Soil Analytical Results
Wild River Land Trust
Port Orford, Oregon

Location:	DEQ Ecological RBC, Soil, Direct Toxicity[1]		DEQ Ecological RBC, Soil, Ground Feeding[1]		DEQ Ecological RBC, Soil, Top Consumer[1]		DEQ Background Metals, Klamath Mountains[2]	Site-specific Background	SL21GP01	SL22GP01	SL23TP01	SL25TP01	SL26TP01	SS-1	SS-2
Sample Name:								DU08SS	JLTW0	JLTW2	JLTW4	JLTW8	JLTX0	9358-190122-SS-1	9358-190122-SS-2
Collection Date:	Invertebrates	Plants	Bird, Non-TE	Mammal, Non-TE	Bird, Non-TE	Mammal, Non-TE		9/12/2020	9/12/2020	9/12/2020	9/10/2020	9/10/2020	9/10/2020	1/22/2019	1/22/2019
Collection Depth (ft bgs):								0-4 cm	0-4	0-4	2-3	2-3	2-3	0-1	0-1
Bromodichloromethane	NV	NV	NV	NV	NV	NV	NV	NV	0.0091 U	0.0084 U	--	--	--	--	--
Bromoform	NV	NV	NV	NV	NV	NV	NV	NV	0.0091 U	0.0084 U	--	--	--	--	--
Bromomethane	NV	NV	NV	NV	NV	NV	NV	NV	0.0091 U	0.0084 U	--	--	--	--	--
Carbon disulfide	NV	NV	NV	8.1	NV	1,900	NV	NV	0.0091 U	0.0084 U	--	--	--	--	--
Carbon tetrachloride	NV	NV	NV	NV	NV	NV	NV	NV	0.0091 U	0.0084 U	--	--	--	--	--
Chlorobenzene	2.4	NV	NV	430	NV	250,000	NV	NV	0.0091 UJ	0.0084 UJ	--	--	--	--	--
Chlorobromomethane	NV	NV	NV	NV	NV	NV	NV	NV	0.0091 U	0.0084 U	--	--	--	--	--
Chloroethane	NV	NV	NV	NV	NV	NV	NV	NV	0.0091 U	0.0084 U	--	--	--	--	--
Chloroform	NV	NV	NV	21	NV	6,000	NV	NV	0.0091 U	0.0084 U	--	--	--	--	--
Chloromethane	NV	NV	NV	NV	NV	NV	NV	NV	0.0091 U	0.0084 U	--	--	--	--	--
cis-1,2-Dichloroethene	NV	NV	NV	NV	NV	NV	NV	NV	0.0091 UJ	0.0084 UJ	--	--	--	--	--
cis-1,3-Dichloropropene	NV	NV	NV	NV	NV	NV	NV	NV	0.0091 U	0.0084 U	--	--	--	--	--
Cyclohexane	NV	NV	NV	NV	NV	NV	NV	NV	0.0091 U	0.0084 U	--	--	--	--	--
Dibromochloromethane	NV	NV	NV	NV	NV	NV	NV	NV	0.0091 U	0.0084 U	--	--	--	--	--
Dibromomethane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
Dichlorodifluoromethane (Freon 12	NV	NV	NV	NV	NV	NV	NV	NV	0.0091 U	0.0084 U	--	--	--	--	--
Diisopropyl Ether	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
Ethylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	0.0091 U	0.0084 U	--	--	--	--	--
Freon 113	NV	NV	NV	NV	NV	NV	NV	NV	0.0091 U	0.0084 U	--	--	--	--	--
Hexachlorobutadiene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
Isopropylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	0.0091 U	0.0084 U	--	--	--	--	--
m,p-Xylene	NV	NV	NV	NV	NV	NV	NV	NV	0.0091 U	0.0084 U	--	--	--	--	--
Methyl acetate	NV	NV	NV	NV	NV	NV	NV	NV	0.0091 U	0.0084 U	--	--	--	--	--
Methyl tert-butyl ether	NV	NV	NV	NV	NV	NV	NV	NV	0.0091 U	0.0084 U	--	--	--	--	--
Methylcyclohexane	NV	NV	NV	NV	NV	NV	NV	NV	0.0091 U	0.0084 U	--	--	--	--	--
Methylene chloride	NV	1,600	NV	22	NV	8,500	NV	NV	0.0091 U	0.0084 U	--	--	--	--	--
Naphthalene	NV	1	34	27	780	16,000	NV	NV	--	--	--	--	--	--	--
n-Butylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
n-Propylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
o-Xylene	NV	NV	NV	NV	NV	NV	NV	NV	0.0091 U	0.0084 U	--	--	--	--	--
sec-Butylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
Styrene	1.2	3.2	NV	NV	NV	NV	NV	NV	0.0091 U	0.0084 U	--	--	--	--	--
tert-Butylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--	--
Tetrachloroethene	NV	10	NV	0.94	NV	210	NV	NV	0.0091 U	0.0084 U	--	--	--	--	--
Toluene	NV	200	NV	230	NV	33,000	NV	NV	0.0091 U	0.0084 U	--	--	--	--	--
trans-1,2-Dichloroethene	NV	NV	NV	NV	NV	NV	NV	NV	0.0091 UJ	0.0084 UJ	--	--	--	--	--
trans-1,3-Dichloropropene	NV	NV	NV	NV	NV	NV	NV	NV	0.0091 U	0.0084 U	--	--	--	--	--
Trichloroethene	NV	NV	NV	420	NV	110,000	NV	NV	0.0091 U	0.0084 U	--	--	--	--	--
Trichlorofluoromethane (Freon 11)	NV	NV	NV	350	NV	420,000	NV	NV	0.0091 U	0.0084 U	--	--	--	--	--
Vinyl chloride	NV	NV	NV	1.2	NV	280	NV	NV	0.0091 UJ	0.0084 UJ	--	--	--	--	--
Xylenes, total[h]	NV	100	410	1.8	1,900	260	NV	NV	0.0091 U	0.0084 U	--	--	--	--	--

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Table 6-1
Ecological Soil Analytical Results
Wild River Land Trust
Port Orford, Oregon

Location:	DEQ Ecological RBC, Soil, Direct Toxicity[1]		DEQ Ecological RBC, Soil, Ground Feeding[1]		DEQ Ecological RBC, Soil, Top Consumer[1]		DEQ Background Metals, Klamath Mountains[2]	Site-specific Background	SS-3	SS-4	SS-5	SS-6	SS-7	SS-8
Sample Name:								DU08SS	9358-190122-SS-3	9358-190122-SS-4	9358-190122-SS-5	9358-190122-SS-6	9358-190122-SS-7	9358-190122-SS-8
Collection Date:	Invertebrates	Plants	Bird, Non-TE	Mammal, Non-TE	Bird, Non-TE	Mammal, Non-TE		9/12/2020	1/22/2019	1/22/2019	1/22/2019	1/22/2019	1/22/2019	1/22/2019
Collection Depth (ft bgs):								0-4 cm	0-1	0-1	0-0.8	0-0.8	0-1	0-0.9
Total Metals (mg/kg)														
Aluminum	(a)	(a)	(a)	(a)	(a)	(a)	NV	22,200	--	--	--	--	--	--
Antimony	78	11	NV	2.7	NV	49	0.59	0.094	--	--	--	--	--	--
Arsenic	6.8	18	32	31	1,000	290	12	4.18	--	--	--	--	--	--
Barium	330	110	1,200	8,700	13,000	44,000	630	81.3	--	--	--	--	--	--
Beryllium	40	2.5	NV	42	NV	110	1.4	0.35	--	--	--	--	--	--
Cadmium	140	32	1.6	4	7.7	1,700	0.52	0.375	--	--	--	--	--	--
Calcium	NV	NV	NV	NV	NV	NV	NV	4340	--	--	--	--	--	--
Chromium	NV	NV	73	1,600	560	10,000	890	67.1	--	--	--	--	--	--
Cobalt	NV	13	170	640	1,400	3,300	3 - 50	23.1	--	--	--	--	--	--
Copper	80	70	43	70	240	1,600	110	57.3	--	--	--	--	--	--
Iron	NV	NV	NV	NV	NV	NV	NV	30300	--	--	--	--	--	--
Lead	1,700	120	23	170	160	1,600	36	15.2	--	--	--	--	--	--
Magnesium	NV	NV	NV	NV	NV	NV	NV	11700	--	--	--	--	--	--
Manganese	450	220	2,700	5,400	50,000	34,000	3,000	1140	--	--	--	--	--	--
Mercury	0.05	34	0.13	17	0.58	130	0.17	0.066	--	--	--	--	--	--
Nickel	280	38	81	21	440	580	630	69.8	--	--	--	--	--	--
Potassium	NV	NV	NV	NV	NV	NV	NV	1060	--	--	--	--	--	--
Selenium	4.1	0.52	1.4	1	7.5	33	0.8	NV	--	--	--	--	--	--
Silver	NV	560	26	140	130	10,000	0.16	0.067	--	--	--	--	--	--
Sodium	NV	NV	NV	NV	NV	NV	NV	174	--	--	--	--	--	--
Thallium	NV	0.05	45	4.2	480	50	0.31	0.076	--	--	--	--	--	--
Vanadium	NV	60	9.5	610	110	1,600	290	75.8	--	--	--	--	--	--
Zinc	120	160	120	980	590	30,000	140	93.1	--	--	--	--	--	--
PCB Aroclors (mg/kg)														
Total PCBs[b]	NV	160	0.24	0.073	1.9	6.9	NV	NV	--	--	--	--	--	--
Dioxins (pg/g)														
1,2,3,4,6,7,8-HpCDD	NV	NV	1,500	7	15,000	11	NV	41	202	59.4	56.2	110	6,030 J*	112
1,2,3,4,6,7,8-HpCDF	NV	NV	230	11	2,300	17	NV	10.4	38.5	15.3	8.78	25.2	1,310	17.3
1,2,3,4,7,8,9-HpCDF	NV	NV	230	11	2,300	17	NV	0.73 J	2.98	2.11 U	0.867 U	1.81 U	99.2	1.27 U
1,2,3,4,7,8-HxCDD	NV	NV	51	1.2	500	1.8	NV	0.811 J	3.85	1.05 U	1.43 U	1.06 U	67.5	1.42 U
1,2,3,4,7,8-HxCDF	NV	NV	23	1.1	230	1.7	NV	0.868 J	6.98	1.91 J	0.655 U	1.7 J	172	1.83 J
1,2,3,6,7,8-HxCDD	NV	NV	190	0.89	1,900	1.4	NV	2.09 J	12.4	1.2 U	1.34 U	4.9	285	4.95
1,2,3,6,7,8-HxCDF	NV	NV	23	1.1	230	1.7	NV	0.679 J	3.06	0.899 U	0.822 U	0.757 U	67.2	0.628 U
1,2,3,7,8,9-HxCDD	NV	NV	19	0.89	190	1.4	NV	1.54 J	7.9	1.1 U	1.34 U	3.09	160	3.33
1,2,3,7,8,9-HxCDF	NV	NV	30	1.4	300	2.2	NV	0.33 U	0.709 U	1.29 U	1.24 U	1.26 U	6.7	0.969 U
1,2,3,7,8-PeCDD	NV	NV	5.9	0.28	59	0.43	NV	0.61 J	2.38 J	0.9 U	0.604 U	0.953 J	43.5	0.68 U
1,2,3,7,8-PeCDF	NV	NV	41	6.5	400	9.8	NV	0.353 J	0.491 U	0.622 U	0.673 U	0.667 U	23.4	0.537 U
2,3,4,6,7,8-HxCDF	NV	NV	23	1.1	230	1.7	NV	1.01 J	3.6	0.874 U	0.907 U	0.882 U	104	0.62 U
2,3,4,7,8-PeCDF	NV	NV	4.1	0.65	40	0.98	NV	0.878 J	1.85 J	0.54 U	0.598 U	0.608 U	21.4	0.446 U
2,3,7,8-TCDD	5,000,000	NV	5.2	0.25	52	0.38	NV	0.669	0.429 U	0.459 U	0.443 U	1.69	13.2	0.461 U
2,3,7,8-TCDF	NV	NV	6.4	3	63	4.6	NV	0.424 J	0.428 U	0.447 U	0.426 U	0.442 U	4.61	0.423 U
OCDD	NV	NV	19,000	300	190,000	460	NV	364	1,760	626	495	1,010	62,000 J*	869
OCDF	NV	NV	14,000	220	140,000	340	NV	36	139	43.9	28.3	87.7	2,540	70.3
Dioxin/furan TEQ (avian)[c][3]	5,000,000	NV	5.2	NV	52	NV	NV	3.31	8.0 J	1.93 J	1.56	4.38 J	169 J*	2.13 J

Table 6-1
Ecological Soil Analytical Results
Wild River Land Trust
Port Orford, Oregon

Location:	DEQ Ecological RBC, Soil, Direct Toxicity[1]		DEQ Ecological RBC, Soil, Ground Feeding[1]		DEQ Ecological RBC, Soil, Top Consumer[1]		DEQ Background Metals, Klamath Mountains[2]	Site-specific Background	SS-3	SS-4	SS-5	SS-6	SS-7	SS-8
Sample Name:								DU08SS	9358-190122-SS-3	9358-190122-SS-4	9358-190122-SS-5	9358-190122-SS-6	9358-190122-SS-7	9358-190122-SS-8
Collection Date:	Invertebrates	Plants	Bird, Non-TE	Mammal, Non-TE	Bird, Non-TE	Mammal, Non-TE		9/12/2020	1/22/2019	1/22/2019	1/22/2019	1/22/2019	1/22/2019	1/22/2019
Collection Depth (ft bgs):								0-4 cm	0-1	0-1	0-0.8	0-0.8	0-1	0-0.9
Dioxin/furan TEQ (mammal)[(d)(4)]	5,000,000	NV	NV	0.25	NV	0.38	NV	2.97	10 J	2.26 J	1.84	5.62 J	244 J*	3.44 J
TPH (mg/kg)														
Gasoline-Range Hydrocarbons	120	120	5,000	5,000	5,000	5,000	NV	NV	--	--	--	--	--	--
Diesel-Range Hydrocarbons	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Lube-Oil-Range Hydrocarbons	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Total Diesel+Oil[(e)]	260	260	6,000	6,000	6,000	6,000	NV	NV	--	--	--	--	--	--
TPH with Silica-Gel Treatment (mg/kg)														
Diesel-Range Hydrocarbons	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Lube-Oil-Range Hydrocarbons	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Total Diesel+Oil[(e)]	260	260	6,000	6,000	6,000	6,000	NV	NV	--	--	--	--	--	--
SVOCs (mg/kg)														
1,1'-Biphenyl	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
1,2,4,5-Tetrachlorobenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
1,4-Dioxane	NV	NV	NV	3.6	NV	180	NV	NV	--	--	--	--	--	--
2,3,4,6-Tetrachlorophenol	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2,4,5-Trichlorophenol	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2,4,6-Trichlorophenol	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2,4-Dichlorophenol	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2,4-Dimethylphenol	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2,4-Dinitrophenol	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2,4-Dinitrotoluene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2,6-Dinitrotoluene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2-Chloronaphthalene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2-Chlorophenol	NV	NV	3.9	5.4	140	3,400	NV	NV	--	--	--	--	--	--
2-Methylnaphthalene	NV	NV	NV	160	NV	49,000	NV	NV	--	--	--	--	--	--
2-Methylphenol	NV	0.67	NV	5,800	NV	190,000	NV	NV						
2-Nitroaniline	NV	NV	NV	10	NV	4,400	NV	NV	--	--	--	--	--	--
2-Nitrophenol	NV	NV	NV	NV	NV	NV	NV	NV						
3- & 4-Methylphenol (m,p-Cresol)	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
3,3-Dichlorobenzidine	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
3-Nitroaniline	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
4,6-Dinitro-2-methylphenol	NV	NV	NV	NV	NV	NV	NV	NV						
4-Bromophenylphenyl ether	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
4-Chloro-3-methylphenol	NV	NV	NV	NV	NV	NV	NV	NV						
4-Chloroaniline	1.8	1	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
4-Chlorophenylphenyl ether	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
4-Methylphenol	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
4-Nitroaniline	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
4-Nitrophenol	NV	NV	NV	NV	NV	NV	NV	NV						
Acenaphthene	NV	0.25	NV	1,300	NV	290,000	NV	NV	--	--	--	--	--	--
Acenaphthylene	NV	NV	NV	1,200	NV	280,000	NV	NV	--	--	--	--	--	--
Acetophenone	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Anthracene	NV	6.8	NV	2,100	NV	380,000	NV	NV	--	--	--	--	--	--
Atrazine	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Benzaldehyde	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--

Location:	DEQ Ecological RBC, Soil, Direct Toxicity[1]		DEQ Ecological RBC, Soil, Ground Feeding[1]		DEQ Ecological RBC, Soil, Top Consumer[1]		DEQ Background Metals, Klamath Mountains[2]	Site-specific Background	SS-3	SS-4	SS-5	SS-6	SS-7	SS-8
Sample Name:								DU08SS	9358-190122-SS-3	9358-190122-SS-4	9358-190122-SS-5	9358-190122-SS-6	9358-190122-SS-7	9358-190122-SS-8
Collection Date:	Invertebrates	Plants	Bird, Non-TE	Mammal, Non-TE	Bird, Non-TE	Mammal, Non-TE		9/12/2020	1/22/2019	1/22/2019	1/22/2019	1/22/2019	1/22/2019	1/22/2019
Collection Depth (ft bgs):								0-4 cm	0-1	0-1	0-0.8	0-0.8	0-1	0-0.9
Benzo(a)anthracene	NV	18	7.3	34	64	1,100	NV	NV	--	--	--	--	--	--
Benzo(a)pyrene	NV	NV	NV	190	NV	11,000	NV	NV	--	--	--	--	--	--
Benzo(b)fluoranthene	NV	18	NV	440	NV	24,000	NV	NV	--	--	--	--	--	--
Benzo(ghi)perylene	NV	NV	NV	250	NV	36,000	NV	NV	--	--	--	--	--	--
Benzo(k)fluoranthene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Bis(2-chloro-1-methylethyl)ether	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Bis(2-chloroethoxy)methane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Bis(2-chloroethyl)ether	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Bis(2-ethylhexyl)phthalate	NV	NV	0.2	6	0.96	1,700	NV	NV	--	--	--	--	--	--
Butylbenzylphthalate	NV	NV	NV	900	NV	74,000	NV	NV	--	--	--	--	--	--
Caprolactam	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Carbazole	NV	NV	NV	790	NV	130,000	NV	NV	--	--	--	--	--	--
Chrysene	NV	NV	NV	31	NV	1,100	NV	NV	--	--	--	--	--	--
Dibenzo(a,h)anthracene	NV	NV	NV	140	NV	8,500	NV	NV	--	--	--	--	--	--
Dibenzofuran	NV	6.1	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Diethyl phthalate	NV	100	NV	18,000	NV	3,200,000	NV	NV	--	--	--	--	--	--
Dimethyl phthalate	10	NV	NV	400	NV	57,000	NV	NV	--	--	--	--	--	--
Di-n-butyl phthalate	NV	160	0.11	450	0.52	50,000	NV	NV	--	--	--	--	--	--
Di-n-octyl phthalate	NV	NV	NV	4.6	NV	2,300	NV	NV	--	--	--	--	--	--
Fluoranthene	10	NV	NV	220	NV	39,000	NV	NV	--	--	--	--	--	--
Fluorene	3.7	NV	NV	510	NV	100,000	NV	NV	--	--	--	--	--	--
Hexachlorobenzene	10	10	0.79	2	3.7	590	NV	NV	--	--	--	--	--	--
Hexachlorobutadiene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Hexachlorocyclopentadiene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Hexachloroethane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	NV	NV	NV	710	NV	46,000	NV	NV	--	--	--	--	--	--
Isophorone	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Naphthalene	NV	1	34	27	780	16,000	NV	NV	--	--	--	--	--	--
Nitrobenzene	2.2	NV	NV	48	NV	41,000	NV	NV	--	--	--	--	--	--
N-Nitrosodiphenylamine	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
N-Nitrosodipropylamine	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Pentachlorophenol	31	5	3.6	8.1	17	85	NV	NV	0.228 U	--	--	0.328 U	0.591 U	--
Phenanthrene	5.5	NV	NV	110	NV	19,000	NV	NV	--	--	--	--	--	--
Phenol	1.8	0.79	NV	370	NV	430,000	NV	NV	--	--	--	--	--	--
Pyrene	10	NV	330	230	1,600	31,000	NV	NV	--	--	--	--	--	--
SVOCs by SIM (mg/kg)														
1-Methylnaphthalene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2-Chloronaphthalene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2-Methylnaphthalene	NV	NV	NV	160	NV	49,000	NV	NV	--	--	--	--	--	--
Acenaphthene	NV	0.25	NV	1,300	NV	290,000	NV	NV	--	--	--	--	--	--
Acenaphthylene	NV	NV	NV	1,200	NV	280,000	NV	NV	--	--	--	--	--	--
Anthracene	NV	6.8	NV	2,100	NV	380,000	NV	NV	--	--	--	--	--	--
Benzo(a)anthracene	NV	18	7.3	34	64	1,100	NV	NV	--	--	--	--	--	--
Benzo(a)pyrene	NV	NV	NV	190	NV	11,000	NV	NV	--	--	--	--	--	--
Benzo(b)fluoranthene	NV	18	NV	440	NV	24,000	NV	NV	--	--	--	--	--	--
Benzo(ghi)perylene	NV	NV	NV	250	NV	36,000	NV	NV	--	--	--	--	--	--

Location:	DEQ Ecological RBC, Soil, Direct Toxicity[1]		DEQ Ecological RBC, Soil, Ground Feeding[1]		DEQ Ecological RBC, Soil, Top Consumer[1]		DEQ Background Metals, Klamath Mountains[2]	Site-specific Background	SS-3	SS-4	SS-5	SS-6	SS-7	SS-8
Sample Name:								DU08SS	9358-190122-SS-3	9358-190122-SS-4	9358-190122-SS-5	9358-190122-SS-6	9358-190122-SS-7	9358-190122-SS-8
Collection Date:	Invertebrates	Plants	Bird, Non-TE	Mammal, Non-TE	Bird, Non-TE	Mammal, Non-TE		9/12/2020	1/22/2019	1/22/2019	1/22/2019	1/22/2019	1/22/2019	1/22/2019
Collection Depth (ft bgs):								0-4 cm	0-1	0-1	0-0.8	0-0.8	0-1	0-0.9
Benzo(k)fluoranthene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Chrysene	NV	NV	NV	31	NV	1,100	NV	NV	--	--	--	--	--	--
Dibenzo(a,h)anthracene	NV	NV	NV	140	NV	8,500	NV	NV	--	--	--	--	--	--
Fluoranthene	10	NV	NV	220	NV	39,000	NV	NV	--	--	--	--	--	--
Fluorene	3.7	NV	NV	510	NV	100,000	NV	NV	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	NV	NV	NV	710	NV	46,000	NV	NV	--	--	--	--	--	--
Naphthalene	NV	1	34	27	780	16,000	NV	NV	--	--	--	--	--	--
Pentachlorophenol	31	5	3.6	8.1	17	85	NV	NV	--	--	--	--	--	--
Phenanthrene	5.5	NV	NV	110	NV	19,000	NV	NV	--	--	--	--	--	--
Pyrene	10	NV	330	230	1,600	31,000	NV	NV	--	--	--	--	--	--
Total LPAH[f][5]	29	NV	67	540	37,000	59,000	NV	NV	--	--	--	--	--	--
Total HPAH[g][5]	18	NV	0.55	5.9	64	550	NV	NV	--	--	--	--	--	--
VOCs (mg/kg)														
1,1,1,2-Tetrachloroethane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
1,1,1-Trichloroethane	NV	NV	NV	1,300	NV	450,000	NV	NV	--	--	--	--	--	--
1,1,2,2-Tetrachloroethane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
1,1,2-Trichloroethane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
1,1-Dichloroethane	NV	NV	NV	2,100	NV	2,500,000	NV	NV	--	--	--	--	--	--
1,1-Dichloroethene	NV	NV	NV	60	NV	1,600	NV	NV	--	--	--	--	--	--
1,1-Dichloropropene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
1,2,3-Trichlorobenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
1,2,3-Trichloropropane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
1,2,3-Trimethylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
1,2,4-Trichlorobenzene	1.2	NV	NV	2.7	NV	1,100	NV	NV	--	--	--	--	--	--
1,2,4-Trimethylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
1,2-Dibromo-3-chloropropane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
1,2-Dibromoethane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
1,2-Dichlorobenzene	NV	NV	NV	9.2	NV	4,800	NV	NV	--	--	--	--	--	--
1,2-Dichloroethane	NV	NV	1.6	270	44	84,000	NV	NV	--	--	--	--	--	--
1,2-Dichloropropane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
1,3,5-Trimethylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
1,3-Dichlorobenzene	NV	NV	NV	7.4	NV	3,800	NV	NV	--	--	--	--	--	--
1,3-Dichloropropane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
1,4-Dichlorobenzene	1.2	NV	NV	3.5	NV	1,800	NV	NV	--	--	--	--	--	--
2,2-Dichloropropane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2-Butanone	NV	NV	NV	920	NV	3,500,000	NV	NV	--	--	--	--	--	--
2-Chlorotoluene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
2-Hexanone	NV	NV	3.6	20	17	22,000	NV	NV	--	--	--	--	--	--
4-Chlorotoluene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
4-Isopropyltoluene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
4-Methyl-2-pentanone	NV	NV	NV	97	NV	180,000	NV	NV	--	--	--	--	--	--
Acetone	NV	NV	75	6.3	8,400	8,900	NV	NV	--	--	--	--	--	--
Acrylonitrile	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Benzene	NV	NV	NV	240	NV	43,000	NV	NV	--	--	--	--	--	--
Bromobenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--

Table 6-1
Ecological Soil Analytical Results
Wild River Land Trust
Port Orford, Oregon

Location:	DEQ Ecological RBC, Soil, Direct Toxicity[1]		DEQ Ecological RBC, Soil, Ground Feeding[1]		DEQ Ecological RBC, Soil, Top Consumer[1]		DEQ Background Metals, Klamath Mountains[2]	Site-specific Background	SS-3	SS-4	SS-5	SS-6	SS-7	SS-8
Sample Name:								DU08SS	9358-190122-SS-3	9358-190122-SS-4	9358-190122-SS-5	9358-190122-SS-6	9358-190122-SS-7	9358-190122-SS-8
Collection Date:	Invertebrates	Plants	Bird, Non-TE	Mammal, Non-TE	Bird, Non-TE	Mammal, Non-TE		9/12/2020	1/22/2019	1/22/2019	1/22/2019	1/22/2019	1/22/2019	1/22/2019
Collection Depth (ft bgs):								0-4 cm	0-1	0-1	0-0.8	0-0.8	0-1	0-0.9
Bromodichloromethane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Bromoform	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Bromomethane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Carbon disulfide	NV	NV	NV	8.1	NV	1,900	NV	NV	--	--	--	--	--	--
Carbon tetrachloride	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Chlorobenzene	2.4	NV	NV	430	NV	250,000	NV	NV	--	--	--	--	--	--
Chlorobromomethane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Chloroethane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Chloroform	NV	NV	NV	21	NV	6,000	NV	NV	--	--	--	--	--	--
Chloromethane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
cis-1,2-Dichloroethene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
cis-1,3-Dichloropropene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Cyclohexane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Dibromochloromethane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Dibromomethane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Dichlorodifluoromethane (Freon 12	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Diisopropyl Ether	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Ethylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Freon 113	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Hexachlorobutadiene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Isopropylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
m,p-Xylene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Methyl acetate	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Methyl tert-butyl ether	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Methylcyclohexane	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Methylene chloride	NV	1,600	NV	22	NV	8,500	NV	NV	--	--	--	--	--	--
Naphthalene	NV	1	34	27	780	16,000	NV	NV	--	--	--	--	--	--
n-Butylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
n-Propylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
o-Xylene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
sec-Butylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Styrene	1.2	3.2	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
tert-Butylbenzene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Tetrachloroethene	NV	10	NV	0.94	NV	210	NV	NV	--	--	--	--	--	--
Toluene	NV	200	NV	230	NV	33,000	NV	NV	--	--	--	--	--	--
trans-1,2-Dichloroethene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
trans-1,3-Dichloropropene	NV	NV	NV	NV	NV	NV	NV	NV	--	--	--	--	--	--
Trichloroethene	NV	NV	NV	420	NV	110,000	NV	NV	--	--	--	--	--	--
Trichlorofluoromethane (Freon 11)	NV	NV	NV	350	NV	420,000	NV	NV	--	--	--	--	--	--
Vinyl chloride	NV	NV	NV	1.2	NV	280	NV	NV	--	--	--	--	--	--
Xylenes, total[h]	NV	100	410	1.8	1,900	260	NV	NV	--	--	--	--	--	--

NOTES:

Analytical results from January 2019 and November 2018 were not validated.

Consistent with DEQ guidance, it is assumed that plants and animals can contact surface soils (up to 3 feet bgs) and biota on the Site; therefore, only data collected from approximately the top 3 feet of soil were screened.

Shading (color key below) indicates an exceedance of screening criteria; non-detects (U or UJ) and rejected results (R) were not compared with screening levels. Metals results below background concentrations were not compared with screening levels.

Site-specific background values and natural background values from the Klamath Mountains were evaluated. Chemicals that exceeded the higher of the two natural background concentrations were considered above natural background levels.

When multiple screening levels are exceeded, the result is shaded with the color associated with the highest exceeded screening level.

DEQ Ecological RBC, Soil, Direct Toxicity, Invertebrates

DEQ Ecological RBC, Soil, Direct Toxicity, Plants

DEQ Ecological RBC, Soil, Ground Feeding, Bird, Non-TE

DEQ Ecological RBC, Soil, Ground Feeding, Mammal, Non-TE

DEQ Ecological RBC, Soil, Top Consumer, Bird, Non-TE

DEQ Ecological RBC, Soil, Top Consumer, Mammal, Non-TE

-- = not analyzed or no data provided.

DEQ = Oregon Department of Environmental Quality.

ft bgs = feet below ground surface.

HPAH = high molecular weight polycyclic aromatic hydrocarbon.

J = the result is estimated.

J* = data source provides a variety of laboratory or validation qualifiers. Data are assumed to be estimated for screening purposes.

LPAH = low molecular weight polycyclic aromatic hydrocarbon.

mg/kg = milligrams per kilogram.

NC = not calculated.

ND = non-detect.

NV = no value.

PCB = polycyclic aromatic hydrocarbon.

pg/g = picograms per gram.

R = the data is rejected and unusable for all purposes.

RBC = risk-based concentration.

SIM = selected ion monitoring.

SVOC = semivolatile organic compound.

TE = threatened and endangered species.

TEQ = toxicity equivalence.

TPH = total petroleum hydrocarbon.

U = the result is non-detect.

U* = data source provides a variety of laboratory qualifiers. These data are assumed to be non-detect with estimated detection or reporting limits for screening purposes.

UJ = the result is non-detect with an estimated detection limit or reporting limit.

VOC = volatile organic compound.

[a]Toxic if soil pH <5.5.

[b]Total PCBs is the sum of all detected PCB Aroclors. Non-detect results are not included in the summation. When all results are non-detect, the highest detection limit or reporting limit is provided.

[c]Dioxin/furan TEQs calculated as the sum of each detected congener concentration multiplied by the corresponding avian TEF value with non-detect results also multiplied by one-half.

[d]Dioxin/furan TEQs calculated as the sum of each detected congener concentration multiplied by the corresponding mammal TEF value with non-detect results also multiplied by one-half.

[e]Total diesel and oil is the sum of diesel- and lube-oil-range hydrocarbon results. Non-detect results are multiplied by one-half. When both results are non-detect, the highest detection limit or reporting limit is provided.

[f]LPAHs are the sum of 2-methylnaphthalene, acenaphthene, acenaphthylene, anthracene, fluorene, naphthalene,and phenanthrene. Non-detect results are multiplied by one-half. When all results are non-detect the highest detection limit or reporting limit is provided.

[g]HPAHs are the sum of benzo(a)anthracene, benzo(a)pyrene, benzo(g,h,i)perylene, benzofluoranthene, chrysene, dibenzo(a,h)anthracene, fluoranthene, indeno(1,2,3,cd)pyrene, and pyrene. Non-detect results are multiplied by one-half. When all results are non-detect the highest

[h]Total xylenes are the sum of m,p- and o-xylene results. Non-detect results are multiplied by one-half. When both results are non-detect, the highest detection limit is provided.

REFERENCES:

[1]DEQ. 2020. *Conducting Ecological Risk Assessments.* Table 1a. Oregon Department of Environmental Quality. September.

[2]DEQ. 2013. *Development of Oregon Background Metals Concentrations in Soil.* Oregon Department of Environmental Quality. March.

[3]Van den Berg, M. et al. 1998. *Toxic equivalency factors (TEFs) for PCBs, PCDDs, PCDFs for humans and wildlife.* Environmental Health Perspectives. 106 No. 12:775–792.

[4]Van den Berg, M. et al. 2006. *The 2005 World Health Organization reevaluation of human and mammalian toxic equivalency factors for dioxins and dioxin-like compounds.* Toxicological Sciences. 93 No. 2:223–241.

[5]LPAHs and HPAHs are identified based on definition provided in the October 2017 DEQ Upriver Reach Sediment Characterization Workplan for the Lower Willamette River prepared by DEQ.

Table 6-2
Ecological ISM Soil Analytical Results
Wild River Land Trust
Port Orford, Oregon

Area of Interest:	DEQ Ecological RBC, Soil, Direct Toxicity[1]		DEQ Ecological RBC, Soil, Ground Feeding[1]		DEQ Ecological RBC, Soil, Top Consumer[1]		DEQ Background Metals, Klamath Mountains[2]	Background	Berm	North Wigwam Burner		
Location:								20375674	20375667	20385668	20385669	20385670
Sample Name:								DU08SS	DU01SS	DU02SS	DU03SS	DU04SS
Collection Date:	Invertebrates	Plants	Bird, Non-TE	Mammal, Non-TE	Bird, Non-TE	Mammal, Non-TE		9/12/2020	9/12/2020	9/13/2020	9/13/2020	9/13/2020
Collection Depth (cm bgs):								0 - 4	0 - 4	0 - 4	0 - 4	0 - 4
Total Metals (mg/kg)												
Aluminum	(a)	(a)	(a)	(a)	(a)	(a)	NV	22,200	25,200	34,300	34,600	28,900
Antimony	78	11	NV	2.7	NV	49	0.59	0.094 J	0.184 J	0.329 J	0.221 J	0.624 J
Arsenic	6.8	18	32	31	1,000	290	12	4.18 J	4.29 J	8.05 J	6.5 J	10.2 J
Barium	330	110	1,200	8,700	13,000	44,000	630	81.3	68.7	535	264	936
Beryllium	40	2.5	NV	42	NV	110	1.4	0.35	0.329	0.318	0.319	0.313
Cadmium	140	32	1.6	4	7.7	1,700	0.52	0.375	0.21	0.221	0.205	0.74
Calcium	NV	NV	NV	NV	NV	NV	NV	4,340	3,740	16,500	6,510	22,000
Chromium	NV	NV	73	1,600	560	10,000	890	67.1	78.5	93.4	94	83.4
Cobalt	NV	13	170	640	1,400	3,300	3 - 50	23.1	14.6	15.3	15.8	14.8
Copper	80	70	43	70	240	1,600	110	57.3	50.8	85.3	70.1	111
Iron	NV	NV	NV	NV	NV	NV	NV	30,300 J	35,000 J	39,400 J	39,200 J	37,900 J
Lead	1,700	120	23	170	160	1,600	36	15.2 J	20.2 J	19.4 J	18 J	43.7 J
Magnesium	NV	NV	NV	NV	NV	NV	NV	11,700	12,500	14,900	13,700	13,000
Manganese	450	220	2,700	5,400	50,000	34,000	3,000	1,140	513	1,340	896	2,640
Mercury	0.05	34	0.13	17	0.58	130	0.17	0.066	0.111	0.09	0.089	0.068
Nickel	280	38	81	21	440	580	630	69.8	76.3	101	98.5	84.7
Potassium	NV	NV	NV	NV	NV	NV	NV	1,060	982	3,880	2,160	5,230
Silver	NV	560	26	140	130	10,000	0.16	0.067	0.06	0.412	0.181	0.991
Sodium	NV	NV	NV	NV	NV	NV	NV	174	133	475	182	621
Thallium	NV	0.05	45	4.2	480	50	0.31	0.076	0.08	0.075	0.078	0.07
Vanadium	NV	60	9.5	610	110	1,600	290	75.8	79.3	94.5	94.6	81.6
Zinc	120	160	120	980	590	30,000	140	93.1	150	187	178	462
Dioxins (pg/g)												
1,2,3,4,6,7,8-HpCDD	NV	NV	1,500	7	15,000	11	NV	41	1,260	56.4	117	205
1,2,3,4,6,7,8-HpCDF	NV	NV	230	11	2,300	17	NV	10.4	206	10.2	23.6	48.4
1,2,3,4,7,8,9-HpCDF	NV	NV	230	11	2,300	17	NV	0.73 J	12.5	0.88 J	2.12 J	3.84
1,2,3,4,7,8-HxCDD	NV	NV	51	1.2	500	1.8	NV	0.811 J	11.3	0.998 J	1.37 J	2.88
1,2,3,4,7,8-HxCDF	NV	NV	23	1.1	230	1.7	NV	0.868 J	11.5	0.922 J	1.81 J	3.85
1,2,3,6,7,8-HxCDD	NV	NV	190	0.89	1,900	1.4	NV	2.09 J	43.3	2.66	4.7	8.5
1,2,3,6,7,8-HxCDF	NV	NV	23	1.1	230	1.7	NV	0.679 J	5.34 J	0.465 J	0.933 J	2.7
1,2,3,7,8,9-HxCDD	NV	NV	19	0.89	190	1.4	NV	1.54 J	19.9	2.18 J	2.77	6.19
1,2,3,7,8,9-HxCDF	NV	NV	30	1.4	300	2.2	NV	0.33 U	4.43 J	0.4 J	0.712 J	1.11 J
1,2,3,7,8-PeCDD	NV	NV	5.9	0.28	59	0.43	NV	0.61 J	5.71 J	0.889 J	1.2 U	1.98 J

Table 6-2
Ecological ISM Soil Analytical Results
Wild River Land Trust
Port Orford, Oregon

Area of Interest:	DEQ Ecological RBC, Soil, Direct Toxicity[1]		DEQ Ecological RBC, Soil, Ground Feeding[1]		DEQ Ecological RBC, Soil, Top Consumer[1]		DEQ Background Metals, Klamath Mountains[2]	Background	Berm	North Wigwam Burner		
Location:								20375674	20375667	20385668	20385669	20385670
Sample Name:								DU08SS	DU01SS	DU02SS	DU03SS	DU04SS
Collection Date:	Invertebrates	Plants	Bird, Non-TE	Mammal, Non-TE	Bird, Non-TE	Mammal, Non-TE		9/12/2020	9/12/2020	9/13/2020	9/13/2020	9/13/2020
Collection Depth (cm bgs):								0 - 4	0 - 4	0 - 4	0 - 4	0 - 4
1,2,3,7,8-PeCDF	NV	NV	41	6.5	400	9.8	NV	0.353 J	2.75 J	0.398 J	0.454 J	1.12 J
2,3,4,6,7,8-HxCDF	NV	NV	23	1.1	230	1.7	NV	1.01 J	13 U	0.787 J	2 U	4.9 U
2,3,4,7,8-PeCDF	NV	NV	4.1	0.65	40	0.98	NV	0.878 J	6.22 J	0.597 J	0.955 J	2.15 J
2,3,7,8-TCDD	5,000,000	NV	5.2	0.25	52	0.38	NV	0.669	9.45	0.544	2.79	0.984
2,3,7,8-TCDF	NV	NV	6.4	3	63	4.6	NV	0.424 J	1 J	0.622	0.37 U	0.678
OCDD	NV	NV	19,000	300	190,000	460	NV	364	9,930	501	966	1,570
OCDF	NV	NV	14,000	220	140,000	340	NV	36	892	30	81.8	142
Dioxin/furan TEQ (avian)(b)(3)	5,000,000	NV	5.2	NV	52	NV	NV	3.31	33.6	3.46	6.78	8.91
Dioxin/furan TEQ (mammal)(c)(4)	5,000,000	NV	NV	0.25	NV	0.38	NV	2.97	46.12	3.36	7.5	9.81
SVOCs (mg/kg)												
2-Methylnaphthalene	NV	NV	NV	160	NV	49,000	NV	0.0047 JQ	0.0065 J	0.0018 JQ	0.0032 JQ	0.0083 J
Benzo(b)fluoranthene	NV	18	NV	440	NV	24,000	NV	0.0042 JQ	0.00038 UJ	0.00038 UJ	0.0015 JQ	0.0042 JQ
Benzo(ghi)perylene	NV	NV	NV	250	NV	36,000	NV	0.0017 JQ	0.0004 UJ	0.0004 UJ	0.0004 UJ	0.0014 JQ
Dibenzofuran	NV	6.1	NV	NV	NV	NV	NV	0.0032 UJ	0.005 J	0.0045 UJ	0.004 UJ	0.013 J
Fluoranthene	10	NV	NV	220	NV	39,000	NV	0.0058 J	0.016 J	0.0037 UJ	0.0046 UJ	0.014 J
Naphthalene	NV	1	34	27	780	16,000	NV	0.0046 UJ	0.0099 J	0.0063 J	0.0071 J	0.018 J
Phenanthrene	5.5	NV	NV	110	NV	19,000	NV	0.019 J	0.033 J	0.0095 J	0.0095 J	0.03 J
Pyrene	10	NV	330	230	1,600	31,000	NV	0.0045 UJ	0.0077 J	0.0018 UJ	0.0018 UJ	0.0061 J

MAUL FOSTER ALONG

Table 6-2
Ecological ISM Soil Analytical Results
Wild River Land Trust
Port Orford, Oregon

Area of Interest:								South Wigwam Burner				
Location:	DEQ Ecological RBC, Soil, Direct Toxicity[1]		DEQ Ecological RBC, Soil, Ground Feeding[1]		DEQ Ecological RBC, Soil, Top Consumer[1]		DEQ Background Metals, Klamath Mountains[2]	20385671	20385672	20385675	20385676	20385673
Sample Name:								DU05SS	DU06SS	DU06SS-R	DU06SS-T	DU07SS
Collection Date:	Invertebrates	Plants	Bird, Non-TE	Mammal, Non-TE	Bird, Non-TE	Mammal, Non-TE		9/13/2020	9/13/2020	9/13/2020	9/13/2020	9/13/2020
Collection Depth (cm bgs):								0 - 4	0 - 4	0 - 4	0 - 4	0 - 4
Total Metals (mg/kg)												
Aluminum	(a)	(a)	(a)	(a)	(a)	(a)	NV	21,500	23,300	25,600	23,200	26,100
Antimony	78	11	NV	2.7	NV	49	0.59	6.07 J	2.62 J	2.2 J	16.4 J	5.15 J
Arsenic	6.8	18	32	31	1,000	290	12	8.69 J	15.1 J	9.2 J	12.3 J	12.2 J
Barium	330	110	1,200	8,700	13,000	44,000	630	299	253	233	272	403
Beryllium	40	2.5	NV	42	NV	110	1.4	0.296	0.302	0.351	0.311	0.37
Cadmium	140	32	1.6	4	7.7	1,700	0.52	1.26	0.995	0.786	0.977	0.367
Calcium	NV	NV	NV	NV	NV	NV	NV	8,940	9,910	9,600	9,460	12,000
Chromium	NV	NV	73	1,600	560	10,000	890	68.8	81	83.6	89.1	72.5
Cobalt	NV	13	170	640	1,400	3,300	3 - 50	16.1	19	17.8	18.6	16.4
Copper	80	70	43	70	240	1,600	110	183	279	242	167	92.8
Iron	NV	NV	NV	NV	NV	NV	NV	49,000 J	57,900 J	51,900 J	61,200 J	43,400 J
Lead	1,700	120	23	170	160	1,600	36	246 J	125 J	101 J	226 J	32.5 J
Magnesium	NV	NV	NV	NV	NV	NV	NV	8,640	9,100	10,500	9,950	10,400
Manganese	450	220	2,700	5,400	50,000	34,000	3,000	1,070	879	799	978	1,160
Mercury	0.05	34	0.13	17	0.58	130	0.17	0.585	0.206	0.221	0.194	0.08
Nickel	280	38	81	21	440	580	630	72	83	86.2	83.5	73
Potassium	NV	NV	NV	NV	NV	NV	NV	2,600	2,690	2,840	2,540	3,990
Silver	NV	560	26	140	130	10,000	0.16	0.439	0.309	0.234	0.366	0.167
Sodium	NV	NV	NV	NV	NV	NV	NV	1,410	1,360	1,720	1,420	1,560
Thallium	NV	0.05	45	4.2	480	50	0.31	0.054	0.061	0.069	0.076	0.052
Vanadium	NV	60	9.5	610	110	1,600	290	64	72.7	79.4	75	70.6
Zinc	120	160	120	980	590	30,000	140	383	416	382	431	148
Dioxins (pg/g)												
1,2,3,4,6,7,8-HpCDD	NV	NV	1,500	7	15,000	11	NV	652	479	488	556	737
1,2,3,4,6,7,8-HpCDF	NV	NV	230	11	2,300	17	NV	204	131	136	140	79.3
1,2,3,4,7,8,9-HpCDF	NV	NV	230	11	2,300	17	NV	14.9	10.9	9.73	11.6	6.56
1,2,3,4,7,8-HxCDD	NV	NV	51	1.2	500	1.8	NV	7.9 U	7.72	7.39	10.6	21.1
1,2,3,4,7,8-HxCDF	NV	NV	23	1.1	230	1.7	NV	15.9	11.7	11.6	13	6.46
1,2,3,6,7,8-HxCDD	NV	NV	190	0.89	1,900	1.4	NV	27.5	24.2	21.6	26	29.2
1,2,3,6,7,8-HxCDF	NV	NV	23	1.1	230	1.7	NV	12.3 J	7.25	6.88	8.3	3.8
1,2,3,7,8,9-HxCDD	NV	NV	19	0.89	190	1.4	NV	17.9	18.5	17.8	26.1	30
1,2,3,7,8,9-HxCDF	NV	NV	30	1.4	300	2.2	NV	5.35 J	3.92	3.68 J	4.36	2.5 J
1,2,3,7,8-PeCDD	NV	NV	5.9	0.28	59	0.43	NV	5.43 J	6.33	7.1	9.8	12.6

Table 6-2
Ecological ISM Soil Analytical Results
Wild River Land Trust
Port Orford, Oregon

Area of Interest:	DEQ Ecological RBC, Soil, Direct Toxicity[1]		DEQ Ecological RBC, Soil, Ground Feeding[1]		DEQ Ecological RBC, Soil, Top Consumer[1]		DEQ Background Metals, Klamath Mountains[2]	South Wigwam Burner				
Location:								20385671	20385672	20385675	20385676	20385673
Sample Name:								DU05SS	DU06SS	DU06SS-R	DU06SS-T	DU07SS
Collection Date:	Invertebrates	Plants	Bird, Non-TE	Mammal, Non-TE	Bird, Non-TE	Mammal, Non-TE		9/13/2020	9/13/2020	9/13/2020	9/13/2020	9/13/2020
Collection Depth (cm bgs):								0 - 4	0 - 4	0 - 4	0 - 4	0 - 4
1,2,3,7,8-PeCDF	NV	NV	41	6.5	400	9.8	NV	6.8 J	4.6	4.02	5	1.73 J
2,3,4,6,7,8-HxCDF	NV	NV	23	1.1	230	1.7	NV	19 U	12.5	12 U	13 U	7.7 U
2,3,4,7,8-PeCDF	NV	NV	4.1	0.65	40	0.98	NV	11.1 J	8.35	7.52	9.5	3.18
2,3,7,8-TCDD	5,000,000	NV	5.2	0.25	52	0.38	NV	2.71	2.59	2.94	3.27	7.74
2,3,7,8-TCDF	NV	NV	6.4	3	63	4.6	NV	9.5	5.67	5.53	5.53	1.67
OCDD	NV	NV	19,000	300	190,000	460	NV	5,640	3,740	3,760	4,090	5,160
OCDF	NV	NV	14,000	220	140,000	340	NV	617	403	437	491	239
Dioxin/furan TEQ (avian)[(b)(3)]	5,000,000	NV	5.2	NV	52	NV	NV	40.6	31.73	31.64	38.4	33.89
Dioxin/furan TEQ (mammal)[(c)(4)]	5,000,000	NV	NV	0.25	NV	0.38	NV	33.8	28.16	28.66	35.21	41.44
SVOCs (mg/kg)												
2-Methylnaphthalene	NV	NV	NV	160	NV	49,000	NV	0.0051 J	0.01 J	0.01 J	0.011 J	0.009 J
Benzo(b)fluoranthene	NV	18	NV	440	NV	24,000	NV	0.0026 JQ	0.0027 JQ	0.0039 JQ	0.0053 J	0.0026 JQ
Benzo(ghi)perylene	NV	NV	NV	250	NV	36,000	NV	0.001 JQ	0.00095 JQ	0.0022 JQ	0.0076 J	0.0012 JQ
Dibenzofuran	NV	6.1	NV	NV	NV	NV	NV	0.0055 J	0.012 J	0.014 J	0.014 J	0.005 UJ
Fluoranthene	10	NV	NV	220	NV	39,000	NV	0.0077 J	0.0099 J	0.015 J	0.011 J	0.0074 J
Naphthalene	NV	1	34	27	780	16,000	NV	0.0099 J	0.022 J	0.022 J	0.03 J	0.01 J
Phenanthrene	5.5	NV	NV	110	NV	19,000	NV	0.013 J	0.025 J	0.034 J	0.026 J	0.02 J
Pyrene	10	NV	330	230	1,600	31,000	NV	0.0041 UJ	0.0061 J	0.0094 J	0.0063 J	0.0049 UJ

NOTES:

Analytical results were not validated.

Shading (color key below) indicates an exceedance of screening criteria; non-detects (U or UJ) were not compared with screening levels. Metals results below background concentrations were not compared with screening levels.

When multiple screening levels are exceeded, the result is shaded with the color associated with the highest exceeded screening level.

DEQ Ecological RBC, Soil, Direct Toxicity, Invertebrates

DEQ Ecological RBC, Soil, Direct Toxicity, Plants

DEQ Ecological RBC, Soil, Ground Feeding, Bird, Non-TE

DEQ Ecological RBC, Soil, Ground Feeding, Mammal, Non-TE

DEQ Ecological RBC, Soil, Top Consumer, Bird, Non-TE

DEQ Ecological RBC, Soil, Top Consumer, Mammal, Non-TE

-- = not analyzed or no data provided.

cm bgs = centimeters below ground surface.

DEQ = Oregon Department of Environmental Quality.

J = the result is estimated.

JQ = result detected above the detection limit but below the contract-required method reporting limit or quantitation limit.

mg/kg = milligrams per kilogram.

NV = no value.

pg/g = picograms per gram.

RBC = risk-based concentration.

SVOC = semivolatile organic compound.

TE = threatened and endangered species.

TEQ = toxicity equivalence.

U = the result is non-detect.

U* = data source provides a variety of laboratory qualifiers. These data are assumed to be non-detect with estimated detection or reporting limits for screening purposes.

UJ = the result is non-detect with an estimated detection limit or reporting limit.

VOC = volatile organic compound.

[a]Toxic if soil pH <5.5.

[b]Dioxin/furan TEQs calculated as the sum of each detected congener concentration multiplied by the corresponding avian TEF value with non-detect results also multiplied by one-half.

[c]Dioxin/furan TEQs calculated as the sum of each detected congener concentration multiplied by the corresponding mammal TEF value with non-detect results also multiplied by one-half.

REFERENCES:

[1]DEQ. 2020. *Conducting Ecological Risk Assessments.* Table 1a. Oregon Department of Environmental Quality. September.

[2]DEQ. 2013. *Development of Oregon Background Metals Concentrations in Soil.* Oregon Department of Environmental Quality. March.

[3]Van den Berg, M. et al. 1998. *Toxic equivalency factors (TEFs) for PCBs, PCDDs, PCDFs for humans and wildlife.* Environmental Health Perspectives. 106 No. 12:775–792.

[4]Van den Berg, M. et al. 2006. *The 2005 World Health Organization reevaluation of human and mammalian toxic equivalency factors for dioxins and dioxin-like compounds.* Toxicological Sciences. 93 No. 2:223–241.

Table 6-3
Sediment Analytical Results
Wild River Land Trust
Port Orford, Oregon

Area of Interest:	DEQ Sediment Bioaccumulative Screening Level Value[1]				DEQ Ecological RBC[2]	DEQ Background Metals, Klamath Mountains[3]	Site-Specific Background	Former Log Pond						Former Fire Suppression Pond	
Location:							PD09SD	PD01SD	PD02SD	PD03SD	PD04SD	PD05SD	PD06SD	PD07SD	PD08SD
Sample Name:	Birds	Mammals	Fish	Inorganic Background	Sediment		JLTY2	JLTX4	JLTX5	JLTX6	JLTX7	JLTX8	JLTX9	JLTY0	JLTY1
Collection Date:	Population	Population	Freshwater		Freshwater		9/12/2020	9/9/2020	9/9/2020	9/9/2020	9/12/2020	9/12/2020	9/12/2020	9/12/2020	9/12/2020
Collection Depth (ft bgs):							0-1	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-1	0-1	0-1
Total metals (mg/kg)															
Aluminum	NV	NV	NV	NV	NV	NV	22,000	25,200	25,400	23,200	20,900	19,100	17,400	20,700	20,900
Antimony	NV	NV	NV	NV	3	0.59	0.13 JQ	2 U	0.73 U	2.3 U	0.11 JQ	1.2 UJ	0.093 JQ	0.11 JQ	0.12 JQ
Arsenic	NV	NV	NV	7	NV	12	4.9	2.6	2.7	3.3	3.2	2.4	3	3.9	4.5
Barium	NV	NV	NV	NV	NV	630	86.9	124	137	190	129	75.7	92.8	119	101
Beryllium	NV	NV	NV	NV	NV	1.4	0.81	0.74 JQ	0.73	0.81 JQ	0.85	0.68	0.6	0.77	0.72
Cadmium	NV	NV	NV	1	0.6	0.52	0.66 U	1 U	0.48 U	0.14 JQ	0.49 U	0.62 U	0.43 U	0.49 U	0.49 U
Calcium	NV	NV	NV	NV	NV	NV	487 JQ	2780	2590	7350	1580	2920	1350	1570	1350
Chromium	NV	NV	NV	NV	37	890	46.2	75	74.6	78.1	49	51.3	40.9	47.7	48.5
Cobalt	NV	NV	NV	NV	NV	NV	13	13.7	13.4	15.4	15	10.6	10.6	14	11.5
Copper	NV	NV	NV	NV	36	110	30.2	46.1	53.6	72	33.7	32.9	25.6	30.6	30.6
Iron	NV	NV	NV	NV	NV	NV	32,100	32,400	32,400	42,200	29,600	29,100	19,100	28,100	25,900
Lead	NV	NV	NV	17	35	36	6.9	12.7 J	17.4 J	44.2 J	9.3	7.4	7	8.2	8.2
Magnesium	NV	NV	NV	NV	NV	NV	5,680	11,000	9,140	9,030	4,120	8,010	3,700	3,820	3,850
Manganese	NV	NV	NV	NV	1,100	3,000	269	360	331	660	332	336	162	316	184
Mercury	NV	NV	NV	0.07	0.2	0.17	0.18 U	0.24 U	0.19	0.28 U	0.2	0.16 U	0.13	0.14	0.16
Nickel	NV	NV	NV	NV	18	630	53.8	84.9	70	68.5	52.3	56.7	45	53.4	51.5
Potassium	NV	NV	NV	NV	NV	NV	371 JQ	256 JQ	510	491 JQ	253 JQ	375 JQ	432 U	492 U	492 U
Selenium	NV	NV	NV	2	NV	0.8	1 JQ	4.9 U	1.8 U	1.3 JQ	0.9 JQ	3 U	0.82 JQ	1.2 JQ	0.54 JQ
Silver	NV	NV	NV	NV	4.5	0.16	0.43 JQ	0.85 JQ	0.86 JQ	1.2 JQ	0.46 JQ	0.32 JQ	0.38 JQ	0.51 JQ	0.51 JQ
Sodium	NV	NV	NV	NV	NV	NV	663 U	1030 U	106 JQ	132 JQ	52.3 JQ	83.9 JQ	61.5 JQ	35.1 JQ	39.3 JQ
Thallium	NV	NV	NV	NV	NV	0.31	0.7 U	0.98 U	0.37 U	1.1 U	0.36 U	0.6 U	0.37 U	0.36 U	0.37 U
Vanadium	NV	NV	NV	NV	NV	290	56.3	53.6 J	60.7 J	56.3 J	52.2	47	53.3	58.4	69.6
Zinc	NV	NV	NV	NV	123	140	105	130	135	277	87.9	64.1	68.4	71.8	81.8
Dioxins/Furans (pg/g)															
1,2,3,4,6,7,8-HpCDD	2,700,000	110,000	430,000	NV	NV	NV	16	3,200	2,600	2,500	100	43	44	100	69
1,2,3,4,6,7,8-HpCDF	270,000	110,000	43,000	NV	NV	NV	3.7 JQ	880	700	620	26	9.3	12	23	15
1,2,3,4,7,8,9-HpCDF	270,000	110,000	43,000	NV	NV	NV	0.36 U	68	51	44	1.8 JQ	0.72 JQ	0.79 JQ	1.5 JQ	1 JQ
1,2,3,4,7,8-HxCDD	2,100	420	34	NV	NV	NV	0.52 U	33	35	33	1.8 JQ	0.59 JQ	0.75 JQ	1.5 JQ	1.2 JQ
1,2,3,4,7,8-HxCDF	1,100	420	170	NV	NV	NV	0.44 U	83	71	63	2.3 JQ	0.66 JQ	1 JQ	1.9 JQ	1.2 JQ
1,2,3,6,7,8-HxCDD	11,000	420	1,700	NV	NV	NV	0.94 JQ	140	120	150	5.2	2.4 JQ	2.4 JQ	6	3.7 JQ
1,2,3,6,7,8-HxCDF	1,100	420	170	NV	NV	NV	0.37 U	39	32	29	1.6 JQ	0.37 U	0.76 JQ	1.2 JQ	0.79 JQ
1,2,3,7,8,9-HxCDD	1,100	420	1,700	NV	NV	NV	0.55 U	60	67	62	5.4	1.8 JQ	1.3 JQ	2.9 JQ	2.3 JQ
1,2,3,7,8,9-HxCDF	1,100	420	170	NV	NV	NV	0.47 U	27	22	23	0.77 JQ	0.47 U	0.49 JQ	0.76 JQ	0.49 JQ
1,2,3,7,8-PeCDD	110	42	17	NV	NV	NV	0.31 JQ	21	25	24	1 JQ	0.38 JQ	0.61 JQ	0.78 JQ	0.75 JQ
1,2,3,7,8-PeCDF	300	400	95	NV	NV	NV	0.3 U	13	11	11	0.75 JQ	0.3 U	0.42 JQ	0.53 JQ	0.42 JQ
2,3,4,6,7,8-HxCDF	1,100	420	170	NV	NV	NV	0.44 U	60	53	48	1.8 JQ	0.44 U	0.97 JQ	1.6 JQ	1 JQ
2,3,4,7,8-PeCDF	3.5	4.7	1.1	NV	NV	NV	0.32 JQ	33	30	28	1.4 JQ	0.31 JQ	0.86 JQ	1.2 JQ	0.83 JQ
2,3,7,8-TCDD	3.5	1.4	0.56	NV	9	NV	0.37 JQ	7.1	4.5	4.5	0.99 JQ	1.1	3.6	0.88 JQ	1.5
2,3,7,8-TCDF	30	120	95	NV	NV	NV	0.18 JQ	3.1	2.9	3.1	0.63 JQ	0.2 JQ	0.35 JQ	0.48 JQ	0.49 JQ
OCDD	27,000,000	3,600,000	4,300,000	NV	NV	NV	120	33000 J	24000 J	24000 J	870	410	330	720	550
OCDF	27,000,000	3,600,000	4,300,000	NV	NV	NV	7.5 JQ	2,600	1,600	1,400	68	35	30	57	39
Dioxin/furan TEQ (Bird)(a)(b)(4)	3.5	1.4	0.56	NV	9	NV	1.4 J	110 J	100 J	98 J	5.9 J	2.6 J	6.2 J	4.8 J	4.6 J

Area of Interest:	DEQ Sediment Bioaccumulative Screening Level Value[1]				DEQ Ecological RBC[2]	DEQ Background Metals, Klamath Mountains[3]	Site-Specific Background	Former Log Pond						Former Fire Suppression Pond	
Location:							PD09SD	PD01SD	PD02SD	PD03SD	PD04SD	PD05SD	PD06SD	PD07SD	PD08SD
Sample Name:	Birds	Mammals	Fish	Inorganic Background	Sediment		JLTY2	JLTX4	JLTX5	JLTX6	JLTX7	JLTX8	JLTX9	JLTY0	JLTY1
Collection Date:	Population	Population	Freshwater		Freshwater		9/12/2020	9/9/2020	9/9/2020	9/9/2020	9/12/2020	9/12/2020	9/12/2020	9/12/2020	9/12/2020
Collection Depth (ft bgs):							0-1	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-1	0-1	0-1
Dioxin/furan TEQ (Fish)[(a)(b)(4)]	3.5	1.4	0.56	NV	9	NV	1.2 J	100 J	95 J	90 J	4.9 J	2.3 J	5.6 J	4.1 J	4 J
Dioxin/furan TEQ (Mammal)[(a)(b)(4)]	3.5	1.4	0.56	NV	9	NV	1.3 J	140 J	120 J	120 J	5.9 J	2.9 J	6 J	5.1 J	4.7 J
SVOCs (mg/kg)															
1,1'-Biphenyl	NV	NV	NV	NV	NV	NV	0.35 U	0.49 U	0.59 U	0.47 U	0.95 UJ	0.26 UJ	0.81 UJ	0.69 U	0.83 U
1,2,4,5-Tetrachlorobenzene	NV	NV	NV	NV	NV	NV	0.35 U	0.49 U	0.59 U	0.47 U	0.95 UJ	0.26 UJ	0.81 UJ	0.69 U	0.83 U
1,4-Dioxane	NV	NV	NV	NV	NV	NV	0.14 U	0.19 U	0.23 R	0.19 U	0.37 UJ	0.1 UJ	0.32 UJ	0.27 U	0.33 U
2,3,4,6-Tetrachlorophenol	NV	NV	NV	NV	NV	NV	0.35 U	0.49 U	0.59 U	0.47 U	0.95 UJ	0.26 UJ	0.81 UJ	0.69 U	0.83 U
2,4,5-Trichlorophenol	NV	NV	NV	NV	NV	NV	0.35 U	0.49 U	0.59 U	0.47 U	0.95 UJ	0.26 UJ	0.81 UJ	0.69 U	0.83 U
2,4,6-Trichlorophenol	NV	NV	NV	NV	NV	NV	0.35 U	0.49 U	0.59 U	0.47 U	0.95 UJ	0.26 UJ	0.81 UJ	0.69 U	0.83 U
2,4-Dichlorophenol	NV	NV	NV	NV	NV	NV	0.35 U	0.49 U	0.59 U	0.47 U	0.95 UJ	0.26 UJ	0.81 UJ	0.69 U	0.83 U
2,4-Dimethylphenol	NV	NV	NV	NV	NV	NV	0.35 U	0.49 U	0.59 U	0.47 U	0.95 UJ	0.26 UJ	0.81 UJ	0.69 U	0.83 U
2,4-Dinitrophenol	NV	NV	NV	NV	NV	NV	0.68 U	0.96 U	1.1 U	0.92 U	1.8 UJ	0.5 UJ	1.6 UJ	1.3 U	1.6 U
2,4-Dinitrotoluene	NV	NV	NV	NV	NV	NV	0.35 U	0.49 U	0.59 U	0.47 U	0.95 UJ	0.26 UJ	0.81 UJ	0.69 U	0.83 U
2,6-Dinitrotoluene	NV	NV	NV	NV	NV	NV	0.35 U	0.49 U	0.59 U	0.47 U	0.95 UJ	0.26 UJ	0.81 UJ	0.69 U	0.83 U
2-Chloronaphthalene	NV	NV	NV	NV	NV	NV	0.35 U	0.49 U	0.59 U	0.47 U	0.95 UJ	0.26 UJ	0.81 UJ	0.69 U	0.83 U
2-Chlorophenol	NV	NV	NV	NV	NV	NV	0.35 U	0.49 U	0.59 U	0.47 U	0.95 UJ	0.26 UJ	0.81 UJ	0.69 U	0.83 U
2-Methylnaphthalene	NV	NV	NV	NV	NV	NV	0.35 R	0.49 R	0.59 R	0.47 R	0.95 R	0.26 R	0.81 R	0.69 R	0.83 R
2-Methylphenol	NV	NV	NV	NV	NV	NV	0.68 U	0.96 U	1.1 U	0.92 U	1.8 UJ	0.5 UJ	1.6 UJ	1.3 U	1.6 U
2-Nitroaniline	NV	NV	NV	NV	NV	NV	0.35 U	0.49 UJ	0.59 UJ	0.47 UJ	0.95 UJ	0.26 UJ	0.81 UJ	0.69 U	0.83 U
2-Nitrophenol	NV	NV	NV	NV	NV	NV	0.35 U	0.49 U	0.59 U	0.47 U	0.95 UJ	0.26 UJ	0.81 UJ	0.69 U	0.83 U
3,3-Dichlorobenzidine	NV	NV	NV	NV	NV	NV	0.68 U	0.96 U	1.1 U	0.92 U	1.8 UJ	0.5 UJ	1.6 UJ	1.3 U	1.6 U
3-Nitroaniline	NV	NV	NV	NV	NV	NV	0.68 U	0.96 U	1.1 U	0.92 U	1.8 UJ	0.5 UJ	1.6 UJ	1.3 U	1.6 U
4,6-Dinitro-2-methylphenol	NV	NV	NV	NV	NV	NV	0.68 U	0.96 U	1.1 U	0.92 U	1.8 UJ	0.5 UJ	1.6 UJ	1.3 U	1.6 U
4-Bromophenylphenyl ether	NV	NV	NV	NV	NV	NV	0.35 U	0.49 U	0.59 U	0.47 U	0.95 UJ	0.26 UJ	0.81 UJ	0.69 U	0.83 U
4-Chloro-3-methylphenol	NV	NV	NV	NV	NV	NV	0.35 U	0.49 U	0.59 U	0.47 U	0.95 UJ	0.26 UJ	0.81 UJ	0.69 U	0.83 U
4-Chloroaniline	NV	NV	NV	NV	NV	NV	0.68 U	0.96 U	1.1 U	0.92 U	1.8 UJ	0.5 UJ	1.6 UJ	1.3 U	1.6 U
4-Chlorophenylphenyl ether	NV	NV	NV	NV	NV	NV	0.35 U	0.49 U	0.59 U	0.47 U	0.95 UJ	0.26 UJ	0.81 UJ	0.69 U	0.83 U
4-Methylphenol	NV	NV	NV	NV	NV	NV	0.68 U	0.96 U	1.1 U	0.92 U	1.8 UJ	0.5 UJ	1.6 UJ	1.3 U	1.6 U
4-Nitroaniline	NV	NV	NV	NV	NV	NV	0.68 U	0.96 U	1.1 U	0.92 U	1.8 UJ	0.5 UJ	1.6 UJ	1.3 U	1.6 U
4-Nitrophenol	NV	NV	NV	NV	NV	NV	0.68 U	0.96 U	1.1 U	0.92 U	1.8 UJ	0.5 UJ	1.6 UJ	1.3 U	1.6 U
Acenaphthene	NV	NV	NV	NV	0.29	NV	0.35 R	0.49 R	0.59 R	0.47 R	0.95 R	0.26 R	0.81 R	0.69 R	0.83 R
Acenaphthylene	NV	NV	NV	NV	0.16	NV	0.35 R	0.49 R	0.59 R	0.47 R	0.95 R	0.26 R	0.81 R	0.69 R	0.83 R
Acetophenone	NV	NV	NV	NV	NV	NV	0.68 U	0.96 U	1.1 U	0.92 U	1.8 UJ	0.5 UJ	1.6 UJ	1.3 U	1.6 U
Anthracene	NV	NV	NV	NV	0.057	NV	0.35 R	0.49 R	0.59 R	0.47 R	0.95 R	0.26 R	0.81 R	0.69 R	0.83 R
Atrazine	NV	NV	NV	NV	NV	NV	0.68 U	0.96 U	1.1 U	0.92 U	1.8 UJ	0.5 UJ	1.6 UJ	1.3 U	1.6 U
Benzaldehyde	NV	NV	NV	NV	NV	NV	0.68 U	0.96 U	1.1 U	0.92 U	1.8 UJ	0.5 UJ	1.6 UJ	1.3 U	1.6 U
Benzo(a)anthracene	NV	NV	NV	NV	0.032	NV	0.35 R	0.49 R	0.59 R	0.47 R	0.95 R	0.26 R	0.81 R	0.69 R	0.83 R
Benzo(a)pyrene	NV	NV	NV	NV	0.032	NV	0.35 R	0.49 R	0.59 R	0.47 R	0.95 R	0.26 R	0.81 R	0.69 R	0.83 R
Benzo(b)fluoranthene	NV	NV	NV	NV	NV	NV	0.35 R	0.49 R	0.59 R	0.47 R	0.95 R	0.26 R	0.81 R	0.69 R	0.83 R
Benzo(ghi)perylene	NV	NV	NV	NV	0.3	NV	0.35 R	0.49 R	0.59 R	0.47 R	0.95 R	0.26 R	0.81 R	0.69 R	0.83 R
Benzo(k)fluoranthene	NV	NV	NV	NV	0.027	NV	0.35 R	0.49 R	0.59 R	0.47 R	0.95 R	0.26 R	0.81 R	0.69 R	0.83 R
Bis(2-chloro-1-methylethyl)ether	NV	NV	NV	NV	NV	NV	0.68 U	0.96 U	1.1 U	0.92 U	1.8 UJ	0.5 UJ	1.6 UJ	1.3 U	1.6 U
Bis(2-chloroethoxy)methane	NV	NV	NV	NV	NV	NV	0.35 U	0.49 U	0.59 U	0.47 U	0.95 UJ	0.26 UJ	0.81 UJ	0.69 U	0.83 U

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Table 6-3
Sediment Analytical Results
Wild River Land Trust
Port Orford, Oregon

Area of Interest:	DEQ Sediment Bioaccumulative Screening Level Value[1]				DEQ Ecological RBC[2]	DEQ Background Metals, Klamath Mountains[3]	Site-Specific Background	Former Log Pond						Former Fire Suppression Pond	
Location:							PD09SD	PD01SD	PD02SD	PD03SD	PD04SD	PD05SD	PD06SD	PD07SD	PD08SD
Sample Name:	Birds	Mammals	Fish	Inorganic Background	Sediment		JLTY2	JLTX4	JLTX5	JLTX6	JLTX7	JLTX8	JLTX9	JLTY0	JLTY1
Collection Date:	Population	Population	Freshwater		Freshwater		9/12/2020	9/9/2020	9/9/2020	9/9/2020	9/12/2020	9/12/2020	9/12/2020	9/12/2020	9/12/2020
Collection Depth (ft bgs):							0-1	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-1	0-1	0-1
Bis(2-chloroethyl)ether	NV	NV	NV	NV	NV	NV	0.68 U	0.96 U	1.1 U	0.92 U	1.8 UJ	0.5 UJ	1.6 UJ	1.3 U	1.6 U
Bis(2-ethylhexyl)phthalate	NV	NV	NV	NV	0.75	NV	0.35 U	0.49 U	0.59 U	0.47 U	0.95 UJ	0.26 UJ	0.81 UJ	0.31 JQ	0.83 U
Butylbenzylphthalate	NV	NV	NV	NV	NV	NV	0.35 U	0.49 U	0.59 U	0.47 U	0.95 UJ	0.26 UJ	0.81 UJ	0.69 U	0.83 U
Caprolactam	NV	NV	NV	NV	NV	NV	0.68 U	0.96 U	1.1 U	0.92 U	1.8 UJ	0.5 UJ	1.6 UJ	1.3 U	1.6 U
Carbazole	NV	NV	NV	NV	0.14	NV	0.68 U	0.96 U	1.1 U	0.92 U	1.8 UJ	0.5 UJ	1.6 UJ	1.3 U	1.6 U
Chrysene	NV	NV	NV	NV	0.057	NV	0.35 R	0.49 R	0.59 R	0.47 R	0.95 R	0.26 R	0.81 R	0.69 R	0.83 R
Dibenzo(a,h)anthracene	NV	NV	NV	NV	0.033	NV	0.35 R	0.49 R	0.59 R	0.47 R	0.95 R	0.26 R	0.81 R	0.69 R	0.83 R
Dibenzofuran	NV	NV	NV	NV	5.1	NV	0.35 U	0.49 U	0.59 U	0.47 U	0.95 UJ	0.26 UJ	0.81 UJ	0.69 U	0.83 U
Diethyl phthalate	NV	NV	NV	NV	NV	NV	0.35 U	0.49 U	0.59 U	0.47 U	0.95 UJ	0.26 UJ	0.81 UJ	0.69 U	0.83 U
Dimethyl phthalate	NV	NV	NV	NV	NV	NV	0.35 U	0.49 U	0.59 U	0.47 U	0.95 UJ	0.26 UJ	0.81 UJ	0.69 U	0.83 U
Di-n-butyl phthalate	NV	NV	NV	NV	0.11	NV	0.35 U	0.49 U	0.59 U	0.47 U	0.95 UJ	0.26 UJ	0.81 UJ	0.69 U	0.83 U
Di-n-octyl phthalate	NV	NV	NV	NV	NV	NV	0.68 U	0.96 U	1.1 U	0.92 U	1.8 UJ	0.5 UJ	1.6 UJ	1.3 U	1.6 U
Fluoranthene	NV	1,800	37	NV	0.111	NV	0.68 R	0.96 R	1.1 R	0.92 R	1.8 R	0.5 R	1.6 R	1.3 R	1.6 R
Fluorene	NV	NV	NV	NV	0.077	NV	0.35 R	0.49 R	0.59 R	0.47 R	0.95 R	0.26 R	0.81 R	0.69 R	0.83 R
Hexachlorobenzene	NV	NV	61	NV	0.1	NV	0.35 U	0.49 U	0.59 U	0.47 U	0.95 UJ	0.26 UJ	0.81 UJ	0.69 U	0.83 U
Hexachlorobutadiene	NV	NV	NV	NV	NV	NV	0.35 U	0.49 U	0.59 U	0.47 U	0.95 UJ	0.26 UJ	0.81 UJ	0.69 U	0.83 U
Hexachlorocyclopentadiene	NV	NV	NV	NV	NV	NV	0.68 U	0.96 U	1.1 U	0.92 U	1.8 UJ	0.5 UJ	1.6 UJ	1.3 U	1.6 U
Hexachloroethane	NV	NV	NV	NV	NV	NV	0.35 U	0.49 U	0.59 U	0.47 U	0.95 UJ	0.26 UJ	0.81 UJ	0.69 U	0.83 U
Indeno(1,2,3-cd)pyrene	NV	NV	NV	NV	0.017	NV	0.35 R	0.49 R	0.59 R	0.47 R	0.95 R	0.26 R	0.81 R	0.69 R	0.83 R
Isophorone	NV	NV	NV	NV	NV	NV	0.35 U	0.49 U	0.59 U	0.47 U	0.95 UJ	0.26 UJ	0.81 UJ	0.69 U	0.83 U
Naphthalene	NV	NV	NV	NV	0.176	NV	0.35 R	0.49 R	0.59 R	0.47 R	0.95 R	0.26 R	0.81 R	0.69 R	0.83 R
Nitrobenzene	NV	NV	NV	NV	NV	NV	0.35 U	0.49 U	0.59 U	0.47 U	0.95 UJ	0.26 UJ	0.81 UJ	0.69 U	0.83 U
N-Nitrosodiphenylamine	NV	NV	NV	NV	NV	NV	0.35 U	0.49 U	0.59 U	0.47 U	0.95 UJ	0.26 UJ	0.81 UJ	0.69 U	0.83 U
N-Nitrosodipropylamine	NV	NV	NV	NV	NV	NV	0.35 U	0.49 U	0.59 U	0.47 U	0.95 UJ	0.26 UJ	0.81 UJ	0.69 U	0.83 U
Pentachlorophenol	NV	3.3	0.31	NV	NV	NV	0.68 R	0.96 R	1.1 R	0.92 R	1.8 R	0.5 R	1.6 R	1.3 R	1.6 R
Phenanthrene	NV	NV	NV	NV	NV	NV	0.35 R	0.49 R	0.59 R	0.47 R	0.95 R	0.26 R	0.81 R	0.69 R	0.83 R
Phenol	NV	NV	NV	NV	0.048	NV	0.68 U	0.96 U	1.1 U	0.92 U	1.8 UJ	0.5 UJ	1.6 UJ	1.3 U	1.6 U
Pyrene	NV	90,000	1.9	NV	0.053	NV	0.35 R	0.49 R	0.59 R	0.47 R	0.95 R	0.26 R	0.81 R	0.69 R	0.83 R
SVOCs by SIM (mg/kg)															
2-Methylnaphthalene	NV	NV	NV	NV	NV	NV	0.0068 U	0.0056 JQ	0.013	0.013	0.018 U	0.00081 JQ	0.016 U	0.013 U	0.016 U
Acenaphthene	NV	NV	NV	NV	0.29	NV	0.0068 U	0.0019 JQ	0.0039 JQ	0.0039 JQ	0.018 U	0.0049 U	0.016 U	0.013 U	0.016 U
Acenaphthylene	NV	NV	NV	NV	0.16	NV	0.0068 U	0.0058 JQ	0.0043 JQ	0.0034 JQ	0.018 U	0.0049 U	0.016 U	0.013 U	0.016 U
Anthracene	NV	NV	NV	NV	0.057	NV	0.0068 U	0.0096 U	0.011 U	0.0092 U	0.018 U	0.0049 U	0.016 U	0.013 U	0.016 U
Benzo(a)anthracene	NV	NV	NV	NV	0.032	NV	0.0068 U	0.0058 JQ	0.032 J	0.012 J	0.018 U	0.0049 U	0.016 U	0.013 U	0.016 U
Benzo(a)pyrene	NV	NV	NV	NV	0.032	NV	0.0068 U	0.0096 U	0.011 U	0.0092 U	0.018 U	0.0049 U	0.016 U	0.013 U	0.016 U
Benzo(b)fluoranthene	NV	NV	NV	NV	NV	NV	0.0019 JQ	0.0076 JQ	0.024	0.0063 JQ	0.018 U	0.001 JQ	0.0073 JQ	0.004 JQ	0.016 U
Benzo(ghi)perylene	NV	NV	NV	NV	0.3	NV	0.0068 U	0.0096 U	0.011 U	0.0092 U	0.018 U	0.0049 U	0.016 U	0.013 U	0.016 U
Benzo(k)fluoranthene	NV	NV	NV	NV	0.027	NV	0.0016 JQ	0.0096 U	0.011 U	0.0092 U	0.018 U	0.0011 JQ	0.0042 JQ	0.0035 JQ	0.0041 JQ
Chrysene	NV	NV	NV	NV	0.057	NV	0.0017 JQ	0.0089 JQ	0.013 J	0.0079 JQ	0.0027 JQ	0.00097 JQ	0.0036 JQ	0.013 U	0.016 U
Dibenzo(a,h)anthracene	NV	NV	NV	NV	0.033	NV	0.0068 U	0.0096 U	0.011 U	0.0092 U	0.018 U	0.0049 U	0.016 U	0.013 U	0.016 U
Fluoranthene	NV	1,800	37	NV	0.111	NV	0.0068 U	0.018	0.045	0.018	0.0025 JQ	0.00097 JQ	0.0069 JQ	0.028 J	0.0057 JQ
Fluorene	NV	NV	NV	NV	0.077	NV	0.0068 U	0.0031 JQ	0.0042 JQ	0.0041 JQ	0.018 U	0.0049 U	0.016 U	0.013 U	0.016 U
Indeno(1,2,3-cd)pyrene	NV	NV	NV	NV	0.017	NV	0.0068 U	0.0096 U	0.011 U	0.0092 U	0.018 U	0.0049 U	0.016 U	0.013 U	0.016 U

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Table 6-3
Sediment Analytical Results
Wild River Land Trust
Port Orford, Oregon

Area of Interest:	DEQ Sediment Bioaccumulative Screening Level Value[1]				DEQ Ecological RBC[2]	DEQ Background Metals, Klamath Mountains[3]	Site-Specific Background	Former Log Pond						Former Fire Suppression Pond	
Location:							PD09SD	PD01SD	PD02SD	PD03SD	PD04SD	PD05SD	PD06SD	PD07SD	PD08SD
Sample Name:	Birds	Mammals	Fish	Inorganic Background	Sediment		JLTY2	JLTX4	JLTX5	JLTX6	JLTX7	JLTX8	JLTX9	JLTY0	JLTY1
Collection Date:	Population	Population	Freshwater		Freshwater		9/12/2020	9/9/2020	9/9/2020	9/9/2020	9/12/2020	9/12/2020	9/12/2020	9/12/2020	9/12/2020
Collection Depth (ft bgs):							0-1	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-1	0-1	0-1
Naphthalene	NV	NV	NV	NV	0.176	NV	0.0068 U	0.0089 JQ	0.012	0.013	0.018 U	0.0049 U	0.016 U	0.013 U	0.016 U
Pentachlorophenol	NV	3.3	0.31	NV	NV	NV	0.014 U	0.02	0.014 JQ	0.0089 JQ	0.037 U	0.01 U	0.032 U	0.027 U	0.033 U
Phenanthrene	NV	NV	NV	NV	NV	NV	0.0038 JQ	0.026	0.053	0.036	0.0047 JQ	0.0035 JQ	0.0051 JQ	0.0041 JQ	0.0041 JQ
Pyrene	NV	90,000	1.9	NV	0.053	NV	0.0068 U	0.014	0.014 J	0.0077 JQ	0.018 U	0.00058 JQ	0.0041 JQ	0.013 U	0.016 U
Total PAH[c]	NV	NV	NV	NV	1.61	NV	0.053 J	0.13 J	0.25 J	0.15 J	0.14 J	0.033 J	0.12 J	0.12 J	0.13 J
Total LPAH[d][5]	NV	NV	NV	NV	0.076	NV	0.024 J	0.056 J	0.096 J	0.078 J	0.059 J	0.017 J	0.053 J	0.043 J	0.052 J
Total HPAH[e][5]	NV	NV	NV	NV	0.193	NV	0.029 J	0.078 J	0.16 J	0.075 J	0.077 J	0.017 J	0.066 J	0.081 J	0.074 J

Table 6-3
Sediment Analytical Results
Wild River Land Trust
Port Orford, Oregon

Notes

Shading (color key below) indicates an exceedance of screening criteria; non-detects (U or UJ) and rejected results (R) were not compared with screening levels. Metals results below background concentrations were not compared with screening levels.

When multiple screening levels are exceeded, the result is shaded with the color associated with the highest exceeded screening level.

DEQ Sediment Bioaccumulative SLV, Birds, Population

DEQ Sediment Bioaccumulative SLV, Mammals, Population

DEQ Sediment Bioaccumulative SLV, Fish, Freshwater

DEQ Sediment Bioaccumulative SLV, Inorganic Background

DEQ Ecological RBC, Sediment, Freshwater

DEQ = Oregon Department of Environmental Quality.

ft bgs = feet below ground surface.

HPAH = high molecular weight polycyclic aromatic hydrocarbon.

J = the result is estimated.

JQ = result detected above the detection limit but below the contract-required method reporting limit or quantitation limit.

LPAH = low molecular weight polycyclic aromatic hydrocarbon.

mg/kg = milligrams per kilogram.

NV = no value.

pg/g = picograms per gram.

R = the data are rejected and unusable for all purposes.

RBC = risk-based concentration.

SIM = selected ion monitoring.

SLV = screening level value.

SVOC = semivolatile organic compound.

TEQ = toxicity equivalence.

U = the result is non-detect.

UJ = the result is non-detect with an estimated detection limit or reporting limit.

[a]Dioxin/furan TEQs calculated as the sum of each congener concentration multiplied by the corresponding TEF value (avian, fish, or mammal) with each non-detect result also multiplied by one-half.

[b]Dioxin/furan TEQs are compared to bioaccumulative sediment screening levels for the same organism group.

[c]Total PAHs are the sum of all LPAHs and HPAHs. Non-detect results are multiplied by one-half.

[d]LPAHs are the sum of 2-methylnaphthalene, acenaphthene, acenaphthylene, anthracene, fluorene, naphthalene,and phenanthrene. Non-detect results are multiplied by one-half.

[e]HPAHs are the sum of benzo(a)anthracene, benzo(a)pyrene, benzo(g,h,i)perylene, benzofluoranthene, chrysene, dibenzo(a,h)anthracene, fluoranthene, indeno(1,2,3,cd)pyrene, and pyrene. Non-detect results are multiplied by one-half.

References

[1]DEQ. 2020. *Guidance for Assessing Bioaccumulative Chemicals of Concern in Sediment.* Table A-1. Oregon Department of Environmental Quality. October.

[2]DEQ. 2020. *Conducting Ecological Risk Assessments.* Table 3. Oregon Department of Environmental Quality. September.

[3]DEQ. 2013. *Development of Oregon Background Metals Concentrations in Soil.* Oregon Department of Environmental Quality. March.

[4]DEQ. 2020. *Guidance for Assessing Bioaccumulative Chemicals of Concern in Sediment.* Table A-5b. Oregon Department of Environmental Quality. October.

[5]LPAHs and HPAH compounds are identified based on October 2017 DEQ Upriver Reach Sediment Characterization Workplan for the Lower Willamette River.

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Table 6-4
Surface Water Analytical Results
Wild River Land Trust
Port Orford, Oregon

Location:	DEQ RBC for Freshwater[a][1]		PD01SW	PD01SW	PD05SW	PD05SW	PD06SW	PD06SW	PD09SW	PD09SW
Sample Name:			JLW39	JLW40	JLW41	JLW42	JLW43	JLW44	JLW45	JLW46
Sample Type:			Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Collection Date:	RBC Chronic	RBC Chronic, Wildlife	9/11/2020	9/11/2020	9/12/2020	9/12/2020	9/12/2020	9/12/2020	9/12/2020	9/12/2020
Metals (ug/L)										
Aluminum	320	NV	343	200 U	179 JQ	200 U	196 JQ	200 U	107 JQ	200 U
Antimony	190	NV	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U
Arsenic	150	NV	0.52 JQ	0.21 JQ	0.25 JQ	0.09 JQ	0.18 JQ	0.11 JQ	0.14 JQ	1 U
Barium	220	NV	12.7	12.5	14.7	14.9	14.8	13.9	12.6	13.6
Beryllium	11	NV	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Cadmium	0.094	NV	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Calcium	120,000	NV	1,650 JQ	1,550 JQ	1,530 JQ	1,540 JQ	1,510 JQ	1,470 JQ	1,470 JQ	1,440 JQ
Chromium	24[b]	NV	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Cobalt	19	NV	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Copper	1.4	NV	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Iron	1,000	NV	1,780	398	628	166	605	100 U	318	100 U
Lead	0.54	NV	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Magnesium	82,000	NV	1,640 JQ	1,480 JQ	1,630 JQ	1,580 JQ	1,600 JQ	1,530 JQ	1,590 JQ	1,530 JQ
Manganese	93	NV	51.2	36.8	23.6	16.6	39.1	23.3	16.7	15 U
Mercury	0.012	0.0013	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	16	NV	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U
Potassium	53,000	NV	5000 U	5000 U	5000 U	5000 U	5000 U	5000 U	5000 U	5000 U
Selenium	4.6	NV	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Silver	0.1	NV	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	1 U
Sodium	680,000	NV	8,170	8,140	7,850	8,210	7,910	8,190	7,850	8,120
Thallium	6	NV	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
Vanadium	27	NV	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Zinc	36	NV	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U
Dioxins/Furans (pg/L)										
1,2,3,4,6,7,8-HpCDD	NV	NV	13 JQ	--	4.1 U	--	4.2 U	--	8 JQ	--
1,2,3,4,6,7,8-HpCDF	NV	NV	4.3 JQ	--	3.3 U	--	3.4 U	--	3.4 U	--
1,2,3,4,7,8,9-HpCDF	NV	NV	2.4 U	--	2.4 U	--	2.4 U	--	2.8 U	--
1,2,3,4,7,8-HxCDD	NV	NV	1.5 U	--	1.4 U	--	1.5 U	--	1.4 U	--
1,2,3,4,7,8-HxCDF	NV	NV	3.2 U	--	3.2 U	--	3.2 U	--	3.2 U	--
1,2,3,6,7,8-HxCDD	NV	NV	2.1 U	--	2.1 U	--	2.1 U	--	2.1 U	--
1,2,3,6,7,8-HxCDF	NV	NV	2.7 U	--	2.7 U	--	2.7 U	--	2.7 U	--
1,2,3,7,8,9-HxCDD	NV	NV	2.1 U	--	2.1 U	--	2.1 U	--	2.1 U	--
1,2,3,7,8,9-HxCDF	NV	NV	3.8 U	--	3.7 U	--	3.8 U	--	3.7 U	--
1,2,3,7,8-PeCDD	NV	NV	3.7 U	--	3.6 U	--	3.7 U	--	3.6 U	--
1,2,3,7,8-PeCDF	NV	NV	3.8 U	--	3.7 U	--	3.8 U	--	3.7 U	--
2,3,4,6,7,8-HxCDF	NV	NV	3.4 U	--	3.3 U	--	3.4 U	--	3.4 U	--
2,3,4,7,8-PeCDF	NV	NV	3.4 U	--	3.3 U	--	3.4 U	--	3.4 U	--
2,3,7,8-TCDD	NV	NV	0.99 U	--	1.1 U	--	0.72 U	--	0.71 U	--
2,3,7,8-TCDF	NV	NV	1.1 U	--	1.1 U	--	1.1 U	--	1.1 U	--
OCDD	NV	NV	130	--	24 JQ	--	16 JQ	--	94 JQ	--
OCDF	NV	NV	9.1 JQ	--	6.3 U	--	6.4 U	--	6.3 U	--
Dioxin/furan TEQ (Bird)[c][2]	0.0031	0.0031	5.7 JQ	--	5.6 JQ	--	5.5 JQ	--	5.4 JQ	--
Dioxin/furan TEQ (Fish)[c][2]	0.0031	0.0031	4.5 JQ	--	4.3 JQ	--	4.3 JQ	--	4.2 JQ	--

Location:	DEQ RBC for Freshwater[a][1]		PD01SW	PD01SW	PD05SW	PD05SW	PD06SW	PD06SW	PD09SW	PD09SW
Sample Name:			JLW39	JLW40	JLW41	JLW42	JLW43	JLW44	JLW45	JLW46
Sample Type:			Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Collection Date:	RBC Chronic	RBC Chronic, Wildlife	9/11/2020	9/11/2020	9/12/2020	9/12/2020	9/12/2020	9/12/2020	9/12/2020	9/12/2020
Dioxin/furan TEQ (Mammal)[c][3]	0.0031	0.0031	4.1 JQ	--	3.9 JQ	--	3.8 JQ	--	3.8 JQ	--

Location:	DEQ RBC for Freshwater[a][1]		PD01SW	PD01SW	PD05SW	PD05SW	PD06SW	PD06SW	PD09SW	PD09SW
Sample Name:			JLW39	JLW40	JLW41	JLW42	JLW43	JLW44	JLW45	JLW46
Sample Type:			Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Collection Date:	RBC Chronic	RBC Chronic, Wildlife	9/11/2020	9/11/2020	9/12/2020	9/12/2020	9/12/2020	9/12/2020	9/12/2020	9/12/2020
SVOCs (ug/L)										
1,1'-Biphenyl	6.5	NV	5 UJ	--	5 UJ	--	5 UJ	--	5 UJ	--
1,2,4,5-Tetrachlorobenzene	8.3	NV	5 UJ	--	5 UJ	--	5 UJ	--	5 UJ	--
1,4-Dioxane	22,000	NV	2 UJ	--	2 UJ	--	2 UJ	--	2 UJ	--
2,3,4,6-Tetrachlorophenol	1	NV	5 UJ	--	5 UJ	--	5 UJ	--	5 UJ	--
2,4,5-Trichlorophenol	1.9	NV	5 UJ	--	5 UJ	--	5 UJ	--	5 UJ	--
2,4,6-Trichlorophenol	4.9	NV	5 UJ	--	5 UJ	--	5 UJ	--	5 UJ	--
2,4-Dichlorophenol	11	NV	5 UJ	--	5 UJ	--	5 UJ	--	5 UJ	--
2,4-Dimethylphenol	15	NV	5 UJ	--	5 UJ	--	5 UJ	--	5 UJ	--
2,4-Dinitrophenol	71	NV	10 UJ	--	10 UJ	--	10 UJ	--	10 UJ	--
2,4-Dinitrotoluene	44	NV	5 UJ	--	5 UJ	--	5 UJ	--	5 UJ	--
2,6-Dinitrotoluene	81	NV	5 UJ	--	5 UJ	--	5 UJ	--	5 UJ	--
2-Chloronaphthalene	NV	NV	5 UJ	--	5 UJ	--	5 UJ	--	5 UJ	--
2-Chlorophenol	18	NV	5 UJ	--	5 UJ	--	5 UJ	--	5 UJ	--
2-Methylnaphthalene	4.7	NV	5 R	--	5 R	--	5 R	--	5 R	--
2-Methylphenol	67	NV	10 UJ	--	10 UJ	--	10 UJ	--	10 UJ	--
2-Nitroaniline	17	NV	5 UJ	--	5 UJ	--	5 UJ	--	5 UJ	--
2-Nitrophenol	73	NV	5 UJ	--	5 UJ	--	5 UJ	--	5 UJ	--
3,3-Dichlorobenzidine	4.5	NV	10 UJ	--	10 UJ	--	10 UJ	--	10 UJ	--
3-Nitroaniline	NV	NV	10 UJ	--	10 UJ	--	10 UJ	--	10 UJ	--
4,6-Dinitro-2-methylphenol	NA	NV	10 UJ	--	10 UJ	--	10 UJ	--	10 UJ	--
4-Bromophenylphenyl ether	1.5	NV	5 UJ	--	5 UJ	--	5 UJ	--	5 UJ	--
4-Chloro-3-methylphenol	1	NV	5 UJ	--	5 UJ	--	5 UJ	--	5 UJ	--
4-Chloroaniline	0.8	NV	10 UJ	--	10 UJ	--	10 UJ	--	10 UJ	--
4-Chlorophenylphenyl ether	NV	NV	5 UJ	--	5 UJ	--	5 UJ	--	5 UJ	--
4-Methylphenol	53	NV	10 UJ	--	10 UJ	--	10 UJ	--	10 UJ	--
4-Nitroaniline	NV	NV	10 UJ	--	10 UJ	--	10 UJ	--	10 UJ	--
4-Nitrophenol	58	NV	10 UJ	--	10 UJ	--	10 UJ	--	10 UJ	--
Acenaphthene	15	NV	5 R	--	5 R	--	5 R	--	5 R	--
Acenaphthylene	13	NV	5 R	--	5 R	--	5 R	--	5 R	--
Acetophenone	NV	NV	10 UJ	--	10 UJ	--	10 UJ	--	10 UJ	--
Anthracene	0.02	NV	5 R	--	5 R	--	5 R	--	5 R	--
Atrazine	0.03	NV	10 UJ	--	10 UJ	--	10 UJ	--	10 UJ	--
Benzaldehyde	140	NV	10 UJ	--	10 UJ	--	10 UJ	--	10 UJ	--
Benzo(a)anthracene	4.7	NV	5 R	--	5 R	--	5 R	--	5 R	--
Benzo(a)pyrene	0.06	NV	5 R	--	5 R	--	5 R	--	5 R	--
Benzo(b)fluoranthene	2.6	NV	5 R	--	5 R	--	5 R	--	5 R	--
Benzo(ghi)perylene	0.012	NV	5 R	--	5 R	--	5 R	--	5 R	--
Benzo(k)fluoranthene	0.06	NV	5 R	--	5 R	--	5 R	--	5 R	--
Bis(2-chloro-1-methylethyl)ether	NV	NV	10 UJ	--	10 UJ	--	10 UJ	--	10 UJ	--
Bis(2-chloroethoxy)methane	NV	NV	5 UJ	--	5 UJ	--	5 UJ	--	5 UJ	--
Bis(2-chloroethyl)ether	NV	NV	10 UJ	--	10 UJ	--	10 UJ	--	10 UJ	--
Bis(2-ethylhexyl)phthalate	8	NV	5 UJ	--	5 UJ	--	5 UJ	--	5 UJ	--
Butylbenzylphthalate	23	NV	5 UJ	--	5 UJ	--	5 UJ	--	5 UJ	--
Caprolactam	NV	NV	10 UJ	--	10 UJ	--	10 UJ	--	10 UJ	--

Location:	DEQ RBC for Freshwater[a][1]		PD01SW	PD01SW	PD05SW	PD05SW	PD06SW	PD06SW	PD09SW	PD09SW
Sample Name:			JLW39	JLW40	JLW41	JLW42	JLW43	JLW44	JLW45	JLW46
Sample Type:			Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Collection Date:	RBC Chronic	RBC Chronic, Wildlife	9/11/2020	9/11/2020	9/12/2020	9/12/2020	9/12/2020	9/12/2020	9/12/2020	9/12/2020
Carbazole	4	NV	10 UJ	--	10 UJ	--	10 UJ	--	10 UJ	--
Chrysene	4.7	NV	5 R	--	5 R	--	5 R	--	5 R	--
Dibenzo(a,h)anthracene	0.012	NV	5 R	--	5 R	--	5 R	--	5 R	--
Dibenzofuran	4	NV	5 UJ	--	5 UJ	--	5 UJ	--	5 UJ	--
Diethyl phthalate	220	NV	5 UJ	--	5 UJ	--	5 UJ	--	5 UJ	--
Dimethyl phthalate	1100	NV	5 UJ	--	5 UJ	--	5 UJ	--	5 UJ	--
Di-n-butyl phthalate	19	NV	5 UJ	--	5 UJ	--	5 UJ	--	5 UJ	--
Di-n-octyl phthalate	220	NV	10 UJ	--	10 UJ	--	10 UJ	--	10 UJ	--
Fluoranthene	0.8	NV	10 R	--	10 R	--	10 R	--	10 R	--
Fluorene	19	NV	5 R	--	5 R	--	5 R	--	5 R	--
Hexachlorobenzene	0.15	0.0003	5 UJ	--	5 UJ	--	5 UJ	--	5 UJ	--
Hexachlorobutadiene	1	1	5 UJ	--	5 UJ	--	5 UJ	--	5 UJ	--
Hexachlorocyclopentadiene	0.45	NV	10 UJ	--	10 UJ	--	10 UJ	--	10 UJ	--
Hexachloroethane	12	NV	5 UJ	--	5 UJ	--	5 UJ	--	5 UJ	--
Indeno(1,2,3-cd)pyrene	0.012	NV	5 R	--	5 R	--	5 R	--	5 R	--
Isophorone	920	NV	5 UJ	--	5 UJ	--	5 UJ	--	5 UJ	--
Naphthalene	21	NV	5 R	--	5 R	--	5 R	--	5 R	--
Nitrobenzene	230	NV	5 UJ	--	5 UJ	--	5 UJ	--	5 UJ	--
N-Nitrosodiphenylamine	25	NV	5 UJ	--	5 UJ	--	5 UJ	--	5 UJ	--
N-Nitrosodipropylamine	NV	NV	5 UJ	--	5 UJ	--	5 UJ	--	5 UJ	--
Pentachlorophenol	6.7	NV	10 R	--	10 R	--	10 R	--	10 R	--
Phenanthrene	2.3	NV	5 R	--	5 R	--	5 R	--	5 R	--
Phenol	160	NV	10 UJ	--	10 UJ	--	10 UJ	--	10 UJ	--
Pyrene	4.6	NV	5 R	--	5 R	--	5 R	--	5 R	--
SVOCs by SIM (ug/L)										
2-Methylnaphthalene	4.7	NV	0.1 U	--	0.1 U	--	0.1 U	--	0.1 U	--
Acenaphthene	15	NV	0.1 U	--	0.1 U	--	0.1 U	--	0.1 U	--
Acenaphthylene	13	NV	0.1 U	--	0.1 U	--	0.1 U	--	0.1 U	--
Anthracene	0.02	NV	0.1 U	--	0.1 U	--	0.1 U	--	0.1 U	--
Benzo(a)anthracene	4.7	NV	0.1 U	--	0.1 U	--	0.1 U	--	0.1 U	--
Benzo(a)pyrene	0.06	NV	0.1 U	--	0.1 U	--	0.1 U	--	0.1 U	--
Benzo(b)fluoranthene	2.6	NV	0.1 U	--	0.1 U	--	0.1 U	--	0.1 U	--
Benzo(ghi)perylene	0.012	NV	0.1 U	--	0.1 U	--	0.1 U	--	0.1 U	--
Benzo(k)fluoranthene	0.06	NV	0.1 U	--	0.1 U	--	0.1 U	--	0.1 U	--
Chrysene	4.7	NV	0.1 U	--	0.1 U	--	0.1 U	--	0.1 U	--
Dibenzo(a,h)anthracene	0.012	NV	0.1 U	--	0.1 U	--	0.1 U	--	0.1 U	--
Fluoranthene	0.8	NV	0.1 U	--	0.1 U	--	0.1 U	--	0.1 U	--
Fluorene	19	NV	0.1 U	--	0.1 U	--	0.1 U	--	0.1 U	--
Indeno(1,2,3-cd)pyrene	0.012	NV	0.1 U	--	0.1 U	--	0.1 U	--	0.1 U	--
Naphthalene	21	NV	0.1 U	--	0.1 U	--	0.1 U	--	0.1 U	--
Pentachlorophenol	6.7	NV	0.2 U	--	0.2 U	--	0.2 U	--	0.2 U	--
Phenanthrene	2.3	NV	0.1 U	--	0.1 U	--	0.1 U	--	0.1 U	--
Pyrene	4.6	NV	0.1 U	--	0.1 U	--	0.1 U	--	0.1 U	--

Notes

Shading (color key below) indicates an exceedance of screening criteria; non-detects (U or UJ) and rejected results (R) were not compared with screening levels. Metals results below background concentrations were not compared with screening levels.

When multiple screening levels are exceeded, the result is shaded with the color associated with the highest exceeded screening level.

RBC, freshwater, chronic

RBC, freshwater, chronic, wildlife

-- = not analyzed.

DEQ = Oregon Department of Environmental Quality.

J = the result is estimated.

JQ = result detected above the detection limit but below the contract-required method reporting limit or quantitation limit.

NP = result not provided by data source.

NV = no value.

pg/L = picograms per liter.

R = the data are rejected and unusable for all purposes.

RBC = risk-based concentration.

SIM = selected ion monitoring.

SVOC = semivolatile organic compound.

TEQ = toxicity equivalence.

U = the result is non-detect.

ug/L = micrograms per liter.

UJ = the result is non-detect with an estimated detection limit or reporting limit.

[a]Metals RBCs are adjusted using defaults generally applicable to the Willamette Valley. These include a hardness of 25 mg/L, DOC of 1.25 mg/L, and a pH of 7.0.

[b]Value is for trivalent chromium.

[c]Dioxin/furan TEQs calculated as the sum of each congener concentration multiplied by the corresponding TEF value (avian, fish, or mammal) with each non-detect result also multiplied by one-half.

Reference

[1]DEQ. 2020. *Conducting Ecological Risk Assessments* . Table 2. Oregon Department of Environmental Quality. September.

[2]Van den Berg, M. et al. 1998. *Toxic equivalency factors (TEFs) for PCBs, PCDDs, PCDFs for humans and wildlife.* Environmental Health Perspectives.. 106 No. 12:775–792.

[3]Van den Berg, M. et al. 2006. *The 2005 World Health Organization reevaluation of human and mammalian toxic equivalency factors for dioxins and dioxin-like compounds.* Toxicological Sciences. 93 No. 2:223–241.

Table 7-1
Exposure Point Concentrations - Soil
Wild Rivers Land Trust
Port Orford, Oregon

CPEC	Regional Background[1]	Site-Specific Background Value[a]	EPC (ISM Areas of Interest)	EPC (Discrete)	UCL Method (Discrete)
Metals (mg/kg)					
Antimony	0.59	0.094	4.2	0.886	Gamma Adjusted KM-UCL (use when k<=1 and 15 < n < 50 but k<=1)
Arsenic	12	4.18	9.88	NC[b]	--
Barium	630	81.3	348.3	276.1	90% Chebyshev (Mean, Sd) UCL
Copper	110	57.3	149.4	91.46	90% Student's-t UCL
Lead	36	15.2	102.2	62.39	90% Chebyshev (Mean, Sd) UCL
Mercury	0.17	0.066	0.2	0.216	90% KM (Chebyshev) UCL
Selenium	0.8	NV	NA	0.63	90% KM (t) UCL
Zinc	140	93.1	306	209.3	90% Chebyshev (Mean, Sd) UCL
Dioxins (pg/g)					
Dioxin/furan TEQ (avian)[c][2]	NV	3.31	27.3	55.4	90% Chebyshev (Mean, Sd) UCL
Dioxin/furan TEQ (mammal)[d][3]	NV	2.97	30.0	52.5	90% KM (Chebyshev) UCL
TPH (mg/kg)					
Total Diesel+Oil[e]	--	NV	NA	147.6	90% KM (t) UCL

Table 7-1
Exposure Point Concentrations - Soil
Wild Rivers Land Trust
Port Orford, Oregon

NOTES:

Areas of decision units are as follows: DU-1 (0.021 acres), DU-2 (0.027 acres), DU-3 (0.014 acres), DU-4 (0.016 acres), DU-5 (0.03 acres), DU-6 (0.077 acres), DU-7 (0.029 acres).

-- = not applicable.

CPEC = chemical of potential ecological concern.

EPC = exposure point concentration.

mg/kg = milligrams per kilogram.

NA = not analyzed.

NC = not calculated.

NV = no value.

pg/g = picograms per gram.

TEQ = toxicity equivalent.

UCL = upper confidence limit.

[a]Site-specific natural background values were obtained from sample DU08SS.

[b]Discrete arsenic concentrations did not exceed the regional background value; therefore, an EPC was not calculated.

[c]Dioxin/furan TEQs calculated as the sum of each detected congener concentration multiplied by the corresponding avian TEF value with non-detect results also multiplied by one-half.

[d]Dioxin/furan TEQs calculated as the sum of each detected congener concentration multiplied by the corresponding mammal TEF value with non-detect results also multiplied by one-half.

[e]Total diesel and oil is the sum of diesel- and lube-oil-range hydrocarbon results.

REFERENCES:

[1]DEQ. 2013. *Development of Oregon Background Metals Concentrations in Soil.* Oregon Department of Environmental Quality. March.

[2]Van den Berg, M. et al. 1998. *Toxic equivalency factors (TEFs) for PCBs, PCDDs, PCDFs for humans and wildlife.* Environmental Health Perspectives. 106 No. 12:775–792.

[3]Van den Berg, M. et al. 2006. *The 2005 World Health Organization reevaluation of human and mammalian toxic equivalency factors for dioxins and dioxin-like compounds.* Toxicological Sciences. 93 No. 2:223–241.

Table 7-2
Exposure Point Concentrations - Sediment
Wild Rivers Land Trust
Port Orford, Oregon

MAUL FOSTER ALONGI

CPEC	Regional Background[1]	Site-Specific Background Value[a]	EPC	UCL Method
Metals (mg/kg)				
Lead	36	6.9	23.36	90% Adjusted Gamma UCL
Mercury	0.17	0.18 U	0.177	90% KM (t) UCL
Zinc	140	105	150	90% Student's-t UCL
Dioxins (pg/g)				
2,3,7,8-TCDD	--	0.37 JQ	4.16	90% Student's-t UCL
1,2,3,7,8-PeCDD	--	0.31 JQ	12.8	90% Hall's Bootstrap UCL
1,2,3,4,7,8-HxCDD	--	0.52 U	18.7	90% Hall's Bootstrap UCL
1,2,3,6,7,8-HxCDD	--	0.94 JQ	75.6	90% Hall's Bootstrap UCL
1,2,3,7,8,9-HxCDD	--	0.55 U	76.9	90% Adjusted Gamma UCL
1,2,3,4,6,7,8-HpCDD	--	16	1,545	90% Hall's Bootstrap UCL
OCDD	--	120	15,068	90% Hall's Bootstrap UCL
2,3,7,8-TCDF	--	0.18 JQ	2.98	90% Adjusted Gamma UCL
1,2,3,7,8-PeCDF	--	0.3 U	10.92	90% KM (Chebyshev) UCL
2,3,4,7,8-PeCDF	--	0.32 JQ	16.8	90% Hall's Bootstrap UCL
1,2,3,4,7,8-HxCDF	--	0.44 U	40.04	90% Hall's Bootstrap UCL
1,2,3,6,7,8-HxCDF	--	0.37 U	31.3	90% KM (Chebyshev) UCL
1,2,3,7,8,9-HxCDF	--	0.47 U	22.44	90% KM (Chebyshev) UCL
2,3,4,6,7,8-HxCDF	--	0.44 U	37.06	KM Bootstrap t UCL
1,2,3,4,6,7,8-HpCDF	--	3.7 JQ	410.8	90% Hall's Bootstrap UCL
1,2,3,4,7,8,9-HpCDF	--	0.36 U	30.8	90% Hall's Bootstrap UCL
OCDF	--	7.5 JQ	1153	90% Hall's Bootstrap UCL
Dioxin/furan TEQ (Bird)[b, c)][2]	--	1.4 J	57.16	90% Hall's Bootstrap UCL
Dioxin/furan TEQ (Fish)[b,c][2]	--	1.2 J	53.07	90% Hall's Bootstrap UCL
Dioxin/furan TEQ (Mammal)[b,c][2]	--	1.3 J	69.72	90% Hall's Bootstrap UCL

Table 7-2
Exposure Point Concentrations - Sediment
Wild Rivers Land Trust
Port Orford, Oregon

CPEC	Regional Background[1]	Site-Specific Background Value[a]	EPC	UCL Method
SVOCs by SIM (mg/kg)				
Total LPAH	--	0.024 J	0.0684	90% Student's-t UCL

NOTES:

-- = not applicable.

CPEC = chemical of potential ecological concern.

EPC = exposure point concentration.

mg/kg = milligrams per kilogram.

pg/g = picograms per gram.

TEQ = toxicity equivalent.

[a]Site-specific natural background values were obtained from sample PD09SD.

[b]Dioxin/furan TEQs calculated as the sum of each congener concentration multiplied by the corresponding TEF value (avian, fish, or mammal) with each non-detect result also multiplied by one-half.

[c]Dioxin/furan TEQs are compared to bioaccumulative sediment screening levels for the same organism group.

REFERENCES:

[1]DEQ. 2013. *Development of Oregon Background Metals Concentrations in Soil.* Oregon Department of Environmental Quality. March.

[2]DEQ. 2020. Guidance for Assessing Bioaccumulative Chemicals of Concern in Sediment. Table A-5b. Oregon Department of Environmental Quality. October.

Table 7-3
Fish Risk Model—Sediment Bioaccumulation
Wild Rivers Land Trust
Port Orford, Oregon

CPEC	SLf (mg/kg)
	Bagley Creek and Ponds
Model Results	
2,3,7,8-TCDD	1.7E-05
1,2,3,7,8-PeCDD	5.0E-04
1,2,3,4,7,8-HxCDD	1.0E-03
1,2,3,6,7,8-HxCDD	5.0E-02
1,2,3,7,8,9-HxCDD	5.0E-02
1,2,3,4,6,7,8-HpCDD	1.3E+01
OCDD	1.3E+02
2,3,7,8-TCDF	2.8E-03
1,2,3,7,8-PeCDF	2.8E-03
2,3,4,7,8-PeCDF	3.4E-05
1,2,3,4,7,8-HxCDF	5.0E-03
1,2,3,6,7,8-HxCDF	5.0E-03
1,2,3,7,8,9-HxCDF	5.0E-03
2,3,4,6,7,8-HxCDF	5.0E-03
1,2,3,4,6,7,8-HpCDF	1.3E+00
1,2,3,4,7,8,9-HpCDF	1.3E+00
OCDF	1.3E+02

General Model Parameters

Parameter	Description	Value
SLf	Sediment bioaccumulation SL for fish (mg/kg)	See table above
SU	Site-use factor of representative fish species	0.2
f(oc)	Fraction of total organic carbon in sediment (unitless)	0.0643
f(l)—whole	Fraction of organism lipid content of whole body wet weight (unitless)	0.054

Table 7-3
Fish Risk Model—Sediment Bioaccumulation
Wild Rivers Land Trust
Port Orford, Oregon

Chemical-Specific Model Parameters			
CPEC	CTL (mg/kg)[a]	Biota-sediment accumulation factor (kg sediment organic carbon / kg organism lipid)	Toxic Equivalency Factor (Fish)
2,3,7,8-TCDD	6.4E-06	2.268	1
1,2,3,7,8-PeCDD	6.4E-06	0.076	1
1,2,3,4,7,8-HxCDD	1.3E-05	0.076	0.5
1,2,3,6,7,8-HxCDD	6.4E-04	0.076	0.01
1,2,3,7,8,9-HxCDD	6.4E-04	0.076	0.01
1,2,3,4,6,7,8-HpCDD	6.4E-03	0.003	0.001
OCDD	6.4E-02	0.003	0.0001
2,3,7,8-TCDF	1.3E-04	0.27	0.05
1,2,3,7,8-PeCDF	1.3E-04	0.27	0.05
2,3,4,7,8-PeCDF	1.3E-05	2.268	0.5
1,2,3,4,7,8-HxCDF	6.4E-05	0.076	0.1
1,2,3,6,7,8-HxCDF	6.4E-05	0.076	0.1
1,2,3,7,8,9-HxCDF	6.4E-05	0.076	0.1
2,3,4,6,7,8-HxCDF	6.4E-05	0.076	0.1
1,2,3,4,6,7,8-HpCDF	6.4E-04	0.003	0.01
1,2,3,4,7,8,9-HpCDF	6.4E-04	0.003	0.01
OCDF	6.4E-02	0.003	0.0001

NOTES:
-- = not evaluated.
CPEC = chemical of potential ecological concern.
CTL = critical tissue level.
kg = kilogram(s).
mg/kg = milligrams per kilogram.
SL = screening level.
[a]For dioxins, the CTL is calculated as the CTL for 2,3,7,8-TCDD divided by the toxic equivalency factor.

Table 7-4
Bird Risk Model—Sediment Bioaccumulation
Wild Rivers Land Trust
Port Orford, Oregon

MAUL FOSTER ALONGI

CPEC	Acceptable tissue level (mg/kg)	Acceptable tissue level for developing egg (mg/kg)[a]	SLb (mg/kg)[b]
			Bagley Creek and Ponds
Model Results			
2,3,7,8-TCDD	4.0E-05	4.0E-05	4.5E-04
1,2,3,7,8-PeCDD	4.0E-05	4.0E-05	1.3E-02
1,2,3,4,7,8-HxCDD	8.0E-04	8.0E-04	2.7E-01
1,2,3,6,7,8-HxCDD	4.0E-03	4.0E-03	1.3E+00
1,2,3,7,8,9-HxCDD	4.0E-04	4.0E-04	1.3E-01
1,2,3,4,6,7,8-HpCDD	4.0E-02	4.0E-02	3.4E+02
OCDD	4.0E-01	4.0E-01	3.4E+03
2,3,7,8-TCDF	4.0E-05	4.0E-05	3.8E-03
1,2,3,7,8-PeCDF	4.0E-04	4.0E-04	3.8E-02
2,3,4,7,8-PeCDF	4.0E-05	4.0E-05	4.5E-04
1,2,3,4,7,8-HxCDF	4.0E-04	4.0E-04	1.3E-01
1,2,3,6,7,8-HxCDF	4.0E-04	4.0E-04	1.3E-01
1,2,3,7,8,9-HxCDF	4.0E-04	4.0E-04	1.3E-01
2,3,4,6,7,8-HxCDF	4.0E-04	4.0E-04	1.3E-01
1,2,3,4,6,7,8-HpCDF	4.0E-03	4.0E-03	3.4E+01
1,2,3,4,7,8,9-HpCDF	4.0E-03	4.0E-03	3.4E+01
OCDF	4.0E-01	4.0E-01	3.4E+03

Table 7-4
Bird Risk Model—Sediment Bioaccumulation
Wild Rivers Land Trust
Port Orford, Oregon

General Model Parameters		
Parameter	Description	Value
SLb	Sediment bioaccumulation SL for birds (mg/kg)	See table above
IR	Fish ingestion rate for heron (kg/day)	0.42
BW	Body weight for heron (kg)	2.39
SU	Site-use factor of representative bird species	0.05
f(oc)	Fraction of total organic carbon in sediment (unitless)	0.0643
f(l)—whole	Fraction of organism lipid content of whole body wet weight (unitless)	0.05

Table 7-4
Bird Risk Model—Sediment Bioaccumulation
Wild Rivers Land Trust
Port Orford, Oregon

MAUL FOSTER ALONGI

Chemical-Specific Model Parameters				
CPEC	Lowest observed adverse effects level (mg/kg-day)	Lowest observed adverse effects level for egg development (mg/kg-day)[(c)]	Biota-sediment accumulation factor (kg sediment organic carbon / kg organism lipid)	Toxic Equivalency Factor (Bird)
2,3,7,8-TCDD	7.0E-06	4.0E-04	2.268	1
1,2,3,7,8-PeCDD	7.0E-06	4.0E-04	0.076	1
1,2,3,4,7,8-HxCDD	1.4E-04	8.0E-03	0.076	0.05
1,2,3,6,7,8-HxCDD	7.0E-04	4.0E-02	0.076	0.01
1,2,3,7,8,9-HxCDD	7.0E-05	4.0E-03	0.076	0.1
1,2,3,4,6,7,8-HpCDD	7.0E-03	4.0E-01	0.003	0.001
OCDD	7.0E-02	4.0E+00	0.003	0.0001
2,3,7,8-TCDF	7.0E-06	4.0E-04	0.27	1
1,2,3,7,8-PeCDF	7.0E-05	4.0E-03	0.27	0.1
2,3,4,7,8-PeCDF	7.0E-06	4.0E-04	2.268	1
1,2,3,4,7,8-HxCDF	7.0E-05	4.0E-03	0.076	0.1
1,2,3,6,7,8-HxCDF	7.0E-05	4.0E-03	0.076	0.1
1,2,3,7,8,9-HxCDF	7.0E-05	4.0E-03	0.076	0.1
2,3,4,6,7,8-HxCDF	7.0E-05	4.0E-03	0.076	0.1
1,2,3,4,6,7,8-HpCDF	7.0E-04	4.0E-02	0.003	0.01
1,2,3,4,7,8,9-HpCDF	7.0E-04	4.0E-02	0.003	0.01
OCDF	7.0E-02	4.0E+00	0.003	0.0001

Table 7-4
Bird Risk Model—Sediment Bioaccumulation
Wild Rivers Land Trust
Port Orford, Oregon

NOTES:
-- = not evaluated.
CPEC = chemical of potential ecological concern.
kg = kilogram(s).
kg/day = kilograms per day.
mg/kg = milligrams per kilogram.
mg/kg-day = milligrams per kilogram per day.
SL = screening level.
[a]See text for derivation.
[b]Calculated using the acceptable tissue level for developing eggs, where available.
[c]For dioxins, the values are calculated as the value for 2,3,7,8-TCDD divided by the toxic equivalency factor.

Table 7-5
Mammal Risk Model—Sediment Bioaccumulation
Wild Rivers Land Trust
Port Orford, Oregon

MAUL FOSTER ALONGI

CPEC	Acceptable tissue level (mg/kg)	SLb (mg/kg) Bagley Creek and Ponds
Model Results		
2,3,7,8-TCDD	1.6E-05	3.7E-05
1,2,3,7,8-PeCDD	1.6E-05	1.1E-03
1,2,3,4,7,8-HxCDD	1.6E-04	1.1E-02
1,2,3,6,7,8-HxCDD	1.6E-04	1.1E-02
1,2,3,7,8,9-HxCDD	1.6E-04	1.1E-02
1,2,3,4,6,7,8-HpCDD	1.6E-03	2.8E+00
OCDD	5.4E-02	9.3E+01
2,3,7,8-TCDF	1.6E-04	3.1E-03
1,2,3,7,8-PeCDF	5.4E-04	1.0E-02
2,3,4,7,8-PeCDF	5.4E-05	1.2E-04
1,2,3,4,7,8-HxCDF	1.6E-04	1.1E-02
1,2,3,6,7,8-HxCDF	1.6E-04	1.1E-02
1,2,3,7,8,9-HxCDF	1.6E-04	1.1E-02
2,3,4,6,7,8-HxCDF	1.6E-04	1.1E-02
1,2,3,4,6,7,8-HpCDF	1.6E-03	2.8E+00
1,2,3,4,7,8,9-HpCDF	1.6E-03	2.8E+00
OCDF	5.4E-02	9.3E+01

Table 7-5
Mammal Risk Model—Sediment Bioaccumulation
Wild Rivers Land Trust
Port Orford, Oregon

General Model Parameters		
Parameter	Description	Value
SLb	Sediment bioaccumulation SL for mammals (mg/kg)	See table above
IR	Fish ingestion rate for mink (kg/day)	0.137
BW	Body weight for mink (kg)	1
SU	Site-use factor of representative bird species	0.25
f(oc)	Fraction of total organic carbon in sediment (unitless)	0.0643
f(l)—whole	Fraction of organism lipid content of whole body wet weight (unitless)	0.05

Table 7-5
Mammal Risk Model—Sediment Bioaccumulation
Wild Rivers Land Trust
Port Orford, Oregon

MAUL FOSTER ALONGI

Chemical-Specific Model Parameters			
CPEC	Lowest observed adverse effects level (mg/kg-day)	Biota-sediment accumulation factor (kg sediment organic carbon / kg organism lipid)	Toxic Equivalency Factor (Mammals)
2,3,7,8-TCDD	2.2E-06	2.268	1
1,2,3,7,8-PeCDD	2.2E-06	0.076	1
1,2,3,4,7,8-HxCDD	2.2E-05	0.076	0.1
1,2,3,6,7,8-HxCDD	2.2E-05	0.076	0.1
1,2,3,7,8,9-HxCDD	2.2E-05	0.076	0.1
1,2,3,4,6,7,8-HpCDD	2.2E-04	0.003	0.01
OCDD	7.3E-03	0.003	0.0003
2,3,7,8-TCDF	2.2E-05	0.27	0.1
1,2,3,7,8-PeCDF	7.3E-05	0.27	0.03
2,3,4,7,8-PeCDF	7.3E-06	2.268	0.3
1,2,3,4,7,8-HxCDF	2.2E-05	0.076	0.1
1,2,3,6,7,8-HxCDF	2.2E-05	0.076	0.1
1,2,3,7,8,9-HxCDF	2.2E-05	0.076	0.1
2,3,4,6,7,8-HxCDF	2.2E-05	0.076	0.1
1,2,3,4,6,7,8-HpCDF	2.2E-04	0.003	0.01
1,2,3,4,7,8,9-HpCDF	2.2E-04	0.003	0.01
OCDF	7.3E-03	0.003	0.0003

Table 7-5
Mammal Risk Model—Sediment Bioaccumulation
Wild Rivers Land Trust
Port Orford, Oregon

NOTES:
-- = not evaluated.
CPEC = chemical of potential ecological concern.
kg = kilogram(s).
kg/day = kilograms per day.
mg/kg = milligrams per kilogram.
mg/kg-day = milligrams per kilogram per day.
SL = screening level.

Table 7-6
Risk Estimates—Soil Exposure (Plants)
Wild Rivers Land Trust
Port Orford, Oregon

MAUL FOSTER ALONG

CPEC	Soil Screening Level (Plants)	EPC[a]	RS	Exceeds Acceptable Risk Level
Discrete Samples				
Metals (mg/kg)				
Antimony	58	0.886	1.5E-02	No
Copper	490	91.46	1.9E-01	No
Lead	570	62.39	1.1E-01	No
Mercury	64	0.216	3.4E-03	No
Zinc	810	209.3	2.6E-01	No
Dioxins (pg/g)				
TCDD TEQ	--	--	--	--
TPH (mg/kg)				
Total Diesel+Oil	1600	147.6	9.2E-02	No
		Cumulative RS	6.7E-01	
ISM Samples (Areas of Interest)				
Metals (mg/kg)				
Antimony	58	4.2	7.3E-02	No
Copper	490	149.4	3.0E-01	No
Lead	570	102.2	1.8E-01	No
Mercury	64	0.2	3.1E-03	No
Zinc	810	305.7	3.8E-01	No
Dioxins (pg/g)				
TCDD TEQ	--	--	--	--
		Cumulative RS	9.4E-01	

NOTES:
-- = not available.
CPEC = chemical of potential ecological concern.
EPC = exposure point concentration.
mg/kg = milligrams per kilogram.
RS = risk score.
pg/g = picograms per gram.
TEQ = toxicity equivalence.
[a]See text for basis.

Table 7-7
Risk Estimates—Soil Exposure (Invertebrates)
Wild Rivers Land Trust
Port Orford, Oregon

CPEC	Soil Screening Level (Invertebrates)	EPC[a]	RS	Exceeds Acceptable Risk Level
Discrete Samples				
Metals (mg/kg)				
Antimony	780	0.847	1.1E-03	No
Copper	530	90.02	1.7E-01	No
Lead	8400	60.54	7.2E-03	No
Mercury	390	0.215	5.5E-04	No
Zinc	930	204.4	2.2E-01	No
Dioxins (pg/g)				
TCDD TEQ	10000000	52.5	5.3E-06	No
TPH (mg/kg)				
Total Diesel+Oil	260	147.6	5.7E-01	No
		Cumulative RS	9.7E-01	
ISM Samples (Areas of Interest)				
Metals (mg/kg)				
Antimony	780	4.2	5.4E-03	No
Copper	530	149.4	2.8E-01	No
Lead	8400	102.2	1.2E-02	No
Mercury	390	0.2	5.2E-04	No
Zinc	930	305.7	3.3E-01	No
Dioxins (pg/g)				
TCDD TEQ	10000000	30	3.0E-06	No
		Cumulative RS	6.3E-01	

NOTES:
-- = not available.
CPEC = chemical of potential ecological concern.
EPC = exposure point concentration.
mg/kg = milligrams per kilogram.
RS = risk score.
pg/g = picograms per gram.
TEQ = toxicity equivalence.
[a]See text for details.

Table 7-8
Risk Estimates—Soil Exposure (Birds)
Wild Rivers Land Trust
Port Orford, Oregon

MAUL FOSTER ALONG

CPEC	Soil Screening Level (Birds)	EPC[a]	RS	Exceeds Acceptable Risk Level
Discrete Samples				
Metals (mg/kg)				
Antimony	--	--	--	--
Copper	2200	90.02	4.1E-02	No
Lead	1600	60.54	3.8E-02	No
Mercury	14	0.215	1.5E-02	No
Zinc	1900	204.4	1.1E-01	No
Dioxins (pg/g)				
TCDD TEQ	--	--	--	--
TPH (mg/kg)				
Total Diesel+Oil	6000	147.6	2.5E-02	No
		Cumulative RS	2.3E-01	
ISM Samples (Areas of Interest)				
Metals (mg/kg)				
Antimony	--	--	--	--
Copper	2200	149.4	6.8E-02	No
Lead	1600	102.2	6.4E-02	No
Mercury	14	0.2	1.4E-02	No
Zinc	1900	305.7	1.6E-01	No
Dioxins (pg/g)				
TCDD TEQ	--	--	--	--
		Cumulative RS	3.1E-01	

NOTES:
-- = not available.
CPEC = chemical of potential ecological concern.
EPC = exposure point concentration.
mg/kg = milligrams per kilogram.
RS = risk score.
pg/g = picograms per gram.
TEQ = toxicity equivalence.
[a]See text for basis.

Table 7-9
Risk Estimates—Soil Exposure (Mammals)
Wild Rivers Land Trust
Port Orford, Oregon

CPEC	Soil Screening Level (Mammals)	EPC[a]	RS	Exceeds Acceptable Risk Level
Discrete Samples				
Metals (mg/kg)				
Antimony	95000	0.847	8.9E-06	No
Copper	6700	90.02	1.3E-02	No
Lead	16000	60.54	3.8E-03	No
Mercury	820	0.215	2.6E-04	No
Zinc	5400	204.4	3.8E-02	No
Dioxins (pg/g)				
TCDD TEQ	11	52.5	4.8E+00	**Yes**
TPH (mg/kg)				
Total Diesel+Oil	6000	147.6	2.5E-02	No
		Cumulative RS	4.9E+00	
ISM Samples (Areas of Interest)				
Metals (mg/kg)				
Antimony	95000	4.2	4.4E-05	No
Copper	6700	149.4	2.2E-02	No
Lead	16000	102.2	6.4E-03	No
Mercury	820	0.2	2.5E-04	No
Zinc	5400	305.7	5.7E-02	No
Dioxins (pg/g)				
TCDD TEQ	11	30	2.7E+00	**Yes**
		Cumulative RS	2.8E+00	

NOTES:
-- = not available.
CPEC = chemical of potential ecological concern.
EPC = exposure point concentration.
mg/kg = milligrams per kilogram.
RS = risk score.
pg/g = picograms per gram.
TEQ = toxicity equivalence.
[a]See text for basis.

Table 7-10
Risk Estimates—Sediment Direct-Contact Toxicity
Wild Rivers Land Trust
Port Orford, Oregon

Analyte	Probable Effects Sediment Screening Level	Basis	EPC	RS	Exceeds Acceptable Risk Level
Metals (mg/kg)					
Mercury	1.06	MacDonald (2000) PEC	0.177	1.7E-01	Yes, Cumulative Risk
Zinc	459	MacDonald (2000) PEC	150	3.3E-01	Yes, Cumulative Risk
Dioxins (pg/g)					
TCDD TEQ	21.5	NOAA SQUIRT probable effects level	69.7	3.2E+00	**Yes**
SVOCs by SIM (mg/kg)					
Total LPAH	5.3	NOAA SQUIRT upper effects level	0.1	1.3E-02	No
			Cumulative RS	3.7E+00	

NOTES:
EPC = exposure point concentration.
pg/g = picograms per gram.
RS = risk score.
TEQ = toxicity equivalence.

Table 7-11
Risk Estimates—Bioaccumulation (Fish)
Wild Rivers Land Trust
Port Orford, Oregon

CPEC	Bioaccumulation Screening Level	EPC	RS	Exceeds Acceptable Risk Level
Metals (mg/kg)				
Mercury	0.17	0.177	1.0E+00	No
PCDDs/Fs (pg/g)				
2,3,7,8-TCDD	1.7E+01	4.2E+00	2.5E-01	No
1,2,3,7,8-PeCDD	5.0E+02	1.3E+01	2.6E-02	No
1,2,3,4,7,8-HxCDD	1.0E+03	1.9E+01	1.9E-02	No
1,2,3,6,7,8-HxCDD	5.0E+04	7.6E+01	1.5E-03	No
1,2,3,7,8,9-HxCDD	5.0E+04	7.7E+01	1.5E-03	No
1,2,3,4,6,7,8-HpCDD	1.3E+07	1.5E+03	1.2E-04	No
OCDD	1.3E+08	1.5E+04	1.2E-04	No
2,3,7,8-TCDF	2.8E+03	3.0E+00	1.1E-03	No
1,2,3,7,8-PeCDF	2.8E+03	1.1E+01	3.9E-03	No
2,3,4,7,8-PeCDF	3.4E+01	1.7E+01	5.0E-01	No
1,2,3,4,7,8-HxCDF	5.0E+03	4.0E+01	8.0E-03	No
1,2,3,6,7,8-HxCDF	5.0E+03	3.1E+01	6.2E-03	No
1,2,3,7,8,9-HxCDF	5.0E+03	2.2E+01	4.5E-03	No
2,3,4,6,7,8-HxCDF	5.0E+03	3.7E+01	7.4E-03	No
1,2,3,4,6,7,8-HpCDF	1.3E+06	4.1E+02	3.2E-04	No
1,2,3,4,7,8,9-HpCDF	1.3E+06	3.1E+01	2.4E-05	No
OCDF	1.3E+08	1.2E+03	9.1E-06	No
Cumulative Risk Estimate				
Cumulative RS	8.3E-01			

NOTES:
-- = not evaluated.
CPEC = chemical of potential ecological concern.
EPC = exposure point concentration.
MDL = method detection limit.
mg/kg = milligrams per kilogram.
PCDDs/Fs = polychlorinated dibenzodioxins/furans.
pg/g = picograms per gram.
RS = risk score.
U = non-detect.

Table 7-12
Risk Estimates—Bioaccumulation (Birds)
Wild Rivers Land Trust
Port Orford, Oregon

CPEC	Bioaccumulation Screening Level	EPC	RS	Exceeds Acceptable Risk Level
Metals (mg/kg)				
Mercury	0.17	0.177	1.0E+00	No
PCDDs/Fs (pg/g)				
2,3,7,8-TCDD	4.5E+02	4.2E+00	9.2E-03	No
1,2,3,7,8-PeCDD	1.3E+04	1.3E+01	9.5E-04	No
1,2,3,4,7,8-HxCDD	2.7E+05	1.9E+01	6.9E-05	No
1,2,3,6,7,8-HxCDD	1.3E+06	7.6E+01	5.6E-05	No
1,2,3,7,8,9-HxCDD	1.3E+05	7.7E+01	5.7E-04	No
1,2,3,4,6,7,8-HpCDD	3.4E+08	1.5E+03	4.5E-06	No
OCDD	3.4E+09	1.5E+04	4.4E-06	No
2,3,7,8-TCDF	3.8E+03	3.0E+00	7.8E-04	No
1,2,3,7,8-PeCDF	3.8E+04	1.1E+01	2.9E-04	No
2,3,4,7,8-PeCDF	4.5E+02	1.7E+01	3.7E-02	No
1,2,3,4,7,8-HxCDF	1.3E+05	4.0E+01	3.0E-04	No
1,2,3,6,7,8-HxCDF	1.3E+05	3.1E+01	2.3E-04	No
1,2,3,7,8,9-HxCDF	1.3E+05	2.2E+01	1.7E-04	No
2,3,4,6,7,8-HxCDF	1.3E+05	3.7E+01	2.7E-04	No
1,2,3,4,6,7,8-HpCDF	3.4E+07	4.1E+02	1.2E-05	No
1,2,3,4,7,8,9-HpCDF	3.4E+07	3.1E+01	9.0E-07	No
OCDF	3.4E+09	1.2E+03	3.4E-07	No
Cumulative Risk Estimate				
Cumulative RS	5.0E-02			

NOTES:

-- = not evaluated.

CPEC = chemical of potential ecological concern.

EPC = exposure point concentration.

MDL = method detection limit.

mg/kg = milligrams per kilogram.

PCDDs/Fs = polychlorinated dibenzodioxins/furans.

pg/g = picograms per gram.

RS = risk score.

U = non-detect.

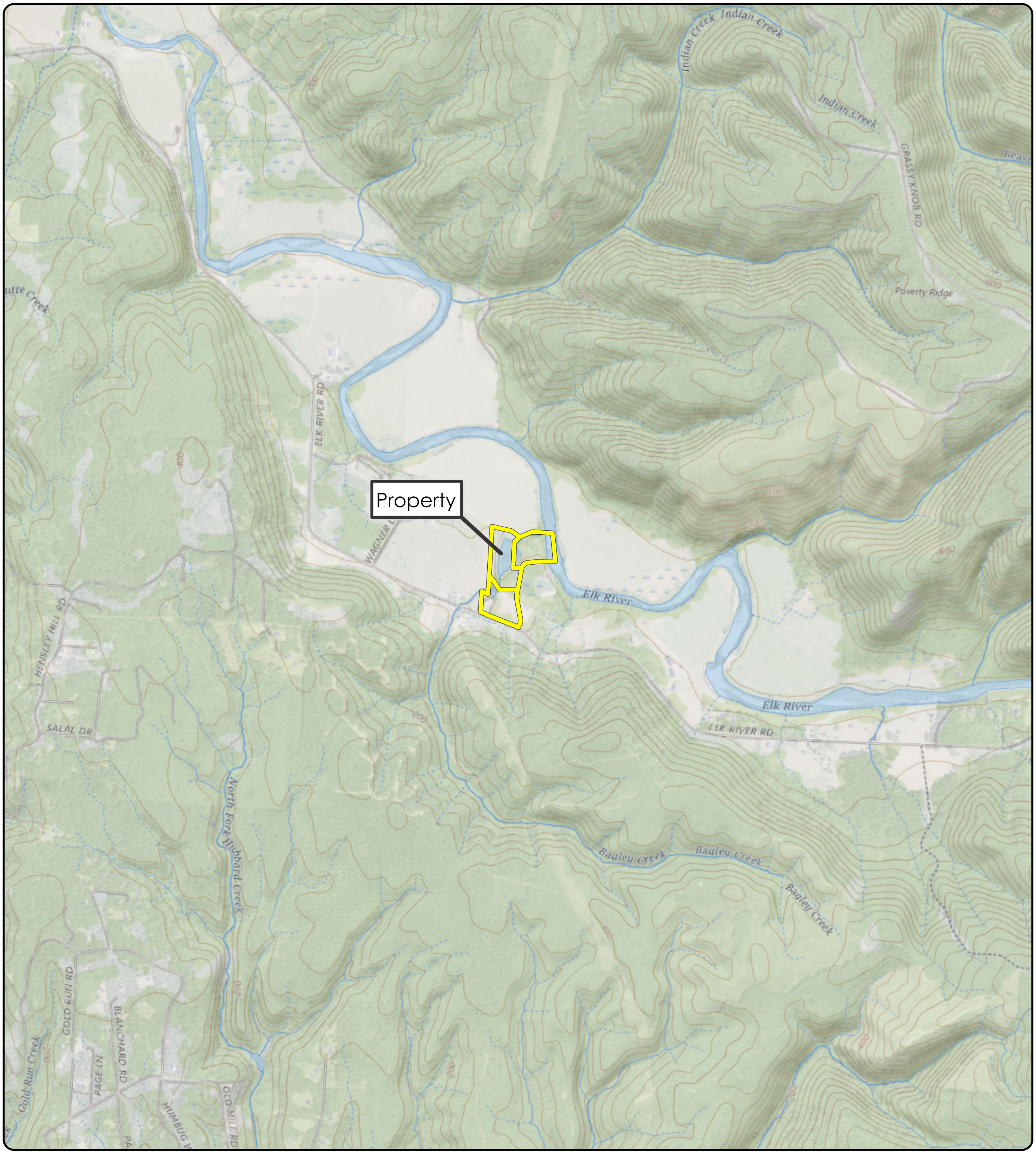
Table 7-13
Risk Estimates—Bioaccumulation (Mammals)
Wild Rivers Land Trust
Port Orford, Oregon

MAUL FOSTER ALONGI

CPEC	Bioaccumulation Screening Level	EPC	RS	Exceeds Acceptable Risk Level
Metals (mg/kg)				
Mercury	0.17	0.177	1.0E+00	No
PCDDs/Fs (pg/g)				
2,3,7,8-TCDD	3.7E+01	4.2E+00	1.1E-01	No
1,2,3,7,8-PeCDD	1.1E+03	1.3E+01	1.2E-02	No
1,2,3,4,7,8-HxCDD	1.1E+04	1.9E+01	1.7E-03	No
1,2,3,6,7,8-HxCDD	1.1E+04	7.6E+01	6.9E-03	No
1,2,3,7,8,9-HxCDD	1.1E+04	7.7E+01	7.0E-03	No
1,2,3,4,6,7,8-HpCDD	2.8E+06	1.5E+03	5.5E-04	No
OCDD	9.3E+07	1.5E+04	1.6E-04	No
2,3,7,8-TCDF	3.1E+03	3.0E+00	9.6E-04	No
1,2,3,7,8-PeCDF	1.0E+04	1.1E+01	1.1E-03	No
2,3,4,7,8-PeCDF	1.2E+02	1.7E+01	1.4E-01	No
1,2,3,4,7,8-HxCDF	1.1E+04	4.0E+01	3.6E-03	No
1,2,3,6,7,8-HxCDF	1.1E+04	3.1E+01	2.8E-03	No
1,2,3,7,8,9-HxCDF	1.1E+04	2.2E+01	2.0E-03	No
2,3,4,6,7,8-HxCDF	1.1E+04	3.7E+01	3.4E-03	No
1,2,3,4,6,7,8-HpCDF	2.8E+06	4.1E+02	1.5E-04	No
1,2,3,4,7,8,9-HpCDF	2.8E+06	3.1E+01	1.1E-05	No
OCDF	9.3E+07	1.2E+03	1.2E-05	No
Cumulative Risk Estimate				
Cumulative RS	2.9E-01			

NOTES:
-- = not evaluated.
CPEC = chemical of potential ecological concern.
EPC = exposure point concentration.
MDL = method detection limit.
mg/kg = milligrams per kilogram.
PCDDs/Fs = polychlorinated dibenzodioxins/furans.
pg/g = picograms per gram.
RS = risk score.
U = non-detect.

FIGURES



Notes:
U.S. Geological Survey 7.5-minute topographic quadrangle: Sixes. Township 32 south, range 15 west, section 27.

Data Source:
Property boundary obtained from Curry County.

Legend

Property Boundary

Figure 1-1
Vicinity Map

Wild Rivers Land Trust
Port Orford, OR

0 1,000 2,000
Feet

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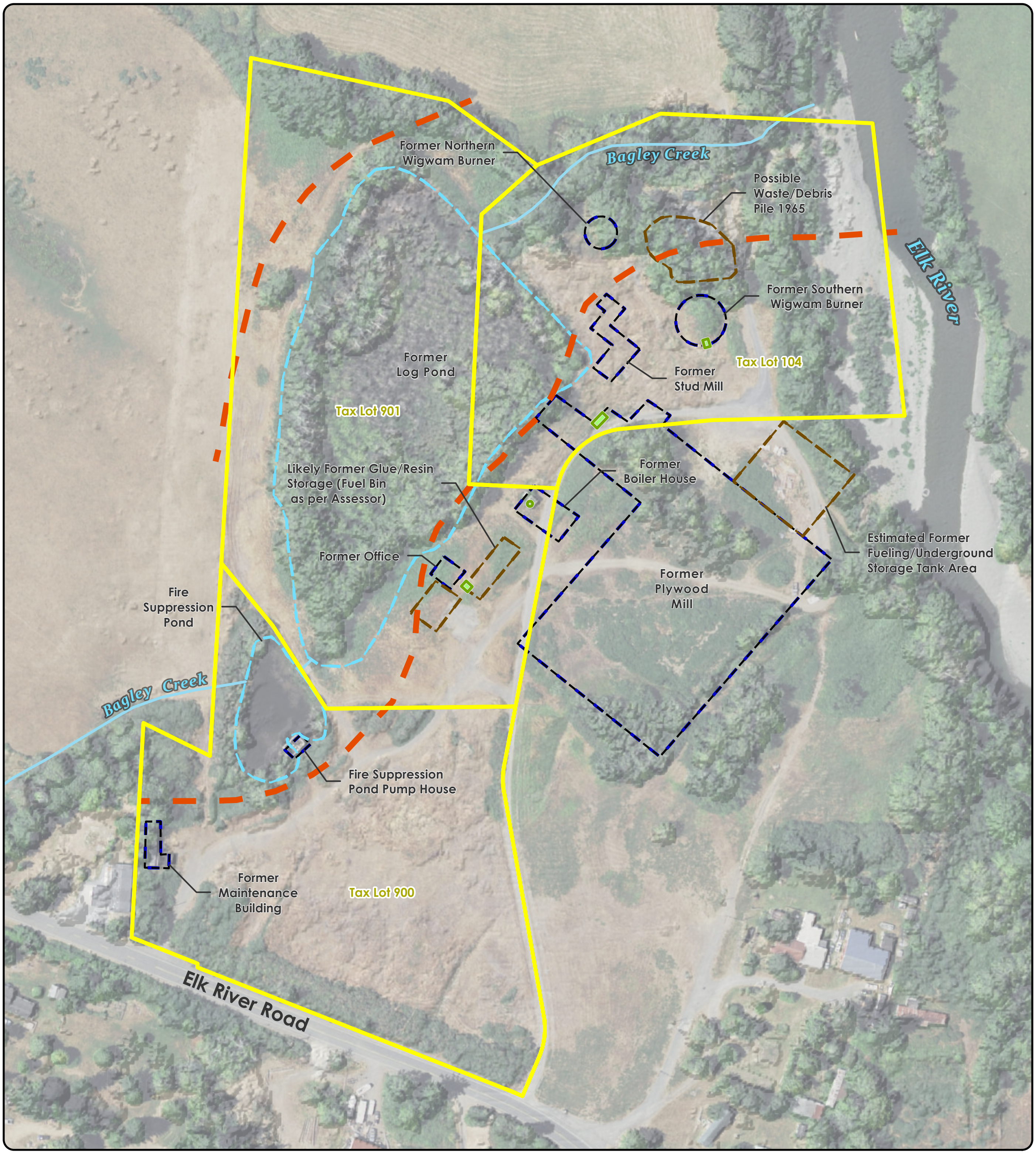

Notes:
All site features are approximate.

Data Sources:
Creek, possible restoration area, geophysical anomalies, and historic site features from HAI (2019). Property boundary obtained from Oregon Department of Revenue (2019).

Legend

- Geophysical Anomaly
- Building
- Other
- Pond
- Creek
- Possible Restoration Area
- Site Tax Lots

Figure 2-1
Historical Site Features

Wild Rivers Land Trust
Port Orford, OR

0 100 200
Feet

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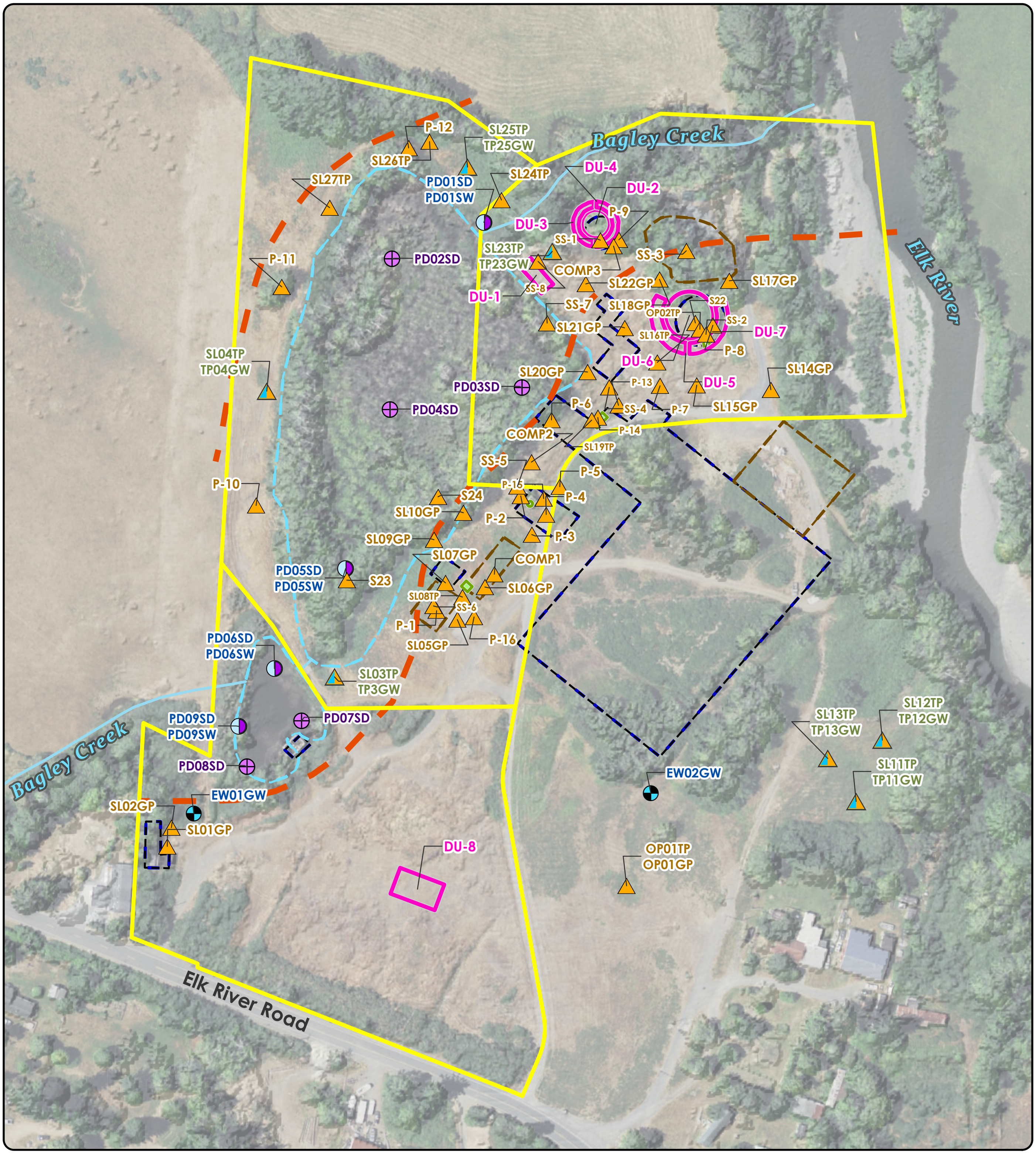

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Reviewed By: cwise

Produced By: jroberts

Project: M2272.01.001

Notes:
All site features are approximate.

Data Sources:
Historic sample locations from WSP (2020) and Hahn and Associates (2018). Creek, possible restoration area, geophysical anomalies, and historic site features from HAI (2019). Property boundary obtained from Oregon Department of Revenue (2019).

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Legend

- Soil Sample
- Sediment Sample
- Groundwater Sample
- Soil and Groundwater Sample
- Sediment and Surface Water Sample
- Decision Units
- Site Tax Lots
- Creek
- Possible Restoration Area

Historical Site Features

- Geophysical Anomaly
- Building
- Other
- Pond

0 100 200
Feet

Figure 2-2
Historical Sample Locations

Wild Rivers Land Trust
Port Orford, OR

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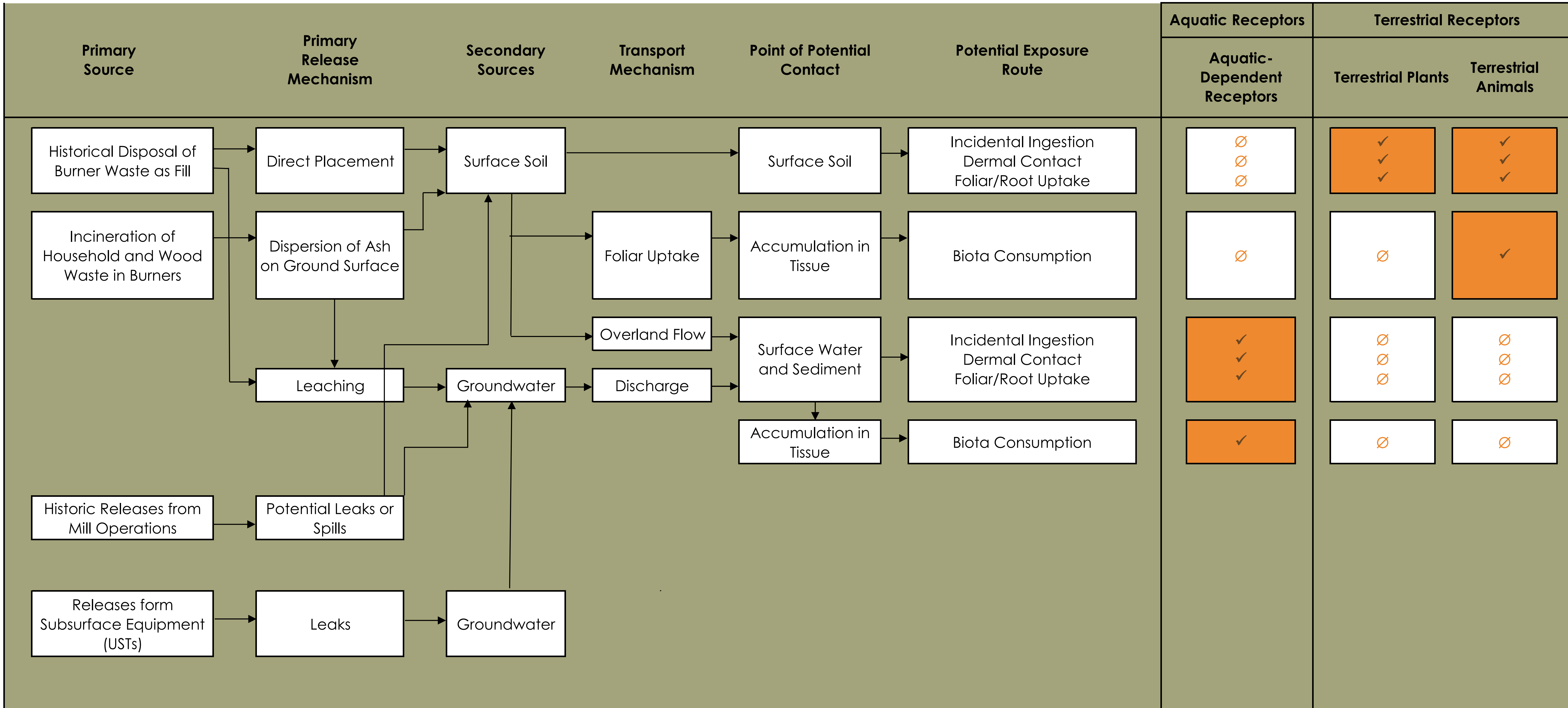
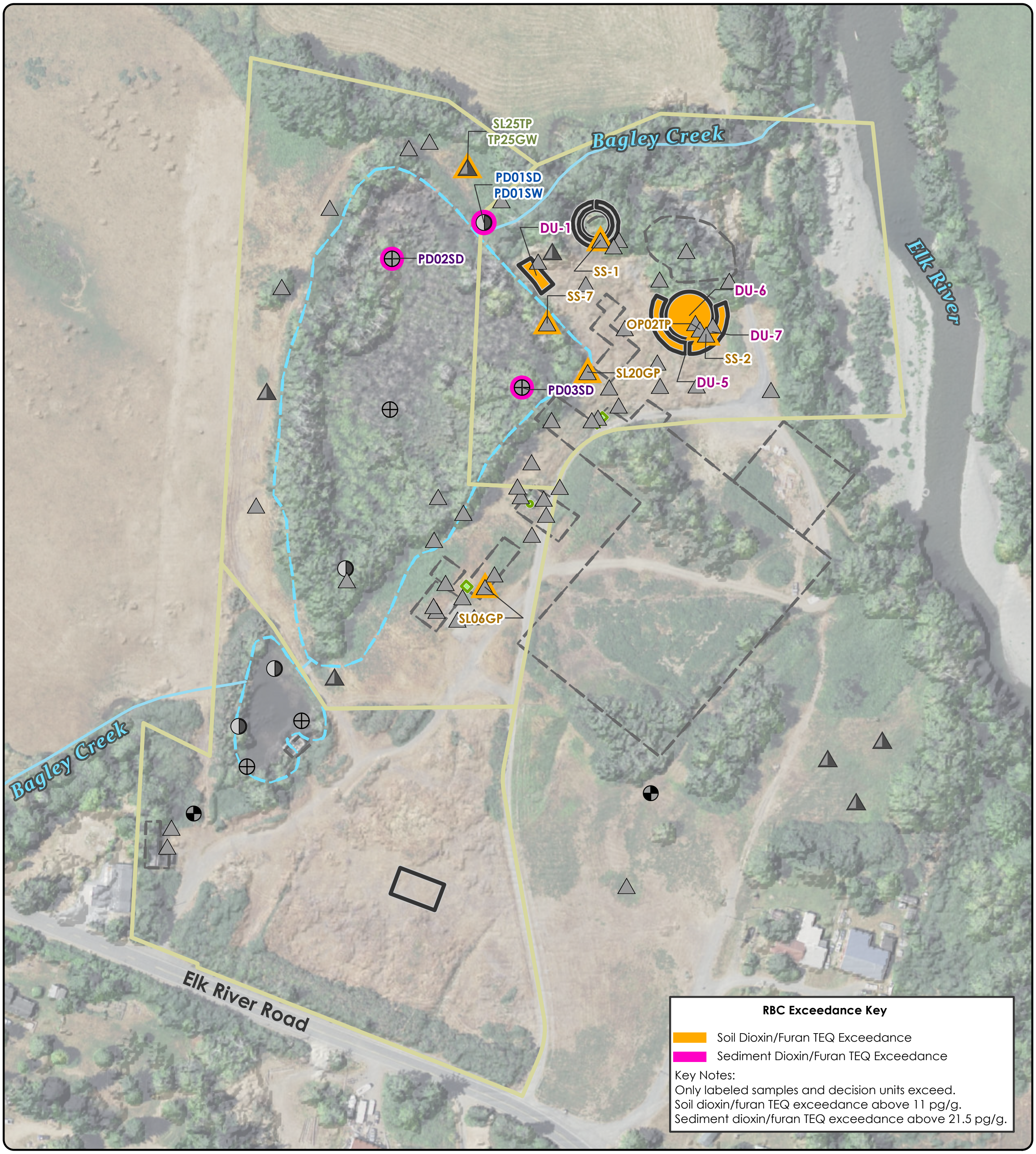
Figure 4-1
Ecological Conceptual Site Model
Wild River Land Trust
Port Orford, Oregon



Notes:
→ = Potential pathway.
✓ = Potentially complete exposure route.
I = Insignificant exposure route.
∅ = Incomplete exposure route.



Notes:
All site features are approximate.
RBC = risk based concentrations.
TEQ = toxicity equivalents.

Data Sources:
Historic sample locations from WSP (2020) and Hahn and Associates (2018). Creek, possible restoration area, geophysical anomalies, and historic site features from HAI (2019). Property boundary obtained from Oregon Department of Revenue (2019).

Legend

- Soil Sample
- Sediment Sample
- Groundwater Sample
- Soil and Groundwater Sample
- Sediment and Surface Water Sample
- Decision Units
- Site Tax Lots
- Creek

Historical Site Features

- Geophysical Anomaly
- Building
- Other
- Pond

0 100 200
Feet

Figure 9-1
Dioxin Tier II
RBC Exceedances

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Print Date: 8/25/2022
Reviewed By: cwise
Produced By: sturner
Project: M2272.01.001

APPENDIX A

LEVEL 1 ECOLOGICAL RISK ASSESSMENT

E Level I Ecological Risk Assessment

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MEMORANDUM

Date: December 30, 2020

To: Brandon Perkins, Site Assessment Manager, EPA, Seattle, WA

From: Derek Pulvino, START-IV Project Manager, WSP USA, Inc., Seattle, WA

Thru: Linda Ader, START-IV Team Leader, WSP USA, Inc., Seattle, WA

Subject: Level I Ecological Risk Assessment
Former Western States Plywood Cooperative Mill
Port Orford, Oregon

Ref: Contract Number: EP-S7-13-07
Task Order, Subtask Number: TO-0380-013

Existing Data Summary

Site Location

A Level I Ecological Risk Assessment (ERA) has been completed for the Former Western States Plywood Cooperative Mill (FWSPCM; Site) as a component of a Targeted Brownfields Assessment (TBA) conducted by WSP USA, Inc. on behalf of the Environmental Protection Agency (EPA). The Site is located in Port Orford, Curry County, Oregon; a coastal town situated on the Pacific Ocean in a rural area of southwest Oregon. The town, and the Site itself, are relatively remote, situated approximately 170 miles and more than 3 hours driving distance from Eugene, Oregon (Figure 1). The FWSPCM Site as defined for this project includes five separate Tax Lots (Tax Lots, 104, 900, 901, 902, and 903), which together comprise 28.17 acres of this total area, were occupied by the FWSPCM (Figure 2). At the time of this writing, Tax Lots 104, 900, and 901 are owned by Elk River Partners, LLC (ERP), JJW Sustainable Land Trust, LLC (JJW) is the owner of Tax Lot 902, and Tax Lot 903 is owned by a separate private party. As the assessment efforts for this group of parcels is completed, ERP and JJW intend to convey ownership and/or control of their land to Wild Rivers Land Trust (WRLT). It should be noted that during the time this project was underway, representatives of ERP/WRLT were in continued discussions with the owner of Tax Lot 903 to arrange for its purchase and/or access; such access was not however granted prior to beginning field efforts, and while that parcel remains within the stakeholders long-term plans for the Site, it was not included in the scope of the TBA investigation or this ERA.

Site History

The Site is a former plywood manufacturing facility that once contained a plywood mill building. This structure occupied portions of four of the five lots listed above. Various mill-related improvements including wigwam burners, boilers, offices, storage buildings, a fire suppression pond, a log storage pond, and log storage areas occupied the balance of the mill property (Figures 2, 3, and 4).

The mill property was vacant and undeveloped land prior to construction of the mill. In 1940, the Site was forested. By 1951, the Site was cleared of most vegetation, and from the 1950s through 1975 it was developed and operated as a plywood mill. The exact date of the mill's construction is uncertain. The mill was destroyed by fire in 1976. By 1980, the mill structures mostly had been removed, and by 2006 the wigwam burners and most of the buildings' foundations also had been removed. While in operation, the mill appears to have occupied a single parcel of land; the property appears to have been subdivided into the currently present five individual tax lots after the mill's closure.

For additional details on historic features and activities at the Site, please refer to the FWSPCM TBA report with which this ERA is associated.

Site Land and Water Use

The Site is in the alluvial plain of the Elk River, bracketed generally to the north and south by the hillsides of Oregon's coastal range. The alluvial plain materials underlying the Site typically comprise mixtures of sand, gravel, and silt (Walker and MacLeod 1991). During subsurface drilling at the Site, such conditions were confirmed, with a mixture of sands, silts, and gravel were encountered to the full depth of exploration at the site at 25 feet below ground surface (bgs). Groundwater was typically encountered within 10 to 15 feet bgs and was present at an average depth of 12 feet bgs; though it was encountered at approximately 7.5 feet bgs near the south end of the former log pond, and at approximately 17 feet bgs north of the former log pond. While the groundwater flow direction has not determined, based on topography, the groundwater flow direction is inferred to range from an easterly to a northwesterly direction, and is likely subject to seasonal variation.

Bagley Creek traverses the Site in a generally north to south direction, flowing onto the Site through a culverted channel from the hillsides to the south. In its natural state, after crossing the Site, Bagley Creek had discharged directly to the Elk River which flows to the north on the eastern side of the Site. However, while FWSPCM was in operation as a plywood mill, Bagley Creek was used as a water source for the mill's log and fire suppression ponds (Figures 2 and 3). While the majority of the diking and dams associated with the ponds remain, a narrow opening was excavated through the former log pond's northern earthen dam. While this helped facilitate the passage of water from the ponds and creek to Elk River, beavers regularly rebuild a dam on the former log pond. This impounds water in the former log pond over the summer months, functionally disconnecting the creek from Elk River for fish rearing purposes. A second dam located between the log and fire suppression ponds remains unaltered and intact (WRLT ND).

Elk River is a national and state designated Wild and Scenic river, providing habitat for steelhead, and the federal-listed endangered Coho salmon. Much of the Elk River watershed is federally owned, with large areas of the United States Forest Service-managed river headwaters protected as designated wilderness or late successional reserve. Because of this, water quality in the river is generally good, with tree canopy helping to minimize the time duration of transient, high turbidity events. That said, addressing the lack of floodplain and high-quality tributary channel structure are key goals in stakeholder's fish conservation and habitat restoration in the Elk River, of which the FWSPCM is a part (WRLT ND).

Known or Suspected Hazardous Substance Releases

Given the past operations at the Site, as well as the results of recent environmental testing, sources of contamination could include industrial machinery and vehicles operated onsite, leaks or spills from oil-filled transformers or of maintenance shop-related materials stored in containers, and possible releases of wood treatment chemicals such as PCP. Potential contaminants associated with such past operations were identified as including metals (including mercury), Total Petroleum Hydrocarbons (TPH) as diesel to heavy-oil (TPH-Dx), TPH as gasoline (TPH-Gx), semivolatile organic compounds (SVOCs) including pentachlorophenol (PCP) and polynuclear aromatic hydrocarbons (PAHs), polychlorinated biphenyls

(PCBs), the TPH-Gx associated BTEX products (i.e., benzene, toluene, ethylbenzene, and xylene or VOCs), formaldehyde, and dioxins/furans.

Sensitive Environments

Bagley Creek generally traverses the western portion of the subject Site, discharging into the former log pond and the former fire suppression pond that had been built as a part of the mill complex prior to discharging into Elk River. Prior to this construction, Bagley Creek had connected directly to the Elk River, providing prime fish spawning habitat both in the portions of the creek located on the Site, and in those portions of the creek within the watershed and drainage basins further to the south. Construction of these ponds not only destroyed the onsite spawning grounds, but also severed the connection between Elk River and the upstream forested headwater spawning and rearing habitat. Bagley Creek is one of the two remaining priority tributaries within the Elk River watershed with barriers that prevent upstream salmon passage to spawning habitat (WRLT ND).

As shown of Figure 5, USFWS's National Wetlands Inventory (NWI) maps depicts several wetlands at low spots on the Site. These include freshwater emergent and freshwater forest/shrub wetlands within the former log pond, and a freshwater emergent wetland on a portion of Tax Lots 902 and 903 (USFWS 2020a). Freshwater emergent and freshwater forest/shrub wetlands within the former log pond continue via freshwater forest/shrub wetlands to the northeast along Bagley Creek, draining into the Elk River. Bagley Creek continues south of the former log pond, exiting the Site. As defined by Oregon Administrative Rule (OAR) 340-122-0115 (50), these potential wetland areas meet the definition of sensitive habitat. No other sensitive environments are located within the boundaries of the Site.

Threatened and/or Endangered Species

According to USFWS's Information, Planning, and Consultation System (IPaC) and ODFW Compass tool, the following special status species in the table below may be present at the Site (USFWS 2020b, ODFWS 2020). There is no critical habitat within, or adjacent to, the Site.

Threatened and Endangered Species Potentially Present on Site

Common Name	Scientific Name	Status
Birds		
Acorn woodpecker	*Melanerpes formicivorus*	SC, SS
Bald eagle	*Haliaeetus leucocephalus*	BCC
Black oystercatcher	*Haematopus bachmani*	BCC, SC, SS
Black turnstone	*Arenaria melanocephala*	BCC
Clark's grebe	*Aechmophorus clarkii*	BCC
Fork-tailed Storm-Petrel	*Oceanodroma furcata*	SS
Northern goshawk	*Accipiter gentilis atricapillus*	SC, SS
Northern spotted owl	*Strix occidentalis caurina*	FT, ST

Common Name	Scientific Name	Status
Olive-sided flycatcher	*Contopus cooperi*	SC, SS
Oregon vesper sparrow	*Pooecetes gramineus affinis*	SC, SS
Pileated woodpecker	*Dryocopus pileatus*	SS
Purple martin	*Progne subis arboricola*	SC, SS
Upland sandpiper	*Bartramia longicauda*	SC, SS
Western bluebird	*Sialia mexicana*	SS
Western meadowlark	*Sturnella neglecta*	SS
Western snowy plover	*Charadrius nivosus nivosus*	FT
Willow flycatcher	*Empidonax traillii*	SC, SS
Yellow-breasted chat	*Icteria virens auricollis*	SC, SS
Plants		
Western lily	*Lilium occidentale*	FE
Clouded salamander	*Aneides ferreus*	SS
Coastal tailed frog	*Ascaphus truei*	SC, SS
Del Norte salamander	*Plethodon elongatus*	SC, SS
Foothill yellow-legged frog	*Rana boylii*	SC, SS
Northern red-legged frog	*Rana aurora*	BCC
Northern sagebrush lizard	*Sceloporus graciosus graciosus*	SC, SS
Southern torrent salamander	*Rhyacotriton variegatus*	SC
Fish		
Coastal cutthroat trout	*Oncorhynchus clarki clarki*	SC, SS
Mammals		
California myotis	*Myotis californicus*	SS
Fisher	*Pekania pennanti*	SC, SS
Hoary bat	*Lasiurus cinereus*	SC, SS
Long-legged myotis	*Myotis volans*	SC, SS

Common Name	Scientific Name	Status
Red tree vole	*Arborimus longicaudus*	SS
Ringtail	*Bassariscus astutus*	SS
Silver-haired bat	*Lasionycteris noctivagans*	SC, SS
Townsend's big-eared bat	*Corynorhinus townsendii*	SC, SS

Source: (USFWS 2020b)

Key:
FE = Federal endangered
FT = Federal threatened
SC = Federal species of concern
SS = State sensitive
ST = State threatened
BCC = Birds of conservation concern

In addition, while not currently present on the Site, the Elk River Coho salmon, a federally listed threatened species, is present in the Elk River (WRLT ND).

Site Visit Summary

WSP accessed the Site from September 8, 2020 through September 13, 2020 to assess whether ecological receptors and/or exposure pathways are present or potentially present at or in the vicinity of the Site. Site photographs are attached to this memorandum.

Contaminants of Interest

As discussed previously, past operations at the Site as well as the results of recent environmental testing identified multiple potential contaminants of interest (COI) at the site. These included metals (including mercury), TPH-Dx, TPH-Gx, SVOCs including PCP and PAHs, PCBs, the TPH-Gx associated BTEX products (i.e., VOCs), formaldehyde, and dioxins/furans. Under the EPA TBA, a total of 125 samples were collected for fixed laboratory analysis for these COI groups to better understand the concentration and extent of these COI at the Site. These samples targeted surface soil, subsurface soil, groundwater, surface sediment, and surface water. TBA sampling efforts utilized a biased sampling approach, focusing locations where site history and previous sampling activity indicated that the highest contaminant concentrations were most likely to be encountered, and thus be representative of a reasonable maximum exposure. Surface soil samples were collected utilizing incremental sampling methodology (ISM). Soil samples collected using a direct push drill rig or from test pit excavations are referred to as subsurface samples in this memorandum, even if they included soils collected from depths that are less than 3 feet. All other samples were discrete, grab samples. Although subsurface soil samples from depths greater than 3 feet are not considered by Oregon Department of Environmental Quality (ODEQ) to be representative of "surface soils" for ecological exposure assessment purposes, these sample results were included in this Level I ERA since future site modifications may involve soil excavation that exposes these deeper horizons.

The analytical results summary tables attached to this memorandum in Tables 1 through 11 are a condensed version of the laboratory data, and generally only include analytes that were detected in one or more sample in a given area. Each of these attached tables include the results of analysis, provide ecological risk-based concentrations (RBCs) for non-threatened and endangered species (i.e., for soils) (ODEQ 2020) or Level II Screening Level Values (SLVs) (i.e., for surface water and sediment) (ODEQ 1998). Screening assumptions utilize the ODEQ's default assessment endpoints. Soil summary tables also include background metals concentrations as established by ODEQ for the region of the site (Klamath Mountains) (ODEQ 2018). As site groundwater RBCs have not been established to be protective surface water quality, groundwater results are compared to the surface water SLVs. All sample locations are depicted on Figure 6.

Highlighting has been added to these tables to assist in identifying results that exceed guild specific RBC values, with separate color coding used to identify COI concentrations that exceed the most restrictive (i.e., lowest) and least restrictive (i.e., highest) RBC. In addition, soil results summary tables include additional hatching to designate those inorganic COI concentrations that exceed both an RBC, and the regional metals background concentrations. The reader should note that ecological RBCs for higher trophic level birds and mammals are not included in these tables, as these values are the highest screening (least conservative) level value, and exceedances at the site were typically only in connection with the most conservative (i.e., lowest) available screening level value.

For additional details on sampling methodology, analytical methods, and other field observations from the sampling event, the user of this report is referred to the TBA for the FWSPCM (WSP 2020).

Observed Impacts

Visually observable impacts to the Site included sheens noted on the water surface of the fire suppression pond as well as on the surface of Bagley Creek where it ran through the former log pond. In addition, some intervals of discolored soil, apparent petroleum-like odors, and burner slag/clinkers were observed in several of the test pits excavated as a portion of TBA sampling activity.

Chemical analysis of samples collected during the TBA identified multiple COIs in soil, sediment, and surface water at concentrations above the most restrictive (i.e., lowest) ecological RBC. This included dioxins/furans; various metals; TPH as gasoline, diesel, and heavy oil; bis(2-ethylhexyl)phthalate, benzo(a)anthracene, and phenanthrene. These exceedances are discussed in further detail in the Exposure Pathway section of this memo.

Ecological Features

Attachment 1 in the group of ODEQ Level I ERA forms presents the evaluation of ecological features, receptors, and habitat identified at the Site. Photographs taken during the Level I ERA site visit are included as an attachment to this memorandum and Figure 5 illustrates the location of features observed during the biologist's site walk. The reader should note that polygons denoting the boundaries of wetlands on the site are as provided by the NWI map, without modification. In some instances, the field biologist's observations of these boundaries differed somewhat from those provided by NWI. As the purpose of this Level I ERA was to identify presence/absence of sensitive environments and not to define the wetland boundaries, boundary disagreements between field observations and the NWI have not been reconciled on Figure 5 and both sets of information are provided on that map.

Approximately 0.5 percent (0.14 acre) of the Site is lentic (non-flowing) aquatic environment. The lentic environmental is comprised of the former fire suppression pond (Photographs 2 through 7). Pond substrate is unconsolidated bottom mud. Dominant vegetation within the pond includes hornwort, duck weed, and water lilies. The pond is hydrologically connected to Bagley Creek by a culvert located at the eastern boundary and the northern boundary of the pond. The fire suppression pond pump house abuts the former fire suppression pond to the east. One raptor was observed in the vicinity of the pond. No nests were observed. One potential bat roosting tree was observed north of the pond.

Approximately 25.6 percent (7.2 acres) of the Site is wetland aquatic environment. The former log pond comprises approximately 4.4 acres of freshwater Palustrine emergent (PEM) wetland (Photographs 9 through 13). The wetland is hydrologically connected to, and receives water from Bagley Creek, as Bagley Creek historically supported a defined bed and bank in this area, connecting to Small Creek. Bagley Creek was dammed during the former Plywood Mill operations. Typical vegetation in the former log pond includes cattail, juncus, phalaris, and skunk cabbage. The wetland supports dead tree stands ranging from approximately 2 inches in diameter to five inches in diameter and areas of standing water. Various bird species were observed in the vicinity of the former log pond. No nests were observed. One tadpole was observed in standing water within the wetland boundaries. Other wetlands on site included a PEM wetland less than 1 acre (Photographs 19 and 20) dominated by juncus and grass species and a Palustrine scrub-shrub (PSS) wetland less than 1 acre (Photograph 18) dominated by willow.

Approximately 1.1 percent of the Site is lotic (flowing) aquatic environment comprised of Bagley Creek, 0.1 acre, (Photographs 8, 14 through 17) and Elk River (Photograph 22), 0.2 acre, both perennial streams. Bagley Creek enters the Site from the southwest and is routed through a culvert into the former fire suppression pond. The creek exits the pond through a culvert on the north end of the pond where it temporarily gains defined bed and bank before losing definition in the former log pond, PEM wetland. The bed and bank within this reach of Bagley Creek is steep with undercut banks and scrub-shrub dominated riparian areas. Substrate of Bagley Creek in this reach is cobble. At the confluence of Bagley Creek and the former log pond, Bagley Creek supports minimal riffle habitats. Bagley Creek exits the former log pond to the north where it transverses an agricultural field used for cow grazing before emptying into Elk River. The bed and bank within this reach of Bagley Creek are highly eroded and dominated with grasses. Substrate of Bagley Creek is mucky loam. Elk River is a national and state designated Wild and Scenic river, providing habitat for steelhead, and the federal-listed endangered Coho salmon. A small reach of Elk River is located within northwest portion of the Site. Substrate of Elk River is gravel and cobble. The banks are comprised of gravel floodplain and grasses.

Approximately 48.8 percent of the Site is terrestrial scrub/scrub/grasses. The Site is largely dominated by weedy, invasive species including grasses, gorse (*Ulex europaeus*), and Himalayan blackberry (*Rubs discolor*).

Approximately 24 percent of the Site is terrestrial ruderal. The Site is occupied by remains of, and dilapidated industrial buildings. Dirt access roads bisect the site in a general north-south direction. A gravel road is located on the eastern boundary of the Site and is used by abutting property owners.

Ecologically Important Species and Habitat

The former log pond comprises approximately 4.4 acres of PEM wetland. Although the wetland area supports a high percent coverage of invasive species, the habitat provides moderate quality habitat for a variety of species. No aquatic or terrestrial species were observed within the wetland area during the site visit. Bird species were observed throughout the wetland understory and within trees. No nests were observed.

Potential bat roosting trees were observed near the former fire suppression pond and within and adjacent to the former log pond. Trees ranged in diameter at breast height (DBH) from approximately 4 inches to 9 inches. Potential habitat included cracks and crevices and sloughing bark. No bats were observed (See Photographs attached to this memorandum).

One raptor was observed near the former fire suppression pond. No nests were observed.

Exposure Pathways

A general evaluation of potential receptor-pathway interactions is provided in the checklist for Evaluation of Receptor-Pathway Interactions presented as Attachment 2. As summarized on the checklist, COIs are currently present in soils, surface water/sediment, and groundwater at the Site. Again, sample locations are depicted on Figure 6, while the analytical results are summarized in Tables 1 through 11.

Soils

For soil, while a large number of metals exceeded the most restrictive RBC available for the soil, the vast majority of these COI exceedances were at concentrations within the range of expected natural background concentrations for the Klamath Mountains. Metals concentrations in soils that exceeded both the most restrictive cleanup level and the regional metals background level included antimony (two grab subsurface and three ISM surface samples), arsenic (three ISM surface soil samples), barium (two grab subsurface and one ISM surface soil samples), copper (two grab subsurface and five ISM surface soil samples), lead (two grab subsurface and five ISM surface soil samples), mercury (two grab subsurface and four ISM surface soil samples), and zinc (four grab subsurface and nine ISM surface soil samples) (see Tables 1 through 7 for grab subsurface soil results and Table 11 for ISM surface soil results).

Dioxins/furans, as represented by the calculated toxicity equivalent quotient (TEQ) value, were the organic constituent most extensively encountered at concentrations above the respective RBC, exceeding the RBC in 21 subsurface soil samples and all 10 surface soil samples. While individual dioxin/furan congeners also exceeded an associated RBC, in all but two subsurface samples, where an individual congener exceeded an RBC, the TEQ value associated with that sample also exceeded the RBC (see Tables 1 through 7 for grab subsurface soil results and Table 11 for ISM surface soil results).

Other organic exceedances were limited, with concentrations of bis(2-ethylhexly)phthalate (one grab subsurface sample) TPH as diesel (two grab subsurface samples), TPH as motor oil (two grab subsurface samples), and TPH as gasoline (one grab subsurface sample) exceeding the most restrictive associated RBC. It should be noted the in one grab subsurface sample with a TPH as diesel exceedance, the total TPH-Dx concentrations (i.e., concentration of motor oil plus diesel) would exceed the most restrictive associated RBC.

Surface Water/Sediment

For sediment results, dioxins/furans as represented by the calculated TEQ value were the predominant organic constituents detected in at concentrations in excess of the Ecological SLVs (Table 8). Sediment sample TEQ values exceeded the utilized SLV in the three samples collected from the northern margin of the former log pond. One sample (PD02SD) also contained concentrations of benzo(a)anthracene and phenanthrene marginally above the sediment SLV. Additionally, while multiple metals were detected in sediments at concentrations above an SLV, with two exceptions all of those concentrations were below the background metals concentration for the region. The two exceptions were lead and zinc detected in sample PD03SD. It should be noted that as the ODEQ Level II sediment SLV table does not include specific TEQ exposure levels for mammal, birds, or fish, therefore these TEQ values were compared to the general freshwater sediment SLV for 2,3,7,8-TCDD.

While surface water samples did not have any organic constituents present above an SLV, these samples did have detections of barium at concentrations above the most restrictive ecological SLV in all total and dissolved samples. Additionally, the total metals surface water sample from location PD01SW had concentrations of aluminum and iron above the ecological SLV, neither of these COIs exceeded this SLV in the dissolved sample (Table 9).

Groundwater

Groundwater samples were also collected during this investigation, however based on the depth to groundwater at the Site, this media does not appear to represent a complete exposure pathway for ecological receptors. However, to help the reader develop a fuller picture of sampling and testing performed in conjunction with the FWSPCM TBA, groundwater analytical summary table (Table 10) has been included in this memorandum, providing the most restrictive available surface water SLV for comparative reference.

Recommendations

WSP completed a Level I ERA for the Site, located in Port Orford, Curry County, Oregon. Port Orford. WSP accessed the Site from September 8, 2020 through September 13, 2020 to assess whether ecological receptors and/or exposure pathways are present or potentially present at or in the vicinity of the Site. The Site visit and historical research identified no ecologically important species (e.g., threatened or endangered) or habitats present within the Site. Accordingly, we have concluded that no further work is necessary to assess the potential for adverse ecological impacts to threatened or endangered terrestrial ecological receptors at the Site in its current state.

Sampling has however identified multiple organic and inorganic COIs in site soils at concentrations that exceed one or more ecological RBC. In general, these exceedances were relative to the most conservative available RBC, and the majority of inorganic COI present at concentrations in excess of an RBC were however below the regional background concentration. For organic constituents, dioxins/furans concentrations as represented by the calculated TEQ value were the predominant COI exceedance, with these exceedances occurring in surface soils and subsurface soils collected from a large portion of the site. Dioxin TEQ values in three sediment samples from the northern portion of the former log pond also exceeded the default freshwater sediment ecological SLV for 2,3,7,8-TCDD.

Given the above, and as many of the near surface soil samples collected during this investigation represented a composite of soils extending from the ground surface up to 4 feet bgs, additional assessment is recommended to better understand the vertical extent of these RBC exceedances, the potential for soils and sediments to be part of a complete exposure pathway for ecological receptors that may be present on the site, and whether the default RBC/SLVs used in this comparison are appropriate for expected end use and/or exposure pathway related scenarios. Such evaluations may include assessing carbon normalized analytical results, better understanding actual exposure risks and adjusting RBCs with more site specific inputs for receptors on the site, looking at receptors cumulative exposure risk to contaminants at the site, as well as other risk assessment steps associated with Level II and/or Level III ERA efforts. In conjunction with habitat restoration planing, finalized, future assessments should also consider onsite contaminants potential impacts to the Federally Threatened listed Coho salmon as they are reintroduced to the Site.

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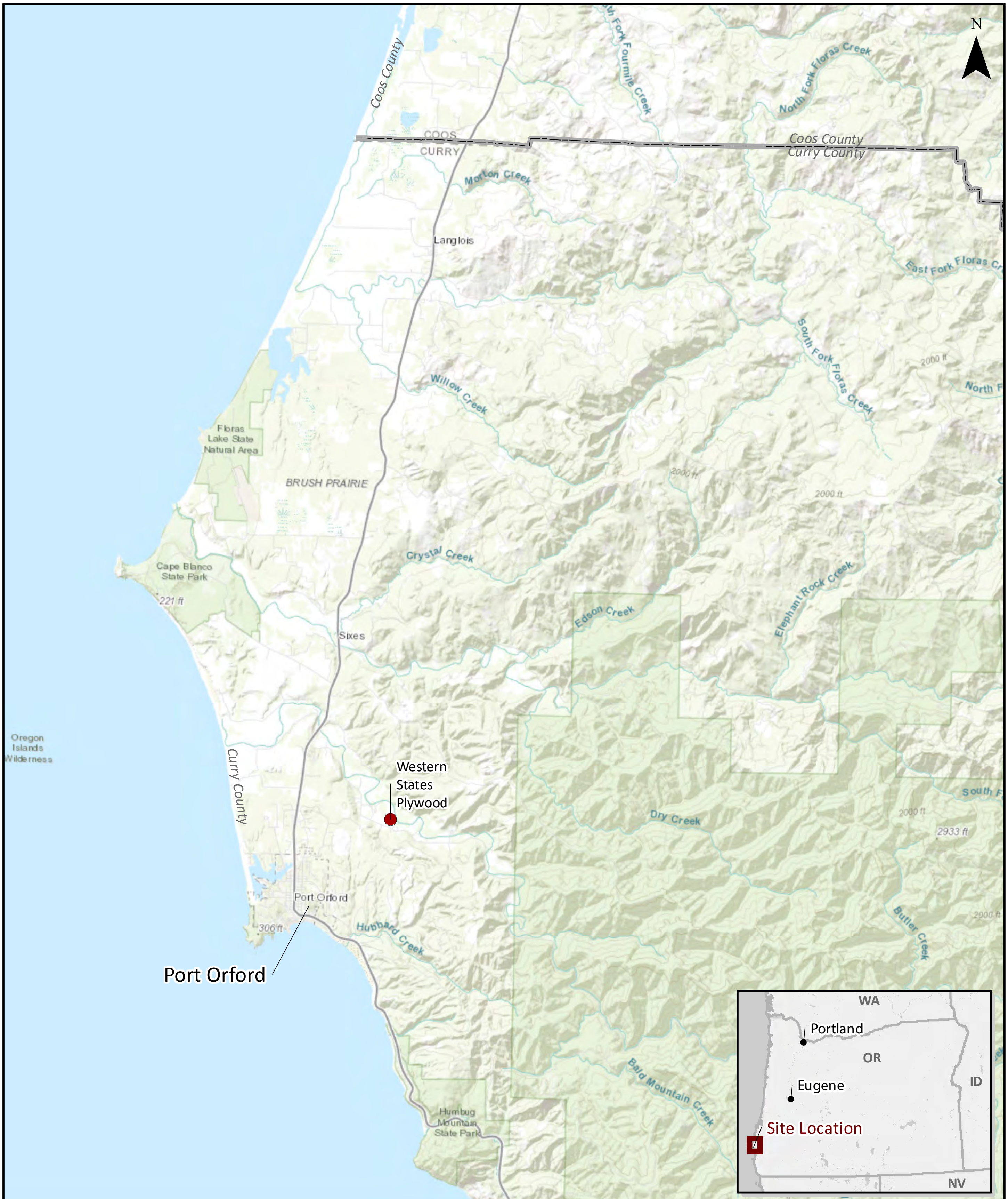
Figures:



ecology and environment, inc.
Member of WSP

Former Western States Plywood Cooperative Mill
Port Orford, Oregon

0 0.5 1 2 3 4
Miles

Figure 1
Site Location Map

12/8/2020

ecology and environment, inc.
Member of WSP

Former Western States Plywood Cooperative Mill
Port Orford, Oregon

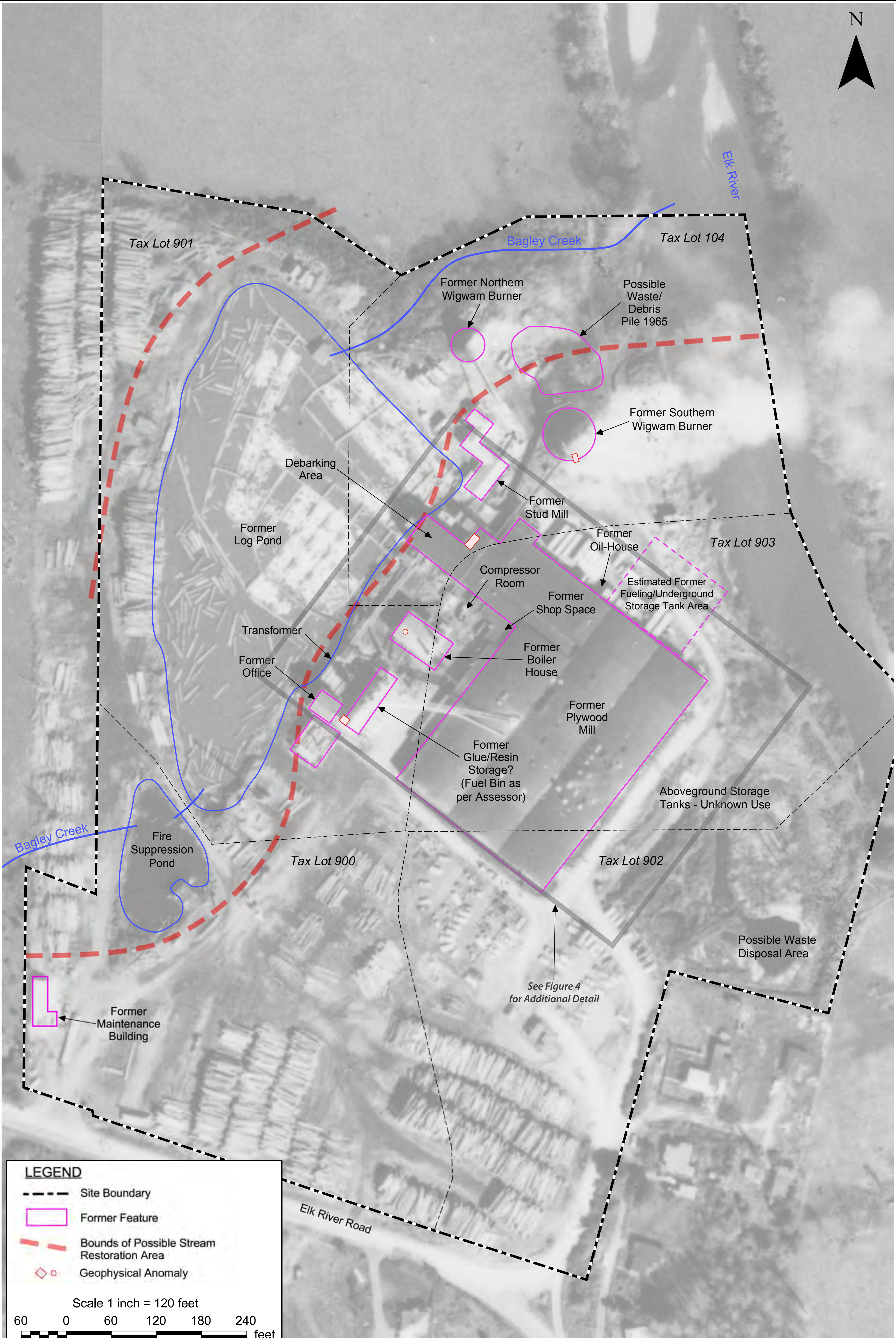
0 50 100 200 300 400
Feet

Sources: Esri 2020

Figure 2
Site Layout Map

12/16/2020

1004530.0380.013.01

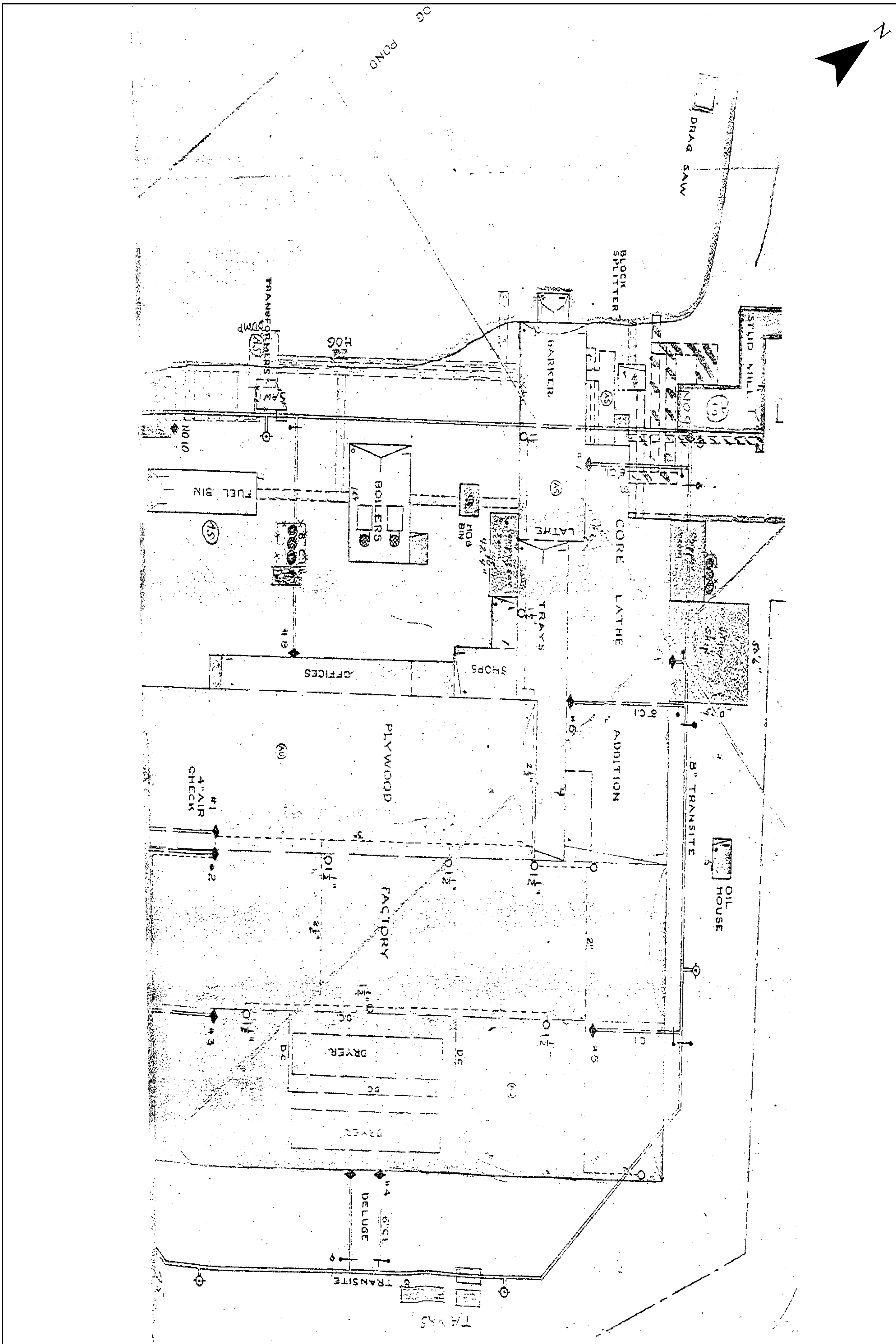


ecology and environment, inc.
Member of WSP

Former Western States Plywood Cooperative Mill
Port Orford, Oregon

Source: HAI 2019

Figure 3
Site Layout Map
Historic Aerial (1970)
12/8/2020



ecology and environment, inc.
Member of WSP

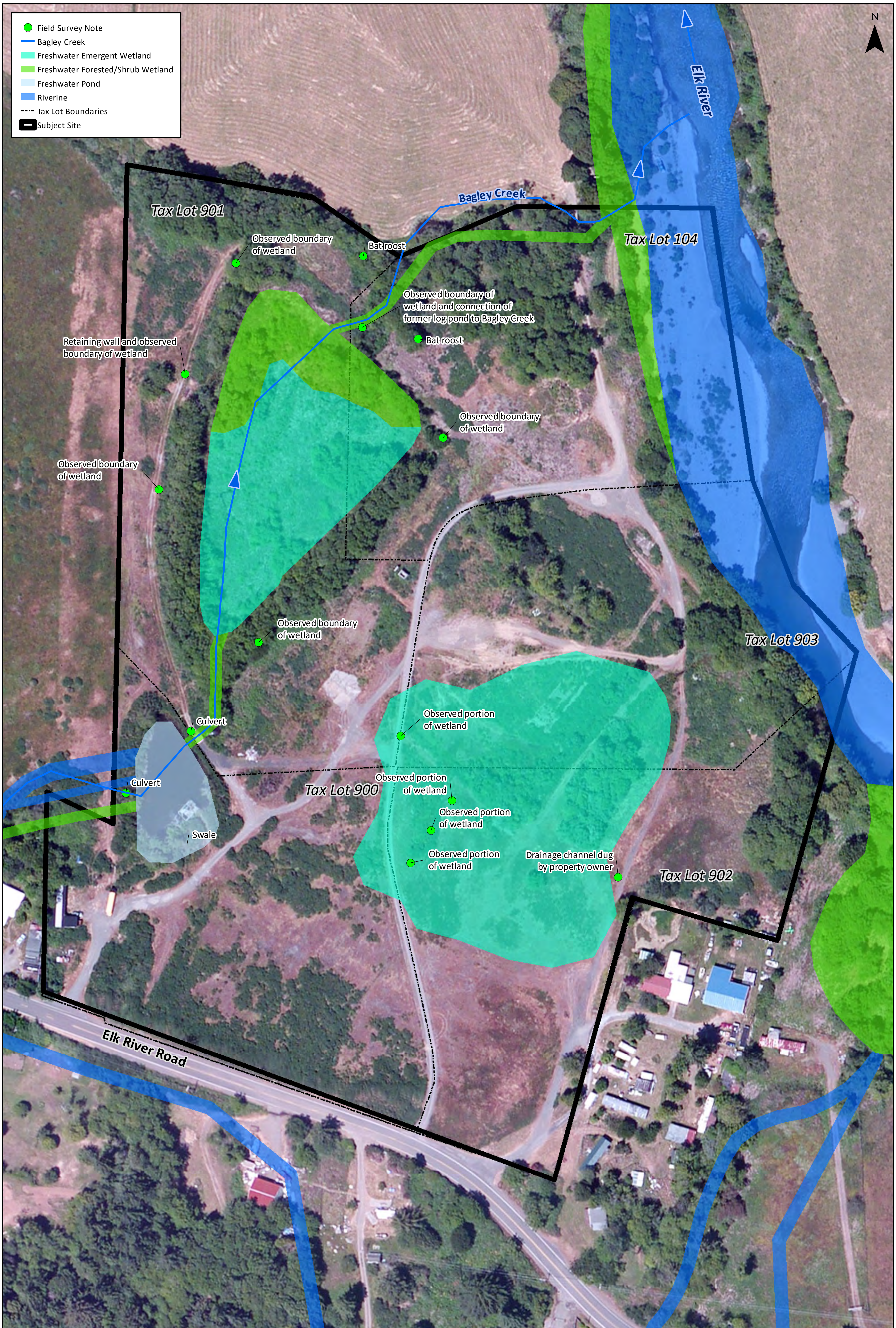
Former Western States Plywood Cooperative Mill
Port Orford, Oregon

0 25 50 100 150 200
Feet

Figure 4
Historic Site Plan (Assessor)

12/8/2020

Source: Curry County Assessor



ecology and environment, inc.
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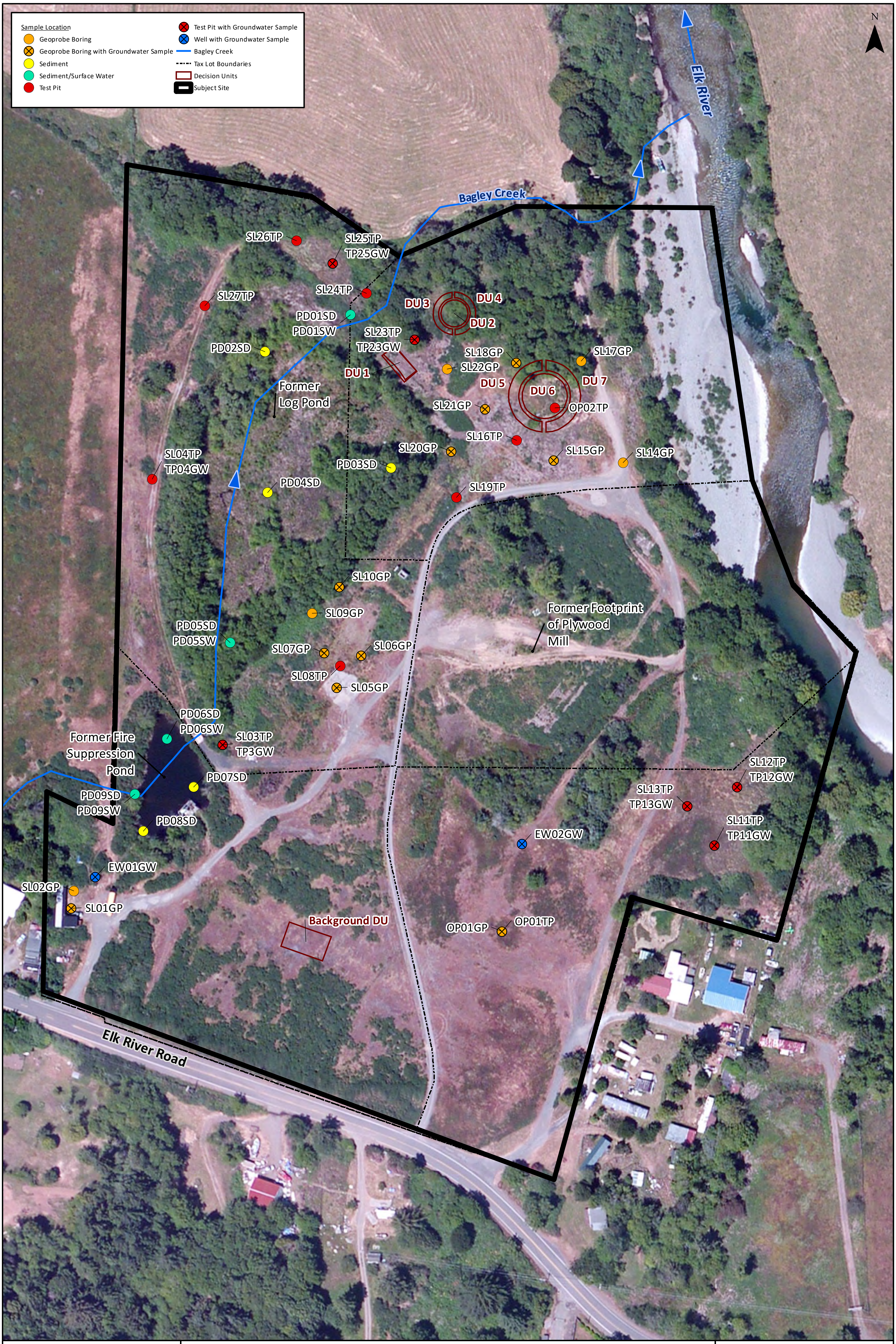
Former Western States Plywood Cooperative Mill
Port Orford, Oregon

0 50 100 200 300 400
Feet

Sources: Esri 2020, USFWS NWI 2020

Figure 5
Wetlands

12/16/2020



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Former Western States Plywood Cooperative Mill
Port Orford, Oregon

0 50 100 200 300 400
Feet

Sources: Esri 2020

Figure 6
Sample Locations

12/16/2020

Ecosurvey Photographs

Photo 1: Typical access road and ruderal landscape within the Analysis Area, facing east.

Photo 2: Former fire suppression pond facing southeast.

Photo 3: Former fire suppression pond, facing west.

Photo 4: Surface water of the former fire suppression pond

Photo 5: Former fire suppression pond culvert located at the north end of pond, facing north, draining into Bagley Creek.

Photo 6: Culvert located at the south end of the former fire suppression pond, facing south.

Photo 7: Representative potential roosting tree near the former fire suppression pond.

Photo 8: Bagley Creek, facing north toward the former log pond

Photo 9: Former log pond, facing east.

Photo 10: Former log pond, facing west.

Photo 11: Typical landscape within the former log pond.

Photo 12: Typical surface water within the former log pond.

Photo 13: Typical potential bat roosting habitat within, or adjacent to the former log pond.

Photo 14: Bagley Creek north of former log pond, facing south.

Photo 15: Bagley Creek north of former log pond.

Photo 16: Surface water of Bagley Creek north of former log pond.

Photo 17: Substrate of Bagley Creek north of former log pond.

Photo 18: Palustrine scrub-shrub wetland, facing east.

Photo 19: Palustrine emergent wetland facing north.

Photo 20: Palustrine emergent wetland facing north.

Photo 21: Culvert and swale, facing east.

Photo 22: Elk River facing east.

Tables:

Table 1 Subsurface Soil Sample Analytical Results Summary - Former Maintenance Building (Ecological)

EPA Sample ID Station Location Description CLP Sample Number Sample Depth (bgs)	Back-ground Metals [a]	Level II Ecological RBC [b]				20375600 SL01GP01 JLTQ0 0 - 4 ft	20375602 SL02GP01 JLTQ2 0 - 4 ft
		P	Inv	Birds	M		
Target Analyte List Metals (mg/kg)							
Aluminum	--	--	--	--	--	**35800**	**30600**
Arsenic	12	18	6.8	32	31	**3.7**	**3.6**
Barium	630	110	330	1200	8700	**39.5**	**33.9**
Beryllium	1.4	2.5	40	--	42	**0.74**	**0.65**
Calcium	--	--	--	--	--	184 JQ	**1430**
Chromium	890	--	--	73	1600	***78.7***	**71.1**
Cobalt	--	13	--	170	640	**7.6**	**10.2**
Copper	110	70	80	43	70	***46.7***	***68.9***
Iron	--	--	--	--	--	**42200**	**36800**
Lead	36	120	1700	23	170	**10.5**	**11.7**
Magnesium	--	--	--	--	--	**6380**	**9400**
Manganese	3000	220	450	2700	5400	**152**	***228***
Mercury	0.17	34	0.05	0.13	17	***0.14***	***0.14***
Nickel	630	38	280	81	21	***49.6***	***64.4***
Potassium	--	--	--	--	--	299 JQ	**458**
Vanadium	290	60	--	9.5	610	***70.4***	***64.1***
Zinc	140	160	120	120	980	**61.5**	**72.4**
Volatile Organic Compounds (µg/kg)		--	--	--	--		
Acetone	--			75000	6300	10 JQ	**69**

Notes: **Bold** type indicates the sample result is above the sample quantitation limit.

43.1 Green shaded cell with italicized type designates value above lowest Level II RBC for given constituent, but below the regional metals background level. The cell with the lowest RBC for a given constituent has also been shaded green.

Yellow shaded cell is used it to identify the highest Level II RBC for a given constituent.

a = Values are background levels of metals in soils for cleanups as provided by an ODEQ 2018 fact sheet for the Klammath Basin.

b = Values are the Level II RBC for the various terrestrial receptors. In all cases provided RBC is for species not listed as threatened or endangered

Key:

-- = Not available or applicable for given constituent
µg/kg = micrograms per kilogram
mg/kg = milligrams per kilogram
bgs = below ground surface
CLP = Contract Laboratory Program
CRQL = Contract Required Quanitation Limit
EPA = United States Environmental Protection Agency
ft = feet
ID = Identification.
Inv = Invertebrates
J = The associated numerical value is an estimated quantity because the reported concentrations were less than the sample quantitation limits or because quality control criteria limits were not met.
M = Mammals
ODEQ = Oregon Department of Environmental Quality
P = Plants
Q = Detected concentration is below the method reporting limit/CRQL.
RBC = Risk Based Concentration

Table 2 Subsurface Soil Sample Analytical Results Summary - Log Pond Perimeter (Ecological)

EPA Sample ID Station Location Description CLP Sample Number Sample Depth (bgs)	Back-ground Metals [a]	Level II Ecological RBC [b]				20375604 SL03TP01 JLTQ4 1 - 2 ft	20375605 SL03TP02 JLTQ5 5 - 6 ft	20375606 SL04TP01 JLTQ6 1 - 2 ft	20375644 SL23TP01 JLTW4 2 -3 ft	20375645 SL23TP02 JLTW5 9 - 10 ft	20375646 SL24TP01 JLTW6 3 - 4 ft	20375647 SL24TP02 JLTW7 8 - 9 ft	20375648 SL25TP01 JLTW8 2 -3 ft	20375649 SL25TP02 JLTW9 9 - 10 ft	20375650 SL26TP01 JLTX0 2 -3 ft	20375651 SL26TP02 JLTX1 6 - 7 ft	20375652 SL27TP01 JLTX2 7 - 8 ft
		P	Inv	Birds	M												
Dioxins/Furans (ng/kg)																	
1,2,3,4,6,7,8-HpCDD	--	--	--	1500	7	--	--	--	3.2 JQ	0.92 JQ	220	100	400	140	59	90	11
1,2,3,4,6,7,8-HpCDF	--	--	--	230	11	--	--	--	0.5 JQ	0.44 U	59	21	89	24	8.3	16	4.6 JQ
1,2,3,4,7,8-HxCDF	--	--	--	23	1.1	--	--	--	0.4 U	0.4 U	5.9	1.8 JQ	12	0.87 JQ	0.46 JQ	0.43 JQ	0.37 U
1,2,3,6,7,8-HxCDD	--	--	--	190	0.89	--	--	--	0.5 U	0.5 U	11	4.8 JQ	20	4.2 JQ	2.1 JQ	3.6 JQ	0.52 JQ
1,2,3,7,8,9-HxCDD	--	--	--	19	0.89	--	--	--	0.36 JQ	0.34 U	5.2	2.7 JQ	14	2.4 JQ	1.4 JQ	1.5 JQ	0.32 U
2,3,4,6,7,8-HxCDF	--	--	--	23	1.1	--	--	--	0.41 U	0.41 U	4.2 JQ	1.4 JQ	6.5	1.9 JQ	0.49 JQ	0.69 JQ	0.38 U
2,3,7,8-TCDD	--	--	--	5.2	0.25	--	--	--	0.084 U	0.096 U	1.2	0.82 JQ	2.4	0.24 JQ	0.22 JQ	0.098 U	0.092 U
OCDD	--	--	--	19000	300	--	--	--	20	5.7 JQ	2400	920	4500 J	820	370	870	100
OCDF	--	--	--	14000	220	--	--	--	1.4 JQ	0.87 U	130	54	200	100	32	78	16
TEQ (Bird)	--	--	--	5.2	--	--	--	--	0.046 J	0.002 J	8.7 J	3.9 J	16 J	1.9 J	1.7 J	1.1 J	0.074 J
TEQ (Fish)	--	--	--	--	--	--	--	--	0.014 J	0.002 J	8 J	3.7 J	15 J	2.1 J	1.5 J	1.5 J	0.074 J
TEQ (Mammal)	--	--	--	--	0.25	--	--	--	0.079 J	0.011 J	10 J	4.8 J	20 J	3.8 J	2.1 J	2.5 J	0.24 J
Target Analyte List Metals (mg/kg)																	
Aluminum	--	--	--	--	--	17900	15000	20300	47200	35900	23400	23800	24600	25800	20500	31100	34800
Arsenic	12	18	6.8	32	31	2.6	2	1.8	5.1	3.7	3.5	4.6	3.3	4	3.1	3.4	3.2
Barium	630	110	330	1200	8700	73.2	50.7	54.6	45.7	48.1	89.2	414	86.2	79	84	54.1	45.1
Beryllium	1.4	2.5	40	--	42	0.61	0.54	0.6	0.84	0.76	0.68	0.61	0.7	0.74	0.66	0.77	0.64
Calcium	--	--	--	--	--	3910	3020	3460	1570	1140	5760	17600	4680	3190	4640	2590	1100
Chromium	890	--	--	73	1600	56.4	41.8	63.3	113	114	64.6	64.1	71.5	74.7	79.4	106	71.3
Cobalt	--	13	--	170	640	19	11.4	16.6	9.1	19.5	17	15.3	24	12.9	15.4	19.2	10.1
Copper	110	70	80	43	70	43.3	38.5	51.9	47.1	55.8	51.8	96	56.4	44	39.4	47.4	40.3
Iron	--	--	--	--	--	28000	23700	27100	54200	41400	34000	31700	33800	29800	31800	41000	35000
Lead	36	120	1700	23	170	11.1	5.7	7.6 J	13.2 J	8.2 J	10.8	15.3	12.6	8	17.3	9.2	8.2
Magnesium	--	--	--	--	--	9600	8280	11400	6120	17500	11600	10100	11100	8960	10400	14400	7520
Manganese	3000	220	450	2700	5400	616	292	400	188	411	527	969	666	287	519	472	193
Mercury	0.17	34	0.05	0.13	17	0.11 U	0.11 U	0.11 U	0.16	0.15	0.11 U	0.12 U	0.13	0.21 U	0.15	0.15	0.11 U
Nickel	630	38	280	81	21	66.2	50.8	77.9	71.8	137	81.7	86.5	88.5	84	87.8	122	61.6
Potassium	--	--	--	--	--	405 JQ	504	600	452 U	442 JQ	707	3470	615	714 U	572	612	515 U
Sodium	--	--	--	--	--	434 U	481 U	37 JQ	452 U	484 U	73.6 JQ	1680	30 JQ	714 U	489 U	480 U	515 U
Vanadium	290	60	--	9.5	610	54.1	44.1	48.3 J	106 J	67.5 J	66.6	55.4	65.9	66.4	61.6	71.7	66.8
Zinc	140	160	120	120	980	72.7	59.3	65.2	55.8	79.1	75.2	90.8	80.6	106	69.3	72.6	61.6
Semivolatile Organic Compounds (µg/kg)																	
2-Methylnaphthalene	--	--	--	--	160000	1.9 JQ	9.6	3.1 JQ	4.4 U	4.1 U	0.77 JQ	0.55 JQ	0.8 JQ	6.3 U	2 JQ	0.55 JQ	4.1 U
Benzo(a)anthracene	--	18000	--	7300	34000	6.7	22 J	3.6 U	4.4 U	4.1 U	3.5 JQ	0.72 JQ	2.8 JQ	6.3 U	4 U	4.1 U	4.1 U
Benzo(b)fluoranthene	--	18000	--	--	440000	2.8 JQ	4 JQ	5.2 J	0.63 JQ	4.1 U	3.1 JQ	2.5 JQ	2.4 JQ	0.95 JQ	4.9 J	2.7 JQ	0.7 JQ
Benzo(k)fluoranthene	--	--	--	--	--	3.6 U	20	3.6 U	4.4 U	4.1 U	4 U	4.3 U	3.7 U	6.3 U	4 U	4.1 U	4.1 U
bis(2-Ethylhexyl)phthalate	--	--	--	200	6000	190 U	220 U	190 UJ	230 UJ	210 UJ	5200 J	220 UJ	200 UJ	330 UJ	210 UJ	210 UJ	210 UJ
Chrysene	--	--	--	--	31000	2.3 JQ	14 J	3.6 J	4.4 U	4.1 U	4 U	1.4 JQ	3.9 J	6.3 U	4 U	4.1 U	0.65 JQ
Fluoranthene	--	--	10000	--	220000	5.3	51	6.6 J	0.62 JQ	4.1 U	1.6 JQ	1.9 JQ	2.1 JQ	4.2 JQ	7.8 J	7.9 J	4.1 U
Fluorene	--	--	3700	--	510000	3.6 U	7.5	0.89 JQ	4.4 U	4.1 U	4 U	4.3 U	3.7 U	6.3 U	4 U	4.1 U	4.1 U

Table 2 Subsurface Soil Sample Analytical Results Summary - Log Pond Perimeter (Ecological)

EPA Sample ID Station Location Description CLP Sample Number Sample Depth (bgs)	Back-ground Metals [a]	Level II Ecological RBC [b]				20375604 SL03TP01 JLTQ4 1 - 2 ft	20375605 SL03TP02 JLTQ5 5 - 6 ft	20375606 SL04TP01 JLTQ6 1 - 2 ft	20375644 SL23TP01 JLTW4 2 -3 ft	20375645 SL23TP02 JLTW5 9 - 10 ft	20375646 SL24TP01 JLTW6 3 - 4 ft	20375647 SL24TP02 JLTW7 8 - 9 ft	20375648 SL25TP01 JLTW8 2 -3 ft	20375649 SL25TP02 JLTW9 9 - 10 ft	20375650 SL26TP01 JLTX0 2 -3 ft	20375651 SL26TP02 JLTX1 6 - 7 ft	20375652 SL27TP01 JLTX2 7 - 8 ft
		P	Inv	Birds	M												
Naphthalene	--	1000	--	34000	27000	1.7 JQ	**4.7**	2.5 JQ	4.4 U	4.1 U	4 U	4.3 U	0.97 JQ	6.3 U	2.5 JQ	1 JQ	4.1 U
Pentachlorophenol	--	5000	31000	3600	8100	7.3 U	**25**	7.4 U	8.9 U	8.3 U	8.2 U	8.6 U	7.6 U	13 U	8.1 U	8.3 U	8.3 U
Phenanthrene	--	--	5500	--	110000	**5.2**	**33**	**23**	0.57 JQ	4.1 U	**7.1**	**4.3**	**5.1**	3.8 JQ	**9.4**	2.9 JQ	1.1 JQ
Pyrene	--	--	10000	330000	230000	1.1 JQ	4.2 U	**5.7 J**	4.4 U	4.1 U	1.3 JQ	2 JQ	1.4 JQ	2.2 JQ	**7.1 J**	4.1 U	0.85 JQ
PAH TEQ		--	--	--	125000	**2.8**	**5.1**	**2.6**	**2.4**	**2.3**	**2.9**	**2.6**	**2.5**	**3.5**	**2.9**	**3.0**	**2.3**
Total Organic Carbon (mg/kg)																	
Total Organic Carbon	--	--	--	--	--	--	--	--	**20900**	--	--	--	--	--	--	--	--

Notes: **Bold** type indicates the sample result is above the sample quantitation limit.

43.1 Green shaded cell with italicized type designates value above lowest Level II RBC for given constituent, but below the regional metals background level. The cell with the lowest RBC for a given constituent has also been shaded green.

Yellow shaded cell with double underlined type designates value above highest Level II RBC for given constituent. Applies only to dioxin/furan TEQ values. The cell with the highest (or only) RBC for a given constituent has also been shaded yellow.

a = Values are background levels of metals in soils for cleanups as provided by an ODEQ 2018 fact sheet for the Klammath Basin.

b = Values are the Level II RBC for the various terrestrial receptors. In all cases provided RBC is for species not listed as threatened or endangered

Key:

-- = Not available or applicable for given constituent
µg/kg = micrograms per kilogram
mg/kg = milligrams per kilogram
bgs = below ground surface
CLP = Contract Laboratory Program
CRQL = Contract Required Quanitation Limit
EPA = United States Environmental Protection Agency
ft = feet
ID = Identification.
Inv = Invertebrates
J = The associated numerical value is an estimated quantity because the reported concentrations were less than the sample quantitation limits or because quality control criteria limits were not met.
M = Mammals
ODEQ = Oregon Department of Environmental Quality
P = Plants
PAH TEQ = Polycyclic aromatic hydrocarbons Toxicity Equivalent Quotient. Result compared to value for benzo(a)pyrene as published in ODEQ 1998 Ecological Risk Assessment guidance
Q = Detected concentration is below the method reporting limit/CRQL.
RBC = Risk Based Concentration
TEQ = Toxicity Equivalent Quotient. Values for are compared to RBC for 2,3,7,8-TCDD. See Section 4.2 of TBA report for additional information on how TEQ was calculated.
U = The material was analyzed for but was not detected. The associated numerical value is the CRQL or sample detection limit.

Table 3 Subsurface Soil Sample Analytical Results Summary- PCP In Groundwater and Potential UST (Ecological)

EPA Sample ID Station Location Description CLP Sample Number Sample Depth (feet bgs)	Back-ground Metals [a]	Level II Ecological RBC [b]				20375608 SL05GP01 JLTQ8 0 - 4 ft	20375609 SL05GP02 JLTQ9 4 - 8 ft	20375610 SL06GP01 JLTR0 0 - 4 ft	20375611 SL06GP02 JLTR1 4 - 8 ft	20375612 SL07GP01 JLTR2 0 - 4 ft	20375613 SL07GP02 JLTR3 8 - 12 ft	20375614 SL08TP01 JLTR4 3 - 4 ft	20375615 SL08TP02 JLTR5 8 - 9 ft
		P	Inv	Birds	M								
Dioxins/Furans (ng/kg)													
1,2,3,4,6,7,8-HpCDD	--	--	--	1500	7	3.1 JQ	1.7 JQ	620	29	46	2.4 JQ	750	7.1
1,2,3,4,6,7,8-HpCDF	--	--	--	230	11	0.98 JQ	0.46 JQ	140	6.9	12	0.44 U	240	2.6 JQ
1,2,3,4,7,8,9-HpCDF	--	--	--	230	11	0.46 U	0.46 U	9.9	0.49 JQ	0.88 JQ	0.46 U	18	0.46 U
1,2,3,4,7,8-HxCDD	--	--	--	51	1.2	0.47 U	0.47 U	6.9	0.52 JQ	0.94 JQ	0.47 U	6.6	0.47 U
1,2,3,4,7,8-HxCDF	--	--	--	23	1.1	0.4 U	0.4 U	13	0.65 JQ	0.91 JQ	0.4 U	14	0.4 U
1,2,3,6,7,8-HxCDD	--	--	--	190	0.89	0.5 U	0.5 U	33	1.5 JQ	2.4 JQ	0.5 U	30	0.5 U
1,2,3,6,7,8-HxCDF	--	--	--	23	1.1	0.47 U	0.47 U	6.2	0.47 U	0.55 JQ	0.47 U	6.7	0.47 U
1,2,3,7,8,9-HxCDD	--	--	--	19	0.89	0.34 U	0.34 U	10	0.8 JQ	1.5 JQ	0.34 U	9.3	0.34 U
2,3,4,6,7,8-HxCDF	--	--	--	23	1.1	0.41 U	0.41 U	9	0.41 U	0.87 JQ	0.41 U	11	0.41 U
2,3,4,7,8-PeCDF	--	--	--	4.1	0.65	0.43 U	0.43 U	7.4	0.43 U	0.61 JQ	0.43 U	6.2	0.43 U
OCDD	--	--	--	19000	300	39	18	5100	230	410	19	7400	70
OCDF	--	--	--	14000	220	3.6 JQ	1.9 JQ	410	20	33	1.5 JQ	830	8.4 JQ
TEQ (Bird)	--	--	--	5.2	--	0.017 J	0.0083 J	19 J	0.31 J	2.9 J	0.0045 J	19 J	0.041 J
TEQ (Fish)	--	--	--	--	--	0.017 J	0.0083 J	16 J	0.48 J	2.7 J	0.0045 J	17 J	0.041 J
TEQ (Mammal)	--	--	--	--	0.25	0.054 J	0.028 J	23 J	0.79 J	3 J	0.03 J	25 J	0.12 J
Target Analyte List Metals (mg/kg)													
Aluminum	--	--	--	--	--	42300	30000	26800	41400	21400	34000	35500	22100
Arsenic	12	18	6.8	32	31	2.8	2.2	3.4	4.8	3	2.3	3.2	5.2
Barium	630	110	330	1200	8700	59.4	62	66.4	43	78.9	41.9	51.4	20.1
Beryllium	1.4	2.5	40	--	42	0.93	0.76	0.82	0.8	0.69	0.99	0.7	0.76
Calcium	--	--	--	--	--	1840	4920	3290	1610	4040	3030	1890	2060
Chromium	890	--	--	73	1600	105	107	73.2	81.1	59.3	71.8	77.2	70
Cobalt	--	13	--	170	640	12.7	13	15.4	10	20.3	18.2	10.1	16.2
Copper	110	70	80	43	70	45	40.2	45.4	37.9	47.8	51.8	40.9	41.2
Iron	--	--	--	--	--	57900	41600	41900	46200	31400	50300	39400	42300
Lead	36	120	1700	23	170	11.9	9	25.2	8.3	11.1	7.9	11.5	6.2
Magnesium	--	--	--	--	--	9000	11600	9620	9280	9970	13500	7750	11000
Manganese	3000	220	450	2700	5400	193	261	423	253	648	313	250	287
Mercury	0.17	34	0.05	0.13	17	0.23	0.11 U	0.12 U	0.15	0.11 U	0.12	0.17	0.11 U
Nickel	630	38	280	81	21	79.8	89	67.8	63.9	72.3	96.9	53.5	92.7
Potassium	--	--	--	--	--	576 U	346 JQ	486 JQ	507	657	745	309 JQ	433 U
Silver	0.16	560	--	26	140	0.92 JQ	1.3 J	0.51 JQ	0.7 JQ	0.38 JQ	0.62 JQ	0.46 JQ	0.56 JQ
Vanadium	290	60	--	9.5	610	101	88.7	73	74.8	61.2	66	75.3	51.9 J
Zinc	140	160	120	120	980	73.6	66.1	161	72.6	70.8	79.7	76.4	56.7
Semivolatile Organic Compounds (µg/kg)													
2,3,4,6-Tetrachlorophenol	--	--	--	--	--	240 U	230 U	200 U	210 U	180 U	R	210 U	190 U
2-Methylnaphthalene	--	--	--	--	160000	0.5 JQ	0.91 JQ	5.2	0.46 JQ	2.7 JQ	0.51 JQ	2 JQ	3.6 U
Benzo(a)anthracene	--	18000	--	7300	34000	4.6 U	4.4 U	1.6 JQ	4.1 U	13 J	3.7 U	4 JQ	3.6 U
Benzo(b)fluoranthene	--	18000	--	--	440000	4.6 U	0.56 JQ	4.6	0.66 JQ	7.3	0.95 JQ	1.8 JQ	3.6 U
Chrysene	--	--	--	--	31000	4.6 U	0.59 JQ	7.3	0.62 JQ	3.9 J	0.82 JQ	1.8 JQ	3.6 U

Table 3 Subsurface Soil Sample Analytical Results Summary- PCP In Groundwater and Potential UST (Ecological)

EPA Sample ID Station Location Description CLP Sample Number Sample Depth (feet bgs)	Back-ground Metals [a]	Level II Ecological RBC [b]				20375608 SL05GP01 JLTQ8 0 - 4 ft	20375609 SL05GP02 JLTQ9 4 - 8 ft	20375610 SL06GP01 JLTR0 0 - 4 ft	20375611 SL06GP02 JLTR1 4 - 8 ft	20375612 SL07GP01 JLTR2 0 - 4 ft	20375613 SL07GP02 JLTR3 8 - 12 ft	20375614 SL08TP01 JLTR4 3 - 4 ft	20375615 SL08TP02 JLTR5 8 - 9 ft
		P	Inv	Birds	M								
Fluoranthene	--	--	10000	--	220000	4.6 U	4.4 U	3.8 U	4.1 U	**4.4**	0.56 JQ	2.4 JQ	3.6 U
Pentachlorophenol	--	5000	31000	3600	8100	9.3 U	8.9 U	7.7 U	8.2 U	7.3 U	7.6 U	**27**	7.3 U
Phenanthrene	--	--	5500	--	110000	0.64 JQ	1.5 JQ	**12**	1.3 JQ	**13**	1.6 JQ	**5.5**	0.37 JQ
PAH TEQ		--	--	--	125000	**2.5**	**2.4**	**2.7**	**2.3**	**3.9**	**2.1**	**2.7**	**2.0**
Volatile Organic Compounds (µg/kg)													
Acetone	--	--	--	75000	6300	**39**	**40**	**14**	6.2 JQ	**100**	**56**	12 JQ	**29**
Benzene	--	--	--	--	240000	7 U	1.3 JQ	6.9 U	0.98 JQ	**24**	1.3 JQ	4.4 JQ	6.6 U
Methyl acetate	--	--	--	--	--	7 U	6.3 U	6.9 U	6.3 U	11 U	**7**	13 U	2.4 JQ
Total Petroleum Hydrocarbons (mg/kg)		--	--	--	--								
Diesel Range Organics	--	260	260	6000	6000	55 U	51 U	***270***	50 U	46 U	47 U	45 U	45 U
Motor Oil Range Organics	--	260	260	6000	6000	140 U	130 U	**150**	120 U	110 U	120 U	110 U	110 U
Total Organic Carbon (mg/kg)													
Total Organic Carbon	--	--	--	--	--	**6820**	--	--	--	--	--	--	--

Notes: **Bold** type indicates the sample result is above the sample quantitation limit.

43.1 Green shaded cell with italicized type designates value above lowest Level II RBC for given constituent, but below the regional metals. background level. The cell with the lowest RBC for a given constituent has also been shaded green.

161 Diagonal hatching added to green shaded to cell to indicate value is also above regional background metals value.

19 Yellow shaded cell with double underlined type designates value above highest (or only for dioxin/furan TEQ) Level II RBC for given contituent. The cell with the highest (or only) RBC for a given constituent has also been shaded yellow.

a = Values are background levels of metals in soils for cleanups as provided by an ODEQ 2018 fact sheet for the Klammath Basin.

b = Values are the Level II RBC for the various terrestrial receptors. In all cases provided RBC is for species not listed as threatened or endangered

Key:

-- = Not available or applicable for given constituent

µg/kg = micrograms per kilogram

mg/kg = milligrams per kilogram

bgs = below ground surface

CLP = Contract Laboratory Program

CRQL = Contract Required Quantitation Limit

EPA = United States Environmental Protection Agency

ft = feet

ID = Identification.

Inv = Invertebrates

J = The associated numerical value is an estimated quantity because the reported concentrations were less than the sample quantitation limits or because quality control criteria limits were not met.

M = Mammals

ODEQ = Oregon Department of Environmental Quality

P = Plants

PAH TEQ = Polycyclic aromatic hydrocarbons Toxicity Equivalent Quotient. Result compared to value for benzo(a)pyrene as published in ODEQ 1998 Ecological Risk Assessment guidance

Q = Detected concentration is below the method reporting limit/CRQL.

R = Rejected, data is not usable for any purpose

RBC = Risk Based Concentration

TEQ = Toxicity Equivalent Quotient. Values for are compared to RBC for 2,3,7,8-TCDD.
See Section 4.2 of TBA report for additional information on how TEQ was calculated.

U = The material was analyzed for but was not detected. The associated numerical value is the CRQL or sample detection limit.

Table 4 Subsurface Soil Sample Analytical Results Summary - Former Transformer Location (Ecological)

EPA Sample ID Station Location Description CLP Sample Number Sample Depth (bgs)	Back-ground Metals [a]	Level II Ecological RBC [b]				20375616 SL09GP01 JLTR6 0 - 4 ft	20375618 SL10GP01 JLTR8 4 - 8 ft
		P	Inv	Birds	M		
Target Analyte List Metals (mg/kg)							
Aluminum	--	--	--	--	--	**23000**	**26200**
Arsenic	12	18	6.8	32	31	**3.8**	**3.8**
Barium	630	110	330	1200	8700	**78.8**	**60.1**
Beryllium	1.4	2.5	40	--	42	**0.74**	**0.86**
Calcium	--	--	--	--	--	**3800**	**8460**
Chromium	890	--	--	73	1600	**65.2**	***77.1***
Cobalt	--	13	--	170	640	***33.6***	***25.8***
Copper	110	70	80	43	70	***58.5***	***48.7***
Iron	--	--	--	--	--	**36400**	**45600**
Lead	36	120	1700	23	170	**13.4 J**	**9.1 J**
Magnesium	--	--	--	--	--	**11800**	**12300**
Manganese	3000	220	450	2700	5400	***827***	***521***
Nickel	630	38	280	81	21	***86.5***	***123***
Potassium	--	--	--	--	--	**519**	**596**
Silver	0.16	560	--	26	140	**0.96**	**1**
Vanadium	290	60	--	9.5	610	***72.7*** **J**	***63.7*** **J**
Zinc	140	160	120	120	980	**97.6**	**75.8**
Semivolatile Organic Compounds (µg/kg)							
2-Methylnaphthalene	--	--	--	--	160000	**11 J**	1.9 JQ
Anthracene	--	6800	--	--	2E+06	3.7 U	**4.2 J**
Benzo(a)anthracene	--	18000	--	7300	34000	**29 J**	2.5 JQ
Benzo(b)fluoranthene	--	18000	--	--	440000	**12**	**4.1**
Chrysene	--	--	--	--	31000	3.7 U	**5.2**
Fluoranthene	--	--	10000	--	220000	**4.4**	3.3 JQ
Naphthalene	--	1000	--	34000	27000	**7.1 J**	2.9 JQ
Phenanthrene	--	--	5500	--	110000	**23 J**	**3.9 J**
PAH TEQ		--	--	--	125000	**6.1**	**2.7**
Total Petroleum Hydrocarbons (mg/kg)							
Motor Oil Range Organics	--	260	260	6000	6000	**160**	110 U

Notes: **Bold** type indicates the sample result is above the sample quantitation limit.

43.1 Green shaded cell with italicized type designates value above lowest Level II RBC for given constituent, but below the regional metals background level. The cell with the lowest RBC for a given constituent has also been shaded green.

Yellow shaded cell is used it to identify the highest Level II RBC for a given constituent.

a = Values are background levels of metals in soils for cleanups as provided by an ODEQ 2018 fact sheet for the Klammath Basin.

b = Values are the Level II RBC for the various terrestrial receptors. In all cases provided RBC is for species not listed as threatened or endangered

Key:

-- = Not available or applicable for given constituent

µg/kg = micrograms per kilogram

mg/kg = milligrams per kilogram

bgs = below ground surface

CLP = Contract Laboratory Program

CRQL = Contract Required Quanitation Limit
EPA = United States Environmental Protection Agency
ft = feet
ID = Identification.
Inv = Invertebrates
J = The associated numerical value is an estimated quantity because the reported concentrations were less than the sample quantitation limits or because quality control criteria limits were not met.
M = Mammals
ODEQ = Oregon Department of Environmental Quality
P = Plants
PAH TEQ = Polycyclic aromatic hydrocarbons Toxicity Equivalent Quotient. Result compared to value for benzo(a)pyrene as published in ODEQ 1998 Ecological Risk Assessment guidance
Q = Detected concentration is below the method reporting limit/CRQL.
RBC = Risk Based Concentration
U = The material was analyzed for but was not detected. The associated numerical value is the CRQL or sample detection limit.

Table 5 Subsurface Soil Sample Analytical Results Summary - Southern Wigwam Burner (Ecological)

EPA Sample ID Station Location Description CLP Sample Number Sample Depth (bgs)	Background Metals [a]	Level II Ecological RBC [b]				20375626 SL14GP01 JLTS6 0 - 4 ft	20375627 SL14GP02 JLTS7 12 - 6 ft	20375628 SL15GP01 JLTS8 0 - 4 ft	20375629 SL15GP02 JLTS9 12 - 16 ft	20375630 SL16TP01 JLTT0 10 - 12 in	20375631 SL16TP02 JLTT1 13 - 18 in	20375663 SL16TP03 JLTY3 18 - 36 in	20375664 SL16TP04 JLTY4 48 - 60 in	20375632 SL17GP01 JLTT2 0 - 4 ft	20375633 SL17GP02 JLTT3 20 - 24 ft	20375634 SL18GP01 JLTT4 0 - 4 ft	20375635 SL18GP02 JLTT5 12 - 16 ft	20375619 OP02TP01 JLTR9 1 - 2 ft
		P	Inv	Birds	M													
Dioxins/Furans (ng/kg)																		
1,2,3,4,6,7,8-HpCDD	--	--	--	1500	7	30	3.5 JQ	69	0.67 JQ	82	34	1.3 JQ	0.46 U	13	0.48 JQ	53	0.45 U	72
1,2,3,4,6,7,8-HpCDF	--	--	--	230	11	8.2	0.85 JQ	5.5	0.44 U	6.3	4.7 JQ	0.44 U	0.44 U	3.1 JQ	0.43 U	8.1	0.44 U	8
1,2,3,4,7,8-HxCDD	--	--	--	51	1.2	0.89 JQ	0.47 U	1.7 JQ	0.47 U	1.3 JQ	0.64 JQ	0.47 U	0.47 U	0.47 U	0.46 U	0.68 JQ	0.47 U	5.5
1,2,3,6,7,8-HxCDD	--	--	--	190	0.89	1.5 JQ	0.5 U	3.3 JQ	0.5 U	3.7 JQ	1.7 JQ	0.5 U	0.5 U	0.77 JQ	0.49 U	2.2 JQ	0.5 U	11
1,2,3,7,8,9-HxCDD	--	--	--	19	0.89	1.1 JQ	0.34 U	2.9 JQ	0.34 U	2.7 JQ	1.1 JQ	0.34 U	0.34 U	0.48 JQ	0.34 U	1.4 JQ	0.34 U	15
1,2,3,7,8-PeCDD	--	--	--	5.9	0.28	0.35 U	0.35 U	0.94 JQ	0.35 U	0.92 JQ	0.39 JQ	0.35 U	0.35 U	0.35 U	0.35 U	0.41 JQ	0.35 U	7.9
2,3,7,8-TCDD	--	--	5	5.2	0.25	0.18 JQ	0.09 U	0.26 JQ	0.084 U	0.25 JQ	0.15 JQ	0.11 U	0.12 U	0.084 U	0.083 U	0.2 JQ	0.084 U	3.3
2,3,7,8-TCDF	--	--	--	6.4	3	0.16 JQ	0.11 U	0.11 U	0.11 U	0.15 JQ	0.12 U	0.11 U	0.11 U	0.11 U	0.11 U	0.39 JQ	0.11 U	0.75 JQ
OCDD	--	--	--	19000	300	250	31	350	3.9 JQ	450	220	7.2 JQ	3.1 JQ	100	4.5 JQ	490	4.3 JQ	200
OCDF	--	--	--	14000	220	23	2.6 JQ	20	0.87 U	26	17	0.87 U	0.87 U	9 JQ	0.86 U	25	0.87 U	9.4 JQ
TEQ (Bird)	--	--	--	5.2	--	0.79 J	0.015 J	1.8 J	0.001 J	2.1 J	0.85 J	0.002 J	3E-04 J	0.11 J	9E-04 J	2.2 J	4E-04 J	16 J
TEQ (Fish)	--	--	--	--	--	0.95 J	0.015 J	2.3 J	0.001 J	2.2 J	1 J	0.002 J	3E-04 J	0.067 J	9E-04 J	1.7 J	4E-04 J	16 J
TEQ (Mammal)	--	--	--	--	0.25	1.2 J	0.054 J	2.9 J	0.008 J	3.1 J	1.4 J	0.015 J	9E-04 J	0.32 J	0.006 J	2.2 J	0.001 J	16 J
Target Analyte List Metals (mg/kg)																		
Aluminum	--	--	--	--	--	18100	34700	36400	23200	17400	27100	35200	35200	27100	16200	24000	33800	24200
Antimony	0.59	11	78	--	2.7	0.9 U	0.9 U	0.96 U	0.79 U	1.2 J	4.4 J	1 UJ	0.91 UJ	0.86 U	0.8 U	0.62 JQ	0.11 JQ	0.9 U
Arsenic	12	18	6.8	32	31	2.9	4.9	3.8	1.6	3.9	8.6	1.8	3.4	3.5	2.1	3.9	2.9	3.4
Barium	630	110	330	1200	8700	108	58.3	44.8	31.3	668	922	71.4	39.1	106	37.6	77	43.8	142
Beryllium	1.4	2.5	40	--	42	0.56	0.68	0.78	0.79	0.4 JQ	0.48	0.81	0.86	0.85	0.49	0.62	0.7	0.6
Calcium	--	--	--	--	--	5980	1180	1850	1390	54000	58200	4010	2070	2790	4760	4330	1060	6220
Chromium	890	--	--	73	1600	59.1	97.6	114	64.8	40	37	109	98.2	76.6	57.7	65.2	146	70.5
Cobalt	--	13	--	170	640	15.4	12.8	17.7	26.2	7.1	6.2	9	13.4	16.4	12.4	12.5	16.9	17
Copper	110	70	80	43	70	52.5	40.8	54.2	64.4	123	88.5	30.8	56.4	46.2	55.4	61.6	44.8	73.7
Iron	--	--	--	--	--	27800	35500	43400	34500	19000	19900	48100	47400	35200	26200	32400	37300	30900
Lead	36	120	1700	23	170	14.5 J	9.1 J	10.3 J	5.8 J	9.2	18.1	9.1	9.4	11 J	3.6 J	18.5	8.2	25.4 J
Magnesium	--	--	--	--	--	10800	5440	12900	13700	4970	5950	4430	13100	9220	12700	10600	12800	9600
Manganese	3000	220	450	2700	5400	529	214	377	446	1110	1630	234	373	507	314	414	283	744
Mercury	0.17	34	0.05	0.13	17	0.11 U	0.17	0.12 U	0.097 U	0.13 U	0.12 U	0.13 U	0.12 U	0.12 U	0.11 U	0.12 U	0.21	0.1 U
Nickel	630	38	280	81	21	67.5	94.7	123	175	45.3	34.5	66.1	105	85.3	72.2	88.1	152	78
Potassium	--	--	--	--	--	945	232 JQ	329 JQ	506	3830	5370	1670	633	625	468	754	470 U	2570
Silver	0.16	560	--	26	140	0.78 JQ	0.94	1	0.82	0.33 JQ	0.38 JQ	0.6 JQ	0.46 JQ	0.94	0.64 JQ	0.51 JQ	0.54 JQ	0.84 JQ
Sodium	--	--	--	--	--	481	57.7 JQ	31.4 JQ	29.5 JQ	2310	4190	494 JQ	34.7 JQ	244 JQ	63.8 JQ	653	36.5 JQ	362 JQ
Vanadium	290	60	--	9.5	610	51.3 J	88.6 J	77.8 J	35.9 J	36	60	75.9	76.3 J	64.7 J	32.1 J	70.7	66.7 J	58 J
Zinc	140	160	120	120	980	104	55.1	74.7	63.3	92.6	108	45.1	73	86.8	48.2	73.6	69	171
Semivolatile Organic Compounds (µg/kg)																		
2-Methylnaphthalene	--	--	--	--	160000	37 U	0.57 JQ	4.1 U	3.7 U	4.4 U	4.1 U	4.6 U	4 U	2.1 JQ	1.6 JQ	4.5	4.3 U	1.2 JQ
Benzo(b)fluoranthene	--	18000	--	--	440000	37 U	0.5 JQ	4.1 U	3.7 U	4.4 UJ	4.1 U	4.6 U	4 U	0.45 JQ	0.69 JQ	1.7 JQ	4.3 U	7.8 J
Chrysene	--	--	--	--	31000	37 U	4.1 U	4.1 U	3.7 U	4.4 UJ	0.53 JQ	4.6 U	4 U	1.3 JQ	0.61 JQ	0.8 JQ	4.3 U	9.5 J
Fluoranthene	--	--	10000	--	220000	37 U	10	4.1 U	3.7 U	4.4 UJ	0.5 JQ	4.6 U	0.55 JQ	3.7	0.66 JQ	24	4.3 U	8.8 J
Naphthalene	--	1000	--	34000	27000	37 U	4.1 U	4.1 U	3.7 U	2.1 JQ	4.1 U	4.6 U	4 U	2.2 JQ	0.9 JQ	4.4	4.3 U	2.6 JQ
Phenanthrene	--	--	5500	--	110000	9.8 JQ	1.5 JQ	0.59 JQ	3.7 U	1.6 JQ	0.83 JQ	4.6 U	0.49 JQ	5.1	4.6	7.1	4.3 U	14
Pyrene	--	--	10000	330000	230000	37 U	4.1 U	4.1 U	3.7 U	4.4 UJ	4.1 U	4.6 U	4 U	2.4 JQ	3.5 U	2.7 JQ	4.3 U	7.5 J

Table 5 Subsurface Soil Sample Analytical Results Summary - Southern Wigwam Burner (Ecological)

EPA Sample ID Station Location Description CLP Sample Number Sample Depth (bgs)	Back-ground Metals [a]	Level II Ecological RBC [b]				20375626 SL14GP01 JLTS6 0 - 4 ft	20375627 SL14GP02 JLTS7 12 - 6 ft	20375628 SL15GP01 JLTS8 0 - 4 ft	20375629 SL15GP02 JLTS9 12 - 16 ft	20375630 SL16TP01 JLTT0 10 - 12 in	20375631 SL16TP02 JLTT1 13 - 18 in	20375663 SL16TP03 JLTY3 18 - 36 in	20375664 SL16TP04 JLTY4 48 - 60 in	20375632 SL17GP01 JLTT2 0 - 4 ft	20375633 SL17GP02 JLTT3 20 - 24 ft	20375634 SL18GP01 JLTT4 0 - 4 ft	20375635 SL18GP02 JLTT5 12 - 16 ft	20375619 OP02TP01 JLTR9 1 - 2 ft
		P	Inv	Birds	M													
PAH TEQ		--	--	--	125000	**20.9**	**2.3**	**2.3**	**2.1**	**2.4**	**2.3**	**2.5**	**2.2**	**2.1**	**2.0**	**2.2**	**2.4**	**4.7**
Volatile Organic Compounds (µg/kg)																		
2-Butanone	--	--	--	--	920000	10 JQ	**19**	15 U	11 U	41 UJ	22 U	15 U	31 U	5.5 JQ	10 U	13 U	12 U	--
Acetone	--	--	--	75000	6300	**88**	**96**	8.6 JQ	4 JQ	**320 J**	**53**	**41**	13 JQ	**78**	8.7 JQ	13 U	12 U	--
Benzene	--	--	--	--	240000	**10**	0.96 JQ	5.4 JQ	5.6 U	**74 J**	5.9 JQ	1.3 JQ	16 U	7.5 JQ	5.2 U	3.8 JQ	5.9 U	--
Ethylbenzene	--	--	--	--	--	**13**	6.1 U	7.6 U	5.6 U	20 U	11 U	7.3 U	16 U	7.9 U	5.2 U	6.4 U	5.9 U	--
m, p-Xylene	--	--	--	--	--	**9.5**	6.1 U	1.2 JQ	5.6 U	20 U	11 U	7.3 U	16 U	1.3 JQ	5.2 U	6.4 U	5.9 U	--
Methyl acetate	--	--	--	--	--	9 JQ	6.1 U	**16**	5.6 U	20 UJ	11 U	4.2 JQ	16 U	7.9 U	5.2 U	6.4 U	5.9 U	--
Toluene	--	200000	--	--	230000	**13**	6.1 U	2.5 JQ	5.6 U	5.7 JQ	11 U	7.3 U	16 U	2.7 JQ	5.2 U	6.4 U	5.9 U	--
Total Petroleum Hydrocarbons (mg/kg)																		
Motor Oil Range Organics	--	260	260	6000	6000	**220**	130 U	120 U	110 U	130 U	130 U	140 U	120 U	120 U	110 U	120 U	130 U	--
Total Organic Carbon (mg/kg)																		
Total Organic Carbon	--	--	--	--	--	**48200**	--	--	--	--	--	--	--	--	--	--	--	--

Notes: **Bold** type indicates the sample result is above the sample quantitation limit.

43.1 Green shaded cell with italicized type designates value above lowest Level II RBC for given constituent, but below the regional metals background level. The cell with the lowest RBC for a given constituent has also been shaded green.

19 Yellow shaded cell with double underlined type designates value above highest (or only for dioxin/furan TEQ) Level II RBC for given contituent. The cell with the highest (or only) RBC for a given constituent has also been shaded yellow.

161 123 Diagonal hatching added to green and/or yellow shaded to cell to indicate value is also above regional background metals value.

a = Values are background levels of metals in soils for cleanups as provided by an ODEQ 2018 fact sheet for the Klammath Basin.

b = Values are the Level II RBC for the various terrestrial receptors. In all cases provided RBC is for species not listed as threatened or endangered

Key:

-- = Not available or applicable for given constituent

µg/kg = micrograms per kilogram

mg/kg = milligrams per kilogram

bgs = below ground surface

CLP = Contract Laboratory Program

CRQL = Contract Required Quanitation Limit

EPA = United States Environmental Protection Agency

ft = feet

ID = Identification.

Inv = Invertebrates

J = The associated numerical value is an estimated quantity because the reported concentrations were less than the sample quantitation limits or because quality control criteria limits were not met.

M = Mammals

ODEQ = Oregon Department of Environmental Quality

P = Plants

PAH TEQ = Polycyclic aromatic hydrocarbons Toxicity Equivalent Quotient. Result compared to value for benzo(a)pyrene as published in ODEQ 1998 Ecological Risk Assessment guidance

Q = Detected concentration is below the method reporting limit/CRQL.

RBC = Risk Based Concentration

TEQ = Toxicity Equivalent Quotient. Values for are compared to RBC for 2,3,7,8-TCDD. See Section 4.2 of TBA report for additional information on how TEQ was calculated.

U = The material was analyzed for but was not detected. The associated numerical value is the CRQL or sample detection limit.

Table 6 Subsurface Soil Sample Analytical Results Summary - Former Stud Mill and Vicinity (Ecological)

EPA Sample ID Station Location Description CLP Sample Number Sample Depth (bgs)	Back-ground Metals [a]	Level II Ecological RBC [b]				20375636 SL19TP01 JLTT6 3 - 4 ft	20375637 SL19TP02 JLTT7 6 - 7 ft	20375638 SL20GP01 JLTT8 0 - 4 ft	20375640 SL21GP01 JLTW0 0 - 4 ft	20375642 SL22GP01 JLTW2 0 - 4 ft
		P	Inv	Birds	M					
Dioxins/Furans (ng/kg)										
1,2,3,4,6,7,8-HpCDD	--	--	--	1500	7	960	4.6 JQ	450	70	55
1,2,3,4,6,7,8-HpCDF	--	--	--	230	11	170	0.6 JQ	55	13	7.3
1,2,3,4,7,8,9-HpCDF	--	--	--	230	11	9.5	0.46 U	3.5 JQ	0.95 JQ	0.5 JQ
1,2,3,4,7,8-HxCDD	--	--	--	51	1.2	7.1	0.47 U	3.7 JQ	1 JQ	0.66 JQ
1,2,3,4,7,8-HxCDF	--	--	--	23	1.1	7.8	0.4 U	2.9 JQ	1 JQ	0.47 JQ
1,2,3,6,7,8-HxCDD	--	--	--	190	0.89	25	0.5 U	13	3 JQ	2.3 JQ
1,2,3,7,8,9-HxCDD	--	--	--	19	0.89	13	0.34 U	7.3	1.9 JQ	1.8 JQ
2,3,4,6,7,8-HxCDF	--	--	--	23	1.1	6.7	0.41 U	2.7 JQ	0.8 JQ	0.61 JQ
2,3,7,8-TCDD	--	--	5	5.2	0.25	2.7	0.12 U	0.84 JQ	0.23 JQ	0.28 JQ
2,3,7,8-TCDF	--	--	--	6.4	3	1.4	0.11 U	0.45 JQ	0.2 JQ	0.13 U
OCDD	--	--	--	19000	300	9800 J	44	4700 J	680	410
OCDF	--	--	--	14000	220	580	3.1 JQ	220	41	29
TEQ (Bird)	--	--	--	5.2	--	19 J	0.015 J	8.2 J	2.4 J	1.2 J
TEQ (Fish)	--	--	--	--	--	18 J	0.015 J	8.2 J	2.3 J	1.3 J
TEQ (Mammal)	--	--	--	--	0.25	29 J	0.066 J	13 J	3 J	2 J
Target Analyte List Metals (mg/kg)										
Aluminum	--	--	--	--	--	20300	32300	27600	32200	37600
Arsenic	12	18	6.8	32	31	4	3.3	3.9	3	4.5
Barium	630	110	330	1200	8700	74.8	40.8	66.9	42.3	56.3
Beryllium	1.4	2.5	40	--	42	0.65	0.66	0.65	0.69	0.82
Calcium	--	--	--	--	--	5470	2030	3450	2480	3290
Chromium	890	--	--	73	1600	65.9	65.6	82.7	82.1	107
Cobalt	--	13	--	170	640	14.7	9.4	10.7	13.3	14.6
Copper	110	70	80	43	70	89.7	38.4	70.3	49.8	53.7
Iron	--	--	--	--	--	33100	39000	38300	37400	47900
Lead	36	120	1700	23	170	42.8	8	26 J	12.5	11.8
Magnesium	--	--	--	--	--	8980	8150	6760	10600	9950
Manganese	3000	220	450	2700	5400	483	234	308	346	380
Mercury	0.17	34	0.05	0.13	17	0.12	0.13	0.14	0.14	0.16
Nickel	630	38	280	81	21	73.8	61.8	61.3	98.3	96.5
Potassium	--	--	--	--	--	488	572	377 JQ	464	574
Silver	0.16	560	--	26	140	0.43 JQ	0.53 JQ	0.98	0.54 JQ	0.71 JQ
Vanadium	290	60	--	9.5	610	56.5	63.1	72.1 J	70.6	90.3
Zinc	140	160	120	120	980	255	68.3	169	74.9	73.7
Semivolatile Organic Compounds (µg/kg)										
2-Methylnaphthalene	--	--	--	--	160000	5.4	4 U	2.2 JQ	0.64 JQ	0.52 JQ
Benzo(a)pyrene	--	--	--	--	190000	4.3	4 U	4.1 U	4 U	4.2 U
Benzo(b)fluoranthene	--	18000	--	--	440000	8.2	4 U	2.6 JQ	4 U	4.2 U
Benzo(g,h,i)perylene	--	--	--	--	250000	7.9	4 U	4.1 U	4 U	4.2 U
Chrysene	--	--	--	--	31000	5	4 U	1.5 JQ	0.69 JQ	0.49 JQ

Table 6 Subsurface Soil Sample Analytical Results Summary - Former Stud Mill and Vicinity (Ecological)

EPA Sample ID Station Location Description CLP Sample Number Sample Depth (bgs)	Back-ground Metals [a]	Level II Ecological RBC [b]				20375636 SL19TP01 JLTT6 3 - 4 ft	20375637 SL19TP02 JLTT7 6 - 7 ft	20375638 SL20GP01 JLTT8 0 - 4 ft	20375640 SL21GP01 JLTW0 0 - 4 ft	20375642 SL22GP01 JLTW2 0 - 4 ft
		P	Inv	Birds	M					
Fluoranthene	--	--	10000	--	220000	**12**	4 U	**4.9**	1 JQ	1.7 JQ
Naphthalene	--	1000	--	34000	27000	**4.8**	0.83 JQ	2.4 JQ	0.84 JQ	4.2 U
Pentachlorophenol	--	5000	31000	3600	8100	**17**	8.2 U	2.8 JQ	8.1 U	8.5 U
Phenanthrene	--	--	5500	--	110000	**16**	0.43 JQ	**4.4**	1.8 JQ	1.5 JQ
Pyrene	--	--	10000	330000	230000	**4.7**	4 U	3.8 JQ	4 U	4.2 U
PAH TEQ		--	--	--	125000	**7.2**	**2.2**	**2.5**	**2.2**	**2.4**
Volatile Organic Compounds (µg/kg)		--	--	--	--					
Acetone	--	--	--	75000	6300	**56**	**47**	**29**	8 JQ	12 JQ
Total Organic Carbon (mg/kg)										
Total Organic Carbon	--	--	--	--	--	**--**	**--**	**35600**	**--**	**--**

Notes: **Bold** type indicates the sample result is above the sample quantitation limit.

43.1 Green shaded cell with italicized type designates value above lowest Level II RBC for given constituent, but below the regional metals background level. The cell with the lowest RBC for a given constituent has also been shaded green.

161 Diagonal hatching added to green shaded to cell to indicate value is also above regional background metals value.

19 Yellow shaded cell with double underlined type designates value above highest (or only for dioxin/furan TEQ) Level II RBC for given contituent. The cell with the highest (or only) RBC for a given constituent has also been shaded yellow.

a = Values are background levels of metals in soils for cleanups as provided by an ODEQ 2018 fact sheet for the Klammath Basin.

b = Values are the Level II RBC for the various terrestrial receptors. In all cases provided RBC is for species not listed as threatened or endangered

Key:

-- = Not available or applicable for given constituent
µg/kg = micrograms per kilogram
mg/kg = milligrams per kilogram
bgs = below ground surface
CLP = Contract Laboratory Program
CRQL = Contract Required Quanitation Limit
EPA = United States Environmental Protection Agency
ft = feet
ID = Identification.
Inv = Invertebrates
J = The associated numerical value is an estimated quantity because the reported concentrations were less than the sample quantitation limits or because quality control criteria limits were not met.
M = Mammals
ODEQ = Oregon Department of Environmental Quality
P = Plants
PAH TEQ = Polycyclic aromatic hydrocarbons Toxicity Equivalent Quotient. Result compared to value for benzo(a)pyrene as published in ODEQ 1998 Ecological Risk Assessment guidance
Q = Detected concentration is below the method reporting limit/CRQL.
RBC = Risk Based Concentration
TEQ = Toxicity Equivalent Quotient. Values for are compared to RBC for 2,3,7,8-TCDD. See Section 4.2 of TBA report for additional information on how TEQ was calculated.
U = The material was analyzed for but was not detected. The associated numerical value is the CRQL or sample detection limit.

Table 7 Subsurface Soil Sample Analytical Results Summary - Potential Eastern Waste Disposal Area and UST Location (Ecological)

EPA Sample ID Station Location Description CLP Sample Number Sample Depth (bgs)	Back-ground Metals [a]	Level II Ecological RBC [b]				20375620 SL11TP01 JLTS0 3 - 4 ft	20375621 SL11TP02 JLTS1 6 - 7 ft	20375622 SL12TP01 JLTS2 3 - 4 ft	20375623 SL12TP02 JLTS3 7 - 8 ft	20375624 SL13TP01 JLTS4 1 - 2 ft	20375625 SL13TP02 JLTS5 4 - 5 ft	20375665 OP01TP01 JLTY5 4 - 5 ft	20375666 OP01TP02 JLTY6 6 - 7 ft	20375617 OP01TP03 JLTR7 7 - 7.5 ft	20385601 OP01GP01 JLTQ1 4 - 8 ft
		P	Inv	Birds	M										
Target Analyte List Metals (mg/kg)															
Aluminum	--	--	--	--	--	**16300**	**27200**	**17900**	**14300**	**35000**	**39900**	**24100**	**31900**	**20600**	**24500**
Antimony	0.59	11	78	--	2.7	***5.5***	0.81 U	0.75 U	0.9 U	0.15 JQ	0.12 JQ	0.96 UJ	0.99 UJ	0.13 JQ	0.11 JQ
Arsenic	12	18	6.8	32	31	***8***	**2.8**	**2**	**1.4**	**3.5**	**3.5**	**3**	**3.4**	**2.2**	**3.2**
Barium	630	110	330	1200	8700	***267***	**49.7**	**37.8**	**30.4**	**27.9**	**57.2**	**80**	**73**	**28.8**	**36.4**
Beryllium	1.4	2.5	40	--	42	**0.71**	**0.72**	**0.54**	0.41 JQ	**0.69**	**0.88**	**0.6**	**0.66**	**0.61**	**0.73**
Cadmium	0.52	32	140	1.6	3.6	0.076 JQ	0.42 U	0.37 U	0.44 U	0.53 U	0.48 U	**0.57**	0.32 JQ	0.49 U	0.41 U
Calcium	--	--	--	--	--	**9530**	**2400**	**4130**	**3430**	**2010**	**2380**	**2420**	**2030**	**2270**	**2320**
Chromium	890	--	--	73	1600	**53.7**	***81.9***	**72.9**	**61.3**	***122***	***139***	**67.5**	***86.3***	***81.1***	***102***
Cobalt	--	13	--	170	640	**9.7**	***21.9***	***13.9***	**9.7**	***15.6***	***22.7***	***17.5***	**11.4**	***14.4***	***13.9***
Copper	110	70	80	43	70	***343***	***54.6***	**42.7**	**34**	***49.7***	***59.7***	**37**	***43.2***	**39.3**	***47.7***
Iron	--	--	--	--	--	**50000**	**38000**	**27900**	**20900**	**39600**	**46800**	**22800**	**26600**	**25400**	**33000**
Lead	36	120	1700	23	170	***104* J**	**20.2 J**	**5 J**	**3.8 J**	**7.5**	**8.7**	**16.8**	***24.5***	**7.5**	**6.9**
Magnesium	--	--	--	--	--	**5840**	**11500**	**14100**	**10900**	**14500**	**19400**	**6780**	**7450**	**11700**	**14200**
Manganese	3000	220	450	2700	5400	***508***	***492***	***341***	**215**	***278***	***373***	***267***	***231***	***271***	***325***
Mercury	0.17	34	0.05	0.13	17	0.14 U	0.1 U	0.09 U	0.11 U	***0.19***	***0.16***	***0.17***	***0.15***	0.13 U	***0.12***
Nickel	630	38	280	81	21	***60.4***	***192***	***84.1***	***65.9***	***152***	***190***	***67.3***	***82.4***	***144***	***133***
Potassium	--	--	--	--	--	**1680**	**422**	**412**	351 JQ	528 U	482 U	492 U	526 U	488 U	**443**
Silver	0.16	560	--	26	140	**1.4**	**0.9**	0.69 JQ	0.53 JQ	0.51 JQ	0.6 JQ	0.98 U	1.1 U	0.37 JQ	0.36 JQ
Sodium	--	--	--	--	--	**1910**	175 JQ	40.9 JQ	48 JQ	528 U	32 JQ	492 U	58.9 JQ	30.3 JQ	30.1 JQ
Vanadium	290	60	--	9.5	610	***46.1* J**	***46.7* J**	***37.6* J**	***28.6* J**	***72.2* J**	***87.7***	***62.9***	***78.8***	***44***	***65.2***
Zinc	140	160	120	120	980	***304***	**80.3**	**57.8**	**46.2**	**60.8**	**77.9**	**92.1**	**113**	**59.5**	**65.9**
Semivolatile Organic Compounds (µg/kg)															
2-Methylnaphthalene	--	--	--	--	160000	**18**	1.9 JQ	1.5 JQ	3.7 JQ	4.7 U	4.5 U	**42**	**48**	**53**	1.7 JQ
Anthracene	--	6800	--	--	2100000	2.3 JQ	3.9 U	3.4 U	4 U	4.7 U	4.5 U	**9.4**	4.9 U	3 JQ	0.75 JQ
Benzo(a)anthracene	--	18000	--	7300	34000	2.5 JQ	3.9 U	3.4 U	4 U	4.7 U	4.5 U	3.5 JQ	**8.4 J**	1.1 JQ	**4.4**
Benzo(a)pyrene	--	--	--	--	190000	4.3 U	3.9 U	3.4 U	4 U	4.7 U	4.5 U	**4.5**	**13 J**	0.81 JQ	**4.4**
Benzo(b)fluoranthene	--	18000	--	--	440000	**8.3**	1.5 JQ	0.8 JQ	4 U	4.7 U	4.5 U	**11**	**20 J**	2.2 JQ	**6.5**
Benzo(g,h,i)perylene	--	--	--	--	250000	3.4 JQ	3.9 U	3.4 U	4 U	4.7 U	4.5 U	2.4 JQ	**10 J**	4.4 U	2.3 JQ
Benzo(k)fluoranthene	--	--	--	--	--	**5.8**	3.9 U	3.4 U	4 U	4.7 U	4.5 U	3.1 JQ	**7.9 J**	0.67 JQ	2.9 JQ
Chrysene	--	--	--	--	31000	**7.2**	0.51 JQ	0.93 JQ	1.3 JQ	4.7 U	4.5 U	**11**	**11 J**	1.7 JQ	**4.8**
Fluoranthene	--	--	10000	--	220000	**8.6**	3.9 U	0.55 JQ	1.6 JQ	4.7 U	4.5 U	**11**	**21 J**	1.9 JQ	**8.2**
Fluorene	--	--	3700	--	510000	2.9 JQ	3.9 U	3.4 U	2 JQ	4.7 U	4.5 U	**6.5**	**5**	4.3 JQ	0.52 JQ
Indeno(1,2,3-cd)pyrene	--	--	--	--	710000	4.3 U	3.9 U	3.4 U	4 U	4.7 U	4.5 U	2.7 JQ	**8.9 J**	4.4 U	3 JQ
Naphthalene	--	1000	--	34000	27000	**7.1**	0.95 JQ	1.2 JQ	1.7 JQ	4.7 U	4.5 U	**16**	**33**	**15**	1.2 JQ
Pentachlorophenol	--	5000	31000	3600	8100	4.5 JQ	7.8 U	6.8 U	**29**	9.6 U	9.1 U	8 JQ	10 U	6 JQ	7.5 U
Phenanthrene	--	--	5500	--	110000	**32**	2.6 JQ	2.2 JQ	**4.1**	4.7 U	4.5 U	**48**	**25**	**5.8**	**4**
Pyrene	--	--	10000	330000	230000	**9.3**	0.94 JQ	3.4 U	4 U	4.7 U	4.5 U	**14**	**19 J**	2.7 JQ	**7.2**
PAH TEQ		--	--	--	125000	**3.5**	**2.2**	**1.9**	**2.2**	**2.7**	**2.5**	**8.0**	**18.8**	**3.0**	**7.3**
Volatile Organic Compounds (µg/kg)															
Acetone	--	--	--	75000	6300	**160**	**69**	**22**	12 U	9 JQ	15 U	14 JQ	1500 U	27 JQ	6.7 JQ
Benzene	--	--	--	--	240000	25 JQ	24 JQ	2.2 JQ	6.1 U	10 U	7.3 U	8.9 U	770 U	15 U	5.8 U
Ethylbenzene	--	--	--	--	--	65 U	28 U	7.9 U	6.1 U	10 U	7.3 U	8.9 U	770 U	7.6 JQ	5.8 U
Isopropylbenzene	--	--	--	--	--	65 U	28 U	7.9 U	6.1 U	10 U	7.3 U	8.9 U	210 JQ	**20**	5.8 U

Table 7 Subsurface Soil Sample Analytical Results Summary - Potential Eastern Waste Disposal Area and UST Location (Ecological)

EPA Sample ID Station Location Description CLP Sample Number Sample Depth (bgs)	Back-ground Metals [a]	Level II Ecological RBC [b]				20375620 SL11TP01 JLTS0 3 - 4 ft	20375621 SL11TP02 JLTS1 6 - 7 ft	20375622 SL12TP01 JLTS2 3 - 4 ft	20375623 SL12TP02 JLTS3 7 - 8 ft	20375624 SL13TP01 JLTS4 1 - 2 ft	20375625 SL13TP02 JLTS5 4 - 5 ft	20375665 OP01TP01 JLTY5 4 - 5 ft	20375666 OP01TP02 JLTY6 6 - 7 ft	20375617 OP01TP03 JLTR7 7 - 7.5 ft	20385601 OP01GP01 JLTQ1 4 - 8 ft
		P	Inv	Birds	M										
m, p-Xylene	--	--	--	--	--	65 U	28 U	7.9 U	6.1 U	10 U	7.3 U	8.9 U	210 JQ	3 JQ	5.8 U
Methyl acetate	--	--	--	--	--	**65**	22 JQ	**11**	6.1 U	10 U	7.3 U	8.9 U	770 U	15 U	5.8 U
Methylcyclohexane	--	--	--	--	--	65 U	28 U	7.9 U	6.1 U	10 U	7.3 U	8.9 U	**3200**	**5100**	5.8 U
o-Xylene	--	--	--	--	--	65 U	28 U	7.9 U	6.1 U	10 U	7.3 U	8.9 U	120 JQ	1.5 JQ	5.8 U
Total Petroleum Hydrocarbons (mg/kg)															
Diesel Range Organics	--	260	260	6000	6000	56 U	47 U	42 U	47 U	57 U	55 U	54 U	***380***	**200**	45 U
Motor Oil Range Organics	--	260	260	6000	6000	***790***	120 U	100 U	120 U	140 U	140 U	140 U	***280***	120 U	110 U
Gasoline Range Organics	--	120	120	5000	5000	33 U	22 U	7.3 U	6.7 U	16 U	17 U	13 U	***180***	20 U	7.9 U

Notes: **Bold** type indicates the sample result is above the sample quantitation limit.

43.1 Green shaded cell with italicized type designates value above lowest Level II RBC for given constituent, but below the regional metals background level. The cell with the lowest RBC for a given constituent has also been shaded green.

19 Yellow shaded cell with double underlined type designates value above highest Level II RBC for given contituent. The cell with the highest RBC for a given constituent has also been shaded yellow.

161 **123** Diagonal hatching added to green and/or yellow shaded to cell to indicate value is also above regional background metals value.

a = Values are background levels of metals in soils for cleanups as provided by an ODEQ 2018 fact sheet for the Klammath Basin.

b = Values are the Level II RBC for the various terrestrial receptors. In all cases provided RBC is for species not listed as threatened or endangered

Key:

-- = Not available or applicable for given constituent
µg/kg = micrograms per kilogram
mg/kg = milligrams per kilogram
bgs = below ground surface
CLP = Contract Laboratory Program
CRQL = Contract Required Quanitation Limit
EPA = United States Environmental Protection Agency
ft = feet
ID = Identification.
Inv = Invertebrates
J = The associated numerical value is an estimated quantity because the reported concentrations were less than the sample quantitation limits or because quality control criteria limits were not met.
M = Mammals
ODEQ = Oregon Department of Environmental Quality
P = Plants
PAH TEQ = Polycyclic aromatic hydrocarbons Toxicity Equivalent Quotient. Result compared to value for benzo(a)pyrene as published in ODEQ 1998 Ecological Risk Assessment guidance
Q = Detected concentration is below the method reporting limit/CRQL.
RBC = Risk Based Concentration
U = The material was analyzed for but was not detected. The associated numerical value is the CRQL or sample detection limit.

Table 8 Sediment Sample Analytical Results Summary - Former Log and Fire Suppresion Ponds

EPA Sample ID Station Location Description CLP Sample Number Sample Depth (bgs)	Back-ground Metals [a]	Regulatory Cleanup Value [b]	20375654 PD01SD JLTX4 0 - 6 in	20375655 PD02SD JLTX5 0 - 6 in	20375656 PD03SD JLTX6 0 - 6 in	20375657 PD04SD JLTX7 0 - 6 in	20375658 PD05SD JLTX8 0 - 6 in	20375659 PD06SD JLTX9 0 - 12 in	20375660 PD07SD JLTY0 0 - 12 in	20375661 PD08SD JLTY1 0 - 12 in	20375662 PD09SD JLTY2 0 - 12 in
Dioxins/Furans (ng/kg)											
1,2,3,4,6,7,8-HpCDD	--	--	3200	2600	2500	100	43	44	100	69	16
1,2,3,4,6,7,8-HpCDF	--	--	880	700	620	26	9.3	12	23	15	3.7 JQ
1,2,3,4,7,8,9-HpCDF	--	--	68	51	44	1.8 JQ	0.72 JQ	0.79 JQ	1.5 JQ	1 JQ	0.36 U
1,2,3,4,7,8-HxCDD	--	--	33	35	33	1.8 JQ	0.59 JQ	0.75 JQ	1.5 JQ	1.2 JQ	0.52 U
1,2,3,4,7,8-HxCDF	--	--	83	71	63	2.3 JQ	0.66 JQ	1 JQ	1.9 JQ	1.2 JQ	0.44 U
1,2,3,6,7,8-HxCDD	--	--	140	120	150	5.2	2.4 JQ	2.4 JQ	6	3.7 JQ	0.94 JQ
1,2,3,6,7,8-HxCDF	--	--	39	32	29	1.6 JQ	0.37 U	0.76 JQ	1.2 JQ	0.79 JQ	0.37 U
1,2,3,7,8,9-HxCDD	--	--	60	67	62	5.4	1.8 JQ	1.3 JQ	2.9 JQ	2.3 JQ	0.55 U
1,2,3,7,8,9-HxCDF	--	--	27	22	23	0.77 JQ	0.47 U	0.49 JQ	0.76 JQ	0.49 JQ	0.47 U
1,2,3,7,8-PeCDD	--	--	21	25	24	1 JQ	0.38 JQ	0.61 JQ	0.78 JQ	0.75 JQ	0.31 JQ
1,2,3,7,8-PeCDF	--	--	13	11	11	0.75 JQ	0.3 U	0.42 JQ	0.53 JQ	0.42 JQ	0.3 U
2,3,4,6,7,8-HxCDF	--	--	60	53	48	1.8 JQ	0.44 U	0.97 JQ	1.6 JQ	1 JQ	0.44 U
2,3,4,7,8-PeCDF	--	--	33	30	28	1.4 JQ	0.31 JQ	0.86 JQ	1.2 JQ	0.83 JQ	0.32 JQ
2,3,7,8-TCDD	--	9	7.1	4.5	4.5	0.99 JQ	1.1	3.6	0.88 JQ	1.5	0.37 JQ
2,3,7,8-TCDF	--	--	3.1	2.9	3.1	0.63 JQ	0.2 JQ	0.35 JQ	0.48 JQ	0.49 JQ	0.18 JQ
OCDD	--	--	33000 J	24000 J	24000 J	870	410	330	720	550	120
OCDF	--	--	2600	1600	1400	68	35	30	57	39	7.5 JQ
TEQ (Bird)	--	9	110	100	99	5.9 J	2.5 J	6.2 J	4.7 J	4.5 J	1.2 J
TEQ (Fish)	--	9	100	96	90	4.9 J	2.2 J	5.6 J	4.1 J	4 J	0.92 J
TEQ (Mammal)	--	9	140	120	120	5.9 J	2.8 J	6 J	5.1 J	4.7 J	1.1 J
Target Analyte List Metals (mg/kg)											
Aluminum	--	--	25200	25400	23200	20900	19100	17400	20700	20900	22000
Arsenic	12	6	2.6	2.7	3.3	3.2	2.4	3	3.9	4.5	4.9
Barium	630	--	124	137	190	129	75.7	92.8	119	101	86.9
Beryllium	1.4	--	0.74 JQ	0.73	0.81 JQ	0.85	0.68	0.6	0.77	0.72	0.81
Calcium	--	--	2780	2590	7350	1580	2920	1350	1570	1350	487 JQ
Chromium	890	37	75	74.6	78.1	49	51.3	40.9	47.7	48.5	46.2
Cobalt	--	--	13.7	13.4	15.4	15	10.6	10.6	14	11.5	13
Copper	110	36	46.1	53.6	72	33.7	32.9	25.6	30.6	30.6	30.2
Iron	--	--	32400	32400	42200	29600	29100	19100	28100	25900	32100
Lead	36	35	12.7 J	17.4 J	44.2 J	9.3	7.4	7	8.2	8.2	6.9
Magnesium	--	--	11000	9140	9030	4120	8010	3700	3820	3850	5680
Manganese	3000	1100	360	331	660	332	336	162	316	184	269
Mercury	0.17	0.2	0.24 U	0.19	0.28 U	0.2	0.16 U	0.13	0.14	0.16	0.18 U
Nickel	630	18	84.9	70	68.5	52.3	56.7	45	53.4	51.5	53.8
Potassium	--	--	256 JQ	510	491 JQ	253 JQ	375 JQ	432 U	492 U	492 U	371 JQ
Vanadium	290	--	53.6 J	60.7 J	56.3 J	52.2	47	53.3	58.4	69.6	56.3
Zinc	140	123	130	135	277	87.9	64.1	68.4	71.8	81.8	105

Table 8 Sediment Sample Analytical Results Summary - Former Log and Fire Suppresion Ponds

EPA Sample ID Station Location Description CLP Sample Number Sample Depth (bgs)	Back-ground Metals [a]	Regulatory Cleanup Value [b]	20375654 PD01SD JLTX4 0 - 6 in	20375655 PD02SD JLTX5 0 - 6 in	20375656 PD03SD JLTX6 0 - 6 in	20375657 PD04SD JLTX7 0 - 6 in	20375658 PD05SD JLTX8 0 - 6 in	20375659 PD06SD JLTX9 0 - 12 in	20375660 PD07SD JLTY0 0 - 12 in	20375661 PD08SD JLTY1 0 - 12 in	20375662 PD09SD JLTY2 0 - 12 in
Semivolatile Organic Compounds (µg/kg)											
2-Methylnaphthalene	--	--	5.6 JQ	**13**	**13**	18 U	0.81 JQ	16 U	13 U	16 U	6.8 U
Benzo(a)anthracene	--	32	5.8 JQ	**32 J**	**12 J**	18 U	4.9 U	16 U	13 U	16 U	6.8 U
Benzo(b)fluoranthene	--	--	7.6 JQ	**24**	6.3 JQ	18 U	1 JQ	7.3 JQ	4 JQ	16 U	1.9 JQ
Chrysene	--	57	8.9 JQ	**13 J**	7.9 JQ	2.7 JQ	0.97 JQ	3.6 JQ	13 U	16 U	1.7 JQ
Fluoranthene	--	111	**18**	**45**	**18**	2.5 JQ	0.97 JQ	6.9 JQ	**28 J**	5.7 JQ	6.8 U
Naphthalene	--	176	8.9 JQ	**12**	**13**	18 U	4.9 U	16 U	13 U	16 U	6.8 U
Pentachlorophenol	--	--	**20**	14 JQ	8.9 JQ	37 U	10 U	32 U	27 U	33 U	14 U
Phenanthrene	--	42	**26**	**53**	**36**	4.7 JQ	3.5 JQ	5.1 JQ	4.1 JQ	4.1 JQ	3.8 JQ
Pyrene	--	53	**14**	**14 J**	7.7 JQ	18 U	0.58 JQ	4.1 JQ	13 U	16 U	6.8 U
PAH TEQ	--	32	**6.5**	**11.7**	**6.7**	**10.1**	**2.7**	**9.3**	**7.6**	**8.9**	**3.9**
Total Organic Carbon (mg/kg)											
Total Organic Carbon	--	--	**111000**	**100000**	**228000**	**178000**	**68600**	**136000**	**137000**	**153000**	**47100**

Notes: **Bold** type indicates the sample result is above the sample quantitation limit.

74 Grey shaded cell with **underlined and bolded type** designates value above Level II Screening Value for Freshwater Sediment but below background metals concentration for inorganic constituents.

277 Orange shaded cell with **underlined and bolded type** designates value above both Level II Screening Value for Freshwater Sediment and background metals concentration.

a = Values are background levels of metals in soils for cleanups as provided by an ODEQ 2018 fact sheet for the Klammath Mountains region.

b = Value is Level II SLV for Freshwater Sediment, non-bioacucmulative from ODEQ 1998 guidance document.

Key:

-- = Not available or applicable for given constituent
µg/kg = micrograms per kilogram
mg/kg = milligrams per kilogram
bgs = below ground surface
CLP = Contract Laboratory Program
CRQL = Contract Required Quanitation Limit
EPA = United States Environmental Protection Agency
ID = Identification.
in = inches
J = The associated numerical value is an estimated quantity because the reported concentrations were less than the sample quantitation limits or because quality control criteria limits were not met.
PAH = Polycyclic aromatic hydrocarbons
Q = Detected concentration is below the method reporting limit/CRQL.
SLV = Screening Level Value
TEQ = Toxicity Equivalent Quotient. All calculated TEQ values are compared to Level II SLV for 2,3,7,8-TCDD.
U = The material was analyzed for but was not detected. For all but PAH TEQ, the associated numerical value is the CRQL or sample detection limit.

Table 9 Surface Water Sample Analytical Results Summary - Former Log and Fire Suppression Ponds (Ecological)

EPA Sample ID Station Location Description CLP Sample Number	Level II SLV *	20375719 PD01SW JLW39	20375720 PD01SW-D MJLW40	20375721 PD05SW JLW41	20375722 PD05SW-D MJLW42	20375723 PD06SW JLW43	20375724 PD06SW-D MJLW44	20375725 PD09SW JLW45	20375726 PD09SW-D MJLW46
Dioxins/Furans (pg/L)									
1,2,3,4,6,7,8-HpCDD	--	13 JQ	--	4.1 U	--	4.2 U	--	8 JQ	--
1,2,3,4,6,7,8-HpCDF	--	4.3 JQ	--	3.3 U	--	3.4 U	--	3.4 U	--
1,2,3,4,7,8,9-HpCDF	--	2.4 U	--	2.4 U	--	2.4 U	--	2.8 U	--
1,2,3,4,7,8-HxCDD	--	1.5 U	--	1.4 U	--	1.5 U	--	1.4 U	--
1,2,3,4,7,8-HxCDF	--	3.2 U	--	3.2 U	--	3.2 U	--	3.2 U	--
1,2,3,6,7,8-HxCDD	--	2.1 U	--	2.1 U	--	2.1 U	--	2.1 U	--
1,2,3,6,7,8-HxCDF	--	2.7 U	--	2.7 U	--	2.7 U	--	2.7 U	--
1,2,3,7,8,9-HxCDD	--	2.1 U	--	2.1 U	--	2.1 U	--	2.1 U	--
1,2,3,7,8,9-HxCDF	--	3.8 U	--	3.7 U	--	3.8 U	--	3.7 U	--
1,2,3,7,8-PeCDD	--	3.7 U	--	3.6 U	--	3.7 U	--	3.6 U	--
1,2,3,7,8-PeCDF	--	3.8 U	--	3.7 U	--	3.8 U	--	3.7 U	--
2,3,4,6,7,8-HxCDF	--	3.4 U	--	3.3 U	--	3.4 U	--	3.4 U	--
2,3,4,7,8-PeCDF	--	3.4 U	--	3.3 U	--	3.4 U	--	3.4 U	--
2,3,7,8-TCDD	7600 [m]	0.99 U	--	1.1 U	--	0.72 U	--	0.71 U	--
2,3,7,8-TCDF	--	1.1 U	--	1.1 U	--	1.1 U	--	1.1 U	--
OCDD	--	**130**	--	24 JQ	--	16 JQ	--	94 JQ	--
OCDF	--	9.1 JQ	--	6.3 U	--	6.4 U	--	6.3 U	--
TEQ (Bird)	100000 [b]	**0.07 J**	--	**0.0024 J**	--	**0.0016 J**	--	**0.017 J**	--
TEQ (Fish)	--	**0.07 J**	--	**0.0024 J**	--	**0.0016 J**	--	**0.017 J**	--
TEQ (Mammal)	7600 [m]	**0.21 J**	--	**0.0072 J**	--	**0.0048 J**	--	**0.11 J**	--
Target Analyte List Metals (µg/L)									
Aluminum	87 [a]	**343**	200 U	179 JQ	200 U	196 JQ	200 U	107 JQ	200 U
Barium	4 [a]	**12.7**	**12.5**	**14.7**	**14.9**	**14.8**	**13.9**	**12.6**	**13.6**
Iron	1000 [a]	**1780**	**398**	**628**	**166**	**605**	100 U	**318**	100 U
Manganese	120 [a]	**51.2**	**36.8**	**23.6**	**16.6**	**39.1**	**23.3**	**16.7**	15 U
Sodium	--	**8170**	**8140**	**7850**	**8210**	**7910**	**8190**	**7850**	**8120**

Notes: **Bold** type indicates the sample result is above the sample quantitation limit.

74 Grey shaded cell with **underlined and bolded type** designates value above Level II SLV for exposure by the referenced receptor.

* = Value is lowest Level II Screening Value for constituent in Surface Water, as referenced in ODEQ's 1998 Ecological Risk Assessment Guidance.
Superscript letter designates associated receptor. Values have not been adjusted in consideration of exposure to non-threatened or endangered species.

a = Value for aquatic receptor

m = Value for mammal receptor

Key:

-- = Not available, applicable, or analyzed for given constituent.

CLP = Contract Laboratory Program

-D = Suffix used to designate filtered sample for dissolved constituents

EPA = United States Environmental Protection Agency

ID = Identification

J = The analyte was positively identified and the associated numerical value is an estimated quantity.

µg/L = Micrograms per liter

pg/L = Picograms per liter

Q = Result is estimated because the concentration is below the Contract Required Quantitation Limits.

SLV = Screening Level Value

TEQ = Toxicity Equivalent Quotient. Values are compared to RBC for 2,3,7,8-TCDD. See Section 4.2 of TBA report for information on how TEQ was calculated.

U = The material was analyzed for but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Table 10 Groundwater Sample Analytical Results Summary (Ecological)

EPA Sample ID Station Location Description CLP Sample Number	Level II SLV *	20375677 SL01GW JLTZ7	20375678 SL01GW-D MJLTZ8	20385679 EW01GW JLTZ9	20385680 EW01GW-D MJLW00	20375685 SL05GW JLW05	20375686 SL05GW-D MJLW06	20375687 SL06GW JLW07	20375688 SL06GW-D MJLW08	20375689 SL07GW JLW09	20375690 SL07GW-D MJLW10	20375691 SL10GW JLW11	20375692 SL10GW-D MJLW12
Sampling Area		Former Maintenance Bldg				PCP in Groundwater and Potential UST						Former Transformer	
Dioxins/Furans (pg/L)													
1,2,3,4,6,7,8-HpCDD	--	--	--	--	--	43 JQ	--	4.4 U	--	4.3 U	--	--	--
1,2,3,4,6,7,8-HpCDF	--	--	--	--	--	6.5 JQ	--	3.5 U	--	3.5 U	--	--	--
1,2,3,4,7,8,9-HpCDF	--	--	--	--	--	2.4 U	--	2.5 U	--	2.5 U	--	--	--
1,2,3,4,7,8-HxCDD	--	--	--	--	--	1.5 U	--	1.6 U	--	1.5 U	--	--	--
1,2,3,4,7,8-HxCDF	--	--	--	--	--	3.2 U	--	3.3 U	--	3.3 U	--	--	--
1,2,3,6,7,8-HxCDD	--	--	--	--	--	3.3 JQ	--	2.2 U	--	2.2 U	--	--	--
1,2,3,6,7,8-HxCDF	--	--	--	--	--	2.7 U	--	2.8 U	--	2.8 U	--	--	--
1,2,3,7,8,9-HxCDD	--	--	--	--	--	2.1 U	--	2.2 U	--	2.2 U	--	--	--
1,2,3,7,8,9-HxCDF	--	--	--	--	--	3.8 U	--	4 U	--	3.9 U	--	--	--
1,2,3,7,8-PeCDD	--	--	--	--	--	3.7 U	--	3.9 U	--	3.8 U	--	--	--
1,2,3,7,8-PeCDF	--	--	--	--	--	3.8 U	--	4 U	--	3.9 U	--	--	--
2,3,4,6,7,8-HxCDF	--	--	--	--	--	3.4 U	--	3.5 U	--	3.5 U	--	--	--
2,3,4,7,8-PeCDF	--	--	--	--	--	3.4 U	--	3.5 U	--	3.5 U	--	--	--
2,3,7,8-TCDD	0.0076 [m]	--	--	--	--	1.1 U	--	1.1 U	--	1.1 U	--	--	--
2,3,7,8-TCDF	--	--	--	--	--	1.1 U	--	1.1 U	--	1.1 U	--	--	--
OCDD	--	--	--	--	--	**340**	--	7.9 U	--	10 JQ	--	--	--
OCDF	--	--	--	--	--	28 JQ	--	6.7 U	--	6.7 U	--	--	--
TEQ (Bird)	100000	--	--	--	--	**0.18 J**	--	**0**	--	**0.001 J**	--	--	--
TEQ (Fish)	--	--	--	--	--	**0.18 J**	--	**0**	--	**0.001 J**	--	--	--
TEQ (Mammal)	7600	--	--	--	--	**0.93 J**	--	**0**	--	**0.003 J**	--	--	--
Target Analyte List Metals (µg/L)													
Arsenic	150 [a]	--	1 U	--	1 U	--	0.09 JQ	--	1 U	--	1 U	--	1 U
Barium	4 [a]	--	**14.6**	--	**15.1**	--	7.9 JQ	--	8.6 JQ	--	8 JQ	--	8.9 JQ
Calcium	116000 [a]	--	2690 JQ	--	2820 JQ	--	**7180**	--	**6390**	--	**6280**	--	**9280**
Copper	9 [a]	--	2 U	--	**5.3**	--	2 U	--	2 U	--	2 U	--	**9.1**
Iron	1000 [a]	--	100 U	--	100 U	--	**1960 J**	--	100 U	--	**228 J**	--	100 U
Magnesium	82000 [a]	--	2150 JQ	--	2490 JQ	--	4210 JQ	--	**5430**	--	4000 JQ	--	3340 JQ
Manganese	120 [a]	--	**40.9**	--	**45.8**	--	**529**	--	**669**	--	**546**	--	**29**
Mercury	0.77 [a]	--	0.2 U	--	0.2 U	--	0.2 U	--	0.2 U	--	0.2 U	--	0.2 U
Sodium	--	--	**7350**	--	**7620**	--	**6770**	--	**8370**	--	**6910**	--	**6500**
Semivolatile Organic Compounds (µg/L)													
Pentachlorophenol	15 [a]	0.2 U	--	0.2 U	--	0.061 JQ	--	0.2 U	--	0.21 U	--	0.21 UJ	--
Volatile Organic Compounds (µg/L)													
Methylcyclohexane	--	0.5 U	--	0.5 U	--	0.5 U	--	0.5 U	--	0.5 U	--	--	--
Total Petroleum Hydrocarbons (µg/L)													
Gasoline Range Organics	--	50 U	--	50 U	--	50 U	--	50 U	--	50 U	--	--	--

Table 10 Groundwater Sample Analytical Results Summary (Ecological)

EPA Sample ID Station Location Description CLP Sample Number	Level II SLV *	20375703 SL15GW JLW23	20375704 SL15GW-D MJLW24	20375707 SL18GW JLW27	20375708 SL18GW-D MJLW28	20375709 SL20GW JLW29	20375710 SL20GW-D MJLW30	20375711 SL21GW JLW31	20375712 SL21GW-D MJLW32	20375713 SL22GW JLW33	20375714 SL22GW-D MJLW34	20385681 TP3GW JLW01	20385682 TP3GW-D MJLW02	20385715 TP23GW JLW35	20385716 TP23GW-D MJLW36
Sampling Area		Southern Wigwam Burner						Former Stud Mill and Vicinity						Log Pond Perimeter	
Dioxins/Furans (pg/L)															
1,2,3,4,6,7,8-HpCDD	--	41 JQ	--	10 JQ	--	**160**	--	10 JQ	--	8.5 JQ	--	--	--	4.4 U	--
1,2,3,4,6,7,8-HpCDF	--	3.6 JQ	--	3.5 U	--	28 JQ	--	3.5 U	--	3.5 U	--	--	--	3.5 U	--
1,2,3,4,7,8,9-HpCDF	--	2.5 U	--	2.5 U	--	2.5 U	--	2.5 U	--	2.5 U	--	--	--	2.5 U	--
1,2,3,4,7,8-HxCDD	--	1.5 U	--	1.5 U	--	1.8 U	--	1.5 U	--	1.5 U	--	--	--	1.5 U	--
1,2,3,4,7,8-HxCDF	--	3.3 U	--	3.3 U	--	3.3 U	--	3.3 U	--	3.3 U	--	--	--	3.3 U	--
1,2,3,6,7,8-HxCDD	--	2.9 JQ	--	2.2 U	--	5 JQ	--	2.2 U	--	2.2 U	--	--	--	2.2 U	--
1,2,3,6,7,8-HxCDF	--	2.8 U	--	2.8 U	--	2.8 U	--	2.8 U	--	2.8 U	--	--	--	2.8 U	--
1,2,3,7,8,9-HxCDD	--	2.5 JQ	--	2.2 U	--	3.1 JQ	--	2.2 U	--	2.2 U	--	--	--	2.2 U	--
1,2,3,7,8,9-HxCDF	--	3.9 U	--	3.9 U	--	3.9 U	--	3.9 U	--	3.9 U	--	--	--	4 U	--
1,2,3,7,8-PeCDD	--	3.8 U	--	3.8 U	--	3.8 U	--	3.8 U	--	3.8 U	--	--	--	3.9 U	--
1,2,3,7,8-PeCDF	--	3.9 U	--	3.9 U	--	3.9 U	--	3.9 U	--	3.9 U	--	--	--	4 U	--
2,3,4,6,7,8-HxCDF	--	3.5 U	--	3.5 U	--	3.5 U	--	3.5 U	--	3.5 U	--	--	--	3.5 U	--
2,3,4,7,8-PeCDF	--	3.5 U	--	3.5 U	--	3.5 U	--	3.5 U	--	3.5 U	--	--	--	3.5 U	--
2,3,7,8-TCDD	0.0076 [m]	1.1 U	--	0.99 U	--	1.2 U	--	1.1 U	--	1.1 U	--	--	--	0.75 U	--
2,3,7,8-TCDF	--	1.1 U	--	1.1 U	--	1.2 U	--	1.1 U	--	1.1 U	--	--	--	1.1 U	--
OCDD	--	**190**	--	83 JQ	--	**1600**	--	**120**	--	29 JQ	--	--	--	**11** JQ	--
OCDF	--	13 JQ	--	8.7 JQ	--	97 JQ	--	7 JQ	--	6.6 U	--	--	--	6.7 U	--
TEQ (Bird)	100000	**0.38 J**	--	**0.019 J**	--	**0.97 J**	--	**0.023 J**	--	**0.011 J**	--	--	--	**0.0011 J**	--
TEQ (Fish)	--	**0.15 J**	--	**0.019 J**	--	**0.69 J**	--	**0.023 J**	--	**0.011 J**	--	--	--	**0.0011 J**	--
TEQ (Mammal)	7600	**1 J**	--	**0.13 J**	--	**3.2 J**	--	**0.14 J**	--	**0.094 J**	--	--	--	**0.0033 J**	--
Target Analyte List Metals (µg/L)															
Arsenic	150 [a]	--	1 U	--	**1.8**	--	**2**	--	**2.6**	--	**3.2**	--	1 U	--	**2.1**
Barium	4 [a]	--	**12.7**	--	**14.9**	--	**12.6**	--	**17.4**	--	6.5 JQ	--	**32.9**	--	**15.6**
Calcium	116000 [a]	--	**12400**	--	**5260**	--	**6640**	--	**5030**	--	1890 JQ	--	3610 JQ	--	**3000** JQ
Copper	9 [a]	--	2 U	--	2 U	--	2 U	--	2 U	--	2 U	--	**2** U	--	2 U
Iron	1000 [a]	--	100 U	--	**13700 J**	--	**10900 J**	--	**14400 J**	--	**19400 J**	--	**726 J**	--	**10600 J**
Magnesium	82000 [a]	--	3110 JQ	--	3210 JQ	--	2780 JQ	--	2980 JQ	--	1610 JQ	--	3200 JQ	--	3160 JQ
Manganese	120 [a]	--	**58.8**	--	**1510**	--	**640**	--	**3010**	--	**463**	--	**65.7**	--	**609**
Mercury	0.77 [a]	--	0.2 U	--	0.2 U	--	0.2 U	--	0.2 U	--	0.2 U	--	0.2 U	--	0.2 U
Sodium	--	--	**8240**	--	**8230**	--	**8810**	--	**9360**	--	**7730**	--	**8670**	--	**8150**
Semivolatile Organic Compounds (µg/L)															
Pentachlorophenol	15 [a]	0.2 U	--	0.21 U	--	0.2 U	--	0.21 U	--	0.21 U	--	0.2 U	--	0.21 U	--
Volatile Organic Compounds (µg/L)															
Methylcyclohexane	--	0.5 U	--	0.5 U	--	0.5 U	--	0.5 U	--	0.5 U	--	--	--	--	--
Total Petroleum Hydrocarbons (µg/L)															
Gasoline Range Organics	--	50 U	--	50 U	--	50 U	--	50 U	--	50 U	--	--	--	--	--

Table 10 Groundwater Sample Analytical Results Summary (Ecological)

EPA Sample ID Station Location Description CLP Sample Number	Level II SLV *	20385717 TP25GW JLW37	20385718 TP25GW-D MJLW38	20385693 TP11GW JLW13	20385694 TP11GW-D MJLW14	20385695 TP12GW JLW15	20385696 TP12GW-D MJLW16	20385697 TP13GW JLW17	20385698 TP13GW-D MJLW18	20385699 EW02GW JLW19	20385700 EW02GW-D MJLW20	20385733 OP01GW-D MJLW53	20385734 OP01GW JLW54
Sampling Area		Log Pond Perimeter		Potential Eastern Waste Disposal Area and UST Location									
Dioxins/Furans (pg/L)													
1,2,3,4,6,7,8-HpCDD	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,3,4,6,7,8-HpCDF	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,3,4,7,8,9-HpCDF	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,3,4,7,8-HxCDD	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,3,4,7,8-HxCDF	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,3,6,7,8-HxCDD	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,3,6,7,8-HxCDF	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,3,7,8,9-HxCDD	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,3,7,8,9-HxCDF	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,3,7,8-PeCDD	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,3,7,8-PeCDF	--	--	--	--	--	--	--	--	--	--	--	--	--
2,3,4,6,7,8-HxCDF	--	--	--	--	--	--	--	--	--	--	--	--	--
2,3,4,7,8-PeCDF	--	--	--	--	--	--	--	--	--	--	--	--	--
2,3,7,8-TCDD	0.0076 [m]	--	--	--	--	--	--	--	--	--	--	--	--
2,3,7,8-TCDF	--	--	--	--	--	--	--	--	--	--	--	--	--
OCDD	--	--	--	--	--	--	--	--	--	--	--	--	--
OCDF	--	--	--	--	--	--	--	--	--	--	--	--	--
TEQ (Bird)	100000	--	--	--	--	--	--	--	--	--	--	--	--
TEQ (Fish)	--	--	--	--	--	--	--	--	--	--	--	--	--
TEQ (Mammal)	7600	--	--	--	--	--	--	--	--	--	--	--	--
Target Analyte List Metals (µg/L)													
Arsenic	150 [a]	--	**5.6**	--	1 U	--	**1.6**	--	1 U	--	1 U	0.2 JQ	--
Barium	4 [a]	--	**360**	--	**20.4**	--	**43.9**	--	**12.2**	--	**11.4**	**10.5**	--
Calcium	116000 [a]	--	**9150**	--	2210 JQ	--	**6010**	--	3370 JQ	--	3990 JQ	2210 JQ	--
Copper	9 [a]	--	2 U	--	2 U	--	2 U	--	2 U	--	2 U	2 U	--
Iron	1000 [a]	--	**160000 J**	--	100 U	--	**4460 J**	--	**223 J**	--	100 U	**1630 J**	--
Magnesium	82000 [a]	--	**6630**	--	1580 JQ	--	4760 JQ	--	2680 JQ	--	3730 JQ	1960 JQ	--
Manganese	120 [a]	--	**2680**	--	**25.9**	--	**104**	--	**112**	--	**42.3**	**59.8**	--
Mercury	0.77 [a]	--	**0.22**	--	0.2 U	--	0.2 U	--	0.2 U	--	0.2 U	0.2 U	--
Sodium	--	--	**12100**	--	**8150**	--	**12600**	--	**9300**	--	**9360**	**7830**	--
Semivolatile Organic Compounds (µg/L)													
Pentachlorophenol	15 [a]	0.21 U	--	0.2 U	--	0.2 U	--	0.2 U	--	0.2 U	--	--	0.21 U
Volatile Organic Compounds (µg/L)													
Methylcyclohexane	--	--	--	0.5 U	--	0.5 U	--	0.5 U	--	0.5 U	--	--	**0.77**
Total Petroleum Hydrocarbons (µg/L)													
Gasoline Range Organics	--	--	--	50 U	--	50 U	--	50 U	--	50 U	--	--	**140**

Notes:

	Bold type indicates the sample result is above the sample quantitation limit.
74	Grey shaded cell with **underlined and bolded type** designates value above Level II SLV for exposure by the referenced receptor.
* =	Value is lowest Level II Screening Value for constituent in Surface Water, as referenced in ODEQ's 1998 Ecological Risk Assessment Guidance. Superscript letter designates associated receptor. Values have not been adjusted in consideration of exposure to non-threatened or endangered species.
a =	Value for aquatic receptor
m =	Value for mammal receptor

Key:

-- =	Not available, applicable, or analyzed for given constituent.
CLP =	Contract Laboratory Program
-D =	Suffix used to designate filtered sample for dissolved consituents
EPA =	United States Environmental Protection Agency
ID =	Identification
J =	The analyte was positively identified and the associated numerical value is an estimated quantity.
µg/L =	Micrograms per liter
pg/L =	Picograms per liter
PCP =	Pentachlorophenol
Q =	Result is estimated because the concentration is below the Contract Required Quantitation Limits.
RBC =	Risk-based concentration for residential groundwater consumption.
TEQ =	Toxicity Equivalent Quotient. Values are compared to RBC for 2,3,7,8-TCDD. See Section 4.2 of TBA report for additional information on how TEQ was calculated.
U =	The material was analyzed for but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
UST =	Underground Storage Tank

Table 11 Surface Soil Sample Analytical Results Summary - Incremental Sampling Method (Ecological)

EPA Sample ID Station Location Description Sample Depth (bgs)	Back-ground Metals [a]	Level II Ecological RBC [b]				20375667 DU01SS 0-4 cm	20385668 DU02SS 0-4 cm	20385669 DU03SS 0-4 cm	20385670 DU04SS 0-4 cm	20385671 DU05SS 0-4 cm	20385672 DU06SS 0-4 cm	20385675 DU06SS-R 0-4 cm	20385676 DU06SS-T 0-4 cm	20385673 DU07SS 0-4 cm	20375674 DU08SS 0-4 cm
		P	Inv	Birds	M										
Dioxins/Furans (ng/kg)															
1,2,3,4,6,7,8-HpCDF	--	--	--	230	11	206	10.2	23.6	48.4	204	131	136	140	79.3	10.4
1,2,3,4,6,7,8-HpCDD	--	--	--	1500	7	1260	56.4	117	205	652	479	488	556	737	41
1,2,3,4,7,8,9-HpCDF	--	--	--	230	11	12.5	0.88 J	2.12 J	3.84	14.9	10.9	9.73	11.6	6.56	0.73 J
1,2,3,4,7,8-HxCDF	--	--	--	23	1.1	11.5	0.922 J	1.81 J	3.85	15.9	11.7	11.6	13	6.46	0.868 J
1,2,3,4,7,8-HxCDD	--	--	--	51	1.2	11.3	0.998 J	1.37 J	2.88	7.9 U	7.72	7.39	10.6	21.1	0.811 J
1,2,3,6,7,8-HxCDF	--	--	--	23	1.1	5.34 J	0.465 J	0.933 J	2.7	12.3 J	7.25	6.88	8.3	3.8	0.679 J
1,2,3,6,7,8-HxCDD	--	--	--	190	0.89	43.3	2.66	4.7	8.5	27.5	24.2	21.6	26	29.2	2.09 J
1,2,3,7,8,9-HxCDF	--	--	--	30	1.4	4.43 J	0.4 J	0.712 J	1.11 J	5.35 J	3.92	3.68 J	4.36	2.5 J	0.33 U
1,2,3,7,8,9-HxCDD	--	--	--	19	0.89	19.9	2.18 J	2.77	6.19	17.9	18.5	17.8	26.1	30	1.54 J
1,2,3,7,8-PeCDF	--	--	--	41	6.5	2.75 J	0.398 J	0.454 J	1.12 J	6.8 J	4.6	4.02	5	1.73 J	0.353 J
1,2,3,7,8-PeCDD	--	--	--	5.9	0.28	5.71 J	0.889 J	1.2 U	1.98 J	5.43 J	6.33	7.1	9.8	12.6	0.61 J
2,3,4,6,7,8-HxCDF	--	--	--	23	1.1	13 U	0.787 J	2 U	4.9 U	19 U	12.5	12 U	13 U	7.7 U	1.01 J
2,3,4,7,8-PeCDF	--	--	--	4.1	0.65	6.22 J	0.597 J	0.955 J	2.15 J	11.1 J	8.35	7.52	9.5	3.18	0.878 J
2,3,7,8-TCDF	--	--	--	6.4	3	1 J	0.622	0.37 U	0.678	9.5	5.67	5.53	5.53	1.67	0.424 J
2,3,7,8-TCDD	--	--	5	5.2	0.25	9.45	0.544	2.79	0.984	2.71	2.59	2.94	3.27	7.74	0.669
OCDF	--	--	--	14000	220	892	30	81.8	142	617	403	437	491	239	36
OCDD	--	--	--	19000	300	9930	501	966	1570	5640	3740	3760	4090	5160	364
TEQ (Bird)	--	--	--	5.2	--	33.60	3.46	6.78	8.91	40.60	31.73	31.64	38.40	33.89	3.31
TEQ (Fish)	--	--	--	--	--	32.69	2.81	6.29	7.87	27.63	23.74	24.15	30.56	37.42	2.68
TEQ (Mammal)	--	--	--	--	0.25	46.12	3.36	7.50	9.81	33.80	28.16	28.66	35.21	41.44	2.97
Target Analyte List Metals (mg/kg)															
Aluminum	--	--	--	--	--	25200	34300	34600	28900	21500	23300	25600	23200	26100	22200
Antimony	0.59	11	78	--	2.7	0.184 J	0.329 J	0.221 J	0.624 J	6.07 J	2.62 J	2.2 J	16.4 J	5.15 J	0.094 J
Arsenic	12	18	6.8	32	31	4.29 J	8.05 J	6.5 J	10.2 J	8.69 J	15.1 J	9.2 J	12.3 J	12.2 J	4.18 J
Barium	630	110	330	1200	8700	68.7	535	264	936	299	253	233	272	403	81.3
Beryllium	1.4	2.5	40	--	42	0.329	0.318	0.319	0.313	0.296	0.302	0.351	0.311	0.37	0.35
Cadmium	0.52	32	140	1.6	3.6	0.21	0.221	0.205	0.74	1.26	0.995	0.786	0.977	0.367	0.375
Calcium	--	--	--	--	--	3740	16500	6510	22000	8940	9910	9600	9460	12000	4340
Chromium	890	--	--	73	1600	78.5	93.4	94	83.4	68.8	81	83.6	89.1	72.5	67.1
Cobalt	--	13	--	170	640	14.6	15.3	15.8	14.8	16.1	19	17.8	18.6	16.4	23.1
Copper	110	70	80	43	70	50.8	85.3	70.1	111	183	279	242	167	92.8	57.3
Iron	--	--	--	--	--	35000 J	39400 J	39200 J	37900 J	49000 J	57900 J	51900 J	61200 J	43400 J	30300 J
Lead	36	120	1700	23	170	20.2 J	19.4 J	18 J	43.7 J	246 J	125 J	101 J	226 J	32.5 J	15.2 J
Magnesium	--	--	--	--	--	12500	14900	13700	13000	8640	9100	10500	9950	10400	11700
Manganese	3000	220	450	2700	5400	513	1340	896	2640	1070	879	799	978	1160	1140
Mercury	0.17	34	0.05	0.13	17	0.111	0.09	0.089	0.068	0.585	0.206	0.221	0.194	0.08	0.066
Nickel	630	38	280	81	21	76.3	101	98.5	84.7	72	83	86.2	83.5	73	69.8
Potassium	--	--	--	--	--	982	3880	2160	5230	2600	2690	2840	2540	3990	1060
Silver	0.16	560	--	26	140	0.06	0.412	0.181	0.991	0.439	0.309	0.234	0.366	0.167	0.067
Sodium	--	--	--	--	--	133	475	182	621	1410	1360	1720	1420	1560	174
Thallium	0.31	--	--	--	--	0.08	0.075	0.078	0.07	0.054	0.061	0.069	0.076	0.052	0.076
Vanadium	290	60	--	9.5	610	79.3	94.5	94.6	81.6	64	72.7	79.4	75	70.6	75.8
Zinc	140	160	120	120	980	150	187	178	462	383	416	382	431	148	93.1

Table 11 Surface Soil Sample Analytical Results Summary - Incremental Sampling Method (Ecological)

EPA Sample ID Station Location Description Sample Depth (bgs)	Back-ground Metals [a]	Level II Ecological RBC [b]				20375667 DU01SS 0-4 cm	20385668 DU02SS 0-4 cm	20385669 DU03SS 0-4 cm	20385670 DU04SS 0-4 cm	20385671 DU05SS 0-4 cm	20385672 DU06SS 0-4 cm	20385675 DU06SS-R 0-4 cm	20385676 DU06SS-T 0-4 cm	20385673 DU07SS 0-4 cm	20375674 DU08SS 0-4 cm
		P	Inv	Birds	M										
Semivolatile Organic Compounds (µg/kg)															
Methylnaphthalene, 2-	--	--	--	--	160000	**6.5 J**	1.8 JQ	3.2 JQ	**8.3 J**	**5.1 J**	**10 J**	**10 J**	**11 J**	**9 J**	4.7 JQ
Benzo(b)fluoranthene	--	18000	--	--	440000	0.38 UJ	0.38 UJ	1.5 JQ	4.2 JQ	2.6 JQ	2.7 JQ	3.9 JQ	**5.3 J**	2.6 JQ	4.2 JQ
Benzo(g,h,i)perylene	--	--	--	--	250000	0.4 UJ	0.4 UJ	0.4 UJ	1.4 JQ	1 JQ	0.95 JQ	2.2 JQ	**7.6 J**	1.2 JQ	1.7 JQ
Dibenzofuran	--	6100	--	--	--	**5 J**	4.5 UJ	4 UJ	**13 J**	**5.5 J**	**12 J**	**14 J**	**14 J**	5 UJ	3.2 UJ
Fluoranthene	--	--	10000	--	220000	**16 J**	3.7 UJ	4.6 UJ	**14 J**	**7.7 J**	**9.9 J**	**15 J**	**11 J**	**7.4 J**	**5.8 J**
Naphthalene	--	1000	--	34000	27000	**9.9 J**	**6.3 J**	**7.1 J**	**18 J**	**9.9 J**	**22 J**	**22 J**	**30 J**	**10 J**	4.6 UJ
Phenanthrene	--	--	5500	--	110000	**33 J**	**9.5 J**	**9.5 J**	**30 J**	**13 J**	**25 J**	**34 J**	**26 J**	**20 J**	**19 J**
Pyrene	--	--	10000	330000	230000	**7.7 J**	1.8 UJ	1.8 UJ	**6.1 J**	4.1 UJ	**6.1 J**	**9.4 J**	**6.3 J**	4.9 UJ	4.5 UJ
Total Organic Carbon (mg/kg)															
Total Organic Carbon	--	--	--	--	--		**55200**				**89900**				**115000**

Notes: **Bold** type indicates the sample result is above the sample quantitation limit.

43.1 Green shaded cell with italicized type designates value above lowest Level II RBC for given constituent, but below the regional metals background level. The cell with the lowest RBC for a given constituent has also been shaded green.

<u>19</u> Yellow shaded cell with double underlined type designates value above highest (or only for dioxin/furan TEQ) Level II RBC for given contituent. The cell with the highest (or only) RBC for a given constituent has also been shaded yellow.

161 <u>123</u> Diagonal hatching added to green and/or yellow shaded to cell to indicate value is also above regional background metals value.

a = Values are background levels of metals in soils for cleanups as provided by an ODEQ 2018 fact sheet for the Klammath Basin.

b = Values are the Level II RBC for the various terrestrial receptors. In all cases provided RBC is for species not listed as threatened or endangered

Key:

-- = Not available or applicable for given constituent
µg/kg = micrograms per kilogram
mg/kg = milligrams per kilogram
bgs = below ground surface
CLP = Contract Laboratory Program
CRQL = Contract Required Quanitation Limit
EPA = United States Environmental Protection Agency
ft = feet
ID = Identification.
Inv = Invertebrates
J = The associated numerical value is an estimated quantity because the reported concentrations were less than the sample quantitation limits or because quality control criteria limits were not met.
M = Mammals
ODEQ = Oregon Department of Environmental Quality
P = Plants
Q = Detected concentration is below the method reporting limit/CRQL.
RBC = Risk Based Concentration
TEQ = Toxicity Equivalent Quotient. Values for are compared to RBC for 2,3,7,8-TCDD. See Section 4.2 of TBA report for additional information on how TEQ was calculated.
U = The material was analyzed for but was not detected. The associated numerical value is the CRQL or sample detection limit.

ODEQ Level I Ecological Risk Assessment Attachments:

Attachment 1 – Guidance for Ecological Risk Assessment Checklist
Attachment 2 – Evaluation of Receptor-Pathway Interactions

ATTACHMENT 1
Ecological Scoping Checklist

Site Name	Former Western States Plywood
Date of Site Visit	9/8/2020 - 9/13/2020
Site Location	Port Orford, Oregon
Site Visit Conducted by	Janelle Leeson

Part ❶

CONTAMINANTS OF INTEREST Types, Classes, Or Specific Hazardous Substances ‡ Known Or Suspected	**Onsite**	**Adjacent to or in locality of the facility †**

‡ As defined by OAR 340-122-115(30) † As defined by OAR 340-122-115(34)

Part ❷

OBSERVED IMPACTS ASSOCIATED WITH THE SITE	**Finding**
Onsite vegetation (**N**one, **L**imited, **E**xtensive)	N
Vegetation in the locality of the site (**N**one, **L**imited, **E**xtensive)	N
Onsite wildlife such as macroinvertebrates, reptiles, amphibians, birds, mammals, other (**N**one, **L**imited, **E**xtensive)	L
Wildlife such as macroinvertebrates, reptiles, amphibians, birds, mammals, other in the locality of the site (**N**one, **L**imited, **E**xtensive)	N
Other readily observable impacts (**N**one, **D**iscuss below)	D

Discussion:
Observed impacts to water quality. A sheen on the water surface was observed in the fire suppression pond as well as on the surface of Bagley Creek.

ATTACHMENT 1
Ecological Scoping Checklist (cont'd)

Part ❸

SPECIFIC EVALUATION OF ECOLOGICAL RECEPTORS / HABITAT	**Finding**

SPECIFIC EVALUATION OF ECOLOGICAL RECEPTORS / HABITAT	Finding
Terrestrial - Wooded	
Percentage of site that is wooded	2.5
Dominant vegetation type (**E**vergreen, **D**eciduous, **M**ixed)	D **P ***
Prominent tree size at breast height, i.e., four feet (<6", 6" to 12", >12")	<6
Evidence / observation of wildlife (**M**acroinvertebrates, **R**eptiles, **A**mphibians, **B**irds, **M**ammals, **O**ther)	B, M
Terrestrial - Scrub/Shrub/Grasses	
Percentage of site that is scrub/shrub	48.8
Dominant vegetation type (**Sc**rub, **Sh**rub, **G**rasses, **O**ther)	G, Sc **P**
Prominent height of vegetation (<2', 2' to 5', >5')	<2
Density of vegetation (**D**ense, **P**atchy, **S**parse)	D **P**
Evidence / observation of wildlife (**M**acroinvertebrates, **R**eptiles, **A**mphibians, **B**irds, **M**ammals, **O**ther)	B, M
Terrestrial - Ruderal	
Percentage of site that is ruderal	24
Dominant vegetation type (**L**andscaped, **A**griculture, **B**are ground)	B **P**
Prominent height of vegetation (0', >0' to <2', 2' to 5', >5')	>0
Density of vegetation (**D**ense, **P**atchy, **S**parse)	S **P**
Evidence / observation of wildlife (**M**acroinvertebrates, **R**eptiles, **A**mphibians, **B**irds, **M**ammals, **O**ther)	B, M
Aquatic - Non-flowing (lentic)	
Percentage of site that is covered by lakes or ponds	0.5
Type of water bodies (**L**akes, **P**onds, **V**ernal pools, **I**mpoundments, **Lag**oon, **R**eservoir, **C**anal)	P
Size (acres), average depth (feet), trophic status of water bodies	0.14 acres
Source water (**R**iver, **St**ream, **G**roundwater, **I**ndustrial discharge, **Su**rface water runoff)	St
Water discharge point (**N**one, **R**iver, **St**ream, **G**roundwater, **W**etlands impoundment)	St, W
Nature of bottom (**M**uddy, **R**ocky, **S**and, **C**oncrete, **O**ther)	M **P**
Vegetation present (**S**ubmerged, **E**mergent, **F**loating)	S, E, F **P**
Obvious wetlands present (**Y**es / **N**o)	N
Evidence / observation of wildlife (**M**acroinvertebrates, **R**eptiles, **A**mphibians, **B**irds, **M**ammals, **O**ther)	B, M
Aquatic - Flowing (lotic)	
Percentage of site that is covered by rivers, streams (brooks, creeks), intermittent streams, dry wash, arroyo, ditches, or channel waterway	1.1
Type of water bodies (**R**ivers, **S**treams, **I**ntermittent Streams, **Dr**y wash, **A**rroyo, **Di**tches, **C**hannel waterway)	R, S
Size (acres), average depth (feet), approximate flow rate (cfs) of water bodies	0.3 acre **P**
Bank environment (cover: **V**egetated, **B**are / slope: **S**teep, **G**radual / height (in feet))	V, S
Source water (**R**iver, **St**ream, **G**roundwater, **I**ndustrial discharge, **Su**rface water runoff)	S, G, S
Tidal influence (**Y**es / **N**o)	N
Water discharge point (**N**one, **R**iver, **St**ream, **G**roundwater, **W**etlands impoundment)	W, R
Nature of bottom (**M**uddy, **R**ocky, **S**and, **C**oncrete, **O**ther)	R
Vegetation present (**S**ubmerged, **E**mergent, **F**loating)	**P**
Obvious wetlands present (**Y**es / **N**o)	Y
Evidence / observation of wildlife (**M**acroinvertebrates, **R**eptiles, **A**mphibians, **B**irds,	B

SPECIFIC EVALUATION OF ECOLOGICAL RECEPTORS / HABITAT	Finding
Mammals, **O**ther)	
Aquatic - Wetlands	
Obvious or designated wetlands present (**Y**es / **N**o)	Y
Wetlands suspected as site is/has (**A**djacent to water body, in **F**loodplain, **S**tanding water, **D**ark wet soils, **M**ud cracks, **D**ebris line, **W**ater marks)	A, S, D, D
Vegetation present (**S**ubmerged, **E**mergent, **S**crub/shrub, **W**ooded)	E, S **P**
Size (acres) and depth (feet) of suspected wetlands	7.2 acres
Source water (**R**iver, **St**ream, **G**roundwater, **I**ndustrial discharge, **Su**rface water runoff)	S, G
Water discharge point (**N**one, **R**iver, **St**ream, **G**roundwater, **I**mpoundment)	S, G
Tidal influence (**Y**es / **N**o)	N
Evidence / observation of wildlife (**M**acroinvertebrates, **R**eptiles, **A**mphibians, **B**irds, **M**ammals, **O**ther)	B

*** P**: Photographic documentation of these features is highly recommended.

Part ❹

ECOLOGICALLY IMPORTANT SPECIES / HABITATS OBSERVED
No endangered species or associated habitats observed. Potential bat roosting trees were observed and recorded.

ATTACHMENT 1
Ecological Scoping Checklist

Site Name	Former Western States Plywood
Date of Site Visit	9/8/2020 - 9/13/2020
Site Location	Port Orford, Oregon
Site Visit Conducted by	Janelle Leeson

Part ❶

CONTAMINANTS OF INTEREST Types, Classes, Or Specific Hazardous Substances ‡ Known Or Suspected	Onsite	Adjacent to or in locality of the facility †

‡ As defined by OAR 340-122-115(30) † As defined by OAR 340-122-115(34)

Part ❷

OBSERVED IMPACTS ASSOCIATED WITH THE SITE	Finding
Onsite vegetation (**N**one, **L**imited, **E**xtensive)	N
Vegetation in the locality of the site (**N**one, **L**imited, **E**xtensive)	N
Onsite wildlife such as macroinvertebrates, reptiles, amphibians, birds, mammals, other (**N**one, **L**imited, **E**xtensive)	L
Wildlife such as macroinvertebrates, reptiles, amphibians, birds, mammals, other in the locality of the site (**N**one, **L**imited, **E**xtensive)	N
Other readily observable impacts (**N**one, **D**iscuss below)	D

Discussion:
Observed impacts to water quality. A sheen on the water surface was observed in the fire suppression pond as well as on the surface of Bagley Creek.

ATTACHMENT 1
Ecological Scoping Checklist (cont'd)

Part ❸

SPECIFIC EVALUATION OF ECOLOGICAL RECEPTORS / HABITAT	Finding

SPECIFIC EVALUATION OF ECOLOGICAL RECEPTORS / HABITAT	Finding	
Terrestrial - Wooded		
Percentage of site that is wooded	2.5	
Dominant vegetation type (**E**vergreen, **D**eciduous, **M**ixed)	D	**P ***
Prominent tree size at breast height, i.e., four feet (<6", 6" to 12", >12")	<6	
Evidence / observation of wildlife (**M**acroinvertebrates, **R**eptiles, **A**mphibians, **B**irds, **M**ammals, **O**ther)	B, M	
Terrestrial - Scrub/Shrub/Grasses		
Percentage of site that is scrub/shrub	48.8	
Dominant vegetation type (**Sc**rub, **Sh**rub, **G**rasses, **O**ther)	G, Sc	**P**
Prominent height of vegetation (<2', 2' to 5', >5')	<2	
Density of vegetation (**D**ense, **P**atchy, **S**parse)	D	**P**
Evidence / observation of wildlife (**M**acroinvertebrates, **R**eptiles, **A**mphibians, **B**irds, **M**ammals, **O**ther)	B, M	
Terrestrial - Ruderal		
Percentage of site that is ruderal	24	
Dominant vegetation type (**L**andscaped, **A**griculture, **B**are ground)	B	**P**
Prominent height of vegetation (0', >0' to <2', 2' to 5', >5')	>0	
Density of vegetation (**D**ense, **P**atchy, **S**parse)	S	**P**
Evidence / observation of wildlife (**M**acroinvertebrates, **R**eptiles, **A**mphibians, **B**irds, **M**ammals, **O**ther)	B, M	
Aquatic - Non-flowing (lentic)		
Percentage of site that is covered by lakes or ponds	0.5	
Type of water bodies (**L**akes, **P**onds, **V**ernal pools, **I**mpoundments, **Lag**oon, **R**eservoir, **C**anal)	P	
Size (acres), average depth (feet), trophic status of water bodies	0.14 acres	
Source water (**R**iver, **St**ream, **G**roundwater, **I**ndustrial discharge, **Su**rface water runoff)	St	
Water discharge point (**N**one, **R**iver, **St**ream, **G**roundwater, **W**etlands impoundment)	St, W	
Nature of bottom (**M**uddy, **R**ocky, **S**and, **C**oncrete, **O**ther)	M	**P**
Vegetation present (**S**ubmerged, **E**mergent, **F**loating)	S, E, F	**P**
Obvious wetlands present (**Y**es / **N**o)	N	
Evidence / observation of wildlife (**M**acroinvertebrates, **R**eptiles, **A**mphibians, **B**irds, **M**ammals, **O**ther)	B, M	
Aquatic - Flowing (lotic)		
Percentage of site that is covered by rivers, streams (brooks, creeks), intermittent streams, dry wash, arroyo, ditches, or channel waterway	1.1	
Type of water bodies (**R**ivers, **S**treams, **I**ntermittent Streams, **D**ry wash, **A**rroyo, **D**itches, **C**hannel waterway)	R, S	
Size (acres), average depth (feet), approximate flow rate (cfs) of water bodies	0.3 acre	**P**
Bank environment (cover: **V**egetated, **B**are / slope: **S**teep, **G**radual / height (in feet))	V, S	
Source water (**R**iver, **St**ream, **G**roundwater, **I**ndustrial discharge, **Su**rface water runoff)	S, G, S	
Tidal influence (**Y**es / **N**o)	N	
Water discharge point (**N**one, **R**iver, **St**ream, **G**roundwater, **W**etlands impoundment)	W, R	
Nature of bottom (**M**uddy, **R**ocky, **S**and, **C**oncrete, **O**ther)	R	
Vegetation present (**S**ubmerged, **E**mergent, **F**loating)		**P**
Obvious wetlands present (**Y**es / **N**o)	Y	
Evidence / observation of wildlife (**M**acroinvertebrates, **R**eptiles, **A**mphibians, **B**irds,	B	

SPECIFIC EVALUATION OF ECOLOGICAL RECEPTORS / HABITAT	Finding
Mammals, **O**ther)	
Aquatic - Wetlands	
Obvious or designated wetlands present (**Y**es / **N**o)	Y
Wetlands suspected as site is/has (**A**djacent to water body, in **F**loodplain, **S**tanding water, **D**ark wet soils, **M**ud cracks, **D**ebris line, **W**ater marks)	A, S, D, D
Vegetation present (**S**ubmerged, **E**mergent, **S**crub/shrub, **W**ooded)	E, S **P**
Size (acres) and depth (feet) of suspected wetlands	7.2 acres
Source water (**R**iver, **St**ream, **G**roundwater, **I**ndustrial discharge, **Su**rface water runoff)	S, G
Water discharge point (**N**one, **R**iver, **St**ream, **G**roundwater, **I**mpoundment)	S, G
Tidal influence (**Y**es / **N**o)	N
Evidence / observation of wildlife (**M**acroinvertebrates, **R**eptiles, **A**mphibians, **B**irds, **M**ammals, **O**ther)	B

* **P**: Photographic documentation of these features is highly recommended.

Part ❹

ECOLOGICALLY IMPORTANT SPECIES / HABITATS OBSERVED
No endangered species or associated habitats observed. Potential bat roosting trees were observed and recorded.

APPENDIX B

LAND AND WATER BENEFICIAL USE DETERMINATION

MEMORANDUM

To: Max Beeken, Wild Rivers Land Trust | Date: August 25, 2022

From: Carolyn Wise, RG | Project No.: M2272.01.001

RE: Beneficial Land and Water Use Determination
Former Western States Plywood Cooperative Mill

On behalf of Wild Rivers Land Trust, Maul Foster & Alongi, Inc. (MFA) has prepared this beneficial land and water use determination (BLWUD) for the Former Western States Plywood Cooperative Mill (ECSI Site ID: 556) located at Elk River Road in Port Orford, Oregon (the Site). The Site consists of three tax lots (104, 900, and 901) in Curry County, Oregon (see Figure 1 and Figure 2).

SITE SETTING

The Site, as well as the adjacent Curry County tax lots 902 and 903, were formerly developed and operated as a plywood mill owned by Western States Plywood Cooperative. The mill was built in 1951 and operated until 1975. Historical features associated with the former mill are shown on Figure 2. The land has been vacant since a fire destroyed the mill in 1976. (WSP 2020)

Surface water on the Site includes former log and fire suppression ponds associated with historical mill operations, and Bagley Creek, which flows approximately south to north across the eastern side of the Site (Figure 2). Prior to the construction of the plywood mill, Bagley Creek discharged to Elk River. Historical plywood mill operations significantly disrupted the natural flow of Bagley Creek, and the majority of the diking and dams altering Bagley Creek remain in place. (WSP 2020)

Groundwater on the Site is typically present at depths between 10 and 15 feet below ground surface. The groundwater flow direction is inferred to range from an easterly to northwesterly direction based on topography and is likely subject to seasonal variation. (WSP 2020; HAI 2018).

LOCALITY OF FACILITY

The locality of facility (LOF) is any point where a human or an ecological receptor contacts or is reasonably likely to come into contact with chemical constituents from a facility (i.e., the Site). The LOF considers the likelihood of the chemical constituents migrating over time. Chemical data from the Site investigations are typically used to approximate the LOF. Historical data from previous environmental investigations at the Site were reviewed to determine the approximate LOF (WSP 2020; HAI 2018). Samples of multiple environmental media were collected on the Site and one adjoining tax lots (902) that encompassed the operational area of the former Western States Plywood Cooperative Mill (see Figure 3). Tax lot 903 was also part of the former Western States Plywood Cooperative Mill, however previous environmental investigations have not been able to access this property (WSP 2020).

Based on previous environmental investigations, recognized environmental conditions present at the Site include the following:

- The presence of dioxins/furans in Site soils and sediments at concentrations exceeding DEQ risk based concentrations (RBCs).

- The presence of dioxins/furans, pentachlorophenol, formaldehyde, and manganese in Site groundwater at concentrations exceeding DEQ RBCs.

- Sporadic detections of other organic compounds, including bis(2-ethyhexyl)phthalate, benzene, and total petroleum hydrocarbons in soil at concentrations exceeding DEQ RBCs.

- The presence of gasoline range petroleum hydrocarbons in one groundwater location at concentrations exceeding DEQ RBCs. The extent of the groundwater contamination associated with this location has not been fully characterized, but is likely to be spatially limited and is located off-Site.

There a number of metals are present in Site soils and sediments at concentrations that exceed DEB RBCs, but are below background concentrations. There are also a number of potential environmental concerns associated tax lot 903, including the historical presence of underground storage tanks (USTs) potentially associated with a former fueling area, and the presence of above ground storage tanks with unknown uses. (WSP 2020)

For purposes of this evaluation, the LOF for soil, surface water, and groundwater encompasses the entire Site and adjacent tax lots 902 and 903. Groundwater on the Site has been incompletely characterized, but likely discharges to both Bagley Creek and Elk River. The spatial distribution of available data suggests that groundwater discharging to Elk River from the Site is unlikely to be impacted by chemical constituents from Site, however in the absence of more complete groundwater characterization Elk River adjacent to the Site is included in the LOF for the purposes of this conservative evaluation.

METHODOLOGY

The beneficial water use determination (BWUD) is based on an understanding of the hydrogeologic setting of the Site based on previous investigations (WSP 2020; HAI 2018), regional data from published literature, and current land and water use on or near the Site consistent with the DEQ's guidance document for BWUDs.

The evaluation of land use within the LOF was conducted consistent with the DEQ's guidance document for land use (DEQ, 1998) and includes:

- Current land uses;
- Zoning, comprehensive plan, and other land use designations;
- Land use regulations from any governmental body having jurisdiction;
- Concerns of the facility owner, the neighboring owners, and the community; and,
- Other relevant factors

LAND USE

A land use survey was performed for the LOF in general accordance with the DEQ guidance for consideration of land use (DEQ 1998a). The current and reasonably anticipated future land use of the LOF was evaluated in accordance with Oregon Administrative Rule (OAR) 340-122-080(3)(e).

Current Zoning and Land Use

Curry County zoning for the Site and adjoining properties is shown in Figure 4. The Site is currently zoned as Rural Residential, which allows for low density residential development outside of rural communities and urban growth boundaries (Curry County 2018). While the Site zoning allows for residential development, there are currently no residences on the Site.

The Site is directly bordered to the north and west by properties designated as Forest Grazing Zones. Forest Grazing Zones are resource areas of the County where the primary land use is commercial forestry with some intermixed agricultural uses for livestock uses. Forest Grazing Zones do not allow residential use with the exception of caretaker residences for public parks and fish hatcheries (Curry County 2018). To the south and east the Site is bordered by properties zoned as Rural Residential, including tax lots 902 and 903 which are within the LOF. No residences are currently located on tax lots 902 and 903, however there are residences currently present on other lots which adjoin the Site to the south and east.

Reasonably Likely Future Land Use

Wild Rivers Land Trust (WRLT) has identified Bagley Creek, which crosses the Site as important historical fish habitat that has been compromised by the historical operation of the plywood mill. The proposed future land use for the Site is to restore the fish habitat along Bagley Creek by removal of the ponds, dams and spillways that prohibit fish from traveling up Bagley Creek to historic spawning grounds. The most likely future use of the Site is ecological habitat. Recreational use, including recreational access to surface water is also a reasonably likely future use.

The most likely future uses for nearby properties include rural residential use, as well as forestry and agricultural use. Tax lots 902 and 903 are not currently included in the proposed habitat restoration, however those properties may be incorporated into future habitat restoration work, so ecological restoration and recreation are both considered reasonably likely future uses for those properties.

GROUNDWATER USE

A water use survey was performed for the LOF in general accordance with the DEQ guidance for beneficial water use (DEQ 1998b). This includes consideration of the following OARs:

- OAR 340-122-080(3)(f): the current and likely future beneficial uses of groundwater and surface water,
- OAR 340-122-080(6): hazardous substances having significant adverse effects on beneficial uses of water, and
- OAR 340-122-085(5): feasibility of reasonable treatments needed to restore or protect beneficial uses of water within a reasonable timeframe.

Table 1 summarizes current, historical, and reasonably likely future beneficial uses of groundwater near the Site. The primary current beneficial uses of groundwater in the area are domestic drinking water and presumed recharge to surface water including Bagley Creek and Elk River.

A search of the Oregon Water Resources Department (OWRD) Well Report Mapping Tool identified eight water wells within an approximate 0.5-mile radius of the LOF (Figure 5). Well logs for these wells are presented in Attachment A. Two of these wells have been abandoned and are no longer in use. Five of the active wells list the primary water use as domestic. The final active well is associated with Well Log CURR 067, which lists the proposed use as Municipal, and the OWRD database lists the primary water use as Community. No water right certificate or permit is associated with this well. Review of aerial imagery through the OWRD Well Report Mapping Tool suggests that this well may be associated with a RV park.

In addition to the wells identified in OWRD records, previous Site investigations identified two wells located on the Site, designated as EW01 and EW02 (WSP 2020). No OWRD records associated with these wells were identified during review of OWRD databases. In WSP's Targeted Brownfields Assessment Report, EW01 is described as "a domestic well, constructed with a downhole pump and a hose spigot installed on aboveground piping extending from the well head." EW02 is described as "an approximately 30-inch diameter concrete cased well." (WSP 2020). These wells were sampled as part of previous environmental investigations, but are otherwise not currently in use for any purpose.

OWRD is responsible for apportioning water rights in Oregon and maintains an online database of water rights, the Water Rights Information System (WRIS) and a Water Rights Mapping tool. The WRIS provides information about water rights applications and locations of points of diversion and points of use. A search of the OWRD Water Rights Mapping Tool did not identify any water rights certificates or permits for diversion or use of groundwater within an approximate 0.5 miles radius of the LOF (Figure 6).

Based on the land use zoning of the LOF (rural residential), as well as common nearby uses of groundwater, and the proposed use of the Site as ecological habitat, reasonably likely future uses of groundwater within the LOF include drinking water and discharge to surface water to support resident fish and aquatic life.

SURFACE WATER USE

Table 2 summarizes the current, historical, and reasonably likely futures uses of surface water within 0.5 miles of the LOF. Current beneficial uses of surface water from Elk River include irrigation, domestic water supply, ecological habitat, and recreation. There are no current beneficial uses of Bagley Creek on or within 0.5 miles of the LOF.

Review of the OWRD Water Rights Mapping Tool identified one active water right certificate for diversion and use of surface water within the LOF (Figure 6). Water rights transfer T-4147 was recorded by OWRD in 1979 and approves a change in use for water rights certificate 23957 previously issued to Western States Plywood Cooperative. Transfer T-4147 approves the change in water use from manufacturing and maintenance of a log pond to fish rearing, including pond maintenance and fish culture in tanks (Attachment B). No fish culture operations are currently present on the Site, so this is not considered a current beneficial water use. No other current surface water rights are recorded within the LOF.

Review of the OWRD Water Rights Mapping Tool identifies seven other points of diversion for surface water rights within the LOF (Figure 6). One of these points along the Elk River directly north of the Site is associated with the water rights Transfer T-4147 described above. The other points of diversion are associated with the following uses:

- Two points of diversion are associated with water rights permit S 44337, which diverts water from an unnamed stream south of the Site and uses the water for domestic use and livestock watering.
- One point of diversion is associated with water right certificate 26303, which diverts water from Elk River upstream of the Site, and uses the water for irrigation.
- Three points of diversion are located in Elk River downstream of the Site, and are associated with water rights certificates 26428, 42388, and 79433. All three water rights divert water from Elk creek for irrigation.

All current beneficial water uses of Elk River surface water are considered reasonably likely future uses. Ecological habitat and recreation are considered reasonably likely future uses of Bagley Creek.

SUMMARY OF BENEFICIAL LAND AND WATER USES

Current land use within the LOF is vacant historical industrial land. Current land uses within 0.5 mile of the Site include rural residential land and commercial forestry and limited agriculture. Reasonably likely future land use within the LOF include ecological habitat and recreational use.

The primary current beneficial uses of groundwater within the LOF is presumed recharge of surface water, including Bagley Creek and Elk River. Current beneficial uses of groundwater in the area surrounding the LOF are domestic drinking water and presumed recharge to surface water including Bagley Creek and Elk River. Reasonably likely future uses of groundwater within the LOF and in the surrounding area include drinking water and discharge to surface water to support resident fish and aquatic life.

Current beneficial uses of surface water from Elk River within and surrounding the LOF include irrigation, domestic water supply, ecological habitat, and recreation. There are no current beneficial uses of Bagley Creek on or within 0.5 miles of the LOF. All current beneficial water uses of Elk River surface water are considered reasonably likely future uses. Ecological habitat and recreation are considered reasonably likely future uses of Bagley Creek.

REFERENCES

Curry County. 2018. *Curry County Zoning Ordinance.* August.

DEQ. 1998a. *Consideration of land use in environmental remedial actions.* Oregon Department of Environmental Quality. July 1. Updated October 2017.

DEQ. 1998b. *Guidance for conducting beneficial water use determinations at environmental cleanup sites.* Oregon Department of Environmental Quality. July 1. Updated November 2017.

HAI. 2018. *Draft Phase II Environmental Site Assessment Report. Log Pond Parcel and Tax Lot 104, Former Western States Plywood Cooperative Property, Port Orford, Curry County, Oregon.* Hahn and Associates, Inc. December 18.

WSP. 2020. *USA Inc. Former Western States Plywood Cooperative Mill Site Target Brownfield Assessment, Port Orford, Oregon*. December.

ATTACHMENTS

Figures
Attachments:
- A – Well Logs
- B – Water Rights Transfer Documents

TABLES

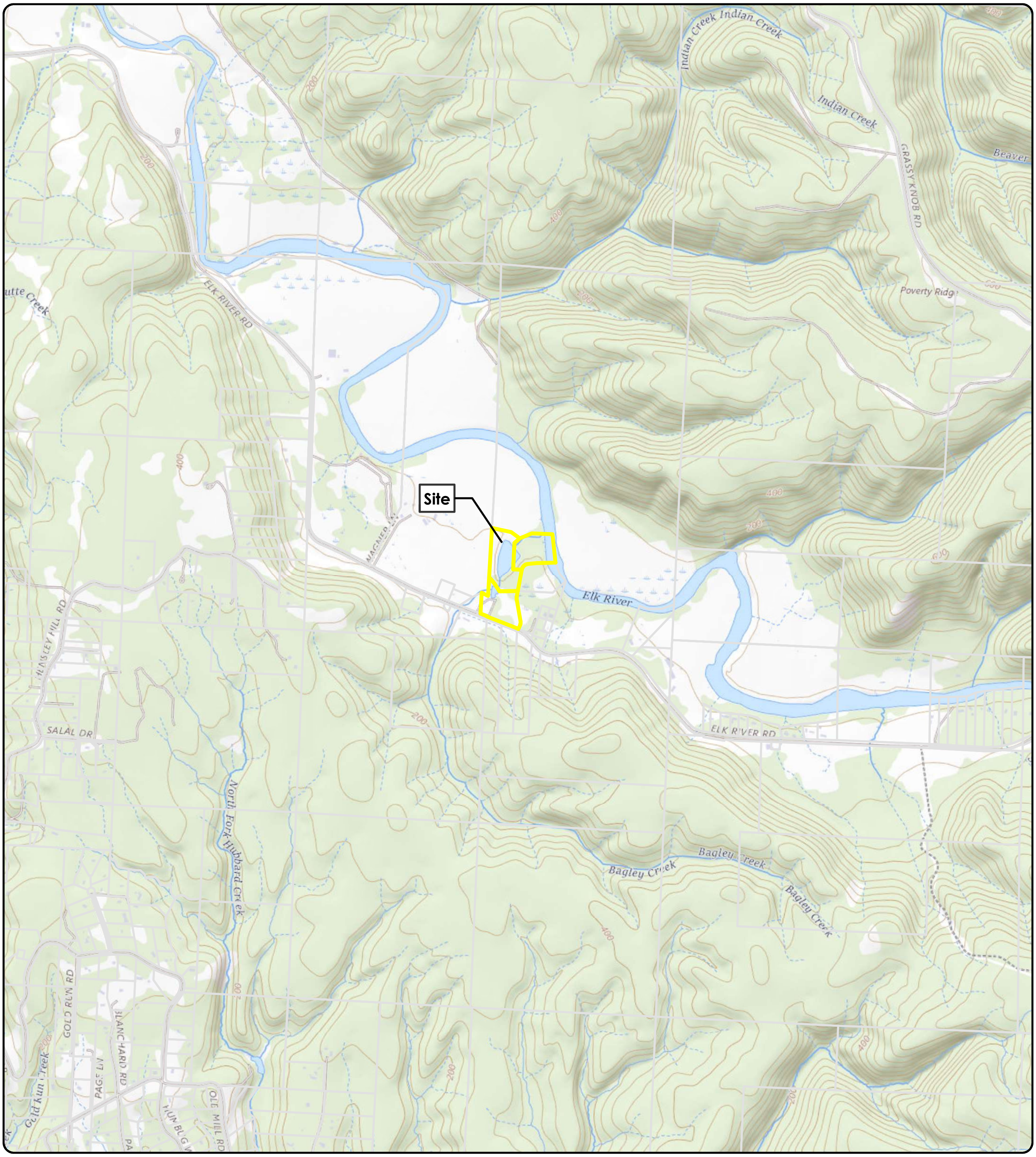
Table 1
Groundwater Use
Former Western States Cooperative Plywood Mill
Port Orford, Oregon

Beneficial Use	Historical	Current	Reasonably Likely Future
Public Domestic Water Supply	Yes	Yes	Yes
Private Domestic Water Supply	Yes	Yes	Yes
Industrial Water Supply	Yes	No	No
Irrigation	No	No	Yes
Livestock Watering	No	No	Yes
Resident Fish and Aquatic Life	Yes	Yes	Yes
Recreation	Yes	Yes	Yes
Aesthetic Quality	Yes	Yes	Yes
Surface Water Recharge	Yes	Yes	Yes
Engineering	No	No	No

Table 2
Surface Water Use
Former Western States Cooperative Plywood Mill
Port Orford, Oregon

Beneficial Use	Historical	Current	Reasonably Likely Future
Public Domestic Water Supply	No	No	No
Private Domestic Water Supply	Yes	Yes	Yes
Industrial Water Supply	Yes	No	No
Irrigation	Yes	Yes	Yes
Livestock Watering	Yes	Yes	Yes
Anadromous Fish Passage	Yes	Yes	Yes
Salmonid Fish Spawning	Yes	Yes	Yes
Resident Fish and Aquatic Life	Yes	Yes	Yes
Wildlife Habitat	Yes	Yes	Yes
Fishing	Yes	Yes	Yes
Boating	Yes	Yes	Yes
Water Contact Recreation	Yes	Yes	Yes
Aesthetic Quality	Yes	Yes	Yes
Hydro Power	No	No	No
Commercial Navigation and Transportation	No	No	No
Engineering	No	No	No

FIGURES



NOTES:
U.S. Geological Survey 7.5-minute
topographic quadrangle: Sixes.
Township 32 south, range 15 west, section 27.

Data Source:
Property boundary obtained from Curry County.

Legend

Property Boundary

Figure 1
Property Location

Wild Rivers Land Trust
Port Orford, Oregon

0 1,000 2,000
Feet

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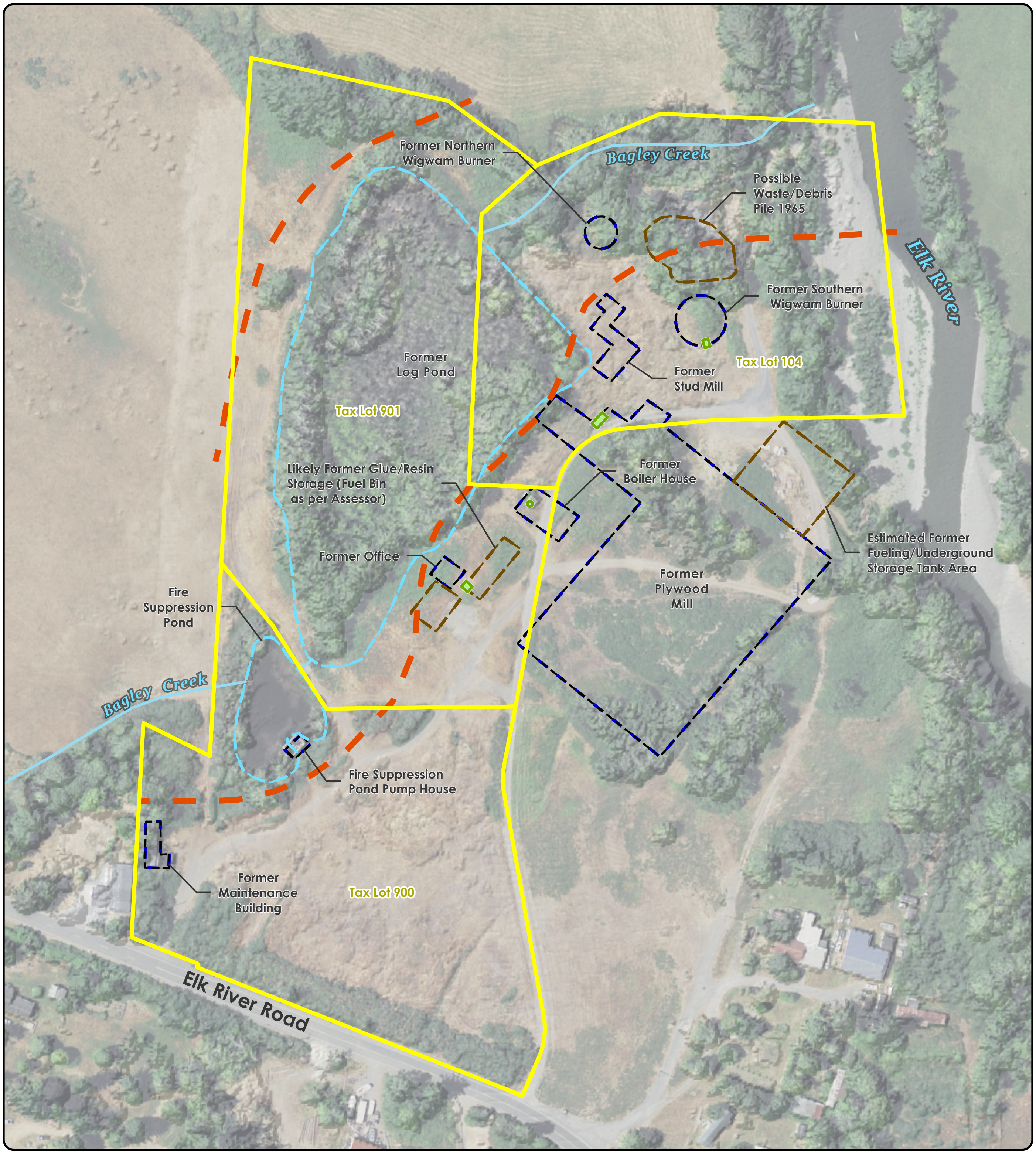
Project: M2272.01.001 Produced By: csifford Reviewed By: Print Date: 6/3/2022 Path: X:\0_MFA_Projects\M2272\01\001\Fig1_1_Property_Location.mxd



Notes:
All site features are approximate.

Data Sources:
Creek, possible restoration area, geophysical anomalies, and historic site features from HAI (2019). Property boundary obtained from Oregon Department of Revenue (2019).

Legend

- Geophysical Anomaly
- Building
- Other
- Pond
- Creek
- Possible Restoration Area
- Site Tax Lots

Figure 2
Historical Site Features

Wild Rivers Land Trust
Port Orford, OR

0 100 200
Feet

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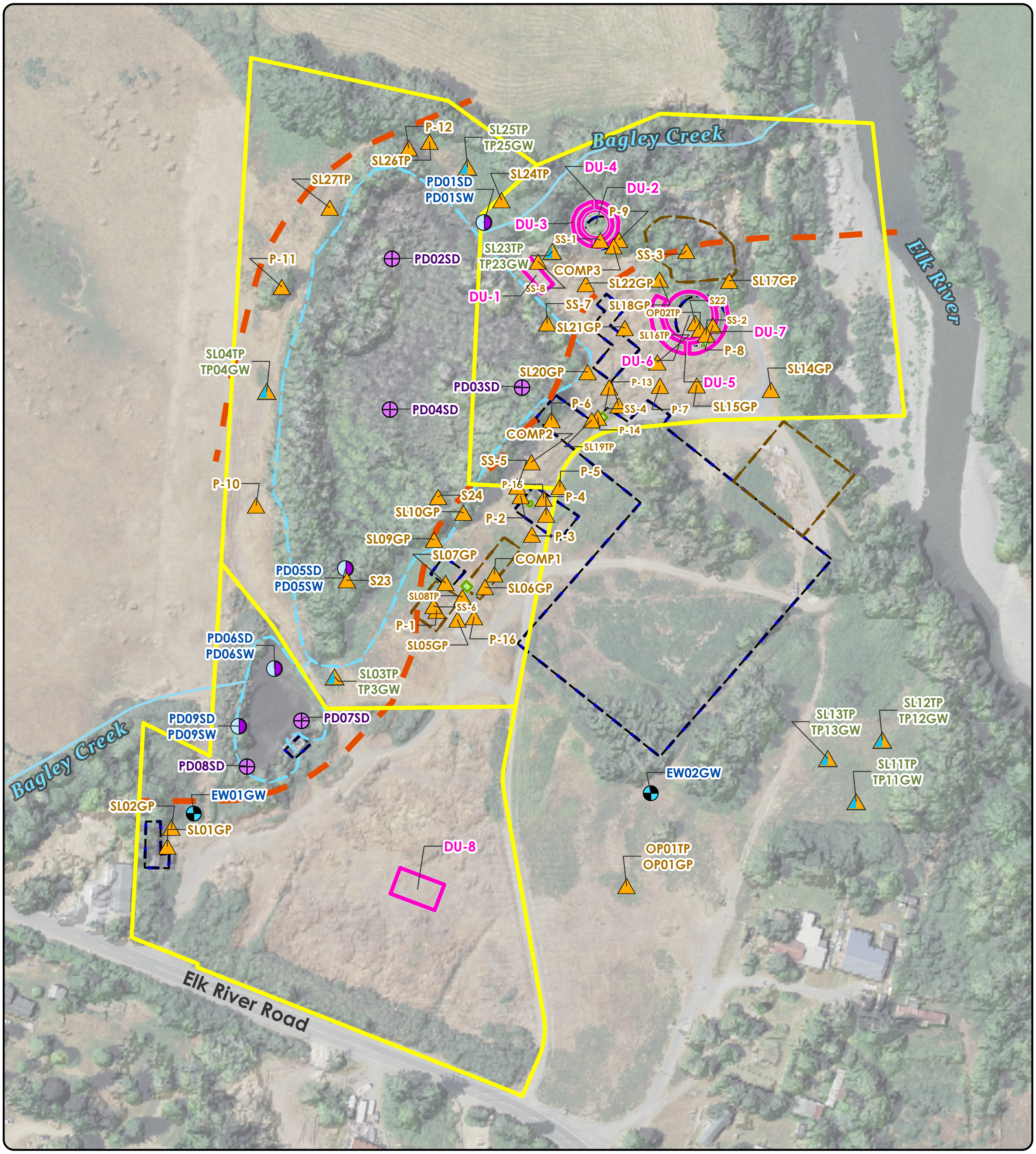
Project: M2272.01.001 Produced By: jroberts Reviewed By: csifford Print Date: 7/25/2022 Path: X:\0_MFA_Projects\M2272\01\001\Projects\Pro\M2272_01_001.aprx



Notes:
All site features are approximate.

Data Sources:
Historic sample locations from WSP (2020) and Hahn and Associates (2018). Creek, possible restoration area, geophysical anomalies, and historic site features from HAI (2019). Property boundary obtained from Oregon Department of Revenue (2019).

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Legend

- Soil Sample
- Sediment Sample
- Groundwater Sample
- Soil and Groundwater Sample
- Sediment and Surface Water Sample
- Decision Units
- Site Tax Lots
- Creek
- Possible Restoration Area

Historical Site Features

- Geophysical Anomaly
- Building
- Other
- Pond

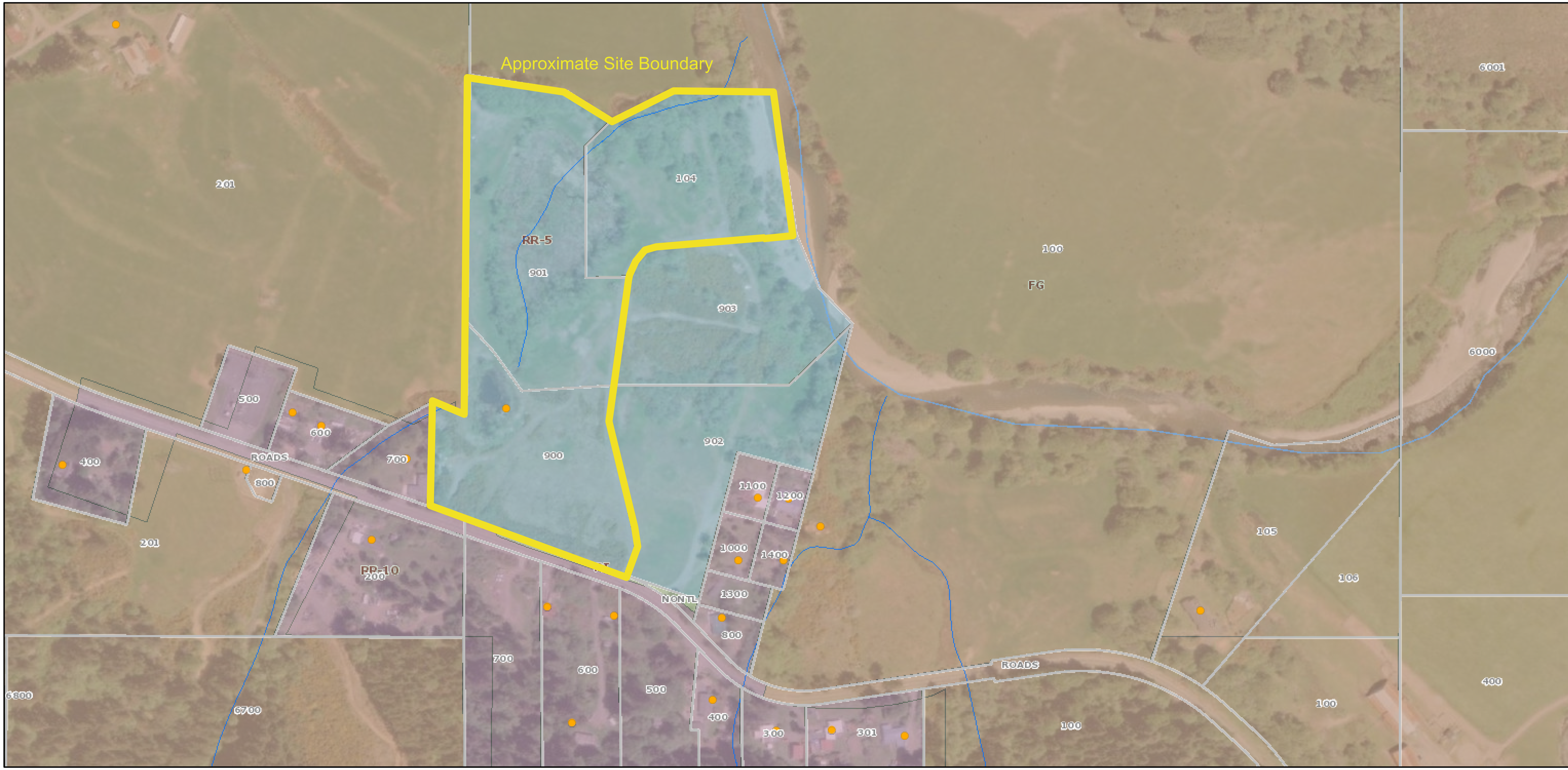
0 100 200
Feet

Figure 3
Historical Sample Locations

Wild Rivers Land Trust
Port Orford, OR

Path: X:\0_MFA_Projects\M2272\01\001\Projects\Pro\M2272_01_001.aprx
Print Date: 7/28/2022
Reviewed By: cwise
Produced By: jroberts
Project: M2272.01.001

Figure 4. Curry County Zoning



7/22/2022, 10:32:10 AM

World Imagery
Low Resolution 15m Imagery
High Resolution 60cm Imagery
High Resolution 30cm Imagery
Citations
1.2m Resolution Metadata
Parcels
Parcel Labels
Situs Address (Current)
Rivers (NHD)
Streams
County Zoning
AFD
C-1
C-2
CON
EFU
FG
I
MA
MPA/FG
PF
R-1
R-2
R-3
RC
RC-10
RCR-1
RCR-10
RCR-2.5
RCR-5
RI
RR-10
RR-5
RRC
SW
T
NOT ZONED

1:4,514

0 0.04 0.08 0.16 mi

0 0.05 0.1 0.2 km

Bureau of Land Management, State of Oregon, State of Oregon DOT, State of Oregon GEO, Esri Canada, Esri, HERE, Garmin, USGS, EPA, USDA, Maxar

Note: RR-5 and RR-10 are both designations indicating rural residential zoning.

Created by LCOG for Curry County

The information on this map was derived from digital databases from the Curry County regional geographic information system by LCOG. Care was taken in the creation of this map, but is provided "as-is". Curry County and LCOG cannot accept any responsibility for errors, omissions or positional accuracy in the digital

MAUL FOSTER ALONGI

Figure 5
Well Reports
Wild Rivers Land Trust
Port Orford, Oregon

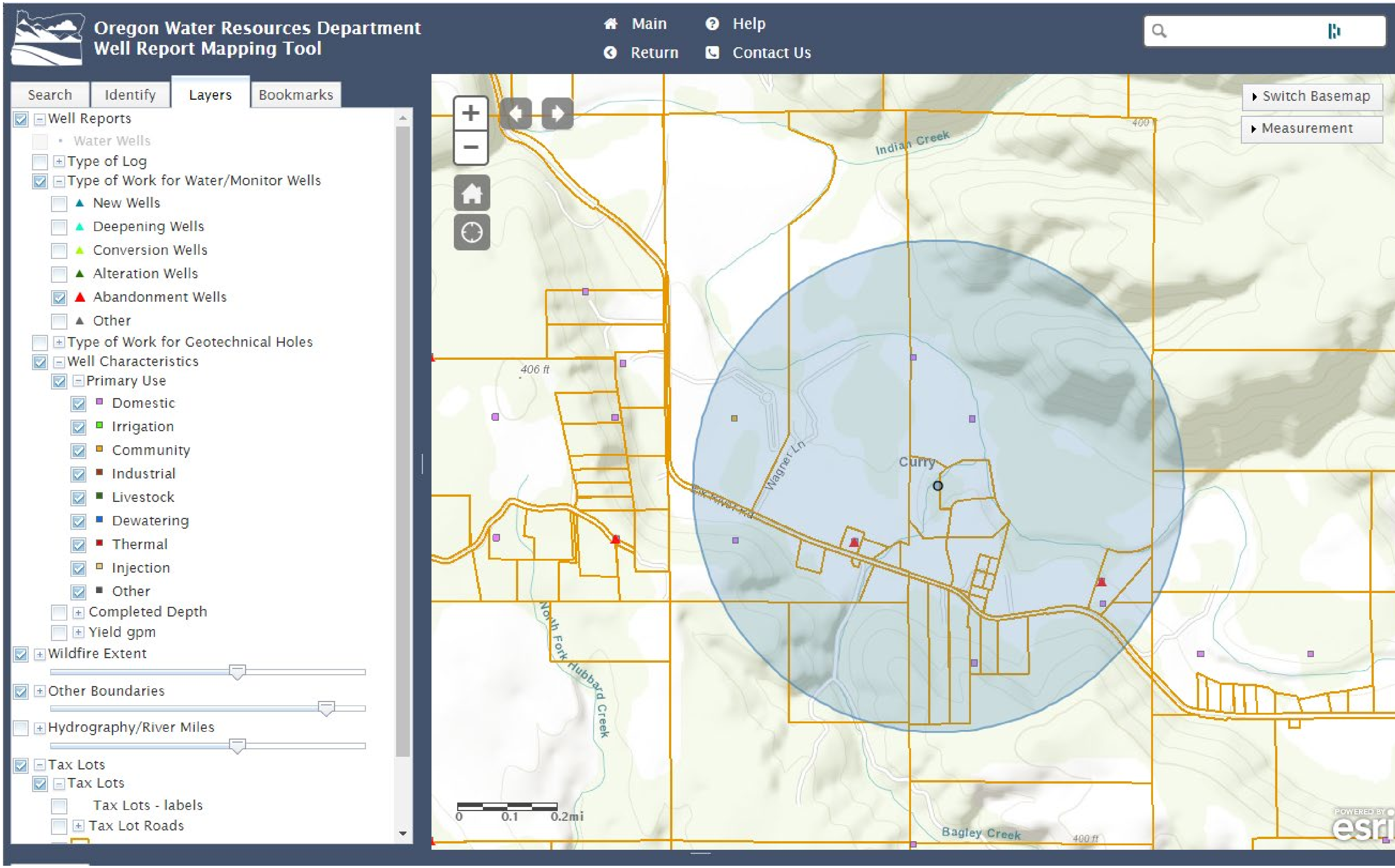


Image obtained from Oregon Water Resources Department Well Report Mapping Tool July 22, 2022

Figure 6
Water Rights Features
Wild Rivers Land Trust
Port Orford, Oregon

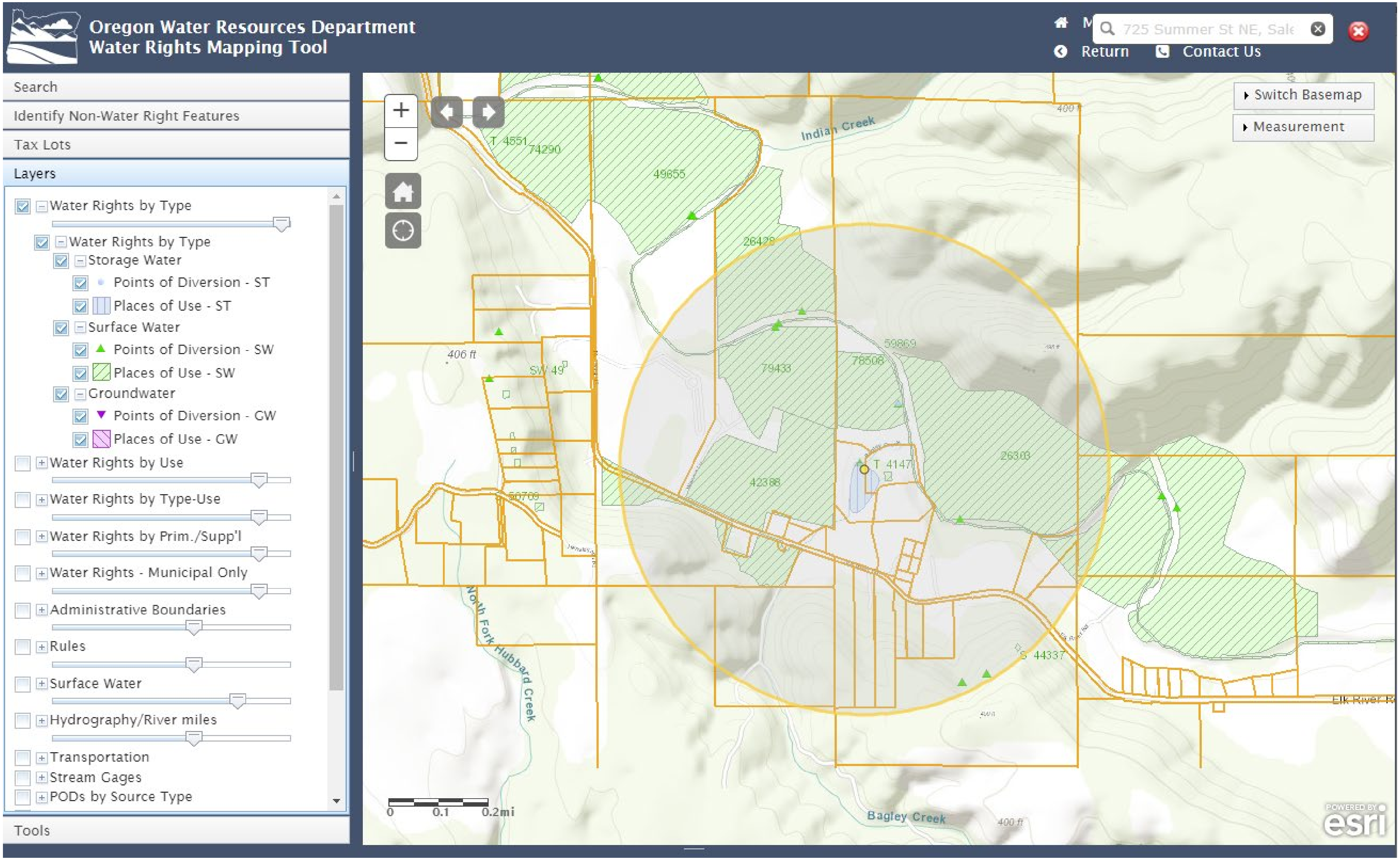


Image obtained from Oregon Water Resources Department Water Rights Mapping Tool July 22, 2022

ATTACHMENT A

WELL LOGS

STATE OF OREGON
WATER WELL REPORT
(as required by ORS 537.765)

RECEIVED
DEC 19 1985
WATER RESOURCES DEPT
SALEM, OREGON

PLEASE TYPE or PRINT IN INK

CURR 867

32S/15W-27cb
(for official use only)

(1) OWNER:
Name Glen Wagner
Address Box 110 Elk River
City Port Orford State Ore

(2) TYPE OF WORK (check):
New Well [X] Deepening ☐ Reconditioning ☐ Abandon ☐
If abandonment, describe material and procedure in Item 12.

(3) TYPE OF WELL:
Rotary Air ☐ Driven ☐
Rotary Mud ☐ Dug ☐
Cable [X] Bored ☐

(4) PROPOSED USE (check):
Domestic ☐ Industrial ☐ Municipal [X]
Irrigation ☐ Thermal: Withdrawal ☐ Reinjection ☐
Other: Piezometric ☐ Grounding ☐ Test ☐

(5) CASING INSTALLED: Steel [X] Plastic ☐ Threaded ☐ Welded [X]
6" Diam. from +1 ft. to 27 ft. Gauge .250
" Diam. from ft. to ft. Gauge

LINER INSTALLED: Steel ☐ Plastic ☐ Threaded ☐ Welded ☐
NO
" Diam. from ft. to ft. Gauge

(6) PERFORATIONS: Perforated? ☐ Yes [X] No
Size of perforations in. by in.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.

(7) SCREENS: Well screen installed? ☐ Yes [X] No
Manufacturer's Name
Type Model No.
Diam. Slot Size Set from ft. to ft.
Diam. Slot Size Set from ft. to ft.

(8) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? [X] Yes ☐ No If yes, by whom?
Yield: 15 gal./min. with 15 ft. drawdown after 2 hrs.
" " "
Air test gal./min. with drill stem at ft. hrs.
Bailer test 20 gal./min. with 18 ft. drawdown after 1 hrs.
Artesian flow g.p.m.
Temperature of water 52 Depth artesian flow encountered ft.

(9) CONSTRUCTION: Special standards: Yes ☐ No [X]
Well seal—Material used Cement
Well sealed from land surface to 20 ft.
Diameter of well bore to bottom of seal 10 in.
Diameter of well bore below seal 6 in.
Amount of sealing material 11 sacks [X] pounds ☐
How was cement grout placed? Pumped via tremie pipe

Was pump installed? NO Type HP Depth ft.
Was a drive shoe used? ☐ Yes [X] No Plugs Size: location ft.
Did any strata contain unusable water? ☐ Yes [X] No
Type of Water? depth of strata
Method of sealing strata off
Was well gravel packed? ☐ Yes [X] No Size of gravel:
Gravel placed from ft. to ft.

(10) LOCATION OF WELL by legal description:
County Curry NW ¼ SW ¼ of Section 27 of
Township 32s (Township is North or South), Range 15w (Range is East or West), WM.
Tax Lot 300 Lot Block Subdivision
MAILING ADDRESS OF WELL (or nearest address)
SAME

(11) WATER LEVEL of COMPLETED WELL:
Depth at which water was first found 10 ft.
Static level 10 ft. below land surface. Date 12-5-85
Artesian pressure lbs. per square inch. Date

(12) WELL LOG: Diameter of well below casing 0
Depth drilled 40 ft. Depth of completed well 27 ft.
Formation: Describe color, texture, grain size and structure of materials; and show thickness and nature of each stratum and aquifer penetrated, with at least one entry for each change of formation. Report each change in position of Static Water Level and indicate principal water-bearing strata.

MATERIAL	From	To	SWL
Clay soil black	0	1	
Clay brown	1	4	
Clay and gravel brown	4	16	
Gravel brown medium	16	27	
Clay and gravel brown	27	31	
Silty clay blue	31	40	

Date work started 12-3-85 /completed 12-5-85
Date well drilling machine moved off of well 12-5-85 19

(unbonded) Water Well Constructor Certification (if applicable):
This well was constructed under my direct supervision. Materials used and information reported above are true to my best knowledge and belief.
[Signed] Date , 19

(bonded) Water Well Constructor Certification:
Bond 28042900 (number) Issued by: Western Surety (Surety Company Name)
On behalf of Bill Miller Well Drilling (type or print name of Water Well Constructor)
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.
(Signed) Andrew D. Miller (Water Well Constructor)
(Dated) 12-17-85

NOTICE TO WATER WELL CONSTRUCTOR
The original and first copy of this report are to be filed with the
WATER RESOURCES DEPARTMENT, SALEM, OREGON 97310
within 30 days from the date of well completion.

SP*46866-690

RECEIVED JUN 20 1966 STATE ENGINEER SALEM, OREGON

RECEIVED JUL 25 1966 STATE ENGINEER SALEM, OREGON

1061 CURRY 001061

NOTICE TO WATER WELL CONTRACTOR
The original and first copy of this report are to be filed with the
STATE ENGINEER, SALEM, OREGON 97310 within 30 days from the date of well completion.

WATER WELL REPORT
STATE OF OREGON
(Please type or print)

State Well No. 32/15w-27
State Permit No.

(1) OWNER:
Name Clyde Wagner
Address Port Orford Ore

(2) LOCATION OF WELL:
County Curry Driller's well number
¼ ¼ Section 27 T. 32S R. 15W W.M.
Bearing and distance from section or subdivision corner

(3) TYPE OF WORK (check):
New Well ☑ Deepening ☐ Reconditioning ☐ Abandon ☐
If abandonment, describe material and procedure in Item 12.

(4) PROPOSED USE (check):
Domestic ☑ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☐ Other ☐

(5) TYPE OF WELL:
Rotary ☐ Driven ☐
Cable ☑ Jetted ☐
Dug ☐ Bored ☐

(6) CASING INSTALLED:
Threaded ☐ Welded ☑
6" Diam. from 0 ft. to 37 ft. Gage .250
" Diam. from ft. to ft. Gage
" Diam. from ft. to ft. Gage

(7) PERFORATIONS:
Perforated? ☑ Yes ☐ No
Type of perforator used Torch
Size of perforations 1/4 in. by 7 in.
3 feet perforations from 30 ft. to 37 ft.
21 perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.

(8) SCREENS:
Well screen installed? ☐ Yes ☑ No
Manufacturer's Name
Type Model No.
Diam. Slot size Set from ft. to ft.
Diam. Slot size Set from ft. to ft.

(9) CONSTRUCTION:
Well seal—Material used in seal Bentonite
Depth of seal 18 ft. Was a packer used? NO
Diameter of well bore to bottom of seal 10 in.
Were any loose strata cemented off? ☐ Yes ☑ No Depth
Was a drive shoe used? ☑ Yes ☐ No
Was well gravel packed? ☐ Yes ☑ No Size of gravel:
Gravel placed from ft. to ft.
Did any strata contain unusable water? ☐ Yes ☑ No
Type of water? depth of strata
Method of sealing strata off

(10) WATER LEVELS:
Static level 14 ft. below land surface Date June 1
Artesian pressure lbs. per square inch Date

(11) WELL TESTS:
Drawdown is amount water level is lowered below static level
Was a pump test made? ☐ Yes ☑ No If yes, by whom?
Yield: gal./min. with ft. drawdown after hrs.
" " " "
" " " "
Bailer test 1260 gal./hr. with 2 ft. drawdown after 1 hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? ☐ Yes ☑ No

(12) WELL LOG:
Diameter of well below casing 6
Depth drilled 34 ft. Depth of completed well 34 ft.
Formation: *Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.*

MATERIAL	FROM	TO
Brown Clay	0	27
River Gravel Course	27	29
Brown Clay	29	31
Red Clay & River Gravel Cemented Dry	31	34

Work started May 28 1966 Completed June 1 1966
Date well drilling machine moved off of well June 1 1966

(13) PUMP:
Manufacturer's Name
Type: H.P.

Water Well Contractor's Certification:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME Barrington Well Drilling
(Person, firm or corporation) (Type or print)
Address North Bend Ore
Drilling Machine Operator's License No. 325
[Signed] Donald C Barrington
(Water Well Contractor)
Contractor's License No. 501 Date June 18, 1966

(USE ADDITIONAL SHEETS IF NECESSARY)

NOTICE TO WATER WELL CONTRACTOR
The original and first copy of this report are to be filed with the
STATE ENGINEER, SALEM, OREGON 97310 within 30 days from the date of well completion.

RECEIVED
OCT 16 1972
STATE ENGINEER
SALEM OREGON

NC

WATER WELL REPORT
STATE OF OREGON
(Please type or print)
(Do not write above this line)

001062
CURR

State Well No. 32S/15W-27 cd

State Permit No.

(1) OWNER:

Name Clarence R. Wagner
Address Box 116 Star Route Port Orford, Oregon

(2) TYPE OF WORK (check):

New Well ☑ Deepening ☐ Reconditioning ☐ Abandon ☑
If abandonment, describe material and procedure in Item 12.

(3) TYPE OF WELL:

Rotary ☐ Driven ☐
Cable ☑ Jetted ☐
Dug ☐ Bored ☐

(4) PROPOSED USE (check):

Domestic ☑ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☐ Other ☐

(5) CASING INSTALLED: Threaded ☐ Welded ☐
None
" Diam. from ft. to ft. Gage
" Diam. from ft. to ft. Gage
" Diam. from ft. to ft. Gage

(6) PERFORATIONS: Perforated? ☐ Yes ☑ No.

Type of perforator used
Size of perforations in. by in.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.

(7) SCREENS: Well screen installed? ☐ Yes ☑ No

Manufacturer's Name
Type Model No.
Diam. Slot size Set from ft. to ft.
Diam. Slot size Set from ft. to ft.

(8) WELL TESTS: Drawdown is amount water level is lowered below static level

Was a pump test made? ☐ Yes ☑ No If yes, by whom?
Yield: gal./min. with ft. drawdown after hrs.
" " " "
" " " "
Bailer test None gal./min. with ft. drawdown after hrs.
Artesian flow g.p.m.
Temperature of water Depth artesian flow encountered ft.

(9) CONSTRUCTION:

Well seal—Material used Puddled clay & Cement
Well sealed from land surface to 50 ft.
Diameter of well bore to bottom of seal 6 in.
Diameter of well bore below seal 0 in.
Number of sacks of cement used in well seal 1/2 sacks
Number of sacks of bentonite used in well seal 0 sacks
Brand name of bentonite XX
Number of pounds of bentonite per 100 gallons of water XX lbs./100 gals.
Was a drive shoe used? ☐ Yes ☒ No Plugs Size: location ft.
Did any strata contain unusable water? ☐ Yes ☒ No
Type of water? depth of strata
Method of sealing strata off
Was well gravel packed? ☐ Yes ☑ No Size of gravel:
Gravel placed from ft. to ft.

(10) LOCATION OF WELL:

County Curry Driller's well number
SE ¼ SW ¼ Section 27 T. 32S R. 15W W.M.
Bearing and distance from section or subdivision corner

(11) WATER LEVEL: Completed well.

Depth at which water was first found None ft.
Static level XX ft. below land surface. Date 10-3-72
Artesian pressure lbs. per square inch. Date

(12) WELL LOG: Diameter of well below casing 0

Depth drilled 50 ft. Depth of completed well 50 ft.

Formation: Describe color, texture, grain size and structure of materials; and show thickness and nature of each stratum and aquifer penetrated, with at least one entry for each change of formation. *Report each change in position of Static Water Level and indicate principal water-bearing strata.*

MATERIAL	From	To	SWL
Soil brown	0	1½	
Clay gray	1½	21	
Clay with gravel gray	21	36	
Serpentine claystone gray	36	50	

No water encountered. Bore hole filled with puddled clay and capped with cement.

Work started Oct 2 72 19 Completed Oct 3 1972
Date well drilling machine moved off of well Oct 3 1972

Drilling Machine Operator's Certification:

This well was constructed under my direct supervision. Materials used and information reported above are true to my best knowledge and belief.

[Signed] Andrew W. Miller Date Oct. 14, 1972
(Drilling Machine Operator)

Drilling Machine Operator's License No. 469

Water Well Contractor's Certification:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Name George R. Miller & Son Welll Drilling
(Person, firm or corporation) (Type or print)
Address Route 1, Box 561 Bandon, Oregon
[Signed] George R Miller
(Water Well Contractor)

Contractor's License No. 322 Date October 14 1972

(USE ADDITIONAL SHEETS IF NECESSARY)

SP*45656-119

ORIGINAL
File Original, and Duplicate with the STATE ENGINEER, SALEM, OREGON

WATER WELL DRILLERS REPORT
STATE OF OREGON

RECEIVED JUL 30 1956 STATE ENGINEER SALEM, OREGON

CURR 0010633

Do Not Fill In — State Well No. 32/15-27 N(1) w — State Permit No.

(1) OWNER:
Name Leo V iolette
Address Elk River Road, Port Orford, Oregon.

(2) LOCATION OF WELL:
County Curry Owner's number, if any—
R. F. D. or Street No.
Bearing and distance from section or subdivision corner
See letter in Mosbys file for loc.

(3) TYPE OF WORK (check):
New well ☒ Deepening ☐ Reconditioning ☐ Abandon ☐
If abandonment, describe material and procedure in Item 11.

(4) PROPOSED USE (check):
Domestic ☒ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☐ Other ☐

(5) EQUIPMENT:
Rotary ☐
Cable ☒
Dug Well ☐

(6) CASING INSTALLED:
Threaded ☐ Welded ☒

FROM	ft. to	Diam.	Gage or Wall
1	31' 8-4"	6"	

If gravel packed

Diameter of Bore	from ft.	to ft.

Type and size of shoe or well ring 6"
Size of gravel:
Describe joint We lded

(7) PERFORATIONS:
Type of perforator used C utting Torch
SIZE of perforations 3" in., length, by in.

FROM	ft. to	ft.	perf per foot	No. of rows
	16	2		4

SCREENS:
Give Manufacturer's Name, Model No. and Size

(8) CONSTRUCTION:
Was a surface sanitary seal provided? ☐ Yes ☐ No To what depth ft.
Were any strata sealed against pollution? ☐ Yes ☐ No
If yes, note depth of strata
FROM ft. to ft.
METHOD OF SEALING Mud

(9) WATER LEVELS:
Depth at which water was first found 16 ft.
Standing level before perforating ft.
Standing level after perforating ft.

Log Accepted by:
[Signed] .... Dated ...., 19....
Owner

(10) WELL TESTS:
Was a pump test made? ☐ Yes ☐ No If yes, by whom?
Yield: gal./min. with ft. draw down after hrs.
Artesian flow .... g.p.m.
Shut-in pressure .... lbs. per square inch.
Bailer test 1000 g.p.m. with Bottom ft. drawdown
Temperature of water Was a chemical analysis made? ☐ Yes ☐ No
Was electric log made of well? ☐ Yes ☐ No

(11) WELL LOG:
Diameter of well, 6" inches.
Total depth 35 ft. Depth of completed well ft.

Formation: *Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.*

From	To	Formation
1 ft.	16 ft.	Sand & Gravel
16"	35 "	Light Gre y S and Ston e

Ground elevation at well site .... feet above mean sea level.
Work started JULY 16 1956 Completed July 17 1956

Well Driller's Statement:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME Howard Mosby We ll D rilling
(Person, firm, or corporation) (Typed or printed)
Address 140 Willona Dr . Eugene, Oregon.
Driller's well number
[Signed] Howard Mosby (Well Driller)
License No. 98 Dated July 25, 1956

CURR 50905

32-15-34

STATE OF OREGON
WATER SUPPLY WELL REPORT
(as required by ORS 537.765)
Instructions for completing this report are on the last page of this form.

WELL I.D. # L 51196
START CARD # 136010

(1) LAND OWNER Well Number 857
Name Kenneth Aytes
Address 598 W Plumb Lane
City Reno State NV Zip 89509

(2) TYPE OF WORK
☒ New Well ☐ Deepening ☐ Alteration (repair/recondition) ☐ Abandonment

(3) DRILL METHOD:
☐ Rotary Air ☒ Rotary Mud ☐ Cable ☐ Auger
☐ Other

(4) PROPOSED USE:
☒ Domestic ☐ Community ☐ Industrial ☐ Irrigation
☐ Thermal ☐ Injection ☐ Livestock ☐ Other

(5) BORE HOLE CONSTRUCTION:
Special Construction approval ☐ Yes ☒ No Depth of Completed Well 52'8" ft. (TOC)
Explosives used ☐ Yes ☒ No Type Amount

HOLE Diameter	From	To	SEAL Material	From	To	Sacks or pounds
10"	0	52	Bentonite	0	35	47 Sx

How was seal placed: Method ☐ A ☐ B ☐ C ☐ D ☐ E
☒ Other Poured from Surface
Backfill placed from ft. to ft. Material
Gravel placed from 35 ft. to 52 ft. Size of gravel 10/20

(6) CASING/LINER:

	Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing:	5"	+1	46'5	160#	☐	☒	☒	☐
					☐	☐	☐	☐
	6"	+1'4	4'	.250	☒	☐	☐	☐
	(Protective Casing)				☐	☐	☐	☐
Liner:					☐	☐	☐	☐
					☐	☐	☐	☐

Drive Shoe used ☐ Inside ☐ Outside ☐ None
Final location of shoe(s)

(7) PERFORATIONS/SCREENS:
☐ Perforations Method Attached to Casing
☒ Screens Type Nojicka V-wire Material SS

From	To	Slot size	Number	Diameter	Tele/pipe size	Casing	Liner
46'5	51'8"	.016		5"	Pipe	☐	☐
						☐	☐
						☐	☐
						☐	☐

(8) WELL TESTS: Minimum testing time is 1 hour
☒ Pump ☐ Bailer ☐ Air ☐ Flowing Artesian

Yield gal/min	Drawdown	Drill stem at	Time
12	19'		1 hr.
11.16 AM Actual Production w/ stable			
draw down			

Temperature of water 52° Depth Artesian Flow Found
Was a water analysis done? ☒ Yes By whom BW+S
Did any strata contain water not suitable for intended use? ☐ Too little
☐ Salty ☐ Muddy ☐ Odor ☐ Colored ☐ Other
Depth of strata:

Bandon Well & Septic Co., Inc.

(9) LOCATION OF WELL by legal description:
County Curry Latitude Longitude
Township 32 N or S Range 15 E or W. WM.
Section 34 NW 1/4 NE 1/4
Tax Lot 400 Lot Block Subdivision
Street Address of Well (or nearest address) 93722 Elk River Rd. Sixes

(10) STATIC WATER LEVEL:
27'6" ft. below land surface. Date 10/10/02
Artesian pressure lb. per square inch Date

(11) WATER BEARING ZONES:
Depth at which water was first found 27'6

From	To	Estimated Flow Rate	SWL
27'6	51	+/- 12	27'6"

(12) WELL LOG:
Ground Elevation +/- 300'

Material	From	To	SWL
TopSoil Brown	0	1	
Sandy Clay Tan	1	2	
Conglomerate - Clay, Gravel Sand etc	2	13	
Clay Orange	13	15	
Clay Gray	15	17	
wood	17	18	
Wood w/ Clay + gravel Gray	18	20	
Gravel Fine-Crs Brown	20	28	27'6
Gravel Fine-med w/ Clay + wood (Loss Circulation)	28	33	
Gravel Fine-Crs w/ Large Cobbles (Loss Circulation)	33	36	
Wood w/ gravel + Cobbles + Clay Gray brown	36	39	
Cobbles Lrg-small w/ Gravel Crs-Fine + Clay lenses Gray	39	51	
Claystone black	51	52	

Date started 10/9/02 Completed 10/11/02

(unbonded) Water Well Constructor Certification:
I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.
WWC Number 1759
Signed Chris Keasey Date 10/14/02

(bonded) Water Well Constructor Certification:
I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well construction standards. This report is true to the best of my knowledge and belief.
WWC Number 1493
Signed Jim Mack Sr MGWC Date 10/14/02

ORIGINAL – WATER RESOURCES DEPARTMENT FIRST COPY – CONSTRUCTOR SECOND COPY – CUSTOMER

STATE OF OREGON
WATER SUPPLY WELL REPORT
(as required by ORS 537.765 & OAR 690-205-0210)

CURR 52908
10/21/2019

WELL I.D. LABEL# L
START CARD # 1045167
ORIGINAL LOG #

(1) LAND OWNER
Owner Well I.D. 1837
First Name CHEREECE Last Name MARSH
Company
Address PO BOX 787
City PORT ORFORD State OR Zip 97465

(2) TYPE OF WORK
[X] New Well [ ] Deepening [ ] Conversion
[ ] Alteration (complete 2a & 10) [X] Abandonment(complete 5a)

(2a) PRE-ALTERATION

	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
Casing:									

	Material	From	To	Amt	sacks/lbs
Seal:					

(3) DRILL METHOD
[ ] Rotary Air [X] Rotary Mud [ ] Cable [ ] Auger [ ] Cable Mud
[ ] Reverse Rotary [ ] Other

(4) PROPOSED USE
[X] Domestic [ ] Irrigation [ ] Community
[ ] Industrial/ Commericial [ ] Livestock [ ] Dewatering
[ ] Thermal [ ] Injection [ ] Other

(5) BORE HOLE CONSTRUCTION
Special Standard [ ] (Attach copy)
Depth of Completed Well 18.00 ft.

BORE HOLE Dia	From	To
10	0	18

SEAL Material	From	To	Amt	sacks/lbs
Bentonite Chips	0	18	14	S
		Calculated	12.24	
		Calculated		

How was seal placed: Method [ ] A [ ] B [ ] C [ ] D [ ] E
[X] Other POUR FROM SURFACE
Backfill placed from ____ ft. to ____ ft. Material
Filter pack from ____ ft. to ____ ft. Material ____ Size
Explosives used: [ ] Yes Type ____ Amount

(5a) ABANDONMENT USING UNHYDRATED BENTONITE
Proposed Amount 12.24 Sacks Actual Amount 14.00 Sacks

(6) CASING/LINER

Casing	Liner	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd

Shoe [ ] Inside [ ] Outside [ ] Other Location of shoe(s)
Temp casing [ ] Yes Dia ____ From + [ ] ____ To

(7) PERFORATIONS/SCREENS
Perforations Method
Screens Type ____ Material

Perf/ Screen	Casing/ Liner	Screen Dia	From	To	Scrn/slot width	Slot length	# of slots	Tele/ pipe size

(8) WELL TESTS: Minimum testing time is 1 hour
( ) Pump ( ) Bailer ( ) Air ( ) Flowing Artesian

Yield gal/min	Drawdown	Drill stem/Pump depth	Duration (hr)

Temperature 54 °F Lab analysis [ ] Yes By
Water quality concerns? [ ] Yes (describe below) TDS amount 72 ppm

From	To	Description	Amount	Units

(9) LOCATION OF WELL (legal description)
County CURRY Twp 32.00 S N/S Range 15.00 W E/W WM
Sec 27 SE 1/4 of the SE 1/4 Tax Lot 105
Tax Map Number Lot
Lat ° ' " or 42.76786442 DMS or DD
Long ° ' " or -124.45598622 DMS or DD
(•) Street address of well ( ) Nearest address
93835 ELK RIVER ROAD PORT ORFORD, OREGON

(10) STATIC WATER LEVEL

	Date	SWL(psi)	+	SWL(ft)
Existing Well / Pre-Alteration				
Completed Well	10/9/2019			6

Flowing Artesian? [ ] Dry Hole? [ ]

WATER BEARING ZONES Depth water was first found 6.00

SWL Date	From	To	Est Flow	SWL(psi)	+	SWL(ft)
10/9/2019	6	12.5	3			6

(11) WELL LOG
Ground Elevation 49.00

Material	From	To
Silty clay brown	0	2
Silty clay tan	2	5
Silty clay w/gravel f tan	5	6
Gravel c-f brown	6	12
Gravel c-f w/clay orange	12	12.5
Clay gray	12.5	13
Basalt hblack h	13	18
Hole abandon due to shallow depth	13	18

Date Started 10/9/2019 Completed 10/9/2019

(unbonded) Water Well Constructor Certification
I certify that the work I performed on the construction, deepening, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.
License Number 1759 Date 10/21/2019
Signed CHRISTOPHER KERSEY (E-filed)

(bonded) Water Well Constructor Certification
I accept responsibility for the construction, deepening, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well construction standards. This report is true to the best of my knowledge and belief.
License Number 1493 Date 10/21/2019
Signed JAMES MACK SR (E-filed)
Contact Info (optional) Bandon Well & Pump Co. (541) 347-7867

WATER SUPPLY WELL REPORT - Map with location identified must be attached and shall include an approximate scale and north arrow

CURR 52908

10/21/2019

Map of Hole

STATE OF OREGON
WELL LOCATION MAP

This map is supplemental to the WATER SUPPLY WELL REPORT

Oregon Water Resources Department
725 Summer St NE, Salem OR 97301
(503)986-0900

LOCATION OF WELL

Latitude: 42.7678644178 Datum: WGS84
Longitude: -124.45598621591
Township/Range/Section/Quarter-Quarter Section:
WM 32S 15W 27 SESE
Address of Well:
93835 ELK RIVER ROAD PORT ORFORD, OREGON

Hole Nbr: 1837

Printed: October 21, 2019

DISCLAIMER: This map is intended to represent the approximate location the well. It is not intended to be construed as survey accurate in any manner.

Provided by well constructor

STATE OF OREGON
WATER SUPPLY WELL REPORT
(as required by ORS 537.765 & OAR 690-205-0210)

CURR 52909
10/21/2019

WELL I.D. LABEL# L 134955
START CARD # 1045207
ORIGINAL LOG #

(1) LAND OWNER

Owner Well I.D. 1838
First Name CHEREECE Last Name MARSH
Company
Address 93835 ELK RIVER ROAD PORT ORFORD, O
City PORT ORFORD State OR Zip 97465

(2) TYPE OF WORK

[X] New Well [ ] Deepening [ ] Conversion
[ ] Alteration (complete 2a & 10) [ ] Abandonment(complete 5a)

(2a) PRE-ALTERATION

Casing: Dia + From To Gauge Stl Plstc Wld Thrd

Seal: Material From To Amt sacks/lbs

(3) DRILL METHOD

[X] Rotary Air [X] Rotary Mud [ ] Cable [ ] Auger [ ] Cable Mud
[ ] Reverse Rotary [ ] Other

(4) PROPOSED USE

[X] Domestic [ ] Irrigation [ ] Community
[ ] Industrial/ Commericial [ ] Livestock [ ] Dewatering
[ ] Thermal [ ] Injection [ ] Other

(5) BORE HOLE CONSTRUCTION

Special Standard [X] (Attach copy)
Depth of Completed Well 80.50 ft.

BORE HOLE Dia	From	To	SEAL Material	From	To	Amt	sacks/ lbs
10	0	10	Bentonite	0	8	4	S
8	10	18			Calculated	3.76	
6	18	166	Cement	80.5	166	11	S
					Calculated	10	

How was seal placed: Method [ ] A [ ] B [X] C [ ] D [ ] E
[X] Other POUR FROM SURFACE
Backfill placed from ft. to ft. Material
Filter pack from 8 ft. to 18 ft. Material GRAVEL Size pea gravel
Explosives used: [ ] Yes Type Amount

(5a) ABANDONMENT USING UNHYDRATED BENTONITE

Proposed Amount Actual Amount

(6) CASING/LINER

Casing	Liner	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
(●)	( )	6	[X]	1.5	18.66	.250	(●)	( )	[X]	[ ]
( )	( )		[ ]				( )	( )	[ ]	[ ]
( )	( )		[ ]				( )	( )	[ ]	[ ]
( )	( )		[ ]				( )	( )	[ ]	[ ]
( )	( )		[ ]				( )	( )	[ ]	[ ]

Shoe [ ] Inside [X] Outside [ ] Other Location of shoe(s) 18.75
Temp casing [ ] Yes Dia From + [ ] To

(7) PERFORATIONS/SCREENS

Perforations Method Mills Knife
Screens Type Material

Perf/ Screen	Casing/ Screen Liner	Dia	From	To	Scrn/slot width	Slot length	# of slots	Tele/ pipe size
Perf	Casing	6	9	17	.25	3	27	6

(8) WELL TESTS: Minimum testing time is 1 hour

(●) Pump ( ) Bailer ( ) Air ( ) Flowing Artesian

Yield gal/min	Drawdown	Drill stem/Pump depth	Duration (hr)
7.3	13	70	1

Temperature 53 °F Lab analysis [X] Yes By BW&P
Water quality concerns? [X] Yes (describe below) TDS amount 62 ppm

From	To	Description	Amount	Units
110	166	Total Disolved Solids	800	ppm

(9) LOCATION OF WELL (legal description)

County CURRY Twp 32.00 S N/S Range 15.00 W E/W WM
Sec 34 NE 1/4 of the NE 1/4 Tax Lot 105
Tax Map Number Lot
Lat ° ' " or 42.76719662 DMS or DD
Long ° ' " or -124.45592839 DMS or DD
(●) Street address of well ( ) Nearest address
93835 ELK RIVER ROAD PORT ORFORD, OREGON

(10) STATIC WATER LEVEL

	Date	SWL(psi)	+	SWL(ft)
Existing Well / Pre-Alteration			[ ]	
Completed Well	10/17/2019		[ ]	8

Flowing Artesian? [ ] Dry Hole? [ ]

WATER BEARING ZONES Depth water was first found 9.00

SWL Date	From	To	Est Flow	SWL(psi)	+	SWL(ft)
10/10/2019	9	11	7.3		[ ]	8
10/15/2019	110	166	0.1		[ ]	116
					[ ]	
					[ ]	
					[ ]	

(11) WELL LOG

Ground Elevation 62.00

Material	From	To
Clay brown	0	3
Gravel c-f w/clay brown	3	7
Clay orange w/gravel f-m brown	7	9
Gravel c-f brown orangw	9	11
Basalt black	11	14
Basalt black iron stained	14	15
Basalt black w/quartz h	15	26
Basalt black w/claystone lenses	26	31
Basalt black w/quartz h	31	56
Basalt w/sandstone lenses black h	56	62
Basalt w/sandstone lenses black & quartz	62	79
Sandstone w/basalt lenses black & quartz	79	104
Basalt w/sandstone & claystone lenses& q	104	166
Hole cemented from 80.5'-166' high TDS	104	166

Date Started 10/9/2019 Completed 10/17/2019

(unbonded) Water Well Constructor Certification

I certify that the work I performed on the construction, deepening, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.

License Number 1759 Date 10/21/2019

Signed CHRISTOPHER KERSEY (E-filed)

(bonded) Water Well Constructor Certification

I accept responsibility for the construction, deepening, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well construction standards. This report is true to the best of my knowledge and belief.

License Number 1493 Date 10/21/2019

Signed JAMES MACK SR (E-filed)

Contact Info (optional) Bandon Well & Pump Co. (541) 347-7867

WATER SUPPLY WELL REPORT - Map with location identified must be attached and shall include an approximate scale and north arrow

CURR 52909

10/21/2019

Map of Hole

STATE OF OREGON
WELL LOCATION MAP

This map is supplemental to the WATER SUPPLY WELL REPORT

Oregon Water Resources Department
725 Summer St NE, Salem OR 97301
(503)986-0900

LOCATION OF WELL

Latitude: 42.7671966222 Datum: WGS84
Longitude: -124.45592838705
Township/Range/Section/Quarter-Quarter Section:
WM 32S 15W 34 NENE
Address of Well:
93835 ELK RIVER ROAD PORT ORFORD, OREGON

Well Label: 134955

Printed: October 21, 2019

DISCLAIMER: This map is intended to represent the approximate location the well. It is not intended to be construed as survey accurate in any manner.

Provided by well constructor

ATTACHMENT B
WATER RIGHTS TRANSFER DOCUMENTS

BEFORE THE WATER RESOURCES DIRECTOR OF OREGON

CURRY COUNTY

IN THE MATTER OF THE APPLICATION) OF PHOENIX WESTERN, INC., FOR AP-) PROVAL OF A CHANGE IN USE OF) WATER FROM BAGLEY CREEK)	ORDER APPROVING TRANSFER NO. 4147

On January 26, 1979, an application was filed in the office of the Water Resources Director by Phoenix Western, Inc., for approval of a change in use heretofore made of water from Bagley Creek, pursuant to the provisions of ORS 540.510 to 540.530.

The certificate recorded at page 23957, Volume 17, State Record of Water Right Certificates, in the name of Western States Plywood Cooperative, describes a right for the use of not to exceed 0.20 cubic foot per second from Bagley Creek, Marsh Log Pond and reservoir, being 0.10 cubic foot per second for maintenance of log pond and 0.10 cubic foot per second for manufacturing, located in SW¼ SE¼ and NW¼ SE¼ of Section 27, Township 32 South, Range 15 West, W.M., with a date of priority of September 25, 1951.

Water for the said right is diverted from a point located 1230 feet South and 2300 feet West from the East Quarter Corner of Section 27, being within the NW¼ SE¼ of Section 27, Township 32 South, Range 15 West, W.M.

The applicant proposes to change the use heretofore made of water, without loss of priority, to fish rearing, being 0.10 cubic foot per second for pond maintenance and fish culture and 0.10 cubic foot per second for fish rearing in tanks, located in said SW¼ SE¼ and NW¼ SE¼ of said Section 27.

The certificate recorded at page 23956, Volume 17 of said record, in the name of Western States Plywood Cooperative, describes a right for storage of not to exceed 31.8 acre feet from Bagley Creek for a log pond, with a date of priority of September 25, 1951.

The reservoir is located in SW¼ SE¼ and NW¼ SE¼ of Section 27, Township 32 South, Range 15 West, W.M.

The applicant proposes to change the use heretofore made of water, without loss of priority, and to use said reservoir for fish rearing purposes.

Notice of the application, pursuant to ORS 540.520(2), was published in the Port Orford News, a newspaper printed and having general circulation in Curry County, Oregon, for a period of three weeks in the issues of September 13, 20 and 27, 1979.

Mr. M. John Youngquist, Watermaster, has filed a statement to the effect that the proposed change in use heretofore made of water may be made without injury to existing rights.

No objections having been filed and it appearing that the proposed change in use heretofore made may be made without injury to existing rights, the application should be approved.

NOW, THEREFORE, it hereby is ORDERED that the requested change in use heretofore made of water, as described herein, without loss of priority, is approved.

It is FURTHER ORDERED that the construction work shall be completed and that the water so transferred shall be applied to beneficial use on or before October 1, 1981.

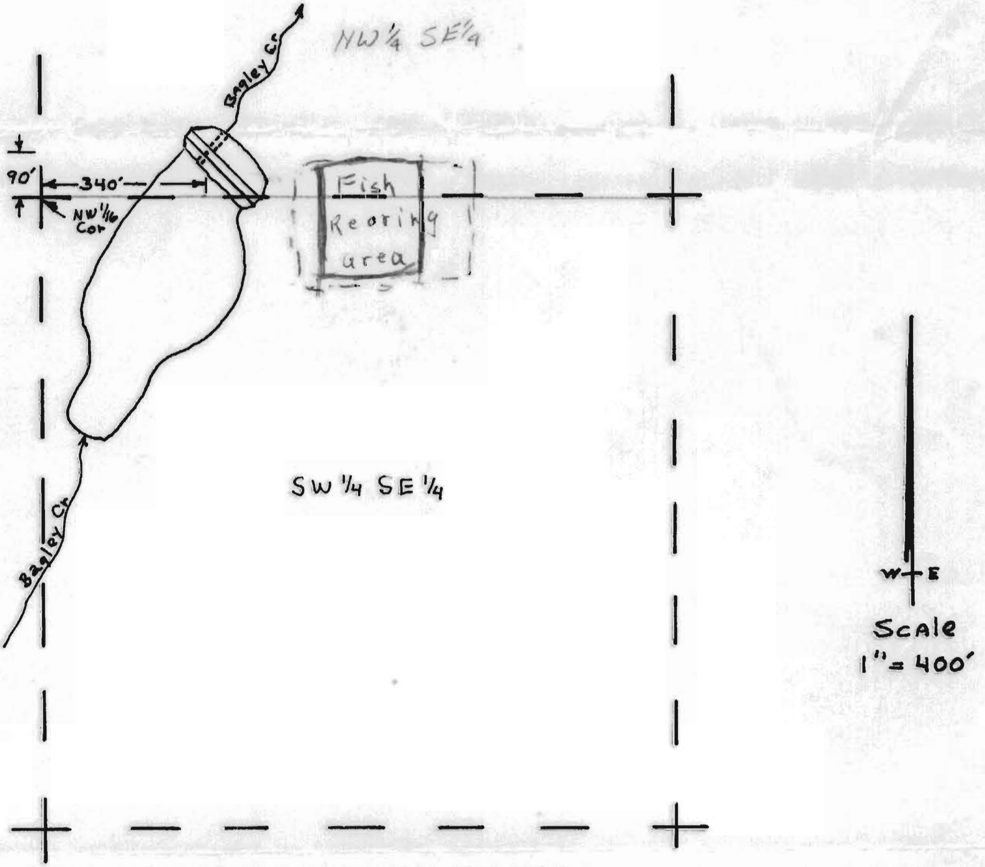
It is FURTHER ORDERED that the certificates recorded at pages 23956 and 23957, Volume 17, State Record of Water Right Certificates, are canceled; and upon proof satisfactory to the Water Resources Director of completion of works and beneficial use of water to the extent intended under the provisions of this order, confirming certificates of water right shall be issued to the applicant herein.

Dated at Salem, Oregon, this 13th day of November, 1979.

James E. Sexson
Director

T-4147

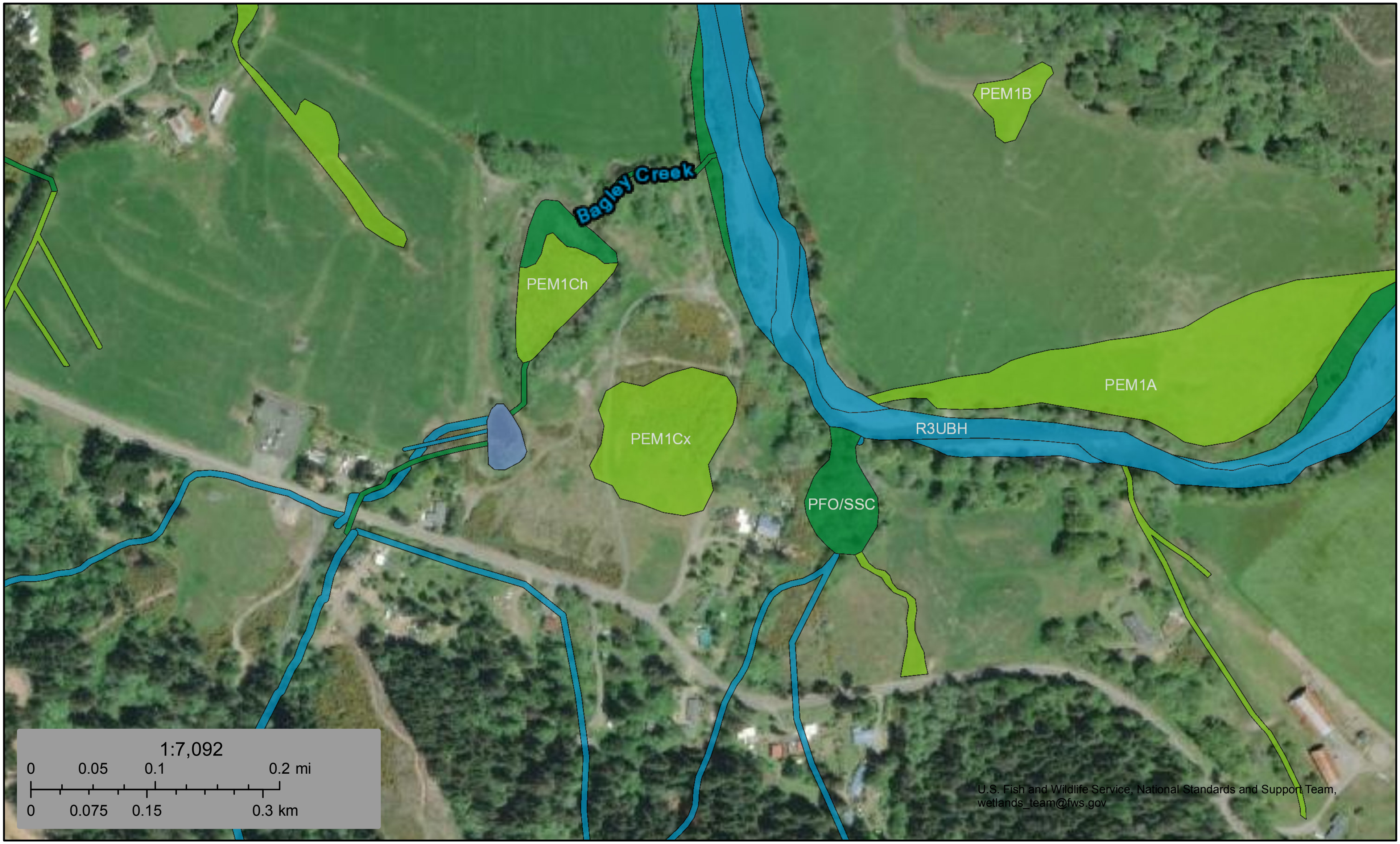
T 32S R15W
SW1/4 SE1/4
Sec 27



APPENDIX C
WETLANDS INVENTORY

U.S. Fish and Wildlife Service
National Wetlands Inventory

Former Western States



July 22, 2022

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

National Wetlands Inventory (NWI)
This page was produced by the NWI mapper

APPENDIX D
SPECIES LIST

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Curry County, Oregon

Local office

Oregon Fish And Wildlife Office

(503) 231-6179
(503) 231-6195

2600 Southeast 98th Avenue, Suite 100

Portland, OR 97266-1398

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

---

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).

2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Pacific Marten, Coastal Distinct Population Segment Martes caurina Wherever found There is **proposed** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/9081	Threatened

Birds

NAME	STATUS
Marbled Murrelet Brachyramphus marmoratus There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/4467	Threatened
Northern Spotted Owl Strix occidentalis caurina Wherever found There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/1123	Threatened
Western Snowy Plover Charadrius nivosus nivosus There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/8035	Threatened

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9743	Candidate

Flowering Plants

NAME	STATUS
Western Lily Lilium occidentale Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/998	Endangered

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern https://www.fws.gov/program/migratory-birds/species
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Jan 1 to Sep 30
Black Oystercatcher Haematopus bachmani This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9591	Breeds Apr 15 to Oct 31
Black Turnstone Arenaria melanocephala This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere

Clark's Grebe *Aechmophorus clarkii* Breeds Jun 1 to Aug 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Wrentit *Chamaea fasciata* Breeds Mar 15 to Aug 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

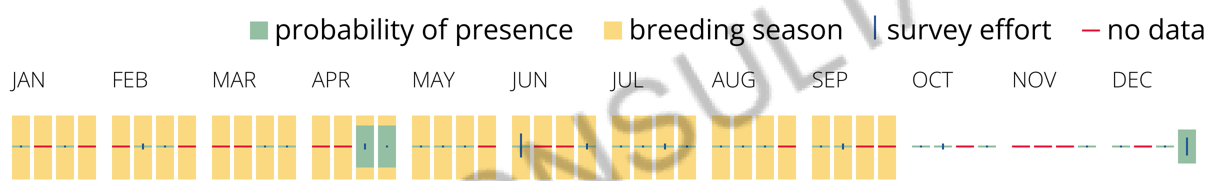
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

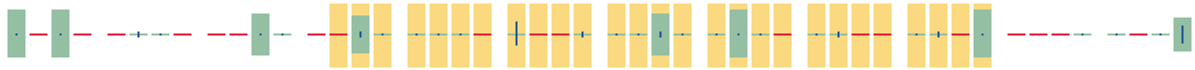
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



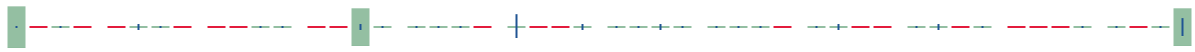
SPECIES

Bald Eagle Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

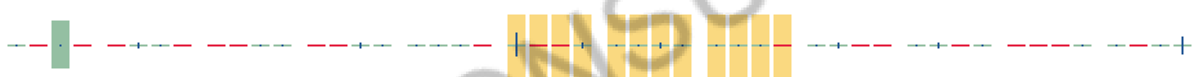
Black Oystercatcher BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



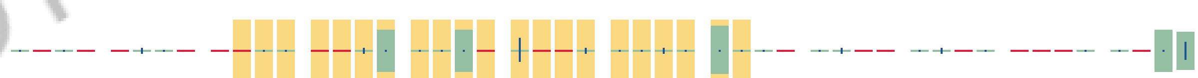
Black Turnstone BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Clark's Grebe BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Wrentit BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

[Nationwide Conservation Measures](https://www.fws.gov) describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and

3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Coastal Barrier Resources System

Projects within the John H. Chafee Coastal Barrier Resources System (CBRS) may be subject to the restrictions on federal expenditures and financial assistance and the consultation requirements of the Coastal Barrier Resources Act (CBRA) (16 U.S.C. 3501 et seq.). For more information, please contact the local Ecological Services Field Office or visit the CBRA Consultations website. The CBRA website provides tools such as a flow chart to help determine whether consultation is required and a template to facilitate the consultation process.

THERE ARE NO KNOWN COASTAL BARRIERS AT THIS LOCATION.

Data limitations

The CBRS boundaries used in IPaC are representations of the controlling boundaries, which are depicted on the official CBRS maps. The boundaries depicted in this layer are not to be considered authoritative for in/out determinations close to a CBRS boundary (i.e., within the "CBRS Buffer Zone" that appears as a hatched area on either side of the boundary). For projects that are very close to a CBRS boundary but do not clearly intersect a unit, you may contact the Service for an official determination by following the instructions here: https://www.fws.gov/service/coastal-barrier-resources-system-property-documentation

Data exclusions

CBRS units extend seaward out to either the 20- or 30-foot bathymetric contour (depending on the location of the unit). The true seaward extent of the units is not shown in the CBRS data, therefore projects in the offshore areas of units (e.g., dredging, breakwaters, offshore wind energy or oil and gas projects) may be subject to CBRA even if they do not intersect the CBRS data. For additional information, please contact CBRA@fws.gov.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER EMERGENT WETLAND
  Palustrine

RIVERINE
  Riverine

A full description for each wetland code can be found at the National Wetlands Inventory website

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

APPENDIX E

ALL DISCRETE SOIL DATA

Table E
Soil Analytical Results
Wild River Land Trust
Port Orford, Oregon

Location:	Site-specific Background	OP01GP01	OP01TP01	OP01TP02	OP01TP03	OP01TP03	OP02TP01	P-3	P-4	P-5	P-8	S13_S14_S15-COMP	S16_S17_S18-COMP	S19_S20_S21-COMP	S22	S23
Sample Name:	DU08SS	JLTQ1	JLTY5	JLTY6	JLTR7	JLTR7ME	JLTR9	9358-181115-011	9358-181115-015	9358-181115-008	P-8-6.6-7.6	9358-181113-COMP-01	9358-181113-COMP-02	9358-181115-COMP-03	9358-181115-021	9358-181115-016
Collection Date:	9/12/2020	9/13/2020	9/11/2020	9/11/2020	9/11/2020	9/11/2020	9/11/2020	11/15/2018	11/15/2018	11/15/2018	11/14/2018	11/13/2018	11/13/2018	11/15/2018	11/15/2018	11/15/2018
Collection Depth (ft bgs):	0-4 cm	4-8	4-5	6-7	7-7.5	7-7.5	1-2	6-7	10-11	6.7-7.7	6.6-7.6	0-1	0-1	0-1	0-1	0-1
Total Metals (mg/kg)																
Aluminum	22,200	24,500	24,100	31,900	20,600	--	24,200	--	--	--	--	--	--	--	--	--
Antimony	0.094	0.11 J*	0.96 UJ	0.99 UJ	0.13 J*	--	0.9 U	--	--	--	1.79 J*	0.755 J	0.973 J	1.11 J	3 U	1.29 U
Arsenic	4.18	3.2	3	3.4	2.2	--	3.4	--	--	--	4.43	1.39	0.853 J	2.75	2.76 U	1.18 U
Barium	81.3	36.4	80	73	28.8	--	142	--	--	--	--	--	--	--	--	--
Beryllium	0.35	0.73	0.6	0.66	0.61	--	0.6	--	--	--	0.437 J*	0.0824 U	0.0869 U	0.0831 U	0.42 U	0.18 U
Cadmium	0.375	0.41 U	0.57	0.32 J*	0.49 U	--	0.17 J*	--	--	--	0.106 J	0.0824 U	0.118 J	0.0831 U	1.49	0.18 U
Calcium	4340	2320	2420	2030	2270	--	6220	--	--	--	--	--	--	--	--	--
Chromium	67.1	102	67.5	86.3	81.1	--	70.5	--	--	--	138	58.5	81.7	64.2	73.7	86.9
Cobalt	23.1	13.9	17.5	11.4	14.4	--	17	--	--	--	--	--	--	--	--	--
Copper	57.3	47.7	37	43.2	39.3	--	73.7	--	--	--	63.8	57.3	80.3	70.5	459	52.6
Iron	30300	33,000	22,800	26,600	25,400	--	30,900	--	--	--	--	--	--	--	--	--
Lead	15.2	6.9	16.8	24.5	7.5	--	25.4 J	--	--	--	3.89	11	31.5	56.6	330	9.05
Magnesium	11700	14,200	6,780	7,450	11,700	--	9,600	--	--	--	--	--	--	--	--	--
Manganese	1140	325	267	231	271	--	744	--	--	--	--	--	--	--	--	--
Mercury	0.066	0.12	0.17	0.15	0.13 U	--	0.1 U	--	--	--	0.0971	0.0534	0.119	0.149	0.818 J*	0.083
Nickel	69.8	133	67.3	82.4	144	--	78	--	--	--	192	75.2	83.3	71.5	91.5	76.7
Potassium	1060	443	492 U	526 U	488 U	--	2570	--	--	--	--	--	--	--	--	--
Selenium	NV	2 UJ	0.69 J*	2.5 UJ	2.2 UJ	--	2.2 U	--	--	--	0.755 U	0.73 U	0.77 U	0.736 U	3.72 U	1.6 U
Silver	0.067	0.36 J*	0.98 U	1.1 U	0.37 J*	--	0.84 J*	--	--	--	0.146 U	0.141 U	0.149 U	0.142 U	0.826 J	0.309 U
Sodium	174	30.1 J*	492 U	58.9 J*	30.3 J*	--	362 J*	--	--	--	--	--	--	--	--	--
Thallium	0.076	0.4 U	0.48 U	0.49 U	0.45 U	--	0.45 U	--	--	--	0.791 U	0.589 U	0.621 U	0.594 U	3 U	1.29 U
Vanadium	75.8	65.2	62.9	78.8	44	--	58 J	--	--	--	--	--	--	--	--	--
Zinc	93.1	65.9	92.1	113	59.5	--	171	--	--	--	70.3	84.7	131	162	899	93.1
PCB Aroclors (mg/kg)																
Total PCBs[(a)]	NV	--	--	--	--	--	--	--	--	--	--	0.00632 U	0.00667 U	0.00637 U	0.0507	0.0138 U
Dioxins (pg/g)																
1,2,3,4,6,7,8-HpCDD	NV	--	--	--	--	--	72	--	--	--	--	--	--	--	--	--
1,2,3,4,6,7,8-HpCDF	NV	--	--	--	--	--	8	--	--	--	--	--	--	--	--	--
1,2,3,4,7,8,9-HpCDF	NV	--	--	--	--	--	0.94 J*	--	--	--	--	--	--	--	--	--
1,2,3,4,7,8-HxCDD	NV	--	--	--	--	--	5.5	--	--	--	--	--	--	--	--	--
1,2,3,4,7,8-HxCDF	NV	--	--	--	--	--	1.3 J*	--	--	--	--	--	--	--	--	--
1,2,3,6,7,8-HxCDD	NV	--	--	--	--	--	11	--	--	--	--	--	--	--	--	--
1,2,3,6,7,8-HxCDF	NV	--	--	--	--	--	1.5 J*	--	--	--	--	--	--	--	--	--
1,2,3,7,8,9-HxCDD	NV	--	--	--	--	--	15	--	--	--	--	--	--	--	--	--
1,2,3,7,8,9-HxCDF	NV	--	--	--	--	--	0.71 J*	--	--	--	--	--	--	--	--	--
1,2,3,7,8-PeCDD	NV	--	--	--	--	--	7.9	--	--	--	--	--	--	--	--	--
1,2,3,7,8-PeCDF	NV	--	--	--	--	--	0.71 J*	--	--	--	--	--	--	--	--	--
2,3,4,6,7,8-HxCDF	NV	--	--	--	--	--	2.2 J*	--	--	--	--	--	--	--	--	--
2,3,4,7,8-PeCDF	NV	--	--	--	--	--	1.6 J*	--	--	--	--	--	--	--	--	--
2,3,7,8-TCDD	NV	--	--	--	--	--	3.3	--	--	--	--	--	--	--	--	--
2,3,7,8-TCDF	NV	--	--	--	--	--	0.75 J*	--	--	--	--	--	--	--	--	--
OCDD	NV	--	--	--	--	--	200	--	--	--	--	--	--	--	--	--
OCDF	NV	--	--	--	--	--	9.4 J*	--	--	--	--	--	--	--	--	--
Dioxin/furan TEQ (avian)[(b)(1)]	NV	--	--	--	--	--	16 J*	--	--	--	--	--	--	--	--	--

Location:	Site-specific Background	OP01GP01	OP01TP01	OP01TP02	OP01TP03	OP01TP03	OP02TP01	P-3	P-4	P-5	P-8	S13_S14_S15-COMP	S16_S17_S18-COMP	S19_S20_S21-COMP	S22	S23
Sample Name:	DU08SS	JLTQ1	JLTY5	JLTY6	JLTR7	JLTR7ME	JLTR9	9358-181115-011	9358-181115-015	9358-181115-008	P-8-6.6-7.6	9358-181113-COMP-01	9358-181113-COMP-02	9358-181115-COMP-03	9358-181115-021	9358-181115-016
Collection Date:	9/12/2020	9/13/2020	9/11/2020	9/11/2020	9/11/2020	9/11/2020	9/11/2020	11/15/2018	11/15/2018	11/15/2018	11/14/2018	11/13/2018	11/13/2018	11/15/2018	11/15/2018	11/15/2018
Collection Depth (ft bgs):	0-4 cm	4-8	4-5	6-7	7-7.5	7-7.5	1-2	6-7	10-11	6.7-7.7	6.6-7.6	0-1	0-1	0-1	0-1	0-1
Dioxin/furan TEQ (mammal)[(c)(2)]	NV	--	--	--	--	--	16 J*	--	--	--	--	--	--	--	--	--
TPH (mg/kg)																
Gasoline-Range Hydrocarbons	NV	7.9 U	13 U	180	20 U	--	--	1.65 U	1.46 U	1.72 U	1.62 U	15.7 U	1.63 J*	1.59 J*	15.9 U	3.75 J
Diesel-Range Hydrocarbons	NV	45 U	54 U	380	200	--	--	1.65 U	1.46 U	1.72 U	1.62 U	17.3	--	--	15.9 U	--
Lube-Oil-Range Hydrocarbons	NV	110 U	140 U	280	120 U	--	--	4.14 U	3.65 U	4.32 U	4.05 U	94.8	--	--	79.3	--
Total Diesel+Oil[(d)]	NV	110 U	140 U	660	220	--	--	4.14 U	3.65 U	4.32 U	4.05 U	112	--	--	87	--
TPH with Silica-Gel Treatment (mg/kg)																
Diesel-Range Hydrocarbons	NV	--	--	--	--	--	--	--	--	--	--	--	22.4 J*	14.6 J	--	3.42 U
Lube-Oil-Range Hydrocarbons	NV	--	--	--	--	--	--	--	--	--	--	--	224 J*	121	--	14.9 J
Total Diesel+Oil[(e)]	NV	--	--	--	--	--	--	--	--	--	--	--	246 J*	136 J	--	16.6 J
SVOCs (mg/kg)																
1,1'-Biphenyl	NV	0.19 U	0.22 U	0.25 UJ	0.23 U	--	0.21 UJ	--	--	--	--	--	--	--	--	--
1,2,4,5-Tetrachlorobenzene	NV	0.19 U	0.22 U	0.25 UJ	0.23 U	--	0.21 UJ	--	--	--	--	--	--	--	--	--
1,4-Dioxane	NV	0.075 U	0.086 U	0.1 UJ	0.089 U	--	0.081 UJ	--	--	--	--	--	--	--	--	--
2,3,4,6-Tetrachlorophenol	NV	0.19 U	0.22 U	0.25 UJ	0.23 U	--	0.21 UJ	--	--	--	--	--	--	--	--	--
2,4,5-Trichlorophenol	NV	0.19 U	0.22 U	0.25 UJ	0.23 U	--	0.21 UJ	--	--	--	--	0.122 U	0.129 U	0.123 U	0.125 U	0.268 U
2,4,6-Trichlorophenol	NV	0.19 U	0.22 U	0.25 UJ	0.23 U	--	0.21 UJ	--	--	--	--	0.0917 U	0.0967 U	0.0925 U	0.0934 U	0.201 U
2,4-Dichlorophenol	NV	0.19 U	0.22 U	0.25 UJ	0.23 U	--	0.21 UJ	--	--	--	--	0.0878 U	0.0926 U	0.0886 U	0.0895 U	0.192 U
2,4-Dimethylphenol	NV	0.19 U	0.22 U	0.25 UJ	0.23 U	--	0.21 UJ	--	--	--	--	0.555 U	0.585 U	0.559 U	0.565 U	1.21 U
2,4-Dinitrophenol	NV	0.37 U	0.42 U	0.49 UJ	0.44 U	--	0.4 UJ	--	--	--	--	1.15 U	1.22 U	1.16 U	1.18 U	2.52 U
2,4-Dinitrotoluene	NV	0.19 U	0.22 U	0.25 UJ	0.23 U	--	0.21 UJ	--	--	--	--	--	--	--	--	--
2,6-Dinitrotoluene	NV	0.19 U	0.22 U	0.25 UJ	0.23 U	--	0.21 UJ	--	--	--	--	--	--	--	--	--
2-Chloronaphthalene	NV	0.19 U	0.22 U	0.25 UJ	0.23 U	--	0.21 UJ	--	--	--	--	--	--	--	--	--
2-Chlorophenol	NV	0.19 U	0.22 U	0.25 UJ	0.23 U	--	0.21 UJ	--	--	--	--	0.0979 U	0.103 U	0.0986 U	0.0997 U	0.214 U
2-Methylnaphthalene	NV	0.19 R	0.22 R	0.25 R	0.23 R	--	0.21 R	--	--	--	--	--	--	--	--	--
2-Methylphenol	NV	0.37 U	0.42 U	0.49 UJ	0.44 U	--	0.4 UJ	--	--	--	--	0.116 U	0.122 U	0.117 U	0.118 U	0.254 U
2-Nitroaniline	NV	0.19 UJ	0.22 U	0.25 UJ	0.23 U	--	0.21 UJ	--	--	--	--	--	--	--	--	--
2-Nitrophenol	NV	0.19 U	0.22 U	0.25 UJ	0.23 U	--	0.21 UJ	--	--	--	--	0.153 U	0.161 U	0.154 U	0.156 U	0.335 U
3- & 4-Methylphenol (m,p-Cresol)	NV	--	--	--	--	--	--	--	--	--	--	0.0922 U	0.0972 U	0.093 U	0.0939 U	0.202 U
3,3-Dichlorobenzidine	NV	0.37 U	0.42 U	0.49 UJ	0.44 U	--	0.4 UJ	--	--	--	--	--	--	--	--	--
3-Nitroaniline	NV	0.37 U	0.42 U	0.49 UJ	0.44 U	--	0.4 UJ	--	--	--	--	--	--	--	--	--
4,6-Dinitro-2-methylphenol	NV	0.37 U	0.42 U	0.49 UJ	0.44 U	--	0.4 UJ	--	--	--	--	1.46 U	1.54 U	1.47 U	1.49 U	3.19 U
4-Bromophenylphenyl ether	NV	0.19 U	0.22 U	0.25 UJ	0.23 U	--	0.21 UJ	--	--	--	--	--	--	--	--	--
4-Chloro-3-methylphenol	NV	0.19 U	0.22 U	0.25 UJ	0.23 U	--	0.21 UJ	--	--	--	--	0.0562 U	0.0592 U	0.0566 U	0.0572 U	0.123 U
4-Chloroaniline	NV	0.37 U	0.42 U	0.49 UJ	0.44 U	--	0.4 UJ	--	--	--	--	--	--	--	--	--
4-Chlorophenylphenyl ether	NV	0.19 U	0.22 U	0.25 UJ	0.23 U	--	0.21 UJ	--	--	--	--	--	--	--	--	--
4-Methylphenol	NV	0.37 U	0.42 U	0.49 UJ	0.44 U	--	0.4 UJ	--	--	--	--	--	--	--	--	--
4-Nitroaniline	NV	0.37 U	0.42 U	0.49 UJ	0.44 U	--	0.4 UJ	--	--	--	--	--	--	--	--	--
4-Nitrophenol	NV	0.37 U	0.42 U	0.49 UJ	0.44 U	--	0.4 UJ	--	--	--	--	0.618 U	0.652 U	0.623 U	0.63 U	1.35 U
Acenaphthene	NV	0.19 R	0.22 R	0.25 R	0.23 R	--	0.21 R	--	--	--	--	--	--	--	--	--
Acenaphthylene	NV	0.19 R	0.22 R	0.25 R	0.23 R	--	0.21 R	--	--	--	--	--	--	--	--	--
Acetophenone	NV	0.37 U	0.42 U	0.49 UJ	0.44 U	--	0.4 UJ	--	--	--	--	--	--	--	--	--
Anthracene	NV	0.19 R	0.22 R	0.25 R	0.23 R	--	0.21 R	--	--	--	--	--	--	--	--	--
Atrazine	NV	0.37 U	0.42 U	0.49 UJ	0.44 U	--	0.4 UJ	--	--	--	--	--	--	--	--	--
Benzaldehyde	NV	0.37 U	0.42 U	0.49 UJ	0.44 U	--	0.4 UJ	--	--	--	--	--	--	--	--	--

Location:	Site-specific Background	OP01GP01	OP01TP01	OP01TP02	OP01TP03	OP01TP03	OP02TP01	P-3	P-4	P-5	P-8	S13_S14_S15-COMP	S16_S17_S18-COMP	S19_S20_S21-COMP	S22	S23
Sample Name:	DU08SS	JLTQ1	JLTY5	JLTY6	JLTR7	JLTR7ME	JLTR9	9358-181115-011	9358-181115-015	9358-181115-008	P-8-6.6-7.6	9358-181113-COMP-01	9358-181113-COMP-02	9358-181115-COMP-03	9358-181115-021	9358-181115-016
Collection Date:	9/12/2020	9/13/2020	9/11/2020	9/11/2020	9/11/2020	9/11/2020	9/11/2020	11/15/2018	11/15/2018	11/15/2018	11/14/2018	11/13/2018	11/13/2018	11/15/2018	11/15/2018	11/15/2018
Collection Depth (ft bgs):	0-4 cm	4-8	4-5	6-7	7-7.5	7-7.5	1-2	6-7	10-11	6.7-7.7	6.6-7.6	0-1	0-1	0-1	0-1	0-1
Benzo(a)anthracene	NV	0.19 R	0.22 R	0.25 R	0.23 R	--	0.21 R	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene	NV	0.19 R	0.22 R	0.25 R	0.23 R	--	0.21 R	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene	NV	0.19 R	0.22 R	0.25 R	0.23 R	--	0.21 R	--	--	--	--	--	--	--	--	--
Benzo(ghi)perylene	NV	0.19 R	0.22 R	0.25 R	0.23 R	--	0.21 R	--	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene	NV	0.19 R	0.22 R	0.25 R	0.23 R	--	0.21 R	--	--	--	--	--	--	--	--	--
Bis(2-chloro-1-methylethyl)ether	NV	0.37 U	0.42 U	0.49 UJ	0.44 U	--	0.4 UJ	--	--	--	--	--	--	--	--	--
Bis(2-chloroethoxy)methane	NV	0.19 U	0.22 U	0.25 UJ	0.23 U	--	0.21 UJ	--	--	--	--	--	--	--	--	--
Bis(2-chloroethyl)ether	NV	0.37 U	0.42 U	0.49 UJ	0.44 U	--	0.4 UJ	--	--	--	--	--	--	--	--	--
Bis(2-ethylhexyl)phthalate	NV	0.19 U	0.22 U	0.25 UJ	0.23 U	--	0.21 UJ	--	--	--	--	--	--	--	--	--
Butylbenzylphthalate	NV	0.19 U	0.22 U	0.25 UJ	0.23 U	--	0.21 UJ	--	--	--	--	--	--	--	--	--
Caprolactam	NV	0.37 U	0.42 U	0.49 UJ	0.44 U	--	0.4 UJ	--	--	--	--	--	--	--	--	--
Carbazole	NV	0.37 U	0.42 U	0.49 UJ	0.44 U	--	0.4 UJ	--	--	--	--	--	--	--	--	--
Chrysene	NV	0.19 R	0.22 R	0.25 R	0.23 R	--	0.21 R	--	--	--	--	--	--	--	--	--
Dibenzo(a,h)anthracene	NV	0.19 R	0.22 R	0.25 R	0.23 R	--	0.21 R	--	--	--	--	--	--	--	--	--
Dibenzofuran	NV	0.19 U	0.22 U	0.25 UJ	0.23 U	--	0.21 UJ	--	--	--	--	--	--	--	--	--
Diethyl phthalate	NV	0.19 U	0.22 U	0.25 UJ	0.23 U	--	0.21 UJ	--	--	--	--	--	--	--	--	--
Dimethyl phthalate	NV	0.19 U	0.22 U	0.25 UJ	0.23 U	--	0.21 UJ	--	--	--	--	--	--	--	--	--
Di-n-butyl phthalate	NV	0.19 U	0.22 U	0.25 UJ	0.23 U	--	0.21 UJ	--	--	--	--	--	--	--	--	--
Di-n-octyl phthalate	NV	0.37 U	0.42 U	0.49 UJ	0.44 U	--	0.4 UJ	--	--	--	--	--	--	--	--	--
Fluoranthene	NV	0.37 R	0.42 R	0.49 R	0.44 R	--	0.4 R	--	--	--	--	--	--	--	--	--
Fluorene	NV	0.19 R	0.22 R	0.25 R	0.23 R	--	0.21 R	--	--	--	--	--	--	--	--	--
Hexachlorobenzene	NV	0.19 U	0.22 U	0.25 UJ	0.23 U	--	0.21 UJ	--	--	--	--	--	--	--	--	--
Hexachlorobutadiene	NV	0.19 U	0.22 U	0.25 UJ	0.23 U	--	0.21 UJ	--	--	--	--	--	--	--	--	--
Hexachlorocyclopentadiene	NV	0.37 U	0.42 U	0.49 UJ	0.44 U	--	0.4 UJ	--	--	--	--	--	--	--	--	--
Hexachloroethane	NV	0.19 U	0.22 U	0.25 UJ	0.23 U	--	0.21 UJ	--	--	--	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	NV	0.19 R	0.22 R	0.25 R	0.23 R	--	0.21 R	--	--	--	--	--	--	--	--	--
Isophorone	NV	0.19 U	0.22 U	0.25 UJ	0.23 U	--	0.21 UJ	--	--	--	--	--	--	--	--	--
Naphthalene	NV	0.19 R	0.22 R	0.25 R	0.23 R	--	0.21 R	--	--	--	--	--	--	--	--	--
Nitrobenzene	NV	0.19 U	0.22 U	0.25 UJ	0.23 U	--	0.21 UJ	--	--	--	--	--	--	--	--	--
N-Nitrosodiphenylamine	NV	0.19 U	0.22 U	0.25 UJ	0.23 U	--	0.21 UJ	--	--	--	--	--	--	--	--	--
N-Nitrosodipropylamine	NV	0.19 U	0.22 U	0.25 UJ	0.23 U	--	0.21 UJ	--	--	--	--	--	--	--	--	--
Pentachlorophenol	NV	0.37 R	0.42 R	0.49 R	0.44 R	--	0.4 R	--	--	--	--	0.565 U	0.596 U	0.57 U	0.576 U	1.24 U
Phenanthrene	NV	0.19 R	0.22 R	0.25 R	0.23 R	--	0.21 R	--	--	--	--	--	--	--	--	--
Phenol	NV	0.37 U	0.42 U	0.49 UJ	0.44 U	--	0.4 UJ	--	--	--	--	0.0818 U	0.0863 U	0.0825 U	0.0833 U	0.179 U
Pyrene	NV	0.19 R	0.22 R	0.25 R	0.23 R	--	0.21 R	--	--	--	--	--	--	--	--	--
SVOCs by SIM (mg/kg)																
1-Methylnaphthalene	NV	--	--	--	--	--		--	--	--	0.00243 U	0.00293 J	0.00248 U	0.00284 J	0.00498 J	0.00515 U
2-Chloronaphthalene	NV	--	--	--	--	--		--	--	--	0.00243 U	0.00236 U	0.00248 U	0.00237 U	0.0024 U	0.00515 U
2-Methylnaphthalene	NV	0.0017 J*	0.042	0.048	0.053	--	0.0012 J*	--	--	--	0.00243 U	0.00413 J	0.00365 J	0.00508 J	0.00514 J	0.00515 U
Acenaphthene	NV	0.0037 U	0.0024 J*	0.0041 J*	0.003 J*	--	0.004 U	--	--	--	0.00073 U	0.000707 U	0.000745 U	0.000712 U	0.00072 U	0.00155 U
Acenaphthylene	NV	0.0037 U	0.0013 J*	0.0013 J*	0.0044 U	--	0.004 U	--	--	--	0.00073 U	0.000707 U	0.000745 U	0.000712 U	0.00072 U	0.00155 U
Anthracene	NV	0.00075 J*	0.0094	0.0049 U	0.003 J*	--	0.004 U	--	--	--	0.00073 U	0.000707 U	0.000745 U	0.000992 J	0.000899 J	0.00155 U
Benzo(a)anthracene	NV	0.0044	0.0035 J*	0.0084 J	0.0011 J*	--	0.0035 J*	--	--	--	0.00073 U	0.00139 J	0.00116 J	0.00254 J	0.00186 J	0.00155 U
Benzo(a)pyrene	NV	0.0044	0.0045	0.013 J	0.00081 J*	--	0.0018 J*	--	--	--	0.00073 U	0.000809 J	0.00106 J	0.00212 J	0.00259 J	0.00155 U
Benzo(b)fluoranthene	NV	0.0065	0.011	0.02 J	0.0022 J*	--	0.0078 J	--	--	--	0.00073 U	0.0026 J	0.00302 J	0.00388 J	0.00512 J	0.00155 U
Benzo(ghi)perylene	NV	0.0023 J*	0.0024 J*	0.01 J	0.0044 U	--	0.0021 J*	--	--	--	0.00073 U	0.00151 J	0.00176 J	0.00192 J	0.00411 J	0.00155 U

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Table E
Soil Analytical Results
Wild River Land Trust
Port Orford, Oregon

Location:	Site-specific Background	OP01GP01	OP01TP01	OP01TP02	OP01TP03	OP01TP03	OP02TP01	P-3	P-4	P-5	P-8	S13_S14_S15-COMP	S16_S17_S18-COMP	S19_S20_S21-COMP	S22	S23
Sample Name:	DU08SS	JLTQ1	JLTY5	JLTY6	JLTR7	JLTR7ME	JLTR9	9358-181115-011	9358-181115-015	9358-181115-008	P-8-6.6-7.6	9358-181113-COMP-01	9358-181113-COMP-02	9358-181115-COMP-03	9358-181115-021	9358-181115-016
Collection Date:	9/12/2020	9/13/2020	9/11/2020	9/11/2020	9/11/2020	9/11/2020	9/11/2020	11/15/2018	11/15/2018	11/15/2018	11/14/2018	11/13/2018	11/13/2018	11/15/2018	11/15/2018	11/15/2018
Collection Depth (ft bgs):	0-4 cm	4-8	4-5	6-7	7-7.5	7-7.5	1-2	6-7	10-11	6.7-7.7	6.6-7.6	0-1	0-1	0-1	0-1	0-1
Benzo(k)fluoranthene	NV	0.0029 J*	0.0031 J*	0.0079 J	0.00067 J*	--	0.004 U	--	--	--	0.00073 U	0.000707 U	0.000745 U	0.00118 J	0.00121 J	0.00155 U
Chrysene	NV	0.0048	0.011	0.011 J	0.0017 J*	--	0.0095 J	--	--	--	0.00073 U	0.00353 J	0.00359 J	0.00438 J	0.00194 J	0.00155 U
Dibenzo(a,h)anthracene	NV	0.0037 U	0.0042 U	0.0049 U	0.0044 U	--	0.004 U	--	--	--	0.00073 U	0.000707 U	0.000745 U	0.000712 U	0.0011 J	0.00155 U
Fluoranthene	NV	0.0082	0.011	0.021 J	0.0019 J*	--	0.0088 J	--	--	--	0.00073 U	0.00343 J	0.00469 J	0.00648 J	0.0041 J	0.00155 U
Fluorene	NV	0.00052 J*	0.0065	0.005	0.0043 J*	--	0.004 U	--	--	--	0.00073 U	0.000804 J	0.000745 U	0.000712 U	0.000768 J	0.00155 U
Indeno(1,2,3-cd)pyrene	NV	0.003 J*	0.0027 J*	0.0089 J	0.0044 U	--	0.0018 J*	--	--	--	0.00073 U	0.000763 J	0.000924 J	0.00119 J	0.00263 J	0.00155 U
Naphthalene	NV	0.0012 J*	0.016	0.033	0.015	--	0.0026 J*	--	--	--	0.00361 J	0.00656 J	0.00526 J	0.00723 J	0.0103 J	0.00548 J
Pentachlorophenol	NV	0.0075 U	0.008 J*	0.01 U	0.006 J*	--	0.008 U	--	--	--	--	--	--	--	--	--
Phenanthrene	NV	0.004	0.048	0.025	0.0058	--	0.014	--	--	--	0.00073 U	0.00824	0.00847	0.0128	0.00923	0.00155 U
Pyrene	NV	0.0072	0.014	0.019 J	0.0027 J*	--	0.0075 J	--	--	--	0.00073 U	0.00252 J	0.00293 J	0.00398 J	0.00242 J	0.00155 U
Total LPAH[e][3]	NV	0.012 J*	0.13 J*	0.12 J*	0.086 J*	--	0.026 J*	--	--	--	0.0067 J	0.021 J	0.019 J	0.027 J	0.027 J	0.012 J
Total HPAH[f][3]	NV	0.046 J*	0.065 J*	0.12 J*	0.018 J*	--	0.047 J*	--	--	--	0.0037 J	0.017 J	0.02 J	0.028 J	0.027 J	0.0078 J
VOCs (mg/kg)																
1,1,1,2-Tetrachloroethane	NV	--	--	--	--	--	--	--	--	--	0.000608 U	--	0.000739 UJ*	--	--	0.00155 U
1,1,1-Trichloroethane	NV	0.0058 U	0.0089 U	0.77 U	0.015 U	0.97 R	--	--	--	--	0.000335 U	--	0.000406 UJ*	--	--	0.00085 U
1,1,2,2-Tetrachloroethane	NV	0.0058 U	0.0089 U	0.77 U	0.015 U	0.97 R	--	--	--	--	0.000475 U	--	0.000576 UJ*	--	--	0.00121 U
1,1,2-Trichloroethane	NV	0.0058 U	0.0089 U	0.77 U	0.015 U	0.97 R	--	--	--	--	0.00107 U	--	0.0013 UJ*	--	--	0.00273 U
1,1-Dichloroethane	NV	0.0058 U	0.0089 U	0.77 U	0.015 U	0.97 R	--	--	--	--	0.0007 U	--	0.000849 UJ*	--	--	0.00178 U
1,1-Dichloroethene	NV	0.0058 U	0.0089 UJ	0.77 U	0.015 U	0.97 R	--	--	--	--	0.000608 U	--	0.000739 UJ*	--	--	0.00155 U
1,1-Dichloropropene	NV	--	--	--	--	--	--	--	--	--	0.000852 U	--	0.00103 UJ*	--	--	0.00216 U
1,2,3-Trichlorobenzene	NV	0.0058 U	0.0089 UJ	0.77 U	0.015 UJ	0.97 R	--	--	--	--	0.000761 U	--	0.000924 UJ*	--	--	0.00193 U
1,2,3-Trichloropropane	NV	--	--	--	--	--	--	--	--	--	0.00621 U	--	0.00754 UJ*	--	--	0.0158 U
1,2,3-Trimethylbenzene	NV	--	--	--	--	--	--	--	--	--	0.0014 U	--	0.0017 UJ*	--	--	0.00355 U
1,2,4-Trichlorobenzene	NV	0.0058 U	0.0089 UJ	0.77 U	0.015 UJ	0.97 R	--	--	--	--	0.00587 U	--	0.00713 UJ*	--	--	0.0149 U
1,2,4-Trimethylbenzene	NV	--	--	--	--	--	--	--	--	--	0.00404 J	--	0.00204 J*	--	--	0.00358 U
1,2-Dibromo-3-chloropropane	NV	0.0058 U	0.0089 U	0.77 U	0.015 U	0.97 R	--	--	--	--	0.00621 U	--	0.00754 UJ*	--	--	0.0158 U
1,2-Dibromoethane	NV	0.0058 U	0.0089 U	0.77 U	0.015 U	0.97 R	--	--	--	--	0.000639 U	--	0.000776 UJ*	--	--	0.00162 U
1,2-Dichlorobenzene	NV	0.0058 U	0.0089 UJ	0.77 U	0.015 UJ	0.97 R	--	--	--	--	0.00176 U	--	0.00214 UJ*	--	--	0.00448 U
1,2-Dichloroethane	NV	0.0058 U	0.0089 U	0.77 U	0.015 U	0.97 R	--	--	--	--	0.000578 U	--	0.000702 UJ*	--	--	0.00147 U
1,2-Dichloropropane	NV	0.0058 U	0.0089 U	0.77 U	0.015 U	0.97 R	--	--	--	--	0.00155 U	--	0.00188 UJ*	--	--	0.00391 U
1,3,5-Trimethylbenzene	NV	--	--	--	--	--	--	--	--	--	0.00145 J	--	0.00159 UJ*	--	--	0.00335 U
1,3-Dichlorobenzene	NV	0.0058 U	0.0089 UJ	0.77 U	0.015 UJ	0.97 R	--	--	--	--	0.00207 U	--	0.00251 UJ*	--	--	0.00525 U
1,3-Dichloropropane	NV	--	--	--	--	--	--	--	--	--	0.00213 UJ*	--	0.00258 UJ*	--	--	0.00541 U
1,4-Dichlorobenzene	NV	0.0058 U	0.0089 UJ	0.77 U	0.015 UJ	0.97 R	--	--	--	--	0.0024 U	--	0.00291 UJ*	--	--	0.00608 U
2,2-Dichloropropane	NV	--	--	--	--	--	--	--	--	--	0.000965 U	--	0.00117 UJ*	--	--	0.00245 U
2-Butanone	NV	0.012 U	0.018 U	1.5 U	0.03 U	1.9 R	--	--	--	--	0.0152 U	--	0.0185 UJ*	--	--	0.0676 J
2-Chlorotoluene	NV	--	--	--	--	--	--	--	--	--	0.00112 U	--	0.00135 UJ*	--	--	0.00283 U
2-Hexanone	NV	0.012 U	0.018 U	1.5 U	0.03 U	1.9 R	--	--	--	--	--	--	--	--	--	--
4-Chlorotoluene	NV	--	--	--	--	--	--	--	--	--	0.00138 U	--	0.00166 UJ*	--	--	0.0035 U
4-Isopropyltoluene	NV	--	--	--	--	--	--	--	--	--	0.00284 U	--	0.047 J*	--	--	0.0184
4-Methyl-2-pentanone	NV	0.012 U	0.018 U	1.5 U	0.03 U	1.9 R	--	--	--	--	0.0122 U	--	0.0148 UJ*	--	--	0.0309 U
Acetone	NV	0.0067 J*	0.014 J*	1.5 U	0.027 J*	1.9 R	--	--	--	--	0.0167 U	--	0.0202 UJ*	--	--	0.162
Acrylonitrile	NV	--	--	--	--	--	--	--	--	--	0.00231 U	--	0.00281 UJ*	--	--	0.00587 U
Benzene	NV	0.0058 U	0.0089 U	0.77 U	0.015 U	0.97 R	--	--	--	--	0.000487 U	--	0.000591 UJ*	--	--	0.00659
Bromobenzene	NV	--	--	--	--	--	--	--	--	--	0.00128 U	--	0.00155 UJ*	--	--	0.00324 U

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Table E
Soil Analytical Results
Wild River Land Trust
Port Orford, Oregon

Location:	Site-specific Background	OP01GP01	OP01TP01	OP01TP02	OP01TP03	OP01TP03	OP02TP01	P-3	P-4	P-5	P-8	S13_S14_S15-COMP	S16_S17_S18-COMP	S19_S20_S21-COMP	S22	S23
Sample Name:	DU08SS	JLTQ1	JLTY5	JLTY6	JLTR7	JLTR7ME	JLTR9	9358-181115-011	9358-181115-015	9358-181115-008	P-8-6.6-7.6	9358-181113-COMP-01	9358-181113-COMP-02	9358-181115-COMP-03	9358-181115-021	9358-181115-016
Collection Date:	9/12/2020	9/13/2020	9/11/2020	9/11/2020	9/11/2020	9/11/2020	9/11/2020	11/15/2018	11/15/2018	11/15/2018	11/14/2018	11/13/2018	11/13/2018	11/15/2018	11/15/2018	11/15/2018
Collection Depth (ft bgs):	0-4 cm	4-8	4-5	6-7	7-7.5	7-7.5	1-2	6-7	10-11	6.7-7.7	6.6-7.6	0-1	0-1	0-1	0-1	0-1
Bromodichloromethane	NV	0.0058 U	0.0089 U	0.77 U	0.015 U	0.97 R	--	--	--	--	0.000959 U	--	0.00116 UJ*	--	--	0.00244 U
Bromoform	NV	0.0058 U	0.0089 U	0.77 U	0.015 U	0.97 R	--	--	--	--	0.00728 U	--	0.00884 UJ*	--	--	0.0185 U
Bromomethane	NV	0.0058 U	0.0089 U	0.77 U	0.015 U	0.97 R	--	--	--	--	0.0045 U	--	0.00546 UJ*	--	--	0.0114 U
Carbon disulfide	NV	0.0058 U	0.0089 U	0.77 U	0.015 U	0.97 R	--	--	--	--	--	--	--	--	--	--
Carbon tetrachloride	NV	0.0058 U	0.0089 U	0.77 U	0.015 U	0.97 R	--	--	--	--	0.00131 U	--	0.00159 UJ*	--	--	0.00335 U
Chlorobenzene	NV	0.0058 U	0.0089 UJ	0.77 U	0.015 UJ	0.97 R	--	--	--	--	0.000697 U	--	0.000847 UJ*	--	--	0.00177 U
Chlorobromomethane	NV	0.0058 U	0.0089 U	0.77 U	0.015 U	0.97 R	--	--	--	--	--	--	--	--	--	--
Chloroethane	NV	0.0058 U	0.0089 U	0.77 U	0.015 U	0.97 R	--	--	--	--	0.00131 U	--	0.00159 UJ*	--	--	0.00335 U
Chloroform	NV	0.0058 U	0.0089 U	0.77 U	0.0038 J*	0.97 R	--	--	--	--	0.000505 U	--	0.000613 UJ*	--	--	0.00128 U
Chloromethane	NV	0.0058 U	0.0089 U	0.77 U	0.015 U	0.97 R	--	--	--	--	0.00169 U	--	0.00205 UJ*	--	--	0.0043 UJ*
cis-1,2-Dichloroethene	NV	0.0058 U	0.0089 UJ	0.77 U	0.015 U	0.97 R	--	--	--	--	0.00084 U	--	0.00102 UJ*	--	--	0.00213 U
cis-1,3-Dichloropropene	NV	0.0058 U	0.0089 U	0.77 U	0.015 U	0.97 R	--	--	--	--	0.000825 U	--	0.001 UJ*	--	--	0.0021 U
Cyclohexane	NV	0.0058 U	0.0089 U	0.77 U	0.015 U	0.97 R	--	--	--	--	--	--	--	--	--	--
Dibromochloromethane	NV	0.0058 U	0.0089 U	0.77 U	0.015 U	0.97 R	--	--	--	--	0.000548 U	--	0.000666 UJ*	--	--	0.00139 U
Dibromomethane	NV	--	--	--	--	--	--	--	--	--	0.00122 U	--	0.00148 UJ*	--	--	0.00309 U
Dichlorodifluoromethane (Freon 12	NV	0.0058 U	0.0089 U	0.77 U	0.015 U	0.97 R	--	--	--	--	0.000995 U	--	0.00121 UJ*	--	--	0.00253 U
Diisopropyl Ether	NV	--	--	--	--	--	--	--	--	--	0.000426 U	--	0.000517 UJ*	--	--	0.00108 U
Ethylbenzene	NV	0.0058 U	0.0089 U	0.77 U	0.0076 J*	0.97 R	--	--	--	--	0.000645 U	--	0.00177 J*	--	--	0.00164 U
Freon 113	NV	0.0058 U	0.0089 U	0.77 U	0.015 U	0.97 R	--	--	--	--	0.000821 U	--	0.000997 UJ*	--	--	0.00209 U
Hexachlorobutadiene	NV	--	--	--	--	--	--	--	--	--	0.0155 U	--	0.0188 UJ*	--	--	0.0391 U
Isopropylbenzene	NV	0.0058 U	0.0089 U	0.21 J*	0.02	0.97 R	--	--	--	--	0.00105 U	--	0.00128 UJ*	--	--	0.00268 U
m,p-Xylene	NV	0.0058 U	0.0089 U	0.21 J*	0.003 J*	0.97 R	--	--	--	--	0.00582 U	--	0.00707 UJ*	--	--	0.0148 U
Methyl acetate	NV	0.0058 U	0.0089 U	0.77 U	0.015 U	0.97 R	--	--	--	--	--	--	--	--	--	--
Methyl tert-butyl ether	NV	0.0058 U	0.0089 U	0.77 U	0.015 U	0.97 R	--	--	--	--	0.000359 U	--	0.000436 UJ*	--	--	0.000912 U
Methylcyclohexane	NV	0.0058 U	0.0089 U	3.2	0.015 R	5.1	--	--	--	--	--	--	--	--	--	--
Methylene chloride	NV	0.0058 U	0.0089 U	0.77 U	0.015 U	0.97 R	--	--	--	--	0.00808 U	--	0.00981 UJ*	--	--	0.0205 U
Naphthalene	NV	--	--	--	--	--	--	--	--	--	0.00525 J	--	0.00461 UJ*	--	--	0.00963 U
n-Butylbenzene	NV	--	--	--	--	--	--	--	--	--	0.00467 U	--	0.00567 UJ*	--	--	0.0119 U
n-Propylbenzene	NV	--	--	--	--	--	--	--	--	--	0.00144 U	--	0.00174 UJ*	--	--	0.00366 U
o-Xylene	NV	0.0058 U	0.0089 U	0.12 J*	0.0015 J*	0.97 R	--	--	--	--	--	--	--	--	--	--
sec-Butylbenzene	NV	--	--	--	--	--	--	--	--	--	0.00308 U	--	0.00374 UJ*	--	--	0.00783 U
Styrene	NV	0.0058 U	0.0089 U	0.77 U	0.015 U	0.97 R	--	--	--	--	0.00332 U	--	0.00404 UJ*	--	--	0.00845 U
tert-Butylbenzene	NV	--	--	--	--	--	--	--	--	--	0.00189 U	--	0.00228 UJ*	--	--	0.00479 U
Tetrachloroethene	NV	0.0058 U	0.0089 U	0.77 U	0.015 U	0.97 R	--	--	--	--	0.000852 U	--	0.00184 J*	--	--	0.00216 U
Toluene	NV	0.0058 U	0.0089 U	0.18 J*	0.015 U	0.97 R	--	--	--	--	0.00152 U	--	0.0187 J*	--	--	0.0522
trans-1,2-Dichloroethene	NV	0.0058 U	0.0089 UJ	0.77 U	0.015 U	0.97 R	--	--	--	--	0.00174 U	--	0.00211 UJ*	--	--	0.00443 U
trans-1,3-Dichloropropene	NV	0.0058 U	0.0089 U	0.77 U	0.015 U	0.97 R	--	--	--	--	0.00186 U	--	0.00226 UJ*	--	--	0.00474 U
Trichloroethene	NV	0.0058 U	0.0089 U	0.77 U	0.015 U	0.97 R	--	--	--	--	0.000487 U	--	0.000591 UJ*	--	--	0.00124 U
Trichlorofluoromethane (Freon 11)	NV	0.0058 U	0.0089 U	0.77 U	0.015 U	0.97 R	--	--	--	--	0.000608 U	--	0.000739 UJ*	--	--	0.00155 U
Vinyl chloride	NV	0.0058 U	0.0089 UJ	0.77 U	0.015 U	0.97 R	--	--	--	--	0.000831 U	--	0.00101 UJ*	--	--	0.00211 U
Xylenes, total[g]	NV	0.0058 U	0.0089 U	0.33	0.0045 J*	NC	--	--	--	--	0.00582 U	--	0.00707 UJ*	--	--	0.0148 U

Table E
Soil Analytical Results
Wild River Land Trust
Port Orford, Oregon

Location:	S24	SL01GP01	SL02GP01	SL03TP01	SL03TP02	SL04TP01	SL05GP01	SL05GP02	SL06GP01	SL06GP02	SL07GP01	SL07GP02	SL08TP01	SL08TP02	SL09GP01	SL10GP01
Sample Name:	9358-181115-017	JLTQ0	JLTQ2	JLTQ4	JLTQ5	JLTQ6	JLTQ8	JLTQ9	JLTR0	JLTR1	JLTR2	JLTR3	JLTR4	JLTR5	JLTR6	JLTR8
Collection Date:	11/15/2018	9/9/2020	9/9/2020	9/9/2020	9/9/2020	9/10/2020	9/9/2020	9/9/2020	9/9/2020	9/9/2020	9/10/2020	9/10/2020	9/9/2020	9/9/2020	9/10/2020	9/10/2020
Collection Depth (ft bgs):	0-1	0-4	0-4	1-2	5-6	1-2	0-4	4-8	0-4	4-8	0-4	8-12	3-4	8-9	0-4	4-8
Total Metals (mg/kg)																
Aluminum	--	35,800	30,600	17,900	15,000	20,300	42,300	30,000	26,800	41,400	21,400	34,000	35,500	22,100	23,000	26,200
Antimony	2.46 U	0.9 UJ	0.89 UJ	0.79 UJ	0.95 UJ	0.79 U	1 UJ	0.92 UJ	0.83 UJ	0.89 UJ	0.85 UJ	0.87 UJ	0.88 UJ	0.84 UJ	0.84 U	0.8 U
Arsenic	2.27 U	3.7	3.6	2.6	2	1.8	2.8	2.2	3.4	4.8	3	2.3	3.2	5.2	3.8	3.8
Barium	--	39.5	33.9	73.2	50.7	54.6	59.4	62	66.4	43	78.9	41.9	51.4	20.1	78.8	60.1
Beryllium	0.345 U	0.74	0.65	0.61	0.54	0.6	0.93	0.76	0.82	0.8	0.69	0.99	0.7	0.76	0.74	0.86
Cadmium	0.345 U	0.5 U	0.41 U	0.43 U	0.48 U	0.038 J*	0.58 U	0.43 U	0.5 U	0.45 U	0.43 U	0.42 U	0.43 U	0.43 U	0.11 J*	0.45 U
Calcium	--	184 J*	1430	3910	3020	3460	1840	4920	3290	1610	4040	3030	1890	2060	3800	8460
Chromium	42.5	78.7	71.1	56.4	41.8	63.3	105	107	73.2	81.1	59.3	71.8	77.2	70	65.2	77.1
Cobalt	--	7.6	10.2	19	11.4	16.6	12.7	13	15.4	10	20.3	18.2	10.1	16.2	33.6	25.8
Copper	44.7	46.7	68.9	43.3	38.5	51.9	45	40.2	45.4	37.9	47.8	51.8	40.9	41.2	58.5	48.7
Iron	--	42,200	36,800	28,000	23,700	27,100	57,900	41,600	41,900	46,200	31,400	50,300	39,400	42,300	36,400	45,600
Lead	42.6	10.5	11.7	11.1	5.7	7.6 J	11.9	9	25.2	8.3	11.1	7.9	11.5	6.2	13.4 J	9.1 J
Magnesium	--	6,380	9,400	9,600	8,280	11,400	9,000	11,600	9,620	9,280	9,970	13,500	7,750	11,000	11,800	12,300
Manganese	--	152	228	616	292	400	193	261	423	253	648	313	250	287	827	521
Mercury	0.092 J	0.14	0.14	0.11 U	0.11 U	0.11 U	0.23	0.11 U	0.12 U	0.15	0.11 U	0.12	0.17	0.11 U	0.11 U	0.11 U
Nickel	30.2	49.6	64.4	66.2	50.8	77.9	79.8	89	67.8	63.9	72.3	96.9	53.5	92.7	86.5	123
Potassium	--	299 J*	458	405 J*	504	600	576 U	346 J*	486 J*	507	657	745	309 J*	433 U	519	596
Selenium	3.05 U	2.2 U	2.2 U	2 U	2.4 U	0.42 J*	2.6 U	2.3 U	0.47 J*	2.2 U	2.1 U	0.45 J*	2.2 U	2.1 U	2.1 U	0.58 J*
Silver	0.591 U	0.49 J*	0.47 J*	0.33 J*	0.27 J*	0.7 J*	0.92 J*	1.3 J	0.51 J*	0.7 J*	0.38 J*	0.62 J*	0.46 J*	0.56 J*	0.96	1
Sodium	--	499 U	411 U	434 U	481 U	37 J*	576 U	43.6 J*	42.7 J*	453 U	60 J*	53.4 J*	429 U	433 U	45.5 J*	119 J*
Thallium	2.46 U	0.45 U	0.44 U	0.4 U	0.48 U	0.4 U	0.51 U	0.46 U	0.42 U	0.45 U	0.42 U	0.43 U	0.44 U	0.42 U	0.42 U	0.4 U
Vanadium	--	70.4	64.1	54.1	44.1	48.3 J	101	88.7	73	74.8	61.2	66	75.3	51.9 J	72.7 J	63.7 J
Zinc	49.6	61.5	72.4	72.7	59.3	65.2	73.6	66.1	161	72.6	70.8	79.7	76.4	56.7	97.6	75.8
PCB Aroclors (mg/kg)																
Total PCBs[a]	0.0265 U	--	--	--	--	--	--	--	--	--	--	--	--	--	0.011 U	0.003 J*
Dioxins (pg/g)																
1,2,3,4,6,7,8-HpCDD	--	--	--	--	--	--	3.1 J*	1.7 J*	620	29	46	2.4 J*	750	7.1	--	--
1,2,3,4,6,7,8-HpCDF	--	--	--	--	--	--	0.98 J*	0.46 J*	140	6.9	12	0.44 U	240	2.6 J*	--	--
1,2,3,4,7,8,9-HpCDF	--	--	--	--	--	--	0.46 U	0.46 U	9.9	0.49 J*	0.88 J*	0.46 U	18	0.46 U	--	--
1,2,3,4,7,8-HxCDD	--	--	--	--	--	--	0.47 U	0.47 U	6.9	0.52 J*	0.94 J*	0.47 U	6.6	0.47 U	--	--
1,2,3,4,7,8-HxCDF	--	--	--	--	--	--	0.4 U	0.4 U	13	0.65 J*	0.91 J*	0.4 U	14	0.4 U	--	--
1,2,3,6,7,8-HxCDD	--	--	--	--	--	--	0.5 U	0.5 U	33	1.5 J*	2.4 J*	0.5 U	30	0.5 U	--	--
1,2,3,6,7,8-HxCDF	--	--	--	--	--	--	0.47 U	0.47 U	6.2	0.47 U	0.55 J*	0.47 U	6.7	0.47 U	--	--
1,2,3,7,8,9-HxCDD	--	--	--	--	--	--	0.34 U	0.34 U	10	0.8 J*	1.5 J*	0.34 U	9.3	0.34 U	--	--
1,2,3,7,8,9-HxCDF	--	--	--	--	--	--	0.44 U	0.44 U	3.3 J*	0.44 U	0.44 U	0.44 U	4.4 J*	0.44 U	--	--
1,2,3,7,8-PeCDD	--	--	--	--	--	--	0.35 U	0.35 U	2.5 J*	0.35 U	0.51 J*	0.35 U	2 J*	0.35 U	--	--
1,2,3,7,8-PeCDF	--	--	--	--	--	--	0.38 U	0.38 U	2.2 J*	0.38 U	0.38 U	0.38 U	2.5 J*	0.38 U	--	--
2,3,4,6,7,8-HxCDF	--	--	--	--	--	--	0.41 U	0.41 U	9	0.41 U	0.87 J*	0.41 U	11	0.41 U	--	--
2,3,4,7,8-PeCDF	--	--	--	--	--	--	0.43 U	0.43 U	7.4	0.43 U	0.61 J*	0.43 U	6.2	0.43 U	--	--
2,3,7,8-TCDD	--	--	--	--	--	--	0.13 U	0.11 U	0.36 J*	0.1 U	0.88 J*	0.1 U	0.55 J*	0.12 U	--	--
2,3,7,8-TCDF	--	--	--	--	--	--	0.11 U	0.11 U	0.67 J*	0.11 U	0.2 J*	0.11 U	0.65 J*	0.13 U	--	--
OCDD	--	--	--	--	--	--	39	18	5100	230	410	19	7400	70	--	--
OCDF	--	--	--	--	--	--	3.6 J*	1.9 J*	410	20	33	1.5 J*	830	8.4 J*	--	--
Dioxin/furan TEQ (avian)[b][1]	--	--	--	--	--	--	0.67 J*	0.65 J*	19 J*	0.89 J*	2.9 J*	0.64 J*	19 J*	0.69 J*	--	--

Table E
Soil Analytical Results
Wild River Land Trust
Port Orford, Oregon

Location:	S24	SL01GP01	SL02GP01	SL03TP01	SL03TP02	SL04TP01	SL05GP01	SL05GP02	SL06GP01	SL06GP02	SL07GP01	SL07GP02	SL08TP01	SL08TP02	SL09GP01	SL10GP01
Sample Name:	9358-181115-017	JLTQ0	JLTQ2	JLTQ4	JLTQ5	JLTQ6	JLTQ8	JLTQ9	JLTR0	JLTR1	JLTR2	JLTR3	JLTR4	JLTR5	JLTR6	JLTR8
Collection Date:	11/15/2018	9/9/2020	9/9/2020	9/9/2020	9/9/2020	9/10/2020	9/9/2020	9/9/2020	9/9/2020	9/9/2020	9/10/2020	9/10/2020	9/9/2020	9/9/2020	9/10/2020	9/10/2020
Collection Depth (ft bgs):	0-1	0-4	0-4	1-2	5-6	1-2	0-4	4-8	0-4	4-8	0-4	8-12	3-4	8-9	0-4	4-8
Dioxin/furan TEQ (mammal)[(c)(2)]	--	--	--	--	--	--	0.52 J*	0.49 J*	23 J*	1.2 J*	3.1 J*	0.49 J*	25 J*	0.59 J*	--	--
TPH (mg/kg)																
Gasoline-Range Hydrocarbons	13.2 U	8.1 U	6.9 U	--	--	--	8.6 U	6.8 U	8.2 U	7.8 U	9.3 U	6.4 U	11 U	8 U	--	--
Diesel-Range Hydrocarbons	15.7	49 U	47 U	--	--	--	55 U	51 U	270	50 U	46 U	47 U	45 U	45 U	45 U	46 U
Lube-Oil-Range Hydrocarbons	42.4	120 U	120 U	--	--	--	140 U	130 U	150	120 U	110 U	120 U	110 U	110 U	160	110 U
Total Diesel+Oil[(d)]	58.1	120 U	120 U	--	--	--	140 U	130 U	420	120 U	110 U	120 U	110 U	110 U	180	110 U
TPH with Silica-Gel Treatment (mg/kg																
Diesel-Range Hydrocarbons	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lube-Oil-Range Hydrocarbons	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Diesel+Oil[(e)]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SVOCs (mg/kg)																
1,1'-Biphenyl	--	0.21 U	0.2 U	0.19 U	0.22 U	0.19 UJ	0.24 U	0.23 U	0.2 U	0.21 U	0.18 U	0.19 U	0.21 U	0.19 U	0.19 U	0.19 U
1,2,4,5-Tetrachlorobenzene	--	0.21 U	0.2 U	0.19 U	0.22 U	0.19 UJ	0.24 U	0.23 U	0.2 U	0.21 U	0.18 U	0.19 U	0.21 U	0.19 U	0.19 U	0.19 U
1,4-Dioxane	--	0.082 U	0.08 U	0.073 U	0.086 U	0.074 UJ	0.093 U	0.089 U	0.077 UJ	0.082 U	0.073 UJ	0.076 U	0.083 U	0.073 U	0.076 U	0.076 U
2,3,4,6-Tetrachlorophenol	--	0.21 U	0.2 U	0.19 U	0.22 U	0.19 UJ	0.24 U	0.23 U	0.2 U	0.21 U	0.18 U	0.19 U	0.21 U	0.19 U	0.19 U	0.19 U
2,4,5-Trichlorophenol	0.512 U	0.21 U	0.2 U	0.19 U	0.22 U	0.19 UJ	0.24 U	0.23 U	0.2 U	0.21 U	0.18 U	0.19 U	0.21 U	0.19 U	0.19 U	0.19 U
2,4,6-Trichlorophenol	0.384 U	0.21 U	0.2 U	0.19 U	0.22 U	0.19 UJ	0.24 U	0.23 U	0.2 U	0.21 U	0.18 U	0.19 U	0.21 U	0.19 U	0.19 U	0.19 U
2,4-Dichlorophenol	0.367 U	0.21 U	0.2 U	0.19 U	0.22 U	0.19 UJ	0.24 U	0.23 U	0.2 U	0.21 U	0.18 U	0.19 U	0.21 U	0.19 U	0.19 U	0.19 U
2,4-Dimethylphenol	2.32 U	0.21 U	0.2 U	0.19 U	0.22 U	0.19 UJ	0.24 U	0.23 U	0.2 U	0.21 U	0.18 U	0.19 U	0.21 U	0.19 U	0.19 U	0.19 U
2,4-Dinitrophenol	4.83 U	0.4 U	0.39 U	0.36 U	0.42 U	0.36 UJ	0.46 U	0.44 U	0.38 U	0.41 U	0.36 U	0.37 U	0.41 U	0.36 U	0.37 U	0.37 U
2,4-Dinitrotoluene	--	0.21 U	0.2 U	0.19 U	0.22 U	0.19 UJ	0.24 U	0.23 U	0.2 U	0.21 U	0.18 U	0.19 U	0.21 U	0.19 U	0.19 U	0.19 U
2,6-Dinitrotoluene	--	0.21 U	0.2 U	0.19 U	0.22 U	0.19 UJ	0.24 U	0.23 U	0.2 U	0.21 U	0.18 U	0.19 U	0.21 U	0.19 U	0.19 U	0.19 U
2-Chloronaphthalene	--	0.21 U	0.2 U	0.19 U	0.22 U	0.19 UJ	0.24 U	0.23 U	0.2 U	0.21 U	0.18 U	0.19 U	0.21 U	0.19 U	0.19 U	0.19 U
2-Chlorophenol	0.409 U	0.21 U	0.2 U	0.19 U	0.22 U	0.19 UJ	0.24 U	0.23 U	0.2 U	0.21 U	0.18 U	0.19 U	0.21 U	0.19 U	0.19 U	0.19 U
2-Methylnaphthalene	--	0.21 R	0.2 R	0.19 R	0.22 R	0.19 R	0.24 R	0.23 R	0.2 R	0.21 R	0.18 R	0.19 R	0.21 R	0.19 R	0.19 R	0.19 R
2-Methylphenol	0.486 U	0.4 U	0.39 U	0.36 U	0.42 U	0.36 UJ	0.46 U	0.44 U	0.38 U	0.41 U	0.36 U	0.37 U	0.41 U	0.36 U	0.37 U	0.37 U
2-Nitroaniline	--	0.21 UJ	0.2 UJ	0.19 UJ	0.22 UJ	0.19 UJ	0.24 UJ	0.23 UJ	0.2 UJ	0.21 UJ	0.18 UJ	0.19 UJ	0.21 UJ	0.19 UJ	0.19 U	0.19 U
2-Nitrophenol	0.64 U	0.21 U	0.2 U	0.19 U	0.22 U	0.19 UJ	0.24 U	0.23 U	0.2 U	0.21 U	0.18 U	0.19 U	0.21 U	0.19 U	0.19 U	0.19 U
3- & 4-Methylphenol (m,p-Cresol)	0.386 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3,3-Dichlorobenzidine	--	0.4 U	0.39 U	0.36 U	0.42 U	0.36 UJ	0.46 U	0.44 U	0.38 U	0.41 U	0.36 U	0.37 U	0.41 U	0.36 U	0.37 U	0.37 U
3-Nitroaniline	--	0.4 U	0.39 U	0.36 U	0.42 U	0.36 UJ	0.46 U	0.44 U	0.38 U	0.41 U	0.36 U	0.37 U	0.41 U	0.36 U	0.37 U	0.37 U
4,6-Dinitro-2-methylphenol	6.11 U	0.4 U	0.39 U	0.36 U	0.42 U	0.36 UJ	0.46 U	0.44 U	0.38 U	0.41 U	0.36 U	0.37 U	0.41 U	0.36 U	0.37 U	0.37 U
4-Bromophenylphenyl ether	--	0.21 U	0.2 U	0.19 U	0.22 U	0.19 UJ	0.24 U	0.23 U	0.2 U	0.21 U	0.18 U	0.19 U	0.21 U	0.19 U	0.19 U	0.19 U
4-Chloro-3-methylphenol	0.235 U	0.21 U	0.2 U	0.19 U	0.22 U	0.19 UJ	0.24 U	0.23 U	0.2 U	0.21 U	0.18 U	0.19 U	0.21 U	0.19 U	0.19 U	0.19 U
4-Chloroaniline	--	0.4 U	0.39 U	0.36 U	0.42 U	0.36 UJ	0.46 U	0.44 U	0.38 U	0.41 U	0.36 U	0.37 U	0.41 U	0.36 U	0.37 U	0.37 U
4-Chlorophenylphenyl ether	--	0.21 U	0.2 U	0.19 U	0.22 U	0.19 UJ	0.24 U	0.23 U	0.2 U	0.21 U	0.18 U	0.19 U	0.21 U	0.19 U	0.19 U	0.19 U
4-Methylphenol	--	0.4 U	0.39 U	0.36 U	0.081 J*	0.36 UJ	0.46 U	0.44 U	0.38 U	0.41 U	0.36 U	0.37 U	0.41 U	0.36 U	0.37 U	0.37 U
4-Nitroaniline	--	0.4 U	0.39 U	0.36 U	0.42 U	0.36 UJ	0.46 U	0.44 U	0.38 U	0.41 U	0.36 U	0.37 U	0.41 U	0.36 U	0.37 U	0.37 U
4-Nitrophenol	2.59 U	0.4 U	0.39 U	0.36 U	0.42 U	0.36 UJ	0.46 U	0.44 U	0.38 U	0.41 U	0.36 U	0.37 U	0.41 U	0.36 U	0.37 U	0.37 U
Acenaphthene	--	0.21 R	0.2 R	0.19 R	0.22 R	0.19 R	0.24 R	0.23 R	0.2 R	0.21 R	0.18 R	0.19 R	0.21 R	0.19 R	0.19 R	0.19 R
Acenaphthylene	--	0.21 R	0.2 R	0.19 R	0.22 R	0.19 R	0.24 R	0.23 R	0.2 R	0.21 R	0.18 R	0.19 R	0.21 R	0.19 R	0.19 R	0.19 R
Acetophenone	--	0.4 U	0.39 U	0.36 U	0.42 U	0.36 UJ	0.46 U	0.44 U	0.38 U	0.41 U	0.36 U	0.37 U	0.41 U	0.36 U	0.37 U	0.37 U
Anthracene	--	0.21 R	0.2 R	0.19 R	0.22 R	0.19 R	0.24 R	0.23 R	0.2 R	0.21 R	0.18 R	0.19 R	0.21 R	0.19 R	0.19 R	0.19 R
Atrazine	--	0.4 U	0.39 U	0.36 U	0.42 U	0.36 UJ	0.46 U	0.44 U	0.38 U	0.41 U	0.36 U	0.37 U	0.41 U	0.36 U	0.37 U	0.37 U
Benzaldehyde	--	0.4 U	0.39 U	0.36 U	0.42 U	0.36 UJ	0.46 U	0.44 U	0.38 U	0.41 U	0.36 U	0.37 U	0.41 U	0.36 U	0.37 U	0.37 U

Table E
Soil Analytical Results
Wild River Land Trust
Port Orford, Oregon

Location:	S24	SL01GP01	SL02GP01	SL03TP01	SL03TP02	SL04TP01	SL05GP01	SL05GP02	SL06GP01	SL06GP02	SL07GP01	SL07GP02	SL08TP01	SL08TP02	SL09GP01	SL10GP01
Sample Name:	9358-181115-017	JLTQ0	JLTQ2	JLTQ4	JLTQ5	JLTQ6	JLTQ8	JLTQ9	JLTR0	JLTR1	JLTR2	JLTR3	JLTR4	JLTR5	JLTR6	JLTR8
Collection Date:	11/15/2018	9/9/2020	9/9/2020	9/9/2020	9/9/2020	9/10/2020	9/9/2020	9/9/2020	9/9/2020	9/9/2020	9/10/2020	9/10/2020	9/9/2020	9/9/2020	9/10/2020	9/10/2020
Collection Depth (ft bgs):	0-1	0-4	0-4	1-2	5-6	1-2	0-4	4-8	0-4	4-8	0-4	8-12	3-4	8-9	0-4	4-8
Benzo(a)anthracene	--	0.21 R	0.2 R	0.19 R	0.22 R	0.19 R	0.24 R	0.23 R	0.2 R	0.21 R	0.18 R	0.19 R	0.21 R	0.19 R	0.19 R	0.19 R
Benzo(a)pyrene	--	0.21 R	0.2 R	0.19 R	0.22 R	0.19 R	0.24 R	0.23 R	0.2 R	0.21 R	0.18 R	0.19 R	0.21 R	0.19 R	0.19 R	0.19 R
Benzo(b)fluoranthene	--	0.21 R	0.2 R	0.19 R	0.22 R	0.19 R	0.24 R	0.23 R	0.2 R	0.21 R	0.18 R	0.19 R	0.21 R	0.19 R	0.19 R	0.19 R
Benzo(ghi)perylene	--	0.21 R	0.2 R	0.19 R	0.22 R	0.19 R	0.24 R	0.23 R	0.2 R	0.21 R	0.18 R	0.19 R	0.21 R	0.19 R	0.19 R	0.19 R
Benzo(k)fluoranthene	--	0.21 R	0.2 R	0.19 R	0.22 R	0.19 R	0.24 R	0.23 R	0.2 R	0.21 R	0.18 R	0.19 R	0.21 R	0.19 R	0.19 R	0.19 R
Bis(2-chloro-1-methylethyl)ether	--	0.4 U	0.39 U	0.36 U	0.42 U	0.36 UJ	0.46 U	0.44 U	0.38 U	0.41 U	0.36 U	0.37 U	0.41 U	0.36 U	0.37 U	0.37 U
Bis(2-chloroethoxy)methane	--	0.21 U	0.2 U	0.19 U	0.22 U	0.19 UJ	0.24 U	0.23 U	0.2 U	0.21 U	0.18 U	0.19 U	0.21 U	0.19 U	0.19 U	0.19 U
Bis(2-chloroethyl)ether	--	0.4 U	0.39 U	0.36 U	0.42 U	0.36 UJ	0.46 U	0.44 U	0.38 U	0.41 U	0.36 U	0.37 U	0.41 U	0.36 U	0.37 U	0.37 U
Bis(2-ethylhexyl)phthalate	--	0.21 U	0.047 J*	0.19 U	0.22 U	0.19 UJ	0.24 U	0.23 U	0.037 J*	0.21 U	0.18 U	0.19 U	0.036 J*	0.19 U	0.19 U	0.19 U
Butylbenzylphthalate	--	0.21 U	0.2 U	0.19 U	0.22 U	0.19 UJ	0.24 U	0.23 U	0.2 U	0.21 U	0.18 U	0.19 U	0.21 U	0.19 U	0.19 U	0.19 U
Caprolactam	--	0.4 U	0.39 U	0.36 U	0.42 U	0.36 UJ	0.46 U	0.44 U	0.38 U	0.41 U	0.36 U	0.37 U	0.41 U	0.36 U	0.37 U	0.37 U
Carbazole	--	0.4 U	0.39 U	0.36 U	0.42 U	0.36 UJ	0.46 U	0.44 U	0.38 U	0.41 U	0.36 U	0.37 U	0.41 U	0.36 U	0.37 U	0.37 U
Chrysene	--	0.21 R	0.2 R	0.19 R	0.22 R	0.19 R	0.24 R	0.23 R	0.2 R	0.21 R	0.18 R	0.19 R	0.21 R	0.19 R	0.19 R	0.19 R
Dibenzo(a,h)anthracene	--	0.21 R	0.2 R	0.19 R	0.22 R	0.19 R	0.24 R	0.23 R	0.2 R	0.21 R	0.18 R	0.19 R	0.21 R	0.19 R	0.19 R	0.19 R
Dibenzofuran	--	0.21 U	0.2 U	0.19 U	0.22 U	0.19 UJ	0.24 U	0.23 U	0.2 U	0.21 U	0.18 U	0.19 U	0.21 U	0.19 U	0.19 U	0.19 U
Diethyl phthalate	--	0.21 U	0.2 U	0.19 U	0.22 U	0.19 UJ	0.24 U	0.23 U	0.2 U	0.21 U	0.18 U	0.19 U	0.21 U	0.19 U	0.19 U	0.19 U
Dimethyl phthalate	--	0.21 U	0.2 U	0.19 U	0.22 U	0.19 UJ	0.24 U	0.23 U	0.2 U	0.21 U	0.18 U	0.19 U	0.21 U	0.19 U	0.19 U	0.19 U
Di-n-butyl phthalate	--	0.21 U	0.2 U	0.19 U	0.22 U	0.19 UJ	0.24 U	0.23 U	0.2 U	0.21 U	0.18 U	0.19 U	0.21 U	0.19 U	0.19 U	0.19 U
Di-n-octyl phthalate	--	0.4 U	0.39 U	0.36 U	0.42 U	0.36 UJ	0.46 U	0.44 U	0.38 U	0.41 U	0.36 U	0.37 U	0.41 U	0.36 U	0.37 U	0.37 U
Fluoranthene	--	0.4 R	0.39 R	0.36 R	0.42 R	0.36 R	0.46 R	0.44 R	0.38 R	0.41 R	0.36 R	0.37 R	0.41 R	0.36 R	0.37 R	0.37 R
Fluorene	--	0.21 R	0.2 R	0.19 R	0.22 R	0.19 R	0.24 R	0.23 R	0.2 R	0.21 R	0.18 R	0.19 R	0.21 R	0.19 R	0.19 R	0.19 R
Hexachlorobenzene	--	0.21 U	0.2 U	0.19 U	0.22 U	0.19 UJ	0.24 U	0.23 U	0.2 U	0.21 U	0.18 U	0.19 U	0.21 U	0.19 U	0.19 U	0.19 U
Hexachlorobutadiene	--	0.21 U	0.2 U	0.19 U	0.22 U	0.19 UJ	0.24 U	0.23 U	0.2 U	0.21 U	0.18 U	0.19 U	0.21 U	0.19 U	0.19 U	0.19 U
Hexachlorocyclopentadiene	--	0.4 U	0.39 U	0.36 U	0.42 U	0.36 UJ	0.46 U	0.44 U	0.38 U	0.41 U	0.36 U	0.37 U	0.41 U	0.36 U	0.37 U	0.37 U
Hexachloroethane	--	0.21 U	0.2 U	0.19 U	0.22 U	0.19 UJ	0.24 U	0.23 U	0.2 U	0.21 U	0.18 U	0.19 U	0.21 U	0.19 U	0.19 U	0.19 U
Indeno(1,2,3-cd)pyrene	--	0.21 R	0.2 R	0.19 R	0.22 R	0.19 R	0.24 R	0.23 R	0.2 R	0.21 R	0.18 R	0.19 R	0.21 R	0.19 R	0.19 R	0.19 R
Isophorone	--	0.21 U	0.2 U	0.19 U	0.22 U	0.19 UJ	0.24 U	0.23 U	0.2 U	0.21 U	0.18 U	0.19 U	0.21 U	0.19 U	0.19 U	0.19 U
Naphthalene	--	0.21 R	0.2 R	0.19 R	0.22 R	0.19 R	0.24 R	0.23 R	0.2 R	0.21 R	0.18 R	0.19 R	0.21 R	0.19 R	0.19 R	0.19 R
Nitrobenzene	--	0.21 U	0.2 U	0.19 U	0.22 U	0.19 UJ	0.24 U	0.23 U	0.2 U	0.21 U	0.18 U	0.19 U	0.21 U	0.19 U	0.19 U	0.19 U
N-Nitrosodiphenylamine	--	0.21 U	0.2 U	0.19 U	0.22 U	0.19 UJ	0.24 U	0.23 U	0.2 U	0.21 U	0.18 U	0.19 U	0.21 U	0.19 U	0.19 U	0.19 U
N-Nitrosodipropylamine	--	0.21 U	0.2 U	0.19 U	0.22 U	0.19 UJ	0.24 U	0.23 U	0.2 U	0.21 U	0.18 U	0.19 U	0.21 U	0.19 U	0.19 U	0.19 U
Pentachlorophenol	2.36 U	0.4 R	0.39 R	0.36 R	0.42 R	0.36 R	0.46 R	0.44 R	0.38 R	0.41 R	0.36 R	0.37 R	0.41 R	0.36 R	0.37 R	0.37 R
Phenanthrene	--	0.21 R	0.2 R	0.19 R	0.22 R	0.19 R	0.24 R	0.23 R	0.2 R	0.21 R	0.18 R	0.19 R	0.21 R	0.19 R	0.19 R	0.19 R
Phenol	0.342 U	0.4 U	0.39 U	0.36 U	0.42 U	0.36 UJ	0.46 U	0.44 U	0.38 U	0.41 U	0.36 U	0.37 U	0.41 U	0.36 U	0.37 U	0.37 U
Pyrene	--	0.21 R	0.2 R	0.19 R	0.22 R	0.19 R	0.24 R	0.23 R	0.2 R	0.21 R	0.18 R	0.19 R	0.21 R	0.19 R	0.19 R	0.19 R
SVOCs by SIM (mg/kg)																
1-Methylnaphthalene	0.00985 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Chloronaphthalene	0.00985 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Methylnaphthalene	0.00985 U	0.0005 J*	0.00075 J*	0.0019 J*	0.0096	0.0031 J*	0.0005 J*	0.00091 J*	0.0052	0.00046 J*	0.0027 J*	0.00051 J*	0.002 J*	0.0036 U	0.011 J	0.0019 J*
Acenaphthene	0.00296 U	0.004 U	0.0039 U	0.0036 U	0.0013 J*	0.00048 J*	0.0046 U	0.0044 U	0.0038 U	0.0041 U	0.0036 U	0.0037 U	0.0041 U	0.0036 U	0.0011 J*	0.0037 U
Acenaphthylene	0.00296 U	0.004 U	0.0039 U	0.0036 U	0.0042 U	0.001 J*	0.0046 U	0.0044 U	0.0038 U	0.0041 U	0.0036 U	0.0037 U	0.0041 U	0.0036 U	0.0008 J*	0.0006 J*
Anthracene	0.00296 U	0.004 U	0.0039 U	0.00045 J*	0.0042 U	0.0036 U	0.0046 U	0.0044 U	0.0038 U	0.0041 U	0.0036 U	0.0037 U	0.0041 U	0.0036 U	0.0037 U	0.0042 J
Benzo(a)anthracene	0.00296 U	0.004 U	0.0039 U	0.0067	0.022 J	0.0036 U	0.0046 U	0.0044 U	0.0016 J*	0.0041 U	0.013 J	0.0037 U	0.004 J*	0.0036 U	0.029 J	0.0025 J*
Benzo(a)pyrene	0.00296 U	0.004 U	0.0039 U	0.0036 U	0.0042 U	0.00053 J*	0.0046 U	0.0044 U	0.0038 U	0.0041 U	0.0036 U	0.0037 U	0.0041 U	0.0036 U	0.0037 U	0.0037 U
Benzo(b)fluoranthene	0.00296 U	0.004 U	0.00072 J*	0.0028 J*	0.004 J*	0.0052 J	0.0046 U	0.00056 J*	0.0046	0.00066 J*	0.0073	0.00095 J*	0.0018 J*	0.0036 U	0.012	0.0041
Benzo(ghi)perylene	0.00296 U	0.004 U	0.0039 U	0.0036 U	0.0042 U	0.0025 J*	0.0046 U	0.0044 U	0.0038 U	0.0041 U	0.0036 U	0.0037 U	0.0041 U	0.0036 U	0.0037 U	0.0037 U

MAUL FOSTER ALONGI

Table E
Soil Analytical Results
Wild River Land Trust
Port Orford, Oregon

Location:	S24	SL01GP01	SL02GP01	SL03TP01	SL03TP02	SL04TP01	SL05GP01	SL05GP02	SL06GP01	SL06GP02	SL07GP01	SL07GP02	SL08TP01	SL08TP02	SL09GP01	SL10GP01
Sample Name:	9358-181115-017	JLTQ0	JLTQ2	JLTQ4	JLTQ5	JLTQ6	JLTQ8	JLTQ9	JLTR0	JLTR1	JLTR2	JLTR3	JLTR4	JLTR5	JLTR6	JLTR8
Collection Date:	11/15/2018	9/9/2020	9/9/2020	9/9/2020	9/9/2020	9/10/2020	9/9/2020	9/9/2020	9/9/2020	9/9/2020	9/10/2020	9/10/2020	9/9/2020	9/9/2020	9/10/2020	9/10/2020
Collection Depth (ft bgs):	0-1	0-4	0-4	1-2	5-6	1-2	0-4	4-8	0-4	4-8	0-4	8-12	3-4	8-9	0-4	4-8
Benzo(k)fluoranthene	0.00296 U	0.004 U	0.0039 U	0.0036 U	0.02	0.0036 U	0.0046 U	0.0044 U	0.0006 J*	0.0041 U	0.0036 U	0.0037 U	0.0041 U	0.0036 U	0.0037 U	0.0016 J*
Chrysene	0.0129 J	0.004 U	0.00062 J*	0.0023 J*	0.014 J	0.0036 J	0.0046 U	0.00059 J*	0.0073	0.00062 J*	0.0039 J	0.00082 J*	0.0018 J*	0.0036 U	0.0037 U	0.0052
Dibenzo(a,h)anthracene	0.00296 U	0.004 U	0.0039 U	0.0036 U	0.0042 U	0.0036 U	0.0046 U	0.0044 U	0.0038 U	0.0041 U	0.0036 U	0.0037 U	0.0041 U	0.0036 U	0.0037 U	0.0037 U
Fluoranthene	0.00296 U	0.004 U	0.0039 U	0.0053	0.051	0.0066 J	0.0046 U	0.0044 U	0.0038 U	0.0041 U	0.0044	0.00056 J*	0.0024 J*	0.0036 U	0.0044	0.0033 J*
Fluorene	0.00296 U	0.004 U	0.0039 U	0.0036 U	0.0075	0.00089 J*	0.0046 U	0.0044 U	0.0038 U	0.0041 U	0.00069 J*	0.0037 U	0.0041 U	0.0036 U	0.0037 U	0.0037 U
Indeno(1,2,3-cd)pyrene	0.00296 U	0.004 U	0.0039 U	0.0036 U	0.0017 J*	0.0036 U	0.0046 U	0.0044 U	0.0038 U	0.0041 U	0.0036 U	0.0037 U	0.0041 U	0.0036 U	0.0037 U	0.0037 U
Naphthalene	0.0101 J	0.0011 J*	0.0011 J*	0.0017 J*	0.0047	0.0025 J*	0.00096 J*	0.0044 U	0.0035 J*	0.0041 U	0.0026 J*	0.0037 U	0.0019 J*	0.0036 U	0.0071 J	0.0029 J*
Pentachlorophenol	--	0.0082 U	0.008 U	0.0073 U	0.025	0.0074 U	0.0093 U	0.0089 U	0.0077 U	0.0082 U	0.0073 U	0.0076 U	0.027	0.0073 U	0.0033 J*	0.0076 U
Phenanthrene	0.00695 J	0.00065 J*	0.0017 J*	0.0052	0.033	0.023	0.00064 J*	0.0015 J*	0.012	0.0013 J*	0.013	0.0016 J*	0.0055	0.00037 J*	0.023 J	0.0039 J
Pyrene	0.00542 J	0.004 U	0.0039 U	0.0011 J*	0.0042 U	0.0057 J	0.0046 U	0.0044 U	0.009	0.0041 U	0.0015 J*	0.0037 U	0.0034 J*	0.0036 U	0.0037 U	0.0083
Total LPAH(e)(3)	0.028 J	0.01 J*	0.011 J*	0.015 J*	0.06 J*	0.033 J*	0.011 J*	0.013 J*	0.028 J*	0.012 J*	0.024 J*	0.011 J*	0.018 J*	0.011 J*	0.047 J*	0.017 J*
Total HPAH(f)(3)	0.03 J	0.02 J*	0.017 J*	0.027 J*	0.12 J*	0.031 J*	0.023 J*	0.019 J*	0.033 J*	0.018 J*	0.039 J*	0.015 J*	0.024 J*	0.0018 U	0.047 J	0.032 J*
VOCs (mg/kg)																
1,1,1,2-Tetrachloroethane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1,1-Trichloroethane	--	0.0055 U	0.0075 U	--	--	--	0.007 U	0.0063 U	0.0069 U	0.0063 U	0.011 U	0.0054 U	0.013 U	0.0066 U	--	--
1,1,2,2-Tetrachloroethane	--	0.0055 U	0.0075 U	--	--	--	0.007 U	0.0063 U	0.0069 U	0.0063 U	0.011 U	0.0054 U	0.013 U	0.0066 U	--	--
1,1,2-Trichloroethane	--	0.0055 U	0.0075 U	--	--	--	0.007 U	0.0063 U	0.0069 U	0.0063 U	0.011 U	0.0054 U	0.013 U	0.0066 U	--	--
1,1-Dichloroethane	--	0.0055 U	0.0075 U	--	--	--	0.007 U	0.0063 U	0.0069 U	0.0063 U	0.011 U	0.0054 U	0.013 U	0.0066 U	--	--
1,1-Dichloroethene	--	0.0055 U	0.0075 U	--	--	--	0.007 U	0.0063 U	0.0069 U	0.0063 U	0.011 U	0.0054 U	0.013 U	0.0066 U	--	--
1,1-Dichloropropene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,3-Trichlorobenzene	--	0.0055 U	0.0075 U	--	--	--	0.007 U	0.0063 U	0.0069 U	0.0063 U	0.011 U	0.0054 U	0.013 U	0.0066 U	--	--
1,2,3-Trichloropropane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,3-Trimethylbenzene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,4-Trichlorobenzene	--	0.0055 U	0.0075 U	--	--	--	0.007 U	0.0063 U	0.0069 U	0.0063 U	0.011 U	0.0054 U	0.013 U	0.0066 U	--	--
1,2,4-Trimethylbenzene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dibromo-3-chloropropane	--	0.0055 U	0.0075 U	--	--	--	0.007 U	0.0063 U	0.0069 U	0.0063 U	0.011 U	0.0054 U	0.013 U	0.0066 U	--	--
1,2-Dibromoethane	--	0.0055 U	0.0075 U	--	--	--	0.007 U	0.0063 U	0.0069 U	0.0063 U	0.011 U	0.0054 U	0.013 U	0.0066 U	--	--
1,2-Dichlorobenzene	--	0.0055 U	0.0075 U	--	--	--	0.007 U	0.0063 U	0.0069 U	0.0063 U	0.011 U	0.0054 U	0.013 U	0.0066 U	--	--
1,2-Dichloroethane	--	0.0055 U	0.0075 U	--	--	--	0.007 U	0.0063 U	0.0069 U	0.0063 U	0.011 U	0.0054 U	0.013 U	0.0066 U	--	--
1,2-Dichloropropane	--	0.0055 U	0.0075 U	--	--	--	0.007 U	0.0063 U	0.0069 U	0.0063 U	0.011 U	0.0054 U	0.013 U	0.0066 U	--	--
1,3,5-Trimethylbenzene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,3-Dichlorobenzene	--	0.0055 U	0.0075 U	--	--	--	0.007 U	0.0063 U	0.0069 U	0.0063 U	0.011 U	0.0054 U	0.013 U	0.0066 U	--	--
1,3-Dichloropropane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,4-Dichlorobenzene	--	0.0055 U	0.0075 U	--	--	--	0.007 U	0.0063 U	0.0069 U	0.0063 U	0.011 U	0.0054 U	0.013 U	0.0066 U	--	--
2,2-Dichloropropane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Butanone	--	0.011 U	0.0075 J*	--	--	--	0.014 U	0.013 U	0.014 U	0.013 U	0.023 U	0.011 U	0.025 U	0.013 U	--	--
2-Chlorotoluene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Hexanone	--	0.011 U	0.015 U	--	--	--	0.014 U	0.013 U	0.014 U	0.013 U	0.023 U	0.011 U	0.025 U	0.013 U	--	--
4-Chlorotoluene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Isopropyltoluene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Methyl-2-pentanone	--	0.011 U	0.015 U	--	--	--	0.014 U	0.013 U	0.014 U	0.013 U	0.023 U	0.011 U	0.025 U	0.013 U	--	--
Acetone	--	0.01 J*	0.069	--	--	--	0.039	0.04	0.014	0.0062 J*	0.1	0.056	0.012 J*	0.029	--	--
Acrylonitrile	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzene	--	0.0055 U	0.0013 J*	--	--	--	0.007 U	0.0013 J*	0.0069 U	0.00098 J*	0.024	0.0013 J*	0.0044 J*	0.0066 U	--	--
Bromobenzene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Location:	S24	SL01GP01	SL02GP01	SL03TP01	SL03TP02	SL04TP01	SL05GP01	SL05GP02	SL06GP01	SL06GP02	SL07GP01	SL07GP02	SL08TP01	SL08TP02	SL09GP01	SL10GP01
Sample Name:	9358-181115-017	JLTQ0	JLTQ2	JLTQ4	JLTQ5	JLTQ6	JLTQ8	JLTQ9	JLTR0	JLTR1	JLTR2	JLTR3	JLTR4	JLTR5	JLTR6	JLTR8
Collection Date:	11/15/2018	9/9/2020	9/9/2020	9/9/2020	9/9/2020	9/10/2020	9/9/2020	9/9/2020	9/9/2020	9/9/2020	9/10/2020	9/10/2020	9/9/2020	9/9/2020	9/10/2020	9/10/2020
Collection Depth (ft bgs):	0-1	0-4	0-4	1-2	5-6	1-2	0-4	4-8	0-4	4-8	0-4	8-12	3-4	8-9	0-4	4-8
Bromodichloromethane	--	0.0055 U	0.0075 U	--	--	--	0.007 U	0.0063 U	0.0069 U	0.0063 U	0.011 U	0.0054 U	0.013 U	0.0066 U	--	--
Bromoform	--	0.0055 U	0.0075 U	--	--	--	0.007 U	0.0063 U	0.0069 U	0.0063 U	0.011 U	0.0054 U	0.013 U	0.0066 U	--	--
Bromomethane	--	0.0055 U	0.0075 U	--	--	--	0.007 U	0.0063 U	0.0069 U	0.0063 U	0.011 U	0.0054 U	0.013 U	0.0066 U	--	--
Carbon disulfide	--	0.0055 U	0.0075 U	--	--	--	0.007 U	0.0063 U	0.0069 U	0.0063 U	0.011 U	0.0054 U	0.013 U	0.0066 U	--	--
Carbon tetrachloride	--	0.0055 U	0.0075 U	--	--	--	0.007 U	0.0063 U	0.0069 U	0.0063 U	0.011 U	0.0054 U	0.013 U	0.0066 U	--	--
Chlorobenzene	--	0.0055 U	0.0075 U	--	--	--	0.007 U	0.0063 U	0.0069 U	0.0063 U	0.011 U	0.0054 U	0.013 U	0.0066 U	--	--
Chlorobromomethane	--	0.0055 U	0.0075 U	--	--	--	0.007 U	0.0063 U	0.0069 U	0.0063 U	0.011 U	0.0054 U	0.013 U	0.0066 U	--	--
Chloroethane	--	0.0055 U	0.0075 U	--	--	--	0.007 U	0.0063 U	0.0069 U	0.0063 U	0.011 U	0.0054 U	0.013 U	0.0066 U	--	--
Chloroform	--	0.0055 U	0.0075 U	--	--	--	0.007 U	0.0063 U	0.0069 U	0.0063 U	0.011 U	0.0054 U	0.013 U	0.0066 U	--	--
Chloromethane	--	0.0055 U	0.0075 U	--	--	--	0.007 U	0.0063 U	0.0069 U	0.0063 U	0.011 U	0.0054 U	0.013 U	0.0066 U	--	--
cis-1,2-Dichloroethene	--	0.0055 U	0.0075 U	--	--	--	0.007 U	0.0063 U	0.0069 U	0.0063 U	0.011 U	0.0054 U	0.013 U	0.0066 U	--	--
cis-1,3-Dichloropropene	--	0.0055 U	0.0075 U	--	--	--	0.007 U	0.0063 U	0.0069 U	0.0063 U	0.011 U	0.0054 U	0.013 U	0.0066 U	--	--
Cyclohexane	--	0.0055 U	0.0075 U	--	--	--	0.007 U	0.0063 U	0.0069 U	0.0063 U	0.011 U	0.0054 U	0.013 U	0.0066 U	--	--
Dibromochloromethane	--	0.0055 U	0.0075 U	--	--	--	0.007 U	0.0063 U	0.0069 U	0.0063 U	0.011 U	0.0054 U	0.013 U	0.0066 U	--	--
Dibromomethane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dichlorodifluoromethane (Freon 12	--	0.0055 U	0.0075 U	--	--	--	0.007 U	0.0063 U	0.0069 U	0.0063 U	0.011 U	0.0054 U	0.013 U	0.0066 U	--	--
Diisopropyl Ether	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Ethylbenzene	--	0.0055 U	0.0075 U	--	--	--	0.007 U	0.0063 U	0.0069 U	0.0063 U	0.011 U	0.0054 U	0.013 U	0.0066 U	--	--
Freon 113	--	0.0055 U	0.0075 U	--	--	--	0.007 U	0.0063 U	0.0069 U	0.0063 U	0.011 U	0.0054 U	0.013 U	0.0066 U	--	--
Hexachlorobutadiene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Isopropylbenzene	--	0.0055 U	0.0075 U	--	--	--	0.007 U	0.0063 U	0.0069 U	0.0063 U	0.011 U	0.0054 U	0.013 U	0.0066 U	--	--
m,p-Xylene	--	0.0055 U	0.0075 U	--	--	--	0.007 U	0.0063 U	0.0069 U	0.0063 U	0.011 U	0.0013 J*	0.013 U	0.0066 U	--	--
Methyl acetate	--	0.0055 U	0.0075 U	--	--	--	0.007 U	0.0063 U	0.0069 U	0.0063 U	0.011 U	0.007	0.013 U	0.0024 J*	--	--
Methyl tert-butyl ether	--	0.0055 U	0.0075 U	--	--	--	0.007 U	0.0063 U	0.0069 U	0.0063 U	0.011 U	0.0054 U	0.013 U	0.0066 U	--	--
Methylcyclohexane	--	0.0055 U	0.0075 U	--	--	--	0.007 U	0.0063 U	0.0069 U	0.0063 U	0.011 U	0.0054 U	0.013 U	0.0066 U	--	--
Methylene chloride	--	0.0055 U	0.0075 U	--	--	--	0.007 U	0.0063 U	0.0069 U	0.0063 U	0.011 U	0.0054 U	0.013 U	0.0066 U	--	--
Naphthalene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
n-Butylbenzene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
n-Propylbenzene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
o-Xylene	--	0.0055 U	0.0075 U	--	--	--	0.007 U	0.0063 U	0.0069 U	0.0063 U	0.011 U	0.0054 U	0.013 U	0.0066 U	--	--
sec-Butylbenzene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Styrene	--	0.0055 U	0.0075 U	--	--	--	0.007 U	0.0063 U	0.0069 U	0.0063 U	0.011 U	0.0054 U	0.013 U	0.0066 U	--	--
tert-Butylbenzene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tetrachloroethene	--	0.0055 U	0.0075 U	--	--	--	0.007 U	0.0063 U	0.0069 U	0.0063 U	0.011 U	0.0054 U	0.013 U	0.0066 U	--	--
Toluene	--	0.0055 U	0.0075 U	--	--	--	0.007 U	0.0063 U	0.0069 U	0.0063 U	0.0077 J*	0.0013 J*	0.0024 J*	0.0066 U	--	--
trans-1,2-Dichloroethene	--	0.0055 U	0.0075 U	--	--	--	0.007 U	0.0063 U	0.0069 U	0.0063 U	0.011 U	0.0054 U	0.013 U	0.0066 U	--	--
trans-1,3-Dichloropropene	--	0.0055 U	0.0075 U	--	--	--	0.007 U	0.0063 U	0.0069 U	0.0063 U	0.011 U	0.0054 U	0.013 U	0.0066 U	--	--
Trichloroethene	--	0.0055 U	0.0075 U	--	--	--	0.007 U	0.0063 U	0.0069 U	0.0063 U	0.011 U	0.0054 U	0.013 U	0.0066 U	--	--
Trichlorofluoromethane (Freon 11)	--	0.0055 U	0.0075 U	--	--	--	0.007 U	0.0063 U	0.0069 U	0.0063 U	0.011 U	0.0054 U	0.013 U	0.0066 U	--	--
Vinyl chloride	--	0.0055 U	0.0075 U	--	--	--	0.007 U	0.0063 U	0.0069 U	0.0063 U	0.011 U	0.0054 U	0.013 U	0.0066 U	--	--
Xylenes, total[g]	--	0.0055 U	0.0075 U	--	--	--	0.007 U	0.0063 U	0.0069 U	0.0063 U	0.011 U	0.004 J*	0.013 U	0.0066 U	--	--

Location:	SL11TP01	SL11TP02	SL12TP01	SL12TP02	SL13TP01	SL13TP02	SL14GP01	SL14GP02	SL15GP01	SL15GP02	SL16TP01	SL16TP02	SL16TP03	SL16TP04	SL19TP01	SL19TP02
Sample Name:	JLTS0	JLTS1	JLTS2	JLTS3	JLTS4	JLTS5	JLTS6	JLTS7	JLTS8	JLTS9	JLTT0	JLTT1	JLTY3	JLTY4	JLTT6	JLTT7
Collection Date:	9/11/2020	9/11/2020	9/11/2020	9/11/2020	9/11/2020	9/11/2020	9/10/2020	9/10/2020	9/11/2020	9/11/2020	9/10/2020	9/10/2020	9/10/2020	9/10/2020	9/9/2020	9/9/2020
Collection Depth (ft bgs):	3-4	6-7	3-4	7-8	1-2	4-5	0-4	12-16	0-4	12-16	0.833-1	1.0833-1.5	1.5-3	4-5	3-4	6-7
Total Metals (mg/kg)																
Aluminum	16,300	27,200	17,900	14,300	35,000	39,900	18,100	34,700	36,400	23,200	17,400	27,100	35,200	35,200	20,300	32,300
Antimony	5.5	0.81 U	0.75 U	0.9 U	0.15 J*	0.12 J*	0.9 U	0.9 U	0.96 U	0.79 U	1.2 J	4.4 J	1 UJ	0.91 UJ	0.85 UJ	0.88 UJ
Arsenic	8	2.8	2	1.4	3.5	3.5	2.9	4.9	3.8	1.6	3.9	8.6	1.8	3.4	4	3.3
Barium	267	49.7	37.8	30.4	27.9	57.2	108	58.3	44.8	31.3	668	922	71.4	39.1	74.8	40.8
Beryllium	0.71	0.72	0.54	0.41 J*	0.69	0.88	0.56	0.68	0.78	0.79	0.4 J*	0.48	0.81	0.86	0.65	0.66
Cadmium	0.076 J*	0.42 U	0.37 U	0.44 U	0.53 U	0.48 U	0.45 U	0.46 U	0.43 U	0.37 U	0.51 U	0.47 U	0.5 U	0.43 U	0.41 U	0.44 U
Calcium	9530	2400	4130	3430	2010	2380	5980	1180	1850	1390	54000	58200	4010	2070	5470	2030
Chromium	53.7	81.9	72.9	61.3	122	139	59.1	97.6	114	64.8	40	37	109	98.2	65.9	65.6
Cobalt	9.7	21.9	13.9	9.7	15.6	22.7	15.4	12.8	17.7	26.2	7.1	6.2	9	13.4	14.7	9.4
Copper	343	54.6	42.7	34	49.7	59.7	52.5	40.8	54.2	64.4	123	88.5	30.8	56.4	89.7	38.4
Iron	50,000	38,000	27,900	20,900	39,600	46,800	27,800	35,500	43,400	34,500	19,000	19,900	48,100	47,400	33,100	39,000
Lead	104 J	20.2 J	5 J	3.8 J	7.5	8.7	14.5 J	9.1 J	10.3 J	5.8 J	9.2	18.1	9.1	9.4	42.8	8
Magnesium	5,840	11,500	14,100	10,900	14,500	19,400	10,800	5,440	12,900	13,700	4,970	5,950	4,430	13,100	8,980	8,150
Manganese	508	492	341	215	278	373	529	214	377	446	1110	1630	234	373	483	234
Mercury	0.14 U	0.1 U	0.09 U	0.11 U	0.19	0.16	0.11 U	0.17	0.12 U	0.097 U	0.13 U	0.12 U	0.13 U	0.12 U	0.12	0.13
Nickel	60.4	192	84.1	65.9	152	190	67.5	94.7	123	175	45.3	34.5	66.1	105	73.8	61.8
Potassium	1680	422	412	351 J*	528 U	482 U	945	232 J*	329 J*	506	3830	5370	1670	633	488	572
Selenium	0.51 J*	2 U	1.9 U	2.3 U	0.66 J*	2.6 UJ	2.2 U	2.3 U	2.4 U	2 U	1 J*	2.3 U	2.6 U	2.3 U	2.1 U	2.2 U
Silver	1.4	0.9	0.69 J*	0.53 J*	0.51 J*	0.6 J*	0.78 J*	0.94	1	0.82	0.33 J*	0.38 J*	0.6 J*	0.46 J*	0.43 J*	0.53 J*
Sodium	1910	175 J*	40.9 J*	48 J*	528 U	32 J*	481	57.7 J*	31.4 J*	29.5 J*	2310	4190	494 J*	34.7 J*	93.7 J*	441 U
Thallium	0.5 U	0.41 U	0.38 U	0.45 U	0.52 U	0.51 U	0.45 U	0.45 U	0.48 U	0.4 U	0.49 U	0.46 U	0.51 U	0.45 U	0.42 U	0.44 U
Vanadium	46.1 J	46.7 J	37.6 J	28.6 J	72.2 J	87.7	51.3 J	88.6 J	77.8 J	35.9 J	36	60	75.9	76.3 J	56.5	63.1
Zinc	304	80.3	57.8	46.2	60.8	77.9	104	55.1	74.7	63.3	92.6	108	45.1	73	255	68.3
PCB Aroclors (mg/kg)																
Total PCBs[a]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dioxins (pg/g)																
1,2,3,4,6,7,8-HpCDD	--	--	--	--	--	--	30	3.5 J*	69	0.67 J*	82	34	1.3 J*	0.46 U	960	4.6 J*
1,2,3,4,6,7,8-HpCDF	--	--	--	--	--	--	8.2	0.85 J*	5.5	0.44 U	6.3	4.7 J*	0.44 U	0.44 U	170	0.6 J*
1,2,3,4,7,8,9-HpCDF	--	--	--	--	--	--	0.68 J*	0.46 U	0.46 J*	0.46 U	0.64 J*	0.46 U	0.46 U	0.46 U	9.5	0.46 U
1,2,3,4,7,8-HxCDD	--	--	--	--	--	--	0.89 J*	0.47 U	1.7 J*	0.47 U	1.3 J*	0.64 J*	0.47 U	0.47 U	7.1	0.47 U
1,2,3,4,7,8-HxCDF	--	--	--	--	--	--	0.73 J*	0.4 U	0.4 J*	0.4 U	0.7 J*	0.42 J*	0.4 U	0.4 U	7.8	0.4 U
1,2,3,6,7,8-HxCDD	--	--	--	--	--	--	1.5 J*	0.5 U	3.3 J*	0.5 U	3.7 J*	1.7 J*	0.5 U	0.5 U	25	0.5 U
1,2,3,6,7,8-HxCDF	--	--	--	--	--	--	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	4.6 J*	0.47 U
1,2,3,7,8,9-HxCDD	--	--	--	--	--	--	1.1 J*	0.34 U	2.9 J*	0.34 U	2.7 J*	1.1 J*	0.34 U	0.34 U	13	0.34 U
1,2,3,7,8,9-HxCDF	--	--	--	--	--	--	0.44 U	0.44 U	0.44 U	0.44 U	0.44 U	0.44 U	0.44 U	0.44 U	2.4 J*	0.44 U
1,2,3,7,8-PeCDD	--	--	--	--	--	--	0.35 U	0.35 U	0.94 J*	0.35 U	0.92 J*	0.39 J*	0.35 U	0.35 U	3.7 J*	0.35 U
1,2,3,7,8-PeCDF	--	--	--	--	--	--	0.38 U	0.38 U	0.38 U	0.38 U	0.38 U	0.38 U	0.38 U	0.38 U	1.5 J*	0.38 U
2,3,4,6,7,8-HxCDF	--	--	--	--	--	--	0.69 J*	0.41 U	0.41 U	0.41 U	0.47 J*	0.41 U	0.41 U	0.41 U	6.7	0.41 U
2,3,4,7,8-PeCDF	--	--	--	--	--	--	0.43 U	0.43 U	0.43 U	0.43 U	0.43 U	0.43 U	0.43 U	0.43 U	3.4 J*	0.43 U
2,3,7,8-TCDD	--	--	--	--	--	--	0.18 J*	0.09 U	0.26 J*	0.084 U	0.25 J*	0.15 J*	0.11 U	0.12 U	2.7	0.12 U
2,3,7,8-TCDF	--	--	--	--	--	--	0.16 J*	0.11 U	0.11 U	0.11 U	0.15 J*	0.12 U	0.11 U	0.11 U	1.4	0.11 U
OCDD	--	--	--	--	--	--	250	31	350	3.9 J*	450	220	7.2 J*	3.1 J*	9,800 J	44
OCDF	--	--	--	--	--	--	23	2.6 J*	20	0.87 U	26	17	0.87 U	0.87 U	580	3.1 J*
Dioxin/furan TEQ (avian)[b][1]	--	--	--	--	--	--	1.3 J*	0.64 J*	2.2 J*	0.63 J*	2.3 J*	1.2 J*	0.64 J*	0.65 J*	19 J*	0.66 J*

MAUL FOSTER ALONGI

Table E
Soil Analytical Results
Wild River Land Trust
Port Orford, Oregon

Location:	SL11TP01	SL11TP02	SL12TP01	SL12TP02	SL13TP01	SL13TP02	SL14GP01	SL14GP02	SL15GP01	SL15GP02	SL16TP01	SL16TP02	SL16TP03	SL16TP04	SL19TP01	SL19TP02
Sample Name:	JLTS0	JLTS1	JLTS2	JLTS3	JLTS4	JLTS5	JLTS6	JLTS7	JLTS8	JLTS9	JLTT0	JLTT1	JLTY3	JLTY4	JLTT6	JLTT7
Collection Date:	9/11/2020	9/11/2020	9/11/2020	9/11/2020	9/11/2020	9/11/2020	9/10/2020	9/10/2020	9/11/2020	9/11/2020	9/10/2020	9/10/2020	9/10/2020	9/10/2020	9/9/2020	9/9/2020
Collection Depth (ft bgs):	3-4	6-7	3-4	7-8	1-2	4-5	0-4	12-16	0-4	12-16	0.833-1	1.0833-1.5	1.5-3	4-5	3-4	6-7
Dioxin/furan TEQ (mammal)[(c)(2)]	--	--	--	--	--	--	1.4 J*	0.50 J*	3.0 J*	0.46 J*	3.2 J*	1.5 J*	0.48 J*	0.47 J*	29 J*	0.53 J*
TPH (mg/kg)																
Gasoline-Range Hydrocarbons	33 U	22 U	7.3 U	6.7 U	16 U	17 U	9.4 U	8.7 U	10 U	6.3 U	20 U	10 U	9.3 U	8.7 U	14 U	13 U
Diesel-Range Hydrocarbons	56 U	47 U	42 U	47 U	57 U	55 U	47 U	53 U	50 U	45 U	54 U	51 U	55 U	49 U	46 U	49 U
Lube-Oil-Range Hydrocarbons	790	120 U	100 U	120 U	140 U	140 U	220	130 U	120 U	110 U	130 U	130 U	140 U	120 U	120 U	120 U
Total Diesel+Oil[(d)]	820	120 U	100 U	120 U	140 U	140 U	240	130 U	120 U	110 U	130 U	130 U	140 U	120 U	120 U	120 U
TPH with Silica-Gel Treatment (mg/kg																
Diesel-Range Hydrocarbons	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lube-Oil-Range Hydrocarbons	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Diesel+Oil[(e)]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SVOCs (mg/kg)																
1,1'-Biphenyl	0.22 U	0.2 U	0.17 U	0.21 U	0.24 U	0.23 U	0.19 U	0.21 U	0.21 U	0.19 U	0.22 U	0.21 U	0.23 U	0.21 U	0.19 U	0.21 U
1,2,4,5-Tetrachlorobenzene	0.22 U	0.2 U	0.17 U	0.21 U	0.24 U	0.23 U	0.19 U	0.21 U	0.21 U	0.19 U	0.22 U	0.21 U	0.23 U	0.21 U	0.19 U	0.21 U
1,4-Dioxane	0.087 U	0.078 U	0.068 U	0.081 U	0.096 U	0.091 U	0.075 U	0.084 U	0.083 U	0.075 U	0.088 U	0.084 U	0.092 UJ	0.081 U	0.075 UJ	0.082 UJ
2,3,4,6-Tetrachlorophenol	0.22 U	0.2 U	0.17 U	0.21 U	0.24 U	0.23 U	0.19 U	0.21 U	0.21 U	0.19 U	0.22 U	0.21 U	0.23 U	0.21 U	0.19 U	0.21 U
2,4,5-Trichlorophenol	0.22 U	0.2 U	0.17 U	0.21 U	0.24 U	0.23 U	0.19 U	0.21 U	0.21 U	0.19 U	0.22 U	0.21 U	0.23 U	0.21 U	0.19 U	0.21 U
2,4,6-Trichlorophenol	0.22 U	0.2 U	0.17 U	0.21 U	0.24 U	0.23 U	0.19 U	0.21 U	0.21 U	0.19 U	0.22 U	0.21 U	0.23 U	0.21 U	0.19 U	0.21 U
2,4-Dichlorophenol	0.22 U	0.2 U	0.17 U	0.21 U	0.24 U	0.23 U	0.19 U	0.21 U	0.21 U	0.19 U	0.22 U	0.21 U	0.23 U	0.21 U	0.19 U	0.21 U
2,4-Dimethylphenol	0.22 U	0.2 U	0.17 U	0.21 U	0.24 U	0.23 U	0.19 U	0.21 U	0.21 U	0.19 U	0.22 UJ	0.21 U	0.23 U	0.21 U	0.19 U	0.21 U
2,4-Dinitrophenol	0.43 U	0.39 U	0.34 U	0.4 U	0.47 U	0.45 U	0.37 U	0.41 U	0.41 U	0.37 U	0.44 U	0.41 U	0.46 U	0.4 U	0.37 U	0.4 U
2,4-Dinitrotoluene	0.22 U	0.2 U	0.17 U	0.21 U	0.24 U	0.23 U	0.19 U	0.21 U	0.21 U	0.19 U	0.22 U	0.21 U	0.23 U	0.21 U	0.19 U	0.21 U
2,6-Dinitrotoluene	0.22 U	0.2 U	0.17 U	0.21 U	0.24 U	0.23 U	0.19 U	0.21 U	0.21 U	0.19 U	0.22 U	0.21 U	0.23 U	0.21 U	0.19 U	0.21 U
2-Chloronaphthalene	0.22 U	0.2 U	0.17 U	0.21 U	0.24 U	0.23 U	0.19 U	0.21 U	0.21 U	0.19 U	0.22 U	0.21 U	0.23 U	0.21 U	0.19 U	0.21 U
2-Chlorophenol	0.22 U	0.2 U	0.17 U	0.21 U	0.24 U	0.23 U	0.19 U	0.21 U	0.21 U	0.19 U	0.22 U	0.21 U	0.23 U	0.21 U	0.19 U	0.21 U
2-Methylnaphthalene	0.22 R	0.2 R	0.17 R	0.21 R	0.24 R	0.23 R	0.19 R	0.21 R	0.21 R	0.19 R	0.22 R	0.21 R	0.23 R	0.21 R	0.19 R	0.21 R
2-Methylphenol	0.43 U	0.39 U	0.34 U	0.4 U	0.47 U	0.45 U	0.37 U	0.41 U	0.41 U	0.37 U	0.44 UJ	0.41 U	0.46 U	0.4 U	0.37 U	0.4 U
2-Nitroaniline	0.22 UJ	0.2 UJ	0.17 UJ	0.21 UJ	0.24 UJ	0.23 U	0.19 UJ	0.21 UJ	0.21 UJ	0.19 UJ	0.22 UJ	0.21 UJ	0.23 UJ	0.21 U	0.19 UJ	0.21 UJ
2-Nitrophenol	0.22 U	0.2 U	0.17 U	0.21 U	0.24 U	0.23 U	0.19 U	0.21 U	0.21 U	0.19 U	0.22 U	0.21 U	0.23 U	0.21 U	0.19 U	0.21 U
3- & 4-Methylphenol (m,p-Cresol)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3,3-Dichlorobenzidine	0.43 U	0.39 U	0.34 U	0.4 U	0.47 U	0.45 U	0.37 U	0.41 U	0.41 U	0.37 U	0.44 U	0.41 U	0.46 U	0.4 U	0.37 U	0.4 U
3-Nitroaniline	0.43 U	0.39 U	0.34 U	0.4 U	0.47 U	0.45 U	0.37 U	0.41 U	0.41 U	0.37 U	0.44 U	0.41 U	0.46 U	0.4 U	0.37 U	0.4 U
4,6-Dinitro-2-methylphenol	0.43 U	0.39 U	0.34 U	0.4 U	0.47 U	0.45 U	0.37 U	0.41 U	0.41 U	0.37 U	0.44 UJ	0.41 U	0.46 U	0.4 U	0.37 U	0.4 U
4-Bromophenylphenyl ether	0.22 U	0.2 U	0.17 U	0.21 U	0.24 U	0.23 U	0.19 U	0.21 U	0.21 U	0.19 U	0.22 U	0.21 U	0.23 U	0.21 U	0.19 U	0.21 U
4-Chloro-3-methylphenol	0.22 U	0.2 U	0.17 U	0.21 U	0.24 U	0.23 U	0.19 U	0.21 U	0.21 U	0.19 U	0.22 U	0.21 U	0.23 U	0.21 U	0.19 U	0.21 U
4-Chloroaniline	0.43 U	0.39 U	0.34 U	0.4 U	0.47 U	0.45 U	0.37 U	0.41 U	0.41 U	0.37 U	0.44 U	0.41 U	0.46 U	0.4 U	0.37 U	0.4 U
4-Chlorophenylphenyl ether	0.22 U	0.2 U	0.17 U	0.21 U	0.24 U	0.23 U	0.19 U	0.21 U	0.21 U	0.19 U	0.22 U	0.21 U	0.23 U	0.21 U	0.19 U	0.21 U
4-Methylphenol	0.43 U	0.39 U	0.34 U	0.4 U	0.47 U	0.45 U	0.37 U	0.41 U	0.41 U	0.37 U	0.44 UJ	0.41 U	0.46 U	0.4 U	0.37 U	0.4 U
4-Nitroaniline	0.43 U	0.39 U	0.34 U	0.4 U	0.47 U	0.45 U	0.37 U	0.41 U	0.41 U	0.37 U	0.44 U	0.41 U	0.46 U	0.4 U	0.37 U	0.4 U
4-Nitrophenol	0.43 U	0.39 U	0.34 U	0.4 U	0.47 U	0.45 U	0.37 U	0.41 U	0.41 U	0.37 U	0.44 U	0.41 U	0.46 U	0.4 U	0.37 U	0.4 U
Acenaphthene	0.22 R	0.2 R	0.17 R	0.21 R	0.24 R	0.23 R	0.19 R	0.21 R	0.21 R	0.19 R	0.22 R	0.21 R	0.23 R	0.21 R	0.19 R	0.21 R
Acenaphthylene	0.22 R	0.2 R	0.17 R	0.21 R	0.24 R	0.23 R	0.19 R	0.21 R	0.21 R	0.19 R	0.22 R	0.21 R	0.23 R	0.21 R	0.19 R	0.21 R
Acetophenone	0.43 U	0.39 U	0.34 U	0.4 U	0.47 U	0.45 U	0.37 U	0.41 U	0.41 U	0.37 U	0.44 U	0.41 U	0.46 U	0.4 U	0.37 U	0.4 U
Anthracene	0.22 R	0.2 R	0.17 R	0.21 R	0.24 R	0.23 R	0.19 R	0.21 R	0.21 R	0.19 R	0.22 R	0.21 R	0.23 R	0.21 R	0.19 R	0.21 R
Atrazine	0.43 U	0.39 U	0.34 U	0.4 U	0.47 U	0.45 U	0.37 U	0.41 U	0.41 U	0.37 U	0.44 U	0.41 U	0.46 U	0.4 U	0.37 U	0.4 U
Benzaldehyde	0.43 U	0.39 U	0.34 U	0.4 U	0.47 U	0.45 U	0.37 U	0.41 U	0.41 U	0.37 U	0.44 U	0.41 U	0.46 U	0.4 U	0.37 U	0.4 U

Location:	SL11TP01	SL11TP02	SL12TP01	SL12TP02	SL13TP01	SL13TP02	SL14GP01	SL14GP02	SL15GP01	SL15GP02	SL16TP01	SL16TP02	SL16TP03	SL16TP04	SL19TP01	SL19TP02
Sample Name:	JLTS0	JLTS1	JLTS2	JLTS3	JLTS4	JLTS5	JLTS6	JLTS7	JLTS8	JLTS9	JLTT0	JLTT1	JLTY3	JLTY4	JLTT6	JLTT7
Collection Date:	9/11/2020	9/11/2020	9/11/2020	9/11/2020	9/11/2020	9/11/2020	9/10/2020	9/10/2020	9/11/2020	9/11/2020	9/10/2020	9/10/2020	9/10/2020	9/10/2020	9/9/2020	9/9/2020
Collection Depth (ft bgs):	3-4	6-7	3-4	7-8	1-2	4-5	0-4	12-16	0-4	12-16	0.833-1	1.0833-1.5	1.5-3	4-5	3-4	6-7
Benzo(a)anthracene	0.22 R	0.2 R	0.17 R	0.21 R	0.24 R	0.23 R	0.19 R	0.21 R	0.21 R	0.19 R	0.22 R	0.21 R	0.23 R	0.21 R	0.19 R	0.21 R
Benzo(a)pyrene	0.22 R	0.2 R	0.17 R	0.21 R	0.24 R	0.23 R	0.19 R	0.21 R	0.21 R	0.19 R	0.22 R	0.21 R	0.23 R	0.21 R	0.19 R	0.21 R
Benzo(b)fluoranthene	0.22 R	0.2 R	0.17 R	0.21 R	0.24 R	0.23 R	0.19 R	0.21 R	0.21 R	0.19 R	0.22 R	0.21 R	0.23 R	0.21 R	0.19 R	0.21 R
Benzo(ghi)perylene	0.22 R	0.2 R	0.17 R	0.21 R	0.24 R	0.23 R	0.19 R	0.21 R	0.21 R	0.19 R	0.22 R	0.21 R	0.23 R	0.21 R	0.19 R	0.21 R
Benzo(k)fluoranthene	0.22 R	0.2 R	0.17 R	0.21 R	0.24 R	0.23 R	0.19 R	0.21 R	0.21 R	0.19 R	0.22 R	0.21 R	0.23 R	0.21 R	0.19 R	0.21 R
Bis(2-chloro-1-methylethyl)ether	0.43 U	0.39 U	0.34 U	0.4 U	0.47 U	0.45 U	0.37 U	0.41 U	0.41 U	0.37 U	0.44 U	0.41 U	0.46 U	0.4 U	0.37 U	0.4 U
Bis(2-chloroethoxy)methane	0.22 U	0.2 U	0.17 U	0.21 U	0.24 U	0.23 U	0.19 U	0.21 U	0.21 U	0.19 U	0.22 U	0.21 U	0.23 U	0.21 U	0.19 U	0.21 U
Bis(2-chloroethyl)ether	0.43 U	0.39 U	0.34 U	0.4 U	0.47 U	0.45 U	0.37 U	0.41 U	0.41 U	0.37 U	0.44 U	0.41 U	0.46 U	0.4 U	0.37 U	0.4 U
Bis(2-ethylhexyl)phthalate	0.19 J*	0.2 U	0.17 U	0.21 U	0.24 U	0.23 U	0.19 U	0.21 U	0.21 U	0.19 U	0.22 U	0.21 U	0.23 U	0.21 U	0.054 J*	0.21 U
Butylbenzylphthalate	0.22 U	0.2 U	0.17 U	0.21 U	0.24 U	0.23 U	0.19 U	0.21 U	0.21 U	0.19 U	0.22 U	0.21 U	0.23 U	0.21 U	0.19 U	0.21 U
Caprolactam	0.43 U	0.39 U	0.34 U	0.4 U	0.47 U	0.45 U	0.37 U	0.41 U	0.41 U	0.37 U	0.44 U	0.41 U	0.46 U	0.4 U	0.37 U	0.4 U
Carbazole	0.43 U	0.39 U	0.34 U	0.4 U	0.47 U	0.45 U	0.37 U	0.41 U	0.41 U	0.37 U	0.44 U	0.41 U	0.46 U	0.4 U	0.37 U	0.4 U
Chrysene	0.22 R	0.2 R	0.17 R	0.21 R	0.24 R	0.23 R	0.19 R	0.21 R	0.21 R	0.19 R	0.22 R	0.21 R	0.23 R	0.21 R	0.19 R	0.21 R
Dibenzo(a,h)anthracene	0.22 R	0.2 R	0.17 R	0.21 R	0.24 R	0.23 R	0.19 R	0.21 R	0.21 R	0.19 R	0.22 R	0.21 R	0.23 R	0.21 R	0.19 R	0.21 R
Dibenzofuran	0.22 U	0.2 U	0.17 U	0.21 U	0.24 U	0.23 U	0.19 U	0.21 U	0.21 U	0.19 U	0.22 U	0.21 U	0.23 U	0.21 U	0.19 U	0.21 U
Diethyl phthalate	0.22 U	0.2 U	0.17 U	0.21 U	0.24 U	0.23 U	0.19 U	0.21 U	0.21 U	0.19 U	0.22 U	0.21 U	0.23 U	0.21 U	0.19 U	0.21 U
Dimethyl phthalate	0.22 U	0.2 U	0.17 U	0.21 U	0.24 U	0.23 U	0.19 U	0.21 U	0.21 U	0.19 U	0.22 U	0.21 U	0.23 U	0.21 U	0.19 U	0.21 U
Di-n-butyl phthalate	0.22 U	0.2 U	0.17 U	0.21 U	0.24 U	0.23 U	0.19 U	0.21 U	0.21 U	0.19 U	0.22 U	0.21 U	0.23 U	0.21 U	0.19 U	0.21 U
Di-n-octyl phthalate	0.43 U	0.39 U	0.34 U	0.4 U	0.47 U	0.45 U	0.37 U	0.41 U	0.41 U	0.37 U	0.44 U	0.41 U	0.46 U	0.4 U	0.37 U	0.4 U
Fluoranthene	0.43 R	0.39 R	0.34 R	0.4 R	0.47 R	0.45 R	0.37 R	0.41 R	0.41 R	0.37 R	0.44 R	0.41 R	0.46 R	0.4 R	0.37 R	0.4 R
Fluorene	0.22 R	0.2 R	0.17 R	0.21 R	0.24 R	0.23 R	0.19 R	0.21 R	0.21 R	0.19 R	0.22 R	0.21 R	0.23 R	0.21 R	0.19 R	0.21 R
Hexachlorobenzene	0.22 U	0.2 U	0.17 U	0.21 U	0.24 U	0.23 U	0.19 U	0.21 U	0.21 U	0.19 U	0.22 U	0.21 U	0.23 U	0.21 U	0.19 U	0.21 U
Hexachlorobutadiene	0.22 U	0.2 U	0.17 U	0.21 U	0.24 U	0.23 U	0.19 U	0.21 U	0.21 U	0.19 U	0.22 U	0.21 U	0.23 U	0.21 U	0.19 U	0.21 U
Hexachlorocyclopentadiene	0.43 U	0.39 U	0.34 U	0.4 U	0.47 U	0.45 U	0.37 U	0.41 U	0.41 U	0.37 U	0.44 U	0.41 U	0.46 U	0.4 U	0.37 U	0.4 U
Hexachloroethane	0.22 U	0.2 U	0.17 U	0.21 U	0.24 U	0.23 U	0.19 U	0.21 U	0.21 U	0.19 U	0.22 U	0.21 U	0.23 U	0.21 U	0.19 U	0.21 U
Indeno(1,2,3-cd)pyrene	0.22 R	0.2 R	0.17 R	0.21 R	0.24 R	0.23 R	0.19 R	0.21 R	0.21 R	0.19 R	0.22 R	0.21 R	0.23 R	0.21 R	0.19 R	0.21 R
Isophorone	0.22 U	0.2 U	0.17 U	0.21 U	0.24 U	0.23 U	0.19 U	0.21 U	0.21 U	0.19 U	0.22 U	0.21 U	0.23 U	0.21 U	0.19 U	0.21 U
Naphthalene	0.22 R	0.2 R	0.17 R	0.21 R	0.24 R	0.23 R	0.19 R	0.21 R	0.21 R	0.19 R	0.22 R	0.21 R	0.23 R	0.21 R	0.19 R	0.21 R
Nitrobenzene	0.22 U	0.2 U	0.17 U	0.21 U	0.24 U	0.23 U	0.19 U	0.21 U	0.21 U	0.19 U	0.22 U	0.21 U	0.23 U	0.21 U	0.19 U	0.21 U
N-Nitrosodiphenylamine	0.22 U	0.2 U	0.17 U	0.21 U	0.24 U	0.23 U	0.19 U	0.21 U	0.21 U	0.19 U	0.22 U	0.21 U	0.23 U	0.21 U	0.19 U	0.21 U
N-Nitrosodipropylamine	0.22 U	0.2 U	0.17 U	0.21 U	0.24 U	0.23 U	0.19 U	0.21 U	0.21 U	0.19 U	0.22 U	0.21 U	0.23 U	0.21 U	0.19 U	0.21 U
Pentachlorophenol	0.43 R	0.39 R	0.34 R	0.4 R	0.47 R	0.45 R	0.37 R	0.41 R	0.41 R	0.37 R	0.44 R	0.41 R	0.46 R	0.4 R	0.37 R	0.4 R
Phenanthrene	0.22 R	0.2 R	0.17 R	0.21 R	0.24 R	0.23 R	0.19 R	0.21 R	0.21 R	0.19 R	0.22 R	0.21 R	0.23 R	0.21 R	0.19 R	0.21 R
Phenol	0.43 U	0.39 U	0.34 U	0.4 U	0.47 U	0.45 U	0.37 U	0.41 U	0.41 U	0.37 U	0.44 U	0.41 U	0.46 U	0.4 U	0.37 U	0.4 U
Pyrene	0.22 R	0.2 R	0.17 R	0.21 R	0.24 R	0.23 R	0.19 R	0.21 R	0.21 R	0.19 R	0.22 R	0.21 R	0.23 R	0.21 R	0.19 R	0.21 R
SVOCs by SIM (mg/kg)																
1-Methylnaphthalene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Chloronaphthalene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Methylnaphthalene	0.018	0.0019 J*	0.0015 J*	0.0037 J*	0.0047 U	0.0045 U	0.037 U	0.00057 J*	0.0041 U	0.0037 U	0.0044 U	0.0041 U	0.0046 U	0.004 U	0.0054	0.004 U
Acenaphthene	0.0014 J*	0.0039 U	0.0034 U	0.004 U	0.0047 U	0.0045 U	0.037 U	0.0041 U	0.0041 U	0.0037 U	0.0044 U	0.0041 U	0.0046 U	0.004 U	0.0037 U	0.004 U
Acenaphthylene	0.00085 J*	0.0039 U	0.0034 U	0.004 U	0.0047 U	0.0045 U	0.037 U	0.0041 U	0.0041 U	0.0037 U	0.0044 U	0.0041 U	0.0046 U	0.004 U	0.0015 J*	0.004 U
Anthracene	0.0023 J*	0.0039 U	0.0034 U	0.004 U	0.0047 U	0.0045 U	0.0094 J*	0.0041 U	0.0041 U	0.0037 U	0.0044 U	0.0041 U	0.0046 U	0.00057 J*	0.0037 U	0.004 U
Benzo(a)anthracene	0.0025 J*	0.0039 U	0.0034 U	0.004 U	0.0047 U	0.0045 U	0.037 U	0.0041 U	0.0041 U	0.0037 U	0.0044 UJ	0.0041 U	0.0046 U	0.004 U	0.0025 J*	0.004 U
Benzo(a)pyrene	0.0043 U	0.0039 U	0.0034 U	0.004 U	0.0047 U	0.0045 U	0.037 U	0.0041 U	0.0041 U	0.0037 U	0.0044 UJ	0.0041 U	0.0046 U	0.004 U	0.0043	0.004 U
Benzo(b)fluoranthene	0.0083	0.0015 J*	0.0008 J*	0.004 U	0.0047 U	0.0045 U	0.037 U	0.0005 J*	0.0041 U	0.0037 U	0.0044 UJ	0.0041 U	0.0046 U	0.004 U	0.0082	0.004 U
Benzo(ghi)perylene	0.0034 J*	0.0039 U	0.0034 U	0.004 U	0.0047 U	0.0045 U	0.037 U	0.0041 U	0.0041 U	0.0037 U	0.0044 UJ	0.0041 U	0.0046 U	0.004 U	0.0079	0.004 U

MAUL FOSTER ALONGI

Table E
Soil Analytical Results
Wild River Land Trust
Port Orford, Oregon

Location:	SL11TP01	SL11TP02	SL12TP01	SL12TP02	SL13TP01	SL13TP02	SL14GP01	SL14GP02	SL15GP01	SL15GP02	SL16TP01	SL16TP02	SL16TP03	SL16TP04	SL19TP01	SL19TP02
Sample Name:	JLTS0	JLTS1	JLTS2	JLTS3	JLTS4	JLTS5	JLTS6	JLTS7	JLTS8	JLTS9	JLTT0	JLTT1	JLTY3	JLTY4	JLTT6	JLTT7
Collection Date:	9/11/2020	9/11/2020	9/11/2020	9/11/2020	9/11/2020	9/11/2020	9/10/2020	9/10/2020	9/11/2020	9/11/2020	9/10/2020	9/10/2020	9/10/2020	9/10/2020	9/9/2020	9/9/2020
Collection Depth (ft bgs):	3-4	6-7	3-4	7-8	1-2	4-5	0-4	12-16	0-4	12-16	0.833-1	1.0833-1.5	1.5-3	4-5	3-4	6-7
Benzo(k)fluoranthene	0.0058	0.0039 U	0.0034 U	0.004 U	0.0047 U	0.0045 U	0.037 U	0.0041 U	0.0041 U	0.0037 U	0.0044 UJ	0.0041 U	0.0046 U	0.004 U	0.0027 J*	0.004 U
Chrysene	0.0072	0.00051 J*	0.00093 J*	0.0013 J*	0.0047 U	0.0045 U	0.037 U	0.0041 U	0.0041 U	0.0037 U	0.0044 UJ	0.00053 J*	0.0046 U	0.004 U	0.005	0.004 U
Dibenzo(a,h)anthracene	0.0043 U	0.0039 U	0.0034 U	0.004 U	0.0047 U	0.0045 U	0.037 U	0.0041 U	0.0041 U	0.0037 U	0.0044 UJ	0.0041 U	0.0046 U	0.004 U	0.0037 U	0.004 U
Fluoranthene	0.0086	0.0039 U	0.00055 J*	0.0016 J*	0.0047 U	0.0045 U	0.037 U	0.01	0.0041 U	0.0037 U	0.0044 UJ	0.0005 J*	0.0046 U	0.00055 J*	0.012	0.004 U
Fluorene	0.0029 J*	0.0039 U	0.0034 U	0.002 J*	0.0047 U	0.0045 U	0.037 U	0.0041 U	0.0041 U	0.0037 U	0.0044 U	0.0041 U	0.0046 U	0.004 U	0.00079 J*	0.004 U
Indeno(1,2,3-cd)pyrene	0.0043 U	0.0039 U	0.0034 U	0.004 U	0.0047 U	0.0045 U	0.037 U	0.0041 U	0.0041 U	0.0037 U	0.0044 UJ	0.0041 U	0.0046 U	0.004 U	0.0025 J*	0.004 U
Naphthalene	0.0071	0.00095 J*	0.0012 J*	0.0017 J*	0.0047 U	0.0045 U	0.037 U	0.0041 U	0.0041 U	0.0037 U	0.0021 J*	0.0041 U	0.0046 U	0.004 U	0.0048	0.00083 J*
Pentachlorophenol	0.0045 J*	0.0078 U	0.0068 U	0.029	0.0096 U	0.0091 U	0.075 U	0.0084 U	0.0083 U	0.0075 U	0.0088 U	0.0084 U	0.0092 U	0.0081 U	0.017	0.0082 U
Phenanthrene	0.032	0.0026 J*	0.0022 J*	0.0041	0.0047 U	0.0045 U	0.0098 J*	0.0015 J*	0.00059 J*	0.0037 U	0.0016 J*	0.00083 J*	0.0046 U	0.00049 J*	0.016	0.00043 J*
Pyrene	0.0093	0.00094 J*	0.0034 U	0.004 U	0.0047 U	0.0045 U	0.037 U	0.0041 U	0.0041 U	0.0037 U	0.0044 UJ	0.0041 U	0.0046 U	0.004 U	0.0047	0.004 U
Total LPAH(e)(3)	0.065 J*	0.013 J*	0.012 J*	0.018 J*	0.00235 U	0.00225 U	0.11 J*	0.012 J*	0.013 J*	0.00185 U	0.015 J*	0.013 J*	0.0023 U	0.011 J*	0.032 J*	0.011 J*
Total HPAH(f)(3)	0.052 J*	0.017 J*	0.014 J*	0.019 J*	0.00235 U	0.00225 U	0.0185 U	0.027 J*	0.00205 U	0.00185 U	0.0022 UJ	0.017 J*	0.0023 U	0.019 J*	0.052 J*	0.002 U
VOCs (mg/kg)																
1,1,1,2-Tetrachloroethane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1,1-Trichloroethane	0.065 U	0.028 U	0.0079 U	0.0061 U	0.01 U	0.0073 U	0.0093 U	0.0061 U	0.0076 U	0.0056 U	0.02 UJ	0.011 U	0.0073 U	0.016 U	0.013 U	0.0082 U
1,1,2,2-Tetrachloroethane	0.065 U	0.028 U	0.0079 U	0.0061 U	0.01 U	0.0073 U	0.0093 U	0.0061 U	0.0076 U	0.0056 U	0.02 UJ	0.011 U	0.0073 U	0.016 U	0.013 U	0.0082 U
1,1,2-Trichloroethane	0.065 U	0.028 U	0.0079 U	0.0061 U	0.01 U	0.0073 U	0.0093 U	0.0061 U	0.0076 U	0.0056 U	0.02 U	0.011 U	0.0073 U	0.016 U	0.013 U	0.0082 U
1,1-Dichloroethane	0.065 U	0.028 U	0.0079 U	0.0061 U	0.01 U	0.0073 U	0.0093 U	0.0061 U	0.0076 U	0.0056 U	0.02 UJ	0.011 U	0.0073 U	0.016 U	0.013 U	0.0082 U
1,1-Dichloroethene	0.065 U	0.028 U	0.0079 U	0.0061 U	0.01 U	0.0073 U	0.0093 U	0.0061 U	0.0076 U	0.0056 U	0.02 UJ	0.011 U	0.0073 U	0.016 U	0.013 U	0.0082 U
1,1-Dichloropropene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,3-Trichlorobenzene	0.065 UJ	0.028 U	0.0079 U	0.0061 U	0.01 U	0.0073 U	0.0093 U	0.0061 U	0.0076 U	0.0056 U	0.02 UJ	0.011 UJ	0.0073 U	0.016 U	0.013 U	0.0082 U
1,2,3-Trichloropropane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,3-Trimethylbenzene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,4-Trichlorobenzene	0.065 UJ	0.028 U	0.0079 U	0.0061 U	0.01 U	0.0073 U	0.0093 U	0.0061 U	0.0076 U	0.0056 U	0.02 UJ	0.011 UJ	0.0073 U	0.016 U	0.013 U	0.0082 U
1,2,4-Trimethylbenzene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dibromo-3-chloropropane	0.065 U	0.028 U	0.0079 U	0.0061 U	0.01 U	0.0073 U	0.0093 U	0.0061 U	0.0076 U	0.0056 U	0.02 UJ	0.011 U	0.0073 U	0.016 U	0.013 U	0.0082 U
1,2-Dibromoethane	0.065 U	0.028 U	0.0079 U	0.0061 U	0.01 U	0.0073 U	0.0093 U	0.0061 U	0.0076 U	0.0056 U	0.02 U	0.011 U	0.0073 U	0.016 U	0.013 U	0.0082 U
1,2-Dichlorobenzene	0.065 UJ	0.028 U	0.0079 U	0.0061 U	0.01 U	0.0073 U	0.0093 U	0.0061 U	0.0076 U	0.0056 U	0.02 UJ	0.011 UJ	0.0073 U	0.016 U	0.013 U	0.0082 U
1,2-Dichloroethane	0.065 U	0.028 U	0.0079 U	0.0061 U	0.01 U	0.0073 U	0.0093 U	0.0061 U	0.0076 U	0.0056 U	0.02 UJ	0.011 U	0.0073 U	0.016 U	0.013 U	0.0082 U
1,2-Dichloropropane	0.065 U	0.028 U	0.0079 U	0.0061 U	0.01 U	0.0073 U	0.0093 U	0.0061 U	0.0076 U	0.0056 U	0.02 U	0.011 U	0.0073 U	0.016 U	0.013 U	0.0082 U
1,3,5-Trimethylbenzene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,3-Dichlorobenzene	0.065 UJ	0.028 U	0.0079 U	0.0061 U	0.01 U	0.0073 U	0.0093 U	0.0061 U	0.0076 U	0.0056 U	0.02 UJ	0.011 UJ	0.0073 U	0.016 U	0.013 U	0.0082 U
1,3-Dichloropropane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,4-Dichlorobenzene	0.065 UJ	0.028 U	0.0079 U	0.0061 U	0.01 U	0.0073 U	0.0093 U	0.0061 U	0.0076 U	0.0056 U	0.02 UJ	0.011 UJ	0.0073 U	0.016 U	0.013 U	0.0082 U
2,2-Dichloropropane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Butanone	0.13 U	0.056 U	0.016 U	0.012 U	0.02 U	0.015 U	0.01 J*	0.019	0.015 U	0.011 U	0.041 UJ	0.022 U	0.015 U	0.031 U	0.027 U	0.016 U
2-Chlorotoluene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Hexanone	0.13 U	0.056 U	0.016 U	0.012 U	0.02 U	0.015 U	0.019 U	0.012 U	0.015 U	0.011 U	0.041 U	0.022 U	0.015 U	0.031 U	0.027 U	0.016 U
4-Chlorotoluene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Isopropyltoluene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Methyl-2-pentanone	0.13 U	0.056 U	0.016 U	0.012 U	0.02 U	0.015 U	0.019 U	0.012 U	0.015 U	0.011 U	0.041 U	0.022 U	0.015 U	0.031 U	0.027 U	0.016 U
Acetone	0.16	0.069	0.022	0.012 U	0.009 J*	0.015 U	0.088	0.096	0.0086 J*	0.004 J*	0.32 J	0.053	0.041	0.013 J*	0.056	0.047
Acrylonitrile	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzene	0.025 J*	0.024 J*	0.0022 J*	0.0061 U	0.01 U	0.0073 U	0.01	0.00096 J*	0.0054 J*	0.0056 U	0.074 J	0.0059 J*	0.0013 J*	0.016 U	0.0055 J*	0.002 J*
Bromobenzene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

MAUL FOSTER ALONGI

Table E
Soil Analytical Results
Wild River Land Trust
Port Orford, Oregon

Location:	SL11TP01	SL11TP02	SL12TP01	SL12TP02	SL13TP01	SL13TP02	SL14GP01	SL14GP02	SL15GP01	SL15GP02	SL16TP01	SL16TP02	SL16TP03	SL16TP04	SL19TP01	SL19TP02
Sample Name:	JLTS0	JLTS1	JLTS2	JLTS3	JLTS4	JLTS5	JLTS6	JLTS7	JLTS8	JLTS9	JLTT0	JLTT1	JLTY3	JLTY4	JLTT6	JLTT7
Collection Date:	9/11/2020	9/11/2020	9/11/2020	9/11/2020	9/11/2020	9/11/2020	9/10/2020	9/10/2020	9/11/2020	9/11/2020	9/10/2020	9/10/2020	9/10/2020	9/10/2020	9/9/2020	9/9/2020
Collection Depth (ft bgs):	3-4	6-7	3-4	7-8	1-2	4-5	0-4	12-16	0-4	12-16	0.833-1	1.0833-1.5	1.5-3	4-5	3-4	6-7
Bromodichloromethane	0.065 U	0.028 U	0.0079 U	0.0061 U	0.01 U	0.0073 U	0.0093 U	0.0061 U	0.0076 U	0.0056 U	0.02 U	0.011 U	0.0073 U	0.016 U	0.013 U	0.0082 U
Bromoform	0.065 U	0.028 U	0.0079 U	0.0061 U	0.01 U	0.0073 U	0.0093 U	0.0061 U	0.0076 U	0.0056 U	0.02 UJ	0.011 U	0.0073 U	0.016 U	0.013 U	0.0082 U
Bromomethane	0.065 U	0.028 U	0.0079 U	0.0061 U	0.01 U	0.0073 U	0.0093 U	0.0061 U	0.0076 U	0.0056 U	0.02 UJ	0.011 U	0.0073 U	0.016 U	0.013 U	0.0082 U
Carbon disulfide	0.065 U	0.028 U	0.0079 U	0.0061 U	0.01 U	0.0073 U	0.0093 U	0.0061 U	0.0076 U	0.0056 U	0.02 UJ	0.011 U	0.0073 U	0.016 U	0.013 U	0.0082 U
Carbon tetrachloride	0.065 U	0.028 U	0.0079 U	0.0061 U	0.01 U	0.0073 U	0.0093 U	0.0061 U	0.0076 U	0.0056 U	0.02 U	0.011 U	0.0073 U	0.016 U	0.013 U	0.0082 U
Chlorobenzene	0.065 UJ	0.028 U	0.0079 U	0.0061 U	0.01 U	0.0073 U	0.0093 U	0.0061 U	0.0076 U	0.0056 U	0.02 UJ	0.011 UJ	0.0073 U	0.016 U	0.013 U	0.0082 U
Chlorobromomethane	0.065 U	0.028 U	0.0079 U	0.0061 U	0.01 U	0.0073 U	0.0093 U	0.0061 U	0.0076 U	0.0056 U	0.02 UJ	0.011 U	0.0073 U	0.016 U	0.013 U	0.0082 U
Chloroethane	0.065 U	0.028 U	0.0079 U	0.0061 U	0.01 U	0.0073 U	0.0093 U	0.0061 U	0.0076 U	0.0056 U	0.02 UJ	0.011 U	0.0073 U	0.016 U	0.013 U	0.0082 U
Chloroform	0.065 U	0.028 U	0.0079 U	0.0061 U	0.01 U	0.0073 U	0.0093 U	0.0061 U	0.0076 U	0.0056 U	0.02 UJ	0.011 U	0.0073 U	0.016 U	0.013 U	0.0082 U
Chloromethane	0.065 U	0.028 U	0.0079 U	0.0061 U	0.01 U	0.0073 U	0.0093 U	0.0061 U	0.0076 U	0.0056 U	0.02 UJ	0.011 U	0.0073 U	0.016 U	0.013 U	0.0082 U
cis-1,2-Dichloroethene	0.065 U	0.028 U	0.0079 U	0.0061 U	0.01 U	0.0073 U	0.0093 U	0.0061 U	0.0076 U	0.0056 U	0.02 UJ	0.011 U	0.0073 U	0.016 U	0.013 U	0.0082 U
cis-1,3-Dichloropropene	0.065 U	0.028 U	0.0079 U	0.0061 U	0.01 U	0.0073 U	0.0093 U	0.0061 U	0.0076 U	0.0056 U	0.02 U	0.011 U	0.0073 U	0.016 U	0.013 U	0.0082 U
Cyclohexane	0.065 U	0.028 U	0.0079 U	0.0061 U	0.01 U	0.0073 U	0.0093 U	0.0061 U	0.0076 U	0.0056 U	0.02 UJ	0.011 U	0.0073 U	0.016 U	0.013 U	0.0082 U
Dibromochloromethane	0.065 U	0.028 U	0.0079 U	0.0061 U	0.01 U	0.0073 U	0.0093 U	0.0061 U	0.0076 U	0.0056 U	0.02 U	0.011 U	0.0073 U	0.016 U	0.013 U	0.0082 U
Dibromomethane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dichlorodifluoromethane (Freon 12	0.065 U	0.028 U	0.0079 U	0.0061 U	0.01 U	0.0073 U	0.0093 U	0.0061 U	0.0076 U	0.0056 U	0.02 UJ	0.011 U	0.0073 U	0.016 U	0.013 U	0.0082 U
Diisopropyl Ether	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Ethylbenzene	0.065 U	0.028 U	0.0079 U	0.0061 U	0.01 U	0.0073 U	0.013	0.0061 U	0.0076 U	0.0056 U	0.02 U	0.011 U	0.0073 U	0.016 U	0.013 U	0.0082 U
Freon 113	0.065 U	0.028 U	0.0079 U	0.0061 U	0.01 U	0.0073 U	0.0093 U	0.0061 U	0.0076 U	0.0056 U	0.02 UJ	0.011 U	0.0073 U	0.016 U	0.013 U	0.0082 U
Hexachlorobutadiene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Isopropylbenzene	0.065 U	0.028 U	0.0079 U	0.0061 U	0.01 U	0.0073 U	0.0093 U	0.0061 U	0.0076 U	0.0056 U	0.02 U	0.011 U	0.0073 U	0.016 U	0.013 U	0.0082 U
m,p-Xylene	0.065 U	0.028 U	0.0079 U	0.0061 U	0.01 U	0.0073 U	0.0095	0.0061 U	0.0012 J*	0.0056 U	0.02 U	0.011 U	0.0073 U	0.016 U	0.013 U	0.0082 U
Methyl acetate	0.065	0.022 J*	0.011	0.0061 U	0.01 U	0.0073 U	0.009 J*	0.0061 U	0.016	0.0056 U	0.02 UJ	0.011 U	0.0042 J*	0.016 U	0.013 U	0.0082 U
Methyl tert-butyl ether	0.065 U	0.028 U	0.0079 U	0.0061 U	0.01 U	0.0073 U	0.0093 U	0.0061 U	0.0076 U	0.0056 U	0.02 UJ	0.011 U	0.0073 U	0.016 U	0.013 U	0.0082 U
Methylcyclohexane	0.065 U	0.028 U	0.0079 U	0.0061 U	0.01 U	0.0073 U	0.0093 U	0.0061 U	0.0076 U	0.0056 U	0.02 U	0.011 U	0.0073 U	0.016 U	0.013 U	0.0082 U
Methylene chloride	0.065 U	0.028 U	0.0079 U	0.0061 U	0.01 U	0.0073 U	0.0093 U	0.0061 U	0.0076 U	0.0056 U	0.02 UJ	0.011 U	0.0073 U	0.016 U	0.013 U	0.0082 U
Naphthalene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
n-Butylbenzene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
n-Propylbenzene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
o-Xylene	0.065 U	0.028 U	0.0079 U	0.0061 U	0.01 U	0.0073 U	0.0034 J*	0.0061 U	0.0076 U	0.0056 U	0.02 U	0.011 U	0.0073 U	0.016 U	0.013 U	0.0082 U
sec-Butylbenzene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Styrene	0.065 U	0.028 U	0.0079 U	0.0061 U	0.01 U	0.0073 U	0.0093 U	0.0061 U	0.0076 U	0.0056 U	0.02 U	0.011 U	0.0073 U	0.016 U	0.013 U	0.0082 U
tert-Butylbenzene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tetrachloroethene	0.065 U	0.028 U	0.0079 U	0.0061 U	0.01 U	0.0073 U	0.0093 U	0.0061 U	0.0076 U	0.0056 U	0.02 U	0.011 U	0.0073 U	0.016 U	0.013 U	0.0082 U
Toluene	0.065 U	0.028 U	0.0079 U	0.0061 U	0.01 U	0.0073 U	0.013	0.0061 U	0.0025 J*	0.0056 U	0.0057 J*	0.011 U	0.0073 U	0.016 U	0.005 J*	0.0082 U
trans-1,2-Dichloroethene	0.065 U	0.028 U	0.0079 U	0.0061 U	0.01 U	0.0073 U	0.0093 U	0.0061 U	0.0076 U	0.0056 U	0.02 UJ	0.011 U	0.0073 U	0.016 U	0.013 U	0.0082 U
trans-1,3-Dichloropropene	0.065 U	0.028 U	0.0079 U	0.0061 U	0.01 U	0.0073 U	0.0093 U	0.0061 U	0.0076 U	0.0056 U	0.02 UJ	0.011 U	0.0073 U	0.016 U	0.013 U	0.0082 U
Trichloroethene	0.065 U	0.028 U	0.0079 U	0.0061 U	0.01 U	0.0073 U	0.0093 U	0.0061 U	0.0076 U	0.0056 U	0.02 U	0.011 U	0.0073 U	0.016 U	0.013 U	0.0082 U
Trichlorofluoromethane (Freon 11)	0.065 U	0.028 U	0.0079 U	0.0061 U	0.01 U	0.0073 U	0.0093 U	0.0061 U	0.0076 U	0.0056 U	0.02 UJ	0.011 U	0.0073 U	0.016 U	0.013 U	0.0082 U
Vinyl chloride	0.065 U	0.028 U	0.0079 U	0.0061 U	0.01 U	0.0073 U	0.0093 U	0.0061 U	0.0076 U	0.0056 U	0.02 UJ	0.011 U	0.0073 U	0.016 U	0.013 U	0.0082 U
Xylenes, total[g]	0.065 U	0.028 U	0.0079 U	0.0061 U	0.01 U	0.0073 U	0.0129 J*	0.0061 U	0.005 J*	0.0056 U	0.02 U	0.011 U	0.0073 U	0.016 U	0.013 U	0.0082 U

Table E
Soil Analytical Results
Wild River Land Trust
Port Orford, Oregon

Location:	SL20GP01	SL21GP01	SL22GP01	SL23TP01	SL23TP02	SL24TP01	SL24TP02	SL25TP01	SL25TP02	SL26TP01	SL26TP02	SL27TP01	SS-1	SS-2	SS-3	SS-4
Sample Name:	JLTJT8	JLTW0	JLTW2	JLTW4	JLTW5	JLTW6	JLTW7	JLTW8	JLTW9	JLTX0	JLTX1	JLTX2	9358-190122-SS-1	9358-190122-SS-2	9358-190122-SS-3	9358-190122-SS-4
Collection Date:	9/11/2020	9/12/2020	9/12/2020	9/10/2020	9/10/2020	9/10/2020	9/10/2020	9/10/2020	9/10/2020	9/10/2020	9/10/2020	9/10/2020	1/22/2019	1/22/2019	1/22/2019	1/22/2019
Collection Depth (ft bgs):	0-4	0-4	0-4	2-3	9-10	3-4	8-9	2-3	9-10	2-3	6-7	7-8	0-1	0-1	0-1	0-1
Total Metals (mg/kg)																
Aluminum	27,600	32,200	37,600	47,200	35,900	23,400	23,800	24,600	25,800	20,500	31,100	34,800	--	--	--	--
Antimony	0.92 U	0.16 J*	0.19 J*	1 U	0.89 U	0.24 J*	0.76 J*	0.21 J*	0.25 J*	0.16 J*	0.17 J*	0.082 J*	--	--	--	--
Arsenic	3.9	3	4.5	5.1	3.7	3.5	4.6	3.3	4	3.1	3.4	3.2	--	--	--	--
Barium	66.9	42.3	56.3	45.7	48.1	89.2	414	86.2	79	84	54.1	45.1	--	--	--	--
Beryllium	0.65	0.69	0.82	0.84	0.76	0.68	0.61	0.7	0.74	0.66	0.77	0.64	--	--	--	--
Cadmium	0.47 U	0.44 U	0.47 U	0.45 U	0.48 U	0.42 U	0.46 U	0.5 U	0.71 U	0.49 U	0.48 U	0.52 U	--	--	--	--
Calcium	3450	2480	3290	1570	1140	5760	17600	4680	3190	4640	2590	1100	--	--	--	--
Chromium	82.7	82.1	107	113	114	64.6	64.1	71.5	74.7	79.4	106	71.3	--	--	--	--
Cobalt	10.7	13.3	14.6	9.1	19.5	17	15.3	24	12.9	15.4	19.2	10.1	--	--	--	--
Copper	70.3	49.8	53.7	47.1	55.8	51.8	96	56.4	44	39.4	47.4	40.3	--	--	--	--
Iron	38,300	37,400	47,900	54,200	41,400	34,000	31,700	33,800	29,800	31,800	41,000	35,000	--	--	--	--
Lead	26 J	12.5	11.8	13.2 J	8.2 J	10.8	15.3	12.6	8	17.3	9.2	8.2	--	--	--	--
Magnesium	6,760	10,600	9,950	6,120	17,500	11,600	10,100	11,100	8,960	10,400	14,400	7,520	--	--	--	--
Manganese	308	346	380	188	411	527	969	666	287	519	472	193	--	--	--	--
Mercury	0.14	0.14	0.16	0.16	0.15	0.11 U	0.12 U	0.13	0.21 U	0.15	0.15	0.11 U	--	--	--	--
Nickel	61.3	98.3	96.5	71.8	137	81.7	86.5	88.5	84	87.8	122	61.6	--	--	--	--
Potassium	377 J*	464	574	452 U	442 J*	707	3470	615	714 U	572	612	515 U	--	--	--	--
Selenium	0.48 J*	0.54 J*	0.52 J*	0.65 J*	2.2 U	0.8 J*	2.5 UJ	0.54 J*	0.83 J*	2.3 UJ	0.55 J*	2.4 UJ	--	--	--	--
Silver	0.98	0.54 J*	0.71 J*	0.81 J*	0.95 J*	0.8 J*	0.58 J*	0.55 J*	0.5 J*	0.41 J*	0.54 J*	0.63 J*	--	--	--	--
Sodium	42 J*	44.4 J*	32.5 J*	452 U	484 U	73.6 J*	1680	30 J*	714 U	489 U	480 U	515 U	--	--	--	--
Thallium	0.46 U	0.43 U	0.49 U	0.51 U	0.44 U	0.44 U	0.49 U	0.46 U	0.77 U	0.45 U	0.45 U	0.48 U	--	--	--	--
Vanadium	72.1 J	70.6	90.3	106 J	67.5 J	66.6	55.4	65.9	66.4	61.6	71.7	66.8	--	--	--	--
Zinc	169	74.9	73.7	55.8	79.1	75.2	90.8	80.6	106	69.3	72.6	61.6	--	--	--	--
PCB Aroclors (mg/kg)																
Total PCBs[a]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dioxins (pg/g)																
1,2,3,4,6,7,8-HpCDD	450	70	55	3.2 J*	0.92 J*	220	100	400	140	59	90	11	195	199	202	59.4
1,2,3,4,6,7,8-HpCDF	55	13	7.3	0.5 J*	0.44 U	59	21	89	24	8.3	16	4.6 J*	38.2	537	38.5	15.3
1,2,3,4,7,8,9-HpCDF	3.5 J*	0.95 J*	0.5 J*	0.46 U	0.46 U	4.4 J*	1.4 J*	7.7	2.1 J*	0.55 J*	1.1 J*	0.43 U	3.21	18.2	2.98	2.11 U
1,2,3,4,7,8-HxCDD	3.7 J*	1 J*	0.66 J*	0.47 U	0.47 U	2.7 J*	1.3 J*	5.2	0.88 J*	0.6 J*	1.1 J*	0.44 U	3.99	9.99	3.85	1.05 U
1,2,3,4,7,8-HxCDF	2.9 J*	1 J*	0.47 J*	0.4 U	0.4 U	5.9	1.8 J*	12	0.87 J*	0.46 J*	0.43 J*	0.37 U	6.39	273	6.98	1.91 J
1,2,3,6,7,8-HxCDD	13	3 J*	2.3 J*	0.5 U	0.5 U	11	4.8 J*	20	4.2 J*	2.1 J*	3.6 J*	0.52 J*	8.67	24.3	12.4	1.2 U
1,2,3,6,7,8-HxCDF	1.7 J*	0.59 J*	0.47 U	0.47 U	0.47 U	2.7 J*	0.86 J*	4.8 J*	0.7 J*	0.47 U	0.47 U	0.44 U	3.22	127	3.06	0.899 U
1,2,3,7,8,9-HxCDD	7.3	1.9 J*	1.8 J*	0.36 J*	0.34 U	5.2	2.7 J*	14	2.4 J*	1.4 J*	1.5 J*	0.32 U	6.04	34.1	7.9	1.1 U
1,2,3,7,8,9-HxCDF	0.89 J*	0.48 J*	0.44 U	0.44 U	0.44 U	2.1 J*	0.58 J*	3.5 J*	0.46 J*	0.44 U	0.44 U	0.41 U	0.877 U	4.22	0.709 U	1.29 U
1,2,3,7,8-PeCDD	2.2 J*	0.63 J*	0.41 J*	0.35 U	0.35 U	1.5 J*	0.87 J*	2.9 J*	0.49 J*	0.4 J*	0.44 J*	0.33 U	2.07 J	17.5	2.38 J	0.9 U
1,2,3,7,8-PeCDF	0.62 J*	0.38 U	0.38 U	0.38 U	0.38 U	0.85 J*	0.38 U	1.6 J*	0.38 U	0.38 U	0.38 U	0.35 U	0.853 U	63.2	0.491 U	0.622 U
2,3,4,6,7,8-HxCDF	2.7 J*	0.8 J*	0.61 J*	0.41 U	0.41 U	4.2 J*	1.4 J*	6.5	1.9 J*	0.49 J*	0.69 J*	0.38 U	3.08	145	3.6	0.874 U
2,3,4,7,8-PeCDF	1.3 J*	0.54 J*	0.43 U	0.43 U	0.43 U	2.2 J*	0.68 J*	3.9 J*	0.43 U	0.45 J*	0.43 U	0.4 U	0.8 U	106	1.85 J	0.54 U
2,3,7,8-TCDD	0.84 J*	0.23 J*	0.28 J*	0.084 U	0.096 U	1.2	0.82 J*	2.4	0.24 J*	0.22 J*	0.098 U	0.092 U	3.97	9.26	0.429 U	0.459 U
2,3,7,8-TCDF	0.45 J*	0.2 J*	0.13 U	0.11 U	0.11 U	0.33 J*	0.23 J*	0.69 J*	0.11 U	0.17 J*	0.11 U	0.1 U	0.47 U	42.2	0.428 U	0.447 U
OCDD	4,700 J	680	410	20	5.7 J*	2,400	920	4,500 J	820	370	870	100	1830	845	1,760	626
OCDF	220	41	29	1.4 J*	0.87 U	130	54	200	100	32	78	16	131	115	139	43.9
Dioxin/furan TEQ (avian)[b][1]	8.2 J*	2.5 J*	1.6 J*	0.65 J*	0.64 J*	8.7 J*	3.9 J*	16 J*	2.2 J*	1.8 J*	1.5 J*	0.66 J*	9.73 J	246	8.0 J	1.93 J

Table E
Soil Analytical Results
Wild River Land Trust
Port Orford, Oregon

Location:	SL20GP01	SL21GP01	SL22GP01	SL23TP01	SL23TP02	SL24TP01	SL24TP02	SL25TP01	SL25TP02	SL26TP01	SL26TP02	SL27TP01	SS-1	SS-2	SS-3	SS-4
Sample Name:	JLTJT8	JLTW0	JLTW2	JLTW4	JLTW5	JLTW6	JLTW7	JLTW8	JLTW9	JLTX0	JLTX1	JLTX2	9358-190122-SS-1	9358-190122-SS-2	9358-190122-SS-3	9358-190122-SS-4
Collection Date:	9/11/2020	9/12/2020	9/12/2020	9/10/2020	9/10/2020	9/10/2020	9/10/2020	9/10/2020	9/10/2020	9/10/2020	9/10/2020	9/10/2020	1/22/2019	1/22/2019	1/22/2019	1/22/2019
Collection Depth (ft bgs):	0-4	0-4	0-4	2-3	9-10	3-4	8-9	2-3	9-10	2-3	6-7	7-8	0-1	0-1	0-1	0-1
Dioxin/furan TEQ (mammal)[(c)(2)]	13 J*	3.0 J*	2.2 J*	0.51 J*	0.47 J*	10 J*	4.8 J*	20 J*	3.9 J*	2.1 J*	2.7 J*	0.64 J*	12.3 J	134	10 J	2.26 J
TPH (mg/kg)																
Gasoline-Range Hydrocarbons	9.8 U	11 U	13 U	--	--	--	--	--	--	--	--	--	--	--	--	--
Diesel-Range Hydrocarbons	49 U	49 U	52 U	--	--	--	--	--	--	--	--	--	--	--	--	--
Lube-Oil-Range Hydrocarbons	120 U	120 U	130 U	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Diesel+Oil[(d)]	120 U	120 U	130 U	--	--	--	--	--	--	--	--	--	--	--	--	--
TPH with Silica-Gel Treatment (mg/kg																
Diesel-Range Hydrocarbons	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lube-Oil-Range Hydrocarbons	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Diesel+Oil[(e)]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SVOCs (mg/kg)																
1,1'-Biphenyl	0.21 U	0.21 U	0.22 U	0.23 UJ	0.21 UJ	0.21 UJ	0.22 UJ	0.2 UJ	0.33 UJ	0.21 UJ	0.21 UJ	0.21 UJ	--	--	--	--
1,2,4,5-Tetrachlorobenzene	0.21 U	0.21 U	0.22 U	0.23 UJ	0.21 UJ	0.21 UJ	0.22 UJ	0.2 UJ	0.33 UJ	0.21 UJ	0.21 UJ	0.21 UJ	--	--	--	--
1,4-Dioxane	0.084 U	0.081 U	0.085 U	0.089 UJ	0.083 UJ	0.084 UJ	0.087 UJ	0.078 UJ	0.13 UJ	0.081 UJ	0.083 UJ	0.084 UJ	--	--	--	--
2,3,4,6-Tetrachlorophenol	0.21 U	0.21 U	0.22 U	0.23 UJ	0.21 UJ	0.21 UJ	0.22 UJ	0.2 UJ	0.33 UJ	0.21 UJ	0.21 UJ	0.21 UJ	--	--	--	--
2,4,5-Trichlorophenol	0.21 U	0.21 U	0.22 U	0.23 UJ	0.21 UJ	0.21 UJ	0.22 UJ	0.2 UJ	0.33 UJ	0.21 UJ	0.21 UJ	0.21 UJ	--	--	--	--
2,4,6-Trichlorophenol	0.21 U	0.21 U	0.22 U	0.23 UJ	0.21 UJ	0.21 UJ	0.22 UJ	0.2 UJ	0.33 UJ	0.21 UJ	0.21 UJ	0.21 UJ	--	--	--	--
2,4-Dichlorophenol	0.21 U	0.21 U	0.22 U	0.23 UJ	0.21 UJ	0.21 UJ	0.22 UJ	0.2 UJ	0.33 UJ	0.21 UJ	0.21 UJ	0.21 UJ	--	--	--	--
2,4-Dimethylphenol	0.21 U	0.21 U	0.22 U	0.23 UJ	0.21 UJ	0.21 UJ	0.22 UJ	0.2 UJ	0.33 UJ	0.21 UJ	0.21 UJ	0.21 UJ	--	--	--	--
2,4-Dinitrophenol	0.41 U	0.4 U	0.42 U	0.44 UJ	0.41 UJ	0.41 UJ	0.43 UJ	0.38 UJ	0.64 UJ	0.4 UJ	0.41 UJ	0.42 UJ	--	--	--	--
2,4-Dinitrotoluene	0.21 U	0.21 U	0.22 U	0.23 UJ	0.21 UJ	0.21 UJ	0.22 UJ	0.2 UJ	0.33 UJ	0.21 UJ	0.21 UJ	0.21 UJ	--	--	--	--
2,6-Dinitrotoluene	0.21 U	0.21 U	0.22 U	0.23 UJ	0.21 UJ	0.21 UJ	0.22 UJ	0.2 UJ	0.33 UJ	0.21 UJ	0.21 UJ	0.21 UJ	--	--	--	--
2-Chloronaphthalene	0.21 U	0.21 U	0.22 U	0.23 UJ	0.21 UJ	0.21 UJ	0.22 UJ	0.2 UJ	0.33 UJ	0.21 UJ	0.21 UJ	0.21 UJ	--	--	--	--
2-Chlorophenol	0.21 U	0.21 U	0.22 U	0.23 UJ	0.21 UJ	0.21 UJ	0.22 UJ	0.2 UJ	0.33 UJ	0.21 UJ	0.21 UJ	0.21 UJ	--	--	--	--
2-Methylnaphthalene	0.21 R	0.21 R	0.22 R	0.23 R	0.21 R	0.21 R	0.22 R	0.2 R	0.33 R	0.21 R	0.21 R	0.21 R	--	--	--	--
2-Methylphenol	0.41 U	0.4 U	0.42 U	0.44 UJ	0.41 UJ	0.41 UJ	0.43 UJ	0.38 UJ	0.64 UJ	0.4 UJ	0.41 UJ	0.42 UJ				
2-Nitroaniline	0.21 UJ	0.21 UJ	0.22 UJ	0.23 UJ	0.21 UJ	0.21 UJ	0.22 UJ	0.2 UJ	0.33 UJ	0.21 UJ	0.21 UJ	0.21 UJ	--	--	--	--
2-Nitrophenol	0.21 U	0.21 U	0.22 U	0.23 UJ	0.21 UJ	0.21 UJ	0.22 UJ	0.2 UJ	0.33 UJ	0.21 UJ	0.21 UJ	0.21 UJ				
3- & 4-Methylphenol (m,p-Cresol)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3,3-Dichlorobenzidine	0.41 U	0.4 U	0.42 U	0.44 UJ	0.41 UJ	0.41 UJ	0.43 UJ	0.38 UJ	0.64 UJ	0.4 UJ	0.41 UJ	0.42 UJ	--	--	--	--
3-Nitroaniline	0.41 U	0.4 U	0.42 U	0.44 UJ	0.41 UJ	0.41 UJ	0.43 UJ	0.38 UJ	0.64 UJ	0.4 UJ	0.41 UJ	0.42 UJ	--	--	--	--
4,6-Dinitro-2-methylphenol	0.41 U	0.4 U	0.42 U	0.44 UJ	0.41 UJ	0.41 UJ	0.43 UJ	0.38 UJ	0.64 UJ	0.4 UJ	0.41 UJ	0.42 UJ				
4-Bromophenylphenyl ether	0.21 U	0.21 U	0.22 U	0.23 UJ	0.21 UJ	0.21 UJ	0.22 UJ	0.2 UJ	0.33 UJ	0.21 UJ	0.21 UJ	0.21 UJ	--	--	--	--
4-Chloro-3-methylphenol	0.21 U	0.21 U	0.22 U	0.23 UJ	0.21 UJ	0.21 UJ	0.22 UJ	0.2 UJ	0.33 UJ	0.21 UJ	0.21 UJ	0.21 UJ				
4-Chloroaniline	0.41 U	0.4 U	0.42 U	0.44 UJ	0.41 UJ	0.41 UJ	0.43 UJ	0.38 UJ	0.64 UJ	0.4 UJ	0.41 UJ	0.42 UJ	--	--	--	--
4-Chlorophenylphenyl ether	0.21 U	0.21 U	0.22 U	0.23 UJ	0.21 UJ	0.21 UJ	0.22 UJ	0.2 UJ	0.33 UJ	0.21 UJ	0.21 UJ	0.21 UJ	--	--	--	--
4-Methylphenol	0.41 U	0.4 U	0.42 U	0.44 UJ	0.41 UJ	0.41 UJ	0.43 UJ	0.38 UJ	0.64 UJ	0.4 UJ	0.41 UJ	0.42 UJ	--	--	--	--
4-Nitroaniline	0.41 U	0.4 U	0.42 U	0.44 UJ	0.41 UJ	0.41 UJ	0.43 UJ	0.38 UJ	0.64 UJ	0.4 UJ	0.41 UJ	0.42 UJ	--	--	--	--
4-Nitrophenol	0.41 U	0.4 U	0.42 U	0.44 UJ	0.41 UJ	0.41 UJ	0.43 UJ	0.38 UJ	0.64 UJ	0.4 UJ	0.41 UJ	0.42 UJ				
Acenaphthene	0.21 R	0.21 R	0.22 R	0.23 R	0.21 R	0.21 R	0.22 R	0.2 R	0.33 R	0.21 R	0.21 R	0.21 R	--	--	--	--
Acenaphthylene	0.21 R	0.21 R	0.22 R	0.23 R	0.21 R	0.21 R	0.22 R	0.2 R	0.33 R	0.21 R	0.21 R	0.21 R	--	--	--	--
Acetophenone	0.41 U	0.4 U	0.42 U	0.44 UJ	0.41 UJ	0.41 UJ	0.43 UJ	0.38 UJ	0.64 UJ	0.4 UJ	0.41 UJ	0.42 UJ	--	--	--	--
Anthracene	0.21 R	0.21 R	0.22 R	0.23 R	0.21 R	0.21 R	0.22 R	0.2 R	0.33 R	0.21 R	0.21 R	0.21 R	--	--	--	--
Atrazine	0.41 U	0.4 U	0.42 U	0.44 UJ	0.41 UJ	0.41 UJ	0.43 UJ	0.38 UJ	0.64 UJ	0.4 UJ	0.41 UJ	0.42 UJ	--	--	--	--
Benzaldehyde	0.41 U	0.4 U	0.42 U	0.44 UJ	0.41 UJ	0.41 UJ	0.43 UJ	0.38 UJ	0.64 UJ	0.4 UJ	0.41 UJ	0.42 UJ	--	--	--	--

Location:	SL20GP01	SL21GP01	SL22GP01	SL23TP01	SL23TP02	SL24TP01	SL24TP02	SL25TP01	SL25TP02	SL26TP01	SL26TP02	SL27TP01	SS-1	SS-2	SS-3	SS-4
Sample Name:	JLTJT8	JLTW0	JLTW2	JLTW4	JLTW5	JLTW6	JLTW7	JLTW8	JLTW9	JLTX0	JLTX1	JLTX2	9358-190122-SS-1	9358-190122-SS-2	9358-190122-SS-3	9358-190122-SS-4
Collection Date:	9/11/2020	9/12/2020	9/12/2020	9/10/2020	9/10/2020	9/10/2020	9/10/2020	9/10/2020	9/10/2020	9/10/2020	9/10/2020	9/10/2020	1/22/2019	1/22/2019	1/22/2019	1/22/2019
Collection Depth (ft bgs):	0-4	0-4	0-4	2-3	9-10	3-4	8-9	2-3	9-10	2-3	6-7	7-8	0-1	0-1	0-1	0-1
Benzo(a)anthracene	0.21 R	0.21 R	0.22 R	0.23 R	0.21 R	0.21 R	0.22 R	0.2 R	0.33 R	0.21 R	0.21 R	0.21 R	--	--	--	--
Benzo(a)pyrene	0.21 R	0.21 R	0.22 R	0.23 R	0.21 R	0.21 R	0.22 R	0.2 R	0.33 R	0.21 R	0.21 R	0.21 R	--	--	--	--
Benzo(b)fluoranthene	0.21 R	0.21 R	0.22 R	0.23 R	0.21 R	0.21 R	0.22 R	0.2 R	0.33 R	0.21 R	0.21 R	0.21 R	--	--	--	--
Benzo(ghi)perylene	0.21 R	0.21 R	0.22 R	0.23 R	0.21 R	0.21 R	0.22 R	0.2 R	0.33 R	0.21 R	0.21 R	0.21 R	--	--	--	--
Benzo(k)fluoranthene	0.21 R	0.21 R	0.22 R	0.23 R	0.21 R	0.21 R	0.22 R	0.2 R	0.33 R	0.21 R	0.21 R	0.21 R	--	--	--	--
Bis(2-chloro-1-methylethyl)ether	0.41 U	0.4 U	0.42 U	0.44 UJ	0.41 UJ	0.41 UJ	0.43 UJ	0.38 UJ	0.64 UJ	0.4 UJ	0.41 UJ	0.42 UJ	--	--	--	--
Bis(2-chloroethoxy)methane	0.21 U	0.21 U	0.22 U	0.23 UJ	0.21 UJ	0.21 UJ	0.22 UJ	0.2 UJ	0.33 UJ	0.21 UJ	0.21 UJ	0.21 UJ	--	--	--	--
Bis(2-chloroethyl)ether	0.41 U	0.4 U	0.42 U	0.44 UJ	0.41 UJ	0.41 UJ	0.43 UJ	0.38 UJ	0.64 UJ	0.4 UJ	0.41 UJ	0.42 UJ	--	--	--	--
Bis(2-ethylhexyl)phthalate	0.21 U	0.21 U	0.22 U	0.23 UJ	0.21 UJ	5.2 J	0.22 UJ	0.2 UJ	0.33 UJ	0.21 UJ	0.21 UJ	0.21 UJ	--	--	--	--
Butylbenzylphthalate	0.21 U	0.21 U	0.22 U	0.23 UJ	0.21 UJ	0.21 UJ	0.22 UJ	0.2 UJ	0.33 UJ	0.21 UJ	0.21 UJ	0.21 UJ	--	--	--	--
Caprolactam	0.41 U	0.4 U	0.42 U	0.44 UJ	0.41 UJ	0.41 UJ	0.43 UJ	0.38 UJ	0.64 UJ	0.4 UJ	0.41 UJ	0.42 UJ	--	--	--	--
Carbazole	0.41 U	0.4 U	0.42 U	0.44 UJ	0.41 UJ	0.41 UJ	0.43 UJ	0.38 UJ	0.64 UJ	0.4 UJ	0.41 UJ	0.42 UJ	--	--	--	--
Chrysene	0.21 R	0.21 R	0.22 R	0.23 R	0.21 R	0.21 R	0.22 R	0.2 R	0.33 R	0.21 R	0.21 R	0.21 R	--	--	--	--
Dibenzo(a,h)anthracene	0.21 R	0.21 R	0.22 R	0.23 R	0.21 R	0.21 R	0.22 R	0.2 R	0.33 R	0.21 R	0.21 R	0.21 R	--	--	--	--
Dibenzofuran	0.21 U	0.21 U	0.22 U	0.23 UJ	0.21 UJ	0.21 UJ	0.22 UJ	0.2 UJ	0.33 UJ	0.21 UJ	0.21 UJ	0.21 UJ	--	--	--	--
Diethyl phthalate	0.21 U	0.21 U	0.22 U	0.23 UJ	0.21 UJ	0.21 UJ	0.22 UJ	0.2 UJ	0.33 UJ	0.21 UJ	0.21 UJ	0.21 UJ	--	--	--	--
Dimethyl phthalate	0.21 U	0.21 U	0.22 U	0.23 UJ	0.21 UJ	0.21 UJ	0.22 UJ	0.2 UJ	0.33 UJ	0.21 UJ	0.21 UJ	0.21 UJ	--	--	--	--
Di-n-butyl phthalate	0.21 U	0.21 U	0.22 U	0.23 UJ	0.21 UJ	0.21 UJ	0.22 UJ	0.2 UJ	0.33 UJ	0.21 UJ	0.21 UJ	0.21 UJ	--	--	--	--
Di-n-octyl phthalate	0.41 U	0.4 U	0.42 U	0.44 UJ	0.41 UJ	0.41 UJ	0.43 UJ	0.38 UJ	0.64 UJ	0.4 UJ	0.41 UJ	0.42 UJ	--	--	--	--
Fluoranthene	0.41 R	0.4 R	0.42 R	0.44 R	0.41 R	0.41 R	0.43 R	0.38 R	0.64 R	0.4 R	0.41 R	0.42 R	--	--	--	--
Fluorene	0.21 R	0.21 R	0.22 R	0.23 R	0.21 R	0.21 R	0.22 R	0.2 R	0.33 R	0.21 R	0.21 R	0.21 R	--	--	--	--
Hexachlorobenzene	0.21 U	0.21 U	0.22 U	0.23 UJ	0.21 UJ	0.21 UJ	0.22 UJ	0.2 UJ	0.33 UJ	0.21 UJ	0.21 UJ	0.21 UJ	--	--	--	--
Hexachlorobutadiene	0.21 U	0.21 U	0.22 U	0.23 UJ	0.21 UJ	0.21 UJ	0.22 UJ	0.2 UJ	0.33 UJ	0.21 UJ	0.21 UJ	0.21 UJ	--	--	--	--
Hexachlorocyclopentadiene	0.41 U	0.4 U	0.42 U	0.44 UJ	0.41 UJ	0.41 UJ	0.43 UJ	0.38 UJ	0.64 UJ	0.4 UJ	0.41 UJ	0.42 UJ	--	--	--	--
Hexachloroethane	0.21 U	0.21 U	0.22 U	0.23 UJ	0.21 UJ	0.21 UJ	0.22 UJ	0.2 UJ	0.33 UJ	0.21 UJ	0.21 UJ	0.21 UJ	--	--	--	--
Indeno(1,2,3-cd)pyrene	0.21 R	0.21 R	0.22 R	0.23 R	0.21 R	0.21 R	0.22 R	0.2 R	0.33 R	0.21 R	0.21 R	0.21 R	--	--	--	--
Isophorone	0.21 U	0.21 U	0.22 U	0.23 UJ	0.21 UJ	0.21 UJ	0.22 UJ	0.2 UJ	0.33 UJ	0.21 UJ	0.21 UJ	0.21 UJ	--	--	--	--
Naphthalene	0.21 R	0.21 R	0.22 R	0.23 R	0.21 R	0.21 R	0.22 R	0.2 R	0.33 R	0.21 R	0.21 R	0.21 R	--	--	--	--
Nitrobenzene	0.21 U	0.21 U	0.22 U	0.23 UJ	0.21 UJ	0.21 UJ	0.22 UJ	0.2 UJ	0.33 UJ	0.21 UJ	0.21 UJ	0.21 UJ	--	--	--	--
N-Nitrosodiphenylamine	0.21 U	0.21 U	0.22 U	0.23 UJ	0.21 UJ	0.21 UJ	0.22 UJ	0.2 UJ	0.33 UJ	0.21 UJ	0.21 UJ	0.21 UJ	--	--	--	--
N-Nitrosodipropylamine	0.21 U	0.21 U	0.22 U	0.23 UJ	0.21 UJ	0.21 UJ	0.22 UJ	0.2 UJ	0.33 UJ	0.21 UJ	0.21 UJ	0.21 UJ	--	--	--	--
Pentachlorophenol	0.41 R	0.4 R	0.42 R	0.44 R	0.41 R	0.41 R	0.43 R	0.38 R	0.64 R	0.4 R	0.41 R	0.42 R	--	--	0.228 U	--
Phenanthrene	0.21 R	0.21 R	0.22 R	0.23 R	0.21 R	0.21 R	0.22 R	0.2 R	0.33 R	0.21 R	0.21 R	0.21 R	--	--	--	--
Phenol	0.41 U	0.4 U	0.42 U	0.44 UJ	0.41 UJ	0.41 UJ	0.43 UJ	0.38 UJ	0.64 UJ	0.4 UJ	0.41 UJ	0.42 UJ	--	--	--	--
Pyrene	0.21 R	0.21 R	0.22 R	0.23 R	0.21 R	0.21 R	0.22 R	0.2 R	0.33 R	0.21 R	0.21 R	0.21 R	--	--	--	--
SVOCs by SIM (mg/kg)																
1-Methylnaphthalene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Chloronaphthalene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Methylnaphthalene	0.0022 J*	0.00064 J*	0.00052 J*	0.0044 U	0.0041 U	0.00077 J*	0.00055 J*	0.0008 J*	0.0063 U	0.002 J*	0.00055 J*	0.0041 U	--	--	--	--
Acenaphthene	0.0041 U	0.004 U	0.0042 U	0.0044 U	0.0041 U	0.004 U	0.0043 U	0.0037 U	0.0063 U	0.004 U	0.0041 U	0.0041 U	--	--	--	--
Acenaphthylene	0.00053 J*	0.004 U	0.0042 U	0.0044 U	0.0041 U	0.004 U	0.0043 U	0.0037 U	0.0063 U	0.004 U	0.0041 U	0.0041 U	--	--	--	--
Anthracene	0.0041 U	0.004 U	0.0042 U	0.0044 U	0.0041 U	0.004 U	0.0043 U	0.0037 U	0.0063 U	0.004 U	0.0041 U	0.0041 U	--	--	--	--
Benzo(a)anthracene	0.00046 J*	0.004 U	0.0042 U	0.0044 U	0.0041 U	0.0035 J*	0.00072 J*	0.0028 J*	0.0063 U	0.004 U	0.0041 U	0.0041 U	--	--	--	--
Benzo(a)pyrene	0.0041 U	0.004 U	0.0042 U	0.0044 U	0.0041 U	0.00047 J*	0.0043 U	0.0037 U	0.0063 U	0.00064 J*	0.00093 J*	0.0041 U	--	--	--	--
Benzo(b)fluoranthene	0.0026 J*	0.004 U	0.0042 U	0.00063 J*	0.0041 U	0.0031 J*	0.0025 J*	0.0024 J*	0.00095 J*	0.0049 J	0.0027 J*	0.0007 J*	--	--	--	--
Benzo(ghi)perylene	0.0041 U	0.004 U	0.0042 U	0.0044 U	0.0041 U	0.004 U	0.0043 U	0.0037 U	0.0063 U	0.004 U	0.0041 U	0.0041 U	--	--	--	--

Location:	SL20GP01	SL21GP01	SL22GP01	SL23TP01	SL23TP02	SL24TP01	SL24TP02	SL25TP01	SL25TP02	SL26TP01	SL26TP02	SL27TP01	SS-1	SS-2	SS-3	SS-4
Sample Name:	JLTJT8	JLTW0	JLTW2	JLTW4	JLTW5	JLTW6	JLTW7	JLTW8	JLTW9	JLTX0	JLTX1	JLTX2	9358-190122-SS-1	9358-190122-SS-2	9358-190122-SS-3	9358-190122-SS-4
Collection Date:	9/11/2020	9/12/2020	9/12/2020	9/10/2020	9/10/2020	9/10/2020	9/10/2020	9/10/2020	9/10/2020	9/10/2020	9/10/2020	9/10/2020	1/22/2019	1/22/2019	1/22/2019	1/22/2019
Collection Depth (ft bgs):	0-4	0-4	0-4	2-3	9-10	3-4	8-9	2-3	9-10	2-3	6-7	7-8	0-1	0-1	0-1	0-1
Benzo(k)fluoranthene	0.0041 U	0.0009 J*	0.00072 J*	0.0044 U	0.0041 U	0.004 U	0.0043 U	0.0037 U	0.0063 U	0.004 U	0.0041 U	0.0041 U	--	--	--	--
Chrysene	0.0015 J*	0.00069 J*	0.00049 J*	0.0044 U	0.0041 U	0.004 U	0.0014 J*	0.0039 J	0.0063 U	0.004 U	0.0041 U	0.00065 J*	--	--	--	--
Dibenzo(a,h)anthracene	0.0041 U	0.004 U	0.0042 U	0.0044 U	0.0041 U	0.004 U	0.0043 U	0.0037 U	0.0063 U	0.004 U	0.0041 U	0.0041 U	--	--	--	--
Fluoranthene	0.0049	0.001 J*	0.0017 J*	0.00062 J*	0.0041 U	0.0016 J*	0.0019 J*	0.0021 J*	0.0042 J*	0.0078 J	0.0079 J	0.0041 U	--	--	--	--
Fluorene	0.0041 U	0.004 U	0.0042 U	0.0044 U	0.0041 U	0.004 U	0.0043 U	0.0037 U	0.0063 U	0.004 U	0.0041 U	0.0041 U	--	--	--	--
Indeno(1,2,3-cd)pyrene	0.0041 U	0.004 U	0.0042 U	0.0044 U	0.0041 U	0.004 U	0.0043 U	0.0037 U	0.0063 U	0.004 U	0.0041 U	0.0041 U	--	--	--	--
Naphthalene	0.0024 J*	0.00084 J*	0.0042 U	0.0044 U	0.0041 U	0.004 U	0.0043 U	0.00097 J*	0.0063 U	0.0025 J*	0.001 J*	0.0041 U	--	--	--	--
Pentachlorophenol	0.0028 J*	0.0081 U	0.0085 U	0.0089 U	0.0083 U	0.0082 U	0.0086 U	0.0076 U	0.013 U	0.0081 U	0.0083 U	0.0083 U	--	--	--	--
Phenanthrene	0.0044	0.0018 J*	0.0015 J*	0.00057 J*	0.0041 U	0.0071	0.0043	0.0051	0.0038 J*	0.0094	0.0029 J*	0.0011 J*	--	--	--	--
Pyrene	0.0038 J*	0.004 U	0.0042 U	0.0044 U	0.0041 U	0.0013 J*	0.002 J*	0.0014 J*	0.0022 J*	0.0071 J	0.0041 U	0.00085 J*	--	--	--	--
Total LPAH[(e)(3)]	0.016 J*	0.011 J*	0.013 J*	0.014 J*	0.00205 U	0.018 J*	0.016 J*	0.014 J*	0.023 J*	0.022 J*	0.013 J*	0.013 J*	--	--	--	--
Total HPAH[(f)(3)]	0.024 J*	0.017 J*	0.018 J*	0.019 J*	0.00205 U	0.02 J*	0.019 J*	0.022 J*	0.029 J*	0.032 J*	0.026 J*	0.017 J*	--	--	--	--
VOCs (mg/kg)																
1,1,1,2-Tetrachloroethane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1,1-Trichloroethane	0.0089 U	0.0091 U	0.0084 U	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1,2,2-Tetrachloroethane	0.0089 U	0.0091 U	0.0084 U	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1,2-Trichloroethane	0.0089 U	0.0091 U	0.0084 U	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1-Dichloroethane	0.0089 U	0.0091 U	0.0084 U	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1-Dichloroethene	0.0089 UJ	0.0091 UJ	0.0084 UJ	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1-Dichloropropene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,3-Trichlorobenzene	0.0089 UJ	0.0091 UJ	0.0084 UJ	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,3-Trichloropropane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,3-Trimethylbenzene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,4-Trichlorobenzene	0.0089 UJ	0.0091 UJ	0.0084 UJ	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,4-Trimethylbenzene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dibromo-3-chloropropane	0.0089 U	0.0091 U	0.0084 U	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dibromoethane	0.0089 U	0.0091 U	0.0084 U	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichlorobenzene	0.0089 UJ	0.0091 UJ	0.0084 UJ	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichloroethane	0.0089 U	0.0091 U	0.0084 U	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichloropropane	0.0089 U	0.0091 U	0.0084 U	--	--	--	--	--	--	--	--	--	--	--	--	--
1,3,5-Trimethylbenzene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,3-Dichlorobenzene	0.0089 UJ	0.0091 UJ	0.0084 UJ	--	--	--	--	--	--	--	--	--	--	--	--	--
1,3-Dichloropropane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,4-Dichlorobenzene	0.0089 UJ	0.0091 UJ	0.0084 UJ	--	--	--	--	--	--	--	--	--	--	--	--	--
2,2-Dichloropropane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Butanone	0.018 U	0.018 U	0.017 U	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Chlorotoluene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Hexanone	0.018 U	0.018 U	0.017 U	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Chlorotoluene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Isopropyltoluene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Methyl-2-pentanone	0.018 U	0.018 U	0.017 U	--	--	--	--	--	--	--	--	--	--	--	--	--
Acetone	0.029	0.008 J*	0.012 J*	--	--	--	--	--	--	--	--	--	--	--	--	--
Acrylonitrile	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzene	0.0089 U	0.0042 J*	0.0054 J*	--	--	--	--	--	--	--	--	--	--	--	--	--
Bromobenzene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

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Table E
Soil Analytical Results
Wild River Land Trust
Port Orford, Oregon

Location:	SL20GP01	SL21GP01	SL22GP01	SL23TP01	SL23TP02	SL24TP01	SL24TP02	SL25TP01	SL25TP02	SL26TP01	SL26TP02	SL27TP01	SS-1	SS-2	SS-3	SS-4
Sample Name:	JLTJT8	JLTW0	JLTW2	JLTW4	JLTW5	JLTW6	JLTW7	JLTW8	JLTW9	JLTX0	JLTX1	JLTX2	9358-190122-SS-1	9358-190122-SS-2	9358-190122-SS-3	9358-190122-SS-4
Collection Date:	9/11/2020	9/12/2020	9/12/2020	9/10/2020	9/10/2020	9/10/2020	9/10/2020	9/10/2020	9/10/2020	9/10/2020	9/10/2020	9/10/2020	1/22/2019	1/22/2019	1/22/2019	1/22/2019
Collection Depth (ft bgs):	0-4	0-4	0-4	2-3	9-10	3-4	8-9	2-3	9-10	2-3	6-7	7-8	0-1	0-1	0-1	0-1
Bromodichloromethane	0.0089 U	0.0091 U	0.0084 U	--	--	--	--	--	--	--	--	--	--	--	--	--
Bromoform	0.0089 U	0.0091 U	0.0084 U	--	--	--	--	--	--	--	--	--	--	--	--	--
Bromomethane	0.0089 U	0.0091 U	0.0084 U	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbon disulfide	0.0089 U	0.0091 U	0.0084 U	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbon tetrachloride	0.0089 U	0.0091 U	0.0084 U	--	--	--	--	--	--	--	--	--	--	--	--	--
Chlorobenzene	0.0089 UJ	0.0091 UJ	0.0084 UJ	--	--	--	--	--	--	--	--	--	--	--	--	--
Chlorobromomethane	0.0089 U	0.0091 U	0.0084 U	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloroethane	0.0089 U	0.0091 U	0.0084 U	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloroform	0.0089 U	0.0091 U	0.0084 U	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloromethane	0.0089 U	0.0091 U	0.0084 U	--	--	--	--	--	--	--	--	--	--	--	--	--
cis-1,2-Dichloroethene	0.0089 UJ	0.0091 UJ	0.0084 UJ	--	--	--	--	--	--	--	--	--	--	--	--	--
cis-1,3-Dichloropropene	0.0089 U	0.0091 U	0.0084 U	--	--	--	--	--	--	--	--	--	--	--	--	--
Cyclohexane	0.0089 U	0.0091 U	0.0084 U	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibromochloromethane	0.0089 U	0.0091 U	0.0084 U	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibromomethane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dichlorodifluoromethane (Freon 12	0.0089 U	0.0091 U	0.0084 U	--	--	--	--	--	--	--	--	--	--	--	--	--
Diisopropyl Ether	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Ethylbenzene	0.0089 U	0.0091 U	0.0084 U	--	--	--	--	--	--	--	--	--	--	--	--	--
Freon 113	0.0089 U	0.0091 U	0.0084 U	--	--	--	--	--	--	--	--	--	--	--	--	--
Hexachlorobutadiene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Isopropylbenzene	0.0089 U	0.0091 U	0.0084 U	--	--	--	--	--	--	--	--	--	--	--	--	--
m,p-Xylene	0.0089 U	0.0091 U	0.0084 U	--	--	--	--	--	--	--	--	--	--	--	--	--
Methyl acetate	0.0089 U	0.0091 U	0.0084 U	--	--	--	--	--	--	--	--	--	--	--	--	--
Methyl tert-butyl ether	0.0089 U	0.0091 U	0.0084 U	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylcyclohexane	0.0089 U	0.0091 U	0.0084 U	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylene chloride	0.0089 U	0.0091 U	0.0084 U	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
n-Butylbenzene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
n-Propylbenzene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
o-Xylene	0.0089 U	0.0091 U	0.0084 U	--	--	--	--	--	--	--	--	--	--	--	--	--
sec-Butylbenzene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Styrene	0.0089 U	0.0091 U	0.0084 U	--	--	--	--	--	--	--	--	--	--	--	--	--
tert-Butylbenzene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tetrachloroethene	0.0089 U	0.0091 U	0.0084 U	--	--	--	--	--	--	--	--	--	--	--	--	--
Toluene	0.0089 U	0.0091 U	0.0084 U	--	--	--	--	--	--	--	--	--	--	--	--	--
trans-1,2-Dichloroethene	0.0089 UJ	0.0091 UJ	0.0084 UJ	--	--	--	--	--	--	--	--	--	--	--	--	--
trans-1,3-Dichloropropene	0.0089 U	0.0091 U	0.0084 U	--	--	--	--	--	--	--	--	--	--	--	--	--
Trichloroethene	0.0089 U	0.0091 U	0.0084 U	--	--	--	--	--	--	--	--	--	--	--	--	--
Trichlorofluoromethane (Freon 11)	0.0089 U	0.0091 U	0.0084 U	--	--	--	--	--	--	--	--	--	--	--	--	--
Vinyl chloride	0.0089 UJ	0.0091 UJ	0.0084 UJ	--	--	--	--	--	--	--	--	--	--	--	--	--
Xylenes, total[g]	0.0089 U	0.0091 U	0.0084 U	--	--	--	--	--	--	--	--	--	--	--	--	--

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Table E
Soil Analytical Results
Wild River Land Trust
Port Orford, Oregon

Location:	SS-5	SS-6	SS-7	SS-8
Sample Name:	9358-190122-SS-5	9358-190122-SS-6	9358-190122-SS-7	9358-190122-SS-8
Collection Date:	1/22/2019	1/22/2019	1/22/2019	1/22/2019
Collection Depth (ft bgs):	0-0.8	0-0.8	0-1	0-0.9
Total Metals (mg/kg)				
Aluminum	--	--	--	--
Antimony	--	--	--	--
Arsenic	--	--	--	--
Barium	--	--	--	--
Beryllium	--	--	--	--
Cadmium	--	--	--	--
Calcium	--	--	--	--
Chromium	--	--	--	--
Cobalt	--	--	--	--
Copper	--	--	--	--
Iron	--	--	--	--
Lead	--	--	--	--
Magnesium	--	--	--	--
Manganese	--	--	--	--
Mercury	--	--	--	--
Nickel	--	--	--	--
Potassium	--	--	--	--
Selenium	--	--	--	--
Silver	--	--	--	--
Sodium	--	--	--	--
Thallium	--	--	--	--
Vanadium	--	--	--	--
Zinc	--	--	--	--
PCB Aroclors (mg/kg)				
Total PCBs[a]	--	--	--	--
Dioxins (pg/g)				
1,2,3,4,6,7,8-HpCDD	56.2	110	6,030 J*	112
1,2,3,4,6,7,8-HpCDF	8.78	25.2	1,310	17.3
1,2,3,4,7,8,9-HpCDF	0.867 U	1.81 U	99.2	1.27 U
1,2,3,4,7,8-HxCDD	1.43 U	1.06 U	67.5	1.42 U
1,2,3,4,7,8-HxCDF	0.655 U	1.7 J	172	1.83 J
1,2,3,6,7,8-HxCDD	1.34 U	4.9	285	4.95
1,2,3,6,7,8-HxCDF	0.822 U	0.757 U	67.2	0.628 U
1,2,3,7,8,9-HxCDD	1.34 U	3.09	160	3.33
1,2,3,7,8,9-HxCDF	1.24 U	1.26 U	6.7	0.969 U
1,2,3,7,8-PeCDD	0.604 U	0.953 J	43.5	0.68 U
1,2,3,7,8-PeCDF	0.673 U	0.667 U	23.4	0.537 U
2,3,4,6,7,8-HxCDF	0.907 U	0.882 U	104	0.62 U
2,3,4,7,8-PeCDF	0.598 U	0.608 U	21.4	0.446 U
2,3,7,8-TCDD	0.443 U	1.69	13.2	0.461 U
2,3,7,8-TCDF	0.426 U	0.442 U	4.61	0.423 U
OCDD	495	1,010	62,000 J*	869
OCDF	28.3	87.7	2,540	70.3
Dioxin/furan TEQ (avian)[b][1]	1.56	4.38 J	169 J*	2.13 J

Location:	SS-5	SS-6	SS-7	SS-8
Sample Name:	9358-190122-SS-5	9358-190122-SS-6	9358-190122-SS-7	9358-190122-SS-8
Collection Date:	1/22/2019	1/22/2019	1/22/2019	1/22/2019
Collection Depth (ft bgs):	0-0.8	0-0.8	0-1	0-0.9
Dioxin/furan TEQ (mammal)[(c)(2)]	1.84	5.62 J	244 J*	3.44 J
TPH (mg/kg)				
Gasoline-Range Hydrocarbons	--	--	--	--
Diesel-Range Hydrocarbons	--	--	--	--
Lube-Oil-Range Hydrocarbons	--	--	--	--
Total Diesel+Oil[(d)]	--	--	--	--
TPH with Silica-Gel Treatment (mg/kg				
Diesel-Range Hydrocarbons	--	--	--	--
Lube-Oil-Range Hydrocarbons	--	--	--	--
Total Diesel+Oil[(e)]	--	--	--	--
SVOCs (mg/kg)				
1,1'-Biphenyl	--	--	--	--
1,2,4,5-Tetrachlorobenzene	--	--	--	--
1,4-Dioxane	--	--	--	--
2,3,4,6-Tetrachlorophenol	--	--	--	--
2,4,5-Trichlorophenol	--	--	--	--
2,4,6-Trichlorophenol	--	--	--	--
2,4-Dichlorophenol	--	--	--	--
2,4-Dimethylphenol	--	--	--	--
2,4-Dinitrophenol	--	--	--	--
2,4-Dinitrotoluene	--	--	--	--
2,6-Dinitrotoluene	--	--	--	--
2-Chloronaphthalene	--	--	--	--
2-Chlorophenol	--	--	--	--
2-Methylnaphthalene	--	--	--	--
2-Methylphenol				
2-Nitroaniline	--	--	--	--
2-Nitrophenol				
3- & 4-Methylphenol (m,p-Cresol)	--	--	--	--
3,3-Dichlorobenzidine	--	--	--	--
3-Nitroaniline	--	--	--	--
4,6-Dinitro-2-methylphenol				
4-Bromophenylphenyl ether	--	--	--	--
4-Chloro-3-methylphenol				
4-Chloroaniline	--	--	--	--
4-Chlorophenylphenyl ether	--	--	--	--
4-Methylphenol	--	--	--	--
4-Nitroaniline	--	--	--	--
4-Nitrophenol				
Acenaphthene	--	--	--	--
Acenaphthylene	--	--	--	--
Acetophenone	--	--	--	--
Anthracene	--	--	--	--
Atrazine	--	--	--	--
Benzaldehyde	--	--	--	--

Location:	SS-5	SS-6	SS-7	SS-8
Sample Name:	9358-190122-SS-5	9358-190122-SS-6	9358-190122-SS-7	9358-190122-SS-8
Collection Date:	1/22/2019	1/22/2019	1/22/2019	1/22/2019
Collection Depth (ft bgs):	0-0.8	0-0.8	0-1	0-0.9
Benzo(a)anthracene	--	--	--	--
Benzo(a)pyrene	--	--	--	--
Benzo(b)fluoranthene	--	--	--	--
Benzo(ghi)perylene	--	--	--	--
Benzo(k)fluoranthene	--	--	--	--
Bis(2-chloro-1-methylethyl)ether	--	--	--	--
Bis(2-chloroethoxy)methane	--	--	--	--
Bis(2-chloroethyl)ether	--	--	--	--
Bis(2-ethylhexyl)phthalate	--	--	--	--
Butylbenzylphthalate	--	--	--	--
Caprolactam	--	--	--	--
Carbazole	--	--	--	--
Chrysene	--	--	--	--
Dibenzo(a,h)anthracene	--	--	--	--
Dibenzofuran	--	--	--	--
Diethyl phthalate	--	--	--	--
Dimethyl phthalate	--	--	--	--
Di-n-butyl phthalate	--	--	--	--
Di-n-octyl phthalate	--	--	--	--
Fluoranthene	--	--	--	--
Fluorene	--	--	--	--
Hexachlorobenzene	--	--	--	--
Hexachlorobutadiene	--	--	--	--
Hexachlorocyclopentadiene	--	--	--	--
Hexachloroethane	--	--	--	--
Indeno(1,2,3-cd)pyrene	--	--	--	--
Isophorone	--	--	--	--
Naphthalene	--	--	--	--
Nitrobenzene	--	--	--	--
N-Nitrosodiphenylamine	--	--	--	--
N-Nitrosodipropylamine	--	--	--	--
Pentachlorophenol	--	0.328 U	0.591 U	--
Phenanthrene	--	--	--	--
Phenol	--	--	--	--
Pyrene	--	--	--	--
SVOCs by SIM (mg/kg)				
1-Methylnaphthalene	--	--	--	--
2-Chloronaphthalene	--	--	--	--
2-Methylnaphthalene	--	--	--	--
Acenaphthene	--	--	--	--
Acenaphthylene	--	--	--	--
Anthracene	--	--	--	--
Benzo(a)anthracene	--	--	--	--
Benzo(a)pyrene	--	--	--	--
Benzo(b)fluoranthene	--	--	--	--
Benzo(ghi)perylene	--	--	--	--

MAUL FOSTER ALONGI

Table E
Soil Analytical Results
Wild River Land Trust
Port Orford, Oregon

Location:	SS-5	SS-6	SS-7	SS-8
Sample Name:	9358-190122-SS-5	9358-190122-SS-6	9358-190122-SS-7	9358-190122-SS-8
Collection Date:	1/22/2019	1/22/2019	1/22/2019	1/22/2019
Collection Depth (ft bgs):	0-0.8	0-0.8	0-1	0-0.9
Benzo(k)fluoranthene	--	--	--	--
Chrysene	--	--	--	--
Dibenzo(a,h)anthracene	--	--	--	--
Fluoranthene	--	--	--	--
Fluorene	--	--	--	--
Indeno(1,2,3-cd)pyrene	--	--	--	--
Naphthalene	--	--	--	--
Pentachlorophenol	--	--	--	--
Phenanthrene	--	--	--	--
Pyrene	--	--	--	--
Total LPAH[(e)(3)]	--	--	--	--
Total HPAH[(f)(3)]	--	--	--	--
VOCs (mg/kg)				
1,1,1,2-Tetrachloroethane	--	--	--	--
1,1,1-Trichloroethane	--	--	--	--
1,1,2,2-Tetrachloroethane	--	--	--	--
1,1,2-Trichloroethane	--	--	--	--
1,1-Dichloroethane	--	--	--	--
1,1-Dichloroethene	--	--	--	--
1,1-Dichloropropene	--	--	--	--
1,2,3-Trichlorobenzene	--	--	--	--
1,2,3-Trichloropropane	--	--	--	--
1,2,3-Trimethylbenzene	--	--	--	--
1,2,4-Trichlorobenzene	--	--	--	--
1,2,4-Trimethylbenzene	--	--	--	--
1,2-Dibromo-3-chloropropane	--	--	--	--
1,2-Dibromoethane	--	--	--	--
1,2-Dichlorobenzene	--	--	--	--
1,2-Dichloroethane	--	--	--	--
1,2-Dichloropropane	--	--	--	--
1,3,5-Trimethylbenzene	--	--	--	--
1,3-Dichlorobenzene	--	--	--	--
1,3-Dichloropropane	--	--	--	--
1,4-Dichlorobenzene	--	--	--	--
2,2-Dichloropropane	--	--	--	--
2-Butanone	--	--	--	--
2-Chlorotoluene	--	--	--	--
2-Hexanone	--	--	--	--
4-Chlorotoluene	--	--	--	--
4-Isopropyltoluene	--	--	--	--
4-Methyl-2-pentanone	--	--	--	--
Acetone	--	--	--	--
Acrylonitrile	--	--	--	--
Benzene	--	--	--	--
Bromobenzene	--	--	--	--

MAUL FOSTER ALONGI

Table E
Soil Analytical Results
Wild River Land Trust
Port Orford, Oregon

Location:	SS-5	SS-6	SS-7	SS-8
Sample Name:	9358-190122-SS-5	9358-190122-SS-6	9358-190122-SS-7	9358-190122-SS-8
Collection Date:	1/22/2019	1/22/2019	1/22/2019	1/22/2019
Collection Depth (ft bgs):	0-0.8	0-0.8	0-1	0-0.9
Bromodichloromethane	--	--	--	--
Bromoform	--	--	--	--
Bromomethane	--	--	--	--
Carbon disulfide	--	--	--	--
Carbon tetrachloride	--	--	--	--
Chlorobenzene	--	--	--	--
Chlorobromomethane	--	--	--	--
Chloroethane	--	--	--	--
Chloroform	--	--	--	--
Chloromethane	--	--	--	--
cis-1,2-Dichloroethene	--	--	--	--
cis-1,3-Dichloropropene	--	--	--	--
Cyclohexane	--	--	--	--
Dibromochloromethane	--	--	--	--
Dibromomethane	--	--	--	--
Dichlorodifluoromethane (Freon 12	--	--	--	--
Diisopropyl Ether	--	--	--	--
Ethylbenzene	--	--	--	--
Freon 113	--	--	--	--
Hexachlorobutadiene	--	--	--	--
Isopropylbenzene	--	--	--	--
m,p-Xylene	--	--	--	--
Methyl acetate	--	--	--	--
Methyl tert-butyl ether	--	--	--	--
Methylcyclohexane	--	--	--	--
Methylene chloride	--	--	--	--
Naphthalene	--	--	--	--
n-Butylbenzene	--	--	--	--
n-Propylbenzene	--	--	--	--
o-Xylene	--	--	--	--
sec-Butylbenzene	--	--	--	--
Styrene	--	--	--	--
tert-Butylbenzene	--	--	--	--
Tetrachloroethene	--	--	--	--
Toluene	--	--	--	--
trans-1,2-Dichloroethene	--	--	--	--
trans-1,3-Dichloropropene	--	--	--	--
Trichloroethene	--	--	--	--
Trichlorofluoromethane (Freon 11)	--	--	--	--
Vinyl chloride	--	--	--	--
Xylenes, total[g]	--	--	--	--

Table E
Soil Analytical Results
Wild River Land Trust
Port Orford, Oregon

NOTES:

Analytical results from January 2019 and November 2018 were not validated.

-- = not analyzed or no data provided.

DEQ = Oregon Department of Environmental Quality.

ft bgs = feet below ground surface.

HPAH = high molecular weight polycyclic aromatic hydrocarbon.

J = the result is estimated.

J* = data source provides a variety of laboratory or validation qualifiers. Data are assumed to be estimated for screening purposes.

LPAH = low molecular weight polycyclic aromatic hydrocarbon.

mg/kg = milligrams per kilogram.

NC = not calculated.

ND = non-detect.

NV = no value.

PCB = polycyclic aromatic hydrocarbon.

pg/g = picograms per gram.

R = the data is rejected and unusable for all purposes.

SIM = selected ion monitoring.

SVOC = semivolatile organic compound.

TE = threatened and endangered species.

TEQ = toxicity equivalence.

TPH = total petroleum hydrocarbon.

U = the result is non-detect.

U* = data source provides a variety of laboratory qualifiers. These data are assumed to be non-detect with estimated detection or reporting limits for screening purposes.

UJ = the result is non-detect with an estimated detection limit or reporting limit.

VOC = volatile organic compound.

[a]Total PCBs is the sum of all detected PCB Aroclors. Non-detect results are not included in the summation. When all results are non-detect, the highest detection limit or reporting limit is provided.

[b]Dioxin/furan TEQs calculated as the sum of each detected congener concentration multiplied by the corresponding avian TEF value with non-detect results also multiplied by one-half.

[c]Dioxin/furan TEQs calculated as the sum of each detected congener concentration multiplied by the corresponding mammal TEF value with non-detect results also multiplied by one-half.

[d]Total diesel and oil is the sum of diesel- and lube-oil-range hydrocarbon results. Non-detect results are multiplied by one-half. When both results are non-detect, the highest detection limit or reporting limit is provided.

[e]LPAHs are the sum of 2-methylnaphthalene, acenaphthene, acenaphthylene, anthracene, fluorene, naphthalene,and phenanthrene. Non-detect results are multiplied by one-half. When all results are non-detect the highest detection limit or reporting limit is provided.

[f]HPAHs are the sum of benzo(a)anthracene, benzo(a)pyrene, benzo(g,h,i)perylene, benzofluoranthene, chrysene, dibenzo(a,h)anthracene, fluoranthene, indeno(1,2,3,cd)pyrene, and pyrene. Non-detect results are multiplied by one-half. When all results are non-detect the highest

[g]Total xylenes are the sum of m,p- and o-xylene results. Non-detect results are multiplied by one-half. When both results are non-detect, the highest detection limit is provided.

REFERENCES:

[1]Van den Berg, M. et al. 1998. *Toxic equivalency factors (TEFs) for PCBs, PCDDs, PCDFs for humans and wildlife.* Environmental Health Perspectives. 106 No. 12:775–792.

[2]Van den Berg, M. et al. 2006. *The 2005 World Health Organization reevaluation of human and mammalian toxic equivalency factors for dioxins and dioxin-like compounds.* Toxicological Sciences. 93 No. 2:223–241.

[3]LPAHs and HPAHs are identified based on definition provided in the October 2017 DEQ Upriver Reach Sediment Characterization Workplan for the Lower Willamette River prepared by DEQ.

APPENDIX F
UCL OUTPUTS

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.17/25/2022 6:03:24 PM
From File	UCLs_Sed Input.xls
Full Precision	OFF
Confidence Coefficient	90%
Number of Bootstrap Operations	2000

Pb

General Statistics

Total Number of Observations	8	Number of Distinct Observations	7
		Number of Missing Observations	0
Minimum	7	Mean	14.3
Maximum	44.2	Median	8.75
SD	12.57	Std. Error of Mean	4.445
Coefficient of Variation	0.879	Skewness	2.44

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.636	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.818	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.301	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.283	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

90% Normal UCL		**90% UCLs (Adjusted for Skewness)**	
90% Student's-t UCL	20.59	90% Adjusted-CLT UCL (Chen-1995)	22.74
		90% Modified-t UCL (Johnson-1978)	21.23

Gamma GOF Test

A-D Test Statistic	0.945	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.723	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.286	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.297	Detected data appear Gamma Distributed at 5% Significance Level

Detected data follow Appr. Gamma Distribution at 5% Significance Level

Gamma Statistics

k hat (MLE)	2.494	k star (bias corrected MLE)	1.642
Theta hat (MLE)	5.734	Theta star (bias corrected MLE)	8.709
nu hat (MLE)	39.9	nu star (bias corrected)	26.27
MLE Mean (bias corrected)	14.3	MLE Sd (bias corrected)	11.16
		Approximate Chi Square Value (0.1)	17.51
Adjusted Level of Significance	0.0607	Adjusted Chi Square Value	16.08

Assuming Gamma Distribution

90% Approximate Gamma UCL (use when n>=50))	21.45	90% Adjusted Gamma UCL (use when n<50)	23.36

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.797	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.818	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.261	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.283	Data appear Lognormal at 5% Significance Level

Data appear Approximate Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	1.946	Mean of logged Data	2.447
Maximum of Logged Data	3.789	SD of logged Data	0.622

Assuming Lognormal Distribution

90% H-UCL	21.39	90% Chebyshev (MVUE) UCL	22.76
95% Chebyshev (MVUE) UCL	26.89	97.5% Chebyshev (MVUE) UCL	32.63
99% Chebyshev (MVUE) UCL	43.89		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

90% CLT UCL	20	90% Jackknife UCL	20.59
90% Standard Bootstrap UCL	19.5	90% Bootstrap-t UCL	36.28
90% Hall's Bootstrap UCL	44.73	90% Percentile Bootstrap UCL	19.39
90% BCA Bootstrap UCL	22.84		
90% Chebyshev(Mean, Sd) UCL	27.64	95% Chebyshev(Mean, Sd) UCL	33.68
97.5% Chebyshev(Mean, Sd) UCL	42.06	99% Chebyshev(Mean, Sd) UCL	58.53

Suggested UCL to Use

Recommendation Provided only for 95% Confidence Coefficient

Hg

General Statistics

Total Number of Observations	8	Number of Distinct Observations	7
Number of Detects	5	Number of Non-Detects	3
Number of Distinct Detects	5	Number of Distinct Non-Detects	3
Minimum Detect	0.13	Minimum Non-Detect	0.16
Maximum Detect	0.2	Maximum Non-Detect	0.28
Variance Detects	9.3000E-4	Percent Non-Detects	37.5%
Mean Detects	0.164	SD Detects	0.0305
Median Detects	0.16	CV Detects	0.186
Skewness Detects	0.162	Kurtosis Detects	-2.501
Mean of Logged Detects	-1.822	SD of Logged Detects	0.187

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).

Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.923	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.762	Detected Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.203	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.343	Detected Data appear Normal at 5% Significance Level	

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.159	KM Standard Error of Mean	0.0125
KM SD	0.0272	90% KM (BCA) UCL	0.175
90% KM (t) UCL	0.177	90% KM (Percentile Bootstrap) UCL	0.176
90% KM (z) UCL	0.175	90% KM Bootstrap t UCL	0.177
90% KM Chebyshev UCL	0.197	95% KM Chebyshev UCL	0.214
97.5% KM Chebyshev UCL	0.237	99% KM Chebyshev UCL	0.283

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.307	**Anderson-Darling GOF Test**	
5% A-D Critical Value	0.678	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.232	**Kolmogorov-Smirnov GOF**	
5% K-S Critical Value	0.357	Detected data appear Gamma Distributed at 5% Significance Level	

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	36.06	k star (bias corrected MLE)	14.56
Theta hat (MLE)	0.00455	Theta star (bias corrected MLE)	0.0113
nu hat (MLE)	360.6	nu star (bias corrected)	145.6
Mean (detects)	0.164		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.13	Mean	0.159
Maximum	0.2	Median	0.158
SD	0.0251	CV	0.158
k hat (MLE)	47.4	k star (bias corrected MLE)	29.71
Theta hat (MLE)	0.00335	Theta star (bias corrected MLE)	0.00535
nu hat (MLE)	758.4	nu star (bias corrected)	475.4
Adjusted Level of Significance (β)	0.0607		
Approximate Chi Square Value (475.35, α)	436.3	Adjusted Chi Square Value (475.35, β)	428.6
90% Gamma Approximate UCL (use when n>=50)	0.173	90% Gamma Adjusted UCL (use when n<50)	0.176
95% Gamma Approximate UCL (use when n>=50)	0.177	95% Gamma Adjusted UCL (use when n<50)	N/A

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.159	SD (KM)	0.0272
Variance (KM)	7.4097E-4	SE of Mean (KM)	0.0125
k hat (KM)	34.19	k star (KM)	21.45

nu hat (KM)	547	nu star (KM)	343.2
theta hat (KM)	0.00466	theta star (KM)	0.00742
80% gamma percentile (KM)	0.187	90% gamma percentile (KM)	0.204
95% gamma percentile (KM)	0.22	99% gamma percentile (KM)	0.25

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (343.24, α)	310.1	Adjusted Chi Square Value (343.24, β)	303.6
90% Gamma Approximate KM-UCL (use when n>=50)	0.176	90% Gamma Adjusted KM-UCL (use when n<50)	0.18

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.928	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.762	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.206	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.343	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.159	Mean in Log Scale	-1.852
SD in Original Scale	0.0251	SD in Log Scale	0.154
90% t UCL (assumes normality of ROS data)	0.171	90% Percentile Bootstrap UCL	0.17
90% BCA Bootstrap UCL	0.171	90% Bootstrap t UCL	0.174
90% H-UCL (Log ROS)	0.172		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-1.852	KM Geo Mean	0.157
KM SD (logged)	0.168	90% Critical H Value (KM-Log)	1.403
KM Standard Error of Mean (logged)	0.0769	90% H-UCL (KM -Log)	0.174
KM SD (logged)	0.168	90% Critical H Value (KM-Log)	1.403
KM Standard Error of Mean (logged)	0.0769		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	0.145	Mean in Log Scale	-1.965
SD in Original Scale	0.0385	SD in Log Scale	0.288
90% t UCL (Assumes normality)	0.164	90% H-Stat UCL	0.172

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

Recommendation Provided only for 95% Confidence Coefficient

Zn

General Statistics

Total Number of Observations	8	Number of Distinct Observations	8
		Number of Missing Observations	0
Minimum	64.1	Mean	114.5
Maximum	277	Median	84.85

SD	71.05	Std. Error of Mean	25.12
Coefficient of Variation	0.62	Skewness	2.096

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.728	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.818	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.271	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.283	Data appear Normal at 5% Significance Level

Data appear Approximate Normal at 5% Significance Level

Assuming Normal Distribution

90% Normal UCL		**90% UCLs (Adjusted for Skewness)**	
90% Student's-t UCL	150	90% Adjusted-CLT UCL (Chen-1995)	160
		90% Modified-t UCL (Johnson-1978)	153.1

Gamma GOF Test

A-D Test Statistic	0.663	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.719	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.263	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.295	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	4.21	k star (bias corrected MLE)	2.714
Theta hat (MLE)	27.2	Theta star (bias corrected MLE)	42.18
nu hat (MLE)	67.36	nu star (bias corrected)	43.43
MLE Mean (bias corrected)	114.5	MLE Sd (bias corrected)	69.5
		Approximate Chi Square Value (0.1)	32
Adjusted Level of Significance	0.0607	Adjusted Chi Square Value	30.01

Assuming Gamma Distribution

90% Approximate Gamma UCL (use when n>=50))	155.4	90% Adjusted Gamma UCL (use when n<50)	165.7

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.857	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.818	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.237	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.283	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	4.16	Mean of logged Data	4.617
Maximum of Logged Data	5.624	SD of logged Data	0.493

Assuming Lognormal Distribution

90% H-UCL	155.7	90% Chebyshev (MVUE) UCL	171.9

95% Chebyshev (MVUE) UCL	198.8	97.5% Chebyshev (MVUE) UCL	236.2
99% Chebyshev (MVUE) UCL	309.5		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

90% CLT UCL	146.7	90% Jackknife UCL	150
90% Standard Bootstrap UCL	144.7	90% Bootstrap-t UCL	190.3
90% Hall's Bootstrap UCL	285.7	90% Percentile Bootstrap UCL	146.8
90% BCA Bootstrap UCL	158.1		
90% Chebyshev(Mean, Sd) UCL	189.9	95% Chebyshev(Mean, Sd) UCL	224
97.5% Chebyshev(Mean, Sd) UCL	271.4	99% Chebyshev(Mean, Sd) UCL	364.4

Suggested UCL to Use

Recommendation Provided only for 95% Confidence Coefficient

1,2,3,4,7,8-HxCDD

General Statistics

Total Number of Observations	8	Number of Distinct Observations	7
		Number of Missing Observations	0
Minimum	0.59	Mean	13.36
Maximum	35	Median	1.65
SD	16.84	Std. Error of Mean	5.952
Coefficient of Variation	1.261	Skewness	0.647

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.675	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.818	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.379	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.283	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

90% Normal UCL		**90% UCLs (Adjusted for Skewness)**	
90% Student's-t UCL	21.78	90% Adjusted-CLT UCL (Chen-1995)	21.96
		90% Modified-t UCL (Johnson-1978)	22

Gamma GOF Test

A-D Test Statistic	1.068	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.761	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.346	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.309	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.515	k star (bias corrected MLE)	0.405
Theta hat (MLE)	25.94	Theta star (bias corrected MLE)	32.97
nu hat (MLE)	8.237	nu star (bias corrected)	6.481
MLE Mean (bias corrected)	13.36	MLE Sd (bias corrected)	20.98
		Approximate Chi Square Value (0.1)	2.504
Adjusted Level of Significance	0.0607	Adjusted Chi Square Value	2.041

Assuming Gamma Distribution

90% Approximate Gamma UCL (use when n>=50))	34.56	90% Adjusted Gamma UCL (use when n<50)	42.42

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.784	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.818	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.29	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.283	Data Not Lognormal at 5% Significance Level

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-0.528	Mean of logged Data	1.364
Maximum of Logged Data	3.555	SD of logged Data	1.817

Assuming Lognormal Distribution

90% H-UCL	265.8	90% Chebyshev (MVUE) UCL	40.25
95% Chebyshev (MVUE) UCL	52.17	97.5% Chebyshev (MVUE) UCL	68.72
99% Chebyshev (MVUE) UCL	101.2		

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs

90% CLT UCL	20.98	90% Jackknife UCL	21.78
90% Standard Bootstrap UCL	20.47	90% Bootstrap-t UCL	25.37
90% Hall's Bootstrap UCL	18.71	90% Percentile Bootstrap UCL	21.34
90% BCA Bootstrap UCL	21.56		
90% Chebyshev(Mean, Sd) UCL	31.21	95% Chebyshev(Mean, Sd) UCL	39.3
97.5% Chebyshev(Mean, Sd) UCL	50.53	99% Chebyshev(Mean, Sd) UCL	72.58

Suggested UCL to Use

Recommendation Provided only for 95% Confidence Coefficient

1,2,3,7,8-PeCDD

General Statistics

Total Number of Observations	8	Number of Distinct Observations	8
		Number of Missing Observations	0
Minimum	0.38	Mean	9.19
Maximum	25	Median	0.89
SD	11.77	Std. Error of Mean	4.16

Coefficient of Variation	1.28	Skewness	0.677

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.689	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.818	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.382	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.283	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

90% Normal UCL		**90% UCLs (Adjusted for Skewness)**	
90% Student's-t UCL	15.08	90% Adjusted-CLT UCL (Chen-1995)	15.23
		90% Modified-t UCL (Johnson-1978)	15.24

Gamma GOF Test

A-D Test Statistic	1.129	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.763	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.363	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.309	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.494	k star (bias corrected MLE)	0.392
Theta hat (MLE)	18.6	Theta star (bias corrected MLE)	23.43
nu hat (MLE)	7.907	nu star (bias corrected)	6.275
MLE Mean (bias corrected)	9.19	MLE Sd (bias corrected)	14.67
		Approximate Chi Square Value (0.1)	2.376
Adjusted Level of Significance	0.0607	Adjusted Chi Square Value	1.927

Assuming Gamma Distribution

90% Approximate Gamma UCL (use when n>=50))	24.27	90% Adjusted Gamma UCL (use when n<50)	29.93

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.763	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.818	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.317	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.283	Data Not Lognormal at 5% Significance Level

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-0.968	Mean of logged Data	0.93
Maximum of Logged Data	3.219	SD of logged Data	1.857

Assuming Lognormal Distribution

90% H-UCL	205.9	90% Chebyshev (MVUE) UCL	27.73
95% Chebyshev (MVUE) UCL	36	97.5% Chebyshev (MVUE) UCL	47.47

99% Chebyshev (MVUE) UCL	70		

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs

90% CLT UCL	14.52	90% Jackknife UCL	15.08
90% Standard Bootstrap UCL	14.22	90% Bootstrap-t UCL	17.12
90% Hall's Bootstrap UCL	12.88	90% Percentile Bootstrap UCL	14.77
90% BCA Bootstrap UCL	14.98		
90% Chebyshev(Mean, Sd) UCL	21.67	95% Chebyshev(Mean, Sd) UCL	27.32
97.5% Chebyshev(Mean, Sd) UCL	35.17	99% Chebyshev(Mean, Sd) UCL	50.58

Suggested UCL to Use

Recommendation Provided only for 95% Confidence Coefficient

2,3,4,7,8-PeCDF

General Statistics

Total Number of Observations	8	Number of Distinct Observations	8
		Number of Missing Observations	0
Minimum	0.31	Mean	11.95
Maximum	33	Median	1.3
SD	15.29	Std. Error of Mean	5.404
Coefficient of Variation	1.279	Skewness	0.673

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.697	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.818	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.38	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.283	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

90% Normal UCL		**90% UCLs (Adjusted for Skewness)**	
90% Student's-t UCL	19.6	90% Adjusted-CLT UCL (Chen-1995)	19.79
		90% Modified-t UCL (Johnson-1978)	19.81

Gamma GOF Test

A-D Test Statistic	1	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.766	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.348	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.31	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.482	k star (bias corrected MLE)	0.385
Theta hat (MLE)	24.8	Theta star (bias corrected MLE)	31.08
nu hat (MLE)	7.71	nu star (bias corrected)	6.152
MLE Mean (bias corrected)	11.95	MLE Sd (bias corrected)	19.27
		Approximate Chi Square Value (0.1)	2.3
Adjusted Level of Significance	0.0607	Adjusted Chi Square Value	1.86

Assuming Gamma Distribution

90% Approximate Gamma UCL (use when n>=50))	31.97	90% Adjusted Gamma UCL (use when n<50)	39.53

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.812	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.818	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.29	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.283	Data Not Lognormal at 5% Significance Level

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-1.171	Mean of logged Data	1.155
Maximum of Logged Data	3.497	SD of logged Data	1.92

Assuming Lognormal Distribution

90% H-UCL	346.2	90% Chebyshev (MVUE) UCL	38.31
95% Chebyshev (MVUE) UCL	49.82	97.5% Chebyshev (MVUE) UCL	65.81
99% Chebyshev (MVUE) UCL	97.21		

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs

90% CLT UCL	18.88	90% Jackknife UCL	19.6
90% Standard Bootstrap UCL	18.36	90% Bootstrap-t UCL	21.45
90% Hall's Bootstrap UCL	16.63	90% Percentile Bootstrap UCL	19.24
90% BCA Bootstrap UCL	19.32		
90% Chebyshev(Mean, Sd) UCL	28.16	95% Chebyshev(Mean, Sd) UCL	35.51
97.5% Chebyshev(Mean, Sd) UCL	45.7	99% Chebyshev(Mean, Sd) UCL	65.72

Suggested UCL to Use

Recommendation Provided only for 95% Confidence Coefficient

2,3,7,8-TCDD

General Statistics

Total Number of Observations	8	Number of Distinct Observations	7
		Number of Missing Observations	0
Minimum	0.88	Mean	3.021
Maximum	7.1	Median	2.55
SD	2.27	Std. Error of Mean	0.802
Coefficient of Variation	0.751	Skewness	0.745

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use
guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.
For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).
Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.865	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.818	Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.249	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.283	Data appear Normal at 5% Significance Level	

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

90% Normal UCL		**90% UCLs (Adjusted for Skewness)**	
90% Student's-t UCL	4.157	90% Adjusted-CLT UCL (Chen-1995)	4.2
		90% Modified-t UCL (Johnson-1978)	4.192

Gamma GOF Test

A-D Test Statistic	0.533	**Anderson-Darling Gamma GOF Test**	
5% A-D Critical Value	0.724	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.233	**Kolmogorov-Smirnov Gamma GOF Test**	
5% K-S Critical Value	0.298	Detected data appear Gamma Distributed at 5% Significance Level	

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	1.941	k star (bias corrected MLE)	1.297
Theta hat (MLE)	1.556	Theta star (bias corrected MLE)	2.33
nu hat (MLE)	31.06	nu star (bias corrected)	20.75
MLE Mean (bias corrected)	3.021	MLE Sd (bias corrected)	2.653
		Approximate Chi Square Value (0.1)	13.04
Adjusted Level of Significance	0.0607	Adjusted Chi Square Value	11.82

Assuming Gamma Distribution

90% Approximate Gamma UCL (use when n>=50))	4.808	90% Adjusted Gamma UCL (use when n<50)	5.303

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.877	**Shapiro Wilk Lognormal GOF Test**	
5% Shapiro Wilk Critical Value	0.818	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.21	**Lilliefors Lognormal GOF Test**	
5% Lilliefors Critical Value	0.283	Data appear Lognormal at 5% Significance Level	

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-0.128	Mean of logged Data	0.827
Maximum of Logged Data	1.96	SD of logged Data	0.822

Assuming Lognormal Distribution

90% H-UCL	6.074	90% Chebyshev (MVUE) UCL	5.75
95% Chebyshev (MVUE) UCL	6.975	97.5% Chebyshev (MVUE) UCL	8.676
99% Chebyshev (MVUE) UCL	12.02		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

90% CLT UCL	4.05	90% Jackknife UCL	4.157
90% Standard Bootstrap UCL	3.998	90% Bootstrap-t UCL	4.404
90% Hall's Bootstrap UCL	4.125	90% Percentile Bootstrap UCL	4.033
90% BCA Bootstrap UCL	4.133		
90% Chebyshev(Mean, Sd) UCL	5.429	95% Chebyshev(Mean, Sd) UCL	6.519
97.5% Chebyshev(Mean, Sd) UCL	8.033	99% Chebyshev(Mean, Sd) UCL	11.01

Suggested UCL to Use

Recommendation Provided only for 95% Confidence Coefficient

TEQ Bird

General Statistics

Total Number of Observations	8	Number of Distinct Observations	8
		Number of Missing Observations	0
Minimum	2.6	Mean	41.51
Maximum	110	Median	6.05
SD	50.77	Std. Error of Mean	17.95
Coefficient of Variation	1.223	Skewness	0.66

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.688	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.818	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.382	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.283	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

90% Normal UCL		90% UCLs (Adjusted for Skewness)	
90% Student's-t UCL	66.91	90% Adjusted-CLT UCL (Chen-1995)	67.51
		90% Modified-t UCL (Johnson-1978)	67.61

Gamma GOF Test

A-D Test Statistic	1.137	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.756	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.37	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.307	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.598	k star (bias corrected MLE)	0.457
Theta hat (MLE)	69.4	Theta star (bias corrected MLE)	90.8
nu hat (MLE)	9.57	nu star (bias corrected)	7.315
MLE Mean (bias corrected)	41.51	MLE Sd (bias corrected)	61.4
		Approximate Chi Square Value (0.1)	3.038
Adjusted Level of Significance	0.0607	Adjusted Chi Square Value	2.516

Assuming Gamma Distribution

90% Approximate Gamma UCL (use when n>=50))	99.95	90% Adjusted Gamma UCL (use when n<50)	120.7

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.768	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.818	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.328	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.283	Data Not Lognormal at 5% Significance Level

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	0.956	Mean of logged Data	2.693
Maximum of Logged Data	4.7	SD of logged Data	1.626

Assuming Lognormal Distribution

90% H-UCL	445.1	90% Chebyshev (MVUE) UCL	113.6
95% Chebyshev (MVUE) UCL	146.1	97.5% Chebyshev (MVUE) UCL	191.3
99% Chebyshev (MVUE) UCL	280		

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs

90% CLT UCL	64.52	90% Jackknife UCL	66.91
90% Standard Bootstrap UCL	62.83	90% Bootstrap-t UCL	74.46
90% Hall's Bootstrap UCL	57.73	90% Percentile Bootstrap UCL	65.3
90% BCA Bootstrap UCL	66.28		
90% Chebyshev(Mean, Sd) UCL	95.36	95% Chebyshev(Mean, Sd) UCL	119.8
97.5% Chebyshev(Mean, Sd) UCL	153.6	99% Chebyshev(Mean, Sd) UCL	220.1

Suggested UCL to Use

Recommendation Provided only for 95% Confidence Coefficient

TEQ Fish

General Statistics

Total Number of Observations	8	Number of Distinct Observations	8
		Number of Missing Observations	0
Minimum	2.3	Mean	38.24
Maximum	100	Median	5.25
SD	47.09	Std. Error of Mean	16.65
Coefficient of Variation	1.231	Skewness	0.655

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.
For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).
Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.683	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.818	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.381	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.283	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

90% Normal UCL		**90% UCLs (Adjusted for Skewness)**	
90% Student's-t UCL	61.79	90% Adjusted-CLT UCL (Chen-1995)	62.33
		90% Modified-t UCL (Johnson-1978)	62.44

Gamma GOF Test

A-D Test Statistic	1.149	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.757	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.365	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.307	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.581	k star (bias corrected MLE)	0.446
Theta hat (MLE)	65.82	Theta star (bias corrected MLE)	85.65
nu hat (MLE)	9.295	nu star (bias corrected)	7.143
MLE Mean (bias corrected)	38.24	MLE Sd (bias corrected)	57.23
		Approximate Chi Square Value (0.1)	2.926
Adjusted Level of Significance	0.0607	Adjusted Chi Square Value	2.416

Assuming Gamma Distribution

90% Approximate Gamma UCL (use when n>=50))	93.33	90% Adjusted Gamma UCL (use when n<50)	113.1

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.763	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.818	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.321	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.283	Data Not Lognormal at 5% Significance Level

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	0.833	Mean of logged Data	2.575
Maximum of Logged Data	4.605	SD of logged Data	1.658

Assuming Lognormal Distribution

90% H-UCL	450.5	90% Chebyshev (MVUE) UCL	106
95% Chebyshev (MVUE) UCL	136.5	97.5% Chebyshev (MVUE) UCL	178.9
99% Chebyshev (MVUE) UCL	262.2		

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs

90% CLT UCL	59.57	90% Jackknife UCL	61.79
90% Standard Bootstrap UCL	58.19	90% Bootstrap-t UCL	69.29
90% Hall's Bootstrap UCL	53.08	90% Percentile Bootstrap UCL	60.48
90% BCA Bootstrap UCL	61.2		
90% Chebyshev(Mean, Sd) UCL	88.18	95% Chebyshev(Mean, Sd) UCL	110.8
97.5% Chebyshev(Mean, Sd) UCL	142.2	99% Chebyshev(Mean, Sd) UCL	203.9

Suggested UCL to Use

Recommendation Provided only for 95% Confidence Coefficient

TEQ Mam

General Statistics

Total Number of Observations	8	Number of Distinct Observations	7
		Number of Missing Observations	0
Minimum	2.9	Mean	50.58
Maximum	140	Median	5.95
SD	63.32	Std. Error of Mean	22.39
Coefficient of Variation	1.252	Skewness	0.681

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.693	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.818	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.384	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.283	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

90% Normal UCL		90% UCLs (Adjusted for Skewness)	
90% Student's-t UCL	82.25	90% Adjusted-CLT UCL (Chen-1995)	83.11
		90% Modified-t UCL (Johnson-1978)	83.15

Gamma GOF Test

A-D Test Statistic	1.183	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.759	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.381	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.308	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.552	k star (bias corrected MLE)	0.428

Theta hat (MLE)	91.58	Theta star (bias corrected MLE)	118
nu hat (MLE)	8.836	nu star (bias corrected)	6.856
MLE Mean (bias corrected)	50.58	MLE Sd (bias corrected)	77.26
		Approximate Chi Square Value (0.1)	2.742
Adjusted Level of Significance	0.0607	Adjusted Chi Square Value	2.251

Assuming Gamma Distribution

90% Approximate Gamma UCL (use when n>=50))	126.5	90% Adjusted Gamma UCL (use when n<50)	154

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.751	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.818	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.345	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.283	Data Not Lognormal at 5% Significance Level

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	1.065	Mean of logged Data	2.791
Maximum of Logged Data	4.942	SD of logged Data	1.711

Assuming Lognormal Distribution

90% H-UCL	698	90% Chebyshev (MVUE) UCL	142.6
95% Chebyshev (MVUE) UCL	184	97.5% Chebyshev (MVUE) UCL	241.6
99% Chebyshev (MVUE) UCL	354.8		

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs

90% CLT UCL	79.26	90% Jackknife UCL	82.25
90% Standard Bootstrap UCL	78.06	90% Bootstrap-t UCL	89.25
90% Hall's Bootstrap UCL	69.77	90% Percentile Bootstrap UCL	81.46
90% BCA Bootstrap UCL	81.64		
90% Chebyshev(Mean, Sd) UCL	117.7	95% Chebyshev(Mean, Sd) UCL	148.2
97.5% Chebyshev(Mean, Sd) UCL	190.4	99% Chebyshev(Mean, Sd) UCL	273.3

Suggested UCL to Use

Recommendation Provided only for 95% Confidence Coefficient

Total LPAH

General Statistics

Total Number of Observations	8	Number of Distinct Observations	8
		Number of Missing Observations	0
Minimum	0.017	Mean	0.0568
Maximum	0.096	Median	0.0545
SD	0.0233	Std. Error of Mean	0.00824
Coefficient of Variation	0.411	Skewness	0.0678

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use

guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.
For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).
Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.955	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.818	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.212	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.283	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

90% Normal UCL		**90% UCLs (Adjusted for Skewness)**	
90% Student's-t UCL	0.0684	90% Adjusted-CLT UCL (Chen-1995)	0.0675
		90% Modified-t UCL (Johnson-1978)	0.0684

Gamma GOF Test

A-D Test Statistic	0.435	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.719	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.229	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.295	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	5.36	k star (bias corrected MLE)	3.434
Theta hat (MLE)	0.0106	Theta star (bias corrected MLE)	0.0165
nu hat (MLE)	85.76	nu star (bias corrected)	54.94
MLE Mean (bias corrected)	0.0568	MLE Sd (bias corrected)	0.0306
		Approximate Chi Square Value (0.1)	42
Adjusted Level of Significance	0.0607	Adjusted Chi Square Value	39.71

Assuming Gamma Distribution

90% Approximate Gamma UCL (use when n>=50))	0.0742	90% Adjusted Gamma UCL (use when n<50)	0.0785

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.861	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.818	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.257	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.283	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-4.075	Mean of logged Data	-2.965
Maximum of Logged Data	-2.343	SD of logged Data	0.514

Assuming Lognormal Distribution

90% H-UCL	0.0815	90% Chebyshev (MVUE) UCL	0.0896
95% Chebyshev (MVUE) UCL	0.104	97.5% Chebyshev (MVUE) UCL	0.124
99% Chebyshev (MVUE) UCL	0.163		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

90% CLT UCL	0.0673	90% Jackknife UCL	0.0684
90% Standard Bootstrap UCL	0.0666	90% Bootstrap-t UCL	0.0692
90% Hall's Bootstrap UCL	0.0745	90% Percentile Bootstrap UCL	0.0668
90% BCA Bootstrap UCL	0.0666		
90% Chebyshev(Mean, Sd) UCL	0.0815	95% Chebyshev(Mean, Sd) UCL	0.0927
97.5% Chebyshev(Mean, Sd) UCL	0.108	99% Chebyshev(Mean, Sd) UCL	0.139

Suggested UCL to Use

Recommendation Provided only for 95% Confidence Coefficient

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.18/17/2022 1:09:19 PM
From File	UCLs_Soil Input v2.xls
Full Precision	OFF
Confidence Coefficient	90%
Number of Bootstrap Operations	2000

Sb

General Statistics

Total Number of Observations	28	Number of Distinct Observations	22
Number of Detects	10	Number of Non-Detects	18
Number of Distinct Detects	9	Number of Distinct Non-Detects	13
Minimum Detect	0.16	Minimum Non-Detect	0.79
Maximum Detect	4.4	Maximum Non-Detect	3
Variance Detects	1.612	Percent Non-Detects	64.29%
Mean Detects	0.978	SD Detects	1.269
Median Detects	0.688	CV Detects	1.298
Skewness Detects	2.58	Kurtosis Detects	7.326
Mean of Logged Detects	-0.59	SD of Logged Detects	1.104

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.65	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.842	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.331	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.262	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.588	KM Standard Error of Mean	0.179
KM SD	0.806	90% KM (BCA) UCL	0.81
90% KM (t) UCL	0.822	90% KM (Percentile Bootstrap) UCL	0.828
90% KM (z) UCL	0.816	90% KM Bootstrap t UCL	0.962
90% KM Chebyshev UCL	1.123	95% KM Chebyshev UCL	1.366
97.5% KM Chebyshev UCL	1.703	99% KM Chebyshev UCL	2.364

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.571	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.748	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.21	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.274	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	1.014	k star (bias corrected MLE)	0.777
Theta hat (MLE)	0.964	Theta star (bias corrected MLE)	1.259
nu hat (MLE)	20.29	nu star (bias corrected)	15.54
Mean (detects)	0.978		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	0.482
Maximum	4.4	Median	0.187
SD	0.834	CV	1.731
k hat (MLE)	0.749	k star (bias corrected MLE)	0.693
Theta hat (MLE)	0.644	Theta star (bias corrected MLE)	0.696
nu hat (MLE)	41.94	nu star (bias corrected)	38.78
Adjusted Level of Significance (β)	0.0893		
Approximate Chi Square Value (38.78, α)	28.01	Adjusted Chi Square Value (38.78, β)	27.56
90% Gamma Approximate UCL (use when n>=50)	0.668	90% Gamma Adjusted UCL (use when n<50)	0.678
95% Gamma Approximate UCL (use when n>=50)	0.733	95% Gamma Adjusted UCL (use when n<50)	N/A

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.588	SD (KM)	0.806
Variance (KM)	0.649	SE of Mean (KM)	0.179
k hat (KM)	0.532	k star (KM)	0.499
nu hat (KM)	29.79	nu star (KM)	27.93
theta hat (KM)	1.105	theta star (KM)	1.178
80% gamma percentile (KM)	0.965	90% gamma percentile (KM)	1.591
95% gamma percentile (KM)	2.259	99% gamma percentile (KM)	3.904

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (27.93, α)	18.88	Adjusted Chi Square Value (27.93, β)	18.52
90% Gamma Approximate KM-UCL (use when n>=50)	0.869	90% Gamma Adjusted KM-UCL (use when n<50)	0.886

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.898	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.842	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.21	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.262	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.546	Mean in Log Scale	-1
SD in Original Scale	0.806	SD in Log Scale	0.752
90% t UCL (assumes normality of ROS data)	0.747	90% Percentile Bootstrap UCL	0.755
90% BCA Bootstrap UCL	0.86	90% Bootstrap t UCL	1.12
90% H-UCL (Log ROS)	0.618		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-1.004	KM Geo Mean	0.366
KM SD (logged)	0.882	90% Critical H Value (KM-Log)	1.73
KM Standard Error of Mean (logged)	0.269	90% H-UCL (KM -Log)	0.725
KM SD (logged)	0.882	90% Critical H Value (KM-Log)	1.73
KM Standard Error of Mean (logged)	0.269		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.71	Mean in Log Scale	-0.637
SD in Original Scale	0.797	SD in Log Scale	0.703
90% t UCL (Assumes normality)	0.908	90% H-Stat UCL	0.841

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Gamma Distributed at 5% Significance Level

Suggested UCL to Use

Recommendation Provided only for 95% Confidence Coefficient

Ba

General Statistics

Total Number of Observations	22	Number of Distinct Observations	22
		Number of Missing Observations	0
Minimum	33.9	Mean	136.6
Maximum	922	Median	72.3
SD	218.1	Std. Error of Mean	46.51
Coefficient of Variation	1.597	Skewness	3.161

Normal GOF Test

Shapiro Wilk Test Statistic	0.444	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.911	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.416	Lilliefors GOF Test
5% Lilliefors Critical Value	0.184	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

90% Normal UCL		90% UCLs (Adjusted for Skewness)	
90% Student's-t UCL	198.1	90% Adjusted-CLT UCL (Chen-1995)	218.6
		90% Modified-t UCL (Johnson-1978)	203.4

Gamma GOF Test

A-D Test Statistic	3.379	Anderson-Darling Gamma GOF Test
5% A-D Critical Value	0.767	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.332	Kolmogorov-Smirnov Gamma GOF Test
5% K-S Critical Value	0.19	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	1.144	k star (bias corrected MLE)	1.018
Theta hat (MLE)	119.4	Theta star (bias corrected MLE)	134.1
nu hat (MLE)	50.34	nu star (bias corrected)	44.81
MLE Mean (bias corrected)	136.6	MLE Sd (bias corrected)	135.4
		Approximate Chi Square Value (0.1)	33.18
Adjusted Level of Significance	0.0873	Adjusted Chi Square Value	32.6

Assuming Gamma Distribution

90% Approximate Gamma UCL (use when n>=50))	184.5	90% Adjusted Gamma UCL (use when n<50)	187.8

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.752	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.911	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.255	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.184	Data Not Lognormal at 5% Significance Level

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	3.523	Mean of logged Data	4.42
Maximum of Logged Data	6.827	SD of logged Data	0.807

Assuming Lognormal Distribution

90% H-UCL	156	90% Chebyshev (MVUE) UCL	176.6
95% Chebyshev (MVUE) UCL	205.4	97.5% Chebyshev (MVUE) UCL	245.4
99% Chebyshev (MVUE) UCL	324		

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs

90% CLT UCL	196.2	90% Jackknife UCL	198.1
90% Standard Bootstrap UCL	194.5	90% Bootstrap-t UCL	608.4
90% Hall's Bootstrap UCL	593.6	90% Percentile Bootstrap UCL	198.5
90% BCA Bootstrap UCL	218.9		
90% Chebyshev(Mean, Sd) UCL	276.1	95% Chebyshev(Mean, Sd) UCL	339.3
97.5% Chebyshev(Mean, Sd) UCL	427	99% Chebyshev(Mean, Sd) UCL	599.4

Suggested UCL to Use

Recommendation Provided only for 95% Confidence Coefficient

Cu

General Statistics

Total Number of Observations	28	Number of Distinct Observations	28
		Number of Missing Observations	0
Minimum	30.8	Mean	72.11
Maximum	459	Median	53.15
SD	77.95	Std. Error of Mean	14.73
Coefficient of Variation	1.081	Skewness	4.862

Normal GOF Test

Shapiro Wilk Test Statistic	0.373	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.924	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.351	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.164	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

90% Normal UCL		**90% UCLs (Adjusted for Skewness)**	
90% Student's-t UCL	91.46	90% Adjusted-CLT UCL (Chen-1995)	100.7
		90% Modified-t UCL (Johnson-1978)	93.72

Gamma GOF Test

A-D Test Statistic	3.662	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.754	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.264	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.167	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	2.836	k star (bias corrected MLE)	2.556
Theta hat (MLE)	25.43	Theta star (bias corrected MLE)	28.21
nu hat (MLE)	158.8	nu star (bias corrected)	143.1
MLE Mean (bias corrected)	72.11	MLE Sd (bias corrected)	45.11
		Approximate Chi Square Value (0.1)	121.9
Adjusted Level of Significance	0.0893	Adjusted Chi Square Value	121

Assuming Gamma Distribution

90% Approximate Gamma UCL (use when n>=50))	84.66	90% Adjusted Gamma UCL (use when n<50)	85.33

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.719	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.924	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.197	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.164	Data Not Lognormal at 5% Significance Level

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	3.428	Mean of logged Data	4.092
Maximum of Logged Data	6.129	SD of logged Data	0.485

Assuming Lognormal Distribution

90% H-UCL	77.11	90% Chebyshev (MVUE) UCL	86.13
95% Chebyshev (MVUE) UCL	94.81	97.5% Chebyshev (MVUE) UCL	106.8
99% Chebyshev (MVUE) UCL	130.5		

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs

90% CLT UCL	90.99	90% Jackknife UCL	91.46
90% Standard Bootstrap UCL	90.09	90% Bootstrap-t UCL	152.9
90% Hall's Bootstrap UCL	188.2	90% Percentile Bootstrap UCL	89.82
90% BCA Bootstrap UCL	103.2		
90% Chebyshev(Mean, Sd) UCL	116.3	95% Chebyshev(Mean, Sd) UCL	136.3
97.5% Chebyshev(Mean, Sd) UCL	164.1	99% Chebyshev(Mean, Sd) UCL	218.7

Suggested UCL to Use

Recommendation Provided only for 95% Confidence Coefficient

Pb

General Statistics

Total Number of Observations	28	Number of Distinct Observations	26
		Number of Missing Observations	0
Minimum	7.6	Mean	28.28
Maximum	330	Median	12.55
SD	60.16	Std. Error of Mean	11.37
Coefficient of Variation	2.127	Skewness	5.02

Normal GOF Test

Shapiro Wilk Test Statistic	0.318	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.924	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.372	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.164	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

90% Normal UCL		**90% UCLs (Adjusted for Skewness)**	
90% Student's-t UCL	43.22	90% Adjusted-CLT UCL (Chen-1995)	50.55
		90% Modified-t UCL (Johnson-1978)	45.01

Gamma GOF Test

A-D Test Statistic	4.108	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.772	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.28	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.17	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	1.074	k star (bias corrected MLE)	0.982
Theta hat (MLE)	26.34	Theta star (bias corrected MLE)	28.79
nu hat (MLE)	60.12	nu star (bias corrected)	55.02
MLE Mean (bias corrected)	28.28	MLE Sd (bias corrected)	28.53
		Approximate Chi Square Value (0.1)	42.07
Adjusted Level of Significance	0.0893	Adjusted Chi Square Value	41.52

Assuming Gamma Distribution

90% Approximate Gamma UCL (use when n>=50))	36.98	90% Adjusted Gamma UCL (use when n<50)	37.47

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.744	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.924	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.217	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.164	Data Not Lognormal at 5% Significance Level

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	2.028	Mean of logged Data	2.809
Maximum of Logged Data	5.799	SD of logged Data	0.763

Assuming Lognormal Distribution

90% H-UCL	28.22	90% Chebyshev (MVUE) UCL	32.25
95% Chebyshev (MVUE) UCL	36.93	97.5% Chebyshev (MVUE) UCL	43.43
99% Chebyshev (MVUE) UCL	56.21		

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs

90% CLT UCL	42.85	90% Jackknife UCL	43.22
90% Standard Bootstrap UCL	42.55	90% Bootstrap-t UCL	111.6
90% Hall's Bootstrap UCL	106.6	90% Percentile Bootstrap UCL	42.14
90% BCA Bootstrap UCL	52.17		
90% Chebyshev(Mean, Sd) UCL	62.39	95% Chebyshev(Mean, Sd) UCL	77.83
97.5% Chebyshev(Mean, Sd) UCL	99.28	99% Chebyshev(Mean, Sd) UCL	141.4

Suggested UCL to Use

Recommendation Provided only for 95% Confidence Coefficient

Hg

General Statistics

Total Number of Observations	28	Number of Distinct Observations	14
Number of Detects	15	Number of Non-Detects	13
Number of Distinct Detects	11	Number of Distinct Non-Detects	4
Minimum Detect	0.0534	Minimum Non-Detect	0.1
Maximum Detect	0.818	Maximum Non-Detect	0.13
Variance Detects	0.0327	Percent Non-Detects	46.43%
Mean Detects	0.18	SD Detects	0.181
Median Detects	0.14	CV Detects	1.003
Skewness Detects	3.553	Kurtosis Detects	13.26
Mean of Logged Detects	-1.932	SD of Logged Detects	0.586

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.483	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.881	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.411	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.22	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.133	KM Standard Error of Mean	0.0275
KM SD	0.138	90% KM (BCA) UCL	0.17
90% KM (t) UCL	0.169	90% KM (Percentile Bootstrap) UCL	0.171
90% KM (z) UCL	0.168	90% KM Bootstrap t UCL	0.233
90% KM Chebyshev UCL	0.216	95% KM Chebyshev UCL	0.253
97.5% KM Chebyshev UCL	0.305	99% KM Chebyshev UCL	0.407

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	1.849	**Anderson-Darling GOF Test**	
5% A-D Critical Value	0.746	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.353	**Kolmogorov-Smirnov GOF**	
5% K-S Critical Value	0.224	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	2.442	k star (bias corrected MLE)	1.998
Theta hat (MLE)	0.0738	Theta star (bias corrected MLE)	0.0902
nu hat (MLE)	73.27	nu star (bias corrected)	59.95
Mean (detects)	0.18		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	0.108
Maximum	0.818	Median	0.0793
SD	0.153	CV	1.409
k hat (MLE)	0.881	k star (bias corrected MLE)	0.81
Theta hat (MLE)	0.123	Theta star (bias corrected MLE)	0.134
nu hat (MLE)	49.34	nu star (bias corrected)	45.39
Adjusted Level of Significance (β)	0.0893		
Approximate Chi Square Value (45.39, α)	33.69	Adjusted Chi Square Value (45.39, β)	33.19
90% Gamma Approximate UCL (use when n>=50)	0.146	90% Gamma Adjusted UCL (use when n<50)	0.148
95% Gamma Approximate UCL (use when n>=50)	0.159	95% Gamma Adjusted UCL (use when n<50)	N/A

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.133	SD (KM)	0.138
Variance (KM)	0.0191	SE of Mean (KM)	0.0275
k hat (KM)	0.926	k star (KM)	0.851
nu hat (KM)	51.87	nu star (KM)	47.64
theta hat (KM)	0.144	theta star (KM)	0.156
80% gamma percentile (KM)	0.217	90% gamma percentile (KM)	0.319
95% gamma percentile (KM)	0.422	99% gamma percentile (KM)	0.665

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (47.64, α)	35.64	Adjusted Chi Square Value (47.64, β)	35.13
90% Gamma Approximate KM-UCL (use when n>=50)	0.178	90% Gamma Adjusted KM-UCL (use when n<50)	0.18

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.801	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.881	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.299	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.22	Detected Data Not Lognormal at 5% Significance Level	

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.129	Mean in Log Scale	-2.284
SD in Original Scale	0.142	SD in Log Scale	0.6
90% t UCL (assumes normality of ROS data)	0.164	90% Percentile Bootstrap UCL	0.164
90% BCA Bootstrap UCL	0.19	90% Bootstrap t UCL	0.232
90% H-UCL (Log ROS)	0.145		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-2.231	KM Geo Mean	0.107
KM SD (logged)	0.552	90% Critical H Value (KM-Log)	1.499
KM Standard Error of Mean (logged)	0.129	90% H-UCL (KM -Log)	0.147
KM SD (logged)	0.552	90% Critical H Value (KM-Log)	1.499
KM Standard Error of Mean (logged)	0.129		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.124	Mean in Log Scale	-2.357
SD in Original Scale	0.144	SD in Log Scale	0.63
90% t UCL (Assumes normality)	0.159	90% H-Stat UCL	0.139

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

Recommendation Provided only for 95% Confidence Coefficient

Se

General Statistics

Total Number of Observations	28	Number of Distinct Observations	21
Number of Detects	10	Number of Non-Detects	18
Number of Distinct Detects	9	Number of Distinct Non-Detects	12
Minimum Detect	0.42	Minimum Non-Detect	0.73
Maximum Detect	1	Maximum Non-Detect	3.72
Variance Detects	0.0265	Percent Non-Detects	64.29%
Mean Detects	0.584	SD Detects	0.163
Median Detects	0.54	CV Detects	0.279
Skewness Detects	2.094	Kurtosis Detects	5.318
Mean of Logged Detects	-0.566	SD of Logged Detects	0.24

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.786	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.842	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.242	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.262	Detected Data appear Normal at 5% Significance Level

Detected Data appear Approximate Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.573	KM Standard Error of Mean	0.0428
KM SD	0.141	90% KM (BCA) UCL	0.629
90% KM (t) UCL	0.63	90% KM (Percentile Bootstrap) UCL	0.626

90% KM (z) UCL	0.628	90% KM Bootstrap t UCL	0.665
90% KM Chebyshev UCL	0.702	95% KM Chebyshev UCL	0.76
97.5% KM Chebyshev UCL	0.841	99% KM Chebyshev UCL	0.999

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.58	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.725	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.197	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.266	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	17.73	k star (bias corrected MLE)	12.48
Theta hat (MLE)	0.0329	Theta star (bias corrected MLE)	0.0468
nu hat (MLE)	354.5	nu star (bias corrected)	249.5
Mean (detects)	0.584		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.42	Mean	0.571
Maximum	1	Median	0.556
SD	0.107	CV	0.188
k hat (MLE)	35.37	k star (bias corrected MLE)	31.61
Theta hat (MLE)	0.0161	Theta star (bias corrected MLE)	0.0181
nu hat (MLE)	1981	nu star (bias corrected)	1770
Adjusted Level of Significance (β)	0.0893		
Approximate Chi Square Value (N/A, α)	1694	Adjusted Chi Square Value (N/A, β)	1690
90% Gamma Approximate UCL (use when n>=50)	0.596	90% Gamma Adjusted UCL (use when n<50)	0.598
95% Gamma Approximate UCL (use when n>=50)	0.604	95% Gamma Adjusted UCL (use when n<50)	N/A

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.573	SD (KM)	0.141
Variance (KM)	0.0199	SE of Mean (KM)	0.0428
k hat (KM)	16.53	k star (KM)	14.78
nu hat (KM)	925.8	nu star (KM)	827.9
theta hat (KM)	0.0347	theta star (KM)	0.0388
80% gamma percentile (KM)	0.694	90% gamma percentile (KM)	0.771
95% gamma percentile (KM)	0.839	99% gamma percentile (KM)	0.976

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (827.92, α)	776.2	Adjusted Chi Square Value (827.92, β)	773.7
90% Gamma Approximate KM-UCL (use when n>=50)	0.612	90% Gamma Adjusted KM-UCL (use when n<50)	0.613

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.887	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.842	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.186	**Lilliefors GOF Test**

5% Lilliefors Critical Value	0.262	Detected Data appear Lognormal at 5% Significance Level	

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.568	Mean in Log Scale	-0.579
SD in Original Scale	0.105	SD in Log Scale	0.16
90% t UCL (assumes normality of ROS data)	0.594	90% Percentile Bootstrap UCL	0.594
90% BCA Bootstrap UCL	0.601	90% Bootstrap t UCL	0.608
90% H-UCL (Log ROS)	0.591		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-0.581	KM Geo Mean	0.559
KM SD (logged)	0.212	90% Critical H Value (KM-Log)	1.342
KM Standard Error of Mean (logged)	0.0656	90% H-UCL (KM -Log)	0.604
KM SD (logged)	0.212	90% Critical H Value (KM-Log)	1.342
KM Standard Error of Mean (logged)	0.0656		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.884	Mean in Log Scale	-0.226
SD in Original Scale	0.391	SD in Log Scale	0.475
90% t UCL (Assumes normality)	0.981	90% H-Stat UCL	1.019

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Normal Distributed at 5% Significance Level

Suggested UCL to Use

Recommendation Provided only for 95% Confidence Coefficient

Zn

General Statistics

Total Number of Observations	28	Number of Distinct Observations	27
		Number of Missing Observations	0
Minimum	45.1	Mean	120.5
Maximum	899	Median	77.75
SD	156.7	Std. Error of Mean	29.61
Coefficient of Variation	1.301	Skewness	4.87

Normal GOF Test

Shapiro Wilk Test Statistic	0.375	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.924	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.338	Lilliefors GOF Test
5% Lilliefors Critical Value	0.164	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

90% Normal UCL		90% UCLs (Adjusted for Skewness)	
90% Student's-t UCL	159.4	90% Adjusted-CLT UCL (Chen-1995)	177.9

		90% Modified-t UCL (Johnson-1978)	163.9

Gamma GOF Test

A-D Test Statistic	3.18	**Anderson-Darling Gamma GOF Test**	
5% A-D Critical Value	0.758	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.255	**Kolmogorov-Smirnov Gamma GOF Test**	
5% K-S Critical Value	0.167	Data Not Gamma Distributed at 5% Significance Level	

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	2.108	k star (bias corrected MLE)	1.906
Theta hat (MLE)	57.16	Theta star (bias corrected MLE)	63.22
nu hat (MLE)	118	nu star (bias corrected)	106.7
MLE Mean (bias corrected)	120.5	MLE Sd (bias corrected)	87.27
		Approximate Chi Square Value (0.1)	88.48
Adjusted Level of Significance	0.0893	Adjusted Chi Square Value	87.66

Assuming Gamma Distribution

90% Approximate Gamma UCL (use when n>=50))	145.3	90% Adjusted Gamma UCL (use when n<50)	146.7

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.774	**Shapiro Wilk Lognormal GOF Test**	
5% Shapiro Wilk Critical Value	0.924	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.184	**Lilliefors Lognormal GOF Test**	
5% Lilliefors Critical Value	0.164	Data Not Lognormal at 5% Significance Level	

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	3.809	Mean of logged Data	4.536
Maximum of Logged Data	6.801	SD of logged Data	0.567

Assuming Lognormal Distribution

90% H-UCL	129.2	90% Chebyshev (MVUE) UCL	145.8
95% Chebyshev (MVUE) UCL	162.5	97.5% Chebyshev (MVUE) UCL	185.7
99% Chebyshev (MVUE) UCL	231.3		

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs

90% CLT UCL	158.4	90% Jackknife UCL	159.4
90% Standard Bootstrap UCL	157.5	90% Bootstrap-t UCL	282.3
90% Hall's Bootstrap UCL	337.8	90% Percentile Bootstrap UCL	156.9
90% BCA Bootstrap UCL	182.2		
90% Chebyshev(Mean, Sd) UCL	209.3	95% Chebyshev(Mean, Sd) UCL	249.5
97.5% Chebyshev(Mean, Sd) UCL	305.4	99% Chebyshev(Mean, Sd) UCL	415.1

Suggested UCL to Use

Recommendation Provided only for 95% Confidence Coefficient

General Statistics

Total Number of Observations	25	Number of Distinct Observations	23
		Number of Missing Observations	0
Minimum	0.64	Mean	20.9
Maximum	246	Median	2.2
SD	57.49	Std. Error of Mean	11.5
Coefficient of Variation	2.75	Skewness	3.463

Normal GOF Test

Shapiro Wilk Test Statistic	0.384	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.918	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.433	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.173	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

90% Normal UCL		**90% UCLs (Adjusted for Skewness)**	
90% Student's-t UCL	36.06	90% Adjusted-CLT UCL (Chen-1995)	41.33
		90% Modified-t UCL (Johnson-1978)	37.38

Gamma GOF Test

A-D Test Statistic	3.315	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.832	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.282	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.187	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.387	k star (bias corrected MLE)	0.367
Theta hat (MLE)	54.08	Theta star (bias corrected MLE)	56.99
nu hat (MLE)	19.33	nu star (bias corrected)	18.34
MLE Mean (bias corrected)	20.9	MLE Sd (bias corrected)	34.51
		Approximate Chi Square Value (0.1)	11.13
Adjusted Level of Significance	0.0883	Adjusted Chi Square Value	10.83

Assuming Gamma Distribution

90% Approximate Gamma UCL (use when n>=50))	34.44	90% Adjusted Gamma UCL (use when n<50)	35.39

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.863	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.918	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.207	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.173	Data Not Lognormal at 5% Significance Level

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-0.446	Mean of logged Data	1.328
Maximum of Logged Data	5.505	SD of logged Data	1.569

Assuming Lognormal Distribution

90% H-UCL	28.11	90% Chebyshev (MVUE) UCL	25.47
95% Chebyshev (MVUE) UCL	31.7	97.5% Chebyshev (MVUE) UCL	40.34
99% Chebyshev (MVUE) UCL	57.32		

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs

90% CLT UCL	35.64	90% Jackknife UCL	36.06
90% Standard Bootstrap UCL	35.62	90% Bootstrap-t UCL	166.8
90% Hall's Bootstrap UCL	129.8	90% Percentile Bootstrap UCL	36.77
90% BCA Bootstrap UCL	43.03		
90% Chebyshev(Mean, Sd) UCL	55.4	95% Chebyshev(Mean, Sd) UCL	71.02
97.5% Chebyshev(Mean, Sd) UCL	92.71	99% Chebyshev(Mean, Sd) UCL	135.3

Suggested UCL to Use

Recommendation Provided only for 95% Confidence Coefficient

DDx Mam

General Statistics

Total Number of Observations	25	Number of Distinct Observations	24
Number of Detects	24	Number of Non-Detects	1
Number of Distinct Detects	23	Number of Distinct Non-Detects	1
Minimum Detect	0.48	Minimum Non-Detect	3.1
Maximum Detect	244	Maximum Non-Detect	3.1
Variance Detects	2979	Percent Non-Detects	4%
Mean Detects	21.1	SD Detects	54.58
Median Detects	3	CV Detects	2.587
Skewness Detects	3.618	Kurtosis Detects	13.32
Mean of Logged Detects	1.464	SD of Logged Detects	1.621

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.409	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.916	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.403	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.177	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	20.32	KM Standard Error of Mean	10.72
KM SD	52.49	90% KM (BCA) UCL	32.07
90% KM (t) UCL	34.45	90% KM (Percentile Bootstrap) UCL	34.34
90% KM (z) UCL	34.07	90% KM Bootstrap t UCL	122
90% KM Chebyshev UCL	52.49	95% KM Chebyshev UCL	67.07
97.5% KM Chebyshev UCL	87.29	99% KM Chebyshev UCL	127

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	2.309	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.826	Detected Data Not Gamma Distributed at 5% Significance Level

K-S Test Statistic	0.262	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.19	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.413	k star (bias corrected MLE)	0.389
Theta hat (MLE)	51.09	Theta star (bias corrected MLE)	54.22
nu hat (MLE)	19.82	nu star (bias corrected)	18.68
Mean (detects)	21.1		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	20.26
Maximum	244	Median	3
SD	53.6	CV	2.646
k hat (MLE)	0.372	k star (bias corrected MLE)	0.354
Theta hat (MLE)	54.38	Theta star (bias corrected MLE)	57.15
nu hat (MLE)	18.62	nu star (bias corrected)	17.72
Adjusted Level of Significance (β)	0.0883		
Approximate Chi Square Value (17.72, α)	10.65	Adjusted Chi Square Value (17.72, β)	10.36
90% Gamma Approximate UCL (use when n>=50)	33.71	90% Gamma Adjusted UCL (use when n<50)	34.66
95% Gamma Approximate UCL (use when n>=50)	39.06	95% Gamma Adjusted UCL (use when n<50)	N/A

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	20.32	SD (KM)	52.49
Variance (KM)	2755	SE of Mean (KM)	10.72
k hat (KM)	0.15	k star (KM)	0.159
nu hat (KM)	7.496	nu star (KM)	7.93
theta hat (KM)	135.6	theta star (KM)	128.1
80% gamma percentile (KM)	23.11	90% gamma percentile (KM)	60.68
95% gamma percentile (KM)	110.6	99% gamma percentile (KM)	253.9

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (7.93, α)	3.443	Adjusted Chi Square Value (7.93, β)	3.289
90% Gamma Approximate KM-UCL (use when n>=50)	46.8	90% Gamma Adjusted KM-UCL (use when n<50)	48.99

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.924	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.916	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.181	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.177	Detected Data Not Lognormal at 5% Significance Level	

Detected Data appear Approximate Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	20.32	Mean in Log Scale	1.423
SD in Original Scale	53.57	SD in Log Scale	1.6
90% t UCL (assumes normality of ROS data)	34.44	90% Percentile Bootstrap UCL	35.09

90% BCA Bootstrap UCL	39.81	90% Bootstrap t UCL	120.4
90% H-UCL (Log ROS)	33.29		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	1.419	KM Geo Mean	4.133
KM SD (logged)	1.576	90% Critical H Value (KM-Log)	2.431
KM Standard Error of Mean (logged)	0.323	90% H-UCL (KM -Log)	31.26
KM SD (logged)	1.576	90% Critical H Value (KM-Log)	2.431
KM Standard Error of Mean (logged)	0.323		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	20.32	Mean in Log Scale	1.423
SD in Original Scale	53.57	SD in Log Scale	1.6
90% t UCL (Assumes normality)	34.44	90% H-Stat UCL	33.29

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

Recommendation Provided only for 95% Confidence Coefficient

Bis(2-ethylhexyl)phthalate

General Statistics

Total Number of Observations	22	Number of Distinct Observations	9
Number of Detects	2	Number of Non-Detects	20
Number of Distinct Detects	2	Number of Distinct Non-Detects	7
Minimum Detect	0.037	Minimum Non-Detect	0.18
Maximum Detect	0.047	Maximum Non-Detect	0.24
Variance Detects	5.0000E-5	Percent Non-Detects	90.91%
Mean Detects	0.042	SD Detects	0.00707
Median Detects	0.042	CV Detects	0.168
Skewness Detects	N/A	Kurtosis Detects	N/A
Mean of Logged Detects	-3.177	SD of Logged Detects	0.169

Warning: Data set has only 2 Detected Values.

This is not enough to compute meaningful or reliable statistics and estimates.

Normal GOF Test on Detects Only

Not Enough Data to Perform GOF Test

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.042	KM Standard Error of Mean	0.005
KM SD	0.005	90% KM (BCA) UCL	N/A
90% KM (t) UCL	0.0486	90% KM (Percentile Bootstrap) UCL	N/A
90% KM (z) UCL	0.0484	90% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	0.057	95% KM Chebyshev UCL	0.0638
97.5% KM Chebyshev UCL	0.0732	99% KM Chebyshev UCL	0.0917

Gamma GOF Tests on Detected Observations Only

Not Enough Data to Perform GOF Test

Gamma Statistics on Detected Data Only

k hat (MLE)	70.23	k star (bias corrected MLE)	N/A
Theta hat (MLE)	5.9808E-4	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	280.9	nu star (bias corrected)	N/A
Mean (detects)	0.042		

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.042	SD (KM)	0.005
Variance (KM)	2.5000E-5	SE of Mean (KM)	0.005
k hat (KM)	70.56	k star (KM)	60.97
nu hat (KM)	3105	nu star (KM)	2683
theta hat (KM)	5.9524E-4	theta star (KM)	6.8888E-4
80% gamma percentile (KM)	0.0464	90% gamma percentile (KM)	0.049
95% gamma percentile (KM)	0.0512	99% gamma percentile (KM)	0.0555

Gamma Kaplan-Meier (KM) Statistics

		Adjusted Level of Significance (β)	0.0873
Approximate Chi Square Value (N/A, α)	2589	Adjusted Chi Square Value (N/A, β)	2584
90% Gamma Approximate KM-UCL (use when n>=50)	0.0435	90% Gamma Adjusted KM-UCL (use when n<50)	0.0436

Lognormal GOF Test on Detected Observations Only

Not Enough Data to Perform GOF Test

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.0423	Mean in Log Scale	-3.177
SD in Original Scale	0.00702	SD in Log Scale	0.166
90% t UCL (assumes normality of ROS data)	0.0442	90% Percentile Bootstrap UCL	0.0441
90% BCA Bootstrap UCL	0.0441	90% Bootstrap t UCL	0.0443
90% H-UCL (Log ROS)	0.0444		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-3.177	KM Geo Mean	0.0417
KM SD (logged)	0.12	90% Critical H Value (KM-Log)	1.323
KM Standard Error of Mean (logged)	0.12	90% H-UCL (KM -Log)	0.0435
KM SD (logged)	0.12	90% Critical H Value (KM-Log)	1.323
KM Standard Error of Mean (logged)	0.12		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.0979	Mean in Log Scale	-2.353
SD in Original Scale	0.0197	SD in Log Scale	0.279
90% t UCL (Assumes normality)	0.103	90% H-Stat UCL	0.107

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

Recommendation Provided only for 95% Confidence Coefficient

TPH

General Statistics

Total Number of Observations	18	Number of Distinct Observations	10
Number of Detects	6	Number of Non-Detects	12
Number of Distinct Detects	6	Number of Distinct Non-Detects	4
Minimum Detect	58.1	Minimum Non-Detect	110
Maximum Detect	420	Maximum Non-Detect	140
Variance Detects	17857	Percent Non-Detects	66.67%
Mean Detects	182.9	SD Detects	133.6
Median Detects	146	CV Detects	0.731
Skewness Detects	1.301	Kurtosis Detects	1.489
Mean of Logged Detects	4.993	SD of Logged Detects	0.72

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.888	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.788	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.202	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.325	Detected Data appear Normal at 5% Significance Level

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	115.3	KM Standard Error of Mean	24.22
KM SD	86.77	90% KM (BCA) UCL	152.5
90% KM (t) UCL	147.6	90% KM (Percentile Bootstrap) UCL	148.7
90% KM (z) UCL	146.4	90% KM Bootstrap t UCL	161.9
90% KM Chebyshev UCL	188	95% KM Chebyshev UCL	220.9
97.5% KM Chebyshev UCL	266.6	99% KM Chebyshev UCL	356.4

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.208	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.703	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.189	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.335	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	2.477	k star (bias corrected MLE)	1.349
Theta hat (MLE)	73.83	Theta star (bias corrected MLE)	135.5
nu hat (MLE)	29.72	nu star (bias corrected)	16.19
Mean (detects)	182.9		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	5.437	Mean	107.4
Maximum	420	Median	88.07
SD	98.18	CV	0.914
k hat (MLE)	1.407	k star (bias corrected MLE)	1.21
Theta hat (MLE)	76.34	Theta star (bias corrected MLE)	88.8
nu hat (MLE)	50.67	nu star (bias corrected)	43.56
Adjusted Level of Significance (β)	0.0838		
Approximate Chi Square Value (43.56, α)	32.1	Adjusted Chi Square Value (43.56, β)	31.36
90% Gamma Approximate UCL (use when n>=50)	145.8	90% Gamma Adjusted UCL (use when n<50)	149.2
95% Gamma Approximate UCL (use when n>=50)	159.1	95% Gamma Adjusted UCL (use when n<50)	N/A

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	115.3	SD (KM)	86.77
Variance (KM)	7529	SE of Mean (KM)	24.22
k hat (KM)	1.767	k star (KM)	1.51
nu hat (KM)	63.61	nu star (KM)	54.34
theta hat (KM)	65.28	theta star (KM)	76.41
80% gamma percentile (KM)	178.3	90% gamma percentile (KM)	240
95% gamma percentile (KM)	299.8	99% gamma percentile (KM)	434.9

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (54.34, α)	41.48	Adjusted Chi Square Value (54.34, β)	40.63
90% Gamma Approximate KM-UCL (use when n>=50)	151.1	90% Gamma Adjusted KM-UCL (use when n<50)	154.3

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.985	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.788	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.149	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.325	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	116.1	Mean in Log Scale	4.568
SD in Original Scale	90.46	SD in Log Scale	0.578
90% t UCL (assumes normality of ROS data)	144.5	90% Percentile Bootstrap UCL	142.3
90% BCA Bootstrap UCL	153.3	90% Bootstrap t UCL	170.1
90% H-UCL (Log ROS)	141.8		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	4.577	KM Geo Mean	97.18
KM SD (logged)	0.526	90% Critical H Value (KM-Log)	1.526
KM Standard Error of Mean (logged)	0.179	90% H-UCL (KM -Log)	135.5
KM SD (logged)	0.526	90% Critical H Value (KM-Log)	1.526
KM Standard Error of Mean (logged)	0.179		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	102.9	Mean in Log Scale	4.424
SD in Original Scale	93	SD in Log Scale	0.572
90% t UCL (Assumes normality)	132.1	90% H-Stat UCL	122

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

Recommendation Provided only for 95% Confidence Coefficient

APPENDIX G
LANL SPREADSHEET

Soil EcoPRGs For All Receptors

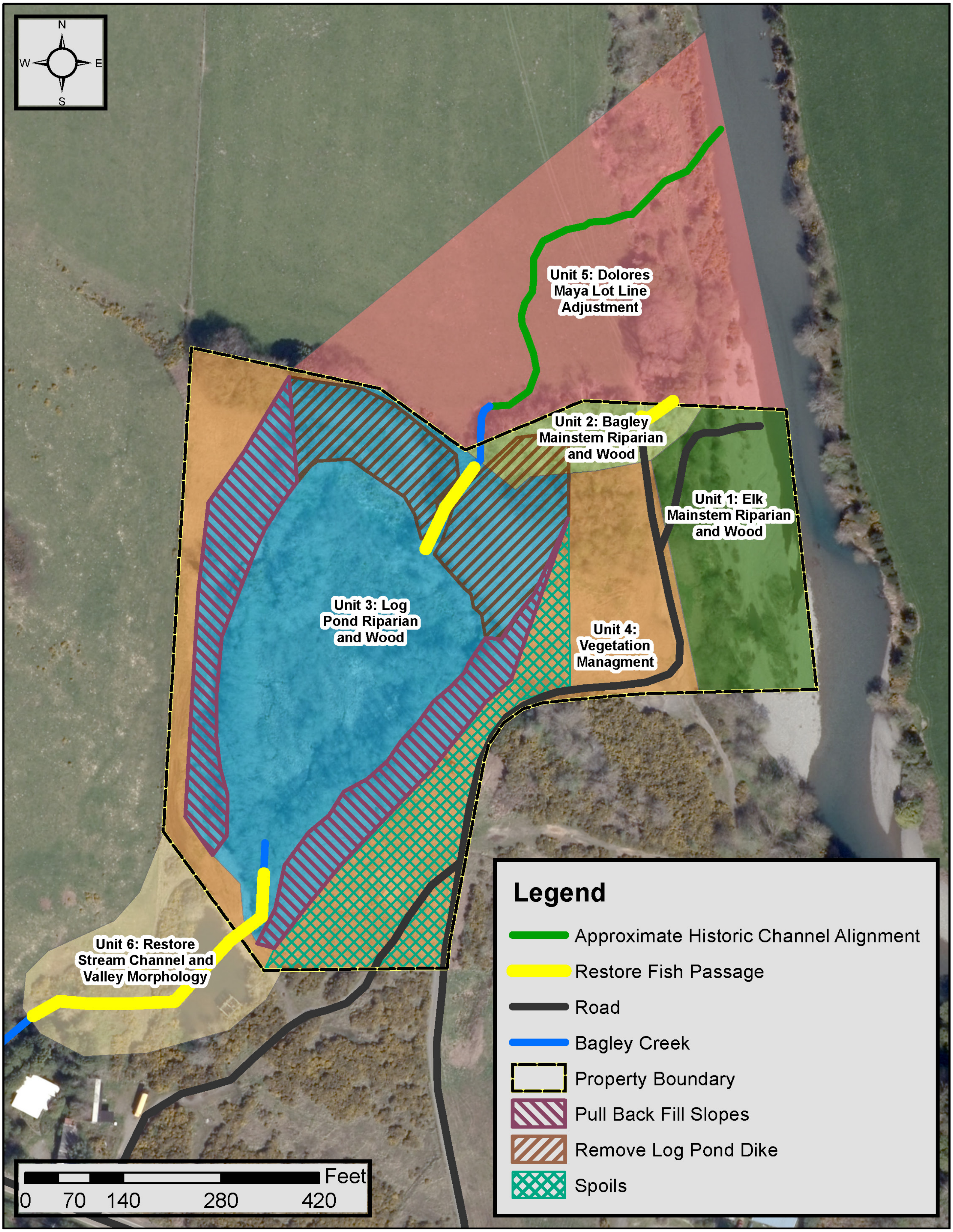
Group	COPC	Analyte Code	A. Robin (plant diet)	A. Robin (invert/plant diet)	A. Robin (invert diet)	Montane Shrew	Earthworm	Generic Plant	Background value	Soil Final EcoPRG (mg/kg)	Soil Final EcoPRG Receptor	Soil Wildlife EcoPRG (mg/kg)	Soil Wildlife EcoPRG Receptor
D/F	Tetrachlorodibenzodioxin[2	1746-01-6				0.000011	10			**0.000011**	**Montane Shrew**	**0.000011**	**Montane Shrew**
INORG	Antimony	SB				95000	780	58	0.83	**58**	**Generic Plant**	**14000**	**Deer Mouse**
INORG	Copper	CU	4800	2800	2200	6700	530	490	14.7	**490**	**Generic Plant**	**2200**	**A. Robin (invert diet)**
INORG	Lead	PB	2100	1700	1600	16000	8400	570	22.3	**570**	**Generic Plant**	**1600**	**A. Robin (invert diet)**
INORG	Mercury (inorganic)	HGI	14	17	23	820	390	64	0.1	**14**	**A. Robin (plant diet)**	**14**	**A. Robin (plant diet)**
INORG	Zinc	ZN	12000	2900	1900	5400	930	810	48.8	**810**	**Generic Plant**	**1900**	**A. Robin (invert diet)**

site area (ha)	2.9

APPENDIX H

POTENTIAL FUTURE CONDITIONS

Bagley Creek: Alternative Five Conceptual Design



Bagley Creek: Existing Conditions