United States
Environmental Protection
Agency

Region 10
1200 Sixth Avenue
Seattle WA 98101

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Or
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EPA

August 4, 1994

Reply to
Attn of: HW-114

Lee Olson
Union Pacific Realty
24422 Avinada de la Carlota
Oakbrook Plaza, Suite 360
Laguna Hills, CA 92653

Dear Mr. Olson:

The U.S. Environmental Protection Agency (EPA), through its contractor, Roy F. Weston, Inc., has completed the non-sampling site investigation (SI) of the METRO/Union Station site. A copy of the report is enclosed.

Based on this SI and other pertinent information, EPA finds it appropriate to refer to state authority for further consideration. Accordingly, EPA does not anticipate further investigation under the Federal Superfund Program. Weston's conclusions, with which EPA concurs, are outlined on the conclusions page of this report.

If you have any questions, I can be reached at (206) 553-2103.

Sincerely,

David Bennett

David Bennett
Site Assessment Manager
Site Evaluation Section

Enclosure

cc: Michael Spencer, Ecology (w/o Enclosure)
Bob Kievit, EPA-WOO (w/o Enclosure)
Mike Gallagher, Ecology-NWRO
Seattle-King County Environmental Health

Site Inspection Report
METRO/Union Station Site
Seattle, Washington

EPA REGION X

Contract No. 68-W9-0046
Work Assignment No. 46-23-0JZZ
Document Control No. 4000-019-012-AAAC
Work Order No. 4000-019-012-4100

July 1994

WESTON
MANAGERS DESIGNERS/CONSULTANTS

SITE INSPECTION REPORT
METRO/UNION STATION SITE
SEATTLE, WASHINGTON

Prepared for

U.S. Environmental Protection Agency
Region X
1200 Sixth Avenue
Seattle, Washington 98101

Document Control No. 4000-019-012-AAAC
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Prepared by

Roy F. Weston, Inc.
700 Fifth Avenue
Suite 5700
Seattle, Washington 98104-5057

ARCS QUALITY ASSURANCE CONCURRENCE

SITE INSPECTION REPORT
METRO/Union Station Site
Seattle, Washington

Project Name:	Site Inspection Report METRO/Union Station Site
Contract Number:	68-W9-0046
Work Assignment Number:	46-23-0JZZ
Responsible Organization:	Roy F. Weston, Inc. 700 Fifth Avenue, Suite 5700 Seattle, Washington 98104

Concurrences:

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Title: Site Manager, Roy F. Weston, Inc.
Signature: _____ Date: 20 July 1994

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Title: Deputy QA Manager, Roy F. Weston, Inc.
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Name: Frank C. Monahan, PE
Title: ARCS Program Manager, Roy F. Weston, Inc.
Signature: _____ Date: 22 July 1994

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SECTION 1

INTRODUCTION

The U.S. Environmental Protection Agency (EPA), Region X Site Assessment Section, under the authority of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986 (SARA) has tasked Roy F. Weston, Inc. (WESTON®) to conduct a Site Inspection (SI) of the METRO/Union Station site in Seattle, Washington.

The METRO/Union Station site is owned by Union Pacific Railroad, and was previously occupied by a coal gasification plant and an iron foundry. The site was identified as a potential hazardous waste site in 1984 when a viscous substance which was reported as diesel oil and hydrocarbons was found in the soil on the northern part of the site during a geotechnical investigation for the METRO Tunnel project. Between 1985 and 1988 the source and extent of contamination was investigated, and in 1988, the site was entered into the Comprehensive, Environmental Response, Compensation, and Liability Information System (CERCLIS). Science Applications International Corporation (SAIC), subsequently, completed a Preliminary Assessment (PA) of the site in April 1989 (SAIC, 1989). The purpose of the PA was to review existing information on the site and surrounding areas to assess the threats, if any, posed to public health and the environment and to determine if further action (an SI) was warranted under CERCLA/SARA. After the PA, EPA decided that further investigation of the METRO/Union Station site would be necessary to more completely evaluate the site using EPA's Hazard Ranking System (HRS). The HRS assesses the relative threat associated with the actual or potential releases of hazardous substances at the site an is the primary method used by EPA to determine a site's eligibility for placement on the National Priorities List (NPL). The NPL identifies the sites at which EPA may conduct remedial response actions.

This document presents a summary of the objectives, activities, and results of the METRO/Union Station SI, which was performed as a nonsampling SI. Included are descriptions of site background information (Section 2), regulatory involvement (Section 3), a summary of pathway considerations (Section 4), and conclusions (Section 5).

SECTION 2

BACKGROUND

2.1 SITE LOCATION

The METRO/Union Station site is located in downtown Seattle, Washington, approximately 0.25 mile northeast of the King Dome. The site is bound by 4th Avenue, 5th Avenue, Jackson Street and Airport Way South (Figure 2-1) and is located in King County in the northwest 1/4 of Section 5, Township 24 North, Range 4 East. The approximate geographical coordinates are 47 degrees 35 minutes 53.3 seconds North latitude and 122 degrees 19 minutes 37 seconds West longitude.

Surrounding the METRO/Union Station site is a commercial and industrial section of the city. Immediately to the east of the site there are a commercial/retail building and a hotel. To the northeast there is a parking lot; to the north a hotel and restaurant. To the west there are the King Street Station and office buildings (Figure 2-2). To the south there is a textile facility and highway access ramps. Elliott Bay, the closest body of water, is located approximately 1/2 mile west of the site. Lake Washington is approximately two miles east of the site.

2.2 SUMMARY OF SITE HISTORY

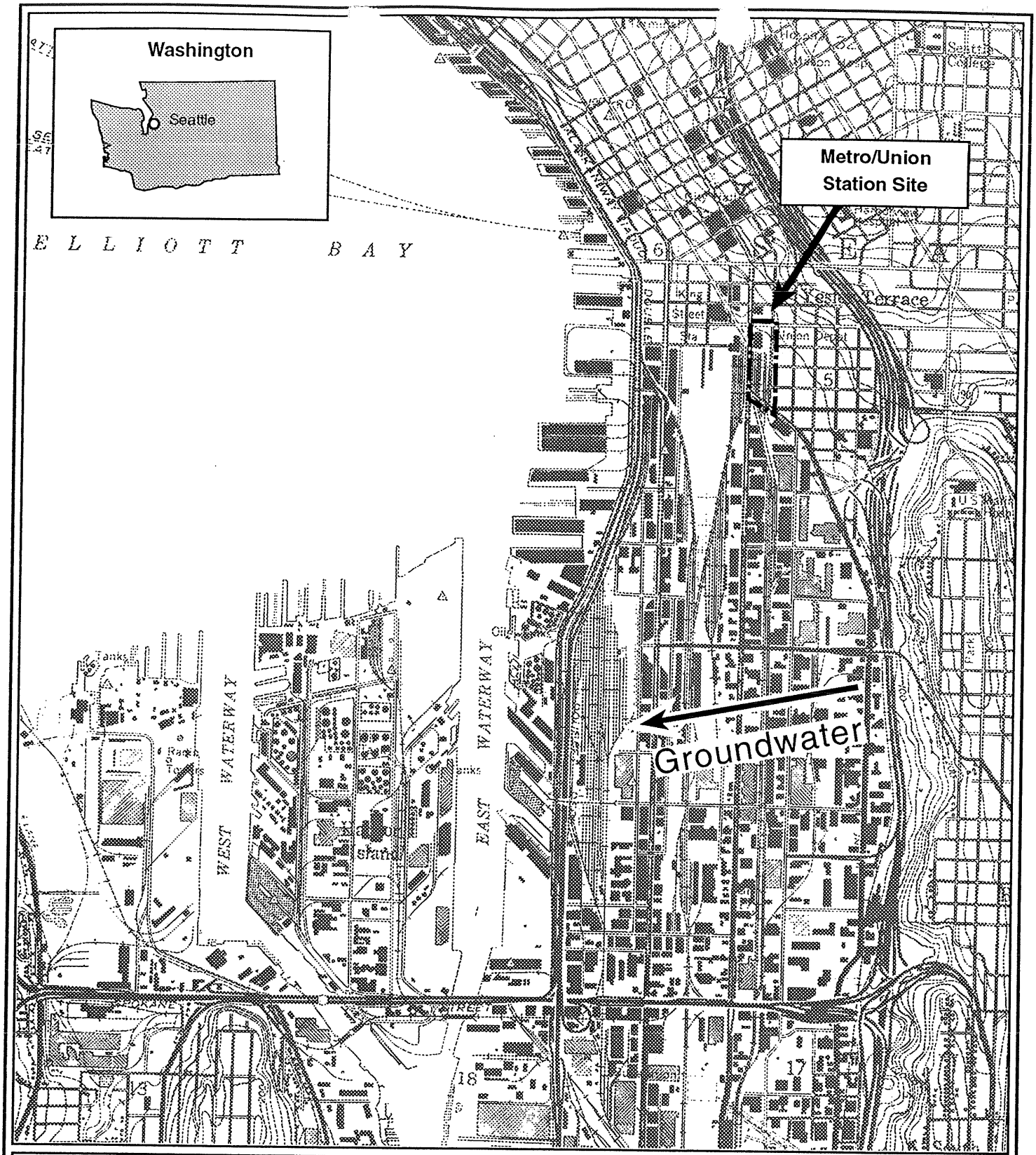
2.2.1 Ownership

The METRO/Union Station site is and has been owned by Union Pacific Railroad since 1907. Union Pacific Realty, a subsidiary of Union Pacific Railroad, based in Irvine, California, manages the site and has been attempting to sell the property (Cornell, 1994a). METRO controls the eastern portion of the site from an easement from Union Pacific Railroad since 1987 (Solberg, 1994) and this portion of the site houses the METRO bus tunnel.

Henry Yesler owned the northern portion of the site and operated a coal gasification facility from 1890 until 1907. Vulcan Ironworks operated on the southern portion of the site from 1900 until 1910 (SAIC, 1989); however, the owner is not known.

2.2.2 A Summary of Historical Site Uses

Three operations including a coal gasification facility, Vulcan Ironworks plant and Union Station have historically been the primary site users; they are discussed below.



N

0 1000 2000

Scale in Feet

Source: USGS 7 1/2' Quadrangle Series— South Seattle, WA (1949)

METRO/Union Station Vicinity Map

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FIGURE
2-1

The coal gasification plant occupied the northern portion of the site and manufactured gas for heating and lighting purposes from coal. The gasification processes produced waste byproducts including PAHs and trace metals (USDC, 1985), that were deposited into the tidal area of Elliott Bay which at the time extended to the western border of the site. The plant was originally built on pile and plank platform, but by 1900 the tideland surrounding the plant had been filled with materials from a local regrading project. The coal gasification facilities ceased operation in 1907 (SAIC, 1989).

The Vulcan Ironworks plant occupied the southern portion of the METRO/Union Station site and manufactured steel and iron for use in heavy machinery engines and freight cars. In 1905, the plant became involved in brass casting. Vulcan Ironworks was relocated in 1910 and railroad tracks for Union Station were constructed in its place (SAIC, 1989).

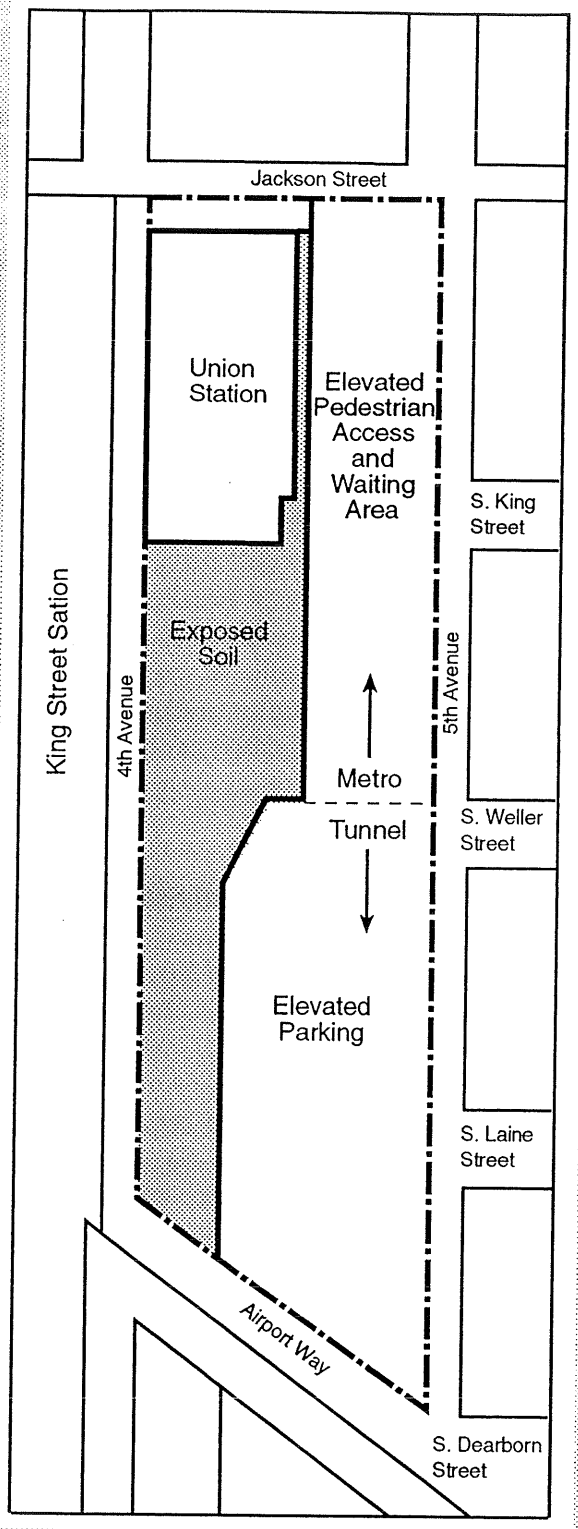
By 1909, The METRO/Union Station site had been filled and leveled with materials from construction of a ship canal from Elliott Bay to Lake Washington during city regrading. Union Station construction was completed in 1914. From 1914 until 1972, the majority of the activity on this site occurred at the Union Station trainyard (Cornell, 1994b). The METRO bus tunnel was built between 1986 and 1990 (Solberg, 1994) and since completion, has been the major on-site activity.

2.3 SUMMARY OF EXISTING SITE CONDITIONS

WESTON conducted a site visit to the METRO/Union Station site on 21 June 1994. Mr. Alan Cornell of Union Pacific Realty joined WESTON on the site tour and answered questions. The following information was obtained.

The METRO tunnel and Union Station buildings cover approximately two-thirds of the on-site soil, (Figure 2-2) including the northern portion of the site where the coal gasification facility was located. Therefore, the METRO Tunnel and Union Station have essentially capped the soil containing the highest concentrations of contamination, eliminating direct exposure to the population.

The METRO bus tunnel extends from Jackson Street to Airport Way South, on the eastern side of the METRO/Union Station site. METRO buses access the tunnel south of the site near Airport Way, and the tunnel extends north under central downtown. The tunnel was constructed primarily of concrete on existing site soil, and the top of the tunnel is even with 5th Avenue. Pedestrian access to the tunnel, a pedestrian sitting area, and a parking lot are located on top of the tunnel at street level, approximately 30 feet above exposed soil in the western portion of the site (Figure 2-2). There appears to be no feasible way for human contact with the existing contaminated soil.



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Not to Scale

Source:
Shannon and Wilson, 1986

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4000-19-12-4100
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METRO/Union Station Site Map

FIGURE
2-2

The Union station building, constructed of brick and concrete, is located in the northwestern portion of the site. The main hall of the station is being rented by a local catering company for storing supplies and by an espresso vender. The remainder of Union Station is unused. Exposed fill extended from the rear of Union Station south to Airport Way and there is an area of exposed fill approximately 8 feet wide between Union Station and the METRO tunnel in the northern section of the site. Access to the exposed fill was restricted by a 10 foot fence topped in barbed wire. There was scattered clothing lying in the fill area, reportedly accessed by trespassers (Cornell, 1994a). There was no evidence of spills or observed releases of contamination to this exposed fill.

SECTION 3

REGULATORY INVOLVEMENT

3.1 SUMMARY

The nature and extent of contamination at the METRO/Union Station site have been investigated from 1985 until present. Soil and groundwater contamination by polycyclic aromatic hydrocarbons (PAHs) and trace metals have been identified on the site (Shannon & Wilson, 1986). The highest contaminant concentrations were found in the northern portion of the site, between 5 and 50 feet below ground surface (bgs), where the coal gasification facility was located. The soil in the northern portion of the site has been capped by construction of Union Station and the METRO bus tunnel.

3.2 REGULATORY HISTORY

In 1984, the first evidence of contamination on the METRO/Union Station site was identified, during a geotechnical investigation (Shannon & Wilson, 1986) as part of the METRO bus tunnel project. Soil borings penetrated a zone between 5 and 36 bgs, which contained diesel oil and a more viscous hydrocarbon substance. Shannon & Wilson brought the possible contamination to the attention of Union Pacific Realty (UPR) (then Upland Industries), submitted soil samples for analysis, and recommended further sampling and analysis of site soil to characterize nature and extent of the contamination.

Subsequently, Hart Crowser was contracted by UPR to confirm the presence of contamination in the soil on the site. They drilled and sampled 12 soil borings and installed 11 groundwater wells (Hart Crowser, 1986a). Analytical results confirmed the presence of PAHs and trace metals. Hart Crowser recommended that further investigation of the site was necessary.

Upon confirmation of site contamination, UPR notified the Washington Department of Ecology (Ecology) on 12 February 1986. A meeting was held between UPR, Hart Crowser and Mr. Gary Brugger of Ecology to discuss the findings of the recent investigation and possible further investigation (Ecology, 1994b). Ecology agreed to continue investigation of the METRO/Union Station site. UPR then authorized Hart Crowser to proceed with more soil and groundwater quality analyses and preliminary hydrogeologic assessment (Hart Crowser, 1986b).

Hart Crowser concluded from their soil investigation that the heaviest concentration of PAHs and trace metals appeared to reside under 5th Avenue, just east of the site. Further, it was likely that this contamination originated from the coal gasification facility that had been

located there. In addition, Hart Crowser indicated that inorganic contamination existed in the soil at the southern end of the site and this contamination may have been related to Vulcan Ironworks.

Analysis of groundwater samples indicated elevated concentrations of PAH compounds and priority pollutant volatile organic compounds (VOCs). In addition, groundwater flow rates, directions and volumes of contaminants being transported onto the site in the groundwater from off-site sources under 5th Avenue were estimated based on the hydrogeological trends observed in these monitoring wells.

A second meeting between UPR, Hart Crowser and Mr. Brugger of Ecology was held upon delivery of the Hart Croswer Soil and Groundwater Quality Report (Hart Crowser, 1986b) on 5 June 1986 (Ecology, 1994b). This meeting ended with four general conclusions, verbally agreed to by Ecology:

- Additional analysis of the on-site soil was not required.
- Contamination was generally migrating onto the site from an off-site source under 5th Avenue and was, therefore, considered a regional concern.
- Proposed on-site development would cap the contamination reducing the amount of infiltration of rainfall, thus constituting a positive remedial action.
- If excavation was undertaken, it would be necessary to conduct additional analysis in the top 6 feet of soil for the purpose of selecting a proper soil disposal location.

METRO was having similar meetings with Ecology at this time to propose construction of a bus tunnel on the eastern portion of the METRO/Union Station site (Ecology, 1994). In 1987, Hart Crowser conducted two additional soil investigations (Hart Crowser, 1987a; 1987b), one in the area north of Jackson street and one in the area south of Airport Way.

In the area north of Jackson Street, analytical results indicated low concentrations of PAHs and trace metals. Based on these results, Hart Crowser reported that the soil would be designated as dangerous waste under both persistence and EP Toxicity standards stated in Chapter 173-303 of WAC.

The soil samples from the area south of Airport Way contained low concentrations of PAHs and some trace metals relative to concentrations detected in the soil north of Airport Way. Hart Crowser reported that this contamination was attributable to the Vulcan Ironworks.

In 1987, UPR, began excavation of soil for the development of the METRO/Union Station site. UPR lead the excavation; however, METRO worked closely with UPR. In a permit

obtained by METRO to dispose of the excavated soil in the Cedar Hills solid waste landfill, the on-site soil was classified as contaminated but not hazardous. There was also construction debris listed on the permit. The permit allowed for 80 cubic yards of the METRO/Union Station site on-site soil to be removed. This amount was not exceeded when excavation ceased in 1989. In the northern portion of the METRO/Union Station site where the highest concentrations of PAHs and trace metals were found, contaminated soil was excavated approximately 80 to 100 feet bgs (Ii, 1994).

In 1989, SAIC conducted a PA of the Union Station site. The PA summarized the site activities and recommended that additional investigation of the site was warranted because the extent of groundwater contamination was not known.

In 1991, a Site Hazard Assessment (SHA) was conducted (SAIC, 1991). Recommendations from the investigation included installation of three groundwater monitoring wells, one upgradient and two downgradient to determine local groundwater flow patterns; analysis of groundwater and sewage flow interaction to determine if the sewer was a conduit for hazardous substances to marine fauna; sampling of the Connecticut Road (S. Royal Brougham Way) combined sewer system at regular intervals as it flows away from the site for PAHs and metals. The Ecology source files did not state if these recommendations were completed.

Most recently, the Washington Department of Health (WDOH) conducted a health investigation of the site in 1993 (WDOH, 1993). The investigation was a preliminary assessment of the potential for a hazardous waste site to affect public health. WDOH concluded that the site did not present a significant hazard to public health.

following description was obtained from the Hart Crowser *Soil and Groundwater Investigation and Preliminary Hydrogeologic Assessment* (Hart Crowser, 1986b).

The upper fill unit is comprised of heterogeneously deposited silty sands and gravels and the general direction of groundwater flow in this unit is from east to west. The hydraulic conductivities in the fill material range from 4×10^{-5} to 2×10^{-3} cm/sec. The upper fill unit and the upper layers of the middle marine deposits unit contain the observed release of contamination to the groundwater.

The middle marine deposits unit is comprised of layers of silty clays, interbedded with sand and gravels. This unit acts as a barrier to the groundwater flow between the upper fill unit and the lower glacial recessional deposits unit. The glacial recessional deposits unit is under artesian conditions and the upward movement of groundwater in this unit also decreases the likelihood of contamination migrating downward.

4.2.1.2 Observed Release

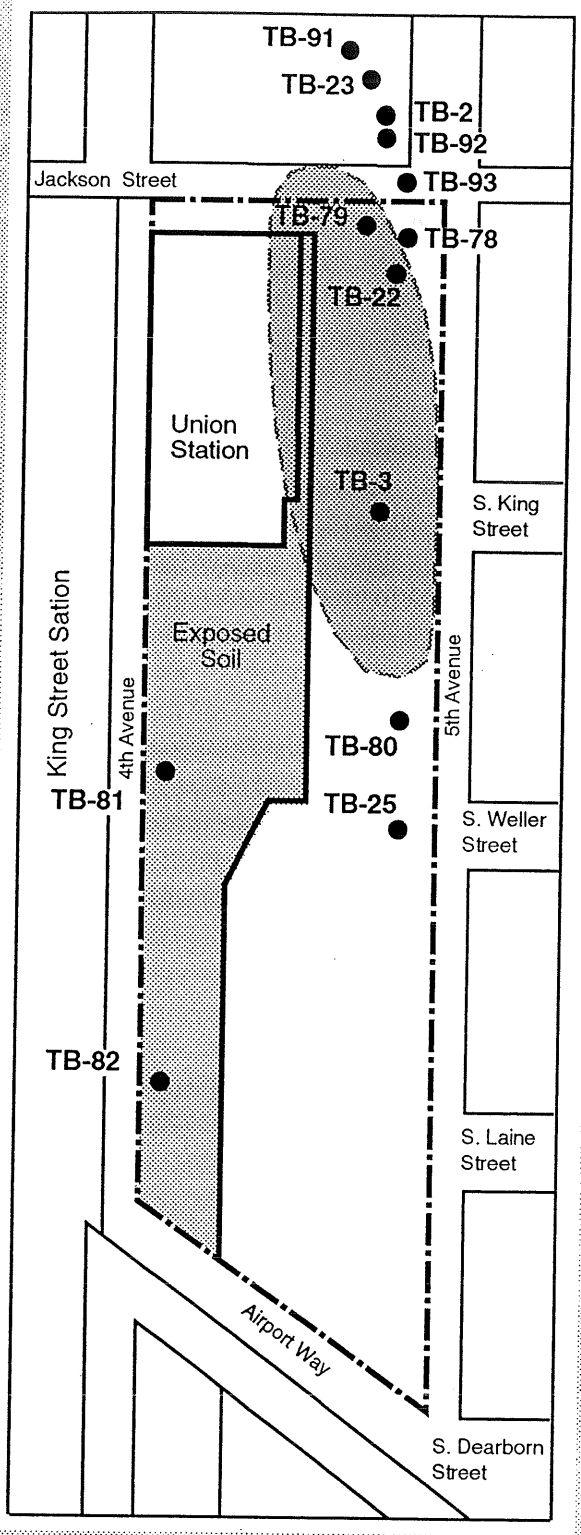
Groundwater data from a hydrogeological investigation (Hart Crowser, 1986b) (Table 5-1) identifies an observed release to groundwater in the upper fill unit. However, there is a lack of targets for the groundwater pathway. The majority of Seattle's public water is from the South Fork of the Tolt River, the Cedar River, and from a well field near the Sea-Tac Airport (WESTON, 1994). In addition, there are no drinking water wells within 5 miles of the site (EPA, 1994).

4.2.2 Surface Water Pathway

The surface water pathway is evaluated based on two migration components: the overland flow component and the groundwater to surface water component. These are discussed below.

4.2.2.1 Overland Flow Pathway

There is minimal potential for environmental, human food chain, or drinking water impacts to the surface water (Elliott Bay) via overland flow for one main reason: rainfall and, hence, surface water will not reach the contamination because the contaminants are in the subsurface. The contaminated on-site soil has been capped by construction of the METRO bus tunnel and Union Station, minimizing contact by surface water. In addition, even if surface water did contact the contamination, surface water runoff form the site is unlikely to reach Elliott Bay, located approximately 0.5 mile to the west because of physical barriers. The surface water flows off-site toward the west, but the western side of the site is bordered by railroad tracks that would hinder most surface water flow. Furthermore, beyond the tracks to the west are more buildings and physical barriers.



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Not to Scale

Source:
Shannon and Wilson, 1986;
Hart Crowser, 1886b

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Selected Soil Borings and Significant PAH Contamination

FIGURE
4-1

Table 4-1—Chemical Analysis of Selected Soil and Water Samples
Union Station, Seattle, Washington—Hart Crowser Soil and Groundwater Quality Analyses (Hart Crowser, 1986b) *(Continued)*

Location ID Media Depth (ft bgs)	TB-3 Soil (mg/kg) 18–19.5	TB-22 Soil (mg/kg) 12.5	TB-25 Soil (mg/kg) 18–19	TB-78 Soil (mg/kg) 19–20.5	TB-78 Soil (mg/kg) 21.5–23	TB-79 Soil (mg/kg) 17.5–19	TB-78 Water (µ/L) 5–25	TB-80 Water (µ/L) 15–25	TB-91 Soil (mg/kg) 2.5–4.0	TB-92 Soil (mg/kg) 2.5–4.0	TB-93 Soil (mg/kg) 2.5–4.0
Others											
Bis(2-ethylhexyl)phthalate				.13	ND	ND	ND	ND	ND	0.11	ND
Di-n-butylphthalate				.090	10.0	ND	ND	ND	ND	ND	ND
Di-n-octylphthalate									ND	ND	ND
Dibenzofuran				2.7	4.0	22.0	120.00	ND	ND	ND	ND
2-Methylnaphthalene				4.0	9.0	190.0	600.0	ND	0.12	ND	ND
Phenol				0.5	0.5	ND	16.0	29.0			
Diesel	7,200	145,000		ND	ND				7,200	145,000	
Acetone				ND	ND	18.0	ND	MD		0.03	0.28
Ethylbenzene				ND	ND	18.0	ND	ND		ND	ND
Methylene Chloride				ND	ND	8.4	ND	ND		ND	ND
Toluene				ND	ND	5.0	ND	ND		ND	ND
Total Xylenes				ND	ND	30.0	ND	ND		ND	ND

ND = Not Detected.
Blanks = Not analyzed for that analyte.

Table 4-1—Chemical Analysis of Selected Soil and Water Samples
Union Station, Seattle, Washington—Hart Crowser Soil and Groundwater Quality Analyses (Hart Crowser, 1986b) *(Continued)*

Location ID Media Depth (ft bgs)	TB-3 Soil (mg/kg) 18–19.5	TB-22 Soil (mg/kg) 12.5	TB-25 Soil (mg/kg) 18–19	TB-78 Soil (mg/kg) 19–20.5	TB-78 Soil (mg/kg) 21.5–23	TB-79 Soil (mg/kg) 17.5–19	TB-78 Water (µ/L) 5–25	TB-80 Water (µ/L) 15–25	TB-91 Soil (mg/kg) 2.5–4.0	TB-92 Soil (mg/kg) 2.5–4.0	TB-93 Soil (mg/kg) 2.5–4.0
Naphthalene	1,510	62	ND	7.3	5.0	360.0	2,300.0	14.0	0.21	ND	ND
Phenanthrene	416	30	ND	14.0	20.0	190.0	600.0	ND	0.58	0.14	ND
Pyrene	752	74	2	4.1	11.0	55.0	270.0	ND	0.71	0.22	0.052
Metals											
Arsenic				5.4	5.4	9.7	6.0	ND		11.0	3.8
Beryllium				0.4	0.4	0.8	ND	ND		2.2	0.5
Cadmium				0.7	0.7	0.7	3.0	3.0		0.6	ND
Chromium				21.0	21.0	49.0	11.0	26.0		17.0	37.0
Copper				16.0	16.0	66.0	3.0	16.0		67.0	16.0
Lead				1.8	1.8	7.1	60.0	69.0		100.0	ND
Nickel				26.0	26.0	54.0	11.0	25.0		24.0	40.0
Selenium				1.5	1.5	1.0				ND	ND
Silver				0.3	0.3	1.2	3.0	4.0		ND	ND
Zinc				39.0	39.0	88.0	24.0	42.0		120.0	56.0
Cyanide				0.6	0.6	0.8	37.0	5.0		ND	ND

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Location ID Media Depth (ft bgs)	TB-3 Soil (mg/kg) 18–19.5	TB-22 Soil (mg/kg) 12.5	TB-25 Soil (mg/kg) 18–19	TB-78 Soil (mg/kg) 19–20.5	TB-78 Soil (mg/kg) 21.5–23	TB-79 Soil (mg/kg) 17.5–19	TB-78 Water (µ/L) 5–25	TB-80 Water (µ/L) 15–25	TB-91 Soil (mg/kg) 2.5–4.0	TB-92 Soil (mg/kg) 2.5–4.0	TB-93 Soil (mg/kg) 2.5–4.0
Chemical											
PAHs											
Acenaphthene	ND	68	ND	4.4	9.0	77.0	370.0	ND	ND	ND	ND
Acenaphthylene	ND	33	ND	0.7	ND	10.0	130.0	ND	0.23	ND	ND
Anthracene	93	9	ND	5.0	8.0	45.0	240.0	ND	0.18	ND	ND
Benzo(a)anthracene	104	16	2	1.7	5.0	26.0	140.0	ND	0.38	0.20	0.065
Benzo(a)pyrene	17	5	ND	2.4	ND	38.0	170.0	ND	0.61	0.24	0.220
Benzo(b)fluoranthene	35	3	ND	2.5	ND	45.0			1.00	0.18	
Benzo(k)fluoranthene	29	3	ND	2.2	ND	15.0	120.0	ND		0.20	0.160
Benzo(ghi)perylene	ND	ND	ND	0.59	ND	ND	ND	ND	0.43	0.35	ND
Chrysene				1.7	4.0	26.0	160.0	ND	0.60	0.22	0.060
Dibenzo(ah)anthracene	ND	ND	ND	0.25	ND	ND	ND	ND	ND	0.26	0.063
Fluorene	384	22	1	3.8	8.0	48.0	200.0	ND	ND	ND	ND
Fluoranthene	516	5	2	7.3	12.0	87.0	310.0	ND	0.58	0.17	0.079
Indeno(1,2,3-cd)pyrene	ND	ND	ND	0.67	ND	ND	ND	ND	0.33	0.32	0.150

SECTION 4

SUMMARY OF PATHWAY CONSIDERATIONS

This section presents a summary of the potential threats associated with each exposure pathway at the Union Station site.

4.1 WASTE TYPE AND CHARACTERISTICS

The METRO/Union Station site contains one source: contaminated soil. The contaminated soil concentrated in the northern and southern areas of the site is associated with coal gasification and ironworking activities, respectively. The highest levels of PAH and trace metal contamination appear to lie just east of the site under 5th Avenue (Hart Crowser, 1986b). Table 4-1 provides concentrations for these contaminants.

The contaminated soil covers an area approximately 300 by 150 feet or 45,000 square feet (Figure 4-1). Based on soil data from borings, contamination has been found between 5 and 36 bgs (SAIC, 1989). It is covered by at least 5 feet of fill and capped by concrete and pavement from the construction of the METRO tunnel and Union Station.

There are no groundwater wells on site at the present time, however, monitoring wells have been on site during previous investigations. The release of PAHs and trace metals to the groundwater has been documented in the results of groundwater analyses from these wells (Hart Crowser, 1986b).

4.2 PATHWAYS OF CONCERN

4.2.1 Groundwater Pathway

The groundwater pathway was evaluated based upon an observed release of hazardous substances, as indicated by historical analytical data.

4.2.1.1 Site Hydrogeology

The METRO/Union Station site is located in a tidal area which has been filled since the late 1800s with approximately 8 to 10 feet of material. The hydrogeology in this area is very complicated due to the past filling. However, three distinct hydrogeologic units have been identified: an upper fill unit, a marine deposits unit, and a glacial recessional unit. The

4.2.2.2 Groundwater to Surface Water Pathway

This pathway is evaluated because the surface water potentially affected by the site is within one mile of the source (which has a containment factor greater than one), there is no aquifer discontinuity between the source and the surface water, and the uppermost aquifer is above the bottom of the surface water. It is unlikely, however, that the contribution of contamination in this pathway from this site poses a threat to the surface water due to the absence of pathways and minimal targets.

The three types of threats for this component are drinking water threat, human food chain threat, and environmental threat. There is no drinking water threat because there are no drinking water intakes within 15 miles of the probable point of entry (e.g., the Elliott Bay shoreline). In addition, the hydrogeology is complicated due to past filling from a city regrading project. The area immediately west of the site was once tidelands and has been extensively filled over the years. Therefore, the flow pattern to Elliott Bay is difficult to determine.

Furthermore, for all three of the above threats, attribution would be difficult. Numerous industrial properties are potentially releasing contaminants into Elliott Bay and the results of a groundwater investigation of the METRO/Union Station site (Hart Crowser, 1986b) indicated that contamination is being transported onto the site via groundwater from an upgradient source located under 5th Avenue.

4.2.3 Air Pathway

There appears to be minimal potential for exposure to contaminants through the air pathway because of the improbability of soil being resuspended. The contaminated soil has been covered by more the 5 feet of fill and capped by concrete and pavement from the construction of the METRO bus tunnel and Union Station. In addition, there are fewer than 10 workers on the site.

4.2.4 Soil Exposure Pathway

The soil exposure pathway is evaluated based on two threats: resident population and nearby population threats. These are discussed below.

4.2.4.1 Resident Population

The resident population threat is evaluated for this site because the area of observed contamination is within a workplace property boundary and within 200 feet of a workplace area.

There are three reasons, however, that the potential exposure to contaminated soil is minimal. First there are only a few (i.e., less than ten) workers on the site. Second, the most contaminated soil has been covered by fill and capped by construction of the METRO tunnel and Union Station. Therefore, workers who access the site will not be exposed to the contaminated soil. Third, the only exposed soil is noncontaminated fill material located to the south of Union Station, and this soil is enclosed in a 10-foot fence topped with barbed wire. There was evidence of trespassers accessing this area but there was no evidence of people accessing the subsurface soil.

4.2.4.2 Nearby Population Threats

The nearby population threat is evaluated for this site because there are individuals living within a one-mile travel distance of the area of observed contamination. However, the likelihood of the nearby population coming into contact with the contaminated soil is low due to the capping of the contaminated soil and the fence which limits accessibility to the noncontaminated soil on-site.

4.3 SIGNIFICANT FACTORS

The significant factors for the METRO/Union Station site are as follows:

- There is groundwater contamination due to historical percolation of surface water through the contaminated soil to groundwater. However, groundwater is not used for domestic purposes within four miles of the site and attribution would be difficult due to the other industrial properties in the area which may be releasing contaminants to the groundwater.

- Surface water is unable to reach the on-site subsurface contamination because the site is mostly capped. In addition, surface water runoff occurs from the site to the west where there is no direct surface water runoff path to a surface water body such as a stream or ditch. In addition, there are many barriers including railroad tracks and buildings that obstruct the surface water from reaching the closest surface water body.

- There is minimal potential for air exposure because there are very few operations that would resuspend contaminated soil particles, the contaminated soil has been covered by fill, pavement and/or cement, and there are few workers on the site.

- There is minimal soil exposure potential due to the capping of two-thirds of the site by construction of the METRO tunnel and Union Station and a fence restricting access to the remainder of the site. In addition, the few on-site workers do not come in contact with the exposed fill on the eastern portion of the site.

SECTION 5

CONCLUSIONS

No further actions under the CERCLA program are recommended because the potential threat to human health and the environmental from the METRO/Union Station site are minimal. However, should further development of the METRO/Union Station site occur, additional actions are recommended under the authority of another agency. These actions may include soil and groundwater sampling, removal of contaminated soil, and/or recapping of the contaminated soil to ensure limited exposure to the existing contamination.

SECTION 6

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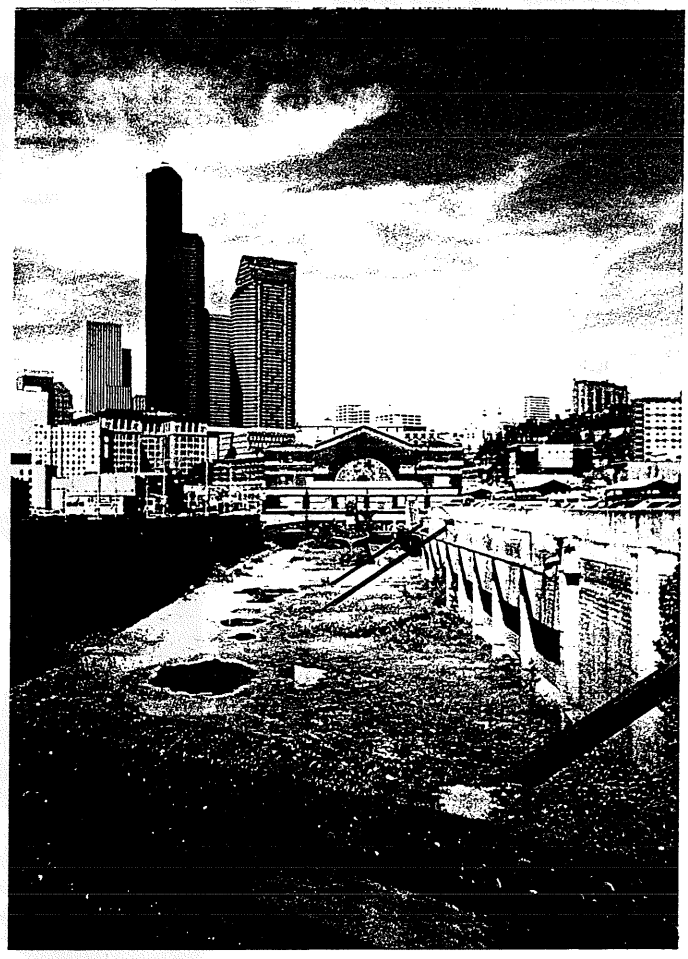
Aerial photo of the METRO/Union Station site, facing south

METRO/Union Station
WAD988466371
21June1994
Photographer: K. Ritenburg



Exposed fill behind Union Station, facing north, METRO tunnel to the right

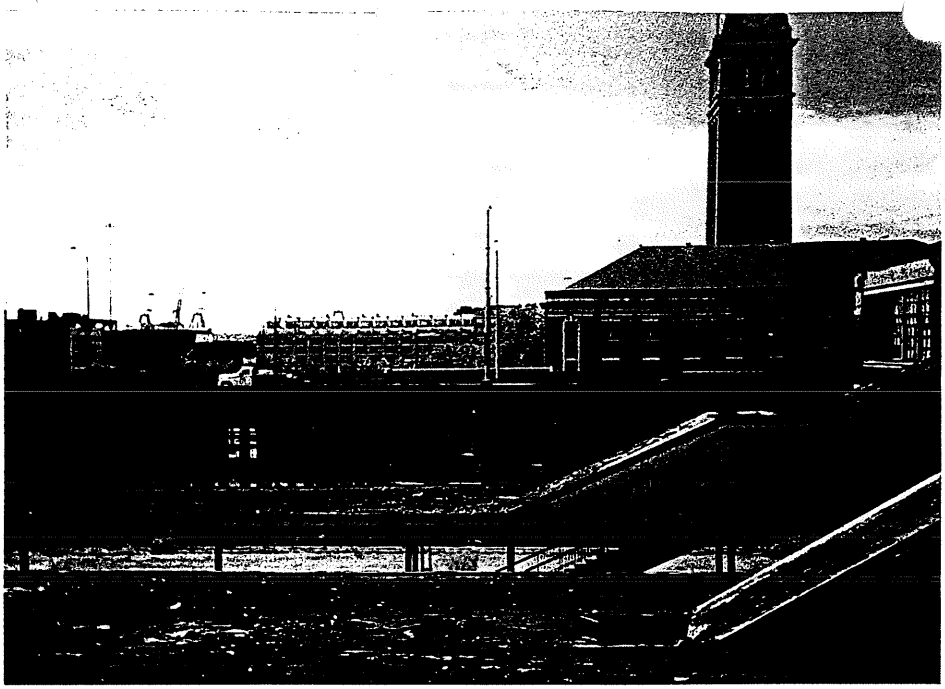
METRO/Union Station
WAD988466371
21June1994
Photographer: K. Ritenburg

Union Station and METRO Tunnel pedestrian access at Jackson Street, facing south

METRO/Union Station
WAD988466371
21June1994
Photographer: K. Ritenburg

Parking area on top of the METRO Tunnel, facing south, towards Airport Way

METRO/Union Station
WAD988466371
21June1994
Photographer: K. Ritenburg

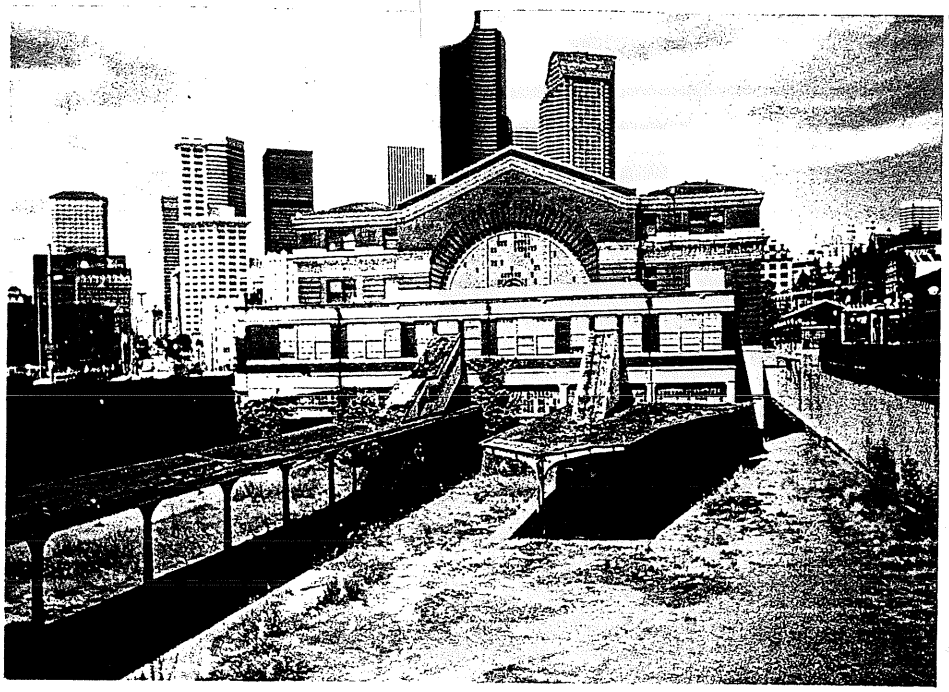


Fourth Avenue boundary and King Street Station; photo taken standing on METRO tunnel, facing west

METRO/Union Station
WAD988466371
21June1994
Photographer: K. Ritenburg

Site fence, barbed wire, and railroad tracks of King Street Station , facing west

METRO/Union Station
WAD988466371
21June1994
Photographer: K. Ritenburg

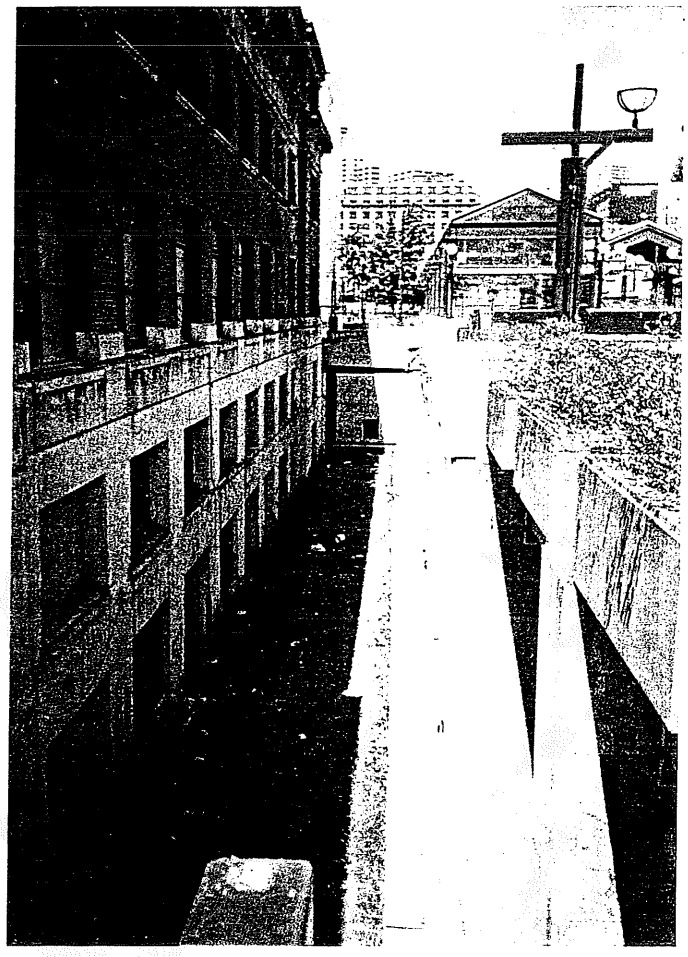


Exposed fill material behind Union Station, facing north;
METRO tunnel to the right

METRO/Union Station
WAD988466371
21June1994
Photographer: K. Ritenburg

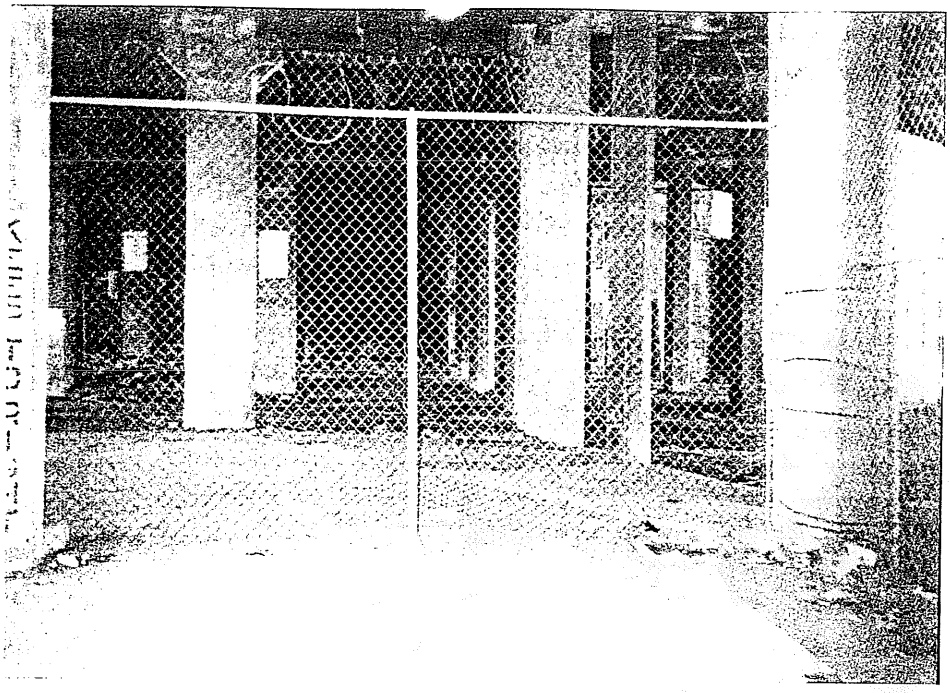
Area below Union Station, facing southwest

METRO/Union Station
WAD988466371
21June1994
Photographer: K. Ritenburg



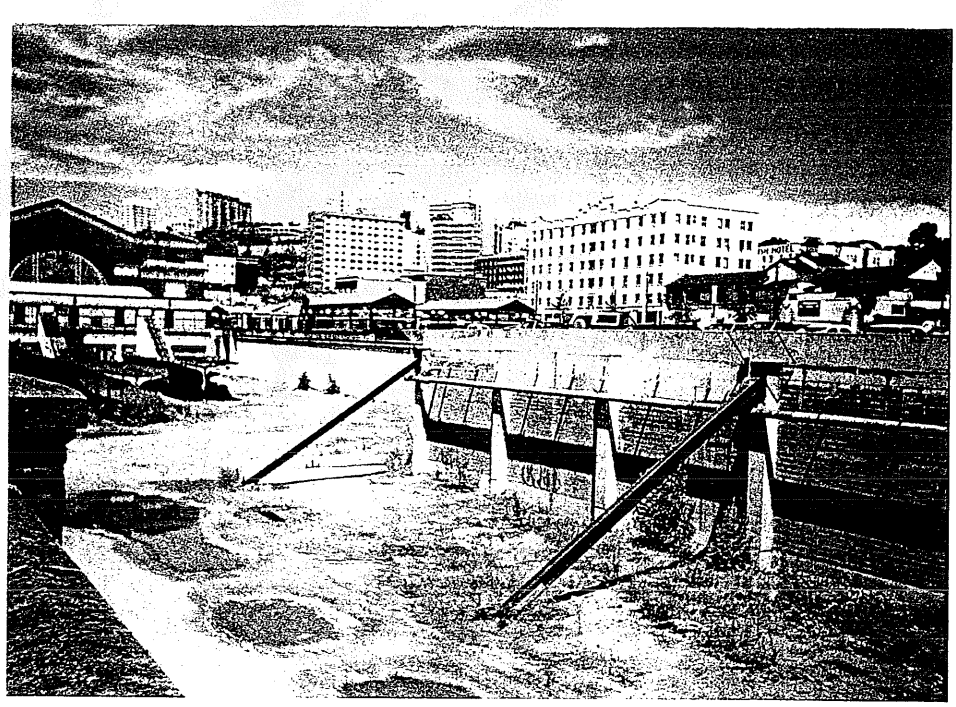
Area of exposed fill between Union Station, and METRO bus tunnel, facing north, towards Jackson Street

METRO/Union Station
WAD988466371
21June1994
Photographer: K. Ritenburg



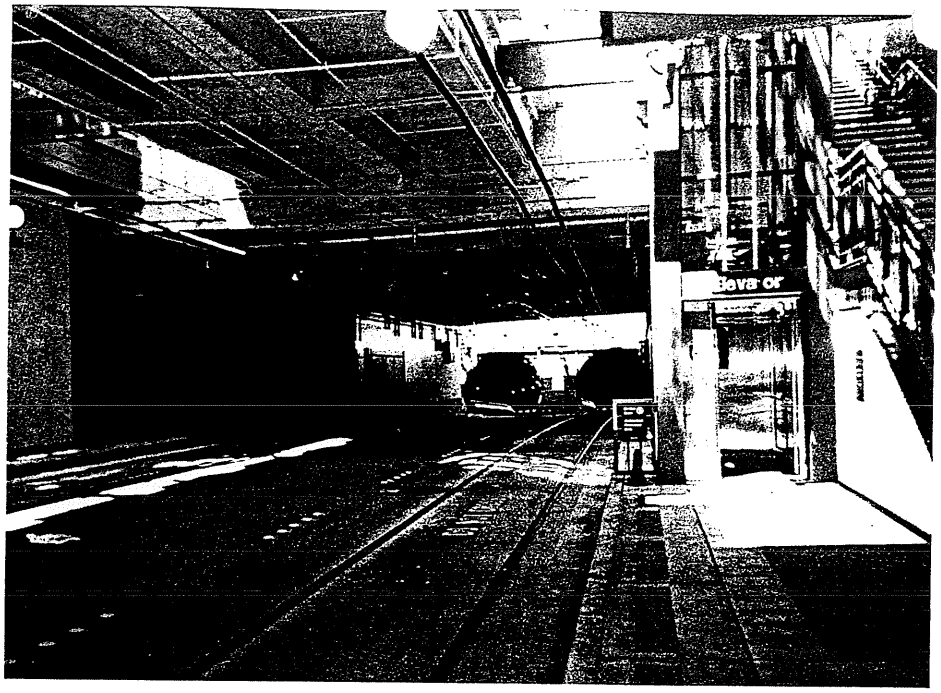
Fence at southern boundary, under Airport Way, facing south; notice spot for possible trespass

METRO/Union Station
WAD988466371
21June1994
Photographer: K. Ritenburg



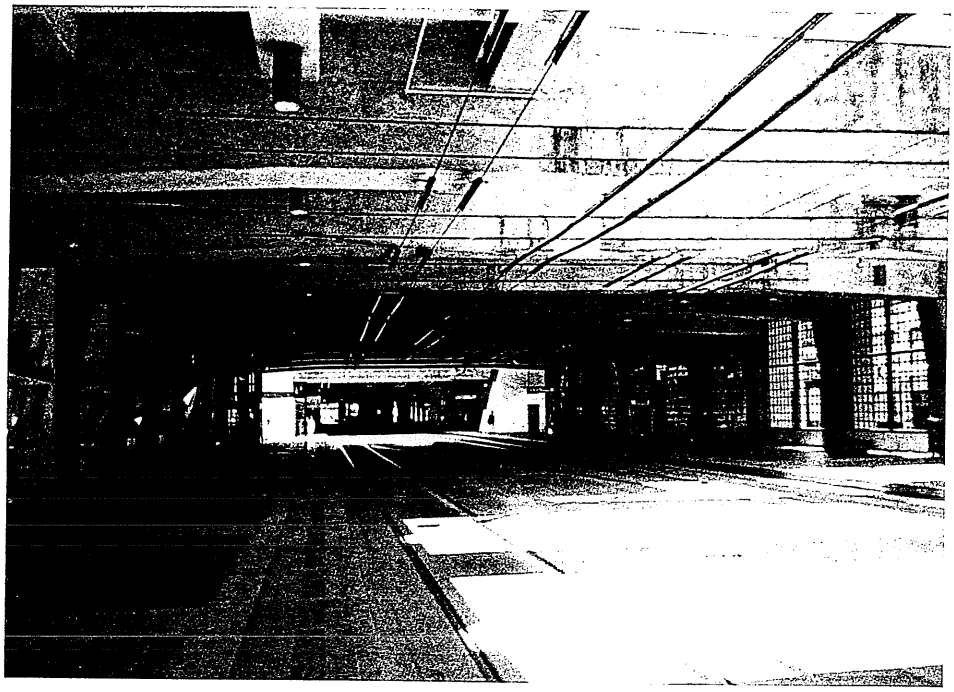
Exposed fill material, METRO tunnel and back of Union Station, seen from Fourth Avenue, facing northwest

METRO/Union Station
WAD988466371
21June1994
Photographer: K. Ritenburg



Inside the METRO tunnel, facing north, towards Jackson Street

METRO/Union Station
WAD988466371
21June1994
Photographer: K. Ritenburg



Inside the METRO tunnel, facing south, towards Airport Way

METRO/Union Station
WAD988466371
21June1994
Photographer: K. Ritenburg

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
Northwest Regional Office, 3190 - 160th Ave S.E. • Bellevue, Washington 98008-5452 • (206) 649-7000

August 4, 1994

Union Pacific Realty Company
505 Washington Avenue
Suite 17
Kent, WA 98032

Dear Sir or Madam:

Re: Re-ranking of Union Station

This is to inform you that the Department of Ecology (Ecology) has completed its revision of the Washington Ranking Method (WARM) ranking matrix, as proposed in the March 8, 1994 Special Issue of the Site Register. Those hazardous sites where there is actual, or a high potential for, drinking water contamination will receive a higher WARM ranking.

This revision has been done in response to legislative direction that Ecology give higher priority to actual/potential drinking water contamination. The WARM, as previously used, did not give the highest rankings to sites where groundwater was the only affected pathway. However, these sites have been noted on Ecology's Hazardous Sites List as having groundwater as the only affected pathway, and that Ecology could choose to give them higher priority where drinking water was affected.

As a result of this matrix revision, your site, previously ranked 5, will now rank a 3. Changes in rankings due to this revision will be published in the August 23, 1994 Special Issue of the Site Register.

What does this new ranking mean for you?

- There will be no effect if remedial action (cleanup) is already underway at your site. The new ranking will better reflect the priority which Ecology has given this site.

- For those sites currently awaiting cleanup, an increase in site ranking will normally result in the site receiving higher priority from Ecology in terms of initiating remedial action.

What does an increase in Ecology's priority mean for you?

- Ecology has been directed by the Legislature to ensure that those sites currently being worked on are of the highest priority in terms of all sites known by the department. Priority for initiating cleanup is set by the WARM ranking, along with consideration of many other site-specific factors.

- An increase in your site's priority normally will mean that it has moved up the list of those sites awaiting cleanup, and that it will receive increased attention from the department in seeing that this cleanup does occur.

- Ecology prefers, and encourages, cleanups initiated by those owners/operators responsible for the contamination. This can be accomplished through cleanups totally independent of Ecology approval/oversight (independent cleanups), or through formal negotiated agreements, with Ecology oversight, such as consent decrees or agreed orders.

- Where cleanup actions cannot be achieved expeditiously through the above, an Ecology-initiated administrative order (enforcement order) will be issued, requiring cleanup activities by the responsible party without a negotiated agreement.

Please call me at (206) 649-7054 if you have any questions about the above described options for initiating cleanup of you site. Please call Michael Spence at (206) 407-7195 if you have any questions/comments about your site ranking change.

Sincerely,

Michael Gallagher

Michael Gallagher,
NWRO Section Manager
Toxics Cleanup Program

MS:mg:lp

SIS update 10/9/95 LS

DEPART[illegible]NT OF ECOLOGY - TOXICS CLEANUP [illegible]GRAM
SIS DATA ENTRY FORM (PART 1)

SITE ID INFORMATION:

TCP ID: _-___-_____-___ SITE NAME: Metro / Union Station

SITE MASTER DESCRIPTION INFORMATION:

REGION: 10

COUNTY: __ _____

SITE #: _____

SUB-SITE #: ___

STATUTE: 2

ECOLOGY STATUS: 2

INDEPENDENT STATUS: 2

LOCATION ADDRESS: betw. 4th Ave, 5th Ave. Jackson St. & Airport Way S.

CLOSEST CITY: Seattle

ZIP CODE: _____-____

WARM BIN #: ___

TAX PARCEL #: _____

SITE MANAGER: ___ _____

RESPONSIBLE UNIT: ___ _____

DATA ENTRY DATE: __/__/____

UPDATED DATE: __/__/____

TOWNSHIP: ___

RANGE: ___

SECTION: ____

LEGISLATIVE DISTRICT: __

CONGRESSIONAL DISTRICT: __

DEGREES MINUTES SECONDS

ERTS ID: _____

LUST ID: ____

EPA ID: WAD_____

UBI ID: _____

AFRS PROJECT CODE: ____

LONGITUDE: ___ __ __.__

LATITUDE: __ __ __.__

METHOD ___

UBAT SITE: ___ PROGRAM PLAN: ___

NFA CODE: ___

SITE COMMENTS: EPA defers site to the state. former coal gasification site, former ironworks, former train station. Partially remediated - fill & concrete cap.

AFFECTED MEDIA & CONTAMINANTS INFO:

MEDIA	STATUS	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	#14	#15	#16	#17	DW TYPE
1 Groundwater		C		C	C			S	C	C		C							
2 Surface Water																			
3 Air																			
4 Soil		C		C	C			C	S	S		C							
5 Sediment																			
6 Drinking Water																			

* Explanation of codes on reverse side

Revised: June, 1993

DEPARTMENT OF ECOLOGY - TOXICS CLEANUP PROGRAM
SIS DATA ENTRY FORM (PART 2)

TCP ID: _____ SITE NAME: Metro / Union Station

SITE ADDRESSES:

	ADDRESS TYPE	OWNER TYPE	OPERATOR TYPE	ORGANIZATION / CONTACT PERSON / TELEPHONE	ADDRESS LINE 1 / ADDRESS LINE 2 / CITY	STATE	ZIP CODE	COUNTRY	BEGIN DATE	END DATE
1.										
2.										
3.										
4.										

ALTERNATE SITE NAMES:	SIC CODES:	WASTE MGMT. PRACTICE(S):
	coal gasification	
	iron works	
	train station	

KEY:

ADDRESS TYPE CODES
1 = Current Owner
2 = Current Operator
3 = Current Generator
4 = Current Transporter
5 = Former Owner
6 = Former Operator
7 = Former Generator
8 = Former Transporter
9 = Attorney
10 = Contractor

OWNER/OPERATOR TYPE CODES
1 = Private
2 = Municipal
3 = County
4 = Federal
5 = State
6 = Tribal
7 = Mixed
8 = Other
9 = Unknown
10 = Public-Owned (Bankruptcy)
11 = Fin. Inst. Owned (Bankruptcy)

WASTE MANAGEMENT PRACTICE CODES:
1 = Drug Lab
2 = Drum
3 = Impoundment
4 = Improper Handling
5 = Landfill
6 = Land Application
7 = Pesticide Application
8 = Pesticide Disposal
9 = Spill
10 = Storm Drain
11 = Tank

Revised: June, 1993

ROY F. WESTON, INC.
SUITE 5700
700 FIFTH AVENUE
SEATTLE, WASHINGTON 98104-5057
206-521-7600 • FAX: 206-521-7601

9 June 1994

Mr. Lee Olson
Union Pacific Reality
24422 Avinada de la Carlota
Oakbrook Plaza, Suite 360
Laguna Hills, CA 92653

WO 4000-19-12-4020
DCN 4000-19-12-AAAB

Subject: Union Station
WAD 988466371
EPA Contract No. 68-W9-0046
Work Assignment No. 46-23-0JZZ

Dear Mr. Olson:

Please disregard the previous letter confirming my visit to your property.

Per my conversation with you on 6 June 1994, this letter confirms my visit to the Union Station property located between 4th and 5th Avenues east of the Kingdome, Seattle, Washington, scheduled for 21 June 1994 at 1:00 PM. The purpose of the visit will be to conduct a non-sampling inspection. In addition, you are requested to provide copies of sampling or monitoring information related to this site.

The sampling inspection will be performed by Roy F. Weston, Inc. (WESTON®). WESTON is an authorized contractor of the U.S. Environmental Protection Agency (EPA) (Contract No. 68-W9-0046), and is acting as field investigators for the EPA. The investigators may be accompanied by representatives from EPA or Washington Department of Environmental Ecology (DOE).

Under Section 104 (e) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. 960(e), EPA has authority to gain access to and request information from sites where any hazardous substances or pollutants or contaminants may have been: 1) released or are threatened to be released, or 2) generated, stored, treated, disposed of, received, or transported from the site. If access to the site is not granted or information is not provided, EPA has the authority to issue a compliance order to gain access or obtain information and seek civil penalties of up to $25,000 per day for each day of noncompliance.

Your property will be inspected to determine the impact or potential impact of any hazardous substances which have been, are, or may be released to the environment at or from the landfill, or may have migrated to the area from some other facility. During the visit, the field investigators will perform the following:

- Meet the property owner(s) or representative(s).
- Interview the property owner(s) or representative(s) to confirm existing information (i.e., address, total area, etc.).
- Perform a site walk-through and visual inspection with the property owner(s) or representative(s).
- Take photographs of the area.
- Collect all pertinent information including manifests, engineering plans, site maps, sampling results, etc., from the property owner(s) or representative(s).

The inspection findings will be documented in a report which will provide a basis for EPA to determine if any further action is appropriate at the site. The completed report will be made available to you by EPA.

You may assert a claim of confidentiality for any information entitled to protection under 40 C.F.R., Part 2, Subpart B. All confidential material must be separately submitted, marked "confidential," and include the basis of your claim. EPA will treat such information as set forth in the cited subpart.

If you have any questions regarding our visit, please contact me at (206) 521-7600. Please contact Dave Bennett (206) 553-2103 at the EPA if you have any questions regarding the purpose of this inspection.

Sincerely,

ROY F. WESTON, INC.

Kata Ritenburg

Kata Ritenburg
Environmental Scientist

1912AAAB.DOC
KR/rh
cc: J. LaBaw, EPA Region X, Seattle, Washington
D. Bennett, EPA Region X, Seattle, Washington
M. Gallagher, DOE, Bellevue, Washington
PMO file
Chron file

Gail Mary
FYI + then to
Central
files
Mike G.

RECEIVED
JUN - 8 1994
DEPT. OF ECOLOGY

ROY F. WESTON, INC.
SUITE 5700
700 FIFTH AVENUE
SEATTLE, WASHINGTON 98104-5057
206-521-7600 • FAX: 206-521-7601

6 June 1994

Mr. Lee Olson
Union Pacific Reality
24422 Avinada de la Carlota
Oakbrook Plaza, Suite 360
Laguna Hills, CA 92653

WO 4000-19-12-4040
DCN 4000-19-12-AAAA

Subject: Union Station
WAD 988466371
EPA Contract No. 68-W9-0046
Work Assignment No. 46-23-0JZZ

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Sincerely,

ROY F. WESTON, INC.

Kata Ritenburg

Kata Ritenburg
Environmental Scientist

1912AAAA.DOC
KR/pln
cc: J. LaBaw, EPA Region X, Seattle, Washington
D. Bennett, EPA Region X, Seattle, Washington
M. Gallagher, DOE, Bellevue, Washington
PMO file
Chron file