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ENVIRONMENTAL CLEANUP SITE INFORMATION
SITE SUMMARY REPORT

August 31, 2000 10:08 am

SITE ID: 2363

SITE NAME: Crawford Street Corporation

CERCLIS NO:

ALIASES: Columbia Forge & Machine Works
Lampros Steel - 8524 N Crawford
Portland Harbor Site Discovery
TLS Steel - 8514 N Crawford

ADDRESS: 8424 N Crawford St Portland 97203

COUNTY: MULTNOMAH

REGION: NWR

INVG STATUS: SUS

NPL SITE: N

ORPHAN SITE: N

STUDY AREA: N

PROPERTY:

TWNSHP/RANGE/SECT: 1N,1W,12

TAX LOTS: 1,3,4,5,6

LATITUDE: 45 deg.35'5"

LONGITUDE: 122 deg.45'18"

SITE SIZE: Approx 14.8 acres

STUDY AREAS:

STUDY ID	STUDY NAME	INVG STATUS
2068	Portland Harbor Sediments	XCN
1544	Lower Willamette River Basin Study Area (LWRBSA)	XCN
2340	V.A.- Surface Waters, WQ-Limited for Toxics	XCN
2339	V.A.- Designated National Estuaries	XCN
2344	V.A.- High-Poverty Census Tracts	XCN

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1315609

FACILITIES:

NAME: Columbia Forge & Machine Works Inc.

YEARS OF OPERATION: 1971 - Current

SIC CODES: 3462

OPERATING STATUS: Active

PERMITS:

PERMIT NO:	PERMIT TYPE	ISSUED BY	COMMENTS
ORD009022104	HW Generator (CEG)	DEQ/RCRA	Columbia Forge & Machine Works
7610	UST	DEQ/UST	Crawford Street Corp.
7591	UST	DEQ/UST	Columbia Forge & Machine Works
	NPDES	DEQ/WQ	Issued 10/7/92, terminated 10/

CONTAMINATION INFORMATION:

Weston sampling results from the Portland Harbor Sediment Study revealed dibutylphthalates, total organotins, mercury, PAHs, lead, and arsenic in river sediments adjacent to the site.

SUBSTANCE CONTAMINATION

SUBSTANCE	MEDIA CONTAMINATED	CONCENTRATION LEVEL	EVIDENCE	OBSERV. DATE
DI-n-BUTYL PHTHALATE	Sediment	34 ppb	Laboratory Data	01JUN1997
LEAD	Sediment	36 ppm	Laboratory Data	01JUN1997
MERCURY	Sediment	0.14 ppm	Laboratory Data	01JUN1997
POLYAROMATIC HYDROCARBONS (PA	Sediment	LPAHs - 873 ppb	Laboratory Data	01JUN1997
	Sediment	HPAHs - 4,448 ppb	Laboratory Data	01JUN1997
TRIBUTYLTIN	Sediment	Organotins - 773 ppb	Laboratory Data	01JUN1997

MEDIA CONTAMINATION COMMENTS:

Willamette River sediments.

STATUS OF INVESTIGATIVE OR REMEDIAL ACTION:

(6/8/99 JMW/SAP) Based on initial sampling results from a river sediment quality study, the Crawford Street Corp/Columbia Forge & Machine Works property has been identified as a potential source of contamination to the Portland Harbor. A Site Assessment Review Notice was sent on March 2, 1999. Response from Columbia Forge & Machine Works was received April 5, 1999. A site screening is scheduled (level II priority). (10/1/99 TG/SAP) Strategy Recommendation for high-priority Expanded Preliminary Assessment; includes TLS Steel and Lampros Steel operations on Crawford Street Corp. property. Mercury and PAH sediment contamination appears to be from upstream sources; subject site appears to be the source of organotin sediment contamination. (12/6/99 JMW/SAP) Voluntary Letter Agreement signed November 8, 1999. (4/7/00 TBG/VCP) Preliminary Assessment submitted for Crawford Street Corporation.

REMEDIAL ACTION FUNDING:

Owner, operator or other party under agreement, order or consent decree under ORS 465.200 or 465

INVESTIGATIVE, REMEDIAL, AND ADMINISTRATIVE ACTIONS

ACTION	START DATE	COMPL. DATE	RESP. STAFF	AGENCY CODE	REGION	LEAD PROGRAM
Site added to database	08JUN1999	08JUN1999	Janelle Waggy	DEQ	NW	VCS
Site Screening recommended (EV)	08JUN1999	08JUN1999	Steve Fortuna	DEQ	NW	SAS
Insufficient information to list	05OCT1999	05OCT1999	Thomas Gainer	DEQ	NW	SAS
SITE EVALUATION	05OCT1999	05OCT1999	Thomas Gainer	DEQ	NW	SAS
State Expanded Preliminary Assessment recommended (XPA)	05OCT1999	05OCT1999	Thomas Gainer	DEQ	NW	SAS

Priority for Further Action: HIGH
COMMENTS: Strategy Recommendation - High priority for a XPA.

VCS Waiting List	08NOV1999	08NOV1999	Janelle Waggy	DEQ	NW	VCS
Letter Agreement	08NOV1999	08NOV1999	Janelle Waggy	DEQ	NW	VCS
EXPANDED PRELIMINARY ASSESSMENT	09NOV1999		Thomas Gainer	DEQ	NW	VCS

ACTIVE PROJECTS

PROJECT ID	PROJECT NAME
13474	Crawford Street Corp.

COMMENT:

PARTY INFORMATION

SITE CONTACT:

Matt Cusma
Schnitzer Steel Industries
PO Box 10047
Portland , OR 97296
PHONE: 503-286-6944

ASSOCIATED PARTIES NAME AND ADDRESS	AFFILIATION	AFFILIATION STATUS	INFORMATION AS OF DATE
Doug McMullin General Manager - Fee/Site/Form Contact Columbia Forge & Machine Works 8424 N Crawford St Portland , OR 97203 (503) 286-3621((503) 286-5258 FAX) COMMENTS:	Facility Operator		08JUN1999
Crawford Street Corporation 3200 NW Yeon Ave Portland , OR 97210 ( ) COMMENTS: Property owner.	Legal Owner		08JUN1999

OWNERSHIP COMMENTS:

DATA SOURCES: Portland Harbor Sediment Investigation Report, prepared by Roy F. Weston, Inc. for US EPA, 5/98.

LAST UPDATED BY: gmw DATE: 24-MAR-00

(site_report.rpt)

DEQ SITE ASSESSMENT PROGRAM - STRATEGY RECOMMENDATION

Site Name: Crawford Street Corporation, including:
Columbia Forge and Machine Works, Inc.
Lampros Steel, Inc.
TLS Steel Products, Inc.

Site CERCLIS Number: (none)

DEQ ECSI Number: 2363

Site Address: 8424 N. Crawford Street
Portland, Oregon 97203

Recommendation By: Tom Gainer, Voluntary Cleanup and Site Assessment Section, DEQ Northwest Region

Approved By: Michael E. Rosen, Portland Harbor Manager, DEQ Northwest Region

Date: October 1, 1999

NOTE: This site (Figure 1) is within a 6-mile stretch of the Lower Willamette River in which the U.S. Environmental Protection Agency (EPA) conducted a sediment study in 1997. This area, referred to as the *Portland Harbor*, is between the upstream ends of Sauvie Island (River Mile 3.5) and Swan Island (RM 9.5). The purpose of this Strategy Recommendation is to determine whether a specific hazardous substance release or a specific past operation at the site can be linked to contamination documented by EPA in sediments adjacent to the site. Because of this focus, the Strategy Recommendation may omit some historical site information, regulatory issues, or further-action conclusions that might otherwise be included in a DEQ Strategy Recommendation.

Background, Portland Harbor Sediment Evaluation

In September and October 1997, EPA's contractor, Roy F. Weston, Inc., collected 187 near-shore sediment samples within the Portland Harbor area defined above. Most samples (150) were collected as shallow grab samples within the upper 6 to 17 centimeters (cm) of sediments. 37 deeper composite core samples, from depths of between 55 and 139 cm, were also collected. All samples were analyzed for total metals, semi-volatile organic compounds (SVOCs), total organic

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carbon (TOC), and sediment grain size. Selected samples were also variously analyzed for organotins (TBTs), pesticides, polychlorinated biphenyls (PCBs), chlorinated herbicides, and polychlorinated dioxins and dibenzofurans.

Based on analytical results from this study, which showed extensive sediment contamination, EPA is currently considering Portland Harbor for inclusion on the federal National Priority List (NPL - also known as Superfund).

Between late 1998 and mid-1999, DEQ examined EPA's analytical data to determine potential sources for sediment contamination in the Harbor. Potential sources associated with the most contaminated areas of sediment were sites already active in DEQ's Cleanup Programs.

DEQ categorized other areas of sediment contamination (i.e., those areas not thought to be associated with active Cleanup Program sites) by defining the areas:

- having the highest detected concentration of a given contaminant;
- with contaminant concentrations in the upper five percent of a given contaminant's detected concentrations; and
- having contaminant concentrations above an apparent "baseline range" most commonly detected throughout the harbor area.

DEQ categorized in this manner because there are no established freshwater sediment contaminant concentration guidelines or well-defined background contaminant concentrations for the harbor area. The contaminant "baseline range" was developed by examining the geometric distribution of concentrations for each contaminant detected. Any sediment concentrations that appeared to depart significantly from the ranges most commonly detected were suspected of lying near a potential contaminant source.

One shallow sediment sample (SD060) was collected adjacent to the Crawford Street site (Figure 2). As shown on Table 1, contaminant concentrations in sample SD060 that exceed Portland Harbor baseline concentrations include: arsenic, lead, mercury, di-n-butylphthalate, low- and high-molecular weight polynuclear aromatic hydrocarbons (LPAHs and HPAHs, respectively), and organotins.

Shallow sediment sample SD058 collected downstream of the subject property only had elevated levels of di-n-butylphthalate. This suggests that shallow sediment contamination adjacent to the subject property has not migrated beyond the SD058 location.

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Shallow sediment sample SD066 collected upstream of the subject property had elevated levels of mercury, zinc, 2-methylnapthalene, LPAHs, and HPAHs. This suggests that an upstream source may have contributed to the mercury, LPAH, and HPAH sediment contamination observed adjacent to the subject property. The Willamette Cove site is adjacent upstream of the subject site and has an extensive history of industrial activities.

Operational History

The subject site is approximately 15 acres and is divided into two portions by railroad tracks. There are currently three businesses that operate on the northern portion of the subject property: Columbia Forge and Machine Works, Inc. (CFM), Lampros Steel, Inc., and TLS Steel Products, Inc. The southern portion of the site adjacent to the Willamette River is currently used to store steel; it is not clear which of the three businesses use the southern portion, although it appears that it is used primarily by Lampros Steel.

CFM has produced metal forgings and stampings on the site since 1971. Their operation consists of three buildings and two yards. They use oil, lubricants, non-halogenated petroleum solvent, and degreasers that are sent offsite for recycling and/or disposal.

Lampros Steel has operated a structural steel distribution center since 1989, which includes off-loading railcars and trucks, cutting steel with saws, and loading outgoing trucks. Steel scrap is recycled, used motor oil is sent offsite, and synthetic saw coolant is reused or recycled on site. They have one 1,000-gallon aboveground diesel tank, located about 500 feet from the Willamette River.

TLS has operated a small steel forging and fabrication business since 1989. Hydraulic oil is used in their machines.

Crawford Street Corp. acquired the subject property from the Skookum Logging Supply Company in 1971. Aerial photographs indicate that the current buildings on the subject property were constructed between 1957 and 1963. The southern portion of the site was extensively covered by buildings with docks in photographs from 1936 through 1963; it appears that these structures were removed sometime between 1963 and 1977. Fire insurance maps from 1950 indicate that the property was used primarily by Portland Lumber Mills, and also by the Plylock Corp. (manufacturing with wood), Portland Chain Manufacturing Co., and Skookum Logging Supply Co.

Regulatory History

Spills
In May 1987, a transformer capacitor at CFM overheated and leaked several ounces of PCB-containing oil. The spill was contained and PCB-impacted material, including the transformer, was shipped offsite for disposal.

Information provided by CFM and TLS indicates that they have minor (less than one gallon) spills of hydraulic, motor, or lubricating oil from machinery on to concrete. These spills are apparently cleaned up and have not caused impacts to soil or groundwater.

Lampros claims they have had no spills.

Underground Storage Tanks (USTs)
Two 1,000-gallon USTs, one containing gasoline and the other containing used oil, were decommissioned at the CFM site in December 1987. According to CFM, contamination was apparently not observed during decommissioning activities, which predates DEQ UST record-keeping.

Water Quality
CFM was issued an NPDES permit on October 7, 1992 and it was terminated on October 20, 1992, apparently because a permit was not required at that facility. A CFM stormwater sample collected and analyzed for metals by the Portland Bureau of Environmental Services in June 1997 detected low concentrations of copper (0.010 milligrams per liter), selenium (0.047 mg/L), and zinc (0.065 mg/L).

There are no water discharge permits on file for Lampros or TLS.

Hazardous Waste
CFM operates as a conditionally exempt small quantity hazardous waste generator and appears to be in compliance.

Lampros and TLS are not registered as hazardous waste generators at DEQ.

Site Hydrogeology

The site lies in the northern-most Portland Basin, a major north-southeast trending sediment filled structural depression found in the northern part of the Willamette River valley and adjoining Columbia River valley (Swanson et al, 1993). The basin is filled with recent alluvium, Pleistocene cataclysmic flood deposits, Miocene to Holocene nonmarine sedimentary rocks, and is underlain by Eocene to Miocene volcanic and sedimentary rocks that are exposed along the basin margins.

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The youngest deposits are recent alluvium (silt, sand and gravel mixtures) characteristic of an active fluvial environment. These are made up of shoreline, river channel, and adjacent floodplain deposits.

Terraces that rise 50 to 100 feet above the northeastern shore of the Willamette were formed during Pleistocene cataclysmic flooding related to glacial Lake Missoula, and consist of unconsolidated mixtures of silt, sand, and gravel that generally are coarser than the recent deposits. Fill comprised of fine to medium sands and silt was also placed in many areas along the river during site development. The total thickness of recent alluvium and flood deposits appears to be about 100 feet in the vicinity of the site.

Coarse gravel to conglomerate of the Troutdale Formation, deposited by the ancestral Columbia River, underlies the cataclysmic flood deposits and appears to be about 100 feet thick in the vicinity of the site. Sandy River mudstone underlies the Troutdale Formation and appears to be about 100 feet thick. Basalt of the Columbia River Basalt (CRB) group forms the basement rock of the Portland Basin, and may be as much as several hundred feet thick in the vicinity of the site.

Aquifers in the unconsolidated sedimentary deposits generally are unconfined and localized due to heterogeneity of the deposits. The Troutdale Formation is an important regional aquifer and is widely tapped for both potable and non-potable uses. Interbedded Claystone and/or siltstone, or cementation often promotes confined aquifer conditions within the Troutdale Formation. Deep wells installed in fractured CRB can be very productive and important supply wells. Site elevation is about 30 feet above mean sea level.

Pathway Summary

The Crawford Street site lies in an area of mixed industrial, commercial, and residential use. Approximately 123 residences lie within 1/4 mile of the facility.

Site workers at the facility or trespassers could be exposed to contaminants in surface soil. Utility trench workers could potentially be exposed to subsurface contaminants through direct contact, inhalation, or incidental ingestion.

Oregon Water Resources Department has no well logs for domestic wells within one-half mile of the Crawford Street site.

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The nearest significant wetland is located three miles downstream of the subject site at the mouth of Multnomah Channel. Cathedral Park is approximately 1,000 feet downstream of the subject site. Both recreational and subsistence fishing occur within the Lower Willamette River. Commercial fishing within the Portland Harbor is limited to a small Pacific lamprey fishery. Recreational boating, water skiing, swimming, and beach use also occur within the Harbor.

The Lower Willamette River provides habitat for 39 fish species, including populations of wild cutthroat trout, rainbow trout, and mountain whitefish. White sturgeon are plentiful within the Harbor. The Harbor is also an important migratory corridor, nursery habitat, and adult foraging area for two runs of chinook salmon, two runs of steelhead trout, and individual runs of coho and sockeye salmon.

Upper Willamette River populations of chinook and steelhead, which migrate through the Harbor, are listed as threatened species under the Federal Endangered Species Act. The Pacific lamprey is considered a federal species of concern.

Great blue herons, cormorants, osprey, mergansers, kingfishers, peregrine falcons, and bald eagles routinely forage within the Harbor. The area is also part of the wintering range for the Aleutian Canada goose. All are protected under the Migratory Bird Treaty Act. The peregrine falcon is federally listed as an endangered species, while the Aleutian Canada goose is federally listed as threatened species. The bald eagle also is a threatened species, but was recently proposed to be removed from this list.

There is little data on the nature and extent of the benthic community within Portland Harbor sediments. However, it is known that contamination in the benthos, which is a protected beneficial use, can be the source of food-chain effects that radiate up to the species listed above, including humans.

The Lower Willamette River is water quality limited for the following toxic compounds:

- Dioxins/furans (water column and sediments);
- Mercury (fish tissue);
- Pesticides (water column and sediments);
- Polynuclear Aromatic Hydrocarbons - PAHs - (water column and sediments); and
- Trace metals (water column and sediments).

DEQ's Water Quality Division is developing Total Maximum Daily Load requirements (TMDLs) within the lower Willamette River for these contaminants. A TMDL for 2,3,7,8-TCDD was established in 1991.

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Conclusions/Recommendations

NOTE: As indicated previously, this review is limited to establishing a link between site activities and contamination in adjacent Portland Harbor sediments. It does not necessarily represent a thorough review of available site data, and the conclusions and recommendations presented below may reflect this limited focus.

The following conclusions are based on the contents of this review:

- Site activities may have resulted in sediment contamination adjacent to the site. Concentrations of sediment contaminants adjacent to the site that exceed Portland Harbor baseline levels include arsenic, lead, mercury, di-n-butylphthalate, LPAHs, HPAHs, and organotins. PAH contaminants found in the sediment are associated with handling/storage of petroleum products, metals are associated with fabrication activities, and organotins are associated with boat painting maintenance (possibly from historical dock activities or by migration from upland use/storage of organotin-based paints on metal).

- It appears that the subject site is the source of organotins contamination observed adjacent to the site, where the concentration is over twice the Portland Harbor baseline value and 55 times the upstream concentration.

- Contaminant concentrations for mercury, LPAHs, and HPAHs observed in the upstream sediment sample are generally equal to or greater than in the sample adjacent to the Crawford Street site. This suggests that historical activities at the upstream adjacent Willamette Cove site may have contributed towards contamination observed adjacent to the subject site.

- Use of the site's historical docks, possibly for conveyance of materials and boat fueling and maintenance, is a possible source of sediment contamination by routine or accidental activities.

Contamination of river sediments adjacent to the Crawford Street site may represent a threat to human health and aquatic life within the river. An Expanded Preliminary Assessment (XPA) on the entire Crawford Street property (CFM, Lampros, TLS, and the southern portion of the property) should be conducted to evaluate sediment contamination, potential upland site contaminant sources, and past waste management practices and to determine the extent and source(s) of observed sediment contamination. Sediment sampling should include subsurface samples to further define the extent of contamination. As necessary, the XPA should present recommendations

aimed at preventing potential further contamination of adjacent sediment. DEQ has determined that these actions warrant a high priority for follow-up.

There is insufficient information to propose adding the site to DEQ's Confirmed Release List or Inventory.

References

DEQ consulted the following general references in preparing this Strategy Recommendation:

1. Portland Harbor Sediment Investigation Report, prepared by Roy F. Weston, Inc. for USEPA, May 1998.

2. Columbia Forge and Machine Works, Inc. response to DEQ Site Assessment Information Request, April 9, 1999.

3. Lampros Steel, Inc. response to DEQ Site Assessment Information Request, March 15, 1999.

4. TLS Steel Products, Inc. response to DEQ Site Assessment Information Request, March 19, 1999.

5. DEQ LUST Database.

6. DEQ HWIMSy Hazardous Waste Generator Database.

7. DEQ SPINS Spill Database.

8. MetroScan Property Records, Multnomah County, Oregon.

Attachments

Table 1: River Sediment Contaminant Concentrations

Figure 1: Site Location Map

Figure 2: Sediment Sampling Points, 1997 Portland Harbor Sediment Investigation

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TABLE 1

River Sediment Contaminant Concentrations (1997)
Crawford Street Corporation

Contaminant	Units	Down-Stream SD058	*Crawford Street* SD060	Up-Stream SD066	Apparent Portland Harbor Sediment Baseline Maximum Value
Aluminum	ppm	22800	24700	33200	42800
Antimony	ppm	<4	NA	NA	<5
Arsenic	ppm	<4	5	5	<5
Barium	ppm	126	152	163	195
Beryllium	ppm	0.4	0.5	0.6	0.7
Cadmium	ppm	0.3	0.4	0.5	0.6
Chromium	ppm	25	28	35	41
Cobalt	ppm	16	11	18	19.7
Copper	ppm	30	50	41	60
Iron	ppm	31700	32700	37600	45000
Lead	ppm	13	36	28	30
Manganese	ppm	322	397	547	810
Mercury	ppm	0.1	0.14	0.23	0.1
Nickel	ppm	24	21	29	32
Selenium	ppm	11	12	11	15
Silver	ppm	0.7	0.8	1.0	1.4
Thallium	ppm	5	<4	<4	13
Titanium	ppm	1650	NA	1910	2075
Vanadium	ppm	80	85	98	112
Zinc	ppm	87	112	158	118
2-Methylnaphthalene	ppb	37	66	180	150
4-Methylphenol	ppb	50	230	130	680
Benzoic Acid	ppb	<200	<200	<190	<200
Benzyl Alcohol	ppb	<20	<20	<19	<20
bis(2-Ethylhexyl)phthalate	ppb	<90	<190	<88	390
Butylbenzylphthalate	ppb	<20	<20	<19	<20
Carbazole	ppb	48	99	<19	100
Di-N-Butylphthalate	ppb	43	34	<19	<20
Di-N-Octylphthalate	ppb	<20	<20	<19	<20
Dibenzofuran	ppb	24	33	57	100
Dimethylphthalate	ppb	<20	<20	<19	<20
Pentachlorophenol	ppb	<99	<99	<96	Detect
Phenol	ppb	<20	<20	<19	<20
LPAHs (total)	ppb	379	873	1904	700
HPAHs (total)	ppb	2333	4448	4481	2400
DDTs (total)	ppb	4.1	NA	7.5	220
PCBs (total)	ppb	<40	NA	54	<180
Organotins (total)	ppb	170	773	14	300
2,4-D	ppb	NA	NA	NA	<3.3
2,4-DB	ppb	NA	NA	NA	<5
TOC	%	2.6	0.9	1.6	2
Water Depth	Ft	45	9	17	
Sediment Sample Depth	cm	0-10	0-10	0-10	

NA = Not Analyzed

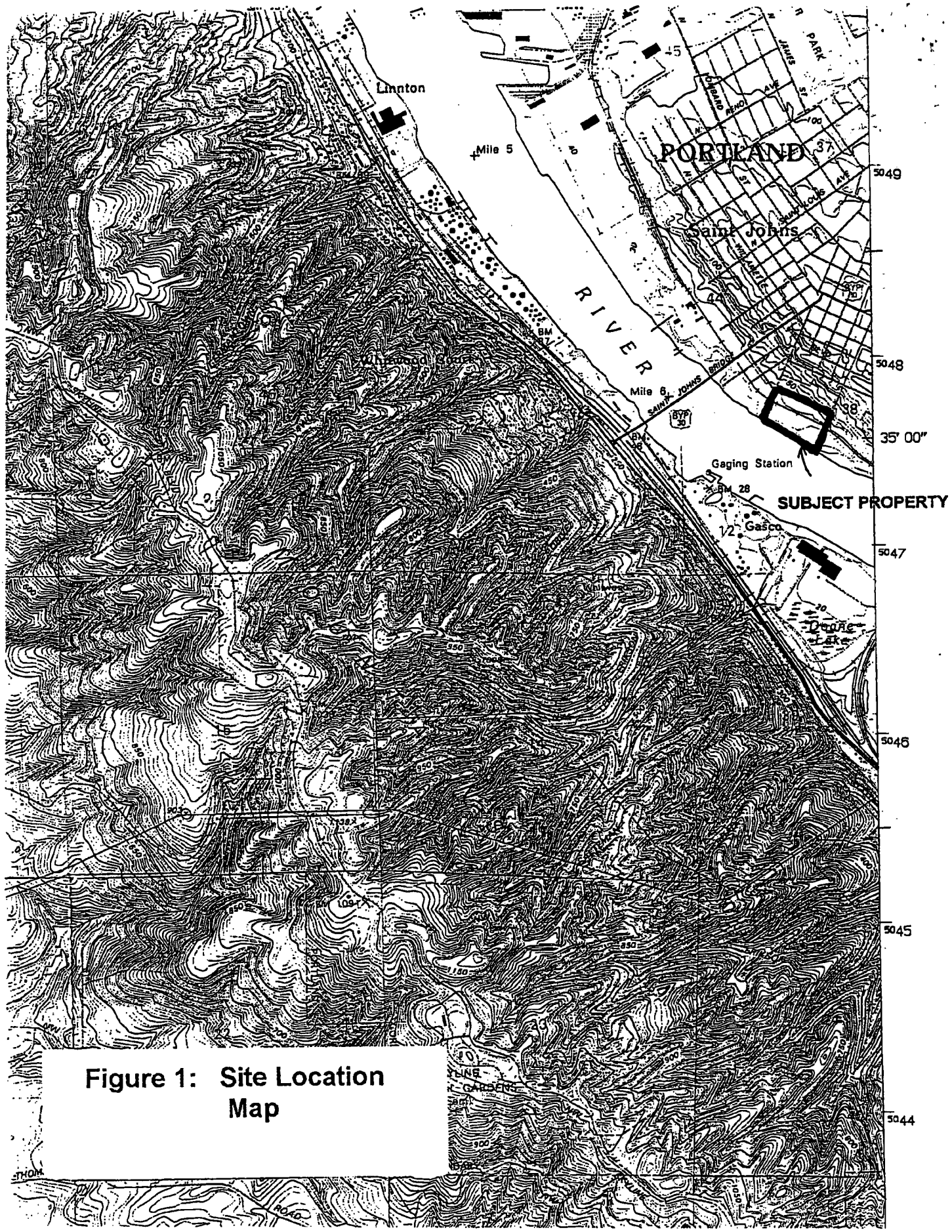

Figure 1: Site Location Map

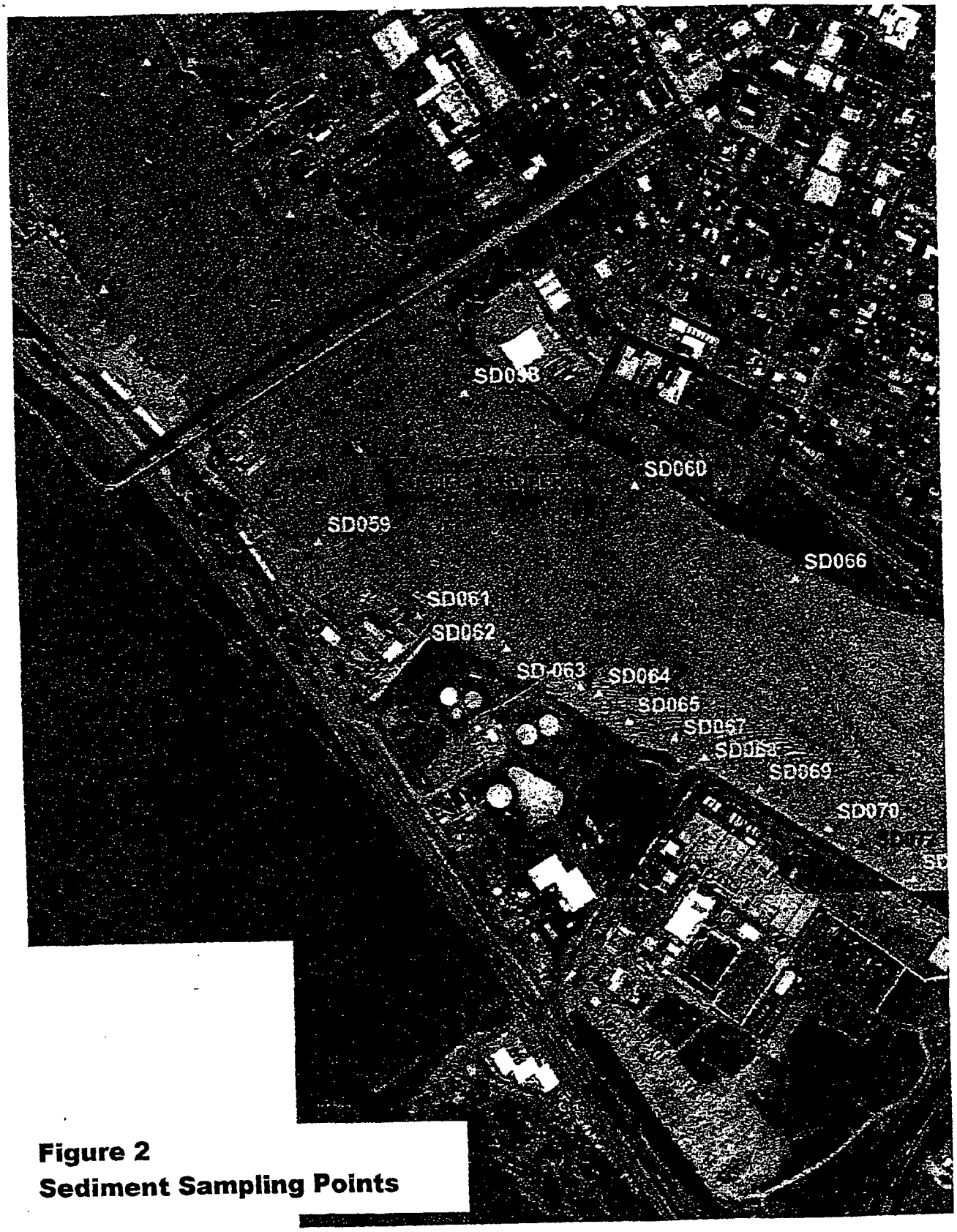

Figure 2
Sediment Sampling Points

BRIDGEWATER GROUP, INC.

ROSS D. RIEKE, P.E.
4640 SW MACADAM; SUITE 222
PORTLAND, OR 97201
TEL: (503) 973-6068
FAX: (503) 973-6069
rieke@bridgeh2o.com

August 10, 2000

DEPT OF ENVIRONMENTAL QUALITY
RECEIVED

AUG 14 2000

NORTHWEST REGION

CRF001

Mr. Tom Gainer
Oregon Department of Environmental Quality
2020 SW Fourth Ave., Suite 400
Portland, OR 97201-4987

Subject: Crawford Street Corporation Site
Preliminary Assessment Sampling and Analysis Plan

Dear Mr. Gainer:

Please find enclosed three copies of the August 11, 2000 *Preliminary Assessment Sampling and Analysis Plan, Crawford Street Corporation Site*. This revised sampling and analysis plan is submitted in response to your July 24, 2000 letter to Mat Cusma at Schnitzer Steel Industries regarding the revised Preliminary Assessment dated June 14, 2000.

Please call if you have any questions.

Sincerely,

BRIDGEWATER GROUP, INC.

Ross D. Rieke, P.E.
Vice President
Environmental Consultant

Encl.

Preliminary Assessment Sampling and Analysis Plan

Crawford Street Site Portland, Oregon

Prepared for

Crawford Street Corporation

August 11, 2000

BRIDGEWATER GROUP, INC.

DEPT OF ENVIRONMENTAL QUALITY
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Figure 1-1 Site Location Map
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Figure 2-1 Proposed PA Sampling Locations

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SECTION 1

INTRODUCTION

This Preliminary Assessment (PA) Sampling and Analysis Plan (SAP) describes the sampling and analysis that will be performed as part of the PA performed for the Crawford Street Corporation (CSC) site in Portland, Oregon (Figure 1-1 and Figure 1-2).

This SAP is revised from the SAP presented in the June 14, 2000, *Preliminary Assessment, Crawford Street Site, Portland, Oregon* report. The revisions are based on the SAP proposed in the June 14, 2000 PA report, DEQ's July 24, 2000 comments on the proposed sampling program, and recent property ownership determinations.

SAMPLING AND ANALYSIS OF SOURCE/PATHWAYS OF CONCERN

This section presents the sampling and analysis program that will be performed at the CSC site as part of the PA. The purpose of the sampling and analysis is to assess whether releases of Contaminants of Interest (COIs) have occurred from potential source(s) and whether released COIs have migrated through the identified potential pathways to the Willamette River or otherwise could pose a potential threat to human health and the environment.

Potential source(s) that require further assessment and their associated COIs are discussed in Section 5 of the June 14, 2000 PA report. These features of concern and associated COIs are:

Storm Water Runoff From Columbia Forge Yard – PAHs, VOCs, and metals

Import Black Sand in southwest portion of South Area – PAHs, lead, mercury

The sampling and analysis program was developed to assess whether releases have occurred from these possible sources and whether these releases may pose a potential threat to human health and the environment.

2.1 Storm Water Runoff From Columbia Forge Yard

The sampling and analysis program for the Columbia Forge operation yard storm water runoff was developed based on the specific routes through which a possible release from the yard could pose a threat to human health or the environment. The basis for the potential exposure pathways are discussed in Section 4 of the June 14, 2000 PA report.

2.1.1 Worker Contact with Surface Soil

A surface soil sample will be collected from the unpaved portion of the Columbia Forge yard (i.e. the low area near the southwest corner) to assess whether there has been a release to the surface soil that could pose a threat to workers through direct contact (ingestion or dermal exposure routes) or through inhalation. This area is where soil staining was observed during the site reconnaissance and is also the topographical low point where surface water runoff from other areas of the Columbia Forge operations yard accumulates.

A surface soil sample will be collected from the upper 6-inches of soil in this area and analyzed for the Columbia Forge COIs (PAHs, metals, and VOCs). The specific laboratory analyses that will be performed are presented in Section 5.1 below.

Figure 2-1 shows the surface soil sample location (SS-1). Other possible areas where direct contact with surface soil with possible COIs due to the Columbia Forge yard runoff (i.e. at former drain outlets along UPRR spur) will be sampled as described in Section 2.1.2 below.

2.1.2 Migration Through Surface Water Drainage to Willamette River Receptors

The potential for COIs to have been released from the Columbia Forge yard and to have migrated to the Willamette River via the surface water pathway will be assessed by collecting two surface soil samples. The soil samples will be collected from where storm water runoff from the Columbia Forge operations yard previously drained from collection pipes to the ground surface near the UPRR rail spur. As noted in the June 14, 2000 PA report, equipment operations in the Columbia Forge operations yard may have resulted in incidental drips of oils and associated oily runoff. The proposed sampling locations SS-2 and SS-3 are located where possible oily water runoff from the Columbia Forge operations yard could possibly have been released to the surface soil and migrated with local surface water. Figure 2-1 shows the proposed soil sampling locations.

Because sample SS-3 is on City of Portland property, collecting sample SS-3 will require obtaining access from the City of Portland.

The June 14, 2000 PA report proposed several additional surface soil samples beyond those proposed above. The purpose of those samples was to assess potential run-on to the UPRR alignment, which tends to accumulate and channel runoff, from up gradient sources such as the UPRR alignment east of the CSC site and the industrial properties north of the CSC site.

Subsequent to the June 14, 2000 report, it was discovered that the property along the UPRR rail spur is owned by the City of Portland, not CSC as presumed in the June 14, 2000 PA report. Given this property ownership, most of the proposed sample locations are no longer relevant or appropriate for assessing the runoff from the CSC site (i.e. Columbia Forge yard). For this reason, previously proposed samples SS-2, SS-3, SS-4, and SS-7 are no longer included in the PA sampling program.

Surface soil contamination is expected to be the most indicative of a possible release to the soil from surface water runoff. Therefore, the soil samples will be collected from the upper 6-inches of the ground surface at the proposed locations shown in Figure 2-1. The soil samples will be analyzed for the Columbia Forge COIs (PAHs, metals, and VOCs). The specific laboratory analyses that will be performed are presented in Section 5.1 below.

2.1.3 Migration Through Groundwater to Willamette River Receptors

As described in Section 4.1.2 of the June 14, 2000 PA report, the sole possible exposure pathway associated with impacted groundwater at the CSC site is through discharge of the shallow groundwater to the Willamette River bordering the southern edge of the CSC site. Any groundwater impacts resulting from possible releases in the Columbia Forge yard would pose a threat only by migrating and discharging to the river.

A contingent groundwater sampling and analysis program will be performed in the event that the results of the surface soil sampling performed to assess the direct worker contact pathway (Section 2.1.1) and the surface water migration pathway (Section 2.1.2) indicate possible groundwater impacts. Section 2.3 describes the contingent groundwater assessment program.

Whether or not the surface soil analysis results are indicative of possible groundwater impacts will be determined by comparing the measured concentrations of COIs in the surface soil samples against specific criteria. In particular, the criteria against which the surface soil COI concentrations will be compared are as follows:

- If the COI concentration does not exceed the concentrations deemed protective of groundwater in the DEQ Oregon Soil Cleanup Table (i.e. concentrations noted with an "a" in the Pathway column), no potential groundwater impacts will be assumed to exist for that COI.
- If the COI is not listed in the DEQ table or is listed under a non-groundwater pathway (e.g. direct contact), the measured surface soil concentration will be compared to the "Migration to Groundwater" criteria listed in Table A-1 of EPA's May 1996, Soil Screening Guidance: Technical Background Document. If the measured surface soil concentration does not exceed the EPA Soil Screening value, it will be assumed that there are no potential groundwater impacts.

If the COI concentrations in the surface soil samples exceed the criteria described above, the potential for contaminated groundwater to migrate to the Willamette River will be assessed using the program described in Section 2.3. Only those COIs that exceed the surface soil concentration criteria will be included in the groundwater assessment.

2.2 Import Black Sand

2.2.1 Worker Direct Contact with Soil

One soil sample will be collected from where the black sand is exposed at the ground surface along the top of the bank in the South Area of the CSC site. This soil sample will be collected to assess whether the black sand represents a release to the soil that could pose a threat to workers

through direct contact (ingestion or dermal exposure routes) or through inhalation.

The soil sample will be collected by excavating a shallow (about 3 feet deep) test pit in the area where the most heavily stained soil is observed at the ground surface. The 3-foot depth is based on the maximum reported thickness of the black sand in the 1988 Emcon study. The soil sample will be collected from the most visibly stained soil horizon exposed in the test pit. Figure 2-1 shows the approximate location of the proposed test pit soil sample (TP-1). The sample will be analyzed for PAHs, lead, mercury, cadmium, chromium, and PCBs. The specific laboratory analyses that will be performed are presented in Section 5.2 below.

2.2.2 Leaching to Willamette River Receptors

One surface soil sample will be collected from where the black sand is exposed on the shoreline in direct contact with the Willamette River. This surface soil sample will be collected to assess whether the black sand represents a release to the surface soil that could pose a threat through leaching to the river.

The surface soil sample will be collected from the most heavily stained area exposed at the shoreline. Figure 2-1 shows the approximate location of the proposed surface soil sample (SS-4). The sample will be analyzed for PAHs, lead, mercury, cadmium, chromium, and PCBs. The specific laboratory analyses that will be performed are presented in Section 5.2 below.

2.2.3 Migration Through Groundwater to Willamette River Receptors

As described in Section 4.1.2 of the June 14, 2000 PA report, the sole possible exposure pathway associated with impacted groundwater at the CSC site is through discharge of the shallow groundwater to the Willamette River bordering the southern edge of the CSC site. Any groundwater impacts resulting from possible releases from the black sand would pose a threat only by migrating and discharging to the river. This is especially true considering the close proximity of the black sand to the river.

A contingent groundwater sampling and analysis program will be performed in the event that the results of the surface soil sampling performed to assess the direct worker contact pathway (Section 2.2.1) and the surface water migration pathway (Section 2.2.2) indicate possible groundwater impacts. Section 2.3 describes the contingent groundwater assessment program.

Whether or not the soil analysis results are indicative of possible groundwater impacts will be determined by comparing the measured concentrations of COIs in the soil samples against specific criteria. In particular, the criteria against which the soil COI concentrations will be compared are as follows:

- If the COI concentration does not exceed the concentrations deemed protective of groundwater in the DEQ Oregon Soil Cleanup Table (i.e. concentrations noted with an "a" in the Pathway column), no potential groundwater impacts will be assumed to exist for that COI.
- If the COI is not listed in the DEQ table or is listed under a non-groundwater pathway (e.g. direct contact), the measured soil concentration will be compared to the "Migration to Groundwater" criteria listed in Table A-1 of EPA's May 1996, *Soil Screening Guidance: Technical Background Document*. If the measured soil concentration does not exceed the EPA Soil Screening value, it will be assumed that there are no potential groundwater impacts.

If the COI concentrations in the soil samples exceed the criteria described above, the potential for contaminated groundwater to migrate to the Willamette River will be assessed using the program described in Section 2.3. Only those COIs that exceed the soil concentration criteria will be included in the groundwater assessment.

2.3 Contingent Groundwater Migration Pathway Assessment

The potential for COIs present in the Columbia Forge yard or the black sand to have impacted the shallow groundwater, and for the groundwater to have migrated to the Willamette River, will be assessed only if the COIs are detected in the surface and near-surface soil samples at concentrations exceeding the criteria presented in Sections 2.1.3 and 2.2.3.

The "contingent" groundwater assessment would consist of collecting a groundwater sample at the down gradient edge of the CSC site, directly down gradient from both the black sand area and the Columbia Forge yard. The location of the contingent groundwater sample is shown on Figure 2-1.

The groundwater sample will be collected by drilling and installing a groundwater monitoring well. A groundwater monitoring well will be used rather than probe sampling techniques due to the low solubility/high soil-water partition coefficients of the COIs (PAHs and metals). It is doubtful that a sufficiently non-turbid groundwater sample could be collected from a probe exploration given the lack of a properly installed well screen and developed filter pack possible only with an installed well. Because of the affinity that PAHs and metals have for soil particles, analysis of a turbid sample would measure the COIs on the suspended soil particles rather than the dissolved constituents in the groundwater.

The groundwater sample will be analyzed for only the COIs exceeding the surface soil criteria (See Sections 2.1.3 and 2.2.3).

If the groundwater assessment indicates a possible impact to the river through discharge of contaminated groundwater, further groundwater

sampling and analysis between the black sand and the Columbia Forge yard will be necessary to assess the source of the groundwater impacts and associated possible threat. Sampling and analysis from up gradient of the Columbia Forge yard will also likely be necessary to assess background water quality and potential offsite sources.

SECTION 3

DATA QUALITY OBJECTIVES

The data collected during the sampling and analysis program will be used to assess whether any releases have occurred from the suspect sources and whether these releases, if any, pose a potential threat to human health or the environment. This assessment will be performed by comparing the results of the sampling and analysis to conservative screening levels. In particular, the measured concentrations of hazardous substances in the soil samples, if any, will be compared to the following:

- EPA Region IX Preliminary Remediation Goals for industrial sites
- DEQ Risk Based Concentration values for direct worker contact, inhalation, and protection of groundwater pathways.
- DEQ Soil Cleanup Table concentrations
- EPA Soil Screening Concentrations for protection of groundwater

The measured concentrations of hazardous substances in the groundwater, if any, will be compared to ambient water quality criteria given the anticipated beneficial shallow groundwater use as discharge to the Willamette River.

The quality of the field and laboratory data will be sufficient to meet this end use of the data. In particular, the analytical laboratory detection limits will be lower than the screening criteria where possible with typical analytical techniques. The field sampling procedures will be performed to provide representative samples.

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SECTION 4

SAMPLING PROCEDURES

This section presents the procedures that will be used to collect the samples described in Section 2.

4.1 Surface Soil Samples

Each surface soil sample collected for non-VOC analysis will consist of five subsamples composited into a single sample. The subsamples will be collected in a 5-point dice pattern across an approximately 5-foot by 5-foot area at each sample location.

The purpose of the composite sampling at each location is to obtain a concentration that is representative of how the soil in the area of the sample would impact a possible receptor or migration pathway (e.g. direct contact to a worker or impact on a surface water pathway). A single point concentration is not representative of how the soil contamination in the sample area would affect a possible receptor. Given the small subarea from which each subsample is collected (about 5 square feet), single point concentrations at each subsample location are not representative or useful.

Each sample will be collected using the following procedure:

- Scrape away surface vegetation, if present, at each subsample location.
- Excavate a minimum 6-inch deep hole with a clean shovel at each subsample location. If necessary, a clean pick will be used to penetrate the surface.
- After the hole is excavated, collect the soil sample across the upper 6-inches of the sidewall of the hole with a clean trowel or spoon. Exclude large gravel or organic debris from the sample.
- Place the subsample in the laboratory-supplied glass container. Fill the container about 1/5 with each subsample. Instruct the analytical laboratory to thoroughly mix the sample before collecting the aliquot for analysis.
- Place the filled sample container in a chilled cooler for transport to the analytical laboratory.

Samples collected for VOC analyses will consist of a point sample collected from any stained areas within the composite area. If stained soil is not present in the composite area, the VOC sample will be collected from the center point of the 5-point dice pattern.

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The samples will be collected and transported using proper chain-of-custody procedures. The samples will be transported to the analytical laboratory within 24 hours of collection. Field notes will be maintained noting the general soil conditions and any unusual or unanticipated conditions.

4.2 Subsurface Soil Samples

Subsurface soil samples will be collected from shallow (about 3 feet deep) test pits excavated either by hand (with a clean shovel) or with a small backhoe excavator. The soil sample will be collected from the sidewall of the test pit using a clean metal spoon or trowel. If the pit is excavated with a backhoe and the pit is unsafe to enter to obtain the sample, the sample will be collected from the bucket of the excavator.

The soil sample will be placed in a laboratory-supplied glass container and placed in a chilled cooler. The sample will be transported to the analytical laboratory within 24 hours of collection.

Once the soil sample is collected, the test pit will be backfilled with the previously removed soil. Field notes will be maintained noting the general soil conditions and any unusual or unanticipated conditions.

4.3 Contingent Groundwater Monitoring Well Installation and Sampling

The groundwater sample will be collected from a drilled and constructed groundwater monitoring well. The methods and procedures that will be used to drill and construct the well and to collect the groundwater sample from the well are described below.

4.3.1 Soil Boring

The groundwater monitoring well boring will be drilled using a truck- or trailer-mounted, hollow-stem auger drill rig. The soil boring will be drilled to the estimated depth of the monitoring well, which will be subsequently constructed. The completion depth is anticipated to be about 40 feet, corresponding to about 10 feet below the top of the shallow groundwater table.

Continuous soil samples will be collected by driving a 5-foot long, nominal 2-inch diameter core barrel sampler using combination of mechanical hammer blows and pushing. The sampling technician will remove the soil core from the sampler for field screening, description, and placement into sample jars. Soil samples will be transferred from the core into labeled, laboratory-supplied sample jars using a clean stainless steel spoon. Any extra soil generated during drilling activities will be managed as investigation derived waste (IDW).

Headspace measurements will be made on all soil samples and all soil samples will be observed for field evidence (odor or sheen) of contamination.

The field technician will observe and document the drilling activities including preparing a detailed field log for the boring. The field geologist will describe the soil samples, noting any indications of contamination, and will describe the lithologic characteristics using the Unified Soil Classification System (USCS). Other features such as sorting, sedimentary features, mineralogy, degree of weathering, and contacts with other soil types will also be noted if relevant. In particular, the depth of the black sand encountered in the boring will be logged.

4.3.2 Monitoring Well Construction and Development

The groundwater monitoring well will be constructed in the soil borings described in Section 4.3.1 in accordance with OAR 690-240 and DEQ guidance, *Groundwater Monitoring Well Drilling, Construction, and Decommissioning* (1992). A start card will be filed by the driller in accordance with OAR 690-240.

The well will be completed using 2-inch diameter, flush-threaded Schedule 40 PVC casing. The screened interval of the well will be 10 feet long and consist of 20-slot machine slotted PVC screen with a PVC end cap threaded to the bottom of the screen. The screened section will be placed below the solid casing near the bottom of the wellbore. The top of the casing will be capped with a lockable, water-tight cap.

A clean silica sand pack will be placed between the boring wall and the PVC screen/riser (i.e., the annulus) from the bottom of the well to approximately one to two feet above the screened interval. A bentonite seal will be placed above the sand to about one to two feet of the ground surface.

The surface completion will consist of a locking, steel stick-up monument protected with bollards. The monument will be permanently marked with well identification numbers.

The field geologist will document the well construction activities in field notes and a well construction log. Details to be noted include:

- Length of well components.
- Measurements of bentonite, sand, and concrete depths.
- Types, brands, and amounts of materials used.
- Documentation of decontamination.
- Any deviation from standard procedures or problems encountered during the well installation activities.

The drilling contractor will be responsible for conforming to all applicable regulations pertaining to well construction.

The groundwater monitoring well will be developed after construction to minimize the turbidity of the groundwater samples collected for analysis and to optimize the hydraulic efficiency of the well. The well will be developed by surging with a slug rod and purging at least three casing volumes of water from the well using a stainless steel bailer or two-stage pump.

During development, electrical conductivity, temperature, dissolved oxygen, and pH will be measured for each casing volume removed from the well to assess the effectiveness of the development. Development is considered complete when no additional reduction in the turbidity of the well water is observed and after the above parameters have stabilized to within 10 percent for three successive casing volumes. Development water will be managed as IDW.

4.3.3 Groundwater Sampling

Groundwater Level Measurements

The groundwater level in the monitoring well will be measured prior to collecting the groundwater sample. The groundwater level will be measured to the reference point marked on the well casing and recorded for the purpose of determining groundwater elevations. The well will be opened and the water level allowed to equilibrate before the measurement is taken. The groundwater level will be measured to the nearest 0.01 foot using an electronic probe.

Purging

After the groundwater level is measured, the well will be purged using a low flow electric pump. The volume of water evacuated from the well will be measured in five-gallon buckets, and the temperature, pH and specific conductivity of the purged water will be measured at five-gallon intervals. Purging will be considered complete when each measured parameter has stabilized (i.e., three consecutive measurements are within ±10%). In the event that the well is pumped or bailed dry prior to achieving stable field measurements, purging will be considered complete and the volume removed will be recorded. Purge water will be managed as IDW.

Collecting Groundwater Sample

A groundwater sample will be obtained from the well immediately after purging using a low flow electric pump. If the well purges dry, the well will be allowed to recover to at least 50 percent of its original volume before collecting the sample. The groundwater sample will be placed directly into laboratory-supplied containers. The container will be placed directly into a chilled cooler for transport to the analytical laboratory. The sample will be collected and transported using proper chain-of-custody procedures.

4.4 Field QA/QC Procedures

One field duplicate surface soil sample will be collected to assess the representativeness of the surface soil field sampling technique. If VOC analysis is performed on groundwater samples, a trip blank will be prepared by the laboratory and included with the field-collected groundwater sample. The trip blank will be analyzed for VOCs to assess for possible background contamination incurred during handling and transport of the groundwater sample.

SECTION 5

ANALYTICAL LABORATORY ANALYSIS

This section presents the laboratory analysis methods that will be used to analyze the soil and groundwater samples collected. Laboratory analysis will be performed by North Creek Analytical laboratory in Beaverton, Oregon using EPA methods and QA/QC procedures.

5.1 Columbia Forge Yard Surface Soil Samples

Each surface soil sample collected to assess the Columbia Forge yard will be analyzed for the Columbia Forge COIs using the following methods:

- PAHs by EPA Method 8310 or 8270 SIM
- Total Priority Pollutant Metals by EPA 3000 series/6000 series
- TCLP Priority Pollutant Metals by EPA Method 1311/6000 series
- Mercury by EPA Method 7471
- TCLP Mercury by EPA Method 1311/7471
- VOCs by EPA Method 8261

The TCLP analysis results will be used in the assessment of whether there are potential groundwater impacts (the DEQ Soil Cleanup Table is based on TCLP concentrations for metals).

5.2 Import Black Sand Surface Soil Samples

Each soil sample collected to assess the black sand will be analyzed for the black sand COIs using the following methods:

- PAHs by EPA Method 8310 or 8270 SIM
- Total Lead by EPA Method 3000 series/6010
- TCLP Lead by EPA Method 1311/6010
- Total Mercury by EPA Method 7471
- TCLP Mercury by EPA Method 1311/7471
- Total Cadmium by EPA Method 3000 series/6010
- TCLP Cadmium by EPA Method 1311/6010
- Total Chromium by EPA Method 3000 series/6010

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- TCLP Chromium by EPA Method 1311/6010
- PCBs by EPA Method 8082

The TCLP analysis results will be used in the assessment of whether there are potential groundwater impacts (the DEQ Soil Cleanup Table is based on TCLP concentrations for metals).

5.3 Contingent Groundwater Sample

The specific analysis methods for the groundwater sample collected from the contingent monitoring well will be determined based on the results of the surface soil analyses. In general, the groundwater sample will be analyzed for only those COIs that exceed the screening criteria presented in 2.1.3 or 2.2.3.

5.4 Laboratory QA/QC Procedures

Standard analytical laboratory procedures will be used including method blanks, surrogate spikes, blank spikes, and blank spike duplicates. A QA/QC review of the laboratory data will be performed once the data is received from the analytical laboratory. This review will include the following:

- Chain-of-custody complete and correct
- Analysis within holding times
- Chemicals of interest in method blanks
- Blank spike recoveries within accuracy control limits
- Blank spike duplicate results within analytical precision control limits
- Surrogate recoveries within accuracy control limits
- Matrix spike recoveries within accuracy control limits
- Matrix spike duplicate results within analytical precision control limits
- Detection limits sufficiently low

On the basis of the results of the QA/QC data review, the data will be flagged according to standard EPA procedures. Questionable data will be flagged with a "J" and considered an estimated value. Data unacceptable for its intended use will be rejected and flagged with an "R."

SECTION 6

REPORTING

The results of the PA sampling will be presented in a report once the results of the chemical analysis are received from the laboratory. The report will include the following:

- Table showing the results of the chemical analysis.
- Figure showing the location of the surface soil samples and groundwater monitoring well, if installed.
- Description of the soil and general site conditions in the area where the samples were collected.
- Soil boring logs and well construction diagrams for the groundwater monitoring well installation, if installed.
- Discussion of any unanticipated or unusual conditions encountered while collecting the soil samples.
- Relevant photographs taken during the sampling activities
- Copy of the analytical laboratory report.

The report will also include a brief assessment of the potential for releases and migration of hazardous substances based on the results of the PA sampling.

Once the results of the soil sample analysis are received from the laboratory, the data will be reviewed and compared to the criteria presented in Section 2.1.3 and 2.2.3. If the criteria are exceeded, a brief memorandum will be prepared and provided to DEQ describing the COIs for which the criteria were exceeded and the resulting COIs that will be considered in the groundwater assessment. The groundwater assessment will then be performed.

If the PA sampling indicates that no additional assessment of the CSC site is necessary after installation and sampling of the contingent groundwater monitoring well, the groundwater monitoring well will be abandoned. The well will be abandoned in accordance with DEQ guidance and the Oregon Water Resource Department rules.

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FIGURES

CRAW00015001

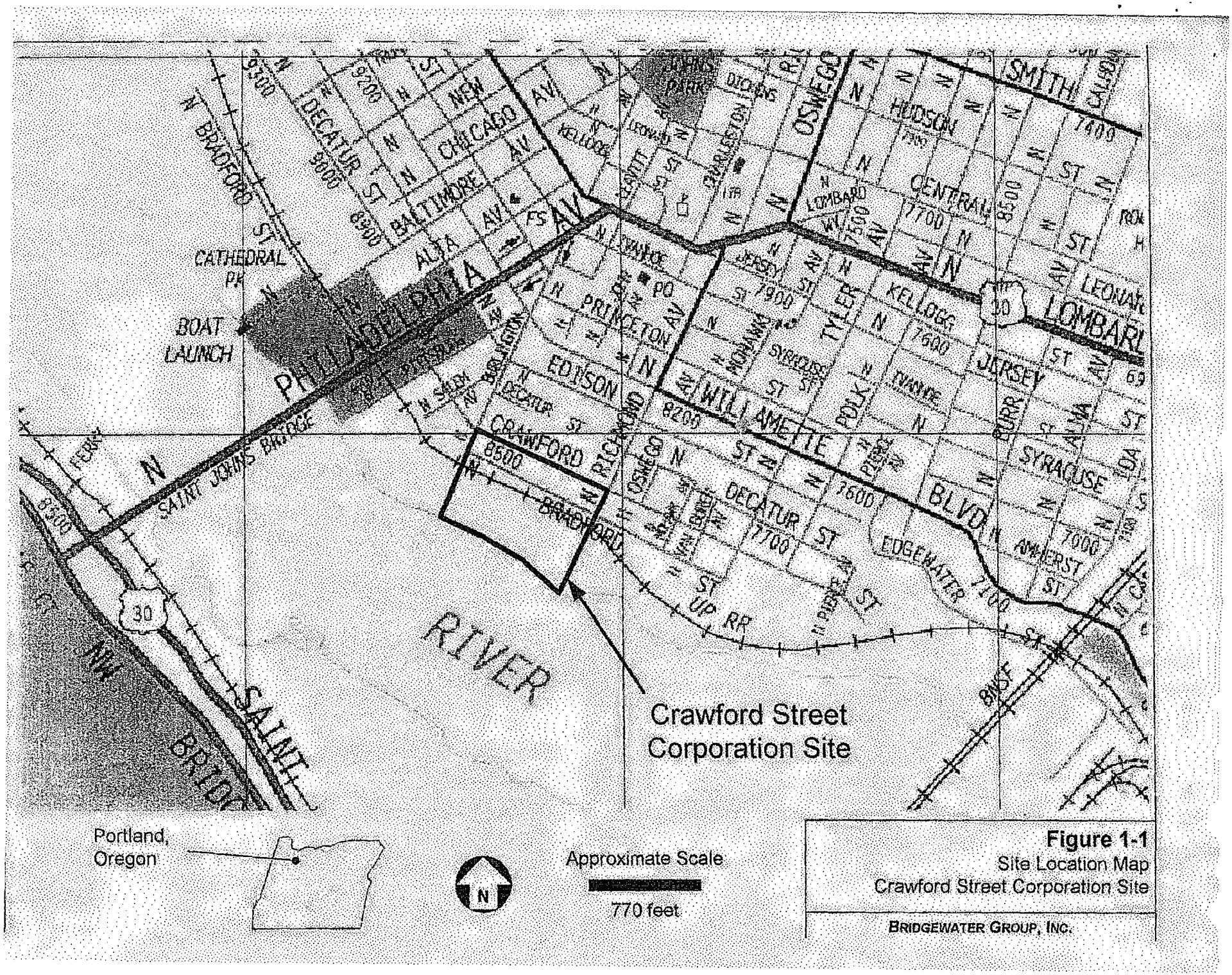

Figure 1-1
Site Location Map
Crawford Street Corporation Site

BRIDGEWATER GROUP, INC.

CRAW00015002

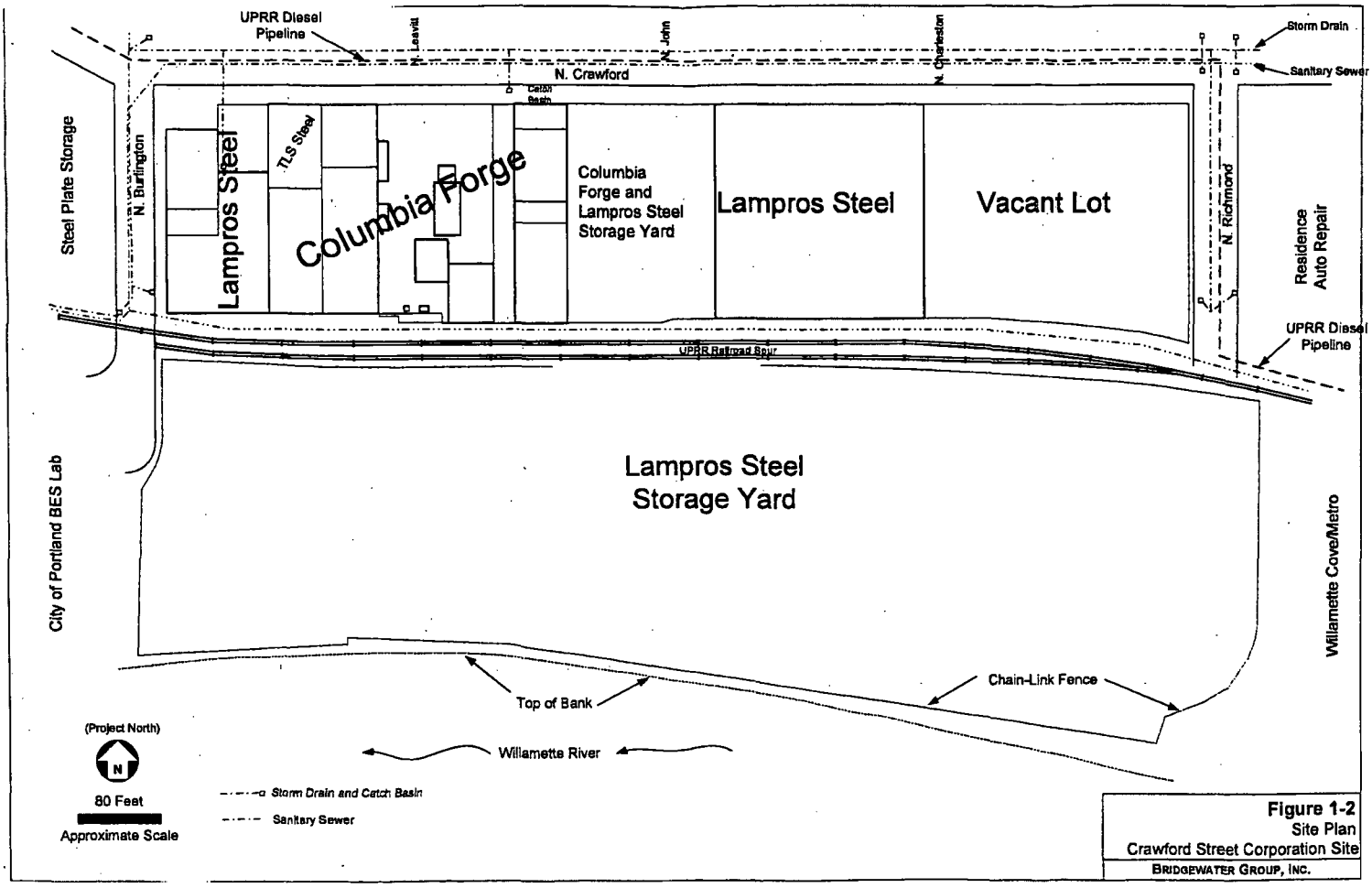

Figure 1-2
Site Plan
Crawford Street Corporation Site
BRIDGEWATER GROUP, INC.

CRAW00015003

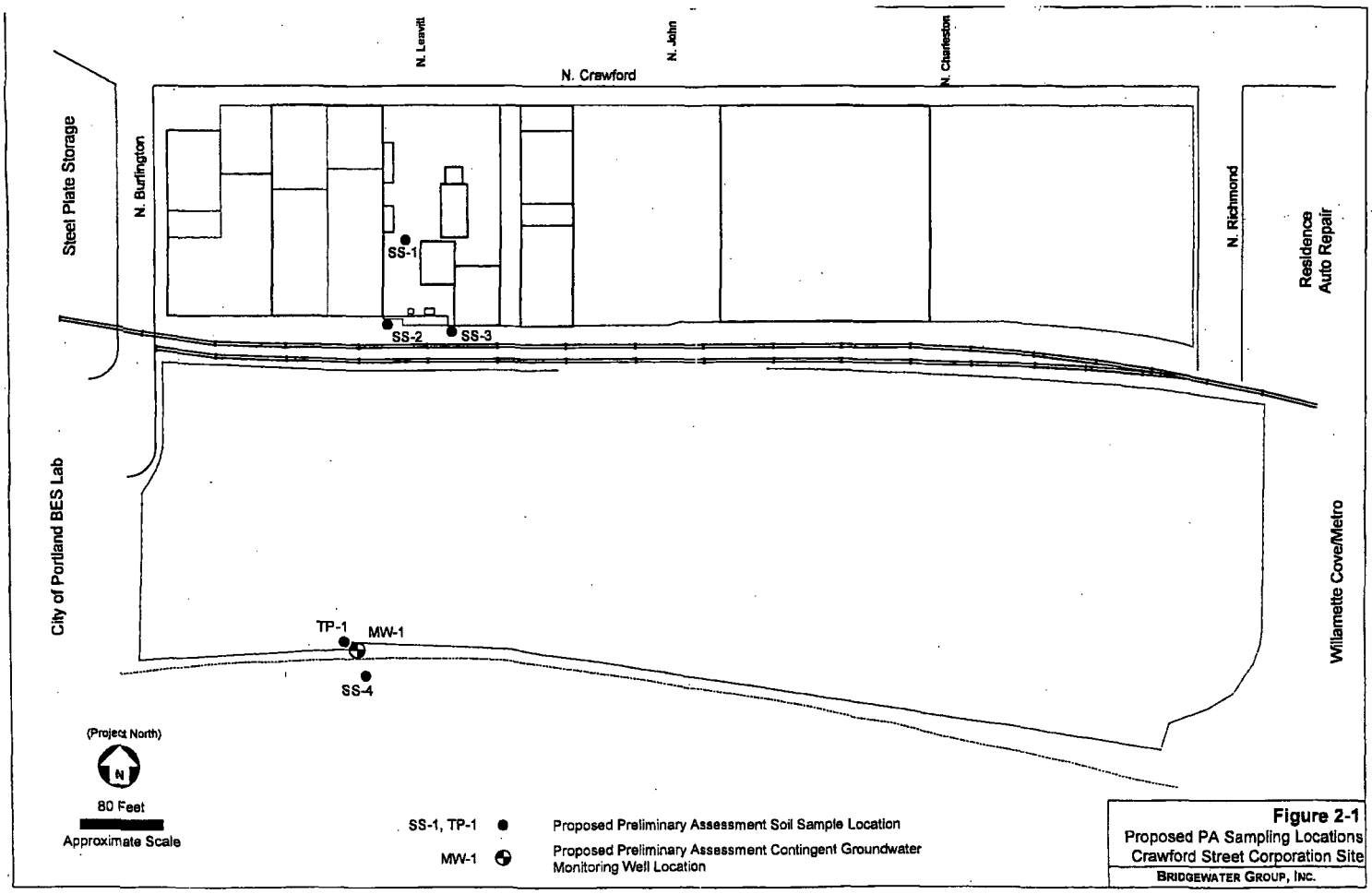

Figure 2-1
Proposed PA Sampling Locations
Crawford Street Corporation Site
BRIDGEWATER GROUP, INC.

SCRAP DIVISION

COLUMBIA FORGE
INCOME STATEMENT

For the Twelve Months Ending August 31, 1999

Description	Current Period	% of Revenue	YTD Current Period	% of Revenue	Prior YTD Current Period	% of Revenue
REVENUE						
Outside Scrap Sales						
Interlocation Scrap Sales			1,008	*******		
Sales to Consolidating Entities						
Other Revenues	150,191	101	1,977,755	100	1,957,434	100
Sales Deductions	(1,305)	(1)	(3,557)	(0)	(955)	********
Net Revenues	148,887	100	1,975,206	100	1,956,479	100
COST OF GOODS SOLD AND OTH. EXP.						
Material	72,766	49	941,586	48	847,691	43
Production					470,864	24
Inventoriable Production Costs						
Salaries and Wages	8,970	6	87,825	4	68,143	3
Fringe Benefits	2,510	2	4,564	0	6,844	0
Rent	4,950	3	64,090	3	59,400	3
Repairs and Maint.	903	1	34,440	2	26,788	1
Depreciation and Amortization	9,947	7	121,985	6	125,472	6
Other Production Costs	20,540	14	232,057	12	183,261	9
Less: Inventoriable Costs					(470,864)	(24)
Total Cost of Goods Sold	120,586	81	1,486,547	75	1,317,600	67
GROSS MARGIN	28,301	19	488,659	25	638,880	33
SELLING, GENERAL AND ADMIN. EXPENSES						
Salaries and Wages	13,376	9	153,156	8	193,608	10
Fringe Benefits	845	1	20,388	1	27,829	1
Depreciation and Amortization	1,042	1	12,500	1	12,500	1
Rent						
Other	2,980	2	49,938	3	103,242	5
Admin Allocation	1,296	1	18,477	1	20,536	1
Total SG & A Expenses	19,539	13	254,459	13	357,715	18
OPERATING INCOME	8,762	6	234,201	12	281,164	14
Other Income / (Expense)	260	0	8,167	0	15,517	1
FIFO PRETAX INCOME (LOSS)	9,022	6	242,368	12	296,681	15

Schedule 3.3

COLUMBIA FORGE
INCOME STATEMENT

For the Twelve Months Ending August 31, 1999

Description	Current Period	% of Revenue	YTD Current Period	% of Revenue	Prior YTD Current Period	% of Revenue
REVENUE						
Outside Scrap Sales						
Interlocation Scrap Sales			1,008	*******		
Sales to Consolidating Entities						
Other Revenues	150,191	101	1,977,755	100	1,957,434	100
Sales Deductions	(1,305)	(1)	(3,557)	(0)	(955)	********
Net Revenues	148,887	100	1,975,206	100	1,956,479	100
COST OF GOODS SOLD AND OTH. EXP.						
Material	72,766	49	941,586	48	847,691	43
Production					470,864	24
Inventoriable Production Costs						
Salaries and Wages	8,970	6	87,825	4	68,143	3
Fringe Benefits	2,510	2	4,564	0	6,844	0
Rent	4,950	3	64,090	3	59,400	3
Repairs and Maint.	903	1	34,440	2	26,788	1
Depreciation and Amortization	9,947	7	121,985	6	125,472	6
Other Production Costs	20,540	14	232,057	12	183,261	9
Less: Inventoriable Costs					(470,864)	(24)
Total Cost of Goods Sold	120,586	81	1,486,547	75	1,317,600	67
GROSS MARGIN	28,301	19	488,659	25	638,880	33
SELLING, GENERAL AND ADMIN. EXPENSES						
Salaries and Wages	13,376	9	153,156	8	193,608	10
Fringe Benefits	845	1	20,388	1	27,829	1
Depreciation and Amortization	1,042	1	12,500	1	12,500	1
Rent						
Other	2,980	2	49,938	3	103,242	5
Admin Allocation	1,296	1	18,477	1	20,536	1
Total SG & A Expenses	19,539	13	254,459	13	357,715	18
OPERATING INCOME	8,762	6	234,201	12	281,164	14
Other Income / (Expense)	260	0	8,167	0	15,517	1
FIFO PRETAX INCOME (LOSS)	9,022	6	242,368	12	296,681	15

Schedule 3.3

Columbia Forge/Crawford Street Historical Financial Information

	First Six Months FY00	FY99	FY99	FY98
Revenues	850	985	1,975	1,956
COGS				
Raw Material	412	481	942	848
Production Costs	264	264	545	470
Total	676	745	1,487	1,318
Gross Margin	174	240	488	638
	20%	24%	25%	33%
SG&A				
Salaries and Fringe	70	74	173	221
Dep & Amort	6	6	13	13
Other	29	27	60	108
Total	105	107	246	342
	12%	11%	12%	17%
Income - Columbia Forge	**69**	**133**	**242**	**296**
Adjustment for Crawford Street				
Rent paid by Lampro and CF to Crawford Street	148	115	230	230
Net Adjustments	**148**	**115**	**230**	**230**
Operating Income	**217**	**248**	**472**	**526**
EBITDA	**223**	**254**	**484**	**538**

	February-00
Balance Sheet Data	
Receiables - net	246
Inventory	291
Land	716
Buildings	1,027
Equipment	726
Accum Depreciation	(764)
Total	1,706
Other	20
Payables and Accrued Liabilities	(66)
Net Assets	**2,197**

less bad debt

DATE: 03/28/2000
TIME: 14:49:35

F I X E D A S S E T M A N A G E M E N T S Y S T E M Version 7.91
Tax Depreciation Report
CEMF
For the Period 9/1/1999 to 8/31/2000
For Domestic Regular

Entity Number : 01535 COLUMBIA FORGE OPERATIONS

Asset Number	Description	Date Acquired	Depr Meth	Salv %	Life/ Class	Conv	Asset Basis	SEC 179 EXP	ITC Basis Reduction	Recovery Basis	Current Depreciation	Accumulated Depreciation
35950190	ELECTRICAL WORK - WIRING	06/30/81	1	0.00	4.00	4	1914	0	0	1914	0	1914
35950193	Electrical upgrade - shop area	04/24/84	1	0.00	5.00	4	1941	0	0	1941	0	1941
35992000	PLUMBING LAMPROS STEEL 8524 NC	10/01/99	25	0.00	39.00	5	20617	0	0	20617	463	463
Total Acct Number 1720							24472	0	0	24472	463	4318
35950016	Shear	06/30/72	1	0.00	7.00	4	2500	0	0	2500	0	2500
35950017	Saw	06/30/72	1	0.00	7.00	4	1263	0	0	1263	0	1263
35950039	Hydraulic Press	06/30/73	1	0.00	7.00	4	7557	0	0	7557	0	7557
35950040	Bergmaster Drill Press	06/30/73	1	0.00	7.00	4	4210	0	0	4210	0	4210
35950041	Tacco #1 KM 200	06/30/74	1	0.00	7.00	4	25874	0	0	25874	0	25874
35950042	Pneumatic Chuck Assembly	06/30/74	1	0.00	7.00	4	800	0	0	800	0	800
35950044	Auto Turratt Lathe	06/30/74	1	0.00	7.00	4	3750	0	0	3750	0	3750
35950045	Induma Mill	06/30/74	1	0.00	7.00	4	3486	0	0	3486	0	3486
35950046	Heavy Duty Heat Treat Furnace	06/30/74	1	0.00	7.00	4	10228	0	0	10228	0	10228
35950047	Induction Heating Generator	06/30/74	1	0.00	7.00	4	2569	0	0	2569	0	2569
35950048	Hydraulic Handgrab Forging Pre	06/30/74	1	0.00	7.00	4	1421	0	0	1421	0	1421
35950049	1926 Ajax 7" upsetter	06/30/75	1	0.00	10.00	4	175862	0	0	175862	0	175862
35950050	Hydraulic Press	06/30/75	1	0.00	7.00	4	21742	0	0	21742	0	21742
35950052	Hankins Jawchuck	06/30/75	1	0.00	7.00	4	457	0	0	457	0	457
35950054	Cooling Tank	06/30/75	1	0.00	7.00	4	363	0	0	363	0	363
35950056	Bending equipment	06/30/77	1	0.00	8.00	4	400	0	0	400	0	400
35950057	Induction heater	06/30/77	1	0.00	8.00	4	8188	0	0	8188	0	8188
35950058	Hydraulic press	06/30/77	1	0.00	8.00	4	29896	0	0	29896	0	29896
35950059	#1 Hand press	06/30/78	1	0.00	8.00	4	21768	0	0	21768	0	21768
35950061	Hand grab machine	06/30/78	1	0.00	8.00	4	380	0	0	380	0	380
35950062	#2 Hand press	06/30/78	1	0.00	8.00	4	6333	0	0	6333	0	6333
35950063	Brake pin press	06/30/78	1	0.00	8.00	4	4412	0	0	4412	0	4412
35950065	1000 Tacco - Induction heater	06/30/78	1	0.00	7.00	4	8676	0	0	8676	0	8676
35950070	Blower	06/30/78	1	0.00	5.00	4	400	0	0	400	0	400
35950071	Hand held press	06/30/79	1	0.00	7.00	4	14454	0	0	14454	0	14454
35950075	Bending furnace	06/30/79	1	0.00	7.00	4	2158	0	0	2158	0	2158
35950077	Bench grinder	06/30/79	1	0.00	7.00	4	137	0	0	137	0	137
35950078	Fan & starter	06/30/79	1	0.00	7.00	4	145	0	0	145	0	145
35950079	Air compressor	06/30/79	1	0.00	7.00	4	2738	0	0	2738	0	2738
35950080	7" Upset crane	06/30/79	1	0.00	7.00	4	1660	0	0	1660	0	1660
35950081	Baco backup pump	06/30/79	1	0.00	7.00	4	452	0	0	452	0	452
35950082	Tacco	06/30/79	1	0.00	7.00	4	981	0	0	981	0	981
35950083	Drill press - floor	06/30/79	1	0.00	7.00	4	383	0	0	383	0	383
35950084	Drill press - bench	06/30/79	1	0.00	7.00	4	165	0	0	165	0	165
35950085	8" sure center vises	06/30/79	1	0.00	7.00	4	798	0	0	798	0	798
35950086	Welding gun	06/30/79	1	0.00	7.00	4	138	0	0	138	0	138
35950087	2 welding machines	06/30/79	1	0.00	7.00	4	1000	0	0	1000	0	1000

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Asset Number	Description	Date Acquired	Depr Meth	Salv %	Life/ Class	Conv	Asset Basis	SEC 179 EXP	ITC Basis Reduction	Recovery Basis	Current Depreciation	Accumulated Depreciation
35950091	2 - 8" center vise	06/30/81	1	0.00	7.00	4	722	0	0	722	0	722
35950092	2 milling cutter	06/30/81	1	0.00	7.00	4	838	0	0	838	0	838
35950093	Fixture for drilling press	06/30/81	1	0.00	7.00	4	1200	0	0	1200	0	1200
35950094	Magnetic drill base	01/31/82	20	0.00	5.00	2	525	0	0	525	0	525
35950096	1.128 x .9108 pull broach	05/31/82	20	0.00	5.00	2	1321	0	0	1321	0	1321
35950097	2 Micrometers	05/31/82	20	0.00	5.00	2	508	0	0	508	0	508
35950098	1.003 x .817 pull broach	07/31/82	20	0.00	5.00	2	1183	0	0	1183	0	1183
35950099	Tool - tap & spade drill	07/31/82	20	0.00	5.00	2	1615	0	0	1615	0	1615
35950100	Chain hoist w/ trolley	08/31/82	20	0.00	5.00	2	650	0	0	650	0	650
35950101	#4 Press	02/28/83	1	0.00	5.00	4	4214	0	0	4214	0	4214
35950103	12" Power chuck	04/30/83	20	0.00	5.00	2	975	0	0	975	0	975
35950104	Victor machine torch	04/30/83	20	0.00	5.00	2	675	0	0	675	0	675
35950105	5000# Hammer	09/30/83	20	0.00	5.00	2	144957	0	0	144957	0	144957
35950106	DD pull 1.128 x .9108	09/30/83	20	0.00	5.00	2	1450	0	0	1450	0	1450
35950107	Electrical system	09/30/83	20	0.00	5.00	2	28673	0	0	28673	0	28673
35950109	Pull broach	01/28/84	20	0.00	5.00	2	1355	0	0	1355	0	1355
35950110	Drill press	01/23/84	20	0.00	5.00	2	2100	0	0	2100	0	2100
35950111	Boring head	03/01/84	20	0.00	5.00	2	355	0	0	355	0	355
35950112	Buttress tap	03/07/84	20	0.00	5.00	2	451	0	0	451	0	451
35950113	Grinder	03/26/84	20	0.00	5.00	2	1510	0	0	1510	0	1510
35950114	Turret lathe	04/09/84	20	0.00	5.00	2	6000	0	0	6000	0	6000
35950116	Grinder	04/21/84	20	0.00	5.00	2	150	0	0	150	0	150
35950117	Tap	04/23/84	20	0.00	5.00	2	193	0	0	193	0	193
35950118	Lathe	05/01/84	20	0.00	5.00	2	3500	0	0	3500	0	3500
35950120	Scales	06/15/84	20	0.00	5.00	2	251	0	0	251	0	251
35950121	Die press	06/15/84	20	0.00	5.00	2	22341	0	0	22341	0	22341
35950122	Pull broach	07/12/84	20	0.00	5.00	2	1371	0	0	1371	0	1371
35950123	Ring gauge	08/07/84	20	0.00	5.00	2	264	0	0	264	0	264
35950124	Ring gauge	08/15/84	20	0.00	5.00	2	268	0	0	268	0	268
35950125	Apex vise	10/11/84	20	0.00	5.00	2	200	0	0	200	0	200
35950126	Tocco - transformer	10/31/84	20	0.00	5.00	2	22021	0	0	22021	0	22021
35950127	Drill head	12/26/84	20	0.00	5.00	2	3228	0	0	3228	0	3228
35950129	#1 Press	03/04/85	20	0.00	5.00	2	4389	0	0	4389	0	4389
35950131	Left hand tap	03/08/85	20	0.00	5.00	2	299	0	0	299	0	299
35950132	Tocco (Eye rod press)	03/12/85	20	0.00	5.00	2	19077	0	0	19077	0	19077
35950133	47GGS Grinder	03/22/85	20	0.00	5.00	2	195	0	0	195	0	195
35950134	Landex die head	04/01/85	20	0.00	5.00	2	3424	0	0	3424	0	3424
35950135	#3 Press	04/05/85	20	0.00	5.00	2	3302	0	0	3302	0	3302
35950136	Wilton SQ Wheel Grinder	05/04/85	20	0.00	5.00	2	793	0	0	793	0	793
35950137	Die sinking mill - Pratt & Whi	05/10/85	20	0.00	5.00	2	7000	0	0	7000	0	7000
35950138	Baker drill head	05/10/85	20	0.00	5.00	2	776	0	0	776	0	776
35950139	Power steam cleaner	10/23/85	20	0.00	5.00	2	1367	0	0	1367	0	1367
35950140	Clausing 8112 Lathe	04/30/86	20	0.00	5.00	2	12750	0	0	12750	0	12750

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Asset Number	Description	Date Acquired	Depr Meth	Salv %	Life/ Class	Conv	Asset Basis	SEC 179 EXP	ITC Basis Reduction	Recovery Basis	Current Depreciation	Accumulated Depreciation
35950141	RMSE Compressor	06/30/85	20	0.00	5.00	2	24127	0	0	24127	0	24127
35950142	Cooling Tower & Basin	10/31/86	20	0.00	5.00	2	7336	0	0	7336	0	7336
35950143	Cincinnati Power Mill 450-20	11/30/86	20	0.00	5.00	2	24587	0	0	24587	0	24587
35950144	Hydrotel	02/28/87	24*	0.00	7.00	2	23138	0	0	23138	0	23138
35950145	5000# Furnace	04/30/87	24*	0.00	7.00	2	8946	0	0	8946	0	8946
35950146	Hydrotel Mill	04/30/87	24*	0.00	7.00	2	8245	0	0	8245	0	8245
35950149	Portable Welder	09/30/89	24*	0.00	7.00	2	1604	0	0	1604	0	1604
35950150	6000# Forklift	10/12/89	24*	0.00	7.00	8	22000	0	0	22000	0	22000
35950151	Drill Press	12/15/89	24*	0.00	7.00	8	6342	0	0	6342	0	6342
35950153	Tocco Cooling Tower & Basin	04/30/90	24*	0.00	7.00	2	2232	0	0	2232	0	2232
35950154	Horizontal Mill - Jasper-Belgi	07/30/90	24*	0.00	7.00	2	2500	0	0	2500	0	2500
35950155	Rebuild Wheelabrator	11/01/90	24*	0.00	7.00	8	15631	0	0	15631	0	15631
35950156	7" Upsetter Backstop Assembly	12/01/90	24*	0.00	7.00	8	8228	0	0	8228	0	8228
35950157	Hydraulic Press	04/30/92	24*	0.00	7.00	2	5028	0	0	5028	0	5028
35950158	Equipment - Produce all Plow B	03/09/93	24*	0.00	7.00	2	6000	0	0	6000	451	6000
35950159	Hydraulic Press W/Power Unit	04/01/93	24*	0.00	7.00	2	2000	0	0	2000	150	2000
35950160	Sliding Head Drill W/1 Drill H	04/14/93	24*	0.00	7.00	2	2000	0	0	2000	150	2000
35950161	20" S.S. Quench Tank	04/14/93	24*	0.00	7.00	2	300	0	0	300	23	300
35950162	Brick Cut-off Saw	04/14/93	24*	0.00	7.00	2	350	0	0	350	26	350
35950163	Cement Mixer	04/14/93	24*	0.00	7.00	2	150	0	0	150	11	150
35950164	Horizonal Bandsaw 230/460V, Do	04/14/93	24*	0.00	7.00	2	1050	0	0	1050	79	1050
35950165	100 Ton Trimmer W/12" Stroke	04/16/93	24*	0.00	7.00	2	2250	0	0	2250	169	2250
35950166	Gas Fired Forge Furnace 8' Box	04/14/93	24*	0.00	7.00	2	3000	0	0	3000	225	3000
35950167	Gas Fired Forge 8' Open Face	04/14/93	24*	0.00	7.00	2	500	0	0	500	38	500
35950168	Electric Power Sweeper	04/14/93	24*	0.00	7.00	2	200	0	0	200	15	200
35950169	Baker Drill Press 4"	09/08/93	24*	0.00	7.00	2	300	0	0	300	23	300
35950170	Furnace	09/30/93	24*	0.00	7.00	2	1761	0	0	1761	132	1761
35950171	Air receiver	09/30/93	24*	0.00	7.00	2	5082	0	0	5082	382	5082
35950172	2000# Drop Hammer	09/30/93	24*	0.00	7.00	2	15829	0	0	15829	1190	15829
35950173	Large Air Tank	12/31/93	24*	0.00	7.00	2	2651	0	0	2651	199	2651
35950174	Hammer 5000# Erie	02/17/94	24*	0.00	7.00	2	11743	0	0	11743	1059	10860
35950175	Hydraulic Press (Handholds)	03/09/94	24*	0.00	7.00	2	2000	0	0	2000	181	1850
35950176	Upsetter 1 1/2"	07/31/94	24*	0.00	7.00	2	6295	0	0	6295	568	5822
35950177	Harmer Ram 5000# Erie	12/06/94	24*	0.00	7.00	2	12321	0	0	12321	1218	11306
35950196	1980 Dies	06/30/80	1	0.00	3.00	4	50539	0	0	50539	0	50539
35950197	1981 Dies	06/30/81	1	0.00	3.00	4	47679	0	0	47679	0	47679
35950198	1982 patterns & dies	06/30/82	20	0.00	5.00	2	69137	0	0	69137	0	69137
35950199	1983 Dies & patterns	06/30/83	20	0.00	5.00	2	56156	0	0	56156	0	56156
35950200	1984 Dies & patterns	06/30/84	20	0.00	5.00	2	130003	0	0	130003	0	130003
35950201	1986 additions	06/30/85	20	0.00	5.00	2	45707	0	0	45707	0	45707
35950202	Anode stub die	06/30/86	1	0.00	3.00	4	8210	0	0	8210	0	8210
35950223	1000 TACCO - CENTRIFUGAL COOL	06/30/78	1	0.00	7.00	2	1296	0	0	1296	0	1296
35950224	DC Generator & Heater Controls	10/31/84	20	0.00	5.00	2	53912	0	0	53912	0	53912

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Asset Number	Description	Date Acquired	Depr Meth	Salv %	Life/ Class	Conv	Asset Basis	SEC 179 EXP	ITC Basis Reduction	Recovery Basis	Current Depreciation	Accumulated Depreciation
35950225	Centrifugal Pumps	10/31/86	20	0.00	5.00	2	7336	0	0	7336	0	7336
35950226	Tacco Centrifugal Pumps	04/30/90	24*	0.00	7.00	2	2232	0	0	2232	0	2232
35950227	Air receiver	09/30/93	24*	0.00	7.00	2	3811	0	0	3811	286	3811
35950228	Air Receiver	09/30/93	24*	0.00	7.00	2	3811	0	0	3811	286	3811
35950235	HYDRAULIC PRESS	08/31/95	24*	0.00	7.00	2	4310	0	0	4310	378	3632
35970061	CAT V50B FORKLIFT S0008	04/30/97	24	0.00	7.00	2	15500	0	0	15500	1937	10659
Total Acct Number 1725							1411945	0	0	1411945	9176	1403905
35950002	1994 Chevrolet C3500 PU	08/18/94	24*	0.00	5.00	2	20000	0	0	20000	0	20000
35950095	Chevy truck	01/31/82	20	0.00	3.00	2	4160	0	0	4160	0	4160
Total Acct Number 1730							24160	0	0	24160	0	24160
35950003	Office furniture	06/30/72	1	0.00	10.00	4	1081	0	0	1081	0	1081
35950004	Air conditioner	06/30/72	1	0.00	10.00	4	75	0	0	75	0	75
35950005	Office furniture	06/30/73	1	0.00	10.00	4	1946	0	0	1946	0	1946
35950006	2 Drawer file	06/30/74	1	0.00	10.00	4	110	0	0	110	0	110
35950007	Davenport	06/30/74	1	0.00	10.00	4	253	0	0	253	0	253
35950008	Table lamp	06/30/74	1	0.00	10.00	4	90	0	0	90	0	90
35950009	3 Tables	06/30/74	1	0.00	10.00	4	215	0	0	215	0	215
35950010	Desk & Chair	06/30/74	1	0.00	10.00	4	200	0	0	200	0	200
35950011	Electric Clock	06/30/74	1	0.00	10.00	4	95	0	0	95	0	95
35950012	File cabinet	06/30/75	1	0.00	10.00	4	143	0	0	143	0	143
35950013	Gray desk & chair	06/30/75	1	0.00	7.00	4	232	0	0	232	0	232
35950014	Check protector	06/30/75	1	0.00	7.00	4	70	0	0	70	0	70
35950015	Desk	06/30/75	1	0.00	7.00	4	185	0	0	185	0	185
35950016	Chair	06/30/76	1	0.00	7.00	4	85	0	0	85	0	85
35950017	Non file	06/30/76	1	0.00	7.00	4	97	0	0	97	0	97
35950018	Non file (2)	06/30/76	1	0.00	7.00	4	175	0	0	175	0	175
35950019	2 drawer file	06/30/77	1	0.00	7.00	4	91	0	0	91	0	91
35950020	Drafting table	06/30/78	1	0.00	8.00	4	400	0	0	400	0	400
35950021	File cabinet	06/30/78	1	0.00	8.00	4	139	0	0	139	0	139
35950022	Ten metal desk	06/30/79	1	0.00	7.00	4	250	0	0	250	0	250
35950023	Swivel airchair	06/30/79	1	0.00	7.00	4	75	0	0	75	0	75
35950024	4 drawer legal file	06/30/79	1	0.00	7.00	4	110	0	0	110	0	110
35950025	2 Black files	06/30/79	1	0.00	7.00	4	254	0	0	254	0	254
35950026	Lighting tray	06/30/79	1	0.00	7.00	4	134	0	0	134	0	134
35950027	Chair	06/30/80	1	0.00	7.00	4	137	0	0	137	0	137
35950028	Desk	06/30/80	1	0.00	7.00	4	200	0	0	200	0	200
35950029	Painting	06/30/81	1	0.00	7.00	4	268	0	0	268	0	268
35950033	Printer	12/15/85	24*	0.00	5.00	5	609	0	0	609	0	609
35950035	Chairs - Office (4)	06/23/92	24*	0.00	7.00	2	352	0	0	352	0	352

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Asset Number	Description	Date Acquired	Depr Meth	Salv %	Life/ Class	Conv	Asset Basis	SEC 179 EXP	ITC Basis Reduction	Recovery Basis	Current Depreciation	Accumulated Depreciation
35950236	486 PC 16 MG RAM W/MONITOR	08/21/95	24*	0.00	5.00	2	2065	0	0	2065	181	2065
35970002	1998 COMPUTERS	10/31/98	24	0.00	5.00	8	6943	0	0	6943	1805	4235
Total Acct Number 1735							17079	0	0	17079	1986	14371
35950192	Yard paving	06/30/81	1	0.00	4.00	4	14945	0	0	14945	0	14945
35950194	Chain link fence	04/30/84	1	0.00	5.00	4	1883	0	0	1883	0	1883
35950195	Paving	09/31/86	1	0.00	5.00	4	3275	0	0	3275	0	3275
35950219	Lot Plant Piping	06/30/75	1	0.00	10.00	4	56905	0	0	56905	0	56905
35950220	Lot Plant Piping	06/30/75	1	0.00	10.00	4	22625	0	0	22625	0	22625
35950221	Lot Plant Piping	06/30/75	1	0.00	10.00	4	28796	0	0	28796	0	28796
Total Acct Number 1745							128429	0	0	128429	0	128429
C35980002	REBUILD TRIM PRESS	01/31/99	95	0.00	1.00		4595	0	0	4595	0	0
C35990001	ROTARY SCREW AIR COMPRESSORS	10/30/99	95	0.00	1.00		27650	0	0	27650	0	0
Total Acct Number 1755							32245	0	0	32245	0	0
Grand Total							1638310	0	0	1638310	11625	1575183

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FIXED ASSET MANAGEMENT SYSTEM Version 7.91
Tax Depreciation Report
CFMN
For the Period 9/1/1999 to 8/31/2000
For Domestic Regular

Total Records Processed: 173

Total Warnings : 0

Select Detail : COLUMBIA FORGE

Field Name	Book Name	Operator	Values(s)	And /Or
Asset Entity		=	1535	

Sort Detail : ACCT-NUMBER DN

Sort Fields	Book	Total Break	Page Break
Acct Number		Y	N

COLUMBIA FORGE
INCOME STATEMENT

For the Ten Months Ending June 30, 2000

Description	Current Period	% of Revenue	YTD Current Period	% of Revenue	Prior YTD Current Period	% of Revenue
REVENUE						
Outside Scrap Sales						
Interlocation Scrap Sales					1,008	*******
Sales to Consolidating Entities						
Other Revenues	136,897	100	1,465,546	100	1,656,169	100
Sales Deductions	430	0	(5,251)	(0)	(3,578)	(0)
Net Revenues	137,326	100	1,460,295	100	1,653,599	100
COST OF GOODS SOLD AND OTH. EXP.						
Material	73,398	53	707,709	48	792,323	48
Production						
Inventoriable Production Costs						
Salaries and Wages	6,345	5	66,603	5	76,944	5
Fringe Benefits	(2,604)	(2)	(3,515)	(0)	(352)	********
Rent	5,300	4	49,850	3	54,190	3
Repairs and Maint.	1,312	1	24,857	2	27,325	2
Depreciation and Amortization	6,541	5	85,844	6	102,091	6
Other Production Costs	13,963	10	163,275	11	190,224	12
Less: Inventoriable Costs						
Total Cost of Goods Sold	104,256	76	1,094,623	75	1,242,746	75
GROSS MARGIN	33,071	24	365,672	25	410,854	25
SELLING, GENERAL AND ADMIN. EXPENSES						
Salaries and Wages	13,912	10	111,419	8	127,785	8
Fringe Benefits			64	*******	19,364	1
Depreciation and Amortization	1,042	1	10,417	1	10,417	1
Rent						
Other	3,666	3	17,783	1	41,548	3
Admin Allocation	2,661	2	20,376	1	15,994	1
Total SG & A Expenses	21,281	15	160,059	11	215,108	13
OPERATING INCOME	11,789	9	205,613	14	195,746	12
Other Income / (Expense)			85,526	6	7,990	0
FIFO PRETAX INCOME (LOSS)	11,789	9	291,138	20	203,736	12

S 22 File for additional info

DEPT OF ENVIRONMENTAL QUALITY
RECEIVED

APR 12 1999

NORTHWEST REGION

April 9, 1999

Mr. Steve Fortuna
Site Assessment Program
Oregon Department of Environmental Quality
2020 S.W. Fourth Avenue, Suite 400
Portland, OR 97201-4987

RE: Response to Information Request
Crawford Street Corporation/Columbia Forge & Machine Works, Inc.
8424 N. Crawford Street
Portland, OR 97203
Multnomah County

Dear Mr. Fortuna:

Columbia Forge and Machine Works (CFMW) received your letter dated March 3, 1999 requesting information regarding our site at the referenced address. We have reviewed our files and have assembled the following information in response to your request. We have presented the data in the same format as the *Site Assessment Information Request* outline you provided with your letter so facilitate your review of the provided information.

Background Information

Facility Name and Address

The site is most commonly referred to as:

Columbia Forge & Machine Works, Inc.
8424 N. Crawford Street
Portland, Oregon 97203

Facility Owners and Operators Names, Titles, Addresses, and Phone Numbers

The site is currently owned by Crawford Street Corporation. The site is operated by Columbia Forge & Machine Works, Inc. The site contact is:

Doug McMullin, M.E.
8424 N. Crawford Street
Portland, Oregon 97203
Phone (503) 286-3621

Outdoor Process Areas

The primary outdoor process areas on the site consist of:

- The Central Yard is where steel pieces are manufactured.
- The Western Yard is where raw steel is stored.

These areas are shown on Attachment 1.

Above Ground Storage Tanks

No above ground storage tanks containing liquids are located on the site.

One stationary propane tank is located in the Central Yard along the eastern property boundary. Three stationary ambient oxygen tanks are located in the Central Yard. A limited number of oxygen, acetylene and propane tanks are present in the Weld Shop area. CFMW forklifts also have small propane attached tanks.

Underground Storage Tanks

All known underground storage tanks (USTs) were removed from the site in the late 1980s as part of an overall UST removal program. The tanks were removed by a licensed contractor using the standard of practice at that time and in accordance with applicable regulations.

Two underground storage tanks are believed to have been located in the Central Yard portion and the Weld Shop of the site. One tank was a 1,000-gallon gasoline tank (Weld Shop) and one was a 1,000-gallon bunker oil tank (Central Yard). The DEQ Notification Form is included in Attachment 2.

No evidence of contamination was reported during the removal of these tanks.

Waste Treatment Systems

No waste treatment systems are located on site. All liquids are recycled when spent. All solids are disposed as solid waste with the regional waste disposal contractor.

On-site Wells

No wells exist on site.

Any On-site Chemical or Waste Treatment Systems

There are no chemical or waste treatment systems on site.

Past and Present Chemical and Waste Storage and Disposal Areas

The following areas are used to store waste materials on the site.

- Used oil, lubricants and degreaser materials are stored within a cover containment area referred to as the Oil Storage Hut (Attachment 1).
- Used petroleum distillate solvent is contained in 2 parts washers, both located in Building 3. Safety-Kleen, routinely services the units and transports the distillate to their facility in Clackamas, Oregon for eventual recycling.

Other solid waste is contained in wastebaskets and garbage cans at various locations around the facility. This material is either segregated for recycling or placed in a six cubic yard dumpster at the east end of the Oil Storage Hut. Paper and wood debris (solid waste) is typically hauled off site by an independent recycler or self hauled to a recycling facility.

Type, Quantity, and Destination of Wastes Removed from the Site

Approximately 72 cubic yards of solid waste per year are disposed at the USA Waste facility in Hillsboro, Oregon. Approximately 1,000 to 4,999 gallons of used hydraulic and motor oil is removed from the site on a yearly basis for recycling by Spencer Environmental of Oregon City, Oregon. Other degreaser (0 to 4 gallons) and organic lubricating material (0 to 4 gallons) is also periodically recycled by Spencer Environmental. Safety-Kleen transports and recycles the petroleum naphtha solvent (53 gallons in 1998) from CFMW. The solvent is taken to their Clackamas, Oregon facility.

Spills or Releases During Operation or Ownership

Minor releases of lubricating, hydraulic, or motor oil have occurred near machinery. The release is typically a very small volume (i.e., less than one gallon), on concrete, and is always cleaned up immediately. These incidents have not caused impacts to soil or ground water.

In May1987, a transformer capacitor overheated and leaked a small volume (estimated to be 2 to 3 ounces) of PCB containing oil. The oil impacted the transformer, which was the surface below the capacitor which completely contained the spill. The volume released was reported to be less than 10 pounds. After attempting to have the transformer unit cleaned for reuse, all the PCB impacted material and equipment, including the transformer which caught the spill, was transported off site and disposed of by General Electric. Disposal records are provided in Attachment 4.

clean the impacted transformer. The laboratory reports and available sampling correspondence for the sampling events is presented in Attachment 6.

BES DEQ Storm Water Investigation

On July 9, 1997, the City of Portland Bureau of Environmental Services (BES) and the DEQ performed a storm water inspection at the CFMW facility to determine whether CWMW needed a storm water permit. After the inspection was completed it was determined that storm water runoff did not directly discharge to a waterway and implementation of best management practices would be adequate to mitigate storm water runoff. A sample collected by the BES, prior to the inspection (June 17, 1997) is provided in Attachment 7.

Summary

We hope the above information is useful to you. While we have provided all data and information that seems directly responsive to your questions, please understand that we have not attempted to provide every piece of information that is arguably called for. For example, we have not provided miscellaneous analytical data found in the files that we are unable to associate to any known sampling event or that we are unable to connect to the subject property. We have also not looked for, or provided, documents in the possession of our legal counsel that would be protected by attorney-client or work product privileges. We have also not contacted previous owners to obtain historical site information. Once again we hope this submittal is useful to you.

Sincerely,

Columbia Forge & Machine Works, Inc.

Doug McMullin, M.E.
General Manager

Attachment 1 - Site Plan Figure
Attachment 2 - Underground Storage Tank Notification Form
Attachment 3 - State Fire Marshall Surveys and Other Documentation
Attachment 4 - Transformer Spill Memorandum and Disposal Documentation
Attachment 5 - UST Laboratory Analysis Reports
Attachment 6 - Transformer Sampling and Analysis Reports
Attachment 7 – BES Storm Water Sample

Attachment 1
Site Plan Figure

COLUMBIA FORGE
AND MACHINE WORKS
8424 N. CRAWFORD ST.
PORTLAND, OR 97203

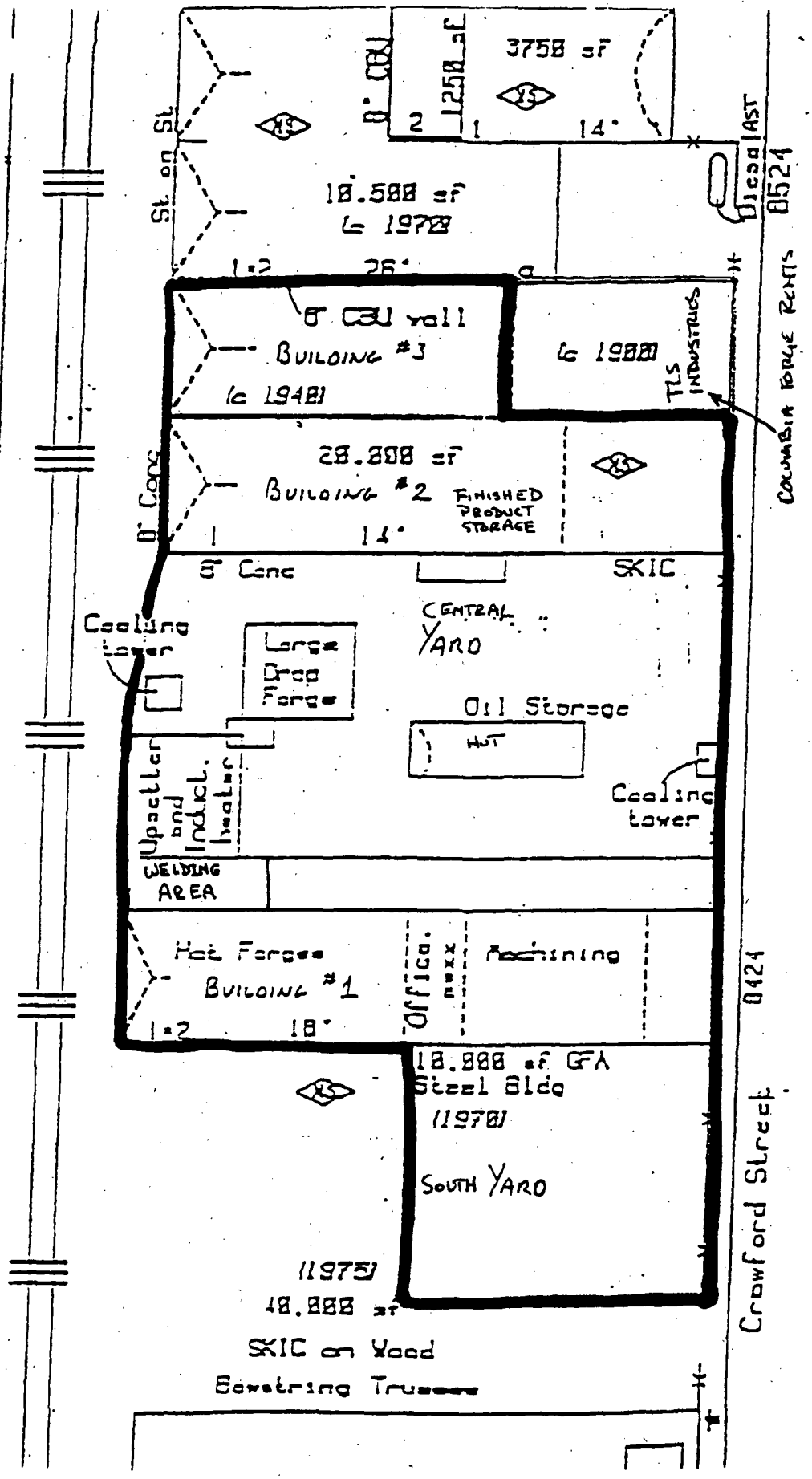
THE SITE CONSISTS OF THREE BUILDINGS AND TWO YARDS.

PARKING IS ON CITY STREETS.

NO CHANGES OR ADDITIONS ARE PLANNED.

COLUMBIA FORGE
TOTAL SF = 57,000
BUILDING SF = 27,000

23 OCT 91



CRAW00015051

Attachment 2
Underground Storage Tank Notification Form

Notification for Underground Storage Tanks

APPROVAL EXPIRES 6-30-88

Return To: **Oregon Department of Environmental Quality**
Underground Storage Tank Program
P.O. Box 1760
Portland, Oregon 97207

STATE USE ONLY
I.D. No.
Date Received

GENERAL INFORMATION

Notification is required by Federal law for all underground tanks that have been used to store regulated substances since January 1, 1974, that are in the ground as of May 8, 1986, or that are brought into use after May 8, 1986. The information requested is required by Section 9002 of the Resource Conservation and Recovery Act, (RCRA), as amended.

The primary purpose of this notification program is to locate and evaluate underground tanks that store or have stored petroleum or hazardous substances. It is expected that the information you provide will be based on reasonably available records, or, in the absence of such records, your knowledge, belief, or recollection.

Who Must Notify! Section 9002 of RCRA, as amended, requires that, unless exempted, owners of underground tanks that store regulated substances must notify designated State or local agencies of the existence of their tanks. Owner means—

(a) in the case of an underground storage tank in use on November 8, 1984, or brought into use after that date, any person who owns an underground storage tank used for the storage, use, or dispensing of regulated substances, and

(b) in the case of any underground storage tank in use before November 8, 1984, but no longer in use on that date, any person who owned such tank immediately before the discontinuation of its use.

What Tanks Are Included! Underground storage tank is defined as any one or combination of tanks that (1) is used to contain an accumulation of "regulated substances," and (2) whose volume (including connected underground piping) is 10% or more beneath the ground. Some examples are underground tanks storing: 1. gasoline, used oil, or diesel fuel, and 2. industrial solvents, pesticides, herbicides or fumigants.

What Tanks Are Excluded! Tanks removed from the ground are not subject to notification. Other tanks excluded from notification are:

1. farm or residential tanks of 1,100 gallons or less capacity used for storing motor fuel for noncommercial purposes;
2. tanks used for storing heating oil for consumptive use on the premises where stored;
3. septic tanks;
4. pipeline facilities (including gathering lines) regulated under the Natural Gas Pipeline Safety Act of 1968, or the Hazardous Liquid Pipeline Safety Act of 1979, or which is an intrastate pipeline facility regulated under State laws;
5. surface impoundments, pits, ponds, or lagoons;
6. storm water or waste water collection systems;
7. flow-through process tanks;
8. liquid traps or associated gathering lines directly related to oil or gas production and gathering operations;
9. storage tanks situated in an underground area (such as a basement, cellar, mineworking drift, shaft, or tunnel) if the storage tank is situated upon or above the surface of the floor.

What Substances are Covered! The notification requirements apply to underground storage tanks that contain regulated substances. This includes any substance defined as hazardous in section 101 (14) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), with the exception of those substances regulated as hazardous waste under Subtitle C of RCRA. It also includes petroleum, e.g., crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute).

Where To Notify! Completed notification forms should be sent to the address given at the top of this page.

When To Notify! 1. Owners of underground storage tanks in use or that have been taken out of operation after January 1, 1974, but still in the ground, must notify by May 8, 1986. 2. Owners who bring underground storage tanks into use after May 8, 1986, must notify within 30 days of bringing the tanks into use.

Penalties: Any owner who knowingly fails to notify or submits false information shall be subject to a civil penalty not to exceed $10,000 for each tank for which notification is not given or for which false information is submitted.

INSTRUCTIONS

Please type or print in ink all items except "signature" in Section V. This form must be completed for each location containing underground storage tanks. If more than 5 tanks are owned at this location, photocopy the reverse side, and staple continuation sheets to this form.

Indicate number of continuation sheets attached. 0

I. OWNERSHIP OF TANK(S)

Owner Name (Corporation, Individual, Public Agency, or Other Entity)
COLUMBIA FORGE + MACH. WORKS

Street Address
8424 N. CRAWFORD

County
MULTNOMAH

City: PORTLAND State: OR. Zip Code: 97203

Area Code Phone Number: (503) 286-3621

Type of Owner (Mark all that apply ☒)

☒ Current ☐ Former

☐ State or Local Gov't. ☐ Federal Gov't. ☐ (GSA facility I.D. no.) _____

☒ Private or Corporate ☐ Ownership uncertain

II. LOCATION OF TANK(S)

(If same as Section I, mark box here ☒)

Facility Name or Company Site Identifier, as applicable

Street Address or State Road, as applicable

County

City (nearest) State Zip Code

Indicate number of tanks at this location 2

Mark box here if tank(s) are located on land within an Indian reservation or other Indian trust lands ☐

III. CONTACT PERSON AT TANK LOCATION

Name (if same as Section I, mark box here ☐): HENRY STROMQUIST

Job Title: GENERAL MANAGER

Area Code: (503) Phone Number: 286-3621

IV. TYPE OF NOTIFICATION

☐ Mark box here only if this is an amended or subsequent notification for this location.

V. CERTIFICATION (Read and sign after completing Section VI.)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete.

Name and official title of owner or owner's authorized representative	Signature	Date Signed
HENRY STROMQUIST — GEN MGR	Henry Stromquist	1/19/87

CONTINUE ON REVERSE SIDE

EPA Form 7530-1 (11-85)

Please complete the voluntary UST Survey on Page 4.

B 11575

CRAW00015053

Owner Name (from Section I) COLUMBIA FORGE Location (from Section II) PORTLAND, OR. Page No. 2 of 3 Pages

VI. DESCRIPTION OF UNDERGROUND STORAGE TANKS *(Complete for each tank at this location.)*

Tank Identification No. (e.g., ABC-123), or Arbitrarily Assigned Sequential No. (e.g., 1,2,3...)	Tank No. 1	Tank No. 2	Tank No.	Tank No.	Tank No.
1. Status of Tank *(Mark all that apply ☒)* Currently in Use	☐	☐	☐	☐	☐
Temporarily Out of Use	☐	☐	☐	☐	☐
Permanently Out of Use	☒	☒	☐	☐	☐
Brought into Use after 5/8/86	☐	☐	☐	☐	☐
2. Estimated Age (Years)	19	35			
3. Estimated Total Capacity (Gallons)	1000	1000			
4. Material of Construction *(Mark one ☒)* Steel	☒	☒	☐	☐	☐
Concrete	☐	☐	☐	☐	☐
Fiberglass Reinforced Plastic	☐	☐	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
Other, Please Specify					
5. Internal Protection *(Mark all that apply ☒)* Cathodic Protection	☐	☐	☐	☐	☐
Interior Lining (e.g., epoxy resins)	☐	☐	☐	☐	☐
None	☒	☒	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
Other, Please Specify					
6. External Protection *(Mark all that apply ☒)* Cathodic Protection	☐	☐	☐	☐	☐
Painted (e.g., asphaltic)	☐	☐	☐	☐	☐
Fiberglass Reinforced Plastic Coated	☐	☐	☐	☐	☐
None	☒	☒	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
Other, Please Specify					
7. Piping *(Mark all that apply ☒)* Bare Steel	☒	☒	☐	☐	☐
Galvanized Steel	☐	☐	☐	☐	☐
Fiberglass Reinforced Plastic	☐	☐	☐	☐	☐
Cathodically Protected	☐	☐	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
Other, Please Specify					
8. Substance Currently or Last Stored in Greatest Quantity by Volume *(Mark all that apply ☒)* a. Empty	☐	☒	☐	☐	☐
b. Petroleum					
Diesel	☐	☐	☐	☐	☐
Kerosene	☐	☐	☐	☐	☐
Gasoline (including alcohol blends)	☐	☒	☐	☐	☐
Used Oil	☒	☐	☐	☐	☐
Other, Please Specify	BUNKER OIL				
Please c. Hazardous Substance	☐	☐	☐	☐	☐
Indicate Name of Principal CERCLA Substance					
or Chemical Abstract Service (CAS) No.					
Mark box ☒ if tank stores a mixture of substances	☐	☐	☐	☐	☐
d. Unknown	☐	☐	☐	☐	☐
9. Additional information (for tanks permanently taken out of service) a. Estimated date last used (mo/yr)	1975	1960	/	/	/
b. Estimate quantity of substance remaining (gal.)	100	EMPTY			
c. Mark box ☒ if tank was filled with inert material (e.g., sand, concrete)	☐	☒	☐	☐	☐

Form 7530-1 (11-85) Reverse

THANK YOU FOR YOUR ASSISTANCE

B 11576

CRAW00015054

Owner Name (from Section I EPA Form) COLUMBIA FORGE Location (from Section II EPA form) PORTLAND OR. Page 3 of 3 Pages

OREGON UNDERGROUND STORAGE TANK (UST) SURVEY

The underground storage tank program will soon include performance standards for new tanks and regulations for leak detection/prevention and corrective actions which will affect owners and operators of underground storage tanks. In preparation for these new requirements, the Department has prepared a state-wide survey. The Department requests that owners of underground storage tanks complete the survey questions.

Your response to these questions will assist the Department in developing a cost-effective and responsive state-wide regulatory program. In addition, owners of underground storage tanks may find the survey useful in the management of such tanks.

INSTRUCTIONS

Please type or print in ink all items. Please complete one survey form for each location containing underground storage tanks. Tank I.D. should correspond to Tank I.D. on EPA form 7530-1 for the respective facility location. If more than five tanks are owned at this location, photocopy this survey or request additional forms from DEQ, and staple continuation sheets to this survey.

Tank Identification No.	Tank No. 1	Tank No. 2	Tank No.	Tank No.	Tank No.
1. Status of Tank *(Check One)* — If temporarily out of use, Estimated time out of use:					
1 month - 6 months	☐	☐	☐	☐	☐
6 months - 1 year	☐	☐	☐	☐	☐
1 year - 5 years	☐	☐	☐	☐	☐
5 years or more	X	X	☐	☐	☐
Estimated date to be brought back into use (mo/yr)	/	/	/	/	/
2. Was tank new at time of installation? (Y/N)	UNKNOWN	UNKNOWN			
3. Containment Systems *(check one)* — Single-walled tank	X	X	☐	☐	☐
Double-walled tank	☐	☐	☐	☐	☐
Pit-lining system	☐	☐	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
4. Leak Detection System *(check all that apply)* — Visual	☐	☐	☐	☐	☐
Stock inventory	☐	☐	☐	☐	☐
Tile drain	☐	☐	☐	☐	☐
Vapor wells	☐	☐	☐	☐	☐
Sensor instrument (specify type):					
In-ground detector	☐	☐	☐	☐	☐
Within walls of double-walled tank	☐	☐	☐	☐	☐
Ground water monitoring wells	☐	☐	☐	☐	☐
Continuous in piping	☐	☐	☐	☐	☐
Pressure test	☐	☐	☐	☐	☐
Internal inspection	☐	☐	☐	☐	☐
Other, specify					
None	X	X	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
5. Overfill Protection (Yes/No)	NO	NO			
6. Location of Piping *(check all that apply)* — No parts in contact with soil	☐	☐	☐	☐	☐
Parts contacting the soil which are:					
Unprotected metal	X	X	☐	☐	☐
Made of corrosion resistant materials	☐	☐	☐	☐	☐
Corrosion-resisted coated	☐	☐	☐	☐	☐
Cathodically protected	☐	☐	☐	☐	☐
Double-walled	☐	☐	☐	☐	☐
Within a secondary containment	☐	☐	☐	☐	☐
Interior lined	☐	☐	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
7. History of Tank Repairs *(check one except as indicated)* — If tank repaired, indicate date of last repairs (mo/yr)	/	/	/	/	/
None	X	X	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
8. History of Pipe Repairs *(check one except as indicated)* — If pipe repaired, indicate date (mo/yr)	/	/	/	/	/
None	X	X	☐	☐	☐
Unknown	☐	☐	☐	☐	☐

THANK YOU FOR YOUR ASSISTANCE

R 11577

Attachment 3
Fire Marshall Survey and Other Documentation

FORM COMPANY

Due Date: NOVEMBER 30, 1998 | 1997-1998 | Facility ID Number 005730

OREGON STATE FIRE MARSHAL
HAZARDOUS SUBSTANCE INFORMATION SURVEY

PLEASE TYPE OR PRINT ONLY CHANGES OR ADDITIONS IN THE [BRACKETED] AREAS TO THE RIGHT OR BELOW THE PREPRINTED DATA

SECTION A HAZARDOUS SUBSTANCE PRESENCE Check the correct box to the left.

☑ YES ☒ NO Are there hazardous substances present at this site in reportable quantities?
If yes, complete sections A, B, C, and D. If no, complete sections A, B and C.
A hazardous substance is any substance for which a Material Safety Data Sheet (MSDS) is required. If a previously reported substance is no longer present, see instructions for Section A.

☐ YES ☑ NO Are there Extremely Hazardous Substances (EHS) at this site that meet the threshold planning quantities?

☐ YES ☑ NO Is this facility subject to the reporting requirements of Section 112(r) of the Clean Air Act?

SECTION B DEMOGRAPHIC DATA Complete, correct or add information in the [bracketed] areas.

1. SIC CODE 1: 3462 DEFINITION: IRON AND STEEL FORGINGS-MFG
2. SIC CODE 2: DEFINITION:
3. BUSINESS ACTIVITY: STEEL FORGING
4. DUN & BRADSTREET #: 00-902-2104
5. MANAGER'S NAME: ~~VINCE SCHILE - MGR~~ [DOUG McMULLIN GEN. MGR.]
6. SEND TO ATTENTION OF: ~~VINCE SCHILE - MGR~~ [DOUG McMULLIN GEN. MGR]
7. E-MAIL ADDRESS: [dmcmullin@schn.com]
8. BUSINESS NAME: COLUMBIA FORGE & MACHINE
9. DEPT OR DIV:
10. SITE ADDRESS: 3424 N CRAWFORD
CITY: PORTLAND
COUNTY: MULTNOMAH
STATE: OR ZIP CODE: 97203
11. MAILING ADDRESS: 3424 N CRAWFORD
CITY: PORTLAND
COUNTY: MULTNOMAH
STATE: OR ZIP CODE: 97203
12. BUSINESS PHONE: 503-236-3621
13. NUMBER OF EMPLOYEES AT THIS SITE: ~~18~~ 17 [17]
14. EMERGENCY ASSISTANCE CONTACT PERSON FOR THIS SITE: ~~VINCE SCHILE~~ [DOUG McMULLIN]
15. EMERGENCY CONTACT PHONES: (503) DAY 503-236-3621 NIGHT ~~[illegible]~~ [(503) 289-5011]
16. RESPONSIBLE FIRE DEPARTMENT: PORTLAND FIRE BUREAU

SPECIAL FIRE DEPARTMENT INFORMATION This section is for information the fire service needs to know in case of an emergency.

17. ☐ YES ☑ NO WRITTEN EMERGENCY PLAN. IF YES, LOCATION:
18. ☐ YES ☑ NO AUTOMATIC FIRE SUPPRESSION SYSTEM PRESENT, e.g., sprinklered, halon system, etc.
19. ☐ YES ☑ NO ARE STORAGE BUILDINGS/TANKS/AREAS PLACARDED ACCORDING TO NFPA 704?
20. ☐ YES ☑ NO ARE OTHER TYPES OF PLACARDS USED?

SECTION C PERSON COMPLETING FORM
This person will be contacted to answer any questions needing clarification.

1. PRINT NAME: DOUG McMULLIN
2. SIGNATURE (REQUIRED): Doug McMullin
3. DATE SURVEY COMPLETED: 11/30/98

DOUG McMULLIN
~~VINCE SCHILE~~ - MGR
COLUMBIA FORGE & MACHINE
3424 N CRAWFORD
PORTLAND OR 97203

RETAIN A COPY OF THIS SURVEY FOR 3 YEARS

PLEASE TYPE OR PRINT ALL ANSWERS. THANK YOU!

FORM CHEMICAL

7-1998 OREGON STATE FIRE MAR AL

HAZARDOUS SUBSTANCE INFORMATION SURVEY

Facility ID Numbe 005730

SECTION D SUBSTANCE INFORMATION - TYPE OR PRINT ONLY CHANGES IN THE [BRACKETED] AREAS

COMMON NAME/TRADE NAME: ARGON 75%/CARBON DIOXIDE 25%

HAZARDOUS INGREDIENT IN HIGHEST CONCENTRATION: ARGON

EHS	1 = PURE 2 = MIXTURE	PHYSICAL STATE (USE TABLE I)	UNIT OF MEASURE (USE TABLE II)	AVG. AMT. CODE (USE TABLE III)	MAX. AMT. CODE (USE TABLE III)	AMT. IN CODE (USE TABLE III)	AMT. OUT CODE (USE TABLE III)	NUMBER OF DAYS ON SITE (3 DIGIT NO.)	STORAGE CODE (USE TABLES IV & V)	HAZARD CLASSES (USE TABLE VI)	CAS NO. (IF KNOWN)
	2	3	3	10	20			365	L 2 4	2.2	0007440-37-
		[ ]	[ ]	[ ]	[11]	[10]	[00]	[ ]	[ ] [ ] [ ]	[ ]	[ ]

STORAGE LOCATIONS AT SITE: WELDING AREA AT REAR OF MAIN BLDG

UN/NA NO. (IF KNOWN): 1956

COMMON NAME/TRADE NAME: ARGON 98%/OXYGEN 2%

HAZARDOUS INGREDIENT IN HIGHEST CONCENTRATION: ARGON

EHS	1 = PURE 2 = MIXTURE	PHYSICAL STATE (USE TABLE I)	UNIT OF MEASURE (USE TABLE II)	AVG. AMT. CODE (USE TABLE III)	MAX. AMT. CODE (USE TABLE III)	AMT. IN CODE (USE TABLE III)	AMT. OUT CODE (USE TABLE III)	NUMBER OF DAYS ON SITE (3 DIGIT NO.)	STORAGE CODE (USE TABLES IV & V)	HAZARD CLASSES (USE TABLE VI)	CAS NO. (IF KNOWN)
	2	3	3	10	20			365	L 2 4	2.2	0007440-37-
		[ ]	[ ]	[20]	[ ]	[20]	[00]	[ ]	[ ] [ ] [ ]	[ ]	[ ]

STORAGE LOCATIONS AT SITE: WELDING AREA AT REAR OF MAIN BLDG

UN/NA NO. (IF KNOWN): 1956

COMMON NAME/TRADE NAME: DEGREASER 353

HAZARDOUS INGREDIENT IN HIGHEST CONCENTRATION: 2-BUTOXYETHANOL

EHS	1 = PURE 2 = MIXTURE	PHYSICAL STATE (USE TABLE I)	UNIT OF MEASURE (USE TABLE II)	AVG. AMT. CODE (USE TABLE III)	MAX. AMT. CODE (USE TABLE III)	AMT. IN CODE (USE TABLE III)	AMT. OUT CODE (USE TABLE III)	NUMBER OF DAYS ON SITE (3 DIGIT NO.)	STORAGE CODE (USE TABLES IV & V)	HAZARD CLASSES (USE TABLE VI)	CAS NO. (IF KNOWN)
	2	2	2	02	02			365	D 1 4	4.5 6.3	0000111-76-
		[ ]	[ ]	[ ]	[ ]	[00]	[00]	[ ]	[ ] [ ] [ ]	[ ]	[ ]

STORAGE LOCATIONS AT SITE: OIL STORAGE AREA IN CENTER OF MAIN YARD

UN/NA NO. (IF KNOWN): 0000

COMMON NAME/TRADE NAME: HYDRAULIC OIL

HAZARDOUS INGREDIENT IN HIGHEST CONCENTRATION: HIGHLY REFINED BASE LUBRICATING OILS

EHS	1 = PURE 2 = MIXTURE	PHYSICAL STATE (USE TABLE I)	UNIT OF MEASURE (USE TABLE II)	AVG. AMT. CODE (USE TABLE III)	MAX. AMT. CODE (USE TABLE III)	AMT. IN CODE (USE TABLE III)	AMT. OUT CODE (USE TABLE III)	NUMBER OF DAYS ON SITE (3 DIGIT NO.)	STORAGE CODE (USE TABLES IV & V)	HAZARD CLASSES (USE TABLE VI)	CAS NO. (IF KNOWN)
	2	2	2	10	10			365	D 1 4	4.5	0064742-65-
		[ ]	[ ]	[ ]	[ ]	[20]	[20]	[ ]	[ ] [ ] [ ]	[ ]	[ ]

STORAGE LOCATIONS AT SITE: VARIOUS TYPES IN OIL STORAGE AREA IN CENTER OF MAIN YARD

UN/NA NO. (IF KNOWN): 1270

FORM CHEMICAL

SECTION D

19 1998 OREGON STATE FIRE MARS' 'L

HAZARDOUS SUBSTANCE INFORMATION SURVEY

SUBSTANCE INFORMATION - TYPE OR PRINT ONLY CHANGES IN THE [BRACKETED] AREAS

Facility ID Number 005730

OMMON NAME/TRADE NAME: MOTOR OIL

AZARDOUS INGREDIENT HIGHEST CONCENTRATION: HIGHLY REFINED BASE OILS

EHS	PHYSICAL STATE (USE TABLE I)	UNIT OF MEASURE (USE TABLE II)	AVG. AMT. CODE (USE TABLE III)	MAX. AMT. CODE (USE TABLE III)	AMT. IN CODE (USE TABLE III)	AMT. OUT CODE (USE TABLE III)	NUMBER OF DAYS ON SITE (3 DIGIT NO.)	STORAGE CODE (USE TABLES IV & V)	HAZARD CLASSES (USE TABLE VI)	CAS NO. (IF KNOWN)
2	2	2	04	04			365	D 1 4	4.5	0064742-54-7

STORAGE LOCATIONS AT SITE: OIL STORAGE AREA IN CENTER O F MAIN YARD

UN/NA NO. (IF KNOWN): 1270

OMMON NAME/TRADE NAME: ORGANIC COMPOUND 135

AZARDOUS INGREDIENT HIGHEST CONCENTRATION: NONE AS PER 29CFR 1910.1200

EHS	PHYSICAL STATE (USE TABLE I)	UNIT OF MEASURE (USE TABLE II)	AVG. AMT. CODE (USE TABLE III)	MAX. AMT. CODE (USE TABLE III)	AMT. IN CODE (USE TABLE III)	AMT. OUT CODE (USE TABLE III)	NUMBER OF DAYS ON SITE (3 DIGIT NO.)	STORAGE CODE (USE TABLES IV & V)	HAZARD CLASSES (USE TABLE VI)	CAS NO. (IF KNOWN)
2	2	2	03	03	04	00	365	D 1 4	9.0	

STORAGE LOCATIONS AT SITE: OIL STORAGE AREA IN CENTER O F MAIN YARD

UN/NA NO. (IF KNOWN): 0000

OMMON NAME/TRADE NAME: OXYGEN

AZARDOUS INGREDIENT HIGHEST CONCENTRATION: OXYGEN

EHS	PHYSICAL STATE (USE TABLE I)	UNIT OF MEASURE (USE TABLE II)	AVG. AMT. CODE (USE TABLE III)	MAX. AMT. CODE (USE TABLE III)	AMT. IN CODE (USE TABLE III)	AMT. OUT CODE (USE TABLE III)	NUMBER OF DAYS ON SITE (3 DIGIT NO.)	STORAGE CODE (USE TABLES IV & V)	HAZARD CLASSES (USE TABLE VI)	CAS NO. (IF KNOWN)
1	3	3	20	20	21	00	365	L 2 4	2.2 5.1	0007782-44-7

STORAGE LOCATIONS AT SITE: WELDING AREA AT REAR OF MAIN BLDG

UN/NA NO. (IF KNOWN): 1072

OMMON NAME/TRADE NAME: PROPANE

AZARDOUS INGREDIENT HIGHEST CONCENTRATION: PROPANE

EHS	PHYSICAL STATE (USE TABLE I)	UNIT OF MEASURE (USE TABLE II)	AVG. AMT. CODE (USE TABLE III)	MAX. AMT. CODE (USE TABLE III)	AMT. IN CODE (USE TABLE III)	AMT. OUT CODE (USE TABLE III)	NUMBER OF DAYS ON SITE (3 DIGIT NO.)	STORAGE CODE (USE TABLES IV & V)	HAZARD CLASSES (USE TABLE VI)	CAS NO. (IF KNOWN)
1	3	2	10	10	20	00	365	A 2 4	2.1 6.3	0000074-98-6

STORAGE LOCATIONS AT SITE: TANK LOCATED BY FENCE IN CEN TER OF MAIN YARD

UN/NA NO. (IF KNOWN): 1075

CRAW00015059

FORM
CHEMICAL

7-1998 OREGON STATE FIRE MAR AL

HAZARDOUS SUBSTANCE INFORMATION SURVEY

Facility ID Numbe
005730

SECTION D

SUBSTANCE INFORMATION - TYPE OR PRINT ONLY CHANGES IN THE [BRACKETED] AREAS

COMMON NAME/TRADE NAME: PROPANE
HAZARDOUS INGREDIENT
IN HIGHEST CONCENTRATION: PROPANE

EHS	PHYSICAL STATE (USE TABLE I)	UNIT OF MEASURE (USE TABLE II)	AVG. AMT. CODE (USE TABLE III)	MAX. AMT. CODE (USE TABLE III)	AMT. IN CODE (USE TABLE III)	AMT. OUT CODE (USE TABLE III)	NUMBER OF DAYS ON SITE (3 DIGIT NO.)	STORAGE CODE (USE TABLES IV & V)	HAZARD CLASSES (USE TABLE VI)	CAS NO. (IF KNOWN)
1 PURE / MIXTURE	3	2	03	03			365	L 2 4	2.1 3.3	0000074-98-6
NEW / NO LONGER REPORTABLE				04	11	00				

STORAGE LOCATIONS AT SITE: WELDING AREA AT REAR OF MAIN BLDG

UN/NA NO. (IF KNOWN): 1075

COMMON NAME/TRADE NAME: THINNER 550B
HAZARDOUS INGREDIENT
IN HIGHEST CONCENTRATION: PETROLEUM NAPHTHA

EHS	PHYSICAL STATE (USE TABLE I)	UNIT OF MEASURE (USE TABLE II)	AVG. AMT. CODE (USE TABLE III)	MAX. AMT. CODE (USE TABLE III)	AMT. IN CODE (USE TABLE III)	AMT. OUT CODE (USE TABLE III)	NUMBER OF DAYS ON SITE (3 DIGIT NO.)	STORAGE CODE (USE TABLES IV & V)	HAZARD CLASSES (USE TABLE VI)	CAS NO. (IF KNOWN)
2 PURE / MIXTURE	2	2	04	04			365	D 1 4	3.3	0064742-47-8
NEW / NO LONGER REPORTABLE					04	04				

STORAGE LOCATIONS AT SITE: OIL STORAGE AREA IN CENTER OF MAIN YARD

UN/NA NO. (IF KNOWN): 1255

COMMON NAME/TRADE NAME:
HAZARDOUS INGREDIENT
IN HIGHEST CONCENTRATION:

EHS	PHYSICAL STATE (USE TABLE I)	UNIT OF MEASURE (USE TABLE II)	AVG. AMT. CODE (USE TABLE III)	MAX. AMT. CODE (USE TABLE III)	AMT. IN CODE (USE TABLE III)	AMT. OUT CODE (USE TABLE III)	NUMBER OF DAYS ON SITE (3 DIGIT NO.)	STORAGE CODE (USE TABLES IV & V)	HAZARD CLASSES (USE TABLE VI)	CAS NO. (IF KNOWN)
PURE / MIXTURE										
NEW / NO LONGER REPORTABLE										

STORAGE LOCATIONS AT SITE:

UN/NA NO. (IF KNOWN):

COMMON NAME/TRADE NAME:
HAZARDOUS INGREDIENT
IN HIGHEST CONCENTRATION:

EHS	PHYSICAL STATE (USE TABLE I)	UNIT OF MEASURE (USE TABLE II)	AVG. AMT. CODE (USE TABLE III)	MAX. AMT. CODE (USE TABLE III)	AMT. IN CODE (USE TABLE III)	AMT. OUT CODE (USE TABLE III)	NUMBER OF DAYS ON SITE (3 DIGIT NO.)	STORAGE CODE (USE TABLES IV & V)	HAZARD CLASSES (USE TABLE VI)	CAS NO. (IF KNOWN)
PURE / MIXTURE										
NEW / NO LONGER REPORTABLE										

STORAGE LOCATIONS AT SITE:

UN/NA NO. (IF KNOWN):

FORM
CHEMICAL

1 /-1998 OREGON STATE FIRE MAR AL

Facility ID Numbe:

HAZARDOUS SUBSTANCE INFORMATION SURVEY

005730

SECTION D

SUBSTANCE INFORMATION - TYPE OR PRINT ONLY CHANGES IN THE [BRACKETED] AREAS

OMMON NAME/TRADE NAME:
AZARDOUS INGREDIENT
HIGHEST CONCENTRATION:

EHS	PHYSICAL STATE	UNIT OF MEASURE	AVG. AMT. CODE	MAX. AMT. CODE	AMT. IN CODE	AMT. OUT CODE	NUMBER OF DAYS ON SITE	STORAGE CODE	HAZARD CLASSES	CAS NO. (IF KNOWN)
	USE TABLE I	USE TABLE II	USE TABLE III	USE TABLE III	USE TABLE III	USE TABLE III	3 DIGIT NO.	USE TABLES IV & V	USE TABLE VI	
1 - PURE 2 - MIXTURE										
1 - NEW 2 - NO LONGER REPORTABLE										UN/NA NO. (IF KNOWN)

STORAGE LOCATIONS AT SITE

OMMON NAME/TRADE NAME:
AZARDOUS INGREDIENT
N HIGHEST CONCENTRATION:

EHS	PHYSICAL STATE	UNIT OF MEASURE	AVG. AMT. CODE	MAX. AMT. CODE	AMT. IN CODE	AMT. OUT CODE	NUMBER OF DAYS ON SITE	STORAGE CODE	HAZARD CLASSES	CAS NO. (IF KNOWN)
	USE TABLE I	USE TABLE II	USE TABLE III	USE TABLE III	USE TABLE III	USE TABLE III	3 DIGIT NO.	USE TABLES IV & V	USE TABLE VI	
1 - PURE 2 - MIXTURE										
1 - NEW 2 - NO LONGER REPORTABLE										UN/NA NO. (IF KNOWN)

STORAGE LOCATIONS AT SITE

OMMON NAME/TRADE NAME:
AZARDOUS INGREDIENT
N HIGHEST CONCENTRATION:

EHS	PHYSICAL STATE	UNIT OF MEASURE	AVG. AMT. CODE	MAX. AMT. CODE	AMT. IN CODE	AMT. OUT CODE	NUMBER OF DAYS ON SITE	STORAGE CODE	HAZARD CLASSES	CAS NO. (IF KNOWN)
	USE TABLE I	USE TABLE II	USE TABLE III	USE TABLE III	USE TABLE III	USE TABLE III	3 DIGIT NO.	USE TABLES IV & V	USE TABLE VI	
1 - PURE 2 - MIXTURE										
1 - NEW 2 - NO LONGER REPORTABLE										UN/NA NO. (IF KNOWN)

STORAGE LOCATIONS AT SITE

OMMON NAME/TRADE NAME:
AZARDOUS INGREDIENT
N HIGHEST CONCENTRATION:

EHS	PHYSICAL STATE	UNIT OF MEASURE	AVG. AMT. CODE	MAX. AMT. CODE	AMT. IN CODE	AMT. OUT CODE	NUMBER OF DAYS ON SITE	STORAGE CODE	HAZARD CLASSES	CAS NO. (IF KNOWN)
	USE TABLE I	USE TABLE II	USE TABLE III	USE TABLE III	USE TABLE III	USE TABLE III	3 DIGIT NO.	USE TABLES IV & V	USE TABLE VI	
1 - PURE 2 - MIXTURE										
1 - NEW 2 - NO LONGER REPORTABLE										UN/NA NO. (IF KNOWN)

STORAGE LOCATIONS AT SITE

CT OF

PORTLAND, OREGON

FIRE PREVENTION DIVISION

Track #	Account #
151	E08-074-001

CITY OF PORTLAND
Hazardous Substance Possession Fee

Please Remit: $*450.00

Must be received by: 01/15/90

COLUMBIA FORGE & MACHINE
8424 N CRAWFORD
PORTLAND, OR 97203

Late payments will be assessed an additional 1% per month after the due date.

Check Payable to: CITY TREASURER
Remit to: Portland Fire Bureau
55 S.W. Ash Street
Portland, Oregon 97204

ach and return upper portion with remittance - - - - - - - - ->

State and Federal laws have been enacted to provide state and local emergency services and the community with information concerning hazardous substance locations and hazards. The legislation also provides that the local community participate and plan for responding to hazardous substance incidents.

Hazardous substance fees collected by the City of Portland will be used to fund a local data storage and retrieval system for hazardous chemical information provided by the state. This system will provide emergency responders with timely on-site information which will enable them to effectively manage incidents while minimizing the danger to emergency response personnel and the public.

This fee is not a permit fee and does not indicate that the occupancy and use of a building is in compliance with Fire and Building Regulations. The fees collected for this purpose are not a duplication of fees charged by the Department of Environmental Quality or the State Fire Marshal's Office.

The annual hazardous substance fee will be used to administer a local information and protection program in accordance with Title 31 of the City Code, Fire Regulations, sections 31.80.010-31.80.070, "Hazardous Substances Emergency Planning." The fees will provide the Portland Bureau of Fire, Rescue & Emergency Services with a computerized information system that will be used by ALL emergency responders. This system will also ensure that emergency personnel have immediate access to information concerning the type of material, location, degree of hazard, available emergency systems and associated information so that they may effectively and safely deal with hazardous substance emergencies.

You are entitled to appeal specific requirements of these regulations by written notification as set forth in section 31.10.150 of the City Code, Title 31.

Appeals should be directed to: Hazardous Substance Section
55 S.W. Ash Street
Portland, Oregon 97204

RECEIVED COLUMBIA FORGE & MACHINE NOV 89

If you have any questions about this bill, please call the Hazardous Substance Section at 760-1081.

B 11289 Track: 151 Account: E08-074-001

Billing: 11/15/89 Due: 01/15/90 Amount: $*450.00

HAZARDOUS INVENTORY DATA

CHEMICAL NAME:	CHEMICAL HAZARD CLASS:	STATE QTY. RANGE:	QUANTITY RANGE:	FEE:
** 151 005730, COLUMBIA FORGE & MACHINE				
8424 N CRAWFORD				
DEGREASER 853	UNKNOWN, PROBABLY CLASS C	0-99	0-199	0.00
ORGANIC COMPOUND 135	UNKNOWN, PROBABLY CLASS C	100-999	200-999	50.00
PROPANE	2.1, FLAMMABLE GAS	100-999	200-999	50.00
PROPYLENE	2.1, FLAMMABLE GAS	0-99	0-199	0.00
BLUE SHIELD 4	2.2, NONFLAMMABLE GAS	1,000-9,999	1,000-9,999	100.00
BLUE SHIELD 8	2.2, NONFLAMMABLE GAS	1,000-9,999	1,000-9,999	100.00
THINNER 350B	3.2, FLAMM. LIQ. FP 0-73 F	0-99	0-199	0.00
HYDRAULIC OIL	4.2, COMBUSTIBLE MATERIAL	100-999	200-999	50.00
MOTOR OIL	4.2, COMBUSTIBLE MATERIAL	0-99	0-199	0.00
GAS AIR FUEL	5.1, OXIDIZERS	0-99	0-199	0.00
OXYGEN	5.1, OXIDIZERS	1,000-9,999	1,000-9,999	100.00
** Subtotal **				450.00
*** Total ***				450.00

B 11290

ORDINANCE 162225

Chapter 31.40
(and a new Table 40-B is substituted to read:)

CHAPTER 31.40

TABLE 40 - B

(A) RADIOACTIVE SUBSTANCES OR RADIOACTIVE WASTES

(S) SOLIDS (in pounds)	(L) LIQUIDS (in gallons)	(G) GASES COMPRESSED (cu. ft. at STP)	FEE
>0 - 99	>0 - 99	>0 - 99	$ 50
100 - 999	100 - 999	100 - 999	100
1,000 - 9,999	1,000 - 9,999	1,000 - 9,999	200
10,000 - 99,999	10,000 - 99,999	10,000 - 99,999	600
100,000 - 999,999	100,000 - 999,999	100,000 - 999,999	1,000
1,000,000 - up	1,000,000 - up	1,000,000 - up	1,400

(B) CLASS A & B POISONS; IRRITATING MATERIALS; CLASS A, B & C EXPLOSIVES, BLASTING AGENTS AND HIGHLY TOXIC SUBSTANCES

(S) SOLIDS (in pounds)	(L) LIQUIDS (in gallons)	(G) GASES COMPRESSED (cu. ft. at STP)	FEE
>0 - 9	>0 - 4	>0 - 19	$ 25
10 - 99	5 - 99	20 - 99	50
100 - 999	100 - 999	100 - 999	100
1,000 - 9,999	1,000 - 9,999	1,000 - 9,999	200
10,000 - 99,999	10,000 - 99,999	10,000 - 99,999	600
100,000 - 999,999	100,000 - 999,999	100,000 - 999,999	1,000
1,000,000 - up	1,000,000 - up	1,000,000 - up	1,400

* (C) ALL OTHER REGULATED HAZARDOUS SUBSTANCES, MATERIALS AND WASTES

(S) SOLIDS (in pounds)	(L) LIQUIDS (in gallons)	(G) GASES COMPRESSED (cu. ft. at STP)	FEE
0 - 499	0 - 54	0 - 199	$ 0
500 - 999	55 - 999	200 - 999	50
1,000 -9,999	1,000 - 9,999	1,000 - 9,999	100
10,000 - 99,999	10,000 - 99,999	10,000 - 99,999	200
100,000 - 999,999	100,000 - 999,999	100,000 - 999,999	600
1,000,000 - up	1,000,000 - up	1,000,000 - up	1,000

* Permit fees for ordinary flammable and combustible liquids such as motor fuels contained in approved underground storage tanks are $25 per tank per year. Heating fuels stored in approved underground tanks are exempt from this fee schedule.

V. LIST OF HAZARDOUS CHEMICALS (con't.)

HAZARDOUS CHEMICALS	LOCATION
G. Miscellaneous	
Quick Set Adhesive 404	Maint. Area
Never-seez Anti-Seize Compound	Maint. Area
Floor Dry	Warehouse
Loctite Adhesive/Sealant 271	Maint. Area
Crack Check Cleaner C-F (Spray)	Supply Closet
Crack Check Developer D-NF (Spray)	Supply Closet
Crack Check Penetrant P-HF (Spray	Supply Closet
Thread Sealant w/Teflon 14H,14D,14F	Maint. Area
Propane	Center Yard
Fel-Pro N-500 Antiseize	Maint. Area
Devon Plastic Steel Putty	Maint. Area
50 Hardhat Aeorsol Spray	Supply Closet

V. LIST OF HAZARDOUS CHEMICALS (con't.)

HAZARDOUS CHEMICALS	LOCATION
F. Furnace Construction Materials	
Marinite M Calcium Silicate Board	Warehouse
Lytherm Ceramic Fiber Papers	Warehouse
Mizzou Castable Plus	Warehouse
A.P. Green: Refractory Bricks or Slopes	Warehouse
A.P. Green: Insulating Fire Brick: G 3	Warehouse
A.P. Green: High Duty Fireclay Brick: Idaho	Warehouse
Cerachrome Blanket Refractory	Warehouse
K-FAC 19 Board	Warehouse
Sairset Mortar	Warehouse
Durablanket 2600	Warehouse

V. LIST OF HAZARDOUS CHEMICALS (con't.)

HAZARDOUS CHEMICALS	LOCATION
E. Paints	
Sparvar Spray Paint - Metallic Item Nos. S-121,S-122,S-123	Supply Closet
Sparvar Fluorescent Spray Paint Item Nos. S-311,S-312	Supply Closet
Sparvar Spray Paint - Flat Item No. S-111	Supply Closet
Sparvar Spray Paint Item Nos. S-101,S-103,S-117,S-118	Supply Closet
Sparvar Spray Paint Covers 25 Items	Supply Closet
Rodda Alkyd Enamel 817	Warehouse
Rodda Alkyd Enamel 812Spray Paint	Supply Closet
Rodda Alkyd Primer Red Oxide	Supply Closet

V. LIST OF HAZARDOUS CHEMICALS (con't.)

HAZARDOUS CHEMICALS	LOCATION
D. Welding and Soldering Supplies	
Oxygen	Welding Area
Liquid Air Fuel Gas	Welding Area
Blue Shield Nos.6,7 or 8 gas mixture	Welding Area
Blue Shield Nos. 4 or 5 gas mixture	Welding Area
Welco 1620 Auto Spatter Compound	Welding Area
Fleetweld 35 Welding rod	Welding Area
UTP 653 Stainless welding rod	Welding Area
UTP 65 312 Stainless Welding rod	Welding Area
Jet-LH78 Welding Rod (E7018)	Welding Area
Stainless Steel Welding Electrodes	Welding Area
Stainless Steel Welding Wire	Welding Area
WeldMold Stick Electrode	Welding Area
Silvaloy 45 Silver Solder	Welding Area
Ultra Flux	Welding Area
Braze Welding Wire & Rod	Welding Area
E7024 Welding Rod	Welding Area
E6013 Welding Rod	Welding Area
Tool Steel Flux-Cored Wire	Welding Area
Dual Shield T-1 and T-2 Flux-Cored Welding Rods	Welding Area
Mild and Low Alloy Steel Welding Wire	Welding Area
Fuel-Gas-Propylene	Welding Area

V. LIST OF HAZARDOUS CHEMICALS (con't.)

HAZARDOUS CHEMICALS	LOCATION
C. Solvents and Thinners	
Chevron Thinner 350 B	Oil Storage
Rodda Thinner: Synthetic Reducer	Warehouse==
853 Degreaser	Oil Storage

V. LIST OF HAZARDOUS CHEMICALS (con't.)

HAZARDOUS CHEMICALS	LOCATION
B. Oils and Lubricants	
Unocal Unax AW 68	Oil Storage
Unocal Unax AW 46	Oil Storage
Unocal Turbine Oil 68	Oil Storage
Unocal Unoba EP Grease 2	Oil Storage
Unocal Marok 68 Oil	Oil Storage
Cimperial 1011 Coolant	Oil Storage
Cimclean 30 Coolant cleaner	Oil Storage
Soluble Organic Compound #135-	Oil Storage
die lube	Oil Storage
Unocal Soluble Oil 10 coolant	Oil Storage
Unocal Heavy Duty Motor Oil 30	Oil Storage
Chevron Insulating Oil	Oil Storage
Lubrizol 5525	Oil Storage
Unocal Hydraulic Oil AW 68	Oil Storage
Unocal Koolkut II HD	Oil Storage
Unocal Marok 220	Oil Storage
Anderal 500 Oil	Oil Storage
29 Moly Cart	Oil Storage
81 BP-2 (formerly 81 EP LIght)	Oil Storage
Union Turbine Oil 100, 150	Oil Storage

Attachment 4
Transformer Spill Documentation

NOTE TO PCB SPILL FILE:

5/28/87 - An overheated capacitor located in an enclosed TOCCO cabinet ruptured and spilled a small amount (2-3oz) of PCB. The spill was totally contained in the cabinet and was isolated to the surface of a transformer located under the capacitor. The unit was taken out of service and labeled with warning signs.

6/3/87 - Crosby and Overton, an environmental clean up company was contracted to clean-up the spill and remove the faulty capacitor in accordance with Oregon and EPA rules

6/9/87 - Crosby and Overton removed the capacitor, cleaned up the spill and conducted wipe tests. The capacitor was placed in a barrel and temporarily stored on Columbia Forge premises.

Crosby and Overton could not achieve a clean-up to 10 ug / 100 cm² consequently the unit was kept out of service with warning signs until a resolution could be found.

The ultimate solution included removal of the transformer (thus the removal of the spill surface by Crosby and Overton — see other documentation for dates.

B 11442

CRAW00015072

GENERAL ELECTRIC

USTOMER COLUMBIA FORGE & MACHINE WORKS, INC REFER TO: JOB NO: 21308

.O. NUMBER 4119 DATE: 02/19/88

ATE RECEIVED 02 / 22 /88 VIA DELIVERED

EQUIPMENT DESC.

SHIP TO:

MANUF.

MODEL

SERIAL NO.

BILL TO: COLUMBIA FORGE & MACHINE WORKS, INC
8424 N. CRAWFORD STREET
PORTLAND, OR 97203

ATTENTION: MR. JOHN SHORE

IF YOU DESIRE FURTHER INFORMATION, PLEASE CONTACT

Annette E Noe

ANNETTE E NOE

TELEPHONE: (503) 221-5097

DATE MAILED: 02 /22 / 88

PER QUOTATION NUMER 101-88-55

DISPOSAL OF CAPACITOR IN DRUM

CLEANING AND TESTING OF TRANSFORMER

WE ACKNOWLEDGE RECEIPT OF YOUR ORDER AND/OR MATERIAL AS LISTED ABOVE, SUBJECT TO OUR STANDARD CONDITIONS AS STATED ON THE REVERSE SIDE.

TERMS: NET DUE UPON RECEIPT OF INVOICE

B 11440

ACKNOWLEDGMENT - CUSTOMER COPY

FORM NO. PN-1068 6/85 REV.

CRAW00015073

GENERAL ELECTRIC
PORTLAND DECOMMISSIONING/STORAGE FACILITY
2535 NW 28TH AVENUE PORTLAND, OREGON 97210
(503) 221-5098

February 23, 1988

Mr. John L. Shore 21308
COLUMBIA FORGE
8424 N. Crawford St.
Portland, OR 97203

SUBJECT: HAZARDOUS WASTE MANIFEST NO. 21308
GENERAL ELECTRIC TRACKING NO. 21308

Dear Mr. Shore:

Attached, please find the original of the above captioned Hazardous Waste Manifest signed by our representative upon receipt of your material at our Decommissioning Facility in Portland. You should keep this record to establish the disposition of this material.

We will provide you with copies of the Manifest when this material is sent out for final disposition. These copies will be signed by the ultimate disposer and our cover letter will reference the above captioned G.E. TRACKING NUMBER so that you then will have a record of the material from the time it left your premises until it is properly disposed. Please note the corrections made in the DISCREPANCY SECTION 19 on the manifest.

Should you have any questions, please do not hesitate to call me at (503) 221-5098. We appreciate the opportunity of providing this service and look forward to additional work in the future.

Sincerely,

Shirlee Porter

Shirlee K. Porter
Facility Supervisor
Portland Oregon

Attachment

B 11438

UNIFORM HAZARDOUS WASTE MANIFEST	1. Generator's US EPA ID No. 93-0463820	Manifest Document No. 21308	2. Page 1 of 1	Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
Columbia Forge
8424 N Crawford st. Portland, OR 97203

4. Generator's Phone (203) 286-3621

A. State Manifest Document Number

B. State Generator's ID

5. Transporter 1 Company Name: General Electric Company
6. US EPA ID Number: ORD980833537

C. State Transporter's ID

D. Transporter's Phone: 503-221-5098

7. Transporter 2 Company Name
8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
General Electric Company
2535 NW 28th Ave.
Portland, OR 97210

10. US EPA ID Number: ORD980833537

G. State Facility's ID

H. Facility's Phone: (503) 221-5098

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	HM	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Hazardous Substance Liquid, NOS ORM-E, NA9188, RQ (Polychlorinated Biphenyls)	X	001	DM	0250 *	P	X-002
b. Hazardous Substance Solid, NOS ORM-E NA9188, RQ (Polychlorinated Biphenyls)	X	001	CM	Ø	P	X002
c.						
d.						

J. Additional Descriptions for Materials Listed Above
a) 1 drum ~~capacitor~~ leaking Capacitors o/s date 7-87
b) 1 Transformer (empty)
* Estimated weight

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
Dike and Contain Spills Avoid Contact with Skin.
Alternated TSDF, Return to Generator
In Case of Spill Call 1-800-626-2001 ex 66

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations.

Unless I am a small quantity generator who has been exempted by statute or regulation from the duty to make a waste minimization certification under Section 3002(b) of RCRA, I also certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and I have selected the method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment.

Printed/Typed Name	Signature	Month	Day	Year
John L Shore	John L. Shore	2	22	88

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
Scott A Duncan	[signature]	02	22	88

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

19. Discrepancy Indication Space
XFMER AND CAPACITOR WERE RECIEVED IN (1) DRUM

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year
GARY E. SCHMALZ	Gary E Schmalz	02	22	88

ORIGINAL - RETURN TO GENERATOR

GENERATOR

TRANSPORTER

FACILITY

CRAW00015075

Attachment 5
Underground Storage Tank Lab Reports

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

March 24, 1987
Log #A870319-K
PO#: 2864

Columbia Forge & Machine
8424 N. Crawford St.
Portland, Oregon 97203

Attention: John Shore

Analysis Requested: Total Hydrocarbons

Sample ID: #3 Weld Shop

Sample Date: March 19, 1987

Sample Received: March 19, 1987

ANALYSIS	RESULTS
Gasoline	< 4 mg/kg
Diesel	< 4 mg/kg

Analysis by capillary GC/FID

The less than "<" symbol means none detected at or above the indicated value and represents the detection limit for the method.

Approved,

Susan M. Brillante

Susan M. Brillante,
Laboratory Director

Sincerely,

Susan M. Coffey

Susan M. Coffey,
President

SMC/gs

Soil analy
weld sh
(no ru

This report is for the sole and exclusive use of the above client. Samples are retained a maximum of 15 days from the date of this letter.

B 11592

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

March 19, 1987
Log #A870316-B1-2
PO#: 2842

Columbia Forge & Machine
8424 N. Crawford St.
Portland, Oregon 97203

Attention: John Shore

Sample ID: #1 - Skookum, 3/13/87
#2 - Yard, 3/13/87

Samples Received: March 13, 1987

Samples Collected by: Crosby & Overton

ANALYSIS	SAMPLE #1	SAMPLE #2
Gasoline*	< 1.0	16**
Diesel*	< 1.0	< 1.0
Lead	---	30.0

Results in mg/kg

* Analysis by extraction capillary GC/FID.

** Appears to contain some other high boiling oil and possibly some kerosene.

The less than "<" symbol means none detected at or above the indicated value and represents the detection limit for the method.

Approved by,

Susan M. Brillante

Susan M. Brillante,
Laboratory Director

Sincerely,

Susan M. Coffey

Susan M. Coffey,
President

Soil analy
yard s

SMC/gs

This report is for the sole and exclusive use of the above client. (no
Samples are retained a maximum of 15 days from the date of this letter.

B 11587

Attachment 6
Transformer Sampling and Analysis Reports

CROSBY & OVERTON, INC.

5420 N. LAGOON
PORTLAND, OREGON 97217
283-1150 or 289-5749

HEAVY DUTY CLEANING

24 HOUR SERVICE

P.O. BOX 1085
20245 76th
SOUTH KENT, WA 98031

January 15, 1988

John Shore
Production Manager
Columbia Forge & Machine Works, Inc.
8424 N. Crawford Street
Portland, OR 97203

RE: Cleaning of PCB contaminated transformer; job summary

Dear John:

On December 14, 1987 Crosby & Overton removed a transformer from a piece of equipment at your facility. The transformer was brought to C & O's shop where it was cleaned; subsequently a wipe sample was taken (N.W.T. report #310693). Because of the past difficulties with cleaning this transformer and the fact that PCB's were still detectable after this thorough cleaning, Randy Rees (of this office) advised the cleaning process be repeated (as discussed with you on or about December 21, 1988). December 21 the transformer was cleaned and sampled a second time (N.W.T. report #310875).

As you can see from the attached lab analysis the transformer appeared dirtier the after the second sampling than it had after the first. Apparently, the location of the first wipe sample was unrepresentative of the overall cleanliness of the transformer.

Cleaning method

The transformer was cleaned twice using the same methodology. First the unit was completely wiped using rags and liberal amount of Power Cleaner 155, a Penetone Corp. product. Power Cleaner is a heavy duty alkaline liquid cleaner designed for cleaning PCB contaminated materials. Then the unit was thoroughly steam cleaned. Then a second washing was completed using kerosene and rags (a common method of cleaning up PCB spills) followed by a second steam cleaning.

B 11443

Currently, the transformer is back at your facility awaiting final disposition. Due to the inability to get it clean, a suitable disposal facility is being sought, at your request.

Sincerely,

CROSBY & OVERTON, INC.

Jeffrey T. Wallace

Jeffrey T. Wallace
Hazmat Technical Supervisor

JTW:dk

d30.jw

B 11444

NORTHWEST TESTING LABORATORIES, INC.

CONSTRUCTION INSPECTION
MATERIALS INSPECTION
CHEMICAL ANALYSIS
PHYSICAL TESTING

5405 N. Lagoon Avenue
P.O. Box 17126
Portland, Oregon 97217-0126
Phone: (503) 289-1778

NON-DESTRUCTIVE TESTING
WELDING CERTIFICATION
SOIL TESTING
ASSAYING

December 22, 1987

Crosby & Overton
5420 N. Lagoon
Portland, Oregon 97217

Attention: Mr. Jeff Wallace

Subject: Analysis on one (1) sample received on 12-14-87, per your P.O. Number 22041

REPORT:

Item: Hexane Wipe -120

Reference: Columbia Forge

Analysis:

Total PCB's, micrograms 7.5

Respectfully,
NORTHWEST TESTING LABORATORIES, INC.

Howard B. Holmes,
Assistant Supervisor, Chemistry

Report Number: 310693

B 11445

NORTHWEST TESTING LABORATORIES, INC.

CONSTRUCTION INSPECTION
MATERIALS INSPECTION
CHEMICAL ANALYSIS
PHYSICAL TESTING

5405 N. Lagoon Avenue
P.O. Box 17126
Portland, Oregon 97217-0126
Phone: (503) 289-1778

NON-DESTRUCTIVE TESTING
WELDING CERTIFICATION
SOIL TESTING
ASSAYING

December 28, 1987

Crosby & Overton
5420 N. Lagoon
Portland, Oregon 97217

Attention: Mr. Jeff Wallace

Subject: Analysis on three (3) samples received on 12-21-87, per your P.O. Number 22041.

REPORT:

Item: Hexane Swab Sample

Reference: Columbia Forge

Analysis:

	TOTAL PCB's (1260) micrograms
121 (Blank)	2.5
122 (Transformer Bottom)	12
123 (Transformer Side)	270

Respectfully,
NORTHWEST TESTING LABORATORIES, INC.

Fred Thomas, Chemist

Howard B. Holmes
Assistant Supervisor, Chemistry

Report Number: 310875

B 11446

AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE

Water, Food & Research Lab, Inc.
Laboratory: 13015 S.W. Pacific Hwy., Tigard, Oregon 97223
Mailing Address: P.O. Box 19700, Portland, Oregon 97219
Telephone (503) 639-9311
Problem Solvers

COLUMBIA FORGE & MACHINE WORKS, INC.
ATTN: HENRY STROMGUIST, GEN MGR.
8424 N. CRAWFORD STREET
PORTLAND, OR 97203

SAMPLE NO # 4720

PHONE 286-3621

CC: MANUFACTURING MANAGEMENT, INC.
ATTN: NORMAN WEBB, CORP. ENV. OFFICER
444 PORT AVENUE
ST HELENS, OREGON 97051

241-4796

CHEMICAL CONTAMINANTS LABORATORY REPORT
********** OF JUNE 1987 **********

SAMPLE: SPECIAL SAMPLE -LEAK FROM TRANSFORMER ON EQUIPMENT

SAMPLER: CERTIFIED SAMPLED BY PBS FROM LAB

LOCATION: UNDER TRANSFORMER ON EQUIPMENT, LIQUID POOLED IN PAN.

DATE SAMPLED: 05-28-87 AT 1130 HRS BY PS

DATE RECEIVED: 05-28-87 (PRIORITY ANALYSIS

CONTAMINANT	EPA METHOD	LIMIT	RESULTS	ANAL DATE	ANALYST
**********	******	******	**********	*********	*******
PCB'S	EPA		990,000 PPM	05-29-87	L.G.
			(99% PURE, AL 1254)		

****

CERTIFIED BY:

TESTED BY EPA CERTIFIED LAB, COL LAB ID # 14817

RECOMMENDATIONS: SPECIAL CLEANUP PERSONNEL NEEDED TO HANDLE HAZARDOUS WASTE MATERIAL.

PAUL B. STEVENS
Microbiologist/Biochemist
LAB DIRECTOR (EPA/OSHD # 24)

< = LESS THAN OR NONE DETECTED
ALL RESULTS IN PPM = MG/L

B 11458

CERTIFIED

Attachment 7
BES Storm Water Sample Results

City of Portland
Water Pollution Control Laboratory
Laboratory Analysis Report

Sample Date/Time	6/17/97 17:10	**System ID** AB12647	**Sample ID** SRP970116

Page: 1

Proj./Company Name:	BES INVESTIGATIONS	**Date Received:**	6/17/97
Address/Location:	COLUMBIA FORGING N CRAWFORD	**Sample Status:**	REPORT QUEUE
Proj Subcategory:	ENVIRONMENTAL COMPLIANCE	**Sample Type:**	GRAB
Sample Point Code:	0	**Sample Matrix:**	SURFWTR
IMS File:	3050.004	**Collected By:**	RMC

Comments:

Test Parameter	Result	Units	MDL	Method
MET ICP METALS (HIGH-LEVEL)				
CADMIUM	<0.001	mg/L	0.001	EPA 200.7
CHROMIUM	<0.003	mg/L	0.003	EPA 200.7
COPPER	0.010	mg/L	0.004	EPA 200.7
LEAD	<0.020	mg/L	0.020	EPA 200.7
MOLYBDENUM	<0.003	mg/L	0.003	EPA 200.7
NICKEL	<0.004	mg/L	0.004	EPA 200.7
SELENIUM	0.047	mg/L	0.020	EPA 200.7
ZINC	0.065	mg/L	0.001	EPA 200.7

End of Report for Sample ID: SRP970116

6543 N. Burlington Ave. / Portland OR 97203 (503) 823-6600 fax (503) 823-6656

Report Date: 7/1/97

Oregon
John A. Kitzhaber, M.D., Governor

Department of Environmental Quality
811 SW Sixth Avenue
Portland, OR 97204-1390
(503) 229-5696
TDD (503) 229-6993

October 6, 1999

duplicate original mailed 11-8-99
cc: Mat Cusma
Ross K. [illegible]

Mr. Robert Phillip
President
Crawford Street Corporation
3200 N.W. Yeon Street
Portland, Oregon 97210

SUBJECT: Voluntary Cleanup Letter Agreement

Dear Mr. Phillip:

This letter serves as an agreement between the Oregon Department of Environmental Quality (DEQ) and Crawford Street Corporation for performance of a preliminary assessment with sampling regarding hazardous substances at your property located at: 8424 N. Crawford Street in Portland, Oregon.

You agree to perform a preliminary assessment and submit it to DEQ within 30 business days of your execution of this Letter Agreement. The preliminary assessment will provide the information described in DEQ guidance for the completion of a preliminary assessment and a proposed sampling program. DEQ will review documents submitted by you or on your behalf regarding the preliminary assessment and investigation of the above referenced site.

A sub-account of the Hazardous Substances Remedial Action Fund has been established to be drawn upon by DEQ as project costs are incurred. When you have signed this letter agreement, you will be invoiced monthly for DEQ project costs, including the costs of preparing the DEQ strategy recommendation and any ongoing review and oversight costs. You will pay DEQ invoices within 30 days of receipt. A sample invoice is attached.

DEQ project costs will include direct costs and indirect costs. Direct costs include site-specific expenses and legal costs. Indirect costs are those general management and support costs of the DEQ and of the Waste Management and Cleanup Division (WMCD) allocable to DEQ oversight of this Letter Agreement which are not charged as direct, site-specific costs. Review and oversight costs shall not include any unreasonable costs or costs not otherwise recoverable by DEQ under ORS 465.255.

This Letter Agreement is not and shall not be construed as an admission by Crawford Street Corporation of any liability under ORS 465.255 or any other law or as a waiver of any defense to such liability. This Letter Agreement is not and shall not be construed as a waiver, release or settlement of claims DEQ may have against Crawford Street Corporation or any other person or as a waiver of any enforcement authority DEQ may have with respect to Crawford Street Corporation or the property. Upon DEQ's request and as necessary to oversight of your work under this Letter Agreement, Crawford Street Corporation shall provide DEQ with data and records related to investigation and cleanup activities at the property, excluding any privileged documents identified as such by you.

Following execution of the letter agreement, a DEQ Project Manager will be assigned for the review of the preliminary assessment and oversight of investigation activities associated with your property.

DEQ looks forward to working with you.

Sincerely,

Robert P Baumgartner
for

Neil Mullane
Administrator
Northwest Region

If the terms of this Letter Agreement are acceptable to Crawford Street Corporation, please have it executed by an authorized representative in the space provided below and returned to us.

Accepted and agreed to this 8th day of November, 1999. **

By: Barry A. Rosen

Title: Vice President

Attachment

** Crawford Street Corporation will perform such preliminary assessment activities and reimburse Oregon DEQ for such costs as Oregon DEQ has a statutory right to require from it under the Environmental Cleanup Law, Oregon Revised Statutes 465.200 et seq. Crawford Street Corporation notes that: (1) DEQ's Strategy Recommendation concludes that it has insufficient information to propose adding the site to DEQ's confirmed Release List or Inventory, and DEQ's October 8, 1999 letter states that DEQ is unable to determine whether hazardous substances have been released or are threaten to be released from the subject property; and (2) DEQ's Strategy Recommendation (which contains several factual inaccuracies) refers to historical dock activities, which have not occurred during the time period of Crawford Street Corporation's ownership of the property. Crawford Street Corporation reserves the right to withdraw from this voluntary agreement upon ten days notice to Oregon DEQ.

Oregon
John A. Kitzhaber, M.D., Governor

Department of Environmental Quality
811 SW Sixth Avenue
Portland, OR 97204-1390
(503) 229-5696
TDD (503) 229-6993

cc: Mat Cusma
Rose R.
Joan S.

October 8, 1999

Mr. Robert Phillip
President
Crawford Street Corporation
3200 N.W. Yeon Street
Portland, Oregon 97210

Re: Crawford Street Site: Request for Performance of Preliminary Assessment with Sampling

Dear Mr. Phillip:

This letter informs you of the results of our review of information regarding hazardous substance contamination at the Crawford Street facility located at 8424 N. Crawford Street in Portland, Oregon. The Oregon Department of Environmental Quality (DEQ) has determined that the Crawford Street site is a high priority for a preliminary assessment with sampling and requests that Crawford Street Corporation perform a preliminary assessment with sampling in accordance with the Environmental Cleanup Law, Oregon Revised Statutes (ORS) 465.200 *et seq.*

The Crawford Street facility is located within or near a portion of the Willamette River known as the Portland Harbor. A 1997 investigation revealed significant contamination of sediments within the harbor. DEQ has undertaken review of available information regarding properties throughout the harbor to identify potential sources of the sediment contamination. The results of DEQ's review for the Crawford Street facility are summarized in the enclosed Strategy Recommendation

Based on this review, DEQ has determined additional information is necessary to determine whether hazardous substances have been released or threaten to be released at the Crawford Street facility and come to be located in Willamette River sediments. The preliminary assessment with sampling will fully evaluate all upland, in-water and over-water activities that might have resulted in the release of hazardous substances and include sufficient sampling to assess whether hazardous substances have come to be located in Willamette River sediments at or near the Crawford Street facility. At a minimum, sampling will include the collection of surface and subsurface sediment samples at appropriate points adjacent to the Crawford Street facility.

DEQ proposes that your performance of the preliminary assessment with sampling be governed by the enclosed Voluntary Cleanup Letter Agreement. The facility's preliminary assessment with sampling will be coordinated with harbor-wide sediments investigations currently being pursued by DEQ. This will require commencement of the preliminary assessment with sampling at the Crawford Street facility in the near future. DEQ therefore requests that you review the enclosed Strategy Recommendation and Voluntary Cleanup Letter Agreement, and inform DEQ whether will perform a preliminary assessment with sampling by signing and returning one original of the enclosed Voluntary Cleanup Letter Agreement within 30 calendar days of mailing of this letter. Please retain one signed original for your records. It is DEQ's expectation that a preliminary assessment and sampling work plan will be completed and submitted to DEQ within six weeks of signing the Voluntary Cleanup Letter Agreement.

Should you not agree to perform the preliminary assessment with sampling by execution of the Voluntary Cleanup Letter Agreement, DEQ will assume you are not willing to perform the requested work. In this case, as with other facilities within the Portland Harbor, DEQ will complete the preliminary assessment with sampling itself, with subsequent cost recovery from liable parties.

Finally, please be advised that DEQ is required by ORS 465.330 to recover remedial action costs incurred by DEQ, including for site assessment activities. You will be receiving an invoice in the near future for DEQ's costs of preparing the Strategy Recommendation for the Crawford Street facility. Reimbursement of future DEQ costs will be provided through the Voluntary Cleanup Letter Agreement for the facility, if one is entered.

Please Contact me at 503 229-5648 if you have any questions regarding the enclosed Strategy Recommendation .

Sincerely,

Eric Blischke,
Coordinator
Portland Harbor Study Area
Waste Management and Cleanup Division

Enclosures

c: Kurt Burkholder, DOJ
Dave St. Louis, Manager, NWR Site Assessment Program
Mike Rosen, NWR Voluntary Cleanup Program
Gil Wistar, Coordinator, Site Assessment Program
ESCI File No.: 2363

DEQ SITE ASSESSMENT PROGRAM - STRATEGY RECOMMENDATION

Site Name: Crawford Street Corporation, including:
Columbia Forge and Machine Works, Inc.
Lampros Steel, Inc.
TLS Steel Products, Inc.

Site CERCLIS Number: (none)

DEQ ECSI Number: 2363

Site Address: 8424 N. Crawford Street
Portland, Oregon 97203

Recommendation By: Tom Gainer, Voluntary Cleanup and Site Assessment Section, DEQ Northwest Region

Approved By: Michael E. Rosen, Portland Harbor Manager, DEQ Northwest Region FOR MER

Date: October 1, 1999

NOTE: This site (Figure 1) is within a 6-mile stretch of the Lower Willamette River in which the U.S. Environmental Protection Agency (EPA) conducted a sediment study in 1997. This area, referred to as the *Portland Harbor*, is between the upstream ends of Sauvie Island (River Mile 3.5) and Swan Island (RM 9.5). The purpose of this Strategy Recommendation is to determine whether a specific hazardous substance release or a specific past operation at the site can be linked to contamination documented by EPA in sediments adjacent to the site. Because of this focus, the Strategy Recommendation may omit some historical site information, regulatory issues, or further-action conclusions that might otherwise be included in a DEQ Strategy Recommendation.

Background, Portland Harbor Sediment Evaluation

In September and October 1997, EPA's contractor, Roy F. Weston, Inc., collected 187 near-shore sediment samples within the Portland Harbor area defined above. Most samples (150) were collected as shallow grab samples within the upper 6 to 17 centimeters (cm) of sediments. 37 deeper composite core samples, from depths of between 55 and 139 cm, were also collected. All samples were analyzed for total metals, semi-volatile organic compounds (SVOCs), total organic

CRAW00015092

Shallow sediment sample SD066 collected upstream of the subject property had elevated levels of mercury, zinc, 2-methylnapthalene, LPAHs, and HPAHs. This suggests that an upstream source may have contributed to the mercury, LPAH, and HPAH sediment contamination observed adjacent to the subject property. The Willamette Cove site is adjacent upstream of the subject site and has an extensive history of industrial activities.

Operational History

The subject site is approximately 15 acres and is divided into two portions by railroad tracks. There are currently three businesses that operate on the northern portion of the subject property: Columbia Forge and Machine Works, Inc. (CFM), Lampros Steel, Inc., and TLS Steel Products, Inc. The southern portion of the site adjacent to the Willamette River is currently used to store steel; it is not clear which of the three businesses use the southern portion, although it appears that it is used primarily by Lampros Steel.

CFM has produced metal forgings and stampings on the site since 1971. Their operation consists of three buildings and two yards. They use oil, lubricants, non-halogenated petroleum solvent, and degreasers that are sent offsite for recycling and/or disposal.

Lampros Steel has operated a structural steel distribution center since 1989, which includes off-loading railcars and trucks, cutting steel with saws, and loading outgoing trucks. Steel scrap is recycled, used motor oil is sent offsite, and synthetic saw coolant is reused or recycled on site. They have one 1,000-gallon aboveground diesel tank, located about 500 feet from the Willamette River.

TLS has operated a small steel forging and fabrication business since 1989. Hydraulic oil is used in their machines.

Crawford Street Corp. acquired the subject property from the Skookum Logging Supply Company in 1971. Aerial photographs indicate that the current buildings on the subject property were constructed between 1957 and 1963. The southern portion of the site was extensively covered by buildings with docks in photographs from 1936 through 1963; it appears that these structures were removed sometime between 1963 and 1977. Fire insurance maps from 1950 indicate that the property was used primarily by Portland Lumber Mills, and also by the Plylock Corp. (manufacturing with wood), Portland Chain Manufacturing Co., and Skookum Logging Supply Co.

The youngest deposits are recent alluvium (silt, sand and gravel mixtures) characteristic of an active fluvial environment. These are made up of shoreline, river channel, and adjacent floodplain deposits.

Terraces that rise 50 to 100 feet above the northeastern shore of the Willamette were formed during Pleistocene cataclysmic flooding related to glacial Lake Missoula, and consist of unconsolidated mixtures of silt, sand, and gravel that generally are coarser than the recent deposits. Fill comprised of fine to medium sands and silt was also placed in many areas along the river during site development. The total thickness of recent alluvium and flood deposits appears to be about 100 feet in the vicinity of the site.

Coarse gravel to conglomerate of the Troutdale Formation, deposited by the ancestral Columbia River, underlies the cataclysmic flood deposits and appears to be about 100 feet thick in the vicinity of the site. Sandy River mudstone underlies the Troutdale Formation and appears to be about 100 feet thick. Basalt of the Columbia River Basalt (CRB) group forms the basement rock of the Portland Basin, and may be as much as several hundred feet thick in the vicinity of the site.

Aquifers in the unconsolidated sedimentary deposits generally are unconfined and localized due to heterogeneity of the deposits. The Troutdale Formation is an important regional aquifer and is widely tapped for both potable and non-potable uses. Interbedded Claystone and/or siltstone, or cementation often promotes confined aquifer conditions within the Troutdale Formation. Deep wells installed in fractured CRB can be very productive and important supply wells. Site elevation is about 30 feet above mean sea level.

Pathway Summary

The Crawford Street site lies in an area of mixed industrial, commercial, and residential use. Approximately 123 residences lie within 1/4 mile of the facility.

Site workers at the facility or trespassers could be exposed to contaminants in surface soil. Utility trench workers could potentially be exposed to subsurface contaminants through direct contact, inhalation, or incidental ingestion.

Oregon Water Resources Department has no well logs for domestic wells within one-half mile of the Crawford Street site.

Conclusions/Recommendations

NOTE: As indicated previously, this review is limited to establishing a link between site activities and contamination in adjacent Portland Harbor sediments. It does not necessarily represent a thorough review of available site data, and the conclusions and recommendations presented below may reflect this limited focus.

The following conclusions are based on the contents of this review:

- Site activities may have resulted in sediment contamination adjacent to the site. Concentrations of sediment contaminants adjacent to the site that exceed Portland Harbor baseline levels include arsenic, lead, mercury, di-n-butylphthalate, LPAHs, HPAHs, and organotins. PAH contaminants found in the sediment are associated with handling/storage of petroleum products, metals are associated with fabrication activities, and organotins are associated with boat painting maintenance (possibly from historical dock activities or by migration from upland use/storage of organotin-based paints on metal).

- It appears that the subject site is the source of organotins contamination observed adjacent to the site, where the concentration is over twice the Portland Harbor baseline value and 55 times the upstream concentration.

- Contaminant concentrations for mercury, LPAHs, and HPAHs observed in the upstream sediment sample are generally equal to or greater than in the sample adjacent to the Crawford Street site. This suggests that historical activities at the upstream adjacent Willamette Cove site may have contributed towards contamination observed adjacent to the subject site.

- Use of the site's historical docks, possibly for conveyance of materials and boat fueling and maintenance, is a possible source of sediment contamination by routine or accidental activities.

Contamination of river sediments adjacent to the Crawford Street site may represent a threat to human health and aquatic life within the river. An Expanded Preliminary Assessment (XPA) on the entire Crawford Street property (CFM, Lampros, TLS, and the southern portion of the property) should be conducted to evaluate sediment contamination, potential upland site contaminant sources, and past waste management practices and to determine the extent and source(s) of observed sediment contamination. Sediment sampling should include subsurface samples to further define the extent of contamination. As necessary, the XPA should present recommendations

TABLE 1

River Sediment Contaminant Concentrations (1997)
Crawford Street Corporation

Contaminant	Units	Down-Stream SD058	*Crawford Street* SD060	Up-Stream SD066	Apparent Portland Harbor Sediment Baseline Maximum Value
Aluminum	ppm	22800	24700	33200	42800
Antimony	ppm	<4	NA	NA	<5
Arsenic	ppm	<4	5	5	<5
Barium	ppm	126	152	163	195
Beryllium	ppm	0.4	0.5	0.6	0.7
Cadmium	ppm	0.3	0.4	0.5	0.6
Chromium	ppm	25	28	35	41
Cobalt	ppm	16	11	18	19.7
Copper	ppm	30	50	41	60
Iron	ppm	31700	32700	37600	45000
Lead	ppm	13	36	28	30
Manganese	ppm	322	397	547	810
Mercury	ppm	0.1	0.14	0.23	0.1
Nickel	ppm	24	21	29	32
Selenium	ppm	11	12	11	15
Silver	ppm	0.7	0.8	1.0	1.4
Thallium	ppm	5	<4	<4	13
Titanium	ppm	1650	NA	1910	2075
Vanadium	ppm	80	85	98	112
Zinc	ppm	87	112	158	118
2-Methylnaphthalene	ppb	37	66	180	150
4-Methylphenol	ppb	50	230	130	680
Benzoic Acid	ppb	<200	<200	<190	<200
Benzyl Alcohol	ppb	<20	<20	<19	<20
bis(2-Ethylhexyl)phthalate	ppb	<90	<190	<88	390
Butylbenzylphthalate	ppb	<20	<20	<19	<20
Carbazole	ppb	48	99	<19	100
Di-N-Butylphthalate	ppb	43	34	<19	<20
Di-N-Octylphthalate	ppb	<20	<20	<19	<20
Dibenzofuran	ppb	24	33	57	100
Dimethylphthalate	ppb	<20	<20	<19	<20
Pentachlorophenol	ppb	<99	<99	<96	Detect
Phenol	ppb	<20	<20	<19	<20
LPAHs (total)	ppb	379	873	1904	700
HPAHs (total)	ppb	2333	4448	4481	2400
DDTs (total)	ppb	4.1	NA	7.5	220
PCBs (total)	ppb	<40	NA	54	<180
Organotins (total)	ppb	170	773	14	300
2,4-D	ppb	NA	NA	NA	<3.3
2,4-DB	ppb	NA	NA	NA	<5
TOC	%	2.6	0.9	1.6	2
Water Depth	ft	45	9	17	
Sediment Sample Depth	cm	0-10	0-10	0-10	

NA = Not Analyzed

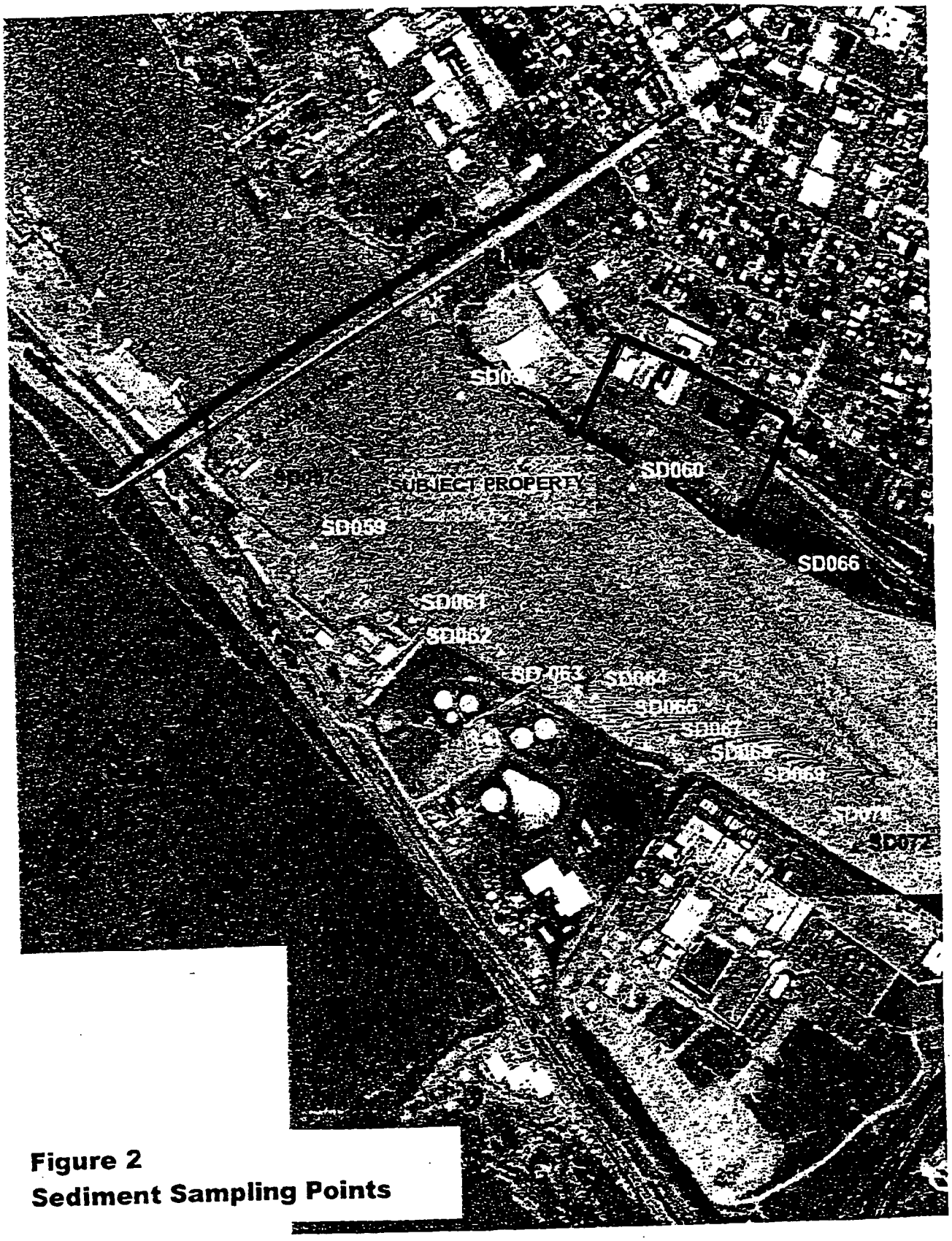


Figure 2
Sediment Sampling Points

Attachment 1
Site Plan Figure

COLUMBIA FORGE
AND MACHINE WORKS
8424 N. CRAWFORD ST.
PORTLAND, OR 97203

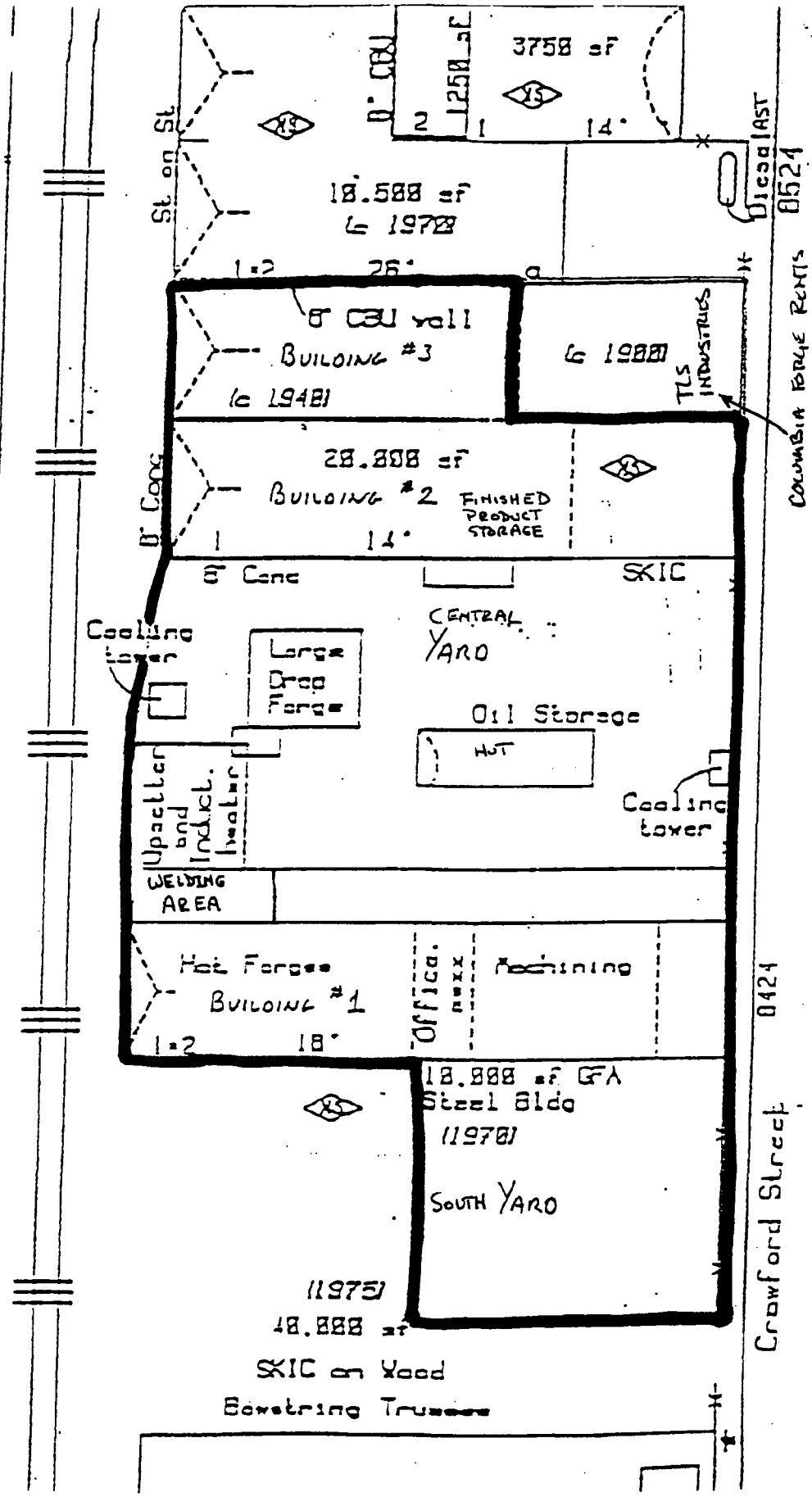
THE SITE CONSISTS OF THREE BUILDINGS AND TWO YARDS.

PARKING IS ON CITY STREETS.

NO CHANGES OR ADDITIONS ARE PLANNED.

COLUMBIA FORGE
TOTAL SF = 57,000
BUILDING SF = 27,000

23 OCT 91



CRAW00015051

Attachment 2
Underground Storage Tank Notification Form

Notification for Underground Storage Tanks

APPROVAL EXPIRES 6-30-88

Return To: **Oregon Department of Environmental Quality**
Underground Storage Tank Program
P.O. Box 1760
Portland, Oregon 97207

STATE USE ONLY
I.D. Number
Date Received

GENERAL INFORMATION

Notification is required by Federal law for all underground tanks that have been used to store regulated substances since January 1, 1974, that are in the ground as of May 8, 1986, or that are brought into use after May 8, 1986. The information requested is required by Section 9002 of the Resource Conservation and Recovery Act, (RCRA), as amended.

The primary purpose of this notification program is to locate and evaluate underground tanks that store or have stored petroleum or hazardous substances. It is expected that the information you provide will be based on reasonably available records, or, in the absence of such records, your knowledge, belief, or recollection.

Who Must Notify? Section 9002 of RCRA, as amended, requires that, unless exempted, owners of underground tanks that store regulated substances must notify designated State or local agencies of the existence of their tanks. Owner means—

(a) in the case of an underground storage tank in use on November 8, 1984, or brought into use after that date, any person who owns an underground storage tank used for the storage, use, or dispensing of regulated substances, and

(b) in the case of any underground storage tank in use before November 8, 1984, but no longer in use on that date, any person who owned such tank immediately before the discontinuation of its use.

What Tanks Are Included? Underground storage tank is defined as any one or combination of tanks that (1) is used to contain an accumulation of "regulated substances," and (2) whose volume (including connected underground piping) is 10% or more beneath the ground. Some examples are underground tanks storing: 1. gasoline, used oil, or diesel fuel, and 2. industrial solvents, pesticides, herbicides or fumigants.

What Tanks Are Excluded? Tanks removed from the ground are not subject to notification. Other tanks excluded from notification are:

1. farm or residential tanks of 1,100 gallons or less capacity used for storing motor fuel for noncommercial purposes;
2. tanks used for storing heating oil for consumptive use on the premises where stored;
3. septic tanks;
4. pipeline facilities (including gathering lines) regulated under the Natural Gas Pipeline Safety Act of 1968, or the Hazardous Liquid Pipeline Safety Act of 1979, or which is an intrastate pipeline facility regulated under State laws;
5. surface impoundments, pits, ponds, or lagoons;
6. storm water or waste water collection systems;
7. flow-through process tanks;
8. liquid traps or associated gathering lines directly related to oil or gas production and gathering operations;
9. storage tanks situated in an underground area (such as a basement, cellar, mineworking drift, shaft, or tunnel) if the storage tank is situated upon or above the surface of the floor.

What Substances are Covered? The notification requirements apply to underground storage tanks that contain regulated substances. This includes any substance defined as hazardous in section 101 (14) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), with the exception of those substances regulated as hazardous waste under Subtitle C of RCRA. It also includes petroleum, e.g., crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute).

Where To Notify? Completed notification forms should be sent to the address given at the top of this page.

When To Notify? 1. Owners of underground storage tanks in use or that have been taken out of operation after January 1, 1974, but still in the ground, must notify by May 8, 1986. 2. Owners who bring underground storage tanks into use after May 8, 1986, must notify within 30 days of bringing the tanks into use.

Penalties: Any owner who knowingly fails to notify or submits false information shall be subject to a civil penalty not to exceed $10,000 for each tank for which notification is not given or for which false information is submitted.

INSTRUCTIONS

Please type or print in ink all items except "signature" in Section V. **This form must be completed for each location containing underground storage tanks.** If more than 5 tanks are owned at this location, photocopy the reverse side, and staple continuation sheets to this form.

Indicate number of continuation sheets attached. 0

I. OWNERSHIP OF TANK(S)

Owner Name (Corporation, Individual, Public Agency, or Other Entity): COLUMBIA FORGE + MACH. WORKS

Street Address: 8424 N. CRAWFORD

County: MULTNOMAH

City: PORTLAND State: OR. Zip Code: 97203

Area Code Phone Number: (503) 286-3621

Type of Owner (*Mark all that apply* ☒)

☒ Current ☐ Former

☐ State or Local Gov't. ☐ Federal Gov't. ☐ (GSA facility I.D. no.) _____)

☒ Private or Corporate ☐ Ownership uncertain

II. LOCATION OF TANK(S)

(If same as Section 1, mark box here ☒)

Facility Name or Company Site Identifier, as applicable

Street Address or State Road, as applicable

County

City (nearest) State Zip Code

Indicate number of tanks at this location 2

Mark box here if tank(s) are located on land within an Indian reservation or other Indian trust lands ☐

III. CONTACT PERSON AT TANK LOCATION

Name (if same as Section 1, mark box here ☐): HENRY STROMQUIST

Job Title: GENERAL MANAGER

Area Code: (503) Phone Number: 286-3621

IV. TYPE OF NOTIFICATION

☐ Mark box here only if this is an amended or subsequent notification for this location.

V. CERTIFICATION (Read and sign after completing Section VI.)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete.

Name and official title of owner or owner's authorized representative	Signature	Date Signed
HENRY STROMQUIST — GEN MGR	Henry Stromquist	1/19/87

CONTINUE ON REVERSE SIDE

EPA Form 7530-1 (11-85)

Please complete the voluntary UST Survey on Page 4.

B 11575

Owner Name (from Section I) COLUMBIA FORGE Location (from Section II) PORTLAND, OR. Page No. 2 of 3 Pages

VI. DESCRIPTION OF UNDERGROUND STORAGE TANKS *(Complete for each tank at this location.)*

Tank Identification No. (e.g., ABC-123), or Arbitrarily Assigned Sequential No. (e.g., 1,2,3...)	Tank No. 1	Tank No. 2	Tank No.	Tank No.	Tank No.
1. Status of Tank *(Mark all that apply ☒)* Currently in Use	☐	☐	☐	☐	☐
Temporarily Out of Use	☐	☐	☐	☐	☐
Permanently Out of Use	☒	☒	☐	☐	☐
Brought into Use after 5/8/86	☐	☐	☐	☐	☐
2. Estimated Age (Years)	19	35			
3. Estimated Total Capacity (Gallons)	1000	1000			
4. Material of Construction *(Mark one ☒)* Steel	☒	☒	☐	☐	☐
Concrete	☐	☐	☐	☐	☐
Fiberglass Reinforced Plastic	☐	☐	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
Other, Please Specify					
5. Internal Protection *(Mark all that apply ☒)* Cathodic Protection	☐	☐	☐	☐	☐
Interior Lining (e.g., epoxy resins)	☐	☐	☐	☐	☐
None	☒	☒	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
Other, Please Specify					
6. External Protection *(Mark all that apply ☒)* Cathodic Protection	☐	☐	☐	☐	☐
Painted (e.g., asphaltic)	☐	☐	☐	☐	☐
Fiberglass Reinforced Plastic Coated	☐	☐	☐	☐	☐
None	☒	☒	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
Other, Please Specify					
7. Piping *(Mark all that apply ☒)* Bare Steel	☒	☒	☐	☐	☐
Galvanized Steel	☐	☐	☐	☐	☐
Fiberglass Reinforced Plastic	☐	☐	☐	☐	☐
Cathodically Protected	☐	☐	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
Other, Please Specify					
8. Substance Currently or Last Stored in Greatest Quantity by Volume *(Mark all that apply ☒)* **a. Empty**	☐	☒	☐	☐	☐
b. Petroleum					
Diesel	☐	☐	☐	☐	☐
Kerosene	☐	☐	☐	☐	☐
Gasoline (including alcohol blends)	☐	☒	☐	☐	☐
Used Oil	☒	☐	☐	☐	☐
Other, Please Specify	BUNKER OIL				
Please **c. Hazardous Substance**	☐	☐	☐	☐	☐
Indicate Name of Principal CERCLA Substance					
or Chemical Abstract Service (CAS) No.					
Mark box ☒ if tank stores a mixture of substances	☐	☐	☐	☐	☐
d. Unknown	☐	☐	☐	☐	☐
9. Additional information (for tanks permanently taken out of service) a. Estimated date last used (mo/yr)	1975	1960	/	/	/
b. Estimate quantity of substance remaining (gal.)	100	EMPTY			
c. Mark box ☒ if tank was filled with inert material (e.g., sand, concrete)	☐	☒	☐	☐	☐

Form 7530-1 (11-85) Reverse

THANK YOU FOR YOUR ASSISTANCE

B 11576

CRAW00015054

Owner Name (from Section I EPA Form) COLUMBIA FORGE Location (from Section II EPA form) PORTLAND OR. Page 3 of 3 Pages

OREGON UNDERGROUND STORAGE TANK (UST) SURVEY

The underground storage tank program will soon include performance standards for new tanks and regulations for leak detection/prevention and corrective actions which will affect owners and operators of underground storage tanks. In preparation for these new requirements, the Department has prepared a state-wide survey. The Department requests that owners of underground storage tanks complete the survey questions.

Your response to these questions will assist the Department in developing a cost-effective and responsive state-wide regulatory program. In addition, owners of underground storage tanks may find the survey useful in the management of such tanks.

INSTRUCTIONS

Please type or print in ink all items. Please complete one survey form for each location containing underground storage tanks. Tank I.D. should correspond to Tank I.D. on EPA form 7530-1 for the respective facility location. If more than five tanks are owned at this location, photocopy this survey or request additional forms from DEQ, and staple continuation sheets to this survey.

Tank Identification No.	Tank No. 1	Tank No. 2	Tank No.	Tank No.	Tank No.
1. Status of Tank *(Check One)* — If temporarily out of use, Estimated time out of use:					
1 month - 6 months	☐	☐	☐	☐	☐
6 months - 1 year	☐	☐	☐	☐	☐
1 year - 5 years	☐	☐	☐	☐	☐
5 years or more	X	X	☐	☐	☐
Estimated date to be brought back into use (mo/yr)	/	/	/	/	/
2. Was tank new at time of installation? (Y/N)	UNKNOWN	UNKNOWN			
3. Containment Systems *(check one)* — Single-walled tank	X	X	☐	☐	☐
Double-walled tank	☐	☐	☐	☐	☐
Pit-lining system	☐	☐	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
4. Leak Detection System *(check all that apply)* — Visual	☐	☐	☐	☐	☐
Stock inventory	☐	☐	☐	☐	☐
Tile drain	☐	☐	☐	☐	☐
Vapor wells	☐	☐	☐	☐	☐
Sensor instrument (specify type):					
In-ground detector	☐	☐	☐	☐	☐
Within walls of double-walled tank	☐	☐	☐	☐	☐
Ground water monitoring wells	☐	☐	☐	☐	☐
Continuous in piping	☐	☐	☐	☐	☐
Pressure test	☐	☐	☐	☐	☐
Internal inspection	☐	☐	☐	☐	☐
Other, specify					
None	X	X	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
5. Overfill Protection (Yes/No)	NO	NO			
6. Location of Piping *(check all that apply)* — No parts in contact with soil	☐	☐	☐	☐	☐
Parts contacting the soil which are:					
Unprotected metal	X	X	☐	☐	☐
Made of corrosion resistant materials	☐	☐	☐	☐	☐
Corrosion-resisted coated	☐	☐	☐	☐	☐
Cathodically protected	☐	☐	☐	☐	☐
Double-walled	☐	☐	☐	☐	☐
Within a secondary containment	☐	☐	☐	☐	☐
Interior lined	☐	☐	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
7. History of Tank Repairs *(check one except as indicated)* — If tank repaired, indicate date of last repairs (mo/yr)	/	/	/	/	/
None	X	X	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
8. History of Pipe Repairs *(check one except as indicated)* — If pipe repaired, indicate date (mo/yr)	/	/	/	/	/
None	X	X	☐	☐	☐
Unknown	☐	☐	☐	☐	☐

THANK YOU FOR YOUR ASSISTANCE

R 11577

CRAW00015055

Attachment 3
Fire Marshall Survey and Other Documentation

FORM COMPANY

Due Date: NOVEMBER 30, 1998 | 1997-1998 | Facility ID Number 005730

OREGON STATE FIRE MARSHAL
HAZARDOUS SUBSTANCE INFORMATION SURVEY

PLEASE TYPE OR PRINT ONLY CHANGES OR ADDITIONS IN THE [BRACKETED] AREAS TO THE RIGHT OR BELOW THE PREPRINTED DATA

SECTION A HAZARDOUS SUBSTANCE PRESENCE Check the correct box to the left.

☑ YES ☐ NO Are there hazardous substances present at this site in reportable quantities? If yes, complete sections A, B, C, and D. If no, complete sections A, B and C. A hazardous substance is any substance for which a Material Safety Data Sheet (MSDS) is required. If a previously reported substance is no longer present, see instructions for Section A.

☐ YES ☑ NO Are there Extremely Hazardous Substances (EHS) at this site that meet the threshold planning quantities?

☐ YES ☑ NO Is this facility subject to the reporting requirements of Section 112(r) of the Clean Air Act?

SECTION B DEMOGRAPHIC DATA Complete, correct or add information in the [bracketed] areas.

1. SIC CODE 1: 3462 DEFINITION: IRON AND STEEL FORGINGS-MFG
2. SIC CODE 2: DEFINITION:
3. BUSINESS ACTIVITY: STEEL FORGING
4. DUN & BRADSTREET #: 00-902-2104
5. MANAGER'S NAME: ~~VINCE SCHILE - MGR~~ [DOUG McMULLIN GEN. MGR.]
6. SEND TO ATTENTION OF: ~~VINCE SCHILE - MGR~~ [DOUG McMULLIN GEN. MGR]
7. E-MAIL ADDRESS: [dmcmullin@schn.com]
8. BUSINESS NAME: COLUMBIA FORGE & MACHINE
9. DEPT OR DIV:
10. SITE ADDRESS: 3424 N CRAWFORD
CITY: PORTLAND
COUNTY: MULTNOMAH
STATE: OR ZIP CODE: 97203
11. MAILING ADDRESS: 3424 N CRAWFORD
CITY: PORTLAND
COUNTY: MULTNOMAH
STATE: OR ZIP CODE: 97203
12. BUSINESS PHONE: 503-236-3621
13. NUMBER OF EMPLOYEES AT THIS SITE: ~~18~~ 17 [17]
14. EMERGENCY ASSISTANCE CONTACT PERSON FOR THIS SITE: ~~VINCE SCHILE~~ [DOUG McMULLIN]
15. EMERGENCY CONTACT PHONES: DAY 503-236-3621 NIGHT ~~[illegible]~~ [(503) 289-5011]
16. RESPONSIBLE FIRE DEPARTMENT: PORTLAND FIRE BUREAU

SPECIAL FIRE DEPARTMENT INFORMATION This section is for information the fire service needs to know in case of an emergency.

17. ☐ YES ☑ NO WRITTEN EMERGENCY PLAN. IF YES, LOCATION:
18. ☐ YES ☑ NO AUTOMATIC FIRE SUPPRESSION SYSTEM PRESENT; e.g., sprinklered, halon system, etc.
19. ☐ YES ☑ NO ARE STORAGE BUILDINGS/TANKS/AREAS PLACARDED ACCORDING TO NFPA 704?
20. ☐ YES ☑ NO ARE OTHER TYPES OF PLACARDS USED?

SECTION C PERSON COMPLETING FORM
This person will be contacted to answer any questions needing clarification.

1. PRINT NAME: DOUG McMULLIN
2. SIGNATURE (REQUIRED): Doug McMullin
3. DATE SURVEY COMPLETED: 11/30/98

DOUG McMULLIN
~~VINCE SCHILE~~ - MGR
COLUMBIA FORGE & MACHINE
3424 N CRAWFORD
PORTLAND OR 97203

RETAIN A COPY OF THIS SURVEY FOR 3 YEARS

PLEASE TYPE OR PRINT ALL ANSWERS. THANK YOU!

FORM
CHEMICAL

7-1998 OREGON STATE FIRE MAR AL
HAZARDOUS SUBSTANCE INFORMATION SURVEY

Facility ID Numbe
005730

SECTION D

SUBSTANCE INFORMATION - TYPE OR PRINT ONLY CHANGES IN THE [BRACKETED] AREAS

COMMON NAME/TRADE NAME: ARGON 75%/CARBON DIOXIDE 25%
HAZARDOUS INGREDIENT
IN HIGHEST CONCENTRATION: ARGON

EHS	PHYSICAL STATE (USE TABLE I)	UNIT OF MEASURE (USE TABLE II)	AVG. AMT. CODE (USE TABLE III)	MAX. AMT. CODE (USE TABLE III)	AMT. IN CODE (USE TABLE III)	AMT. OUT CODE (USE TABLE III)	NUMBER OF DAYS ON SITE (3 DIGIT NO.)	STORAGE CODE (USE TABLES IV & V)	HAZARD CLASSES (USE TABLE VI)	CAS NO. (IF KNOWN)
2	3	3	10	20			365	L 2 4	2.2	0007440-37-
				11	10	00				

STORAGE LOCATIONS AT SITE: WELDING AREA AT REAR OF MAIN BLDG

UN/NA NO. (IF KNOWN): 1956

COMMON NAME/TRADE NAME: ARGON 98%/OXYGEN 2%
HAZARDOUS INGREDIENT
IN HIGHEST CONCENTRATION: ARGON

EHS	PHYSICAL STATE (USE TABLE I)	UNIT OF MEASURE (USE TABLE II)	AVG. AMT. CODE (USE TABLE III)	MAX. AMT. CODE (USE TABLE III)	AMT. IN CODE (USE TABLE III)	AMT. OUT CODE (USE TABLE III)	NUMBER OF DAYS ON SITE (3 DIGIT NO.)	STORAGE CODE (USE TABLES IV & V)	HAZARD CLASSES (USE TABLE VI)	CAS NO. (IF KNOWN)
2	3	3	10	20			365	L 2 4	2.2	0007440-37-
			20		20	00				

STORAGE LOCATIONS AT SITE: WELDING AREA AT REAR OF MAIN BLDG

UN/NA NO. (IF KNOWN): 1956

COMMON NAME/TRADE NAME: DEGREASER 853
HAZARDOUS INGREDIENT
IN HIGHEST CONCENTRATION: 2-BUTOXYETHANOL

EHS	PHYSICAL STATE (USE TABLE I)	UNIT OF MEASURE (USE TABLE II)	AVG. AMT. CODE (USE TABLE III)	MAX. AMT. CODE (USE TABLE III)	AMT. IN CODE (USE TABLE III)	AMT. OUT CODE (USE TABLE III)	NUMBER OF DAYS ON SITE (3 DIGIT NO.)	STORAGE CODE (USE TABLES IV & V)	HAZARD CLASSES (USE TABLE VI)	CAS NO. (IF KNOWN)
2	2	2	02	02			365	D 1 4	4.5 6.3	0000111-76-
					00	00				

STORAGE LOCATIONS AT SITE: OIL STORAGE AREA IN CENTER OF MAIN YARD

UN/NA NO. (IF KNOWN): 0000

COMMON NAME/TRADE NAME: HYDRAULIC OIL
HAZARDOUS INGREDIENT
IN HIGHEST CONCENTRATION: HIGHLY REFINED BASE LUBRICATING OILS

EHS	PHYSICAL STATE (USE TABLE I)	UNIT OF MEASURE (USE TABLE II)	AVG. AMT. CODE (USE TABLE III)	MAX. AMT. CODE (USE TABLE III)	AMT. IN CODE (USE TABLE III)	AMT. OUT CODE (USE TABLE III)	NUMBER OF DAYS ON SITE (3 DIGIT NO.)	STORAGE CODE (USE TABLES IV & V)	HAZARD CLASSES (USE TABLE VI)	CAS NO. (IF KNOWN)
2	2	2	10	10			365	D 1 4	4.5	0064742-65-
					20	20				

STORAGE LOCATIONS AT SITE: VARIOUS TYPES IN OIL STORAGE AREA IN CENTER OF MAIN YARD

UN/NA NO. (IF KNOWN): 1270

FORM
CHEMICAL

1998 OREGON STATE FIRE MARSHAL
HAZARDOUS SUBSTANCE INFORMATION SURVEY

Facility ID Number
005730

SECTION D

SUBSTANCE INFORMATION - TYPE OR PRINT ONLY CHANGES IN THE [BRACKETED] AREAS

COMMON NAME/TRADE NAME: MOTOR OIL
HAZARDOUS INGREDIENT
HIGHEST CONCENTRATION: HIGHLY REFINED BASE OILS

EHS	PHYSICAL STATE (USE TABLE I)	UNIT OF MEASURE (USE TABLE II)	AVG. AMT. CODE (USE TABLE III)	MAX. AMT. CODE (USE TABLE III)	AMT. IN CODE (USE TABLE III)	AMT. OUT CODE (USE TABLE III)	NUMBER OF DAYS ON SITE (3 DIGIT NO.)	STORAGE CODE (USE TABLES IV & V)	HAZARD CLASSES (USE TABLE VI)	CAS NO. (IF KNOWN)
2 (PURE / MIXTURE)	2	2	04	04			365	9 1 4	4.5	0064742-54-7
(NEW / NO LONGER REPORTABLE)				10	11	11				

STORAGE LOCATIONS AT SITE: OIL STORAGE AREA IN CENTER OF MAIN YARD

UN/NA NO. (IF KNOWN): 1270

COMMON NAME/TRADE NAME: ORGANIC COMPOUND 135
HAZARDOUS INGREDIENT
HIGHEST CONCENTRATION: NONE AS PER 29CFR 1910.1200

EHS	PHYSICAL STATE (USE TABLE I)	UNIT OF MEASURE (USE TABLE II)	AVG. AMT. CODE (USE TABLE III)	MAX. AMT. CODE (USE TABLE III)	AMT. IN CODE (USE TABLE III)	AMT. OUT CODE (USE TABLE III)	NUMBER OF DAYS ON SITE (3 DIGIT NO.)	STORAGE CODE (USE TABLES IV & V)	HAZARD CLASSES (USE TABLE VI)	CAS NO. (IF KNOWN)
2 (PURE / MIXTURE)	2	2	03	03			365	9 1 4	9.0	
(NEW / NO LONGER REPORTABLE)					04	00				

STORAGE LOCATIONS AT SITE: OIL STORAGE AREA IN CENTER OF MAIN YARD

UN/NA NO. (IF KNOWN): 0000

COMMON NAME/TRADE NAME: OXYGEN
HAZARDOUS INGREDIENT
HIGHEST CONCENTRATION: OXYGEN

EHS	PHYSICAL STATE (USE TABLE I)	UNIT OF MEASURE (USE TABLE II)	AVG. AMT. CODE (USE TABLE III)	MAX. AMT. CODE (USE TABLE III)	AMT. IN CODE (USE TABLE III)	AMT. OUT CODE (USE TABLE III)	NUMBER OF DAYS ON SITE (3 DIGIT NO.)	STORAGE CODE (USE TABLES IV & V)	HAZARD CLASSES (USE TABLE VI)	CAS NO. (IF KNOWN)
1 (PURE / MIXTURE)	3	3	20	20			365	L 2 4	2.2 5.1	0007782-44-7
(NEW / NO LONGER REPORTABLE)					21	00				

STORAGE LOCATIONS AT SITE: WELDING AREA AT REAR OF MAIN BLDG

UN/NA NO. (IF KNOWN): 1072

COMMON NAME/TRADE NAME: PROPANE
HAZARDOUS INGREDIENT
HIGHEST CONCENTRATION: PROPANE

EHS	PHYSICAL STATE (USE TABLE I)	UNIT OF MEASURE (USE TABLE II)	AVG. AMT. CODE (USE TABLE III)	MAX. AMT. CODE (USE TABLE III)	AMT. IN CODE (USE TABLE III)	AMT. OUT CODE (USE TABLE III)	NUMBER OF DAYS ON SITE (3 DIGIT NO.)	STORAGE CODE (USE TABLES IV & V)	HAZARD CLASSES (USE TABLE VI)	CAS NO. (IF KNOWN)
1 (PURE / MIXTURE)	3	2	10	10			365	A 2 4	2.1 6.3	0000074-98-6
(NEW / NO LONGER REPORTABLE)					20	00				

STORAGE LOCATIONS AT SITE: TANK LOCATED BY FENCE IN CENTER OF MAIN YARD

UN/NA NO. (IF KNOWN): 1075

CRAW00015059

FORM
CHEMICAL

7-1998 OREGON STATE FIRE MAR AL

HAZARDOUS SUBSTANCE INFORMATION SURVEY

Facility ID Numbe
005730

SECTION D

SUBSTANCE INFORMATION - TYPE OR PRINT ONLY CHANGES IN THE [BRACKETED] AREAS

COMMON NAME/TRADE NAME: PROPANE
HAZARDOUS INGREDIENT
IN HIGHEST CONCENTRATION: PROPANE

EHS	PHYSICAL STATE (USE TABLE I)	UNIT OF MEASURE (USE TABLE II)	AVG. AMT. CODE (USE TABLE III)	MAX. AMT. CODE (USE TABLE III)	AMT. IN CODE (USE TABLE III)	AMT. OUT CODE (USE TABLE III)	NUMBER OF DAYS ON SITE (3 DIGIT NO.)	STORAGE CODE (USE TABLES IV & V)	HAZARD CLASSES (USE TABLE VI)	CAS NO. (IF KNOWN)
1 PURE / MIXTURE	3	2	03	03			365	L 2 4	2.1 6.3	0000074-98-6
NEW / NO LONGER REPORTABLE				04	11	00				

STORAGE LOCATIONS AT SITE WELDING AREA AT REAR OF MAIN BLDG

UN/NA NO. (IF KNOWN) 1075

COMMON NAME/TRADE NAME: THINNER 550B
HAZARDOUS INGREDIENT
IN HIGHEST CONCENTRATION: PETROLEUM NAPHTHA

EHS	PHYSICAL STATE (USE TABLE I)	UNIT OF MEASURE (USE TABLE II)	AVG. AMT. CODE (USE TABLE III)	MAX. AMT. CODE (USE TABLE III)	AMT. IN CODE (USE TABLE III)	AMT. OUT CODE (USE TABLE III)	NUMBER OF DAYS ON SITE (3 DIGIT NO.)	STORAGE CODE (USE TABLES IV & V)	HAZARD CLASSES (USE TABLE VI)	CAS NO. (IF KNOWN)
2 PURE / MIXTURE	2	2	04	04			365	D 1 4	3.3	0064742-47-8
NEW / NO LONGER REPORTABLE					04	04				

STORAGE LOCATIONS AT SITE OIL STORAGE AREA IN CENTER OF MAIN YARD

UN/NA NO. (IF KNOWN) 1255

COMMON NAME/TRADE NAME:
HAZARDOUS INGREDIENT
IN HIGHEST CONCENTRATION:

EHS	PHYSICAL STATE (USE TABLE I)	UNIT OF MEASURE (USE TABLE II)	AVG. AMT. CODE (USE TABLE III)	MAX. AMT. CODE (USE TABLE III)	AMT. IN CODE (USE TABLE III)	AMT. OUT CODE (USE TABLE III)	NUMBER OF DAYS ON SITE (3 DIGIT NO.)	STORAGE CODE (USE TABLES IV & V)	HAZARD CLASSES (USE TABLE VI)	CAS NO. (IF KNOWN)
PURE / MIXTURE										
NEW / NO LONGER REPORTABLE										

STORAGE LOCATIONS AT SITE

UN/NA NO. (IF KNOWN)

COMMON NAME/TRADE NAME:
HAZARDOUS INGREDIENT
IN HIGHEST CONCENTRATION:

EHS	PHYSICAL STATE (USE TABLE I)	UNIT OF MEASURE (USE TABLE II)	AVG. AMT. CODE (USE TABLE III)	MAX. AMT. CODE (USE TABLE III)	AMT. IN CODE (USE TABLE III)	AMT. OUT CODE (USE TABLE III)	NUMBER OF DAYS ON SITE (3 DIGIT NO.)	STORAGE CODE (USE TABLES IV & V)	HAZARD CLASSES (USE TABLE VI)	CAS NO. (IF KNOWN)
PURE / MIXTURE										
NEW / NO LONGER REPORTABLE										

STORAGE LOCATIONS AT SITE

UN/NA NO. (IF KNOWN)

FORM
CHEMICAL

1 /-1998 OREGON STATE FIRE MAR AL

Facility ID Numbe:
005730

HAZARDOUS SUBSTANCE INFORMATION SURVEY

SECTION D

SUBSTANCE INFORMATION - TYPE OR PRINT ONLY CHANGES IN THE [BRACKETED] AREAS

OMMON NAME/TRADE NAME:
AZARDOUS INGREDIENT
HIGHEST CONCENTRATION:

EHS	PHYSICAL STATE	UNIT OF MEASURE	AVG. AMT. CODE	MAX. AMT. CODE	AMT. IN CODE	AMT. OUT CODE	NUMBER OF DAYS ON SITE	STORAGE CODE	HAZARD CLASSES	CAS NO. (IF KNOWN)
	USE TABLE II	USE TABLE II	USE TABLE III	USE TABLE III	USE TABLE III	USE TABLE III	3 DIGIT NO.	USE TABLES IV & V	USE TABLE VI	
1 - PURE 2 - MIXTURE										
1 - NEW 2 - NO LONGER REPORTABLE										

STORAGE LOCATIONS AT SITE

UN/NA NO. (IF KNOWN)

OMMON NAME/TRADE NAME:
AZARDOUS INGREDIENT
N HIGHEST CONCENTRATION:

EHS	PHYSICAL STATE	UNIT OF MEASURE	AVG. AMT. CODE	MAX. AMT. CODE	AMT. IN CODE	AMT. OUT CODE	NUMBER OF DAYS ON SITE	STORAGE CODE	HAZARD CLASSES	CAS NO. (IF KNOWN)
	USE TABLE II	USE TABLE II	USE TABLE III	USE TABLE III	USE TABLE III	USE TABLE III	3 DIGIT NO.	USE TABLES IV & V	USE TABLE VI	
1 - PURE 2 - MIXTURE										
1 - NEW 2 - NO LONGER REPORTABLE										

STORAGE LOCATIONS AT SITE

UN/NA NO. (IF KNOWN

OMMON NAME/TRADE NAME:
AZARDOUS INGREDIENT
N HIGHEST CONCENTRATION:

EHS	PHYSICAL STATE	UNIT OF MEASURE	AVG. AMT. CODE	MAX. AMT. CODE	AMT. IN CODE	AMT. OUT CODE	NUMBER OF DAYS ON SITE	STORAGE CODE	HAZARD CLASSES	CAS NO. (IF KNOWN
	USE TABLE II	USE TABLE II	USE TABLE III	USE TABLE III	USE TABLE III	USE TABLE III	3 DIGIT NO.	USE TABLES IV & V	USE TABLE VI	
1 - PURE 2 - MIXTURE										
1 - NEW 2 - NO LONGER REPORTABLE										

STORAGE LOCATIONS AT SITE

UN/NA NO. (IF KNOWN

OMMON NAME/TRADE NAME:
AZARDOUS INGREDIENT
N HIGHEST CONCENTRATION:

EHS	PHYSICAL STATE	UNIT OF MEASURE	AVG. AMT. CODE	MAX. AMT. CODE	AMT. IN CODE	AMT. OUT CODE	NUMBER OF DAYS ON SITE	STORAGE CODE	HAZARD CLASSES	CAS NO. (IF KNOWN
	USE TABLE II	USE TABLE II	USE TABLE III	USE TABLE III	USE TABLE III	USE TABLE III	3 DIGIT NO.	USE TABLES IV & V	USE TABLE VI	
1 - PURE 2 - MIXTURE										
1 - NEW 2 - NO LONGER REPORTABLE										

STORAGE LOCATIONS AT SITE

UN/NA NO. (IF KNOWN

CT OF

PORTLAND, OREGON

FIRE PREVENTION DIVISION

Track #	Account #
151	E08-074-001

CITY OF PORTLAND
Hazardous Substance Possession Fee

Please Remit: $*450.00

Must be received by: 01/15/90

COLUMBIA FORGE & MACHINE
8424 N CRAWFORD
PORTLAND, OR 97203

Late payments will be assessed an additional 1% per month after the due date.

Check Payable to: CITY TREASURER
Remit to: Portland Fire Bureau
55 S.W. Ash Street
Portland, Oregon 97204

ach and return upper portion with remittance - - - - - - - - ->

State and Federal laws have been enacted to provide state and local emergency services and the community with information concerning hazardous substance locations and hazards. The legislation also provides that the local community participate and plan for responding to hazardous substance incidents.

Hazardous substance fees collected by the City of Portland will be used to fund a local data storage and retrieval system for hazardous chemical information provided by the state. This system will provide emergency responders with timely on-site information which will enable them to effectively manage incidents while minimizing the danger to emergency response personnel and the public.

This fee is not a permit fee and does not indicate that the occupancy and use of a building is in compliance with Fire and Building Regulations. The fees collected for this purpose are not a duplication of fees charged by the Department of Environmental Quality or the State Fire Marshal's Office.

The annual hazardous substance fee will be used to administer a local information and protection program in accordance with Title 31 of the City Code, Fire Regulations, sections 31.80.010-31.80.070, "Hazardous Substances Emergency Planning." The fees will provide the Portland Bureau of Fire, Rescue & Emergency Services with a computerized information system that will be used by ALL emergency responders. This system will also ensure that emergency personnel have immediate access to information concerning the type of material, location, degree of hazard, available emergency systems and associated information so that they may effectively and safely deal with hazardous substance emergencies.

You are entitled to appeal specific requirements of these regulations by written notification as set forth in section 31.10.150 of the City Code, Title 31.

Appeals should be directed to: Hazardous Substance Section
55 S.W. Ash Street
Portland, Oregon 97204

RECEIVED COLUMBIA FORGE & MACHINE NOV 8 89

If you have any questions about this bill, please call the Hazardous Substance Section at 760-1081.

B 11289 Track: 151 Account: E08-074-001

Billing: 11/15/89 Due: 01/15/90 Amount: $*450.00

HAZARDOUS INVENTORY DATA

CHEMICAL NAME:	CHEMICAL HAZARD CLASS:	STATE QTY. RANGE:	QUANTITY RANGE:	FEE:
** 151 005730, COLUMBIA FORGE & MACHINE				
8424 N CRAWFORD				
DEGREASER 853	UNKNOWN, PROBABLY CLASS C	0-99	0-199	0.00
ORGANIC COMPOUND 135	UNKNOWN, PROBABLY CLASS C	100-999	200-999	50.00
PROPANE	2.1, FLAMMABLE GAS	100-999	200-999	50.00
PROPYLENE	2.1, FLAMMABLE GAS	0-99	0-199	0.00
BLUE SHIELD 4	2.2, NONFLAMMABLE GAS	1,000-9,999	1,000-9,999	100.00
BLUE SHIELD 8	2.2, NONFLAMMABLE GAS	1,000-9,999	1,000-9,999	100.00
THINNER 350B	3.2, FLAMM. LIQ. FP 0-73 F	0-99	0-199	0.00
HYDRAULIC OIL	4.2, COMBUSTIBLE MATERIAL	100-999	200-999	50.00
MOTOR OIL	4.2, COMBUSTIBLE MATERIAL	0-99	0-199	0.00
GAS AIR FUEL	5.1, OXIDIZERS	0-99	0-199	0.00
OXYGEN	5.1, OXIDIZERS	1,000-9,999	1,000-9,999	100.00
** Subtotal **				450.00
*** Total ***				450.00

B 11290

ORDINANCE 162225

Chapter 31.40
(and a new Table 40-B is substituted to read:)

CHAPTER 31.40

TABLE 40 - B

(A) RADIOACTIVE SUBSTANCES OR RADIOACTIVE WASTES

(S) SOLIDS (in pounds)	(L) LIQUIDS (in gallons)	(G) GASES COMPRESSED (cu. ft. at STP)	FEE
>0 - 99	>0 - 99	>0 - 99	$ 50
100 - 999	100 - 999	100 - 999	100
1,000 - 9,999	1,000 - 9,999	1,000 - 9,999	200
10,000 - 99,999	10,000 - 99,999	10,000 - 99,999	600
100,000 - 999,999	100,000 - 999,999	100,000 - 999,999	1,000
1,000,000 - up	1,000,000 - up	1,000,000 - up	1,400

(B) CLASS A & B POISONS; IRRITATING MATERIALS; CLASS A, B & C EXPLOSIVES, BLASTING AGENTS AND HIGHLY TOXIC SUBSTANCES

(S) SOLIDS (in pounds)	(L) LIQUIDS (in gallons)	(G) GASES COMPRESSED (cu. ft. at STP)	FEE
>0 - 9	>0 - 4	>0 - 19	$ 25
10 - 99	5 - 99	20 - 99	50
100 - 999	100 - 999	100 - 999	100
1,000 - 9,999	1,000 - 9,999	1,000 - 9,999	200
10,000 - 99,999	10,000 - 99,999	10,000 - 99,999	600
100,000 - 999,999	100,000 - 999,999	100,000 - 999,999	1,000
1,000,000 - up	1,000,000 - up	1,000,000 - up	1,400

* (C) ALL OTHER REGULATED HAZARDOUS SUBSTANCES, MATERIALS AND WASTES

(S) SOLIDS (in pounds)	(L) LIQUIDS (in gallons)	(G) GASES COMPRESSED (cu. ft. at STP)	FEE
0 - 499	0 - 54	0 - 199	$ 0
500 - 999	55 - 999	200 - 999	50
1,000 -9,999	1,000 - 9,999	1,000 - 9,999	100
10,000 - 99,999	10,000 - 99,999	10,000 - 99,999	200
100,000 - 999,999	100,000 - 999,999	100,000 - 999,999	600
1,000,000 - up	1,000,000 - up	1,000,000 - up	1,000

* Permit fees for ordinary flammable and combustible liquids such as motor fuels contained in approved underground storage tanks are $25 per tank per year. Heating fuels stored in approved underground tanks are exempt from this fee schedule.

V. LIST OF HAZARDOUS CHEMICALS (con't.)

HAZARDOUS CHEMICALS	LOCATION
G. Miscellaneous	
Quick Set Adhesive 404	Maint. Area
Never-seez Anti-Seize Compound	Maint. Area
Floor Dry	Warehouse
Loctite Adhesive/Sealant 271	Maint. Area
Crack Check Cleaner C-F (Spray)	Supply Closet
Crack Check Developer D-NF (Spray)	Supply Closet
Crack Check Penetrant P-HF (Spray	Supply Closet
Thread Sealant w/Teflon 14H,14D,14F	Maint. Area
Propane	Center Yard
Fel-Pro N-500 Antiseize	Maint. Area
Devon Plastic Steel Putty	Maint. Area
50 Hardhat Aeorsol Spray	Supply Closet

V. LIST OF HAZARDOUS CHEMICALS (con't.)

HAZARDOUS CHEMICALS	LOCATION
F. Furnace Construction Materials	
Marinite M Calcium Silicate Board	Warehouse
Lytherm Ceremic Fiber Papers	Warehouse
Mizzou Castable Plus	Warehouse
A.P. Green: Refractory Bricks or Slopes	Warehouse
A.P. Green: Insulating Fire Brick: G 3	Warehouse
A.P. Green: High Duty Fireclay Brick: Idaho	Warehouse
Cerachrome Blanket Refractory	Warehouse
K-FAC 19 Board	Warehouse
Sairset Mortar	Warehouse
Durablanket 2600	Warehouse

V. LIST OF HAZARDOUS CHEMICALS (con't.)

HAZARDOUS CHEMICALS	LOCATION
E. Paints	
Sparvar Spray Paint - Metallic Item Nos. S-121,S-122,S-123	Supply Closet
Sparvar Fluorescent Spray Paint Item Nos. S-311,S-312	Supply Closet
Sparvar Spray Paint - Flat Item No. S-111	Supply Closet
Sparvar Spray Paint Item Nos. S-101,S-103,S-117,S-118	Supply Closet
Sparvar Spray Paint Covers 25 Items	Supply Closet
Rodda Alkyd Enamel 817	Warehouse
Rodda Alkyd Enamel 812Spray Paint	Supply Closet
Rodda Alkyd Primer Red Oxide	Supply Closet

V. LIST OF HAZARDOUS CHEMICALS (con't.)

HAZARDOUS CHEMICALS	LOCATION
D. Welding and Soldering Supplies	
Oxygen	Welding Area
Liquid Air Fuel Gas	Welding Area
Blue Shield Nos.6,7 or 8 gas mixture	Welding Area
Blue Shield Nos. 4 or 5 gas mixture	Welding Area
Welco 1620 Auto Spatter Compound	Welding Area
Fleetweld 35 Welding rod	Welding Area
UTP 653 Stainless welding rod	Welding Area
UTP 65 312 Stainless Welding rod	Welding Area
Jet-LH78 Welding Rod (E7018)	Welding Area
Stainless Steel Welding Electrodes	Welding Area
Stainless Steel Welding Wire	Welding Area
WeldMold Stick Electrode	Welding Area
Silvaloy 45 Silver Solder	Welding Area
Ultra Flux	Welding Area
Braze Welding Wire & Rod	Welding Area
E7024 Welding Rod	Welding Area
E6013 Welding Rod	Welding Area
Tool Steel Flux-Cored Wire	Welding Area
Dual Shield T-1 and T-2 Flux-Cored Welding Rods	Welding Area
Mild and Low Alloy Steel Welding Wire	Welding Area
Fuel-Gas-Propylene	Welding Area

V. LIST OF HAZARDOUS CHEMICALS (con't.)

HAZARDOUS CHEMICALS	LOCATION
C. Solvents and Thinners	
Chevron Thinner 350 B	Oil Storage
Rodda Thinner: Synthetic Reducer	Warehouse==
853 Degreaser	Oil Storage

V. LIST OF HAZARDOUS CHEMICALS (con't.)

HAZARDOUS CHEMICALS	LOCATION
B. Oils and Lubricants	
Unocal Unax AW 68	Oil Storage
Unocal Unax AW 46	Oil Storage
Unocal Turbine Oil 68	Oil Storage
Unocal Unoba EP Grease 2	Oil Storage
Unocal Marok 68 Oil	Oil Storage
Cimperial 1011 Coolant	Oil Storage
Cimclean 30 Coolant cleaner	Oil Storage
Soluble Organic Compound #135-	Oil Storage
die lube	Oil Storage
Unocal Soluble Oil 10 coolant	Oil Storage
Unocal Heavy Duty Motor Oil 30	Oil Storage
Chevron Insulating Oil	Oil Storage
Lubrizol 5525	Oil Storage
Unocal Hydraulic Oil AW 68	Oil Storage
Unocal Koolkut II HD	Oil Storage
Unocal Marok 220	Oil Storage
Anderal 500 Oil	Oil Storage
29 Moly Cart	Oil Storage
81 BP-2 (formerly 81 EP LIght)	Oil Storage
Union Turbine Oil 100, 150	Oil Storage

Attachment 4
Transformer Spill Documentation

[redacted]

NOTE TO PCB SPILL FILE:

5/28/87 - An overheated capacitor located in an enclosed TOCCO cabinet ruptured and spilled a small amount (2-3oz) of PCB. The spill was totally contained in the cabinet and was isolated to the surface of a transformer locate under the capacitor. The unit was taken out of service and labeled with warning signs.

6/3/87 - Crosby and Overton, an environmental clean up company was contracted to clean-up the spill and remove the faulty capacitor in accordance with Oregon and EPA rules

6/9/87 - Crosby and Overton removed the capacitor, cleaned up the spill and conducted wipe tests. The capacitor was placed in a barrel and temporarily stored on Columbia Forge premises.

Crosby and Overton could not achieve a clean-up to 10 ug / 100 cm² consequently the unit was kept out of service, with warning signs until a resolution could be found.

The ultimate solution included removal of the transformer (thus the removal of the spill surface by Crosby and Overton — see other documentation for dates.

Henry Strangwood

B 11442

GENERAL ELECTRIC

USTOMER COLUMBIA FORGE & MACHINE WORKS, INC REFER TO: JOB NO: 21308

.O. NUMBER 4119 DATE: 02/19/88

ATE RECEIVED 02 / 22 /88 VIA DELIVERED

EQUIPMENT DESC.

SHIP TO:

MANUF.

MODEL

SERIAL NO.

BILL TO: COLUMBIA FORGE & MACHINE WORKS, INC
8424 N. CRAWFORD STREET
PORTLAND, OR 97203

ATTENTION: MR. JOHN SHORE

IF YOU DESIRE FURTHER INFORMATION, PLEASE CONTACT

Annette E Noe

ANNETTE E NOE

TELEPHONE: (503) 221-5097

DATE MAILED: 02 /22 / 88

PER QUOTATION NUMER 101-88-55

DISPOSAL OF CAPACITOR IN DRUM

CLEANING AND TESTING OF TRANSFORMER

WE ACKNOWLEDGE RECEIPT OF YOUR ORDER AND/OR MATERIAL AS LISTED ABOVE, SUBJECT TO OUR STANDARD CONDITIONS AS STATED ON THE REVERSE SIDE.

TERMS: NET DUE UPON RECEIPT OF INVOICE

B 11440

ACKNOWLEDGMENT - CUSTOMER COPY

FORM NO. FN-1060 6/85 REV.

CRAW00015073

GENERAL ELECTRIC
PORTLAND DECOMMISSIONING/STORAGE FACILITY
2535 NW 28TH AVENUE PORTLAND, OREGON 97210
(503) 221-5098

February 23, 1988

Mr. John L. Shore 21308
COLUMBIA FORGE
8424 N. Crawford St.
Portland, OR 97203

SUBJECT: HAZARDOUS WASTE MANIFEST NO. 21308
GENERAL ELECTRIC TRACKING NO. 21308

Dear Mr. Shore:

Attached, please find the original of the above captioned Hazardous Waste Manifest signed by our representative upon receipt of your material at our Decommissioning Facility in Portland. You should keep this record to establish the disposition of this material.

We will provide you with copies of the Manifest when this material is sent out for final disposition. These copies will be signed by the ultimate disposer and our cover letter will reference the above captioned G.E. TRACKING NUMBER so that you then will have a record of the material from the time it left your premises until it is properly disposed. Please note the corrections made in the DISCREPANCY SECTION 19 on the manifest.

Should you have any questions, please do not hesitate to call me at (503) 221-5098. We appreciate the opportunity of providing this service and look forward to additional work in the future.

Sincerely,

Shirlee Porter

Shirlee K. Porter
Facility Supervisor
Portland Oregon

Attachment

B 11438

UNIFORM HAZARDOUS WASTE MANIFEST	1. Generator's US EPA ID No. 93-0463820	Manifest Document No. 21308	2. Page 1 of 1	Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
Columbia Forge
8424 N Crawford St. Portland, OR 97203

4. Generator's Phone (203) 286-3621

A. State Manifest Document Number

B. State Generator's ID

5. Transporter 1 Company Name: General Electric Company
6. US EPA ID Number: ORD980833537

C. State Transporter's ID

D. Transporter's Phone 503-221-5098

7. Transporter 2 Company Name
8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
General Electric Company
2535 NW 28th Ave.
Portland, OR 97210

10. US EPA ID Number: ORD980833537

G. State Facility's ID

H. Facility's Phone (503) 221-5098

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	HM	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Hazardous Substance Liquid, NOS ORM-E, NA9188, RQ (Polychlorinated Biphenyls)	X	001	DM	0250 *	P	X002
b. Hazardous Substance Solid, NOS ORM-E NA9188, RQ (Polychlorinated Biphenyls)	X	001	CM	Ø	P	X002
c.						
d.						

J. Additional Descriptions for Materials Listed Above
a) 1 drum ~~[illegible]~~ leaking Capacitors o/s date 7-87
b) 1 Transformer (empty)
* Estimated weight

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
Dike and Contain Spills Avoid Contact with Skin.
Alternated TSDF, Return to Generator
In Case of Spill Call 1-800-626-2001 ex 66

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations.

Unless I am a small quantity generator who has been exempted by statute or regulation from the duty to make a waste minimization certification under Section 3002(b) of RCRA, I also certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and I have selected the method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment.

Printed/Typed Name	Signature	Month	Day	Year
John L Shore	John L. Shore	2	22	88

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
Scott A Duncan	[signature]	02	22	88

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

19. Discrepancy Indication Space
XFMER AND CAPACITOR WERE RECIEVED IN (1) DRUM

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year
GARY E. SCHMALZ	Gary E Schmalz	02	22	88

ORIGINAL-RETURN TO GENERATOR

CRAW00015075

Attachment 5
Underground Storage Tank Lab Reports

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

March 24, 1987
Log #A870319-K
PO#: 2864

Columbia Forge & Machine
8424 N. Crawford St.
Portland, Oregon 97203

Attention: John Shore

Analysis Requested: Total Hydrocarbons

Sample ID: #3 Weld Shop

Sample Date: March 19, 1987

Sample Received: March 19, 1987

ANALYSIS	RESULTS
Gasoline	< 4 mg/kg
Diesel	< 4 mg/kg

Analysis by capillary GC/FID

The less than "<" symbol means none detected at or above the indicated value and represents the detection limit for the method.

Approved,

Susan M. Brillante

Susan M. Brillante,
Laboratory Director

Sincerely,

Susan M. Coffey

Susan M. Coffey,
President

SMC/gs

Soil analy
weld sh
(no ru

This report is for the sole and exclusive use of the above client. Samples are retained a maximum of 15 days from the date of this letter.

B 11592

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

March 19, 1987
Log #A870316-B1-2
PO#: 2842

Columbia Forge & Machine
8424 N. Crawford St.
Portland, Oregon 97203

Attention: John Shore

Sample ID: #1 - Skookum, 3/13/87
#2 - Yard, 3/13/87

Samples Received: March 13, 1987

Samples Collected by: Crosby & Overton

ANALYSIS	SAMPLE #1	SAMPLE #2
Gasoline*	< 1.0	16**
Diesel*	< 1.0	< 1.0
Lead	---	30.0

Results in mg/kg

* Analysis by extraction capillary GC/FID.

** Appears to contain some other high boiling oil and possibly some kerosene.

The less than "<" symbol means none detected at or above the indicated value and represents the detection limit for the method.

Approved by,

Susan M. Brillante

Susan M. Brillante,
Laboratory Director

Sincerely,

Susan M. Coffey

Susan M. Coffey,
President

Soil analy
yard s

SMC/gs

This report is for the sole and exclusive use of the above client. (no
Samples are retained a maximum of 15 days from the date of this letter.

B 11587

Attachment 6
Transformer Sampling and Analysis Reports

CROSBY & OVERTON, INC.

5420 N. LAGOON
PORTLAND, OREGON 97217
283-1150 or 289-5749

HEAVY DUTY CLEANING

24 HOUR SERVICE

P.O. BOX 1085
20245 76th
SOUTH KENT, WA 98031

January 15, 1988

John Shore
Production Manager
Columbia Forge & Machine Works, Inc.
8424 N. Crawford Street
Portland, OR 97203

RE: Cleaning of PCB contaminated transformer; job summary

Dear John:

On December 14, 1987 Crosby & Overton removed a transformer from a piece of equipment at your facility. The transformer was brought to C & O's shop where it was cleaned; subsequently a wipe sample was taken (N.W.T. report #310693). Because of the past difficulties with cleaning this transformer and the fact that PCB's were still detectable after this thorough cleaning, Randy Rees (of this office) advised the cleaning process be repeated (as discussed with you on or about December 21, 1988). December 21 the transformer was cleaned and sampled a second time (N.W.T. report #310875).

As you can see from the attached lab analysis the transformer appeared dirtier the after the second sampling than it had after the first. Apparently, the location of the first wipe sample was unrepresentative of the overall cleanliness of the transformer.

Cleaning method

The transformer was cleaned twice using the same methodology. First the unit was completely wiped using rags and liberal amount of Power Cleaner 155, a Penetone Corp. product. Power Cleaner is a heavy duty alkaline liquid cleaner designed for cleaning PCB contaminated materials. Then the unit was thoroughly steam cleaned. Then a second washing was completed using kerosene and rags (a common method of cleaning up PCB spills) followed by a second steam cleaning.

B 11443

Currently, the transformer is back at your facility awaiting final disposition. Due to the inability to get it clean, a suitable disposal facility is being sought, at your request.

Sincerely,

CROSBY & OVERTON, INC.

Jeffrey T. Wallace
Hazmat Technical Supervisor

JTW:dk

d30.jw

B 11444

NORTHWEST TESTING LABORATORIES, INC.

CONSTRUCTION INSPECTION
MATERIALS INSPECTION
CHEMICAL ANALYSIS
PHYSICAL TESTING

5405 N. Lagoon Avenue
P.O. Box 17126
Portland, Oregon 97217-0126
Phone: (503) 289-1778

NON-DESTRUCTIVE TESTING
WELDING CERTIFICATION
SOIL TESTING
ASSAYING

December 22, 1987

Crosby & Overton
5420 N. Lagoon
Portland, Oregon 97217

Attention: Mr. Jeff Wallace

Subject: Analysis on one (1) sample received on 12-14-87, per your P.O. Number 22041

REPORT:

Item: Hexane Wipe -120

Reference: Columbia Forge

Analysis:

Total PCB's, micrograms 7.5

Respectfully,
NORTHWEST TESTING LABORATORIES, INC.

Howard B. Holmes,
Assistant Supervisor, Chemistry

Report Number: 310693

B 11445

NORTHWEST TESTING LABORATORIES, INC.

CONSTRUCTION INSPECTION
MATERIALS INSPECTION
CHEMICAL ANALYSIS
PHYSICAL TESTING

5405 N. Lagoon Avenue
P.O. Box 17126
Portland, Oregon 97217-0126
Phone: (503) 289-1778

NON-DESTRUCTIVE TESTING
WELDING CERTIFICATION
SOIL TESTING
ASSAYING

December 28, 1987

Crosby & Overton
5420 N. Lagoon
Portland, Oregon 97217

Attention: Mr. Jeff Wallace

Subject: Analysis on three (3) samples received on 12-21-87, per your P.O. Number 22041.

REPORT:

Item: Hexane Swab Sample

Reference: Columbia Forge

Analysis:

	TOTAL PCB's (1260) micrograms
121 (Blank)	2.5
122 (Transformer Bottom)	12
123 (Transformer Side)	270

Respectfully,
NORTHWEST TESTING LABORATORIES, INC.

Fred Thomas, Chemist

Howard B. Holmes
Assistant Supervisor, Chemistry

Report Number: 310875

B 11446

AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE

Problem Solvers

Water, Food & Research Lab, Inc.

Laboratory: 13015 S.W. Pacific Hwy., Tigard, Oregon 97223
Mailing Address: P.O. Box 19700, Portland, Oregon 97219
Telephone (503) 639-9311

COLUMBIA FORGE & MACHINE WORKS, INC.
ATTN: HENRY STROMGUIST, GEN MGR.
8424 N. CRAWFORD STREET
PORTLAND, OR 97203

SAMPLE NO # 4720

PHONE 286-3621

CC: MANUFACTURING MANAGEMENT, INC.
ATTN: NORMAN WEBB, CORP. ENV. OFFICER
444 PORT AVENUE
ST HELENS, OREGON 97051

241-4796

CHEMICAL CONTAMINANTS LABORATORY REPORT
********** OF JUNE 1987 **********

SAMPLE: SPECIAL SAMPLE -LEAK FROM TRANSFORMER ON EQUIPMENT

SAMPLER: CERTIFIED SAMPLED BY PBS FROM LAB

LOCATION: UNDER TRANSFORMER ON EQUIPMENT, LIQUID POOLED IN PAN.

DATE SAMPLED: 05-28-87 AT 1130 HRS BY PS

DATE RECEIVED: 05-28-87 (PRIORITY ANALYSIS

CONTAMINANT	EPA METHOD	LIMIT	RESULTS	ANAL DATE	ANALYST
**********	******	*PPM*	* ****PPM****	*********	*******
PCB'S	EPA		990,000 PPM	05-29-87	L.G.
			(99% PURE, AL 1254)		

****

CERTIFIED BY:

PAUL B. STEVENS
Microbiologist/Biochemist
LAB DIRECTOR (EPA/OSHD # 24)

TESTED BY EPA CERTIFIED LAB, COL LAB ID # 14817

RECOMMENDATIONS: SPECIAL CLEANUP PERSONNEL NEEDED TO HANDLE HAZARDOUS WASTE MATERIAL.

< = LESS THAN OR NONE DETECTED
ALL RESULTS IN PPM = MG/L

B 11458

CERTIFIED

Attachment 7
BES Storm Water Sample Results

City of Portland
Water Pollution Control Laboratory
Laboratory Analysis Report

Sample Date/Time	6/17/97 17:10	**System ID**	AB12647	**Sample ID**	**SRP970116**

Page: 1

Proj./Company Name: BES INVESTIGATIONS
Address/Location: COLUMBIA FORGING
N CRAWFORD

Date Received: 6/17/97
Sample Status: REPORT QUEUE

Proj Subcategory: ENVIRONMENTAL COMPLIANCE
Sample Point Code: 0
IMS File: 3050.004

Sample Type: GRAB
Sample Matrix: SURFWTR
Collected By: RMC

Comments:

Test Parameter	Result	Units	MDL	Method
MET ICP METALS (HIGH-LEVEL)				
CADMIUM	<0.001	mg/L	0.001	EPA 200.7
CHROMIUM	<0.003	mg/L	0.003	EPA 200.7
COPPER	0.010	mg/L	0.004	EPA 200.7
LEAD	<0.020	mg/L	0.020	EPA 200.7
MOLYBDENUM	<0.003	mg/L	0.003	EPA 200.7
NICKEL	<0.004	mg/L	0.004	EPA 200.7
SELENIUM	0.047	mg/L	0.020	EPA 200.7
ZINC	0.065	mg/L	0.001	EPA 200.7

End of Report for Sample ID: SRP970116

6543 N. Burlington Ave. / Portland OR 97203 (503) 823-6600 fax (503) 823-5656

Report Date: 7/1/97

Oregon
John A. Kitzhaber, M.D., Governor

Department of Environmental Quality
811 SW Sixth Avenue
Portland, OR 97204-1390
(503) 229-5696
TDD (503) 229-6993

October 8, 1999

Mr. Robert Phillip
President
Crawford Street Corporation
3200 N.W. Yeon Street
Portland, Oregon 97210

Re: Crawford Street Site: Request for Performance of Preliminary Assessment with Sampling

Dear Mr. Phillip:

This letter informs you of the results of our review of information regarding hazardous substance contamination at the Crawford Street facility located at 8424 N. Crawford Street in Portland, Oregon. The Oregon Department of Environmental Quality (DEQ) has determined that the Crawford Street site is a high priority for a preliminary assessment with sampling and requests that Crawford Street Corporation perform a preliminary assessment with sampling in accordance with the Environmental Cleanup Law, Oregon Revised Statutes (ORS) 465.200 *et seq.*

The Crawford Street facility is located within or near a portion of the Willamette River known as the Portland Harbor. A 1997 investigation revealed significant contamination of sediments within the harbor. DEQ has undertaken review of available information regarding properties throughout the harbor to identify potential sources of the sediment contamination. The results of DEQ's review for the Crawford Street facility are summarized in the enclosed Strategy Recommendation

Based on this review, DEQ has determined additional information is necessary to determine whether hazardous substances have been released or threaten to be released at the Crawford Street facility and come to be located in Willamette River sediments. The preliminary assessment with sampling will fully evaluate all upland, in-water and over-water activities that might have resulted in the release of hazardous substances and include sufficient sampling to assess whether hazardous substances have come to be located in Willamette River sediments at or near the Crawford Street facility. At a minimum, sampling will include the collection of surface and subsurface sediment samples at appropriate points adjacent to the Crawford Street facility.

DEQ proposes that your performance of the preliminary assessment with sampling be governed by the enclosed Voluntary Cleanup Letter Agreement. The facility's preliminary assessment with sampling will be coordinated with harbor-wide sediments investigations currently being pursued by DEQ. This will require commencement of the preliminary assessment with sampling at the Crawford Street facility in the near future. DEQ therefore requests that you review the enclosed Strategy Recommendation and Voluntary Cleanup Letter Agreement, and inform DEQ whether will perform a preliminary assessment with sampling by signing and returning one original of the enclosed Voluntary Cleanup Letter Agreement within 30 calendar days of mailing of this letter. Please retain one signed original for your records. It is DEQ's expectation that a preliminary assessment and sampling work plan will be completed and submitted to DEQ within six weeks of signing the Voluntary Cleanup Letter Agreement.

Should you not agree to perform the preliminary assessment with sampling by execution of the Voluntary Cleanup Letter Agreement, DEQ will assume you are not willing to perform the requested work. In this case, as with other facilities within the Portland Harbor, DEQ will complete the preliminary assessment with sampling itself, with subsequent cost recovery from liable parties.

Finally, please be advised that DEQ is required by ORS 465.330 to recover remedial action costs incurred by DEQ, including for site assessment activities. You will be receiving an invoice in the near future for DEQ's costs of preparing the Strategy Recommendation for the Crawford Street facility. Reimbursement of future DEQ costs will be provided through the Voluntary Cleanup Letter Agreement for the facility, if one is entered.

Please Contact me at 503 229-5648 if you have any questions regarding the enclosed Strategy Recommendation .

Sincerely,

Eric Blischke,
Coordinator
Portland Harbor Study Area
Waste Management and Cleanup Division

Enclosures

c: Kurt Burkholder, DOJ
Dave St. Louis, Manager, NWR Site Assessment Program
Mike Rosen, NWR Voluntary Cleanup Program
Gil Wistar, Coordinator, Site Assessment Program
ESCI File No.: 2363

Oregon
John A. Kitzhaber, M.D., Governor

Department of Environmental Quality
811 SW Sixth Avenue
Portland, OR 97204-1390
(503) 229-5696
TDD (503) 229-6993

October 6, 1999

Mr. Robert Phillip
President
Crawford Street Corporation
3200 N.W. Yeon Street
Portland, Oregon 97210

SUBJECT: Voluntary Cleanup Letter Agreement

Dear Mr. Phillip:

This letter serves as an agreement between the Oregon Department of Environmental Quality (DEQ) and Crawford Street Corporation for performance of a preliminary assessment with sampling regarding hazardous substances at your property located at: 8424 N. Crawford Street in Portland, Oregon.

You agree to perform a preliminary assessment and submit it to DEQ within 30 business days of your execution of this Letter Agreement. The preliminary assessment will provide the information described in DEQ guidance for the completion of a preliminary assessment and a proposed sampling program. DEQ will review documents submitted by you or on your behalf regarding the preliminary assessment and investigation of the above referenced site.

A sub-account of the Hazardous Substances Remedial Action Fund has been established to be drawn upon by DEQ as project costs are incurred. When you have signed this letter agreement, you will be invoiced monthly for DEQ project costs, including the costs of preparing the DEQ strategy recommendation and any ongoing review and oversight costs. You will pay DEQ invoices within 30 days of receipt. A sample invoice is attached.

DEQ project costs will include direct costs and indirect costs. Direct costs include site-specific expenses and legal costs. Indirect costs are those general management and support costs of the DEQ and of the Waste Management and Cleanup Division (WMCD) allocable to DEQ oversight of this Letter Agreement which are not charged as direct, site-specific costs. Review and oversight costs shall not include any unreasonable costs or costs not otherwise recoverable by DEQ under ORS 465.255.

This Letter Agreement is not and shall not be construed as an admission by Crawford Street Corporation of any liability under ORS 465.255 or any other law or as a waiver of any defense to such liability. This Letter Agreement is not and shall not be construed as a waiver, release or settlement of claims DEQ may have against Crawford Street Corporation or any other person or as a waiver of any enforcement authority DEQ may have with respect to Crawford Street Corporation or the property. Upon DEQ's request and as necessary to oversight of your work under this Letter Agreement, Crawford Street Corporation shall provide DEQ with data and records related to investigation and cleanup activities at the property, excluding any privileged documents identified as such by you.

Following execution of the letter agreement, a DEQ Project Manager will be assigned for the review of the preliminary assessment and oversight of investigation activities associated with your property.

DEQ looks forward to working with you.

Sincerely,

Robert P Baumgartner
for

Neil Mullane
Administrator
Northwest Region

If the terms of this Letter Agreement are acceptable to Crawford Street Corporation, please have it executed by an authorized representative in the space provided below and returned to us.

Accepted and agreed to this _____ day of_____,

By: _____

Title: _____

Attachment

DEQ SITE ASSESSMENT PROGRAM - STRATEGY RECOMMENDATION

Site Name: Crawford Street Corporation, including:
Columbia Forge and Machine Works, Inc.
Lampros Steel, Inc.
TLS Steel Products, Inc.

Site CERCLIS Number: (none)

DEQ ECSI Number: 2363

Site Address: 8424 N. Crawford Street
Portland, Oregon 97203

Recommendation By: Tom Gainer, Voluntary Cleanup and Site Assessment Section, DEQ Northwest Region

Approved By: Michael E. Rosen, Portland Harbor Manager, DEQ Northwest Region FOR HER

Date: October 1, 1999

NOTE: This site (Figure 1) is within a 6-mile stretch of the Lower Willamette River in which the U.S. Environmental Protection Agency (EPA) conducted a sediment study in 1997. This area, referred to as the *Portland Harbor*, is between the upstream ends of Sauvie Island (River Mile 3.5) and Swan Island (RM 9.5). The purpose of this Strategy Recommendation is to determine whether a specific hazardous substance release or a specific past operation at the site can be linked to contamination documented by EPA in sediments adjacent to the site. Because of this focus, the Strategy Recommendation may omit some historical site information, regulatory issues, or further-action conclusions that might otherwise be included in a DEQ Strategy Recommendation.

Background, Portland Harbor Sediment Evaluation

In September and October 1997, EPA's contractor, Roy F. Weston, Inc., collected 187 near-shore sediment samples within the Portland Harbor area defined above. Most samples (150) were collected as shallow grab samples within the upper 6 to 17 centimeters (cm) of sediments. 37 deeper composite core samples, from depths of between 55 and 139 cm, were also collected. All samples were analyzed for total metals, semi-volatile organic compounds (SVOCs), total organic

CRAW00015103

carbon (TOC), and sediment grain size. Selected samples were also variously analyzed for organotins (TBTs), pesticides, polychlorinated biphenyls (PCBs), chlorinated herbicides, and polychlorinated dioxins and dibenzofurans.

Based on analytical results from this study, which showed extensive sediment contamination, EPA is currently considering Portland Harbor for inclusion on the federal National Priority List (NPL - also known as Superfund).

Between late 1998 and mid-1999, DEQ examined EPA's analytical data to determine potential sources for sediment contamination in the Harbor. Potential sources associated with the most contaminated areas of sediment were sites already active in DEQ's Cleanup Programs.

DEQ categorized other areas of sediment contamination (i.e., those areas not thought to be associated with active Cleanup Program sites) by defining the areas:

- having the highest detected concentration of a given contaminant;
- with contaminant concentrations in the upper five percent of a given contaminant's detected concentrations; and
- having contaminant concentrations above an apparent "baseline range" most commonly detected throughout the harbor area.

DEQ categorized in this manner because there are no established freshwater sediment contaminant concentration guidelines or well-defined background contaminant concentrations for the harbor area. The contaminant "baseline range" was developed by examining the geometric distribution of concentrations for each contaminant detected. Any sediment concentrations that appeared to depart significantly from the ranges most commonly detected were suspected of lying near a potential contaminant source.

One shallow sediment sample (SD060) was collected adjacent to the Crawford Street site (Figure 2). As shown on Table 1, contaminant concentrations in sample SD060 that exceed Portland Harbor baseline concentrations include: arsenic, lead, mercury, di-n-butylphthalate, low- and high-molecular weight polynuclear aromatic hydrocarbons (LPAHs and HPAHs, respectively), and organotins.

Shallow sediment sample SD058 collected downstream of the subject property only had elevated levels of di-n-butylphthalate. This suggests that shallow sediment contamination adjacent to the subject property has not migrated beyond the SD058 location.

Regulatory History

Spills

In May 1987, a transformer capacitor at CFM overheated and leaked several ounces of PCB-containing oil. The spill was contained and PCB-impacted material, including the transformer, was shipped offsite for disposal.

Information provided by CFM and TLS indicates that they have minor (less than one gallon) spills of hydraulic, motor, or lubricating oil from machinery on to concrete. These spills are apparently cleaned up and have not caused impacts to soil or groundwater.

Lampros claims they have had no spills.

Underground Storage Tanks (USTs)

Two 1,000-gallon USTs, one containing gasoline and the other containing used oil, were decommissioned at the CFM site in December 1987. According to CFM, contamination was apparently not observed during decommissioning activities, which predates DEQ UST record-keeping.

Water Quality

CFM was issued an NPDES permit on October 7, 1992 and it was terminated on October 20, 1992, apparently because a permit was not required at that facility. A CFM stormwater sample collected and analyzed for metals by the Portland Bureau of Environmental Services in June 1997 detected low concentrations of copper (0.010 milligrams per liter), selenium (0.047 mg/L), and zinc (0.065 mg/L).

There are no water discharge permits on file for Lampros or TLS.

Hazardous Waste

CFM operates as a conditionally exempt small quantity hazardous waste generator and appears to be in compliance.

Lampros and TLS are not registered as hazardous waste generators at DEQ.

Site Hydrogeology

The site lies in the northern-most Portland Basin, a major north-southeast trending sediment filled structural depression found in the northern part of the Willamette River valley and adjoining Columbia River valley (Swanson et al, 1993). The basin is filled with recent alluvium, Pleistocene cataclysmic flood deposits, Miocene to Holocene nonmarine sedimentary rocks, and is underlain by Eocene to Miocene volcanic and sedimentary rocks that are exposed along the basin margins.

CRAW00015105

Shallow sediment sample SD066 collected upstream of the subject property had elevated levels of mercury, zinc, 2-methylnapthalene, LPAHs, and HPAHs. This suggests that an upstream source may have contributed to the mercury, LPAH, and HPAH sediment contamination observed adjacent to the subject property. The Willamette Cove site is adjacent upstream of the subject site and has an extensive history of industrial activities.

Operational History

The subject site is approximately 15 acres and is divided into two portions by railroad tracks. There are currently three businesses that operate on the northern portion of the subject property: Columbia Forge and Machine Works, Inc. (CFM), Lampros Steel, Inc., and TLS Steel Products, Inc. The southern portion of the site adjacent to the Willamette River is currently used to store steel; it is not clear which of the three businesses use the southern portion, although it appears that it is used primarily by Lampros Steel.

CFM has produced metal forgings and stampings on the site since 1971. Their operation consists of three buildings and two yards. They use oil, lubricants, non-halogenated petroleum solvent, and degreasers that are sent offsite for recycling and/or disposal.

Lampros Steel has operated a structural steel distribution center since 1989, which includes off-loading railcars and trucks, cutting steel with saws, and loading outgoing trucks. Steel scrap is recycled, used motor oil is sent offsite, and synthetic saw coolant is reused or recycled on site. They have one 1,000-gallon aboveground diesel tank, located about 500 feet from the Willamette River.

TLS has operated a small steel forging and fabrication business since 1989. Hydraulic oil is used in their machines.

Crawford Street Corp. acquired the subject property from the Skookum Logging Supply Company in 1971. Aerial photographs indicate that the current buildings on the subject property were constructed between 1957 and 1963. The southern portion of the site was extensively covered by buildings with docks in photographs from 1936 through 1963; it appears that these structures were removed sometime between 1963 and 1977. Fire insurance maps from 1950 indicate that the property was used primarily by Portland Lumber Mills, and also by the Plylock Corp. (manufacturing with wood), Portland Chain Manufacturing Co., and Skookum Logging Supply Co.

The youngest deposits are recent alluvium (silt, sand and gravel mixtures) characteristic of an active fluvial environment. These are made up of shoreline, river channel, and adjacent floodplain deposits.

Terraces that rise 50 to 100 feet above the northeastern shore of the Willamette were formed during Pleistocene cataclysmic flooding related to glacial Lake Missoula, and consist of unconsolidated mixtures of silt, sand, and gravel that generally are coarser than the recent deposits. Fill comprised of fine to medium sands and silt was also placed in many areas along the river during site development. The total thickness of recent alluvium and flood deposits appears to be about 100 feet in the vicinity of the site.

Coarse gravel to conglomerate of the Troutdale Formation, deposited by the ancestral Columbia River, underlies the cataclysmic flood deposits and appears to be about 100 feet thick in the vicinity of the site. Sandy River mudstone underlies the Troutdale Formation and appears to be about 100 feet thick. Basalt of the Columbia River Basalt (CRB) group forms the basement rock of the Portland Basin, and may be as much as several hundred feet thick in the vicinity of the site.

Aquifers in the unconsolidated sedimentary deposits generally are unconfined and localized due to heterogeneity of the deposits. The Troutdale Formation is an important regional aquifer and is widely tapped for both potable and non-potable uses. Interbedded Claystone and/or siltstone, or cementation often promotes confined aquifer conditions within the Troutdale Formation. Deep wells installed in fractured CRB can be very productive and important supply wells. Site elevation is about 30 feet above mean sea level.

Pathway Summary

The Crawford Street site lies in an area of mixed industrial, commercial, and residential use. Approximately 123 residences lie within 1/4 mile of the facility.

Site workers at the facility or trespassers could be exposed to contaminants in surface soil. Utility trench workers could potentially be exposed to subsurface contaminants through direct contact, inhalation, or incidental ingestion.

Oregon Water Resources Department has no well logs for domestic wells within one-half mile of the Crawford Street site.

The nearest significant wetland is located three miles downstream of the subject site at the mouth of Multnomah Channel. Cathedral Park is approximately 1,000 feet downstream of the subject site. Both recreational and subsistence fishing occur within the Lower Willamette River. Commercial fishing within the Portland Harbor is limited to a small Pacific lamprey fishery. Recreational boating, water skiing, swimming, and beach use also occur within the Harbor.

The Lower Willamette River provides habitat for 39 fish species, including populations of wild cutthroat trout, rainbow trout, and mountain whitefish. White sturgeon are plentiful within the Harbor. The Harbor is also an important migratory corridor, nursery habitat, and adult foraging area for two runs of chinook salmon, two runs of steelhead trout, and individual runs of coho and sockeye salmon.

Upper Willamette River populations of chinook and steelhead, which migrate through the Harbor, are listed as threatened species under the Federal Endangered Species Act. The Pacific lamprey is considered a federal species of concern.

Great blue herons, cormorants, osprey, mergansers, kingfishers, peregrine falcons, and bald eagles routinely forage within the Harbor. The area is also part of the wintering range for the Aleutian Canada goose. All are protected under the Migratory Bird Treaty Act. The peregrine falcon is federally listed as an endangered species, while the Aleutian Canada goose is federally listed as threatened species. The bald eagle also is a threatened species, but was recently proposed to be removed from this list.

There is little data on the nature and extent of the benthic community within Portland Harbor sediments. However, it is known that contamination in the benthos, which is a protected beneficial use, can be the source of food-chain effects that radiate up to the species listed above, including humans.

The Lower Willamette River is water quality limited for the following toxic compounds:

- Dioxins/furans (water column and sediments);
- Mercury (fish tissue);
- Pesticides (water column and sediments);
- Polynuclear Aromatic Hydrocarbons - PAHs - (water column and sediments); and
- Trace metals (water column and sediments).

DEQ's Water Quality Division is developing Total Maximum Daily Load requirements (TMDLs) within the lower Willamette River for these contaminants. A TMDL for 2,3,7,8-TCDD was established in 1991.

CRAW00015108

Conclusions/Recommendations

NOTE: As indicated previously, this review is limited to establishing a link between site activities and contamination in adjacent Portland Harbor sediments. It does not necessarily represent a thorough review of available site data, and the conclusions and recommendations presented below may reflect this limited focus.

The following conclusions are based on the contents of this review:

- Site activities may have resulted in sediment contamination adjacent to the site. Concentrations of sediment contaminants adjacent to the site that exceed Portland Harbor baseline levels include arsenic, lead, mercury, di-n-butylphthalate, LPAHs, HPAHs, and organotins. PAH contaminants found in the sediment are associated with handling/storage of petroleum products, metals are associated with fabrication activities, and organotins are associated with boat painting maintenance (possibly from historical dock activities or by migration from upland use/storage of organotin-based paints on metal).

- It appears that the subject site is the source of organotins contamination observed adjacent to the site, where the concentration is over twice the Portland Harbor baseline value and 55 times the upstream concentration.

- Contaminant concentrations for mercury, LPAHs, and HPAHs observed in the upstream sediment sample are generally equal to or greater than in the sample adjacent to the Crawford Street site. This suggests that historical activities at the upstream adjacent Willamette Cove site may have contributed towards contamination observed adjacent to the subject site.

- Use of the site's historical docks, possibly for conveyance of materials and boat fueling and maintenance, is a possible source of sediment contamination by routine or accidental activities.

Contamination of river sediments adjacent to the Crawford Street site may represent a threat to human health and aquatic life within the river. An Expanded Preliminary Assessment (XPA) on the entire Crawford Street property (CFM, Lampros, TLS, and the southern portion of the property) should be conducted to evaluate sediment contamination, potential upland site contaminant sources, and past waste management practices and to determine the extent and source(s) of observed sediment contamination. Sediment sampling should include subsurface samples to further define the extent of contamination. As necessary, the XPA should present recommendations

aimed at preventing potential further contamination of adjacent sediment. DEQ has determined that these actions warrant a high priority for follow-up.

There is insufficient information to propose adding the site to DEQ's Confirmed Release List or Inventory.

References

DEQ consulted the following general references in preparing this Strategy Recommendation:

1. Portland Harbor Sediment Investigation Report, prepared by Roy F. Weston, Inc. for USEPA, May 1998.

2. Columbia Forge and Machine Works, Inc. response to DEQ Site Assessment Information Request, April 9, 1999.

3. Lampros Steel, Inc. response to DEQ Site Assessment Information Request, March 15, 1999.

4. TLS Steel Products, Inc. response to DEQ Site Assessment Information Request, March 19, 1999.

5. DEQ LUST Database.

6. DEQ HWIMSy Hazardous Waste Generator Database.

7. DEQ SPINS Spill Database.

8. MetroScan Property Records, Multnomah County, Oregon.

Attachments

Table 1: River Sediment Contaminant Concentrations

Figure 1: Site Location Map

Figure 2: Sediment Sampling Points, 1997 Portland Harbor Sediment Investigation

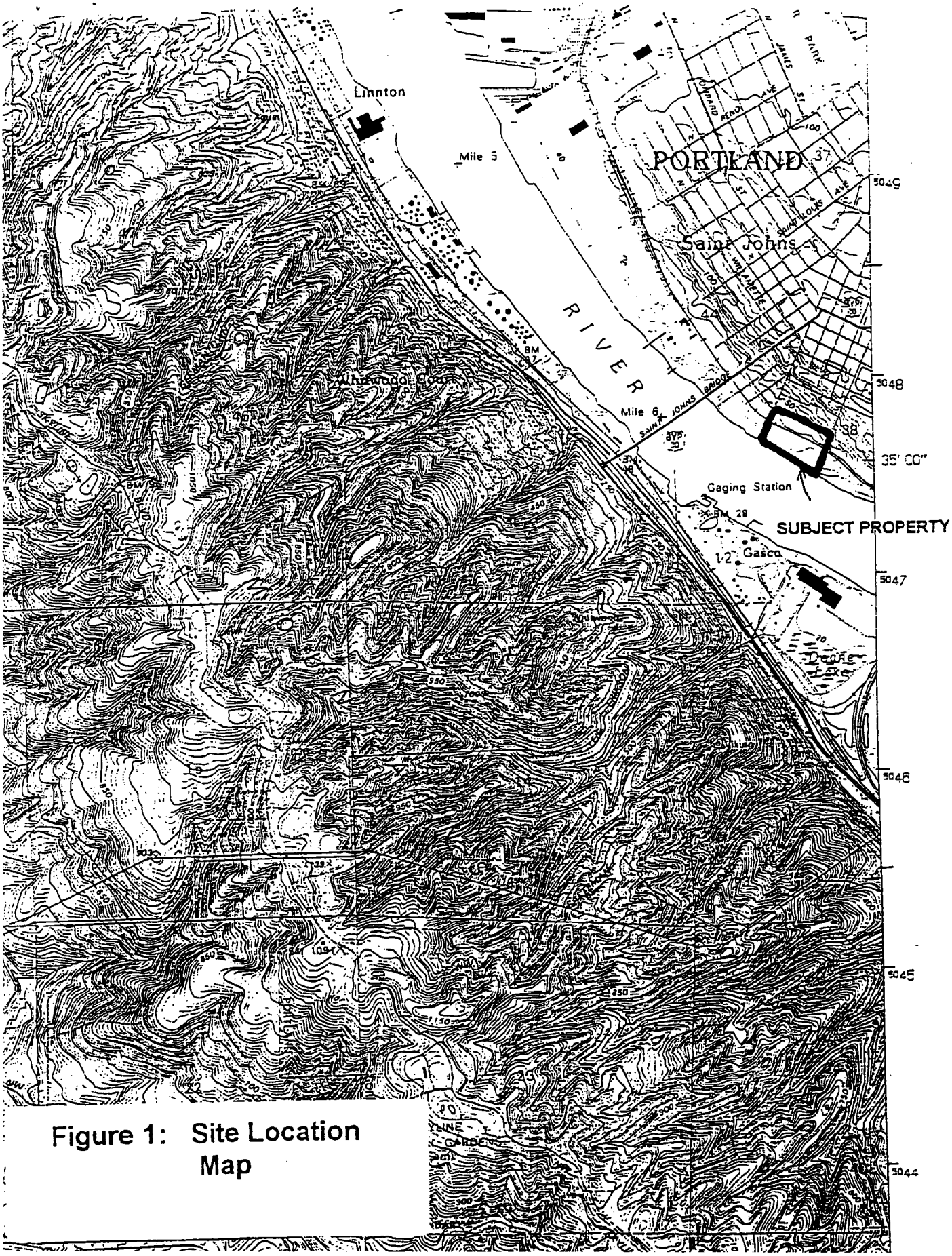


Figure 1: Site Location Map

TABLE 1

River Sediment Contaminant Concentrations (1997)
Crawford Street Corporation

Contaminant	Units	Down-Stream SD058	*Crawford Street* SD060	Up-Stream SD066	Apparent Portland Harbor Sediment Baseline Maximum Value
Aluminum	ppm	22800	24700	33200	42800
Antimony	ppm	<4	NA	NA	<5
Arsenic	ppm	<4	5	5	<5
Barium	ppm	126	152	163	195
Beryllium	ppm	0.4	0.5	0.6	0.7
Cadmium	ppm	0.3	0.4	0.5	0.6
Chromium	ppm	25	28	35	41
Cobalt	ppm	16	11	18	19.7
Copper	ppm	30	50	41	60
Iron	ppm	31700	32700	37600	45000
Lead	ppm	13	36	28	30
Manganese	ppm	322	397	547	810
Mercury	ppm	0.1	0.14	0.23	0.1
Nickel	ppm	24	21	29	32
Selenium	ppm	11	12	11	15
Silver	ppm	0.7	0.8	1.0	1.4
Thallium	ppm	5	<4	<4	13
Titanium	ppm	1650	NA	1910	2075
Vanadium	ppm	80	85	98	112
Zinc	ppm	87	112	158	118
2-Methylnaphthalene	ppb	37	66	180	150
4-Methylphenol	ppb	50	230	130	680
Benzoic Acid	ppb	<200	<200	<190	<200
Benzyl Alcohol	ppb	<20	<20	<19	<20
bis(2-Ethylhexyl)phthalate	ppb	<90	<190	<88	390
Butylbenzylphthalate	ppb	<20	<20	<19	<20
Carbazole	ppb	48	99	<19	100
Di-N-Butylphthalate	ppb	43	34	<19	<20
Di-N-Octylphthalate	ppb	<20	<20	<19	<20
Dibenzofuran	ppb	24	33	57	100
Dimethylphthalate	ppb	<20	<20	<19	<20
Pentachlorophenol	ppb	<99	<99	<96	Detect
Phenol	ppb	<20	<20	<19	<20
LPAHs (total)	ppb	379	873	1904	700
HPAHs (total)	ppb	2333	4448	4481	2400
DDTs (total)	ppb	4.1	NA	7.5	220
PCBs (total)	ppb	<40	NA	54	<180
Organotins (total)	ppb	170	773	14	300
2,4-D	ppb	NA	NA	NA	<3.3
2,4-DB	ppb	NA	NA	NA	<5
TOC	%	2.6	0.9	1.6	2
Water Depth	ft	45	9	17	
Sediment Sample Depth	cm	0-10	0-10	0-10	

NA = Not Analyzed

TABLE 1

River Sediment Contaminant Concentrations (1997)
Crawford Street Corporation

Contaminant	Units	Down-Stream SD058	*Crawford Street* SD060	Up-Stream SD066	Apparent Portland Harbor Sediment Baseline Maximum Value
Aluminum	ppm	22800	24700	33200	42800
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Arsenic	ppm	<4	5	5	<5
Barium	ppm	126	152	163	195
Beryllium	ppm	0.4	0.5	0.6	0.7
Cadmium	ppm	0.3	0.4	0.5	0.6
Chromium	ppm	25	28	35	41
Cobalt	ppm	16	11	18	19.7
Copper	ppm	30	50	41	60
Iron	ppm	31700	32700	37600	45000
Lead	ppm	13	36	28	30
Manganese	ppm	322	397	547	810
Mercury	ppm	0.1	0.14	0.23	0.1
Nickel	ppm	24	21	29	32
Selenium	ppm	11	12	11	15
Silver	ppm	0.7	0.8	1.0	1.4
Thallium	ppm	5	<4	<4	13
Titanium	ppm	1650	NA	1910	2075
Vanadium	ppm	80	85	98	112
Zinc	ppm	87	112	158	118
2-Methylnaphthalene	ppb	37	66	180	150
4-Methylphenol	ppb	50	230	130	680
Benzoic Acid	ppb	<200	<200	<190	<200
Benzyl Alcohol	ppb	<20	<20	<19	<20
bis(2-Ethylhexyl)phthalate	ppb	<90	<190	<88	390
Butylbenzylphthalate	ppb	<20	<20	<19	<20
Carbazole	ppb	48	99	<19	100
Di-N-Butylphthalate	ppb	43	34	<19	<20
Di-N-Octylphthalate	ppb	<20	<20	<19	<20
Dibenzofuran	ppb	24	33	57	100
Dimethylphthalate	ppb	<20	<20	<19	<20
Pentachlorophenol	ppb	<99	<99	<96	Detect
Phenol	ppb	<20	<20	<19	<20
LPAHs (total)	ppb	379	873	1904	700
HPAHs (total)	ppb	2333	4448	4481	2400
DDTs (total)	ppb	4.1	NA	7.5	220
PCBs (total)	ppb	<40	NA	54	<180
Organotins (total)	ppb	170	773	14	300
2,4-D	ppb	NA	NA	NA	<3.3
2,4-DB	ppb	NA	NA	NA	<5
TOC	%	2.6	0.9	1.6	2
Water Depth	ft	45	9	17	
Sediment Sample Depth	cm	0-10	0-10	0-10	

NA = Not Analyzed

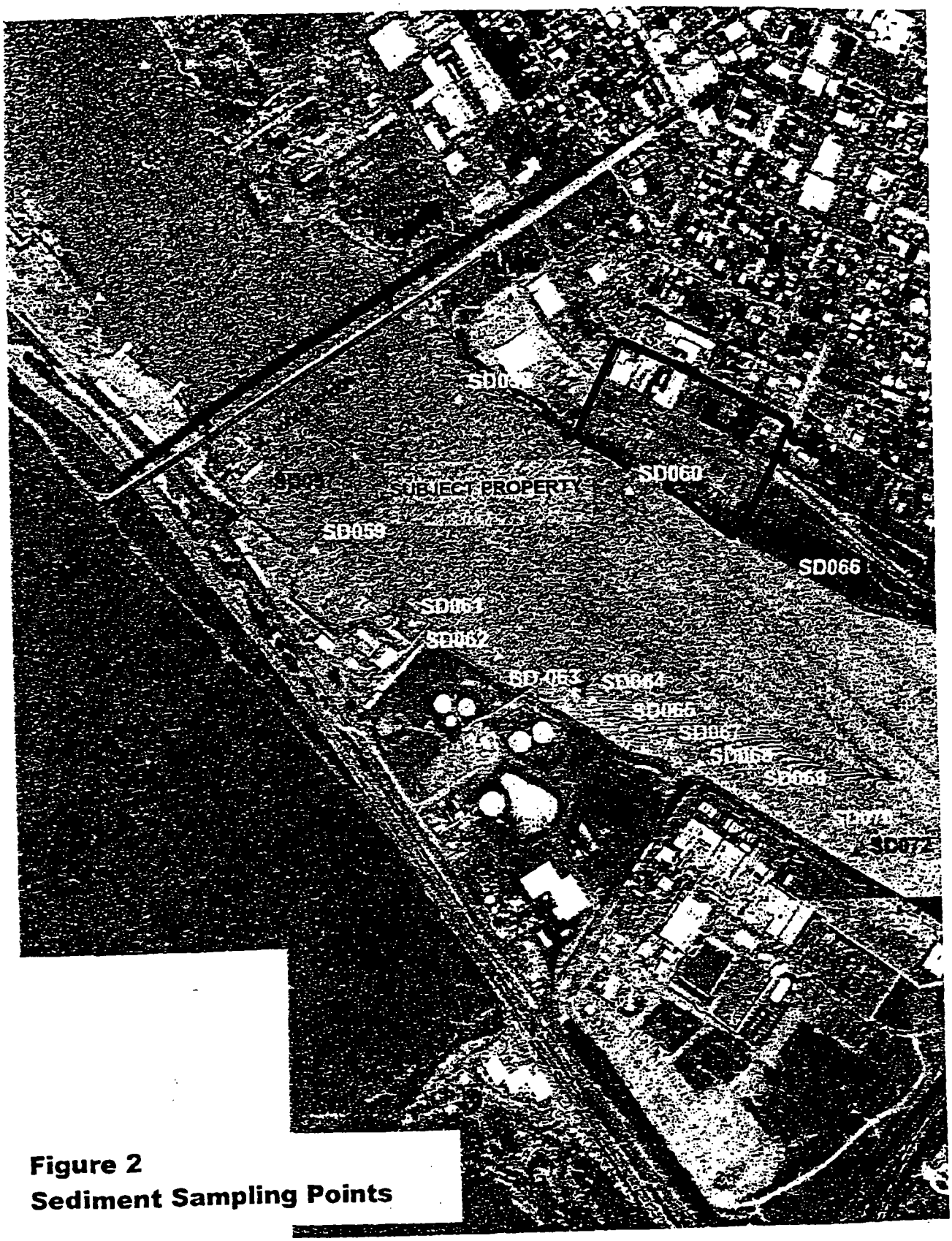

Figure 2
Sediment Sampling Points

Preliminary Assessment

Crawford Street Site
Portland, Oregon

Prepared for

Crawford Street Corporation

February 10, 2000

BRIDGEWATER GROUP, INC.

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SECTION 1

INTRODUCTION

This Preliminary Assessment (PA) report presents the results of a PA performed for the Crawford Street Corporation (CSC) site in Portland, Oregon (Figure 1-1). The site includes current addresses of 8424 and 8524 North Crawford Street. This PA was requested by the Oregon Department of Environmental Quality (DEQ) and is being performed under a DEQ Voluntary Cleanup Letter Agreement dated November 8, 1999.

1.1 Purpose of the Preliminary Assessment

The purpose of the PA is to assess the potential for releases of hazardous substances to have occurred at the CSC site and for the releases, if they have occurred, to have migrated to the Willamette River sediments and caused a threat to human health or the environment. Based on the October 1, 1999 DEQ Site Strategy Recommendation for the CSC site, the contaminants of interest (COIs) in the Willamette River sediments adjacent to the CSC site are:

- Arsenic
- Lead
- Mercury
- Di-n-butylphthalate
- Low molecular weight polynuclear aromatic hydrocarbons (LPAHs)
- High molecular weight polynuclear aromatic hydrocarbons (HPAHs)
- Organotins

The PA specifically assesses the potential for these COIs to have been released on the CSC site during CSC's ownership of the site and to have migrated to the Willamette River.

This PA also identifies a soil sampling program to further assess whether COIs may have been released from the CSC site and may have migrated to the Willamette River.

1.2 Scope of Preliminary Assessment

The PA was performed by reviewing available historical information, performing a site reconnaissance, and interviewing available persons familiar with the current and past site operations. Specific sources of information reviewed included:

- Sanborn Fire Insurance maps from 1905, 1911, 1924, 1950, and 1969.
- Aerial photographs from the U.S. Army Corps of Engineering and Northern Lights Studio from 1936, 1939, 1940, 1948, 1955, 1956, 1957, 1961, 1963, 1964, 1967, 1968, 1970, 1971, 1972, 1973, 1977, 1980, 1984, 1991, 1994, 1996, and 1998.
- City Directories for 1936, 1941, 1950, 1955, 1960, 1970, 1975, 1980, 1985, 1990, and 1998.
- Historical photographs from the Oregon Historical Society for the late 1800s, early 1900s, and 1932.

A site reconnaissance was performed on December 9 and 21, 1999. Representatives of CSC and the current property tenants were interviewed during the site visits.

SECTION 2

CURRENT SITE CONDITIONS AND OPERATIONS

The CSC site is an approximately 15-acre site located along the Willamette River in the St. Johns district of Portland, Oregon (Figure 2-1). The site is situated in the southwest quarter of Section 15, Township 1 South, Range 1 West. The site is bordered by the Willamette River to the south, North Burlington and North Richmond Streets to the west and east, respectively, and by North Crawford Street to the north. A Union Pacific Railroad (UPRR) rail spur runs east/west through the center of the site.

For the purposes of the PA and consistent with the past and current use of the site, the site is separated into two areas; North Area and the South Area. The North Area is located north of the railroad tracks and the South Area is located south of the railroad tracks. The North Area is currently mostly covered with buildings and pavement while the south area is vacant and covered with gravel and asphalt pavement.

The overall site area slopes down, relatively steeply north of the CSC site, from north to south with a slight slope down from east to west. A USGS Map showing the regional topography is presented in Figure 2-2. A 1998 aerial photograph is presented in Figure 2-3. Appendix A presents representative photographs of the current site conditions.

2.1 Local Utilities and Storm Water System

The site is currently served by the public utility system including water and sewer. Water lines are located in beneath Crawford Street and the UPRR rail spur. Electric power is provided from along Crawford Street. A buried, 8-inch diameter UPRR diesel pipeline is located beneath North Crawford Street west of the site and between North Burlington and Richmond Streets. The pipeline alignment then follows North Richmond Street between North Crawford Street and the UPRR rail spur. East of the site, the pipeline lies beneath the UPRR rail spur.

Storm water runoff in the CSC site area is collected in local catch basins and conveyed in the City of Portland storm sewer system. The collected storm water is conveyed to the Willamette River through the outfall located on the City of Portland property west (downriver) of the CSC site (City Outfall 50). From its construction in the early 1900s to about 1997, sewage from the overall St. Johns area was occasionally also conveyed through Outfall 50 during periods of wet weather. In approximately 1997, the sanitary sewer in the CSC site area was separated from the storm water system and sewage "overflows" are no longer discharged through the outfall.

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Storm drain lines at the CSC site are located along the UPRR rail spur and along North Crawford Street. Catch basins along Crawford Street drain into the Crawford Street lines. Roof drains from the CSC buildings are connected to the line along the UPRR tracks. Two catch basins are located just north of the intersection of the UPRR tracks and North Burlington Street. These catch basins capture most of the runoff from both the CSC site and the large area up-slope (i.e. north) of the site. The buried storm drain lines flow east to west.

2.2 North Area

For the purposes of describing the current site conditions and consistent with current site use, the north area is subdivided into five subareas:

- North Richmond Street to North Charleston Street (Vacated)
- North Charleston Street (Vacated) to North John Street (Vacated)
- Columbia Forge
- TLS Steel
- Lampros Steel

The current site conditions on each of these areas are presented below.

2.2.1 North Richmond Street to North Charleston Street

This area is vacant and covered mostly with dense vegetation. This area slopes down from the northeast to the southwest. A portion of the interior of the area has been cleared and gravel fill has been placed. Lampros Steel is using the gravel-filled area for limited storage of structural steel product.

The entire area is fenced with a gate in the southeast corner of the area. No significant areas of stains or distressed vegetation were observed in this area. In summary, no evidence of releases of hazardous substances was observed in this area of the CSC site.

2.2.2 North Charleston Street to North John Street

This entire area is covered by a 200-foot by 200-foot steel building. The building is open to the west and is used by Lampros Steel to cut structural steel beams. The building has a sound concrete floor and no floor drains were observed. Lampros uses small quantities of lubricating oil in the beam saw located in this building. Lampros uses water-based cutting lubricants in the beam saw. The lubricating oil and water-based cutting oils were stored in the various locations in the building, near the cutting equipment. Oil staining was observed on the building floor beneath the cutting equipment. The oil was contained on the floor and no evidence of release to the underlying soil was observed. Lampros representatives

noted that they have always used water-based lubricants since they started operations at the site in 1989.

In summary, no evidence of releases of hazardous substances was observed in this area of the CSC site.

2.2.3 Columbia Forge

The Columbia Forge area includes a 10,000 square-foot steel building on the eastern edge of the area (Building 1) and a 20,000 square-foot concrete masonry and wood-frame building on the western edge of the area (Building 2/3). The buildings border an approximately 26,000 square-foot yard that includes covered upset forges, shear, drop forge, and induction heater areas and an oil storage shed. These buildings are shown in Figure 2-4.

Two forges set on concrete pads are located in the southern end of Building 1. The perimeter of this area is covered with a concrete floor with the area between the forge pads and the perimeter being bare ground. The floor and ground surface in this area is covered with mill scale which is oxidized metal that falls from the surface of the steel after it has been heated and is being shaped. The mill scale is a valuable product and is routinely collected from the floor and reprocessed. The forges are fueled by natural gas. The forges are cooled with water that is circulated through a water cooling-tower outside the southeast corner of the building.

The northern portion of Building 1 is used for machining and contains several large lathes. This area has a sound concrete floor with no floor drains. Water-based cutting oils were observed in this area and the CSC representatives noted that the facility had been using water-based oil since the late 1970s. Prior to that time, petroleum-based cutting oils were used. No evidence of releases was observed in the machining room.

The far northern end of Building 1 is used for offices.

Columbia Forge Building 2/3 is used primarily for storage of various metal equipment, parts, and steel stock. Steel cutting is performed in the southeastern corner of this building. Oil stains are present on the building floor. This building has a sound concrete floor and no floor drains. Two small part washers are located in this building as shown on Figure 2-4. Petroleum-based naphtha solvents have been used since Columbia Forge started operations. Chlorinated solvents have never been used at the Columbia Forge facility. Columbia Forge is a conditionally exempt hazardous waste generator due solely to the waste naphtha solvents (i.e. D001) generated in the Safety Kleen part washers.

Small quantities of oil and lubricant products were observed in this area including lubricant oil for the air compressor located just east of the building and aerosol cans of brake cleaner in the northwest portion of the building. No evidence of releases of these products was observed in these areas.

The Columbia Forge yard is an approximately 26,000 square-foot area between Building 1 and Building 2/3. The yard is paved except for the far

southwest corner. Upsetter forges and induction heaters are located in covered areas along the eastern edge of the yard. A large drop forge is located in a covered area in the southern portion of the yard. Welding operations are performed in a covered area in the southeastern portion of the yard. All forging and general operation areas are covered. Steel materials to be forged are stored throughout the yard including steel rod and pipe.

An approximately 1,000 square-foot oil storage building is located in the central portion of the yard. Lubricating oil used in the equipment on the Columbia Forge site is stored in this building. Other materials stored in this building include used oil, and two drums of Safety-Kleen naphtha solvent. Approximately forty 55-gallon drums, mostly lubricating oils, were stored in the oil storage building. The drums were placed in metal containment trays and spill kits were conspicuously located in the northeast corner building. The floor of the building was sound concrete with no floor drains. Although there was evidence of incidental drippage of oil (i.e. stains) on the building floor, rapid cleanup of the incidental drippage with absorbent material appears to have prevented any migration of the minor spills. The facility manager did not recall any spills of oil that caused impacts outside the building.

Used oil is removed from the site by a licensed oil recycler for recycling.

Two storm water drainage catch basins are located in the yard. One catch basin is located near the northeast corner of the drop forge. One catch basin is located along the western edge of the yard just north of the compressor building. Storm water runoff from the yard flows to these catch basins. From the catch basins, the water flows through buried pipes to the south boundary of the yard where the water infiltrates into the ground alongside the UPRR rail spur. CSC has installed filters within the catch basins to remove suspended particulates from the storm water runoff.

Most of the roof drains from the Columbia Forge and Lampros buildings are connected to the storm drain line located along the UPRR rail spur.

2.2.4 TLS Steel

TLS Steel leases a small (less than 2,000 square-feet) space from Columbia Forge in the northern end of Building 2/3. TLS performs light metal heating, shaping, punching, cutting, and bending using a small natural gas-fired furnace. TLS has been operating in the current location since 1989. The portion of Building 2/3 that TLS occupies is a wood frame building with a metal roof.

TLS uses small amounts of lubricating oil and cutting oil. All cutting oils are water-based. Lubricating and cutting oils are stored in various containers throughout the relatively small TLS area. Although petroleum stains are present on the TLS floor, the floor was sound concrete with no floor drains. No evidence of recent releases of hazardous substances was observed in the TLS area.

2.2.5 Lampros Steel

Lampros Steel has been operating on the CSC site since 1989. Lampros Steel distributes steel structural members (typically steel W and H sections). As part of the distribution work, Lampros also cuts and bends members to customer specifications. All cutting and bending work is performed in the building located west of the Columbia Forge area (See Section 2.2.2).

Activities performed in the Lampros area in the northwest corner of the CSC site include general storage of equipment and raw materials (steel bars and beams). Hazardous substances observed in the Lampros building included hydraulic oil (three 55-gallon drums), water-based cutting oil (two 55-gallon drums), and used oil (one 55-gallon drum). No significant stains were observed on the sound concrete floor. No floor drains were observed. The Lampros Steel office is located in the northwest corner of the Lampros building.

A 1,000-gallon, above ground diesel storage tank is located at the northern edge of the Lampros site. A steel containment box surrounds the tank. No stains were observed on the pavement surrounding the containment box. The Lampros representative was not aware of any releases or spills from the tank.

Lampros Steel is not a registered hazardous waste generator and evidence of hazardous waste generation was not observed. Used oil generated through equipment maintenance is placed in the Columbia Forge oil storage building and recycled offsite by a licensed oil recycler.

In summary, no evidence of recent releases of hazardous substances was observed in this area of the CSC site.

2.2.6 UPRR Rail Spur

Soil staining typical of rail road operations was observed along the UPRR rail spur separating the North and South Areas. The staining was consistent with petroleum hydrocarbons releases from diesel locomotives and spillage of products from the rail road cars.

2.3 South Area

The South Area of the CSC site consists of about 7 acres of open area used by Lampros Steel to store and stage structural steel beams. Most of the northern half of the area is paved with asphalt. Most of the southern half is covered with gravel. Lampros Steel representatives estimated that about 60 percent of the overall South Area is paved. No buildings are present in this area and the structural steel is stored in rows with access paths for the fork lifts and trucks in between the rows.

The entire South Area is fenced with access gates in the western and eastern ends of the area. The fence has been knocked over for an approximate 100-foot length along the southern edge of the property near

the abandoned extension of North John Street and for an approximate 50-foot length along the eastern boundary near the UPRR rail spur.

The riverbank is vegetated with blackberries and small trees. Most of the bank is covered with concrete debris and logs. Some of the concrete debris is larger than 6 feet with logs greater than 20 feet long. Smaller asphalt debris was also observed on the riverbank. Although the vegetation limited the ability to closely observe, no seeps were observed along the riverbank during the site reconnaissance. A nominal 8-inch diameter concrete pipe was observed protruding from the river bank about 200 feet east of the western boundary of the site. No evidence of recent flow from the pipe was observed (even after recent wet weather) and the pipe appeared to be associated with previous uses of the site.

In general, surface water was observed to infiltrate into the bare ground in the South Area and no evidence of direct surface water runoff to the adjacent Willamette River was observed. However, there were limited areas along the riverbank where small draws and associated surface water collection areas along the top of the bank were observed. Although these areas do not appear to drain large areas of the South Area, localized runoff collection and flow to the adjacent river could occur in these areas during heavy rainfall events.

Limited areas of black sand were observed along the top of the bank and, in some areas, along the river shoreline. The black sand appears to be different from the native soil present along the riverbank. The black sand was present in some of the small draw areas observed along the riverbank. The black sand is believed to have been imported and placed by previous property owners during the demolition of the former lumber mill buildings.

In summary, no evidence of recent releases of hazardous substances was observed in this area of the CSC site.

2.4 Adjacent North of Crawford Street Corporation Property

The area north of the CSC site is used for heavy equipment and truck storage and repair. St. Johns Truck and Equipment/Hildebrand Truck & Equipment is located immediately north (up gradient) of the CSC site, across North Crawford Street at 8435 North Crawford Street. The central portion of the site is used to store a large amount of disassembled truck parts including transmissions, wheels, tires, tanks, rear-end assemblies, and axles on unpaved ground. The property was observed from public right-of-ways during the site reconnaissance.

A heavily-stained, uncovered wash pit is present immediately adjacent to North Crawford Street, across the street from the Columbia Forge office. The approximate 15-foot by 30-foot area drains to a sump that presumably drains to the local storm water or sanitary sewer system. The concrete floor in the wash pit was heavily stained with petroleum

hydrocarbons. What appeared to be a solvent cleaning tank was also located in the wash pit. Any releases from the solvent tank would also flow directly to the drain.

Based on hazardous substance reports filed with the State Fire Marshal, St. Johns Truck and Equipment handles significant quantities of hazardous substances including waste oil, motor fuel, fuel oil, and welding gasses. St. Johns Truck and Equipment is also noted as having a sodium hydroxide cleaning tank.

The western portion of this up gradient property (across from Lampros Steel offices) is also used to store trucks. Oil stains are present on the unpaved ground where the trucks are stored. Torch cutting of disassembled truck parts is also being performed in this area.

St. Johns Marine is located north of the CSC site, along North Richmond Street. Along with boat and boat motor repair facilities, boats and boat motors are stored outside on unpaved ground.

Storm water runoff from these up gradient areas flows on to, and across the CSC site. In particular, runoff flows off of the St. Johns Truck and Equipment site and flows on to the Lampros Steel property at the west end of the CSC site, onto the Columbia Forge yard, and onto the Columbia Forge and Lampros Steel yard at North John Street. A sheen was observed on this runoff during the site visit. CSC constructed an asphalt berm along the southern edge of North Crawford Street to reduce the amount of runoff coming on to the CSC site from up gradient properties.

The runoff from the up gradient properties continues across the CSC property to the UPRR rail spur where it ponds and infiltrates. During heavy rainfall events, this runoff from the up gradient properties can flow to the west to the City of Portland catch basin at the intersection of North Burlington Street and the UPRR rail spur.

Storm water runoff also flows down North Richmond Street to the UPRR rail spur from the up gradient properties.

2.5 Adjacent East (Upriver) of Crawford Street Corporation Property

The property east (upriver) of the North Area of the CSC site consists of a residence and an auto repair shop. The shop is located in an approximately 80-foot by 30-foot building. Vehicles and small construction equipment were observed on the unpaved area around the building.

The property east (upriver) of the South Area, is presently vacant. Various debris are present on the site including concrete debris, tires, and general trash. Vegetation on this adjacent property consists of grasses, blackberries, and small trees. Recent petroleum staining was observed along the UPRR rail spur immediately east of the CSC site.

An approximate 8-inch diameter concrete pipe daylights at the river bank on the property east of the CSC site. No flow was observed coming from the pipe at the time of the site visit (after recent wet weather).

2.6 Adjacent West (Downriver) of Crawford Street Corporation Property

The property west (downriver) of the Northern Area of the CSC site is vacant and used to store steel sheets. This area is not paved.

The property west (downriver) of the Southern Area of the CSC site is the location of the City of Portland Bureau of Environmental Services (BES) laboratory. This area is mostly paved with some landscaped areas. Storm water runoff in the eastern portion of this area is directed to a small ditch and wetland area in the eastern area of the BES property. A waste pile containing asphalt debris was observed on the eastern edge of the BES property, adjacent to the CSC property. The Willamette riverbank also contains concrete and asphalt debris at the eastern edge of the BES property.

2.7 Soil and Groundwater Conditions

2.7.1 Regional and Local Geology and Hydrology

The CSC site is located along the historical flood terrace of the Willamette River. As a result, the regional geology is dominated by river deposits of varying energy underlain by the sand and gravel Troutdale formation. The Troutdale formation is about 100 feet below the ground surface. Fill has also been historically placed along the river on top of the natural river deposits. Regionally, shallow groundwater is present within the river deposits. More productive groundwater zones are present within the underlying sand and gravel Troutdale formation.

Based on soil and groundwater investigations on the southern portion of the CSC site and the properties to the east (Metro/Willamette Cove) and west (City of Portland BES Laboratory) of the CSC site, near surface soil conditions at the CSC site are anticipated to consist of fine sand, silty fine sand, and clayey silt. The depth to shallow groundwater corresponds roughly to the elevation of the Willamette River and is about 20 to 30 feet below the ground surface at the CSC site. Debris, including brick and wood was encountered in the upper 10 feet on the CSC site and on the BES property west of the CSC site. "Manmade" fill was observed to depths up to 6 feet in test pits and borings along the western end of the CSC site on the bluff above the Willamette River shoreline. The fill consisted of a black, angular sand.

2.7.2 Groundwater Use

There is no reported groundwater use on and around the CSC site. A preliminary search of the Oregon Water Resources Department did not note any groundwater supply wells within ½ mile of the CSC site. The area around the site has been serviced by the public water system since the early 1900s.

2.7.3 Hydrologic Setting

The primary surface water body in the CSC site area is the Willamette River. Other than a man-made pond constructed on the City of Portland BES property west (downriver) of the CSC site, no other significant surface waters are present in the CSC site area.

The site is located in an industrial area and much of the ground surface is paved or covered with gravel. The soil on unpaved areas consists generally of sand and silty, fine sand. The 2-year, 24-hour rainfall in the Portland area is about 2.4 inches (BES July 1999 Stormwater Management Manual). Storm water in the site area either infiltrates into the ground or is collected in catch basins and conveyed in the local storm water system.

The CSC site lies above the 100-year Willamette river flood plain. The 1996 flood did not exceed the top of the bank along the CSC site. The slope of the CSC site area is generally towards the south.

SECTION 3

SITE HISTORY

This section summarizes the site use history of the CSC site and the immediate surrounding properties. The site history is based on the review of the Sanborn Fire Insurance maps, the historical aerial photographs, and the City Directories. Some recent site use information was obtained through the interviews with CSC and CSC tenant representatives.

The overall history of the site area includes both residential and industrial use. The site's close proximity to the St. Johns neighborhood and the Willamette River has resulted in both residential and industrial land uses around the area. Land use at and adjacent to the CSC site is industrial.

The St. Johns district of Portland is one of the oldest districts in Portland with development dating back to the 1800s. The area, including the site, has been serviced by public water since the early 1900s. No wells are known to have been present on the site and historical facilities used water pumped from the Willamette River to supplement the local water supply system.

3.1 South Area

As noted in Section 2, the South Area is the portion of the site located between the UPRR railroad spur and the Willamette River. The location of the streets (existing and vacant) used to reference the subareas discussed below are shown on Figure 2-1.

Numerous large log rafts were present along the entire CSC river front, offshore of the CSC site, from the early 1900s to the mid-1970s, all prior to CSC's ownership of the property. No other significant water front activities appear to have occurred. No ship building or ship repair was performed. The limited length of river front where a dock was located (see 3.1.1 below) was used only for staging of sand and gravel.

3.1.1 North Richmond Street to North John Street

3.1.1.1 Activities Prior to CSC Ownership

The earliest available Sanborn Map (1905) shows a closed small lumber mill (Central Lumber Company) along the shore in the western portion of this subarea. The mill extends out into the river on a dock. No fuel tanks are on the map and the map notes that a sawdust-fueled electrical generator powered the mill. The mill was apparently closed in 1904 due to "litigation" and this area was generally vacant by 1911. The 1911 Sanborn map also notes a "Horse Barn" and "Wagon Shed" in this area.

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A dock was constructed at end of North Richmond Street sometime between 1911 and 1924. The dock was used solely to stage sand and gravel. There is no evidence that ship building or repair was performed at, or around, the dock, or anywhere else on the site. The dock was removed between the late 1940s and 1950s.

From sometime between 1911 and 1924 to 1973, this area was used for a variety of manufacturing and warehouse activities. American Marine Iron Works (foundry and machine shop) was noted in this area on the 1924 Sanborn Map. From the early 1930s to the 1960s, this area was used by Plylock Corporation (plywood mill). The 1950 Sanborn Map shows a 20,000 SF "Woolen Mill" warehouse in the western portion of this area. The 1969 Sanborn Map shows a "Western Homes" operation on the eastern edge of this area. All of these facilities were noted as using "sawdust" for fuel and no fuel tanks are shown on the Sanborn Maps or apparent on the historical aerial photographs.

Buildings present in this area were demolished starting in the early 1970s. The City of Portland, through the Portland Development Commission, purchased the property in 1979. The last building was removed sometime between 1980 and 1984.

3.1.1.2 Activities During CSC Ownership

Manufacturing Management Incorporated (MMI) purchased this property from the City of Portland in 1988. MMI shortly thereafter transferred the site to the Crawford Street Corporation. In 1989, Lampros Steel started using this area to store structural steel.

There are no records or direct evidence of releases of hazardous substances on this portion of the CSC site during CSC's ownership.

3.1.2 North John Street to North Leavitt Street

3.1.2.1 Activities Prior to CSC Ownership

The earliest Sanborn Map (1905) shows dwellings across most of this area with a small machine shop in the southwest corner. Starting sometime between 1905 and 1911, this area was used to store lumber for the St. John's Lumber Company. This area was used solely to store lumber until the mid-1950s. An April 27, 1924 fire damaged much of the lumber storage area but the area was repaired and the lumber storage continued.

Starting in 1955 to sometime between 1973 and 1977, 12,000 square-foot building was located in the southern portion of this area. The building was associated with the Portland Lumber Company mill and was apparently used to store lumber. The building was demolished and the area was vacant from sometime between 1973 and 1977 to 1989. The City of Portland, through the Portland Development Commission, purchased the property in 1979.

3.1.2.2 Activities During CSC Ownership

MMI purchased this property from the City of Portland in 1988. MMI shortly thereafter transferred the site to the Crawford Street Corporation. In 1989, Lampros Steel started using this area to store structural steel.

There are no records or direct evidence of releases of hazardous substances on this portion of the CSC site.

3.1.3 South/Leavitt to Burlington

3.1.3.1 Activities Prior to CSC Ownership

Historical photographs obtained from the Oregon Historical Society notes this area being undeveloped, except for a few dwellings, in the late 1800s.

The earliest available Sanborn Map (1905) notes this area being used for lumber storage for St. John's Lumber Company. The 1911 Sanborn Map continues to note lumber storage with the addition of a 30,000 square-foot planing mill building and a 55,000-gallon water tower. The water tower was located at the end of the present-day, North Burlington Street and was present until 1969. The planing mill building was significantly reduced in size between 1911 and the 1930s. In the early 1950s, the planing mill was significantly expanded and was present until the mid-1970s.

An April 27, 1924 fire damaged much of the lumber storage platforms along southern edge of this area.

By 1936, a 10,000 square-foot lumber storage building was located in the northern portion of this area. This building was expanded in the early 1950s and was present until the mid-1970s.

The Sanborn Maps note that mill refuse was used for fuel at the lumber mill and no oil tanks are noted on the maps.

The 1969 Sanborn Map shows a small machine shop along the river from in the western portion of this area. The machine shop was apparently associated with the lumber mill and was removed with the other buildings on the site in the mid-1970s. By the late 1970s, the site was vacant and all buildings had been removed. The City of Portland, through the Portland Development Commission, purchased the property in 1979.

Some former and current property tenants and representatives noted that black sand material was imported to the South Area and used for surface fill when the lumber buildings were demolished. The reports of black sand fill are consistent with the black sand observed along the riverbank during the site reconnaissance (Section 2.3).

3.1.3.2 Activities During CSC Ownership

MMI purchased this property from the City of Portland in 1988. MMI shortly thereafter transferred the site to the Crawford Street Corporation. In 1989, Lampros Steel started using this area to store structural steel.

There are no records or direct evidence of releases of hazardous substances on this portion of the CSC site during CSC's ownership.

3.1.4 Previous Environmental Investigation on South Area

In 1988, prior to MMI's purchase of the South Area, MMI retained Sweet-Edwards/Emcon to perform an environmental investigation of the South Area. The investigation included the following:

- Historical review including Sanborn Fire Insurance Map review and an interview with a former onsite worker.
- Water sampling from pipes protruding from ground surface.
- Geophysical survey for subsurface features (e.g. underground storage tanks).
- Five test pits to assess subsurface features suggested from the geophysical survey.
- Removal of an underground storage tank identified from the geophysical survey and test pits.
- Sampling of black sand fill.
- Seven test pits and one soil boring to assess subsurface conditions in the area of the black sand fill.
- One soil boring exploration to assess a possible septic drain and drain field area.
- Soil and groundwater sample laboratory analysis for petroleum hydrocarbons, volatile organic compounds, PCBs, and EP Tox metals.

The study identified and assessed the following possible environmental issues on the South Area of the CSC site:

- Up to about 6 feet of black sand fill is present in the western portion of the South Area along portions of the bank above the Willamette River shoreline. Based on an interview with a former site employee, the fill was reportedly placed during the demolition of the sawmill in 1977-1978, prior to CSC's ownership of the property. The sand was reportedly spent sandblast material that had been used to clean oil tanks. The sand was oily when placed and oily water reportedly migrated briefly to the adjacent river.
- EP Tox metal concentrations in samples of the black sand did not exceed hazardous waste levels. A sample of the material was measured to contain oil and grease at a concentration of 400 mg/kg. No PCBs were detected in the samples of the material. Perched groundwater with a sheen was observed in some of the test pits in the black sand area.
- A groundwater sample from near the black sand fill area did not note any evidence of contamination according to the Sweet-Edwards/Emcon study. Soil beneath the black sand, but above the

shallow groundwater, was not stained and did not indicate evidence of contamination. The shallow groundwater was about 26 feet beneath the bottom of the fill material.

- Soil and groundwater samples collected from the test pits and the soil boring in the area of the former septic tank and drain field did not note any evidence of contamination.
- The underground storage tank identified from the geophysical survey and test pit explorations was located in the southeastern portion of the South Area. A sample of the contents of the tank was found to be diesel. The tank was removed and properly disposed offsite. No field evidence of contamination was observed during the tank removal. Two soil samples collected from the bottom of the tank excavation and a third sample from the fill port area were analyzed for oil and grease. Oil and grease was detected in the bottom soil samples at concentrations of 100 mg/kg and 200 mg/kg. Oil and grease was detected in the soil sample from the fill port area at a concentration of 100 mg/kg.
- A reconnaissance of the river bluff did not note any groundwater seeps in the exposed bank.

3.2 North Area

As noted in Section 2, the North Area is the portion of the site located between the UPRR railroad spur and North Crawford Street. The location of the streets used to reference the subareas discussed below are shown on Figure 2-1.

3.2.1 North Richmond Street to North Charleston Street

3.2.1.1 Activities Prior to CSC Ownership

The earliest available Sanborn Map (1905) shows only a few dwellings and a small machine shop in this area.

By 1911, a 9,000 square-foot machine shop was located in this area. The foundry in the machine shop was fueled by coal. Two dwellings are also noted in this area on the 1911 Sanborn Map. The 9,000 square-foot building is vacant and only the dwellings remain in the 1924 Sanborn Map.

From the mid 1930s to 1948, this area was used for lumber storage. The site was no longer used for lumber storage from about 1950 to the early 1970s when logs were stored in this area.

The building was removed in 1973 and by 1977, the site was not used and was vacant with vegetation.

3.2.1.2 Activities During CSC Ownership

MMI purchased this property from the City of Portland Development Commission in 1988. MMI shortly thereafter transferred the site to the Crawford Street Corporation. In the mid-1990s, Lampros Steel started using the middle of this area to store structural steel.

There are no records or direct evidence of releases of hazardous substances on this portion of the CSC site.

3.2.2 North Charleston Street to North John Street

3.2.2.1 Activities Prior to CSC Ownership

From before 1905 to the mid-1930s, only dwellings were present in this area. Starting in the mid-1930s to the mid-1940s, this area was used to store lumber. The 1950 Sanborn Map shows a small auto repair shop (noted in the City Directory as Love Fuel Company) and a single dwelling on this area. No fuel tanks are shown to be associated with this facility.

Sometime between 1957 and 1960, a 200-foot by 200-foot building was constructed, covering almost this entire area. The 1969 Sanborn Map notes the building being used by Portland Manufacturing Company to store lumber.

The City of Portland Development Commission (PDC) acquired the property in the 1970s. While the PDC owned the property, the City of Portland used the building for general maintenance operations.

3.2.2.2 Activities During CSC Ownership

MMI purchased this property from the City of Portland Development Commission in 1988. MMI file information notes that there was a drum of Silvex in the PDC building when the building was purchased by MMI in 1988.

This building is currently present on the site and has been used by Lampros Steel since 1989. Shortly after purchasing the property, MMI transferred the site to the Crawford Street Corporation.

There are no records or direct evidence of releases of hazardous substances on this portion of the CSC site.

3.2.3 North John Street to North Leavitt Street

The earliest available Sanborn Map (1905) shows this area vacant. This area remains vacant except for periodic use for storage of plywood and lumber mill wood waste, until the mid-1950s when a 1,700 square-foot "Pattern Shop" is constructed in the northern portion of this area. The pattern shop is noted as "Peninsula Pattern Works" in the 1960 through 1970 City directories.

By 1961, the use of the western area of site, including "Pattern Shop" appeared to be associated with Skookum Logging Equipment, located to the west of this area. The use of the eastern portion of this area was associated with the 200-foot by 200-foot building located to the east.

Columbia Forge moved into the Pattern Shop building in 1971. The building is expanded in 1972 to what is currently the Columbia Forge office and Building 1. The current oil storage building was also constructed in 1972.

CSC files indicate that two underground storage tanks (USTs) were formerly present in this portion of the CSC site. Both tanks were removed in 1987. The approximate former locations of the tanks are shown on Figure 2-4.

One tank was located near the southern portion of the area in the "weld shop." This tank was a 1,000-gallon steel tank and was installed in the late 1960s. The tank was used to store Bunker C oil. A second tank was located along the northern edge of the site and was referred to as the "Yard" tank. This tank was a 1,000-gallon steel tank and was installed in the mid-1950s. This tank was used to store gasoline.

Soil samples were collected from the tank excavations and analyzed for petroleum hydrocarbons when the tanks were removed. The sample from the "Yard" UST was also analyzed for total lead and EP Toxicity lead. Diesel was not detected in either of the soil samples and gasoline petroleum hydrocarbons were detected only in the sample from the Yard UST excavation at a concentration of 16 mg/kg. The measured total lead concentration in the soil sample from the Yard UST was in the range of typical background concentrations and lead was not detected in the EP toxicity analysis. The laboratory report for the soil chemical analyses is presented in Appendix B.

A very small quantity (2 to 3 ounces) of PCB-containing oil was spilled inside an electrical induction heater cabinet in May 1987. The entire cabinet was removed from the site and disposed properly by General Electric. No PCB oil was released outside the cabinet and no PCBs were released to the ground. There is no potential for the contained spill of PCB oil to have caused an impact to the Willamette River water or sediments.

In 1997, BES collected a storm water sample from the western drain pipe outlet from the Columbia Forge yard area (see Section 2.2.3 and Figure 2-4). The sample was analyzed for metals. Low concentrations of copper (10 µg/L), selenium (47 µg/L), and zinc (65 µg/L) were detected in the sample. Lead, cadmium, and chromium were not detected in the storm water sample.

3.2.4 North Leavitt Street to North Burlington Street

The earliest available Sanborn Map (1905) notes five dwellings on this area of the site. The dwellings are also present on the 1911 map along with a building labeled "Portland Collapsible Box" on the southeast corner

of the site. A "Lauther's Mercantile Warehouse" is also shown on the southwest corner of this area on the 1911 Sanborn Map.

By 1924, Skookum Logging Equipment Company began operations on this area of the site except for the northwest corner of the area where three dwellings were located. The Skookum operations included a machine shop in the southeast corner and a coal bin in the southern portion of the area. The Skookum facility also included a brass foundry in the northern portion of the site. Warehouses used to store hay and wire cable were noted in the southwest portion of this area in the 1924 Sanborn Map.

The foundry was expanded sometime between 1924 and 1936 and 1940 when the last remaining dwellings in this area were removed. The warehouses in the southwest portion of this area were removed in the late 1940s.

By 1950 Skookum Logging Equipment occupied the entire eastern half of this area. The Skookum operations had been expanded to include a foundry with two furnaces, a hammer forge, and a machine shop in the southeast corner.

The 1950 Sanborn Map shows Portland Chain Manufacturing Company occupying the western half of this area. The Portland Chain Manufacturing Company was mostly an open yard with five forge furnaces. A 3,500 square-foot building was located in the northwest corner of this area.

The buildings on the eastern half of this area were expanded in the period 1950 to 1955 such that the entire eastern half of this area was covered. Between 1963 and 1964, the building currently existing on the western portion of this area was constructed.

CSC files indicate that an UST was formerly present in this portion of the CSC site. The UST was removed in 1987. The approximate former location of the tank is shown on Figure 2-4. This tank was a 5,000-gallon steel tank and was used to store diesel. It is not clear when the tank was installed but it appears to have been installed before 1960. A soil sample was collected from the tank excavation and analyzed for petroleum hydrocarbons when the tank was removed. Gasoline or diesel was not detected in the soil sample. The laboratory report for the soil chemical analyses is presented in Appendix B.

3.2.5 Previous Environmental Investigation on North Area

The environmental investigation performed by Sweet-Edwards/Emcon in 1988 and described in Section 3.1.4 also included a historical review and site reconnaissance of the North Area. No soil or groundwater samples were collected in the North Area as part of the 1988 investigation.

The 1988 historical review and site reconnaissance noted the following:

- An 8-inch, buried, Union Pacific Railroad diesel pipeline is present beneath North Crawford Street.

- Three underground storage tanks had been previously located on the Columbia Forge and Lampros Steel areas. The tanks were removed in 1987. Petroleum hydrocarbons were detected at a concentration of 16 mg/kg in one sample. Petroleum hydrocarbons were not detected in the other two soil samples.
- Oily runoff of storm water occurs from the Columbia Forge and Lampros Steel areas. The runoff pools along the UPRR rail road spur along the southern edge of the Columbia Forge and Lampros Steel areas.
- A fuel pump island and, presumably, an underground storage tank are present on the St. Johns Truck and Equipment property north of North Crawford Street. An outside steam cleaning area with a drain was also observed on the St. Johns Truck and Equipment property.

The Sweet-Edwards/Emcon report did not recognize the flow of storm water onto and across the CSC site from the properties upgradient (i.e. north) of the CSC site.

3.3 Adjacent North of Crawford Street Corporation Property

From before the earliest Sanborn Map available (1905) to the mid 1950s, the area north of the CSC site was mostly vacant with a few dwellings. Starting in the 1920's, the far west end was also used for lumber storage.

In the early 1960s, a building was constructed along the north side of North Crawford Street, between North John and Leavitt Streets. The building was used initially for a fuel business (St. Johns Fuel Company) and then for truck repair (Hildebrand Truck and Equipment starting between 1970 and 1975). The truck repair shop is still operated on this area north of the site. Since its construction, more and more debris, equipment, and trucks have been placed around the truck repair building.

The property between North Burlington and Leavitt Streets was used for lumber storage up to the late 1960s. From that time to the present, this area has been used for auto and truck parking.

By 1991, a large amount of debris, equipment, and trucks in varying degrees of disassembly were present on almost all of the properties north of the CSC site. As discussed in other sections of this PA report, storm water runoff from these areas flows to, and across, the CSC site. Sheens have been observed on this runoff coming from the properties north of the CSC site.

A fuel pump was present on the St. Johns Truck and Equipment site in the late 1980s. Such a pump would have most likely been associated with underground storage tanks. DEQ has no records of USTs on the St. Johns Truck and Equipment site. However, City of Portland Fire Bureau records note a 2,000-gallon diesel tank and two 8,000-gallon gasoline tanks being installed on the St. Johns Truck and Equipment site. No files

were found at DEQ or the Fire Bureau indicating that the tanks have been removed.

3.4 Adjacent East (Upriver) of Crawford Street Corporation Property

3.4.1 General History

The earliest available Sanborn Map for this area (1911) shows a dock along the river front, east of the CSC site. By 1924, the area east (upriver) of the CSC site was the site of a large plywood mill. The plywood mill was present in this area through the late 1960s. From no later than 1950 to its closure, the mill was operated by Plylock.

The several Sanborn Maps covering this area over this period note glue storage areas. Phenol-based glue was a typical industrial product used at similar operations. The glue was presumably used to attach the wood veneers to form the plywood. Other hazardous substances typically associated with plywood mills include petroleum hydrocarbons from lubricating oils.

By the later 1960s, the plywood mill was abandoned and only a small cabinet shop remained operating in the area east (up river) of the CSC site. The plywood mill buildings and the dock along the river front were demolished in 1971 and 1972. By 1973, the area east of the CSC site was vacant with bare ground.

The property east of the CSC site is currently owned by the Metropolitan Regional Center (Metro) who recently purchased the site from the City of Portland.

3.4.2 Previous Environmental Investigation on Property East (Upriver) of Crawford Street Site

In 1988 and 1989, Sweet-Edwards/Emcon was retained by Grayco Resources to perform a Level I environmental site assessment and field investigation of the property east (up river) of the CSC site and south of the UPRR rail tracks. The investigation consisted of an historical review, a site reconnaissance, geophysical survey, 13 test pits, four hand auger borings, and 19 soil borings. Chemical analysis was performed on 25 soil samples and 22 groundwater samples. PCBs were detected in groundwater samples from soil borings on the western end of the investigation area, near the east end of the CSC site.

In 1994, the City of Portland retained Century West Engineering Corporation to perform a Phase I and Phase II environmental site assessment of the property east of the CSC site, north of UPRR rail tracks, and south of vacated North Bradford Street. The investigation consisted of an historical review, a site reconnaissance, and excavation of 12 test pits. No soil or groundwater samples were collected for

chemical analysis from the test pits. The investigation did not note any evidence of contamination on the site.

In 1995 Emcon was retained by Metro to perform additional soil, groundwater, and sediment sampling on the property east of the CSC site and south of the UPRR rail tracks. Soil samples were collected from a series of soil borings and groundwater monitoring wells. Samples from the western end of the site (near the east end of the CSC property), noted PAHs in soil, groundwater, and sediment.

3.5 Adjacent West (Downriver) of Crawford Street Corporation Property

3.5.1 General Site History

The earliest available Sanborn Map for this area (1911) shows a dock along the river front, west of the CSC site. By 1911, the area west (downriver) of the CSC site was the site of a large lumber mill. The lumber mill operations included a large dock. The major operations of the lumber mill were present on this area through the mid-1950s. From the mid-1950s to its closure in the mid-1970s, this area was used for lumber storage and mill refuse management. The dock was present and used from the early 1900s to when the mill was demolished in the late 1970s.

The mill was operated by St. Johns Lumber until between the late 1920s and the early 1930s. From this period to its closure in the mid-1970s, the mill was operated by Portland Lumber Mills. The mill produced wooden boxes.

The mill operations included mill refuse handling and burning. Lumber mill operations also typically include use of lubricants and oils.

The property west of the CSC site was purchased by the City of Portland Development Commission (i.e. City of Portland) in the late 1970s when the former lumber mill and box manufacturer ceased operations on the site.

3.5.2 Previous Environmental Investigation on Property West of Crawford Street Site

In 1988, CSC considered purchasing the property west (downriver) of the CSC site from the City of Portland Development Commission (PDC). As part of their consideration of the property, CSC retained Sweet-Edwards/Emcon to assess potential soil and groundwater contamination issues on the property. The investigation noted several soil and groundwater contamination issues on the PDC property including:

- Over 500 cubic yards of black fill material containing petroleum hydrocarbons and halogenated organic compounds in the western portion of the property.

- Uncontrolled fill containing demolition waste and trash in the southern portion of the property.
- Halogenated organic compounds and 2,4-dichlorophenol in shallow groundwater at the site.

The file information also indicates that underground storage tanks associated with the former lumber mill were formerly present immediately north (upgradient) of the City of Portland property.

In 1994, the City of Portland Bureau of Environmental Services (BES) retained RZA Agra to perform an environmental site investigation at the property west of the CSC South Area property. The investigation included:

- Site history review
- Twenty test pit excavations
- Drilling and construction of five groundwater monitoring wells
- Five test trenches

Samples of black sand material encountered in the test trenches were measured to have petroleum hydrocarbon concentrations up to 667 mg/kg. About 2,113 cubic yards of black sand material was removed from the site based on visual criteria. Pentachlorophenol was detected in a groundwater sample from a well in the southeastern corner of the site at a concentration of 18 µg/L.

In October 1994, a drilling contractor penetrated an abandoned electrical conduit filled with PCB insulating oil on the eastern portion of the City of Portland property. A series of test pits were performed and about 150 cubic yards of PCB contaminated soil was excavated. Five of the 15 confirmation soil samples collected from the excavation after the soil excavation was completed had PCB concentrations greater than 1 mg/kg.

SECTION 4

ASSESSMENT OF POTENTIAL SOURCES AND PORTLAND HARBOR PATHWAYS OF EXPOSURE

This section presents the assessment of potential contaminant sources on the CSC site, the potential contaminant migration pathways from the CSC site sources to the Willamette River, and the potential receptors associated with the Willamette River.

The sources and pathways were identified based on the recent site conditions and operations. The following potential sources and migration pathways were identified and assessed:

- Former underground storage tanks
- Storm water runoff from Columbia Forge

For the purposes of this PA, only those on-site sources and migration pathways possibly occurring during CSC ownership of the site and as a result of operations performed by CSC are considered. In particular, only operations and possible releases occurring after 1988 on the entire South Area and the eastern 500 feet of the North Area were considered in this PA. CSC's predecessor-in-interest did not own the western portion of the North Area until the 1930s.

Only those potential sources and migration pathways associated with contaminants identified by DEQ as COIs in the Willamette River sediments are included in the assessment.

4.1 Possible Willamette River Receptors

The potential exposure receptors associated with the Willamette River are presented in the DEQ Site Strategy Recommendation. These receptors include:

- Persons participating in recreational boating, swimming, and beach use.
- Persons participating in recreational and subsistence fishing.
- Habitat and migration pathway for fish including Chinook salmon and steelhead, which are listed as threatened species under the Federal Endangered Species Act.
- Benthic community in the river sediments
- Habitat for birds and wildlife.

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The potential contaminant sources and migration pathways discussed in this section are those that could possibly impact the above potential Willamette River receptors as presented by DEQ in the site strategy recommendation.

4.2 Underground Storage Tanks

Three underground storage tanks were previously located on the CSC site. Table 4-1 summarizes the tank characteristics and locations.

Table 4-1
Former Underground Storage Tanks on CSC Site
Crawford Street Corporation Site PA

Name/ Reference	Location	Size (gal)	Contents	Date Installed
Weld Shop	Outside the southwest corner of Building 1 in southeast corner of the Columbia Forge yard.	1,000	Bunker C oil	1950s
Skookum	Northern edge of the Lampros Steel property at the western end of the CSC site.	5,000	Diesel	Prior to 1960
Yard	Northern edge of the CSC site in the Columbia Forge yard	1,000	Gasoline	Late 1960s

All of these USTs were removed in 1987. Soil samples were collected from the excavation of each tank and analyzed for petroleum hydrocarbons. As noted in Sections 3.2.3 and 3.2.4, petroleum hydrocarbons were not detected in two of the samples and were detected at a concentration of 16 mg/kg in the third sample (from the Yard UST excavation).

Based on the lack of petroleum hydrocarbons in the soil samples from each of the three UST excavations, no releases of petroleum hydrocarbons occurred from the USTs. Therefore, there is no potential for the USTs to have caused an impact to the Willamette River water or sediments. No further assessment of the USTs as possible sources is necessary.

4.3 Storm Water Runoff and Infiltration from Columbia Forge

As noted in Section 2.2.3, storm water runoff from the Columbia Forge yard is collected in catch basins and conveyed to the area along the UPRR rail spur where it infiltrates into the ground. Particulate contaminants from the Columbia Forge site conveyed in the storm water runoff would be deposited in the surface soil as the storm water infiltrated

into the soil. Because of the relative low solubility of the possible contaminants associated with the Columbia Forge site, runoff contaminants would likely consist of contaminated particulates rather than dissolved contaminants.

The area along the UPRR tracks collects stormwater runoff from the entire hillside north of the Crawford Street site. During heavy rainfall, including during the site visit for this PA, storm water runoff flows from the properties to the north of the Crawford Street site, across Crawford Street, and onto the Crawford Street property. Significant sheet flow was observed particularly from the abandoned North John Street area into, and across, the Columbia Forge and Lampros Steel storage yard. As noted in Section 2.4, debris, heavy equipment, and disassembled trucks are, and have been, present on these properties and runoff from these properties likely contains petroleum hydrocarbons and metals. Significant surface water runoff also flows down North Richmond Street and North Burlington Street to the UPRR rail spur.

CSC constructed a 200-foot long asphalt berm along the southern edge of Crawford Street yard to reduce the runoff from the upslope sites entering the CSC property. Prior to CSC's construction of the berm, offsite stormwater runoff flowed freely across the Columbia Forge yard and into the yard catch basins.

4.3.1 Possible Surface Water Migration Pathway

During long periods of heavy rainfall, ponded water along the northern edge of the UPRR tracks may eventually drain into the City of Portland storm water catch basin on North Burlington Street. The City of Portland catch basin is connected to the local combined storm water system, which discharges to the Willamette River at Outfall 50 on the City of Portland property west of the CSC site. Because this ponded water may include runoff from the Columbia Forge yard (along with runoff from the properties north of the CSC site), there is some potential for storm water runoff from the Columbia Forge yard to flow to the Willamette River. CSC Contaminants of Interest (COIs) present in the stormwater runoff (if any) could possibly, therefore, migrate to the Willamette River.

4.3.2 Possible Groundwater Migration Pathway

There is a slight potential that dissolved contaminants in the infiltrating stormwater (if present) could migrate down through the vadose zone and eventually impact the underlying shallow groundwater. The shallow groundwater is expected to flow toward the Willamette River and eventually discharge into the river.

The storm water is expected to have, at the most, only modest contaminant concentrations of relatively insoluble COIs and the depth to shallow groundwater is 20 to 30 feet. Therefore, the potential for groundwater to have been impacted by stormwater runoff and for the groundwater impacts to extend to the Willamette River is small. Such groundwater impacts to the Willamette River from the CSC site, if they

exist, would be indicated by high COI concentrations in the near surface soil near where the runoff from the Columbia Forge yard infiltrates.

4.3.3 Possible Air Migration Pathway

Once COIs, if present, are deposited in the surface soil from infiltrating stormwater, there is some theoretical potential for the contaminants to migrate through the air to the Willamette River. In particular, soil particulates with absorbed COIs could become wind born and migrate to the river with blowing dust. The potential for such impacts to the Willamette River through the air, would be indicated by high COI concentrations in the near surface soil near where the runoff from the Columbia Forge yard infiltrates.

Given the very high dispersion of the contaminated soil particulates that would occur in the air and river, contaminant concentrations in the surface soil would have to be very high before air migration of contaminants could possibly, materially affect the Willamette River sediment.

SECTION 5

SAMPLING AND ANALYSIS OF SOURCE/PATHWAYS OF CONCERN TO PORTLAND HARBOR

This section presents the sampling and analysis program that will be performed at the Crawford Street site as part of the PA. The purpose of the sampling and analysis will be to assess whether releases of Contaminants of Interest (COIs) have occurred from potential source(s) and whether released COIs have migrated through the identified potential pathways to the Willamette River. Potential source(s) that require further assessment are discussed in Section 4.

5.1 Contaminants of Interest

A sediment sample collected by the U.S. Environmental Protection Agency (EPA) in 1997 from offshore of the CSC site was determined by DEQ to contain elevated concentrations of a few hazardous substances. DEQ determined the hazardous substances to be "elevated" based on their concentrations relative to "baseline" concentrations elsewhere in the Portland Harbor. Using this approach, DEQ identified the following as Contaminants of Interest (COIs) for the CSC site:

- Arsenic
- Lead
- Mercury
- Di-n-butylphthalate
- Low molecular weight polynuclear aromatic hydrocarbons (LPAHs)
- High molecular weight polynuclear aromatic hydrocarbons (HPAHs)
- Organotins

The DEQ Environmental Cleanup Site Information (ECSI) Site Summary Report for the CSC site notes that "Mercury and PAH sediment contamination appears (sic) contribution from upstream sources."

There have been no activities on the CSC site associated with organotins. No ship repair or shop painting work has been performed on the CSC site. Over water activities, off of the CSC site, by previous owners was limited to loading of sand and gravel barges at the far eastern end of the site from early 1900s to the late 1940s. Therefore, there is no potential for releases of organotins to have occurred on the CSC site and organotins are not considered a COI at the CSC site.

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It is doubtful whether arsenic is actually a COI for the CSC site. The measured arsenic concentration in the sediments offshore of the CSC site (5 mg/kg) is well within typical natural background concentration in the Portland area and only 1 mg/kg greater than the "baseline" concentration established by DEQ. The method detection limit for the arsenic analyses in the EPA study often exceeded the DEQ baseline concentration. Furthermore, arsenic concentrations in suspended sediment entering the Portland Harbor from upstream sources is in the range of 5 to 10 mg/kg. Therefore, the arsenic concentrations in the sediment offshore from the CSC site are not indicative an upland source of arsenic on the CSC site.

5.2 Source/Pathways of Concern

As noted in Section 4.3, there is a potential for COIs to be released from the Columbia Forge yard to the surface soil and possibly migrate through periodic surface water flow to the local storm water system. There is also a small potential for the surface water COIs, if present, to impact the underlying shallow groundwater. Given the non-volatile nature of the COIs, volatilization of the COIs is not expected to be a significant migration pathway.

The relative concentrations of COIs in the surface soil in the area where the Columbia Forge surface runoff infiltrates into the ground would be indicative of the potential for the surface water or groundwater pathways to be significant COI migration pathways. If significantly elevated concentrations of COIs (relative to the upgradient and background concentrations) are not present in the surface soil, elevated concentrations of COIs would not be expected in the surface water runoff or shallow groundwater.

Runoff from the Columbia Forge yard is commingled with storm water runoff from the uphill properties to the north and from runoff from along the UPRR tracks east of the site (the ground slope along the UPRR tracks slopes gently down east to west). Past and current activities on these properties have likely resulted in releases of petroleum hydrocarbons and other COIs to the surface water runoff from the properties. Sampling of surface soil down gradient of the Columbia Forge yard to assess the potential for releases from the yard must also consider the likely sources of COIs up gradient from the Columbia Forge property.

5.3 Proposed Sampling Program

This section describes the specific PA sampling and analysis program that will be performed to assess whether COIs have been released from the Columbia Forge yard to the surface soil and possibly migrated to the Willamette River through the surface water, groundwater, and air pathways.

5.3.1 General Scope of Sampling Program

The PA sampling and analysis program will consist of collecting surface soil samples from six locations along the UPRR rail spur and analyzing the soil samples for the COIs identified by DEQ. Figure 5-1 shows the proposed PA sampling locations. Table 5-1 summarizes the proposed locations and their rationale.

Table 5-1
Proposed PA Surface Soil Sample Locations
Crawford Street Corporation Site PA

Sample	Location	Rationale
SS-1	50 feet west of Richmond Street, along north side of UPRR rail spur.	Assess background soil concentrations along UPRR rail spur
SS-2	At foot of Richmond Street, along north side of UPRR rail spur.	Assess impacts from offsite runoff down Richmond Street.
SS-3	Between southern exit from the Columbia Forge/Lampros Steel yard and the UPRR rail spur.	Assess impacts from offsite runoff onto and through the paved yard.
SS-4	Between outlet drain from catch basin near drop forge and UPRR rail spur.	Area of infiltration for Columbia Forge yard runoff. Assess impacts from Columbia Forge yard runoff
SS-5	Between outlet drain from catch basin at eastern entrance to Building 2/3 and UPRR rail spur.	Area of infiltration for Columbia Forge yard runoff. Assess impacts from Columbia Forge yard runoff
SS-6	At foot of North Burlington Street, along north side of UPRR rail spur.	Assess impacts from offsite runoff down North Burlington Street.

Surface soil contamination is expected to be the most indicative of possible releases to the soil from surface water runoff. Therefore, the soil samples will be collected from the upper 6-inches of the ground surface at the proposed locations shown in Figure 5-1 and described in Table 5-1.

5.3.2 Sampling Procedures

Each surface soil sample will consist of five subsamples composited into a single sample. The subsamples will be collected in a 5-point dice pattern across an approximately 5-foot by 5-foot area at each sample location. The composite soil sampling will provide a more representative assessment of the surface soil contaminant concentrations at each sample location.

Each sample will be collected using the following procedure:

- Scrape away surface vegetation, if present, at each subsample location.

- Excavate a minimum 6-inch deep hole with a clean shovel at each subsample location. If necessary, a clean pick will be used to penetrate the surface.
- After the hole is excavated, collect the soil sample across the upper 6-inches of the sidewall of the hole with a clean trowel or spoon. Exclude large gravel or organic debris from the sample.
- Place the subsample in the laboratory-supplied glass container. Fill the container about 1/5 with each subsample. Instruct the analytical laboratory to thoroughly mix the sample before collecting the aliquot for analysis.
- Place the filled sample container in a chilled cooler for transport to the analytical laboratory.

The samples will be collected and transported using proper chain-of-custody procedures. Field notes will be maintained noting the general soil conditions and any unusual or unanticipated conditions.

5.3.3 Analytical Laboratory Analysis

Each soil sample will be analyzed for the CSC site COIs using the following methods:

- PAHs by EPA Method 8310 or 8270 SIM
- Di-N-butylphthalate by EPA Method 8270
- Lead by EPA Method 3050/6010
- Mercury by EPA Method 7471

A QA/QC review of the laboratory data will be performed once the data is received from the analytical laboratory. This review will include the following:

- Chain-of-custody complete and correct
- Analysis within holding times
- Chemicals of interest in method blanks
- Blank spike recoveries within accuracy control limits
- Blank spike duplicate results within analytical precision control limits
- Surrogate recoveries within accuracy control limits
- Matrix spike recoveries within accuracy control limits
- Matrix spike duplicate results within analytical precision control limits
- Detection limits sufficiently low

On the basis of the results of the QA/QC data review, the data will be flagged according to standard EPA procedures. Questionable data will

be flagged with a "J" and considered an estimated value. Data unacceptable for its intended use will be rejected and flagged with an "R."

5.3.4 Reporting

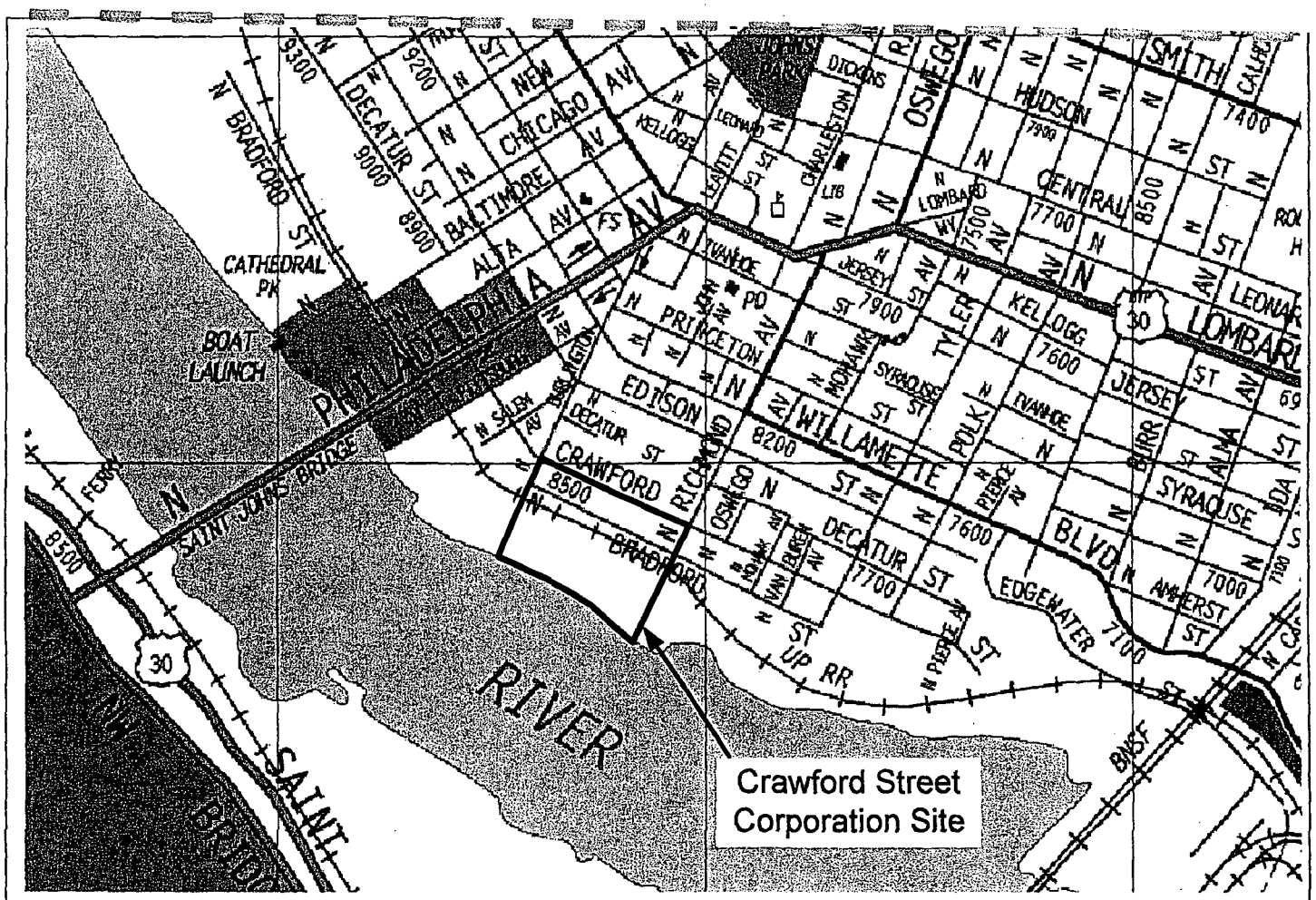
The results of the PA sampling will be presented in a report once the results of the chemical analysis are received from the laboratory. The report will include the following:

- Table showing the results of the chemical analysis.
- Figure showing where the samples were collected.
- Description of the soil and general site conditions in the area where the samples were collected.
- Discussion of any unanticipated or unusual conditions encountered while collecting the soil samples.
- Copy of the analytical laboratory report.

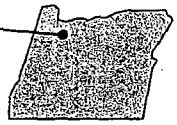
The report will also include a brief assessment of the potential for releases and migration of hazardous substances based on the results of the PA sampling.

The PA sampling results will be analyzed by comparing the relative COI concentrations in the soil samples from along the UPRR rail spur. In particular, if the COI concentrations in the surface soil samples from where the Columbia Forge storm water runoff infiltrates are greater than the COI concentrations in the other surface soil samples, additional sampling will be performed. Additional sampling will likely include surface water samples collected during rainfall events at the surface soil sample locations and groundwater samples collected at the down gradient edge of the CSC site.

A detailed sampling and analysis plan for any necessary additional sampling, including specific sample types and locations, will be prepared as part of the PA sampling report.



Portland, Oregon



Approximate Scale

770 feet

Figure 1-1
Site Location Map
Crawford Street Corporation Site

BRIDGEWATER GROUP, INC.

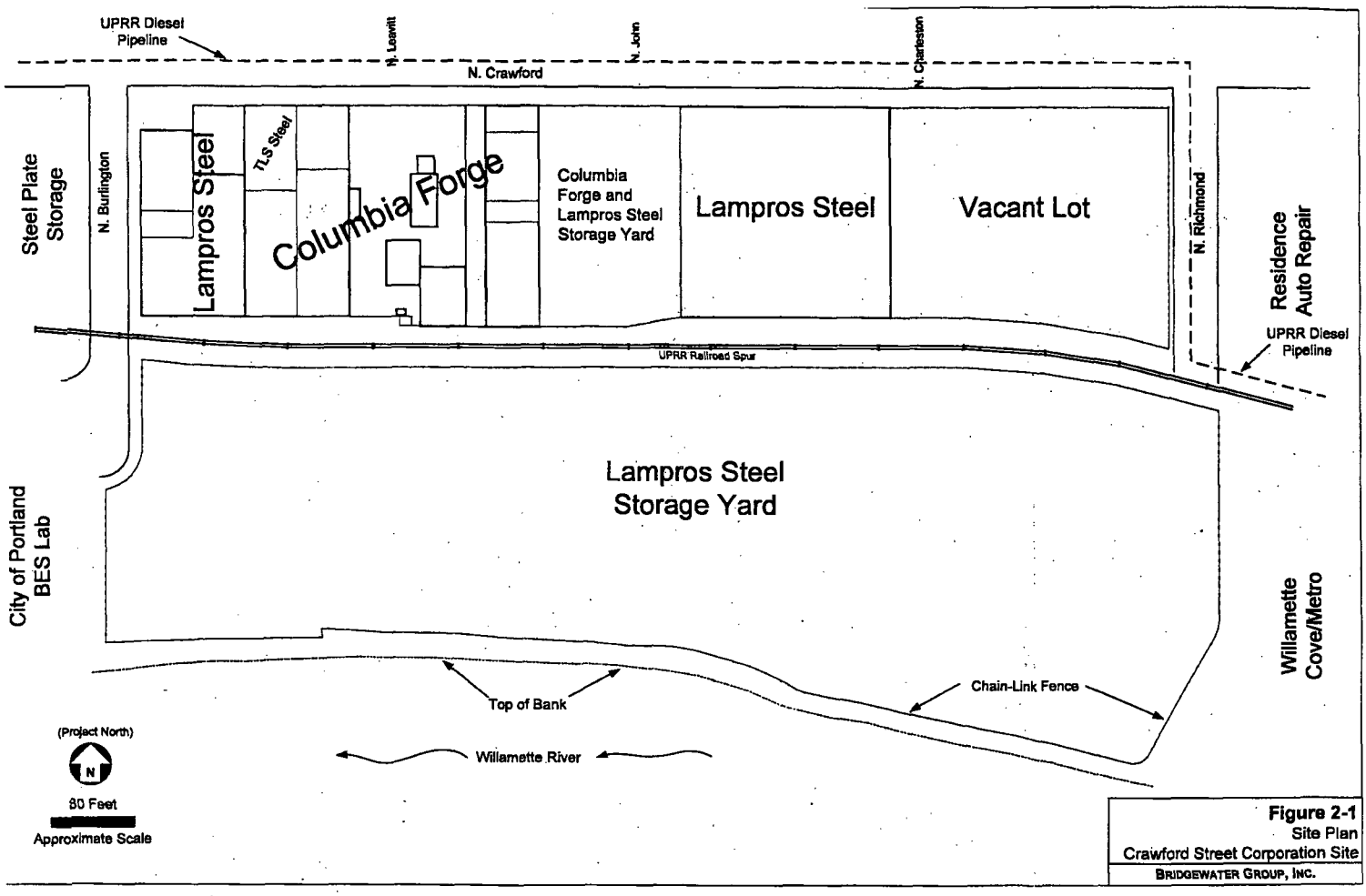


Figure 2-1
Site Plan
Crawford Street Corporation Site
BRIDGEWATER GROUP, INC.

CRAW00015151

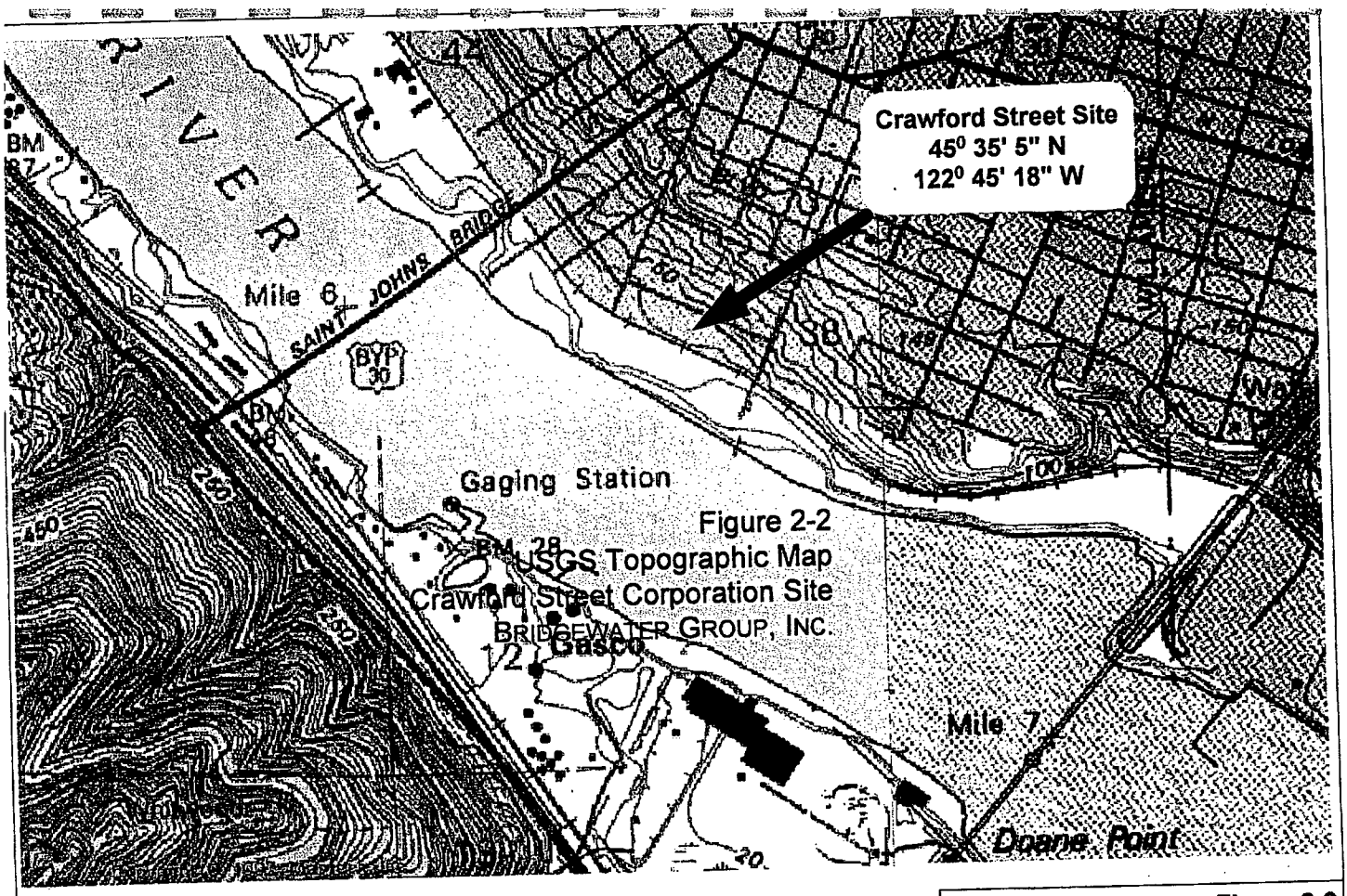


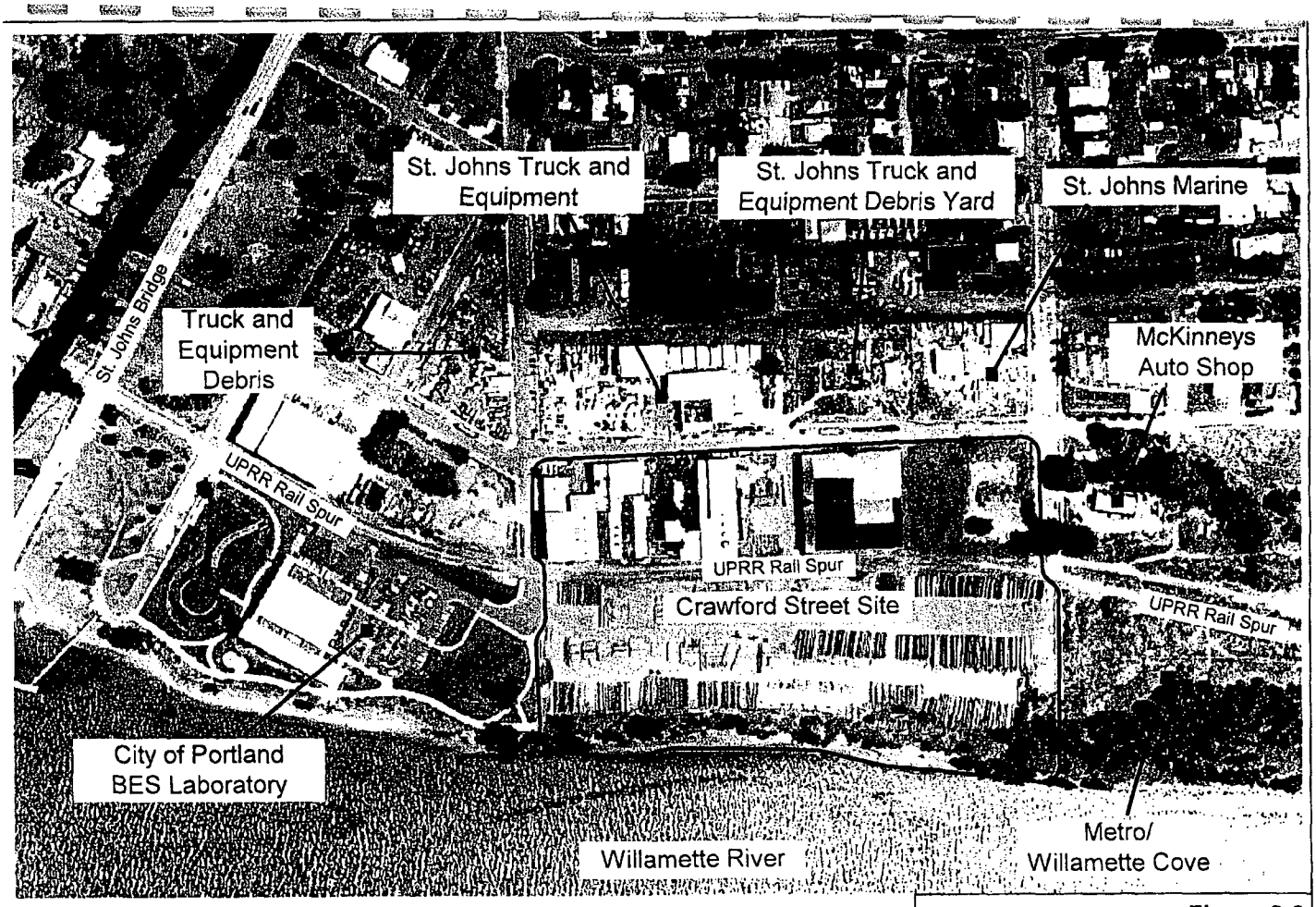
Figure from USGS Topographic Map Linnton and Portland Quadrangles Photorevised 1990

Approximate Scale

833 feet

Figure 2-2
USGS Topographic Map
Crawford Street Corporation Site

BRIDGEWATER GROUP, INC.



(Project North)

N

Approximate Scale

260 Feet

Figure 2-3
1998 Aerial Photograph
Crawford Street Corporation Site

BRIDGEWATER GROUP, INC.

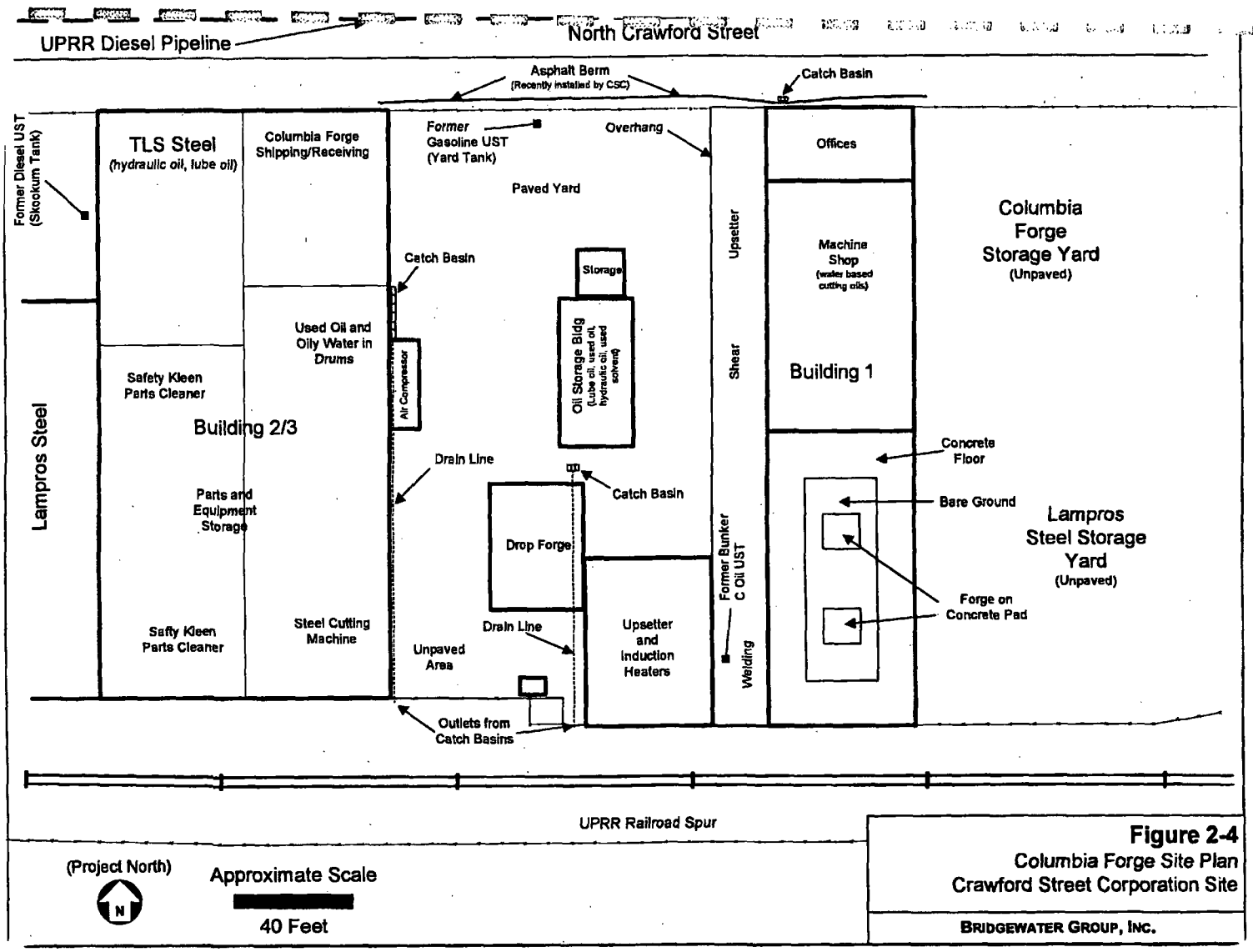


Figure 2-4
Columbia Forge Site Plan
Crawford Street Corporation Site

BRIDGEWATER GROUP, INC.

CRAW00015154

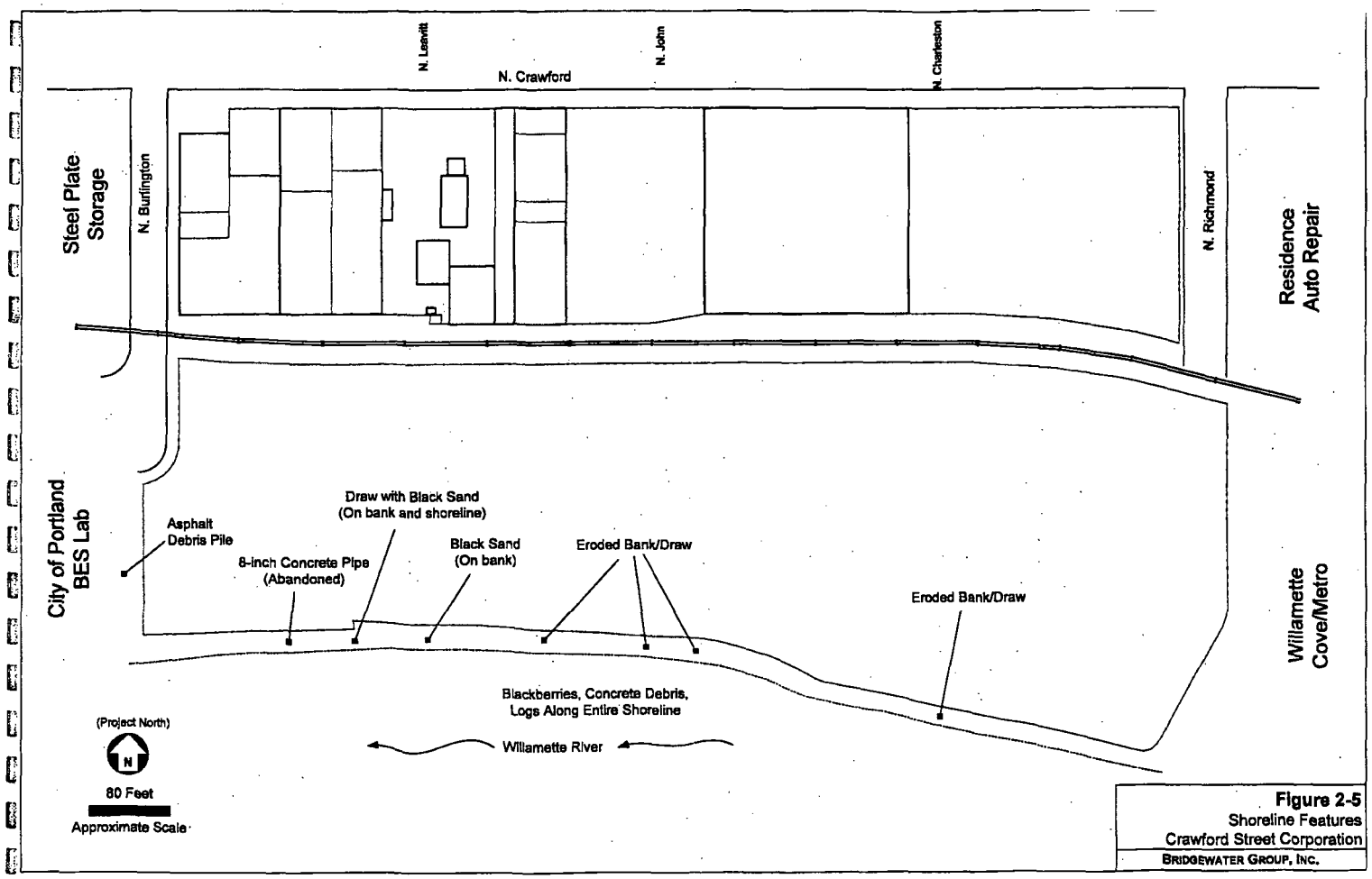


Figure 2-5
Shoreline Features
Crawford Street Corporation
BRIDGEWATER GROUP, INC.

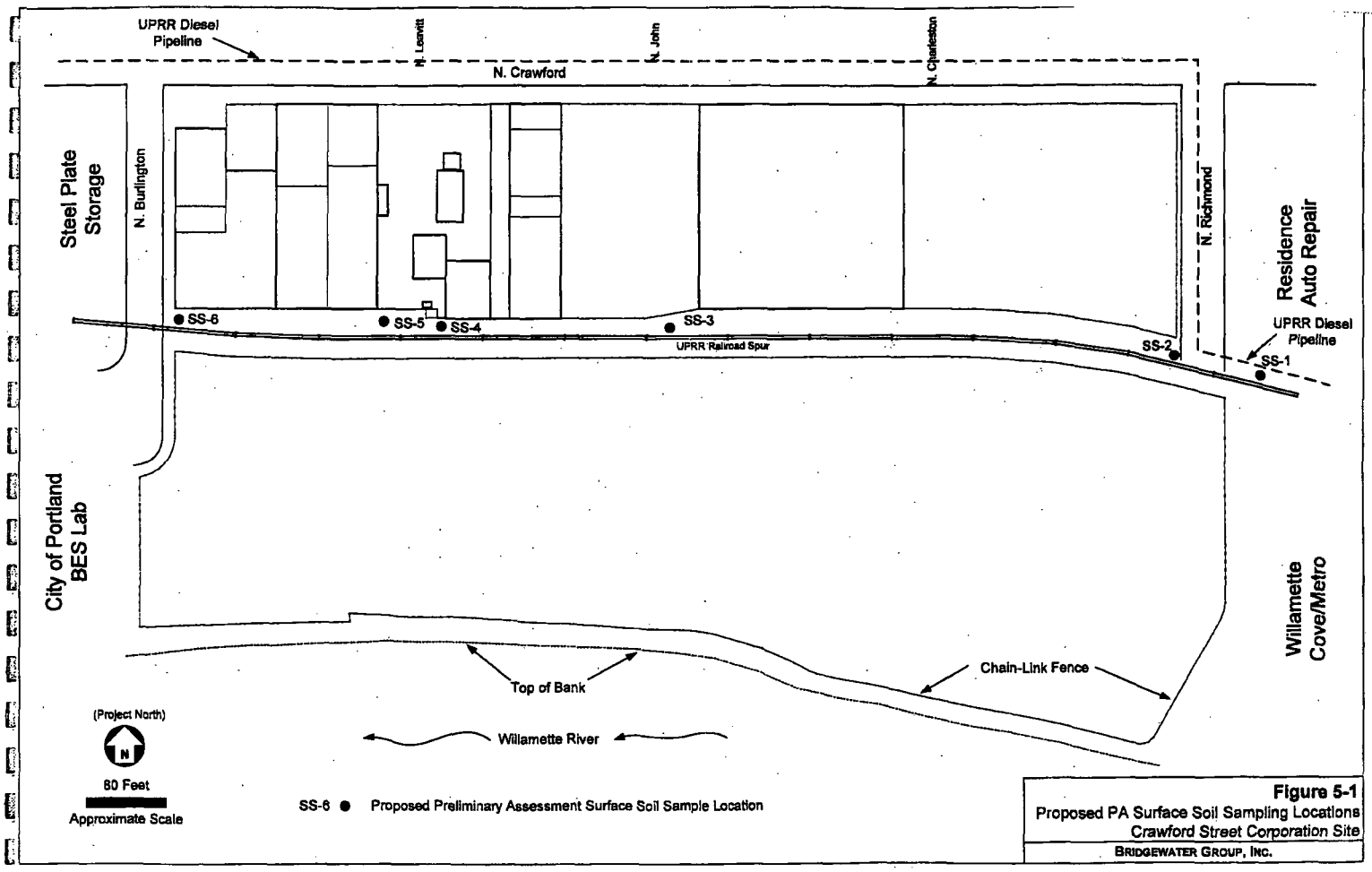


Figure 5-1
Proposed PA Surface Soil Sampling Locations
Crawford Street Corporation Site
BRIDGEWATER GROUP, INC.

APPENDIX A

PHOTOGRAPHS OF CURRENT SITE CONDITIONS

Photo No. 1 **Photo Date: 12/9/99**

Looking southeast from intersection of North Burlington and North Crawford Streets.

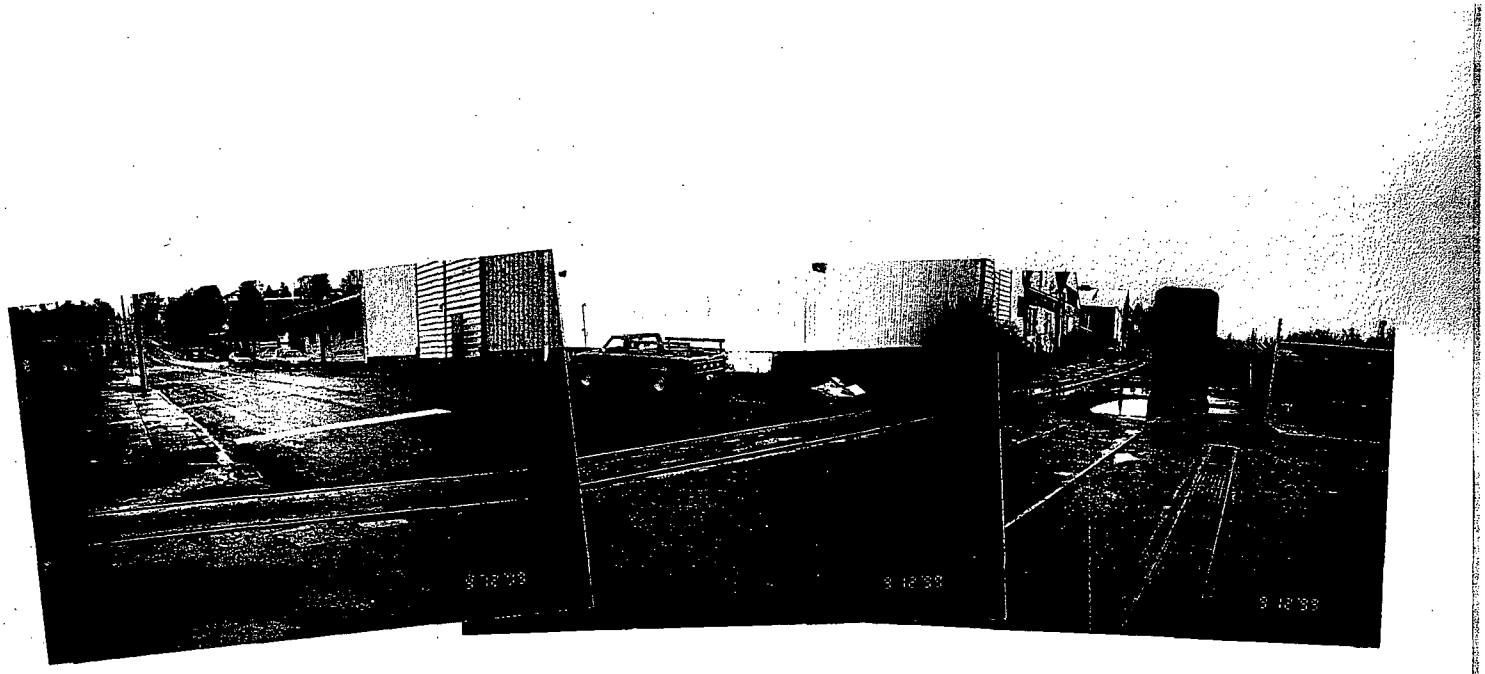


Photo No. 5 **Photo Date: 12/9/99**

Looking northeast from intersection of North Burlington Street and UPRR rail spur.

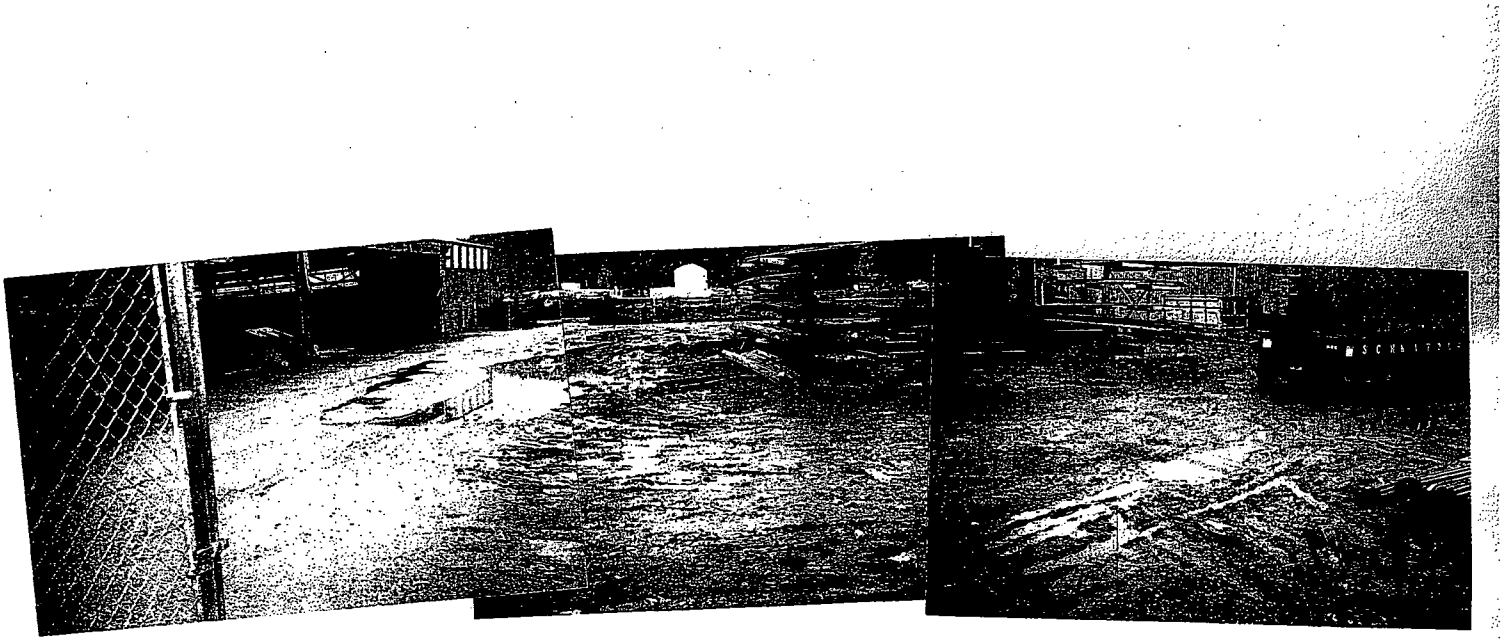


Photo No. 6 **Photo Date: 12/9/99**

Looking south across Columbia Forge/Lampros Steel yard.

Photo No. 7 **Photo Date: 12/9/99**

Columbia Forge Yard. Looking northwest.

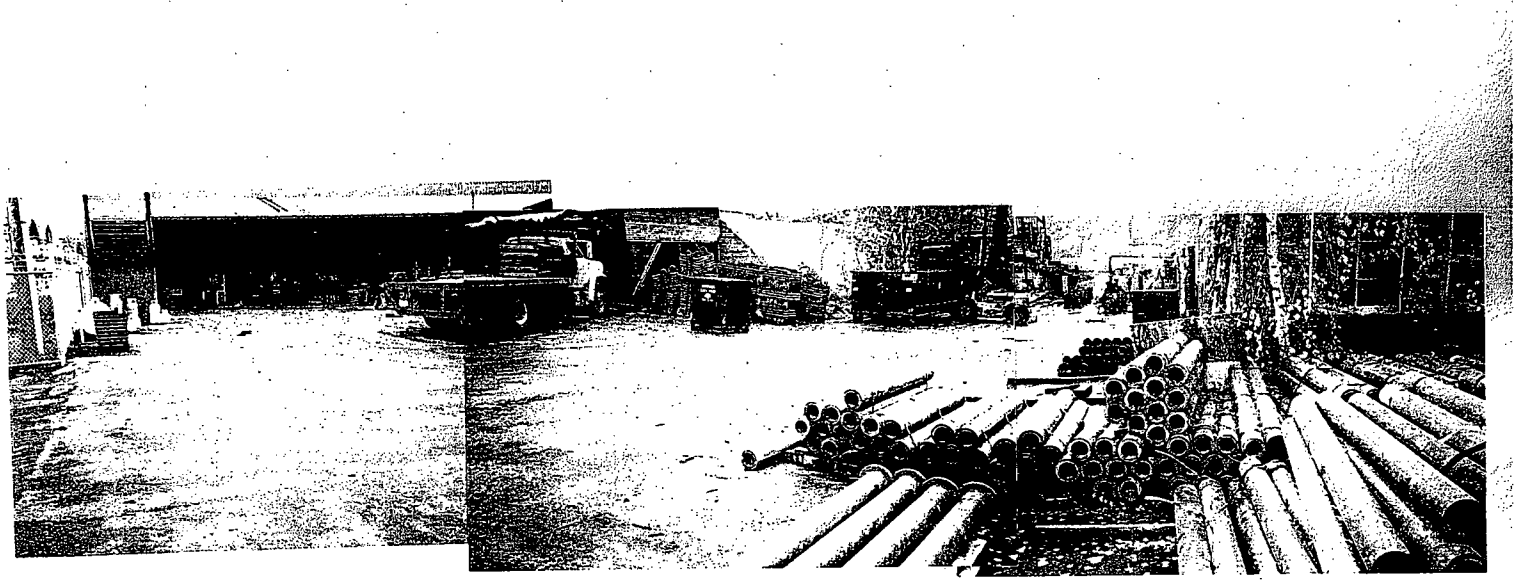


Photo No. 8 **Photo Date: 12/9/99**

Columbia Forge Yard. Looking southeast.

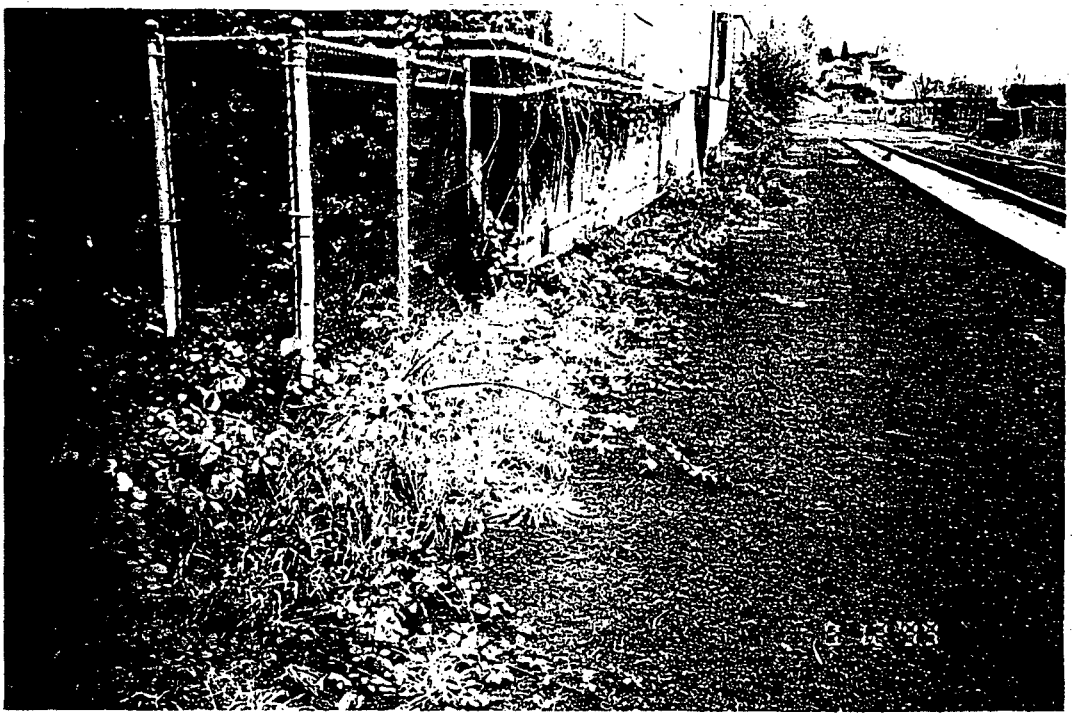


Photo No. 16 **Photo Date: 12/9/99**

Looking east along UPRR rail spur from south side of Columbia Forge yard.

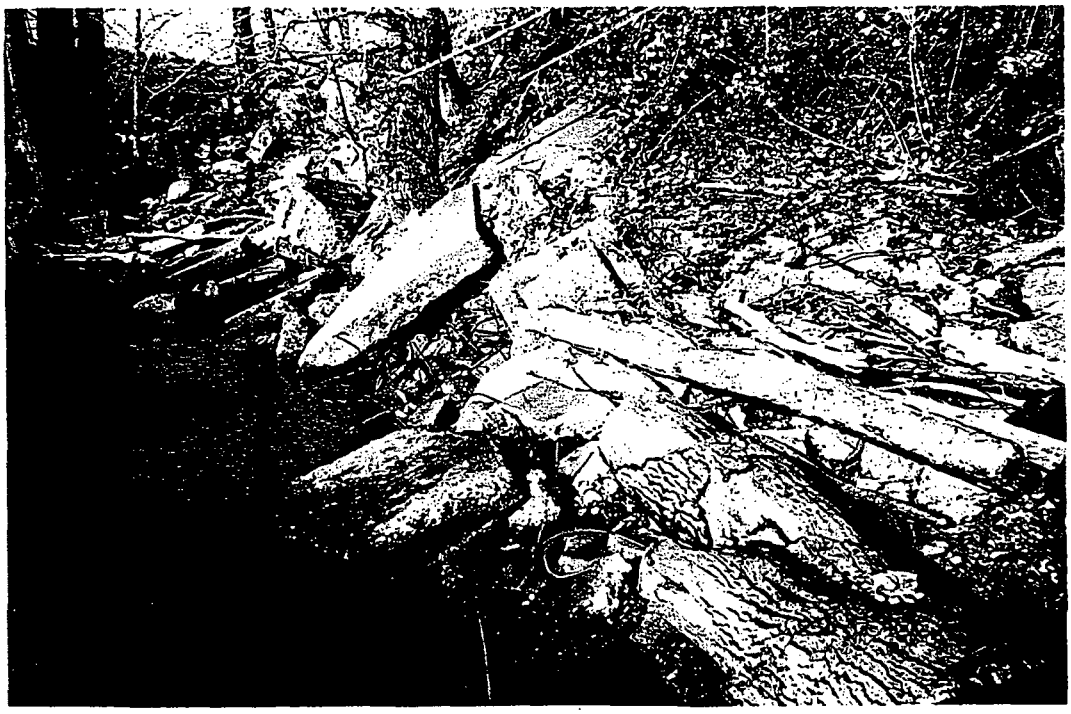


Photo No: 17 **Photo Date: 12/21/99**

Typical river bank conditions.

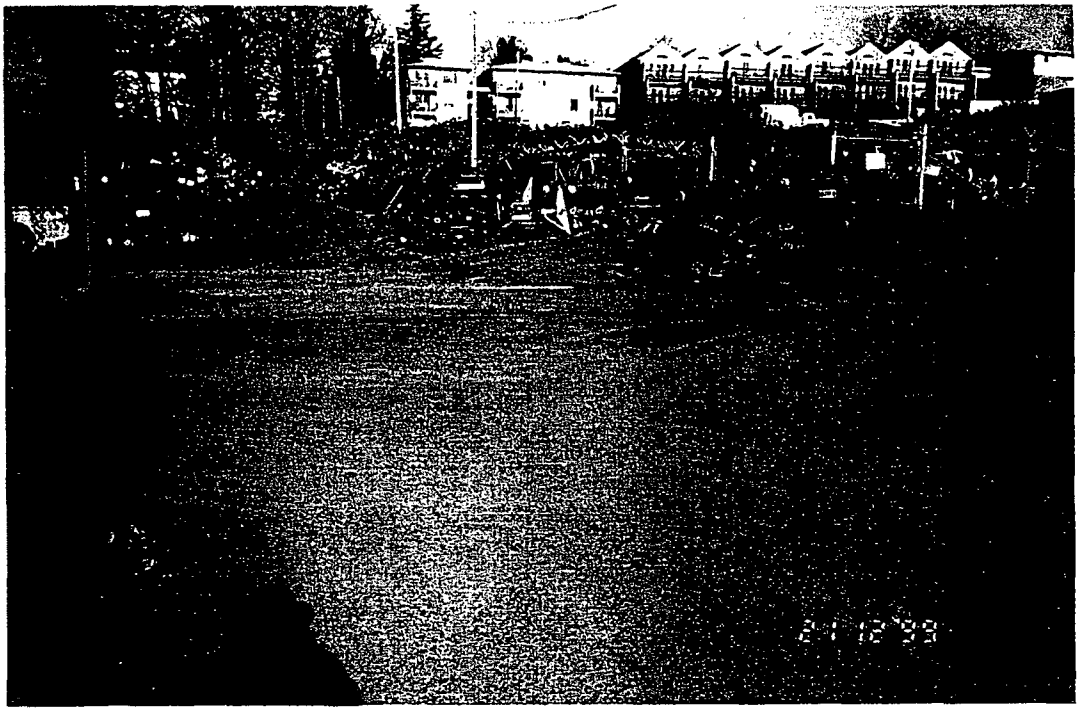


Photo No. 18 **Photo Date: 12/21/99**

Looking north from north side of Columbia Forge/Lampros Steel yard at St. Johns Truck and Equipment debris yard. Storm water runs from this area, across Crawford Street, and on to and across the storage yard.

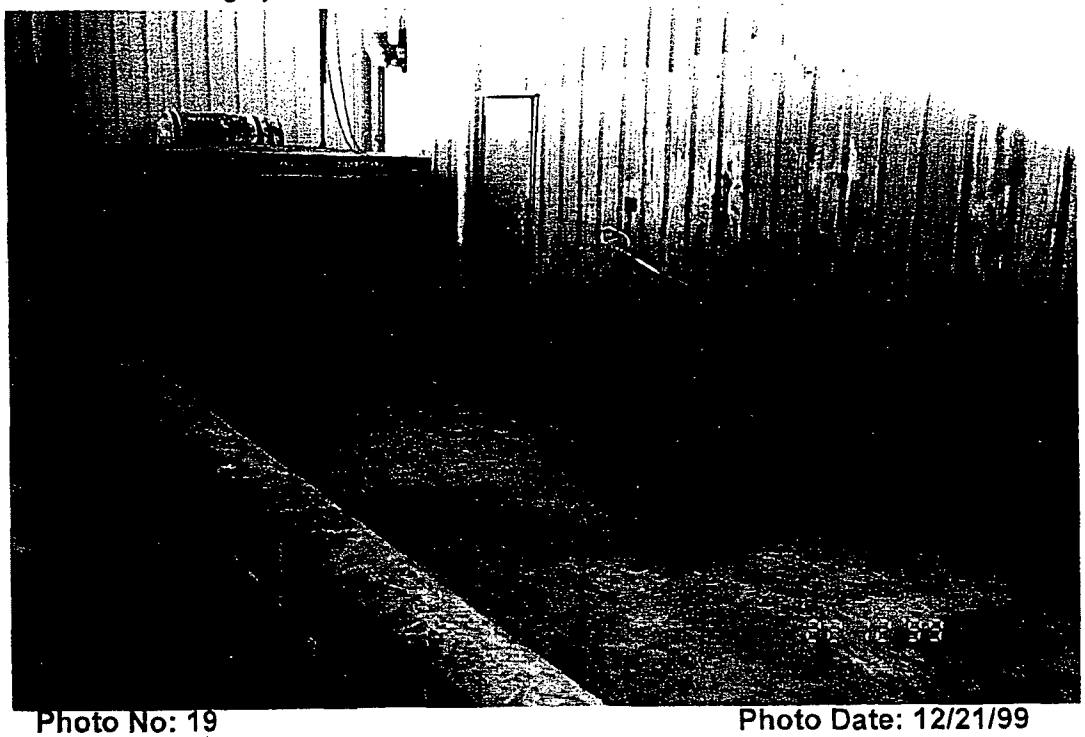


Photo No: 19 **Photo Date: 12/21/99**

Stained wash area adjacent to Crawford Street at St. Johns Truck and Equipment. Across Crawford Street from Columbia Forge.

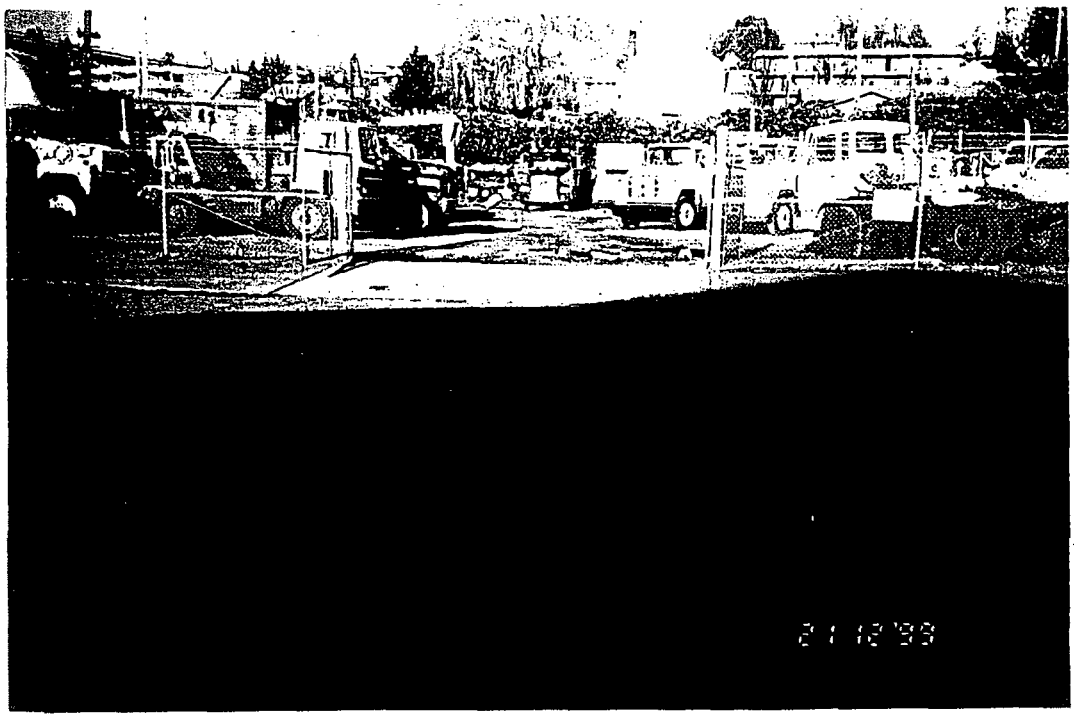


Photo No. 20 **Photo Date: 12/21/99**

Looking north at St. Johns Truck and Equipment truck storage yard. Storm water runs from this area, across Crawford Street, and on to and across the Lampros and TLS Steel areas.

Photo No: 21 **Photo Date: 12/21/99**

Looking south down North Richmond Street. Storm water flows down this street to UPRR rail spur area and to the Lampros Steel south storage yard.

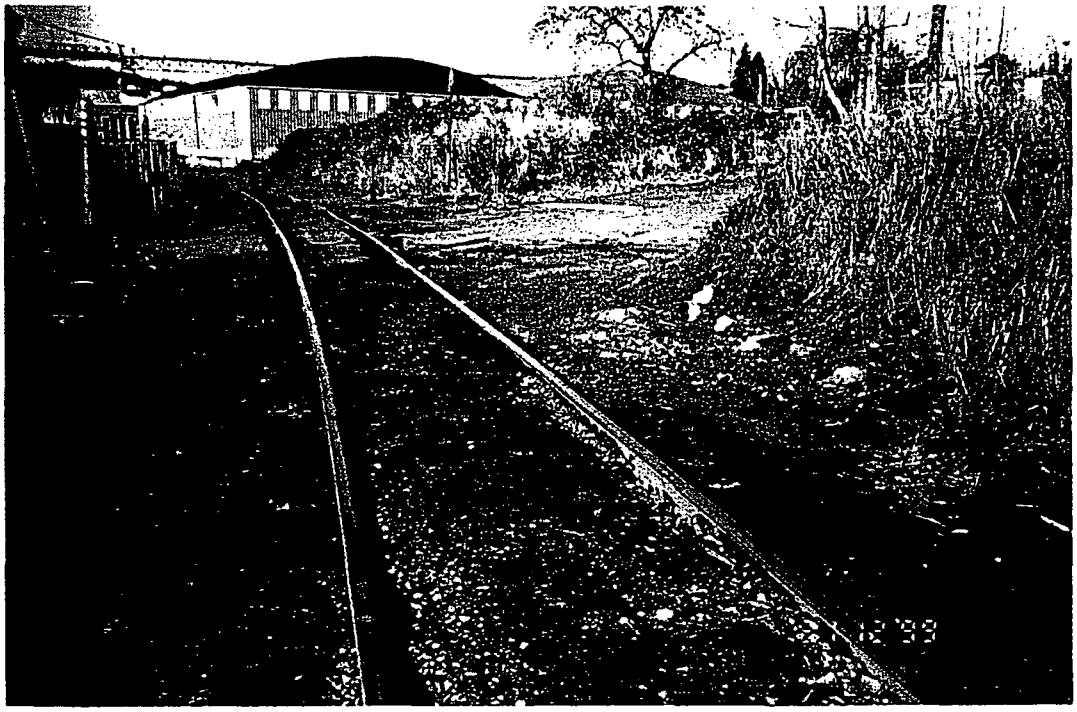


Photo No. 22 **Photo Date: 12/21/99**

Looking west from east of site along UPRR rail spur. Note fresh oil stain in rail alignment east of Crawford Street. Stain drips continue onto the Crawford Street site.

Photo No: 23 **Photo Date: 12/9/99**

Looking northeast from City of Portland property west of Crawford Street site. Note asphalt and concrete debris pile on City property.

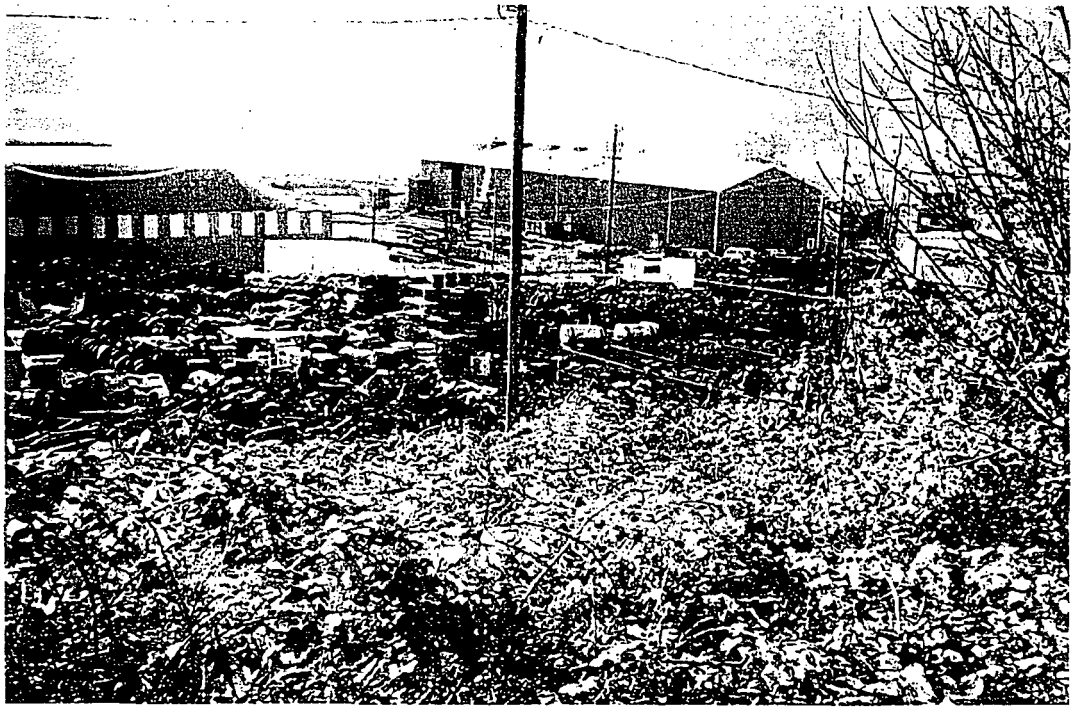


Photo No. 24 **Photo Date: 12/21/99**

Looking south from hill above site. St. Johns Truck and Equipment debris yard north (up gradient) of Crawford Street site.

Photo No: 25 **Photo Date: 12/21/99**

Looking north from south end of Columbia Forge/Lampros Steel yard at UPRR rail spur. St. Johns Truck and Equipment debris yard in distance. Lampros Steel beam cutting building on right.

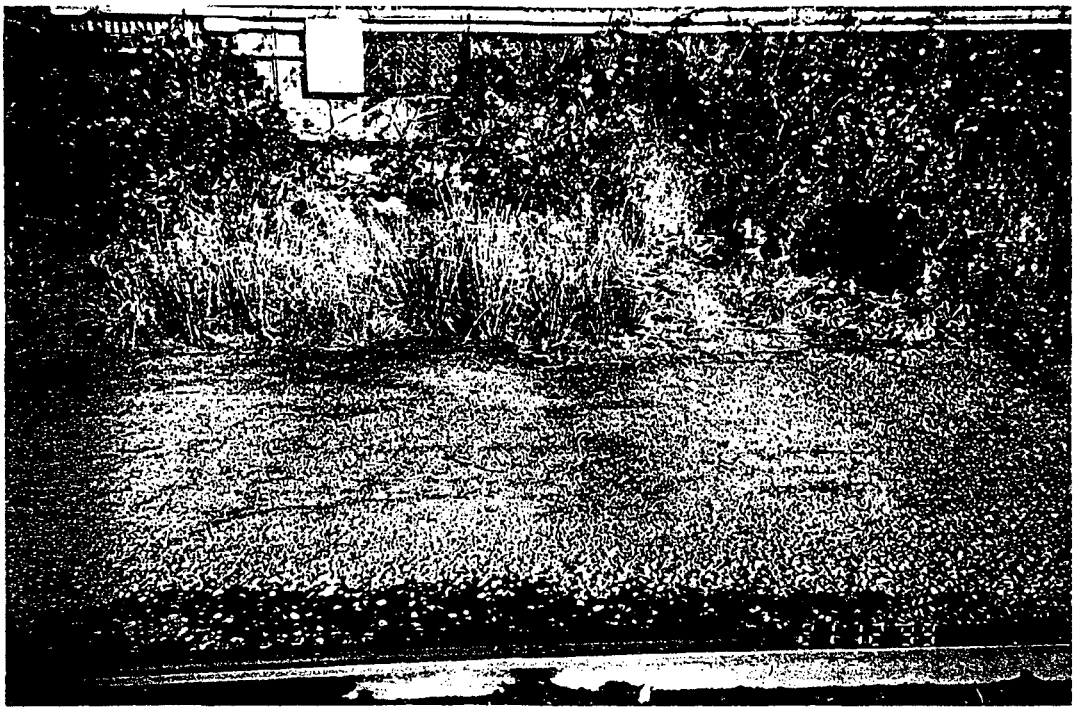


Photo No. 14 **Photo Date: 12/21/99**

Looking north at drain line outlet from west end of Columbia Forge yard.

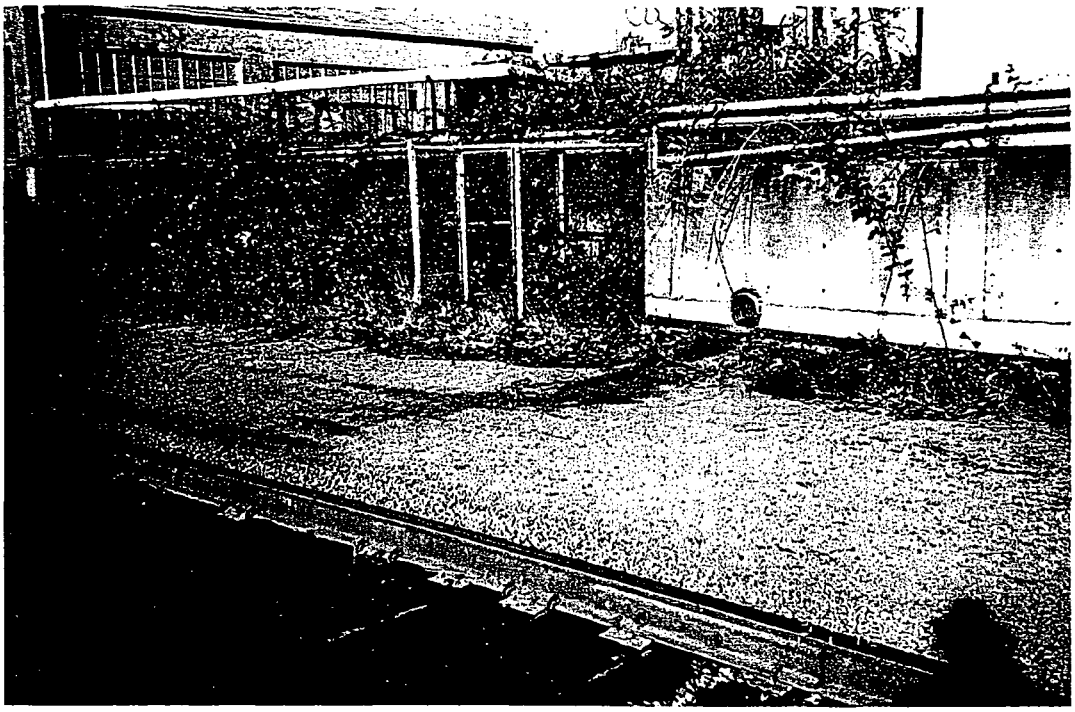


Photo No: 15 **Photo Date: 12/21/99**

Looking north at drain line outlet from east end of Columbia Forge yard.

Photo No. 13 **Photo Date: 12/9/99**

Inside Lampros Steel building at west end of site.

Photo No. 9 **Photo Date: 12/9/99**

Southwest area of Columbia Forge Building 1. Looking south.

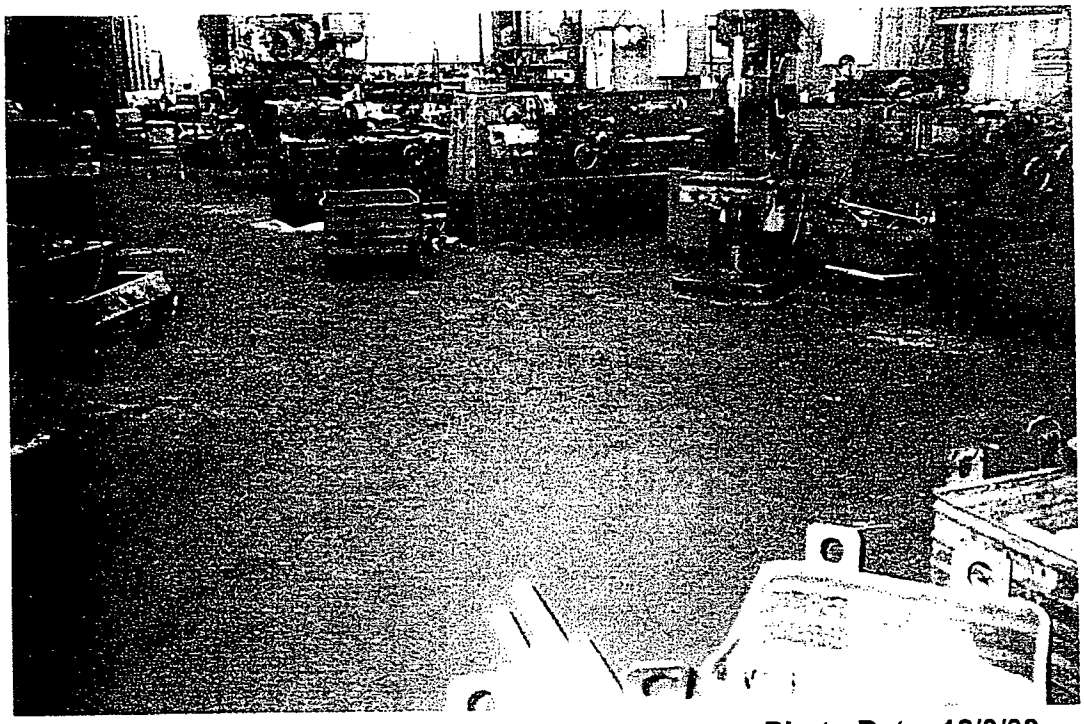


Photo No: 10 **Photo Date: 12/9/99**

Machine Shop in north portion of Columbia Forge Building 1.

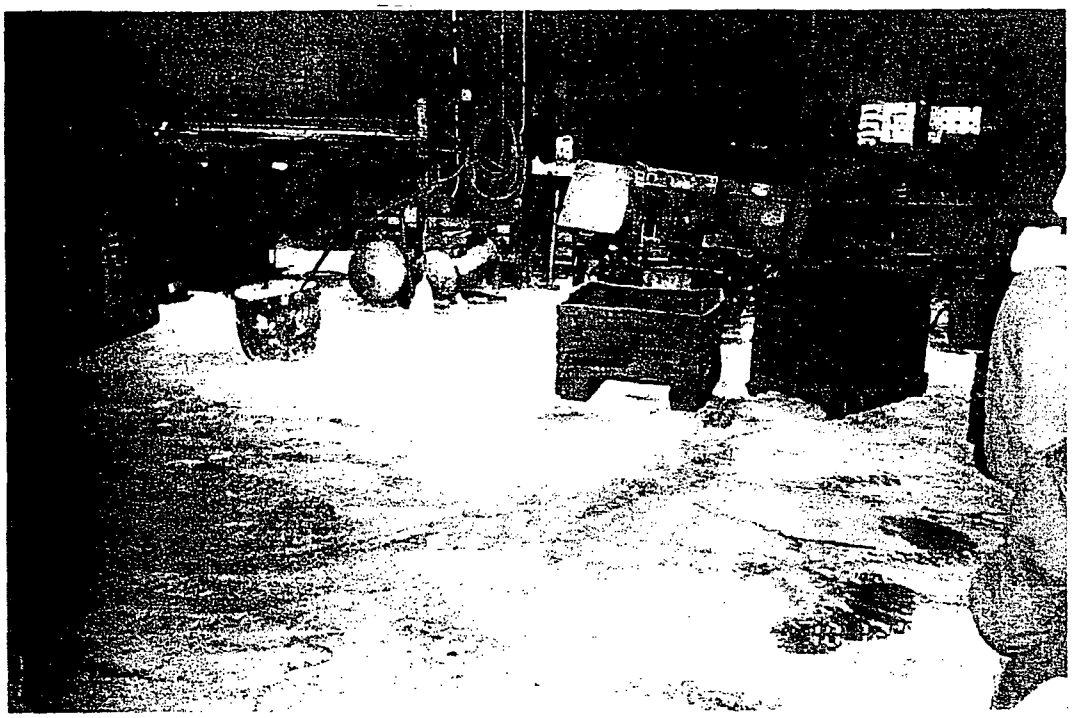


Photo No. 11 **Photo Date: 12/9/99**

Inside Lampros Steel

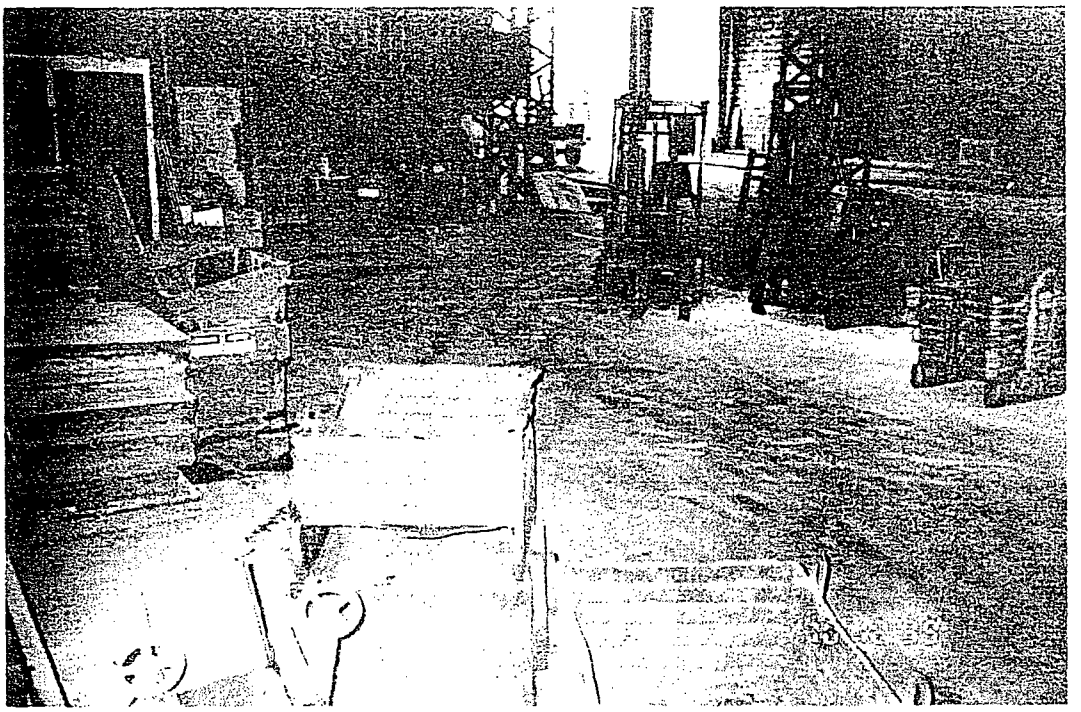


Photo No: 12 **Photo Date: 12/9/99**

Inside Lampros Steel building at west end of site.

APPENDIX B

ANALYTICAL LABORATORY REPORT FOR UNDERGROUND STORAGE TANK REMOVAL SOIL SAMPLES

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

March 19, 1987
Log #A870316-B1-2
PO#: 2842

Columbia Forge & Machine
8424 N. Crawford St.
Portland, Oregon 97203

Attention: John Shore

Sample ID: #1 - Skookum, 3/13/87
#2 - Yard, 3/13/87

Samples Received: March 13, 1987

Samples Collected by: Crosby & Overton

ANALYSIS	SAMPLE #1	SAMPLE #2
Gasoline*	< 1.0	16**
Diesel*	< 1.0	< 1.0
Lead	---	30.0

Results in mg/kg

* Analysis by extraction capillary GC/FID.

** Appears to contain some other high boiling oil and possibly some kerosene.

The less than "<" symbol means none detected at or above the indicated value and represents the detection limit for the method.

Approved by,

Susan M. Brillante

Susan M. Brillante,
Laboratory Director

Sincerely,

Susan M. Coffey

Susan M. Coffey,
President

Soil analy
yard c

SMC/gs

This report is for the sole and exclusive use of the above client. (no
Samples are retained a maximum of 15 days from the date of this letter.

B 11587

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

March 24, 1987
Log #A870316-B1-2

Columbia Forge & Machine
8424 N. Crawford St.
Portland, Oregon 97203

ATTENTION: John Shore

SUBJECT: EP TOXICITY ANALYSIS

METHOD: Federal Register, Vol. 45 No. 98, Monday, May 19, 1980, Rules and Regulations, Appendix II, Page 33127.

FIELD DATA: Sample ID: #2 - Yard
Collected by: Sample collected and delivered by client.

Sample Received: March 16, 1987

ANALYSIS	RESULTS	LIMIT
Lead	< 0.100	5.0

The less than "<" symbol means none detected at or above the indicated value and represents the detection limit for the method.

Results are reported in milligrams per liter (mg/L)

Sincerely,

Susan M. Coffey

Susan M. Coffey,
President

SMC/gs

ordered rush for YC
2nd soil ok
ile only E
done.

This report is for the sole and exclusive use of the above client. Samples are retained a maximum of 15 days from the date of this letter.

B 11588

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

March 24, 1987
Log #A870319-K
PO#: 2864

Columbia Forge & Machine
8424 N. Crawford St.
Portland, Oregon 97203

Attention: John Shore

Analysis Requested: Total Hydrocarbons

Sample ID: #3 Weld Shop

Sample Date: March 19, 1987

Sample Received: March 19, 1987

ANALYSIS	RESULTS
Gasoline	< 4 mg/kg
Diesel	< 4 mg/kg

Analysis by capillary GC/FID

The less than "<" symbol means none detected at or above the indicated value and represents the detection limit for the method.

Approved,

Susan M. Brillante

Susan M. Brillante,
Laboratory Director

Sincerely,

Susan M. Coffey

Susan M. Coffey,
President

SMC/gs

soil analy
weld st
(no i

This report is for the sole and exclusive use of the above client. Samples are retained a maximum of 15 days from the date of this letter.

B 11592

SOIL EXCAVATION AND REMEDIATION REPORT

7.6 ACRE PARCEL

PORTLAND, OREGON

PREPARED FOR:
BUREAU OF ENVIRONMENTAL SERVICES

21-07197

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FEBRUARY, 1994

RZA AGRA, Inc.
Engineering & Environmental Services

AGRA
Earth & Environmental Group

RZA AGRA, Inc.

(Formerly: Rittenhouse-Zeman & Associates, Inc.)
Engineering & Environmental Services

7477 SW Tech Center Drive
Portland, Oregon 97223-8024
(503) 639-3400
FAX (503) 620-7892

February 17, 1994

21-07197

City of Portland
Bureau of Environmental Services
1120 S.W. Fifth Avenue, Room 400
Portland, OR 97204

Attn: Randy Miller

**SUBJECT: SOIL REMOVAL AND REMEDIATION EXCAVATION REPORT
WATER POLLUTION CONTROL LABORATORY
PORTLAND, OREGON**

Dear Mr. Miller:

RZA AGRA, Inc. (RZA) is pleased to submit this soil removal and remediation excavation report for the above referenced site. This report has been prepared to document the results of work conducted on the site from October 25, 1993 through January 1994.

Approximately 150 cubic yards of PCB contaminated soil was excavated from the two PCB release areas and is currently stored on site, pending disposal. An additional 350 linear feet of contaminated electrical conduit piping is also stored on site, pending disposal. A waste profile was submitted to Chemical Waste Management and has been approved for the disposal of both contaminated materials.

RZA would be pleased to assist you with the disposal.

If you have any questions regarding this report or if you require any additional information, please do not hesitate to contact the undersigned at (503) 639-3400.

Respectfully submitted,

RZA AGRA, Inc.

Denny Macomber, Hazardous Waste Specialist

Gerard Koschal, R.G., Senior Geologist

AGRA
Earth & Environmental Group

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Appendix D Chemical Analysis

1.0 INTRODUCTION

RZA AGRA, Inc. (RZA) was contracted by the Bureau of Environmental Services (BES) to identify, characterize, and remediate by excavation and removal a release of an unknown petroleum product later identified as PCB-containing oil at the proposed Water Pollution Control Laboratory, a 7.6 acre parcel owned by the City of Portland, located along the northeast bank of the Willamette River, south of Pittsburg Avenue and west of Burlington Avenue, in the St John's area of Portland, Oregon.

RZA's objectives were to: 1) identify the unknown substance; 2) investigate the vertical and lateral extent of the release; 3) Characterize the source of the release; 4) excavate any contaminated materials; and 5) arrange for the storage and disposal of all contaminated soils and debris.

The scope of this project included:

1) Amend the Health & Safety Plan to include information on PCBs,
2) Develop a Field Operation Plan
3) Research potential sources of the PCB-containing oil
4) Locate the release and characterize the impacted area
5) Pre-closure sampling
6) Excavate contaminated soils and debris and arrange for storage
7) Closure sampling
8) Backfill excavations
9) Prepare for disposal of contaminated materials

This report has been prepared for the exclusive use of the Bureau of Environmental Services, City of Portland and its agents, for the specific application to this project in accordance with generally accepted environmental engineering practices. No other warranty expressed or implied is made.

2.0 SITE DESCRIPTION AND BACKGROUND

The subject site is a rectangular shaped, partially vegetated, undeveloped lot located along the northeast bank of the Willamette River, south of Pittsburg Avenue and west of Burlington Avenue, in St John's, Oregon. The site is bounded by the Willamette River to the west, Cathedral Park to the north, Union Pacific Railroad tracks to the east, and Lampros Steel to the south. Property usage in the area is commercial and residential (see Plate 1).

The site is the former location of the Portland Lumber Mills which was demolished during the 1970's and comprised several mill buildings, including a boiler in the southwestern part of the site near the Willamette River, and a dock along the river bank. The boiler reportedly burned sawdust until the middle 1960s, when it was switched to natural gas. Dry kilns on-site were heated with steam generated rom the boiler, and later with natural gas.

Portland Development Commission reportedly bought the site from Brand S Corporation in the late 1970s. The site was vacant until 1988, when Lampros Steel rented the property from PDC to store new steel on it. During the intervening years, access to the site was uncontrolled and unknown persons dumped fill in an area approximately 100 to 300 feet in the southern part of the site and along the northwestern portion of the site as well. Lampros Steel apparently closed off access to the site using concrete slabs sometime in the late 1980s..

Currently the site consists of a 7.6 acre vacant parcel, being considered for redevelopment by the Bureau of Environmental Services in Portland, Oregon.

3.0 HISTORY OF RELEASE

On October 13, 1993, RZA was on site conducting a subsurface environmental investigation on the northern portion of the property. During a routine geotechnical subsurface investigation, another contractor of BES notified RZA personnel that a release had occurred in the southern portion of the site. While drilling the contractor intersected an object which broke releasing a liquid, an unknown substance. To secure the hole the contractor reportedly pumped drilling fluid containing the unknown substance into a 55 gallon drum and subsequently abandoned the boring, sealing the hole with bentonite.

RZA sampled the contents of the drum, noting the substance had a distinct moth-ball-like odor, and estimated that the contents of the drum contained less than one-half gallon of petroleum based product and ten gallons of drilling fluid (H_2O). The sample was submitted to OAL Laboratory located in Gresham, Oregon. The analytical results later indicated that the liquid material contained 1,000 ppm of PCBs (Aroclor 1260).

RZA had arranged for a security fence to be erected around the site. RZA notified the Bureau of Environmental Services that a release had occurred. RZA indicated that the source and the extent of the release was unknown and informed BES that the analytical results identified the unknown substance as PCBs containing oil.

Following the notification, RZA met with BES and it was decided that BES would notify the Oregon Department of Environmental Quality (ODEQ) about the release. Subsequently, RZA was asked to perform a subsurface investigation in accordance with TSCA regulations. This investigation included amending the current Health & Safety Plan and developing and Operation and Sampling Plan for the additional scope of work.

4.0 REGULATIONS

PCB releases fall under Toxic Substance Control Act (TSCA) which has established specific requirements for reporting PCB spills. According to Toxic Substance Control Act (TSCA) regulations (40 CFR 761.30 (a) (1) (iii) and 40 CFR 761.60d), PCB spills are viewed as improper disposal of PCBs. Although specific PCB cleanup requirements are not established in the TSCA regulations, each regional director is given authority to enforce adequate cleanup of PCB spills to protect human health and the environment. The reporting requirements apply mostly to users and manufacturers of PCB transformers or PCB containing hydralic systems; however, they also apply to sites where spills or releases of PCBs containing material in concentrations greater than 50 ppm have occurred.

The reporting requirements for PCB spill cleanup listed in 40 CFR 761.125 include:

- Spill Notification
- Proper storage and disposal of PCB contaminated debris
- Determination of spill boundaries in the absence of visible traces
- Post-cleanup Sampling and Documentation

4.1 Spill Notification

PCB spills involving 10 pounds or more by weight of PCBs must currently be reported to the National Response Center (1-800-424-8802). Where a spill directly contaminates surface water, sewers, or drinking water supplies, the responsible party shall notify EPA regional office and obtain guidance for appropriate cleanup measures in the shortest possible time after discovery, but in no case later than 24 hours after discovery. In this case, BES notified both the Oregon Department of Environmental Equality (ODEQ) and EPA as required by TSCA.

4.2 Storage and Disposal of Contaminated Debris

PCB storage and disposal regulations listed in 40 CFR 761.60 through 761.65 require responsible parties to dispose of debris containing PCBs in concentrations greater that 50 ppm at an EPA permitted chemical waste landfill.

4.3 Determination of Spill Boundaries/Post-cleanup Sampling

Post-cleanup sampling is outline in section 40 CFR 761.130 and is required to verify the level of cleanup under 761.125 has been reached. According to the regulations: "The responsible party may use any statistically valid, reproducible, sampling scheme (either random samples or grid samples) provided that the sampling area is the greater of (1) an area equal to the area cleaned plus an additional one 1- foot boundary, or (2) an area 20 percent larger than the original area of contamination; (3) The sampling scheme must ensure 95 % confidence against false positives; (4) The number of samples must be sufficient to ensure that areas of contamination of a radius of 2 feet or more within the sampling area will be detected, except that the minimum number of samples is 3 and the maximum number of samples is 40.

4.4 Health and Safety Plan

The Health and Safety Plan for this site was amended to include information on PCB containing material. The H & S plan is included in Appendix B.

4.5 Exclusion Zones/Equipment Decontamination

Included in the Health and Safety Plan specific guidelines outline the proper procedure in accordance with OSHA regulations 1910.120, which spell out protocol for hazardous waste operations including specific measures for setting up decontamination stations and exclusion zones and for proper equipment decontamination. These measures are employed in order to reduce the possibility of spreading contamination from the "hot zone" to non-sensitive areas of the site.

RZA was responsible for delineating three exclusion zones using caution tape and security fencing. No personnel was allowed access to the either of the three zones unless they were properly equipped with the correct personal protective equipment (PPE) and had received the necessary OSHA training.

Every piece of equipment that enters the exclusion zone was decontaminated after use. A decontamination station was set up employing secondary containment in order to collect all wash water. A hot pressure washer and detergent was used to decon the trackhoe bucket after each use. Personnel were required to triple rinse each piece of equipment, including PPE prior to exiting the decontamination zone.

All water was collected and stored on-site in a 500 gallon Baker tank.

4.6 Operation Plan

RZA's first task was to ensure site safety by establishing adequate exclusions zones. Prior to beginning each task, RZA employees and its subcontractors were wearing the appropriate PPE as outline in the amended H & S Plan.

RZA's second task was to identify, characterize and contain the source of the release. This was accomplished by excavation an initial test pit in the vicinity of the release area. The source was source identified and additional contamination was present. Pre-closure samples was taken in order to determine the extent of contamination present. A combustible gas indicator was used to screen soils for possible elevated levels of petroleum bases products. The operation plan covered the possibility that drums or transformers might be discovered. RZA personnel were prepared to take the necessary precautions to avoid explosions or uncontrolled releases. A staging area was secured for the storage of drums.

The plan covered the possibility that electrical conduit piping was discovered. The pipe was visually inspected for leaks or damage which could have occurred during the previous subsurface exploration. RZA was prepared with the necessary absorbent material to further reduce the spreading of contamination if a leak was detected. RZA was also prepared to remove damaged pipe.

Follow this, RZA excavated the contaminated material and stored it in a lined containment area. Closure samples were taken to ensure that soils did not exceed the TSCA PCB cleanup standard of 1 ppm. RZA then arranged for storage and the proper disposal of the contaminated material.

4.7 Closure

According to TSCA regulations, RZA employed a grid system to delineate the boundaries of contamination. RZA will use a grid system for closure sampling if applicable. Following the excavation of any contaminated soils, closure samples were collected upgradient, along sidewalls, beneath the release area, and down gradient. Composite samples were collected from specific grid points to ensure the largest possible area is screened for residual contamination. (TSCA recommends composite samples for this very reason.) Following the removing of piping, composite samples were collected along the trenched area to ensure leakage had not occurred somewhere along the piping. Sampling was conducted in a manner consistent with general environmental practices outlined in the Sampling Plan included in Appendix C.

5.0 IDENTIFICATION AND CHARACTERIZATION OF RELEASE

On October 25, 1993, RZA set up the exclusion zones, the security fencing, and the decon area.

On October 26, C. Wark Trucking, Inc in Tualatin, Oregon, excavated soils to a depth of approximately ten feet in the vicinity of the former boring location and uncovered a damaged 3" electrical conduit pipe, suspected of containing PCB fluids (see Photo 1, Appendix A). RZA estimated that approximately one gallon of fluid was released into the soil in the immediate vicinity of the damaged pipe. An absorbent material was poured onto those areas showing signs of visible contamination.

Additional test pits were excavated to trace the direction of the pipe. Difficulty in tracing the conduit by test pitting occurred due to numerous pipes underground in the foundation.

5.1 Utility Locate Service

A utility locate service was contacted to locate the direction and ending points of the 3" electrical conduit piping. To accurately follow along the piping, a trenchbox was lowered into a clean excavation and a representative of RZA attached a lead to the conduit piping (see photo 2). The piping appeared to run northeast to southwest across the property with a major deviation to the east approximately thirty-five feet northeast of the release area. The piping appeared to end at the adjacent property line of Lampros Steel. The pipe extended to the southwest of the release area and then dog-legged to the south. The piping appeared to terminate in an area of several foundations.

5.2 Test pits

Three additional test pits were dug in the vicinity of the original release area and along the locators marking. The south end of the piping was identified, approximately 150 feet south of the original release area and fifty feet from the property boundary. The east end of the piping could not be located based on the piping projection.

5.3 Interviews

An employee at Lampros steel was asked if he knew of an old electrical conduit line running onto their property. He had no knowledge about such a pipe and suggested we talk to a man "who lives just up the street" who had actually worked on-site for Portland Lumber Mills prior to the operation shutting down. A representative of RZA was able to locate the wife of the former mill worker but was informed that the husband had passed on.

5.4 Aerial Photographs

A 1940s aerial photograph located on the wall at the US Bank Building in St Johns and several historical photographs viewed at the Oregon Historical Society indicated several pole-mounted electrical transformers located on the adjacent property and mounted along Pittsburg Street in various locations. Photographs viewed at the St John's Historical Society indicated that the Portland Lumber Mill site was built on a dock-like platform that covered most of the site. RZA believed that the piping must run in an northeast southwest direction and not bend to the east as the utility locate had indicated.

The southern end of the pipe was located in an area that was identified as a transformer pad on the Sandborn Fire Maps.

5.5 PGE

PGE was contacted in an attempt to learn more about the electrical conduit piping and the standard protocol for disconnecting PCB containing transformer, practiced in the late 1970s.

PGE had no record that transformers had been removed from site. They, however, did indicate that the insulation may have used PCB containing material. If during the geotechnical subsurface exploration, the piping was exposed to heat or if previous site usage exposed the piping to heat, there was the possibility that the PCB liquid in the pipe could be due to the insulation liquefying.

5.6 Preliminary Sampling

A trenchbox was installed in the initial release area and a thorough inspection of the pipe revealed that the pipe had been hit by the drill rig and the piped had been sheared. No additional liquids were noted in the pipe. As a precautionary measure, waterproofing tape was applied around the piping to seal off the damaged area. Samples were then taken in the immediate vicinity of the release area to determine if contamination was present in the soils. The results of the preliminary sampling are listed below.

Sample ID#	Location	Concentrations (Aroclor 1260)
P-1	Beneath Puncture	20,000 ppm
P-2	1 ft North, Beneath Piping	1,500 ppm
P-3	1 ft South, Beneath Piping	220 ppm
P-4	2 ft East, Beneath Piping	53 ppm
P-5	2 ft West, Beneath Piping	37,000 ppm

The highest level was recorded at P-5, downgradient of the immediate release area.

Following the removal of approximately 75 cubic yards of soil at the initial release area, preliminary closure samples were taken. Analytical results indicated that three of the five closure samples exceeded EPA's cleanup standard of 1 ppm.

Sample ID#	Location	Concentrations (PPM)
CL-1	NE, Sidewall/5 ft	3.9 ppm
CL-2	SE, Sidewall/5 ft	150 ppm
CL-3	SW, Sidewall/5 ft	0.13 ppm
CL-4	NW, Sidewall/5 ft	0.35 ppm
CL-5	Center Bottom/5 ft	1.6 ppm

** CL-1, CL-3, and CL-5 exceeded EPA's cleanup Standard of 1 ppm.

5.7 Additional Soil Removal/Additional Preliminary Closure Samples

Approximately 15 cubic yards of additional soil was removed from those three areas mentioned above which exceeded the cleanup level. A second set of closure samples were later collected from areas CL- 1, CL-2, and CL-5. All three samples results were below the 1 ppm TSCA cleanup standard (see Plate 2).

5.8 Demolisher

RZA attempted to trace the pipe from the release area to its southwest. Extensive foundations were encountered. A concrete demolisher was brought in to break re-bar concrete foundations that crossed the electrical conduit.

5.9 Electrical Conduit

RZA continued to excavate along the conduit piping at a depth of approximately 10 feet toward the Willamette River to ensure that the pipe actually ended in the vicinity of what was once a concrete transformer pad. Visual evidence confirmed that the pipe southeast of the release zone had no releases Preliminary samples were collected from the removed soil to validate these observations. PCBs were not detected in these soil samples.

After the southern end of the pipe was located and no releases were identified excavation continued to the northeast of the release site. The piping was traced to the northeast property line. The piping appeared to continue under the railroad tracks and toward a telephone pole.

To remove the piping, a trench approximately three feet in width and ten feet in depth was excavated along the entire length of the pipe (see Photo 3). Three key areas were sloped in accordance with OSHA regulations in order to allow safe entry into the excavation and in order to allow the pipe to be cut into manageable sections (see Photos 4 and 7). Before cutting the conduit and as a precautionary measure to guard against additional PCB fluid leaking into the exposed trench, a secondary containment area was built below the pipe to collect any free-flowing fluids.

A pipe cutter wrench was used to cut the pipe. Inside the piping was a lead liner with heavy-gauge copper electrical wire wrapped in a fiber, wax-like insulation. No free liquid was identified in the pipe.

A sample of the insulation was analyzed for PCB content. The analysis indicated the insulation contained 17,000 ppm of PCB containing material.

5.10 Old Release

During the excavation of the pipe trench northeast of the release area, evidence of a second, older release was discovered at approximately a depth of 10 feet. A joint in the piping showed signs of historic damage (see Photo 5).

Based on our observations it appears a small release of PCBs oils occurred, probably during the site's demolition. Only slight traces of visibly contaminated soil was present around the piping. The soil beneath the piping revealed only minor surface staining.

A soil sample MP-6 was collected from beneath the release area and was sent to Oregon Analytical Laboratory for analysis. The analytical results indicated a PCB concentration of 6,200 ppm in the immediate vicinity of the damaged conduit, exceeding the TSCA cleanup standard (see Plate 2).

6.0 CLEANUP

Prior to removing the electrical conduit, approximately 75 cubic yards of soil was removed from the initial release area (see Photo 6). The soil was segregated into two soil piles (e.g. SP-1 and SP-2). Soil pile SP-1 represented the "hot pile" or soil that could have come into contact with PCB fluid during the time of the release. Soil pile SP-2 represented the "clean pile" or soil that most likely did not come into contact with the PCB fluid. Representative samples were then collected from both soil piles and were analyzed for PCB contamination. Analytical results indicated that soil pile SP-1 contained 800 ppm of PCBs, while SP-2 contained 0.13 ppm of PCBs. Soils from SP-2 did not exceed EPA's regulatory cleanup level for residential sites of 1 ppm. Soil pile SP-2, approximately 35 yards was used as backfill material.

The piping was removed from the trench in sections and placed in a bermed area for future disposal. The end of the pipe under the railroad track was sealed to prevent in future leakage.

Approximately 100 cubic yards of soil was removed from area of the old release and was stored inside a lined containment area.

7.0 CLOSURE/SAMPLING PLAN

RZA employed a sampling plan designed to characterize the degree of cleanup throughout the entire sampling areas (e.g. initial release area, old release area, and along the entire trench formerly containing the 3" electrical conduit piping). Our goal was to achieve site closure, by ensuring that adequate cleanup levels had been accomplished and that no areas exceeded the TSCA PCB cleanup level of 1 ppm. The sample plan is included in Appendix C.

Once the 3" electrical conduit piping had been removed and all suspected PCB contaminated soils excavated, final closure samples were systematically collected in the old release area and along the entire trench (see Plate 3). Samples were collected with a hand auger at a depth of approximately ten feet at thirty foot intervals along the trench. Three samples were collected at each site and were blended to perform composite samples. Composite samples were then analyzed for PCBs using EPA methods 3540 and 8080/8081. These samples were identified by the prefix "FCL-X." Closure sample locations are shown on Plate 3.

Five final closure samples exceeded the TSCA cleanup standard of 1 ppm for PCBs. These samples were associated with the release areas. Additional soils were removed from those contaminated areas and the area was re-sampled. These samples were identified by the prefix "FCL-XB." Analytical results indicated that all five samples were below the TSCA PCB cleanup standard of 1 ppm.

Final Sampling results are included in the table below.

FINAL CLOSURE SAMPLES

(Sample Date: December 13, 1993)

Sample ID#	Location/Depth	Concentration (PPM)
FCL-1	N. Sidewall, Center Below Piping Area, S. Sidewall (10 ft)	900 ppm
FCL-2	" "	0.31 ppm
FCL-3	" "	2,500 ppm
FCL-4	" "	9.4 ppm
FCL-5	" "	0.19 ppm
FCL-6	" "	9.8 ppm
FCL-7	" "	2.2 ppm
FCL-8	" "	N.D.
FCL-9	" "	N.D.
FCL-10	" "	N.D.
FCL-11	" "	N.D.
FCL-12	" "	N.D.
FCL-13	" "	N.D.
FCL-1E	East-end of Trench, Center Bottom	N.D.
FCL-13E	West-end of Trench, Center Bottom	N.D.
FCL-1B	N. Sidewall, Center Below Piping Area, S. Sidewall (15 ft)	0.31 ppm
FCL-3B	" "	N.D.
FCL-4B	" "	N.D
FCL-6B	" "	N.D
FCL-7B	" "	N.D.

Note: N.D. - Not Detected

8.0 BACKFILL

All fill material was sampled and analyzed for PCBs, prior to use as backfill. Of the seventeen soil piles sampled, only one soil pile SP-17 exceeded the TSCA PCB cleanup level of 1 ppm. The contaminated material was later identified, segregated from the clean soils, and stored with the contaminated material.

9.0 STORAGE AND DISPOSAL

Five 20 cubic yard drop boxes were delivered to the site during the month of December by Chemical Waste Management. The drop boxes were double-lined and a portion of the contaminated soils were transferred to the drop boxes. Approximately 60 cubic yards of contaminated soil is stored on-site in a fenced, lined, and covered containment area pending disposal.

9.1 Waste Water Disposal

All decontamination water was stored on-site in a 500 gallon Baker tank. The waster was tested for the presence of PCBs. Analytical results indicated that low levels (20 ppb) of PCB contamination was present. RZA arranged for proper disposal. Spencer Environmental Services (Spencer) of Oregon City, Oregon, is permitted to accept this level of waste water. Spencer pumped out the 376 gallons of waste water and transported the water off-site for proper disposal.

9.2 PCB Piping Storage And Disposal

Approximately 350' linear feet of 3" electrical conduit piping is wrapped and contained in 10 mil plastic on-site (see Photo 8). The piping has been included into the waste profile information with Chemical Waste Management and is pending disposal.

10.0 CONCLUSIONS

A release of PCB containing oil was identified at the proposed Water Pollution Control Laboratory in the St John's area of Portland, Oregon. The source of the release was identified as a break in a 3" electrical conduit containing PCBs in insulation.

In addition to the initial release an old release was discovered during soil removal. The estimated total release for both areas was estimated at less than two gallons. The extent of contamination was limited to the immediate vicinity of the releases. Approximately 150 cubic yards of soil were impacted. Groundwater does not appear to have been impacted.

Fifteen closure samples were collected from selected grid locations along the trench at approximately ten feet in depth and at 30 foot intervals. Five of the fifteen samples exceeded the TSCA PCB cleanup level of 1 ppm.

Approximately 15 cubic yards of additional soil was excavated from those five areas and the locations were re-sampled. Analytical results indicated that all five samples fell below the TSCA PCB cleanup level of 1 ppm.

A total of 150 cubic yards of contaminated soil has been excavated from the vicinity of both release areas. Approximately 100 cubic yards of that soil is stored inside double-lined drop boxes. The remaining soil is stored on site in a secure containment area. There is an additional 350 linear feet of 3" electrical conduit that is presently stored on site. Both are pending disposal.

We appreciate the opportunity to assist you on this project. If you have any questions, please feel welcome to contact the undersignes.

RZA AGRA, Inc.

Denny Macomber, Hazardous Waste Specialist

Gerard Koschal, R.G., Senior Geologist

REGISTERED PROFESSIONAL
OREGON
GERARD KOSCHAL
#G 1015
GEOLOGIST

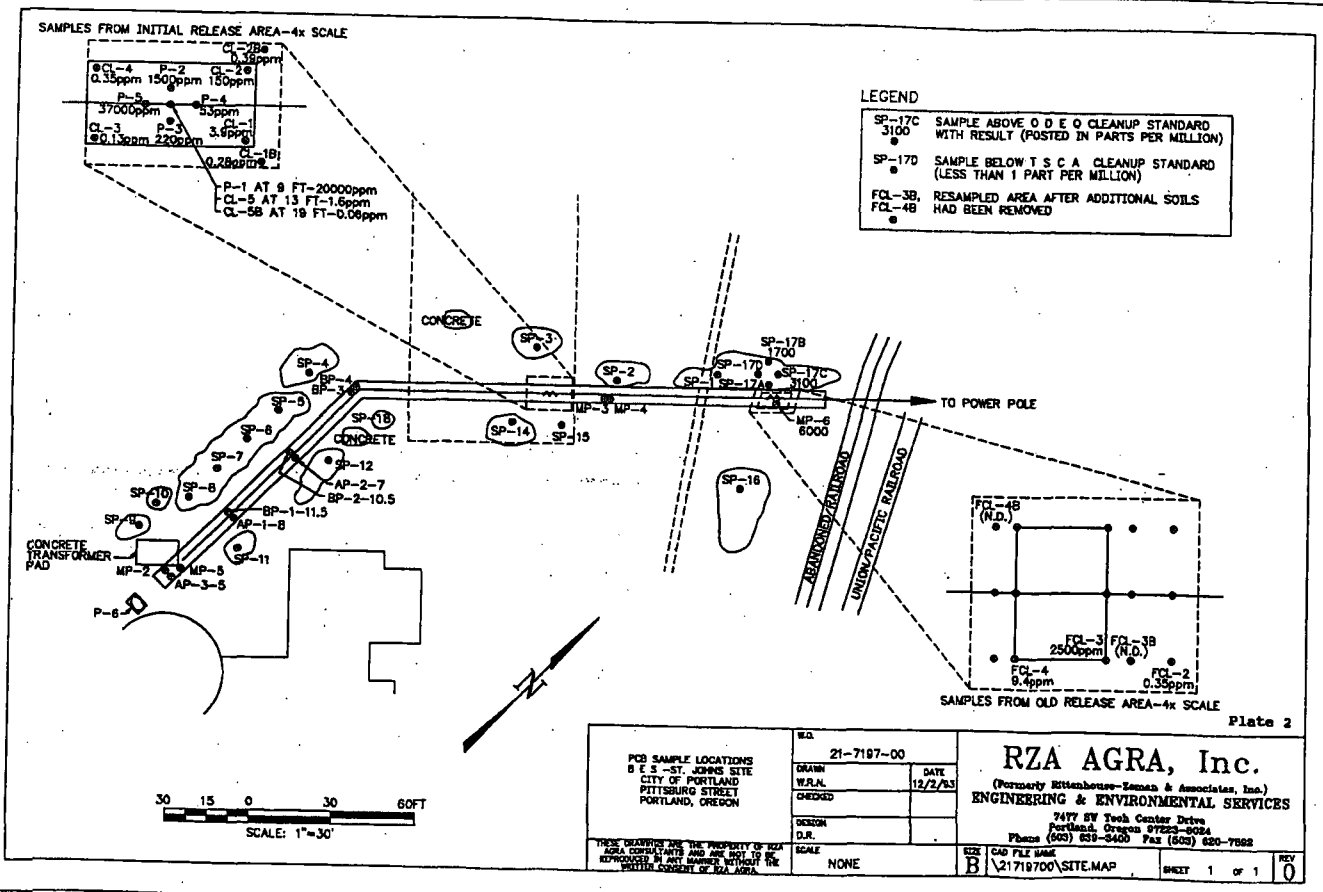

Plate 2

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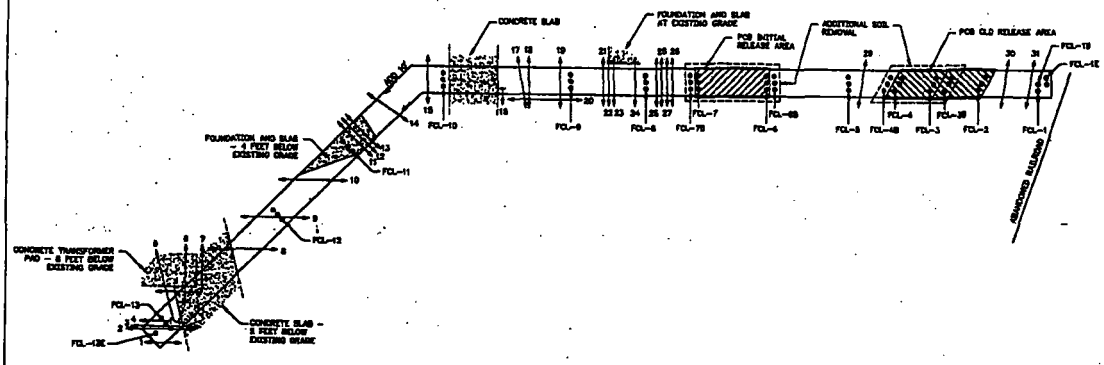

NOTES:

1. A COMPOSITE SAMPLE WAS DERIVED BY BLENDING THREE GRID SAMPLES AT EACH SAMPLE LOCATION.

Plate 3

PCB FINAL TRENCH CLOSURE SAMPLE AND PIPE LOCATIONS B E S - ST. JOHNS SITE CITY OF PORTLAND PITTSBURG STREET PORTLAND, OREGON	W.O.		RZA AGRA, Inc. (Formerly Hillsborough-Sussex & Associates, Inc.) ENGINEERING & ENVIRONMENTAL SERVICES 7477 SW Tech Center Drive Portland, Oregon 97223-8084 Phone (503) 430-3400 Fax (503) 620-7802
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THESE DRAWINGS ARE THE PROPERTY OF RZA AGRA CONSULTANTS AND ARE NOT TO BE REPRODUCED IN ANY MANNER WITHOUT THE WRITTEN CONSENT OF RZA AGRA.

Appendix A

Photographs

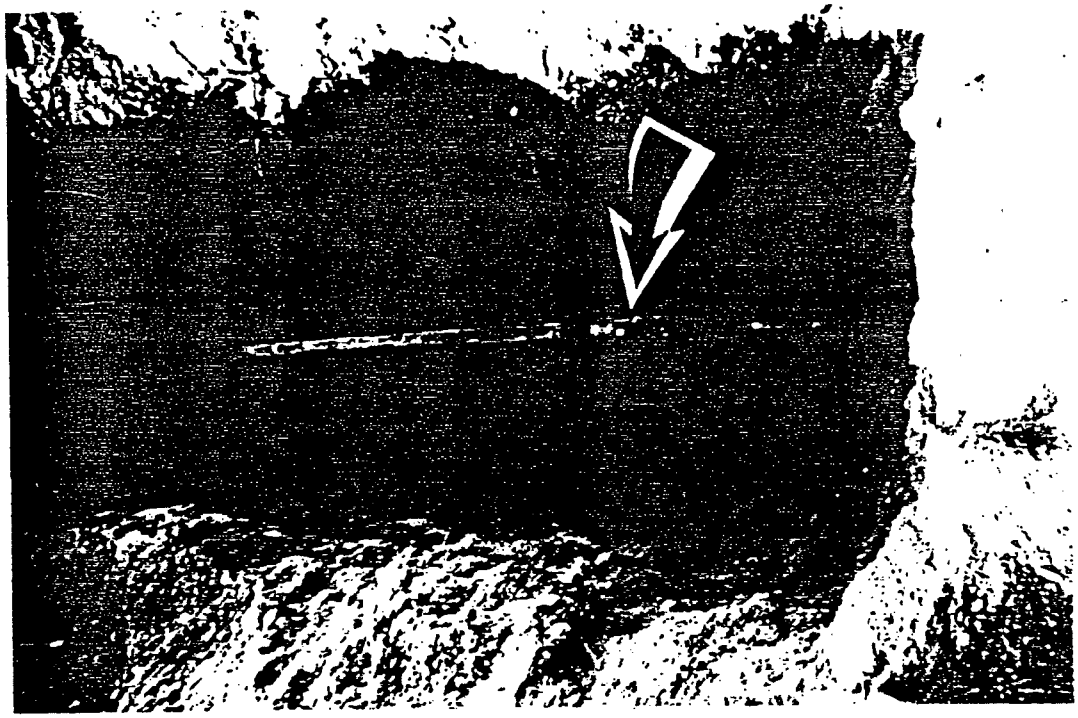


Photo 1 - Initial release area, damaged pipe

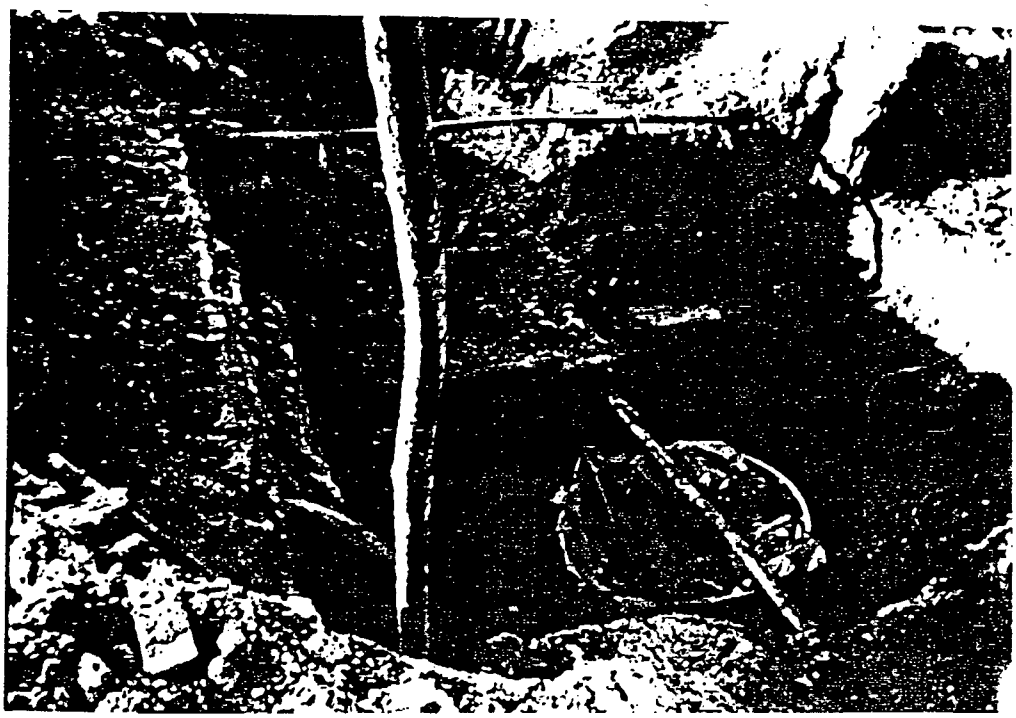
Photo 2 - Attaching a lead to the conduit piping

Photo 3

Piping
&
Concrete
Foundations

Photo 4

Containment
Area



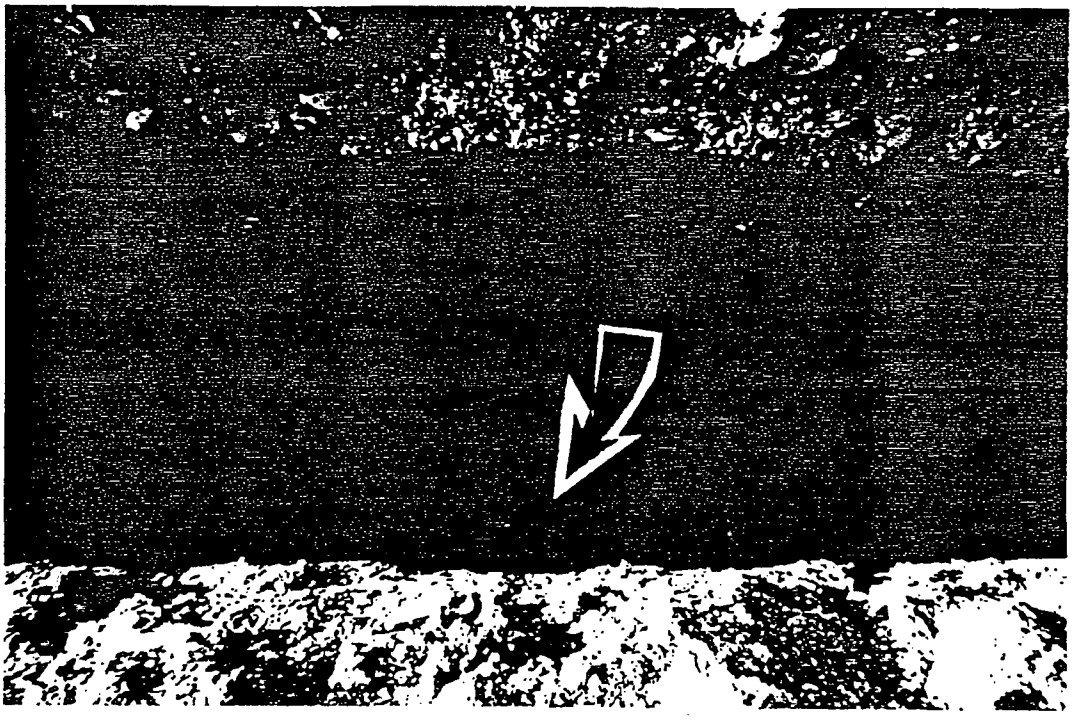


Photo 5 - Old release area, damaged pipe

Photo 6 - Soil piles SP-1 "hot pile" and SP-2 "clean pile"

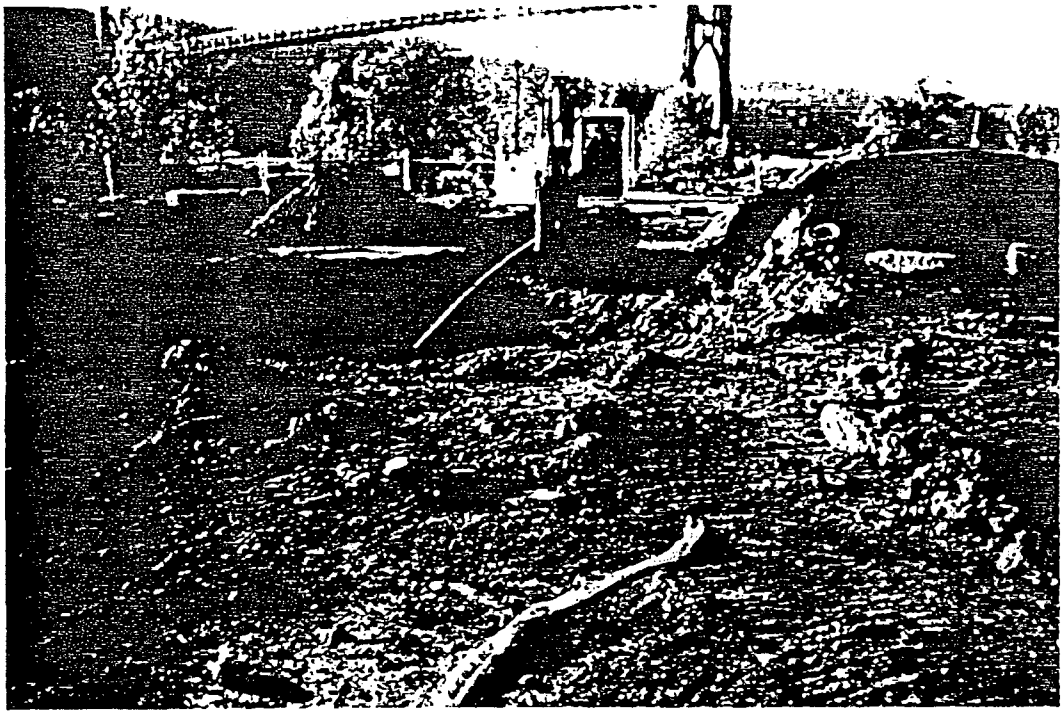


Photo 7 - Removing the conduit

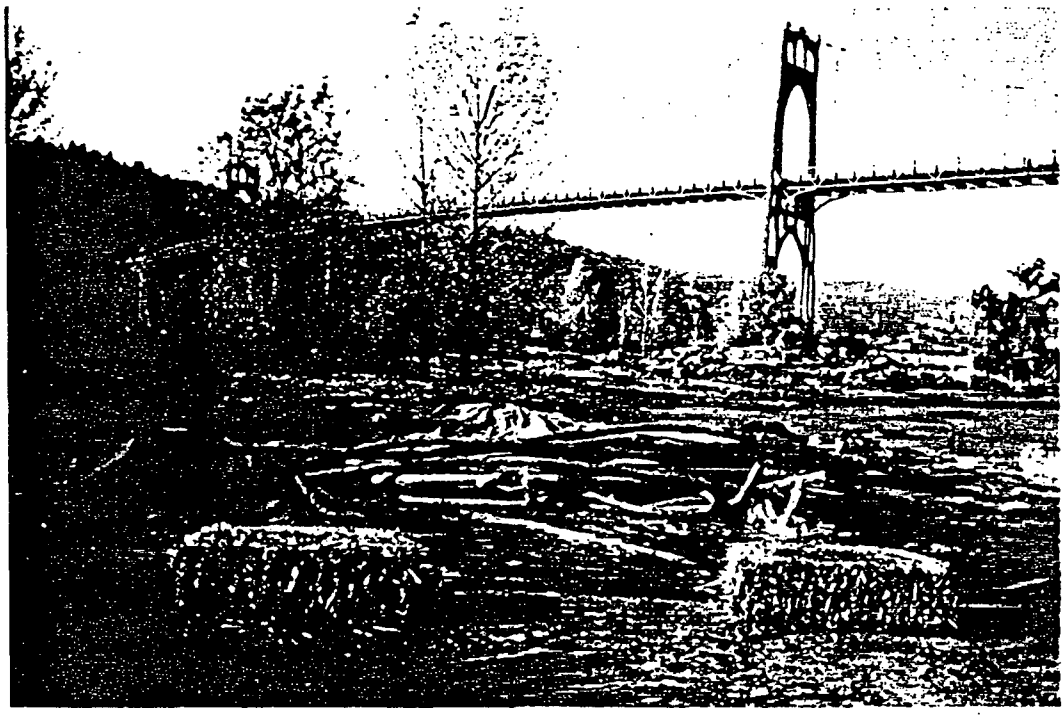


Photo 8 - Removed conduit

Appendix B

Health and Safety Plan

RZA AGRA, Inc

SITE HEALTH AND SAFETY PLAN

REMEDIAL SERVICES

WATER POLLUTION CONTROL LABORATORY

N.E. BANK OF THE WILLAMETTE RIVER NEAR CATHEDRAL PARK

PORTLAND, OREGON

RZA Project #7197-00

A COPY OF THIS SITE HEALTH AND SAFETY PLAN MUST BE KEPT AT THE SITE DURING ALL FIELD ACTIVITIES

Prepared For:

City of Portland

Bureau of Environmental Services

1120 SW Fifth Avenue, RM 400

Portland, Oregon 97204-1972

Prepared By:

RZA AGRA, Inc.

7477 SW Tech Center Drive

Portland, Oregon 97223-8024

EMERGENCY REFERENCE SHEET

Project Name:Water Pollution Control Laboratory
Project Location: Northeast bank of the Willamette River, south of Cathedral Park, Portland, Oregon
Project Number: 21-7197-00

SAFETY PERSONNEL - Portland RZA AGRA, Inc.:

Director, Health & Safety :	John Martin	(Office) (503) 639-3400
Project Manager:	Gerald Koschal	(Home) (503) 538-7011
Site Safety Coordinator:	Paul Ecker	(Office) (503) 639-3400

EMERGENCY NUMBERS:

Nearest Hospital ..... **Kaiser Hospital**

SEE HOSPITAL ROUTE MAP NEXT PAGE

Information: **285-9321**

Emergency Room: **285-9321**

Ambulance: **911**

Fire: **911**

Police: **911**

Client Contact Person (City of Portland) ..... Randy Miller

Work: ..... (503) 823-7187

Oregon OSHA Central (Salem): ..... (503) 378-3272

National Response Center: 1-800-424-8802

EPA Environmental Response Team: ..... (201) 321-6600

Utility Notification Center: ..... (800) 332-2344

Site Safety Coordinator, Project Manager and Director of Health and Safety are to be notified immediately if worker exposure, accidents or site conditions not anticipated in this document are encountered. In case of hazard exposure during and/or prior to a medical situation, the hospital and any emergency response personnel shall be notified that patient's clothing may be contaminated.

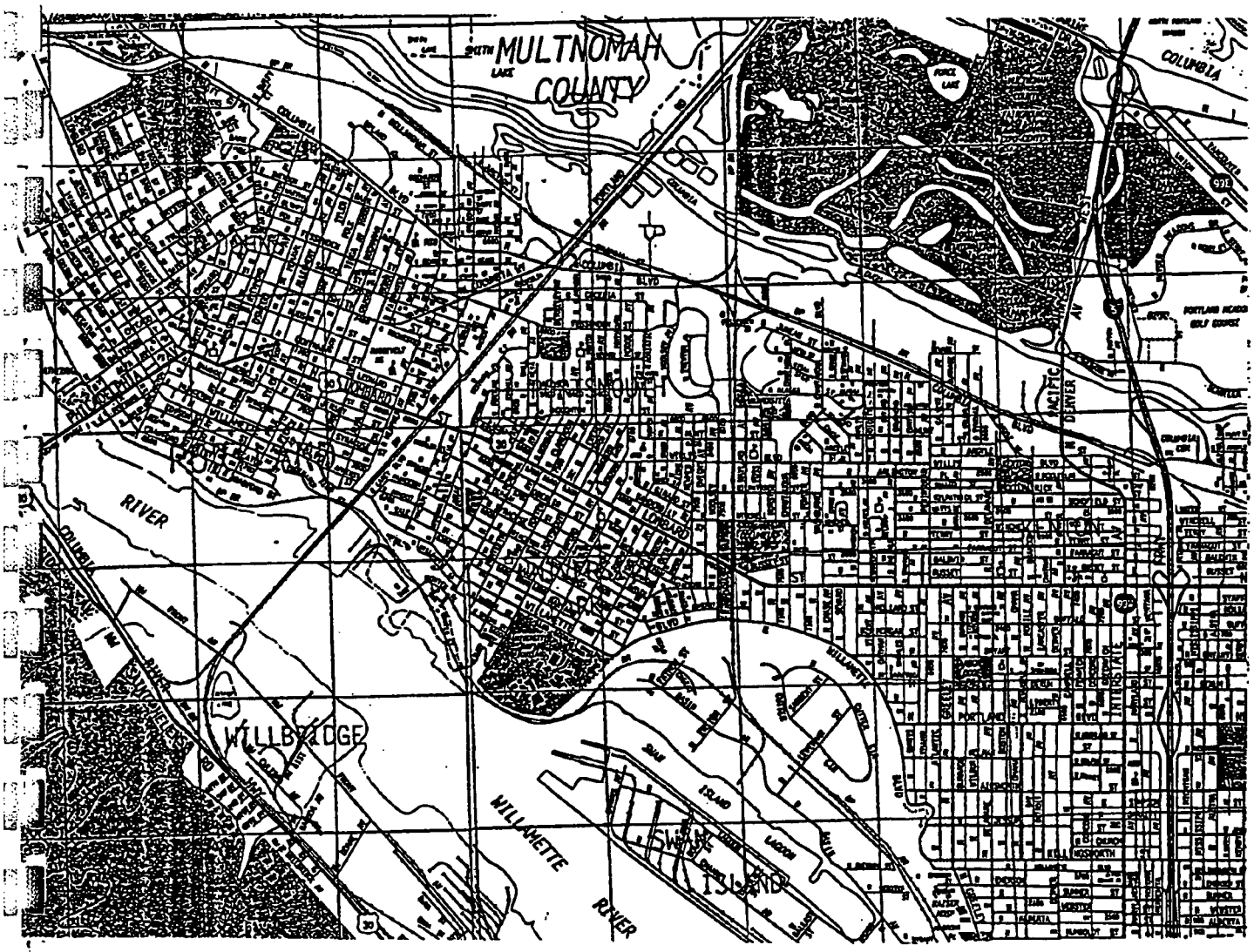
ACTION LEVELS:

Upgrade PPE Level to Level C:	30 ppm in Ambient Air (petroleum hydrocarbons)
Stop all work and exit work area:	10% LEL of gasoline in work area; or
	150 ppm in Ambient Air; or
	$O_2 < 19.5\%$; or $O_2 > 23.5\%$

Nearest Phone:	Telephone available at the building adjacent to the site
Nearest Water:	Water available at the building adjacent to the site

1.0 EMERGENCY/CONTINGENCY PLAN

1.1 Nearest Hospital: **Kaiser Hospital**
5055 N. Greeley Avenue, Portland, Oregon



1.2 Emergency Procedures - Immediate

1. Remove injured party from contaminated or other unsafe zone, if possible without incurring additional injuries.

2. Apply emergency first aid to ensure breathing and reduce immediate threat to life.

3. Call 911: follow Oral Reporting Procedures below.

   If life threatening, request instructions from dispatcher; if not life threatening remove from contamination zone and consider the need for decontamination prior to transport.

4. If any contaminated material enters the eyes, immediately wash with clean water for 15 minutes.

5. Complete written accident/incident report using attached form. Send copies to RZA Project Manager and Director, Health and Safety.

1.3 Emergency Procedures - Secondary

1. Transport to hospital if possible, otherwise call ambulance (911).

2. Notify Project Manager, Director of Health & Safety and other key personnel.

3. Fill out Incident/Accident report in Appendix A.

1.4 Oral Reporting Procedures

Give this information when reporting an emergency:

1. Name, location, and phone number of person reporting.

2. Location of accident/incident, i.e., building number, facility name, etc.

3. How many persons need help.

4. Description of injuries.

5. Details of any chemicals or other contamination involved.

6. Summary of the accident including its suspected cause and the time it occurred.

7. Summary of what is being done for the victim(s).

8. Do not hang up until the other party has done so.

Information will not be released under any circumstances to parties other than those listed above or bonafide emergency response facilities.

1.5 General First Aid

In all emergencies, document action taken and notify safety officer, project manager, SSC and client officials of occurrence of an emergency and actions taken.

Skin: Remove contaminated clothing immediately;wash with soap and water.

Inhalation: Remove to fresh air. Where necessary, call emergency medical help (ambulance, hospital, police) and follow medical emergency help procedures.

Eye Contact: Flush with eye wash or water at least 15 minutes. Follow emergency medical help procedures, if indicated. Contaminants may be absorbed through the eyes.

Ingestion: Obtain medical help if indicated.

Injuries: Administer first aid if necessary. Follow emergency medical procedures in Section 1.2, if necessary. Medical emergencies take precedence over decontamination.

1.6 Emergency Plan

It is not anticipated that the operations for this project will involve hazards that could necessitate instituting emergency response measures. Emergency incidents should be anticipated and prevented by maintaining vigilance and conducting safe operations. The priority of objectives in an emergency situation should be as follows: protection of personnel health and safety; protection of public safety; protection of environment; and protection of property. However, should conditions change and an emergency response is warranted, the following procedures should be followed.

1. The Site Safety Officer (SSO) will assume command unless and until superseded by police, fire or other emergency officials.
2. The SSO will assign personnel to specific functions they should follow during an emergency. This should be done during the pre-entry briefing and may be noted below. Functions suggested are: First-aid; Notify Emergency Services; Stage Safety Equipment; Regroup and take roll of site personnel; and Notify Project Manager.
3. All personnel in an IDLH area will move or be removed (if injured) to an area of refuge designated by the SSO.
4. First aid and CPR will be applied as necessary to any injured personnel.
5. The Site Safety Officer will consider if an upgrade of PPE is necessary based on changing action levels.

6. The Site Safety Officer will consider, as necessary, any other emergency measures outlined in the RZA Health and Safety Program, including evacuation, notification of general public in area, if necessary.

7. The incident will be reported as soon as possible in written form on an RZA Accident/Incident Reporting form found in Appendix A. Care should be taken to evaluate: what went wrong and why; how to avoid in the future; and possible adjustments in the standard operating procedures.

2.0 RZA SAFETY PERSONNEL

Director of Health and Safety ..... John Martin
Home: ..... (503) 591-8708
Coordinator of Health and Safety ..... Denny Macomber
Home: ..... (503) 735-0365
Work: ..... (503) 639-3400
Project Manager: ..... Gerald Koschal
Office: ..... (503) 639-3400
Home: ..... (503) 538-7011
Site Safety Officer: ..... Paul Ecker
Work: ..... (503) 639-3400

2.1 Reporting Structure

RZA employees are to report all health and safety related incidents, accidents, conflicts or problems to the Site Safety Officer (designated above, or the senior RZA person present). The Site Safety Officer is to report incidents/accidents or other serious site problems to the Project Manager and Health and Safety Coordinator/Director, Health and Safety. The following reporting structure should be followed:

Vice President/Manager of Portland Office:	Terry Craven
Director of Health and Safety	John Martin
Coordinator of Health and Safety	Denny Macomber
Senior Project Manager:	Doug Smith
Project Manager:	Gerald Koschal
Site Project Manager:	Paul Ecker
Site Safety Coordinator:	Paul Ecker

2.2 Director, Health and Safety

John Martin is the Director of Health and Safety (DHS) for RZA AGRA, Inc. He is responsible for initiation, coordination, and monitoring of the RZA AGRA, Inc. Health and Safety Program. Mr. Martin shall be notified in the event of any site accidents or injuries and receive copies of all accident reports. Mr. Martin shall have final approval of all Site Health and Safety Plans and shall make occasional Site Safety Inspections to ensure that a high standard of site safety is maintained.

2.3 Health and Safety Coordinator

The Health and Safety Coordinator (HSC) shall be an OSHA knowledgeable employee or representative of RZA responsible for preparation of the Site Health and Safety Plan. The HSC shall work with the Project Manager and Site Safety Officer to ensure that site safety is maintained in accordance with T8 CCR Section 3203 and 1509; 29 CFR 1910.120 and all other regulations that may apply. The HSC shall make occasional Site Safety Inspections to ensure that a high standard of site safety is maintained. The Health and Safety Coordinator for the Portland office of RZA is Denny Macomber.

2.4 RZA Project Manager (Site Project Manager)

The Project Manager, as directed, has the responsibility and authority to direct all hazardous waste operations. These duties shall include, but, not be limited to, designation of the Site Safety Officer and for the initiation and implementation of the Site Safety and Health Plan. The Project Manager (PM) shall maintain communications with the Site Safety Officer while any RZA personnel are on-site. The Project Manager shall designate a qualified and knowledgeable RZA individual to act as Site Project Manager (SPM) in the absence of the Project Manager.

2.5 RZA Site Safety Officer

The Site Safety Officer will be the OSHA knowledgeable individual responsible for implementing and supervising compliance with the Site Health and Safety Plan and site control. In the absence of the Site Safety Officer these responsibilities shall fall to another individual knowledgeable in occupational health and safety acting on behalf of RZA. This individual will:

- Follow the procedures for safe work practices as outline in the RZA AGRA, Inc. *Health and Safety Manual for Safe Work Practices.*
- Conduct a pre-entry briefing prior to initiation of any site activities.

- Determine RZA personnel protection levels and necessary clothing and equipment to ensure the safety of personnel. This information will be provided to RZA subcontractors and visitors, and appropriate compliance by these individuals will be expected.

- Evaluate weather and chemical hazard information and make any necessary modifications to RZA work plans and personnel protection levels to maintain RZA personnel safety.

- **THE SSO MUST NOTIFY OREGON OSHA BY PHONE WITHIN 8 HOURS IN THE EVENT OF DEATH OR CATASTROPHE AT THE WORK SITE.** *(an accident in which five or more site workers seek or are sent to medical attention).* **SSO MUST notify Oregon OSHA by phone within 24 hours in the event of ANY accidents or injuries result in a hospital admission with medical treatment other than first aid.** Salem Office: 1-378-5729.

2.5.1 Pre-entry Briefing - The Site Safety Officer will conduct a briefing with RZA employees, contractors and subcontractors prior to site entry and initiation of operations to ensure that employees are apprised of the contents of this Site Safety and Health Plan and general site safety including:

1. Emergency information including: location of nearest hospital, telephone, water, and fire extinguisher.
2. Use, care, maintenance and fitting of personal protective equipment including respirators, as necessary.
3. Safe places of refuge in an emergency.
4. Buddy system review, as necessary.
5. Emergency evacuation routes and procedures.
6. Site security and site control.

2.6 Personnel Requirements

The personnel requirements for this site will be one to two persons. During operations involving only one person, that person will function as Site Safety Officer and Site Project Manager. Should level of protection increase to Level C or above or involve Confined Space Entry, the SSO will cease work and leave the site until additional personnel arrive and a buddy system is established.

3.0 SITE CHARACTERIZATION

This Site Health and Safety Plan defines the hazards and methods to protect personnel from those hazards as identified in previous site work or background information. This Site Health and Safety Plan is dynamic and may be modified by the Site Safety Officer to encompass changes in work or other unanticipated events and hazards. For a thorough overview of available historical information concerning the site, see RZA Project File #7197-00.

RZA AGRA, Inc. (RZA) is under contract with City of Portland to perform a subsurface investigation/remedial services related to the proposed construction of a water pollution control laboratory at the site in Portland, Oregon. The property, tax lots R42580-6020, R42580-6900, and R42580-6620, is vacant. The site was previously part of the PDC St. John's Riverfront Development Project and is now owned by the City of Portland. The site is a 7.6 acre parcel located on the northeast bank of the Willamette River just south of Cathedral Park and the St. John's Bridge. Previous environmental studies of the site have identified types and locations of potential hazardous substances(TPH & potential Asbestos material). Field investigations were conducted to test soil and groundwater samples. Conclusions from the studies are as follows: 1.) the site, vacated in 1977-1978, had been in use since at least 1920 and occupied by sawmills and a wooden box factory; 2) hazardous materials may have been handled on-site as well as upgradient off-site. Potential on-site groundwater contamination exists; 3) approximately 500-600 cubic yards of spent sand-blasting sand may be present on site, and 4) low levels of groundwater contamination may be present. In addition there has recently been an indication that an asbestos steam pipe and boiler covering plant may have been located on the site.

The purpose of this investigation is to evaluate the quality of subsurface soil related to previous site use or releases in the area. The specific tasks that will be carried out for this project, and which require the preparation of this Site Health and Safety Plan include excavation, drilling,sampling, and soil removal.

3.1 Site Description

The site is located at the northeast bank of Willamette River just south of Cathedral Park and the St. John's Bridge, (tax lots R42580-6020, R42580-6900 & R42580-6620) in Portland, Oregon. The property under investigation is approximately 7.6 acres in size. The topography of the site is generally flat. Property use in the area is residential, industrial and commercial. The site is owned by the City of Portland.

3.2 Scope

The scope of work for the project will include: 1) drilling and sampling a number of borings; and 2) properly abandoning each of the borings. The performance of these tasks will help evaluate the quality of subsurface soil at the site. These tasks may be changed or be added to during the course of this project and this Site Health and Safety Plan may be modified by the Site Safety Officer to accommodate any changes.

3.3 Project Duration

This project will take 3 months to complete.

4.0 HAZARD ANALYSIS

The evaluation of hazards is based upon the knowledge of site background presented in Section 3.0 and anticipated risks posed by the specific operation. Hazards, hazardous conditions or materials may be present or encountered at the site that were not anticipated based on available background information during the preparation of this Site Health and Safety Plan. The information in this document is based on the best available background information or previous investigation, is to be considered dynamic and will be changed or updated as necessary.

Tables 4.1, 4.2, 4.3 and 4.4 provide a summary of hazards and protective measures planned for each task at the site.

4.1 Table of Physical Hazards

PHYSICAL HAZARDS

TASK	HAZARD	RISK	PREVENTION
Excavation/Drilling/ Sampling	Heavy equipment	Moderate	Watchfulness, communication safe distance
	Machinery noise	Moderate	Hearing protection
	Striking overhead or underground utilities	Low	Utility locate, consult client
General Physical Hazards	Fire/Explosion	Low	Monitoring watchfulness
	Hazardous chemicals	Low	Avoid direct contact or inhalation
	Asbestos	Low	Monitoring, PPE as necessary
	Uneven footing and debris	Low	Watchfulness, proper footwear
	Heat stress/hypothermia	Low	Watchfulness, monitoring
	Traffic	Low	Watchfulness, traffic vests, cones, barricades

4.1.1 Utility Location

This subsurface investigation involves activities that could expose personnel to hazards due to buried electrical lines, gas lines, or other underground utilities. In order to minimize these hazards, RZA has contacted the Utility Notification Center (UNC) for delineation of buried utilities. This has been logged by UNC with the site specific identification #_____ and RZA user identification #_____. The UNC can be contacted by phone at: 1-800-332-2344. All other hazards not delineated by the UNC are the responsibility of the client.

4.1.2 Equipment Operational Safety - RZA personnel will not operate any heavy equipment. The contractor for the drilling company will be responsible for picking operators and ensuring that they are qualified. All equipment will be inspected daily to assure that they are in good working order including, but not limited to, hydraulic hoses, belts, cables, chain links, and hoist hooks. All equipment will be turned off, locked up or otherwise secured at the close of the work period to prevent unauthorized use.

4.1.3 Drilling Equipment Safety - All drilling equipment subcontracted by RZA is expected to be in good working condition, with all required safety equipment. Responsibility for safety and maintenance of equipment shall rest with the subcontractor. RZA personnel will wear hard hats at drilling locations; maintain a safe distance from the operating equipment; wear hearing protection during active drilling; not operate any heavy machinery or assist the drilling contractor in the completion of their normal duties (i.e. unloading equipment, shoveling cutting, etc.). Field personnel will keep clear of the derrick radius; ensure that they remain facing the active drilling operations at all times; and maintain communications with the drilling crew. Additional safety procedures for work around drill rigs are located in the RZA AGRA, Inc. *Health and Safety Manual for Safe Work Practices.*

4.1.4 Excavation Procedures - RZA employees will not be responsible for any site excavation activities and will not operate any heavy machinery. Excavation will be carried out by a qualified contractor hired for the purpose. No RZA employee is to approach an excavation unless the contractor has shored or sloped the cavity in accordance with Subpart P of 29 CFR Part 1926 to prevent accidental collapse. Personnel will maintain a distance equal to the depth of the excavation, away from all unshored or non-sloped cavity sideslopes. Should the RZA Site Safety Officer feel that contractor is not in accordance with these standards, the SSO should discuss this with the contractor, cease all RZA activities, and leave the work zone until the standards are met.

Site workers should proceed with great caution in the vicinity of any excavation, especially near the edges, due to the potential for slope failure and burial. The greatest stability will be found at the corners of the excavation, but caution is strongly advised during any approach. **RZA employees should avoid entry to an excavation for any reason.**

SAMPLES SHOULD BE COLLECTED USING A BACKHOE ONLY!

Should entry be necessary, the following steps shall be followed:

- The cavity is to be properly sloped or shored in accordance with Subpart P of 29 CFR Part 1926.
- The cavity is then to be approved by a registered professional engineer for stability prior to entry.
- A stairway, ladder, ramp or other safe means of egress shall be placed in excavations greater than four feet.
- The atmosphere in the cavity is to be assessed for airborne contaminants and oxygen content. Entry is not permitted unless oxygen and hazardous vapor or gas levels are below the action levels outlined in this Health and Safety Plan.
- Oxygen, airborne contaminant and explosive levels, as necessary, are to be monitored in the breathing space of the entrant at all times while in the excavation.
- Emergency rescue equipment, such as breathing apparatus, a safety harness and line, or a basket stretcher, shall be readily available where hazardous atmospheric conditions exist or may reasonably expected to develop during work in the excavation.
- An observer is to posted in sight of the entrant, to monitor the entrant at all times and notify emergency personnel should rescue become necessary. **The observer is NOT to enter the cavity under any circumstances, nor to leave the area except to notify emergency personnel.**

Open excavations will be flagged when active work is not being done on or near the cavity or trench. For the protection of the general public, the site will be secured with fences (six-foot security) or barricades each day when site operations have been concluded.

4.1.5 Machinery Noise - Field personnel shall not be exposed to noise levels greater than 85 decibels (dBA) for an 8-hour time weighted average. Noise dosimeter analysis of drilling projects with similar equipment at similar sites indicate expected noise exposures of no more than 84 - 88 dB, assuming continuous operation of drilling equipment for an 8 hour period. In actual operation which includes breaks

of up to 2 hours for well installation, moving and decontamination, noise exposures are expected to be well below 85 dB for an 8 hour period. Blows to the drill stem during sample collection have not been found to exceed 115 dB, well under the impact limit of 140 dB. Although noise levels are expected to be below regulated levels, all personnel shall wear hearing protection during heavy equipment operation phases. The hearing protection shall have a protection rating of not less than 25 dB when worn properly.

4.1.6 Uneven Footing - The potential for uneven footing hazards will be minimized by personnel by examining the ground prior to stepping on it. Footholds will be tested. Unsafe or loose slopes will be avoided. Care will be taken to avoid stepping on random, sharp objects such as debris, tools, instruments, shovels, and heavy equipment parts and attachments. In addition, sturdy, steel-toed, steel-shanked boots will be worn by all field personnel.

4.1.7 Heat/Cold Stress Monitoring - For this drilling investigation, Level D PPE has been designated, and weather conditions are moderate. It is unlikely that heat or cold stress will be a problem at this site. In the event that PPE or weather conditions change, the SSO will hold a meeting to brief site workers on monitoring protocols for heat/cold stress. Site workers are directed to notify the SSO should they notice any problems or symptoms attributable to heat or cold.

Some of the work performed by RZA personnel and subcontractors is physically demanding. Depending upon the level of protective clothing and weather conditions, the potential for heat stress or hypothermia can be high, personnel will closely monitor themselves, other RZA personnel, and subcontractors for any early warning sings of heat stress or hypothermia.

4.2 Table of Chemical Hazards Part 1

POTENTIAL CHEMICAL HAZARDS

Exposure Standards, Recognition Qualities,
Flammable Limits

CHEMICAL	EXPOSURE STANDARDS (a)	IDLH (b)	RECOGNITION ODOR	QUALITIES Odor Threshold	% VOLUME LEL	% VOLUME UEL
Benzene	1 ppm	2000 ppm Ca (c)	Aromatic	2 ppm	1.3	7.1
Ethylbenzene	100 ppm	2000 ppm	Aromatic	?	1.0	6.7
Toluene	100 ppm	2000 ppm	Aromatic	10 ppm	1.2	7.0
Xylene	100 ppm	10000 ppm	Aromatic	20 ppm	1.1	7.0
Tetraethyl Lead	0.075 mg/m^3	40 mg/m^3	Aromatic	N.A.	1.8	?
Polychlorinated Biphenyl (PCB)	1 mg/m^3 (skin)	10 mg/m^3 Ca (3)	Mild	?.	NA	NA
Pentachlorophenol	0.5 mg/m^3	150 mg/m^3.	Benzene-like	N.A.	N.A.	N.A.
Asbestos	2 fibers/cc	Ca	None	N.A.	N.A.	N.A.

** PAH's exposure standards and regulations are included in Appendix E

(a) OSHA permissible exposure limits or ACGIH Threshold Limit Value based on an 8-hour time weighted average.

(b) IDLH - Immediately dangerous to life and health

(c) Ca - NIOSH Occupational Carcinogen

(d) N.E. - Not Established

4.2.1 Table of Chemical Hazards Part 2

POTENTIAL CHEMICAL HAZARDS

Potential Effects, Route of Entry, First Aid Treatment

CHEMICAL	ROUTE OF ENTRY	EYE IRRITANT	POTENTIAL EFFECTS	
			Acute	Chronic
Benzene	Inhalation Ingestion, Absorption	Medium	Eye, nose, and lung irritation, headache, nausea	Dermatitis, suspected carcinogen
Ethylbenzene	Inhalation Ingestion, Absorption	Severe	Eye, nose, throat, skin irritation, weakness, dizziness	Dermatitis
Toluene	Inhalation Contact	Medium	Eye, skin, and respiratory tract irritation. May also cause fatigue, weakness, headache.	Dermatitis. Possible liver and kidney damage.
Xylene	Inhalation Contact	Medium	Eye, nose, throat irritation Dizziness, drowsiness, nausea, vomiting.	Dermatitis, Reversible eye damage.
Tetraethyl lead	Inhalation Contact	Medium	Eye, nose, throat irritation. Dizziness, nausea, vomiting, loss of consciousness.	Dermatitis.
Polychlorinated Biphenyls (PCB)	Inhalation, Absorption	Medium	Eye, skin irritation: chloracne, contact dermatitis, excessive eye discharge, and swelling.	Liver damage, Suspected carcinogen.
Pentachlorophenol	Inhalation, Ingestion,	Severe Immediate	Inhalation-poisoning of circulatory system, heart failure. Headache, fatigue, vertigo, anorexia; pruritus, acne-form skin eruptions; jaundice, liver necrosis.	Damage to liver, kidneys, lungs, blood, central nervous system, may be fatal.
Asbestos	Inhalation Ingestion	Medium	Eye irritation	Labored breathing, interstitial fibrosis, restricted pulmonary function, finger clubbing, Carcinogen

5.0 ACTION PLAN

5.1 Personal Protection Equipment (PPE)

Site characterization analysis for this subsurface investigation indicates low to moderate risk of exposure to hazards associated with possible contact with hazardous chemical contaminated vapors, soil, sludge, or water. Therefore, Modified Level D PPE, as indicated below, is required during excavation and sampling phases of the project.

5.1.1 Modified Level D Personal Protective Equipment

1. Chemical-resistant clothing (Poly-coated Tyvek; two-piece chemical-splash suit; or other disposable chemical-resistant overalls; or rain gear suitable for decontamination). Wearing Tyvek will be discretionary based on site conditions and the SSO's direction. Should potential contact with hazardous chemical contaminated soil, sludge, or water become likely, site workers MUST upgrade PPE to include chemical-resistant clothing.
2. Boots/shoes, chemical-resistant, steel-toe and shank.
3. Hard hat.
5. Gloves, outer, chemical resistant.
6. Gloves, inner, chemical resistant.
7. Safety glasses with side shields, face shield, or chemical splash goggles.
8 Hearing protection while heavy equipment is in operation or other hearing hazards are present.

Should the Site Safety Officer reassess the situation to Level C, the personal protective equipment will be as indicated below.

5.1.2 Level C Personal Protection Equipment

Level C Protection will include all equipment listed above in Section 5.1.1 in addition to the following:

1. Air-purifying respirator, full-face, cartridge-equipped (MSHA/NIOSH approved).
2. Hooded chemical-resistant clothing (overalls; two-piece chemical-splash suit; disposable chemical-resistant overalls).
3. Boot-covers, disposable, chemical resistant*.
4. Escape mask*.
5. Face shield*.

* Optional, based on site conditions and SSO's direction.

5.1.3 Reassessment of Protection Program - The Site Safety Officer may upgrade or downgrade the Level of Protection provided by PPE upon a change in site conditions or findings of subsurface investigations. When a significant change occurs, the hazards should be reassessed. Some indicators of the need for reassessment are:

- Contact with hazardous chemical contaminated soil, sludge or vapors becomes possible.
- Commencement of a new work phase, such as the start of any recommended subsurface investigation work.
- Change in job tasks during a work phase.
- Change of season or weather.
- When temperature extremes or individual medical considerations limit the effectiveness of PPE.
- Contaminants other than those previously identified are encountered.
- Change in ambient levels of contaminants.
- Change in work scope which affects the degree of contact with contaminants.

5.1.4 Exposure of Unknown Potentially Hazardous Waste (UPHW) - This investigation project involves intrusive activities wherein an unknown potentially hazardous waste could become exposed. Should this occur, the designated RZA Site Safety Officer (SSO) or involved employee should:

- Cease operations immediately;
- Evacuate the affected area immediately of all RZA personnel; and
- Notify the SSO of the situation.

The designated RZA Site Safety Officer should assume command of the situation and:

- Notify sub-contractors, contractors, other site visitors, or other potentially affected personnel of the potential hazard;
- Initiate site control measures to limit access to the affected area; and
- Notify the Project Manager, Director, Health and Safety, or other appropriate RZA key personnel of the potentially hazardous situation.
- See RZA AGRA's *Health and Safety Manual for Safe Work Practices* for procedures on re-entry.

5.2 Action Levels and Action

ACTION PLAN TABLES

5.2.1 Explosive Atmosphere

ACTION LEVEL	ACTION
<10% LEL	Continue subsurface investigation
10%-20% LEL	Continue on-site monitoring with extreme caution as higher levels are encountered
>20% LEL	EXPLOSION HAZARD! WITHDRAW FROM AREA IMMEDIATELY!

5.2.2 Oxygen

ACTION LEVEL	ACTION
<19.5%	Do not enter without self-contained breathing apparatus (Level B protection, see Section 2.3). Note: Combustible gas readings are not valid in atmospheres with <8.0% Oxygen
19.5% - 23%	Continue subsurface investigation with caution. Deviation from normal level may be due to presence of other substances.
>23%	FIRE HAZARD POTENTIAL! Discontinue subsurface investigation. Consult a fire safety specialist.

5.2.3 Organic gases and vapors (Gasoline): - Based on the assumption that all airborne organic vapor is BTEX as measured with a direct reading instrument. *Note: if halogenated volatiles {e.g. trichloroethylene (TCE) or tetrachloroethylene (PCE) are present, they will not be detected by a combustible gas indicator (Gastechtor). You must use a PID or FID for detection of halogenated volatiles.*

ACTION LEVEL	ACTION
0-30 ppm	Continue subsurface investigation in Level D with continuous monitoring with a direct reading instrument. If the threat of significant splash is possible, wear chemical resistant clothing, e.g., Saranex.
30-150 ppm	**Upgrade to Level C** wearing an air-purifying respirator with organic vapor cartridges.
>150 ppm	**Discontinue operation.** Provide additional ventilation to bring concentrations down to acceptable levels prior to resumption of activities.

Note:
Contact with organic materials (such as gasoline) in high concentrations could result in fire. Contact with some organic (e.g. glycerol, alcohol) could cause the formation of peroxides which could be unstable. *A direct reading instrument, is not able to distinguish individual volatile components and should not be relied upon for the detection of low PEL chemicals such as Benzene (PEL of 1 ppm).*

5.2.4 Cadmium - Oregon OSHA has established a separate action level for Cadmium dust or fumes of 2.5 $\mu g/m^3$. Should this level be reached, employers are required to implement medical surveillance for employees exposed above this action level for 30 or more working days a year. Site background and anticipated work indicate that site workers will not be exposed to airborne dust containing cadmium above the PEL for this project.

6.0 SITE CONTROL MEASURES

The following section defines measures and procedures for maintaining site control. Site control is an essential component in the implementation of the site health and safety program. A Site Map is attached in Appendix B for visual reference to Site Control boundaries.

6.1 Work Zone Definition

Intrusive activities will be conducted during this operation. Some of the activities will involve drilling and sampling. These activities may require the establishment of specific work zones to avoid accidents and/or unauthorized entry. Three work zones are recommended for this operation: Work Zone 1, the Exclusion (Hot) Zone; Work Zone 2, the Contamination Reduction Zone; and Work Zone 3, Support Zone. These zones are described in detail in the RZA AGRA, Inc. *Health and Safety Manual for Safe Work Practices* and indicated on the Site Plan located in Appendix B of the HASP.

Site control for this project will consist of:

A hotline will be established fifteen feet from the drilling equipment and should be marked with tape or other barricades, where practicable. The area inside this zone will be considered the Exclusion Zone. Exit from the Exclusion Zone into the Contamination Reduction Zone (CRZ) will be through a corridor established with tape adjacent to the hotline. The area outside of the CRZ will be the Support Zone. General access to the Exclusion Zone and the CRZ by the public or other unauthorized visitors should be restricted by either fencing, barricades, or flagging along the perimeter of the CRZ.

6.2 Standing Orders While On-site

Standing orders while on-site:

- Maintain professional conduct at all times.
- Workers shall obey all warning and instructional signs posted at the site.
- Smoking, eating, drinking, chewing gum or tobacco, or any practice that increases the probability of hand-to-mouth transfer and ingestion of material is prohibited in any area designated as contaminated.
- Workers shall not possess or use alcohol or drugs at the site or work at the site while under the influence of alcohol or drugs. Also while working at the site, workers shall not use prescription drugs that may affect their reflexes or actions.
- Firearms, ammunition, fireworks or explosives are prohibited.
- Long hair will be worn "up" inside the hard hat.
- Facial hair that interferes with a proper seal being created and maintained between the face and respirator is prohibited when respirator use is likely.
- Where appropriate the "buddy system" will be used and visual contact must be maintained at all times between buddies on site. Hand signals will be established and be consistent among all workers. During site operations, each worker should consider himself a safety backup to his partner(s) and make all personnel aware of dangerous situations that may develop.
- Disposable clothing will be used whenever possible to minimize the risk of cross-contamination.
- No unapproved work clothes or equipment will be allowed on site.
- No exchange of personal protective equipment will be allowed except in emergency situations involving a threat to health and safety.
- The number of personnel and amount of equipment in contaminated areas should be minimized, yet allow for effective site operations.

- Work areas, equipment testing areas, and decontamination areas and procedures will be established based on prevailing site conditions and are subject to change.
- Procedures for leaving contaminated areas will be planned and reviewed prior to going on site.
- Contact with contaminated or potentially contaminated material should be avoided. Efforts will be made to keep employee activity upwind of operations. Whenever possible, do not walk through puddles, mud or any discolored ground surface. Where appropriate, do not lean, sit, or place equipment on drums, containers, or on the ground.
- Proper decontamination procedures must be followed before leaving the site, unless medical emergencies dictate otherwise.
- No personnel will be admitted to the site by the Site Safety Officer without the proper safety equipment and requisite training.
- All RZA personnel must comply with the established safety procedures. Any staff member who does not comply with safety policy, as established by the Site Safety Officer or Project Manager will be immediately dismissed from the site.

7.0 MONITORING PLAN

This section explains the general concepts of an air monitoring program and specifies the surveillance activities that will be considered during the project completion. Both direct-reading instruments and passive air monitoring may be employed to estimate worker exposure. Passive badges may be worn when exposure of contaminated soils or ground water, resulting in an increase in airborne vapors near or above the PEL, is likely. Direct reading instruments will be employed during all phases of site work.

7.1 Passive Air Monitoring

Passive air monitoring through use of passive badges may be used to monitor employee exposure to airborne contaminants. Should they be required, the SSO should contact the Director of Health and Safety for proper sampling procedures.

7.2 Direct-reading Monitoring Instruments

Unlike air monitoring devices, which are used to collect samples for subsequent analysis in a laboratory, direct-reading instruments provide information at the time of monitoring, enabling rapid decision-making. Data obtained from the real-time monitors are used to assure proper selection of personnel protection equipment, engineering controls, and work practices. Overall, the instruments provide the user the capability to determine if site personnel are being exposed to concentrations which exceed exposure limits or action levels for specific hazardous materials.

8.0 TRAINING

8.1 Hazardous Waste Operations Training

All general RZA site workers, occasional RZA site workers, on-site RZA management and supervisors must be in compliance with training requirements in accordance with 29 CFR 1910.120 (e), before they will be permitted to engage in operations at this site. All properly trained employees shall have received a written certificate of successful completion of initial training and necessary annual updates. Copies of training certificates for RZA AGRA, Inc. personnel are maintained at offices of RZA AGRA, Inc. and will be available on request.

8.2 First Aid and CPR Training

The Site Safety Officer shall ensure that at least one site worker is trained and certified in the application of emergency first aid and CPR. The personnel trained in first aid and CPR for this site is: **Paul Ecker.**

9.0 DECONTAMINATION PLAN

Extensive decontamination procedures have been determined to be unnecessary for this project. However, should decontamination become necessary due to Personal Protection Level upgrade, the Site Safety Officer will devise a decontamination plan according to the procedures in the RZA AGRA, Inc. *Health and Safety Manual for Safe Work Practices.*

Decontamination for this project will consist of :

1. A wash tub (or equivalent) will be filled with potable water and detergent (e.g. Alconox). Persons leaving the Exclusion Zone will step into the detergent solution and scrub both boots and gloves (and rain gear, if worn). Upon completion of scrubbing, personnel will step into a similar tub filled with clean potable water and rinse gloves and boots thoroughly.

2. Personnel will then remove tape from around wrists and ankles and remove Tyvek coveralls. Tape and Tyvek will be discarded into a drum, or other container, located at the end of the CRZ.

Note: Step 2 will be done only if Tyvek or other protective clothing is worn.

9.1 Disposition of Decontamination Wastes

All equipment and solvents used for decontamination shall be decontaminated or disposed of properly according to local, state and federal regulations. Commercial laundries or cleaning establishments that decontaminate protective clothing or equipment shall be informed of the potentially harmful effects of exposures.

10.0 MEDICAL SURVEILLANCE REQUIREMENTS

All employees at this site are subject to the strict medical surveillance requirements for hazardous site workers as outlined in 29 CFR 1910.120 and detailed in the RZA AGRA, Inc. *Health and Safety Manual for Safe Work Practices*. Copies of evidence of a current physical exam for RZA AGRA, Inc. personnel are maintained at the offices of RZA AGRA, Inc. and available on request.

10.1 Exposure/Injury/Illness

Any employee at this site who becomes injured, ill, or develops signs or symptoms due to possible overexposure involving hazardous substances, will be required to seek medical attention within 24 hours; and to notify the Site Safety Officer, the Project Manager, and the Director, Health and Safety. A physicians written opinion will be required prior to the employees return to normal site activities.

The incident will be reported as soon as possible in written form on an RZA Accident/Incident Reporting form found in Appendix A. Should the accident result in death or a catastrophe (an accident in which five or more site workers seek or are sent to medical attention), THE SSO MUST NOTIFY OREGON OSHA BY PHONE WITHIN 8 HOURS. SSO MUST notify Oregon OSHA by phone within 24 hours in the event of ANY accidents or injuries result in a hospital admission with medical treatment other than first aid. Oregon OSHA phone number: Salem Office: 1-378-5729.

11.0 SPILL CONTAINMENT

Based on background information and previous investigations, a spill of hazardous wastes is not expected at this site. Contaminated soil, if encountered will be drummed or bermed on Visqueen until laboratory analysis is performed. Drums and handling of drums will be carried out by qualified personnel with proper equipment. RZA employees will ensure that:

1. Drums used meet appropriate DOT, OSHA, and EPA regulations;
2. Drums are inspected for integrity;
3. Drums are properly labeled with NFPA (4-part diamond) labels.

Should hazardous waste spill occur at any site, employees are to follow the RZA Standard Operating Procedures for spill containment.

APPENDIX A

ACCIDENT/INCIDENT REPORT FORM

(Use additional page if necessary)

Date: _____ Time: _____

Name: _____ Employer: _____

Site Name and Location: _____

Nature of Illness/Injury: _____

_____

Symptoms: _____

Action Taken: ___ Air and Rest ___ First Aid ___ Medical

Transported by: _____

Witnessed by: _____

Facility Treating (Hospital's name): _____

Treatment: _____

Comments: _____

_____

What was the person doing at the time of the accident/incident: _____

_____

_____

Personal Protection Equipment Worn: _____

_____

Cause of Accident/Incident: _____

_____

_____

_____

What Immediate action was taken to prevent recurrence: _____

_____

Additional Comments: _____

_____

_____

Employee's Signature: _____ Date: _____

Supervisor's Signature: _____ Date: _____

APPENDIX A.1
EXPOSURE RECORD

PROJECT NAME: _____

PROJECT NUMBER: _____

DATE(S): _____

Employee	Date	Hours of Exposure

Weather: Rainy ____ Windy ____ Sunny ____ Cloudy ____ Other _____ Est. Air Temp. _____

Brief description of site activities (include contact with or distance from contaminants and whether upwind or downwind from contaminated material): _____

List of potentially hazardous materials known or suspected on-site: _____

Protective clothing worn on-site: _____

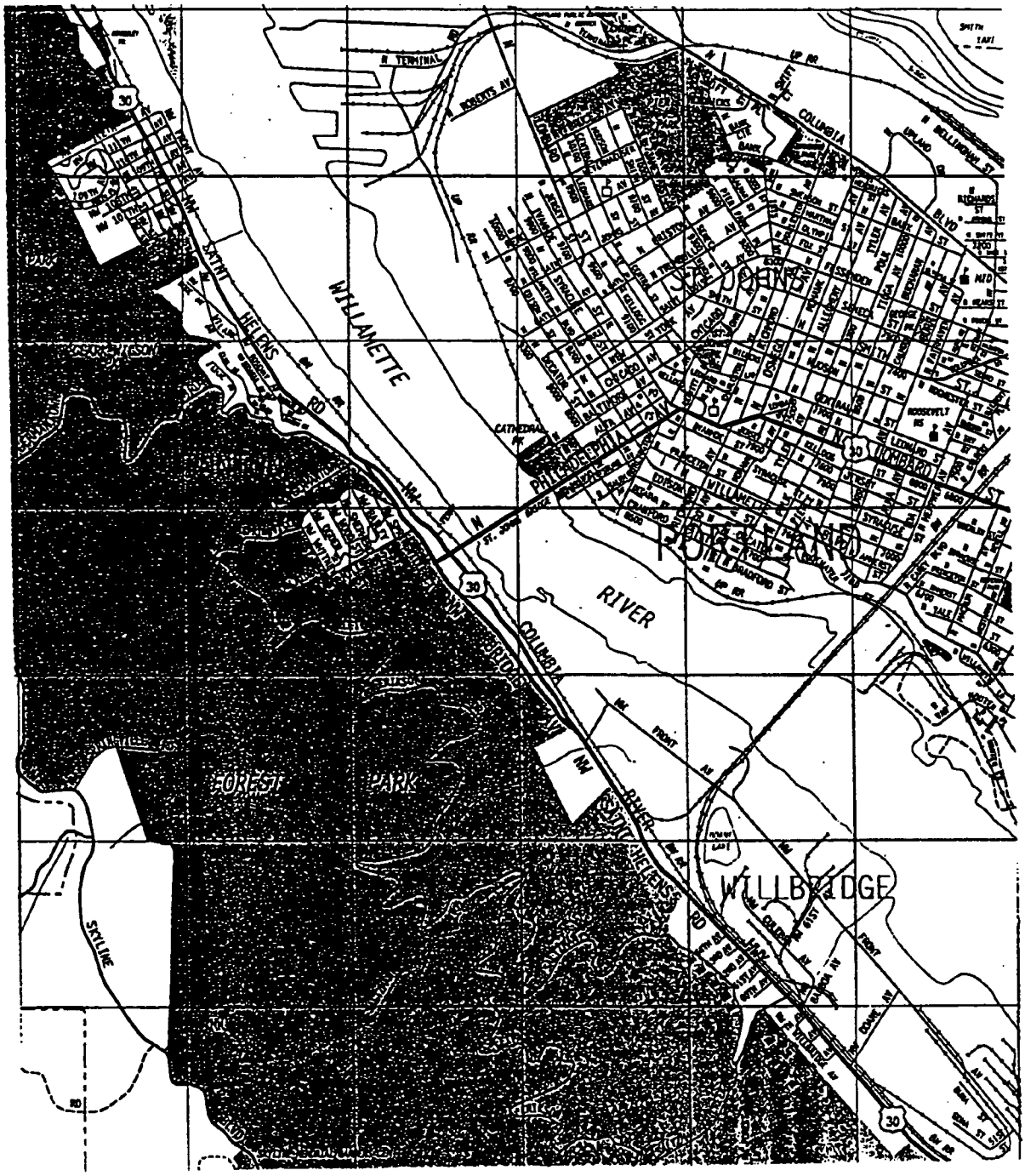
Direct-reading instrument used: _____

Instrument Readings: (Ambient Air Only)	Time	Readings (ppm, LEL, O_2, etc.)

Additional information (include soil or water samples taken, sample numbers, head space readings, unusual events or symptoms of exposure - use back of sheet, if necessary): _____

APPENDIX B

SITE PLAN



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RZA EMPLOYEE ACKNOWLEDGMENT

This Site Health and Safety Plan has been prepared for RZA AGRA, Inc. (RZA) employees; contractors, subcontractors, and others are NOT specifically covered by this plan and are NOT to sign the acknowledgement below unless previously agreed by RZA AGRA Inc., the client, contractors, and/or subcontractors. This information shall be communicated and made available to all subcontractors and official site visitors for their personal health and safety; RZA welcomes all subcontractors and official site visitors to adopt this Site Health and Safety Plan as their own. Agreement to adopt this Site Health and Safety Plan by contractors, subcontractors or others includes agreement that the signatories, their employers, and agents shall indemnify and hold harmless, RZA AGRA, Inc. and their consultants, agents, and employees from any claims, damages, losses and expenses, direct and indirect, or consequential damages, including but not limited to fees and charges of attorneys and court and arbitration costs, arising out of or resulting from, the performance of the work by RZA AGRA, Inc. or claims against RZA AGRA, Inc. arising from the work of others, related to the hazards, hazardous conditions or materials named in this document or found to be present at the site. They further agree that the information in this document is based on the best available background information or previous investigation and is to be considered dynamic and will be changed or updated as necessary. Agreement to this indemnification and acknowledgement will be indicated by signature below.

I have read the attached Site Health and Safety Plan for this project. I have been further trained and briefed in site specific risks and general safety and health information, as necessary, by the on-site supervisor. I understand and agree to comply with these requirements and the indemnification and acknowledgement as explained above.

This Site Health and Safety Plan has been approved by: Denny Macomber Date: 9/30/93
Denny Macomber, CHS

This Site Health and Safety Plan has been accepted by: _____ Date: _____
Paul Ecker, SPM

Employee _____ Date _____

Employee _____ Date _____

Employee _____ Date _____

Employee _____ Date _____

Employee _____ Date _____

Employee _____ Date _____

Employee _____ Date _____

Employee _____ Date _____

Employee _____ Date _____

Employee _____ Date _____

Employee _____ Date _____

Employee _____ Date _____

(If necessary, the back of this page may be used for additional signatures. Employees should initial and date this form upon subsequent visits.)

SITE HEALTH AND SAFETY PLAN ADDENDUM
APPROXIMATE 5-ACRE SITE, SOUTH OF THE ST JOHNS BRIDGE, PORTLAND, OREGON
RZA PROJECT # 21-7197-00

Date: October 25, 1993

From: Denny R. Macomber; Coordinator of Health and Safety

To: RZA AGRA, Inc. Site Personnel

Subject: Site Health and Safety Plan Addendum; Approximate 5-Acre Site, Portland, Oregon

---

This addendum to the Site Health and Safety Plan (HASP) for the approximate 5-Acre Site has been prepared in response to an additional phase to the project. The Site Safety Officer should ensure this information is communicated and made available to all RZA AGRA, Inc. employees; subcontractors; and authorized site visitors. RZA AGRA, Inc. personnel, thus communicated, shall signify their acknowledgement and understanding of the following information by signature on the attached Acknowledgement Agreement.

1.0 BACKGROUND

RZA conducted an initial subsurface investigation at the site in October, 1993 (see original Health and Safety Plan or RZA file). The purpose of the original investigation was to evaluate the quality of subsurface soil and groundwater related to previous site use. Analysis of samples collected during the original investigation indicated that subsurface soil and groundwater were contaminated with fuel hydrocarbons. And, as a result of CH2MH borings conducted onsite, groundwater recovered during the drilling operation from an isolated area along the southern portion of the site was found to contain PCBs.

Chemical Hazard	Quantity	Risk
Total Petroleum Hydrocarbons (Soil)	667 ppm	Low
PCBs (water)	1000 ppm	Moderate

The purpose of this investigation is to excavate PCB containing transformers and dispose of PCB contaminated soils.

2.0 SCOPE

The scope of work for the project will include: 1) excavation of trenches to 10 feet in depth or greater; 2) removal of PCB containing transformers; 3) segregating PCB contaminated soils; 4) soil sampling; 5)

backfilling of the trenches; 4) equipment deconning and containment of decon water, and; 5) preparation for soil and transformer disposal. The performance of these tasks will help clean up contaminated soil at the site. These tasks may be changed or be added to during the course of this project by the Site Safety Officer to accommodate any changes.

3.0 HAZARD ANALYSIS

The following table provides a summary of hazards and protective measures planned for each task, not already included in the original HASP for this project. All information in the original HASP, not superseded by this addendum, is to be reviewed and followed by site workers.

Physical Hazards

TASK	HAZARD	RISK	PREVENTION
Excavation	Heavy equipment	Medium	Watchfulness, communication safe distance
	Machinery noise	Low	Hearing protection
	Striking overhead or underground utilities	Low	- Utility locate, consult client
Trench-Installation/PCB Transformer removal	Fall hazard, Toxic atmosphere	Medium	Safe distance, barricades, flagging, watchfulness
	Trench work	Medium	Safe distance, barricades, flagging, watchfulness DO NOT ENTER!
	Chemical Hazards	Medium	PPE, Watchfulness, Extreme care
General Physical Hazards	Contaminated soil or ground water	Medium	Avoid direct contact, inhalation
	Uneven footing and debris	Medium	Watchfulness, proper footwear
	Heat stress/Cold exposure	Low	Watchfulness, monitoring

3.1 Excavation Procedures

RZA employees will not be responsible for any site excavation activities and will not operate any heavy machinery. Excavation will be carried out by a qualified contractor hired for the purpose. No RZA employee is to approach an excavation unless the contractor has shored or sloped the cavity in accordance

with Subpart P of 29 CFR Part 1926 to prevent accidental collapse. Personnel will maintain a distance equal to the depth of the excavation, away from all unshored or non-sloped cavity sideslopes. Should the RZA Site Safety Officer feel that contractor is not in accordance with these standards, the SSO should discuss this with the contractor, cease all RZA activities, and leave the work zone until the standards are met.

Site workers should proceed with great caution in the vicinity of any excavation, especially near the edges, due to the potential for slope failure and burial. The greatest stability will be found at the corners of the excavation, but caution is strongly advised during any approach. RZA employees should avoid entry to an excavation for any reason.

REMOVAL OF PCB CONTAINING TRANSFORMERS SHOULD BE DONE FROM SURFACE ONLY!!

TRENCHES ARE EXTREMELY DANGEROUS DUE TO INSTABILITY AND THE PRESENCE OF TOXIC VAPORS OR GASES!

Should entry be necessary, the following steps SHALL be followed:

- The cavity is to be properly sloped or shored in accordance with Subpart P of 29 CFR Part 1926.
- The cavity is then to be approved by a registered professional engineer for stability prior to entry.
- A stairway, ladder, ramp or other safe means of egress shall be placed in excavations greater than four feet.
- The atmosphere in the cavity is to be assessed for airborne contaminants and oxygen content. Entry is not permitted unless oxygen and hazardous vapor or gas levels are below the action levels outlined in this Health and Safety Plan.
- Oxygen, airborne contaminant and explosive levels, as necessary, are to be monitored in the breathing space of the entrant at all times while in the excavation.
- Emergency rescue equipment, such as breathing apparatus, a safety harness and line, or a basket stretcher, shall be readily available where hazardous atmospheric conditions exist or may reasonably expected to develop during work in the excavation.

- An observer is to posted in sight of the entrant, to monitor the entrant at all times and notify emergency personnel should rescue become necessary. **The observer is NOT to enter the cavity under any circumstances, nor to leave the area except to notify emergency personnel.**

Open excavations will be flagged when active work is not being done on or near the cavity or trench. For the protection of the general public, the site will be secured with fences (six-foot security) or barricades each day when site operations have been concluded.

3.2.1 Work Zone 1: Exclusion (Hot) Zone

The region encompassing the area of excavation, any excavated soil piles, and a minimum of thirty feet beyond (if possible) on all sides shall be designated Work Zone 1, and is an Exclusion (Hot) Zone. Only necessary site workers or authorized site visitors will be allowed in the Exclusion Zone. All site workers and authorized visitors must have read and signed both the Site Health and Safety Plan and this Addendum prior to entering the Exclusion Zone. Personnel shall limit their time in the Exclusion Zone to necessary work and leave immediately upon completion.

All personnel entering the Exclusion Zone shall be outfitted in the Level of Protection outlined in Section 4.0 of this document. Site workers authorized to be in this zone shall, at a minimum, have received 40 hours of Hazardous Waste Operations training according to 29 CFR 1910.120 and be current in required 8 hour annual update. They must also be current, as applicable based on their annual exposure, in a medical surveillance program as outlined 29 CFR 1910.120 (see Sec. 9.0 of the SHSP).

The Site Safety Officer shall be responsible for ensuring that only personnel meeting the above requirements gain access to the Exclusion Zone. Any contaminated equipment, materials, soil, or water will remain in the Exclusion Zone until properly decontaminated or other suitable disposition is arranged and/or agreed by the client. A decontamination station shall be set up in the Contamination Reduction Corridor at the boundary between the Contamination Reduction Zone and the Exclusion Zone. Decontamination procedures shall be according to the Decontamination Plan outlined in Section 8.0 of the SHSP.

3.2.2 Work Zone 2: Contamination Reduction Zone

Zone 2 is the Contamination Reduction Zone and is the transition area between the contaminated area and the clean zone. The Contamination Reduction Zone boundary shall be located by the Site Safety Officer in a manner such that no contaminated materials or equipment will pass beyond it to the Support Zone.

Initially, the Contamination Reduction Zone is considered to be a non-contaminated area. Two Contamination Reduction Corridors (decontamination stations) shall be established from the Exclusion Zone to the Support Zone, one for personnel and one for equipment. Contamination in the Contamination Reduction Zone should be kept as low as is reasonably possible. No contamination shall be allowed to pass into the Support Zone.

The boundary between the Support Zone and the Contamination Reduction Zone is the Contamination Control Line. Fencing, barricades, or other warning devices shall be erected on the perimeter of this zone to keep unauthorized personnel from entering and to demark the line beyond which contamination shall not pass. Access to the Contamination Reduction Zone from the Support Zone shall be through a control point. Personnel entering the Contamination Reduction Zone shall be wearing modified Level D PPE, unless the site SSO has upgraded the area to Level C PPE.

3.3.3 Work Zone 3: Support Zone

The Support Zone shall consist of the area of the site extending from the outer boundary of the Contamination Reduction Zone to the property boundary. Support personnel and equipment (command post, first aid, eyewash, etc.) will be located in this zone. Support personnel will be responsible for alerting the proper agency in the event of an emergency. All visitors and site personnel not currently required to be in Zone 1, will remain in Zone 3. Normal work clothes are appropriate for this zone.

Potentially contaminated personnel clothing, equipment, or other materials area not permitted in this zone. Personnel entering this zone requires the removal of any protective equipment worn in the Contamination Reduction Zone.

3.3 Sampling and Monitoring

Monitoring will be conducted at this site. Sample analysis indicates potential exposure to PCB contaminated soil and groundwater. To reduce risk of exposure, the Site Safety Officer should maintain a Level of Protection designed to reduce the chance of exposure to the hazardous substance present. The PPE may vary according to task or the presence of contamination.

- Sampling, maintenance, etc. from upgradient locations that previous analysis has shown to be free of groundwater or soil contamination, may be conducted in Level D PPE as outlined in the Site Health and Safety Plan, as minimum protection. The SSO should monitor the air with a direct-reading

instrument at all times. Should airborne contamination be detected above 5 ppm, air-purifying respirators are required.

- Operations at locations where previous analysis has indicated the presence of contaminated liquids, soil, or vapor should be carried out in PPE that prevent exposure to the hazardous materials. PPE may include: full Level C (Appendix C) for skin protection from splashes of contaminated liquids and inhalation protection from airborne vapors; or modified Level C to D for situations that may not involve inhalation exposure. The SSO should monitor the air with a direct-reading instrument at all times to ensure that airborne contaminants are not present. Should airborne contamination be detected above 5 ppm, air-purifying respirators are required.

The Site Safety Officer should check with the Project Manager or Director of Health and Safety prior to initiation of new phases of site work for any changes in recommended PPE.

4.0 PERSONAL PROTECTIVE EQUIPMENT - Modified Level D Personal Protective Equipment

1. **Chemical-resistant clothing** (Poly-coated Tyvek; two-piece chemical-splash suit; or other disposable chemical-resistant overalls; or rain gear suitable for decontamination). **WEARING TYVEK WILL BE MANDATORY BASED ON SITE CONDITIONS AND THE SSO'S DIRECTION.** Should potential contact with hazardous chemical contaminated soil, sludge, or water become likely, site workers **MUST** upgrade PPE to include chemical-resistant clothing.

2. **Boots/shoes, chemical-resistant, steel-toe and shank.**

3. **Hard hat.**

5. **Gloves, outer, chemical resistant.**

6. **Gloves, inner, chemical resistant.**

7. **Safety glasses with side shields, face shield, or chemical splash goggles.**

8 .**Hearing protection** while heavy equipment is in operation or other hearing hazards are present.

RZA EMPLOYEE ADDENDUM ACKNOWLEDGMENT

This Site Health and Safety Plan Addendum has been prepared for RZA AGRA, Inc. (RZA) employees; contractors, subcontractors, and others are NOT specifically covered by this plan and are NOT to sign the acknowledgement below unless previously agreed by RZA AGRA Inc., the client, contractors, and/or subcontractors. This information shall be communicated and made available to all subcontractors and official site visitors for their personal health and safety; RZA welcomes all subcontractors and official site visitors to adopt this Site Health and Safety Plan as their own. Agreement to adopt this Site Health and Safety Plan by contractors, subcontractors or others includes agreement that the signatories, their employers, and agents shall indemnify and hold harmless, RZA AGRA, Inc. and their consultants, agents, and employees from any claims, damages, losses and expenses, direct and indirect, or consequential damages, including but not limited to fees and charges of attorneys and court and arbitration costs, arising out of or resulting from, the performance of the work by RZA AGRA, Inc. or claims against RZA AGRA, Inc. arising from the work of others, related to the hazards, hazardous conditions or materials named in this document or found to be present at the site. They further agree that the information in this document is based on the best available background information or previous investigation and is to be considered dynamic and will be changed or updated as necessary. Agreement to this indemnification and acknowledgement will be indicated by signature below.

I have read the attached Site Health and Safety Plan Addendum for this project. I have been further trained and briefed in site specific risks and general safety and health information, as necessary, by the on-site supervisor. I understand and agree to comply with these requirements and the indemnification and acknowledgement as explained above.

This Site Health and Safety Plan has been approved by: _____ Date: 10/25/93
Denny Macomber, CHS

This Site Health and Safety Plan has been accepted by: _____ Date: _____
Dave Roberston, SSO

Employee _____ Date _____ OSHA ____ Med.Surv. ____

Employee _____ Date _____ OSHA ____ Med.Surv. ____

Employee _____ Date _____ OSHA ____ Med.Surv. ____

Employee _____ Date _____ OSHA ____ Med.Surv. ____

Employee _____ Date _____ OSHA ____ Med.Surv. ____

Employee _____ Date _____ OSHA ____ Med.Surv. ____

Employee _____ Date _____ OSHA ____ Med.Surv. ____

Employee _____ Date _____ OSHA ____ Med.Surv. ____

Employee _____ Date _____ OSHA ____ Med.Surv. ____

Employee _____ Date _____ OSHA ____ Med.Surv. ____

Employee _____ Date _____ OSHA ____ Med.Surv. ____

Employee _____ Date _____ OSHA ____ Med.Surv. ____

(Please check above if current with OSHA training and Medical Surveillance requirements. If necessary, the back of this page may be used for additional signatures. Employees should initial and date this form upon subsequent visits.)

Appendix C

Sampling Plan

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OAL

RZA AGRA, INC.
7477 SW TECH CENTER DRIVE
PORTLAND, OR 97223

REVIEWED BY: D. Miller
REVIEW DATE: 11/24/93

GERRY KOSCHAL
639-3400/ FAX 620-7892
JOB #7197

PCB ANALYSIS OF SOLIDS
BY EPA METHODS 3540 AND 8080/8081

SAMPLE ID:	SP-17D
OAL ID: 25-0173-	17677
SAMPLE DATE:	11/19/93
MATRIX:	SOIL
EXTRACTION DATE:	11/23/93
ANALYSIS DATE:	11/23/93
PCB MG/KG	0.25 (1260)
SURR.RECOVERY %	104.
ANALYST:	DM

MG/KG = PPM
ND = NONE DETECTED(<0.05 MG/KG)
NA = NOT ANALYZED
MI = MATRIX INTERFERENCE WITH SURROGATE RECOVERY
SURROGATE(S) USED: TETRACHLORO-M-XYLENE AND/OR DECACHLOROBIPHENYL

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Old Scholls Ferry Road
Beaverton, OR 97007
Phone 503-644-5300 • Fax 503-671-1404

OAL

RECEIVED DEC 0 3 1993

RZA AGRA, INC.
7477 SW TECH CENTER DRIVE
PORTLAND, OR 97223

REVIEWED BY: DAP

REVIEW DATE: 12/1/93

GERRY KOSCHAL
639-3400/ FAX 620-7892
JOB #7197

PCB ANALYSIS OF SOLIDS
BY EPA METHODS 3540 AND 8080/8081

SAMPLE ID:	CL-1B	CL-2B	CL-5B	MP-3	MP-4
OAL ID: 25-0173-	17556	17557	17558	17559	17560
SAMPLE DATE:	11/17/93	11/17/93	11/17/93	11/18/93	11/18/93
MATRIX:	SOIL	SOIL	SOIL	SOIL	NA
EXTRACTION DATE:	11/29/93	11/29/93	11/29/93	11/29/93	.
ANALYSIS DATE:	11/30/93	11/30/93	11/30/93	11/30/93	.
PCB MG/KG	0.28(1260)*	0.39(1260)	0.06(1260)*	ND	.
SURR.RECOVERY %	97.	100.	99.	98.	.
ANALYST:	DM	DM	DM	DM	.

MG/KG = PPM
ND = NONE DETECTED(<0.05 MG/KG)
NA = NOT ANALYZED
MI = MATRIX INTERFERENCE WITH SURROGATE RECOVERY
SURROGATE(S) USED: TETRACHLORO-M-XYLENE AND/OR DECACHLOROBIPHENYL

* These two samples showed a small amount of Aroclor 1254 also. The result listed is a total.

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A Division of Portland General Electric
14855 S.W. Old Scholls Ferry Road
Beaverton, OR 97007
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RZA AGRA, INC.
7477 SW TECH CENTER DRIVE
PORTLAND, OR 97223

REVIEWED BY: DW

REVIEW DATE: 12/1/93

GERRY KOSCHAL
639-3400/ FAX 620-7892
JOB #7197

PCB ANALYSIS OF SOILS
BY SHAKEOUT* AND EPA 8080/8081

SAMPLE ID:	MP-4
OAL ID: 25-0173-	17774
SAMPLE DATE:	11/17/93
PCB SHAKEOUT PPM	0.07(1260)

MG/KG = PPM
ND = NONE DETECTED(<0.05 MG/KG)
NA = NOT ANALYZED
* THE SHAKEOUT PREP IS NOT AN EPA APPROVED PROCEDURE AND SHOULD BE USED FOR SCREENING PURPOSES ONLY.

OREGON ANALYTICAL LABORATORY
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7477 SW TECH CENTER DRIVE
PORTLAND, OR 97223

REVIEWED BY: DGP

REVIEW DATE: 12/9/93

GERRY KOSCHAL
639-3400/ FAX 620-7892
JOB #7197

PCB ANALYSIS OF SOLIDS
BY EPA METHODS 3580 AND 8080/8081

SAMPLE ID:		IN-1
OAL ID: 25-0173-		17822
SAMPLE DATE:		11/24/93
PCB	MG/KG	17000. (1260)

MG/KG = PPM
ND = NONE DETECTED(<0.5 MG/KG)
NA = NOT ANALYZED

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14855 S.W. Old Scholls Ferry Road
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RZA AGRA, INC.
7477 SW TECH CENTER DRIVE
PORTLAND, OR 97223

REVIEWED BY: Copy DV
REVIEW DATE: 2/15/94

G.K.KOSCHAL
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JOB #7197

PCB ANALYSIS OF SOLIDS
BY EPA METHODS 3540 AND 8080/8081

SAMPLE ID:	FCL-1	FCL-2	FCL-3	FCL-4	FCL-5
OAL ID: 25-0173-	18648	18649	18650	18651	18652
SAMPLE DATE:	12/13/93	12/13/93	12/13/93	12/13/93	12/13/93
MATRIX:	SOIL	SOIL	SOIL	SOIL	SOIL
EXTRACTION DATE:	12/15/93	12/15/93	12/15/93	12/15/93	12/15/93
ANALYSIS DATE:	12/15/93	12/15/93	12/15/93	12/15/93	12/15/93
PCB MG/KG	900.	0.31	2,500.	9.4	0.19
SURR.RECOVERY %	96.	95.	96.	98.	98.
ANALYST:	CN	CN	CN	CN	CN

MG/KG = PPM
ND = NONE DETECTED(<0.05 MG/KG)
NA = NOT ANALYZED
MI = MATRIX INTERFERENCE WITH SURROGATE RECOVERY
SURROGATE(S) USED: TETRACHLORO-M-XYLENE AND/OR DECACHLOROBIPHENYL

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REVIEWED BY: Copy DAP
REVIEW DATE: 2/15/95

G.K.KOSCHAL
639-3400/ FAX 620-7892
JOB #7197

PCB ANALYSIS OF SOLIDS
BY EPA METHODS 3540 AND 8080/8081

SAMPLE ID:	FCL-6	FCL-7	FCL-8	FCL-9	FCL-10
OAL ID: 25-0173-	18653	18654	18655	18656	18657
SAMPLE DATE:	12/13/93	12/13/93	12/13/93	12/13/93	12/13/93
MATRIX:	SOIL	SOIL	SOIL	SOIL	SOIL
EXTRACTION DATE:	12/15/93	12/15/93	12/15/93	12/15/93	12/15/93
ANALYSIS DATE:	12/15/93	12/15/93	12/15/93	12/15/93	12/15/93
PCB MG/KG	9.8	2.2	ND	ND	ND
SURR.RECOVERY %	96.	97.	98.	99.	97.
ANALYST:	CN	CN	CN	CN	CN

MG/KG = PPM
ND = NONE DETECTED(<0.05 MG/KG)
NA = NOT ANALYZED
MI = MATRIX INTERFERENCE WITH SURROGATE RECOVERY
SURROGATE(S) USED: TETRACHLORO-M-XYLENE AND/OR DECACHLOROBIPHENYL

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G.K.KOSCHAL
639-3400/ FAX 620-7892
JOB #7197

REVIEWED BY: copy DIP
REVIEW DATE: 2/15/94

PCB ANALYSIS OF SOLIDS
BY EPA METHODS 3540 AND 8080/8081

SAMPLE ID:	FCL-11	FCL-12	FCL-13	FCL-13E	FCL-1E
OAL ID: 25-0173-	18658	18659	18660	18661	18662
SAMPLE DATE:	12/14/93	12/14/93	12/14/93	12/14/93	12/14/93
MATRIX:	SOIL	SOIL	SOIL	SOIL	SOIL
EXTRACTION DATE:	12/15/93	12/15/93	12/15/93	12/15/93	12/15/93
ANALYSIS DATE:	12/15/93	12/15/93	12/15/93	12/15/93	12/15/93
PCB MG/KG	ND	ND	ND	ND	ND
SURR.RECOVERY %	93.	96.	87.	89.	98.
ANALYST:	CN	CN	CN	CN	CN

MG/KG = PPM
ND = NONE DETECTED(<0.05 MG/KG)
NA = NOT ANALYZED
MI = MATRIX INTERFERENCE WITH SURROGATE RECOVERY
SURROGATE(S) USED: TETRACHLORO-M-XYLENE AND/OR DECACHLOROBIPHENYL

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Old Scholls Ferry Road
Beaverton, OR 97007
Phone 503-644-5300 • Fax 503-671-1404

OAL

RZA AGRA, INC.
7477 SW TECH CENTER DRIVE
PORTLAND, OR 97223

REVIEWED BY: Copy DM
REVIEW DATE: 2/15/94

GERRY KOSCHAL
639-3400/ FAX 620-7892
JOB #7197

PCB ANALYSIS OF SOLIDS
BY EPA METHODS 3540 AND 8080/8081

SAMPLE ID:	FCL-1B	FCL-3B	FCL-4B	FCL-6B	FCL-7B
OAL ID: 25-0173-	18904	18905	18906	18907	18908
SAMPLE DATE:	12/20/93	12/20/93	12/20/93	12/20/93	12/20/93
MATRIX:	SOIL	SOIL	SOIL	SOIL	SOIL
EXTRACTION DATE:	12/21/93	12/21/93	12/21/93	12/21/93	12/21/93
ANALYSIS DATE:	12/22/93	12/22/93	12/22/93	12/22/93	12/22/93
PCB MG/KG	0.31	ND	ND	ND.	ND
SURR.RECOVERY %	100.	99.	101.	101.	99.
ANALYST:	DM	DM	DM	DM	DM

MG/KG = PPM
ND = NONE DETECTED(<0.05 MG/KG)
NA = NOT ANALYZED
MI = MATRIX INTERFERENCE WITH SURROGATE RECOVERY
SURROGATE(S) USED: TETRACHLORO-M-XYLENE AND/OR DECACHLOROBIPHENYL

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Old Scholls Ferry Road
Beaverton, OR 97007
Phone 503-644-5300 • Fax 503-671-1404

OAL

RZA AGRA, INC.
7477 SW TECH CENTER DRIVE
PORTLAND, OR 97223

REVIEWED BY: DP

REVIEW DATE: 12/23/93

G.KOSCHAL
639-3400/ FAX 620-7892
JOB #7197

PCB ANALYSIS OF WATER
BY EPA METHODS 3510 AND 8080/8081

SAMPLE ID:	TANK-A	TS-1	TS-2	TS-3
OAL ID: 25-0173-	18987	18988	18989	18990
SAMPLE DATE:	12/21/93	12/21/93	12/21/93	12/21/93
EXTRACTION DATE:	12/22/93	12/22/93	12/22/93	12/22/93
ANALYSIS DATE:	12/22/93	12/22/93	12/22/93	12/22/93
PCB UG/L	160. (1260)	37.(1260)	1500.(1260)	27.(1260)
SURR.RECOVERY %	83.	97.	94.	93.
ANALYST:	CN	CN	CN	CN

UG/L = PPB
ND = NONE DETECTED(<0.5 UG/L)
NA = NOT ANALYZED
MI = MATRIX INTERFERENCE WITH SURROGATE RECOVERY
SURROGATE(S) USED: TETRACHLORO-M-XYLENE AND/OR DECACHLOROBIPHENYL

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Old Scholls Ferry Road
Beaverton, OR 97007
Phone 503-644-5300 • Fax 503-671-1404

RZA AGRA, Inc.
(Formerly: Rittenhouse-Zeman & Associates, Inc.)
Engineering & Environmental Services
7477 SW Tech Center Drive • Portland, OR 97223-8024
(503) 639-3400 • FAX (503) 620-7892

Chain-of-Custody Record / Laboratory Analyses Reque

Project: St Johns (BES) Job #: 7197
Client: City of Portland
Project Manager: Peggy Koschal Phone #: 639-3400
Sampler's Name: Denny Macomber Phone #: 639-3400
Sampler's Signature: Denny R Macomber

Analysis Requested: (Circle, Check Box, or Write Preferred Method in Box)

Sample I.D. #	Date	Time	Preserv.	Matrix	Halogenated Volatiles EPA 601 EPA 8010	Volatile Aromatics EPA 602 EPA 8020	BTXE or BTXE / TPH-G	WA TPH-G or OR TPH-G	WA TPH-D or OR TPH-D	Fuel Scan / TPH by GC 8015-modified	GC Fingerprint / HCID	WA 418.1 Modified or OR 418.1 Modified	GC / MS Volatiles	GC / MS Semi Volatiles	Total Metals ICP AA Other	TC LP Metals	pH Cond. Alk Color	PCBs		# of Containers	Comments
1. P-1	11/5/93	1630	ice	Soil														+		2	
2. P-2	11/5/93	1635																+		2	
3. P-3	11/5/93	1635																+		2	
4. P-4	11/5/93	1640										<						X		2	
5. P-5	11/5/93	1645																X		2	
6.																					
7. SS-1	11/5/93	1545	ice	H_2O														X		1	
8.																					
9.																					
10.																					

Relinquished by RZA:	Relinquished by:	Relinquished by:	Laboratory:	Sample Receipt:
Signature: Denny R Macomber	Signature:	Signature:		
Printed Name: Denny R Macomber	Printed Name:	Printed Name:	Shipping I.D.#	Total # Containers:
Firm: RZA AGRA, Inc	Firm:	Firm:	Carrier:	Condition of Containers:
Date/Time: 11/8/93 8:30	Date/Time:	Date/Time:	DOT Designation:	Condition of Seals:
Received by:	**Received by:**	**Received by:**	**Special Instructions/Comments:**	
Signature: Sean Gosnley	Signature:	Signature:		
Printed Name: Sean Gosnley	Printed Name:	Printed Name:		
Firm: RZA AGRA, Inc.	Firm:	Firm:		
Date/Time: 11/8/93 08:30	Date/Time:	Date/Time:		

DISTRIBUTION: WHITE & PINK returned to project manager, YELLOW - lab.

Page ___ of ___
SERVICE REQUEST #: ___

CRAW00015913

RZA AGRA, Inc.

(Formerly: Rittenhouse-Zeman & Associates, Inc.)
Engineering & Environmental Services
7477 SW Tech Center Drive • Portland, OR 97223-8024
(503) 639-3400 • FAX (503) 620-7892

Chain-of-Custody Record / Laboratory Analyses Request

Project: BES- St Johns Job #: 7197
Client: City of Portland
Project Manager: Denny Koschat Phone # 639-3400
Sampler's Name: Denny Macomber Phone # 639-3400
Sampler's Signature: [signature]

Analysis Requested: (Circle, Check Box, or Write Preferred Method In Box)

Sample I.D. #	Date	Time	Preserv.	Matrix	Halogenated Volatiles EPA 601 EPA 8010	Volatile Aromatics EPA 602 EPA 8020	BTXE or BTXE / TPH-G	WA TPH-G or OR TPH-G	WA TPH-D or OR TPH-D	Fuel Scan / TPH by GC 8015-modified	GC Fingerprint / HCID	WA 418.1 Modified or OR 418.1 Modified	GC / MS Volatiles	GC / MS Semi Volatiles	Total Metals ICP AA Other	TC LP Metals	pH Cond. Alk. Color	PCB's		# of Containers	Comments
1. CL-1	11/5/93	13:10	ICe	Soil		25-017		3-16888										X		2	
2. CL-2		13:20						16889										X		2	
3. CL-3		13:30						16890										X		2	
4. CL-4		13:40						16891										X		2	
5. CL-5		13:50						16892										X		2	
6.																					
7.																					
8.																					
9.																					
10.																					

Relinquished by RZA:	Relinquished by:	Relinquished by:	Laboratory:	Sample Receipt:
Signature: [signature]	Signature:	Signature:		
Printed Name: Denny Macomber	Printed Name:	Printed Name:	Shipping I.D.#	Total # Containers:
Firm: RZA AGRA	Firm:	Firm:	Carrier:	Condition of Containers:
Date/Time: 11/9/93 9:30 am	Date/Time:	Date/Time:	DOT Designation:	Condition of Seals:

Received by:	Received by:	Received by:	Special Instructions/Comments:
Signature:	Signature:	Signature: [signature]	
Printed Name:	Printed Name:	Printed Name: D. Ward	
Firm:	Firm:	Firm: OAL	
Date/Time:	Date/Time:	Date/Time: 11-9-93	

DISTRIBUTION: WHITE & PINK returned to project manager, YELLOW - lab.

Page ___ of ___

SERVICE REQUEST #: ___

CRAW00015914

RZA AGRA, Inc.

(Formerly: Rittenhouse-Zeman & Associates, Inc.)
Engineering & Environmental Services
7477 SW Tech Center Drive • Portland, OR 97223-8024
(503) 639-3400 • FAX (503) 620-7892

Chain-of-Custody Record / Laboratory Analyses Re[illegible]

Project: BES Job #:
Client: City of Portland
Project Manager: Gerry Koschel Phone #: 639-3400
Sampler's Name: D. Robertson Phone #:
Sampler's Signature: —

Analysis Requested: (Circle, Check Box, or Write Preferred Method in Box)

Sample I.D. #	Date	Time	Preserv.	Matrix	Halogenated Volatiles EPA 601 EPA 8010	Volatile Aromatics EPA 602 EPA 8020	BTXE or BTXE / TPH-G	WA. TPH-G or OR. TPH-G	WA. TPH-D or OR. TPH-D	Fuel Scan / TPH by GC 8015-modified	GC Fingerprint / HCID	WA. 418.1 Modified or OR. 418.1 Modified	GC / MS Volatiles	GC / MS Semi Volatiles	Total Metals ICP AA Other	TC LP Metals	pH Cond. Alk Color	8080-PBs only		# of Containers
1. BP-1-11.5	11/11/93		Cool	Soil	25-0170-17006													X		2
2. AP-1-8	↓		↓	↓			17007											X		2
3. BP-2-10.5							17008											X		2
4. AB-2-7							17009											X		2
5. MP-1	↓		↓	↓			17010											X		1
6.																				
7.																				
8.																				
9.																				
10.																				

Relinquished by RZA	Relinquished by:	Relinquished by:	Laboratory:	Sample Receipt:
Signature: Sean Gormley	Signature:	Signature:	OAL	
Printed Name: Sean Gormley	Printed Name:	Printed Name:	Shipping I.D.#	Total # Containers:
Firm: RZA AGRA, Inc.	Firm:	Firm:	Carrier: Online	Condition of Containers:
Date/Time: 11/12/93 09:00	Date/Time:	Date/Time:	DOT Designation:	Condition of Seals:

Received by:	Received by:	Received by:	Special Instructions/Comments:
Signature:	Signature:	Signature: Wally Strending	Original COC #1013
Printed Name:	Printed Name:	Printed Name: Wally Strending	
Firm:	Firm:	Firm: OAL	
Date/Time:	Date/Time:	Date/Time: 11-12 9:25	

DISTRIBUTION: WHITE & PINK returned to project manager, YELLOW - lab.

Page 1 of 1

SERVICE REQUEST #:

CRAW00015915

RZA AGRA, Inc.

(Formerly: Rittenhouse-Zemke & Associates, Inc.)
Engineering & Environmental Services
7477 SW Tech Center Drive • Portland, OR 97223-8024
(503) 639-3400 • FAX (503) 620-7892

Chain-of-Custody Record / Laboratory Analyses Requested

Project: RES ST JOHNS Job #: 7197-00
Client: CITY OF PORTLAND
Project Manager: GERRY KASCHAK Phone #:
Sampler's Name: DAVE ROBERTSON Phone #:
Sampler's Signature: [signature]

Analysis Requested: (Circle, Check Box, or Write Preferred Method in Box)

Sample I.D. #	Date	Time	Preserv.	Matrix	Halogenated Volatiles EPA 601 EPA 8010	Volatile Aromatics EPA 602 EPA 8020	BTXE or BTXE / TPH-G	WA. TPH-G or OR. TPH-G	WA. TPH-D or OR. TPH-D	Fuel Scan / TPH by GC 8015-modified	GC Fingerprint / HCID	WA. 418.1 Modified or OR. 418.1 Modified	GC / MS Volatiles	GC / MS Semi Volatiles	Total Metals ICP AA Other	TC LP Metals	pH Cond. Alk Color	8080-PCB		# of Containers	Comments
1. AP-3-5	11/12/93	9:15	CHILL	SOIL		25-0173-			17229									X		2	RUSH
2. BP-3-10	11/10/93	4:05	↓	↓					17230											2	↓
3. BP-4-10.5	11/11/93	4:00							17231											2	
4. MP-2	11/11/93	12:15	↓	↓					17232											2	↓
5.																					
6.																					
7.																					
8.																					
9.																					
10.																					

Relinquished by RZA:	Relinquished by: 1	Relinquished by:	Laboratory:	Sample Receipt:
Signature: [signature]	Signature: [signature]	Signature:		
Printed Name: DAVID ROBERTSON	Printed Name: Sean Gormley	Printed Name:	Shipping I.D.#:	Total # Containers:
Firm: RZA AGRA	Firm: RZA AGRA, INC.	Firm:	Carrier:	Condition of Containers:
Date/Time: 11/15/93	Date/Time: 11/16/93 9:42	Date/Time:	DOT Designation:	Condition of Seals:

Received by:	Received by:	Received by:	Special Instructions/Comments:
Signature: [signature]	Signature:	Signature: [signature]	RUSH - 11 SAMPLES 48 HOUR TAT - Please
Printed Name: Sean Gormley	Printed Name:	Printed Name: Wally Strendrig	
Firm: RZA AGRA	Firm:	Firm: OAC	
Date/Time: 11/15/93 08:00	Date/Time:	Date/Time: 11-11-93 11:10	

DISTRIBUTION: WHITE & PINK returned to project manager, YELLOW - lab.

Page 1 of

SERVICE REQUEST #:

CRAW00015916

RZA
RITTENHOUSE-ZEMAN & ASSOCIATES, INC.
EARTH & ENVIRONMENTAL CONSULTANTS
7409 S.W. Tech Center Drive, Suite 135
Portland, Oregon 97223-8024
(503) 639-3400 FAX: (503) 620-7892

3689 **CHAIN-OF-CUSTODY RECORD / LABORATORY ANALYSES REQUEST**

PROJECT: Res-St Johns JOB #: 7197
CLIENT: City of Portland
PROJ. MANAGER: G. Koscha PHONE #: 639-3400
SITE ADDRESS: St Johns Bridge / Burlington
SAMPLER'S NAME: D. Macomber PHONE #: 639 3400
SAMPLER'S SIGNATURE: [signature]

ANALYSIS REQUESTED: (Circle, Check Box, or Write Preferred Method in Box) OTHER: (Write in)

SAMPLE ID #	DATE	TIME	PRESERV.	MATRIX	Halogenated Volatiles EPA 601 EPA 8010	Aromatics (BTX&E) EPA 602 EPA 8020	Fuel Scan/TPH by GC EPA 602-mod/8015-mod.	Volatile Organ. Compnds	GC Fingerprint	Penta/tetra-chlorophenol EPA 604	Tot. Petrol. Hydrocarbons EPA 418.1 / TLC	Total Metals ICP AA Other	EP-TOX Metals	Purgeable Organics EPA 624 8240	Base/Neut.Acids EPA 625 8270	pH Cond. Alk Color	NO3/NO2 N-NO3 NH3-N	Ca Mg Na K Fe Cl SO4	TOX TOC TDS COD	PCBs 8080			# of Containers	Sample Preparation	Detection Limits Desired
1. CL-1B	11/17/93	1600	ice	Soil	25	0173-		17	556											X			2		
2. CL-2B	/	1605						17	557											X			2		
3. CL-5B	/	1610						17	558											X			2		
4. MP-3	11/18	10:00						17	559											X					
5. MP-4	"	10:20						17	560											X					
6.																									
7.																									
8.																									
9.																									
10.																									

RELINQUISHED BY RZA:	RELINQUISHED BY:	RELINQUISHED BY:	LABORATORY:	SAMPLE RECEIPT:
Signature: [signature]	Signature: [signature]	Signature:		
Printed Name: Denny Macomber	Printed Name: DAVE ROBERTSON	Printed Name:	Shipping I.D. #:	Total # Containers:
Firm: RZA AGRA, Inc	Firm: RZA AGRA	Firm:	Carrier:	Condition of Containers?
Date/Time: 11/18/93 4:15	Date/Time: 11/19/93	Date/Time:	POT Designation:	Condition of Seals?
RECEIVED BY:	**RECEIVED BY:**	**RECEIVED BY:**	**SPECIAL INSTRUCTIONS/COMMENTS:**	
Signature: [signature]	Signature: [signature]	Signature:	(with Additional Closure Samples) Please identify Aroclor present	
Printed Name: DAVE ROBERTSON	Printed Name: David Bork	Printed Name:		
Firm: RZA AGRA	Firm:	Firm:		
Date/Time: 11/18/93 4:15	Date/Time:	Date/Time:		

DISTRIBUTION: WHITE-return to RZA; YELLOW-lab; PINK-retained by RZA. PAGE ____ OF ____

RZA AGRA, Inc.

(Formerly: Rittenhouse-Zeman & Associates, Inc.)
Engineering & Environmental Services
7477 SW Tech Center Drive • Portland, OR 97223-8024
(503) 639-3400 • FAX (503) 620-7892

Chain-of-Custody Record / Laboratory Analyses Req

Project: BES-ST Tylers Job #: 7197
Client: City of Portland
Project Manager: Gerry Koschal Phone #: 639-3400
Sampler's Name: Dan Macomber Phone #: 639-3400
Sampler's Signature: [signature]

Analysis Requested: (Circle, Check Box, or Write Preferred Method in Box)

Sample I.D. #	Date	Time	Preserv.	Matrix	Halogenated Volatiles EPA 601 EPA 8010	Volatile Aromatics EPA 602 EPA 8020	BTXE or BTXE / TPH-G	WA. TPH-G or OR. TPH-G	WA. TPH-D or OR. TPH-D	Fuel Scan / TPH by GC 8015-modified	GC Fingerprint / HCID	WA. 418.1 Modified or OR. 418.1 Modified	GC / MS Volatiles	GC / MS Semi Volatiles	Total Metals ICP AA Other	TC LP Metals	pH Cond. Alk Color	PCBs 8080		# of Containers	Comments
1. MP-6	11/14/93	1600	ice	soil		25-0173				17657								X		1	
2. SP-1	11/19	14:00								17658								X		1	
3. SP-2	11/19	14:05								17659								X		1	
4. SP-3	11/19	14:10								17660								X		1	
5. SP-4	11/19	14:15								17661								X		1	
6. SP-5	11/19	14:20								17662								X		1	
7. SP-6	11/19	14:25								17663								X		1	
8. SP-7	11/19	14:30								17664								X		1	
9. SP-8	11/19	14:35								17665								X		1	
10. SP-9	11/19	14:40								17666											

Relinquished by RZA:	Relinquished by:	Relinquished by:	Laboratory:	Sample Receipt:
Signature: [signature]	Signature:	Signature:	OAL	
Printed Name: Bernard Koschal	Printed Name:	Printed Name:	Shipping I.D.#	Total # Containers:
Firm: RZA AGRA	Firm:	Firm:	Carrier:	Condition of Containers:
Date/Time: 11/22/93 4:50	Date/Time:	Date/Time:	DOT Designation:	Condition of Seals:

Received by:	Received by:	Received by:	Special Instructions/Comments:
Signature: Kelly Nickerson	Signature:	Signature:	48 hr.
Printed Name: K. Nickerson	Printed Name:	Printed Name:	
Firm: OAL	Firm:	Firm:	
Date/Time: 11/22/93 4:50	Date/Time:	Date/Time:	

DISTRIBUTION: WHITE & PINK returned to project manager, YELLOW - lab.

SERVICE REQUEST #:

CRAW00015918

RZA AGRA, Inc.
(Formerly: Rittenhouse-Zeman & Associates, Inc.)
Engineering & Environmental Services
7477 SW Tech Center Drive • Portland, OR 97223-8024
(503) 639-3400 • FAX (503) 620-7892

Chain-of-Custody Record / Laboratory Analyses Req

Project: BES ST. JOHNS Job #: 7197
Client: CITY OF PDX
Project Manager: G. KOSCHAL Phone #:
Sampler's Name: D. MACOMBER Phone #: 289-3400
Sampler's Signature:

Analysis Requested: (Circle, Check Box, or Write Preferred Method in Box)

Sample I.D. #	Date	Time	Preserv.	Matrix	Halogenated Volatiles EPA 601 EPA 8010	Volatile Aromatics EPA 602 EPA 8020	BTXE or BTXE / TPH-G	WA. TPH-G or OR. TPH-G	WA. TPH-D or OR. TPH-D	Fuel Scan / TPH by GC 8015-modified	GC Fingerprint / HCID	WA. 418.1 Modified or OR. 418.1 Modified	GC / MS Volatiles	GC / MS Semi Volatiles	Total Metals ICP AA Other	TC LP Metals	pH Cond. Alk Color	PCB 8080		# of Containers	Comments
1. SP-10	11/19/93	14:45	ICE	SOIL			25	8173	17667									X		1	
2. SP-11	11/19	14:50							17668									X		1	
3. SP-12	11/19	1455							17669									X		1	
4. SP-13	11/19	15:00							17670									X		1	
5. SP-14	11/19	15:05							17671									X		1	
6. SP-15	11/19	15:10							17672									X		1	
7. SP-16	11/19	15:15							17673									X		1	
8. SP-17 A	11/22	8:00							17674									X		1	
9. SP-17 B	11/22	8:00							17675									X		1	
10. SP-17 C	11/22	8:00							17676									X		1	

Relinquished by RZA:	Relinquished by:	Relinquished by:	Laboratory:	Sample Receipt:
Signature:	Signature:	Signature:	OAL	
Printed Name: GERRY KOSCHAL	Printed Name:	Printed Name:	Shipping I.D.#	Total # Containers:
Firm: RZA AGRA	Firm:	Firm:	Carrier:	Condition of Containers:
Date/Time: 11/22/93 4:50	Date/Time:	Date/Time:	DOT Designation:	Condition of Seals:
Received by:	**Received by:**	**Received by:**	**Special Instructions/Comments:**	
Signature: Kelly Nickerson	Signature:	Signature:	48 hr.	
Printed Name: K. NICKERSON	Printed Name:	Printed Name:		
Firm: OAL	Firm:	Firm:		
Date/Time: 11/22/93 4:50	Date/Time:	Date/Time:		

DISTRIBUTION: WHITE & PINK returned to project manager, YELLOW - lab.

SERVICE REQUEST #:

RZA AGRA, Inc.
(Formerly: Rittenhouse-Zeman & Associates, Inc.)
Engineering & Environmental Services
7477 SW Tech Center Drive • Portland, OR 97223-8024
(503) 639-3400 • FAX (503) 620-7892

Chain-of-Custody Record / Laboratory Analyses Re

Project: BES St Johns Job #: 7197
Client: City of Pox
Project Manager: G Koschal Phone #: 639-3400
Sampler's Name: D. Mccomeck Phone #:
Sampler's Signature:

Analysis Requested: (Circle, Check Box, or Write Preferred Method in Box)

Sample I.D. #	Date	Time	Preserv.	Matrix	Halogenated Volatiles EPA 601 EPA 8010	Volatile Aromatics EPA 602 EPA 8020	BTXE or BTXE / TPH-G	WA. TPH-G or OR. TPH-G	WA. TPH-D or OR. TPH-D	Fuel Scan / TPH by GC 8015-modified	GC Fingerprint / HCID	WA. 418.1 Modified or OR. 418.1 Modified	GC / MS Volatiles	GC / MS Semi Volatiles	Total Metals ICP AA Other	TCLP Metals	pH Cond. Alk Color	RCB 8080		# of Containers	Comments
1. SR17 D	11/22/93	800	ICE	Soil			25-0173-17677											X		1	
2.																					
3.																					
4.																					
5.																					
6.																					
7.																					
8.																					
9.																					
10.																					

Relinquished by RZA:	Relinquished by:	Relinquished by:	Laboratory:	Sample Receipt:
Signature: [signature]	Signature:	Signature:	OAL	
Printed Name: Gerard Koschal	Printed Name:	Printed Name:	Shipping I.D.#	Total # Containers:
Firm: RZA AGRA	Firm:	Firm:	Carrier:	Condition of Containers:
Date/Time: 11/22/93 4:50	Date/Time:	Date/Time:	DOT Designation:	Condition of Seals:

Received by:	Received by:	Received by:	Special Instructions/Comments:
Signature: Kelly Nickerson	Signature:	Signature:	48 hour
Printed Name: K. Nickerson	Printed Name:	Printed Name:	
Firm: OAL	Firm:	Firm:	
Date/Time: 11/22/93 4:50	Date/Time:	Date/Time:	

DISTRIBUTION: WHITE & PINK returned to project manager, YELLOW - lab.

SERVICE REQUEST #:

CRAW00015920

OAL Oregon Analytical Laboratory

14855 S.W. Old Scholls Ferry Rd
Beaverton, Oregon 97007
(503) 590-5300
FAX (503) 671-1404

CHAIN OF CUSTODY RECORD
LABORATORY ANALYSIS REQUEST

Client Information

Company: RZA AGRA, Inc
Contact: Gerry Koschal
Address: 7477 SW TECH CR DR
Pdx 97223
Phone #: 639-3400 FAX #:

Project Name: BES-St John's
Project Number: 7197
P.O. Number:
Comments: PCBs

Sampler's Name: Denny
Signature: [signature]
Sampling Date: 11/19/93

Provide Verbal Results ☒ Yes ☐ No
Provide FAX Results ☐ Yes ☐ No

N - 2 weeks
S - 1 week
R - Rush
O - Other

	Sample Identification	Date	Time	OAL #	# of Containers	Matrix: Soil	Matrix: Water	Matrix: Other (Note in Remarks)	Analyses: Volatiles 624/8260 (circle) All Aromatic Halogenated	Semivolatiles 625/8270 (circle) All PAHs(SIM) Phenol Phthalate	Organochlorinated 608/8080 All PCB Pesticide (circle)	Chlorinated Herbicides 8150	TPH-HCID OR-DEQ Quantify? ☐Yes ☐No	TPH Quantification (circle) G D 418.1M 418.1	BTEX 602/8020	TCLP Metals (circle) As Be Cd Cr Pb Hg Se Ag	TCLP Organics (circle) Vol Semivol Pest Herb	Metals ☐Dissolved ☐Total list	PCBs		Containers	Turnaround	Remarks
1	P-6	11/19/93	10:15	25-0173-17523	2														X		2	R	
2	MP-5	11/19/93	9:20	25-0173-17524	1														X		1	R	
3																							
4																							
5																							
6																							
7																							
8																							
9																							
10																							

Relinquished
Signature: [signature] Date: 11/19/93
Print Name: Denny Macomber Time: 11 AM
Company: RZA AGRA, Inc

Received
Signature: Dorothy Ward Date: 11-19-93
Print Name: D Ward Time: 11 AM
Company: OAL

Relinquished
Signature: Date:
Print Name: Time:
Company:

Received
Signature: Date:
Print Name: Time:
Company:

Shipped Via:
Received @ 4 °C
Appropriate Containers ☒ Yes ☐ No
2 Soil / 1 water 4oz./8oz. Jars
VOA Vials
Plastic Bottles
Glass Bottles
other

CRAW00015921

RZA AGRA, Inc.
(Formerly: Rittenhouse-Zeman & Associates, Inc.)
Engineering & Environmental Services
7477 SW Tech Center Drive • Portland, OR 97223-8024
(503) 639-3400 • FAX (503) 620-7892

Chain-of-Custody Record / Laboratory Analyses Request

Project: ~~7199~~ ST JOHNS Job #: 7197
Client: CITY OF PORTLAND - BES
Project Manager: G KOSCHAL Phone #: 639-3400
Sampler's Name: G KOSCHAL Phone #:
Sampler's Signature: [signature]

Analysis Requested: (Circle, Check Box, or Write Preferred Method in Box)

Sample I.D. #	Date	Time	Preserv.	Matrix	Halogenated Volatiles EPA 601 EPA 8010	Volatile Aromatics EPA 602 EPA 8020	BTXE or BTXE / TPH-G	WA. TPH-G or OR. TPH-G	WA. TPH-D or OR. TPH-D	Fuel Scan / TPH by GC 8015-modified	GC Fingerprint / HCID	WA. 418.1 Modified or OR. 418.1 Modified	GC / MS Volatiles	GC / MS Semi Volatiles	Total Metals ICP AA Other	TC LP Metals	pH Cond. Alk. Color	PCB		# of Containers	Comments
1. 11-1	11/24/93																	X		1	25-0173-17822
2.																					
3.																					
4.																					
5.																					
6.																					
7.																					
8.																					
9.																					
10.																					

Relinquished by RZA:	Relinquished by:	Relinquished by:	Laboratory:	Sample Receipt:
Signature: [signature]	Signature:	Signature:	OAL	
Printed Name: GERARD KOSCHAL	Printed Name:	Printed Name:	Shipping I.D.#	Total # Containers:
Firm: RZA AGRA	Firm:	Firm:	Carrier:	Condition of Containers:
Date/Time: 11/29/93 4:20	Date/Time:	Date/Time:	DOT Designation:	Condition of Seals:
Received by:	**Received by:**	**Received by:**	**Special Instructions/Comments:**	
Signature: [signature]	Signature:	Signature:	INSULATION FROM CASE	
Printed Name: D.C. PLATH	Printed Name:	Printed Name:		
Firm: OAL	Firm:	Firm:		
Date/Time: 11/29/93 4:20P	Date/Time:	Date/Time:		

DISTRIBUTION: WHITE & PINK returned to project manager, YELLOW - lab.

Page 1 of 1

SERVICE REQUEST #:

CRAW00015922

RZA AGRA, Inc.
(Formerly: Rittenhouse-Zeman & Associates, Inc.)
Engineering & Environmental Services
7477 SW Tech Center Drive • Portland, OR 97223-8024
(503) 639-3400 • FAX (503) 620-7892

Chain-of-Custody Record / Laboratory Analyses Request

Project: GES-ST Johns Job #: 7147
Client: City of Portland
Project Manager: Jerry Koschel Phone #: 639-3400
Sampler's Name: D Macomber Phone #: 639-3400
Sampler's Signature: [signature]

Analysis Requested: (Circle, Check Box, or Write Preferred Method in Box)

Sample I.D. #	Date	Time	Preserv.	Matrix	Halogenated Volatiles EPA 601 EPA 8010	Volatile Aromatics EPA 602 EPA 8020	BTXE or BTXE / TPH-G	WA TPH-G or OR TPH-G	WA TPH-D or OR TPH-D	Fuel Scan / TPH by GC 8015-modified	GC Fingerprint / HCID	WA 418.1 Modified or OR 418.1 Modified	GC / MS Volatiles	GC / MS Semi Volatiles	Total Metals ICP AA Other	TC LP Metals	pH Cond. Alk Color	PCBs		# of Containers	Comments
1. FCL-1B	12/20/93	11:30	ice	Soil														X		1	25-0623-18904
2. FCL-3B		1345																X		1	18905
3. FCL-4B		1400																X		1	18906
4. FCL-6B		1415																X		1	18907
5. FCL-7B		1430																X		1	18908
6.																					
7.																					
8.																					
9.																					
10.																					

Relinquished by RZA:	Relinquished by:	Relinquished by:	Laboratory:	Sample Receipt:
Signature: [signature]	Signature:	Signature:		
Printed Name: Denny Macomber	Printed Name:	Printed Name:	Shipping I.D.#	Total # Containers:
Firm: RZA AGRA	Firm:	Firm:	Carrier:	Condition of Containers:
Date/Time: 12/21/93 9:00	Date/Time:	Date/Time:	DOT Designation:	Condition of Seals:
Received by:	**Received by:**	**Received by:**	**Special Instructions/Comments:**	
Signature: Denice S. Ward	Signature:	Signature:	48 hour turn-around	
Printed Name: D Ward	Printed Name:	Printed Name:		
Firm: OAL	Firm:	Firm:		
Date/Time: 12-21-93 9:02	Date/Time:	Date/Time:		

DISTRIBUTION: WHITE & PINK returned to project manager, YELLOW - lab.

Page ____ of ____

SERVICE REQUEST #: _____

RZA AGRA, Inc.
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Engineering & Environmental Services
7477 SW Tech Center Drive • Portland, OR 97223-8024
(503) 639-3400 • FAX (503) 620-7892

Chain-of-Custody Record / Laboratory Analyses Request

Project: BES-S Job #: 7197
Client: City of Portland
Project Manager: G. Koschal Phone #: 639-3400
Sampler's Name: D. MACOMBER Phone #: 639-3400
Sampler's Signature: [signature]

Analysis Requested: (Circle, Check Box, or Write Preferred Method in Box)

Sample I.D. #	Date	Time	Preserv.	Matrix	Halogenated Volatiles EPA 601 EPA 8010	Volatile Aromatics EPA 602 EPA 8020	BTXE or BTXE / TPH-G	WA. TPH-G or OR. TPH-G	WA. TPH-D or OR. TPH-D	Fuel Scan / TPH by GC 8015-modified	GC Fingerprint / HCID	WA. 418.1 Modified or OR. 418.1 Modified	GC / MS Volatiles	GC / MS Semi Volatiles	Total Metals ICP AA Other	TC LP Metals	pH Cond. Alk. Color	PCBs		# of Containers	Comments
1. TANK-A	12/21/93	1545	ice	H_2O	25-017		3-	18987										X		1	
2. TS-1	|	1445	|	|				18988									X		1	
3. TS-2	|	1500	|	|				18989									X		1	
4. TS-3	|	1515	|	|				18990									X		1	
5.																					
6.																					
7.																					
8.																					
9.																					
10.																					

Relinquished by RZA:	Relinquished by:	Relinquished by:	Laboratory:	Sample Receipt:
Signature: [signature]	Signature:	Signature:		
Printed Name: Denny Macomber	Printed Name:	Printed Name:	Shipping I.D.#	Total # Containers:
Firm: RZA AGRA, Inc	Firm:	Firm:	Carrier:	Condition of Containers:
Date/Time: 12/22/93 10.30	Date/Time:	Date/Time:	DOT Designation:	Condition of Seals:
Received by:	**Received by:**	**Received by:**	**Special Instructions/Comments:**	
Signature: D. Ward	Signature:	Signature:	48 hour Turn-Around	
Printed Name: D. Ward	Printed Name:	Printed Name:		
Firm: OAL	Firm:	Firm:		
Date/Time: 12-22-93 10:30	Date/Time:	Date/Time:		

DISTRIBUTION: WHITE & PINK returned to project manager, YELLOW - lab.

SERVICE REQUEST #: _____

0282

RZA AGRA, Inc.

(Formerly: Rittenhouse-Zeman & Associates, Inc.)
Engineering & Environmental Services
7477 SW Tech Center Drive • Portland, OR 97223-8024
(503) 639-3400 • FAX (503) 620-7892

Chain-of-Custody Record / Laboratory Analyses Request

Project: BES (RZA Office - Baker) Job #: 7197
Client: BES - City of Portland
Project Manager: G. Roschal Phone # 639-3400
Sampler's Name: D. MacAmber Phone # 639-3400
Sampler's Signature: [signature]

Analysis Requested: (Circle, Check Box, or Write Preferred Method in Box)

Sample I.D. #	Date	Time	Preserv.	Matrix	Halogenated Volatiles EPA 601 EPA 8010	Volatile Aromatics EPA 602 EPA 8020	BTXE or BTXE / TPH-G	WA TPH-G or OR TPH-G	WA TPH-D or OR TPH-D	Fuel Scan / TPH by GC 8015-modified	GC Fingerprint / HCID	WA 418.1 Modified or OR 418.1 Modified	GC / MS Volatiles	GC / MS Semi Volatiles	Total Metals ICP AA Other	TC LP Metals	pH Cond. Alk. Color	PCB		# of Containers	Comments
1. BT-1	7/13/94	845	ice	H_2O														X		2	25-0173-19700
2.																					
3.																					
4.																					
5.																					
6.																					
7.																					
8.																					
9.																					
10.																					

Relinquished by RZA:	Relinquished by:	Relinquished by:	Laboratory:	Sample Receipt:
Signature: [signature]	Signature:	Signature:		
Printed Name: Denny MacAmber	Printed Name:	Printed Name:	Shipping I.D.#	Total # Containers:
Firm: RZA AGRA, Inc	Firm:	Firm:	Carrier:	Condition of Containers:
Date/Time: 7/13/94 10 AM	Date/Time:	Date/Time:	DOT Designation:	Condition of Seals:
Received by:	**Received by:**	**Received by:**	**Special Instructions/Comments:**	
Signature: R.A. Nickerson	Signature:	Signature:	- Normal turn-around	
Printed Name: Kelly Nickerson	Printed Name:	Printed Name:		
Firm: DAL	Firm:	Firm:		
Date/Time: 7/13/94 10 AM	Date/Time:	Date/Time:		

DISTRIBUTION: WHITE & PINK returned to project manager, YELLOW - lab.

Page 1 of 1.

SERVICE REQUEST #:

CRAW00015925

OAL

RZA AGRA, INC.
7477 SW TECH CENTER DRIVE
PORTLAND, OR 97223

REVIEWED BY: D. Miller
REVIEW DATE: 11/24/93

GERRY KOSCHAL
639-3400/ FAX 620-7892
JOB #7197

PCB ANALYSIS OF SOLIDS
BY EPA METHODS 3540 AND 8080/8081

SAMPLE ID:	SP-17D
OAL ID: 25-0173-	17677
SAMPLE DATE:	11/19/93
MATRIX:	SOIL
EXTRACTION DATE:	11/23/93
ANALYSIS DATE:	11/23/93
PCB MG/KG	0.25 (1260)
SURR.RECOVERY %	104.
ANALYST:	DH

MG/KG = PPM
ND = NONE DETECTED(<0.05 MG/KG)
NA = NOT ANALYZED
MI = MATRIX INTERFERENCE WITH SURROGATE RECOVERY
SURROGATE(S) USED: TETRACHLORO-M-XYLENE AND/OR DECACHLOROBIPHENYL

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Old Scholls Ferry Road
Beaverton, OR 97007
Phone 503-644-5300 • Fax 503-671-1404

OAL

RECEIVED DEC 0 3 1993

RZA AGRA, INC.
7477 SW TECH CENTER DRIVE
PORTLAND, OR 97223

REVIEWED BY: DLP

REVIEW DATE: 12/1/93

GERRY KOSCHAL
639-3400/ FAX 620-7892
JOB #7197

PCB ANALYSIS OF SOLIDS
BY EPA METHODS 3540 AND 8080/8081

SAMPLE ID:	CL-1B	CL-2B	CL-5B	MP-3	MP-4
OAL ID: 25-0173-	17556	17557	17558	17559	17560
SAMPLE DATE:	11/17/93	11/17/93	11/17/93	11/18/93	11/18/93
MATRIX:	SOIL	SOIL	SOIL	SOIL	NA
EXTRACTION DATE:	11/29/93	11/29/93	11/29/93	11/29/93	.
ANALYSIS DATE:	11/30/93	11/30/93	11/30/93	11/30/93	.
PCB MG/KG	0.28(1260)*	0.39(1260)	0.06(1260)*	ND	.
SURR.RECOVERY %	97.	100.	99.	98.	.
ANALYST:	DM	DM	DM	DM	.

MG/KG = PPM
ND = NONE DETECTED(<0.05 MG/KG)
NA = NOT ANALYZED
MI = MATRIX INTERFERENCE WITH SURROGATE RECOVERY
SURROGATE(S) USED: TETRACHLORO-M-XYLENE AND/OR DECACHLOROBIPHENYL

* These two samples showed a small amount of Aroclor 1254 also. The result listed is a total.

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OAL

RZA AGRA, INC.
7477 SW TECH CENTER DRIVE
PORTLAND, OR 97223

REVIEWED BY: DH

REVIEW DATE: 12/1/93

GERRY KOSCHAL
639-3400/ FAX 620-7892
JOB #7197

PCB ANALYSIS OF SOILS
BY SHAKEOUT* AND EPA 8080/8081

SAMPLE ID:	MP-4
OAL ID: 25-0173-	17774
SAMPLE DATE:	11/17/93
PCB SHAKEOUT PPM	0.07(1260)

MG/KG = PPM
ND = NONE DETECTED(<0.05 MG/KG)
NA = NOT ANALYZED
* THE SHAKEOUT PREP IS NOT AN EPA APPROVED PROCEDURE AND SHOULD BE USED FOR SCREENING PURPOSES ONLY.

OREGON ANALYTICAL LABORATORY
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PORTLAND, OR 97223

REVIEWED BY: DGP

REVIEW DATE: 12/9/93

GERRY KOSCHAL
639-3400/ FAX 620-7892
JOB #7197

PCB ANALYSIS OF SOLIDS
BY EPA METHODS 3580 AND 8080/8081

SAMPLE ID:		IN-1
OAL ID: 25-0173-		17822
SAMPLE DATE:		11/24/93
PCB	MG/KG	17000. (1260)

MG/KG = PPM
ND = NONE DETECTED(<0.5 MG/KG)
NA = NOT ANALYZED

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Old Scholls Ferry Road
Beaverton, OR 97007
Phone 503-644-5300 • Fax 503-671-1404

OAL

RZA AGRA, INC.
7477 SW TECH CENTER DRIVE
PORTLAND, OR 97223

REVIEWED BY: Copy DQV
REVIEW DATE: 2/15/94

G.K.KOSCHAL
639-3400/ FAX 620-7892
JOB #7197

PCB ANALYSIS OF SOLIDS
BY EPA METHODS 3540 AND 8080/8081

SAMPLE ID:	FCL-1	FCL-2	FCL-3	FCL-4	FCL-5
OAL ID: 25-0173-	18648	18649	18650	18651	18652
SAMPLE DATE:	12/13/93	12/13/93	12/13/93	12/13/93	12/13/93
MATRIX:	SOIL	SOIL	SOIL	SOIL	SOIL
EXTRACTION DATE:	12/15/93	12/15/93	12/15/93	12/15/93	12/15/93
ANALYSIS DATE:	12/15/93	12/15/93	12/15/93	12/15/93	12/15/93
PCB MG/KG	900.	0.31	2,500.	9.4	0.19
SURR.RECOVERY %	96.	95.	96.	98.	98.
ANALYST:	CN	CN	CN	CN	CN

MG/KG = PPM
ND = NONE DETECTED(<0.05 MG/KG)
NA = NOT ANALYZED
MI = MATRIX INTERFERENCE WITH SURROGATE RECOVERY
SURROGATE(S) USED: TETRACHLORO-M-XYLENE AND/OR DECACHLOROBIPHENYL

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Old Scholls Ferry Road
Beaverton, OR 97007
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OAL

RZA AGRA, INC.
7477 SW TECH CENTER DRIVE
PORTLAND, OR 97223

REVIEWED BY: Copy DAP
REVIEW DATE: 2/15/94

G.K.KOSCHAL
639-3400/ FAX 620-7892
JOB #7197

PCB ANALYSIS OF SOLIDS
BY EPA METHODS 3540 AND 8080/8081

SAMPLE ID:	FCL-6	FCL-7	FCL-8	FCL-9	FCL-10
OAL ID: 25-0173-	18653	18654	18655	18656	18657
SAMPLE DATE:	12/13/93	12/13/93	12/13/93	12/13/93	12/13/93
MATRIX:	SOIL	SOIL	SOIL	SOIL	SOIL
EXTRACTION DATE:	12/15/93	12/15/93	12/15/93	12/15/93	12/15/93
ANALYSIS DATE:	12/15/93	12/15/93	12/15/93	12/15/93	12/15/93
PCB MG/KG	9.8	2.2	ND	ND	ND
SURR.RECOVERY %	96.	97.	98.	99.	97.
ANALYST:	CN	CN	CN	CN	CN

MG/KG = PPM
ND = NONE DETECTED(<0.05 MG/KG)
NA = NOT ANALYZED
MI = MATRIX INTERFERENCE WITH SURROGATE RECOVERY
SURROGATE(S) USED: TETRACHLORO-M-XYLENE AND/OR DECACHLOROBIPHENYL

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Old Scholls Ferry Road
Beaverton, OR 97007
Phone 503-644-5300 • Fax 503-671-1404

OAL

RZA AGRA, INC.
7477 SW TECH CENTER DRIVE
PORTLAND, OR 97223

G.K.KOSCHAL
639-3400/ FAX 620-7892
JOB #7197

REVIEWED BY: copy DW
REVIEW DATE: 2/15/94

PCB ANALYSIS OF SOLIDS
BY EPA METHODS 3540 AND 8080/8081

SAMPLE ID:	FCL-11	FCL-12	FCL-13	FCL-13E	FCL-1E
OAL ID: 25-0173-	18658	18659	18660	18661	18662
SAMPLE DATE:	12/14/93	12/14/93	12/14/93	12/14/93	12/14/93
MATRIX:	SOIL	SOIL	SOIL	SOIL	SOIL
EXTRACTION DATE:	12/15/93	12/15/93	12/15/93	12/15/93	12/15/93
ANALYSIS DATE:	12/15/93	12/15/93	12/15/93	12/15/93	12/15/93
PCB MG/KG	ND	ND	ND	ND	ND
SURR.RECOVERY %	93.	96.	87.	89.	98.
ANALYST:	CN	CN	CN	CN	CN

MG/KG = PPM
ND = NONE DETECTED(<0.05 MG/KG)
NA = NOT ANALYZED
MI = MATRIX INTERFERENCE WITH SURROGATE RECOVERY
SURROGATE(S) USED: TETRACHLORO-M-XYLENE AND/OR DECACHLOROBIPHENYL

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Old Scholls Ferry Road
Beaverton, OR 97007
Phone 503-644-5300 • Fax 503-671-1404

OAL

RZA AGRA, INC.
7477 SW TECH CENTER DRIVE
PORTLAND, OR 97223

REVIEWED BY: Copy DM
REVIEW DATE: 2/15/94

GERRY KOSCHAL
639-3400/ FAX 620-7892
JOB #7197

PCB ANALYSIS OF SOLIDS
BY EPA METHODS 3540 AND 8080/8081

SAMPLE ID:	FCL-1B	FCL-3B	FCL-4B	FCL-6B	FCL-7B
OAL ID: 25-0173-	18904	18905	18906	18907	18908
SAMPLE DATE:	12/20/93	12/20/93	12/20/93	12/20/93	12/20/93
MATRIX:	SOIL	SOIL	SOIL	SOIL	SOIL
EXTRACTION DATE:	12/21/93	12/21/93	12/21/93	12/21/93	12/21/93
ANALYSIS DATE:	12/22/93	12/22/93	12/22/93	12/22/93	12/22/93
PCB MG/KG	0.31	ND	ND	ND.	ND
SURR.RECOVERY %	100.	99.	101.	101.	99.
ANALYST:	DM	DM	DM	DM	DM

MG/KG = PPM
ND = NONE DETECTED(<0.05 MG/KG)
NA = NOT ANALYZED
MI = MATRIX INTERFERENCE WITH SURROGATE RECOVERY
SURROGATE(S) USED: TETRACHLORO-M-XYLENE AND/OR DECACHLOROBIPHENYL

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Old Scholls Ferry Road
Beaverton, OR 97007
Phone 503-644-5300 • Fax 503-671-1404

OAL

RZA AGRA, INC.
7477 SW TECH CENTER DRIVE
PORTLAND, OR 97223

REVIEWED BY: DMP

REVIEW DATE: 12/23/93

G.KOSCHAL
639-3400/ FAX 620-7892
JOB #7197

PCB ANALYSIS OF WATER
BY EPA METHODS 3510 AND 8080/8081

SAMPLE ID:	TANK-A	TS-1	TS-2	TS-3
OAL ID: 25-0173-	18987	18988	18989	18990
SAMPLE DATE:	12/21/93	12/21/93	12/21/93	12/21/93
EXTRACTION DATE:	12/22/93	12/22/93	12/22/93	12/22/93
ANALYSIS DATE:	12/22/93	12/22/93	12/22/93	12/22/93
PCB UG/L	160. (1260)	37.(1260)	1500.(1260)	27.(1260)
SURR.RECOVERY %	83.	97.	94.	93.
ANALYST:	CN	CN	CN	CN

UG/L = PPB
ND = NONE DETECTED(<0.5 UG/L)
NA = NOT ANALYZED
MI = MATRIX INTERFERENCE WITH SURROGATE RECOVERY
SURROGATE(S) USED: TETRACHLORO-M-XYLENE AND/OR DECACHLOROBIPHENYL

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Old Scholls Ferry Road
Beaverton, OR 97007
Phone 503-644-5300 • Fax 503-671-1404

RZA AGRA, Inc.

(Formerly: Rittenhouse-Zeman & Associates, Inc.)
Engineering & Environmental Services
7477 SW Tech Center Drive • Portland, OR 97223-8024
(503) 639-3400 • FAX (503) 620-7892

Chain-of-Custody Record / Laboratory Analyses Reques

Project: St Johns (BES) Job #: 7197
Client: City of Portland
Project Manager: Gerry Koschal Phone #: 639-3400
Sampler's Name: Denny Macomber Phone #: 639-3400
Sampler's Signature: Denny R Macomber

Analysis Requested: (Circle, Check Box, or Write Preferred Method in Box)

Sample I.D. #	Date	Time	Preserv.	Matrix	Halogenated Volatiles EPA 601 EPA 8010	Volatile Aromatics EPA 602 EPA 8020	BTXE or BTXE / TPH-G	WA TPH-G or OR TPH-G	WA TPH-D or OR TPH-D	Fuel Scan / TPH by GC 8015-modified	GC Fingerprint / HCID	WA 418.1 Modified or OR 418.1 Modified	GC / MS Volatiles	GC / MS Semi Volatiles	Total Metals ICP AA Other	TC LP Metals	pH Cond. Alk Color	PCBs		# of Containers	Comments
1. P-1	11/5/93	1630	ice	Soil														X		2	
2. P-2	11/5/93	1635																X		2	
3. P-3	11/5/93	1635																X		2	
4. P-4	11/5/93	1640										X						X		2	
5. P-5	11/5/93	1645																X		2	
6.																					
7. SS-1	11/5/93	1545	ice	H_2O														X		1	
8.																					
9.																					
10.																					

Relinquished by RZA:	Relinquished by:	Relinquished by:	Laboratory:	Sample Receipt:
Signature: Denny R Macomber	Signature:	Signature:		
Printed Name: Denny R Macomber	Printed Name:	Printed Name:	Shipping I.D.#	Total # Containers:
Firm: RZA AGRA, Inc	Firm:	Firm:	Carrier:	Condition of Containers:
Date/Time: 11/8/93 8:30	Date/Time:	Date/Time:	DOT Designation:	Condition of Seals:
Received by:	**Received by:**	**Received by:**	**Special Instructions/Comments:**	
Signature: Sean Gormley	Signature:	Signature:		
Printed Name: Sean Gormley	Printed Name:	Printed Name:		
Firm: RZA AGRA, Inc.	Firm:	Firm:		
Date/Time: 11/9/93 08:30	Date/Time:	Date/Time:		

DISTRIBUTION: WHITE & PINK returned to project manager, YELLOW - lab.

Page ___ of ___

SERVICE REQUEST #:

CRAW00015935

RZA AGRA, Inc.

(Formerly: Rittenhouse-Zeman & Associates, Inc.)
Engineering & Environmental Services
7477 SW Tech Center Drive • Portland, OR 97223-8024
(503) 639-3400 • FAX (503) 620-7892

Chain-of-Custody Record / Laboratory Analyses Request

Project: BES - St Johns Job #: 7197
Client: City of Portland
Project Manager: Gerry Kuschat Phone #: 654-3400
Sampler's Name: Dennis Macomber Phone #: 639-3400
Sampler's Signature: [signature]

Analysis Requested: (Circle, Check Box, or Write Preferred Method in Box)

Sample I.D. #	Date	Time	Preserv.	Matrix	Halogenated Volatiles EPA 601 EPA 8010	Volatile Aromatics EPA 602 EPA 8020	BTXE or BTXE / TPH-G	WA TPH-G or OR TPH-G	WA TPH-D or OR TPH-D	Fuel Scan / TPH by GC 8015-modified	GC Fingerprint / HCID	WA 418.1 Modified or OR 418.1 Modified	GC / MS Volatiles	GC / MS Semi Volatiles	Total Metals ICP AA Other	TC LP Metals	pH Cond. Alk. Color	PCBs		# of Containers	Comments
1. CL-1	11/5/93	13:10	ICE	Soil		25	017	3-16888										X		2	
2. CL-2		13:20						16889										X		2	
3. CL-3		13:30						16890										X		2	
4. CL-4		13:40						16891										X		2	
5. CL-5		13:50						16892										X		2	
6.																					
7.																					
8.																					
9.																					
10.																					

Relinquished by RZA:	Relinquished by:	Relinquished by:	Laboratory:	Sample Receipt:
Signature: [signature]	Signature:	Signature:		
Printed Name: Dennis Macomber	Printed Name:	Printed Name:	Shipping I.D.#	Total # Containers:
Firm: RZA AGRA	Firm:	Firm:	Carrier:	Condition of Containers:
Date/Time: 11/9/93 9:30 am	Date/Time:	Date/Time:	DOT Designation:	Condition of Seals:
Received by:	**Received by:**	**Received by:**	**Special Instructions/Comments:**	
Signature:	Signature:	Signature: [signature]		
Printed Name:	Printed Name:	Printed Name: D. Ward		
Firm:	Firm:	Firm: OAL		
Date/Time:	Date/Time:	Date/Time: 11-9-93		

DISTRIBUTION: WHITE & PINK returned to project manager, YELLOW - lab.

Page ___ of ___

SERVICE REQUEST #: ___

CRAW00015936

RZA AGRA, Inc.

(Formerly: Rittenhouse-Zeman & Associates, Inc.)
Engineering & Environmental Services
7477 SW Tech Center Drive • Portland, OR 97223-8024
(503) 639-3400 • FAX (503) 620-7892

Chain-of-Custody Record / Laboratory Analyses Re

Project: BES
Job #:
Client: City of Portland
Project Manager: Gerry Koschel
Phone #: 639-3400
Sampler's Name: D. Robertson
Phone #:
Sampler's Signature:

Analysis Requested: (Circle, Check Box, or Write Preferred Method in Box)

Sample I.D. #	Date	Time	Preserv.	Matrix	Halogenated Volatiles EPA 601 EPA 8010	Volatile Aromatics EPA 602 EPA 8020	BTXE or BTXE / TPH-G	WA TPH-G or OR TPH-G	WA TPH-D or OR TPH-D	Fuel Scan / TPH by GC 8015-modified	GC Fingerprint / HCID	WA 418.1 Modified or OR 418.1 Modified	GC / MS Volatiles	GC / MS Semi Volatiles	Total Metals ICP AA Other	TC LP Metals	pH Cond. Alk Color	8080-PBs only		# of Containers
1. BP-1-11.5	11/11/93		Cool	Soil			25-117-17006											X		2
2. AP-1-8	↓		↓	↓			17007											X		2
3. BP-2-10.5							17008											X		2
4. AB-2-7							17009											X		2
5. MP-1	↓		↓	↓			17010											X		1
6.																				
7.																				
8.																				
9.																				
10.																				

Relinquished by RZA	Relinquished by:	Relinquished by:	Laboratory:	Sample Receipt:
Signature: Sean Gourley	Signature:	Signature:	OAL	
Printed Name: Sean Gourley	Printed Name:	Printed Name:	Shipping I.D.#:	Total # Containers:
Firm: RZA AGRA, Inc.	Firm:	Firm:	Carrier: Online	Condition of Containers:
Date/Time: 11/12/93 09:00	Date/Time:	Date/Time:	DOT Designation:	Condition of Seals:

Received by:	Received by:	Received by:	Special Instructions/Comments:
Signature:	Signature:	Signature: Wally Strendling	Original COC # 1013
Printed Name:	Printed Name:	Printed Name: Wally Strendling	
Firm:	Firm:	Firm: OAL	
Date/Time:	Date/Time:	Date/Time: 11-12 9:35	

DISTRIBUTION: WHITE & PINK returned to project manager, YELLOW - lab.

Page 1 of 1

SERVICE REQUEST #:

CRAW00015937

RZA AGRA, Inc.

(Formerly: Rittenhouse-Zeman & Associates, Inc.)
Engineering & Environmental Services
7477 SW Tech Center Drive • Portland, OR 97223-8024
(503) 639-3400 • FAX (503) 620-7892

Chain-of-Custody Record / Laboratory Analyses Requested

Project: RES ST JOHNS Job #: 7197-00
Client: CITY OF PORTLAND
Project Manager: GERRY KOSCHAL Phone #:
Sampler's Name: DAVE ROBERTSON Phone #:
Sampler's Signature: [signature]

Analysis Requested: (Circle, Check Box, or Write Preferred Method in Box)

Sample I.D. #	Date	Time	Preserv.	Matrix	Halogenated Volatiles EPA 601 EPA 8010	Volatile Aromatics EPA 602 EPA 8020	BTXE or BTXE / TPH-G	WA TPH-G or OR TPH-G	WA TPH-D or OR TPH-D	Fuel Scan / TPH by GC 8015-modified	GC Fingerprint / HCID	WA 418.1 Modified or OR 418.1 Modified	GC / MS Volatiles	GC / MS Semi Volatiles	Total Metals ICP AA Other	TC LP Metals	pH Cond. Alk. Color	8080-A28		# of Containers	Comments
1. AP-3-5	11/13/93	9:15	CHILL	SOIL		25-D173-			17229									X		2	RUSH
2. BP-3-10	11/11/93	4:05	↓	↓					17230									↓		2	↓
3. BP-4-10.5	11/11/93	4:00							17231											2	
4. MP-2	11/13/93	12:15	↓	↓					17232									↓		2	↓
5.																					
6.																					
7.																					
8.																					
9.																					
10.																					

Relinquished by RZA:	Relinquished by: 1	Relinquished by:	Laboratory:	Sample Receipt:
Signature: [signature]	Signature: [signature]	Signature:		
Printed Name: DAVID ROBERTSON	Printed Name: Jean Gormley	Printed Name:	Shipping I.D.#:	Total # Containers:
Firm: RZA AGRA	Firm: RZA AGRA INC	Firm:	Carrier:	Condition of Containers:
Date/Time: 11/15/93	Date/Time: 11/16/93 9:25	Date/Time:	DOT Designation:	Condition of Seals:
Received by:	**Received by:**	**Received by:**	**Special Instructions/Comments:**	
Signature: [signature]	Signature:	Signature: [signature]	RUSH - 11/13/93 SAMPLES 48 hour TAT - please	
Printed Name: Jean Gormley	Printed Name:	Printed Name: Willy Strending		
Firm: RZA AGRA	Firm:	Firm: OAC		
Date/Time: 11/15/93 08:50	Date/Time:	Date/Time: 11-11-93 11:10		

DISTRIBUTION: WHITE & PINK returned to project manager, YELLOW - lab.

Page 1 of

SERVICE REQUEST #:

CRAW00015938

RZA

RITTENHOUSE-ZEMAN & ASSOCIATES, INC.
EARTH & ENVIRONMENTAL CONSULTANTS

7409 S.W. Tech Center Drive, Suite 135
Portland, Oregon 97223-8024
(503) 639-3400 FAX: (503) 620-7892

3689

CHAIN-OF-CUSTODY RECORD / LABORATORY ANALYSES REQUEST

PROJECT: Res-St Johns JOB #: 7197
CLIENT: City of Portland
PROJ. MANAGER: G. Koscho PHONE #: 639-3400
SITE ADDRESS: St Johns Bridge / Burlingame
SAMPLER'S NAME: D. Macomber PHONE #: 639 3400
SAMPLER'S SIGNATURE: [signature]

ANALYSIS REQUESTED: (Circle, Check Box, or Write Preferred Method in Box) OTHER: (Write in)

SAMPLE ID #	DATE	TIME	PRESERV.	MATRIX	Halogenated Volatiles EPA 601 EPA 8010	Aromatics (BTXAE) EPA 602 EPA 8020	Fuel Scan/TPH by GC EPA 602-mod/8015-mod.	Volatile Organ. Compods	GC Fingerprint	Penta/tetra-chlorophenol EPA 604 EPA 8040	Tot. Petrol. Hydrocarbons EPA 413.1 418.1 / TLC	Total Metals ICP AA Other	EP-TOX Metals	Purgeable Organics EPA 624	Base/Neut.Acids EPA 625 8270	pH Cond. Alk Color	NO3/NO2 N-NO3 NH3-N	Ca Mg Na K Fe Cl SO4	TOX TOC TDS COD	PCBs 8080			# of Containers	Sample Preparation	Detection Limits Desired
1. CL-1B	11/17/93	16 00	ice	Soil	25	0173-		17	556											X			2		
2. CL-2B	/	1605						17	557											X			2		
3. CL-5B		1610						17	558											X			2		
4. MP-3	11/18	10:00						17	559											X					
5. MP-4	"	10:20						17	560											X					
6.																									
7.																									
8.																									
9.																									
10.																									

RELINQUISHED BY RZA:	RELINQUISHED BY:	RELINQUISHED BY:	LABORATORY:	SAMPLE RECEIPT:
Signature: [signature]	Signature: [signature]	Signature:		
Printed Name: Denny Macomber	Printed Name: DAVE ROBERTSON	Printed Name:	Shipping I.D. #:	Total # Containers:
Firm: RZA AGRA, Inc	Firm: RZA AGRA	Firm:	Carrier:	Condition of Containers?
Date/Time: 11/18/93 4:15	Date/Time: 11/19/93	Date/Time:	DOT Designation:	Condition of Seals?
RECEIVED BY:	**RECEIVED BY:**	**RECEIVED BY:**	**SPECIAL INSTRUCTIONS/COMMENTS:**	
Signature: [signature]	Signature: [signature]	Signature:	(With Additional Closure Samples) Please identify Aroclor present	
Printed Name: DAVE ROBERTSON	Printed Name: Duwed Box	Printed Name:		
Firm: RZA AGRA	Firm:	Firm:		
Date/Time: 11/18/93 4:15	Date/Time:	Date/Time:		

DISTRIBUTION: WHITE-return to RZA; YELLOW-lab; PINK-retained by RZA.

PAGE ____ OF ____.

CRAW00015939

RZA AGRA, Inc.
(Formerly: Rittenhouse-Zeman & Associates, Inc.)
Engineering & Environmental Services
7477 SW Tech Center Drive • Portland, OR 97223-8024
(503) 639-3400 • FAX (503) 620-7892

Chain-of-Custody Record / Laboratory Analyses Req

Project: BES-ST Johns Job #: 7197
Client: City of Portland
Project Manager: Gary Koschal Phone #: 639-3400
Sampler's Name: Dan Macomber Phone #: 639-3400
Sampler's Signature: [signature]

Analysis Requested: (Circle, Check Box, or Write Preferred Method in Box)

Sample I.D. #	Date	Time	Preserv.	Matrix	Halogenated Volatiles EPA 601 EPA 8010	Volatile Aromatics EPA 602 EPA 8020	BTXE or BTXE / TPH-G	WA TPH-G or OR TPH-G	WA TPH-D or OR TPH-D	Fuel Scan / TPH by GC 8015-modified	GC Fingerprint / HCID	WA 418.1 Modified or OR 418.1 Modified	GC / MS Volatiles	GC / MS Semi Volatiles	Total Metals ICP AA Other	TC LP Metals	pH Cond. Alk Color	PCBs 8080		# of Containers	Comments
1. MP-6	11/19/93	1600	ice	soil		25-0173				17657								X		1	
2. SP-1	11/19	14:00								17658								X		1	
3. SP-2	11/19	14:05								17659								X		1	
4. SP-3	11/19	14:10								17660								X		1	
5. SP-4	11/19	14:15								17661								X		1	
6. SP-5	11/19	14:20								17662								X		1	
7. SP-6	11/19	14:25								17663								X		1	
8. SP-7	11/19	14:30								17664								X		1	
9. SP-8	11/19	14:35								17665								X		1	
10. SP-9	11/19	14:44								17666											

Relinquished by RZA:	Relinquished by:	Relinquished by:	Laboratory:	Sample Receipt:
Signature: [signature]	Signature:	Signature:	OAL	
Printed Name: Bernard Koschal	Printed Name:	Printed Name:	Shipping I.D.#	Total # Containers:
Firm: RZA AGRA	Firm:	Firm:	Carrier:	Condition of Containers:
Date/Time: 11/22/93 4:50	Date/Time:	Date/Time:	DOT Designation:	Condition of Seals:

Received by:	Received by:	Received by:	Special Instructions/Comments:
Signature: Kelly Nickerson	Signature:	Signature:	48 hr.
Printed Name: K. Nickerson	Printed Name:	Printed Name:	
Firm: OAL	Firm:	Firm:	
Date/Time: 11/22/93 4:50	Date/Time:	Date/Time:	

DISTRIBUTION: WHITE & PINK returned to project manager, YELLOW - lab.

SERVICE REQUEST #:

CRAW00015940

RZA AGRA, Inc.
(Formerly: Rittenhouse-Zeman & Associates, Inc.)
Engineering & Environmental Services
7477 SW Tech Center Drive • Portland, OR 97223-8024
(503) 639-3400 • FAX (503) 620-7892

Chain-of-Custody Record / Laboratory Analyses Req

Project: BES St. Johns Job #: 7197
Client: City of PDX
Project Manager: G. Koschal Phone #:
Sampler's Name: D. Macomber Phone #: 689-3400
Sampler's Signature:

Analysis Requested: (Circle, Check Box, or Write Preferred Method in Box)

Sample I.D. #	Date	Time	Preserv.	Matrix	Halogenated Volatiles EPA 601 EPA 8010	Volatile Aromatics EPA 602 EPA 8020	BTXE or BTXE / TPH-G	WA. TPH-G or OR. TPH-G	WA. TPH-D or OR. TPH-D	Fuel Scan / TPH by GC 8015-modified	GC Fingerprint / HCID	WA. 418.1 Modified or OR. 418.1 Modified	GC / MS Volatiles	GC / MS Semi Volatiles	Total Metals ICP AA Other	TC LP Metals	pH Cond. Alk Color	PCB 8080		# of Containers	Comments
1. SP-10	11/19/93	14:45	ICE	Soil			25-8173			17667								X		1	
2. SP-11	11/19	14:50								17668								X		1	
3. SP-12	11/19	14:55								17669								X		1	
4. SP-13	11/19	15:00								17670								X		1	
5. SP-14	11/19	15:05								17671								X		1	
6. SP-15	11/19	15:10								17672								X		1	
7. SP-16	11/19	15:15								17673								X		1	
8. SP-17 A	11/22	8:00								17674								X		1	
9. SP-17 B	11/22	8:00								17675								X		1	
10. SP-17 C	11/22	8:00								17676								X		1	

Relinquished by RZA:	Relinquished by:	Relinquished by:	Laboratory:	Sample Receipt:
Signature: [signature]	Signature:	Signature:	DAL	
Printed Name: Gerard Koschal	Printed Name:	Printed Name:	Shipping I.D.#	Total # Containers:
Firm: RZA Agra	Firm:	Firm:	Carrier:	Condition of Containers:
Date/Time: 11/22/93 4:50	Date/Time:	Date/Time:	DOT Designation:	Condition of Seals:

Received by:	Received by:	Received by:	Special Instructions/Comments:
Signature: Kelly Nickerson	Signature:	Signature:	48 hr.
Printed Name: K. Nickerson	Printed Name:	Printed Name:	
Firm: DAL	Firm:	Firm:	
Date/Time: 11/22/93 4:50	Date/Time:	Date/Time:	

DISTRIBUTION: WHITE & PINK returned to project manager, YELLOW - lab.

SERVICE REQUEST #:

CRAW00015941

RZA AGRA, Inc.
(Formerly: Rittenhouse-Zeman & Associates, Inc.)
Engineering & Environmental Services
7477 SW Tech Center Drive • Portland, OR 97223-8024
(503) 639-3400 • FAX (503) 620-7892

Chain-of-Custody Record / Laboratory Analyses Re

Project: BES St Johns Job #: 7197
Client: City of PDX
Project Manager: G Koschal Phone #: 639-3400
Sampler's Name: O. Illacomack Phone #:
Sampler's Signature:

Analysis Requested: (Circle, Check Box, or Write Preferred Method in Box)

Sample I.D. #	Date	Time	Preserv.	Matrix	Halogenated Volatiles EPA 601 EPA 8010	Volatile Aromatics EPA 602 EPA 8020	BTXE or BTXE / TPH-G	WA TPH-G or OR TPH-G	WA TPH-D or OR TPH-D	Fuel Scan / TPH by GC 8015-modified	GC Fingerprint / HCID	WA 418.1 Modified or OR 418.1 Modified	GC / MS Volatiles	GC / MS Semi Volatiles	Total Metals ICP AA Other	TC LP Metals	pH Cond. Alk Color	RCRA 8080		# of Containers	Comments
1. SP17 D	11/22/93	800	ICE	SOIL			25-0173-17677											X		1	
2.																					
3.																					
4.																					
5.																					
6.																					
7.																					
8.																					
9.																					
10.																					

Relinquished by RZA:	Relinquished by:	Relinquished by:	Laboratory:	Sample Receipt:
Signature: [signature]	Signature:	Signature:	OAL	
Printed Name: Gerhard Koschal	Printed Name:	Printed Name:	Shipping I.D.#	Total # Containers:
Firm: RZA AGRA	Firm:	Firm:	Carrier:	Condition of Containers:
Date/Time: 11/22/93 4:50	Date/Time:	Date/Time:	DOT Designation:	Condition of Seals:
Received by:	**Received by:**	**Received by:**	**Special Instructions/Comments:**	
Signature: Kelly Nickerson	Signature:	Signature:	48 hour	
Printed Name: K. Nickerson	Printed Name:	Printed Name:		
Firm: OAL	Firm:	Firm:		
Date/Time: 11/22/93 4:50	Date/Time:	Date/Time:		

DISTRIBUTION: WHITE & PINK returned to project manager, YELLOW - lab.

SERVICE REQUEST #:

OAL Oregon Analytical Laboratory

14855 S.W. Old Scholls Ferry Rd
Beaverton, Oregon 97007
(503) 590-5300
FAX (503) 671-1404

CHAIN OF CUSTODY RECORD
LABORATORY ANALYSIS REQUEST

Client Information

Company: RZA AGRA, Inc
Contact: Gerry Koschal
Address: 7477 SW TECH CR DR
Pdx 97223
Phone #: 639-3400 FAX #:

Project Name: BES-ST John's
Project Number: 7197
P.O. Number:
Comments: PCBs

Sampler's Name: Denny
Signature: [signature]
Sampling Date: 11/19/93

Provide Verbal Results ☒ Yes ☐ No
Provide FAX Results ☐ Yes ☐ No

N - 2 weeks
S - 1 week
R - Rush
O - Other

	Sample Identification	Date	Time	OAL #	# of Containers	Matrix: Soil	Matrix: Water	Matrix: Other (Note in Remarks)	Analyses: Volatiles 624/8260 (circle) All Aromatic Halogenated	Semivolatiles 625/8270 (circle) All PAH/SIM Phenol Phthalate	Organochlorinated 608/8080 All PCB Pesticide (circle)	Chlorinated Herbicides 8150	TPH-HCID OR-DEQ Quantify? ☐Yes ☐No	TPH Quantification (circle) G D 418.1M 418.1	BTEX 602/8020	TCLP Metals (circle) As Ba Cd Cr Pb Hg Se Ag	TCLP Organics (circle) Vol Semivol Pest Herb	Metals ☐Dissolved ☐Total list	PCBs		Containers	Turnaround	Remarks
1	P-6	11/19/93	10:15	25-0173-17523	2														X		2	R	
2	MP-5	11/19/93	9:20	25-0173-17524	1														X		1	R	
3																							
4																							
5																							
6																							
7																							
8																							
9																							
10																							

Relinquished
Signature: [signature] Date: 11/19/93
Print Name: Denny Macomber Time: 11 AM
Company: RZA AGRA, Inc

Received
Signature: [signature] Date: 11-19-93
Print Name: D Ward Time: 11 AM
Company: OAL

Relinquished
Signature: Date:
Print Name: Time:
Company:

Received
Signature: Date:
Print Name: Time:
Company:

Shipped Via:
Received @ 4 °C
Appropriate Containers ☒ Yes ☐ No
2 Soil / 1 water 4oz./8oz. Jars
VOA Vials
Plastic Bottles
Glass Bottles
other

CRAW00015943

1 of 1

RZA AGRA, Inc.

(Formerly: Rittenhouse-Zeman & Associates, Inc.)
Engineering & Environmental Services
7477 SW Tech Center Drive • Portland, OR 97223-8024
(503) 639-3400 • FAX (503) 620-7892

Chain-of-Custody Record / Laboratory Analyses Request

Project: ~~Q-7199~~ ST JOHNS Job #: 7197
Client: CITY OF PORTLAND - BES.
Project Manager: G KOSCHAL Phone #: 659-3400
Sampler's Name: G KOSCHAL Phone #:
Sampler's Signature: [signature]

Analysis Requested:. (Circle, Check Box, or Write Preferred Method in Box)

Sample I.D. #	Date	Time	Preserv.	Matrix	Halogenated Volatiles EPA 601 EPA 8010	Volatile Aromatics EPA 602 EPA 8020	BTXE or BTXE / TPH-G	WA TPH-G or OR TPH-G	WA TPH-D or OR TPH-D	Fuel Scan / TPH by GC 8015-modified	GC Fingerprint / HCID	WA 418.1 Modified or OR 418.1 Modified	GC / MS Volatiles	GC / MS Semi Volatiles	Total Metals ICP AA Other	TC LP Metals	pH Cond. Alk Color	PCB		# of Containers	Comments
1. IN-1	11/24/93																	X		1	05-0173-17822
2.																					
3.																					
4.																					
5.																					
6.																					
7.																					
8.																					
9.																					
10.																					

Relinquished by RZA:	Relinquished by:	Relinquished by:	Laboratory:	Sample Receipt:
Signature: [signature]	Signature:	Signature:	OAL	
Printed Name: GERARD KOSCHAL	Printed Name:	Printed Name:	Shipping I.D.#:	Total # Containers:
Firm: RZA AGRA	Firm:	Firm:	Carrier:	Condition of Containers:
Date/Time: 11/29/93 4:20	Date/Time:	Date/Time:	DOT Designation:	Condition of Seals:
Received by:	**Received by:**	**Received by:**	**Special Instructions/Comments:**	
Signature: [signature]	Signature:	Signature:	INSULATION FROM CASE	
Printed Name: D.C. PLATT	Printed Name:	Printed Name:		
Firm: OAL	Firm:	Firm:		
Date/Time: 11/29/93 4:20P	Date/Time:	Date/Time:		

DISTRIBUTION: WHITE & PINK returned to project manager, YELLOW - lab.

Page 1 of 1

SERVICE REQUEST #:

CRAW00015944

RZA AGRA, Inc.
(Formerly: Rittenhouse-Zeman & Associates, Inc.)
Engineering & Environmental Services
7477 SW Tech Center Drive • Portland, OR 97223-8024
(503) 639-3400 • FAX (503) 620-7892

Chain-of-Custody Record / Laboratory Analyses Request

1001

Project: BES-ST Johns Job #: 7197
Client: City of Portland
Project Manager: Terry Koschal Phone #: 639-3400
Sampler's Name: D Macomber Phone #: 639-3400
Sampler's Signature: [signature]

Analysis Requested: (Circle, Check Box, or Write Preferred Method in Box)

Sample I.D. #	Date	Time	Preserv.	Matrix	Halogenated Volatiles EPA 601 EPA 8010	Volatile Aromatics EPA 602 EPA 8020	BTXE or BTXE / TPH-G	WA. TPH-G or OR. TPH-G	WA. TPH-D or OR. TPH-D	Fuel Scan / TPH by GC 8015-modified	GC Fingerprint / HCID	WA. 418.1 Modified or OR. 418.1 Modified	GC / MS Volatiles	GC / MS Semi Volatiles	Total Metals ICP AA Other	TC LP Metals	pH Cond. Alk. Color	PCBs		# of Containers	Comments
1. FCL-1B	12/20/93	11:30	Ice	Soil														X		1	25-0123-18904
2. FCL-3B		1345																X		1	18905
3. FCL-4B		1400																X		1	18906
4. FCL-6B		1415																X		1	18907
5. FCL-7B		1430																X		1	18908
6.																					
7.																					
8.																					
9.																					
10.																					

Relinquished by RZA:	Relinquished by:	Relinquished by:	Laboratory:	Sample Receipt:
Signature: [signature]	Signature:	Signature:		
Printed Name: Denny Macomber	Printed Name:	Printed Name:	Shipping I.D.#	Total # Containers:
Firm: RZA AGRA	Firm:	Firm:	Carrier:	Condition of Containers:
Date/Time: 12/21/93 9:00	Date/Time:	Date/Time:	DOT Designation:	Condition of Seals:

Received by:	Received by:	Received by:	Special Instructions/Comments:
Signature: Denice J. Ward	Signature:	Signature:	48 hour turn-around
Printed Name: D Ward	Printed Name:	Printed Name:	
Firm: OAL	Firm:	Firm:	
Date/Time: 12-21-93 9:02	Date/Time:	Date/Time:	

DISTRIBUTION: WHITE & PINK returned to project manager, YELLOW - lab.

Page ____ of ____.

SERVICE REQUEST #: _____

CRAW00015945

RZA AGRA, Inc.
(Formerly: Rittenhouse-Zeman & Associates, Inc.)
Engineering & Environmental Services
7477 SW Tech Center Drive • Portland, OR 97223-8024
(503) 639-3400 • FAX (503) 620-7892

Chain-of-Custody Record / Laboratory Analyses Request

Project: BES-S Job #: 7197
Client: City of Portland
Project Manager: G. Koschal Phone #: 639-3400
Sampler's Name: D. MACOMBER Phone #: 639-3400
Sampler's Signature: [signature]

Analysis Requested: (Circle, Check Box, or Write Preferred Method In Box)

Sample I.D. #	Date	Time	Preserv.	Matrix	Halogenated Volatiles EPA 601 EPA 8010	Volatile Aromatics EPA 602 EPA 8020	BTXE or BTXE / TPH-G	WA TPH-G or OR TPH-G	WA TPH-D or OR TPH-D	Fuel Scan / TPH by GC 8015-modified	GC Fingerprint / HCID	WA 418.1 Modified or OR 418.1 Modified	GC / MS Volatiles	GC / MS Semi Volatiles	Total Metals ICP AA Other	TC LP Metals	pH Cond. Alk. Color	PCBs		# of Containers	Comments
1. TANK-A	12/21/93	15:45	ice	H_2O	25·017	3-	18987											X		1	
2. TS-1		1445					18988											X		1	
3. TS-2		1500					18989											X		1	
4. TS-3		1515					18990											X		1	
5.																					
6.																					
7.																					
8.																					
9.																					
10.																					

Relinquished by RZA:	Relinquished by:	Relinquished by:	Laboratory:	Sample Receipt:
Signature: [signature]	Signature:	Signature:		
Printed Name: Denny Macomber	Printed Name:	Printed Name:	Shipping I.D.#:	Total # Containers:
Firm: RZA AGRA, Inc	Firm:	Firm:	Carrier:	Condition of Containers:
Date/Time: 12/22/93 10:30	Date/Time:	Date/Time:	DOT Designation:	Condition of Seals:

Received by:	Received by:	Received by:	Special Instructions/Comments:
Signature: D. Ward	Signature:	Signature:	48 hour Turn-Around
Printed Name: D. Ward	Printed Name:	Printed Name:	
Firm: OAL	Firm:	Firm:	
Date/Time: 12-22-93 10:30	Date/Time:	Date/Time:	

DISTRIBUTION: WHITE & PINK returned to project manager, YELLOW - lab.

SERVICE REQUEST #: _____

0286

RZA AGRA, Inc.

(Formerly: Rittenhouse-Zeman & Associates, Inc.)
Engineering & Environmental Services
7477 SW Tech Center Drive • Portland, OR 97223-8024
(503) 639-3400 • FAX (503) 620-7892

Chain-of-Custody Record / Laboratory Analyses Request

Project: BES (RZA office - Baker) Job #: 7197
Client: BES - City of Portland
Project Manager: G. Roschal Phone # 639-3400
Sampler's Name: D. Macomber Phone # 639-3400
Sampler's Signature: D. Macomber

Analysis Requested: (Circle, Check Box, or Write Preferred Method in Box)

Sample I.D. #	Date	Time	Preserv.	Matrix	Halogenated Volatiles EPA 601 EPA 8010	Volatile Aromatics EPA 602 EPA 8020	BTXE or BTXE / TPH-G	WA. TPH-G or OR. TPH-G	WA. TPH-D or OR. TPH-D	Fuel Scan / TPH by GC 8015-modified	GC Fingerprint / HCID	WA. 418.1 Modified or OR. 418.1 Modified	GC / MS Volatiles	GC / MS Semi Volatiles	Total Metals ICP AA Other	TC LP Metals	pH Cond. Alk. Color	PCB		# of Containers	Comments
1. BT-1	1/13/94	845	ice	H_2O														X		2	25-0173-19700
2.																					
3.																					
4.																					
5.																					
6.																					
7.																					
8.																					
9.																					
10.																					

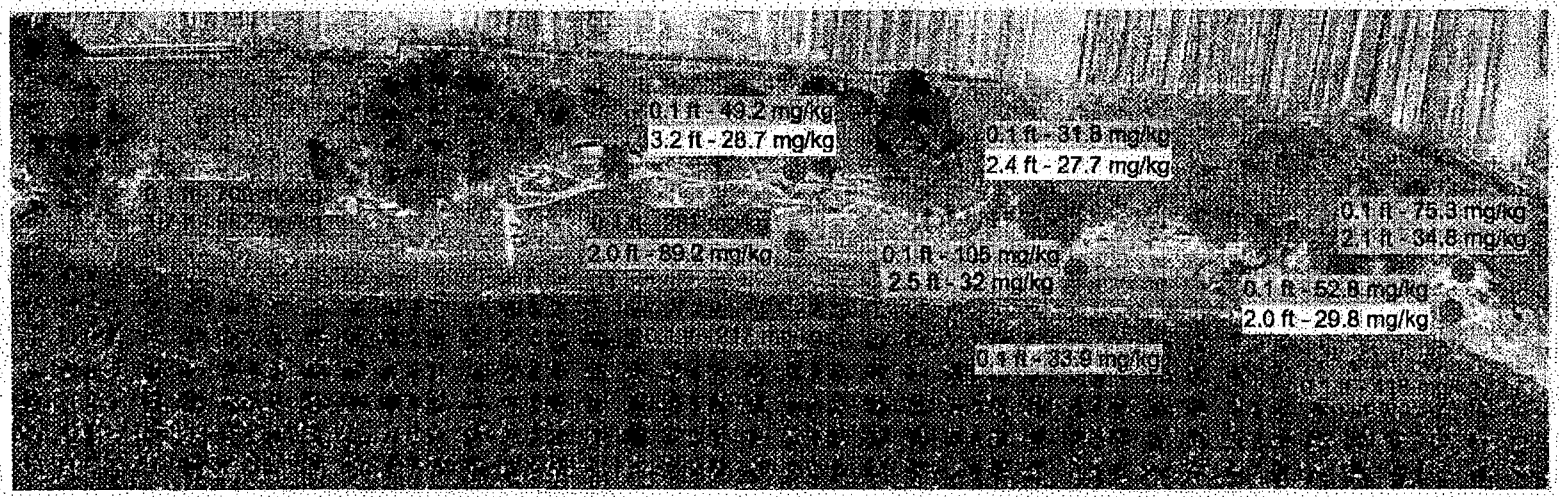
Relinquished by RZA:	Relinquished by:	Relinquished by:	Laboratory:	Sample Receipt:
Signature: D. Macomber	Signature:	Signature:		
Printed Name: Denny Macomber	Printed Name:	Printed Name:	Shipping I.D.#	Total # Containers:
Firm: RZA AGRA, Inc	Firm:	Firm:	Carrier:	Condition of Containers:
Date/Time: 1/13/94 10 AM	Date/Time:	Date/Time:	DOT Designation:	Condition of Seals:
Received by:	**Received by:**	**Received by:**	**Special Instructions/Comments:**	
Signature: K.A. Nickerson	Signature:	Signature:	- Normal turn-around	
Printed Name: Kelly Nickerson	Printed Name:	Printed Name:		
Firm: DAL	Firm:	Firm:		
Date/Time: 1/13/94 10 AM	Date/Time:	Date/Time:		

DISTRIBUTION: WHITE & PINK returned to project manager, YELLOW - lab.

Page 1 of 1

SERVICE REQUEST #:

CRAW00015947



Sampling Point

0.1 ft - 281 mg/kg
2.0 ft - 89.2 mg/kg
Sample Depth and Copper Concentration

Exceeds DEQ Fresh Water Sediment Ecological SLV

Exceeds McDonald PEC

N
Project

Approximate Scale
66 feet

Privileged and Confidential
Prepared at the Direction of Counsel

Figure 2
Copper Concentrations in Beach Samples
Crawford Street Corporation

BRIDGEWATER GROUP, INC.

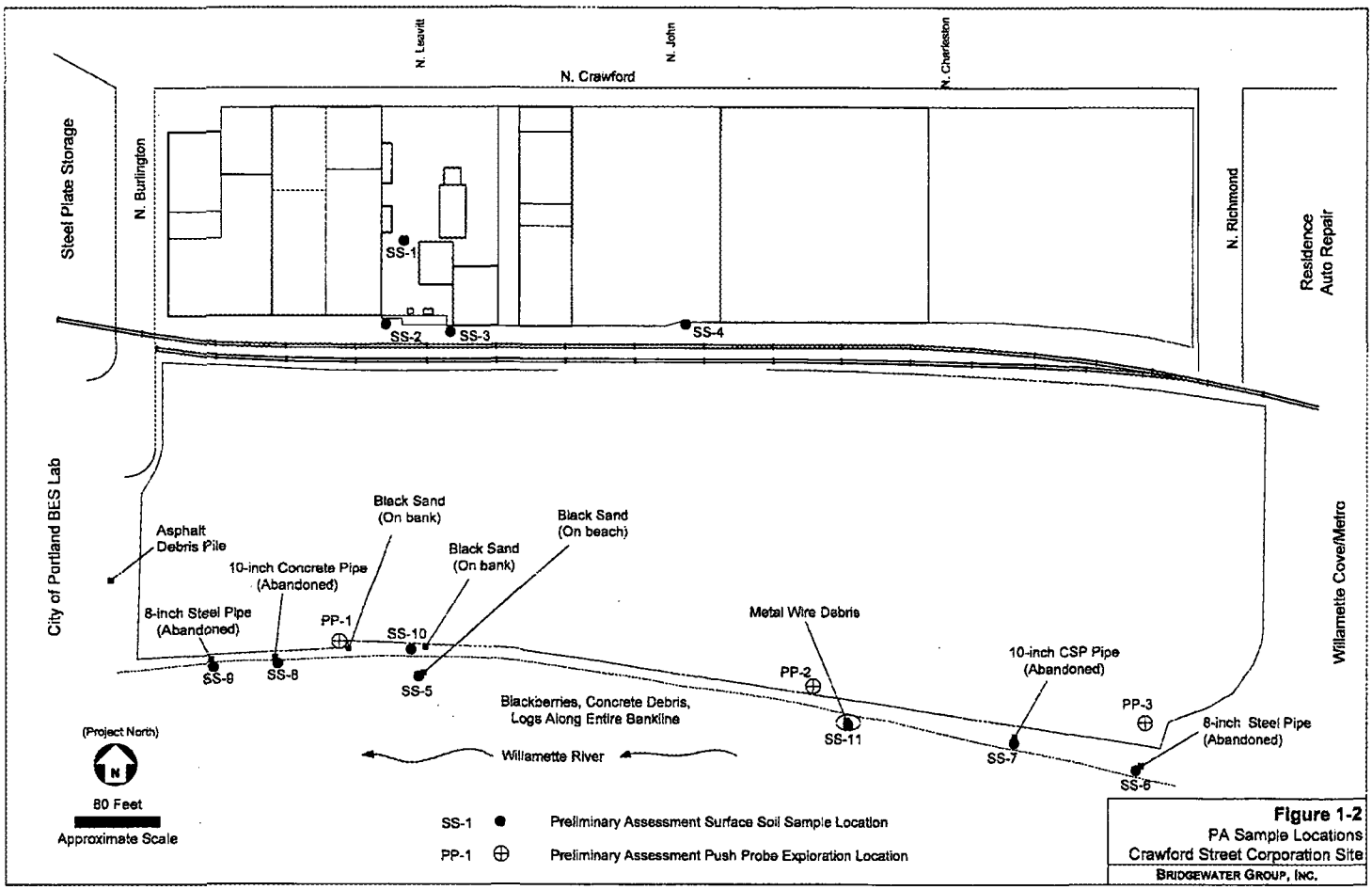


Figure 1-2
PA Sample Locations
Crawford Street Corporation Site
BRIDGEWATER GROUP, INC.

CRAW00010697

Attachment 1
Site Plan Figure

COLUMBIA FORGE
AND MACHINE WORKS
8424 N. CRAWFORD ST.
PORTLAND, OR 97203

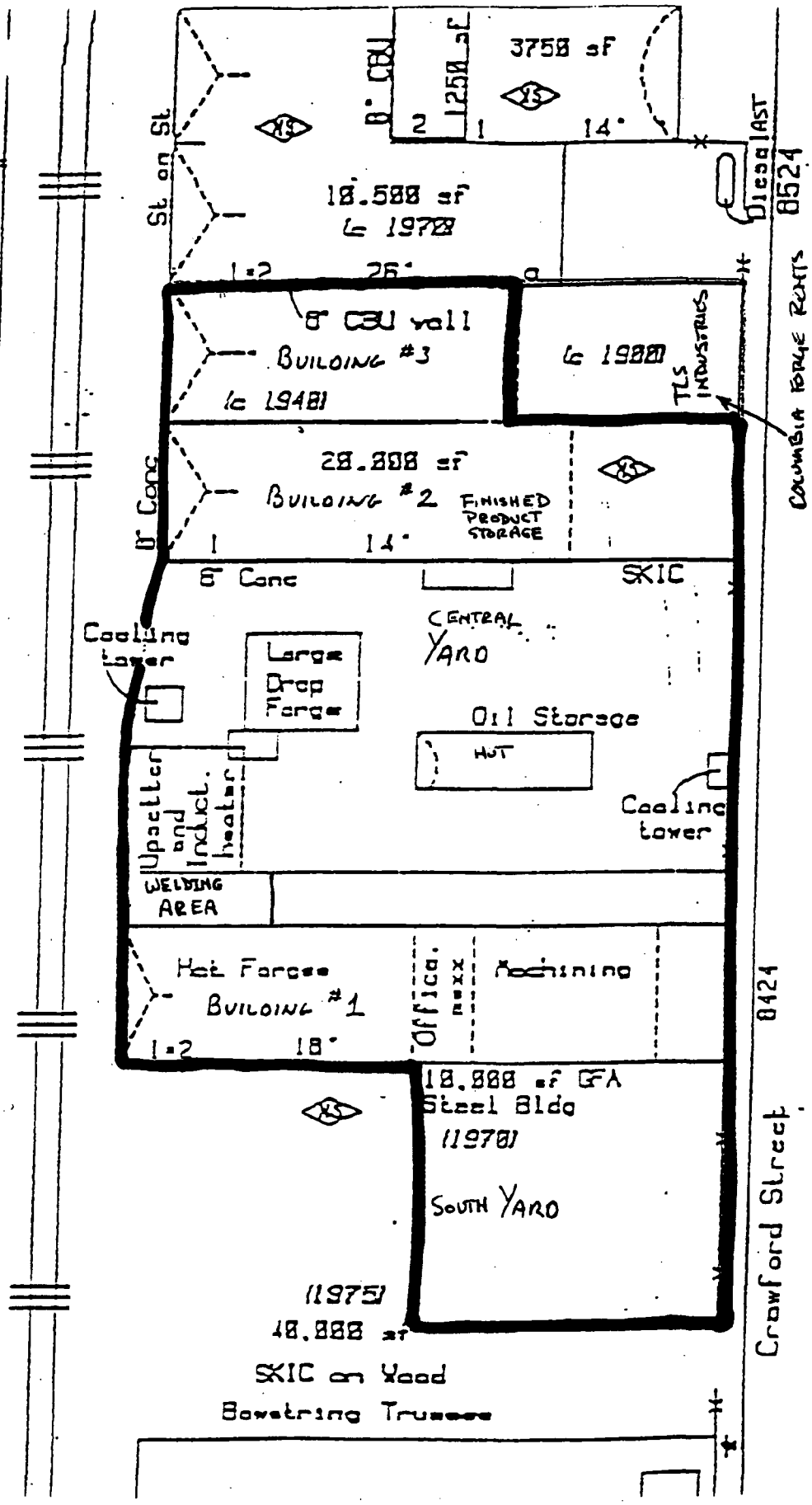
THE SITE CONSISTS OF THREE BUILDINGS AND TWO YARDS.

PARKING IS ON CITY STREETS.

NO CHANGES OR ADDITIONS ARE PLANNED.

COLUMBIA FORGE
TOTAL SF = 57,000
BUILDING SF = 27,000

23 OCT 91



CRAW00016495

Attachment 2
Underground Storage Tank Notification Form

Notification for Underground Storage Tanks

APPROVAL EXPIRES 6-30-88

Return To: **Oregon Department of Environmental Quality**
Underground Storage Tank Program
P.O. Box 1760
Portland, Oregon 97207

STATE USE ONLY
I.D. No.
Date Received

GENERAL INFORMATION

Notification is required by Federal law for all underground tanks that have been used to store regulated substances since January 1, 1974, that are in the ground as of May 8, 1986, or that are brought into use after May 8, 1986. The information requested is required by Section 9002 of the Resource Conservation and Recovery Act, (RCRA), as amended.

The primary purpose of this notification program is to locate and evaluate underground tanks that store or have stored petroleum or hazardous substances. It is expected that the information you provide will be based on reasonably available records, or, in the absence of such records, your knowledge, belief, or recollection.

Who Must Notify? Section 9002 of RCRA, as amended, requires that, unless exempted, owners of underground tanks that store regulated substances must notify designated State or local agencies of the existence of their tanks. Owner means—

(a) In the case of an underground storage tank in use on November 8, 1984, or brought into use after that date, any person who owns an underground storage tank used for the storage, use, or dispensing of regulated substances, and

(b) In the case of any underground storage tank in use before November 8, 1984, but no longer in use on that date, any person who owned such tank immediately before the discontinuation of its use.

What Tanks Are Included? Underground storage tank is defined as any one or combination of tanks that (1) is used to contain an accumulation of "regulated substances," and (2) whose volume (including connected underground piping) is 10% or more beneath the ground. Some examples are underground tanks storing: 1. gasoline, used oil, or diesel fuel, and 2. industrial solvents, pesticides, herbicides or fumigants.

What Tanks Are Excluded? Tanks removed from the ground are not subject to notification. Other tanks excluded from notification are:

1. farm or residential tanks of 1,100 gallons or less capacity used for storing motor fuel for noncommercial purposes;
2. tanks used for storing heating oil for consumptive use on the premises where stored;
3. septic tanks;
4. pipeline facilities (including gathering lines) regulated under the Natural Gas Pipeline Safety Act of 1968, or the Hazardous Liquid Pipeline Safety Act of 1979, or which is an intrastate pipeline facility regulated under State laws;
5. surface impoundments, pits, ponds, or lagoons;
6. storm water or waste water collection systems;
7. flow-through process tanks;
8. liquid traps or associated gathering lines directly related to oil or gas production and gathering operations;
9. storage tanks situated in an underground area (such as a basement, cellar, mineworking drift, shaft, or tunnel) if the storage tank is situated upon or above the surface of the floor.

What Substances Are Covered? The notification requirements apply to underground storage tanks that contain regulated substances. This includes any substance defined as hazardous in section 101 (14) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), with the exception of those substances regulated as hazardous waste under Subtitle C of RCRA. It also includes petroleum, e.g., crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute).

Where To Notify? Completed notification forms should be sent to the address given at the top of this page.

When To Notify? 1. Owners of underground storage tanks in use or that have been taken out of operation after January 1, 1974, but still in the ground, must notify by May 8, 1986. 2. Owners who bring underground storage tanks into use after May 8, 1986, must notify within 30 days of bringing the tanks into use.

Penalties: Any owner who knowingly fails to notify or submits false information shall be subject to a civil penalty not to exceed $10,000 for each tank for which notification is not given or for which false information is submitted.

INSTRUCTIONS

Please type or print in ink all items except "signature" in Section V. **This form must be completed for each location containing underground storage tanks.** If more than 5 tanks are owned at this location, photocopy the reverse side, and staple continuation sheets to this form.

Indicate number of continuation sheets attached. 0

I. OWNERSHIP OF TANK(S)

Owner Name (Corporation, Individual, Public Agency, or Other Entity): COLUMBIA FORGE + MACH. WORKS

Street Address: 8424 N. CRAWFORD

County: MULTNOMAH

City: PORTLAND State: OR. Zip Code: 97203

Area Code Phone Number: (503) 286-3621

Type of Owner (Mark all that apply ☒)

☒ Current ☐ Former

☐ State or Local Gov't. ☐ Federal Gov't. ☐ (GSA facility I.D. no.) _____)

☒ Private or Corporate ☐ Ownership uncertain

II. LOCATION OF TANK(S)

(If same as Section 1, mark box here ☒)

Facility Name or Company Site Identifier, as applicable

Street Address or State Road, as applicable

County

City (nearest) State Zip Code

Indicate number of tanks at this location: 2

Mark box here if tank(s) are located on land within an Indian reservation or other Indian trust lands ☐

III. CONTACT PERSON AT TANK LOCATION

Name (if same as Section 1, mark box here ☐): HENRY STROMQUIST

Job Title: GENERAL MANAGER

Area Code: (503) Phone Number: 286-3621

IV. TYPE OF NOTIFICATION

☐ Mark box here only if this is an amended or subsequent notification for this location.

V. CERTIFICATION (Read and sign after completing Section VI.)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete.

Name and official title of owner or owner's authorized representative	Signature	Date Signed
HENRY STROMQUIST — GEN. MGR	Henry Stromquist	1/19/87

CONTINUE ON REVERSE SIDE

EPA Form 7530-1 (11-85)

Please complete the voluntary UST Survey on Page 4.

B 11575

CRAW00016497

Owner Name (from Section I) COLUMBIA FORGE Location (from Section II) PORTLAND, OR. Page No. 2 of 3 Pages

VI. DESCRIPTION OF UNDERGROUND STORAGE TANKS *(Complete for each tank at this location.)*

Tank Identification No. (e.g., ABC-123), or Arbitrarily Assigned Sequential No. (e.g., 1,2,3...)	Tank No. 1	Tank No. 2	Tank No.	Tank No.	Tank No.
1. Status of Tank *(Mark all that apply ☒)* — Currently in Use	☐	☐	☐	☐	☐
Temporarily Out of Use	☐	☐	☐	☐	☐
Permanently Out of Use	☒	☒	☐	☐	☐
Brought into Use after 5/8/86	☐	☐	☐	☐	☐
2. Estimated Age (Years)	19	35			
3. Estimated Total Capacity (Gallons)	1000	1000			
4. Material of Construction *(Mark one ☒)* — Steel	☒	☒	☐	☐	☐
Concrete	☐	☐	☐	☐	☐
Fiberglass Reinforced Plastic	☐	☐	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
Other, Please Specify					
5. Internal Protection *(Mark all that apply ☒)* — Cathodic Protection	☐	☐	☐	☐	☐
Interior Lining (e.g., epoxy resins)	☐	☐	☐	☐	☐
None	☒	☒	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
Other, Please Specify					
6. External Protection *(Mark all that apply ☒)* — Cathodic Protection	☐	☐	☐	☐	☐
Painted (e.g., asphaltic)	☐	☐	☐	☐	☐
Fiberglass Reinforced Plastic Coated	☐	☐	☐	☐	☐
None	☒	☒	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
Other, Please Specify					
7. Piping *(Mark all that apply ☒)* — Bare Steel	☒	☒	☐	☐	☐
Galvanized Steel	☐	☐	☐	☐	☐
Fiberglass Reinforced Plastic	☐	☐	☐	☐	☐
Cathodically Protected	☐	☐	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
Other, Please Specify					
8. Substance Currently or Last Stored in Greatest Quantity by Volume *(Mark all that apply ☒)* — **a. Empty**	☐	☒	☐	☐	☐
b. Petroleum					
Diesel	☐	☐	☐	☐	☐
Kerosene	☐	☐	☐	☐	☐
Gasoline (including alcohol blends)	☐	☒	☐	☐	☐
Used Oil	☒	☐	☐	☐	☐
Other, Please Specify	BUNKER OIL				
c. Hazardous Substance	☐	☐	☐	☐	☐
Please Indicate Name of Principal CERCLA Substance					
or Chemical Abstract Service (CAS) No.					
Mark box ☒ if tank stores a mixture of substances	☐	☐	☐	☐	☐
d. Unknown	☐	☐	☐	☐	☐
9. Additional Information (for tanks permanently taken out of service) — a. Estimated date last used (mo/yr)	1975	1960	/	/	/
b. Estimate quantity of substance remaining (gal.)	100	EMPTY			
c. Mark box ☒ if tank was filled with inert material (e.g., sand, concrete)	☐	☒	☐	☐	☐

Form 7530-1 (11-85) Reverse

THANK YOU FOR YOUR ASSISTANCE

B 11576

CRAW00016498

Owner Name (from Section I EPA Form) COLUMBIA FORGE Location (from Section II EPA form) PORTLAND OR. Page 3 of 3 Pages

OREGON UNDERGROUND STORAGE TANK (UST) SURVEY

The underground storage tank program will soon include performance standards for new tanks and regulations for leak detection/prevention and corrective actions which will affect owners and operators of underground storage tanks. In preparation for these new requirements, the Department has prepared a state-wide survey. The Department requests that owners of underground storage tanks complete the survey questions.

Your response to these questions will assist the Department in developing a cost-effective and responsive state-wide regulatory program. In addition, owners of underground storage tanks may find the survey useful in the management of such tanks.

INSTRUCTIONS

Please type or print in ink all items. Please complete one survey form for each location containing underground storage tanks. Tank I.D. should correspond to Tank I.D. on EPA form 7530-1 for the respective facility location. If more than five tanks are owned at this location, photocopy this survey or request additional forms from DEQ, and staple continuation sheets to this survey.

Tank Identification No.	Tank No. 1	Tank No. 2	Tank No.	Tank No.	Tank No.
1. Status of Tank *(Check One)* — If temporarily out of use, Estimated time out of use:					
1 month - 6 months	☐	☐	☐	☐	☐
6 months - 1 year	☐	☐	☐	☐	☐
1 year - 5 years	☐	☐	☐	☐	☐
5 years or more	X	X	☐	☐	☐
Estimated date to be brought back into use (mo/yr)	/	/	/	/	/
2. Was tank new at time of installation? (Y/N)	UNKNOWN	UNKNOWN			
3. Containment Systems *(check one)* — Single-walled tank	X	X	☐	☐	☐
Double-walled tank	☐	☐	☐	☐	☐
Pit-lining system	☐	☐	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
4. Leak Detection System *(check all that apply)* — Visual	☐	☐	☐	☐	☐
Stock inventory	☐	☐	☐	☐	☐
Tile drain	☐	☐	☐	☐	☐
Vapor wells	☐	☐	☐	☐	☐
Sensor instrument (specify type):					
In-ground detector	☐	☐	☐	☐	☐
Within walls of double-walled tank	☐	☐	☐	☐	☐
Ground water monitoring wells	☐	☐	☐	☐	☐
Continuous in piping	☐	☐	☐	☐	☐
Pressure test	☐	☐	☐	☐	☐
Internal inspection	☐	☐	☐	☐	☐
Other, specify					
None	X	X	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
5. Overfill Protection (Yes/No)	NO	NO			
6. Location of Piping *(check all that apply)* — No parts in contact with soil	☐	☐	☐	☐	☐
Parts contacting the soil which are:					
Unprotected metal	X	X	☐	☐	☐
Made of corrosion resistant materials	☐	☐	☐	☐	☐
Corrosion-resisted coated	☐	☐	☐	☐	☐
Cathodically protected	☐	☐	☐	☐	☐
Double-walled	☐	☐	☐	☐	☐
Within a secondary containment	☐	☐	☐	☐	☐
Interior lined	☐	☐	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
7. History of Tank Repairs *(check one except as indicated)* — If tank repaired, indicate date of last repairs (mo/yr)	/	/	/	/	/
None	X	X	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
8. History of Pipe Repairs *(check one except as indicated)* — If pipe repaired, indicate date (mo/yr)	/	/	/	/	/
None	X	X	☐	☐	☐
Unknown	☐	☐	☐	☐	☐

THANK YOU FOR YOUR ASSISTANCE

B 11577

CRAW00016499

Attachment 3
Fire Marshall Survey and Other Documentation

FORM COMPANY

Due Date: NOVEMBER 30, 1998 | 1997-1998 | Facility ID Number 005730

OREGON STATE FIRE MARSHAL
HAZARDOUS SUBSTANCE INFORMATION SURVEY

PLEASE TYPE OR PRINT ONLY CHANGES OR ADDITIONS IN THE [BRACKETED] AREAS TO THE RIGHT OR BELOW THE PREPRINTED DATA

SECTION A HAZARDOUS SUBSTANCE PRESENCE Check the correct box to the left.

☑ YES ☐ NO Are there hazardous substances present at this site in reportable quantities? If yes, complete sections A, B, C, and D. If no, complete sections A, B and C. A hazardous substance is any substance for which a Material Safety Data Sheet (MSDS) is required. If a previously reported substance is no longer present, see instructions for Section A.

☐ YES ☑ NO Are there Extremely Hazardous Substances (EHS) at this site that meet the threshold planning quantities?

☐ YES ☑ NO Is this facility subject to the reporting requirements of Section 112(r) of the Clean Air Act?

SECTION B DEMOGRAPHIC DATA Complete, correct or add information in the [bracketed] areas.

1. SIC CODE 1: 3462 DEFINITION: IRON AND STEEL FORGINGS-MFG
2. SIC CODE 2: DEFINITION:
3. BUSINESS ACTIVITY: STEEL FORGING
4. DUN & BRADSTREET #: 00-902-2104
5. MANAGER'S NAME: ~~VINCE SCHILE - MGR~~ [DOUG McMULLIN GEN. MGR.]
6. SEND TO ATTENTION OF: ~~VINCE SCHILE - MGR~~ [DOUG McMULLIN GEN. MGR.]
7. E-MAIL ADDRESS: [dmcmullin@schn.com]
8. BUSINESS NAME: COLUMBIA FORGE & MACHINE
9. DEPT OR DIV:
10. SITE ADDRESS: 3424 N CRAWFORD
CITY: PORTLAND
COUNTY: MULTNOMAH
STATE: OR ZIP CODE: 97203
11. MAILING ADDRESS: 3424 N CRAWFORD
CITY: PORTLAND
COUNTY: MULTNOMAH
STATE: OR ZIP CODE: 97203
12. BUSINESS PHONE: 503-286-3621
13. NUMBER OF EMPLOYEES AT THIS SITE: ~~16~~ 17 [17]
14. EMERGENCY ASSISTANCE CONTACT PERSON FOR THIS SITE: ~~VINCE SCHILE~~ [DOUG McMULLIN]
15. EMERGENCY CONTACT PHONES: (503) DAY 503-286-3621 NIGHT ~~360-256-0355~~ [(503) 289-5011]
16. RESPONSIBLE FIRE DEPARTMENT: PORTLAND FIRE BUREAU

SPECIAL FIRE DEPARTMENT INFORMATION This section is for information the fire service needs to know in case of an emergency.

17. ☐ YES ☑ NO WRITTEN EMERGENCY PLAN. IF YES, LOCATION:
18. ☐ YES ☑ NO AUTOMATIC FIRE SUPPRESSION SYSTEM PRESENT; e.g., sprinklered, halon system, etc.
19. ☐ YES ☑ NO ARE STORAGE BUILDINGS/TANKS/AREAS PLACARDED ACCORDING TO NFPA 704?
20. ☐ YES ☑ NO ARE OTHER TYPES OF PLACARDS USED?

SECTION C PERSON COMPLETING FORM
This person will be contacted to answer any questions needing clarification.

1. PRINT NAME: DOUG McMULLIN
2. SIGNATURE (REQUIRED): Doug McMullin
3. DATE SURVEY COMPLETED: 11/30/98

DOUG McMULLIN
~~VINCE SCHILE~~ - MGR
COLUMBIA FORGE & MACHINE
3424 N CRAWFORD
PORTLAND OR 97203

RETAIN A COPY OF THIS SURVEY FOR 3 YEARS

PLEASE TYPE OR PRINT ALL ANSWERS. THANK YOU!

FORM
CHEMICAL

7-1998 OREGON STATE FIRE MAR AL
HAZARDOUS SUBSTANCE INFORMATION SURVEY

Facility ID Numbe
005730

SECTION D
SUBSTANCE INFORMATION - TYPE OR PRINT ONLY CHANGES IN THE [BRACKETED] AREAS

OMMON NAME/TRADE NAME: ARGON 75%/CARBON DIOXIDE 25%
AZARDOUS INGREDIENT
HIGHEST CONCENTRATION: ARGON

EHS	112(r)	PHYSICAL STATE (USE TABLE I)	UNIT OF MEASURE (USE TABLE II)	AVG. AMT. CODE (USE TABLE III)	MAX. AMT. CODE (USE TABLE III)	AMT. IN CODE (USE TABLE III)	AMT. OUT CODE (USE TABLE III)	NUMBER OF DAYS ON SITE (3 DIGIT NO.)	STORAGE CODE (USE TABLES IV & V)	HAZARD CLASSES (USE TABLE VI)	CAS NO. (IF KNOWN)
2 (1 - PURE, 2 - MIXTURE)		3	3	10	20			365	L 2 4	2.2	0007440-37-
(1 - NEW, 2 - NO LONGER REPORTABLE)						10	00				

STORAGE LOCATIONS AT SITE: WELDING AREA AT REAR OF MAIN BLDG

UN/NA NO. (IF KNOWN): 1956

OMMON NAME/TRADE NAME: ARGON 98%/OXYGEN 2%
AZARDOUS INGREDIENT
HIGHEST CONCENTRATION: ARGON

EHS	112(r)	PHYSICAL STATE (USE TABLE I)	UNIT OF MEASURE (USE TABLE II)	AVG. AMT. CODE (USE TABLE III)	MAX. AMT. CODE (USE TABLE III)	AMT. IN CODE (USE TABLE III)	AMT. OUT CODE (USE TABLE III)	NUMBER OF DAYS ON SITE (3 DIGIT NO.)	STORAGE CODE (USE TABLES IV & V)	HAZARD CLASSES (USE TABLE VI)	CAS NO. (IF KNOWN)
2 (1 - PURE, 2 - MIXTURE)		3	3	10	20			365	L 2 4	2.2	0007440-37-
(1 - NEW, 2 - NO LONGER REPORTABLE)				20		20	00				

STORAGE LOCATIONS AT SITE: WELDING AREA AT REAR OF MAIN BLDG

UN/NA NO. (IF KNOWN): 1956

OMMON NAME/TRADE NAME: DEGREASER 853
AZARDOUS INGREDIENT
N HIGHEST CONCENTRATION: 2-BUTOXYETHANOL

EHS	112(r)	PHYSICAL STATE (USE TABLE I)	UNIT OF MEASURE (USE TABLE II)	AVG. AMT. CODE (USE TABLE III)	MAX. AMT. CODE (USE TABLE III)	AMT. IN CODE (USE TABLE III)	AMT. OUT CODE (USE TABLE III)	NUMBER OF DAYS ON SITE (3 DIGIT NO.)	STORAGE CODE (USE TABLES IV & V)	HAZARD CLASSES (USE TABLE VI)	CAS NO. (IF KNOWN)
2 (1 - PURE, 2 - MIXTURE)		2	2	02	02			365	D 1 4	4.5 6.3	0000111-76-0
(1 - NEW, 2 - NO LONGER REPORTABLE)						00	00				

STORAGE LOCATIONS AT SITE: OIL STORAGE AREA IN CENTER OF MAIN YARD

UN/NA NO. (IF KNOWN): 0000

OMMON NAME/TRADE NAME: HYDRAULIC OIL
AZARDOUS INGREDIENT
N HIGHEST CONCENTRATION: HIGHLY REFINED BASE LUBRICATING OILS

EHS	112(r)	PHYSICAL STATE (USE TABLE I)	UNIT OF MEASURE (USE TABLE II)	AVG. AMT. CODE (USE TABLE III)	MAX. AMT. CODE (USE TABLE III)	AMT. IN CODE (USE TABLE III)	AMT. OUT CODE (USE TABLE III)	NUMBER OF DAYS ON SITE (3 DIGIT NO.)	STORAGE CODE (USE TABLES IV & V)	HAZARD CLASSES (USE TABLE VI)	CAS NO. (IF KNOWN)
2 (1 - PURE, 2 - MIXTURE)		2	2	10	10			365	D 1 4	4.5	0064742-65-
(1 - NEW, 2 - NO LONGER REPORTABLE)						20	20				

STORAGE LOCATIONS AT SITE: VARIOUS TYPES IN OIL STORAGE AREA IN CENTER OF MAIN YARD

UN/NA NO. (IF KNOWN): 1270

FORM CHEMICAL

19 1998 OREGON STATE FIRE MARSHAL
HAZARDOUS SUBSTANCE INFORMATION SURVEY

Facility ID Number 005730

SECTION D SUBSTANCE INFORMATION - TYPE OR PRINT ONLY CHANGES IN THE [BRACKETED] AREAS

COMMON NAME/TRADE NAME: MOTOR OIL
HAZARDOUS INGREDIENT
HIGHEST CONCENTRATION: HIGHLY REFINED BASE OILS

EHS	PHYSICAL STATE (USE TABLE I)	UNIT OF MEASURE (USE TABLE II)	AVG. AMT. CODE (USE TABLE III)	MAX. AMT. CODE (USE TABLE III)	AMT. IN CODE (USE TABLE III)	AMT. OUT CODE (USE TABLE III)	NUMBER OF DAYS ON SITE (3 DIGIT NO.)	STORAGE CODE (USE TABLES IV & V)	HAZARD CLASSES (USE TABLE VI)	CAS NO. (IF KNOWN)
2 (1 = PURE, 2 = MIXTURE)	2	2	04	04	11	11	365	D 1 4	4.5	0064742-54-7

(1 = NEW, 2 = NO LONGER REPORTABLE)

STORAGE LOCATIONS AT SITE: OIL STORAGE AREA IN CENTER OF MAIN YARD

UN/NA NO. (IF KNOWN): 1270

COMMON NAME/TRADE NAME: ORGANIC COMPOUND 135
HAZARDOUS INGREDIENT
HIGHEST CONCENTRATION: NONE AS PER 29CFR 1910.1200

EHS	PHYSICAL STATE (USE TABLE I)	UNIT OF MEASURE (USE TABLE II)	AVG. AMT. CODE (USE TABLE III)	MAX. AMT. CODE (USE TABLE III)	AMT. IN CODE (USE TABLE III)	AMT. OUT CODE (USE TABLE III)	NUMBER OF DAYS ON SITE (3 DIGIT NO.)	STORAGE CODE (USE TABLES IV & V)	HAZARD CLASSES (USE TABLE VI)	CAS NO. (IF KNOWN)
2 (1 = PURE, 2 = MIXTURE)	2	2	03	03	04	00	365	D 1 4	9.0	

(1 = NEW, 2 = NO LONGER REPORTABLE)

STORAGE LOCATIONS AT SITE: OIL STORAGE AREA IN CENTER OF MAIN YARD

UN/NA NO. (IF KNOWN): 0000

COMMON NAME/TRADE NAME: OXYGEN
HAZARDOUS INGREDIENT
HIGHEST CONCENTRATION: OXYGEN

EHS	PHYSICAL STATE (USE TABLE I)	UNIT OF MEASURE (USE TABLE II)	AVG. AMT. CODE (USE TABLE III)	MAX. AMT. CODE (USE TABLE III)	AMT. IN CODE (USE TABLE III)	AMT. OUT CODE (USE TABLE III)	NUMBER OF DAYS ON SITE (3 DIGIT NO.)	STORAGE CODE (USE TABLES IV & V)	HAZARD CLASSES (USE TABLE VI)	CAS NO. (IF KNOWN)
1 (1 = PURE, 2 = MIXTURE)	3	3	20	20	21	00	365	L 2 4	2.2 5.1	0007782-44-7

(1 = NEW, 2 = NO LONGER REPORTABLE)

STORAGE LOCATIONS AT SITE: WELDING AREA AT REAR OF MAIN BLDG

UN/NA NO. (IF KNOWN): 1072

COMMON NAME/TRADE NAME: PROPANE
HAZARDOUS INGREDIENT
HIGHEST CONCENTRATION: PROPANE

EHS	PHYSICAL STATE (USE TABLE I)	UNIT OF MEASURE (USE TABLE II)	AVG. AMT. CODE (USE TABLE III)	MAX. AMT. CODE (USE TABLE III)	AMT. IN CODE (USE TABLE III)	AMT. OUT CODE (USE TABLE III)	NUMBER OF DAYS ON SITE (3 DIGIT NO.)	STORAGE CODE (USE TABLES IV & V)	HAZARD CLASSES (USE TABLE VI)	CAS NO. (IF KNOWN)
1 (1 = PURE, 2 = MIXTURE)	3	2	10	10	20	00	365	A 2 4	2.1 6.3	0000074-98-6

(1 = NEW, 2 = NO LONGER REPORTABLE)

STORAGE LOCATIONS AT SITE: TANK LOCATED BY FENCE IN CENTER OF MAIN YARD

UN/NA NO. (IF KNOWN): 1075

FORM
CHEMICAL

7-1998 OREGON STATE FIRE MAR AL
HAZARDOUS SUBSTANCE INFORMATION SURVEY

Facility ID Numbe.
005730

SECTION D
SUBSTANCE INFORMATION - TYPE OR PRINT ONLY CHANGES IN THE [BRACKETED] AREAS

OMMON NAME/TRADE NAME: PROPANE
AZARDOUS INGREDIENT
HIGHEST CONCENTRATION: PROPANE

EHS	112(r)	PHYSICAL STATE (USE TABLE I)	UNIT OF MEASURE (USE TABLE II)	AVG. AMT. CODE (USE TABLE III)	MAX. AMT. CODE (USE TABLE III)	AMT. IN CODE (USE TABLE III)	AMT. OUT CODE (USE TABLE III)	NUMBER OF DAYS ON SITE (3 DIGIT NO.)	STORAGE CODE (USE TABLES IV & V)	HAZARD CLASSES (USE TABLE VI)	CAS NO. (IF KNOWN)
1 - PURE 2 - MIXTURE		3	2	03	03			365	L 2 4	2.1 6.3	0000074-98-6
1 - NEW 2 - NO LONGER REPORTABLE					04	11	00				

STORAGE LOCATIONS AT SITE WELDING AREA AT REAR OF MAIN BLDG

UN/NA NO. (IF KNOWN) 1075

OMMON NAME/TRADE NAME: THINNER 350B
AZARDOUS INGREDIENT
HIGHEST CONCENTRATION: PETROLEUM NAPHTHA

EHS	112(r)	PHYSICAL STATE (USE TABLE I)	UNIT OF MEASURE (USE TABLE II)	AVG. AMT. CODE (USE TABLE III)	MAX. AMT. CODE (USE TABLE III)	AMT. IN CODE (USE TABLE III)	AMT. OUT CODE (USE TABLE III)	NUMBER OF DAYS ON SITE (3 DIGIT NO.)	STORAGE CODE (USE TABLES IV & V)	HAZARD CLASSES (USE TABLE VI)	CAS NO. (IF KNOWN)
1 - PURE 2 - MIXTURE		2	2	04	04			365	D 1 4	3.3	0064742-47-8
1 - NEW 2 - NO LONGER REPORTABLE						04	04				

STORAGE LOCATIONS AT SITE OIL STORAGE AREA IN CENTER OF MAIN YARD

UN/NA NO. (IF KNOWN) 1255

OMMON NAME/TRADE NAME:
AZARDOUS INGREDIENT
HIGHEST CONCENTRATION:

EHS	112(r)	PHYSICAL STATE (USE TABLE I)	UNIT OF MEASURE (USE TABLE II)	AVG. AMT. CODE (USE TABLE III)	MAX. AMT. CODE (USE TABLE III)	AMT. IN CODE (USE TABLE III)	AMT. OUT CODE (USE TABLE III)	NUMBER OF DAYS ON SITE (3 DIGIT NO.)	STORAGE CODE (USE TABLES IV & V)	HAZARD CLASSES (USE TABLE VI)	CAS NO. (IF KNOWN)
1 - PURE 2 - MIXTURE											
1 - NEW 2 - NO LONGER REPORTABLE											

STORAGE LOCATIONS AT SITE

UN/NA NO. (IF KNOWN)

OMMON NAME/TRADE NAME:
AZARDOUS INGREDIENT
HIGHEST CONCENTRATION:

EHS	112(r)	PHYSICAL STATE (USE TABLE I)	UNIT OF MEASURE (USE TABLE II)	AVG. AMT. CODE (USE TABLE III)	MAX. AMT. CODE (USE TABLE III)	AMT. IN CODE (USE TABLE III)	AMT. OUT CODE (USE TABLE III)	NUMBER OF DAYS ON SITE (3 DIGIT NO.)	STORAGE CODE (USE TABLES IV & V)	HAZARD CLASSES (USE TABLE VI)	CAS NO. (IF KNOWN)
1 - PURE 2 - MIXTURE											
1 - NEW 2 - NO LONGER REPORTABLE											

STORAGE LOCATIONS AT SITE

UN/NA NO. (IF KNOWN)

FORM
CHEMICAL

1 /-1998 OREGON STATE FIRE MAR AL

Facility ID Number
005730

HAZARDOUS SUBSTANCE INFORMATION SURVEY

SECTION D

SUBSTANCE INFORMATION - TYPE OR PRINT ONLY CHANGES IN THE [BRACKETED] AREAS

MMON NAME/TRADE NAME:
ZARDOUS INGREDIENT
HIGHEST CONCENTRATION:

EHS	:12(r)	PHYSICAL STATE	UNIT OF MEASURE	AVG. AMT. CODE	MAX. AMT. CODE	AMT. IN CODE	AMT. OUT CODE	NUMBER OF DAYS ON SITE	STORAGE CODE	HAZARD CLASSES	CAS NO. (IF KNOWN)
		USE TABLE I	USE TABLE II	USE TABLE III	USE TABLE III	USE TABLE III	USE TABLE III	3 DIGIT NO.	USE TABLES IV & V	USE TABLE VI	
1 - PURE 2 - MIXTURE											
1 - NEW 2 - NO LONGER REPORTABLE											

STORAGE LOCATIONS AT SITE

UN/NA NO. (IF KNOWN)

OMMON NAME/TRADE NAME:
AZARDOUS INGREDIENT
HIGHEST CONCENTRATION:

EHS	:12(r)	PHYSICAL STATE	UNIT OF MEASURE	AVG. AMT. CODE	MAX. AMT. CODE	AMT. IN CODE	AMT. OUT CODE	NUMBER OF DAYS ON SITE	STORAGE CODE	HAZARD CLASSES	CAS NO. (IF KNOWN)
		USE TABLE I	USE TABLE II	USE TABLE III	USE TABLE III	USE TABLE III	USE TABLE III	3 DIGIT NO.	USE TABLES IV & V	USE TABLE VI	
1 - PURE 2 - MIXTURE											
1 - NEW 2 - NO LONGER REPORTABLE											

STORAGE LOCATIONS AT SITE

UN/NA NO. (IF KNOWN

OMMON NAME/TRADE NAME:
AZARDOUS INGREDIENT
N HIGHEST CONCENTRATION:

EHS	:12(r)	PHYSICAL STATE	UNIT OF MEASURE	AVG. AMT. CODE	MAX. AMT. CODE	AMT. IN CODE	AMT. OUT CODE	NUMBER OF DAYS ON SITE	STORAGE CODE	HAZARD CLASSES	CAS NO. (IF KNOWN)
		USE TABLE I	USE TABLE II	USE TABLE III	USE TABLE III	USE TABLE III	USE TABLE III	3 DIGIT NO.	USE TABLES IV & V	USE TABLE VI	
1 - PURE 2 - MIXTURE											
1 - NEW 2 - NO LONGER REPORTABLE											

STORAGE LOCATIONS AT SITE

UN/NA NO. (IF KNOWN

OMMON NAME/TRADE NAME:
AZARDOUS INGREDIENT
N HIGHEST CONCENTRATION:

EHS	:12(r)	PHYSICAL STATE	UNIT OF MEASURE	AVG. AMT. CODE	MAX. AMT. CODE	AMT. IN CODE	AMT. OUT CODE	NUMBER OF DAYS ON SITE	STORAGE CODE	HAZARD CLASSES	CAS NO. (IF KNOWN)
		USE TABLE I	USE TABLE II	USE TABLE III	USE TABLE III	USE TABLE III	USE TABLE III	3 DIGIT NO.	USE TABLES IV & V	USE TABLE VI	
1 - PURE 2 - MIXTURE											
1 - NEW 2 - NO LONGER REPORTABLE											

STORAGE LOCATIONS AT SITE

UN/NA NO. (IF KNOWN

CT OF

PORTLAND, OREGON

FIRE PREVENTION DIVISION

Track #	Account #
151	E08-074-001

CITY OF PORTLAND
Hazardous Substance Possession Fee

Please Remit: $*450.00

Must be received by: 01/15/90

Late payments will be assessed an additional 1% per month after the due date.

COLUMBIA FORGE & MACHINE
8424 N CRAWFORD
PORTLAND, OR 97203

Check Payable to: CITY TREASURER
Remit to: **Portland Fire Bureau**
55 S.W. Ash Street
Portland, Oregon 97204

ach and return upper portion with remittance - - - - - - - - ->

State and Federal laws have been enacted to provide state and local emergency services and the community with information concerning hazardous substance locations and hazards. The legislation also provides that the local community participate and plan for responding to hazardous substance incidents.

Hazardous substance fees collected by the City of Portland will be used to fund a local data storage and retrieval system for hazardous chemical information provided by the state. This system will provide emergency responders with timely on-site information which will enable them to effectively manage incidents while minimizing the danger to emergency response personnel and the public.

This fee is not a permit fee and does not indicate that the occupancy and use of a building is in compliance with Fire and Building Regulations. The fees collected for this purpose are not a duplication of fees charged by the Department of Environmental Quality or the State Fire Marshal's Office.

The annual hazardous substance fee will be used to administer a local information and protection program in accordance with Title 31 of the City Code, Fire Regulations, sections 31.80.010-31.80.070, "Hazardous Substances Emergency Planning." The fees will provide the Portland Bureau of Fire, Rescue & Emergency Services with a computerized information system that will be used by ALL emergency responders. This system will also ensure that emergency personnel have immediate access to information concerning the type of material, location, degree of hazard, available emergency systems and associated information so that they may effectively and safely deal with hazardous substance emergencies.

You are entitled to appeal specific requirements of these regulations by written notification as set forth in section 31.10.150 of the City Code, Title 31.

Appeals should be directed to: Hazardous Substance Section
55 S.W. Ash Street
Portland, Oregon 97204

RECEIVED COLUMBIA FORGE & MACHINE NOV 89

If you have any questions about this bill, please call the Hazardous Substance Section at 760-1081.

B 11289 Track: 151 Account: E08-074-001

Billing: 11/15/89 Due: 01/15/90 Amount: $*450.00

Late payments will be assessed an additional 1% per month after the due date.

HAZARDOUS INVENTORY DATA

CHEMICAL NAME:	CHEMICAL HAZARD CLASS:	STATE QTY. RANGE:	QUANTITY RANGE:	FEE:
** 151 005730, COLUMBIA FORGE & MACHINE 8424 N CRAWFORD				
DEGREASER 853	UNKNOWN, PROBABLY CLASS C	0-99	0-199	0.00
ORGANIC COMPOUND 135	UNKNOWN, PROBABLY CLASS C	100-999	200-999	50.00
PROPANE	2.1, FLAMMABLE GAS	100-999	200-999	50.00
PROPYLENE	2.1, FLAMMABLE GAS	0-99	0-199	0.00
BLUE SHIELD 4	2.2, NONFLAMMABLE GAS	1,000-9,999	1,000-9,999	100.00
BLUE SHIELD 8	2.2, NONFLAMMABLE GAS	1,000-9,999	1,000-9,999	100.00
THINNER 350B	3.2, FLAMM. LIQ. FP 0-73 F	0-99	0-199	0.00
HYDRAULIC OIL	4.2, COMBUSTIBLE MATERIAL	100-999	200-999	50.00
MOTOR OIL	4.2, COMBUSTIBLE MATERIAL	0-99	0-199	0.00
GAS AIR FUEL	5.1, OXIDIZERS	0-99	0-199	0.00
OXYGEN	5.1, OXIDIZERS	1,000-9,999	1,000-9,999	100.00
** Subtotal **				450.00
*** Total ***				450.00

B 11290

ORDINANCE 162225

Chapter 31.40
(and a new Table 40-B is substituted to read:)

CHAPTER 31.40

TABLE 40 - B

(A) RADIOACTIVE SUBSTANCES OR RADIOACTIVE WASTES

(S) SOLIDS (in pounds)	(L) LIQUIDS (in gallons)	(G) GASES COMPRESSED (cu. ft. at STP)	FEE
>0 - 99	>0 - 99	>0 - 99	$ 50
100 - 999	100 - 999	100 - 999	100
1,000 - 9,999	1,000 - 9,999	1,000 - 9,999	200
10,000 - 99,999	10,000 - 99,999	10,000 - 99,999	600
100,000 - 999,999	100,000 - 999,999	100,000 - 999,999	1,000
1,000,000 - up	1,000,000 - up	1,000,000 - up	1,400

(B) CLASS A & B POISONS; IRRITATING MATERIALS; CLASS A, B & C EXPLOSIVES, BLASTING AGENTS AND HIGHLY TOXIC SUBSTANCES

(S) SOLIDS (in pounds)	(L) LIQUIDS (in gallons)	(G) GASES COMPRESSED (cu. ft. at STP)	FEE
>0 - 9	>0 - 4	>0 - 19	$ 25
10 - 99	5 - 99	20 - 99	50
100 - 999	100 - 999	100 - 999	100
1,000 - 9,999	1,000 - 9,999	1,000 - 9,999	200
10,000 - 99,999	10,000 - 99,999	10,000 - 99,999	600
100,000 - 999,999	100,000 - 999,999	100,000 - 999,999	1,000
1,000,000 - up	1,000,000 - up	1,000,000 - up	1,400

* (C) ALL OTHER REGULATED HAZARDOUS SUBSTANCES, MATERIALS AND WASTES

(S) SOLIDS (in pounds)	(L) LIQUIDS (in gallons)	(G) GASES COMPRESSED (cu. ft. at STP)	FEE
0 - 499	0 - 54	0 - 199	$ 0
500 - 999	55 - 999	200 - 999	50
1,000 -9,999	1,000 - 9,999	1,000 - 9,999	100
10,000 - 99,999	10,000 - 99,999	10,000 - 99,999	200
100,000 - 999,999	100,000 - 999,999	100,000 - 999,999	600
1,000,000 - up	1,000,000 - up	1,000,000 - up	1,000

* Permit fees for ordinary flammable and combustible liquids such as motor fuels contained in approved underground storage tanks are $25 per tank per year. Heating fuels stored in approved underground tanks are exempt from this fee schedule.

B 11291

V. LIST OF HAZARDOUS CHEMICALS (con't.)

HAZARDOUS CHEMICALS	LOCATION
G. Miscellaneous	
Quick Set Adhesive 404	Maint. Area
Never-seez Anti-Seize Compound	Maint. Area
Floor Dry	Warehouse
Loctite Adhesive/Sealant 271	Maint. Area
Crack Check Cleaner C-F (Spray)	Supply Closet
Crack Check Developer D-NF (Spray)	Supply Closet
Crack Check Penetrant P-HF (Spray	Supply Closet
Thread Sealant w/Teflon 14H,14D,14F	Maint. Area
Propane	Center Yard
Fel-Pro N-500 Antiseize	Maint. Area
Devon Plastic Steel Putty	Maint. Area
50 Hardhat Aeorsol Spray	Supply Closet

V. LIST OF HAZARDOUS CHEMICALS (con't.)

HAZARDOUS CHEMICALS	LOCATION
F. Furnace Construction Materials	
Marinite M Calcium Silicate Board	Warehouse
Lytherm Ceramic Fiber Papers	Warehouse
Mizzou Castable Plus	Warehouse
A.P. Green: Refractory Bricks or Slopes	Warehouse
A.P. Green: Insulating Fire Brick: G 3	Warehouse
A.P. Green: High Duty Fireclay Brick: Idaho	Warehouse
Cerachrome Blanket Refractory	Warehouse
K-FAC 19 Board	Warehouse
Sairset Mortar	Warehouse
Durablanket 2600	Warehouse

V. LIST OF HAZARDOUS CHEMICALS (con't.)

HAZARDOUS CHEMICALS	LOCATION
E. Paints	
Sparvar Spray Paint - Metallic Item Nos. S-121,S-122,S-123	Supply Closet
Sparvar Fluorescent Spray Paint Item Nos. S-311,S-312	Supply Closet
Sparvar Spray Paint - Flat Item No. S-111	Supply Closet
Sparvar Spray Paint Item Nos. S-101,S-103,S-117,S-118	Supply Closet
Sparvar Spray Paint Covers 25 Items	Supply Closet
Rodda Alkyd Enamel 817	Warehouse
Rodda Alkyd Enamel 812Spray Paint	Supply Closet
Rodda Alkyd Primer Red Oxide	Supply Closet

B 11312

CF&MW 8/87

V. LIST OF HAZARDOUS CHEMICALS (con't.)

HAZARDOUS CHEMICALS	LOCATION
D. Welding and Soldering Supplies	
Oxygen	Welding Area
Liquid Air Fuel Gas	Welding Area
Blue Shield Nos.6,7 or 8 gas mixture	Welding Area
Blue Shield Nos. 4 or 5 gas mixture	Welding Area
Welco 1620 Auto Spatter Compound	Welding Area
Fleetweld 35 Welding rod	Welding Area
UTP 653 Stainless welding rod	Welding Area
UTP 65 312 Stainless Welding rod	Welding Area
Jet-LH78 Welding Rod (E7018)	Welding Area
Stainless Steel Welding Electrodes	Welding Area
Stainless Steel Welding Wire	Welding Area
WeldMold Stick Electrode	Welding Area
Silvaloy 45 Silver Solder	Welding Area
Ultra Flux	Welding Area
Braze Welding Wire & Rod	Welding Area
E7024 Welding Rod	Welding Area
E6013 Welding Rod	Welding Area
Tool Steel Flux-Cored Wire	Welding Area
Dual Shield T-1 and T-2 Flux-Cored Welding Rods	Welding Area
Mild and Low Alloy Steel Welding Wire	Welding Area
Fuel-Gas-Propylene	Welding Area

V. LIST OF HAZARDOUS CHEMICALS (con't.)

HAZARDOUS CHEMICALS	LOCATION
C. Solvents and Thinners	
Chevron Thinner 350 B	Oil Storage
Rodda Thinner: Synthetic Reducer	Warehouse==
853 Degreaser	Oil Storage

B 11310

CF&MW 8/87

V. LIST OF HAZARDOUS CHEMICALS (con't.)

HAZARDOUS CHEMICALS	LOCATION
B. Oils and Lubricants	
Unocal Unax AW 68	Oil Storage
Unocal Unax AW 46	Oil Storage
Unocal Turbine Oil 68	Oil Storage
Unocal Unoba EP Grease 2	Oil Storage
Unocal Marok 68 Oil	Oil Storage
Cimperial 1011 Coolant	Oil Storage
Cimclean 30 Coolant cleaner	Oil Storage
Soluble Organic Compound #135-	Oil Storage
die lube	Oil Storage
Unocal Soluble Oil 10 coolant	Oil Storage
Unocal Heavy Duty Motor Oil 30	Oil Storage
Chevron Insulating Oil	Oil Storage
Lubrizol 5525	Oil Storage
Unocal Hydraulic Oil AW 68	Oil Storage
Unocal Koolkut II HD	Oil Storage
Unocal Marok 220	Oil Storage
Anderal 500 Oil	Oil Storage
29 Moly Cart	Oil Storage
81 BP-2 (formerly 81 EP LIght)	Oil Storage
Union Turbine Oil 100, 150	Oil Storage

Attachment 4
Transformer Spill Documentation

[redacted]

NOTE TO PCB SPILL FILE:

5/28/87 - An overheated capacitor located in an enclosed TOCCO cabinet ruptured and spilled a small amount (2-3oz) of PCB. The spill was totally contained in the cabinet and was isolated to the surface of a transformer locate under the capacitor. The unit was taken out of service and labeled with warning signs.

6/3/87 - Crosby and Overton, an environmental clean up company was contracted to clean-up the spill and remove the faulty capacitor in accordance with Oregon and EPA rules

6/9/87 - Crosby and Overton removed the capacitor, cleaned up the spill and conducted wipe tests. The capacitor was placed in a barrel and temporarily stored on Columbia Forge premises.

Crosby and Overton could not achieve a clean-up to 10 ug / 100 cm² consequently the unit was kept out of service, with warning signs until a resolution could be found.

The ultimate solution included removal of the transformer (thus the removal of the spill surface) by Crosby and Overton — see other documentation for dates.

Henry Shumpert

B 11442

GENERAL ELECTRIC

ISTOMER COLUMBIA FORGE & MACHINE WORKS, INC REFER TO: JOB NO: 21308

D. NUMBER 4119 DATE: 02/19/88

ATE RECEIVED 02 / 22 /88 VIA DELIVERED

EQUIPMENT DESC.

SHIP TO:

MANUF.

MODEL

SERIAL NO.

BILL TO: COLUMBIA FORGE & MACHINE WORKS, INC
8424 N. CRAWFORD STREET
PORTLAND, OR 97203

ATTENTION: MR. JOHN SHORE

IF YOU DESIRE FURTHER INFORMATION, PLEASE CONTACT

Annette E Noe

ANNETTE E NOE

TELEPHONE: (503) 221-5097

DATE MAILED: 02 /22 / 88

PER QUOTATION NUMER 101-88-55

DISPOSAL OF CAPACITOR IN DRUM

CLEANING AND TESTING OF TRANSFORMER

WE ACKNOWLEDGE RECEIPT OF YOUR ORDER AND/OR MATERIAL AS LISTED ABOVE, SUBJECT TO OUR STANDARD CONDITIONS AS STATED ON THE REVERSE SIDE.

TERMS: NET DUE UPON RECEIPT OF INVOICE

B 11440

ACKNOWLEDGMENT - CUSTOMER COPY

FORM NO. FN-1068 6/85 REV.

GENERAL ELECTRIC
PORTLAND DECOMMISSIONING/STORAGE FACILITY
2535 NW 28TH AVENUE PORTLAND, OREGON 97210
(503) 221-5098

February 23, 1988

Mr. John L. Shore 21308
COLUMBIA FORGE
8424 N. Crawford St.
Portland, OR 97203

SUBJECT: HAZARDOUS WASTE MANIFEST NO. 21308
GENERAL ELECTRIC TRACKING NO. 21308

Dear Mr. Shore:

Attached, please find the original of the above captioned Hazardous Waste Manifest signed by our representative upon receipt of your material at our Decommissioning Facility in Portland. You should keep this record to establish the disposition of this material.

We will provide you with copies of the Manifest when this material is sent out for final disposition. These copies will be signed by the ultimate disposer and our cover letter will reference the above captioned G.E. TRACKING NUMBER so that you then will have a record of the material from the time it left your premises until it is properly disposed. Please note the corrections made in the DISCREPANCY SECTION 19 on the manifest.

Should you have any questions, please do not hesitate to call me at (503) 221-5098. We appreciate the opportunity of providing this service and look forward to additional work in the future.

Sincerely,

Shirlee Porter

Shirlee K. Porter
Facility Supervisor
Portland Oregon

Attachment

B 11438

UNIFORM HAZARDOUS WASTE MANIFEST	1. Generator's US EPA ID No. 93-0463820	Manifest Document No. 21308	2. Page 1 of 1	Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
Columbia Forge
8424 N Crawford st. Portland, OR 97203

4. Generator's Phone (203) 286-3621

A. State Manifest Document Number

B. State Generator's ID

5. Transporter 1 Company Name: General Electric Company
6. US EPA ID Number: ORD980833537

C. State Transporter's ID

D. Transporter's Phone 503-221-5098

7. Transporter 2 Company Name
8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
General Electric Company
2535 NW 28th Ave.
Portland, OR 97210

10. US EPA ID Number: ORD980833537

G. State Facility's ID

H. Facility's Phone (503) 221-5098

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	HM	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Hazardous Substance Liquid, NOS ORM-E NA9188, RQ (Polychlorinated Biphenyls)	X	001	DM	0250 *	P	X-002
b. Hazardous Substance Solid, NOS ORM-E NA9188, RQ (Polychlorinated Biphenyls)	X	001	CM	Ø	P	X002
c.						
d.						

J. Additional Descriptions for Materials Listed Above
a) 1 drum ~~Capacitor~~ leaking Capacitors o/s date 7-87
b) 1 Transformer (empty)
* Estimated weight

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
Dike and Contain Spills Avoid Contact with Skin.
Alternated TSDF, Return to Generator
In Case of Spill Call 1-800-626-2001 ex 66

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations.

Unless I am a small quantity generator who has been exempted by statute or regulation from the duty to make a waste minimization certification under Section 3002(b) of RCRA, I also certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and I have selected the method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment.

Printed/Typed Name	Signature	Month	Day	Year
John L Shore	John L. Shore	2	22	88

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
Scott A Duncan	[signature]	02	22	88

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

19. Discrepancy Indication Space
XFMER AND CAPACITOR WERE RECIEVED IN (1) DRUM

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year
GARY E. SCHMALZ	[signature]	02	22	88

ORIGINAL-RETURN TO GENERATOR

B-11430

CRAW00016519

Attachment 5
Underground Storage Tank Lab Reports

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

March 24, 1987
Log #A870319-K
PO#: 2864

Columbia Forge & Machine
8424 N. Crawford St.
Portland, Oregon 97203

Attention: John Shore

Analysis Requested: Total Hydrocarbons

Sample ID: #3 Weld Shop

Sample Date: March 19, 1987

Sample Received: March 19, 1987

ANALYSIS	RESULTS
Gasoline	< 4 mg/kg
Diesel	< 4 mg/kg

Analysis by capillary GC/FID

The less than "<" symbol means none detected at or above the indicated value and represents the detection limit for the method.

Approved,

Susan M. Brillante

Susan M. Brillante,
Laboratory Director

Sincerely,

Susan M. Coffey

Susan M. Coffey,
President

SMC/gs

soil analy
weld sh
(no ru

This report is for the sole and exclusive use of the above client. Samples are retained a maximum of 15 days from the date of this letter.

B 11592

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

March 19, 1987
Log #A870316-B1-2
PO#: 2842

Columbia Forge & Machine
8424 N. Crawford St.
Portland, Oregon 97203

Attention: John Shore

Sample ID: #1 - Skookum, 3/13/87
#2 - Yard, 3/13/87

Samples Received: March 13, 1987

Samples Collected by: Crosby & Overton

ANALYSIS	SAMPLE #1	SAMPLE #2
Gasoline*	< 1.0	16**
Diesel*	< 1.0	< 1.0
Lead	---	30.0

Results in mg/kg

* Analysis by extraction capillary GC/FID.

** Appears to contain some other high boiling oil and possibly some kerosene.

The less than "<" symbol means none detected at or above the indicated value and represents the detection limit for the method.

Approved by,

Susan M. Brillante

Susan M. Brillante,
Laboratory Director

Sincerely,

Susan M. Coffey

Susan M. Coffey,
President

Soil analy
Yard +
St

SMC/gs

This report is for the sole and exclusive use of the above client. (no
Samples are retained a maximum of 15 days from the date of this letter.

B 11587

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

March 24, 1987
Log #A870316-B1-2

Columbia Forge & Machine
8424 N. Crawford St.
Portland, Oregon 97203

ATTENTION: John Shore

SUBJECT: EP TOXICITY ANALYSIS

METHOD: Federal Register, Vol. 45 No. 98, Monday, May 19, 1980, Rules and Regulations, Appendix II, Page 33127.

FIELD DATA: Sample ID: #2 - Yard
Collected by: Sample collected and delivered by client.

Sample Received: March 16, 1987

ANALYSIS	RESULTS	LIMIT
Lead	< 0.100	5.0

The less than "<" symbol means none detected at or above the indicated value and represents the detection limit for the method.

Results are reported in milligrams per liter (mg/L)

Sincerely,

Susan M. Coffey

Susan M. Coffey,
President

SMC/gs

ordered rush for [illegible]
2nd soil ok
ile only E[illegible]
done

This report is for the sole and exclusive use of the above client. Samples are retained a maximum of 15 days from the date of this letter.

B 11588

Attachment 6
Transformer Sampling and Analysis Reports

CROSBY & OVERTON, INC.

5420 N. LAGOON
PORTLAND, OREGON 97217
283-1150 or 289-5749

HEAVY DUTY CLEANING

24 HOUR SERVICE

P.O. BOX 1085
20245 76th
SOUTH KENT, WA 98031

January 15, 1988

John Shore
Production Manager
Columbia Forge & Machine Works, Inc.
8424 N. Crawford Street
Portland, OR 97203

RE: Cleaning of PCB contaminated transformer; job summary

Dear John:

On December 14, 1987 Crosby & Overton removed a transformer from a piece of equipment at your facility. The transformer was brought to C & O's shop where it was cleaned; subsequently a wipe sample was taken (N.W.T. report #310693). Because of the past difficulties with cleaning this transformer and the fact that PCB's were still detectable after this thorough cleaning, Randy Rees (of this office) advised the cleaning process be repeated (as discussed with you on or about December 21, 1988). December 21 the transformer was cleaned and sampled a second time (N.W.T. report #310875).

As you can see from the attached lab analysis the transformer appeared dirtier the after the second sampling than it had after the first. Apparently, the location of the first wipe sample was unrepresentative of the overall cleanliness of the transformer.

Cleaning method

The transformer was cleaned twice using the same methodology. First the unit was completely wiped using rags and liberal amount of Power Cleaner 155, a Penetone Corp. product. Power Cleaner is a heavy duty alkaline liquid cleaner designed for cleaning PCB contaminated materials. Then the unit was thoroughly steam cleaned. Then a second washing was completed using kerosene and rags (a common method of cleaning up PCB spills) followed by a second steam cleaning.

B 11443

Currently, the transformer is back at your facility awaiting final disposition. Due to the inability to get it clean, a suitable disposal facility is being sought, at your request.

Sincerely,

CROSBY & OVERTON, INC.

Jeffrey T. Wallace

Jeffrey T. Wallace
Hazmat Technical Supervisor

JTW:dk

d30.jw

B 11444

NORTHWEST TESTING LABORATORIES, INC.

CONSTRUCTION INSPECTION
MATERIALS INSPECTION
CHEMICAL ANALYSIS
PHYSICAL TESTING

5405 N. Lagoon Avenue
P.O. Box 17126
Portland, Oregon 97217-0126
Phone: (503) 289-1778

NON-DESTRUCTIVE TESTING
WELDING CERTIFICATION
SOIL TESTING
ASSAYING

December 22, 1987

Crosby & Overton
5420 N. Lagoon
Portland, Oregon 97217

Attention: Mr. Jeff Wallace

Subject: Analysis on one (1) sample received on 12-14-87, per your P.O. Number 22041

REPORT:

Item: Hexane Wipe -120

Reference: Columbia Forge

Analysis:

Total PCB's, micrograms 7.5

Respectfully,
NORTHWEST TESTING LABORATORIES, INC.

Howard B. Holmes,
Assistant Supervisor, Chemistry

Report Number: 310693

B 11445

NORTHWEST TESTING LABORATORIES, INC.

CONSTRUCTION INSPECTION
MATERIALS INSPECTION
CHEMICAL ANALYSIS
PHYSICAL TESTING

5405 N. Lagoon Avenue
P.O. Box 17126
Portland, Oregon 97217-0126
Phone: (503) 289-1778

NON-DESTRUCTIVE TESTING
WELDING CERTIFICATION
SOIL TESTING
ASSAYING

December 28, 1987

Crosby & Overton
5420 N. Lagoon
Portland, Oregon 97217

Attention: Mr. Jeff Wallace

Subject: Analysis on three (3) samples received on 12-21-87, per your P.O. Number 22041.

REPORT:

Item: Hexane Swab Sample

Reference: Columbia Forge

Analysis:

	TOTAL PCB's (1260) micrograms
121 (Blank)	2.5
122 (Transformer Bottom)	12
123 (Transformer Side)	270

Respectfully,
NORTHWEST TESTING LABORATORIES, INC.

Fred Thomas, Chemist

Howard B. Holmes
Assistant Supervisor, Chemistry

Report Number: 310875

B 11446

AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS AND ARE INTENDED FOR THE USE OF OUR CLIENTS ONLY. NO OTHER PERSON

Problem Solvers

Water, Food & Research Lab, Inc.

Laboratory: 13015 S.W. Pacific Hwy., Tigard, Oregon 97223
Mailing Address: P.O. Box 19700, Portland, Oregon 97219
Telephone (503) 639-9311

COLUMBIA FORGE & MACHINE WORKS, INC.
ATTN: HENRY STROMQUIST, GEN MGR.
8424 N. CRAWFORD STREET
PORTLAND, OR 97203

SAMPLE NO # 4720

PHONE 286-3621

CC: MANUFACTURING MANAGEMENT, INC.
ATTN: NORMAN WEBB, CORP. ENV. OFFICER
444 PORT AVENUE
ST HELENS, OREGON 97051

241-4796

CHEMICAL CONTAMINANTS LABORATORY REPORT
********** OF JUNE 1987 **********

SAMPLE: SPECIAL SAMPLE -LEAK FROM TRANSFORMER ON EQUIPMENT

SAMPLER: CERTIFIED SAMPLED BY PBS FROM LAB

LOCATION: UNDER TRANSFORMER ON EQUIPMENT, LIQUID POOLED IN PAN.

DATE SAMPLED: 05-28-87 AT 1130 HRS BY PS

DATE RECEIVED: 05-28-87 (PRIORITY ANALYSIS

CONTAMINANT	EPA METHOD	LIMIT	RESULTS	ANAL DATE	ANALYST
**********	******	*PPM*	* ****PPM****	*********	*******
PCB'S	EPA		990,000 PPM	05-29-87	L.G.
			(99% PURE, AL 1254)		

****

CERTIFIED BY:

PAUL B. STEVENS
Microbiologist/Biochemist
LAB DIRECTOR (EPA/OSHD # 24)

TESTED BY EPA CERTIFIED LAB, COL LAB ID # 14817

RECOMMENDATIONS: SPECIAL CLEANUP PERSONNEL NEEDED TO HANDLE HAZARDOUS WASTE MATERIAL.

< = LESS THAN OR NONE DETECTED
ALL RESULTS IN PPM = MG/L

B 11458

CERTIFIED

Attachment 7
BES Storm Water Sample Results

City of Portland
Water Pollution Control Laboratory
Laboratory Analysis Report

Sample Date/Time	6/17/97 17:10	**System ID**	AB12647	**Sample ID**	**SRP970116**

Page: 1

Proj./Company Name:	BES INVESTIGATIONS	**Date Received:**	6/17/97
Address/Location:	COLUMBIA FORGING N CRAWFORD	**Sample Status:**	REPORT QUEUE
Proj Subcategory:	ENVIRONMENTAL COMPLIANCE	**Sample Type:**	GRAB
Sample Point Code:	0	**Sample Matrix:**	SURFWTR
IMS File:	3050.004	**Collected By:**	RMC

Comments:

Test Parameter	Result	Units	MDL	Method
MET ICP METALS (HIGH-LEVEL)				
CADMIUM	<0.001	mg/L	0.001	EPA 200.7
CHROMIUM	<0.003	mg/L	0.003	EPA 200.7
COPPER	0.010	mg/L	0.004	EPA 200.7
LEAD	<0.020	mg/L	0.020	EPA 200.7
MOLYBDENUM	<0.003	mg/L	0.003	EPA 200.7
NICKEL	<0.004	mg/L	0.004	EPA 200.7
SELENIUM	0.047	mg/L	0.020	EPA 200.7
ZINC	0.065	mg/L	0.001	EPA 200.7

End of Report for Sample ID: SRP970116

6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656

Report Date: 7/1/97

BRIDGEWATER GROUP, INC.

ROSS D. RIEKE, P.E.
4640 SW MACADAM; SUITE 222
PORTLAND, OR 97201
TEL: (503) 973-6068
FAX: (503) 973-6069
rieke@bridgeh2o.com

February 11, 2000

CRF001

Mr. Tom Gainer
Oregon Department of Environmental Quality
2020 SW Fourth Ave., Suite 400
Portland, OR 97201-4987

Subject: Crawford Street Corporation Site
Preliminary Assessment

Dear Mr. Gainer:

Please find enclosed three copies of the February 10, 2000 *Preliminary Assessment for the Crawford Street Corporation Site*. As noted in the report, we are proposing a soil sampling program to assess potential releases of hazardous substances on the Crawford Street site and the potential migration of the hazardous substances to the Willamette River. We are prepared to initiate the soil sampling program once you have reviewed this report and provided any comments on the proposed sampling program. Thank you for your help and please call if any questions.

Sincerely,

BRIDGEWATER GROUP, INC.

Ross D. Rieke, P.E.
Vice President
Environmental Consultant

cc: Tom Zelenka/Crawford Street Corporation
Joan Snyder/Stoel Rives

SITE ASSESSMENT PRIORITIZATION SYSTEM (SAPS) - SCORESHEET

Site Name: Crawford Street Corp.

Site Address: 8424 N. Crawford St.
Portland, OR 97203

ECSI Number: 2363

EPA ID Number:

Site Evaluator: Tom Gainer

Date: 10/1/99

		HIGH THREAT	MEDIUM THREAT	LOW THREAT	NO THREAT	CONF. VALUE
1.	Potential to Release (Route Characteristics)					
	a. Haz. Sub. Containment	9	(6)	3	0	B
	b. Depth To Aquifer	(6)	4	2	0	B
	c. Distance to DW Well	6	(4)	2	0	B
	d. Soil Permeability	(3)	2	1	0	B
	e. Distance to Surface Water	(6)	4	2	0	A
2.	Haz. Sub. Characteristics					
	a. Source Quantity	9	(6)	3	0	B
	b. Toxicity/Persistence	(9)	6	3	0	A
	c. Water Solubility	(3)	2	1	0	A
3.	Exposure Potential					
	a. Groundwater Use	9	6	(3)	0	B
	b. Land Use/Population	(6)	4	2	0	A
	c. Surface Water Use	9	(6)	3	0	B
	d. Sensitive Environments	(6)	4	2	0	A
	e. Direct Contact	6	(4)	2	0	B
4.	Evaluator Assessment of Threat	13	(9)	5	0	—

- Add the circled numbers to get the total SAPS score -

Confirmed Release ___ Y X N

Total SAPS Score = 75 (out of 100 possible points)
Priority Associated with Score = M (H, M, L)

DISCUSSION:

Discuss your overall impression of the threat posed by the site. Include brief discussion of major factors such as potential or known releases, waste quantity, human and environmental targets, and use of nearby groundwater or surface water. Also discuss any important factors or considerations not addressed in the SAPS scoresheet. Discuss whether you feel the SAPS score generated for the site reflects the overall threat posed by the site to the surrounding population and environment.

The following contaminants were elevated above Portland Harbor baseline concentrations in sediment samples collected adjacent to the subject site: arsenic, lead, mercury, di-n-butylphthalate, low- and high-molecular weight polynuclear aromatic hydrocarbons, and organotins. The subject site may have contributed to observed sediment contamination, with possible contaminant contribution from the adjacent upstream property (Willamette Cove).

Although the score indicates a medium priority, the priority is considered high because the Lower Willamette River represents a valuable resource for recreation and fish and wildlife habitat.

RECOMMENDATION:

- ☒ Further Action - High Priority
- ☐ Further Action - Medium Priority
- ☐ Further Action - Low Priority
- ☐ No Further Action
- ☐ Refer To _____ for further consideration
- ☐ Other: _____

LISTING RECOMMENDATION

- ☐ Recommend proposal on Confirmed Release List
- ☐ Recommend proposal on Inventory
- ☒ Insufficient information to list on the Confirmed Release List
- ☒ Insufficient information to list on the Inventory
- ☐ Excluded from listing

OREGON DEPARTMENT of ENVIRONMENTAL QUALITY
SITE ASSESSMENT ACTION - Northwest REGION

Facility Name: Crawford Street Corp. **ECSI #:** 2363

Address: 8424 N. Crawford St.
Portland OR 97203

PRP:
Company: Crawford Street Corp.
Name Robert Phillip - President **Phone:** (503) 286-3621
Address 3200 NW Yeon St.
Portland OR 97210

Action Date: 10/1/99

Report Type: Strategy Recommendation

Preliminary Assessment:

____ State ____ Federal ____ Voluntary ____ PAE ____ XPA

Screening:

X State ____ Federal ____ Spill

Note: Spill screenings may not require Strategy Recommendation

Recommended Action:

____ NFA [Need management approval]

____ Add to CRL

____ Add to Inventory

____ High Priority--Requires immediate response

X Other
Describe: High Priority XPA

Report Writer: Tom Gainer

	Headquarters	EPA	Other
Transmittal Date(s):			
Report Supplement(s):			

	Sample Analysis	Photos	Operating Plans	Other
Supplemental Date(s):				

Checklist:
X Strategy Recommendation ____ Letter to RP X SAPS X Map
X Data (if applicable) ____ Spill Report (if applicable)
____ Site Report

Manager's approval: _____

TABLE 1

River Sediment Contaminant Concentrations (1997)
Crawford Street Corporation

Contaminant	Units	Down-Stream SD058	*Crawford Street* SD060	Up-Stream SD066	Apparent Portland Harbor Sediment Baseline Maximum Value
Aluminum	ppm	22800	24700	33200	42800
Antimony	ppm	<4	NA	NA	<5
Arsenic	ppm	<4	**5**	**5**	<5
Barium	ppm	126	152	163	195
Beryllium	ppm	0.4	0.5	0.6	0.7
Cadmium	ppm	0.3	0.4	0.5	0.6
Chromium	ppm	25	28	35	41
Cobalt	ppm	16	11	18	19.7
Copper	ppm	30	50	41	60
Iron	ppm	31700	32700	37600	45000
Lead	ppm	13	**36**	28	30
Manganese	ppm	322	397	547	810
Mercury	ppm	0.1	**0.14**	**0.23**	0.1
Nickel	ppm	24	21	29	32
Selenium	ppm	11	12	11	15
Silver	ppm	0.7	0.8	1.0	1.4
Thallium	ppm	5	<4	<4	13
Titanium	ppm	1650	NA	1910	2075
Vanadium	ppm	80	85	98	112
Zinc	ppm	87	112	**158**	118
2-Methylnaphthalene	ppb	37	66	**180**	150
4-Methylphenol	ppb	50	230	130	680
Benzoic Acid	ppb	<200	<200	<190	<200
Benzyl Alcohol	ppb	<20	<20	<19	<20
bis(2-Ethylhexyl)phthalate	ppb	<90	<190	<88	390
Butylbenzylphthalate	ppb	<20	<20	<19	<20
Carbazole	ppb	48	99	<19	100
Di-N-Butylphthalate	ppb	**43**	**34**	<19	<20
Di-N-Octylphthalate	ppb	<20	<20	<19	<20
Dibenzofuran	ppb	24	33	57	100
Dimethylphthalate	ppb	<20	<20	<19	<20
Pentachlorophenol	ppb	<99	<99	<96	Detect
Phenol	ppb	<20	<20	<19	<20
LPAHs (total)	ppb	379	**873**	**1904**	700
HPAHs (total)	ppb	2333	**4448**	**4481**	2400
DDTs (total)	ppb	4.1	NA	7.5	220
PCBs (total)	ppb	<40	NA	54	<180
Organotins (total)	ppb	170	**773**	14	300
2,4-D	ppb	NA	NA	NA	<3.3
2,4-DB	ppb	NA	NA	NA	<5
TOC	%	**2.6**	0.9	1.6	2
Water Depth	Ft	45	9	17	
Sediment Sample Depth	cm	0-10	0-10	0-10	

NA = Not Analyzed

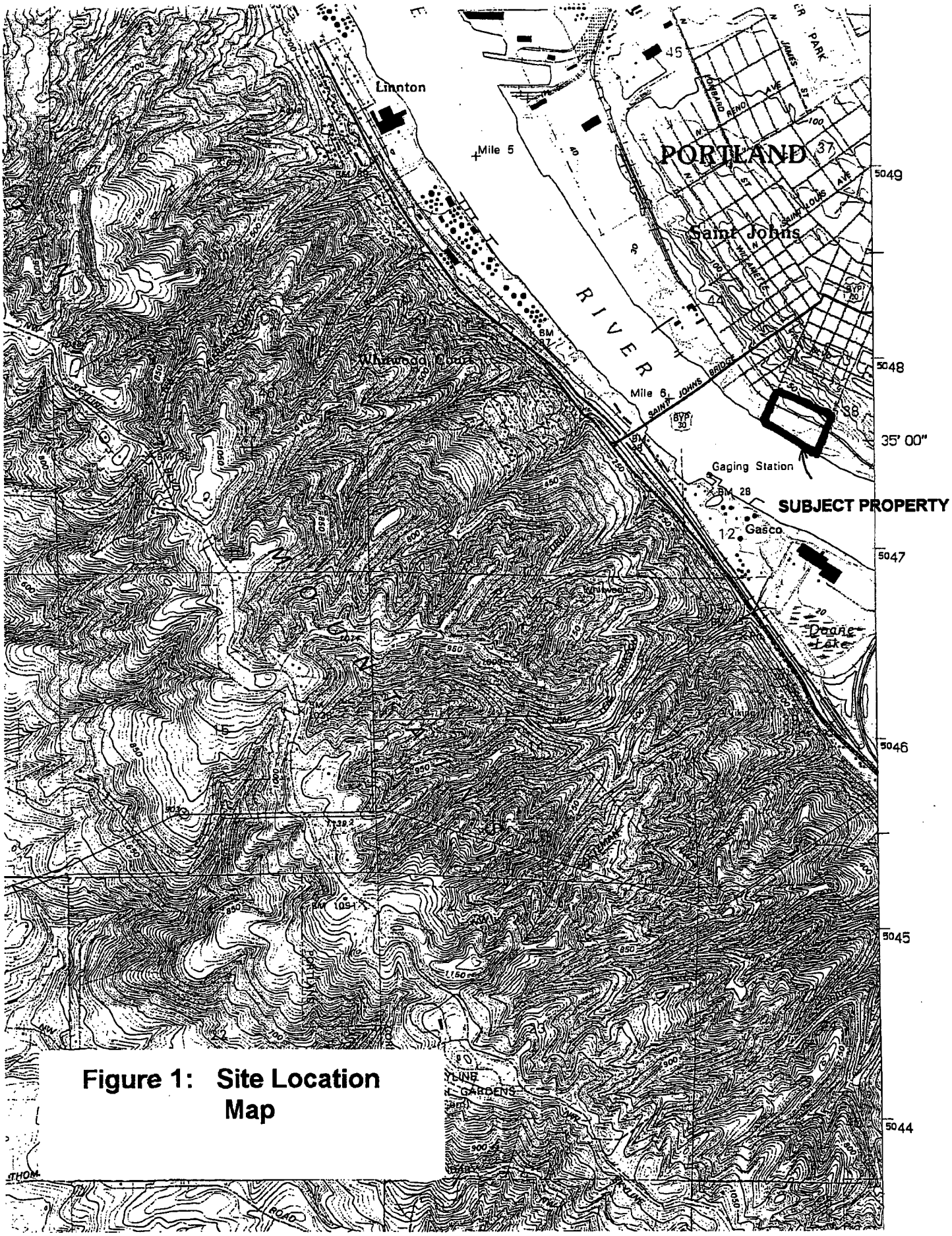


Figure 1: Site Location Map

SD07Z

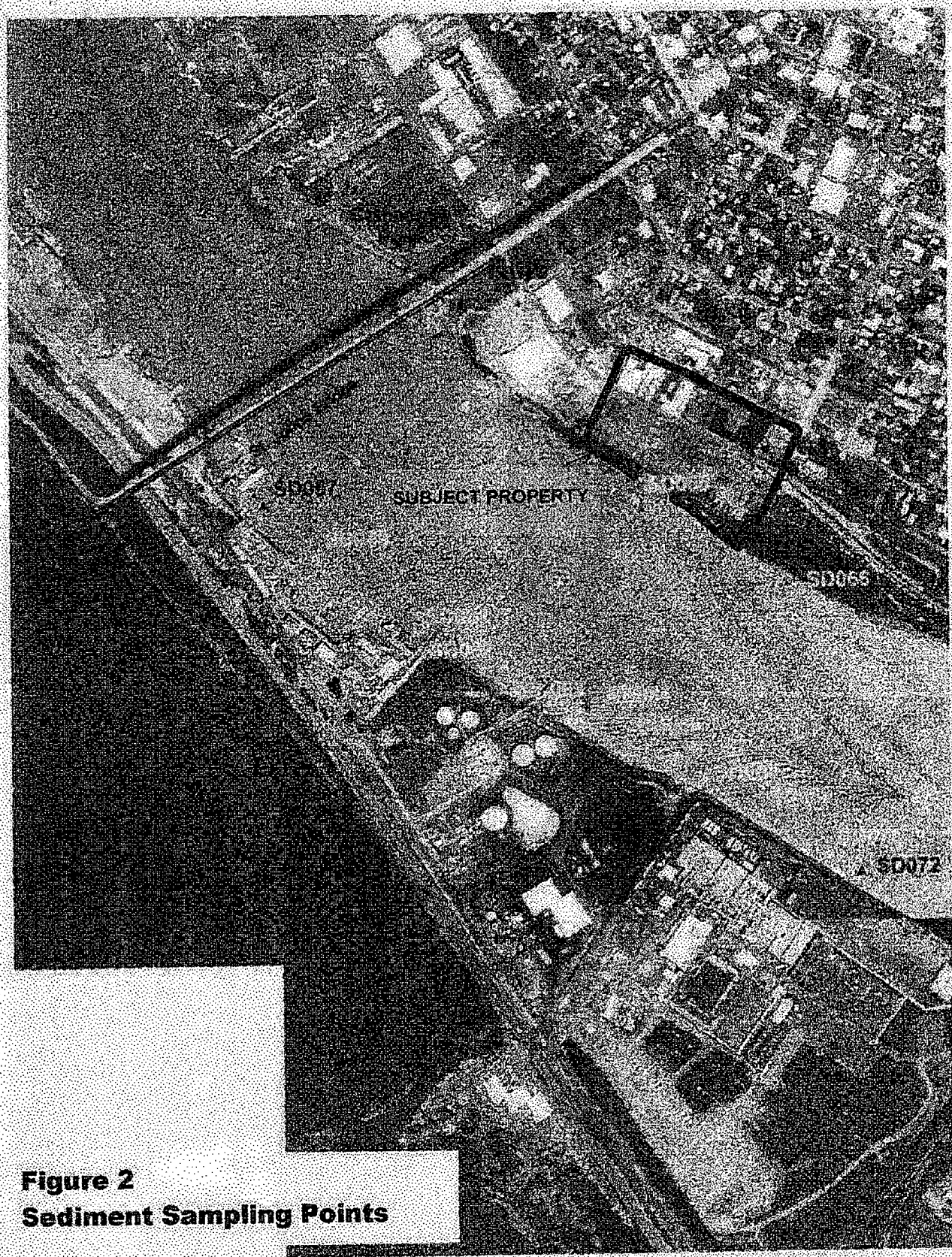
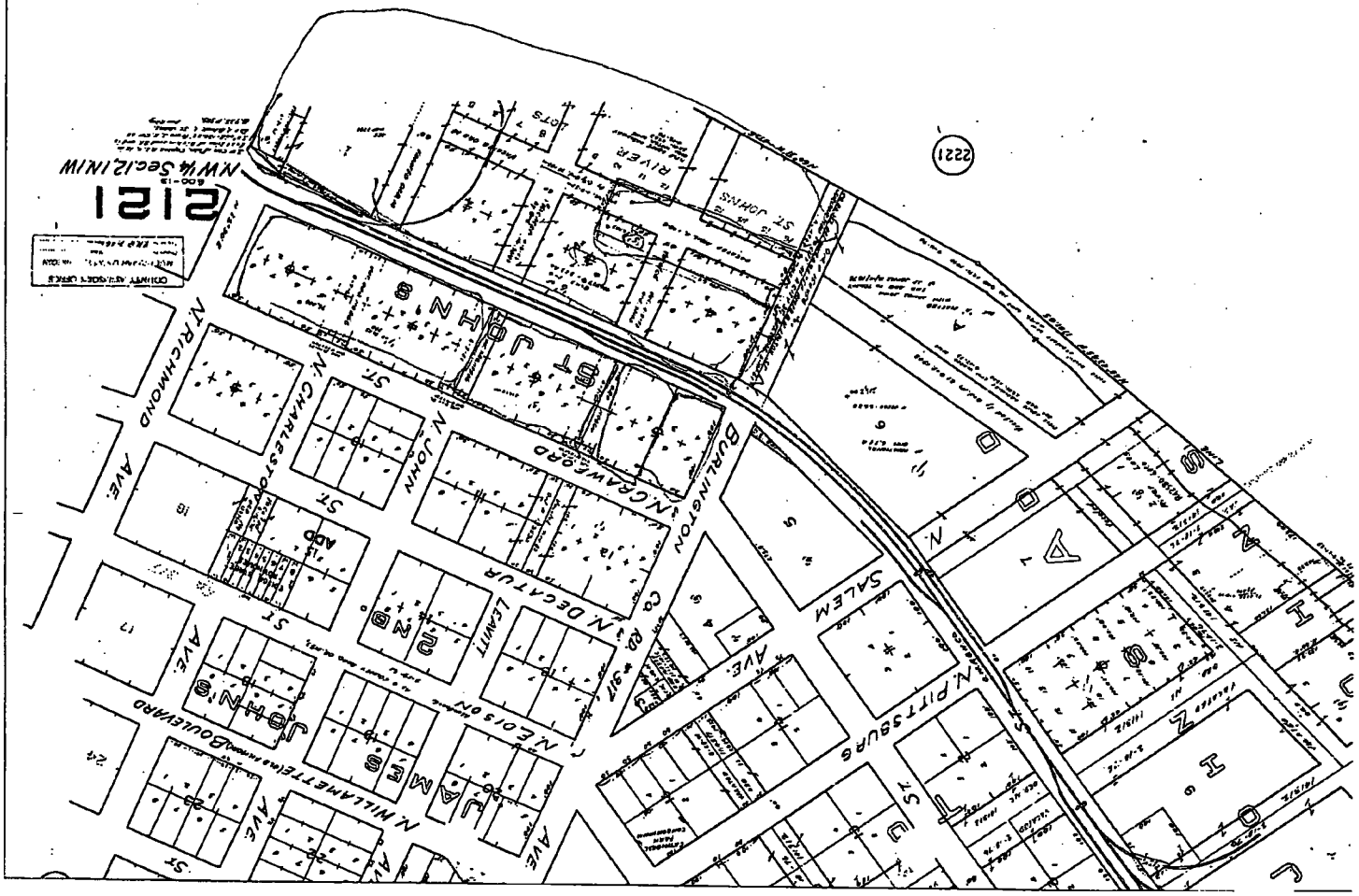


Figure 2
Sediment Sampling Points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N. RICHMOND AVE.
N. CHARLESTON ST.
N. JOHN ST.
N. CRAWFORD
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N. DECATUR
LEAVITT
N. LOISON
N. WILLAMETTE BOULEVARD
JAMES
JOHNS
SALEM
N. PITTSBURG
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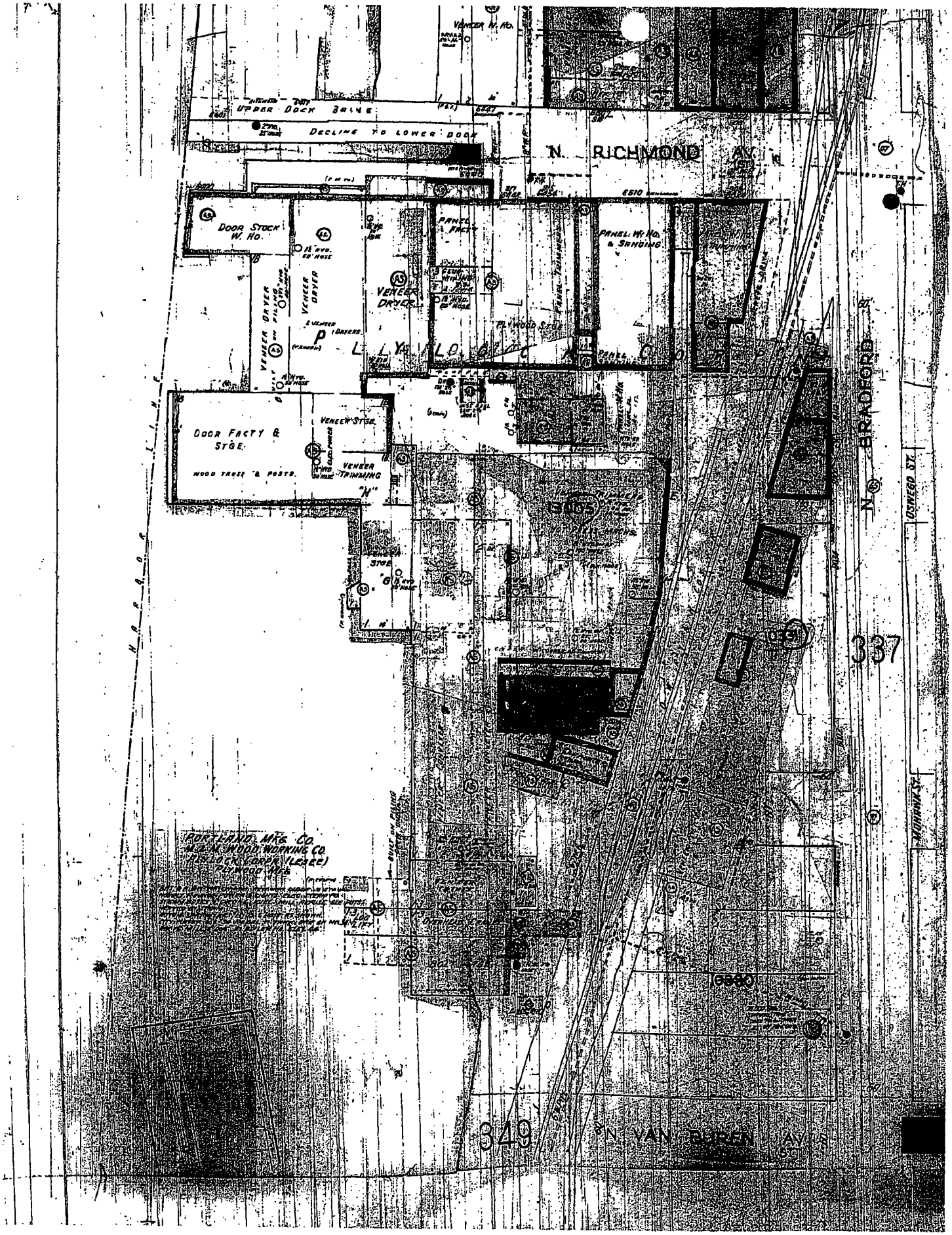

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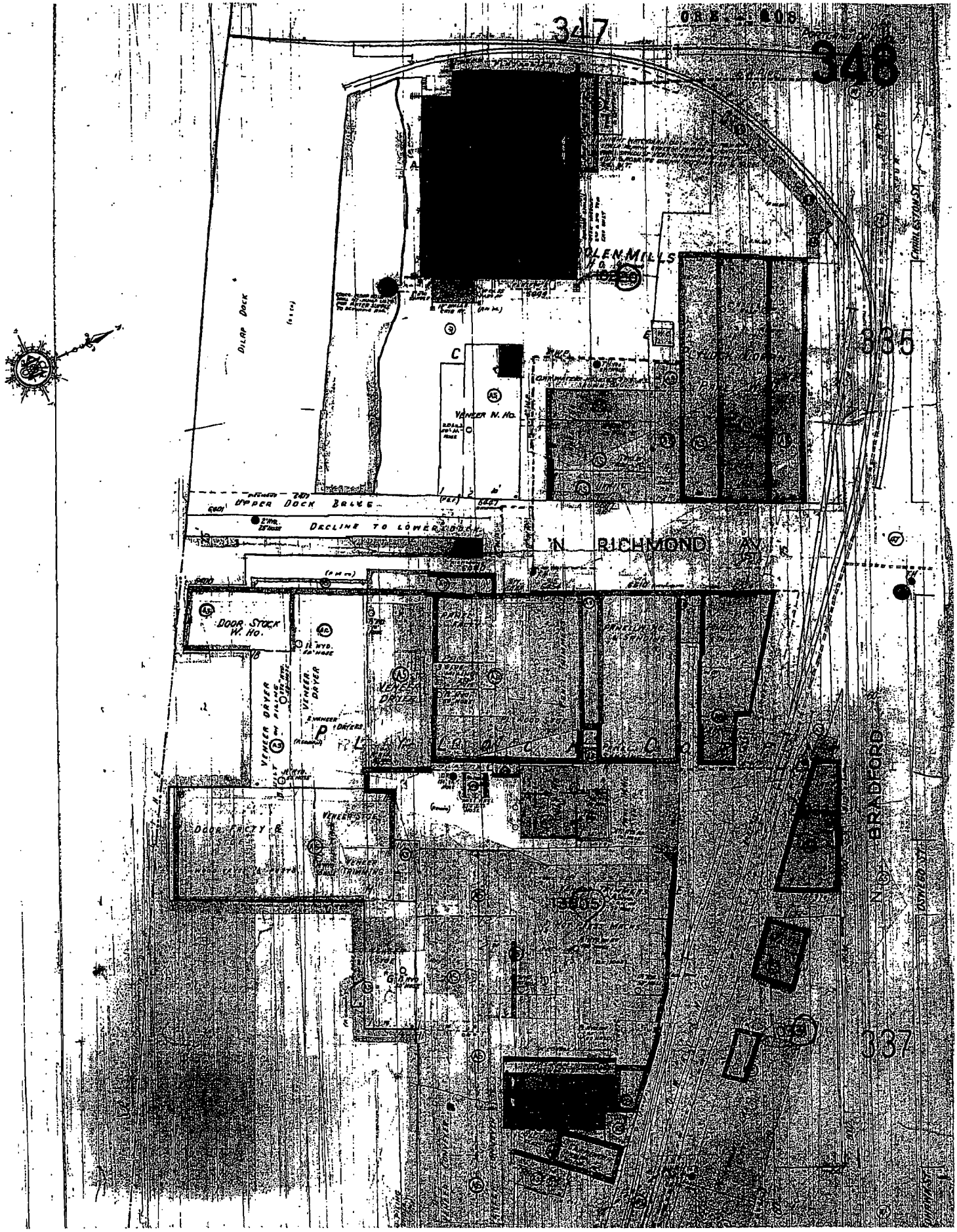
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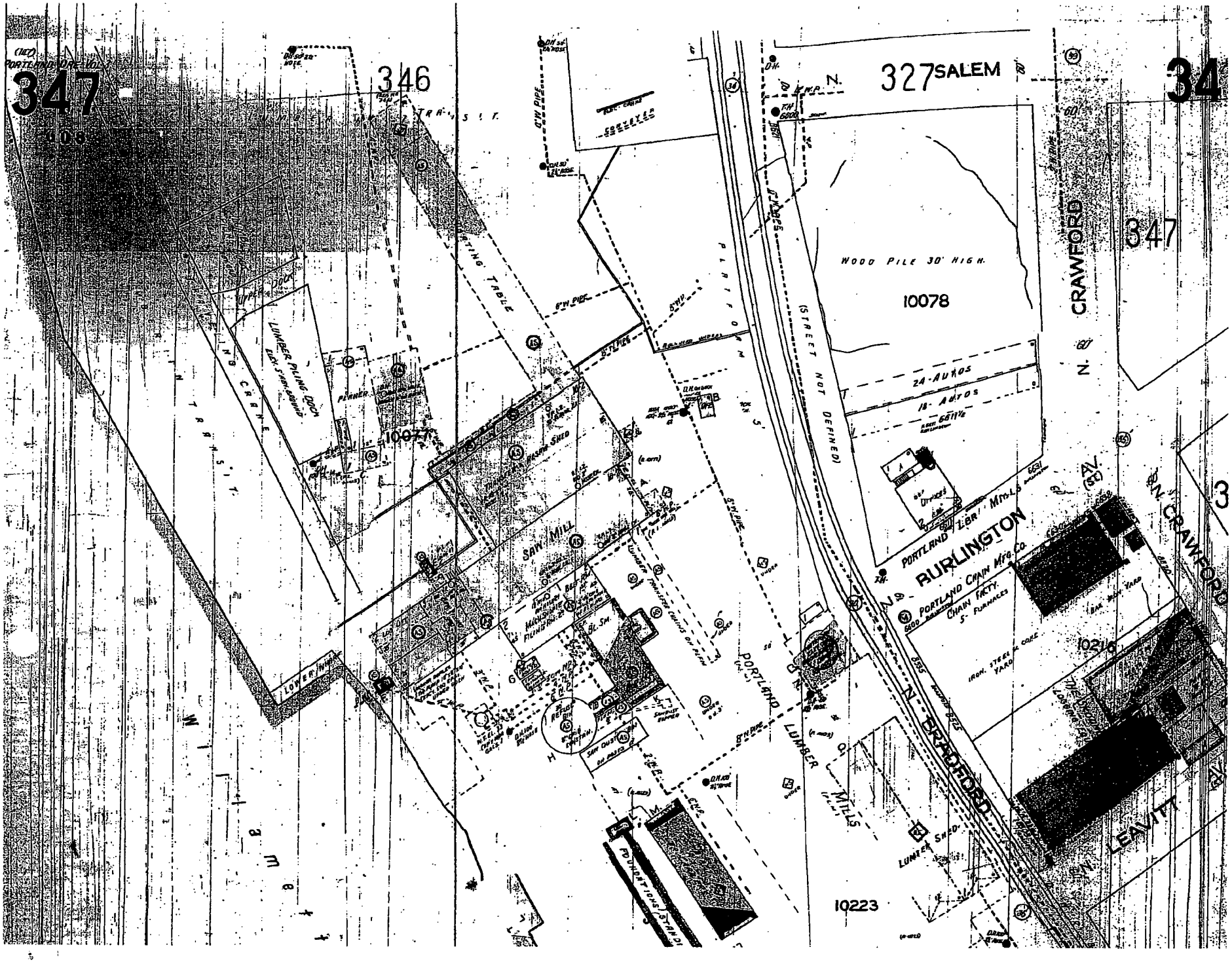
VENEER W. HO.
UPPER DOCK BRIDGE
DECLINE TO LOWER DOCK
N RICHMOND AV
DOOR STOCK W. HO.
VENEER DRYER
VENEER DRYER
VENEER DRYER
DOOR FACTY & SIDE
VENEER SIDE
VENEER TRIMMING
N BRADFORD
CHARLESTON ST
OSWEGO ST



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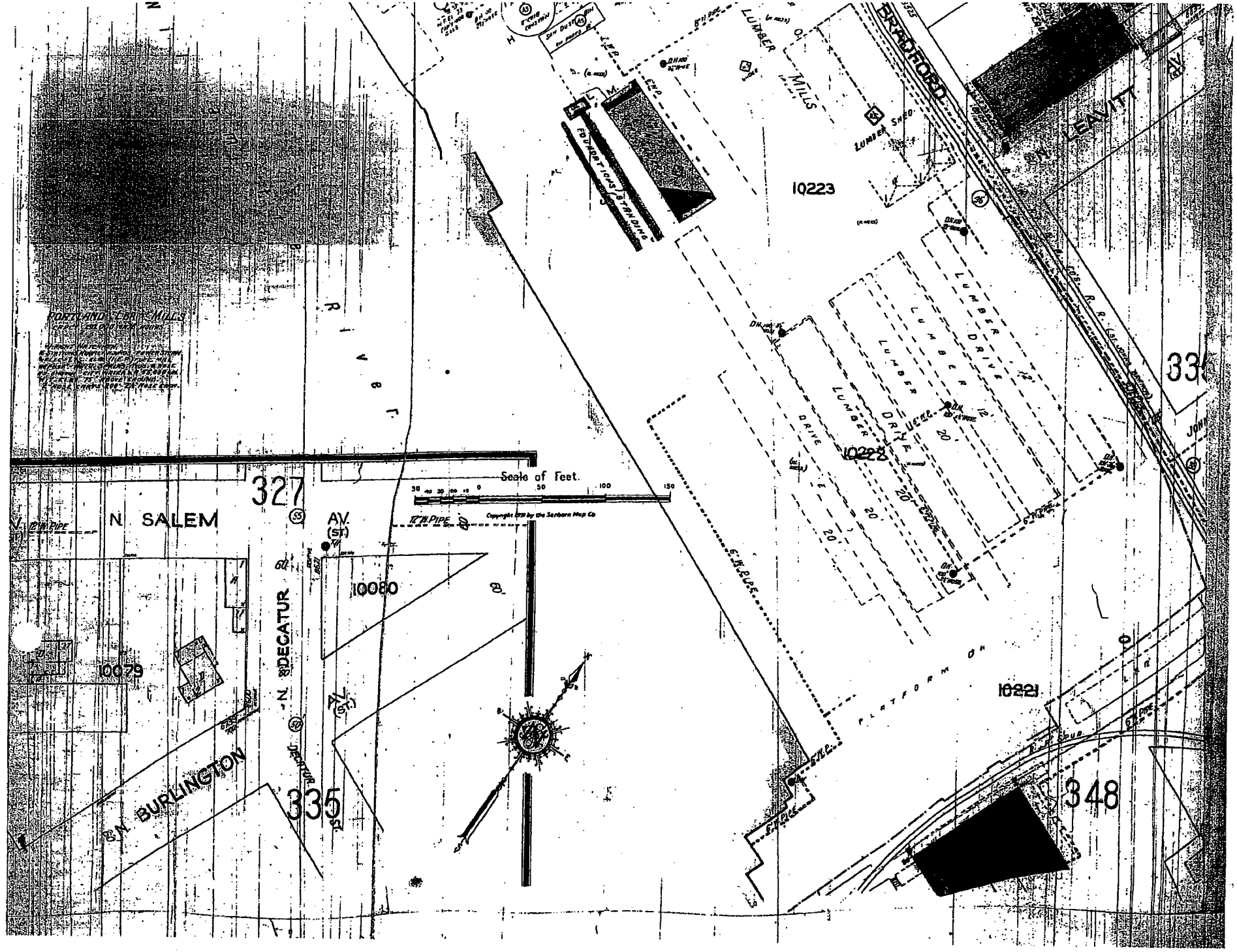

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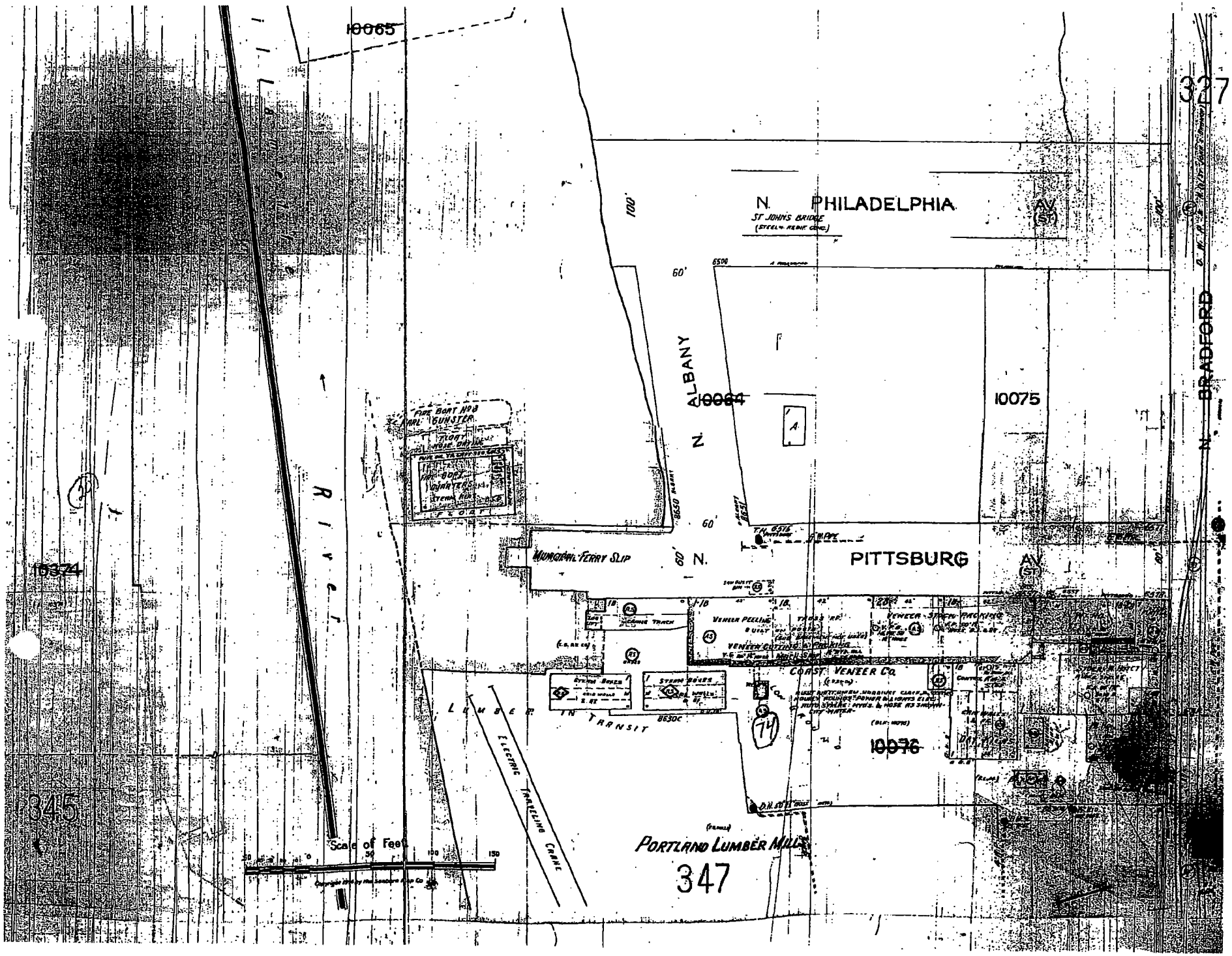

CRAW00016613

Oregon
John A. Kitzhaber, M.D., Governor

Department of Environmental Quality
Northwest Region Portland Office
2020 SW 4th Avenue, Suite 400
Portland, OR 97201-4987
(503) 229-5263
FAX (503) 229-6945
TTY (503) 229-5471

February 25, 2000

Matt Cusma
Schnitzer Steel Industries
P.O. Box 10047
Portland, Oregon 97296-0047

RE: Crawford Street Corporation Site
8424 and 8524 N. Crawford Street
Portland, Oregon
Review of Preliminary Assessment

Dear Mr. Cusma:

Thank you for submitting the February 10, 2000 Preliminary Assessment (PA) of the above-referenced site. The PA addresses certain issues identified in the Department of Environmental Quality's (DEQ) October 1, 1999 Strategy Recommendation, however significant data gaps still exist. The expanded PA should include the information necessary to determine if a release of hazardous substances has occurred at the facility from current or historic operations and whether the release requires additional investigation or remedial action to assure protection of present and future public health, safety, welfare, and the environment. The DEQ has the following specific comments based on our review of the PA.

Section 2.1. Page 4. The location of the storm drain lines should be included on a site figure.

Sections 2.2.2, 2.2.3, 2.2.4, and 2.2.5. Pages 4 – 7. These sections state that various products (e.g., lubricating oils, water-based cutting oils, naphtha solvents) are used in current on-site operations. Material Safety Data Sheets for these products should be provided in the PA report and reviewed to identify contaminants of interest. The use, management, and disposal of these products should be presented. The processes in which the oils are used should be further described. Often after using these oils parts must be washed or cleaned to remove the oils. Please describe how the oils are removed and how any waste generated is managed. The management of used oil should be discussed in greater detail. For example, how long has the oil been recycled? By whom? Has a hazardous waste determination been performed?

Section 2.2.3. Page 6. What prompted the installation of filters within the catch basins?

Section 2.3. Page 8. The location of the 8-inch diameter pipe should be shown on an appropriate site figure.

Section 3.5.2. Page 22. The location of the "black fill material" reported west of the subject site should be shown on an appropriate figure. Is this material believed to have been placed at the same time as the material on the subject site? Are halogenated volatile organic compounds suspected in the on-site material?

Section 3.5.2. Page 23. Pentachlorophenol was detected in groundwater on the adjacent property. Potential on-site sources of pentachlorophenol should be evaluated (e.g., black sand and historical mill operations).

Section 4. Page 24. Potential Contaminant Sources. This section does not adequately assess potential sources of contamination on the CSC site or potential contamination migration or exposure pathways. The PA should evaluate potential contaminant sources and migration pathways from both historical and current site operations; it appears that historical operations were inappropriately excluded. The specific objective of a PA is to determine if a hazardous substance(s) has been released or has the potential to released on the subject property. Potential contaminant source areas should be identified based on a review of historical site information and the results of environmental sampling, if conducted. The identification of potential source areas should include both upland and over or in water operations that may have resulted in a release of hazardous substances to soil, groundwater, surface water, and/or Willamette River sediments. Section 3 identifies numerous industrial uses (e.g., lumber mill, electrical generator, woolen mill, machine shop(s), foundry, plywood mill, planing mill, pattern shop, maintenance operations, imported fill) that may have used or generated hazardous substances. These areas and the types of contamination that could be present in each should be identified.

Section 4. Page 24. Potential Migration Pathways. The PA should identify and evaluate potential contaminant migration pathways (e.g., groundwater discharge; storm water discharge; direct release; volatilization, dust entrainment) and potentially affected media (e.g., groundwater, soil, Willamette River sediments, surface water) at the subject property.

Section 4. Page 24. Potential Exposure Pathways. The PA should identify and evaluate potential contaminant exposure pathways (e.g., ingestion, direct contact, inhalation) to humans and ecological receptors associated with the potentially affected media (e.g., groundwater, soil, Willamette River sediments, surface water) at the subject property.

Section 5. Page 28. The proposed sampling plan is not adequate to address potential concerns regarding the site. The sampling and analyses plan should be based on a conceptual site model that describes the potential sources of contamination, migration pathways, exposure routes, and contaminants of interest. The PA needs to take a broad approach of what could be present at the site, based on the specific site uses (both current and historical). The PA identifies the following potential contaminant source areas:

- Mills (planing, plywood, lumber)
- Electrical generator (transformers & capacitors?)
- Woolen mill
- Imported Fill (black sand)
- Various machine shops

- Auto repair
- Maintenance operations
- Metal forging, cleaning, machining, shaping, cutting, and painting

Potential contaminants of interest (COIs) may include, but are not limited to:

- Petroleum hydrocarbons (cutting oils, lube oils, used oil)
- Volatile Organic compounds (solvents, cleaning, degreasing, maintenance)
- Semivolatile Organic compounds(SVOCs), polycyclic aromatic hydrocarbons (PAHs)
- Metals (e.g., arsenic, copper, chromium, manganese, mercury, lead, zinc)
- Organotins
- PCBs
- Pentachlorophenol
- Herbicides

The proposed sampling plan needs to include analyses of COIs in current and historical process areas. The proposed plan assesses only potential shallow soil contamination due to storm water run off and infiltration. Both subsurface soil samples and groundwater grab samples should be collected from selected areas and screened for the COIs. Based on the extensive industrial history of the site, additional sampling is warranted to determine if a release(s) has occurred.

Section 5.3.2. Page 31. If composite sampling is proposed, the sample result must be multiplied by the number of subsamples for screening purposes. DEQ recommends that the subsamples be archived for future analyses in the event that the screening criteria are exceeded in the composite samples.

Section 5.3.4. Page 32. Following completion of the sampling activities and receipt of the analytical data, the laboratory results, photographs, boring logs, permits should be included as separate attachments to the final report.

Please address these comments and submit a revised document to DEQ by April 1, 2000. Thank you for your cooperation on this project.

Sincerely,

Tom Gainer

Tom Gainer, P.E.
Project Manager

CC: Ross Rieke
Bridgewater Group, Inc.
4640 SW Macadam, Suite 222
Portland, Oregon 97201

Rod Struck, DEQ
ECSI File #2363

BRIDGEWATER GROUP, INC.

ROSS D. RIEKE, P.E.
4640 SW MACADAM; SUITE 222
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rieke@bridgeh2o.com

April 17, 2000

CRF001

Mr. Tom Gainer
Oregon Department of Environmental Quality
2020 SW Fourth Ave., Suite 400
Portland, OR 97201-4987

Subject: Crawford Street Corporation Site
Preliminary Assessment

Dear Mr. Gainer:

This letter presents Crawford Street Corporation's (CSC's) response to DEQ's comments on the February 10, 2000, report titled *Preliminary Assessment for the Crawford Street Corporation Site*. DEQ's comments were presented in a letter from you dated February 25, 2000.

Response to DEQ's Comments

For each comment response, DEQ's comment is first presented (in italics) with CSC's response following (indented and not italicized).

DEQ Comment 1

Section 2.1. Page 4. The location of the storm drain lines should be included on a site figure.

> The storm drain locations, as inferred from the City of Portland drawings, will be added to Figure 2-1.

DEQ Comment 2

Sections 2.2.2, 2.2.3, 2.2.4, and 2.2.5. Pages 4 – 7. These sections state that various products (e.g., lubricating oils, water-based cutting oils, naphtha solvents) are used in current on-site operations. Material Safety Data Sheets for these products should be provided in the PA report and reviewed to identify contaminants of interest. The use, management, and disposal of these products should be presented. The processes in which the oils are used should be further described. Often after using these oils parts must be washed or cleaned to remove the oils. Please describe how the oils are removed and how any waste generated is managed. The management of used oil should be discussed in

greater detail. For example, how long has the oil been recycled? By whom? Has a hazardous waste determination been performed?

Representative MSDS's for the lubricating oils, water-based cutting oils, and naphtha (i.e. Safety Kleen) solvents are attached and will be included in the PA report. As expected, the contaminants of interest associated with these materials are petroleum hydrocarbons.

These oils are used as lubricants in the various equipment used in several locations on the Columbia Forge, TLS Steel, and Lampros Steel sites. These include drop forges, punches, and metal cutting equipment. This equipment is located throughout the Columbia Forge and TLS operations. The Lampros Steel operations that use the lubricants are generally limited to the 200-foot by 200-foot building located between North Charleston Street and North John Street. Columbia Forge also uses the lubricants in an air compressor as noted in Section 2.2.3. As noted in Section 2.2.3, Columbia Forge uses naphtha-based solvent in a small Safety Kleen parts washer to clean metal parts. Cleaning of the equipment is not performed using the naphtha based solvents.

Lampros Steel and TLS Steel provide their used oil to Columbia Forge for recycling. As noted in Section 2.2.3, Columbia Forge recycles the used oil offsite at a licensed oil recycling facility. Used oil has been recycled offsite since prior to the mid 1980s. Currently, Columbia Forge uses Oil Re-Refining Company and Spencer Environmental for the offsite recycling of used oil. Based on the MSDS information for the oil products and generator knowledge, the used oil is not a hazardous waste.

Based on MSDS information, the Safety Kleen solvents are a hazardous waste due to ignitability (i.e. D001). Due to the small quantities of the waste solvent generated, Columbia Forge is a conditionally exempt generator. Safety Kleen maintains the parts washer and removes spent naphtha solvent for recycling at least quarterly. Safety Kleen has been providing these services for at least 13 years. Waste oil and waste solvent are not mixed.

DEQ Comment 3

Section 2.2.3. Page 6. What prompted the installation of filters within the catch basins?

The filters were installed as part of Crawford Street's continuing review and implementation of Best Management Practices that has been performed over the past several years.

DEQ Comment 4

Section 2.3. Page 8. The location of the 8-inch diameter pipe should be shown on an appropriate site figure.

The approximate location of the 8-inch diameter pipe is shown on Figure 2-5.

DEQ Comment 9

Section 3.1.4. Page 15. The 1988 Sweet Edwards/Emcon report should be provided to DEQ. Without documentation (e.g., analytical results, boring logs), the stated findings are not meaningful and the statements raise a lot of questions. Questions include:

- *This section states that "evidence of contamination" was not noted in groundwater. This statement raises questions about what was tested for (PAHs, VOCs, metals, PCBs?) and what the analytical detection limits were.*
- *Who was the former on-site worker? Who did they work for? What period of time were they on-site?*
- *What was the location of the underground storage tank? Was the release reported to DEQ? What analytical testing (TPH-HCID, solvents, metals, PCBs?) was performed to close the tank?*
- *What is the extent of the black sand? What analytical testing was performed to assess contamination associated with this sand? Although the black sand is reported to be from tank cleaning, confirmation for organotins should be conducted.*
- *How where test pits and soil boring locations selected?*
- *Where was the former septic tank and drain field? What facility did this serve? What analytical testing was performed?*

A copy of an April 4, 1988, Sweet-Edwards/Emcon report is attached. The existence of this report became known during the performance of the Preliminary Assessment. All of the work described in the report was performed prior to CSC acquiring the property. The site conditions described in the report represent site conditions prior to CSC's ownership of the site.

Three groundwater samples were analyzed for nitrate-nitrogen, total organic carbon (TOC), and total halogenated organic (TOX) concentrations. The water samples were collected from soil borings T-1 (one sample) and T-2 (two samples) located in the eastern and western areas, respectively, of the CSC site South Area (See Figure 3 in the attached Sweet-Edwards/Emcon report). Nitrate-nitrogen, TOC, and TOX concentrations were detected in all of the groundwater samples, except that TOX was not detected in the sample from T-1. Sweet-Edwards/Emcon concludes that "..neither sample shows any clear indication that shallow groundwater has been affected by oil from the overlying sand fill." Their conclusion is presumably based on the potential for organic material (such as wood waste) to cause interferences with the TOC and TOX analyses and the lack of any field observations suggesting groundwater contamination.

The Sweet-Edwards/Emcon report does not identify the "Former employee of former onsite sawmill."

DEQ Comment 5

Section 2.5. Page 10. The location of the 8-inch diameter pipe should be shown on an appropriate site figure.

The approximate location of the 8-inch diameter pipe on the adjacent property to the east will be added to Figure 2-5.

DEQ Comment 6

Section 2.7.1. Page 10. This section suggests that subsurface investigations have occurred on the subject site. If so, a copy of the investigation report and boring logs should be submitted to DEQ or included as an attachment to the PA report.

A copy of an April 4, 1988, Sweet-Edwards/Emcon report for a limited subsurface investigation on the site is attached. The existence of this report became known during the performance of the Preliminary Assessment.

DEQ Comment 7

Section 3. Pages 12 – 23. This section references various Sanborn Maps. These maps should be provided in the PA or pertinent features (e.g., former maintenance shops, tanks, and mills) shown on appropriate site maps.

Copies of the available Sanborn maps (i.e. 1905, 1911, 1924, 1950, and 1960) for the CSC site and surrounding area are attached.

DEQ Comment 8

Section 3. Pages 12 – 23. This section identifies numerous industrial uses (e.g., lumber mill, electrical generator, woolen mill, machine shop(s), foundry, plywood mill, planing mill, pattern shop, and maintenance operations) on various locations of the subject property. The main processes for each of these industrial uses should be identified and potential hazardous substances used or generated in these processes identified and screened for further evaluation.

There is no direct information available regarding the specific nature of the lumber mill, electrical generator, woolen mill, machine shop(s), foundry, plywood mill, pattern shop, and planing mill, and maintenance operations inferred from the Sanborn Maps. These operations occurred well before CSC acquired the property and it is not possible to identify and characterize the specific processes.

Based on discussions with Columbia Forge representatives, the 200-foot by 200-foot building located between North Charleston and North John Streets was vacant during the City's ownership of the property (i.e. prior to CSC ownership of the property) with no significant operations occurring in the building.

The underground storage tank on the South Area was located at Test Pit TP-2 (See Figure 3 in the attached Sweet-Edwards/Emcon report). Figures 6 and 7 show more detailed views of the tank layout. It is not known whether the observed release was reported to DEQ. The three soil samples collected from the tank excavation were analyzed for oil and grease. The samples were not analyzed for solvents, metals, or PCBs. The current TPH-HCID analysis was not in general use at the time the tanks were removed (1988).

The estimated extent of the black sand is shown on Figure 4 in the attached report. Samples of the black sand were analyzed for oil and grease, PCBs, TOX, volatile organic compounds, and EP Tox metals.

Based on the Sweet-Edwards/Emcon report, test pits were performed in the area of suspected black sand, at targets identified by the geophysical survey, and at the suspected underground storage tank location. The two soil borings were drilled in the suspected drain field area in the eastern portion of the site and in the suspected black sand fill area.

According to the "former saw mill employee" referenced in the Sweet-Edwards/Emcon report, the former "Fibron" building previously located in the eastern portion of the site was served by a septic tank and drain field. The septic system was reportedly located south of the former "Fibron" building (See Building 7 on Figure 3 in the attached Sweet-Edwards/Emcon report). Fibron was reported to have sold fiberglass installation. Prior uses would have been associated with the plywood mill and the woolen mill operations in this area. The test pits were presumably observed for evidence of the septic system. No such evidence was noted in the report. A groundwater sample collected from the soil boring in this area (T-1) was analyzed for nitrate-nitrogen, TOC, and TOX. Nitrate-nitrogen and TOC were detected at concentrations of 2.4 and 2 mg/l, respectively. Sweet-Edwards/Emcon concluded "The sample from T-1 does not show any obvious impacts on water quality due to the drain field."

DEQ Comment 10

Section 3.2.2.1. Page 17. The general maintenance operations performed in this facility should be determined. This information should be used to identify potential contaminants of interest (e.g., herbicides, petroleum products, fuels, paints, and solvents) for sampling activities.

Based on discussions with Columbia Forge representatives, the 200-foot by 200-foot building located between North Charleston and North John Streets was vacant during the City's ownership of the property (i.e. prior to CSC ownership of the property) with no significant operations occurring in the building.

DEQ Comment 11

Section 3.4.2. Page 21. The location of the referenced test pits, hand auger borings, and soil borings should be provided on an appropriate figure. Particularly, any sampling locations located on or in the immediate vicinity of the subject property should be identified.

Figures showing the locations of the 1988, 1989, and 1995 explorations on the property east of the CSC site are attached. Almost all of the explorations are located at great distance (greater than 1,000 feet) from the CSC site. There are two soil borings and one test pit that are located within 200 feet of the Crawford Street site (SE/E-13, SE/E-19, and TP-2). Laboratory data summary tables and boring/test pit logs for these explorations are attached.

DEQ Comment 12

Section 3.5.2. Page 22. The location of the "black fill material" reported west of the subject site should be shown on an appropriate figure. Is this material believed to have been placed at the same time as the material on the subject site? Are halogenated volatile organic compounds suspected in the on-site material?

A figure showing the location of the black sand fill on the property west of the CSC site is attached. It is not known whether this material was placed at the same time as the black sand on the CSC site or if it came from the same source. Total halogenated organic (TOX) concentrations were detected in samples from the black sand on the CSC site and the property to the west. The source of the TOX in the analysis is not known. PCBs were not detected in a sample of the black sand from the CSC site. Given the presence of petroleum hydrocarbons in the black sand samples, the measured TOX concentrations may reflect interferences and do not necessarily indicate the presence of halogenated volatile organic compounds.

DEQ Comment 13

Section 3.5.2. Page 23. Pentachlorophenol was detected in groundwater on the adjacent property. Potential on-site sources of pentachlorophenol should be evaluated (e.g., black sand and historical mill operations).

Pentachlorophenol was detected in a groundwater sample from a well (MW-5) in the southwestern corner of the property west of the CSC site (i.e. off of the CSC site). The draft PA report incorrectly stated the location as the southeastern corner. Thus, this groundwater sample was collected about 800 feet west of the CSC site and in an area away from where black sand was reported to be present. Given this distance from the CSC site and the lack of black sand in the area around the groundwater sample, the presence of pentachlorophenol is not relevant to the possible conditions on the CSC site or any possible association with the black sand. Furthermore, based on the anecdotal description of the source of the black sand (sand blast of oil tanks), there is no reason to expect that the black sand is contaminated with pentachlorophenol. Rather, the pentachlorophenol was likely associated with wood

treating activities previously occurring on the former saw mill site, west of the CSC site (i.e. off of the CSC site).

DEQ Comment 14

Section 4. Page 24. Potential Contaminant Sources. This section does not adequately assess potential sources of contamination on the CSC site or potential contamination migration or exposure pathways. The PA should evaluate potential contaminant sources and migration pathways from both historical and current site operations; it appears that historical operations were inappropriately excluded. The specific objective of a PA is to determine if a hazardous substance(s) has been released or has the potential to released on the subject property. Potential contaminant source areas should be identified based on a review of historical site information and the results of environmental sampling, if conducted. The identification of potential source areas should include both upland and over or in water operations that may have resulted in a release of hazardous substances to soil, groundwater, surface water, and/or Willamette River sediments. Section 3 identifies numerous industrial uses (e.g., lumber mill, electrical generator, woolen mill, machine shop(s), foundry, plywood mill, planing mill, pattern shop, maintenance operations, imported fill) that may have used or generated hazardous substances. These areas and the types of contamination that could be present in each should be identified.

As noted in Section 1.1 of the PA report, the PA assessed the potential for the Willamette River COIs identified by DEQ to have been released on the CSC site during CSC's ownership of the property and for those COIs to have migrated to the Willamette River. Any potential releases associated with the historical sources noted in the PA report and in DEQ's comments occurred prior to CSC's ownership of the property.

DEQ Comment 15

Section 4. Page 24. Potential Migration Pathways. The PA should identify and evaluate potential contaminant migration pathways (e.g., groundwater discharge; storm water discharge; direct release; volatilization, dust entrainment) and potentially affected media (e.g., groundwater, soil, Willamette River sediments, surface water) at the subject property.

The surface water, groundwater, and air migration pathways were considered for the potential sources that were identified within the scope of the PA (i.e. the former underground storage tanks and surface water runoff from Columbia Forge). As a result of this assessment, we identified a potential for Willamette River COIs to have possibly been released at the Columbia Forge facility and to have migrated through storm water runoff to the Willamette River. The proposed sampling program directly assesses this potential release/migration pathway. No other potential source and Willamette River migration pathway associated with the Willamette River COIs and the site operations since CSC's acquisition were identified.

DEQ Comment 16

Section 4. Page 24. Potential Exposure Pathways. The PA should identify and evaluate potential contaminant exposure pathways (e.g., ingestion, direct contact, inhalation) to humans and ecological receptors associated with the potentially affected media (e.g., groundwater, soil, Willamette River sediments, surface water) at the subject property.

As noted in Section 1.1, the PA addressed only the potential release of the DEQ-identified Willamette River COIs and migration of the COIs to the river occurring since CSC's ownership of the property. The only relevant receptors associated with this scenario are those associated with the Willamette River. Section 4.1 of the PA report describes the receptors associated with the Willamette River.

DEQ Comment 17

Section 5. Page 28. The proposed sampling plan is not adequate to address potential concerns regarding the site. The sampling and analyses plan should be based on a conceptual site model that describes the potential sources of contamination, migration pathways, exposure routes, and contaminants of interest. The PA needs to take a broad approach of what could be present at the site, based on the specific site uses (both current and historical). The PA identifies the following potential contaminant source areas:

- *Mills (planing, plywood, lumber)*
- *Electrical generator (transformers & capacitors?)*
- *Woolen mill*
- *Imported Fill (black sand)*
- *Various machine shops*
- *Auto repair*
- *Maintenance operations*
- *Metal forging, cleaning, machining, shaping, cutting, and painting*

Potential contaminants of interest (COIs) may include, but are not limited to:

- *Petroleum hydrocarbons (cutting oils, lube oils, used oil)*
- *Volatile Organic compounds (solvents, cleaning, degreasing, maintenance)*
- *Semivolatile Organic compounds(SVOCs), polycyclic aromatic hydrocarbons (PAHs)*
- *Metals (e.g., arsenic, copper, chromium, manganese, mercury, lead, zinc)*
- *Organotins*
- *PCBs*

- *Pentachlorophenol*
- *Herbicides*

See responses to DEQ comments14, 15, and 16.

DEQ Comment 18

The proposed sampling plan needs to include analyses of COIs in current and historical process areas. The proposed plan assesses only potential shallow soil contamination due to storm water run off and infiltration. Both subsurface soil samples and groundwater grab samples should be collected from selected areas and screened for the COIs. Based on the extensive industrial history of the site, additional sampling is warranted to determine if a release(s) has occurred.

See responses to DEQ comments14, 15, and 16.

DEQ Comment 19

Section 5.3.2. Page 31. If composite sampling is proposed, the sample result must be multiplied by the number of subsamples for screening purposes. DEQ recommends that the subsamples be archived for future analyses in the event that the screening criteria are exceeded in the composite samples.

The purpose of the composite sampling at each location is to obtain a concentration that is representative of how the soil in the area of the sample would impact surface water. A single point concentration is not representative of how the soil contamination in the sample area would affect surface water. The composite concentration multiplied by the number of samples composited would certainly not be representative of the soil's impact. Given the small subarea from which each subsample is collected (about 5 square feet), the usefulness of singe point concentrations at each subsample location is questionable.

DEQ Comment 20

Section 5.3.4. Page 32. Following completion of the sampling activities and receipt of the analytical data, the laboratory results, photographs, boring logs, permits should be included as separate attachments to the final report.

Section 5.3.4 notes that the analytical laboratory report and analytical data will be included in the sampling report. Relevant photographs taken during the sampling work will be included in the sampling report. Because no borings are proposed, boring logs were not included in the items to be provided in the report. Based on the proposed sampling program (as well most any other typical sampling program), it is not clear what permits would be necessary or generated during the sampling program.

Summary

Thank you for your comments on the draft PA report. Please review our responses and let us know if you have any questions. We will proceed to revise the PA report according to the responses presented above. If you would like to meet and discuss the responses prior to us submitting the final PA report please call.

Sincerely,

BRIDGEWATER GROUP, INC.

Ross D. Rieke, P.E.
Vice President
Environmental Consultant

cc: Tom Zelenka/Crawford Street Corporation
Joan Snyder/Stoel Rives

Attachment for Response to DEQ Comment 2

MATERIAL SAFETY DATA SHEET

CHRISTENSON OIL
P.O. BOX 17339
PORTLAND, OREGON 97217
(503)286-1673

CHRISTENSON OIL MSDS AMP140

CHEMTREC 800-424-9300

PRODUCT CODE NO: NONE

SECTION 1 - IDENTIFICATION

PRODUCT	:	AERO MP GEAR OIL SAE 140
SYNONYMS	:	
CHEMICAL	:	PETROLEUM HYDROCARBONS
CAS NO.	:	MIXTURE - NO SINGLE CAS NUMBER APPLICABLE
SARA HAZARD	:	NONE NOTED (SECTION 311/312) TITLE III SECTION 313 - LISTED

SECTION II - INGREDIENTS AND HAZARD CLASSIFICATION

COMPOSITION	%	PEL/TLV	HAZARD
MULTI-PURPOSE GEAR OIL SAE 80-90	100	NONE/NONE	NONE NOTED

SECTION III - HEALTH INFORMATION

INHALATION: THE ESTIMATED LC50 FOR A 1 HOUR EXPOSURE TO A SIMILAR COMPONENT OF THIS FORMULATION WAS 4.68 MG/L (RATS), WHICH IS CONSIDERED TOXIC. IN ORDER TO DETERMINE THE LC50 VALUE, EXTREMELY HEAVY MIST OF TEST MATERIAL WERE REQUIRED. THE VERY HEAVY MISTS AT THE NECESSARY CONCENTRATION MADE VISIBILITY DIFFICULT AND WOULD BE DIFFICULT TO WORK IN FOR ANY PERIOD OF TIME. THE AUTHOR REPORTED THAT HISTOPATHOLOGICAL CHANGES MAY HAVE BEEN A RESPONSE TO A PHYSICAL INSULT RATHER THAN A SPECIFIC COMPOUND RELATED TOXICITY EFFECT AND THAT THE TEST MATERIAL MAY BE CONSIDERED NON-HAZARDOUS FOR ALL PRACTICAL PURPOSES BY INHALATION.

INGESTION: FOR A SIMILAR COMPONENT OF THIS FORMULATION THE ACUTE ORAL LD50 VALUE WAS FOUND TO BE GREATER THAN 5.0 G/KG IN MALE AND FEMALE SPRAGUE-DAWLEY RATS. THE MATERIAL IS NOT CLASSIFIED AS TOXIC BY ORAL ADMINISTRATION AS DEFINED IN 16 CFR 1500.

MATERIAL SAFETY DATA SHEET

CHRISTENSON OIL
PO BOX 17339
PORTLAND, OREGON 97217
(503)286-1673

EYE CONTACT: THE PRODUCT IS NOT CLASSIFIED AS AN IRRITANT BY OCULAR APPLICATION. THE EYES OF NONE OF THE SIX NEW ZEALAND WHITE RABBITS WERE FOUND TO SHOW EVIDENCE OF POSITIVE CORNEAL, IRIS OR CONJUNCTIVAL CHANGES.
FOR A SIMILAR COMPONENT OF THIS FORMULATION THE EYES OF 5 RABBITS WERE FOUND TO SHOW EVIDENCE OF CONJUNCTIVAL CHANGES. IRRITATION SCORES IN INDIVIDUAL RABBITS RANGED FROM 0-4 (SCALE 0-110). THE MATERIAL IS NOT CLASSIFIED AS AN IRRITANT BY OCULAR APPLICATION AS DEFINED BY 16 CFR 1500.

SKIN CONTACT: THE PRIMARY IRRITATION INDEX WAS FOUND TO BE 2.1 BASED ON ERYTHEMA AND EDEMA. NO EVIDENCE OF TISSUE DAMAGE (CORROSION) WAS FOUND. THE MATERIAL IS NOT CLASSIFIED AS A PRIMARY IRRITANT OR AS A CORROSIVE BY DERMAL APPLICATION.
FOR A SIMILAR COMPETENT OF THIS FORMULATION THE PRIMARY IRRITATION INDEX WAS FOUND TO BE 0.5 (SCALE 0-8) BASE ON ERYTHEMA AND EDEMA. NO EVIDENCE OF TISSUE DAMAGE WAS FOUND. THE MATERIAL IS NOT CLASSIFIED AS A PRIMARY IRRITANT OR AS A CORROSIVE BY DERMAL APPLICATION AS DEFINED BY 16 CFR 1500.

SECTION IV - OCCUPATIONAL EXPOSURE LIMITS

PEL: TWA: 5MG/M3(OIL MIST)

PEL: TWA: 5MG/M3; STEL: 10 MG/M3 (OIL MIST)

SECTION V - EMERGENCY FIRST AID PROCEDURE

FOR OVEREXPOSURE BY SWALLOWING: DO NOT INDUCE VOMITING. IF VICTIM IS CONSCIOUS AND ABLE TO SWALLOW, PROMPTLY HAVE VICTIM DRINK WATER TO DILUTE. DO NOT GIVE SODIUM BICARBONATE, FRUIT JUICES OR VINEGAR. NEVER GIVE ANYTHING BY MOUTH IF THE VICTIM IS UNCONSCIOUS OR HAVING CONVULSIONS. CALL A PHYSICIAN OR POISON CONTROL CENTER IMMEDIATELY.

FOR OVEREXPOSURE BY SKIN CONTACT: WASH AFFECTED AREA.

FOR OVEREXPOSURE BY EYE CONTACT: IMMEDIATELY FLUSH EYES WITH PLENTY OF COOL WATER FOR AT LEAST 15 MINUTES. DO NOT LET VICTIM RUB EYES.

FOR OVEREXPOSURE BY INHALATION: IMMEDIATELY REMOVE VICTIM TO FRESH AIR. IF VICTIM HAS STOPPED BREATHING GIVE ARTIFICIAL RESPIRATION, PREFERABLY BY MOUTH - TO - MOUTH. GET MEDICAL ATTENTION IMMEDIATELY.

MATERIAL SAFETY DATA SHEET

CHRISTENSON OIL
P.O. BOX 17339
PORTLAND, OREGON 97217
(503)286-1673

PRODUCT CODE NO.: NONE

SECTION VI - PHYSICAL DATA

BOILING POINT:	NOT DETERMINED
MELTING POINT:	NOT DETERMINED
VAPOR PRESSURE:	NOT DETERMINED
SPECIFIC GRAVITY:	0.91 AT 60/60 DEG F
SOLUBILITY IN WATER:	NEGLIGIBLE
APPEARANCE AND COLOR:	DARK COLORED LIQUID WITH A PUNGENT ODOR

SECTION VII - FIRE AND EXPLOSION HAZARDS

FLASH POINT & METHOD USED: 400 °F (204°C) ASTM D-92
AUTO-IGNITION TEMPERATURE: 650 °F
FLAMMABLE LIMITS IN AIR, % BY VOL. LOWER: NOT DETERMINED
FLAMMABLE LIMITS IN AIR, % BY VOL. UPPER: NOT DETERMINED
NFPA RATING: NO NFPA RATING
HMIS RATING: HEALTH (1) FIRE (1) REACTIVITY (0)
SPECIAL FIRE FIGHTING PROCEDURES & PRECAUTIONS

(INDIVIDUALS SHOULD PERFORM ONLY THOSE FIRE FIGHTING PROCEDURES FOR WHICH THEY HAVE BEEN TRAINED). USE WATER SPRAY, DRY CHEMICAL, FOAM OR CARBON DIOXIDE. WATER MAY BE INEFFECTIVE BUT SHOULD BE USED TO KEEP FIRE-EXPOSED CONTAINERS COOL. IF A SPILL OR LEAK HAS NOT IGNITED, USE WATER SPRAY TO DISPERSE THE VAPORS. WATER SPRAY MAY BE USED TO FLUSH SPILLS AWAY FROM FIRE.

UNUSUAL FIRE & EXPLOSION HAZARDS

FIREFIGHTERS SHOULD WEAR SELF-CONTAINED BREATHING APPARATUS IN THE POSITIVE-PRESSURE MODE WITH A FULL FACEPIECE WHEN THERE IS A POSSIBILITY OF EXPOSURE TO SMOKE, FUMES OR HAZARDOUS DECOMPOSITION PRODUCTS.

SECTION VIII - REACTIVITY

STABILITY:

GENERALLY STABLE

HAZARDOUS POLYMERIZATION:

NOT LIKELY

CONDITIONS & MATERIALS TO AVOID:

AVOID HEATING TO DECOMPOSITION.
THE USER IS ADVISED TO HAVE A SAFETY EXPERT EVALUATE THE SPECIFIC CONDITIONS OF USE.

MATERIAL SAFETY DATA SHEET

CHRISTENSON OIL
P.O. BOX 17339
PORTLAND, OREGON 97217
(503)286-1673

HAZARDOUS DECOMPOSITION PRODUCTS:
DECOMPOSITION MAY PRODUCE CARBON MONOXIDE, CARBON DIOXIDE AND OXIDES OF NITROGEN, PHOSPHORUS AND SULFUR.

SECTION IX - EMPLOYEE PROTECTION

CONTROL MEASURES:
HANDLE IN THE PRESENCE OF ADEQUATE VENTILATION.

RESPIRATORY PROTECTION:
WHERE EXPOSURE IS LIKELY TO EXCEED ACCEPTABLE CRITERIA (SEE SECTIONS II AND IV), USE NIOSH/OSHA APPROVED RESPIRATORY EQUIPMENT. RESPIRATORS SHOULD BE SELECTED BASED ON THE FORM AND CONCENTRATION OF CONTAMINANT IN AIR AND ACCORDANCE WITH OSHA (29 CFR 1910.134).

PROTECTIVE CLOTHING:
WEAR GLOVES AND PROTECTIVE CLOTHING WHICH ARE IMPERVIOUS TO THE PRODUCT FOR THE DURATION OF ANTICIPATED EXPOSURE IF THERE IS A POTENTIAL FOR PROLONGED OR REPEATED SKIN CONTACT.

EYE PROTECTION:
WEAR SAFETY GLASSES MEETING THE SPECIFICATIONS OF ANSI STANDARD Z87.1

SECTION X - ENVIRONMENTAL PROTECTION

ENVIRONMENTAL PRECAUTIONS:
AVOID UNCONTROLLED RELEASES OF THIS MATERIAL. WHERE SPILLS ARE POSSIBLE, A COMPREHENSIVE SPILL RESPONSE PLAN SHOULD BE DEVELOPED AND IMPLEMENTED.

SPILL OR LEAK PRECAUTIONS:
WEAR APPROPRIATE RESPIRATORY PROTECTION AND PROTECTIVE CLOTHING AS DESCRIBED IN SECTION IX. CONTAIN SPILLED MATERIAL. TRANSFER TO SECURE CONTAINERS. WHERE NECESSARY, COLLECT USING ABSORBENT MEDIA. IN THE EVENT OF AN UNCONTROLLED RELEASE OF THIS MATERIAL, THE USER SHOULD DETERMINE IF THE RELEASE IS REPORTABLE UNDER APPLICABLE LAWS AND REGULATION.

WATER DISPOSAL:
ALL RECOVERED MATERIAL SHOULD BE PACKAGED, LABELED, TRANSPORTED AND DISPOSED OR RECLAIMED IN CONFORMANCE WITH APPLICABLE LAWS AND REGULATIONS AND IN CONFORMANCE WITH GOOD ENGINEERING PRACTICES. AVOID LANDFILLING OF LIQUIDS. RECLAIM WHERE POSSIBLE.

MATERIAL SAFETY DATA SHEET

CHRISTENSON OIL
P.O. BOX 17339
PORTLAND, OREGON 97217
(503)286-1673

PRODUCT CODE NO.: NONE

SECTION XI- REGULATORY CONTROLS

DEPARTMENT OF TRANSPORTATION:
DOT CLASSIFICATION: NOT REGULATED
DOT PROPER SHIPPING NAME:
OTHER DOT INFORMATION:

OTHER REGULATORY REQUIREMENTS:
LISTED IN TSCA INVENTORY

SECTION XII - PRECAUTIONS: HANDLING, STORAGE AND USAGE

NO SPECIAL PRECAUTIONS NECESSARY.

The information presented herein is believed to be factual as it has been derived from the works and opinions of persons believed to be qualified experts; however, nothing contained in this information is to be taken as a warranty or representation for which Christenson Oil bears legal responsibility. The user should review any recommendations in the specific context of the intended use to determine whether they are appropriate.

ISSUE DATE: January 17, 1994

SUPERSEDES:

MATERIAL SAFETY DATA SHEET

CHRISTENSON OIL
P.O. BOX 17339
PORTLAND, OREGON 97217
(503)286-1673

CHRISTENSON OIL MSDS #DW068

PRODUCT CODE NO.: NONE

MANUFACTURER:	TRANSPORTATION EMERGENCIES:
CHRISTENSON OIL 3747 N. SUTTLE RD. P.O. BOX 17339 PORTLAND, OREGON 97217 CONTACT FOR FURTHER INFORMATION: CALL (503) 286-1673	CALL CHEMTREC (800) 424-9300 CONTINENTAL U.S.

PRODUCT IDENTIFICATION

PRODUCT NAME	:	DUREX HEAVY DUTY WAY OIL 68
SYNONYMS	:	WAY OIL
GENERIC NAME	:	WAY OIL 68
CHEMICAL FAMILY	:	PETROLEUM HYDROCARBON; INDUSTRIAL OILS
DOT PROPER SHIPPING	:	NOT DOT REGULATED
ID NUMBER	:	NONE

ACUTE HEALTH	FIRE	REACTIVITY	HAZARD RATING		
1	1	0		LEAST -0 MODERATE -2 EXTREME -4	SLIGHT -1 HIGH -3

SECTION I - INGREDIENTS

NO.	COMPOSITION	CAS NUMBER	PERCENT

P	DUREX HEAVY DUTY WAY OIL 68	MIXTURE	100
1	PETROLEUM BASESTOCK	64742-18-3	0-100
2	PETROLEUM BASESTOCK	64742-70-7	0-100
3	POLYMERIC ADDITIVE	MIXTURE	0-1
4	WAY OIL ADDITIVE	MIXTURE	0-10

MATERIAL SAFETY DATA SHEET

CHRISTENSON OIL MSDS#DWO68

SECTION I-B - ACUTE TOXICITY DATA

NO.	ACUTE ORAL LD50	ACUTEDERMAL LD 50	ACUTE INHALAITON LC50
P	NOT AVAILABLE		

SECTION II - EMERGENCY AND FIRST AID PROCEDURES

EYE CONTACT:
Flush with water for 15 minutes while holding eyelids open. Get medical attention.

SKIN CONTACT:
Remove contaminated clothing and wipe excess off. Wash with soap and water or a waterless hand cleaner followed by soap and water. If irritation occurs, get medical attention.

INHALATION (BREATHING):
Remove victim to fresh air and provide oxygen if breathing is difficult. Get medical attention.

INGESTION (SWALLOWING):
Do not induce vomiting. In general, no treatment is necessary unless large quantities of prouct are ingested. However, get medical advice.

NOTE TO PHYSICIAN:
In general, emesis induction is unnecessary in high viscosity, low volatility products, i.e., most oils and greases.

SECTION III - OCCUPATIONAL EXPOSURE LIMITS

OSHA ACGIH

NO.	PEL/TWA	PEL/CEILING	TLV/TWA	TLV/STEL	OTHER
P	5MG/M3*	NONE	5MG/MG*	10MG/M3*	N/AV

NOTE:
* Oil mist, mineral oil.

MATERIAL SAFETY DATA SHEET

CHRISTENSON OIL MSDS#DWO68

HEALTH INFORMAITON

The health effects noted below are consistent with requirements under the OSHA hazard Communication Standard (29 CFR 1910.1200)

EYE CONTACT
Lubricating oils are generally considered no more than mildly irritating to the eyes.

SKIN CONTACT
Lubricating oils are generally considered no more than mildly irritating to the skin. Prolonged and repeated contact may lead to various skin disorders such as dermatitis, oil acne or folliculitis.

INHALATION
Inhalation of vapors (generator at high temperatures only)or oil mist from this product may cause minor irritation of the mucous membrandes of the upper respiratory tract.

INGESTION
Lubricating oils are generally considered no more than slightly toxic if swallowed.

SIGNS AND SYPMTOMS
Irritation as noted above.

AGGRAVATED MEDICAL CONDITIONS
Pre-existing skin and respiratory disorders may be aggravated by exposure to this product.

OTHER HEALTH EFFECTS

SEE SECTION V FOR ADDITIONAL HEALTH INFORMATION.

SECTION IV - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION:
If exposure may or does exceed occupational exposure limits use an NIOSH approved respirator to prevent overexposure. In accordance with 29 CFR 1910.134 use either an atmosphere-supplying respirator or an air-purifying respirator for organic vapor.

PROTECTION CLOTHING

The use of gloves impermeable to the specific material handled is advised to prevent skin contact and possible irritation.

MATERIAL SAFETY DATA SHEETS

CHRISTENSON OIL MSDS#OWO68

SECTION V - REACTIVITY DATA

STABILITY: STABLE

CONDITIONS AND MATERIALS TO AVOID:

Avoid heat, open flames and oxidizing materials.

HAZARDOUS DECOMPOSITION PRODUCTS

Smoke, carbon monoxide, aldehydes and other products of incomplete combustion.

SECTION - FIRE AND EXPLOSION HAZARDS

FLASH POINT AND METHOD:
410 DEG F (COC)

FLAMMABLE LIMITS / % VOLUME IN AIR
LOWER: N/AV UPPER: N/AV

EXTINGUISHING DATA

Use water fog, foam, dry chemical or CO^2. Do not use a direct stream of water. Product will float and can be reignited on surface of water.

SPECIAL FIRE FIGHTING PROCEDURES AND PRECAUTIONS

Material will not burn unless preheated

DOT FLAMMABILITY
CLASSIFICATION
NOT REGULATED 381F (COC)

EXTINGUISHING MEDIA:

EXTINGUISH WITH DRY CHEMICAL, CO_2, WATER SPRAY, FOAM, SAND OR EARTH. WATER AND FOAM MAY CAUSE FROTHING.

FIRE & EXPLOSION HAZARDS:

THIS MATERIAL WILL BURN, BUT WILL NOT IGNITE READILY.

FIRE FIGHTING PROCEDURES:

WATER SPRAY MAY BE USEFUL IN MINIMIZING VAPORS AND COOLING CONTAINER EXPOSED TO HEAT AND FLAME. AVOID SPREADING BURNING LIQUID WITH WATER USED FOR COOLING PURPOSE. MOVE UNDAMAGED CONTAINERS FROM FIRE AREA IF YOU CAN DO SO WITHOUT RISK.

MATERIAL SAFETY DATA SHEET

CHRISTENSON OIL MSDS #DW068

SECTION IX - PHYSICAL DATA

APPROX BOILING POINT	VAPOR DENSITY	EVAPORATION RATE	% VOLATILE
+600F (316C)	HEAVIER THAN AIR	SLOWER THAN ETHER	NEGLIGIBLE
% SOLUBILITY IN WATER	SPECIFIC GRAVITY	APPEARANCE	ODOR
NEGLIGIBLE	N/A	CLEAR, BROWN LIQUID	CHARACTERISTIC

SECTION X - PRECAUTIONARY LABEL

CAUTION! USED MOTOR OIL IS A POSSIBLE SKIN CANCER HAZARD BASED ON TEST WITH LABORATORY ANIMALS. AVOID PROLONGED OR REPEATED SKIN CONTACT. AVOID MAKING OR BREATHING OIL MIST. USE ADEQUATE VENTILATION. WASH THOROUGHLY WITH SOAP AND WATER AFTER HANDLING.

SECTION XI - DOCUMENTARY INFORMATION

ISSUE DATE	:	July 17, 1995	PRODUCT CODE NO.	:	NONE
MSDS NO.	:	DW068	PREV. PROD. CODE NO.	:	DW068
			PREV. MSDS NO.	:	NONE

DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES

The information in this document is believed to be correct as of the date issued. NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTY IS EXPRESSED OR IS TO BE IMPLIED REGARDING THE ACCURACY OR COMPLETENESS OF THIS INFORMATION, THE RESULTS TO BE OBTAINED FROM THE USE OF THIS INFORMATION OR THE PRODUCT, THE SAFETY OF THIS PRODUCT, OR THE HAZARDS RELATED TO ITS USE.

This information and product are furnished on the condition that the person receiving them shall make his own determination as to the suitability of the product for his particular purpose and on the condition that he assume the risk of his use thereof.

72-63-7825-11

MATERIAL SAFETY DATA SHEET

VALVOLINE

VALVOLINE OIL COMPANY
DIVISION OF ASHLAND OIL, INC.
P.O. BOX 391
ASHLAND, KENTUCKY 41114
(606) 329-3333

24-HOUR EMERGENCY TELEPHONE
(606) 324-1133

000094 VAL-PLEX EP PAGE: 1

THIS MSDS COMPLIES WITH 29 CFR 1910.1200 (THE HAZARD COMMUNICATION STANDARD)

PRODUCT NAME: VAL-PLEX EP
CAS NUMBER: TM LIST

CHRISTENSON OIL CO

3821 NW RT HELENS RD

PORTLAND OR 97210

ATTN: PLANT MGR / SAFETY DIR.

OR 70 000 0815850-000
DATA SHEET NO: 0172170-001
LATEST REVISION DATE: 09/06-85099
PRODUCT: 610
INVOICE: 039165
INVOICE DATE: 04/03/87
TO:

SECTION I-PRODUCT IDENTIFICATION

GENERAL OR GENERIC ID: PETROLEUM GREASE

DOT HAZARD CLASSIFICATION: NOT APPLICABLE

SECTION II-COMPONENTS

IF PRESENT, IARC, NTP AND OSHA CARCINOGENS ARE IDENTIFIED IN THIS SECTION
SEE DEFINITION PAGE FOR CLARIFICATION

INGREDIENT	X (BY WT)	NOTE
LUBRICATING GREASE * CAS #: TM LIST - -	100	(1)

(1): PEL/TLV NOT ESTABLISHED FOR THIS MATERIAL

* THE SPECIFIC CHEMICAL IDENTITY HAS BEEN WITHHELD AS A TRADE SECRET.

SECTION III-PHYSICAL DATA

PROPERTY	REFINEMENT	MEASUREMENT
BOILING POINT	FOR PRODUCT	> 700.00 DEG F (371.11 DEG C) @ 760.00 MMHG
VAPOR PRESSURE	NOT APPLICABLE	
SPECIFIC VAPOR DENSITY	NOT APPLICABLE	
SPECIFIC GRAVITY		.960 @ 60.00 DEG F (15.55 DEG C)
PERCENT VOLATILES	NOT APPLICABLE	
EVAPORATION RATE	NOT APPLICABLE	

SECTION IV-FIRE AND EXPLOSION INFORMATION

FLASH POINT(D-92) 960.0 DEG F
(832.2 DEG C)

EXPLOSIVE LIMIT NOT APPLICABLE

EXTINGUISHING MEDIA: REGULAR FOAM OR CARBON DIOXIDE OR DRY CHEMICAL

HAZARDOUS DECOMPOSITION PRODUCTS: MAY FORM TOXIC MATERIALS:, CARBON DIOXIDE AND CARBON MONOXIDE, VARIOUS HYDROCARBONS

FIREFIGHTING PROCEDURES: WATER OR FOAM MAY CAUSE FROTHING WHICH CAN BE VIOLENT AND POSSIBLY ENDANGER THE LIFE OF THE FIREFIGHTER, ESPECIALLY IF SPRAYED INTO CONTAINERS OF HOT, BURNING LIQUID.

WEAR SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACEPIECE OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE WHEN FIGHTING FIRES.
SPECIAL FIRE & EXPLOSION HAZARDS: NEVER USE WELDING OR CUTTING TORCH ON OR NEAR DRUM (EVEN EMPTY) BECAUSE PRODUCT (EVEN JUST RESIDUE) CAN IGNITE EXPLOSIVELY.

NFPA CODES: HEALTH- 1 FLAMMABILITY- 1 REACTIVITY- 0

SECTION V-HEALTH HAZARD DATA

PERMISSIBLE EXPOSURE LEVEL: SEE SECTION II

EFFECTS OF ACUTE OVEREXPOSURE: FOR COMPONENT

EYES - CAN CAUSE IRRITATION.
SKIN - MAY CAUSE IRRITATION.
BREATHING - NONE CURRENTLY KNOWN.
SWALLOWING - CAN CAUSE GASTROINTESTINAL IRRITATION, NAUSEA, VOMITING, AND DIARRHEA.

FIRST AID:

75-02-7925-11

MATERIAL SAFETY DATA SHEET

VALVOLINE

VALVOLINE OIL COMPANY
DIVISION OF ASHLAND OIL, INC.
P.O. BOX 391
ASHLAND, KENTUCKY 41114
(606) 329-3333

24-HOUR EMERGENCY TELEPHONE (606) 324-1133

SECTION V-HEALTH HAZARD DATA (CONTINUED)

IF ON SKIN: THOROUGHLY WASH EXPOSED AREA WITH SOAP AND WATER. REMOVE CONTAMINATED CLOTHING. LAUNDER CONTAMINATED CLOTHING BEFORE RE-USE.

IF IN EYES: FLUSH WITH LARGE AMOUNTS OF WATER, LIFTING UPPER AND LOWER LIDS OCCASIONALLY, GET MEDICAL ATTENTION.

IF SWALLOWED: IMMEDIATELY DRINK TWO GLASSES OF WATER AND INDUCE VOMITING BY EITHER GIVING IPECAC SYRUP OR BY PLACING FINGER AT BACK OF THROAT. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. GET MEDICAL ATTENTION IMMEDIATELY.

IF BREATHED: REMOVE INDIVIDUAL TO FRESH AIR.

SECTION VI-REACTIVITY DATA

HAZARDOUS POLYMERIZATION: CANNOT OCCUR

STABILITY: STABLE

INCOMPATIBILITY: AVOID CONTACT WITH:, STRONG OXIDIZING AGENTS.

SECTION VII-SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

SMALL SPILL: SWEEP UP MATERIAL ONTO PAPER.

LARGE SPILL: SHOVEL MATERIAL INTO CONTAINERS. THOROUGHLY SWEEP AREA OF SPILL TO CLEAN UP ANY RESIDUAL MATERIAL.

WASTE DISPOSAL METHOD:

SMALL SPILL: DEPOSIT IN A LANDFILL IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.

LARGE SPILL: DEPOSIT IN A LANDFILL IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.

SECTION VIII-PROTECTIVE EQUIPMENT TO BE USED

RESPIRATORY PROTECTION: IF TLV OF THE PRODUCT OR ANY COMPONENT IS EXCEEDED, A NIOSH/MSHA JOINTLY APPROVED AIR SUPPLIED RESPIRATOR IS ADVISED IN ABSENCE OF PROPER ENVIRONMENTAL CONTROL. OSHA REGULATIONS ALSO PERMIT OTHER NIOSH/MSHA RESPIRATORS UNDER SPECIFIED CONDITIONS. (SEE YOUR SAFETY EQUIPMENT SUPPLIER). ENGINEERING OR ADMINISTRATIVE CONTROLS SHOULD BE IMPLEMENTED TO REDUCE EXPOSURE.

VENTILATION: PROVIDE SUFFICIENT MECHANICAL (GENERAL AND/OR LOCAL EXHAUST) VENTILATION TO MAINTAIN EXPOSURE BELOW TLV(S).

PROTECTIVE GLOVES: WEAR RESISTANT GLOVES SUCH AS:, NEOPRENE

EYE PROTECTION: WEAR SAFETY GLASSES IN COMPLIANCE WITH OSHA REGULATIONS. (CONSULT YOUR SAFETY EQUIPMENT SUPPLIER)

OTHER PROTECTIVE EQUIPMENT: NORMAL WORK CLOTHING COVERING ARMS AND LEGS.

SECTION IX-SPECIAL PRECAUTIONS OR OTHER COMMENTS

CONTAINERS OF THIS MATERIAL MAY BE HAZARDOUS WHEN EMPTIED. SINCE EMPTIED CONTAINERS RETAIN PRODUCT RESIDUES (VAPOR, LIQUID, AND/OR SOLID), ALL HAZARD PRECAUTIONS GIVEN IN THIS DATASHEET MUST BE OBSERVED.

THE INFORMATION ACCUMULATED HEREIN IS BELIEVED TO BE ACCURATE BUT IS NOT WARRANTED TO BE WHETHER ORIGINATING WITH THE COMPANY OR NOT. RECIPIENTS ARE ADVISED TO CONFIRM IN ADVANCE OF NEED THAT THE INFORMATION IS CURRENT, APPLICABLE, AND SUITABLE TO THEIR CIRCUMSTANCES.

MATERIAL SAFETY DATA SHEET

MERIT OIL & REFINING, INC.
4150 N. Suttle Rd.
Portland, OR 97217
(503) 286-4755

PRODUCT CODE NO.: MOHO

MANUFACTURER:
MERIT OIL & REFINING, INC.
4150 N. Suttle Rd.
Portland, OR 97217

CONTACT FOR FURTHER INFORMATION:
Call in Oregon (503) 286-4755
Transportation Emergencies: CALL CHEMTREC (800)424-9300

PRODUCT IDENTIFICATION:

PRODUCT NAME	: MERIT HYDRAULIC OIL
SYNONYMS	: MERIT HYDRAULIC OIL
GENERIC NAME	: HYDRAULIC OIL
CHEMICAL FAMILY	: PETROLEUM HYDROCARBON
DOT PROPER SHIPPING NAME	: NOT APPLICABLE
ID NUMBER	: NONE

SECTION I: INGREDIENTS	TLV	UNITS	AGENCY	TYPE
OIL MIST, IF GENERATED	5.00	MG/M3	OSHA	FULL TERM TWA

THE IDENTITIES OF INGREDIENTS THAT ARE TRADE SECRETS ARE EXCLUDED FROM THIS LIST.

SECTION II. EMERGENCY AND FIRST AID PROCEDURES

EYE CONTACT:
** FOR DIRECT CONTACT. FLUSH THE AFFECTED EYE(S) WITH CLEAN WATER. IF IRRITATION OR REDNESS DEVELOPS, SEEK MEDICAL ATTENTION.

SKIN CONTACT:
** DO NOT USE GASOLINES. THINNERS OR SOLVENTS TO REMOVE PRODUCT FROM SKIN. WIPE MATERIAL FROM SKIN AND REMOVE CONTAMINATED CLOTHING. CLEANSE AFFECTED AREA(S) THOROUGHLY BY WASHING WITH SOAP AND WATER AND, IF NECESSARY, A WATERLESS SKIN CLEANSER. IF IRRITATION OR REDNESS DEVELOPS AND PERSISTS, SEEK MEDICAL ATTENTION.

INHALATION (BREATHING)
**IF IRRITATION OF NOSE OR THROAT DEVELOPS, MOVE AWAY FROM SOURCE OF EXPOSURE AND INTO FRESH AIR. IF IRRITATION PERSISTS, SEEK MEDICAL ATTENTION. IF VICTIM IS NOT BREATHING OR IF BREATHING DIFFICULTIES DEVELOP, ARTIFICIAL RESPIRATION OF OXYGEN SHOULD BE ADMINISTERED BY QUALIFIED PERSONNEL. SEEK IMMEDIATE MEDICAL ATTENTION.

MATERIAL SAFETY AND DATA SHEET

PRODUCT CODE NO. : MOHO

OTHER PROTECTIVE EQUIPMENT:
IT IS SUGGESTED THAT A SOURCE OF CLEAN WATER BE AVAILABLE IN WORK AREA FOR FLUSHING EYES AND SKIN. BARRIER CREAMS THAT ARE SPECIFIC FOR OIL-BASED MATERIAL ARE RECOMMENDED WHEN GLOVES ARE IMPRACTICAL.

SECTION V: REACTIVITY DATA

STABILITY:
STABLE

INCOMPATIBILITY (MATERIALS TO AVOID):
AVOID CONTACT WITH STRONG OXIDIZING AGENTS. EXTENDED EXPOSURE TO HIGH TEMPERATURES MAY CAUSE DECOMPOSITION.

HAZARDOUS DECOMPOSTION PRODUCTS:
THERMAL DECOMPOSITION IN THE PRESENCE OF AIR MAY YIELD MAJOR AMOUNTS OF OXIDES OF CARBON AND MINOR AMOUNTS OF OXIDES OF NITROGEN, PHOSPHORUS, SULFUR AND ZINC.

HAZARDOUS POLYMERIZATION:
WILL NOT OCCUR.

SECTION VI: SPILL OF LEAK PROCEDURES
(HIGHWAY OR RAILWAY SPILLS, CALL CHEMTREC 800-424-9300 IN CONT. US)

PRECAUTIONS IN CASE OF RELEASE OR SPILL:
COLLECT LEAKING LIQUID IN SEALABLE CANTAINERS. ABSORB SPILLED LIQUID IN SAND OR INERT ABSORBANT. CONTACT FIRE AUTHORITIES AND APPROPRIATE STATE/LOCAL AGENCIES. IF SPILL OF ANY AMOUNT IS MADE INTO OR UPON U.S. NAVIGABLE WATERS, THE CONTIGUOUS ZONE, OR ADJOINING SHORELINES, NOTIFY COAST GUARD NATIONAL RESPONSE CENTER (PHONE NUMBER 800-424-8802).

WASTE DISPOSAL METHOD:
DISPOSE OF PRODUCT IN ACCORDANCE WITH LOCAL, COUNTY, STATE, AND FEDERAL REGULATIONS.

SECTION VII: STORAGE AND SPECIAL PRECAUTIONS

HANDLING AND STORAGE PRECAUTIONS:
STORE IN A COOL, DRY LOCATION. KEEP AWAY FROM INCOMPATIBLE MATERIALS (SEE SECTION V). AVOID GENERATING OIL MISTS WHILE HANDLING. AVOID PROLONGED OR REPEATED SKIN CONTACT. WASH THOROUGHLY AFTER HANDLING. FOR USED MOTOR OIL: LAUNDER SATURATED CLOTHING BEFORE WEARING AND DISCARD OIL-SOAKED SHOES AND UNWASHABLE CLOTHING.

SECTION VIII: FIRE AND EXPLOSION HAZARD DATA

HAZARD RANKING
(0= LEAST, 1= SLIGHT, 2= MODERATE, 3= HIGH, 4= EXTREME)

NFPA HAZARD CLASS:
HEALTH HAZARD: 0.
FLAMMABILITY: 1
REACTIZITY: 0.
OTHER: NONE

PRODUCT CODE NO. : MOHO

INGESTION (SWALLOWING):
IF VICTIM IS CONSCIOUS AND ALERT, GIVE 2 TO 3 CUPS OF MILK OR WATER TO DRINK. SEEK MEDICAL ATTENTION. TO PHYSICIAN: EMESIS OR LAVAGE IS NOT RECOMMENDED FOR INGESTIONS OF MINUTE QUANTITIES OR TASTES OF MOST HYDROCARBONS. MEDICAL OPINION IS DIVIDED FOR LARGER INGESTIONS. EMESIS OR LAVAGE HAS BEEN RECOMMENDED FOR THOSE PETROLEUM PRODUCTS WHICH HAVE A HIGH ORAL TOXICITY. GASTRIC LAVAGE WITH A CUFFED ENDOTRACHEAL TUBE IS RECOMMENDED BY SOME PHYSICIANS TO PREVENT ASPIRATION.

SECTION III: POTENTIAL ADVERSE HEALTH EFFECTS

EYE CONTACT:
THIS MATERIAL MAY CAUSE EYE IRRITATION. DIRECT CONTACT MAY CAUSE BURNING, TEARING AND REDNESS.

SKIN CONTACT:
THIS MATERIAL MAY CAUSE SKIN IRRITATION. PROLONGED OR REPEATED CONTACT MAY CAUSE REDNESS, BURNING AND DERMATITIS.

INHALATION (BREATHING)
EXPOSURE TO MISTS, OR PROLONGED OR REPEATED EXPOSURE TO FUMES OR VAPORS THAT MAY BE GENERATED WHEN THIS MATERIAL IS HEATED, MAY CAUSE IRRITATION OF NOSE AND THROAT.

INGESTION (SWALLOWING)
ACCIDENTAL INGESTION OF THIS MATERIAL MAY CAUSE IRRITATION OF THE DIGESTIVE TRACT.

COMMENTS:
USED MOTOR OIL: FOLLOWING REPEATED SKIN APPLICATIONS, ANIMAL STUDIES HAVE SHOWN THAT USED MOTOR/CRANKCASE OILS HAVE CAUSED AN INCREASED INCIDENCE OF SKIN CANCER IN MICE. IT IS THEREFORE RECOMMENDED THAT PROLONGED OR REPEATED CONTACT WITH MOTOR/CRANKCASE OILS BE AVOIDED.

SECTION IV: SPECIAL PROTECTION INFORMATION

VENTILATION:
IF CURRENT VENTILATION PRACTICES ARE NOT ADEQUATE IN MAINTAINING AIRBORNE CONCENTRATIONS BELOW THE ESTABLISHED EXPOSURE LIMITS (SEE SECTION I), ADDITIONAL VENTILATION OR EXHAUST SYSTEMS MAY BE REQUIRED.

RESPIRATORY PROTECTION:
IF AIRBORNE CONCENTRATIONS EXCEED RECOMMENDED EXPOSURE LIMITS, A SUITABLE FILTER-TYPE RESPIRATOR SHOULD BE WORN. (SEE SECTION I.)

PROTECTIVE GLOVES:
THE USE OF GLOVES IMPERMEABLE TO THE SPECIFIC MATERIAL HANDLED IS ADVISED TO PREVENT SKIN CONTACT AND POSSIBLE IRRITATION.

EYE PROTECTION:
APPROVED EYE PROTECTION TO SAFEGUARD AGAINST POTENTIAL EYE CONTACT, IRRITATION OR INJURY IS RECOMMENDED.

MATERIAL SAFETY AND DATA SHEET

PRODUCT CODE NO. : MOHO

OTHER PROTECTIVE EQUIPMENT:
IT IS SUGGESTED THAT A SOURCE OF CLEAN WATER BE AVAILABLE IN WORK AREA FOR FLUSHING EYES AND SKIN. BARRIER CREAMS THAT ARE SPECIFIC FOR OIL-BASED MATERIAL ARE RECOMMENDED WHEN GLOVES ARE IMPRACTICAL.

SECTION V: REACTIVITY DATA

STABILITY:
STABLE

INCOMPATIBILITY (MATERIALS TO AVOID):
AVOID CONTACT WITH STRONG OXIDIZING AGENTS. EXTENDED EXPOSURE TO HIGH TEMPERATURES MAY CAUSE DECOMPOSITION.

HAZARDOUS DECOMPOSTION PRODUCTS:
THERMAL DECOMPOSITION IN THE PRESENCE OF AIR MAY YIELD MAJOR AMOUNTS OF OXIDES OF CARBON AND MINOR AMOUNTS OF OXIDES OF NITROGEN, PHOSPHORUS, SULFUR AND ZINC.

HAZARDOUS POLYMERIZATION:
WILL NOT OCCUR.

SECTION VI: SPILL OF LEAK PROCEDURES
(HIGHWAY OR RAILWAY SPILLS, CALL CHEMTREC 800-424-9300 IN CONT. US)

PRECAUTIONS IN CASE OF RELEASE OR SPILL:
COLLECT LEAKING LIQUID IN SEALABLE CANTAINERS. ABSORB SPILLED LIQUID IN SAND OR INERT ABSORBANT. CONTACT FIRE AUTHORITIES AND APPROPRIATE STATE/LOCAL AGENCIES. IF SPILL OF ANY AMOUNT IS MADE INTO OR UPON U.S. NAVIGABLE WATERS, THE CONTIGUOUS ZONE, OR ADJOINING SHORELINES, NOTIFY COAST GUARD NATIONAL RESPONSE CENTER (PHONE NUMBER 800-424-8802).

WASTE DISPOSAL METHOD:
DISPOSE OF PRODUCT IN ACCORDANCE WITH LOCAL, COUNTY, STATE, AND FEDERAL REGULATIONS.

SECTION VII: STORAGE AND SPECIAL PRECAUTIONS

HANDLING AND STORAGE PRECAUTIONS:
STORE IN A COOL, DRY LOCATION. KEEP AWAY FROM INCOMPATIBLE MATERIALS (SEE SECTION V). AVOID GENERATING OIL MISTS WHILE HANDLING. AVOID PROLONGED OR REPEATED SKIN CONTACT. WASH THOROUGHLY AFTER HANDLING. FOR USED MOTOR OIL: LAUNDER SATURATED CLOTHING BEFORE WEARING AND DISCARD OIL-SOAKED SHOES AND UNWASHABLE CLOTHING.

SECTION VIII: FIRE AND EXPLOSION HAZARD DATA

HAZARD RANKING
(0= LEAST, 1= SLIGHT, 2= MODERATE, 3= HIGH, 4= EXTREME)

NFPA HAZARD CLASS:
HEALTH HAZARD: 0.
FLAMMABILITY: 1
REACTIZITY: 0.
OTHER: NONE

PRODUCT CODE NO.: MOHO

DOT FLAMMABILITY CLASSIFICATION: NOT REGULATED
FLASH POINT: 390-400, COC F

EXTINGUSHING MEDIA:
EXTINGUISH WITH DRY CHEMICAL, CO2, WATER SPRAY, FOAM, SAND OR EARTH. WATER AND FOAM MAY CAUSE FROTHING.

FIRE & EXPLOSION HAZARDS:
THIS MATERIAL WILL BURN, BUT WILL NOT IGNITE READILY.

FIRE FIGHTING PROCEDURES:
WATER SPRAY MAY BE USEFUL IN MINIMIZING VAPORS AND COOLING CONTAINERS EXPOSED TO HEAT AND FLAME. AVOID SPREADING BURNING LIQUID WITH WATER USED FOR COOLING PURPOSES. MOVE UNDAMAGED CONTAINERS FROM FIRE AREA IF YOU CAN DO SO WITHOUT RISK.

SECTION IX: PHYSICAL DATA

APPROX BOILING POINT	VAPOR DENSITY	EVAPORATION RATE	% VOLITILE
ABOVE 600 F (316 C)	HEAVIER THAN AIR	SLOWER THAN ETHER	NEGLIGIBLE

% SOLUBILITY IN WATER	SPECIFIC GRAVITY	APPEARANCE	ODOR
NEGLIGIBLE	0.89-0.91	CLEAR BROWN LIQUID	CHARACTERISTIC

SECTION X: PRECAUTIONARY LABEL

CAUTION: USED MOTOR OIL IS A POSSIBLE SKIN CANCER HAZARD BASED ON TESTS WITH LABORATORY ANIMALS. AVOID PROLONGED OR REPEATED SKIN CONTACT. AVOID MAKING OR BREATHING OIL MIST. USE ADECUATE VENTILATION. WASH THOROUGHLY WITH SOAP AND WATER AFTER HANDLING.

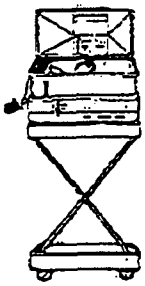
SECTION XI: DOCUMENTARY INFORMATION

ISSUE DATE: Jan. 26, 1993 PRODUCT CODE NUMBER.: MOHO

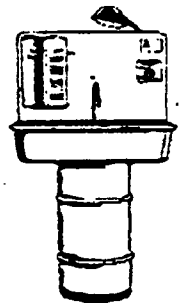
DISCLAMER OF EXPRESSED AND IMPLIED WARRANTIES
The information in this document is believed to be correct as of the date issued. NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTY IS EXPRESSED OR IS TO BE IMPLIED REGARDING THE ACCURACY OR COMPLETENESS OF THIS INFORMATION, THE RESULTS TO BE OBTAINED FROM THE USE OF THIS INFORMATION OF THE PRODUCT, THE SAFETY OF THIS PRODUCT OR THE HAZARDS RELATED TO ITS USE.
This information and product are furnished on the condition that the person receiving them shall make his own determination as to the suitability of the product for his own purpose and on the condition that he assume the risk of his use thereof.

RECYCLED SOLVENT USED AT COLUMBIA FORGE

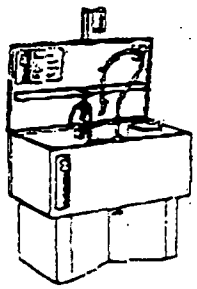
safety-kleen®



Model 14 & 60



Model 16 & 30



Model 34 & 44, COMS, and other

Material Safety Data Sheet

Safety-Kleen 105 Solvent

Part # 6617

SAFETY-KLEEN 105 SOLVENT

MATERIAL SAFETY DATA SHEET FOR U.S.A. AND CANADA

SECTION I – PRODUCT INFORMATION

Safety-Kleen Corp. - 777 Big Timber Road - Elgin, IL, U.S.A. 60123
Safety-Kleen Canada Inc. - 3090 Blvd. Le Carrefour - Suite 300 - Chomedy Laval Quebec, Canada H7T 2J7
For Product Technical Information Call 312-694-2700 (U.S.A.);
800-363-2260 (Eastern Canada); 514-686-2040 (Western Provinces/Call Collect)

24-HOUR EMERGENCY TELEPHONE	*MEDICAL:*	*TRANSPORTATION:*
These numbers are for emergency use only. If you desire non-emergency information about this product, please call a telephone number listed above.	800-752-7869 (U.S.A.) 312-942-5969 (CANADA) RUSH POISON CONTROL CENTER CHICAGO, ILLINOIS, U.S.A.	708-888-4660 (U.S.A.) SAFETY-KLEEN ENVIRONMENT, HEALTH AND SAFETY DEPARTMENT 613-996-6666 (CANADA) CANUTEC

IDENTITY (TRADE NAME): SAFETY-KLEEN 105 SOLVENT

SYNONYMS: PETROLEUM DISTILLATES, PETROLEUM NAPHTHA, MINERAL SPIRITS, STODDARD SOLVENT

SK PART NUMBER: 6617

FAMILY/CHEMICAL NAME: HYDROCARBON SOLVENT

PRODUCT USAGE: SOLVENT FOR CLEANING AND DEGREASING PARTS

SECTION II – HAZARDOUS COMPONENTS

NAME	SYNONYM	Wt. %	CAS NO.	OSHA PEL TWA (ppm)	OSHA PEL STEL (ppm)	ACGIH TLV TWA (ppm)	ACGIH TLV STEL (ppm)	LD50[a]	LC50[b]
Parts Washer Solvent (Consists predominantly of C9-C13 Saturated Hydrocarbons)	Mineral Spirits	85.0	64741-41-9	100 **	N.Av.	100 **	N.Av.	> 5000**	3400**
C8+ Aromatics		12.0	Mixture	N.Av.	N.Av.	N.Av.	N.Av.	N.Av.	N.Av.
*Toluene		0.5	108-88-3	100	150	100	150	5000	4000
*Xylene		1.0	1330-20-7	100	150	100	150	4300	5000
*Ethyl Benzene		0.5	100-41-4	100	125	100	125	3500	4000[c]
*1,1,1 Trichloroethane	Methyl Chloroform	0-0.5***	71-55-6	350	450	350	450	10300	18000
*Perchloroethylene	Tetrachloroethylene	0-0.5***	127-18-4	25	N.Av.	50	200	2629	4000[c]
Total Chlorinated Solvents		0-1.0***							

N.Av. = Not available.
* See Section X - Other Regulatory Information
**For Stoddard Solvent
***Even though the concentration range does not fall under the ranges prescribed by WHMIS, this is the actual range which varies with each batch of the product.

[a] Oral-Rat LD50 (mg/kg)
[b] Inhalation-Rat LC50 (ppm/4 hours)
[c] Inhalation-Rat LCLo (ppm/4 hours)

SECTION III -- PHYSICAL DATA

PHYSICAL STATE, APPEARANCE AND ODOR:	Combustible liquid, clear, green, with characteristic hydrocarbon odor.
ODOR THRESHOLD:	Not available.
BOILING POINT:	304-435°F (151-224°C).
VAPOR PRESSURE:	2 mm Hg at 68°F (20°C).
FREEZING POINT:	Not available.
EVAPORATION RATE:	0.1 (Butyl Acetate = 1).
VOLATILE:	99.9%
VOLATILE ORGANIC COMPOUNDS:	6.4 to 6.7 lbs/gal; 770 to 800 g/l
DENSITY:	Not available.
VAPOR DENSITY:	4.9 (Air = 1).
SOLUBILITY IN WATER:	Negligible.
pH:	Not applicable.
SPECIFIC GRAVITY:	0.77 to 0.80 at 60/60°F (16/16°C) (Water = 1).
COEFFICIENT OF WATER/OIL DISTRIBUTION:	Not available.
MOLECULAR WEIGHT:	142 (Approximately).

SECTION IV -- FIRE AND EXPLOSION HAZARD DATA

FLASH POINT:	105°F (41°C) SETA
AUTOIGNITION TEMPERATURE:	473°F (245°C).
CONDITIONS OF FLAMMABILITY:	Materials must be moderately heated before ignition can occur.
FLAMMABLE LIMITS IN AIR:	*LOWER:* 0.7 Vol. % *UPPER:* 6.0 Vol. %
UNUSUAL FIRE AND EXPLOSION HAZARDS:	Decomposition and combustion products may be toxic. Heated containers may rupture, explode or be thrown into the air. Vapors are heavier than air and may travel great distances to ignition source and flash back. Not sensitive to mechanical impact. Material may be sensitive to static discharge, which could result in fire or explosion.
EXTINGUISHING MEDIA:	Carbon dioxide, foam, dry chemical, water (mist only).
FIRE FIGHTING PROCEDURES -- SPECIAL:	NFPA 704 Rating 0-2-0 Keep storage containers cool with water spray. Use self-contained breathing apparatus (SCBA).
HAZARDOUS COMBUSTION PRODUCTS:	Thermal decomposition and burning may produce carbon monoxide.

INHALATION: (Breathing)	Remove to fresh air immediately. Use oxygen if there is difficulty breathing or artificial respiration if breathing has stopped. Do not leave victim unattended. Seek immediate medical attention if necessary.
INGESTION: (Swallowing)	If conscious, drink 4 to 8 ounces of water and seek immediate medical attention. DO NOT induce vomiting.

SECTION VIII – PRECAUTIONS FOR SAFE USE AND HANDLING AND PREVENTIVE MEASURES

SPILL PROCEDURES:	Remove all ignition sources. Ventilate area and avoid breathing vapors. For large spills, isolate area and deny entry. If possible, contain as a liquid for possible re-refining. Absorb with compatible absorbent material. Shovel into closable container for disposal. Wear protective equipment specified in Section IX. Contain away from surface waters and sewers.
WASTE DISPOSAL METHODS:	Dispose in accordance with Federal, State, Provincial and local regulations. Contact Safety-Kleen regarding recycling or proper disposal.
HANDLING PRECAUTIONS:	Avoid contact with eyes, skin or clothing. Use in well ventilated area and avoid breathing vapors or mists. Keep away from heat, sparks and flames.
SHIPPING AND STORING PRECAUTIONS:	Keep container tightly closed when not in use and during transport. Empty product containers may contain product residue. Do not pressurize, cut, heat, weld, grind or expose containers to flame or other sources of ignition.
PERSONAL HYGIENE:	Use good personal hygiene. Wash thoroughly with soap and water after handling and before eating, drinking or using tobacco products. Launder contaminated clothing and clean protective equipment before reuse.

SECTION IX – CONTROL MEASURES AND OTHER PREVENTIVE MEASURES

EYE PROTECTION:	Where there is likelihood of spill or splash, wear chemical goggles and faceshield. Contact lenses should not be worn.
PROTECTIVE GLOVES:	Use nitrile or neoprene gloves to prevent contact with skin.
RESPIRATORY PROTECTION:	Use NIOSH/MSHA-approved respiratory protective equipment when concentration of vapors or mists exceeds applicable exposure limit. Depending on the airborne concentration, use a respirator or gas mask with appropriate cartridges and canisters. A self-contained breathing apparatus (SCBA) is required for large spills and emergencies. Selection and use of respiratory protective equipment should be in accordance in the U.S.A. with OSHA General Industry Standard 29 CFR 1910.134 and in Canada with CSA Standard Z94.4-M1982.
ENGINEERING CONTROLS:	Provide local exhaust or general dilution ventilation needed to maintain concentrations of vapors or mists below applicable exposure limits. Where explosive mixtures may be present, systems safe for such locations should be used.
OTHER PROTECTIVE EQUIPMENT:	Wear appropriate solvent-resistant boots, apron or other protective clothing where spills and splashes are possible. A source of clean water should be available in work areas for flushing the eyes and skin.

SECTION X – OTHER REGULATORY INFORMATION

DOT PROPER SHIPPING NAME:	PETROLEUM NAPHTHA
DOT CLASS:	COMBUSTIBLE LIQUID
DOT ID NUMBER:	UN1255

SARA TITLE III: Product contains toxic chemicals subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372. Toxic constituents are listed with an asterisk in Section II of this Material Safety Data Sheet.

Product poses the following physical and/or health hazards as defined in 40 CFR 370.3 (Sections 311, 312 of SARA Title III):

Immediate (Acute) Health Hazard
Delayed (Chronic) Health Hazard
Fire Hazard

TDGA: NAPHTHA, PETROLEUM
CLASS 3.3, UN1255, P.G. III

WHMIS CLASSIFICATION: Class B3, Combustible Liquid;
Class D2A, Other Toxic Effects, Very Toxic Material;
Class D2B, Other Toxic Effects, Toxic Material

SECTION XI – PREPARATION INFORMATION

PREPARED BY: Product MSDS Coordinator ***FORM PART NO.*** 82310

ORIGINAL ISSUE DATE: July 20, 1989 ***REVISED:*** December 14, 1990 ***SUPERSEDES:*** March 12, 1990

User assumes all risks incident to the use of this product. To the best of our knowledge, the information contained herein is accurate. However, Safety-Kleen assumes no liability whatsoever for the accuracy or completeness of the information contained herein. No representations or warranties, either expressed or implied, or merchantability, fitness for a particular purpose or of any other nature are made hereunder with respect to information or the product to which information refers. The data contained on this sheet apply to the material as supplied to the user.

MATERIAL SAFETY DATA SHEET

FUEL PROCESSORS INCORPORATED
P.O. Box 1407
Woodland, WA 98674
(503)-286-8352 (Oregon)
(206)-225-6571 (Washington)

PRODUCT CODE NO. : M0AEO

MANUFACTURER:
FUEL PROCESSORS INCORPORATED
P.O. Box 1407
Woodland, WA 98674

CONTACT FOR FURTHER INFORMATION:
Call in Oregon (503)-286-8352
Call in Washington (206)-225-6571

Transportation Emergencies:
CALL CHEMTREC at (800)-424-9300 in continental U.S.

PRODUCT IDENTIFICATION:

PRODUCT NAME	:	MERIT ALL ENGINE OIL 10 - 30
SYNONYMS	:	MERIT ALL ENGINE OIL
GENERIC NAME	:	CRANKCASE OIL
CHEMICAL FAMILY	:	PETROLEUM HYDROCARBON
DOT PROPER SHIPPING NAME	:	NOT APPLICABLE
ID NUMBER	:	NONE

SECTION I: INGREDIENTS	TLV	UNITS	AGENCY	TYPE
OIL MIST, IF GENERATED	5.00	MG/M3	OSHA	FULL TERM TWA

THE IDENTITIES OF INGREDIENTS THAT ARE TRADE SECRETS ARE EXCLUDED FROM THIS LIST.

SECTION II: EMERGENCY AND FIRST AID PROCEDURES

EYE CONTACT:
FOR DIRECT CONTACT, FLUSH THE AFFECTED EYE(S) WITH CLEAN WATER. IF IRRITATION OR REDNESS DEVELOPS, SEEK MEDICAL ATTENTION.

SKIN CONTACT:
DO NOT USE GASOLINES, THINNERS OR SOLVENTS TO REMOVE PRODUCT FROM SKIN. WIPE MATERIAL FROM SKIN AND REMOVE CONTAMINATED CLOTHING. CLEANSE AFFECTED AREA(S) THOROUGHLY BY WASHING WITH SOAP AND WATER AND, IF NECESSARY, A WATERLESS SKIN CLEANSER. IF IRRITATION OR REDNESS DEVELOPS AND PERSISTS, SEEK MEDICAL ATTENTION.

INHALATION (BREATHING)
IF IRRITATION OF NOSE OR THROAT DEVELOPS, MOVE AWAY FROM SOURCE OF EXPOSURE AND INTO FRESH AIR. IF IRRITATION PERSISTS, SEEK MEDICAL ATTENTION. IF VICTIM IS NOT BREATHING OR IF BREATHING DIFFICULTIES DEVELOP, ARTIFICIAL RESPIRATION OF OXYGEN SHOULD BE ADMINISTERED BY QUALIFIED PERSONNEL. SEEK IMMEDIATE MEDICAL ATTENTION.

PRODUCT CODE NO.: MOAEO

INGESTION (SWALLOWING):
IF VICTIM IS CONSCIOUS AND ALERT, GIVE 2 TO 3 CUPS OF MILK OR WATER TO DRINK. SEEK MEDICAL ATTENTION. TO PHYSICIAN: EMESIS OR LAVAGE IS NOT RECOMMENDED FOR INGESTIONS OF MINUTE QUANTITIES OR TASTES OF MOST HYDROCARBONS. MEDICAL OPINION IS DIVIDED FOR LARGER INGESTIONS. EMESIS OR LAVAGE HAS BEEN RECOMMENDED FOR THOSE PETROLEUM PRODUCTS WHICH HAVE A HIGH ORAL TOXICITY. GASTRIC LAVAGE WITH A CUFFED ENDOTRACHEAL TUBE IS RECOMMENDED BY SOME PHYSICIANS TO PREVENT ASPIRATION.

SECTION III: POTENTIAL ADVERSE HEALTH EFFECTS

EYE CONTACT:
THIS MATERIAL MAY CAUSE EYE IRRITATION. DIRECT CONTACT MAY CAUSE BURNING, TEARING AND REDNESS.

SKIN CONTACT:
THIS MATERIAL MAY CAUSE SKIN IRRITATION. PROLONGED OR REPEATED CONTACT MAY CAUSE REDNESS, BURNING AND DERMATITIS.

INHALATION (BREATHING)
EXPOSURE TO MISTS, OR PROLONGED OR REPEATED EXPOSURE TO FUMES OR VAPORS THAT MAY BE GENERATED WHEN THIS MATERIAL IS HEATED, MAY CAUSE IRRITATION OF NOSE AND THROAT.

INGESTION (SWALLOWING)
ACCIDENTAL INGESTION OF THIS MATERIAL MAY CAUSE IRRITATION OF THE DIGESTIVE TRACT.

COMMENTS:
USED MOTOR OIL: FOLLOWING REPEATED SKIN APPLICATIONS, ANIMAL STUDIES HAVE SHOWN THAT USED MOTOR/CRANKCASE OILS HAVE CAUSED AN INCREASED INCIDENCE OF SKIN CANCER IN MICE. IT IS THEREFORE RECOMMENDED THAT PROLONGED OR REPEATED CONTACT WITH MOTOR/CRANKCASE OILS BE AVOIDED.

SECTION IV: SPECIAL PROTECTION INFORMATION

VENTILATION:
IF CURRENT VENTILATION PRACTICES ARE NOT ADEQUATE IN MAINTAINING AIRBORNE CONCENTRATIONS BELOW THE ESTABLISHED EXPOSURE LIMITS (SEE SECTION I), ADDITIONAL VENTILATION OR EXHAUST SYSTEMS MAY BE REQUIRED.

RESPIRATORY PROTECTION:
IF AIRBORNE CONCENTRATIONS EXCEED RECOMMENDED EXPOSURE LIMITS, A SUITABLE FILTER-TYPE RESPIRATOR SHOULD BE WORN. (SEE SECTION I.)

PROTECTIVE GLOVES:
THE USE OF GLOVES IMPERMEABLE TO THE SPECIFIC MATERIAL HANDLED IS ADVISED TO PREVENT SKIN CONTACT AND POSSIBLE IRRITATION.

EYE PROTECTION:
APPROVED EYE PROTECTION TO SAFEGUARD AGAINST POTENTIAL EYE CONTACT, IRRITATION OR INJURY IS RECOMMENDED.

MATERIAL SAFETY AND DATA SHEET

PRODUCT CODE NO.: MOAEO

OTHER PROTECTIVE EQUIPMENT:
IT IS SUGGESTED THAT A SOURCE OF CLEAN WATER BE AVAILABLE IN WORK AREA FOR FLUSHING EYES AND SKIN. BARRIER CREAMS THAT ARE SPECIFIC FOR OIL-BASED MATERIAL ARE RECOMMENDED WHEN GLOVES ARE IMPRACTICAL.

SECTION V: REACTIVITY DATA

STABILITY:
STABLE

INCOMPATIBILITY (MATERIALS TO AVOID):
AVOID CONTACT WITH STRONG OXIDIZING AGENTS. EXTENDED EXPOSURE TO HIGH TEMPERATURES MAY CAUSE DECOMPOSITION.

HAZARDOUS DECOMPOSTION PRODUCTS:
THERMAL DECOMPOSITION IN THE PRESENCE OF AIR MAY YIELD MAJOR AMOUNTS OF OXIDES OF CARBON AND MINOR AMOUNTS OF OXIDES OF NITROGEN, PHOSPHORUS, SULFUR AND ZINC.

HAZARDOUS POLYMERIZATION:
WILL NOT OCCUR.

SECTION VI: SPILL OF LEAK PROCEDURES
(HIGHWAY OR RAILWAY SPILLS, CALL CHEMTREC 800-424-9300 IN CONT. US)

PRECAUTIONS IN CASE OF RELEASE OR SPILL:
COLLECT LEAKING LIQUID IN SEALABLE CANTAINERS. ABSORB SPILLED LIQUID IN SAND OR INERT ABSORBANT. CONTACT FIRE AUTHORITIES AND APPROPRIATE STATE/LOCAL AGENCIES. IF SPILL OF ANY AMOUNT IS MADE INTO OR UPON U.S. NAVIGABLE WATERS, THE CONTIGUOUS ZONE, OR ADJOINING SHORELINES, NOTIFY COAST GUARD NATIONAL RESPONSE CENTER (PHONE NUMBER 800-424-8802).

WASTE DISPOSAL METHOD:
DISPOSE OF PRODUCT IN ACCORDANCE WITH LOCAL, COUNTY, STATE, AND FEDERAL REGULATIONS.

SECTION VII: STORAGE AND SPECIAL PRECAUTIONS

HANDLING AND STORAGE PRECAUTIONS:
STORE IN A COOL, DRY LOCATION. KEEP AWAY FROM INCOMPATIBLE MATERIALS (SEE SECTION V). AVOID GENERATING OIL MISTS WHILE HANDLING. AVOID PROLONGED OR REPEATED SKIN CONTACT. WASH THOROUGHLY AFTER HANDLING. FOR USED MOTOR OIL: LAUNDER SATURATED CLOTHING BEFORE WEARING AND DISCARD OIL-SOAKED SHOES AND UNWASHABLE CLOTHING.

SECTION VIII: FIRE AND EXPLOSION HAZARD DATA

HAZARD RANKING
(0= LEAST, 1= SLIGHT, 2= MODERATE, 3= HIGH, 4= EXTREME)

NFPA HAZARD CLASS:
HEALTH HAZARD: 0,
FLAMMABILITY: 1
REACTIVITY: 0,
OTHER: NONE

MATERIAL SAFETY AND DATA SHEET

PRODUCT CODE NO.: MOAEO

DOT FLAMMABILITY CLASSIFICATION: NOT REGULATED
FLASH POINT: 390-400 COC F

EXTINGUSHING MEDIA:
EXTINGUISH WITH DRY CHEMICAL, CO2, WATER SPRAY, FOAM, SAND OR EARTH. WATER AND FOAM MAY CAUSE FROTHING.

FIRE & EXPLOSION HAZARDS:
THIS MATERIAL WILL BURN, BUT WILL NOT IGNITE READILY.

FIRE FIGHTING PROCEDURES:
WATER SPRAY MAY BE USEFUL IN MINIMIZING VAPORS AND COOLING CONTAINERS EXPOSED TO HEAT AND FLAME. AVOID SPREADING BURNING LIQUID WITH WATER USED FOR COOLING PURPOSES. MOVE UNDAMAGED CONTAINERS FROM FIRE AREA IF YOU CAN DO SO WITHOUT RISK.

SECTION IX: PHYSICAL DATA

APPROX BOILING POINT	VAPOR DENSITY	EVAPORATION RATE	% VOLITILE
ABOVE 600 F (316 C)	HEAVIER THAN AIR	SLOWER THAN ETHER	NEGLIGIBLE

% SOLUBILITY IN WATER	SPECIFIC GRAVITY	APPEARANCE	ODOR
NEGLIGIBLE	0.89-0.91	CLEAR, BROWN LIQUID	CHARACTERISTIC

SECTION X: PRECAUTIONARY LABEL

CAUTION: USED MOTOR OIL IS A POSSIBLE SKIN CANCER HAZARD BASED ON TESTS WITH LABORATORY ANIMALS. AVOID PROLONGED OR REPEATED SKIN CONTACT. AVOID MAKING OR BREATHING OIL MIST. USE ADEQUATE VENTILATION. WASH THOROUGHLY WITH SOAP AND WATER AFTER HANDLING.

SECTION XI: DOCUMENTARY INFORMATION

ISSUE DATE: JULY 2 1986 PRODUCT CODE NUMBER.: MOAEO

DISCLAMER OF EXPRESSED AND IMPLIED WARRANTIES
The information in this document is believed to be correct as of the date issued. NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTY IS EXPRESSED OR IS TO BE IMPLIED REGARDING THE ACCURACY OR COMPLETENESS OF THIS INFORMATION, THE RESULTS TO BE OBTAINED FROM THE USE OF THIS INFORMATION OF THE PRODUCT, THE SAFETY OF THIS PRODUCT OR THE HAZARDS RELATED TO ITS USE.
This information and product are furnished on the condition that the person receiving them shall make his own determination as to the suitability of the product for his own purpose and on the condition that he assume the risk of his use thereof.

Material Safety Data Sheet
May be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200. Standard must be consulted for specific requirements.

U.S. Department of Labor
Occupational Safety and Health Administration
(Non-Mandatory Form)

(7)

IDENTITY (As Used on Label and List)
"CIMPERIAL 1011"

Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.

Section I

Manufacturer's Name: Products Division/ Cincinnati Milacron Marketing Company	Emergency Telephone Number: 513-841-8181
Address (Number, Street, City, State, and ZIP Code): 4701 Marburg Avenue	Telephone Number for Information: 513-841-8964
Cincinnati, Ohio 45209	Date Prepared: 10/85
	Signature of Preparer (optional):

Section II — Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity; Common Name(s))	OSHA PEL	ACGIH TLV	Other Limits Recommended	% (optional)
O-phenylphenol	---	---		
Triethanolamine	---	---		
Ethoxylated nonylphenol	---	---		
Mineral oil (mist)	5 mg/M3	5 mg/M3		

The ingredients listed above may contribute to the product hazard as listed in Section VI of this sheet.

Section III — Physical/Chemical Characteristics

ND = not determined

Boiling Point	ND	Specific Gravity (H_2O = 1)	1.006
Vapor Pressure (mm Hg.) Not applicable (NA)	NA	Melting Point	NA
Vapor Density (AIR = 1)	NA	Evaporation Rate (Butyl Acetate = 1)	NA

Solubility in Water: appreciable; emulsifiable

Appearance and Odor: Hazy; evergreen or sassafras

Section IV — Fire and Explosion Hazard Data

Flash Point (Method Used): 370°F (COC)	Flammable Limits: NA	LEL: NA	UEL: NA

Extinguishing Media: Foam, carbon dioxide

Special Fire Fighting Procedures: NA

Unusual Fire and Explosion Hazards: None

CRAW00016726

Stability	Unstable		Conditions to Avoid
	Stable	X	

Incompatibility (Materials to Avoid)
None known

Hazardous Decomposition or Byproducts
None.

Hazardous Polymerization	May Occur		Conditions to Avoid
	Will Not Occur	X	

Section VI — Health Hazard Data

Route(s) of Entry: Inhalation? YES Skin? YES Ingestion? NA

Health Hazards (Acute and Chronic) WARNING: Concentrate is alkaline. Harmful if taken internally. Concentrate is an eye irritant. Eye damage may occur from contact with concentrate. No adverse chronic effects expected when used as recommended.

Carcinogenicity: NTP? NO IARC Monographs? NO OSHA Regulated? NO

Signs and Symptoms of Exposure Eye damage may occur from contact with concentrate. This product is not a primary skin irritant; however, skin irritation may occur if used improperly (concentrate or mix).

Medical Conditions Generally Aggravated by Exposure May aggravate existing skin irritation where further defatting or skin penetration could occur.

Emergency and First Aid Procedures In case of eye contact, flush immediately with running water for 15 minutes, then get prompt medical attention to check for possible irritation. In case of skin contact with concentrate, wash immediately with water. If concentrate or mix is swallowed, do not induce vomiting. Dilute with water or milk. Immediately contact physician and obtain treatment.

Section VII — Precautions for Safe Handling and Use

Steps to Be Taken in Case Material is Released or Spilled
Thoroughly flush with water to sewer.

Waste Disposal Method Ultrafiltration or acid-alum-polymer chemical treatment (followed by phenol-removing procedures, if required), or high temperature incineration.

Precautions to Be Taken in Handling and Storing Use only as recommended by Cincinnati Milacron. Avoid all contact of concentrate with eyes or prolonged contact with skin. Do not swallow. Avoid open flames, sparks, and temperatures over 370°F. If frozen, thaw completely at room temp.

Other Precautions
Contains amines. Do not add sodium nitrite or other nitrosating agents to this product. Suspected cancer-causing nitrosamines could be formed.

Section VIII — Control Measures

Respiratory Protection (Specify Type)
Product not volatile.

Ventilation	Local Exhaust		Special
	Mechanical (General)	General	Other

Protective Gloves Waterproof gloves required when handling concentrate.

Eye Protection Safety shield or goggles required when handling concentrate.

Other Protective Clothing or Equipment
Effective metalworking plant protective clothing as appropriate.

Work/Hygienic Practices
Good personal hygiene should always be followed.

MERIT Oil & Refining, Inc.
4150 N. Suttle Rd. · Portland, OR 97217
(503) 286-8352 1-800-367-8894
Fax: (503) 286-5027

MATERIAL SAFETY DATA SHEET

AERO SOLUBLE OIL

This Material Safety Data Sheet contains environmental, health and toxicology information for your employees. Please make sure this information is given to them. It also contains information to help you meet community right-to-know/emergency response reporting requirements under SARA Title III and many other laws. If you resell this product, this MSDS must be given to the buyer or the information incorporated into your MSDS.

1. PRODUCT IDENTIFICATION

AERO SOLUBLE OIL

CAUTION ! - MAY CAUSE EYE IRRITATION
- MAY BE HARMFUL IF SWALLOWED
- KEEP OUT OF REACH OF CHILDREN

2. FIRST AID

EYE CONTACT:
Flush eyes immediately with fresh water for at least 15 minutes while holding the eyelids open. Remove contact lenses if worn. No additional first aid should be necessary, however, if irritation persists, see a doctor.
SKIN CONTACT:
No first aid procedures are normally required. As a precaution, wash skin thoroughly with soap and water. Remove and wash contaminated clothing.
INHALATION:
Since this material is not expected to be an immediate inhalation problem, no first aid procedures are required.

INGESTION:
If swallowed, give water or milk to drink and telephone for medical advice. Consult medical personnel before inducing vomiting. If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital.

3. IMMEDIATE HEALTH EFFECTS

EYE CONTACT:
The eye irritation potential of this substance has not been determined. However, it may be slightly irritating to the eyes and could cause prolonged (days) impairment of your vision. The degree of the injury will depend on the amount of material that gets into the eye and the speed and thoroughness of the first aid treatment. Signs and symptoms may include pain, tears, swelling, redness, and blurred vision. This hazard evaluation is based on the known toxicity of the ingredients in this substance.
SKIN IRRITATION:
This substance is not expected to cause prolonged or significant skin irritation. This hazard evaluation is based on the data from similar materials.
DERMAL TOXICITY:
The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if it gets on the skin. This hazard evaluation is based on data from similar materials. Read the Additional Health Data section (12) of this document for more information.
RESPIRATORY/INHALATION:
The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if inhaled. This hazard evaluation is based on data from similar materials.
INGESTION:
The oral toxicity of this substance has not been determined. However, it may be slightly toxic to internal organs if swallowed. The degree of injury will depend on the amount absorbed from the gut. This hazard evaluation is based on the known toxicity of the ingredients in this substance. Read the Additional Health Data section (12) of this document for more information.

4. PROTECTIVE EQUIPMENT

EYE PROTECTION:
Do not get this material in your eyes. Eye contact can be avoided by wearing chemical goggles.
SKIN PROTECTION:
No special skin protection is usually necessary. Avoid prolonged or frequently repeated skin contact with this material. Skin contact can be minimized by wearing protective clothing.

RESPIRATORY PROTECTION:
No special respiratory protection is normally required. However, if operating conditions create high airborne concentrations, the use of an approved respirator is recommended.
VENTILATION:
Use adequate ventilation to keep the airborne concentrations of this material below the recommended exposure standard.

5. FIRE PROTECTION

FLASH POINT: (COC) 320F (160C)
AUTOIGNITION: NDA
FLAMMABILITY LIMITS (% by volume in air): NDA
EXTINGUISHING MEDIA:
CO2, Dry Chemical, Foam, Water Fog
NFPA RATINGS: Health 1; Flammability 1; Reactivity 0; Special NDA
HMIS RATINGS: Health 1; Flammability 1; Reactivity 0; Other NDA;
(Least = 0, Slight = 1, Moderate = 2, High = 3, Extreme = 4). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association or, if applicable, the National Paint and Coatings Association.
FIRE FIGHTING PROCEDURES:
For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.
COMBUSTION PRODUCTS:
Normal combustion forms carbon dioxide, water vapor and may produce oxides of sulfur.

6. STORAGE, HANDLING, AND REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS:
NDA
STABILITY:
Stable
HAZARDOUS POLYMERIZATION:
Polymerization will not occur.
INCOMPATIBILITY:
May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc. Avoid contact with nitrites.
SPECIAL PRECAUTIONS:
READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL.

DO NOT WELD, HEAT OR DRILL CONTAINER! Residue may ignite with explosive violence if heated sufficiently. CAUTION! Do not use pressure to empty drum or explosion may result.

7. PHYSICAL PROPERTIES

SOLUBILITY: Forms a stable emulsion with water.
APPEARANCE: Pale lemon yellow liquid.
BOILING POINT: NDA
MELTING POINT: NA
EVAPORATION: NA
SPECIFIC GRAVITY: 0.91 @ 15.6/15.6C
VAPOR PRESSURE: NA
PERCENT VOLATILE (VOLUME %): NA
VAPOR DENSITY (AIR=1): NA
VISCOSITY: 28 cSt @ 40C (Min.)

8. ENVIRONMENTAL CONCERNS, SPILL RESPONSE AND DISPOSAL

CHEMTREC EMERGENCY PHONE NUMBER: (800) 424-9300 (24 hour)
SPILL/LEAK PRECAUTIONS:
This material is not expected to present any environmental problems other than those associated with oil spills.

Stop the source of the leak or release. Clean up releases as soon as possible. Contain liquid to prevent further contamination of soil, surface water or groundwater. Clean up small spills using appropriate techniques such as sorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Follow prescribed procedures for reporting and responding to larger releases. However, because of its dispersant properties, this material forms emulsions with water.
DISPOSAL METHODS:
Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

9. EXPOSURE STANDARDS, REGULATORY LIMITS AND COMPOSITION

COMPOSITION COMMENT:
All the components of this material are on the Toxic Substances Control Act Chemical Substances Inventory.

This product fits the ACGIH definition for mineral oil mist. The ACGIH TLV is 5 mg/m3, the OSHA PEL is 5 mg/m3.

The percent compositions are given to allow for the various ranges of the components present in the whole product and may not equal 100%.

PERCENT/CAS#	COMPONENT/REGULATORY LIMITS
100.0 %	AERO SOLUBLE OIL
CONTAINING	
> 80.0 %	LUBRICATING BASE OIL

The BASE OIL may be a mixture of any of the following: CAS 64741884, CAS 64741895, CAS 64741964, CAS 64741975, CAS 64742014, CAS 64742525, CAS 64742536, CAS 64742547, CAS 64742627, CAS 64742650, CAS 72623837.

< 20.0 %	ADDITIVES, INCLUDING THE FOLLOWING
CAS111762	ETHANOL, 2-BUTOXY 25ppm ACGIH TLV 25ppm OSHA PEL
CAS107415	2-METHYL-2,4-PENTANEDIOL 25ppm ACGIH TLV

TLV - THRESHOLD LIMIT VALUE
STEL - Short-term Exposure Limit
RQ - Reportable Quantity
TWA - Time Weighted Average
CAS - Threshold Planning Quantity

10. REGULATORY INFORMATION

DOT SHIPPING NAME: NOT DESIGNATED AS A HAZARDOUS MATERIAL BY THE FEDERAL DOT. Petroleum Lubricating Oil, NOIBN
DOT HAZARD CLASS: NOT APPLICABLE
DOT IDENTIFICATION NUMBER: NOT APPLICABLE

SARA 311 CATEGORIES:		
	1. Immediate (Acute) Health Effects:	YES
	2. Delayed (Chronic) Health Effects:	NO
	3. Fire Hazard:	NO
	4. Sudden Release of Pressure Hazard:	NO
	5. Reactivity Hazard:	NO

WHEN A COMPONENT OF THIS MATERIAL IS SHOWN IN THIS SECTION, THE REGULATORY LIST ON WHICH IT APPEARS IS INDICATED.

2-METHYL-2,4-PENTANEDIOL	02,10,14,28
ETHANOL, 2-BUTOXY	02,10,14,17,25,26,28

REGULATORY LISTS SEARCHED:

01 = SARA 313	02 = MASS RTK	03 = NTP carcinogen
04 = CA Prop. 65	05 = MI 406	06 = IARC Group 1
07 = IARC Group 2A	08 = IARC Group 2B	09 = SARA 302/304
10 = PA RTK	11 = NJ RTK	12 = CERCLA 302.4
13 = MN RTK	14 = ACGIH TLV	15 = ACGIH STEL
16 = ACGIH Calculated TLV	17 = OSHA TWA	18 = OSHA STEL
19 = EPA Carcinogen	20 = TSCA Sect 4(e)	21 = TSCA Sect 5 (a) (e) (f)
22 = TSCA Sect 6	23 = TSCA Sect 12 (b)	24 = TSCA Sect 8 (a)
25 = TSCA 8 (d)	26 = TSCA 8 (e)	27 = Canadian WHMIS
28 = OSHA CEILING	29 = TSCA Sect 8 FYI	

11. PRODUCT TOXICOLOGY DATA

EYE IRRITATION:
NDA. The hazard evaluation was based on data on the components.
SKIN IRRITATION:
NDA. The hazard evaluation was based on data from similar materials.
DERMAL TOXICITY:
NDA. The hazard evaluation was based on data from similar materials.
RESPIRATORY/INHALATION:
NDA. The hazard evaluation was based on data from similar materials.
INGESTION:
NDA. The hazard evaluation was based on data from similar materials.

12. ADDITIONAL HEALTH DATA

ADDITIONAL HEALTH DATA COMMENT:
This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrotreating. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since the information contained herein may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modification of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

Data Sheet

Date last revised 03/08/88

MICHIGAN INDUSTRIAL PRODUCTS CO.

I. General Information

Chemical Name & Synonyms: ORGANIC ESTERS	Trade Name & Synonyms: LUBRIFORGE 20-NP
Chemical Family: POLYMERS	Formula: WATER SOLUBLE POLYMERS
Proper DOT Shipping Name: SAME	DOT Hazard Classification: NONE
Manufacturer: MICHIGAN INDUSTRIAL PRODUCTS COMPANY	Manufacturer's Phone Number: 313-985-4545
Manufacturer's Address: 2301 16TH ST., PORT HURON, MI 48060	Chemtrec Phone Number: N/A

II. Ingredients

Principal Hazardous Components	Percent	Threshold Limit Value (units)
NO HAZARDOUS INGREDIENTS		

III. Physical Data

Boiling Point (°F): 220°F	Specific Gravity (H_2O = 1): 1.10
Vapor Pressure (mm Hg.): <760 MM	Percent Volatile By Volume (%): 82.0
Vapor Density (Air = 1): 0.62	Evaporation Rate (~~WATER~~ = 1): 0.75
Solubility in Water: COMPLETE	pH

Appearance & Odor: OILY BROWN - BLAND

IV. Fire & Explosion Hazard Data

Flash Point (Test Method): NONE	Auto Ignition Temperature: NONE	
Flammable Limits: NONE	LEL: NONE	UEL: NONE

Extinguishing Media: NOT NEEDED

Special Fire Fighting Procedures: NOT NEEDED

Unusual Fire & Explosion Hazards: NONE

CRAW00016734

Attachment for Response to DEQ Comment 6 and 9

ENVIRONMENTAL EVALUATION

PROPOSED MANUFACTURING MANAGEMENT, INC. SITE

(LAMPROS STEEL)

ST. JOHNS DISTRICT, PORTLAND, OREGON

April 4, 1988

Submitted To Attorneys For:

Manufacturing Management, Inc.
4927 NW Front Avenue
Portland, Oregon 97210

Submitted By:

Sweet-Edwards/EMCON, Inc.
P.O. Drawer B
Kelso, Washington 98626

T2401.02

Attachment for Response to DEQ Comment 7

Attachment for Response to DEQ Comment 11

LEVEL II

ENVIRONMENTAL SITE ASSESSMENT

ST. JOHNS RIVERFRONT PROPERTY

PORTLAND, OREGON

Prepared for

GRAYCO RESOURCES, INC.

March 15, 1989

CSA CUMMINGS, SENKEL & ASSOCIATES
CONSULTING ENGINEERS

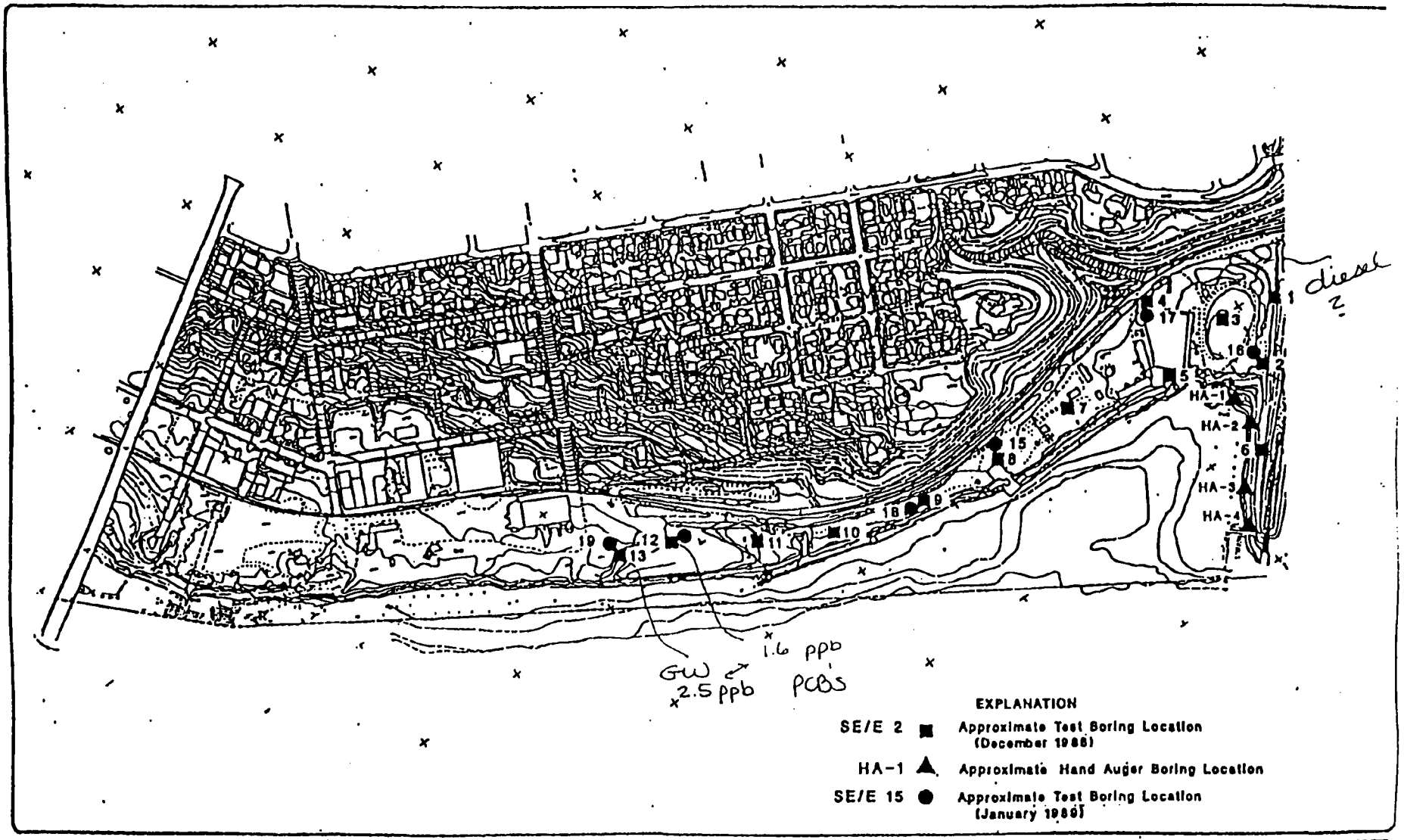
HARVEY L. CUMMINGS, P.E.
Principal

250 W. Clarendon, Gladstone, Oregon 97027
(503) 557-0506 Fax (503) 659-1040

SWEET-EDWARDS/EMCON, INC.
7504 S.W. Bridgeport Rd.
Portland, OR 97224

GRAYCO-R.315 LK
T8701.01

Rev. 1 3/15/89



Sweet-Edwards
EMCON

0 350 700
Scale in Feet

N

GRAYCO/ST. JOHNS RIVERFRONT PROPERTY
Test Boring and Hand Auger Boring Location Map

Figure 8

DATE 11-15-88
DWN. MMM
APPR. SRH
REVIS.
PROJECT NO.

CRAW00016740

LOG OF EXPLORATORY BORING

PROJECT NAME	GRAYCO Portland, Oregon	BORING NO.	SE/E-13
LOCATION	See Figure	PAGE	1 OF 1
DRILLED BY	Geo Tech Exploration	REFERENCE ELEV.	'±
DRILL METHOD	H.S. Auger	TOTAL DEPTH	35.00'
LOGGED BY	R.A. Dixon	DATE COMPLETED	12/9/88

SAMPLE NUMBER	PERCENT RECOVERY	BLOW COUNT (N COMP)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	WELL DETAILS	LITHO-LOGIC COLUMN	LITHOLOGIC DESCRIPTION
								0-5.5' Sandy clayey SILT, black, low to medium plasticity, wet (ML).
S-1	60	2-30 (NA)		5				5.5-6.5' Brick Rubble.
								6.5-10.5' SIlty CLAY, black, moderate to high plasticity, moist to wet (OH).
S-2	90	4-9-12 (21)		10				10.5-15' Sandy silty CLAY, light brown, moderate plasticity, moist (CL). - - - red brick rubble at 11.25 to 11.5 feet.
S-3	95	3-7-8 (15)		15				15-20' Silty clayey SAND, light brown, fine grained, moist (SM).
S-4	65	4-6-8 (14)		20				20-25' Poorly graded SAND, grayish-brown, fine grained, trace silt, moist (SP).
S-5	100	2-4-4 (8)		25				25-30.5' Sandy silty CLAY, brownish-gray, moderate to high plasticity, moist (CL). - - - first encountered water at 30.5 feet.
S-6	120	3-5-8 (13)	▽ 30.5'	30				30.5-35' clayey silty SAND, grayish-brown, fine to medium grained, oily sheen on water and 30 foot soil sample, saturated (SM).
				35				Bottom of boring at 35 feet.

REMARKS

Sampled ground water through 2" PVC Screen and casing with teflon bailer. Pulled PVC after sampling. Minor oily sheen on water sample. Drilled to 35 feet to enhance sampling. Backfilled with bentonite.

SWEET-EDWARDS/EMCON

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LOG OF EXPLORATORY BORING

PROJECT NAME	GRAYCO Portland, Oregon	BORING NO.	SE/E-19
LOCATION	See Figure	PAGE	1 OF 1
DRILLED BY	Geo Tech Exploration	REFERENCE ELEV.	'±
DRILL METHOD	H.S. Auger	TOTAL DEPTH	31.50'
LOGGED BY	S. Ryman	DATE COMPLETED	1/27/89

SAMPLE NUMBER	PERCENT RECOVERY	BLOW COUNT (N COMP)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	WELL DETAILS	LITHO-LOGIC COLUMN	LITHOLOGIC DESCRIPTION
								0-31.5' SAND, brown, medium-to-fine with minor silt, 15% silt, 30% medium sand, 55% fine, moist.
				5				
				10				
				15				
				20				
				25				
S-1		2-3-4	▽ 30.5'	30				--- color change to gray at 30 feet. --- first encountered water at 30.5 feet.
								Bottom of boring at 31.5 feet.
				35				

REMARKS

Drilled adjacent to SE/E-3.

SWEET-EDWARDS/EMCON

T8701.01.GRAYC.JLG.020789

TABLE 3
GRAYCO/ST. JOHNS RIVERFRONT PROPERTY
GROUND WATER SAMPLE TESTING PARAMETERS

SAMPLE I.D.	SAMPLE COLLECTION DATE	PRIORITY POLLUTANT METALS*	TOX	PCB	PAH	PENTA-CHLORO-PHENOL	VOLATILE ORGANICS METHOD 601	PESTICIDES METHOD 608	VOLATILE ORGANICS METHOD 624	BASE NEUTRAL EXTRACTABLES METHOD 625	HYDROCARBON SCAN METHODS 3510/8015 MODIFIED
SE/E-1	12/5/88	X	X	X	X	X					
SE/E-2	12/5/88	X		X	X	X			X	X	
SE/E-3	12/6/88	X	X	X	X	X					
SE/E-4	12/6/88	X	X	X	X	X					
SE/E-5	12/6/88	X	X	X	X	X					
SE/E-6	12/7/88	X		X	X	X			X	X	
SE/E-7	12/7/88	X	X	X	X	X					
SE/E-8	12/7/88	X	X	X	X	X					
SE/E-9	12/8/88	X	X	X	X	X					
SE/E-10	12/8/88	X	X	X	X	X					
SE/E-11	12/8/88	X	X	X	X	X					
SE/E-12	12/9/88	X	X	X	X	X					
SE/E-13	12/9/88	X	X	X	X	X					
SE/E-14	1/26/89			X**							
SE/E-17	1/26/89	X**					X	X			
SE/E-19	1/27/89			X[1]							X[2]
HA-4W	12/12/88	X	X	X	X	X					

NOTE:
TOX = Total Organic Halides
PCB = Polychlorinated Biphenols
PAH = Polyaromatic Hydrocarbons
* = Samples SE/E-1 through SE/E-5 were not field filtered.
** = Filtered and unfiltered samples collected.
1 = Filtered water sample and unfiltered water with concentrated oil sheen.
2 = Test conducted on oil from SE/E 19 unfiltered water sample.

GRAYC-T3.315 PE
P8701.01

TABLE 4, continued

BORING I.D.	SAMPLE I.D.	SAMPLE INTERVAL ft.	DATE COLLECTED	DATE SCREENED	PID*	SAMPLE SUBMITTED FOR TESTING	COMPOSITE SAMPLE IDENTIFICATION
SE/E-13	SE/E-13-5	5-6.5	12/9/88	12/10/88	49	**	SE/E-13-A
	SE/E-13-10	10-11.5	12/9/88	12/10/88	48	**	
	SE/E-13-15	15-16.5	12/9/88	12/10/88	51	X	
	SE/E-13-20	20-21.5	12/9/88	12/10/88	18	**	SE/E-13-B
	SE/E-13-25	25-26.5	12/9/88	12/10/88	35	**	
SE/E-14	SE/E-14	30.5-32	1/26/89	NA	NA	X	NA
SE/E-15	SE/E-15-20	20-21.5	1/26/89	NA	NA	X	NA
SE/E-16	SE/E-16-10	10-11.5	1/26/89	NA	NA	X	NA
SE/E-19	SE/E-19-30	30-31.5	1/27/89	NA	NA	X	NA

NOTE:

*PID = Photoionization detector
NA = Not applicable

GRAYC-T4.315 PE
T8701.01

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TABLE 5
GRAYCO-ST. JOHNS RIVERFRONT PROPERTY
SOIL QUALITY LABORATORY RESULTS

SAMPLE I.D.	PCB (mg/kg)	TOX (mg/kg)	OIL AND GREASE (%)	BTEX METHOD 820 (mg/kg)	HYDROCARBON SCAN (mg/kg)
SE/E-1-10	ND	1	<0.02		
SE/E-2-10	ND	2	0.068		
SE/E-3-10	ND	ND	<0.02		
SE/E-4-20	ND	ND	<0.02		
SE/E-5-10	ND	ND	<0.02		
SE/E-6-20	ND	ND	<0.02		
SE/E-7-10	ND	1	<0.02		
SE/E-8-20	ND	1	0.054		
SE/E-9-15	ND	ND	<0.02		
SE/E-10-25	ND	ND	<0.02		
SE/E-11-15	ND	ND	<0.02		
SE/E-12-A*	ND				
SE/E-12-15	ND	ND	<0.02		
SE/E-12-B*	ND				
SE/E-13-A*	ND				
SE/E-13-10	ND	1	<0.02		
SE/E-13-B*	ND				
SE/E-14	ND				
SE/E-15-20				ND	ND
SE/E-16-10				ND	ND
SE/E-17	No soil samples taken.				
SE/E-18	No soil samples taken.				
SE/E-19-30	ND			ND	ND
HA-1*	ND	1	<0.02		
HA-2*	ND	2	0.052		
HA-3*	ND	ND	0.056		
HA-4*	ND	ND	<0.02		
Detection Limits	1.0	1.0	0.02	.05	5

GRAYC-T5.315 PE
T8701.01

TABLE 6
GRAYCO-ST. JOHNS RIVERFRONT PROPERTY
GROUND WATER QUALITY LABORATORY RESULTS
SELECT ORGANIC CONSTITUENTS (ug/L)

SAMPLE I.D.	PCB	TOX	PAH	PENTA-CHLORO-PHENOL	PESTICIDES METHOD 608	VOLATILE ORGANICS METHOD 601
SE/E-1	ND	39	ND	ND	-	-
SE/E-2	ND	*	ND	ND	-	-
SE/E-3	ND	34	ND	ND	-	-
SE/E-4	ND	44	ND	ND	-	-
SE/E-5	ND	21	ND	ND	-	-
SE/E-6	ND	*	ND	ND	-	-
SE/E-7	ND	26	ND	ND	-	-
SE/E-8	ND	13	ND	ND	-	-
SE/E-9	ND	28	ND	ND	-	-
SE/E-10	ND	14	ND	ND	-	-
SE/E-11	ND	12	ND	ND	-	-
SE/E-12	2.5	7	ND	ND	-	-
SE/E-13	1.6	17	ND	ND	-	-
SE/E-14	ND**	-	-	-	-	-
SE/E-17	-	-	-	-	ND	ND
SE/E-19	ND***	-	-	-	-	-
HA-4	ND	45	ND	ND	-	-
Detection Limits	1[1]	5	1	10	Variable	Variable

GRAYC-T6.315 PE
T8701.01

Table 5 (Continued)

NOTE:

PCB = Polychlorinated Biphenyl
TOX = Total Organic Halides
BTEX = Benzene, Toluene, Ethylbenzene, Xylene
Hydrocarbon Scan - Diesel, Gasoline
* = Composite Soil Samples

TABLE 6
GRAYCO-ST. JOHNS RIVERFRONT PROPERTY
GROUND WATER QUALITY LABORATORY RESULTS
SELECT ORGANIC CONSTITUENTS (ug/L)

SAMPLE I.D.	PCB	TOX	PAH	PENTA-CHLORO-PHENOL	PESTICIDES METHOD 608	VOLATILE ORGANICS METHOD 601
SE/E-1	ND	39	ND	ND	-	-
SE/E-2	ND	*	ND	ND	-	-
SE/E-3	ND	34	ND	ND	-	-
SE/E-4	ND	44	ND	ND	-	-
SE/E-5	ND	21	ND	ND	-	-
SE/E-6	ND	*	ND	ND	-	-
SE/E-7	ND	26	ND	ND	-	-
SE/E-8	ND	13	ND	ND	-	-
SE/E-9	ND	28	ND	ND	-	-
SE/E-10	ND	14	ND	ND	-	-
SE/E-11	ND	12	ND	ND	-	-
SE/E-12	2.5	7	ND	ND	-	-
SE/E-13	1.6	17	ND	ND	-	-
SE/E-14	ND**	-	-	-	-	-
SE/E-17	-	-	-	-	ND	ND
SE/E-19	ND***	-	-	-	-	-
HA-4	ND	45	ND	ND	-	-
Detection Limits	1[1]	5	1	10	Variable	Variable

GRAYC-T6.315 PE
T8701.01

Table 6 (continued)

NOTE:

Detection Limits 0.2

* = Tested for volatile and semivolatile organic compounds, Methods 8240 and 8270. No compounds were detected.

** = Filtered and unfiltered sample

*** = Filtered water and unfiltered water with concentrated oil sheen tested.

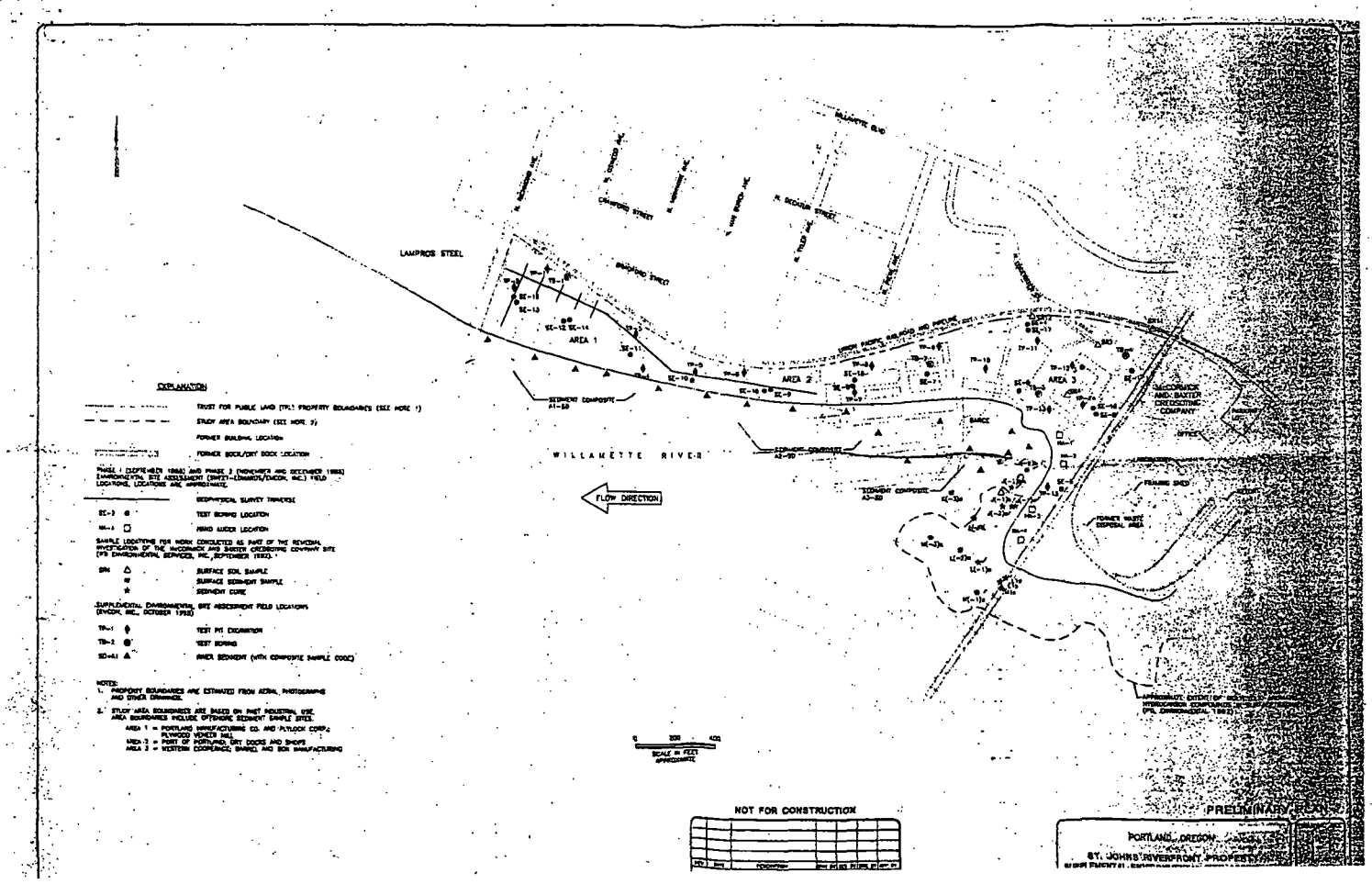
\- = Not tested.

1 = Detection limit for oil contaminated sample from SE/E 19 was 1 ppm.

PCB = Polychlorinated Biphenyl (Total Arachlor)

TOX = Total Organic Halides

PAH = Polyaromatic Hydrocarbons



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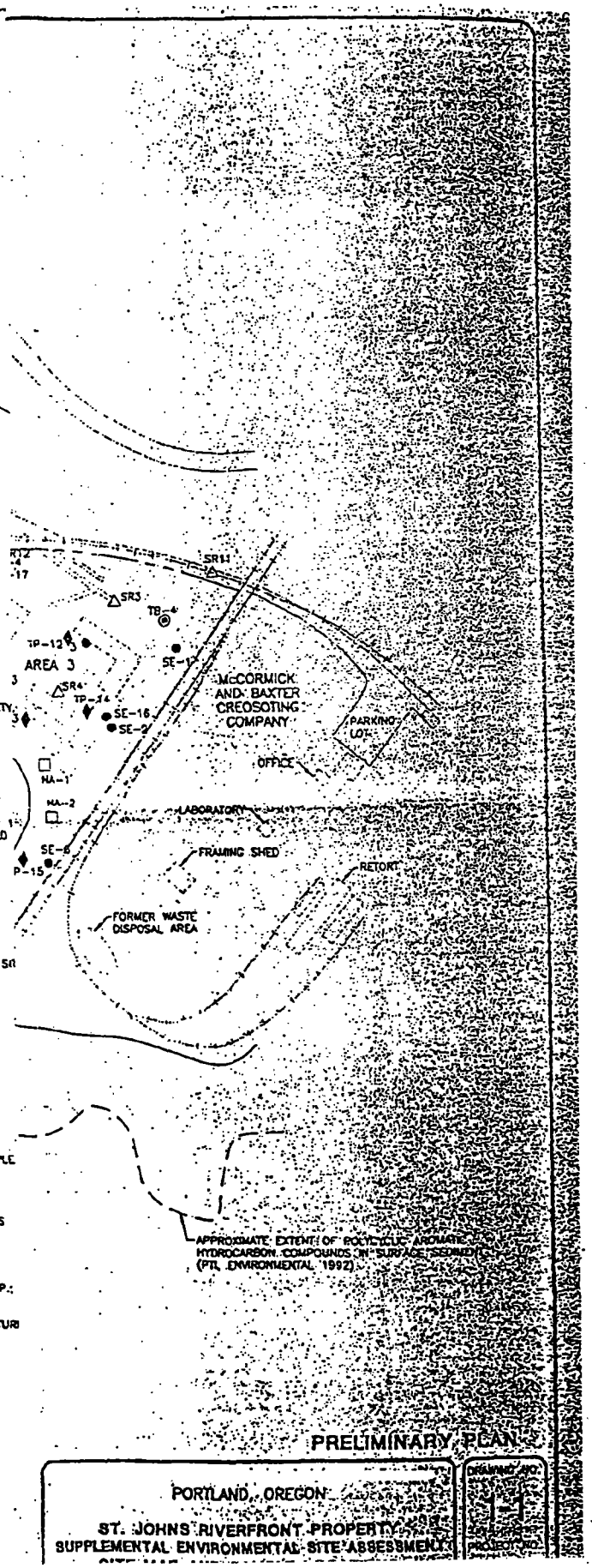


EXPLANATION

TRUST FOR PUBLIC LAND (TPL) PROPERTY

STUDY AREA BOUNDARY (SEE NOTE 2)

FORMER BUILDING LOCATION

FORMER DOCK/DRY DOCK LOCATION

PHASE 1 (SEPTEMBER 1988) AND PHASE 2 (NOVEMBER AND DECEMBER 1 ENVIRONMENTAL SITE ASSESSMENT (SWEET-EDWARDS/EMCON, INC.) FIELD LOCATIONS. LOCATIONS ARE APPROXIMATE.

GEOPHYSICAL SURVEY TRAVERSE

SE-2 TEST BORING LOCATION

HA-1 HAND AUGER LOCATION

SAMPLE LOCATIONS FOR WORK CONDUCTED AS PART OF THE REMEDIAL INVESTIGATION OF THE McCORMICK AND BAXTER CREOSOTING COMPANY SI (PTI ENVIRONMENTAL SERVICES, INC., SEPTEMBER 1992).

SR4 SURFACE SOIL SAMPLE

SURFACE SEDIMENT SAMPLE

SEDIMENT CORE

SUPPLEMENTAL ENVIRONMENTAL SITE ASSESSMENT FIELD LOCATIONS (EMCON, INC., OCTOBER 1995)

TP-1 TEST PIT EXCAVATION

TB-2 TEST BORING

SD-A1 RIVER SEDIMENT (WITH COMPOSITE SAMPLE

NOTES:

1. PROPERTY BOUNDARIES ARE ESTIMATED FROM AERIAL PHOTOGRAPHS AND OTHER DRAWINGS.
2. STUDY AREA BOUNDARIES ARE BASED ON PAST INDUSTRIAL USE. AREA BOUNDARIES INCLUDE OFFSHORE SEDIMENT SAMPLE SITES.
   - AREA 1 = PORTLAND MANUFACTURING CO. AND PLYLOCK CORP.; PLYWOOD VENEER MILL
   - AREA 2 = PORT OF PORTLAND; DRY DOCKS AND SHOPS
   - AREA 3 = WESTERN COOPERAGE; BARREL AND BOX MANUFACTURI

PRELIMINARY PLAN

PORTLAND, OREGON

ST. JOHNS RIVERFRONT PROPERTY
SUPPLEMENTAL ENVIRONMENTAL SITE ASSESSMENT

DRAWING NO.

PROJECT NO.

CRAW00016751

Table 5-2

Summary of Soil Samples Collected and Laboratory Analysis
Trust for Public Land, St Johns Riverfront Property

		Analysis Requested [a]											
Sample ID	Collector	Hydro-carbon Scan (8015M)	Oil and Grease	TOX	BTEX	VOC (8260)	SVOC (8270)	PCBs (8080)	PCP (8150A Mod.)	PCBs (8080)	PAHs (8310)	Priority Pollutant Metals [b]	Archived [c]
Area 1: Portland Manufacturing Co. (Plylock Corp), Plywood Mill													
Test Pits													
TP-1	[redacted]												X
TP-2	[redacted]					X							
TP-3	[redacted]					X				X		X	
TP-4	[redacted]												X
A1C1	[redacted]	X					X						
A1C2	[redacted]									X		X	
Test Borings													
SE/E-10-25	SE/E		X	X				X					
SE/E-11-15	SE/E		X	X				X					
SE/E-12-A [d]	SE/E							X					
SE/E-12-15	SE/E		X	X				X					
SE/E-12-B [d]	SE/E							X					
SE/E-13-A [d]	SE/E							X					
SE/E-13-10	SE/E		X	X				X					
SE/E-13-B [d]	SE/E							X					
SE/E-14	SE/E							X					
SE/E-16-10	SE/E	X			X			X					
SE/E-19-30	SE/E	X			X			X					
TB-1-15S	[redacted]					X							
TB-1-SC1	[redacted]							X					
Area 2: Port of Portland, Dry Dock and Shops													
Test Pits													
TP-6	[redacted]												X
TP-7	[redacted]									X			
TP-7A	[redacted]												X
TP-8	[redacted]												X
TP-9	[redacted]					X							
TP-9A	[redacted]												X
TP-10	[redacted]												X
A2C1	[redacted]	X									X		
A2C2	[redacted]											X	
A2C3	[redacted]											X	
A2C4	[redacted]									X			
Test Borings													
SE/E-7-10	SE/E		X	X				X					
SE/E-8-20	SE/E		X	X				X					
SE/E-9-15	SE/E		X	X				X					
SE/E-15-20	SE/E	X			X			X					
TB-2-15S	[redacted]					X							
TB-2-SC1	[redacted]									X			X

Table 5-2

Summary of Soil Samples Collected and Laboratory Analysis
Trust for Public Land, St Johns Riverfront Property

		Analysis Requested [a]											
Sample ID	Collector	Hydro-carbon Scan (8015M)	Oil and Grease	TOX	BTEX	VOC (8260)	SVOC (8270)	PCBs (8080)	PCP (8150A Mod.)	PCBs (8080)	PAHs (8310)	Priority Pollutant Metals [b]	Archived [c]
Area 3: Western Cooperage													
Surface Soil Samples													
Test Pits													
TP-11	[redacted]					X							
TP-12	[redacted]												X
TP-13	[redacted]												X
TP-14	[redacted]												X
TP-15	[redacted]								X				
A3C1	[redacted]	X					X			X			
A3C2	[redacted]										X		
A3C3	[redacted]										X		
A3C4	[redacted]								X				
Hand-Augered Borings													
HA-1			X	X				X					
HA-2			X	X				X					
HA-3			X	X				X					
HA-4			X	X				X					
Test Borings													
SE/E-1-10	SE/E		X	X				X					
SE/E-2-10	SE/E		X	X				X					
SE/E-3-10	SE/E		X	X				X					
SE/E-4-20	SE/E		X	X				X					
SE/E-5-10	SE/E		X	X				X					
SE/E-6-20	SE/E		X	X				X					
SE/E-17													
TB-4-15S	[redacted]					X							
TB-4-SC1	[redacted]								X		X		
TB-3-SC1	[redacted]								X	X	X		
Willamette River Sediments													
Sediment Samples													
A1-SD-1	[redacted]	X				X	X		X	X	X	X	
A2-SD-2	[redacted]	X				X	X		X	X	X	X	
A3-SD-3	[redacted]	X				X	X		X	X	X	X	

NOTE: [redacted]

[a] Represents USEPA method number. E.G. (8260) is USEPA Method 8260 for volatile organic compounds using gas chromatography and mass spectral analysis.

[b] Priority pollutant metals: Sb, As, Be, Cd, Cr, Cu, Pb, Hg, Ni, Se, Ag, Tl, Zn.

[c] Archived samples were submitted to CAS for holding without requesting analysis.

[d] Composite soil sample.

Table 5-8

Summary of PAHs Detected in Sediment Samples
(ug/Kg)
Trust for Public Land, St Johns Riverfront Property

Analyte	MRL	Sample Identification		
		A1-SD-1[a]	A2-SD-2[a]	A3-SD-3[a]
Napththalene	0.1	,0.5	<0.3	<0.3
Acenapthylene	0.1	,0.5	<0.3	<0.3
Acenaphthene	0.1	,0.5	<0.3	<0.3
Fluorene	0.02	<0.1	<0.06	0.09
Phenanthrene	0.01	1.4	0.14	0.21
Anthracene	0.01	0.18	0.03	0.06
Fluoranthene	0.02	2	0.23	0.37
Pyrene	0.02	2.7[b]	0.2	0.35
Benz(a)anthracene	0.01	1.5	0.09	0.15
Chrysene	0.01	2.9[b]	0.13	0.21
Benzo(b)fluroanthene	0.02	1.3	0.11	0.18
Benzo(k)fluroanthene	0.01	0.67	0.05	0.08
Benzo(a)pyrene	0.01	1.9	0.1	0.15
Dibenzo(a,h)anthracene	0.01	<0.2[c]	<0.03	<0.3
Benzo(g,h,i)perylene	0.02	1.6	0.1	0.11
Indeno(1,2,3-cd)pyrene	0.01	0.98	0.05	0.06

Note:
MRL = method reporting limit.
a = MRLs are elevated because of the low percent solids in the sample as recieved.
b = Result is from the analysis of a diluted sampled, performed on 11/2/95. Dilution factor: 50.
c = MRL is elevated because of matrix interferences and because the sample required diluting. Dilution Factore:5.

Table 5-9

Summary of Metals Detected in Sediment Samples (mg/Kg) Trust for Public Land, St Johns Riverfront Property

Analyte	MRL	Sample Identification		
		A1-SD-1[a]	A2-SD-2[a]	A3-SD-3[a]
Antimony	10	ND	ND	ND
Arsenic	1	4	4	4
Berllium	1	ND	ND	ND
Cadmium	1	ND	ND	ND
Chromium	2	18	33	33
Copper	2	26	60	84
Lead	20	24	28	53
Mercury	0.2	ND	ND	0.2
Nickel	10	20	23	23
Selenium	1	ND	ND	ND
Silver	2	ND	ND	ND
Thallium	1	ND	ND	ND
Zinc	2	103	131	178

Note:
MRL = method reporting limit
ND = not detected above the MRL

EXPLORATORY TEST PIT LOG

PROJECT NAME TPL
LOCATION St. Johns
DUG BY Stratus, Inc.
METHOD Backhoe
LOGGED BY Mike Free

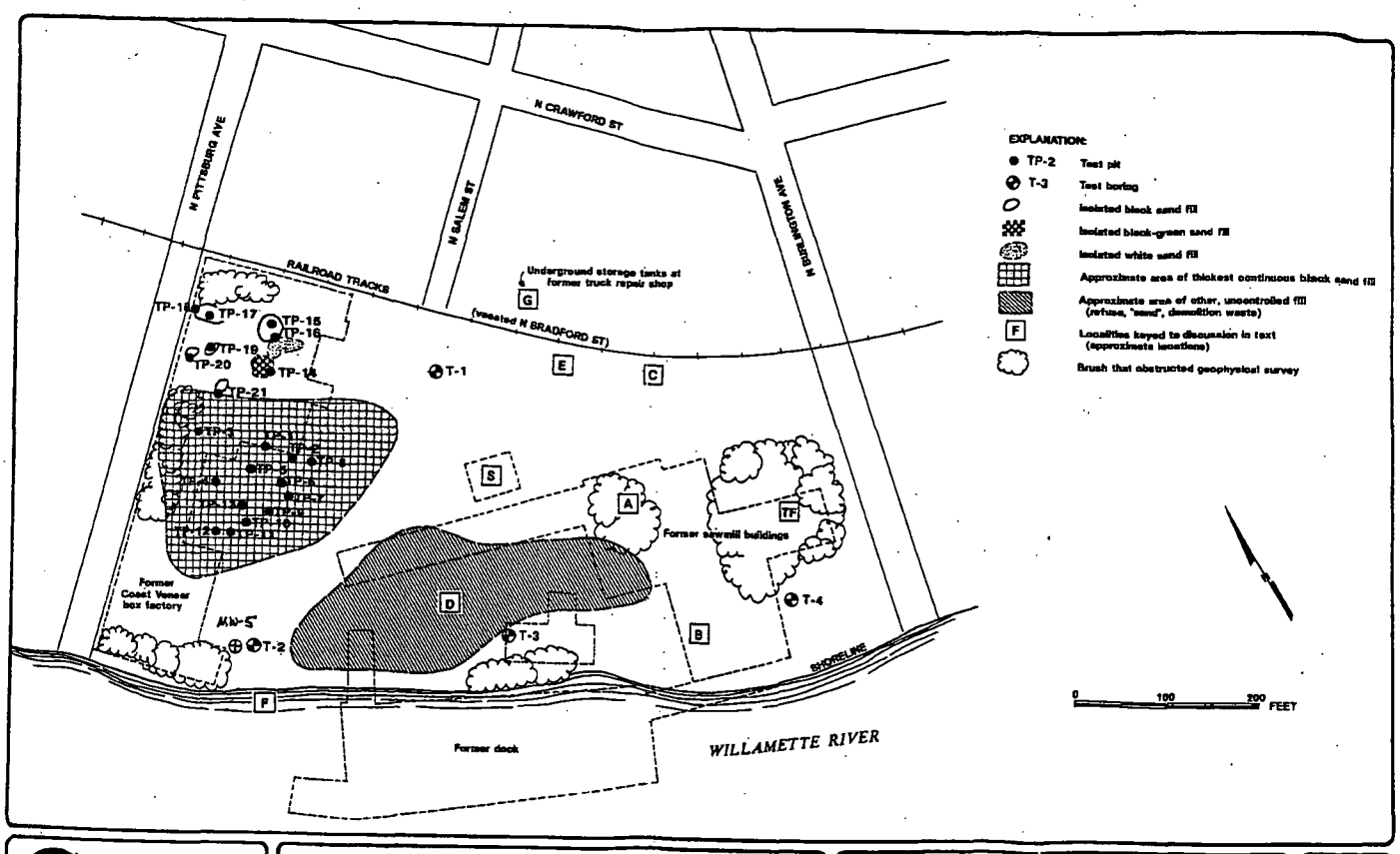
TEST PIT NO. TP-2
PAGE 1/1
GROUND ELEV.
TOTAL DEPTH 4.0
DATE COMPLETED 10/20/95

Sample # (time)	Sample Length (ft)	FID (ppm)	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	LITHOLOGIC COLUMN	LITHOLOGIC DESCRIPTION
TP-2 (1115)	0-4.0	0		5, 10, 15, 20			0-4ft: sandy gravelly silt, brown (various shades) compact; damp; common asphalt debris, some concrete and ceramic, fine to coarse gravel (FILL) trace plastic, wood

REMARKS

.....SEEL TP

Attachment for Response to DEQ Comment 12



Sweet-Edwards
EMCON

PDC PROPERTY
PORTLAND, OREGON
Site Map

Figure 2

DATE 7/89
DWN.
APPR.
REVIS.
PROJECT NO. T2403.01

CRAW00016758

Preliminary Assessment

Crawford Street Site
Portland, Oregon

Prepared for
Crawford Street Corporation

June 14, 2000

BRIDGEWATER GROUP, INC.

Portland Harbor Site Assessment Activities

Related Document(s):

Voluntary Letter Agreement for Portland Harbor - *DEQ's boilerplate letter agreement for Upland RI and Source Control Measures in the Portland Harbor Study Area.*
Portland Harbor Statement of Work (SOW) - *DEQ's boilerplate draft SOW for Remedial Investigation and Source Control Measures in the Portland Harbor Study Area..*

Summary:

Recently, DEQ completed Phase I of the Strategy Recommendation Process for Portland Harbor. This phase of site discovery resulted in the completion of 35 strategy recommendations. The recommendations included:

12 High Priority Remedial Investigations (RI or HP RI)
13 High Priority Expanded Preliminary Assessments (XPA or HP XPA)
10 Low or Medium Preliminary Assessments (L/M PA) or Expanded Preliminary Assessments (L/M XPA)

Click here for a detailed description of the Site Assessment Process

The sites for which strategy recommendations were prepared were based on the sites identified in Appendix F (Table F-3: Sites Identified in Site Discovery Process) of the Portland Harbor Sediment Management Plan (PHSMP). However, this list was modified by adding new sites, combining sites based on property ownership or operation and eliminating sites currently being addressed through the **Voluntary Cleanup Program (VCP)**. In addition, two strategy recommendations were put on hold; at this time it is unclear what follow-up on these sites will be required. A summary of the modifications is presented below:

Added sites:

- Alder Creek Lumber Company (just outside harbor boundary)
- Goldendale Aluminum (just outside harbor boundary)
- UPRR Albina Yard (just outside harbor boundary)
- Calbag Metals Company (shares outfall with Schnitzer Kittridge facility)

CRAW00016762

Combined Sites:

- Hendren Tow Boats (incorporated into Marine Finance Corporation)
- Lampros Steel (incorporated into Crawford Street Corporation)
- TLS Steel (incorporated into Crawford Street Corporation)
- Turmball Asphalt (incorporated into Owens Corning)
- Columbia River Sand and Gravel (incorporated into Linnton Plywood Association)
- Boydstun Metal Works (incorporated into Schnitzer Steel)
- Portland Container Repair Company (incorporated into Schnitzer Steel)
- Western Machine Works (incorporated into Schnitzer Steel)
- Premier Edible Oils (incorporated into Schnitzer Steel)
- Lone Star Northwest (incorporated into Front Avenue LLP)
- CMI/Hampton (incorporated into Front Avenue LLP)
- Port of Portland - McCall (incorporated into McCall Oil/Great Western Chemical)
- Koppers Industries (incorporated into Wacker Siltronics)

Sites on Hold:

- Olympic Pipeline (pipeline crosses many sites within Portland Harbor)
- Ryerson Steel (site is set back from river; no information available)

VCP Sites:

- Time Oil - Northwest Terminals
- Gunderson, Inc.
- Port of Portland - Swan Island Berths
- City Slip 2, Terminal 4

In addition, DEQ is working with the City of Portland and the Port of Portland to address all City outfalls and Port facilities that may be contributing to sediment contamination within Portland Harbor.

Next Steps:

The next step in the site discovery process will be to conduct preliminary screenings on sites located within three specific areas:

- On the east bank of the Willamette River downstream of River Mile 3.5
- The upstream end of Swan Island Lagoon
- The west side of Front Avenue within the boundaries of Portland Harbor

CRAW00016763

Based on the results of this preliminary screening, DEQ will identify additional sites for the completion of strategy recommendations.

Project Status Matrix:

Site	Required Action	Priority	Project Manager	Status	Environmental Issues
Gould Electronics, Inc. (NPL)	RI	High	Jill Kiernan	Cleanup completed. Operation and maintenance activities underway	Former battery manufacturer
McCormick & Baxter (NPL)	RI	High	Bill Dana	Cleanup underway	Former wood treating facility. DNAPL present in sediments.
Rhone Poulenc	RI	High	Eric Blischke	RI/FS underway	Former herbicide and pesticide manufacturer. DNAPL present in source area.
Mobil Oil	RI	High	Matt McClincy	ROD signed. RD/RA Agreement under negotiation	Bulk fuel facility. Source control measures in place
Gunderson	RI	High	Matt McClincy	RI/FS underway	Rail car manufacturer
Time Oil	RI	High	Tom Roick	RI/FS underway	Bulk fuel facility.
Linnton Oil Fire Training Grounds	RI	High	Tom Roick	Cleanup completed. Operation and maintenance activities underway	Former fire training facility
GASCO (NW Natural)	RI	High	Eric Blischke	RI/FS underway	Former oil gasification plant. Tars present in sediments. High concentrations of groundwater contamination near river.
Willbridge (Includes Chevron, Tosco, Shell, UNOCAL and GATX)	RI	High	Jill Kiernan	RI/FS underway	Bulk fuel facility

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Elf Atochem	RI	High	Matt McClincy	RI/FS underway	Former DDT manufacturer. High levels of DDT in sediments. High concentrations of groundwater contamination near river.
Riedel (Zidell -Triangle Park)	RI	High	Jim Anderson	PPA. RI/FS underway	Former scrap metal handler.
Terminal 4 - Port of Portland	RI	High	Tom Roick	RI/FS underway	Sediments contaminated with PAHs from pencil pitch off loading operations and diesel.
Swan Island Shipyard (Cascade General)	RI	High	Jim Anderson	RI/FS underway	Ship maintenance yard
Willamette Cove (METRO)	RI	High	Rod Struck	RI negotiations underway	Former Port of Portland facility.
US Moorings	RI	High	Alicia Voss	RI negotiations underway	USACE dock facility. Sediment contamination likely from former GASCO site.
McCall Oil and Great Western Chemical (includes Port of Portland - McCall)	RI	High	Tom Gainer	Review complete. Strategy Recommendation sent November 21, 1999. Agreed to perform RI December 21, 1999. RI Agreement signed April 2000.	Bulk petroleum facility. Numerous releases of asphalt and diesel. Groundwater contaminated with petroleum hydrocarbons. PAHs detected in sediments above baseline.
Linnton Plywood Association (includes Columbia River Sand and Gravel)	RI	High	Sheila Monroe	Review complete. Strategy recommendation sent 10/8/1999. Agreed to cooperate. Adjacent to Columbia River Sand and Gravel. RI Agreement signed June 2000.	Plywood manufacturing and sand and gravel facility. Documented release of oil to Willamette River. PAHs detected in sediments above baseline.
ARCO	RI	High	Tom Gainer	RI Agreement signed June 2000.	Bulk fuel facility.

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Schnitzer Investment Corporation (includes Boydstun Metal Works, Portland Container Repair Company, and Western Machine Works)	RI	High	Alicia Voss	Review complete. Sent November 24, 1999. Agreed to perform RI December 27, 1999. RI Agreement signed June 2000.	Scrap metal recycling facility. Former location of Oregon Shipbuilding Corporation. Numerous storm drains present. PAHs and metals detected in sediments above baseline.
GATX Linnton Terminal	RI	High	Don Pettit	Review complete. Strategy Recommendation sent July 27, 1999. Agreed to perform RI November 13, 1999. RI Agreement signed June, 2000.	Bulk petroleum facility. Free product present in groundwater. PAHs in sediments exceed baseline concentration by 2 orders of magnitude.
Oregon Steel Mills	RI	High	Rod Struck	Review complete. Strategy Recommendation sent September 27, 1999. Agreed to perform RI October 27, 1999. RI Agreement signed June 2000.	Steel manufacturing facility. Petroleum products and metals detected in sediments during dredging operations.
PGE Harborton Substation	RI	High	Rod Struck	Review complete. Strategy Recommendation sent September 27, 1999. Agreed to perform RI October 27, 1999. Adjacent to ACF and Georgia Pacific. RI signed June 2000.	Substation and former electrical generator facility. Large quantities of petroleum historically stored on-site. PAHs detected in sediments more than 10 times baseline.
Mar Com Marine	RI	High	Alicia Voss	Review complete. Strategy Recommendation sent October 1, 1999. Agreed to perform RI October 27, 1999. Adjacent to Hendren Tow-Boats and General Construction. RI Agreement under negotiation.	Barge and ship repair facility. USCG documented releases of oil and paint to river. PAHs and metals in sediments exceed baseline concentration.

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Texaco Unloading Dock (Includes Pipeline and Terminal)	RI	High	Matt McClincy	Review complete. Strategy Recommendation sent 9/27/1999. Agreed to perform RI 11/18/1999. RI Agreement under negotiation.	Bulk petroleum facility. Known releases of petroleum associated with pipeline and terminal. Documented releases of petroleum to Willamette River. Lead and LPAHs detected in sediments above baseline.
US Coast Guard	RI	High	Eric Blischke	Review complete. Strategy Recommendation sent September 27, 1999. Received letter agreeing to cooperate. Adjacent to Freightliner and Fred Devine Diving and Salvage. RI Agreement under negotiation.	USCG boat operation and maintenance facility. Documented diesel spill and UST releases. PAHs detected in sediments above baseline.
Fred Devine Diving and Salvage	RI	High	Eric Blischke	Review complete. Strategy recommendation sent October 1, 1999. No Response received to date. Adjacent to US Coast Guard and Freightliner. RI Agreement under negotiation.	Diving and salvage facility. Documented petroleum sheen in river adjacent to facility. PAHs detected in sediments more than 5 times baseline.
ACF Industries	RI	High	Dan Hafley	Review complete. Strategy Recommendation sent September 27, 1999. Declined to perform RI Voluntarily. Unilaterial Order in preparation. Adjacent to Georgia Pacific and PGE Harborton.	Former railroad car maintenance facility. Contaminants from waste pond may have reached river via drainage ditch.
Wacker Siltronic	RI	High	Eric Blischke	Strategy Recommendation Complete; sent October 19, 1999. Agreed to perform RI November 19, 1999. RI Agreement under negotiation.	Silicon wafer manufacturing facility. Waste tars from adjoining GASCO facility disposed on site. PAHs detected in sediments at concentrations above baseline.

CRAW00016767

Premier Edible Oils	RI	High	Alicia Voss	Part of Schnitzer Site. Strategy recommendation and request for RI sent to Premier Edible Oils March 2, 2000. RI Agreement under negotiation.	Groundwater contaminated with chlorinated solvents and petroleum compounds. PAHs and metals detected in sediments above baseline.
Shaver Transportation	XPA	High	None Assigned	Review complete. Strategy Recommendation sent December 7, 1999. Received letter indicating cooperation. No Letter Agreement received to date.	Freight transportation facility. Tugboat dock and maintenance operations. Metals detected in sediments above baseline.
Georgia Pacific - Linnton	XPA	High	Tom Gainer	Review complete. Strategy Recommendation sent October 1, 1999. Signed Letter Agreement received. Supplemental PA and sampling plan received February 2, 2000.	Former wood chip export terminal. Creosoting plant once occupied site. PAHs detected in sediments above baseline.
Marine Finance Corporation (Includes Hendren Tow Boats)	XPA	High	Rod Struck	Review complete. Strategy Recommendation sent October 1, 1999. Signed Letter Agreement received January 21, 2000. Unclear whether Marine Finance has financial resources to complete investigation. Orphan site declaration prepared.	Little known about site operations. PAHs detected in sediments above baseline.
Owens Corning Fiberglas (includes Trumball Asphalt)	XPA	High	Tom Gainer	Review complete. Strategy Recommendation sent October 1, 1999. Signed Letter Agreement received. Project Startup initiated. PA expected April 3, 2000.	Asphalt manufacturing facility. Wood treating operations once took place on site. PAHs detected in sediments above baseline.

CRAW00016768

Crawford Street Corp. (includes Lampros Steel and TLS Steel)	XPA	High	Tom Gainer	Review complete. Strategy Recommendation sent October 8, 1999. Signed Letter Agreement received. PA received February 11, 2000.	Steel forging, fabrication and distribution facilities operate on property. Small spills of hydraulic, motor or lubrication oil have occurred on site. Metals and PAHs detected in sediments above baseline.
UPRR - Albina Railroad Yard	XPA	High	Rod Struck	Review complete. Strategy Recommendation sent October 8, 1999. Letter received refusing request. Declared orphan site January 19, 2000. Project startup initiated.	UPRR has operated rail yard at this location since at least 1936. Numerous petroleum spills have occurred at the site. No sediment samples collected immediately adjacent to site.
Foss Marine	XPA	High	Rod Struck	Review complete. Strategy Recommendation sent November 19, 1999. Signed Letter Agreement received December 28, 1999. PA received February 15, 2000.	Maritime maintenance and repair facility. Numerous spills of petroleum products to river. PAHs detected above baseline immediately downstream.
Jefferson Smurfit	XPA	High	None Assigned	Review complete. Strategy Recommendation sent November 19, 1999. No Letter Agreement received to date.	Corrugated container manufacturing facility. 100 gallon fuel spill occurred in 1996. PAHs detected in sediments above baseline.
Northwest Pipe Company	XPA	High	None Assigned	Review complete. Strategy Recommendation sent November 19, 1999. No Letter Agreement received to date.	Steel pipe manufacturing facility. TPH, PAHs and chlorinated solvents detected in stormwater catch basin sediments. PAHs, metals and phthalates detected in river sediments above baseline.

CRAW00016769

Goldendale Aluminum	XPA	High	Tom Gainer	Review complete. Strategy Recommendation sent December 7, 1999. Signed Letter Agreement received February 3, 2000. PA received March 15, 2000.	Alumina transfer facility. Lead, zinc and oil/grease detected in stormwater. PAHs detected in dredge composite sample above baseline.
Front Avenue LLP - Lone Star Northwest (includes Tube Forgings USA and CMI/Hampton Lumber)	XPA	High	None Assigned	Review complete. Strategy Recommendation sent December 14, 1999. Received letter declining request to execute Letter Agreement.	Pipe fitting manufacturing, lumber distribution and concrete plant facilities. Petroleum, VOCs, SVOCs, PCBs and metals detected on Tube Forgings property. Stormwater line discharges from site to river. Metals detected in sediment above baseline.
Schnitzer Investment Corporation - Kittridge	XPA	High	None Assigned	Review complete. Strategy Recommendation sent December 14, 1999. No Letter Agreement received to date.	Numerous industrial operations have occurred at site. Acetylene plant operated from 1942 until 1985. Two drain lines discharge from site to river. Metals detected in sediments above baseline.
Cal Bag Metals	XPA	High	None Assigned	Review complete. Strategy Recommendation sent December 21, 1999. No Letter Agreement received to date. Letter received indicating cooperation and requesting extension.	Metal recycling facility. Ash residue found to contain leachable metals. Metals detected in sediment above baseline.
City of Portland Outfalls	NA	NA	Rod Struck	City of Portland is developing an approach for addressing City outfalls.	Under evaluation

CRAW00016770

Port of Portland Facilities (Includes T-1, T-2, T-4 and T-5)	NA	NA	Eric Blischke	Port of Portland is preparing preliminary assessments for Port facilities	Under evaluation
Santa Fe Pipeline	XPA	Medium	None Assigned	Review complete. Strategy recommendation sent January 3, 2000.	Site runoff discharges to North Doane Lake. No migration pathway from site to river.
Freightliner Corporation	PA	Medium	None Assigned	Review complete. Strategy recommendation sent October 1, 1999. Independent Cleanup Pathway option requested.	Truck assembly and painting facility. Metals and phthalates detected in sediments above baseline. However, Freightliner's contribution to sediment contamination is unclear.
Babcock Land Company	PA	Medium	None Assigned	Review complete. Strategy recommendation sent October 8, 1999. Independent Cleanup Pathway option requested.	Steel and railroad materials storage facility. No site related contaminants present in sediments.
RK Storage	PA	Medium	None Assigned	Review complete. Strategy Recommendation sent October 8, 1999.	Historic operations include lumber storage and phenol formaldehyde glue manufacturing. Site does not appear to have affected sediment quality.
RoMar Reality	PA	Medium	None Assigned	Review complete. Strategy Recommendation sent November 19, 1999.	Warehouse facility. Site does not appear to have affected sediment quality.
Lakeside Industries	PA	Medium	None Assigned	Review complete. Strategy Recommendation sent December 7, 1999.	Asphaltic concrete manufacturing facility. Site does not appear to have affected sediment quality.

CRAW00016771

Time Oil St. Helens Road	PA	Medium	None Assigned	Review complete. Strategy Recommendation sent December 7, 1999.	Bulk petroleum transfer facility. PAHs detected in upstream sample above baseline.
City of Portland Water Laboratory	PA	Medium	None Assigned	Review complete. Strategy Recommendation sent December 8, 1999.	Water pollution control laboratory. Former lumber mill. Site related chemicals not detected in sediment above baseline.
Alder Creek Lumber Company	PA	Medium	None Assigned	Review complete. Strategy Recommendation sent December 21, 1999.	Lumber Mill. Site does not appear to have affected sediment quality.
Transloader International (a.k.a. General Construction)	PA	Low	None Assigned	Review complete. Strategy Recommendation sent December 21, 1999.	Current use of facility unknown. No contaminants detected in sediments above baseline.

Return to Cleanup and Spills Page

Return to Portland Harbor Page

Return to DEQ Home Page

This page was updated: 7/11/2000

For specific site information please e-mail gardner.sara@deq.state.or.us, or contact Sara Gardner at the DEQ Northwest Region Voluntary Cleanup and Site Assessment Program, 2020 SW 4th Avenue, Portland, Oregon 97201, (503)229-5158 or toll-free in Oregon 1-800-452-4011.

CRAW00016772

Oregon
John A. Kitzhaber, M.D., Governor

Department of Environmental Quality
811 SW Sixth Avenue
Portland, OR 97204-1390
(503) 229-5696
TDD (503) 229-6993

October 6, 1999

duplicate original mailed 11-8-99
cc: Mat Cusma
Ross R. Jones

Mr. Robert Phillip
President
Crawford Street Corporation
3200 N.W. Yeon Street
Portland, Oregon 97210

SUBJECT: Voluntary Cleanup Letter Agreement

Dear Mr. Phillip:

This letter serves as an agreement between the Oregon Department of Environmental Quality (DEQ) and Crawford Street Corporation for performance of a preliminary assessment with sampling regarding hazardous substances at your property located at: 8424 N. Crawford Street in Portland, Oregon.

You agree to perform a preliminary assessment and submit it to DEQ within 30 business days of your execution of this Letter Agreement. The preliminary assessment will provide the information described in DEQ guidance for the completion of a preliminary assessment and a proposed sampling program. DEQ will review documents submitted by you or on your behalf regarding the preliminary assessment and investigation of the above referenced site.

A sub-account of the Hazardous Substances Remedial Action Fund has been established to be drawn upon by DEQ as project costs are incurred. When you have signed this letter agreement, you will be invoiced monthly for DEQ project costs, including the costs of preparing the DEQ strategy recommendation and any ongoing review and oversight costs. You will pay DEQ invoices within 30 days of receipt. A sample invoice is attached.

DEQ project costs will include direct costs and indirect costs. Direct costs include site-specific expenses and legal costs. Indirect costs are those general management and support costs of the DEQ and of the Waste Management and Cleanup Division (WMCD) allocable to DEQ oversight of this Letter Agreement which are not charged as direct, site-specific costs. Review and oversight costs shall not include any unreasonable costs or costs not otherwise recoverable by DEQ under ORS 465.255.

This Letter Agreement is not and shall not be construed as an admission by Crawford Street Corporation of any liability under ORS 465.255 or any other law or as a waiver of any defense to such liability. This Letter Agreement is not and shall not be construed as a waiver, release or settlement of claims DEQ may have against Crawford Street Corporation or any other person or as a waiver of any enforcement authority DEQ may have with respect to Crawford Street Corporation or the property. Upon DEQ's request and as necessary to oversight of your work under this Letter Agreement, Crawford Street Corporation shall provide DEQ with data and records related to investigation and cleanup activities at the property, excluding any privileged documents identified as such by you.

Following execution of the letter agreement, a DEQ Project Manager will be assigned for the review of the preliminary assessment and oversight of investigation activities associated with your property.

DEQ looks forward to working with you.

Sincerely,

Robert P Baumgartner
for

Neil Mullane
Administrator
Northwest Region

If the terms of this Letter Agreement are acceptable to Crawford Street Corporation, please have it executed by an authorized representative in the space provided below and returned to us.

Accepted and agreed to this 8th day of November, 1999. **

By: Barry A. Rosen

Title: Vice President

Attachment

** Crawford Street Corporation will perform such preliminary assessment activities and reimburse Oregon DEQ for such costs as Oregon DEQ has a statutory right to require from it under the Environmental Cleanup Law, Oregon Revised Statutes 465.200 et seq. Crawford Street Corporation notes that: (1) DEQ's Strategy Recommendation concludes that it has insufficient information to propose adding the site to DEQ's confirmed Release List or Inventory, and DEQ's October 8, 1999 letter states that DEQ is unable to determine whether hazardous substances have been released or are threaten to be released from the subject property; and (2) DEQ's Strategy Recommendation (which contains several factual inaccuracies) refers to historical dock activities, which have not occurred during the time period of Crawford Street Corporation's ownership of the property. Crawford Street Corporation reserves the right to withdraw from this voluntary agreement upon ten days notice to Oregon DEQ.

Oregon
John A. Kitzhaber, M.D., Governor

Department of Environmental Quality
811 SW Sixth Avenue
Portland, OR 97204-1390
(503) 229-5696
TDD (503) 229-6993

cc: Mat Cusma
Ross R.
Joan S.

October 8, 1999

Mr. Robert Phillip
President
Crawford Street Corporation
3200 N.W. Yeon Street
Portland, Oregon 97210

Re: Crawford Street Site: Request for Performance of Preliminary Assessment with Sampling

Dear Mr. Phillip:

This letter informs you of the results of our review of information regarding hazardous substance contamination at the Crawford Street facility located at 8424 N. Crawford Street in Portland, Oregon. The Oregon Department of Environmental Quality (DEQ) has determined that the Crawford Street site is a high priority for a preliminary assessment with sampling and requests that Crawford Street Corporation perform a preliminary assessment with sampling in accordance with the Environmental Cleanup Law, Oregon Revised Statutes (ORS) 465.200 *et seq.*

The Crawford Street facility is located within or near a portion of the Willamette River known as the Portland Harbor. A 1997 investigation revealed significant contamination of sediments within the harbor. DEQ has undertaken review of available information regarding properties throughout the harbor to identify potential sources of the sediment contamination. The results of DEQ's review for the Crawford Street facility are summarized in the enclosed Strategy Recommendation

Based on this review, DEQ has determined additional information is necessary to determine whether hazardous substances have been released or threaten to be released at the Crawford Street facility and come to be located in Willamette River sediments. The preliminary assessment with sampling will fully evaluate all upland, in-water and over-water activities that might have resulted in the release of hazardous substances and include sufficient sampling to assess whether hazardous substances have come to be located in Willamette River sediments at or near the Crawford Street facility. At a minimum, sampling will include the collection of surface and subsurface sediment samples at appropriate points adjacent to the Crawford Street facility.

DEQ proposes that your performance of the preliminary assessment with sampling be governed by the enclosed Voluntary Cleanup Letter Agreement. The facility's preliminary assessment with sampling will be coordinated with harbor-wide sediments investigations currently being pursued by DEQ. This will require commencement of the preliminary assessment with sampling at the Crawford Street facility in the near future. DEQ therefore requests that you review the enclosed Strategy Recommendation and Voluntary Cleanup Letter Agreement, and inform DEQ whether will perform a preliminary assessment with sampling by signing and returning one original of the enclosed Voluntary Cleanup Letter Agreement within 30 calendar days of mailing of this letter. Please retain one signed original for your records. It is DEQ's expectation that a preliminary assessment and sampling work plan will be completed and submitted to DEQ within six weeks of signing the Voluntary Cleanup Letter Agreement.

Should you not agree to perform the preliminary assessment with sampling by execution of the Voluntary Cleanup Letter Agreement, DEQ will assume you are not willing to perform the requested work. In this case, as with other facilities within the Portland Harbor, DEQ will complete the preliminary assessment with sampling itself, with subsequent cost recovery from liable parties.

Finally, please be advised that DEQ is required by ORS 465.330 to recover remedial action costs incurred by DEQ, including for site assessment activities. You will be receiving an invoice in the near future for DEQ's costs of preparing the Strategy Recommendation for the Crawford Street facility. Reimbursement of future DEQ costs will be provided through the Voluntary Cleanup Letter Agreement for the facility, if one is entered.

Please Contact me at 503 229-5648 if you have any questions regarding the enclosed Strategy Recommendation .

Sincerely,

Eric Blischke,
Coordinator
Portland Harbor Study Area
Waste Management and Cleanup Division

Enclosures

c: Kurt Burkholder, DOJ
Dave St. Louis, Manager, NWR Site Assessment Program
Mike Rosen, NWR Voluntary Cleanup Program
Gil Wistar, Coordinator, Site Assessment Program
ESCI File No.: 2363

DEQ SITE ASSESSMENT PROGRAM - STRATEGY RECOMMENDATION

Site Name: Crawford Street Corporation, including:
Columbia Forge and Machine Works, Inc.
Lampros Steel, Inc.
TLS Steel Products, Inc.

Site CERCLIS Number: (none)

DEQ ECSI Number: 2363

Site Address: 8424 N. Crawford Street
Portland, Oregon 97203

Recommendation By: Tom Gainer, Voluntary Cleanup and Site Assessment Section, DEQ Northwest Region

Approved By: Michael E. Rosen, Portland Harbor Manager, DEQ Northwest Region FOR HER

Date: October 1, 1999

NOTE: This site (Figure 1) is within a 6-mile stretch of the Lower Willamette River in which the U.S. Environmental Protection Agency (EPA) conducted a sediment study in 1997. This area, referred to as the *Portland Harbor*, is between the upstream ends of Sauvie Island (River Mile 3.5) and Swan Island (RM 9.5). The purpose of this Strategy Recommendation is to determine whether a specific hazardous substance release or a specific past operation at the site can be linked to contamination documented by EPA in sediments adjacent to the site. Because of this focus, the Strategy Recommendation may omit some historical site information, regulatory issues, or further-action conclusions that might otherwise be included in a DEQ Strategy Recommendation.

Background, Portland Harbor Sediment Evaluation

In September and October 1997, EPA's contractor, Roy F. Weston, Inc., collected 187 near-shore sediment samples within the Portland Harbor area defined above. Most samples (150) were collected as shallow grab samples within the upper 6 to 17 centimeters (cm) of sediments. 37 deeper composite core samples, from depths of between 55 and 139 cm, were also collected. All samples were analyzed for total metals, semi-volatile organic compounds (SVOCs), total organic

CRAW00016778

carbon (TOC), and sediment grain size. Selected samples were also variously analyzed for organotins (TBTs), pesticides, polychlorinated biphenyls (PCBs), chlorinated herbicides, and polychlorinated dioxins and dibenzofurans.

Based on analytical results from this study, which showed extensive sediment contamination, EPA is currently considering Portland Harbor for inclusion on the federal National Priority List (NPL - also known as Superfund).

Between late 1998 and mid-1999, DEQ examined EPA's analytical data to determine potential sources for sediment contamination in the Harbor. Potential sources associated with the most contaminated areas of sediment were sites already active in DEQ's Cleanup Programs.

DEQ categorized other areas of sediment contamination (i.e., those areas not thought to be associated with active Cleanup Program sites) by defining the areas:

- having the highest detected concentration of a given contaminant;
- with contaminant concentrations in the upper five percent of a given contaminant's detected concentrations; and
- having contaminant concentrations above an apparent "baseline range" most commonly detected throughout the harbor area.

DEQ categorized in this manner because there are no established freshwater sediment contaminant concentration guidelines or well-defined background contaminant concentrations for the harbor area. The contaminant "baseline range" was developed by examining the geometric distribution of concentrations for each contaminant detected. Any sediment concentrations that appeared to depart significantly from the ranges most commonly detected were suspected of lying near a potential contaminant source.

One shallow sediment sample (SD060) was collected adjacent to the Crawford Street site (Figure 2). As shown on Table 1, contaminant concentrations in sample SD060 that exceed Portland Harbor baseline concentrations include: arsenic, lead, mercury, di-n-butylphthalate, low- and high-molecular weight polynuclear aromatic hydrocarbons (LPAHs and HPAHs, respectively), and organotins.

Shallow sediment sample SD058 collected downstream of the subject property only had elevated levels of di-n-butylphthalate. This suggests that shallow sediment contamination adjacent to the subject property has not migrated beyond the SD058 location.

Shallow sediment sample SD066 collected upstream of the subject property had elevated levels of mercury, zinc, 2-methylnapthalene, LPAHs, and HPAHs. This suggests that an upstream source may have contributed to the mercury, LPAH, and HPAH sediment contamination observed adjacent to the subject property. The Willamette Cove site is adjacent upstream of the subject site and has an extensive history of industrial activities.

Operational History

The subject site is approximately 15 acres and is divided into two portions by railroad tracks. There are currently three businesses that operate on the northern portion of the subject property: Columbia Forge and Machine Works, Inc. (CFM), Lampros Steel, Inc., and TLS Steel Products, Inc. The southern portion of the site adjacent to the Willamette River is currently used to store steel; it is not clear which of the three businesses use the southern portion, although it appears that it is used primarily by Lampros Steel.

CFM has produced metal forgings and stampings on the site since 1971. Their operation consists of three buildings and two yards. They use oil, lubricants, non-halogenated petroleum solvent, and degreasers that are sent offsite for recycling and/or disposal.

Lampros Steel has operated a structural steel distribution center since 1989, which includes off-loading railcars and trucks, cutting steel with saws, and loading outgoing trucks. Steel scrap is recycled, used motor oil is sent offsite, and synthetic saw coolant is reused or recycled on site. They have one 1,000-gallon aboveground diesel tank, located about 500 feet from the Willamette River.

TLS has operated a small steel forging and fabrication business since 1989. Hydraulic oil is used in their machines.

Crawford Street Corp. acquired the subject property from the Skookum Logging Supply Company in 1971. Aerial photographs indicate that the current buildings on the subject property were constructed between 1957 and 1963. The southern portion of the site was extensively covered by buildings with docks in photographs from 1936 through 1963; it appears that these structures were removed sometime between 1963 and 1977. Fire insurance maps from 1950 indicate that the property was used primarily by Portland Lumber Mills, and also by the Plylock Corp. (manufacturing with wood), Portland Chain Manufacturing Co., and Skookum Logging Supply Co.

Regulatory History

Spills
In May 1987, a transformer capacitor at CFM overheated and leaked several ounces of PCB-containing oil. The spill was contained and PCB-impacted material, including the transformer, was shipped offsite for disposal.

Information provided by CFM and TLS indicates that they have minor (less than one gallon) spills of hydraulic, motor, or lubricating oil from machinery on to concrete. These spills are apparently cleaned up and have not caused impacts to soil or groundwater.

Lampros claims they have had no spills.

Underground Storage Tanks (USTs)
Two 1,000-gallon USTs, one containing gasoline and the other containing used oil, were decommissioned at the CFM site in December 1987. According to CFM, contamination was apparently not observed during decommissioning activities, which predates DEQ UST record-keeping.

Water Quality
CFM was issued an NPDES permit on October 7, 1992 and it was terminated on October 20, 1992, apparently because a permit was not required at that facility. A CFM stormwater sample collected and analyzed for metals by the Portland Bureau of Environmental Services in June 1997 detected low concentrations of copper (0.010 milligrams per liter), selenium (0.047 mg/L), and zinc (0.065 mg/L).

There are no water discharge permits on file for Lampros or TLS.

Hazardous Waste
CFM operates as a conditionally exempt small quantity hazardous waste generator and appears to be in compliance.

Lampros and TLS are not registered as hazardous waste generators at DEQ.

Site Hydrogeology

The site lies in the northern-most Portland Basin, a major north-southeast trending sediment filled structural depression found in the northern part of the Willamette River valley and adjoining Columbia River valley (Swanson et al, 1993). The basin is filled with recent alluvium, Pleistocene cataclysmic flood deposits, Miocene to Holocene nonmarine sedimentary rocks, and is underlain by Eocene to Miocene volcanic and sedimentary rocks that are exposed along the basin margins.

The youngest deposits are recent alluvium (silt, sand and gravel mixtures) characteristic of an active fluvial environment. These are made up of shoreline, river channel, and adjacent floodplain deposits.

Terraces that rise 50 to 100 feet above the northeastern shore of the Willamette were formed during Pleistocene cataclysmic flooding related to glacial Lake Missoula, and consist of unconsolidated mixtures of silt, sand, and gravel that generally are coarser than the recent deposits. Fill comprised of fine to medium sands and silt was also placed in many areas along the river during site development. The total thickness of recent alluvium and flood deposits appears to be about 100 feet in the vicinity of the site.

Coarse gravel to conglomerate of the Troutdale Formation, deposited by the ancestral Columbia River, underlies the cataclysmic flood deposits and appears to be about 100 feet thick in the vicinity of the site. Sandy River mudstone underlies the Troutdale Formation and appears to be about 100 feet thick. Basalt of the Columbia River Basalt (CRB) group forms the basement rock of the Portland Basin, and may be as much as several hundred feet thick in the vicinity of the site.

Aquifers in the unconsolidated sedimentary deposits generally are unconfined and localized due to heterogeneity of the deposits. The Troutdale Formation is an important regional aquifer and is widely tapped for both potable and non-potable uses. Interbedded Claystone and/or siltstone, or cementation often promotes confined aquifer conditions within the Troutdale Formation. Deep wells installed in fractured CRB can be very productive and important supply wells. Site elevation is about 30 feet above mean sea level.

Pathway Summary

The Crawford Street site lies in an area of mixed industrial, commercial, and residential use. Approximately 123 residences lie within 1/4 mile of the facility.

Site workers at the facility or trespassers could be exposed to contaminants in surface soil. Utility trench workers could potentially be exposed to subsurface contaminants through direct contact, inhalation, or incidental ingestion.

Oregon Water Resources Department has no well logs for domestic wells within one-half mile of the Crawford Street site.

The nearest significant wetland is located three miles downstream of the subject site at the mouth of Multnomah Channel. Cathedral Park is approximately 1,000 feet downstream of the subject site. Both recreational and subsistence fishing occur within the Lower Willamette River. Commercial fishing within the Portland Harbor is limited to a small Pacific lamprey fishery. Recreational boating, water skiing, swimming, and beach use also occur within the Harbor.

The Lower Willamette River provides habitat for 39 fish species, including populations of wild cutthroat trout, rainbow trout, and mountain whitefish. White sturgeon are plentiful within the Harbor. The Harbor is also an important migratory corridor, nursery habitat, and adult foraging area for two runs of chinook salmon, two runs of steelhead trout, and individual runs of coho and sockeye salmon.

Upper Willamette River populations of chinook and steelhead, which migrate through the Harbor, are listed as threatened species under the Federal Endangered Species Act. The Pacific lamprey is considered a federal species of concern.

Great blue herons, cormorants, osprey, mergansers, kingfishers, peregrine falcons, and bald eagles routinely forage within the Harbor. The area is also part of the wintering range for the Aleutian Canada goose. All are protected under the Migratory Bird Treaty Act. The peregrine falcon is federally listed as an endangered species, while the Aleutian Canada goose is federally listed as threatened species. The bald eagle also is a threatened species, but was recently proposed to be removed from this list.

There is little data on the nature and extent of the benthic community within Portland Harbor sediments. However, it is known that contamination in the benthos, which is a protected beneficial use, can be the source of food-chain effects that radiate up to the species listed above, including humans.

The Lower Willamette River is water quality limited for the following toxic compounds:

- Dioxins/furans (water column and sediments);
- Mercury (fish tissue);
- Pesticides (water column and sediments);
- Polynuclear Aromatic Hydrocarbons - PAHs - (water column and sediments); and
- Trace metals (water column and sediments).

DEQ's Water Quality Division is developing Total Maximum Daily Load requirements (TMDLs) within the lower Willamette River for these contaminants. A TMDL for 2,3,7,8-TCDD was established in 1991.

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Conclusions/Recommendations

NOTE: As indicated previously, this review is limited to establishing a link between site activities and contamination in adjacent Portland Harbor sediments. It does not necessarily represent a thorough review of available site data, and the conclusions and recommendations presented below may reflect this limited focus.

The following conclusions are based on the contents of this review:

- Site activities may have resulted in sediment contamination adjacent to the site. Concentrations of sediment contaminants adjacent to the site that exceed Portland Harbor baseline levels include arsenic, lead, mercury, di-n-butylphthalate, LPAHs, HPAHs, and organotins. PAH contaminants found in the sediment are associated with handling/storage of petroleum products, metals are associated with fabrication activities, and organotins are associated with boat painting maintenance (possibly from historical dock activities or by migration from upland use/storage of organotin-based paints on metal).

- It appears that the subject site is the source of organotins contamination observed adjacent to the site, where the concentration is over twice the Portland Harbor baseline value and 55 times the upstream concentration.

- Contaminant concentrations for mercury, LPAHs, and HPAHs observed in the upstream sediment sample are generally equal to or greater than in the sample adjacent to the Crawford Street site. This suggests that historical activities at the upstream adjacent Willamette Cove site may have contributed towards contamination observed adjacent to the subject site.

- Use of the site's historical docks, possibly for conveyance of materials and boat fueling and maintenance, is a possible source of sediment contamination by routine or accidental activities.

Contamination of river sediments adjacent to the Crawford Street site may represent a threat to human health and aquatic life within the river. An Expanded Preliminary Assessment (XPA) on the entire Crawford Street property (CFM, Lampros, TLS, and the southern portion of the property) should be conducted to evaluate sediment contamination, potential upland site contaminant sources, and past waste management practices and to determine the extent and source(s) of observed sediment contamination. Sediment sampling should include subsurface samples to further define the extent of contamination. As necessary, the XPA should present recommendations

aimed at preventing potential further contamination of adjacent sediment. DEQ has determined that these actions warrant a high priority for follow-up.

There is insufficient information to propose adding the site to DEQ's Confirmed Release List or Inventory.

References

DEQ consulted the following general references in preparing this Strategy Recommendation:

1. Portland Harbor Sediment Investigation Report, prepared by Roy F. Weston, Inc. for USEPA, May 1998.

2. Columbia Forge and Machine Works, Inc. response to DEQ Site Assessment Information Request, April 9, 1999.

3. Lampros Steel, Inc. response to DEQ Site Assessment Information Request, March 15, 1999.

4. TLS Steel Products, Inc. response to DEQ Site Assessment Information Request, March 19, 1999.

5. DEQ LUST Database.

6. DEQ HWIMSy Hazardous Waste Generator Database.

7. DEQ SPINS Spill Database.

8. MetroScan Property Records, Multnomah County, Oregon.

Attachments

Table 1: River Sediment Contaminant Concentrations

Figure 1: Site Location Map

Figure 2: Sediment Sampling Points, 1997 Portland Harbor Sediment Investigation

CRAW00016785

TABLE 1

River Sediment Contaminant Concentrations (1997)
Crawford Street Corporation

Contaminant	Units	Down-Stream SD058	*Crawford Street* SD060	Up-Stream SD066	Apparent Portland Harbor Sediment Baseline Maximum Value
Aluminum	ppm	22800	24700	33200	42800
Antimony	ppm	<4	NA	NA	<5
Arsenic	ppm	<4	5	5	<5
Barium	ppm	126	152	163	195
Beryllium	ppm	0.4	0.5	0.6	0.7
Cadmium	ppm	0.3	0.4	0.5	0.6
Chromium	ppm	25	28	35	41
Cobalt	ppm	16	11	18	19.7
Copper	ppm	30	50	41	60
Iron	ppm	31700	32700	37600	45000
Lead	ppm	13	36	28	30
Manganese	ppm	322	397	547	810
Mercury	ppm	0.1	0.14	0.23	0.1
Nickel	ppm	24	21	29	32
Selenium	ppm	11	12	11	15
Silver	ppm	0.7	0.8	1.0	1.4
Thallium	ppm	5	<4	<4	13
Titanium	ppm	1650	NA	1910	2075
Vanadium	ppm	80	85	98	112
Zinc	ppm	87	112	158	118
2-Methylnaphthalene	ppb	37	66	180	150
4-Methylphenol	ppb	50	230	130	680
Benzoic Acid	ppb	<200	<200	<190	<200
Benzyl Alcohol	ppb	<20	<20	<19	<20
bis(2-Ethylhexyl)phthalate	ppb	<90	<190	<88	390
Butylbenzylphthalate	ppb	<20	<20	<19	<20
Carbazole	ppb	48	99	<19	100
Di-N-Butylphthalate	ppb	43	34	<19	<20
Di-N-Octylphthalate	ppb	<20	<20	<19	<20
Dibenzofuran	ppb	24	33	57	100
Dimethylphthalate	ppb	<20	<20	<19	<20
Pentachlorophenol	ppb	<99	<99	<96	Detect
Phenol	ppb	<20	<20	<19	<20
LPAHs (total)	ppb	379	873	1904	700
HPAHs (total)	ppb	2333	4448	4481	2400
DDTs (total)	ppb	4.1	NA	7.5	220
PCBs (total)	ppb	<40	NA	54	<180
Organotins (total)	ppb	170	773	14	300
2,4-D	ppb	NA	NA	NA	<3.3
2,4-DB	ppb	NA	NA	NA	<5
TOC	%	2.6	0.9	1.6	2
Water Depth	Ft	45	9	17	
Sediment Sample Depth	cm	0-10	0-10	0-10	

NA = Not Analyzed

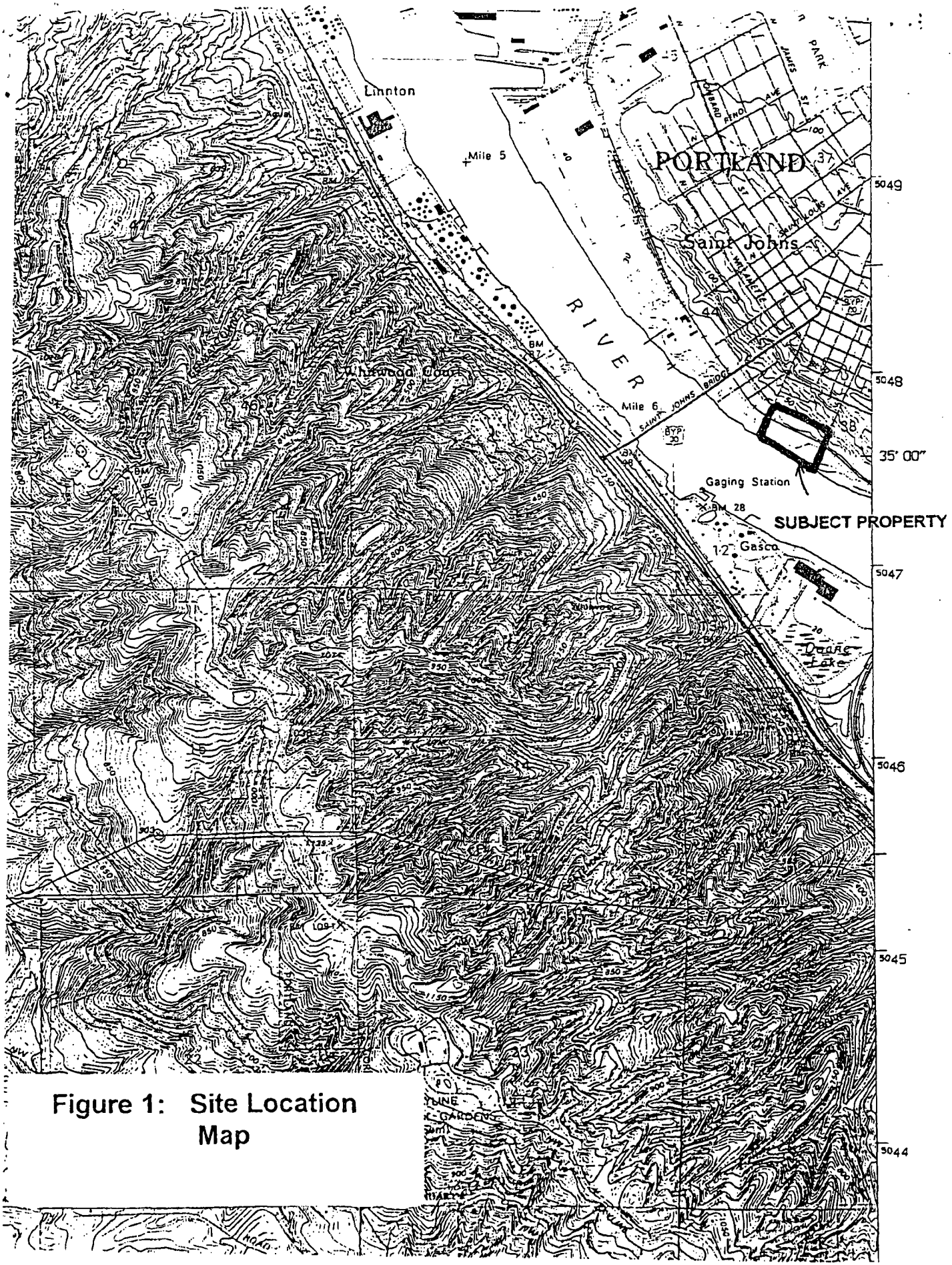
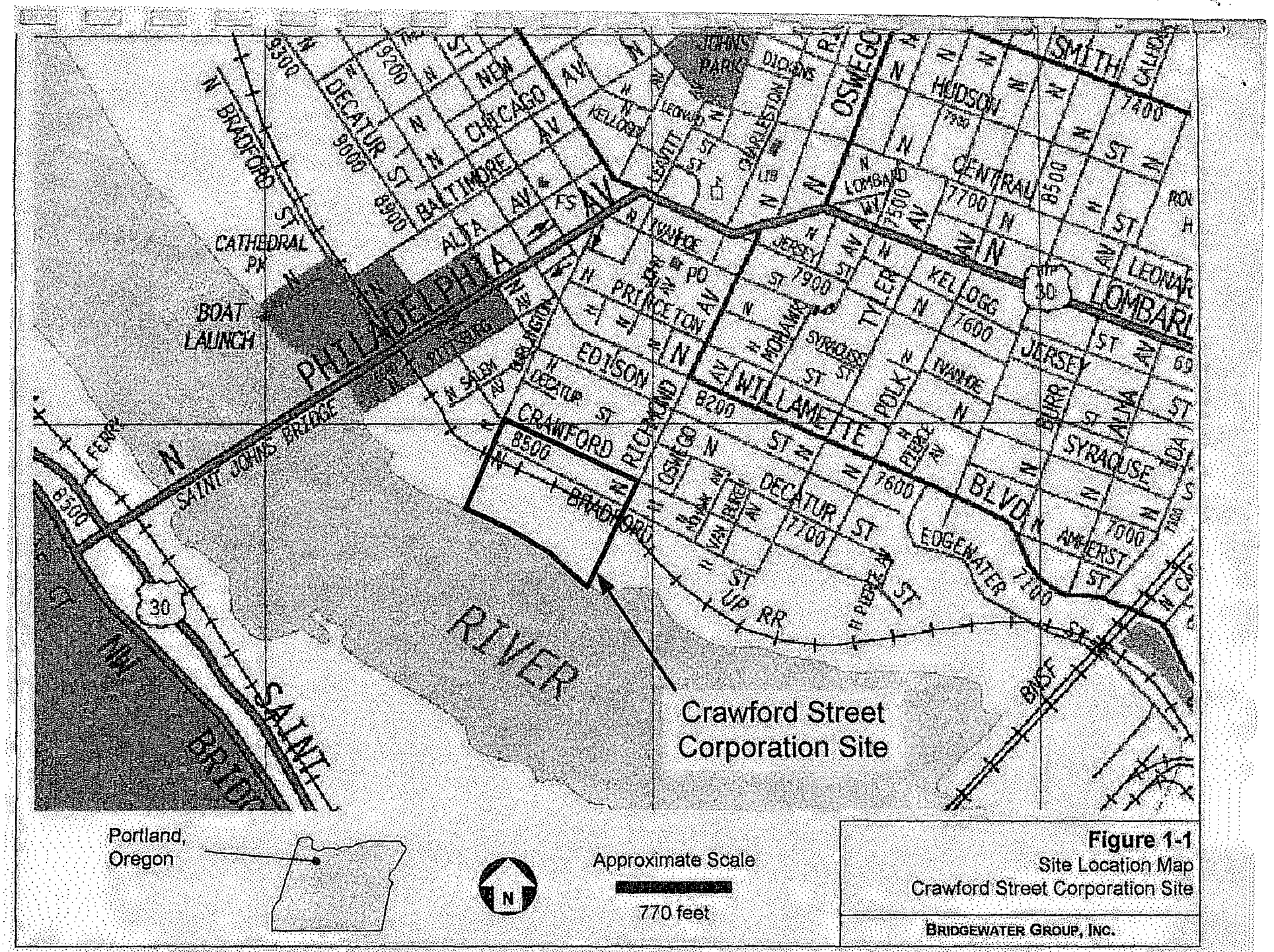


Figure 1: Site Location Map



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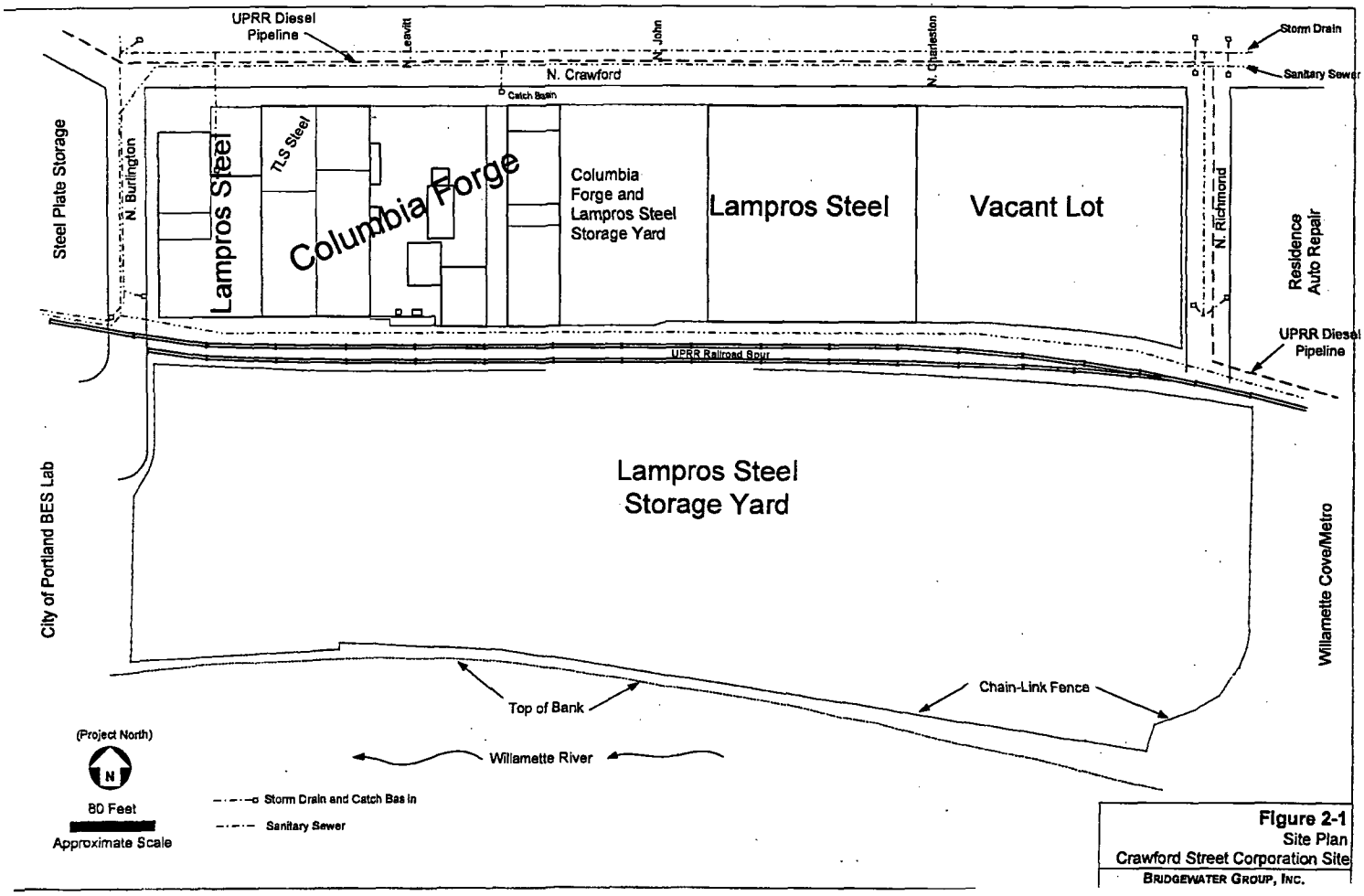


Figure 2-1
Site Plan
Crawford Street Corporation Site
BRIDGEWATER GROUP, INC.

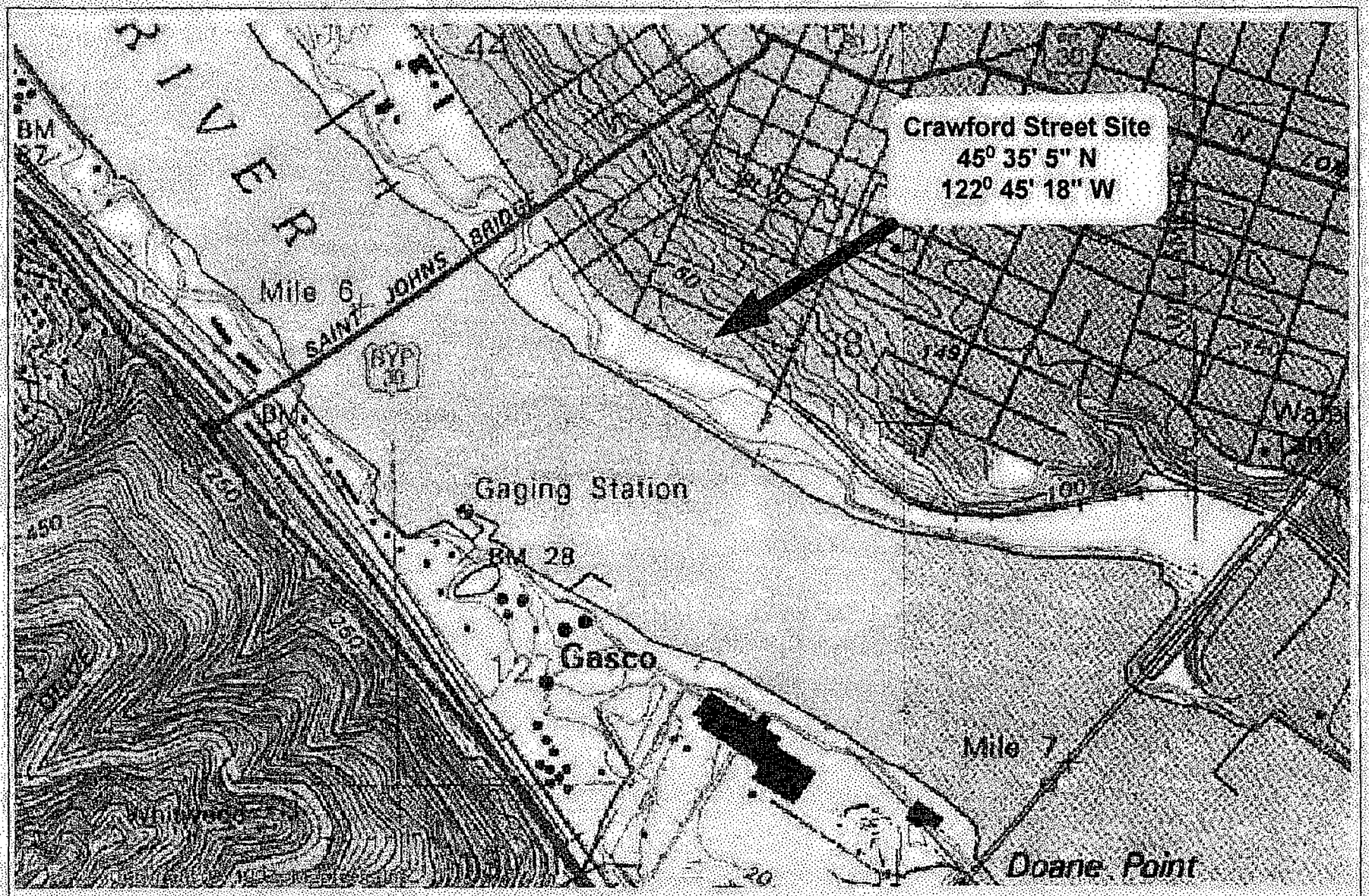


Figure from USGS
Topographic Map Linnton
and Portland Quadrangles
Photorevised 1990

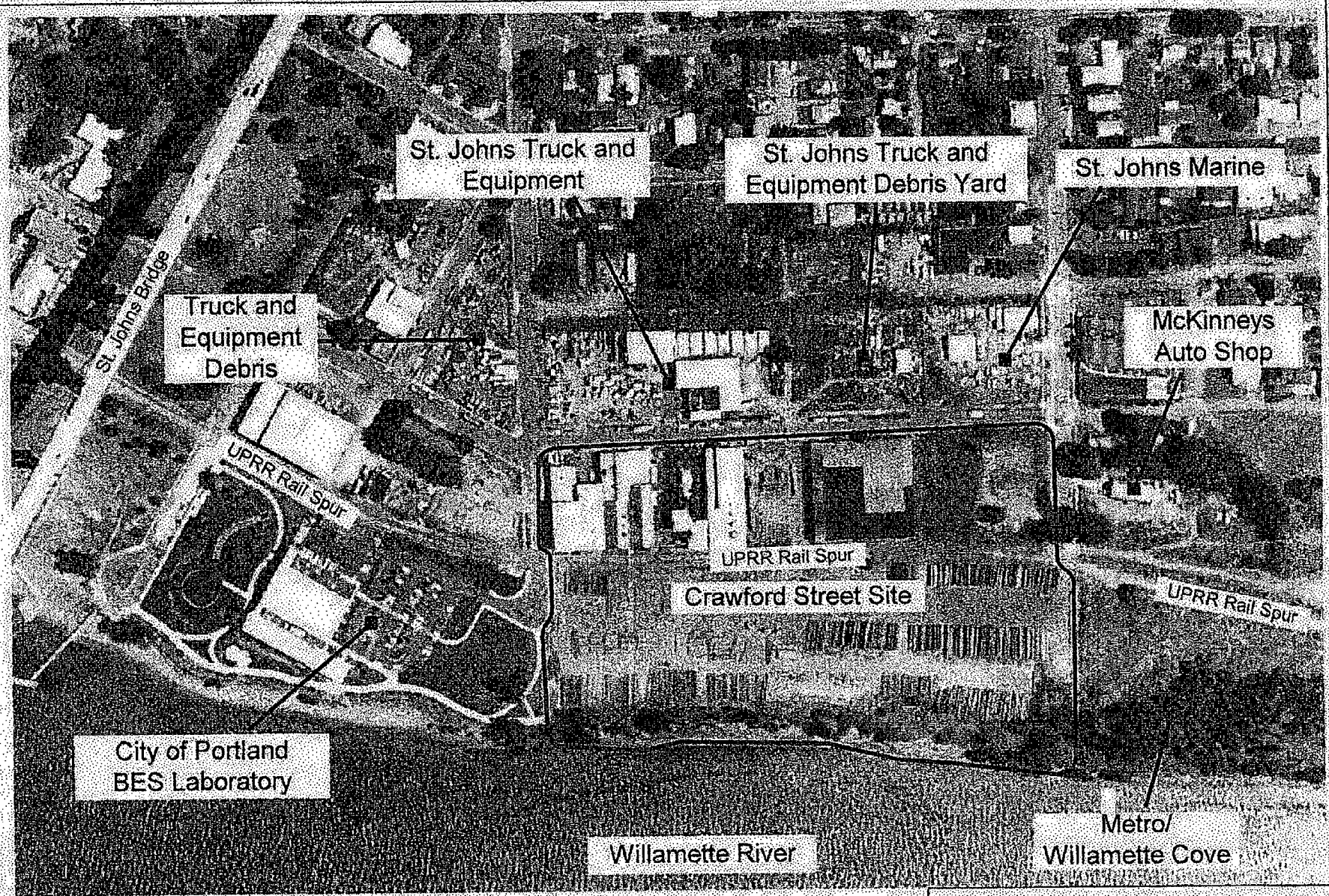
Approximate Scale

833 feet

Figure 2-2
USGS Topographic Map
Crawford Street Corporation Site

BRIDGEWATER GROUP, INC.

CRAW00016838



(Project North)

N

Approximate Scale

260 Feet

Figure 2-3
1998 Aerial Photograph
Crawford Street Corporation Site

BRIDGEWATER GROUP, INC.

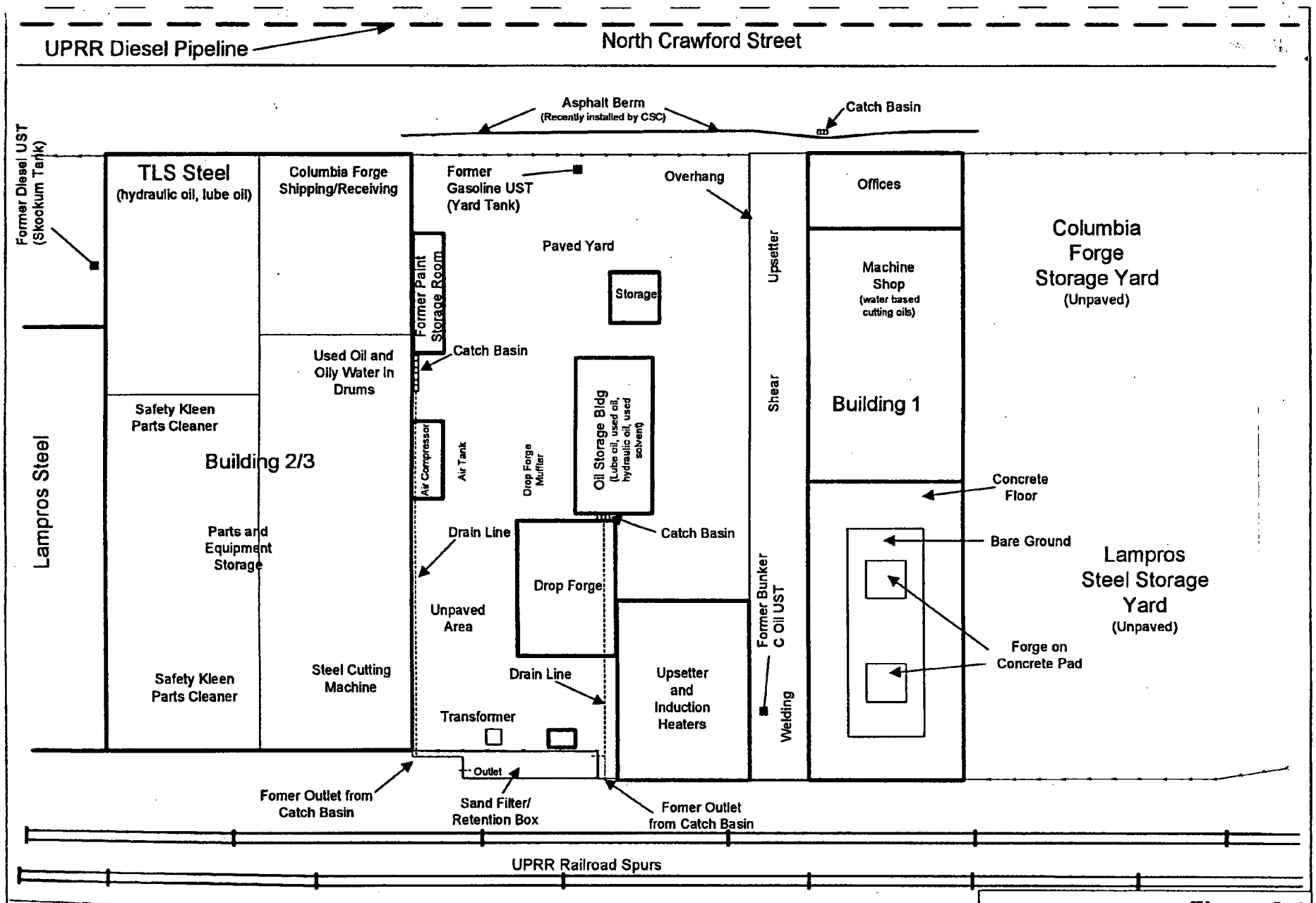


Figure 2-4
Columbia Forge Site Plan
Crawford Street Corporation Site
BRIDGEWATER GROUP, INC.

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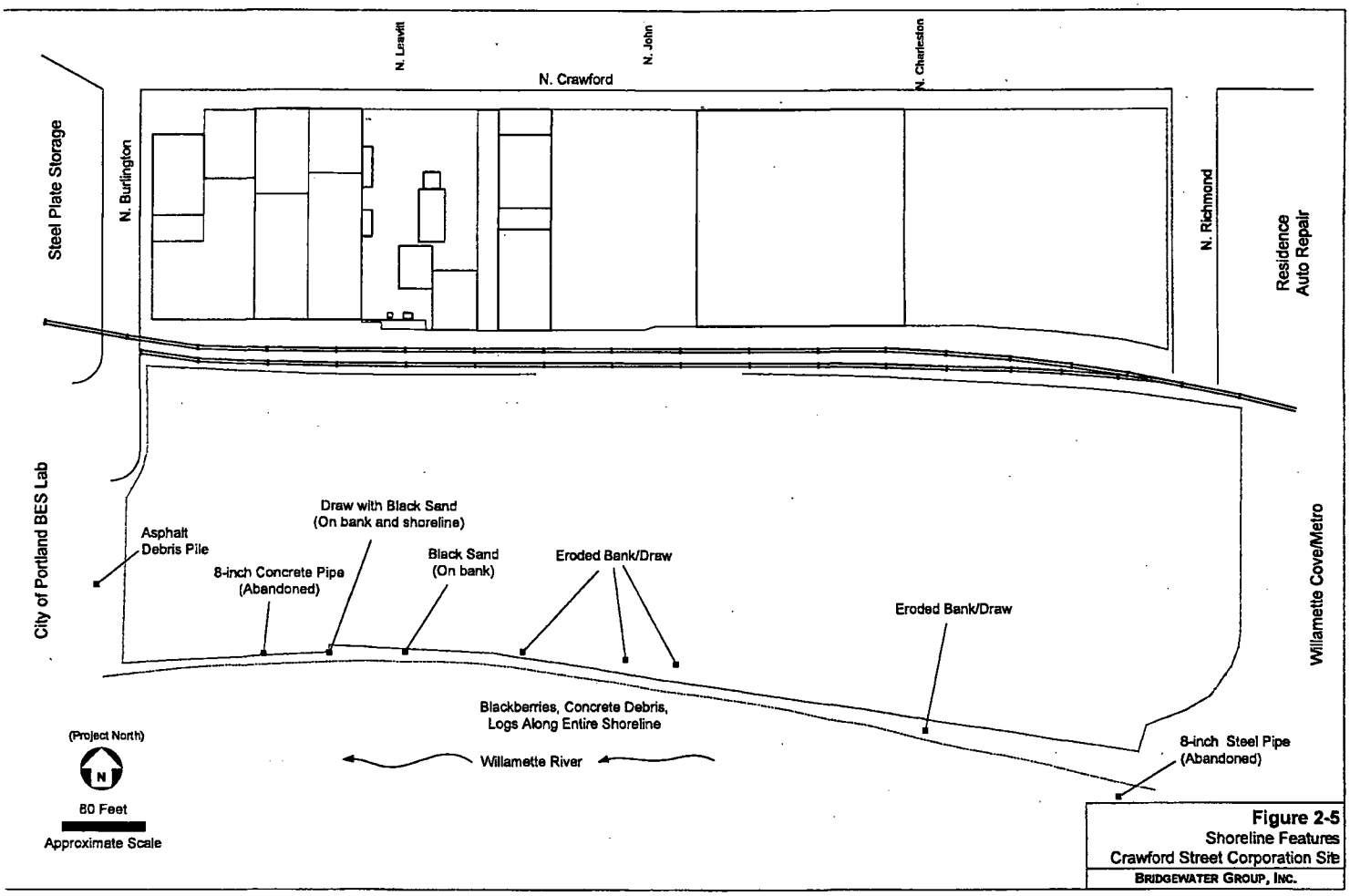

Figure 2-5
Shoreline Features
Crawford Street Corporation Site
BRIDGEWATER GROUP, INC.

CRAW00016841

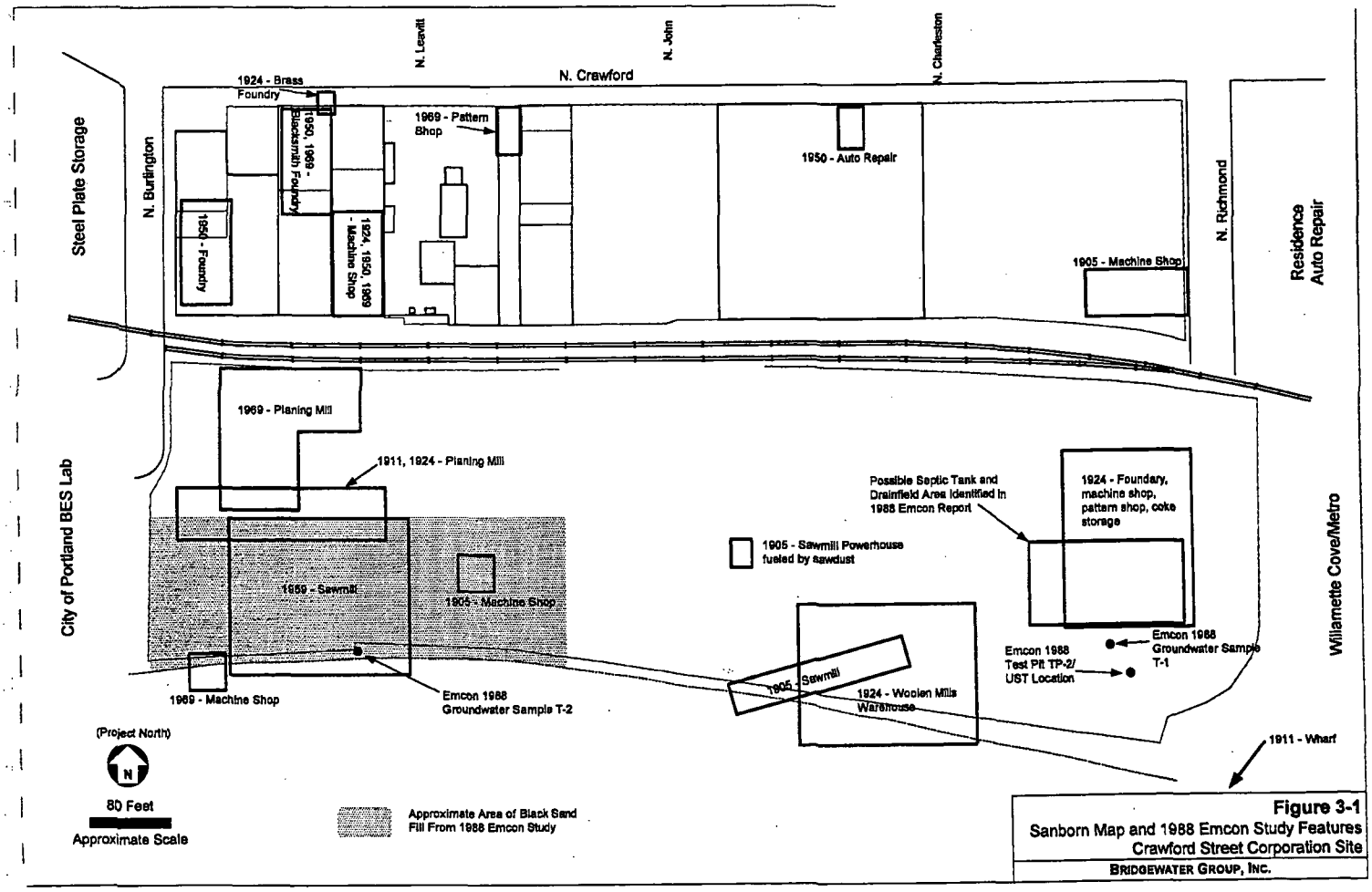

Figure 3-1
Sanborn Map and 1988 Emcon Study Features
Crawford Street Corporation Site
BRIDGEWATER GROUP, INC.

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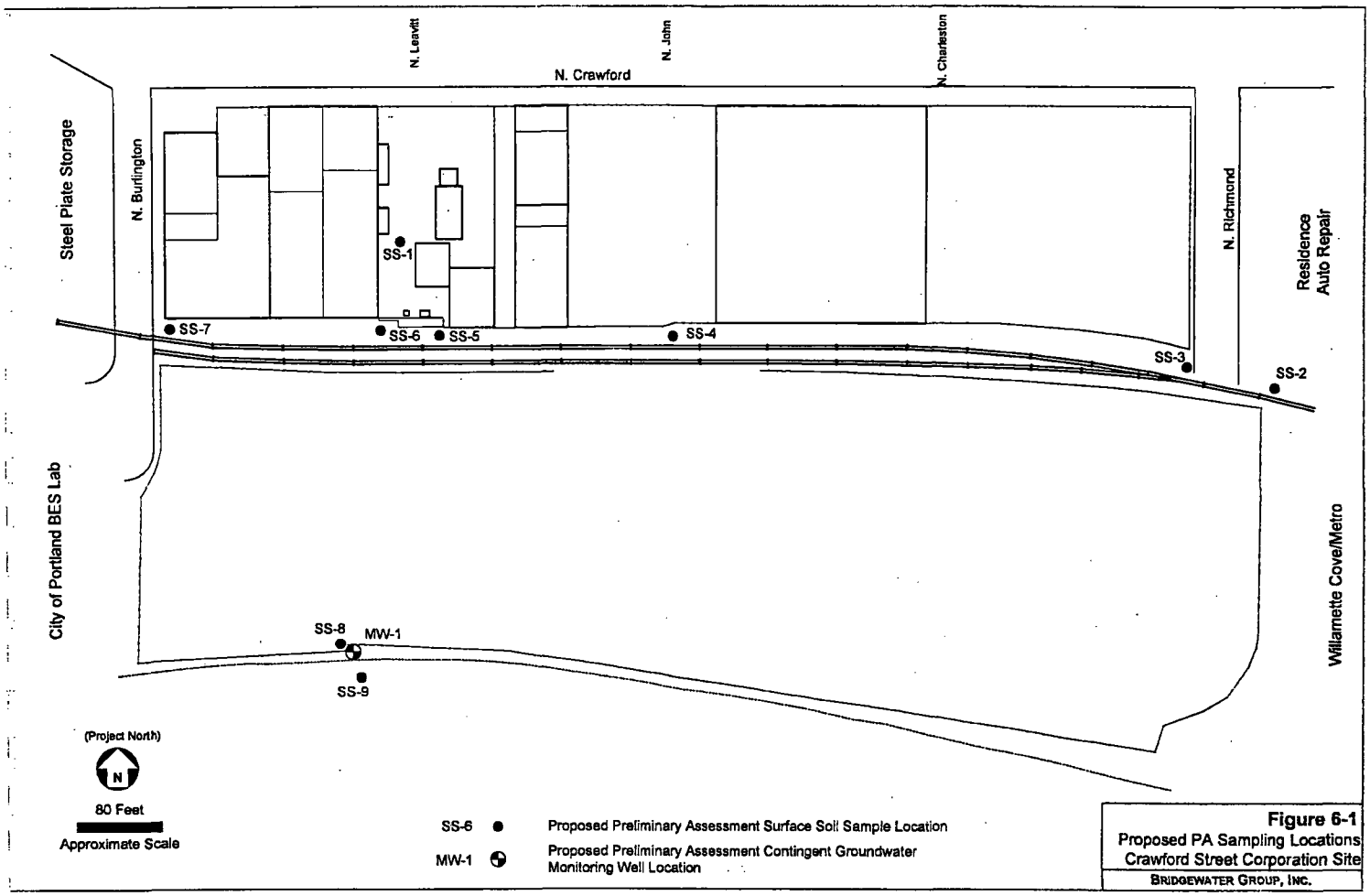


Figure 6-1
Proposed PA Sampling Locations
Crawford Street Corporation Site
BRIDGEWATER GROUP, INC.

CRAW00016843

Photo No. 1 **Photo Date: 12/9/98**

Looking southeast from intersection of North Burlington and North Crawford Streets.

Photo No. 2 Photo Date: 12/9/99

Looking southwest from intersection of North Richmond and North Crawford Streets.

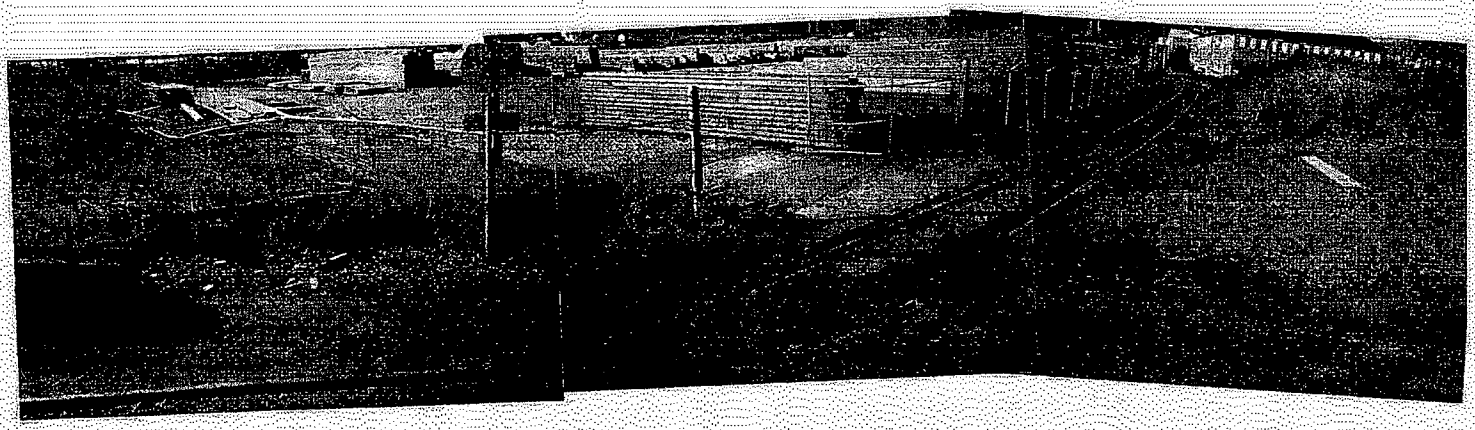


Photo No. 3 **Photo Date: 4/28/99**

Looking southwest into South Area (Lampros Steel storage yard) from intersection of UPRR rail spur and North Richmond Street.

Photo No. 4 **Photo Date: 12/8/99**

Looking north across South Area (Lampros Steel storage yard) at south side of Columbia Forge and Lampros Steel.

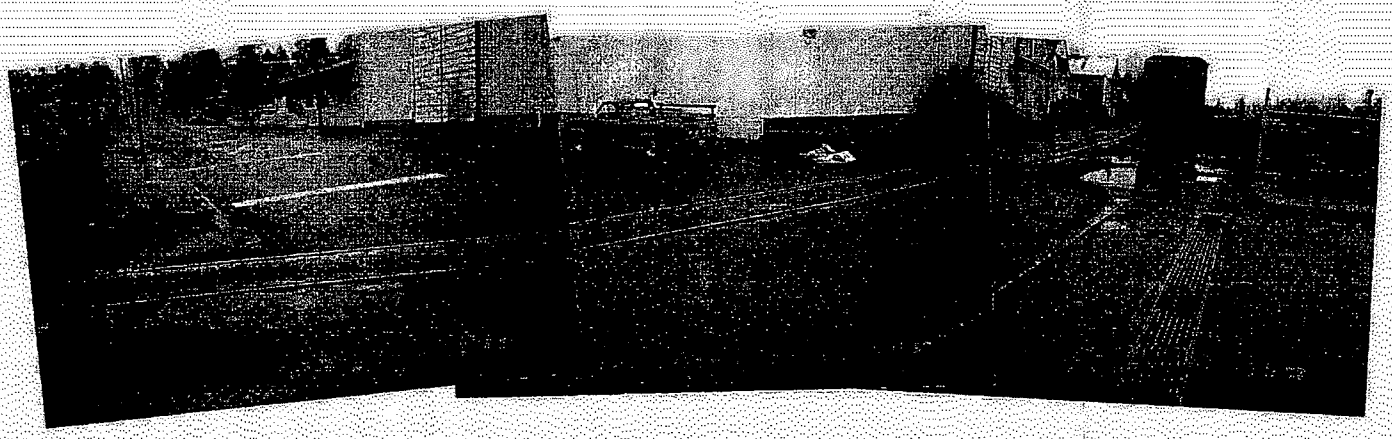


Photo No. 5 **Photo Date: 12/8/99**

Looking northeast from intersection of North Burlington Street and UPRR rail spur

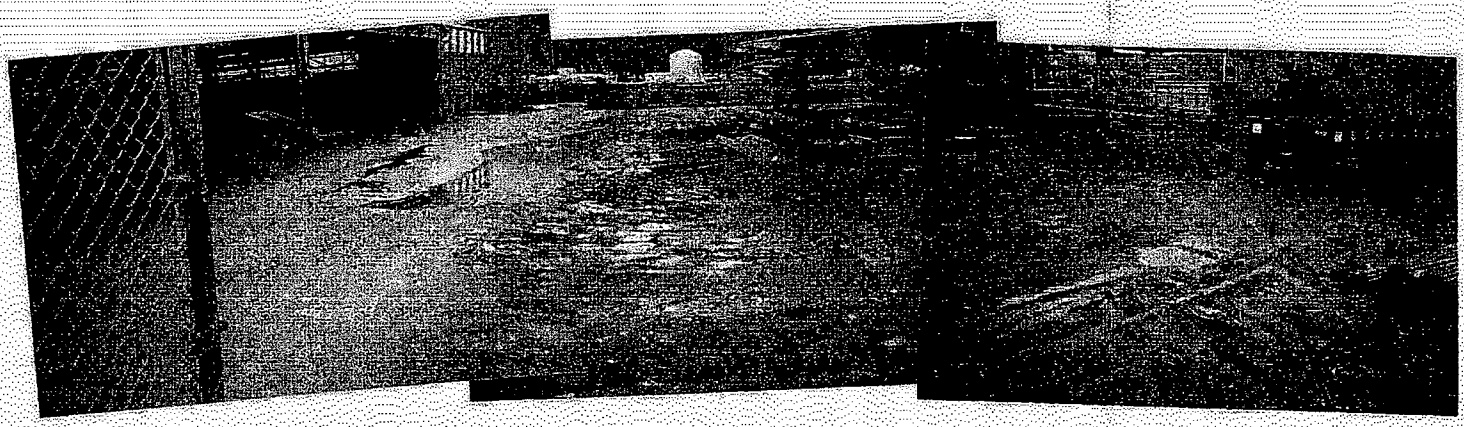


Photo No. 6 Photo Date: 12/9/99

Looking south across Columbia Forge/Lampros Steel yard.

Photo No. 7 Photo Date: 12/9/99

Columbia Forge Yard. Looking northwest.

Photo No.: 8 Photo Date: 12/9/99

Columbia Forge Yard. Looking southeast.

Photo No. 9 **Photo Date: 12/9/99**

Southwest area of Columbia Forge Building 1. Looking south.

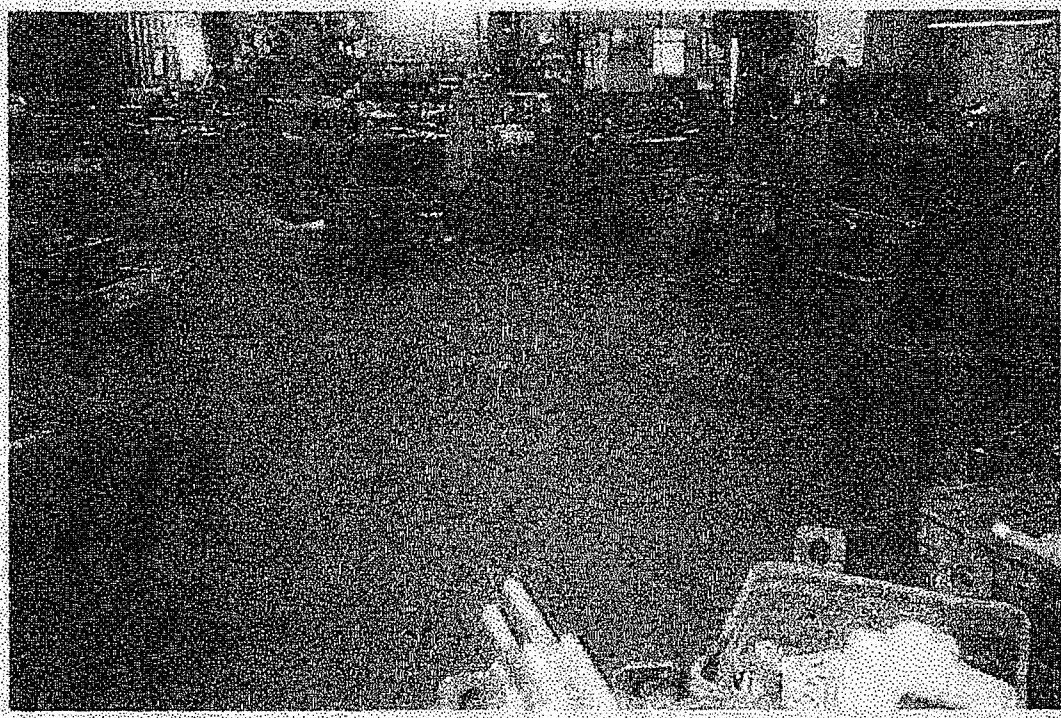


Photo No: 10 **Photo Date: 12/9/99**

Machine Shop in north portion of Columbia Forge Building 1.

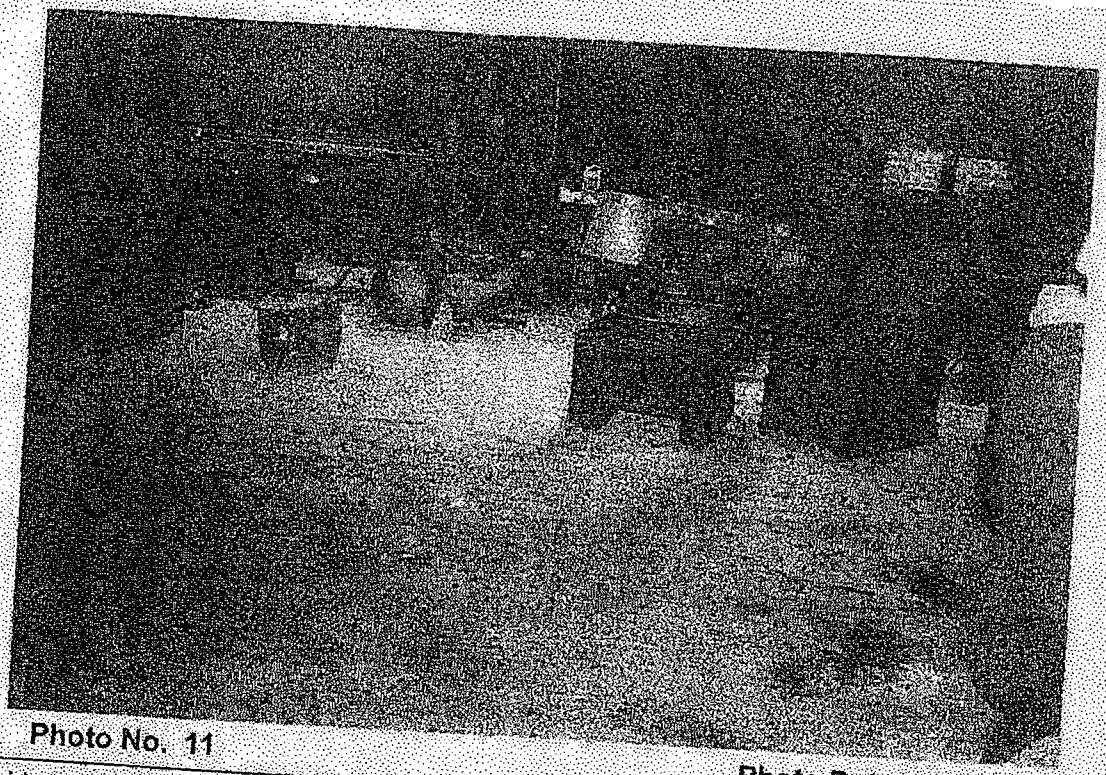


Photo No. 11

Inside Lampros Steel

Photo Date: 12/9/99

Photo No: 12

Inside Lampros Steel building at west end of site.

Photo Date: 12/9/99

Photo No. 13

Photo Date: 12/9/99

Inside Lampros Steel building at west end of site.

Photo No. 14 **Photo Date: 12/21/99**

Looking north at drain line outlet from west end of Columbia Forge yard.

Photo No: 15 **Photo Date: 12/21/99**

Looking north at drain line outlet from east end of Columbia Forge yard.

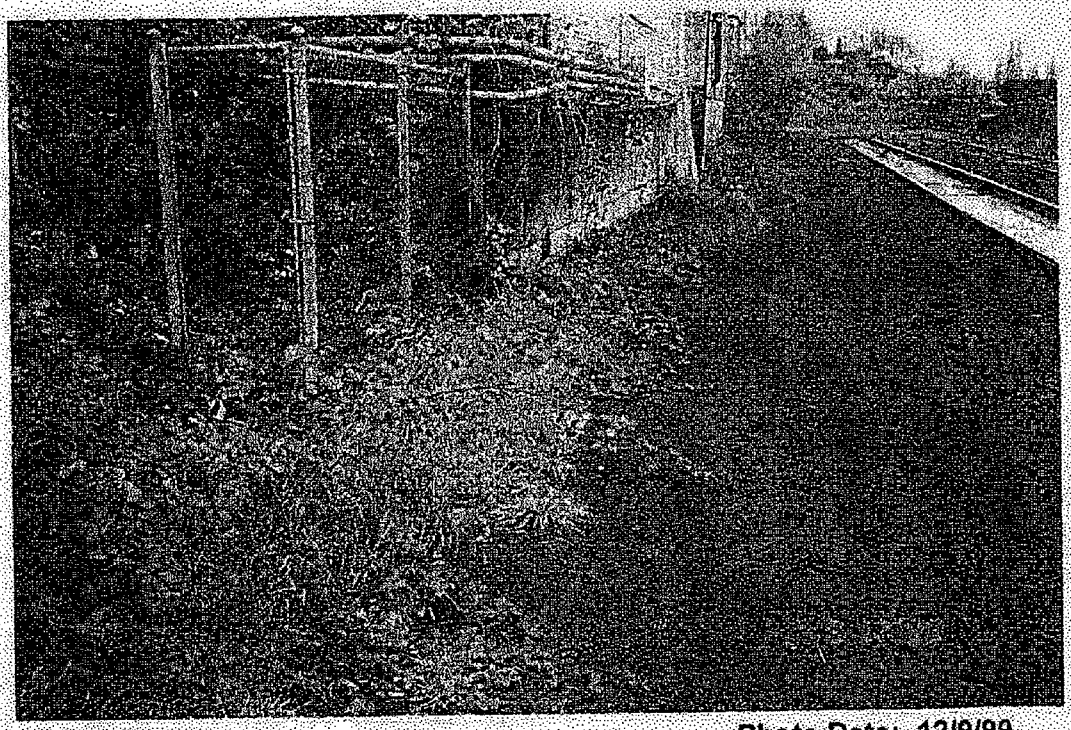


Photo No. 16 **Photo Date: 12/9/99**

Looking east along UPRR rail spur from south side of Columbia Forge yard.

Photo No: 17 **Photo Date: 12/21/99**

Typical river bank conditions.

Photo No. 18 **Photo Date: 12/21/99**

Looking north from north side of Columbia Forge/Lampros Steel yard at St. Johns Truck and Equipment debris yard. Storm water runs from this area, across Crawford Street, and on to and across the storage yard.

Photo No: 19 **Photo Date: 12/21/99**

Stained wash area adjacent to Crawford Street at St. Johns Truck and Equipment. Across Crawford Street from Columbia Forge.

Photo No. 20 **Photo Date: 12/21/99**

Looking north at St. Johns Truck and Equipment truck storage yard. Storm water runs from this area, across Crawford Street, and on to and across the Lampros and TLS Steel areas.

Photo No: 21 **Photo Date: 12/21/99**

Looking south down North Richmond Street. Storm water flows down this street to UPRR rail spur area and to the Lampros Steel south storage yard.

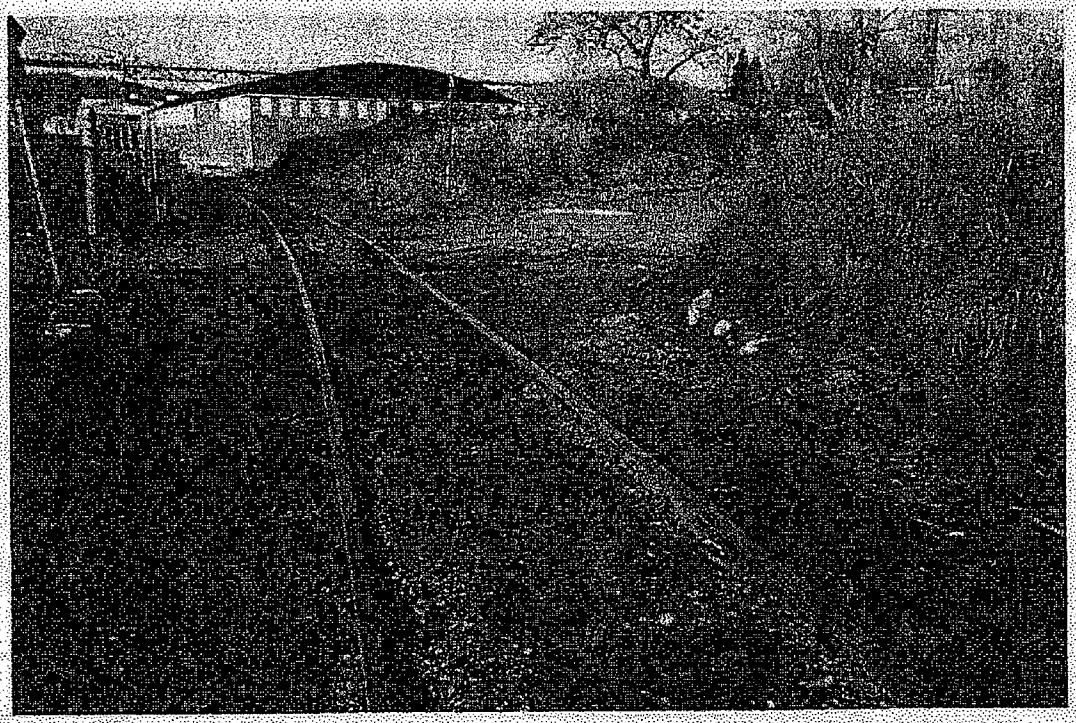


Photo No. 22 **Photo Date: 12/21/99**

Looking west from east of site along UPRR rail spur. Note fresh oil stain in rail alignment east of Crawford Street. Stain drips continue onto the Crawford Street site.

Photo No: 23 **Photo Date: 12/9/99**

Looking northeast from City of Portland property west of Crawford Street site. Note asphalt and concrete debris pile on City property.

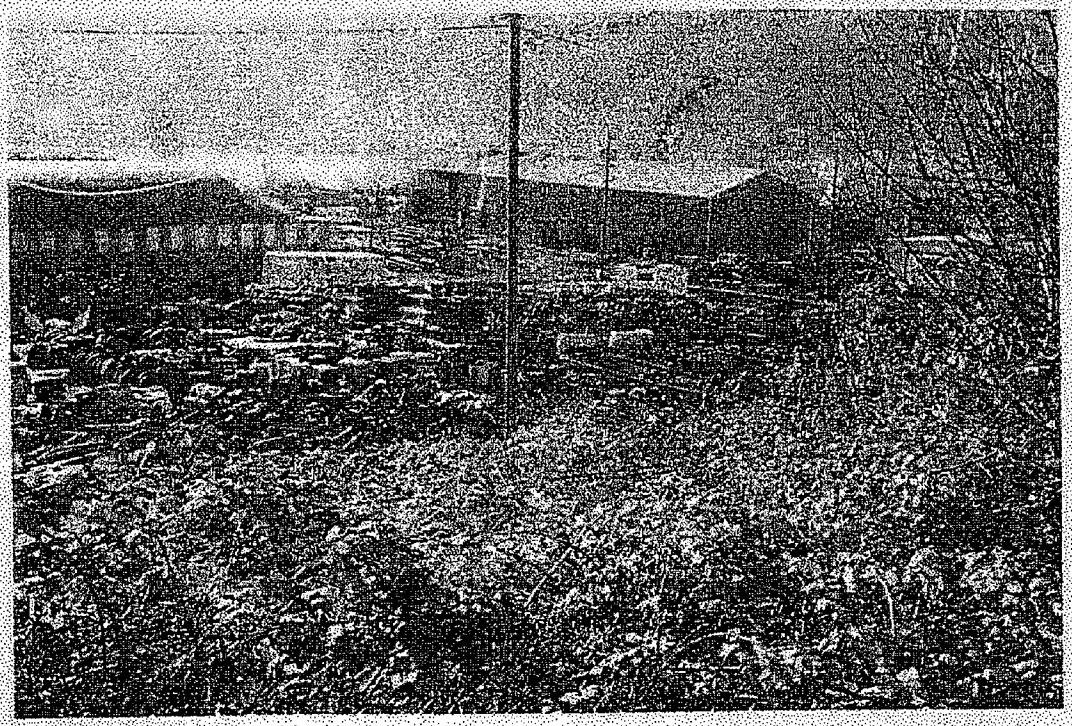


Photo No. 24 **Photo Date: 12/21/99**

Looking south from hill above site. St. Johns Truck and Equipment debris yard north (up gradient) of Crawford Street site.

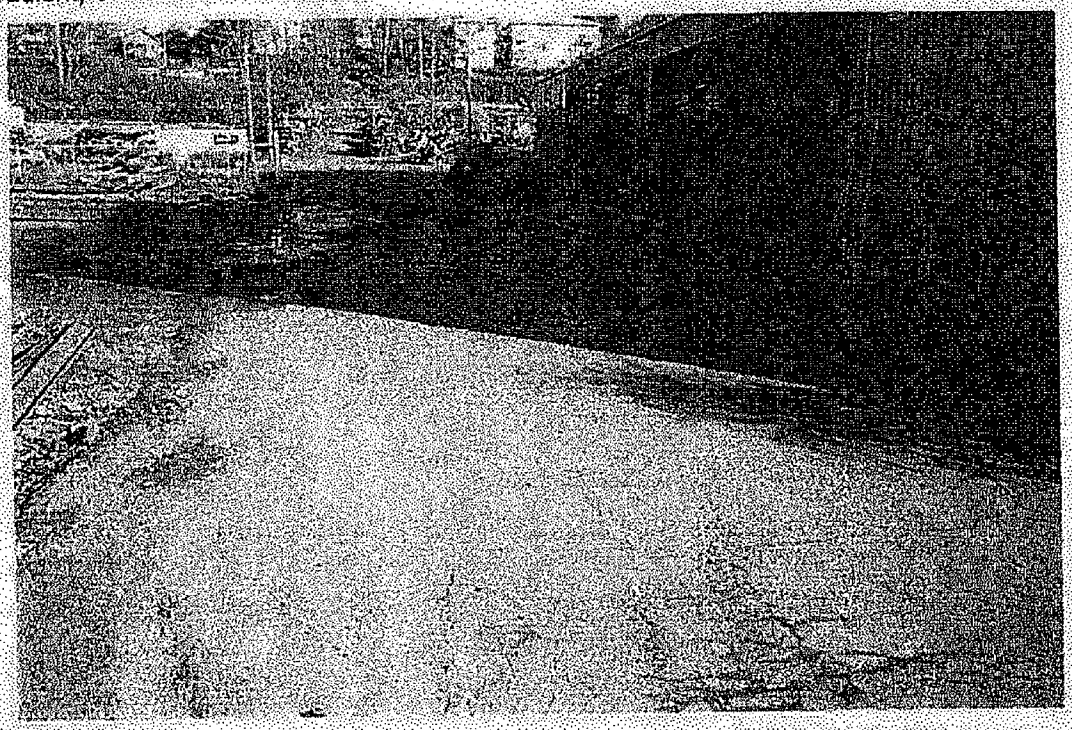


Photo No: 25 **Photo Date: 12/21/99**

Looking north from south end of Columbia Forge/Lampros Steel yard at UPRR rail spur. St. Johns Truck and Equipment debris yard in distance. Lampros Steel beam cutting building on right.

Photo No. 26 **Photo Date: 6/5/00**

Transformer in southwest portion of Columbia Forge operations yard. Looking southwest.

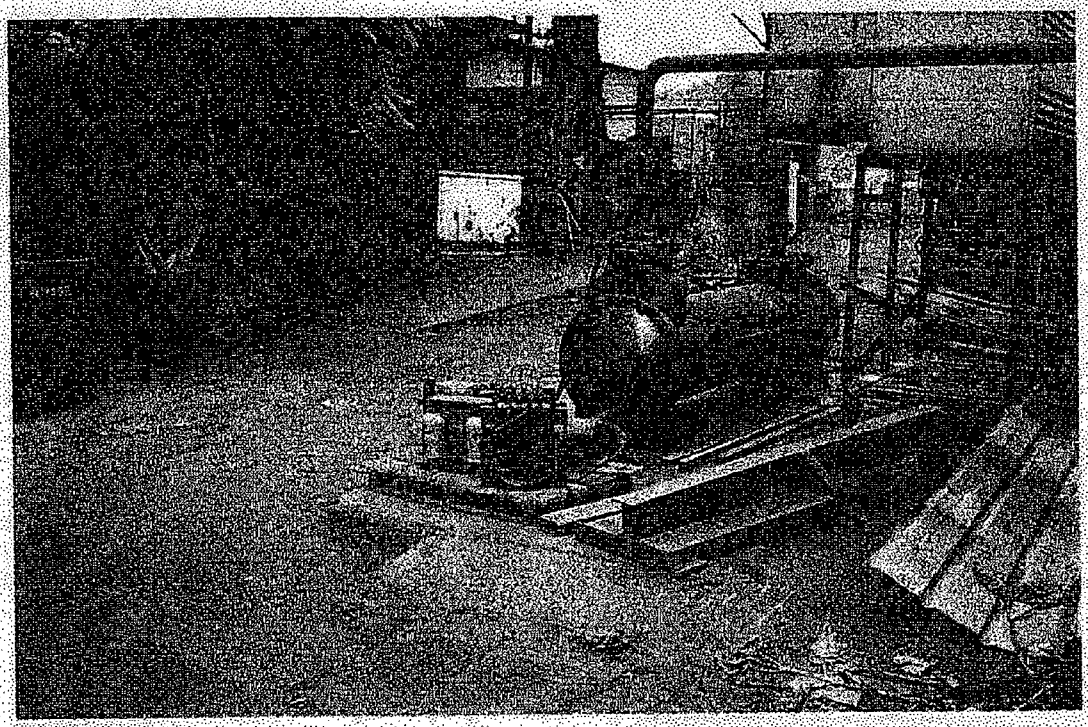


Photo No: 27 **Photo Date: 6/5/00**

Looking southeast in western portion of Columbia Forge operations yard.

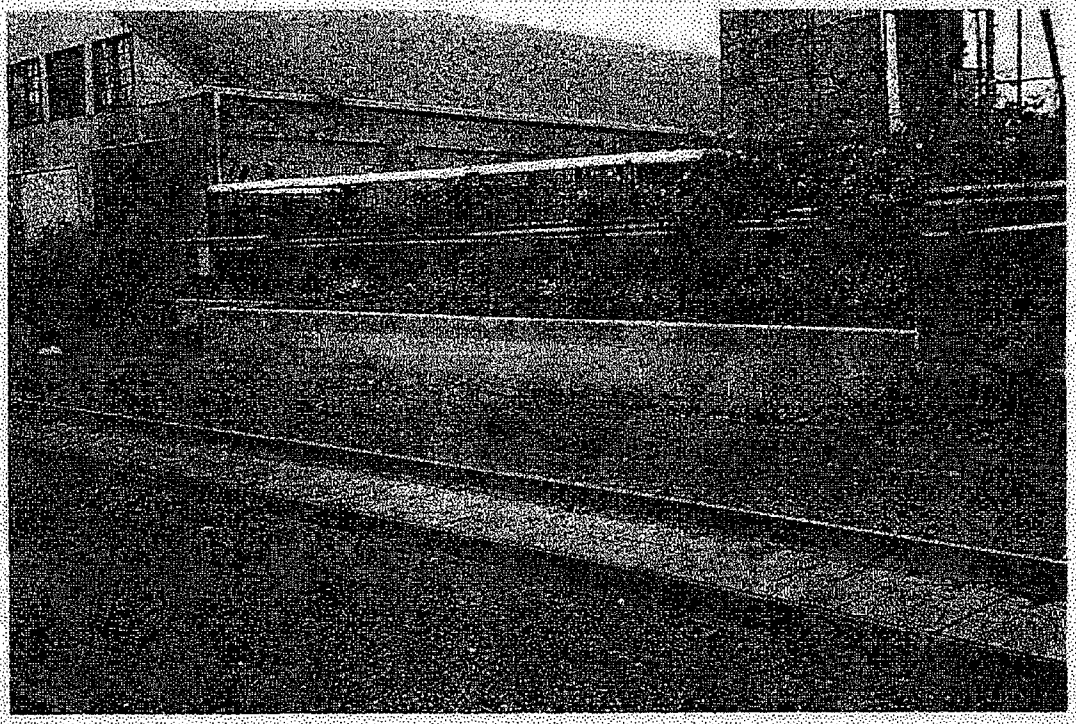


Photo No. 28 **Photo Date: 6/5/00**

Looking northwest at sand filter/retention box at south end of Columbia Forge operations yard.

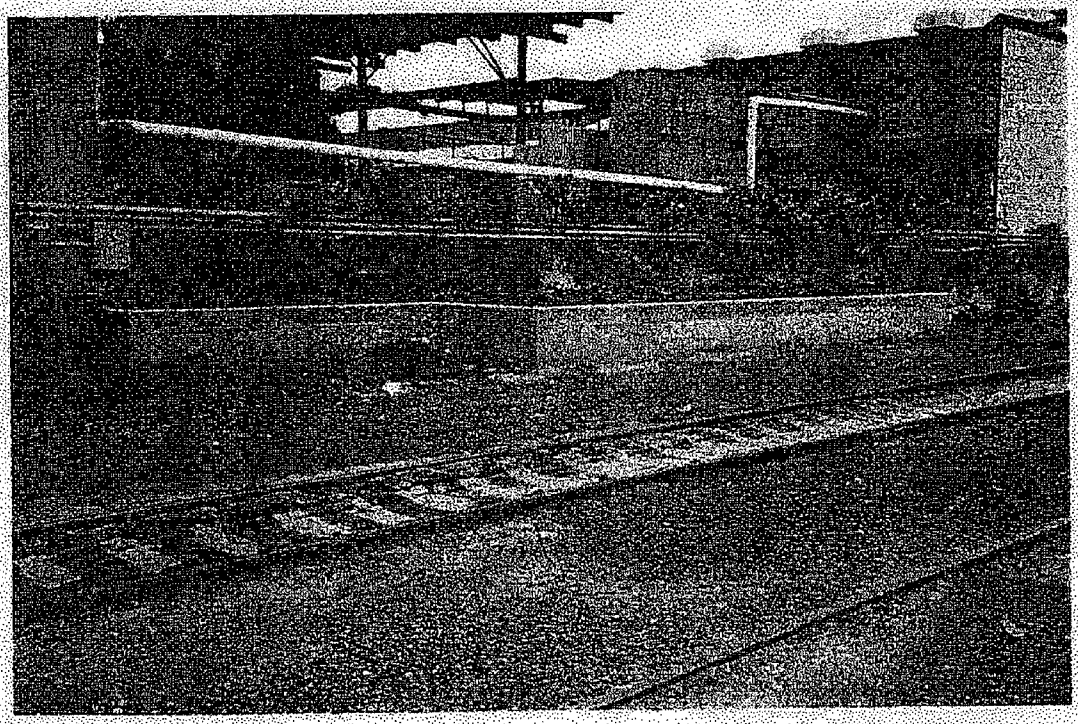


Photo No: 29 **Photo Date: 6/5/00**

Looking northeast at sand filter/retention box at south end of Columbia Forge operations yard.

APPENDIX B

REPRESENTATIVE MATERIAL DATA SHEETS

MATERIAL SAFETY DATA SHEET

CHRISTENSON OIL
P.O. BOX 17338
PORTLAND, OREGON 97217
(503)286-1673

CHRISTENSON OIL MSDS AMP140

CHEMTREC 800-424-9300

PRODUCT CODE NO: NONE

SECTION 1 - IDENTIFICATION

PRODUCT	:	AERO MP GEAR OIL SAE 140
SYNONYMS	:	
CHEMICAL	:	PETROLEUM HYDROCARBONS
CAS NO.	:	MIXTURE - NO SINGLE CAS NUMBER APPLICABLE
SARA HAZARD	:	NONE NOTED (SECTION 311/312) TITLE III SECTION 313 - LISTED

SECTION II - INGREDIENTS AND HAZARD CLASSIFICATION

COMPOSITION	%	PEL/TLV	HAZARD
MULTI-PURPOSE GEAR OIL SAE 80-90	100	NONE/NONE	NONE NOTED

SECTION III - HEALTH INFORMATION

INHALATION: THE ESTIMATED LC50 FOR A 1 HOUR EXPOSURE TO A SIMILAR COMPONENT OF THIS FORMULATION WAS 4.68 MG/L (RATS), WHICH IS CONSIDERED TOXIC. IN ORDER TO DETERMINE THE LC50 VALUE, EXTREMELY HEAVY MIST OF TEST MATERIAL WERE REQUIRED. THE VERY HEAVY MISTS AT THE NECESSARY CONCENTRATION MADE VISIBILITY DIFFICULT AND WOULD BE DIFFICULT TO WORK IN FOR ANY PERIOD OF TIME. THE AUTHOR REPORTED THAT HISTOPATHOLOGICAL CHANGES MAY HAVE BEEN A RESPONSE TO A PHYSICAL INSULT RATHER THAN A SPECIFIC COMPOUND RELATED TOXICITY EFFECT AND THAT THE TEST MATERIAL MAY BE CONSIDERED NON-HAZARDOUS FOR ALL PRACTICAL PURPOSES BY INHALATION.

INGESTION: FOR A SIMILAR COMPONENT OF THIS FORMULATION THE ACUTE ORAL LD50 VALUE WAS FOUND TO BE GREATER THAN 5.0 G/KG IN MALE AND FEMALE SPRAGUE-DAWLEY RATS. THE MATERIAL IS NOT CLASSIFIED AS TOXIC BY ORAL ADMINISTRATION AS DEFINED IN 16 CFR 1500.

MATERIAL SAFETY DATA SHEET

CHRISTENSON OIL
PO BOX 17339
PORTLAND, OREGON 97217
(503)286-1673

EYE CONTACT: THE PRODUCT IS NOT CLASSIFIED AS AN IRRITANT BY OCULAR APPLICATION. THE EYES OF NONE OF THE SIX NEW ZEALAND WHITE RABBITS WERE FOUND TO SHOW EVIDENCE OF POSITIVE CORNEAL, IRIS OR CONJUNCTIVAL CHANGES.
FOR A SIMILAR COMPONENT OF THIS FORMULATION THE EYES OF 6 RABBITS WERE FOUND TO SHOW EVIDENCE OF CONJUNCTIVAL CHANGES. IRRITATION SCORES IN INDIVIDUAL RABBITS RANGED FROM 0-4 (SCALE 0-110). THE MATERIAL IS NOT CLASSIFIED AS AN IRRITANT BY OCULAR APPLICATION AS DEFINED BY 16 CFR 1500.

SKIN CONTACT: THE PRIMARY IRRITATION INDEX WAS FOUND TO BE 2.1 BASED ON ERYTHEMA AND EDEMA. NO EVIDENCE OF TISSUE DAMAGE (CORROSION) WAS FOUND. THE MATERIAL IS NOT CLASSIFIED AS A PRIMARY IRRITANT OR AS A CORROSIVE BY DERMAL APPLICATION.
FOR A SIMILAR COMPETENT OF THIS FORMULATION THE PRIMARY IRRITATION INDEX WAS FOUND TO BE 0.5 (SCALE 0-8) BASE ON ERYTHEMA AND EDEMA. NO EVIDENCE OF TISSUE DAMAGE WAS FOUND. THE MATERIAL IS NOT CLASSIFIED AS A PRIMARY IRRITANT OR AS A CORROSIVE BY DERMAL APPLICATION AS DEFINED BY 16 CFR 1500.

SECTION IV - OCCUPATIONAL EXPOSURE LIMITS

PEL: TWA: 5MG/M3(OIL MIST)

PEL: TWA: 5MG/M3; STEL: 10 MG/M3 (OIL MIST)

SECTION V - EMERGENCY FIRST AID PROCEDURE

FOR OVEREXPOSURE BY SWALLOWING: DO NOT INDUCE VOMITING. IF VICTIM IS CONSCIOUS AND ABLE TO SWALLOW, PROMPTLY HAVE VICTIM DRINK WATER TO DILUTE. DO NOT GIVE SODIUM BICARBONATE, FRUIT JUICES OR VINEGAR. NEVER GIVE ANYTHING BY MOUTH IF THE VICTIM IS UNCONSCIOUS OR HAVING CONVULSIONS. CALL A PHYSICIAN OR POISON CONTROL CENTER IMMEDIATELY.

FOR OVEREXPOSURE BY SKIN CONTACT: WASH AFFECTED AREA.

FOR OVEREXPOSURE BY EYE CONTACT: IMMEDIATELY FLUSH EYES WITH PLENTY OF COOL WATER FOR AT LEAST 15 MINUTES. DO NOT LET VICTIM RUB EYES.

FOR OVEREXPOSURE BY INHALATION: IMMEDIATELY REMOVE VICTIM TO FRESH AIR. IF VICTIM HAS STOPPED BREATHING GIVE ARTIFICIAL RESPIRATION, PREFERABLY BY MOUTH - TO - MOUTH. GET MEDICAL ATTENTION IMMEDIATELY.

MATERIAL SAFETY DATA SHEET

CHRISTENSON OIL
P.O. BOX 17339
PORTLAND, OREGON 97217
(503)286-1673

SECTION VI - PHYSICAL DATA

BOILING POINT:	NOT DETERMINED
MELTING POINT:	NOT DETERMINED
VAPOR PRESSURE:	NOT DETERMINED
SPECIFIC GRAVITY:	0.91 AT 60/60 DEG F
SOLUBILITY IN WATER:	NEGLIGIBLE
APPEARANCE AND COLOR:	DARK COLORED LIQUID WITH A PUNGENT ODOR

SECTION VII - FIRE AND EXPLOSION HAZARDS

FLASH POINT & METHOD USED: 400 °F (204°C) ASTM D-92
AUTO-IGNITION TEMPERATURE: 650 °F
FLAMMABLE LIMITS IN AIR, % BY VOL. LOWER: NOT DETERMINED
FLAMMABLE LIMITS IN AIR, % BY VOL. UPPER: NOT DETERMINED
NFPA RATING: NO NFPA RATING
HMIS RATING: HEALTH (1) FIRE (1) REACTIVITY (0)
SPECIAL FIRE FIGHTING PROCEDURES & PRECAUTIONS

(INDIVIDUALS SHOULD PERFORM ONLY THOSE FIRE FIGHTING PROCEDURES FOR WHICH THEY HAVE BEEN TRAINED). USE WATER SPRAY, DRY CHEMICAL, FOAM OR CARBON DIOXIDE. WATER MAY BE INEFFECTIVE BUT SHOULD BE USED TO KEEP FIRE-EXPOSED CONTAINERS COOL. IF A SPILL OR LEAK HAS NOT IGNITED, USE WATER SPRAY TO DISPERSE THE VAPORS. WATER SPRAY MAY BE USED TO FLUSH SPILLS AWAY FROM FIRE.

UNUSUAL FIRE & EXPLOSION HAZARDS

FIREFIGHTERS SHOULD WEAR SELF-CONTAINED BREATHING APPARATUS IN THE POSITIVE-PRESSURE MODE WITH A FULL FACEPIECE WHEN THERE IS A POSSIBILITY OF EXPOSURE TO SMOKE, FUMES OR HAZARDOUS DECOMPOSITION PRODUCTS.

SECTION VIII - REACTIVITY

STABILITY:

GENERALLY STABLE

HAZARDOUS POLYMERIZATION:

NOT LIKELY

CONDITIONS & MATERIALS TO AVOID:

AVOID HEATING TO DECOMPOSITION.
THE USER IS ADVISED TO HAVE A SAFETY EXPERT EVALUATE THE SPECIFIC CONDITIONS OF USE.

MATERIAL SAFETY DATA SHEET

CHRISTENSON OIL
P.O. BOX 17339
PORTLAND, OREGON 97217
(503)286-1673

PRODUCT CODE NO.: NONE

HAZARDOUS DECOMPOSITION PRODUCTS:
DECOMPOSITION MAY PRODUCE CARBON MONOXIDE, CARBON DIOXIDE AND OXIDES OF NITROGEN, PHOSPHORUS AND SULFUR.

SECTION IX - EMPLOYEE PROTECTION

CONTROL MEASURES:
HANDLE IN THE PRESENCE OF ADEQUATE VENTILATION.

RESPIRATORY PROTECTION:
WHERE EXPOSURE IS LIKELY TO EXCEED ACCEPTABLE CRITERIA (SEE SECTIONS II AND IV), USE NIOSH/OSHA APPROVED RESPIRATORY EQUIPMENT. RESPIRATORS SHOULD BE SELECTED BASED ON THE FORM AND CONCENTRATION OF CONTAMINANT IN AIR AND ACCORDANCE WITH OSHA (29 CFR 1910.134).

PROTECTIVE CLOTHING:
WEAR GLOVES AND PROTECTIVE CLOTHING WHICH ARE IMPERVIOUS TO THE PRODUCT FOR THE DURATION OF ANTICIPATED EXPOSURE IF THERE IS A POTENTIAL FOR PROLONGED OR REPEATED SKIN CONTACT.

EYE PROTECTION:
WEAR SAFETY GLASSES MEETING THE SPECIFICATIONS OF ANSI STANDARD Z87.1

SECTION X - ENVIRONMENTAL PROTECTION

ENVIRONMENTAL PRECAUTIONS:
AVOID UNCONTROLLED RELEASES OF THIS MATERIAL. WHERE SPILLS ARE POSSIBLE, A COMPREHENSIVE SPILL RESPONSE PLAN SHOULD BE DEVELOPED AND IMPLEMENTED.

SPILL OR LEAK PRECAUTIONS:
WEAR APPROPRIATE RESPIRATORY PROTECTION AND PROTECTIVE CLOTHING AS DESCRIBED IN SECTION IX. CONTAIN SPILLED MATERIAL. TRANSFER TO SECURE CONTAINERS. WHERE NECESSARY, COLLECT USING ABSORBENT MEDIA. IN THE EVENT OF AN UNCONTROLLED RELEASE OF THIS MATERIAL, THE USER SHOULD DETERMINE IF THE RELEASE IS REPORTABLE UNDER APPLICABLE LAWS AND REGULATION.

WATER DISPOSAL:
ALL RECOVERED MATERIAL SHOULD BE PACKAGED, LABELED, TRANSPORTED AND DISPOSED OR RECLAIMED IN CONFORMANCE WITH APPLICABLE LAWS AND REGULATIONS AND IN CONFORMANCE WITH GOOD ENGINEERING PRACTICES. AVOID LANDFILLING OF LIQUIDS. RECLAIM WHERE POSSIBLE.

MATERIAL SAFETY DATA SHEET

CHRISTENSON OIL
P.O. BOX 17339
PORTLAND, OREGON 97217
(503)286-1573

SECTION XI- REGULATORY CONTROLS

DEPARTMENT OF TRANSPORTATION:
DOT CLASSIFICATION: NOT REGULATED
DOT PROPER SHIPPING NAME:
OTHER DOT INFORMATION:

OTHER REGULATORY REQUIREMENTS:
LISTED IN TSCA INVENTORY

SECTION XII - PRECAUTIONS: HANDLING, STORAGE AND USAGE

NO SPECIAL PRECAUTIONS NECESSARY.

The information presented herein is believed to be factual as it has been derived from the works and opinions of persons believed to be qualified experts; however, nothing contained in this information is to be taken as a warranty or representation for which Christenson Oil bears legal responsibility. The user should review any recommendations *in the specific context of the intended use to determine whether they are appropriate.*

ISSUE DATE: January 17, 1994

SUPERSEDES:

MATERIAL SAFETY DATA SHEET

CHRISTENSON OIL
P.O. BOX 17339
PORTLAND, OREGON 97217
(503)286-1673

CHRISTENSON OIL MSDS #DWO68

PRODUCT CODE NO.: NONE

MANUFACTURER:	TRANSPORTATION EMERGENCIES:
CHRISTENSON OIL 3747 N. SUTTLE RD. P.O. BOX 17339 PORTLAND, OREGON 97217 CONTACT FOR FURTHER INFORMATION: CALL (503) 286-1673	CALL CHEMTREC (800) 424-9300 CONTINENTAL U.S.

PRODUCT IDENTIFICATION

PRODUCT NAME	:	DUREX HEAVY DUTY WAY OIL 68
SYNONYMS	:	WAY OIL
GENERIC NAME	:	WAY OIL 68
CHEMICAL FAMILY	:	PETROLEUM HYDROCARBON; INDUSTRIAL OILS
DOT PROPER SHIPPING	:	NOT DOT REGULATED
ID NUMBER	:	NONE

ACUTE HEALTH	FIRE	REACTIVITY	HAZARD RATING		
1	1	0		LEAST -0 MODERATE -2 EXTREME -4	SLIGHT -1 HIGH -3

SECTION I - INGREDIENTS

NO.	COMPOSITION	CAS NUMBER	PERCENT

P	DUREX HEAVY DUTY WAY OIL 68	MIXTURE	100
1	PETROLEUM BASESTOCK	64742-18-3	0-100
2	PETROLEUM BASESTOCK	64742-70-7	0-100
3	POLYMERIC ADDITIVE	MIXTURE	0-1
4	WAY OIL ADDITIVE	MIXTURE	0-10

MATERIAL SAFETY DATA SHEET

CHRISTENSON OIL MSDS#DWO68

SECTION I-B - ACUTE TOXICITY DATA

NO.	ACUTE ORAL LD50	ACUTEDERMAL LD 50	ACUTE INHALAITON LC50
P	NOT AVAILABLE		

SECTION II - EMERGENCY AND FIRST AID PROCEDURES

EYE CONTACT:
Flush with water for 15 minutes while holding eyelids open. Get medical attention.

SKIN CONTACT:
Remove contaminated clothing and wipe excess off. Wash with soap and water or a waterless hand cleaner followed by soap and water. If irritation occurs, get medical attention.

INHALATION (BREATHING):
Remove victim to fresh air and provide oxygen if breathing is difficult. Get medical attention.

INGESTION (SWALLOWING):
Do not induce vomiting. In general, no treatment is necessary unless large quantities of prouct are ingested. However, get medical advice.

NOTE TO PHYSICIAN:
In general, emesis induction is unnecessary in high viscosity, low volatility products, i.e., most oils and greases.

SECTION III - OCCUPATIONAL EXPOSURE LIMITS

OSHA ACGIH

NO.	PEL/TWA	PEL/CEILING	TLV/TWA	TLV/STEL	OTHER
P	5MG/M3*	NONE	5MG/MG*	10MG/M3*	N/AV

NOTE:
* Oil mist, mineral oil.

MATERIAL SAFETY DATA SHEET

CHRISTENSON OIL MSDS#DW068

HEALTH INFORMAITON

The health effects noted below are consistent with requirements under the OSHA hazard Communication Standard (29 CFR 1910.1200)

EYE CONTACT
Lubricating oils are generally considered no more than mildly irritating to the eyes.

SKIN CONTACT
Lubricating oils are generally considered no more than mildly irritating to the skin. Prolonged and repeated contact may lead to various skin disorders such as dermatitis, oil acne or folliculitis.

INHALATION
Inhalation of vapors (generator at high temperatures only)or oil mist from this product may cause minor irritation of the mucous membrandes of the upper respiratory tract.

INGESTION
Lubricating oils are generally considered no more than slightly toxic if swallowed.

SIGNS AND SYPMTOMS
Irritation as noted above.

AGGRAVATED MEDICAL CONDITIONS
Pre-existing skin and respiratory disorders may be aggravated by exposure to this product.

OTHER HEALTH EFFECTS

SEE SECTION V FOR ADDITIONAL HEALTH INFORMATION.

SECTION IV - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION:
If exposure may or does exceed occupational exposure limits use an NIOSH approved respirator to prevent overexposure. In accordance with 29 CFR 1910.134 use either an atmosphere-supplying respirator or an air-purifying respirator for organic vapor.

PROTECTION CLOTHING

The use of gloves impermeable to the specific material handled is advised to prevent skin contact and possible irritation.

MATERIAL SAFETY DATA SHEETS

CHRISTENSON OIL MSDS#OWO68

SECTION V - REACTIVITY DATA

STABILITY: STABLE

CONDITIONS AND MATERIALS TO AVOID:

Avoid heat, open flames and oxidizing materials.

HAZARDOUS DECOMPOSITION PRODUCTS

Smoke, carbon monoxide, aldehydes and other products of incomplete combustion.

SECTION - FIRE AND EXPLOSION HAZARDS

FLASH POINT AND METHOD:
410 DEF F (COC)

FLAMMABLE LIMITS / % VOLUME IN AIR
LOWER: N/AV UPPER: N/AV

EXTINGUISHING DATA

Use water fog, foam, dry chemical or CO^2. Do not use a direct stream of water. Product will float and can be reignited on surface of water.

SPECIAL FIRE FIGHTING PROCEDURES AND PRECAUTIONS

Material will not burn unless preheated

DOT FLAMMABILITY
CLASSIFICATION
NOT REGULATED 381F (COC)

EXTINGUISHING MEDIA:

EXTINGUISH WITH DRY CHEMICAL, CO_2, WATER SPRAY, FOAM, SAND OR EARTH. WATER AND FOAM MAY CAUSE FROTHING.

FIRE & EXPLOSION HAZARDS:

THIS MATERIAL WILL BURN, BUT WILL NOT IGNITE READILY.

FIRE FIGHTING PROCEDURES:

WATER SPRAY MAY BE USEFUL IN MINIMIZING VAPORS AND COOLING CONTAINER EXPOSED TO HEAT AND FLAME. AVOID SPREADING BURNING LIQUID WITH WATER USED FOR COOLING PURPOSE. MOVE UNDAMAGED CONTAINERS FROM FIRE AREA IF YOU CAN DO SO WITHOUT RISK.

MATERIAL SAFETY DATA SHEET

CHRISTENSON OIL MSDS #DWO68

SECTION IX - PHYSICAL DATA

APPROX BOILING POINT	VAPOR DENSITY	EVAPORATION RATE	% VOLATILE
+600F (316C)	HEAVIER THAN AIR	SLOWER THAN ETHER	NEGLIGIBLE

% SOLUBILITY IN WATER	SPECIFIC GRAVITY	APPEARANCE	ODOR
NEGLIGIBLE	N/A	CLEAR, BROWN LIQUID	CHARACTERISTIC

SECTION X - PRECAUTIONARY LABEL

CAUTION! USED MOTOR OIL IS A POSSIBLE SKIN CANCER HAZARD BASED ON TEST WITH LABORATORY ANIMALS. AVOID PROLONGED OR REPEATED SKIN CONTACT. AVOID MAKING OR BREATHING OIL MIST. USE ADEQUATE VENTILATION. WASH THOROUGHLY WITH SOAP AND WATER AFTER HANDLING.

SECTION XI - DOCUMENTARY INFORMATION

ISSUE DATE	:	July 17, 1995	PRODUCT CODE NO.	:	NONE
MSDS NO.	:	DWO68	PREV. PROD. CODE NO.	:	DWO68
			PREV. MSDS NO.	:	NONE

DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES

The information in this document is believed to be correct as of the date issued. NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTY IS EXPRESSED OR IS TO BE IMPLIED REGARDING THE ACCURACY OR COMPLETENESS OF THIS INFORMATION, THE RESULTS TO BE OBTAINED FROM THE USE OF THIS INFORMATION OR THE PRODUCT, THE SAFETY OF THIS PRODUCT, OR THE HAZARDS RELATED TO ITS USE.

This information and product are furnished on the condition that the person receiving them shall make his own determination as to the suitability of the product for his particular purpose and on the condition that he assume the risk of his use thereof.

72-4X-7825-11

MATERIAL SAFETY DATA SHEET

VALVOLINE

VALVOLINE OIL COMPANY
DIVISION OF ASHLAND OIL, INC.
P.O. BOX 391
ASHLAND, KENTUCKY 41114
(606) 329-3333

24-HOUR EMERGENCY TELEPHONE
(606) 324-1133

000094 VAL-PLEX EP PAGE: 1

THIS MSDS COMPLIES WITH 29 CFR 1910.1200 (THE HAZARD COMMUNICATION STANDARD)

PRODUCT NAME: VAL-PLEX EP
CAS NUMBER: TM LIST

CHRISTENSON OIL CO

3821 NW ST HELENS RD

PORTLAND OR 97210

ATTN: PLANT MGR / SAFETY DIR.

GR 70 000 0815850-000
DATA SHEET NO: 0172170-001
LATEST REVISION DATE: 04/05-85099
PRODUCT: 610
INVOICE: 034165
INVOICE DATE: 04/03/87
TO:

SECTION I-PRODUCT IDENTIFICATION

GENERAL OR GENERIC ID: PETROLEUM GREASE

DOT HAZARD CLASSIFICATION: NOT APPLICABLE

SECTION II-COMPONENTS

IF PRESENT, IARC, NTP AND OSHA CARCINOGENS ARE IDENTIFIED IN THIS SECTION
SEE DEFINITION PAGE FOR CLARIFICATION

INGREDIENT	% (BY WT)	NOTE
LUBRICATING GREASE * CAS #: TM LIST - -	100	(1)

(1): PEL/TLV NOT ESTABLISHED FOR THIS MATERIAL

* THE SPECIFIC CHEMICAL IDENTITY HAS BEEN WITHHELD AS A TRADE SECRET.

SECTION III-PHYSICAL DATA

PROPERTY	REFINEMENT	MEASUREMENT
BOILING POINT	FOR PRODUCT	> 700.00 DEG F (371.11 DEG C) @ 760.00 MMHG
VAPOR PRESSURE	NOT APPLICABLE	
SPECIFIC VAPOR DENSITY	NOT APPLICABLE	
SPECIFIC GRAVITY		.950 @ 60.00 DEG F (15.55 DEG C)
PERCENT VOLATILES	NOT APPLICABLE	
EVAPORATION RATE	NOT APPLICABLE	

SECTION IV-FIRE AND EXPLOSION INFORMATION

FLASH POINT(D-92) 450.0 DEG F
(232.2 DEG C)

EXPLOSIVE LIMIT NOT APPLICABLE

EXTINGUISHING MEDIA: REGULAR FOAM OR CARBON DIOXIDE OR DRY CHEMICAL

HAZARDOUS DECOMPOSITION PRODUCTS: MAY FORM TOXIC MATERIALS:, CARBON DIOXIDE AND CARBON MONOXIDE, VARIOUS HYDROCARBONS

FIREFIGHTING PROCEDURES: WATER OR FOAM MAY CAUSE FROTHING WHICH CAN BE VIOLENT AND POSSIBLY ENDANGER THE LIFE OF THE FIREFIGHTER, ESPECIALLY IF SPRAYED INTO CONTAINERS OF HOT, BURNING LIQUID.

WEAR SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACEPIECE OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE WHEN FIGHTING FIRES.
SPECIAL FIRE & EXPLOSION HAZARDS: NEVER USE WELDING OR CUTTING TORCH ON OR NEAR DRUM (EVEN EMPTY) BECAUSE PRODUCT (EVEN JUST RESIDUE) CAN IGNITE EXPLOSIVELY.

NFPA CODES: HEALTH- 1 FLAMMABILITY- 1 REACTIVITY- 0

SECTION V-HEALTH HAZARD DATA

PERMISSIBLE EXPOSURE LEVEL: SEE SECTION II

EFFECTS OF ACUTE OVEREXPOSURE: FOR COMPONENT

EYES - CAN CAUSE IRRITATION.
SKIN - MAY CAUSE IRRITATION.
BREATHING - NONE CURRENTLY KNOWN.
SWALLOWING - CAN CAUSE GASTROINTESTINAL IRRITATION, NAUSEA, VOMITING, AND DIARRHEA.

FIRST AID:

75-05-7955-11

MATERIAL SAFETY DATA SHEET

VALVOLINE

VALVOLINE OIL COMPANY
DIVISION OF ASHLAND OIL, INC.
P.O. BOX 391
ASHLAND, KENTUCKY 41114
(606) 329-3333

24-HOUR EMERGENCY TELEPHONE (606) 324-1133

SECTION V-HEALTH HAZARD DATA (CONTINUED)

IF ON SKIN, THOROUGHLY WASH EXPOSED AREA WITH SOAP AND WATER. REMOVE CONTAMINATED CLOTHING. LAUNDER CONTAMINATED CLOTHING BEFORE RE-USE.

IF IN EYES, FLUSH WITH LARGE AMOUNTS OF WATER, LIFTING UPPER AND LOWER LIDS OCCASIONALLY, GET MEDICAL ATTENTION.

IF SWALLOWED: IMMEDIATELY DRINK TWO GLASSES OF WATER AND INDUCE VOMITING BY EITHER GIVING IPECAC SYRUP OR BY PLACING FINGER AT BACK OF THROAT. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. GET MEDICAL ATTENTION IMMEDIATELY.

IF BREATHED, REMOVE INDIVIDUAL TO FRESH AIR.

SECTION VI-REACTIVITY DATA

HAZARDOUS POLYMERIZATION: CANNOT OCCUR

STABILITY: STABLE

INCOMPATIBILITY: AVOID CONTACT WITH:, STRONG OXIDIZING AGENTS.

SECTION VII-SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

SMALL SPILL: SWEEP UP MATERIAL ONTO PAPER.

LARGE SPILL: SHOVEL MATERIAL INTO CONTAINERS. THOROUGHLY SWEEP AREA OF SPILL TO CLEAN UP ANY RESIDUAL MATERIAL.

WASTE DISPOSAL METHOD:

SMALL SPILL: DEPOSIT IN A LANDFILL IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.

LARGE SPILL: DEPOSIT IN A LANDFILL IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.

SECTION VIII-PROTECTIVE EQUIPMENT TO BE USED

RESPIRATORY PROTECTION: IF TLV OF THE PRODUCT OR ANY COMPONENT IS EXCEEDED, A NIOSH/MSHA JOINTLY APPROVED AIR SUPPLIED RESPIRATOR IS ADVISED IN ABSENCE OF PROPER ENVIRONMENTAL CONTROL. OSHA REGULATIONS ALSO PERMIT OTHER NIOSH/MSHA RESPIRATORS UNDER SPECIFIED CONDITIONS. (SEE YOUR SAFETY EQUIPMENT SUPPLIER). ENGINEERING OR ADMINISTRATIVE CONTROLS SHOULD BE IMPLEMENTED TO REDUCE EXPOSURE.

VENTILATION: PROVIDE SUFFICIENT MECHANICAL (GENERAL AND/OR LOCAL EXHAUST) VENTILATION TO MAINTAIN EXPOSURE BELOW TLV(S).

PROTECTIVE GLOVES: WEAR RESISTANT GLOVES SUCH AS:, NEOPRENE

EYE PROTECTION: WEAR SAFETY GLASSES IN COMPLIANCE WITH OSHA REGULATIONS. (CONSULT YOUR SAFETY EQUIPMENT SUPPLIER)

OTHER PROTECTIVE EQUIPMENT: NORMAL WORK CLOTHING COVERING ARMS AND LEGS.

SECTION IX-SPECIAL PRECAUTIONS OR OTHER COMMENTS

CONTAINERS OF THIS MATERIAL MAY BE HAZARDOUS WHEN EMPTIED. SINCE EMPTIED CONTAINERS RETAIN PRODUCT RESIDUES (VAPOR, LIQUID, AND/OR SOLID), ALL HAZARD PRECAUTIONS GIVEN IN THIS DATASHEET MUST BE OBSERVED.

THE INFORMATION ACCUMULATED HEREIN IS BELIEVED TO BE ACCURATE BUT IS NOT WARRANTED TO BE WHETHER ORIGINATING WITH THE COMPANY OR NOT. RECIPIENTS ARE ADVISED TO CONFIRM IN ADVANCE OF NEED THAT THE INFORMATION IS CURRENT, APPLICABLE, AND SUITABLE TO THEIR CIRCUMSTANCES.

MATERIAL SAFETY DATA SHEET

MERIT OIL & REFINING, INC.
4150 N. Suttle Rd.
Portland, OR 97217
(503) 286-4755

PRODUCT CODE NO.: MOHO

MANUFACTURER:
MERIT OIL & REFINING, INC.
4150 N. Suttle Rd.
Portland, OR 97217

CONTACT FOR FURTHER INFORMATION:
Call in Oregon (503) 286-4755
Transportation Emergencies: CALL CHEMTREC (800)424-9300

PRODUCT IDENTIFICATION:

PRODUCT NAME	: MERIT HYDRAULIC OIL
SYNONYMS	: MERIT HYDRAULIC OIL
GENERIC NAME	: HYDRAULIC OIL
CHEMICAL FAMILY	: PETROLEUM HYDROCARBON
DOT PROPER SHIPPING NAME	: NOT APPLICABLE
ID NUMBER	: NONE

SECTION I: INGREDIENTS	TLV	UNITS	AGENCY	TYPE
OIL MIST, IF GENERATED	5.00	MG/M3	OSHA	FULL TERM TWA

THE IDENTITIES OF INGREDIENTS THAT ARE TRADE SECRETS ARE EXCLUDED FROM THIS LIST.

SECTION II. EMERGENCY AND FIRST AID PROCEDURES

EYE CONTACT:
** FOR DIRECT CONTACT. FLUSH THE AFFECTED EYE(S) WITH CLEAN WATER. IF IRRITATION OR REDNESS DEVELOPS, SEEK MEDICAL ATTENTION.

SKIN CONTACT:
** DO NOT USE GASOLINES. THINNERS OR SOLVENTS TO REMOVE PRODUCT FROM SKIN. WIPE MATERIAL FROM SKIN AND REMOVE CONTAMINATED CLOTHING. CLEANSE AFFECTED AREA(S) THOROUGHLY BY WASHING WITH SOAP AND WATER AND, IF NECESSARY, A WATERLESS SKIN CLEANSER. IF IRRITATION OR REDNESS DEVELOPS AND PERSISTS, SEEK MEDICAL ATTENTION.

INHALATION (BREATHING)
**IF IRRITATION OF NOSE OR THROAT DEVELOPS, MOVE AWAY FROM SOURCE OF EXPOSURE AND INTO FRESH AIR. IF IRRITATION PERSISTS, SEEK MEDICAL ATTENTION. IF VICTIM IS NOT BREATHING OR IF BREATHING DIFFICULTIES DEVELOP, ARTIFICIAL RESPIRATION OF OXYGEN SHOULD BE ADMINISTERED BY QUALIFIED PERSONNEL. SEEK IMMEDIATE MEDICAL ATTENTION.

MATERIAL SAFETY AND DATA SHEET

PRODUCT CODE NO.: MOHO

INGESTION (SWALLOWING):
IF VICTIM IS CONSCIOUS AND ALERT, GIVE 2 TO 3 CUPS OF MILK OR WATER TO DRINK. SEEK MEDICAL ATTENTION. TO PHYSICIAN: EMESIS OR LAVAGE IS NOT RECOMMENDED FOR INGESTIONS OF MINUTE QUANTITIES OR TASTES OF MOST HYDROCARBONS. MEDICAL OPINION IS DIVIDED FOR LARGER INGESTIONS. EMESIS OR LAVAGE HAS BEEN RECOMMENDED FOR THOSE PETROLEUM PRODUCTS WHICH HAVE A HIGH ORAL TOXICITY. GASTRIC LAVAGE WITH A CUFFED ENDOTRACHEAL TUBE IS RECOMMENDED BY SOME PHYSICIANS TO PREVENT ASPIRATION.

SECTION III: POTENTIAL ADVERSE HEALTH EFFECTS

EYE CONTACT:
THIS MATERIAL MAY CAUSE EYE IRRITATION. DIRECT CONTACT MAY CAUSE BURNING, TEARING AND REDNESS.

SKIN CONTACT:
THIS MATERIAL MAY CAUSE SKIN IRRITATION. PROLONGED OR REPEATED CONTACT MAY CAUSE REDNESS, BURNING AND DERMATITIS.

INHALATION (BREATHING)
EXPOSURE TO MISTS, OR PROLONGED OR REPEATED EXPOSURE TO FUMES OR VAPORS THAT MAY BE GENERATED WHEN THIS MATERIAL IS HEATED, MAY CAUSE IRRITATION OF NOSE AND THROAT.

INGESTION (SWALLOWING)
ACCIDENTAL INGESTION OF THIS MATERIAL MAY CAUSE IRRITATION OF THE DIGESTIVE TRACT.

COMMENTS:
USED MOTOR OIL: FOLLOWING REPEATED SKIN APPLICATIONS, ANIMAL STUDIES HAVE SHOWN THAT USED MOTOR/CRANKCASE OILS HAVE CAUSED AN INCREASED INCIDENCE OF SKIN CANCER IN MICE. IT IS THEREFORE RECOMMENDED THAT PROLONGED OR REPEATED CONTACT WITH MOTOR/CRANKCASE OILS BE AVOIDED.

SECTION IV: SPECIAL PROTECTION INFORMATION

VENTILATION:
IF CURRENT VENTILATION PRACTICES ARE NOT ADEQUATE IN MAINTAINING AIRBORNE CONCENTRATIONS BELOW THE ESTABLISHED EXPOSURE LIMITS (SEE SECTION I), ADDITIONAL VENTILATION OR EXHAUST SYSTEMS MAY BE REQUIRED.

RESPIRATORY PROTECTION:
IF AIRBORNE CONCENTRATIONS EXCEED RECOMMENDED EXPOSURE LIMITS, A SUITABLE FILTER-TYPE RESPIRATOR SHOULD BE WORN. (SEE SECTION I.)

PROTECTIVE GLOVES:
THE USE OF GLOVES IMPERMEABLE TO THE SPECIFIC MATERIAL HANDLED IS ADVISED TO PREVENT SKIN CONTACT AND POSSIBLE IRRITATION.

EYE PROTECTION:
APPROVED EYE PROTECTION TO SAFEGUARD AGAINST POTENTIAL EYE CONTACT, IRRITATION OR INJURY IS RECOMMENDED.

MATERIAL SAFETY AND DATA SHEET

PRODUCT CODE NO.: MOHO

OTHER PROTECTIVE EQUIPMENT:
IT IS SUGGESTED THAT A SOURCE OF CLEAN WATER BE AVAILABLE IN WORK AREA FOR FLUSHING EYES AND SKIN. BARRIER CREAMS THAT ARE SPECIFIC FOR OIL-BASED MATERIAL ARE RECOMMENDED WHEN GLOVES ARE IMPRACTICAL.

SECTION V: REACTIVITY DATA

STABILITY:
STABLE

INCOMPATIBILITY (MATERIALS TO AVOID):
AVOID CONTACT WITH STRONG OXIDIZING AGENTS. EXTENDED EXPOSURE TO HIGH TEMPERATURES MAY CAUSE DECOMPOSITION.

HAZARDOUS DECOMPOSTION PRODUCTS:
THERMAL DECOMPOSITION IN THE PRESENCE OF AIR MAY YIELD MAJOR AMOUNTS OF OXIDES OF CARBON AND MINOR AMOUNTS OF OXIDES OF NITROGEN, PHOSPHORUS, SULFUR AND ZINC.

HAZARDOUS POLYMERIZATION:
WILL NOT OCCUR.

SECTION VI: SPILL OF LEAK PROCEDURES
(HIGHWAY OR RAILWAY SPILLS, CALL CHEMTREC 800-424-9300 IN CONT. US)

PRECAUTIONS IN CASE OF RELEASE OR SPILL:
COLLECT LEAKING LIQUID IN SEALABLE CANTAINERS. ABSORB SPILLED LIQUID IN SAND OR INERT ABSORBANT. CONTACT FIRE AUTHORITIES AND APPROPRIATE STATE/LOCAL AGENCIES. IF SPILL OF ANY AMOUNT IS MADE INTO OR UPON U.S. NAVIGABLE WATERS, THE CONTIGUOUS ZONE, OR ADJOINING SHORELINES, NOTIFY COAST GUARD NATIONAL RESPONSE CENTER (PHONE NUMBER 800-424-8802).

WASTE DISPOSAL METHOD:
DISPOSE OF PRODUCT IN ACCORDANCE WITH LOCAL, COUNTY, STATE, AND FEDERAL REGULATIONS.

SECTION VII: STORAGE AND SPECIAL PRECAUTIONS

HANDLING AND STORAGE PRECAUTIONS:
STORE IN A COOL, DRY LOCATION. KEEP AWAY FROM INCOMPATIBLE MATERIALS (SEE SECTION V). AVOID GENERATING OIL MISTS WHILE HANDLING. AVOID PROLONGED OR REPEATED SKIN CONTACT. WASH THOROUGHLY AFTER HANDLING. FOR USED MOTOR OIL: LAUNDER SATURATED CLOTHING BEFORE WEARING AND DISCARD OIL-SOAKED SHOES AND UNWASHABLE CLOTHING.

SECTION VIII: FIRE AND EXPLOSION HAZARD DATA

HAZARD RANKING
(0= LEAST, 1= SLIGHT, 2= MODERATE, 3= HIGH, 4= EXTREME)

NFPA HAZARD CLASS:
HEALTH HAZARD: 0.
FLAMMABILITY: 1
REACTIVITY: 0.
OTHER: NONE

PRODUCT CODE NO.: MOHO

DOT FLAMMABILITY CLASSIFICATION: NOT REGULATED
FLASH POINT: 390-400, COC F

EXTINGUISHING MEDIA:
EXTINGUISH WITH DRY CHEMICAL, CO2, WATER SPRAY, FOAM, SAND OR EARTH. WATER AND FOAM MAY CAUSE FROTHING.

FIRE & EXPLOSION HAZARDS:
THIS MATERIAL WILL BURN, BUT WILL NOT IGNITE READILY.

FIRE FIGHTING PROCEDURES:
WATER SPRAY MAY BE USEFUL IN MINIMIZING VAPORS AND COOLING CONTAINERS EXPOSED TO HEAT AND FLAME. AVOID SPREADING BURNING LIQUID WITH WATER USED FOR COOLING PURPOSES. MOVE UNDAMAGED CONTAINERS FROM FIRE AREA IF YOU CAN DO SO WITHOUT RISK.

SECTION IX: PHYSICAL DATA

APPROX BOILING POINT	VAPOR DENSITY	EVAPORATION RATE	% VOLITILE
ABOVE 600 F (316 C)	HEAVIER THAN AIR	SLOWER THAN ETHER	NEGLIGIBLE

% SOLUBILITY IN WATER	SPECIFIC GRAVITY	APPEARANCE	ODOR
NEGLIGIBLE	0.89-0.91	CLEAR BROWN LIQUID	CHARACTERISTIC

SECTION X: PRECAUTIONARY LABEL

CAUTION: USED MOTOR OIL IS A POSSIBLE SKIN CANCER HAZARD BASED ON TESTS WITH LABORATORY ANIMALS. AVOID PROLONGED OR REPEATED SKIN CONTACT. AVOID MAKING OR BREATHING OIL MIST. USE ADEQUATE VENTILATION. WASH THOROUGHLY WITH SOAP AND WATER AFTER HANDLING.

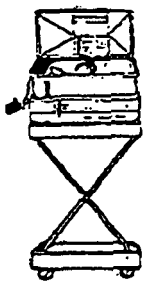
SECTION XI: DOCUMENTARY INFORMATION

ISSUE DATE: Jan. 26, 1993 PRODUCT CODE NUMBER.: MOHO

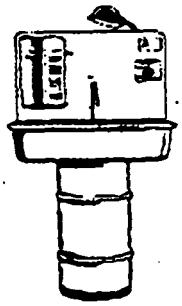
DISCLAMER OF EXPRESSED AND IMPLIED WARRANTIES
The information in this document is believed to be correct as of the date issued. NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTY IS EXPRESSED OR IS TO BE IMPLIED REGARDING THE ACCURACY OR COMPLETENESS OF THIS INFORMATION, THE RESULTS TO BE OBTAINED FROM THE USE OF THIS INFORMATION OF THE PRODUCT, THE SAFETY OF THIS PRODUCT OR THE HAZARDS RELATED TO ITS USE.
This information and product are furnished on the condition that the person receiving them shall make his own determination as to the suitability of the product for his own purpose and on the condition that he assume the risk of his use thereof.

RECYCLED SOLVENT USED AT COLUMBIA FORGE

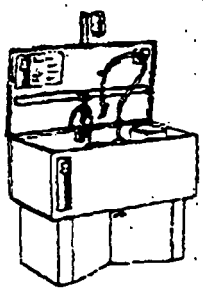
safety-kleen®



Model 14 & 60



Model 16 & 30



Model 34 & 44, COMS, and other

Material Safety Data Sheet

Safety-Kleen 105 Solvent

Part # 6617

SK 105 Solvent; Revision 12/90; Form Part No. 82310

SAFETY-KLEEN 105 SOLVENT

MATERIAL SAFETY DATA SHEET FOR U.S.A. AND CANADA

SECTION I – PRODUCT INFORMATION

Safety-Kleen Corp. - 777 Big Timber Road - Elgin, IL, U.S.A. 60123
Safety-Kleen Canada Inc. - 3090 Blvd. Le Carrefour - Suite 300 - Chomedy Laval Quebec, Canada H7T 2J7
For Product Technical Information Call 312-694-2700 (U.S.A.);
800-363-2260 (Eastern Canada); 514-686-2040 (Western Provinces/Call Collect)

24-HOUR EMERGENCY TELEPHONE	*MEDICAL:*	*TRANSPORTATION:*
These numbers are for emergency use only. If you desire non-emergency information about this product, please call a telephone number listed above.	800-752-7869 (U.S.A.) 312-942-5969 (CANADA) RUSH POISON CONTROL CENTER CHICAGO, ILLINOIS, U.S.A.	708-888-4660 (U.S.A.) SAFETY-KLEEN ENVIRONMENT, HEALTH AND SAFETY DEPARTMENT 613-996-6666 (CANADA) CANUTEC

IDENTITY (TRADE NAME): SAFETY-KLEEN 105 SOLVENT

SYNONYMS: PETROLEUM DISTILLATES, PETROLEUM NAPHTHA, MINERAL SPIRITS, STODDARD SOLVENT

SK PART NUMBER: 6617

FAMILY/CHEMICAL NAME: HYDROCARBON SOLVENT

PRODUCT USAGE: SOLVENT FOR CLEANING AND DEGREASING PARTS

SECTION II – HAZARDOUS COMPONENTS

NAME	SYNONYM	Wt. %	CAS NO.	OSHA PEL TWA (ppm)	OSHA PEL STEL (ppm)	ACGIH TLV TWA (ppm)	ACGIH TLV STEL (ppm)	LD50[a]	LC50[b]
Parts Washer Solvent (Consists predominantly of C9-C13 Saturated Hydrocarbons)	Mineral Spirits	85.0	64741-41-9	100 **	N.Av.	100 **	N.Av.	> 5000**	3400**
C8+ Aromatics		12.0	Mixture	N.Av.	N.Av.	N.Av.	N.Av.	N.Av.	N.Av.
*Toluene		0.5	108-88-3	100	150	100	150	5000	4000
*Xylene		1.0	1330-20-7	100	150	100	150	4300	5000
*Ethyl Benzene		0.5	100-41-4	100	125	100	125	3500	4000[c]
*1,1,1 Trichloroethane	Methyl Chloroform	0-0.5***	71-55-6	350	450	350	450	10300	18000
*Perchloroethylene	Tetrachloroethylene	0-0.5***	127-18-4	25	N.Av.	50	200	2629	4000[c]
Total Chlorinated Solvents		0-1.0***							

N.Av. = Not available.
* See Section X - Other Regulatory Information
**For Stoddard Solvent
***Even though the concentration range does not fall under the ranges prescribed by WHMIS, this is the actual range which varies with each batch of the product.

[a] Oral-Rat LD50 (mg/kg)
[b] Inhalation-Rat LC50 (ppm/4 hours)
[c] Inhalation-Rat LCLo (ppm/4 hours)

SECTION III -- PHYSICAL DATA

PHYSICAL STATE, APPEARANCE AND ODOR:	Combustible liquid, clear, green, with characteristic hydrocarbon odor.
ODOR THRESHOLD:	Not available.
BOILING POINT:	304-435°F (151-224°C).
VAPOR PRESSURE:	2 mm Hg at 68°F (20°C).
FREEZING POINT:	Not available.
EVAPORATION RATE:	0.1 (Butyl Acetate = 1).
VOLATILE:	99.9%
VOLATILE ORGANIC COMPOUNDS:	6.4 to 6.7 lbs/gal; 770 to 800 g/l
DENSITY:	Not available.
VAPOR DENSITY:	4.9 (Air = 1).
SOLUBILITY IN WATER:	Negligible.
pH:	Not applicable.
SPECIFIC GRAVITY:	0.77 to 0.80 at 60/60°F (16/16°C) (Water = 1).
COEFFICIENT OF WATER/OIL DISTRIBUTION:	Not available.
MOLECULAR WEIGHT:	142 (Approximately).

SECTION IV -- FIRE AND EXPLOSION HAZARD DATA

FLASH POINT:	105°F (41°C) SETA
AUTOIGNITION TEMPERATURE:	473°F (245°C).
CONDITIONS OF FLAMMABILITY:	Materials must be moderately heated before ignition can occur.
FLAMMABLE LIMITS IN AIR:	*LOWER:* 0.7 Vol. % *UPPER:* 6.0 Vol. %
UNUSUAL FIRE AND EXPLOSION HAZARDS:	Decomposition and combustion products may be toxic. Heated containers may rupture, explode or be thrown into the air. Vapors are heavier than air and may travel great distances to ignition source and flash back. Not sensitive to mechanical impact. Material may be sensitive to static discharge, which could result in fire or explosion.
EXTINGUISHING MEDIA:	Carbon dioxide, foam, dry chemical, water (mist only).
FIRE FIGHTING PROCEDURES -- SPECIAL:	NFPA 704 Rating 0-2-0 Keep storage containers cool with water spray. Use self-contained breathing apparatus (SCBA).
HAZARDOUS COMBUSTION PRODUCTS:	Thermal decomposition and burning may produce carbon monoxide.

INHALATION: (Breathing)	Remove to fresh air immediately. Use oxygen if there is difficulty breathing or artificial respiration if breathing has stopped. Do not leave victim unattended. Seek immediate medical attention if necessary.
INGESTION: (Swallowing)	If conscious, drink 4 to 8 ounces of water and seek immediate medical attention. DO NOT induce vomiting.

SECTION VIII – PRECAUTIONS FOR SAFE USE AND HANDLING AND PREVENTIVE MEASURES

SPILL PROCEDURES:	Remove all ignition sources. Ventilate area and avoid breathing vapors. For large spills, isolate area and deny entry. If possible, contain as a liquid for possible re-refining. Absorb with compatible absorbent material. Shovel into closable container for disposal. Wear protective equipment specified in Section IX. Contain away from surface waters and sewers.
WASTE DISPOSAL METHODS:	Dispose in accordance with Federal, State, Provincial and local regulations. Contact Safety-Kleen regarding recycling or proper disposal.
HANDLING PRECAUTIONS:	Avoid contact with eyes, skin or clothing. Use in well ventilated area and avoid breathing vapors or mists. Keep away from heat, sparks and flames.
SHIPPING AND STORING PRECAUTIONS:	Keep container tightly closed when not in use and during transport. Empty product containers may contain product residue. Do not pressurize, cut, heat, weld, grind or expose containers to flame or other sources of ignition.
PERSONAL HYGIENE:	Use good personal hygiene. Wash thoroughly with soap and water after handling and before eating, drinking or using tobacco products. Launder contaminated clothing and clean protective equipment before reuse.

SECTION IX – CONTROL MEASURES AND OTHER PREVENTIVE MEASURES

EYE PROTECTION:	Where there is likelihood of spill or splash, wear chemical goggles and faceshield. Contact lenses should not be worn.
PROTECTIVE GLOVES:	Use nitrile or neoprene gloves to prevent contact with skin.
RESPIRATORY PROTECTION:	Use NIOSH/MSHA-approved respiratory protective equipment when concentration of vapors or mists exceeds applicable exposure limit. Depending on the airborne concentration, use a respirator or gas mask with appropriate cartridges and canisters. A self-contained breathing apparatus (SCBA) is required for large spills and emergencies. Selection and use of respiratory protective equipment should be in accordance in the U.S.A. with OSHA General Industry Standard 29 CFR 1910.134 and in Canada with CSA Standard Z94.4-M1982.
ENGINEERING CONTROLS:	Provide local exhaust or general dilution ventilation needed to maintain concentrations of vapors or mists below applicable exposure limits. Where explosive mixtures may be present, systems safe for such locations should be used.
OTHER PROTECTIVE EQUIPMENT:	Wear appropriate solvent-resistant boots, apron or other protective clothing where spills and splashes are possible. A source of clean water should be available in work areas for flushing the eyes and skin.

SECTION X – OTHER REGULATORY INFORMATION

DOT PROPER SHIPPING NAME:	PETROLEUM NAPHTHA
DOT CLASS:	COMBUSTIBLE LIQUID
DOT ID NUMBER:	UN1255

SARA TITLE III:

Product contains toxic chemicals subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372. Toxic constituents are listed with an asterisk in Section II of this Material Safety Data Sheet.

Product poses the following physical and/or health hazards as defined in 40 CFR 370.3 (Sections 311, 312 of SARA Title III):

Immediate (Acute) Health Hazard
Delayed (Chronic) Health Hazard
Fire Hazard

TDGA:

NAPHTHA, PETROLEUM
CLASS 3.3, UN1255, P.G. III

WHMIS CLASSIFICATION:

Class B3, Combustible Liquid;
Class D2A, Other Toxic Effects, Very Toxic Material;
Class D2B, Other Toxic Effects, Toxic Material

SECTION XI – PREPARATION INFORMATION

PREPARED BY: Product MSDS Coordinator *FORM PART NO.* 82310

ORIGINAL ISSUE DATE: July 20, 1989 *REVISED:* December 14, 1990 *SUPERSEDES:* March 12, 1990

User assumes all risks incident to the use of this product. To the best of our knowledge, the information contained herein is accurate. However, Safety-Kleen assumes no liability whatsoever for the accuracy or completeness of the information contained herein. No representations or warranties, either expressed or implied, or merchantability, fitness for a particular purpose or of any other nature are made hereunder with respect to information or the product to which information refers. The data contained on this sheet apply to the material as supplied to the user.

MATERIAL SAFETY DATA SHEET

FUEL PROCESSORS INCORPORATED
P.O. Box 1407
Woodland, WA 98674
(503)-286-8352 (Oregon)
(206)-225-6571 (Washington)

PRODUCT CODE NO.: M0AEO

MANUFACTURER:
FUEL PROCESSORS INCORPORATED
P.O. Box 1407
Woodland, WA 98674

CONTACT FOR FURTHER INFORMATION:
Call in Oregon (503)-286-8352
Call in Washington (206)-225-6571

Transportation Emergencies:
CALL CHEMTREC at (800)-424-9300 in continental U.S.

PRODUCT IDENTIFICATION:

PRODUCT NAME	:	MERIT ALL ENGINE OIL 10 - 30
SYNONYMS	:	MERIT ALL ENGINE OIL
GENERIC NAME	:	CRANKCASE OIL
CHEMICAL FAMILY	:	PETROLEUM HYDROCARBON
DOT PROPER SHIPPING NAME	:	NOT APPLICABLE
ID NUMBER	:	NONE

SECTION I: INGREDIENTS

SECTION I: INGREDIENTS	TLV	UNITS	AGENCY	TYPE
OIL MIST, IF GENERATED	5.00	MG/M3	OSHA	FULL TERM TWA

THE IDENTITIES OF INGREDIENTS THAT ARE TRADE SECRETS ARE EXCLUDED FROM THIS LIST.

SECTION II: EMERGENCY AND FIRST AID PROCEDURES

EYE CONTACT:
FOR DIRECT CONTACT, FLUSH THE AFFECTED EYE(S) WITH CLEAN WATER. IF IRRITATION OR REDNESS DEVELOPS, SEEK MEDICAL ATTENTION.

SKIN CONTACT:
DO NOT USE GASOLINES, THINNERS OR SOLVENTS TO REMOVE PRODUCT FROM SKIN. WIPE MATERIAL FROM SKIN AND REMOVE CONTAMINATED CLOTHING. CLEANSE AFFECTED AREA(S) THOROUGHLY BY WASHING WITH SOAP AND WATER AND, IF NECESSARY, A WATERLESS SKIN CLEANSER. IF IRRITATION OR REDNESS DEVELOPS AND PERSISTS, SEEK MEDICAL ATTENTION.

INHALATION (BREATHING)
IF IRRITATION OF NOSE OR THROAT DEVELOPS, MOVE AWAY FROM SOURCE OF EXPOSURE AND INTO FRESH AIR. IF IRRITATION PERSISTS, SEEK MEDICAL ATTENTION. IF VICTIM IS NOT BREATHING OR IF BREATHING DIFFICULTIES DEVELOP, ARTIFICIAL RESPIRATION OF OXYGEN SHOULD BE ADMINISTERED BY QUALIFIED PERSONNEL. SEEK IMMEDIATE MEDICAL ATTENTION.

PRODUCT CODE NO.: MOAEO

INGESTION (SWALLOWING):
IF VICTIM IS CONSCIOUS AND ALERT, GIVE 2 TO 3 CUPS OF MILK OR WATER TO DRINK. SEEK MEDICAL ATTENTION. TO PHYSICIAN: EMESIS OR LAVAGE IS NOT RECOMMENDED FOR INGESTIONS OF MINUTE QUANTITIES OR TASTES OF MOST HYDROCARBONS. MEDICAL OPINION IS DIVIDED FOR LARGER INGESTIONS. EMESIS OR LAVAGE HAS BEEN RECOMMENDED FOR THOSE PETROLEUM PRODUCTS WHICH HAVE A HIGH ORAL TOXICITY. GASTRIC LAVAGE WITH A CUFFED ENDOTRACHEAL TUBE IS RECOMMENDED BY SOME PHYSICIANS TO PREVENT ASPIRATION.

SECTION III: POTENTIAL ADVERSE HEALTH EFFECTS

EYE CONTACT:
THIS MATERIAL MAY CAUSE EYE IRRITATION. DIRECT CONTACT MAY CAUSE BURNING, TEARING AND REDNESS.

SKIN CONTACT:
THIS MATERIAL MAY CAUSE SKIN IRRITATION. PROLONGED OR REPEATED CONTACT MAY CAUSE REDNESS, BURNING AND DERMATITIS.

INHALATION (BREATHING)
EXPOSURE TO MISTS, OR PROLONGED OR REPEATED EXPOSURE TO FUMES OR VAPORS THAT MAY BE GENERATED WHEN THIS MATERIAL IS HEATED, MAY CAUSE IRRITATION OF NOSE AND THROAT.

INGESTION (SWALLOWING)
ACCIDENTAL INGESTION OF THIS MATERIAL MAY CAUSE IRRITATION OF THE DIGESTIVE TRACT.

COMMENTS:
USED MOTOR OIL: FOLLOWING REPEATED SKIN APPLICATIONS, ANIMAL STUDIES HAVE SHOWN THAT USED MOTOR/CRANKCASE OILS HAVE CAUSED AN INCREASED INCIDENCE OF SKIN CANCER IN MICE. IT IS THEREFORE RECOMMENDED THAT PROLONGED OR REPEATED CONTACT WITH MOTOR/CRANKCASE OILS BE AVOIDED.

SECTION IV: SPECIAL PROTECTION INFORMATION

VENTILATION:
IF CURRENT VENTILATION PRACTICES ARE NOT ADEQUATE IN MAINTAINING AIRBORNE CONCENTRATIONS BELOW THE ESTABLISHED EXPOSURE LIMITS (SEE SECTION I), ADDITIONAL VENTILATION OR EXHAUST SYSTEMS MAY BE REQUIRED.

RESPIRATORY PROTECTION:
IF AIRBORNE CONCENTRATIONS EXCEED RECOMMENDED EXPOSURE LIMITS, A SUITABLE FILTER-TYPE RESPIRATOR SHOULD BE WORN. (SEE SECTION I.)

PROTECTIVE GLOVES:
THE USE OF GLOVES IMPERMEABLE TO THE SPECIFIC MATERIAL HANDLED IS ADVISED TO PREVENT SKIN CONTACT AND POSSIBLE IRRITATION.

EYE PROTECTION:
APPROVED EYE PROTECTION TO SAFEGUARD AGAINST POTENTIAL EYE CONTACT, IRRITATION OR INJURY IS RECOMMENDED.

PRODUCT CODE NO.: MOAEO

OTHER PROTECTIVE EQUIPMENT:
IT IS SUGGESTED THAT A SOURCE OF CLEAN WATER BE AVAILABLE IN WORK AREA FOR FLUSHING EYES AND SKIN. BARRIER CREAMS THAT ARE SPECIFIC FOR OIL-BASED MATERIAL ARE RECOMMENDED WHEN GLOVES ARE IMPRACTICAL.

SECTION V: REACTIVITY DATA

STABILITY:
STABLE

INCOMPATIBILITY (MATERIALS TO AVOID):
AVOID CONTACT WITH STRONG OXIDIZING AGENTS. EXTENDED EXPOSURE TO HIGH TEMPERATURES MAY CAUSE DECOMPOSITION.

HAZARDOUS DECOMPOSTION PRODUCTS:
THERMAL DECOMPOSITION IN THE PRESENCE OF AIR MAY YIELD MAJOR AMOUNTS OF OXIDES OF CARBON AND MINOR AMOUNTS OF OXIDES OF NITROGEN, PHOSPHORUS, SULFUR AND ZINC.

HAZARDOUS POLYMERIZATION:
WILL NOT OCCUR.

SECTION VI: SPILL OF LEAK PROCEDURES

(HIGHWAY OR RAILWAY SPILLS, CALL CHEMTREC 800-424-9300 IN CONT. US)

PRECAUTIONS IN CASE OF RELEASE OR SPILL:
COLLECT LEAKING LIQUID IN SEALABLE CANTAINERS. ABSORB SPILLED LIQUID IN SAND OR INERT ABSORBANT. CONTACT FIRE AUTHORITIES AND APPROPRIATE STATE/LOCAL AGENCIES. IF SPILL OF ANY AMOUNT IS MADE INTO OR UPON U.S. NAVIGABLE WATERS, THE CONTIGUOUS ZONE, OR ADJOINING SHORELINES, NOTIFY COAST GUARD NATIONAL RESPONSE CENTER (PHONE NUMBER 800-424-8802).

WASTE DISPOSAL METHOD:
DISPOSE OF PRODUCT IN ACCORDANCE WITH LOCAL, COUNTY, STATE, AND FEDERAL REGULATIONS.

SECTION VII: STORAGE AND SPECIAL PRECAUTIONS

HANDLING AND STORAGE PRECAUTIONS:
STORE IN A COOL, DRY LOCATION. KEEP AWAY FROM INCOMPATIBLE MATERIALS (SEE SECTION V). AVOID GENERATING OIL MISTS WHILE HANDLING. AVOID PROLONGED OR REPEATED SKIN CONTACT. WASH THOROUGHLY AFTER HANDLING. FOR USED MOTOR OIL: LAUNDER SATURATED CLOTHING BEFORE WEARING AND DISCARD OIL-SOAKED SHOES AND UNWASHABLE CLOTHING.

SECTION VIII: FIRE AND EXPLOSION HAZARD DATA

HAZARD RANKING
(0= LEAST, 1= SLIGHT, 2= MODERATE, 3= HIGH, 4= EXTREME)

NFPA HAZARD CLASS:
HEALTH HAZARD: 0,
FLAMMABILITY: 1
REACTIVITY: 0,
OTHER: NONE

MATERIAL SAFETY AND DATA SHEET

PRODUCT CODE NO.: MOAEO

DOT FLAMMABILITY CLASSIFICATION: NOT REGULATED
FLASH POINT: 390-400 COC F

EXTINGUSHING MEDIA:
EXTINGUISH WITH DRY CHEMICAL, CO2, WATER SPRAY, FOAM, SAND OR EARTH. WATER AND FOAM MAY CAUSE FROTHING.

FIRE & EXPLOSION HAZARDS:
THIS MATERIAL WILL BURN, BUT WILL NOT IGNITE READILY.

FIRE FIGHTING PROCEDURES:
WATER SPRAY MAY BE USEFUL IN MINIMIZING VAPORS AND COOLING CONTAINERS EXPOSED TO HEAT AND FLAME. AVOID SPREADING BURNING LIQUID WITH WATER USED FOR COOLING PURPOSES. MOVE UNDAMAGED CONTAINERS FROM FIRE AREA IF YOU CAN DO SO WITHOUT RISK.

SECTION IX: PHYSICAL DATA

APPROX BOILING POINT	VAPOR DENSITY	EVAPORATION RATE	% VOLITILE
ABOVE 600 F (316 C)	HEAVIER THAN AIR	SLOWER THAN ETHER	NEGLIGIBLE

% SOLUBILITY IN WATER	SPECIFIC GRAVITY	APPEARANCE	ODOR
NEGLIGIBLE	0.89-0.91	CLEAR, BROWN LIQUID	CHARACTERISTIC

SECTION X: PRECAUTIONARY LABEL

CAUTION: USED MOTOR OIL IS A POSSIBLE SKIN CANCER HAZARD BASED ON TESTS WITH LABORATORY ANIMALS. AVOID PROLONGED OR REPEATED SKIN CONTACT. AVOID MAKING OR BREATHING OIL MIST. USE ADEQUATE VENTILATION. WASH THOROUGHLY WITH SOAP AND WATER AFTER HANDLING.

SECTION XI: DOCUMENTARY INFORMATION

ISSUE DATE: JULY 2 1986 PRODUCT CODE NUMBER.: MOAEO

DISCLAMER OF EXPRESSED AND IMPLIED WARRANTIES

The information in this document is believed to be correct as of the date issued. NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTY IS EXPRESSED OR IS TO BE IMPLIED REGARDING THE ACCURACY OR COMPLETENESS OF THIS INFORMATION, THE RESULTS TO BE OBTAINED FROM THE USE OF THIS INFORMATION OF THE PRODUCT, THE SAFETY OF THIS PRODUCT OR THE HAZARDS RELATED TO ITS USE.

This information and product are furnished on the condition that the person receiving them shall make his own determination as to the suitability of the product for his own purpose and on the condition that he assume the risk of his use thereof.

Material Safety Data Sheet
May be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200. Standard must be consulted for specific requirements.

U.S. Department of Labor
Occupational Safety and Health Administration
(Non-Mandatory Form)

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IDENTITY (As Used on Label and List)	Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.
"CIMPERIAL 1011"	

Section I

Manufacturer's Name Products Division/ Cincinnati Milacron Marketing Company	Emergency Telephone Number 513-841-8181
Address (Number, Street, City, State, and ZIP Code) 4701 Marburg Avenue	Telephone Number for Information 513-841-8964
Cincinnati, Ohio 45209	Date Prepared 10/85
	Signature of Preparer (optional)

Section II — Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity; Common Name(s))	OSHA PEL	ACGIH TLV	Other Limits Recommended	% (optional)
O-phenylphenol	---	---		
Triethanolamine	---	---		
Ethoxylated nonylphenol	---	---		
Mineral oil (mist)	5 mg/M3	5 mg/M3		

The ingredients listed above may contribute to the product hazard as listed in Section VI of this sheet.

Section III — Physical/Chemical Characteristics ND = not determined

Boiling Point	ND	Specific Gravity (H_2O = 1)	1.006
Vapor Pressure (mm Hg.) Not applicable (NA)	NA	Melting Point	NA
Vapor Density (AIR = 1)	NA	Evaporation Rate (Butyl Acetate = 1)	NA

Solubility in Water: appreciable; emulsifiable

Appearance and Odor: Hazy; evergreen or sassafras

Section IV — Fire and Explosion Hazard Data

Flash Point (Method Used) 370°F (COC)	Flammable Limits NA	LEL NA	UEL NA

Extinguishing Media: Foam, carbon dioxide

Special Fire Fighting Procedures: NA

Unusual Fire and Explosion Hazards: None

CRAW00016889

Section V — Reactivity Data			
Stability	Unstable		Conditions to Avoid
	Stable	X	

Incompatibility (Materials to Avoid)
None known

Hazardous Decomposition or Byproducts
None.

Hazardous Polymerization	May Occur		Conditions to Avoid
	Will Not Occur	X	

Section VI — Health Hazard Data

Route(s) of Entry: Inhalation? YES Skin? YES Ingestion? NA

Health Hazards (Acute and Chronic) WARNING: Concentrate is alkaline. Harmful if taken internally. Concentrate is an eye irritant. Eye damage may occur from contact with concentrate. No adverse chronic effects expected when used as recommended.

Carcinogenicity: NTP? NO IARC Monographs? NO OSHA Regulated? NO

Signs and Symptoms of Exposure Eye damage may occur from contact with concentrate. This product is not a primary skin irritant; however, skin irritation may occur if used improperly (concentrate or mix).

Medical Conditions Generally Aggravated by Exposure May aggravate existing skin irritation where further defatting or skin penetration could occur.

Emergency and First Aid Procedures In case of eye contact, flush immediately with running water for 15 minutes, then get prompt medical attention to check for possible irritation. In case of skin contact with concentrate, wash immediately with water. If concentrate or mix is swallowed, do not induce vomiting. Dilute with water or milk. Immediately contact physician and obtain treatment.

Section VII — Precautions for Safe Handling and Use

Steps to Be Taken in Case Material is Released or Spilled
Thoroughly flush with water to sewer.

Waste Disposal Method Ultrafiltration or acid-alum-polymer chemical treatment (followed by phenol-removing procedures, if required), or high temperature incineration.

Precautions to Be Taken in Handling and Storing Use only as recommended by Cincinnati Milacron. Avoid all contact of concentrate with eyes or prolonged contact with skin. Do not swallow. Avoid open flames, sparks, and temperatures over 370°F. If frozen, thaw completely at room temp.

Other Precautions
Contains amines. Do not add sodium nitrite or other nitrosating agents to this product. Suspected cancer-causing nitrosamines could be formed.

Section VIII — Control Measures

Respiratory Protection (Specify Type) Product not volatile.

Ventilation	Local Exhaust		Special
	Mechanical (General)	General	Other

Protective Gloves Waterproof gloves required when handling concentrate.

Eye Protection Safety shield or goggles required when handling concentrate.

Other Protective Clothing or Equipment
Effective metalworking plant protective clothing as appropriate.

Work/Hygienic Practices
Good personal hygiene should always be followed.

MERIT Oil & Refining, Inc.
4150 N. Suttle Rd. · Portland, OR 97217
(503) 286-8352 1-800-367-8894
Fax: (503) 286-5027

MATERIAL SAFETY DATA SHEET

AERO SOLUBLE OIL

This Material Safety Data Sheet contains environmental, health and toxicology information for your employees. Please make sure this information is given to them. It also contains information to help you meet community right-to-know/emergency response reporting requirements under SARA Title III and many other laws. If you resell this product, this MSDS must be given to the buyer or the information incorporated into your MSDS.

1. PRODUCT IDENTIFICATION

AERO SOLUBLE OIL

CAUTION ! - MAY CAUSE EYE IRRITATION
- MAY BE HARMFUL IF SWALLOWED
- KEEP OUT OF REACH OF CHILDREN

2. FIRST AID

EYE CONTACT:
Flush eyes immediately with fresh water for at least 15 minutes while holding the eyelids open. Remove contact lenses if worn. No additional first aid should be necessary, however, if irritation persists, see a doctor.
SKIN CONTACT:
No first aid procedures are normally required. As a precaution, wash skin thoroughly with soap and water. Remove and wash contaminated clothing.
INHALATION:
Since this material is not expected to be an immediate inhalation problem, no first aid procedures are required.

INGESTION:
If swallowed, give water or milk to drink and telephone for medical advice. Consult medical personnel before inducing vomiting. If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital.

3. IMMEDIATE HEALTH EFFECTS

EYE CONTACT:
The eye irritation potential of this substance has not been determined. However, it may be slightly irritating to the eyes and could cause prolonged (days) impairment of your vision. The degree of the injury will depend on the amount of material that gets into the eye and the speed and thoroughness of the first aid treatment. Signs and symptoms may include pain, tears, swelling, redness, and blurred vision. This hazard evaluation is based on the known toxicity of the ingredients in this substance.
SKIN IRRITATION:
This substance is not expected to cause prolonged or significant skin irritation. This hazard evaluation is based on the data from similar materials.
DERMAL TOXICITY:
The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if it gets on the skin. This hazard evaluation is based on data from similar materials. Read the Additional Health Data section (12) of this document for more information.
RESPIRATORY/INHALATION:
The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if inhaled. This hazard evaluation is based on data from similar materials.
INGESTION:
The oral toxicity of this substance has not been determined. However, it may be slightly toxic to internal organs if swallowed. The degree of injury will depend on the amount absorbed from the gut. This hazard evaluation is based on the known toxicity of the ingredients in this substance. Read the Additional Health Data section (12) of this document for more information.

4. PROTECTIVE EQUIPMENT

EYE PROTECTION:
Do not get this material in your eyes. Eye contact can be avoided by wearing chemical goggles.
SKIN PROTECTION:
No special skin protection is usually necessary. Avoid prolonged or frequently repeated skin contact with this material. Skin contact can be minimized by wearing protective clothing.

RESPIRATORY PROTECTION:
No special respiratory protection is normally required. However, if operating conditions create high airborne concentrations, the use of an approved respirator is recommended.
VENTILATION:
Use adequate ventilation to keep the airborne concentrations of this material below the recommended exposure standard.

5. FIRE PROTECTION

FLASH POINT: (COC) 320F (160C)
AUTOIGNITION: NDA
FLAMMABILITY LIMITS (% by volume in air): NDA
EXTINGUISHING MEDIA:
CO2, Dry Chemical, Foam, Water Fog
NFPA RATINGS: Health 1; Flammability 1; Reactivity 0; Special NDA
HMIS RATINGS: Health 1; Flammability 1; Reactivity 0; Other NDA;
(Least = 0, Slight = 1, Moderate = 2, High = 3, Extreme = 4). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association or, if applicable, the National Paint and Coatings Association.
FIRE FIGHTING PROCEDURES:
For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.
COMBUSTION PRODUCTS:
Normal combustion forms carbon dioxide, water vapor and may produce oxides of sulfur.

6. STORAGE, HANDLING, AND REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS:
NDA
STABILITY:
Stable
HAZARDOUS POLYMERIZATION:
Polymerization will not occur.
INCOMPATIBILITY:
May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc. Avoid contact with nitrites.
SPECIAL PRECAUTIONS:
READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL.

DO NOT WELD, HEAT OR DRILL CONTAINER! Residue may ignite with explosive violence if heated sufficiently. CAUTION! Do not use pressure to empty drum or explosion may result.

7. PHYSICAL PROPERTIES

SOLUBILITY: Forms a stable emulsion with water.
APPEARANCE: Pale lemon yellow liquid.
BOILING POINT: NDA
MELTING POINT: NA
EVAPORATION: NA
SPECIFIC GRAVITY: 0.91 @ 15.6/15.6C
VAPOR PRESSURE: NA
PERCENT VOLATILE (VOLUME %): NA
VAPOR DENSITY (AIR=1): NA
VISCOSITY: 28 cSt @ 40C (Min.)

8. ENVIRONMENTAL CONCERNS, SPILL RESPONSE AND DISPOSAL

CHEMTREC EMERGENCY PHONE NUMBER: (800) 424-9300 (24 hour)
SPILL/LEAK PRECAUTIONS:
This material is not expected to present any environmental problems other than those associated with oil spills.

Stop the source of the leak or release. Clean up releases as soon as possible. Contain liquid to prevent further contamination of soil, surface water or groundwater. Clean up small spills using appropriate techniques such as sorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Follow prescribed procedures for reporting and responding to larger releases. However, because of its dispersant properties, this material forms emulsions with water.
DISPOSAL METHODS:
Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

9. EXPOSURE STANDARDS, REGULATORY LIMITS AND COMPOSITION

COMPOSITION COMMENT:
All the components of this material are on the Toxic Substances Control Act Chemical Substances Inventory.

This product fits the ACGIH definition for mineral oil mist. The ACGIH TLV is 5 mg/m3, the OSHA PEL is 5 mg/m3.

The percent compositions are given to allow for the various ranges of the components present in the whole product and may not equal 100%.

PERCENT/CAS#	COMPONENT/REGULATORY LIMITS
100.0 %	AERO SOLUBLE OIL
CONTAINING	
> 80.0 %	LUBRICATING BASE OIL

The BASE OIL may be a mixture of any of the following: CAS 64741884, CAS 64741895, CAS 64741964, CAS 64741975, CAS 64742014, CAS 64742525, CAS 64742536, CAS 64742547, CAS 64742627, CAS 64742650, CAS 72623837.

< 20.0 %	ADDITIVES, INCLUDING THE FOLLOWING
CAS111762	ETHANOL, 2-BUTOXY 25ppm ACGIH TLV 25ppm OSHA PEL
CAS107415	2-METHYL-2,4-PENTANEDIOL 25ppm ACGIH TLV

TLV - THRESHOLD LIMIT VALUE
STEL - Short-term Exposure Limit
RQ - Reportable Quantity
TWA - Time Weighted Average
CAS - Threshold Planning Quantity

10. REGULATORY INFORMATION

DOT SHIPPING NAME: NOT DESIGNATED AS A HAZARDOUS MATERIAL BY THE FEDERAL DOT. Petroleum Lubricating Oil, NOIBN
DOT HAZARD CLASS: NOT APPLICABLE
DOT IDENTIFICATION NUMBER: NOT APPLICABLE

SARA 311 CATEGORIES:		
	1. Immediate (Acute) Health Effects:	YES
	2. Delayed (Chronic) Health Effects:	NO
	3. Fire Hazard:	NO
	4. Sudden Release of Pressure Hazard:	NO
	5. Reactivity Hazard:	NO

WHEN A COMPONENT OF THIS MATERIAL IS SHOWN IN THIS SECTION, THE REGULATORY LIST ON WHICH IT APPEARS IS INDICATED.

2-METHYL-2,4-PENTANEDIOL	02,10,14,28
ETHANOL, 2-BUTOXY	02,10,14,17,25,26,28

REGULATORY LISTS SEARCHED:

01 = SARA 313	02 = MASS RTK	03 = NTP carcinogen
04 = CA Prop. 65	05 = MI 406	06 = IARC Group 1
07 = IARC Group 2A	08 = IARC Group 2B	09 = SARA 302/304
10 = PA RTK	11 = NJ RTK	12 = CERCLA 302.4
13 = MN RTK	14 = ACGIH TLV	15 = ACGIH STEL
16 = ACGIH Calculated TLV	17 = OSHA TWA	18 = OSHA STEL
19 = EPA Carcinogen	20 = TSCA Sect 4(e)	21 = TSCA Sect 5 (a) (e) (f)
22 = TSCA Sect 6	23 = TSCA Sect 12 (b)	24 = TSCA Sect 8 (a)
25 = TSCA 8 (d)	26 = TSCA 8 (e)	27 = Canadian WHMIS
28 = OSHA CEILING	29 = TSCA Sect 8 FYI	

11. PRODUCT TOXICOLOGY DATA

EYE IRRITATION:
NDA. The hazard evaluation was based on data on the components.
SKIN IRRITATION:
NDA. The hazard evaluation was based on data from similar materials.
DERMAL TOXICITY:
NDA. The hazard evaluation was based on data from similar materials.
RESPIRATORY/INHALATION:
NDA. The hazard evaluation was based on data from similar materials.
INGESTION:
NDA. The hazard evaluation was based on data from similar materials.

12. ADDITIONAL HEALTH DATA

ADDITIONAL HEALTH DATA COMMENT:
This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrotreating. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since the information contained herein may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modification of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

ıta Sheet

e last revised 03/08/88

MICHIGAN INDUSTRIAL PRODUCTS CO.

I. General Information

emical Name & Synonyms: ORGANIC ESTERS	Trade Name & Synonyms: LUBRIFORGE 20-NP
mical Family: POLYMERS	Formula: WATER SOLUBLE POLYMERS
per DOT Shipping Name: SAME	DOT Hazard Classification: NONE
anufacturer: ICHIGAN INDUSTRIAL PRODUCTS COMPANY	Manufacturer's Phone Number: 313-985-4545
ıufacturer's Address: 01 16TH ST., PORT HURON, MI 48060	Chemtrec Phone Number: N/A

II. Ingredients

Principal Hazardous Components	Percent	Threshold Limit Value (units)
HAZARDOUS INGREDIENTS		

III. Physical Data

iling Point (°F): 220°F	Specific Gravity (H_2O = 1): 1.10
or Pressure (mm Hg.): <760 MM	Percent Volatile By Volume (%): 82.0
or Density (Air = 1): 0.62	Evaporation Rate (WATER = 1): 0.75
ıubility in Water: COMPLETE	pH

earance & Odor: OILY BROWN - BLAND

IV. Fire & Explosion Hazard Data

h Point (Test Method): ONE	Auto Ignition Temperature: NONE	
mmable Limits: NE	LEL: NONE	UEL: NONE

inguishing Media: OT NEEDED

cial Fire Fighting Procedures: T NEEDED

sual Fire & Explosion Hazards: ONE

CRAW00016897

Attachment for Response to DEQ Comment 6 and 9

Lampros

This MSDS should be attached or kept with the respective product with which it is associated.

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MATERIAL SAFETY DATA SHEET

..TION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME : INDUSTRIAL PURE STRENGTH-SPRAY
IDENTIFICATION NUMBER: 3599 838
DATE PRINTED : 12-11-97

PRODUCT USE/CLASS : CLEANER/DEGREASER

SUPPLIER:
RUST-OLEUM CORPORATION
11 HAWTHORN PARKWAY
VERNON HILLS, ILLINOIS
60061 USA

(847) 367-7700 RUST-OLEUM CORP.
MON.-FRI, 8:00 AM-4:30 PM

MANUFACTURER:
RUST-OLEUM CORPORATION
11 HAWTHORN PARKWAY
VERNON HILLS, ILLINOIS
60061 USA

(847) 367-7700 RUST-OLEUM CORP.
MON.-FRI, 8:00 AM-4:30 PM

PREPARER: LJW, PHONE: , PREPARE DATE: 07-25-97

TION 2 - COMPOSITION/INFORMATION ON INGREDIENTS

ITEM	CHEMICAL NAME	CAS NUMBER	WT/WT % LESS THAN
01	D-LIMONENE TECH GRADE	5989-27-5	75.0 %
02	LIQUIFIED PETROLEUM GAS	68476-85-7	30.0 %

EXPOSURE LIMITS

	ACGIH		OSHA		COMPANY	
ITEM	TLV-TWA	TLV-STEL	PEL-TWA	PEL-CEILING	TLV-TWA	SKIN
01	N.E.	N.E.	N.E.	N.E.	N.E.	NO
02	1000 PPM	N.E.	1000 PPM	N.E.	N.E.	NO

(SEE SECTION 16 FOR ABBREVIATION LEGEND)

TION 3 - HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: DO NOT TASTE OR SWALLOW.

EFFECTS OF OVEREXPOSURE - EYE CONTACT: CAN CAUSE SEVERE EYE IRRITATION. IRRITATING, AND MAY INJURE EYE TISSUE IF NOT REMOVED PROMPTLY.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: NO INFORMATI

SECTION 7 - HANDLING AND STORAGE

HANDLING: WASH THOROUGHLY AFTER HANDLING. FOLLOW ALL MSDS/LABEL PRECAUTIONS EVEN AFTER CONTAINER IS EMPTIED BECAUSE IT MAY RETAIN PRODUC RESIDUES.

STORAGE: KEEP AWAY FROM HEAT, SPARKS, FLAME AND SOURCES OF IGNITION.

SECTION 8 - EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: USE PROCESS ENCLOSURES, LOCAL EXHAUST VENTILATION OR OTHER ENGINEERING CONTROLS TO CONTROL AIRBORNE LEVELS BELOW RECOMMEND EXPOSURE LIMITS. PREVENT BUILD-UP OF VAPORS BY OPENING ALL DOORS AND WINDOWS TO ACHIEVE CROSS-VENTILATION.

RESPIRATORY PROTECTION: A RESPIRATORY PROTECTION PROGRAM THAT MEETS OSH 1910.134 AND ANSI Z88.2 REQUIREMENTS MUST BE FOLLOWED WHENEVER WORKPLACE CONDITIONS WARRANT A RESPIRATOR'S USE.

SKIN PROTECTION: USE GLOVES TO PREVENT PROLONGED SKIN CONTACT.

EYE PROTECTION: USE SAFETY EYEWEAR DESIGNED TO PROTECT AGAINST SPLASH O LIQUIDS.

OTHER PROTECTIVE EQUIPMENT: REFER TO SAFETY SUPERVISOR OR INDUSTRIAL HYGIENIST FOR FURTHER INFORMATION REGARDING PERSONAL PROTECTIVE EQUIPMEN AND ITS APPLICATION.

HYGIENIC PRACTICES: WASH THOROUGHLY WITH SOAP AND WATER BEFORE EATING, DRINKING OR SMOKING.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

BOILING RANGE : -34 - 310 F
ODOR : CITRUS
APPEARANCE : LIQUID
SOLUBILITY IN H2O : N.D.
FREEZE POINT : ND
VAPOR PRESSURE : ND
PHYSICAL STATE : LIQUID

VAPOR DENSITY : IS HEAVIER THAN A
ODOR THRESHOLD : ND
EVAPORATION RATE: IS SLOWER THAN ET
SPECIFIC GRAVITY: 1.0078
PH AT 0.0 % : ND
VISCOSITY : ND

COEFFICIENT OF WATER/OIL DISTRIBUTION: ND

(SEE SECTION 16 FOR ABBREVIATION LEGEND)

EFFECTS OF OVEREXPOSURE - SKIN CONTACT: CONTACT CAUSES SKIN IRRITATION. MAY CAUSE ALLERGIC SKIN REACTION. LOW HAZARD FOR USUAL INDUSTRIAL HANDLING OR COMMERCIAL HANDLING BY TRAINED PERSONNEL.

EFFECTS OF OVEREXPOSURE - INHALATION: PROLONGED OR EXCESSIVE INHALATION MAY CAUSE RESPIRATORY TRACT IRRITATION. CAUSES NOSE AND THROAT IRRITATION. BREATHING SMALL AMOUNTS DURING NORMAL HANDLING IS NOT LIKELY TO CAUSE HARMFUL EFFECTS; BREATHING LARGE AMOUNTS MAY BE HARMFUL. SYMPTOMS OF OVEREXPOSURE INCLUDE NOSE, THROAT AND RESPIRATORY TRACT IRRITATION. PRE-EXISTING LUNG DISORDERS, E.G. ASTHMA-LIKE CONDITIONS, MAY BE AGGRAVATED BY EXPOSURE TO THIS MATERIAL.

EFFECTS OF OVEREXPOSURE - INGESTION: SUBSTANCE MAY BE HARMFUL IF SWALLOWED.

EFFECTS OF OVEREXPOSURE - CHRONIC HAZARDS: CONTAINS D-LIMONENE, WHICH IS AN IARC GROUP 3 AGENT: "PROBABLY NOT CARCINOGENIC TO HUMANS". D-LIMONENE IS NOT CLASSIFIED AS A CARCINOGEN BY OSHA, NTP NOR ACGIH.

PRIMARY ROUTE(S) OF ENTRY: SKIN CONTACT INHALATION EYE CONTACT

SECTION 4 - FIRST AID MEASURES

FIRST AID - EYE CONTACT: HOLD EYELIDS APART AND FLUSH WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES. GET MEDICAL ATTENTION.

FIRST AID - SKIN CONTACT: WASH WITH SOAP AND WATER. GET MEDICAL ATTENTION IF IRRITATION DEVELOPS OR PERSISTS.

FIRST AID - INHALATION: NO INFORMATION.

FIRST AID - INGESTION: SWALLOWING LESS THAN AN OUNCE WILL NOT CAUSE SIGNIFICANT HARM. FOR LARGER AMOUNTS, DO NOT INDUCE VOMITING, BUT GIVE ONE OR TWO GLASSES OF WATER TO DRINK AND GET MEDICAL ATTENTION.

SECTION 5 - FIRE FIGHTING MEASURES

FLASH POINT: -10 F

LOWER EXPLOSIVE LIMIT: 0.7 %
UPPER EXPLOSIVE LIMIT: 9.5 %

AUTOIGNITION TEMPERATURE: ND

EXTINGUISHING MEDIA: DRY CHEMICAL FOAM WATER FOG

UNUSUAL FIRE AND EXPLOSION HAZARDS: NO INFORMATION.

SPECIAL FIREFIGHTING PROCEDURES: NO INFORMATION.

SECTION 10 - STABILITY AND REACTIVITY

CONDITIONS TO AVOID: AVOID ALL POSSIBLE SOURCES OF IGNITION.

INCOMPATIBILITY: INCOMPATIBLE WITH STRONG OXIDIZING AGENTS, STRONG ACID AND STRONG ALKALIES.

HAZARDOUS DECOMPOSITION PRODUCTS: BY OPEN FLAME, CARBON MONOXIDE AND CARBON DIOXIDE.

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR UNDER NORMAL CONDITIONS.

STABILITY: THIS PRODUCT IS STABLE UNDER NORMAL STORAGE CONDITIONS.

SECTION 11 - TOXICOLOGICAL PROPERTIES

COMPONENT TOXICOLOGICAL INFORMATION:

CHEMICAL NAME	LD50	LC50
D-LIMONENE TECH GRADE	RAT 5G/KG	N.E.
LIQUIFIED PETROLEUM GAS	N.E.	N.E.

SECTION 12 - ECOLOGICAL INFORMATION

ECOLOGICAL INFORMATION: PRODUCT IS A MIXTURE OF LISTED COMPONENTS.

SECTION 13 - DISPOSAL CONSIDERATIONS

DISPOSAL METHOD: DISPOSE OF MATERIAL IN ACCORDANCE TO LOCAL, STATE AND FEDERAL REGULATIONS AND ORDINANCES. DO NOT ALLOW TO ENTER STORM DRAINS SEWER SYSTEMS.

SECTION 14 - TRANSPORTATION INFORMATION

NO TRANSPORTATION INFORMATION IS AVAILABLE.

SECTION 15 - REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS: AS FOLLOWS -

OSHA: HAZARDOUS BY DEFINITION OF HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200)

CERCLA - SARA HAZARD CATEGORY:
THIS PRODUCT HAS BEEN REVIEWED ACCORDING TO THE EPA 'HAZARD CATEGORIES' PROMULGATED UNDER SECTIONS 311 AND 312 OF THE SUPERFUND AMENDMENT AND REAUTHORIZATION ACT OF 1986 (SARA TITLE III) AND IS CONSIDERED, UNDER APPLICABLE DEFINITIONS, TO MEET THE FOLLOWING CATEGORIES:

FIRE HAZARD

SARA SECTION 313:
THIS PRODUCT CONTAINS THE FOLLOWING SUBSTANCES SUBJECT TO THE REPORTING REQUIREMENTS OF SECTION 313 OF TITLE III OF THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 AND 40 CFR PART 372:

CHEMICAL NAME	CAS NUMBER	WT/WT % IS LESS THAN

NO SARA SECTION 313 COMPONENTS EXIST IN THIS PRODUCT.

TOXIC SUBSTANCES CONTROL ACT:
THIS PRODUCT CONTAINS THE FOLLOWING CHEMICAL SUBSTANCES SUBJECT TO THE REPORTING REQUIREMENTS OF TSCA 12(B) IF EXPORTED FROM THE UNITED STATES:

CHEMICAL NAME	CAS NUMBER

NO INFORMATION IS AVAILABLE.

U.S. STATE REGULATIONS: AS FOLLOWS -

NEW JERSEY RIGHT-TO-KNOW:
THE FOLLOWING MATERIALS ARE NON-HAZARDOUS, BUT ARE AMONG THE TOP FIVE COMPONENTS IN THIS PRODUCT:

CHEMICAL NAME	CAS NUMBER
ALCOHOL ETHOXYLATE MIXTURE	68439-46-3

PENNSYLVANIA RIGHT-TO-KNOW:
THE FOLLOWING NON-HAZARDOUS INGREDIENTS ARE PRESENT IN THE PRODUCT AT GREATER THAN 3%:

CHEMICAL NAME	CAS NUMBER
ALCOHOL ETHOXYLATE MIXTURE	68439-46-3

CALIFORNIA PROPOSITION 65:
WARNING: THE CHEMICAL(S) NOTED BELOW AND CONTAINED IN THIS PRODUCT, ARE KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM:

CHEMICAL NAME	CAS NUMBER

NO PROPOSITION 65 CHEMICALS EXIST IN THIS PRODUCT.

INTERNATIONAL REGULATIONS: AS FOLLOWS -

CANADIAN WHMIS: THIS MSDS HAS BEEN PREPARED IN COMPLIANCE WITH CONTROLLED PRODUCT REGULATIONS EXCEPT FOR USE OF THE 16 HEADINGS.

CANADIAN WHMIS CLASS: NO INFORMATION AVAILABLE.

TION 16 - OTHER INFORMATION

HMIS RATINGS - HEALTH: 2 FLAMMABILITY: 4 REACTIVITY: 0

PREVIOUS MSDS REVISION DATE: 07-25-97

REASON FOR REVISION: REVISED MSDS.

LEGEND: N.A. - NOT APPLICABLE, N.E. - NOT ESTABLISHED,
N.D. - NOT DETERMINED

: NO INFORMATION.

THE INFORMATION CONTAINED ON THIS MSDS HAS BEEN CHECKED AND SHOULD BE ACCURATE. HOWEVER, IT IS THE RESPONSIBILITY OF THE USER TO COMPLY WITH ALL FEDERAL, STATE, AND LOCAL LAWS AND REGULATIONS.

December 30, 1997

Jalapa Gas & Chemical Corp.
P.O. Box 24159
Houston, Texas 77229-4159

MATERIAL SAFETY DATA SHEET (MSDS)

Phone numbers: Voice (713) 643-2408 Spill Chemtrek (800) 424-9300
Fax (713) 643-0771 (202) 483-7616 24-hrs.

A. Product Identification

Chemtane II Fabgas
Gas Mixture (for composition see B. Hazardous components)

B. Hazardous Components

Ingredients	CAS Number	OSHA PEL	ACGIH TLV
Propane	74-98-6	1000 ppm	1000 ppm
n-Butane	106-97-8	800 ppm	800 ppm
n-Pentane	109-66-0	600 ppm	600 ppm
Isohexanes	8030-30-6	NE	NE
Soltrol 100	68551-16-6	NE	NE
2,3 Dimethylbutane	79-29-8	500 ppm	500 ppm
Xylene	1330-20-7	100 ppm	100 ppm
Cyclopentane	287-92-3	600 ppm	600 ppm
2-Methylpentane	107-83-5	500 ppm	500 ppm

C. Physical/Chemical Characteristics

Boiling Point – 43.6 °F -42 °C
Specific Gravity 0.505 @ 15.6 / 15.6 °C
Vapor Pressure 218 PSI @ 37.78 °C
Evaporation Rate (Butyl Acetate = 1) 1.00
Solubility in Water Not Soluble
Appearance is Light Green
Odor – distinct Odor of Commercial Natural Gas

D. Fire and Explosion Hazard Data

Flash Point -150 °F (-101 °C) LEL 2.3% UEL 9.4%

NFPA RATINGS: Health 1; Flammability 4; Reactivity 0; Special NDA
(Least - 0, Moderate - 2, High - 3, Extremely - 4)
These values are obtained using the guidelines of published evaluations.

Extinguishing Media CO_2 foam, Dry Chemical

Special fire fighting procedures, foam, dry chemical; water is not suitable except to keep containers cool.

Unusual Fire and Explosion Hazards Pressurized containers can present explosion hazard in fire.

High volatility, heavier than air.

This product presents an extreme fire hazard. Liquid very quickly evaporates, even at low temperatures and forms vapors (fumes) which can catch fire and burn with explosive violence. Invisible vapor spreads easily and can be ignited by sources such as pilot lights, welding equipment, and electrical motors and switches.

E. Personal Protection Information

Ventilation: Use adequate ventilation to control exposure below recommended levels.

Respiratory Protection: Not generally required for concentrations not exceeding the recommended exposure level, use NIOSH/MSHA approved air purifying respirator.

Eye Protection: Use safety glasses with side shields. For splash protection use face shield and chemical goggles.

Skin Protection: Avoid unnecessary skin contamination with material. Use gloves of Neoprene or Viton construction if liquid contact could occur.

Note: Personal protection information shown in Section C is based upon general information as to normal uses and conditions. Where special or unusual uses or conditions exist, it is suggested that the expert assistance of an industrial hygienist or other qualified professional be sought.

F. Handling and Storage Precautions

Avoid contact with eyes, skin or clothing. Avoid breathing vapors, mist, fumes or dust. Do not swallow. May be aspirated into lungs. Wear protective equipment and/or garments described in Section C if exposure conditions warrant. Wash thoroughly after handling. Launder contaminated clothing before reuse. Use with adequate ventilation.

Keep away from heat, sparks and flame. Store in well-ventilated area. Store in tightly closed container. Bond and ground during liquid transfer.

G. Reactivity Data

Stability: Stable
Conditions to Avoid: Not Applicable
Incompatibility (Materials to Avoid): Oxygen and strong oxidizing agents

Hazardous Polymerization: Will Not Occur
Conditions to Avoid: Not Applicable
Hazardous Decomposition Products: Carbon oxides formed when burned.

H. Health Hazard Data

Recommended Exposure limits
See Section B.

HEALTH HAZARD (continued)

-EXTREMELY FLAMMABLE
-LIQUID CAN CAUSE SKIN AND EYE INJURY
-MAY EXCLUDE OXYGEN AVAILABLE FOR BREATHING
-LEAK DETECTION BY SENSE OF SMELL
-CONTENTS UNDER PRESSURE
-KEEP OUT OF REACH OF CHILDREN

ACUTE EFFECTS OF OVEREXPOSURE:

Eye: Liquid or vapors may be mildly irritating.

Skin: Prolonged or repeated contact with the liquid may cause defatting of the skin resulting in drying, redness, and possibly blistering.

Inhalation: Vapors may be mildly irritating to lungs and mucous membranes of the nose and throat. Overexposure may cause dizziness, headache, excitation, drowsiness, incoordination, anesthesia, unconsciousness, and respiratory arrest. As an example, exposure to butane in concentration of 5000 ppm for ten minutes were found not to be irritating to the mucous membranes or to produce local or systemic effects in humans. A four hour inhalation LD50, rat, for butane (Commercial Grade) > 6100 ppm.

Ingestion: May cause effects similar to those of inhalation and gastrointestinal irritation. If swallowed, may be aspirated resulting inflammation and possible fluid accumulation in the lungs.

SUBCHRONIC AND CHRONIC EFFECTS OF OVEREXPOSURE:

No known applicable effects

OTHER HEALTH EFFECTS:

None of the components were mutagenic in the Salmonella typhimurium assay.
A Toxicity study summary for the components is available upon request.

HEALTH HAZARD CATEGORIES:

Target Organ Toxin No

FIRST AID AND EMERGENCY PROCEDURES:

Eye: Flush eyes with running water for at least fifteen minutes.
If irritation or adverse symptoms develop, seek medical attention.

Skin: Wash skin with Soap and water. If irritation or adverse symptoms develop, seek medical attention.

Inhalation: Remove from exposure. If breathing is difficult, give oxygen. If breathing ceases, administer artificial respiration followed by oxygen. Seek immediate medical attention.

Ingestion: Do not induce vomiting. Seek immediate medical attention.

Note to physician: Gastric lavage using a cuffed endotracheal tube may be performed at your discretion.

I. Physical Data

SOLUBILITY: Soluble in alcohol, ether and hydrocarbons; insoluble in water
Vapor Pressure: 218 PSI at 100 °F (37.78 °C)
Specific Gravity of Gas (compared to air) (Air = 1): 1
Solubility in Water: Negligible
Specific Gravity of Liquid (H_2O = 1): 0.505 at 60/60 °F (15.6/15.6 °C)
Percent Volatile by Volume: 100
Evaporation Rate (Butyl Acetate = 1): > NA

J. Fire and Explosion Data

Flash Point: -150 °F (-101 °C) (CC)
Flammable Limits (% by Volume in Air): LEL 2.3% UEL 9.4%

Fire Extinguishing Media: Dry Chemical, foam or carbon dioxide (CO_2)

Special Fire Fighting Procedures: Evacuate area of all unnecessary personnel. Use NIOSH/MSHA approved self-contained breathing apparatus and other protective equipment and/ or garments described in Section C if exposure conditions warrant. Shut off source if possible. Water fog or spray may be used to cool exposed containers and equipment. Do not spray water directly on fire product will float and could be reignighted on surface of water.

Fire and Explosion Hazards: Carbon oxides formed when burned. Highly flammable vapors which are heavier than air may accumulate in low areas and/or spread along ground away from handling site.
Flash back along vapor trail is possible.

K. Spill, Leak and Disposal Procedures

Precautions Required if Material is Released or Spilled:
Evacuate area of all unnecessary personnel. Wear Protective equipment and/or garments described in Section C if exposure conditions warrant. Shut off source if possible and contain spill. Protect from ignition. Keep out of water sources and sewers. Absorb in dry, inert material (sand, clay, etc.). Transfer to disposal drums using non-sparking equipment.

Waste Disposal (Insure Conformity with all Applicable Disposal regulations): Incinerate or otherwise manage at a RCRA permitted waste management facility.

L. DOT Transportation

DOT IDENTIFICATION NUMBER UN1954
DOT Shipping Name: Liquified Petroleum Gas
Dot Hazard Class 2.1 (Flammable Gas)
Hazardous Substance/RQ: Not Applicable

M. RCRA Classification -UNADULTERATED PRODUCT AS A WASTE

Ignitable (D001)

N Protection Required for Work on Contaminated Equipment

Contact immediate supervisor for specific Instructions before work is initiated. Wear protective equipment and/or garments described in Section C if exposure conditions warrant.

O. Hazard Classification

Yes This product meets the following hazard definition(s) as defined by the Occupational Safety and Health Hazard Communication Standard (29 CFR Section 1910.1200):

Yes Combustible Liquid	Yes Flammable Gas	No Toxic
No Suspect Carcinogen	No Mutagen	No Corrosive
No Known Carcinogen	No Target Organ Toxin	No Teratogen
No Allergic Sensitizer	No Irritant	No Highly Toxic

Additional information is listed in Section R. regulatory Information. The lists which were searched are listed in section R. regulatory Information . The Carcinogenicity data was searched in IARC, NTP Carcinogen, EPA Carcinogen, and OSHA Ceiling.

Other Health Effects:
Propane, n-butane and n-pentane were nonmutagenic in the Salmonella typhimurium assay.

P. ENVIRONMENTAL CONCERNS, SPILL RESPONSE AND DISPOSAL

Chemtrek Emergency Phone (800) 424-9300 / (202) 483-7616 (24 hr)
Spill/Leak Precautions

Q. Additional Comments

SARA 311 CATEGORIES:	1. Immediate (Acute) Heath Effects:	YES
	2. Delayed (Chronic) Heath Effects:	NO
	3. Fire Hazard:	YES
	4. Sudden Release of Pressure Hazard:	YES
	5. Reactivity Hazard:	NO

SARA 313

As of the preparation date, this product was not subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

R. Additional Comments

REGULATORY LISTS SEARCHED:

01=SARA 313	02=MASS RTK	03=NTP Carcinogen
04=CA Prop. 65	05=MI 406	06=IARC Group 1
07=IARC Group 2A	08=IARC Group 2B	09=SARA 302/304
10=PA RTK	11=NJ RTK	12=CERCLA 302.4
13=MN RTK	14=ACGIH TLV	15=ACGIH STEL
16=ACGIH Calculated TLV	17=OSHA TWA	18=OSHA STEL
19=Chevron TLV	20=EPA Carcinogen	21=TSCA Sect 4(e)
22=TSCA Sect 5(a)(e)(f)	23=TSCA Sect 6	24=TSCA Sect 12(b)
25=TSCA Sect 8(a)	26=TSCA Sect 8(d)	28=Canadian WHMIS
29=OSHA CEILING		

The following components of this Material are found on the regulatory lists indicated.

Ethane	02, 10, 11, 13, 14
Propane	02, 10, 11, 13, 14, 17
n-Butane	02, 10, 11, 13, 14, 17, 28
i-Butane	02, 10, 11, 13, 14, 17, 28
n-Pentane	02, 10, 11, 13, 14, 17, 28
Cyclopentane	02, 10, 11, 13, 14, 17, 28
2-Methylpentane	02, 10, 11, 13, 14, 17, 28

MSDS Preparation by
INERTIA, Inc., 2002 Mustang Lane, Rosharon, TX 77583

Lampros

8428930 MATERIAL SAFETY DATA SHEET (MSDS) 5W540

This MSDS should be attached or kept with the respective product with which it is associated.

)9,5W540

ERIAL SAFETY DATA SHEET

ECTION 1 - PRODUCT AND COMPANY IDENTIFICATION

DUCT NAME: BALL PAINT MARKER

EVISION #: 1.5 DATE PREPARED: JANUARY 18, 1995 DATE REVISED: JULY 2, 1998

UFACTURER:

A-CO INDUSTRIES, INC./MARKAL CO.

ul PRATT BLVD.
LK GROVE VILLAGE, IL, USA
07-5746

FORMATION TELEPHONE: 847-956-7600
ERGENCY TELEPHONE: CALL CHEMTREC
SA 800-424-9300
NTERNATIONAL (CALL COLLECT) 1-703-527-3887

EMICAL FORMULA: MIXTURE

AS NO.: NOT APPLICABLE SYNONYMS: NOT APPLICABLE DERIVATION: NOT APPLICABLE

ERAL USE: PAINT MARKER FOR HARD SURFACES

ECTION 2 - COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENT	CAS NO.	%
YL ALCOHOL 3,4,5,6	64-17-5	1-3
GIH: TWA = 1000 PPM		
OSHA: TWA = 1000 PPM		
E NIOSH: TWA = 1000 PPM		
SOPROPYL ALCOHOL 3,4,5,6	67-63-0	2-3
ACGIH: TWA = 400 PPM, STEL = 500 PPM		
HA: TWA = 400 PPM		
E NIOSH: TWA = 400 PPM, STEL = 500 PPM		
PYLENE GLYCOL METHYL ETHER 3,4,5,6	107-98-2	58-79
GIH: TWA = 100 PPM, STEL = 150 PPM		
OSHA: TWA = 100 PPM, STEL = 150 PPM		
E NIOSH: TWA = 100 PPM, STEL = 300 PPM		
YLENE GLYCOL N-BUTYL ETHER 3,4,5,6	111-76-2	1-3
ACGIH: TWA = 25 PPM		
HA: TWA = 50 PPM		
E NIOSH: TWA = 25 PPM		

SECTION 5 - FIRE FIGHTING MEASURES

FLASH POINT (METHOD): 70 F. TO 75 F./21 C. TO 24 C. (TCC)

AUTOIGNITION TEMPERATURE: NOT DETERMINED

LEL: 0.9% UEL: 19%

FLAMMABILITY CLASSIFICATION: FLAMMABLE

EXTINGUISHING MEDIA: FOAM, ALCOHOL FOAM, CARBON DIOXIDE, DRY CHEMICAL, WATE FOG.

HAZARDOUS COMBUSTION PRODUCTS: CARBON MONOXIDE, CARBON DIOXIDE, NITROGEN OXIDES.

UNUSUAL FIRE OR EXPLOSION HAZARDS: NOT APPLICABLE

FIRE-FIGHTING INSTRUCTIONS/EQUIPMENT: KEEP PERSONNEL REMOVED AND UPWIND OF FIRE. WEAR FULL FIRE-FIGHTING TURN-OUT GEAR (FULL BUNKER GEAR), AND RESPIRA PROTECTION (SCBA).

NFPA RATING: HEALTH 1, FLAMMABILITY 3, REACTIVITY 0

SECTION 6 - ACCIDENTAL RELEASE MEASURES

USE RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT (SEE SECTION 8).

SMALL SPILL: REMOVE SOURCES OF IGNITION. WIPE UP WITH A TOWEL OR RAG.

LARGE SPILL: REMOVE SOURCES OF IGNITION. AVOID BREATHING VAPORS. VENTILATE AREA. DIKE AREA TO CONTAIN SPILL. ABSORB SPILL WITH SAW DUST OR OTHER SUITA ABSORBENT. TRANSFER TO METAL WASTE CONTAINER WITH NON-SPARKING TOOLS. TIGHT COVER WASTE CONTAINER.

SECTION 7 - HANDLING AND STORAGE

HANDLING PRECAUTIONS: USE RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT (SEE SECTION 8). WASH THOROUGHLY AFTER HANDLING.

STORAGE REQUIREMENTS: STORE IN A COOL, DRY AREA.

SECTION 8 - EXPOSURE CONTROLS/PERSONAL PROTECTION

EYE/FACE PROTECTION: SAFETY GLASSES WITH SPLASH GUARDS, GOGGLES OR FULL FAC SHIELD.

SKIN PROTECTION: SOLVENT RESISTANT GLOVES FOR PROLONGED OR REPEATED CONTACT

RESPIRATORY PROTECTION: IN RESTRICTED AREAS, USER APPROVED CHEMICAL/MECHANI FILTERS DESIGNED TO REMOVE PARTICLES AND ORGANIC VAPOR. IN CONFINED AREAS, APPROVED AIR LINE TYPE RESPIRATOR OR HOOD. SELF-CONTAINED BREATHING APPARAT IS REQUIRED FOR VAPOR CONCENTRATIONS ABOVE PEL/TLV/OEL/REL LIMITS (SEE SECT 2).

RAL SPIRITS 64742-88-7 0-2

OR SECTION 2 FOOTNOTES: SEE SECTION 15)

..ION 3 - HAZARDS IDENTIFICATION

GENCY OVERVIEW: FLAMMABLE. KEEP AWAY FROM HEAT, SPARKS AND OPEN FLAME.
IRRITANT. AVOID CONTACT WITH EYES. KEEP OUT OF REACH OF CHILDREN.

TENTIAL HEALTH EFFECTS:

IMARY ENTRY ROUTES: EYES, SKIN, INGESTION, INHALATION.

E EFFECTS:

YES: LIQUID OR VAPOR CAN IRRITATE.
N: MAY DRY THE SKIN. CAN BE ABSORBED THROUGH THE SKIN.
ESTION: ORAL TOXICITY IS LOW. CAN CAUSE NAUSEA.
HALATION: RESPIRATORY IRRITATION, HEADACHE, NAUSEA, FATIGUE, DROWSINESS, IMPAIRED COORDINATION.

..NIC EFFECTS:

S: PROLONGED CONTACT MAY LEAD TO CORNEAL DAMAGE.
N: PROLONGED CONTACT MAY CAUSE IRRITATION OR DERMATITIS.
GESTION: POSSIBLE LIVER AND KIDNEY DAMAGE.
..LATION: POSSIBLE LIVER AND KIDNEY DAMAGE.

RCINOGENICITY: NOT APPLICABLE

ET ORGAN EFFECTS: CHRONIC OVER-EXPOSURE CAN CAUSE LIVER AND KIDNEY DAMAGE.

DICAL CONDITIONS AGGRAVATED BY LONG-TERM EXPOSURE: LIVER AND KIDNEY DISEASE.

L INFORMATION: NOT APPLICABLE

S RATING: HEALTH 1, FLAMMABILITY 3, REACTIVITY 0

..TION 4 - FIRST AID

CONTACT: FLUSH WITH WATER FOR AT LEAST 15 MINUTES, OCCASIONALLY LIFTING
L AND LOWER EYELIDS. GET MEDICAL ATTENTION.

.. CONTACT: WIPE OFF EXCESS. WASH WITH SOAP AND WATER. GET MEDICAL ATTENTION
IRRITATION PERSISTS.

GESTION: GET MEDICAL ATTENTION.

..LATION: REMOVE VICTIM TO FRESH AIR. IF BREATHING IS DIFFICULT, ADMINISTER
YGEN. IF BREATHING HAS STOPPED, APPLY ARTIFICIAL RESPIRATION. GET MEDICAL
ETION.

HER INFORMATION: NOT APPLICABLE.

OTHER PROTECTIVE EQUIPMENT: EYE WASH AND SAFETY SHOWER.

ENGINEERING CONTROLS: NORMAL ROOM VENTILATION. LOCAL EXHAUST IN CONFINED AR

ADMINISTRATIVE CONTROLS: USERS OF THIS PRODUCT MUST BE PROPERLY TRAINED AND QUALIFIED IN ITS USE.

OTHER INFORMATION: NOT APPLICABLE

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE/PHYSICAL STATE: LIQUID PAINT IN PLASTIC BOTTLE WITH METAL BALL P TIP.
ODOR: PAINT-LIKE
ODOR THRESHOLD (PPM): NOT DETERMINED
SPECIFIC GRAVITY (H2O=1, @ 68 F./20 C.): 1
SOLUBILITY IN WATER: SLIGHT
COEFFICIENT OF WATER/OIL SOLUBILITY: LT 1
PH: NOT APPLICABLE
MELTING POINT: NOT APPLICABLE
BOILING POINT: 121-336 F./50-170 C.
VAPOR PRESSURE (MM HG AT 20 C.): APPROXIMATELY 12
VAPOR DENSITY (AIR=1): GT 1
EVAPORATION RATE (N-BUAC=1): APPROXIMATELY 0.7
V.O.C.: 74-87%(W/W), 82-85%(V/V), 6.2-7.2 LBS./GAL. (U.S.)

SECTION 10 - STABILITY AND REACTIVITY

CHEMICAL STABILITY: STABLE
HAZARDOUS POLYMERIZATION: WILL NOT OCCUR
CONDITIONS TO AVOID: NOT APPLICABLE
CHEMICALS TO AVOID: STRONG OXIDIZING AGENTS
HAZARDOUS DECOMPOSITION PRODUCTS: NOT APPLICABLE

SECTION 11 - TOXICOLOGICAL INFORMATION

SENSITIZATION TO PRODUCT: NOT APPLICABLE
IRRITANCY OF PRODUCT: EYES, SKIN, RESPIRATORY TRACT.
REPRODUCTIVE TOXICITY: NOT APPLICABLE
TERATOGENICITY: NOT APPLICABLE
MUTAGENICITY: NOT APPLICABLE

TOXICOLOGICAL INFORMATION REGARDING INDIVIDUAL INGREDIENTS, IF APPLICABLE, BE FOUND IN SECTION 2.

SECTION 12 - ECOLOGICAL INFORMATION

NOT DETERMINED.

SECTION 13 - DISPOSAL CONSIDERATIONS

DISPOSE OF IN ACCORDANCE WITH ALL APPLICABLE REGULATIONS.

:TION 14 - TRANSPORT INFORMATION

U.S. D.O.T.: CONSUMER COMMODITY ORM-D

TERNATIONAL MARITIME ORGANIZATION (IMO): EXEMPT (LT 0.5 L/MARKER)

TERNATIONAL AIR TRANSPORT ASSOCIATION (IATA): FLAMMABLE LIQUIDS, N.O.S., UN NO. 1993

TERNATIONAL CIVIL AVIATION ORGANIZATION (ICAO): FLAMMABLE LIQUIDS, N.O.S., NO. 1993

ADR: UN 1263; CLASS 3; ITEM 31 (C); HAZARD IDENTIFICATION NO: 30. CEFIC ...EMCARD IS NOT APPLICABLE.

SECTION 15 - REGULATORY INFORMATION

...TNOTES FOR SECTION 2:

SUBJECT TO THE REPORTING REQUIREMENTS OF SARA TITLE III, SECTION 313.

2 APPEARS ON THE CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT SUBSTANCES LIST.

APPEARS ON THE MASSACHUSETTS SUBSTANCES LIST.

4 APPEARS ON THE NEW JERSEY RIGHT-TO-KNOW HAZARDOUS SUBSTANCES LIST.

5 APPEARS ON THE PENNSYLVANIA HAZARDOUS SUBSTANCES LIST.

APPEARS ON THE CANADIAN WHMIS INGREDIENT DISCLOSURE LIST.

OSHA HAZARD STATUS: THIS PRODUCT IS CONSIDERED TO BE HAZARDOUS AS DEFINED BY : U.S. OSHA HCS (29 CFR 1910.1200).

TOXIC SUBSTANCES CONTROL ACT (TSCA): ALL INGREDIENTS CONTAINED IN THIS PRODUCT ... LISTED ON THE U.S. EPA TSCA CHEMICAL SUBSTANCE INVENTORY.

CANADA:

...IS STATUS: THIS PRODUCT IS CONSIDERED TO BE HAZARDOUS AS DEFINED BY CANADIAN ...IS CONTROLLED PRODUCTS REGULATIONS.

...IS RATING: D-2B, B-2

WHMIS RISK PHRASES: FLAMMABLE. EYE IRRITANT.

...IS PRECAUTIONARY STATEMENTS: KEEP AWAY FROM HEAT, SPARKS AND OPEN FLAME. ...OID CONTACT WITH EYES. KEEP OUT OF REACH OF CHILDREN.

...ESTIC SUBSTANCES LIST (DSL): ALL INGREDIENTS CONTAINED IN THIS PRODUCT IN ...S PRODUCT ARE LISTED ON THE CANADIAN EPA (CEPA) DOMESTIC SUBSTANCES LIST (DSL).

...J.:

EUROPEAN INVENTORY OF EXISTING CHEMICAL SUBSTANCES (EINECS): ALL INGREDIENTS ...TAINED IN THIS PRODUCT ARE LISTED ON THE EUROPEAN INVENTORY OF EXISTING ...EMICAL SUBSTANCES (EINECS).

...TEGORIES OF DANGER (LABELING INFORMATION): HARMFUL (XN), IRRITATING (XI)

RISK (R) PHRASES: FLAMMABLE (R10), HARMFUL IF SWALLOWED (S22), IRRITATING TO ...YES (R36)

ETY (S) PHRASES: KEEP OUT OF REACH OF CHILDREN (S2), DO NOT BREATHE VAPOR (S23), AVOID CONTACT WITH SKIN (S24), IN CASE OF CONTACT WITH EYES, RINSE IMMEDIATELY WITH PLENTY OF WATER AND SEEK MEDICAL ADVICE (S26), WEAR SUITABLE PROTECTIVE CLOTHING, GLOVES AND EYE/FACE PROTECTION (S36/37/39), IN CASE OF FIRE USE FOAM, ALCOHOL FOAM, CARBON DIOXIDE, DRY CHEMICAL, WATER FOG (S43), IF SWALLOWED, SEEK MEDICAL ADVICE AND SHOW THIS CONTAINER, LABEL OR SAFETY DATA SHEET (S46).

FURTHER REGULATORY INFORMATION REGARDING INDIVIDUAL INGREDIENTS, IF APPLICABLE, MAY BE FOUND IN SECTION 2.

THIS PRODUCT HAS BEEN CLASSIFIED IN ACCORDANCE WITH THE HAZARD CRITERIA OF THE U.S. OSHA HAZARD COMMUNICATION STANDARD, THE CANADIAN WHMIS CONTROLLED PRODUCTS REGULATIONS, THE BRITISH CHIP2 REGULATION 6, AND THE AUSTRALIAN NOHSCWHS. THIS MSDS CONTAINS THE INFORMATION REQUIRED BY THE ABOVE REGULATIONS AND CONFORMS TO ANSI Z400.1-1993.

SECTION 16 - OTHER INFORMATION

MSDS PREPARED BY: DIRECTOR OF CHEMICAL SAFETY

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA AVAILABLE TO US AND IS ACCURATE AND RELIABLE TO THE BEST OF OUR KNOWLEDGE AND BELIEF. HOWEVER, LA-CO INDUSTRIES, INC. MAKES NO REPRESENTATIONS AS TO ITS COMPLETENESS OR ACCURACY. INFORMATION IS SUPPLIED ON CONDITION THAT PERSONS RECEIVING SUCH INFORMATION WILL MAKE THEIR OWN DETERMINATION AS TO ITS SUITABILITY FOR THEIR PURPOSES OR TO USE. IN NO EVENT WILL LA-CO INDUSTRIES, INC. BE RESPONSIBLE FOR DAMAGES OF ANY NATURE WHATSOEVER RESULTING FROM THE USE OF OR RELIANCE UPON THE INFORMATION CONTAINED HEREIN.

When shipment is complete, retain for daily Hazmat audit.

GRAINGER SHIPPING INFORMATION

STOCK # : SW540

DS # : 2SC94

WEIGHT CODE : 0800

DOT PROPER SHIP NAME : CONSUMER COMMODITY, ORM-D

RESTRICTIONS : 20 LB. & UNDER REQUIRES 200 LB. BSC/32 ECT,
21 LB. & OVER REQUIRES 275 LB. BSC/44 ECT.

HAZARDOUS CLASS NUMBER :

ID # :

PACKING GROUP :

SHIPPING LABEL : ORM-D

:

LIMITED QUANTITY : N

CARTON INSTRUCTIONS : REPACK IN GRAINGER S CARTON

EXEMPTION :

/UPS EXEMPTION NO. :

COMMENTS 1 : HAZARDOUS MATERIAL. DO NOT SHIP AIR!!

COMMENTS 2 :

SHIPPING PAPERS : AUTOMATED BILL OF LADING REQUIRED FOR TRUCK SHIPMENTS.

CARD OFFERED ? YES ( ) NO ( ) PLEASE MARK ONE

ERG TO ACCOMPANY SHIPMENT

Lamprox

LENOX®	MATERIAL SAFETY DATA SHEET (MSDS)	USA HMIS INDEX HEALTH - 0 FLAMMABILITY - 0 REACTIVITY - 0 PERSONAL PROTECTION - A* (See Section VIII)	NFPA CODE FIRE 0 HEALTH 0 REACTIVITY 0 SPECIAL HAZARD	CANADA WHMIS INDEX HEALTH - 0 FLAMMABILITY - 0 REACTIVITY - 0 PERSONAL PROTECTION - A* (See Section VIII)

SECTION I

TRADE NAME (If None, Put Chemical)	Band-Ade® Sawing Fluid	EMERGENCY TELEPHONE NO.	413/525-3961 ext. 608
CHEMICAL NAME AND SYNONYMS	Sawing Fluid Blend - Trade Secret	REVISED DATE	3/27/98
MANUFACTURER'S NAME	American Saw & Mfg. Company	SUPERCEDES	9/2/94
ADDRESS (Number, Street, City, State, Zip Code)	301 Chestnut Street, East Longmeadow, MA 01028 U.S.A.		

SECTION II - INGREDIENTS

This Fluid Does Not Contain Any Chemicals Listed in SARA Title III, Section 313 Of The Emergency Planning And Community Right-To-Know Act of 1986 Or In OSHA 29 CFR 1910, Subpart Z List.

Note - Canadian Users: This Is Not A Controlled Product Under The WHMIS Guidelines.

SECTION III - PHYSICAL DATA

BOILING POINT (°C) / (°F)	99°C / 210°F	PERCENT VOLATILE BY VOLUME (%)	NA
VAPOR PRESSURE (MM Hg.)	NA	pH	8.5 - 8.7
VAPOR DENSITY (AIR=1)	NA	EVAPORATION RATE	NA
SOLUBILITY IN WATER	100%	FREEZING POINT (°C) / (°F)	-6°C / 21°F
SPECIFIC GRAVITY (H_2O=1)	1.016	VISCOSITY (Room Temp.) 72°F	40 SUS
APPEARANCE AND ODOR	Translucent Amber, Odor - Characteristic		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	None.	FLAMMABLE LIMITS	None.	LEL NA	UEL NA
EXTINGUISHING MEDIA	Water Or Carbon Dioxide.				
SPECIAL FIRE FIGHTING PROCEDURES	None Required.				
UNUSUAL FIRE AND EXPLOSION HAZARDS	None.				

NA - Not Applicable

AMERICAN SAW & MFG. COMPANY
301 CHESTNUT STREET, EAST LONGMEADOW, MA 01028 U.S.A.
800/628-3030 • 413/525-3961
FAX: 800/223-7906 • 413/525-2336

EDP 40161

Lamprus

Material Safety Data Sheet

- Click on the product name to go to the Salesfax description sheet.
- Click on the grade to go to the Salesfax typical test data sheet.

TARR CODE: H046

Chevron Hydraulic Oil AW ISO 46

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

CHEVRON Hydraulic Oil AW ISO 46

PRODUCT NUMBER(S): CPS238074 CPS255674

COMPANY IDENTIFICATION

Chevron Products Company
Global Lubricants
Environment, Health and Safety
Room 1131
555 Market St.
San Francisco, CA 94105-2870

EMERGENCY TELEPHONE NUMBERS

HEALTH (24 hr): (800)231-0623 or
(510)231-0623 (International)
TRANSPORTATION (24 hr): CHEMTREC
(800)424-9300 or (202)483-7616

PRODUCT INFORMATION: MSDS Requests: (800) 228-3500
Environmental, Safety, & Health Info: (415) 894-1899
Product Information: (800) 582-3835

2. COMPOSITION/INFORMATION ON INGREDIENTS

100.0 % CHEVRON Hydraulic Oil AW ISO 46

CONTAINING

COMPONENTS	AMOUNT	LIMIT/QTY	AGENCY/TYPE
LUBRICATING BASE OIL CONTAINING ONE OR MORE OF THE FOLLOWING	> 98.0%		
SOLVENT DEWAXED DIST., HVY PAR Chemical Name: DISTILLATES, SOLVENT DEWAXED HEAVY PARAFFINIC CAS64742650		5 mg/m3 (mist)	ACGIH TWA
		10 mg/m3 (mist)	ACGIH STEL
		5 mg/m3 (mist)	OSHA PEL
HYDROTREATED DIST., HVY PARA Chemical Name: DISTILLATES, HYDROTREATED HEAVY PARAFFINIC CAS64742547		5 mg/m3 (mist)	ACGIH TWA
		10 mg/m3 (mist)	ACGIH STEL
		5 mg/m3 (mist)	OSHA PEL

ADDITIVES
< 2.0%

COMPOSITION COMMENT:
All the components of this material are on the Toxic Substances Control Act Chemical Substances Inventory.

This product fits the ACGIH definition for mineral oil mist. The ACGIH TLV is 5 mg/m3, the OSHA PEL is 5 mg/m3.

3. HAZARDS IDENTIFICATION

POTENTIAL HEALTH EFFECTS
EYE:
This substance is not expected to cause prolonged or significant eye irritation. This hazard evaluation is based on the data from similar materials.
SKIN:
This substance is not expected to cause prolonged or significant skin irritation. The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if it gets on the skin. This hazard evaluation is based on data from similar materials. High-Pressure Equipment Information: Accidental high-velocity injection under the skin of materials of this type may result in serious injury. Seek medical attention at once should an accident like this occur. The initial wound at the injection site may not appear to be serious at first; but, if left untreated, could result in disfigurement or amputation of the affected part.
INGESTION:
The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if swallowed. This hazard evaluation is based on data from similar materials.
INHALATION:
The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if inhaled. Prolonged or repeated breathing of petroleum oil mist can cause respiratory irritation. This hazard evaluation is based on data from similar materials.

4. FIRST AID MEASURES

EYE:
No first aid procedures are required. However, as a precaution flush eyes with fresh water for 15 minutes. Remove contact lenses if worn.
SKIN:
No first aid procedures are required. As a precaution, wash skin thoroughly with soap and water. Remove and wash contaminated clothing.
INGESTION:
If swallowed, give water or milk to drink and telephone for medical advice. Consult medical personnel before inducing vomiting. If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital.
INHALATION:
If respiratory discomfort or irritation occurs, move the person to fresh air. See a doctor if discomfort or irritation continues.
NOTE TO PHYSICIANS:
In an accident involving high pressure equipment, this product may be

injected under the skin. Such an accident may result in a small, sometime bloodless, puncture wound. However, because of its driving force, material injected into a fingertip can be deposited into the palm of the hand. Within 24 hours, there is usually a great deal of swelling, discoloration, and intense throbbing pain. Immediate treatment at a surgical emergency center is recommended.

5. FIRE FIGHTING MEASURES

SPECIAL NOTES: Leaks/ruptures in high pressure systems using materials of this type can create a fire hazard when in the vicinity of ignition sources (eg. open flame, pilot lights, sparks, or electric arcs).
FLAMMABLE PROPERTIES:
FLASH POINT: (COC) 381F (194C) Min.
AUTOIGNITION: NDA
FLAMMABILITY LIMITS (% by volume in air): Lower: NA Upper: NA
EXTINGUISHING MEDIA:
CO_2, Dry Chemical, Foam, Water Fog
NFPA RATINGS: Health 1; Flammability 1; Reactivity 0.
FIRE FIGHTING INSTRUCTIONS:
For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.
COMBUSTION PRODUCTS:
Normal combustion forms carbon dioxide and water vapor and may produce oxides of sulfur and phosphorus. Normal combustion forms oxides of zinc. Incomplete combustion can produce carbon monoxide.

6. ACCIDENTAL RELEASE MEASURES

CHEMTREC EMERGENCY NUMBER (24 hr): (800)424-9300 or (202)483-7616
ACCIDENTAL RELEASE MEASURES:
Stop the source of the leak or release. Clean up releases as soon as possible. Contain liquid to prevent further contamination of soil, surface water or groundwater. Clean up small spills using appropriate techniques such as sorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Follow prescribed procedures for reporting and responding to larger releases.

7. HANDLING AND STORAGE

DO NOT USE IN HIGH PRESSURE SYSTEMS in the vicinity of flames, sparks and hot surfaces. Use only in well ventilated areas. Keep container closed.

DO NOT weld, heat or drill container. Residue may ignite with explosive violence if heated sufficiently. CAUTION! Do not use pressure to empty drum or drum may rupture with explosive force.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS
Use adequate ventilation to keep the airborne concentrations of this material below the recommended exposure standard.

PERSONAL PROTECTIVE EQUIPMENT
EYE/FACE PROTECTION:

No special eye protection is usually necessary.
SKIN PROTECTION:
No special skin protection is usually necessary. Avoid prolonged or frequently repeated skin contact with this material. Skin contact can be minimized by wearing protective clothing.
RESPIRATORY PROTECTION:
No special respiratory protection is normally required. However, if operating conditions create airborne concentrations which exceed the recommended exposure standards, the use of an approved respirator is required.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL DESCRIPTION:
Pale yellow liquid.

pH:	NDA
VAPOR PRESSURE:	NA
VAPOR DENSITY (AIR=1):	NA
BOILING POINT:	NA
FREEZING POINT:	NDA
MELTING POINT:	NA
SOLUBILITY:	Soluble in hydrocarbon solvents; insoluble in water.
SPECIFIC GRAVITY:	0.88 @ 15.6/15.6C
VOLATILE ORGANIC COMPOUNDS (VOC):	<2.2 (wt.%); 19 g/l (est.) ASTM D 2369
EVAPORATION RATE:	NA
VISCOSITY:	41.4 cSt @ 40C (Min.)
PERCENT VOLATILE (VOL):	NA

10. STABILITY AND REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS:
NDA
CHEMICAL STABILITY:
Stable.
CONDITIONS TO AVOID:
No data available.
INCOMPATIBILITY WITH OTHER MATERIALS:
May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.
HAZARDOUS POLYMERIZATION:
Polymerization will not occur.

11. TOXICOLOGICAL INFORMATION

EYE EFFECTS:
No product toxicology data available. The hazard evaluation was based on data from similar materials.
SKIN EFFECTS:
No product toxicology data available. The hazard evaluation was based on data from similar materials.
ACUTE ORAL EFFECTS:
No product toxicology data available. The hazard evaluation was based on data from similar materials.
ACUTE INHALATION EFFECTS:
No product toxicology data available. The hazard evaluation was based on

data from similar materials.
ADDITIONAL TOXICOLOGY INFORMATION:
This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrotreating. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).

12. ECOLOGICAL INFORMATION

ECOTOXICITY:
No data available.
ENVIRONMENTAL FATE:
This material is not expected to present any environmental problems other than those associated with oil spills.

13. DISPOSAL CONSIDERATIONS

Oil collection services are available for used oil recycling or disposal. Place contaminated materials in containers and dispose of in a manner consistent with applicable regulations. Contact your sales representative or local environmental or health authorities for approved disposal or recycling methods.

14. TRANSPORT INFORMATION

The description shown may not apply to all shipping situations. Consult 49CFR, or appropriate Dangerous Goods Regulations, for additional description requirements (e.g., technical name) and mode-specific or quantity-specific shipping requirements.

DOT SHIPPING NAME: NOT DESIGNATED AS A HAZARDOUS MATERIAL BY THE FEDERAL DOT
DOT HAZARD CLASS: NOT APPLICABLE
DOT IDENTIFICATION NUMBER: NOT APPLICABLE
DOT PACKING GROUP: NOT APPLICABLE

15. REGULATORY INFORMATION

SARA 311 CATEGORIES:

1. Immediate (Acute) Health Effects: NO
2. Delayed (Chronic) Health Effects: NO
3. Fire Hazard: NO
4. Sudden Release of Pressure Hazard: NO
5. Reactivity Hazard: NO

REGULATORY LISTS SEARCHED:

01=SARA 313	11=NJ RTK	22=TSCA Sect 5(a)(2)
02=MASS RTK	12=CERCLA 302.4	23=TSCA Sect 6
03=NTP Carcinogen	13=MN RTK	24=TSCA Sect 12(b)
04=CA Prop 65-Carcin	14=ACGIH TWA	25=TSCA Sect 8(a)

05=CA Prop 65-Repro Tox	15=ACGIH-STEL	26=TSCA Sect 8(d)
06=IARC Group 1	16=ACGIH Calc TLV	27=TSCA Sect 4(a)
07=IARC Group 2A	17=OSHA PEL	28=Canadian WHMIS
08=IARC Group 2B	18=DOT Marine Pollutant	29=OSHA CEILING
09=SARA 302/304	19=Chevron TWA	30=Chevron STEL
10=PA RTK	20=EPA Carcinogen	

The following components of this material are found on the regulatory lists indicated.

DISTILLATES, HYDROTREATED HEAVY PARAFFINIC
is found on lists: 14,15,17,
DISTILLATES, SOLVENT DEWAXED HEAVY PARAFFINIC
is found on lists: 14,15,17,

NEW JERSEY RTK CLASSIFICATION:
Under the New Jersey Right-to-Know Act L. 1983 Chapter 315 N.J.S.A. 34:5A-1 et. seq., the product is to be identified as follows:
PETROLEUM OIL

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16. OTHER INFORMATION

NFPA RATINGS: Health 1; Flammability 1; Reactivity 0;
(0-Least, 1-Slight, 2-Moderate, 3-High, 4-Extreme, PPE:- Personal Protection Equipment Index recommendation, *- Chronic Effect Indicator). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association (NFPA) or the National Paint and Coating Association (for HMIS ratings).

REVISION STATEMENT:
This revision updates Section 1 (Company Identification).

ABBREVIATIONS THAT MAY HAVE BEEN USED IN THIS DOCUMENT:

TLV - Threshold Limit Value	TWA - Time Weighted Average
STEL - Short-term Exposure Limit	TPQ - Threshold Planning Quantity
RQ - Reportable Quantity	PEL - Permissible Exposure Limit
C - Ceiling Limit	CAS - Chemical Abstract Service Number
A1-5 - Appendix A Categories	() - Change Has Been Proposed
NDA - No Data Available	NA - Not Applicable

Prepared according to the OSHA Hazard Communication Standard (29 CFR 1910.1200) and the ANSI MSDS Standard (Z400.1) by the Toxicology and Health Risk Assessment Unit, CRTC, P.O. Box 4054, Richmond, CA 94804

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The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modification of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

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THIS IS THE LAST PAGE OF THIS MSDS
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Lamores

Material Safety Data Sheet

- Click on the product name to go to the Salesfax description sheet.
- Click on the grade to go to the Salesfax typical test data sheet.

Chevron Delo® 400 Multigrade SAE 15W-40

TARR CODE: D400 1540

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

CHEVRON DELO 400

PRODUCT NUMBER(S): CPS235101 CPS235109 CPS235117 CPS235118
CPS235119 CPS235120 CPS235200 CPS235246

SYNONYM: CHEVRON DELO 400 ESI Multigrade SAE 15W-40
CHEVRON DELO 400 Multigrade SAE 15W-40
CHEVRON DELO 400 SAE 10W
CHEVRON DELO 400 SAE 10W-30
CHEVRON DELO 400 SAE 20
CHEVRON DELO 400 SAE 30
CHEVRON DELO 400 SAE 40
CHEVRON DELO 400 SAE 50

COMPANY IDENTIFICATION

Chevron Products Company
Global Lubricants
555 Market St.
Room 803
San Francisco, CA 94105-2870

EMERGENCY TELEPHONE NUMBERS

HEALTH (24 hr): (800)231-0623 or
(510)231-0623 (International)
TRANSPORTATION (24 hr): CHEMTREC
(800)424-9300 or (703)527-3887
Int'l collect calls accepted

PRODUCT INFORMATION: MSDS Requests: (800) 228-3500
Environmental, Safety, & Health Info: (415) 894-0703
Product Information: (800) 582-3835

SPECIAL NOTES: This MSDS is for the entire line of CHEVRON DELO 400 products.

2. COMPOSITION/INFORMATION ON INGREDIENTS

100.0 % CHEVRON DELO 400

CONTAINING

COMPONENTS	AMOUNT	LIMIT/QTY	AGENCY/TYPE
LUBRICATING BASE OIL SEVERELY REFINED PETROLEUM DISTILLATE	> 75.00%	5 mg/m3 (mist)	ACGIH TWA
		10 mg/m3 (mist)	ACGIH STEL
		5 mg/m3 (mist)	OSHA PEL

The BASE OIL may be a mixture of any of the following: CAS 64741884,

CAS 64741895, CAS 64741964, CAS 64741975, CAS 64742014, CAS 64742525, CAS 64742536, CAS 64742547, CAS 64742627, CAS 64742650, or CAS 72623837.

ADDITIVES INCLUDING THE FOLLOWING
< 25.00%

ZINC ALKYL DITHIOPHOSPHATE
Chemical Name: PHOSPHORODITHIOIC ACID,O,O-DI-C1-14-ALKYL ESTERS, ZINC SALT
CAS68649423 < 1.60% NONE NA

COMPOSITION COMMENT:
All the components of this material are on the Toxic Substances Control Act Chemical Substances Inventory.

This product fits the ACGIH definition for mineral oil mist. The ACGIH TLV is 5 mg/m3, the OSHA PEL is 5 mg/m3.

3. HAZARDS IDENTIFICATION

POTENTIAL HEALTH EFFECTS
EYE:
Not expected to cause prolonged or significant eye irritation.
SKIN:
Contact with the skin is not expected to cause prolonged or significant irritation. Not expected to be harmful to internal organs if absorbed through the skin.
INGESTION:
Not expected to be harmful if swallowed.
INHALATION:
Contains a petroleum-based mineral oil that may cause respiratory irritation or other pulmonary effects following prolonged or repeated inhalation of airborne levels above the recommended exposure limit.

4. FIRST AID MEASURES

EYE:
No specific first aid measures are required because this material is not expected to cause eye irritation. As a precaution remove contact lenses, if worn, and flush eyes with water.
SKIN:
No specific first aid measures are required because this material is not expected to be harmful if it contacts the skin. As a precaution, remove clothing and shoes if contaminated. Use a waterless hand cleaner, mineral oil, or petroleum jelly to remove the material. Then wash skin with soap and water. Wash or clean contaminated clothing and shoes before reuse.
INGESTION:
No specific first aid measures are required because this material is not expected to be harmful if swallowed. Do not induce vomiting. As a precaution, give the person a glass of water or milk to drink and get medical advice. Never give anything by mouth to an unconscious person.
INHALATION:
If exposed to excessive levels of material in the air, move the exposed person to fresh air. Get medical attention if coughing or respiratory discomfort occurs.

5. FIRE FIGHTING MEASURES

FIRE CLASSIFICATION:
Classification (29 CFR 1910.1200): Not flammable or combustible.
FLAMMABLE PROPERTIES:
FLASH POINT: (COC) 392-428F (200-220C) min.
AUTOIGNITION: NDA
FLAMMABILITY LIMITS (% by volume in air): Lower: NA Upper: NA
EXTINGUISHING MEDIA:
CO2, Dry Chemical, Foam, Water Fog
NFPA RATINGS: Health 1; Flammability 1; Reactivity 0.
FIRE FIGHTING INSTRUCTIONS:
This material will burn although it is not easily ignited.
COMBUSTION PRODUCTS:
Normal combustion forms carbon dioxide and water vapor and may produce oxides of sulfur, nitrogen, phosphorus, and boron. Incomplete combustion can produce carbon monoxide.

6. ACCIDENTAL RELEASE MEASURES

CHEMTREC EMERGENCY NUMBER (24 hr): (800)424-9300 or (703)527-3887
International Collect Calls Accepted
ACCIDENTAL RELEASE MEASURES:
Stop the source of the leak or release. Clean up releases as soon as possible. Contain liquid to prevent further contamination of soil, surface water or groundwater. Clean up small spills using appropriate techniques such as sorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Follow prescribed procedures for reporting and responding to larger releases.

7. HANDLING AND STORAGE

Do not use pressure to empty drum or drum may rupture with explosive force. Empty containers retain product residue (solid, liquid, and/or vapor) and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, static electricity, or other sources of ignition. They may explode and cause injury or death. Empty drums should be completely drained, properly bunged, and promptly returned to a drum reconditioner, or properly disposed of. Avoid contaminating soil or releasing this material into sewage and drainage systems and bodies of water.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS
Use in a well-ventilated area. If user operations generate an oil mist, use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below the recommended exposure limits.

PERSONAL PROTECTIVE EQUIPMENT
EYE/FACE PROTECTION:
No special eye protection is normally required. Where splashing is possible, wear safety glasses with side shields as a good safety practice.
SKIN PROTECTION:
No special protective clothing is normally required. Where splashing is possible, select protective clothing depending on operations conducted, physical requirements and other substances. Suggested materials for protective gloves include: <Viton> <Nitrile> <Silver Shield> <4H>
RESPIRATORY PROTECTION:

No special respiratory protection is normally required. If user operations generate an oil mist, determine if airborne concentrations are below the recommended exposure limits. If not, select a NIOSH/MSHA approved respirator that provides adequate protection from concentrations of this material. Use the following elements for air-purifying respirators: particulate.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL DESCRIPTION:
Dark brown liquid.

pH:	NDA
VAPOR PRESSURE:	NA
VAPOR DENSITY (AIR=1):	NA
BOILING POINT:	NDA
FREEZING POINT:	NDA
MELTING POINT:	NA
SOLUBILITY:	Soluble in hydrocarbon solvents; insoluble in water.
SPECIFIC GRAVITY:	0.87 - 0.89 @ 15.6/15.6C
VOLATILE ORGANIC COMPOUNDS (VOC):	1.1 wt.%, 9.256 g/l
EVAPORATION RATE:	NA
VISCOSITY:	5.9 - 18.6 cSt @ 100C (min.)
PERCENT VOLATILE (VOL):	NA

10. STABILITY AND REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS:
No data available.
CHEMICAL STABILITY:
Stable.
CONDITIONS TO AVOID:
No data available.
INCOMPATIBILITY WITH OTHER MATERIALS:
May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.
HAZARDOUS POLYMERIZATION:
Polymerization will not occur.

11. TOXICOLOGICAL INFORMATION

EYE EFFECTS:
The eye irritation hazard is based on data for a similar material.
SKIN EFFECTS:
The skin irritation hazard is based on data for a similar material.
ACUTE ORAL EFFECTS:
The acute oral toxicity is based on data for a similar material.
ACUTE INHALATION EFFECTS:
The acute respiratory toxicity is based on data for a similar material.
ADDITIONAL TOXICOLOGY INFORMATION:
This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrotreating. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for

Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).

This product contains zinc alkyl dithiophosphates (ZDDPs). Several ZDDPs have been reported to have weak mutagenic activity in cultured mammalian cells but only at concentrations that were toxic to the test cells. We do not believe that there is any mutagenic risk to workers exposed to ZDDPs.

During use in engines, contamination of oil with low levels of cancer-causing combustion products occurs. Used motor oils have been shown to cause skin cancer in mice following repeated application and continuous exposure. Brief or intermittent skin contact with used motor oil is not expected to have serious effects in humans if the oil is thoroughly removed by washing with soap and water. See Chevron Material Safety Data Sheet No. 1793 for additional information on used motor oil.

12. ECOLOGICAL INFORMATION

ECOTOXICITY:
This material is not expected to be harmful to aquatic organisms.
ENVIRONMENTAL FATE:
This material is not expected to be readily biodegradable.

13. DISPOSAL CONSIDERATIONS

Oil collection services and collection centers are available for used motor oil recycling or disposal. Some service stations, automotive service centers, and retailers provide motor oil collection facilities.

Place contaminated materials in containers and dispose of in a manner consistent with applicable regulations. Contact your sales representative or local environmental or health authorities for approved disposal or recycling methods.

14. TRANSPORT INFORMATION

The description shown may not apply to all shipping situations. Consult 49CFR, or appropriate Dangerous Goods Regulations, for additional description requirements (e.g., technical name) and mode-specific or quantity-specific shipping requirements.

DOT SHIPPING NAME: NOT DESIGNATED AS A HAZARDOUS MATERIAL BY THE FEDERAL DOT
DOT HAZARD CLASS: NOT APPLICABLE
DOT IDENTIFICATION NUMBER: NOT APPLICABLE
DOT PACKING GROUP: NOT APPLICABLE

15. REGULATORY INFORMATION

SARA 311 CATEGORIES:	1.	Immediate (Acute) Health Effects:	NO
	2.	Delayed (Chronic) Health Effects:	NO
	3.	Fire Hazard:	NO
	4.	Sudden Release of Pressure Hazard:	NO
	5.	Reactivity Hazard:	NO

REGULATORY LISTS SEARCHED:

01=SARA 313	11=NJ RTK	22=TSCA Sect 5(a)(2)
02=MASS RTK	12=CERCLA 302.4	23=TSCA Sect 6
03=NTP Carcinogen	13=MN RTK	24=TSCA Sect 12(b)
04=CA Prop 65-Carcin	14=ACGIH TWA	25=TSCA Sect 8(a)
05=CA Prop 65-Repro Tox	15=ACGIH STEL	26=TSCA Sect 8(d)
06=IARC Group 1	16=ACGIH Calc TLV	27=TSCA Sect 4(a)
07=IARC Group 2A	17=OSHA PEL	28=Canadian WHMIS
08=IARC Group 2B	18=DOT Marine Pollutant	29=OSHA CEILING
09=SARA 302/304	19=Chevron TWA	30=Chevron STEL
10=PA RTK	20=EPA Carcinogen	

The following components of this material are found on the regulatory lists indicated.

PHOSPHORODITHIOIC ACID,O,O-DI-C1-14-ALKYL ESTERS, ZINC SALTS
is found on lists: 01,11,
SEVERELY REFINED PETROLEUM DISTILLATE
is found on lists: 14,15,17,

EEC RISK AND SAFETY STATEMENTS:
May cause long-term adverse effects in the aquatic environment.
NEW JERSEY RTK CLASSIFICATION:
Under the New Jersey Right-to-Know Act L. 1983 Chapter 315 N.J.S.A. 34:5A-1 et. seq., the product is to be identified as follows:
PETROLEUM OIL
WHMIS CLASSIFICATION:
This product is not considered a controlled product according to the criteria of the Canadian Controlled Products Regulations.

16. OTHER INFORMATION

NFPA RATINGS: Health 1; Flammability 1; Reactivity 0;
HMIS RATINGS: Health 1; Flammability 1; Reactivity 0;
(0-Least, 1-Slight, 2-Moderate, 3-High, 4-Extreme, PPE:- Personal Protection Equipment Index recommendation, *- Chronic Effect Indicator). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association (NFPA) or the National Paint and Coating Association (for HMIS ratings).

REVISION STATEMENT:
This is a new Material Safety Data Sheet.

ABBREVIATIONS THAT MAY HAVE BEEN USED IN THIS DOCUMENT:

TLV - Threshold Limit Value	TWA - Time Weighted Average
STEL - Short-term Exposure Limit	TPQ - Threshold Planning Quantity
RQ - Reportable Quantity	PEL - Permissible Exposure Limit
C - Ceiling Limit	CAS - Chemical Abstract Service Number
A1-5 - Appendix A Categories	() - Change Has Been Proposed
NDA - No Data Available	NA - Not Applicable

Prepared according to the OSHA Hazard Communication Standard (29 CFR 1910.1200) and the ANSI MSDS Standard (Z400.1) by the Toxicology and Health Risk Assessment Unit, CRTC, P.O. Box 4054, Richmond, CA 94804

****

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may

be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modification of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

****

THIS IS THE LAST PAGE OF THIS MSDS

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Lampros

Material Safety Data Sheet

- Click on the product name to go to the Salesfax description sheet.
- Click on the grade to go to the Salesfax typical test data sheet.

HS Diesel Fuel 2 (only grade)

MSDS: 0525 Revision #: 19 Revision Date: 06/03/95

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

TARR CODE: HD

HS DIESEL FUEL 2

PRODUCT NUMBER(S): CPS270010 CPS272102 CPS272152 CPS272185

COMPANY IDENTIFICATION

CHEVRON USA PRODUCTS COMPANY
ENVIRONMENTAL, SAFETY, AND HEALTH
ROOM 2900
575 MARKET ST.
SAN FRANCISCO, CA 94105-2856

EMERGENCY TELEPHONE NUMBERS

HEALTH (24 hr): (800)231-0623 or
(510)231-0623 (International)
TRANSPORTATION (24 hr): CHEMTREC
(800)424-9300 or (202)483-7616

PRODUCT INFORMATION: MSDS REQUEST: (415) 894-2783
ENVIRONMENTAL, SAFETY & HEALTH INFO.: (415) 894-1899
Product Information: (510) 242-5357

2. COMPOSITION/INFORMATION ON INGREDIENTS

100.0 % HS DIESEL FUEL 2

CONTAINING

COMPONENTS	AMOUNT	LIMIT/QTY	AGENCY/TYPE
DIESEL FUEL NO. 2 Chemical Name: FUELS, DIESEL, NO. 2 CAS68476346	100.0%	NONE	NA
HDS DISTILLATE, MIDDLE Chemical Name: DISTILLATES, HYDRODESULFURIZED MIDDLE CAS64742809		NONE	NA
GAS OIL, LIGHT Chemical Name: DISTILLATES, STRAIGHT RUN MIDDLE CAS64741442		NONE	NA
KEROSENE Chemical Name: KEROSINE CAS8008206		NONE	NA
HYDRODESULFURIZED KEROSINE Chemical Name: KEROSINE, HYDRODESULFURIZED			

MAR 24 2000

CAS64742810	NONE	NA

CAT CRACKED DISTILLATE, LIGHT
Chemical Name: DISTILLATES, LIGHT CATALYTIC CRACKED

CAS64741599	NONE	NA

COMPOSITION COMMENT:
All the components of this material are on the Toxic Substances Control Act Chemical Substances Inventory.

TLV - Threshold Limit Value	TWA - Time Weighted Average
STEL - Short-term Exposure Limit	TPQ - Threshold Planning Quantity
RQ - Reportable Quantity	PEL - Permissible Exposure Limit
C - Ceiling Limit	CAS - Chemical Abstract Service Number
A1-5 - Appendix A Categories	() - Change Has Been Proposed

3. HAZARDS IDENTIFICATION

********** EMERGENCY OVERVIEW **********

Red liquid.

- COMBUSTIBLE
- HARMFUL OR FATAL IF SWALLOWED - CAN ENTER LUNGS AND CAUSE DAMAGE
- CAUSES SKIN IRRITATION
- CANCER HAZARD
- PROLONGED OR REPEATED SKIN CONTACT MAY INCREASE THE RISK OF SKIN CANCER
- KEEP OUT OF REACH OF CHILDREN

****

POTENTIAL HEALTH EFFECTS
EYE:
This substance is not expected to cause prolonged or significant eye irritation.
SKIN:
This substance is a moderate skin irritant so contact with the skin could cause prolonged (days) injury to the affected area. The degree of injury will depend on the amount of material that gets on the skin and the speed and thoroughness of the first aid treatment. If absorbed through the skin, this substance is considered practically non-toxic to internal organs.
INGESTION:
If swallowed, this substance is considered practically non-toxic to internal organs. Because of the low viscosity of this substance, it can directly enter the lungs if it is swallowed (this is called aspiration). This can occur during the act of swallowing or when vomiting the substance. Once in the lungs, the substance is very difficult to remove and can cause severe injury to the lungs and death.
INHALATION:
Prolonged breathing of vapors can cause central nervous system effects. This hazard evaluation is based on data from similar materials.
SIGNS AND SYMPTOMS OF EXPOSURE:
SKIN: May include pain or a feeling of heat, discoloration, swelling, and blistering. INHALATION: Central nervous system effects may include one or more of following: headache, dizziness, loss of appetite, weakness and loss of coordination.
CARCINOGENICITY:
This product contains a mixture of petroleum hydrocarbons called middle distillates (which means they boil between approximately 350F and 700F).

MAR 24 2000

Because of this broad description, many products are considered middle distillates yet they are produced by a variety of different petroleum refining processes. Toxicology data developed on some middle distillates found that they caused positive responses in some mutagenicity tests and caused skin cancer when repeatedly applied to mice over their lifetime. This product may contain some middle distillates found to cause those adverse effects.

4. FIRST AID MEASURES

EYE:
No first aid procedures are required. However, as a precaution flush eyes with fresh water for 15 minutes. Remove contact lenses if worn.
SKIN:
Remove contaminated clothing. Wash skin thoroughly with soap and water. See a doctor if any signs or symptoms described in this document occur. Discard contaminated non-waterproof shoes and boots. Wash contaminated clothing.
INGESTION:
If swallowed, give water or milk to drink and telephone for medical advice. DO NOT make person vomit unless directed to do so by medical personnel. If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital.
INHALATION:
If any signs or symptoms as described in this document occur, move the person to fresh air. If any of these effects continue, see a doctor.
NOTE TO PHYSICIANS:
Ingestion of this product or subsequent vomiting can result in aspiration of light hydrocarbon liquid which can cause pneumonitis.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES:
FLASH POINT: (P-M) 125F (52C) Min.
AUTOIGNITION: NDA
FLAMMABILITY LIMITS (% by volume in air): Lower: 0.6 Upper: 4.7
EXTINGUISHING MEDIA:
CO_2, Dry Chemical, Foam and Water Fog.
NFPA RATINGS: Health 0; Flammability 2; Reactivity 0.
FIRE FIGHTING INSTRUCTIONS:
Liquid evaporates and forms vapor (fumes) which can catch fire and burn with explosive violence. Invisible vapor spreads easily and can be set on fire by many sources such as pilot lights, welding equipment, and electrical motors and switches. Fire hazard is greater as liquid temperature rises above 85 F.

For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment. This may include self-contained breathing apparatus to protect against the hazardous effects of normal products of combustion or oxygen deficiency. Read the entire document.
COMBUSTION PRODUCTS:
Normal combustion forms carbon dioxide and water vapor; incomplete combustion can produce carbon monoxide.

6. ACCIDENTAL RELEASE MEASURES

MAR 24 2000

CRAW00016931

CHEMTREC EMERGENCY NUMBER (24 hr): (800)424-9300 or (202)483-7616
ACCIDENTAL RELEASE MEASURES:
Eliminate all sources of ignition in vicinity of spill or released vapor.

Clean up small spills using appropriate techniques such as sorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Follow prescribed procedures for reporting and responding to larger releases. This material is considered to be a water pollutant and releases of this product should be prevented from contaminating soil and water and from entering drainage and sewer systems.

U.S.A. regulations require reporting spills of this material that could reach any surface waters. The toll free number for the U.S. Coast Guard National Response Center is (800) 424-8802.

7. HANDLING AND STORAGE

DO NOT USE OR STORE near flame, sparks or hot surfaces. USE ONLY IN WELL VENTILATED AREA. Keep container closed.

DO NOT weld, heat or drill container. Replace cap or bung. Emptied container still contains hazardous or explosive vapor or liquid.

CAUTION! Do not use pressure to empty drum or drum may rupture with explosive force.

WARNING! Not for use as portable heater or appliance fuel. Toxic fumes may accumulate and cause death.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS
Use this material only in well ventilated areas.

PERSONAL PROTECTIVE EQUIPMENT
EYE/FACE PROTECTION:
No special eye protection is usually necessary.
SKIN PROTECTION:
Avoid contact with skin or clothing. Skin contact should be minimized by wearing protective clothing including gloves.
RESPIRATORY PROTECTION:
No special respiratory protection is normally required. However, if operating conditions create high airborne concentrations, the use of an approved respirator is recommended.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL DESCRIPTION:
Red liquid.

pH:	NDA
VAPOR PRESSURE:	0.04 PSIA @ 40C
VAPOR DENSITY (AIR=1):	NDA
BOILING POINT:	176 - 370C (348-698F)
FREEZING POINT:	NDA
MELTING POINT:	NA
SOLUBILITY:	Soluble in hydrocarbon solvents; insoluble in water.

MAR 24 2000

CRAW00016932

SPECIFIC GRAVITY: 0.84 @ 15.6/15.6C (Typical)
VISCOSITY: 1.9 cSt @ 40C (Min.)

10. STABILITY AND REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS:
NDA.
CHEMICAL STABILITY:
Stable.
CONDITIONS TO AVOID:
No data available.
INCOMPATIBILITY WITH OTHER MATERIALS:
May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.
HAZARDOUS POLYMERIZATION:
Polymerization will not occur.

11. TOXICOLOGICAL INFORMATION

EYE EFFECTS:
Minimal effects clearing in less than 24 hours.
SKIN EFFECTS:
Moderate irritation at 72 hours. (Moderate erythema).
ACUTE ORAL EFFECTS:
The oral LD50 in rats is > 5 ml/kg.
ACUTE INHALATION EFFECTS:
The 4-hour inhalation LC50 in rats is greater than 5 mg/l.
SUBCHRONIC EFFECTS:
The data above is obtained from studies sponsored by the American Petroleum Institute (API).

Whole diesel engine exhaust was reviewed by the International Agency for Research on Cancer (IARC) in their Monograph 46 (1989). Evidence for causing cancer was considered sufficient in animals and limited in humans. IARC placed diesel exhaust in category 2A, considering it probably carcinogenic to humans.

The National Institute of Occupational Safety and Health (NIOSH) has recommended that whole diesel exhaust be regarded as potentially causing cancer. This recommendation was based on test results showing increased lung cancer in laboratory animals exposed to whole diesel exhaust. The excess risk of cancer for people exposed to diesel exhaust has not been determined as studies on exposed workers have been inconclusive. It is recommended that exposure to diesel exhaust be minimized to reduce the potential cancer risk.

12. ECOLOGICAL INFORMATION

ECOTOXICITY:
No data available.
ENVIRONMENTAL FATE:
No data available.

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13. DISPOSAL CONSIDERATIONS

CRAW00016933

Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

14. TRANSPORT INFORMATION

The description shown may not apply to all shipping situations. Consult 49CFR, or appropriate Dangerous Goods Regulations, for additional description requirements (e.g., technical name) and mode-specific or quantity-specific shipping requirements.

DOT SHIPPING NAME: GAS OIL
DOT HAZARD CLASS: COMBUSTIBLE LIQUID
DOT IDENTIFICATION NUMBER: UN1202
DOT PACKING GROUP: III

15. REGULATORY INFORMATION

SARA 311 CATEGORIES:	1. Immediate (Acute) Health Effects:	YES
	2. Delayed (Chronic) Health Effects:	YES
	3. Fire Hazard:	YES
	4. Sudden Release of Pressure Hazard:	NO
	5. Reactivity Hazard:	NO

REGULATORY LISTS SEARCHED:

01=SARA 313	11=NJ RTK	22=TSCA Sect 5(a)(2)
02=MASS RTK	12=CERCLA 302.4	23=TSCA Sect 6
03=NTP Carcinogen	13=MN RTK	24=TSCA Sect 12(b)
04=CA Prop 65-Carcin	14=ACGIH TWA	25=TSCA Sect 8(a)
05=CA Prop 65-Repro Tox	15=ACGIH STEL	26=TSCA Sect 8(d)
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07=IARC Group 2A	17=OSHA PEL	28=Canadian WHMIS
08=IARC Group 2B	18=DOT Marine Pollutant	29=OSHA CEILING
09=SARA 302/304	19=Chevron TWA	30=Chevron STEL
10=PA RTK	20=EPA Carcinogen	

The following components of this material are found on the regulatory lists indicated.

KEROSINE
is found on lists: 02,10,11,

MAR 24 2000

16. OTHER INFORMATION

NFPA RATINGS: Health 0; Flammability 2; Reactivity 0;
(Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association (NFPA) or the National Paint and Coating Association (for HMIS ratings).

REVISION STATEMENT:
This revision updates Section 1 (Chemical Product and Company ID).

Prepared according to the OSHA Hazard Communication Standard (29 CFR 1910.1200) and the ANSI MSDS Standard (Z400.1) by the Toxicology and Health Risk Assessment Unit, CRTC, P.O. Box 4054, Richmond, CA 94804

****

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modification of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

NDA - No Data Available NA - Not Applicable

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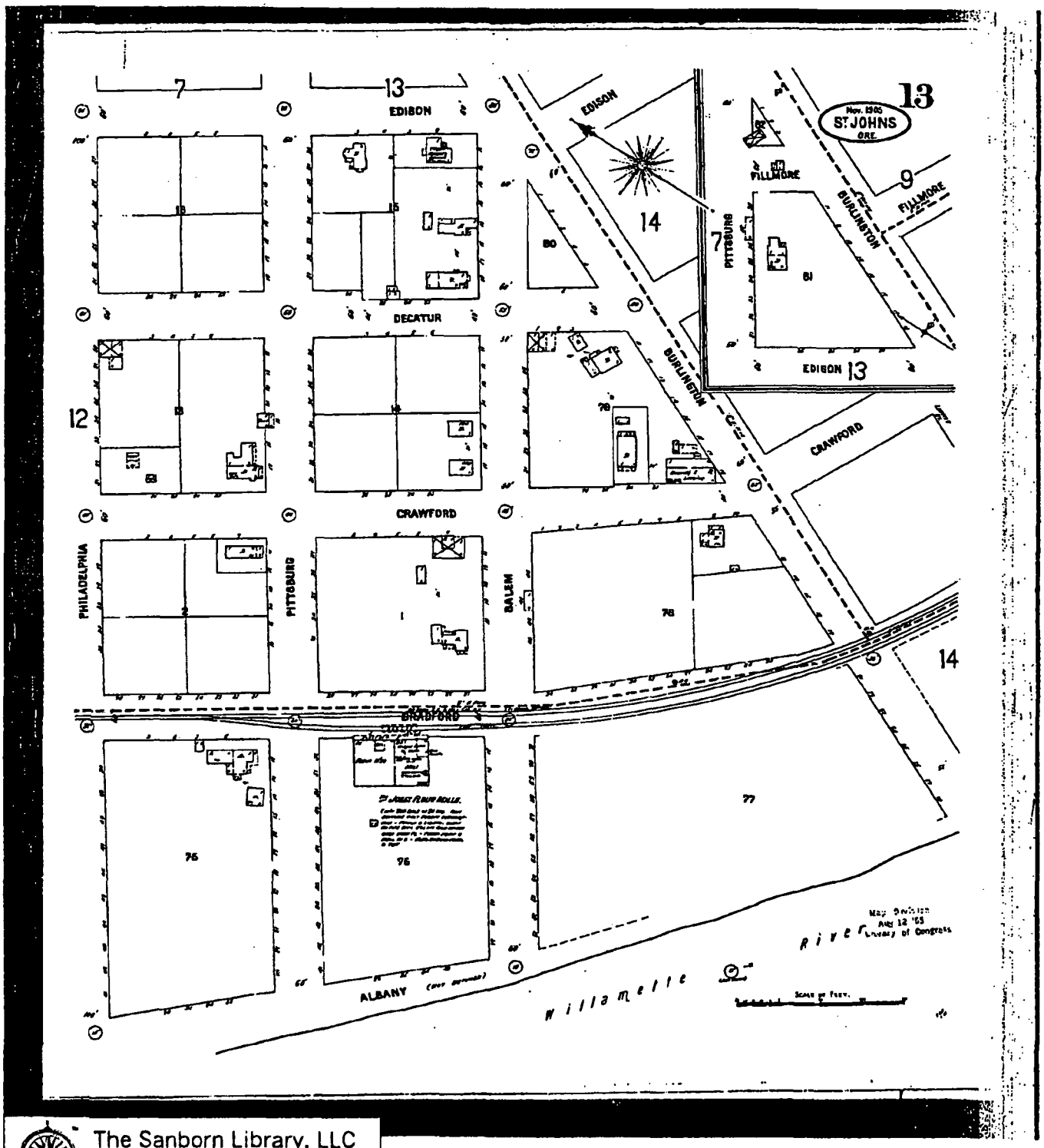
MAR 24 2000

APPENDIX C

SANBORN FIRE INSURANCE MAPS



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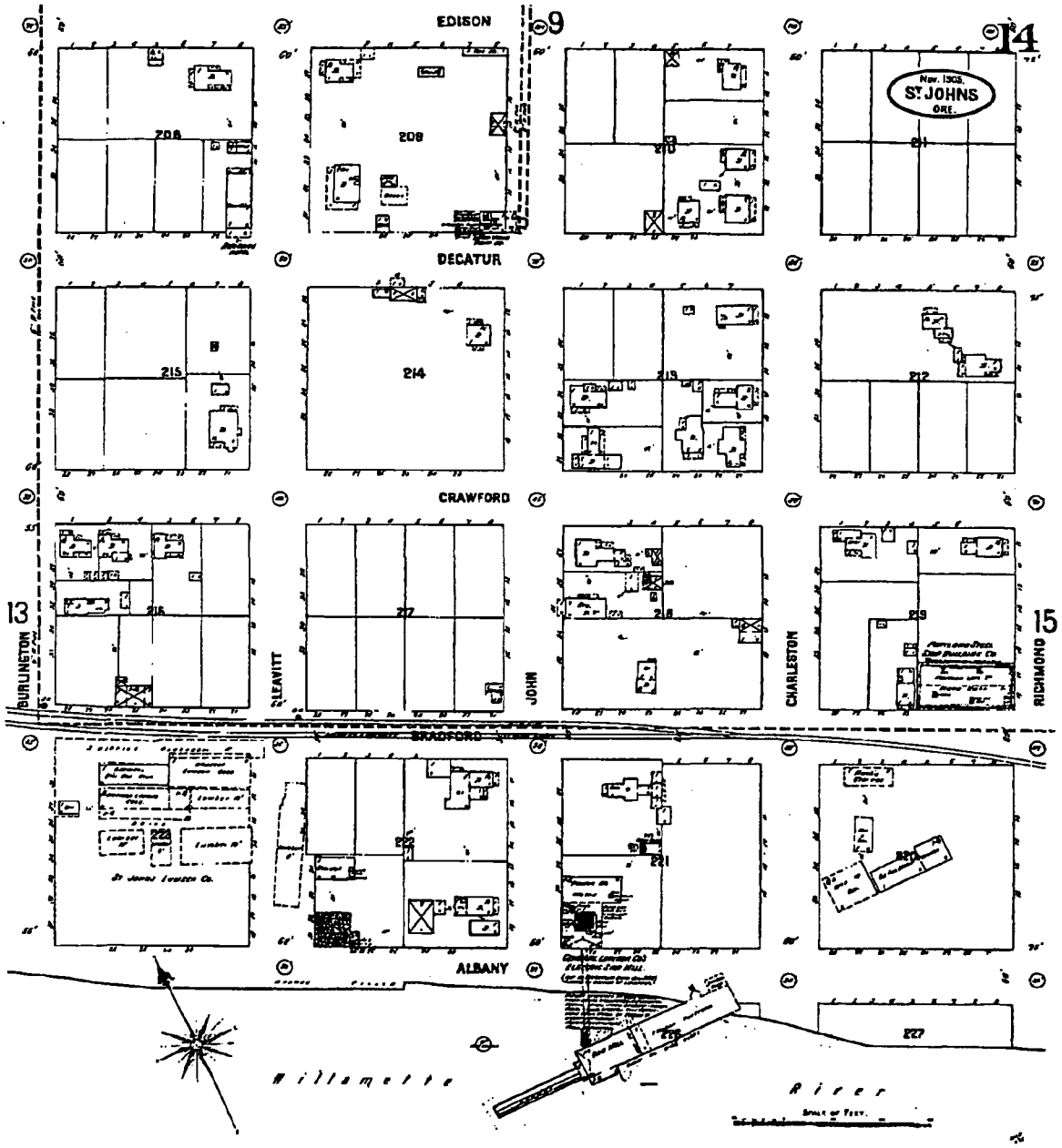

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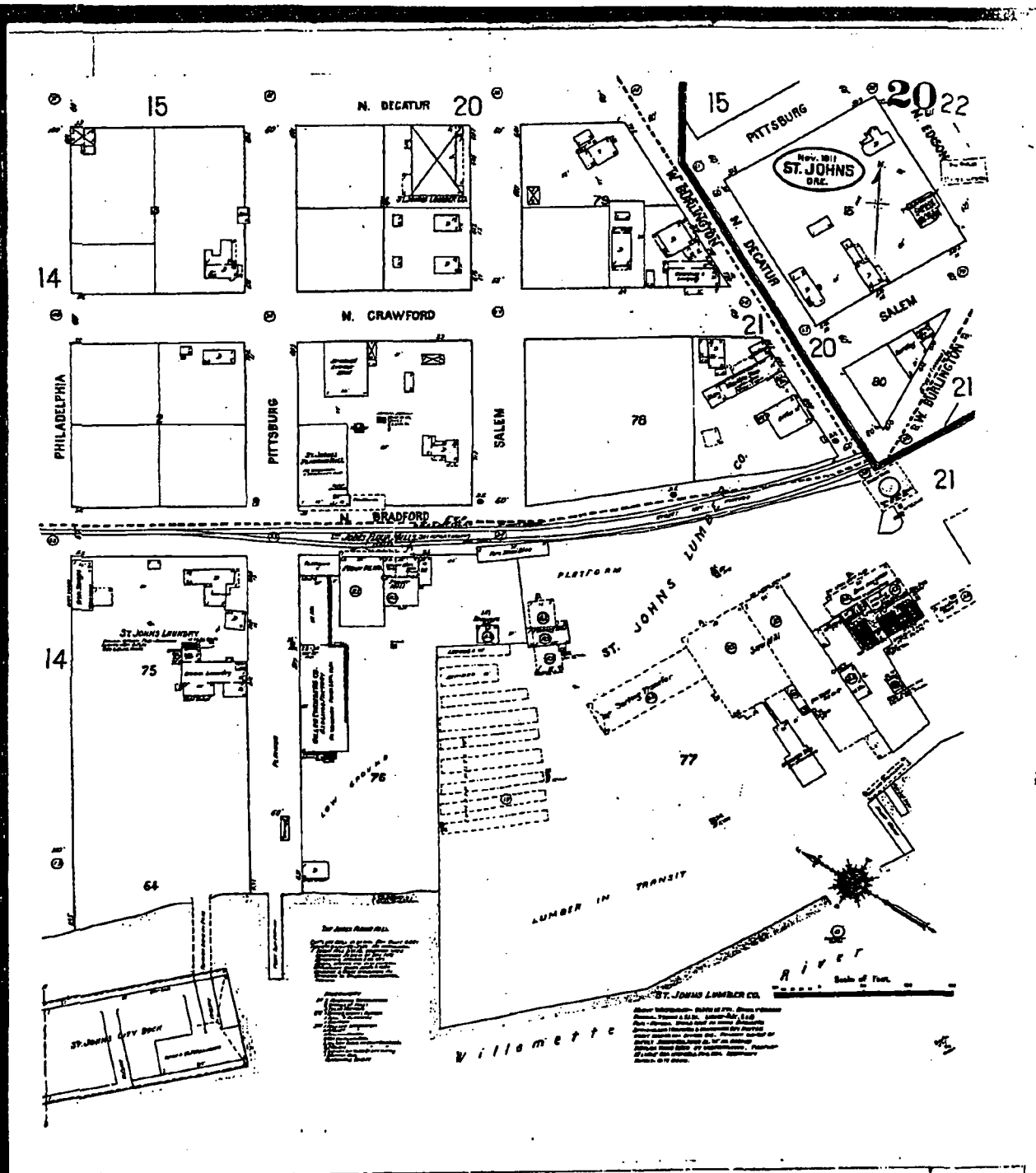

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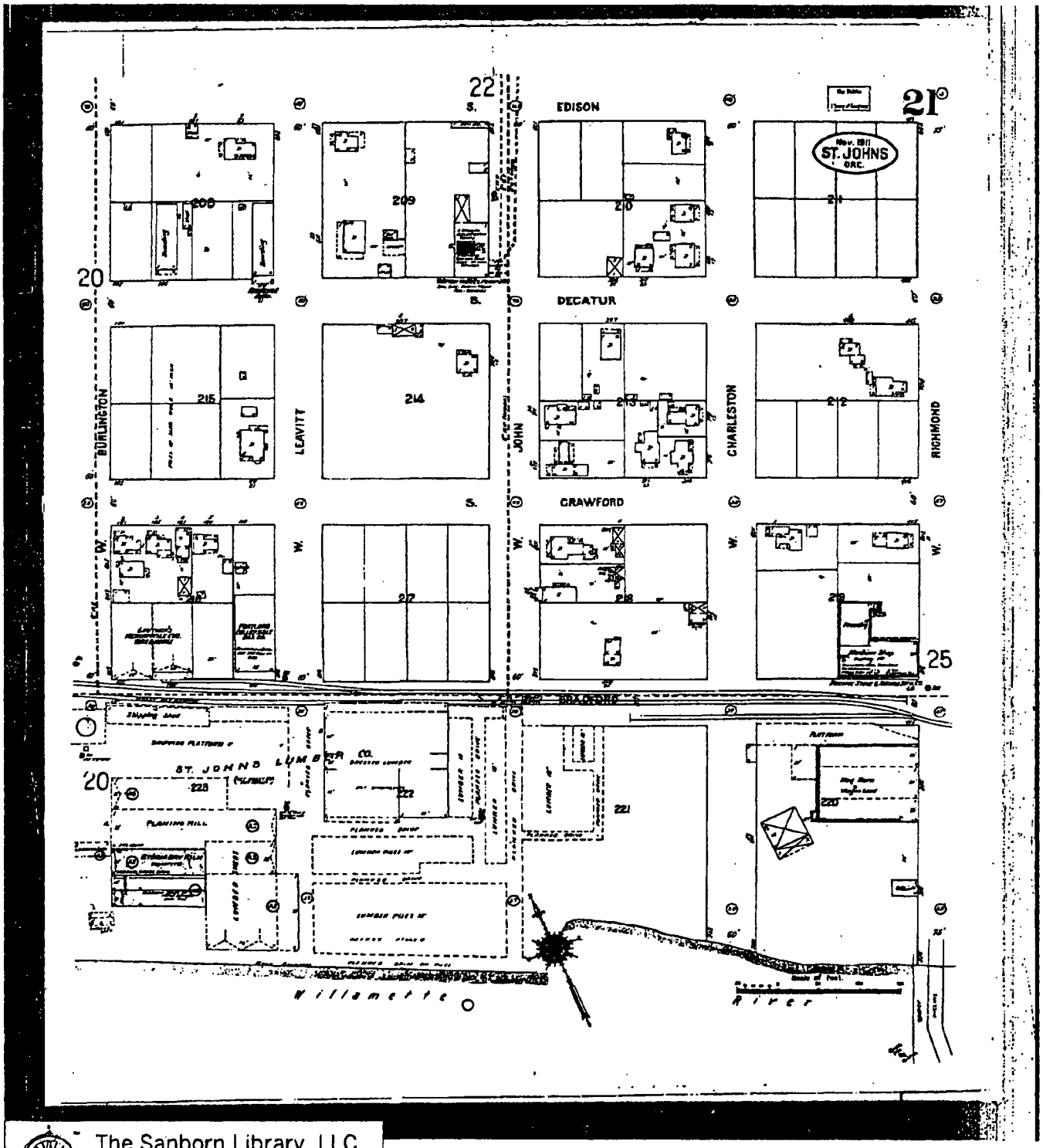

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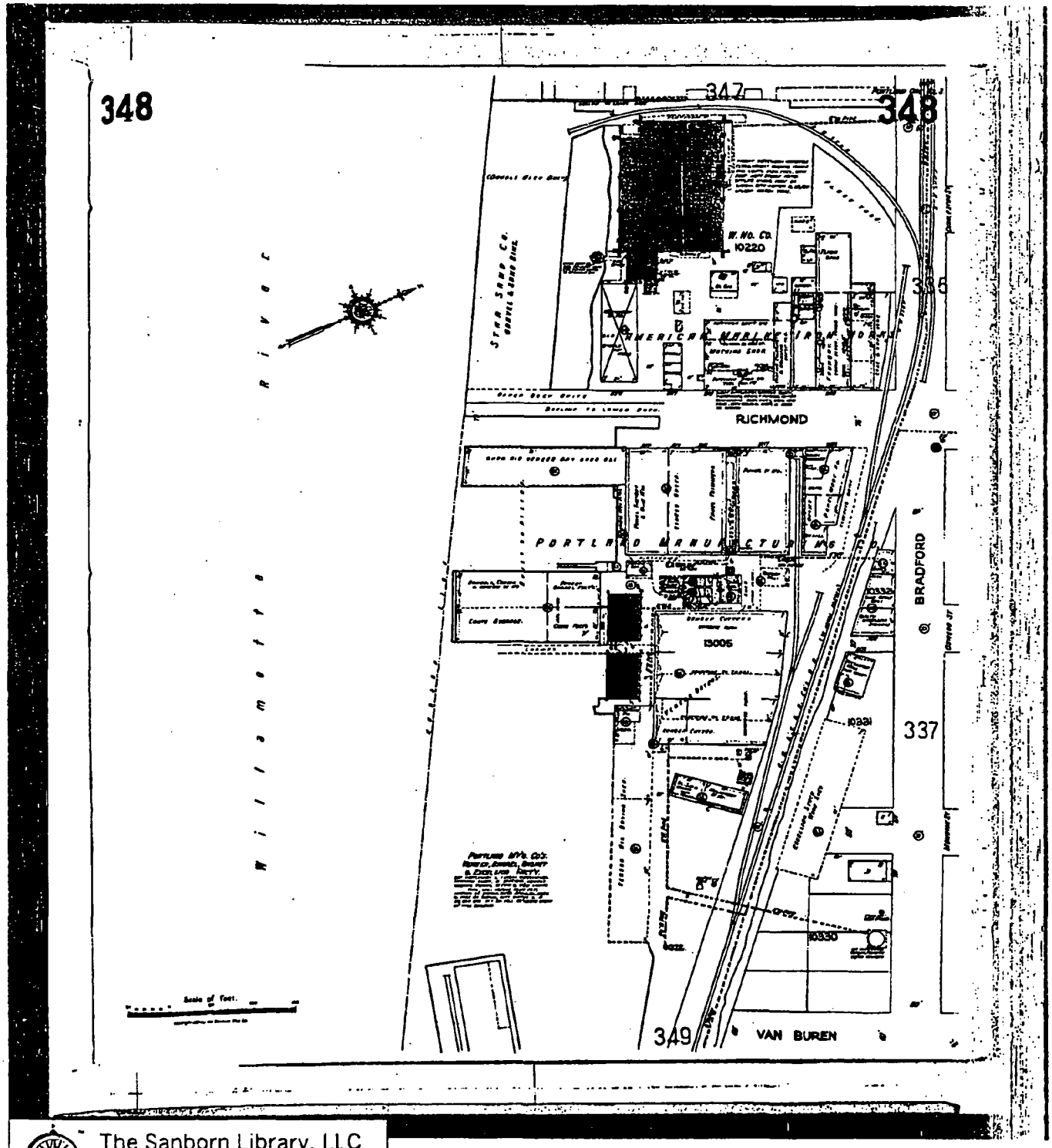

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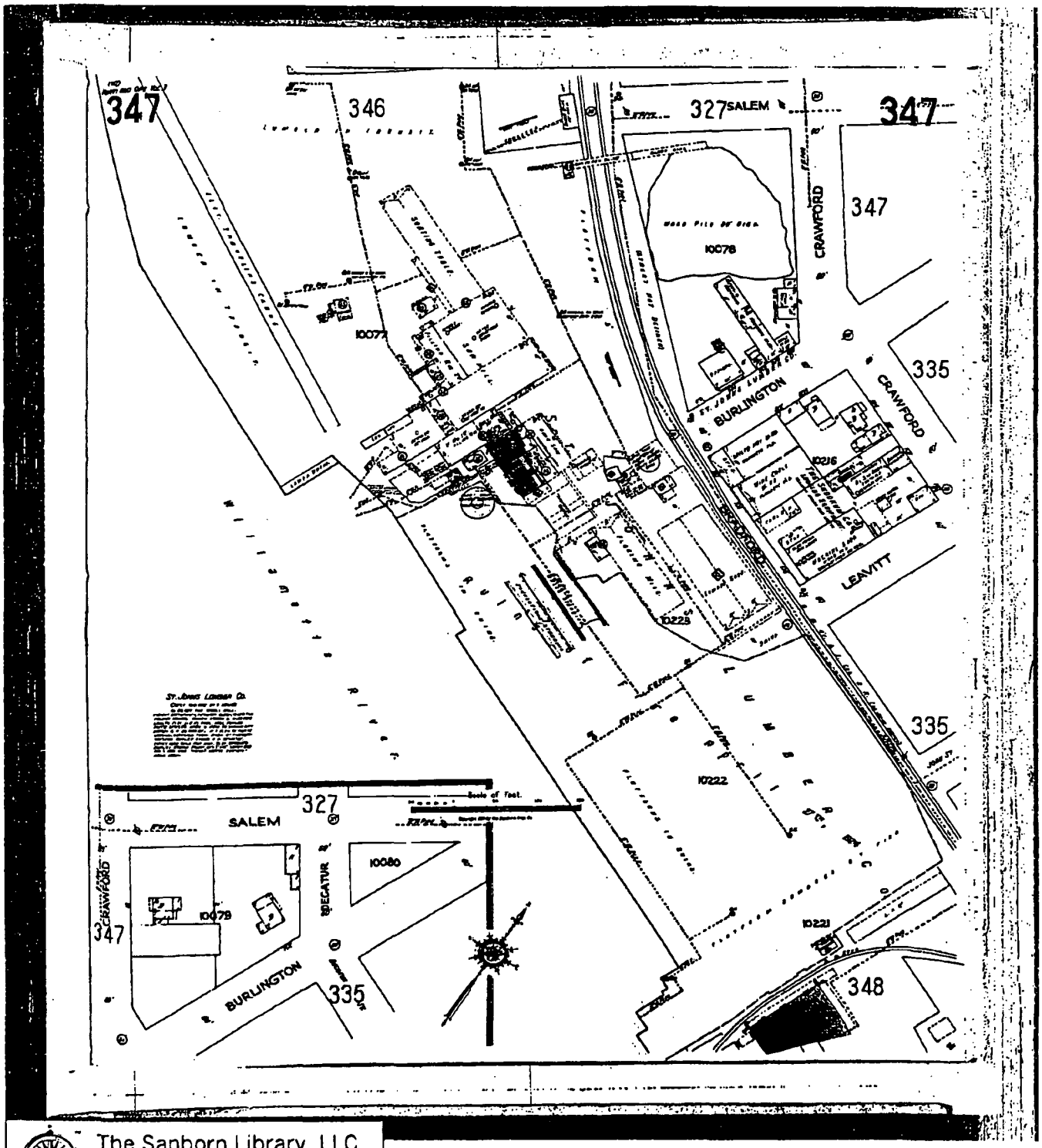

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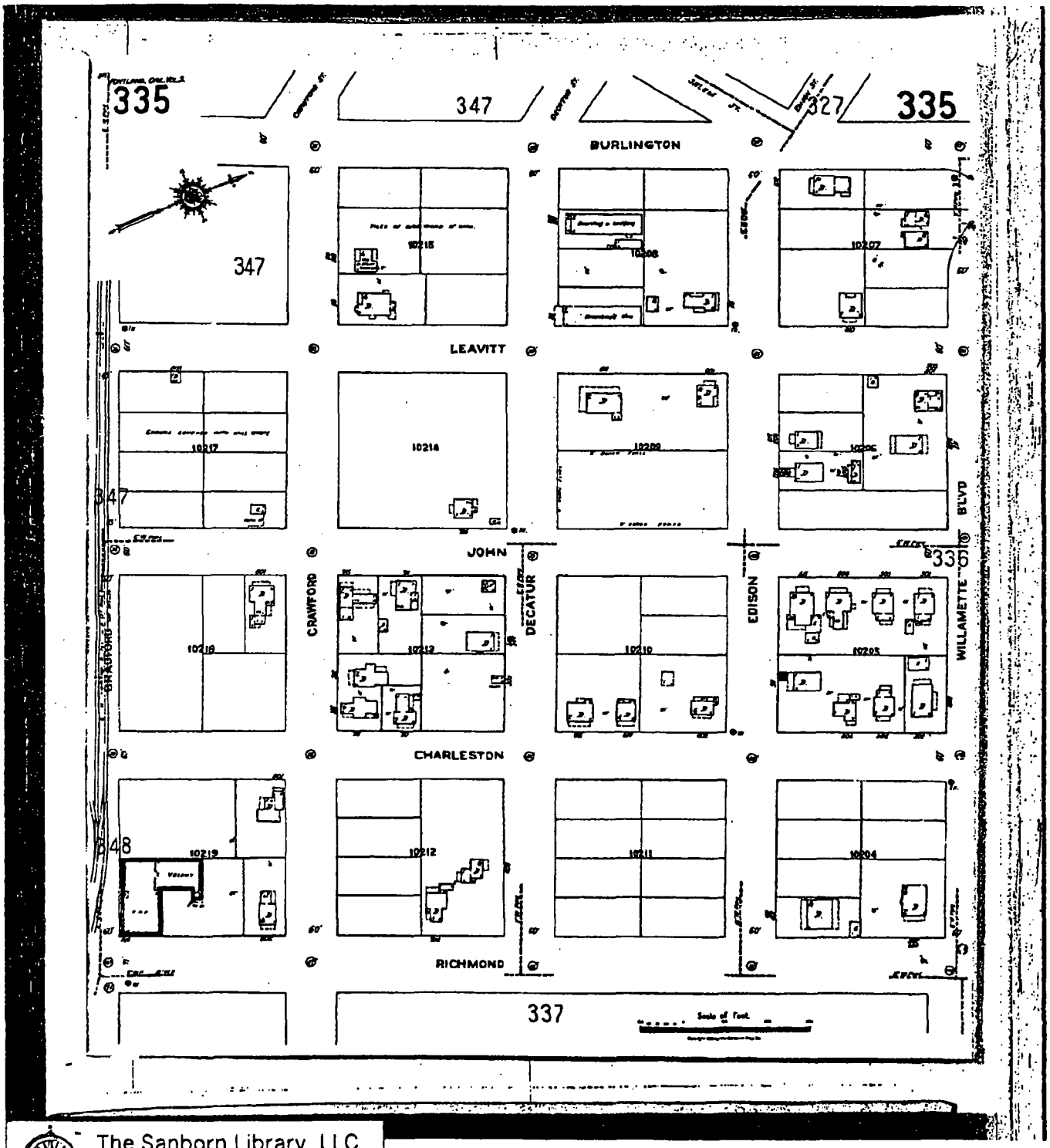

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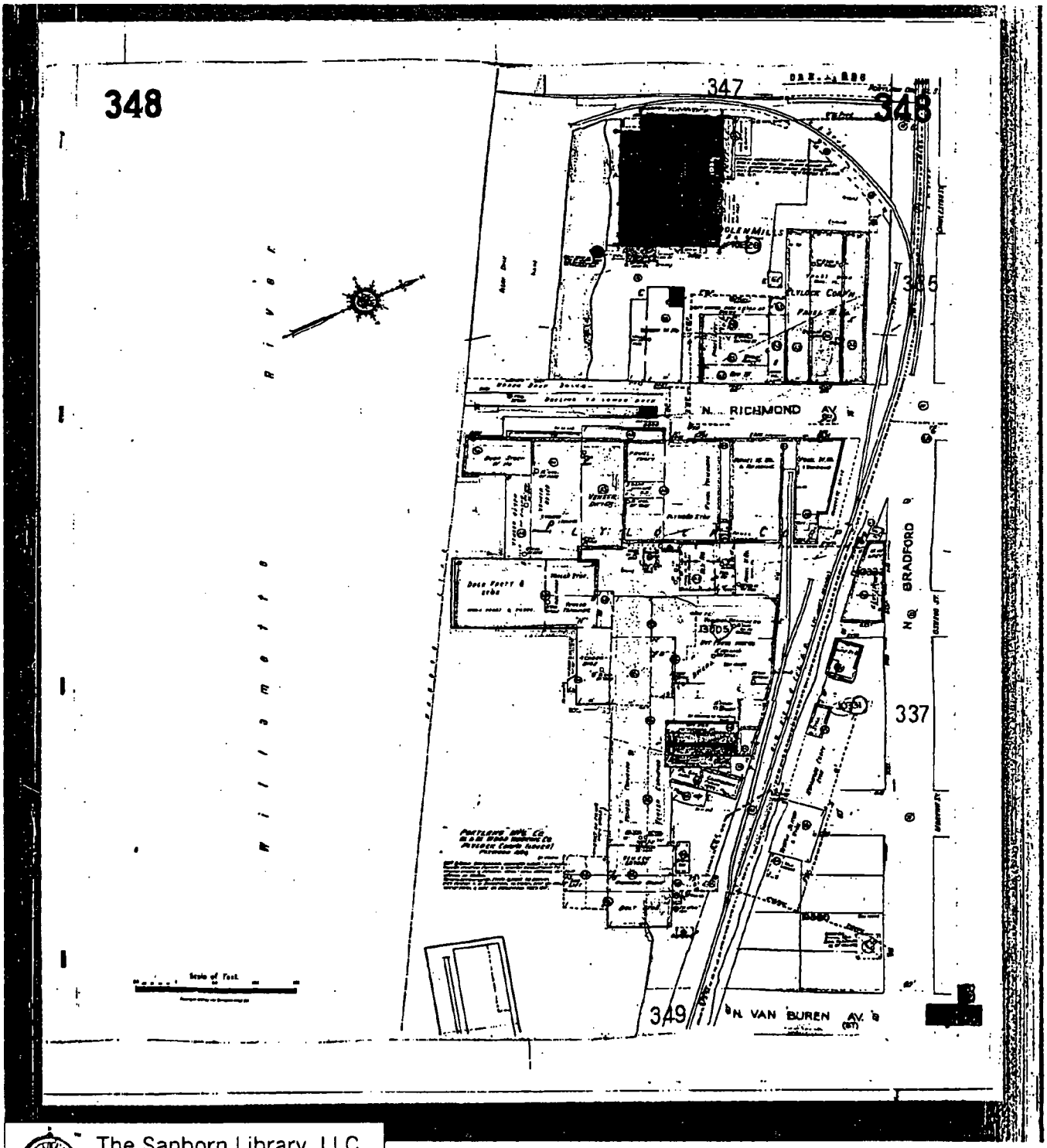

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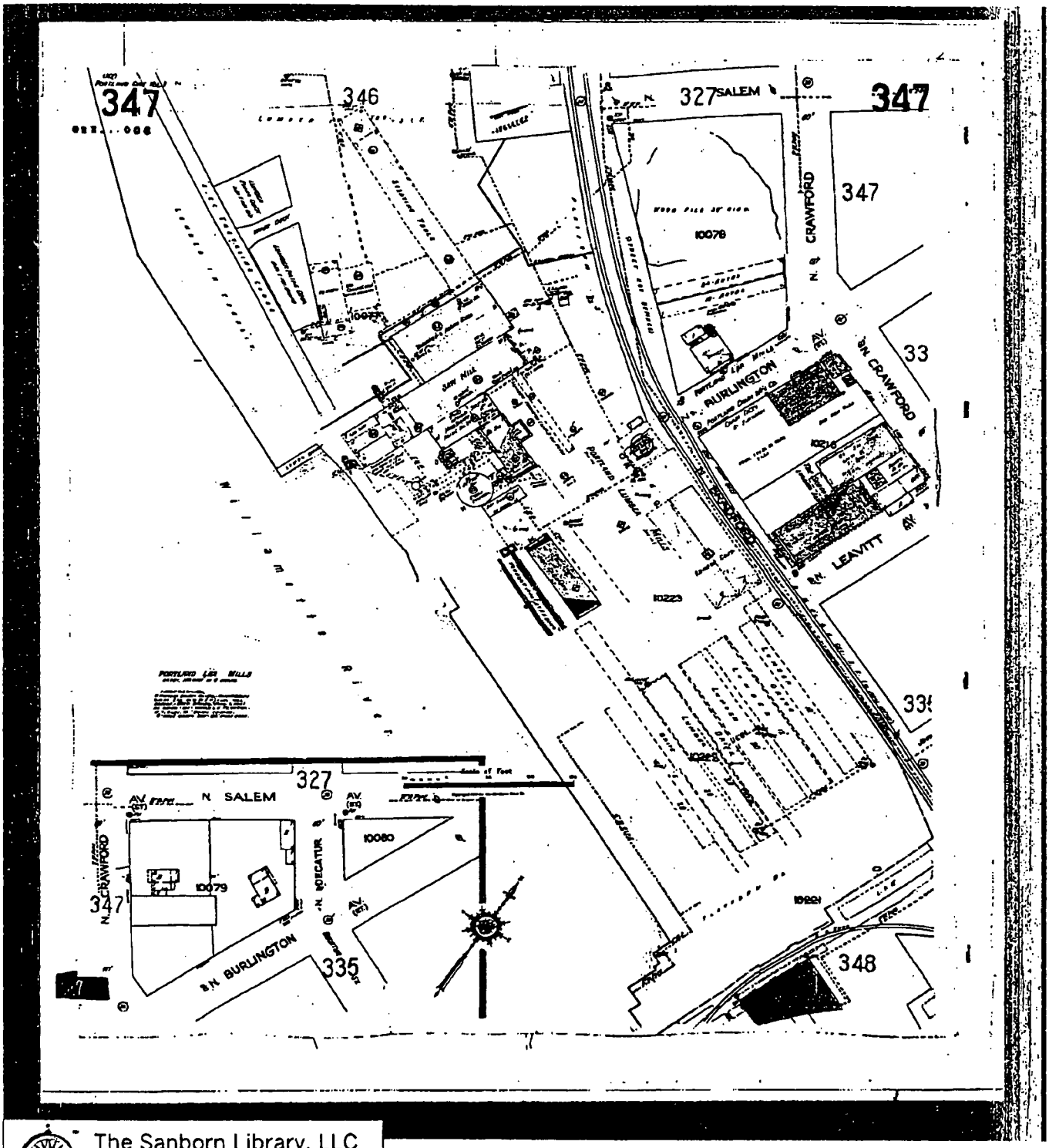

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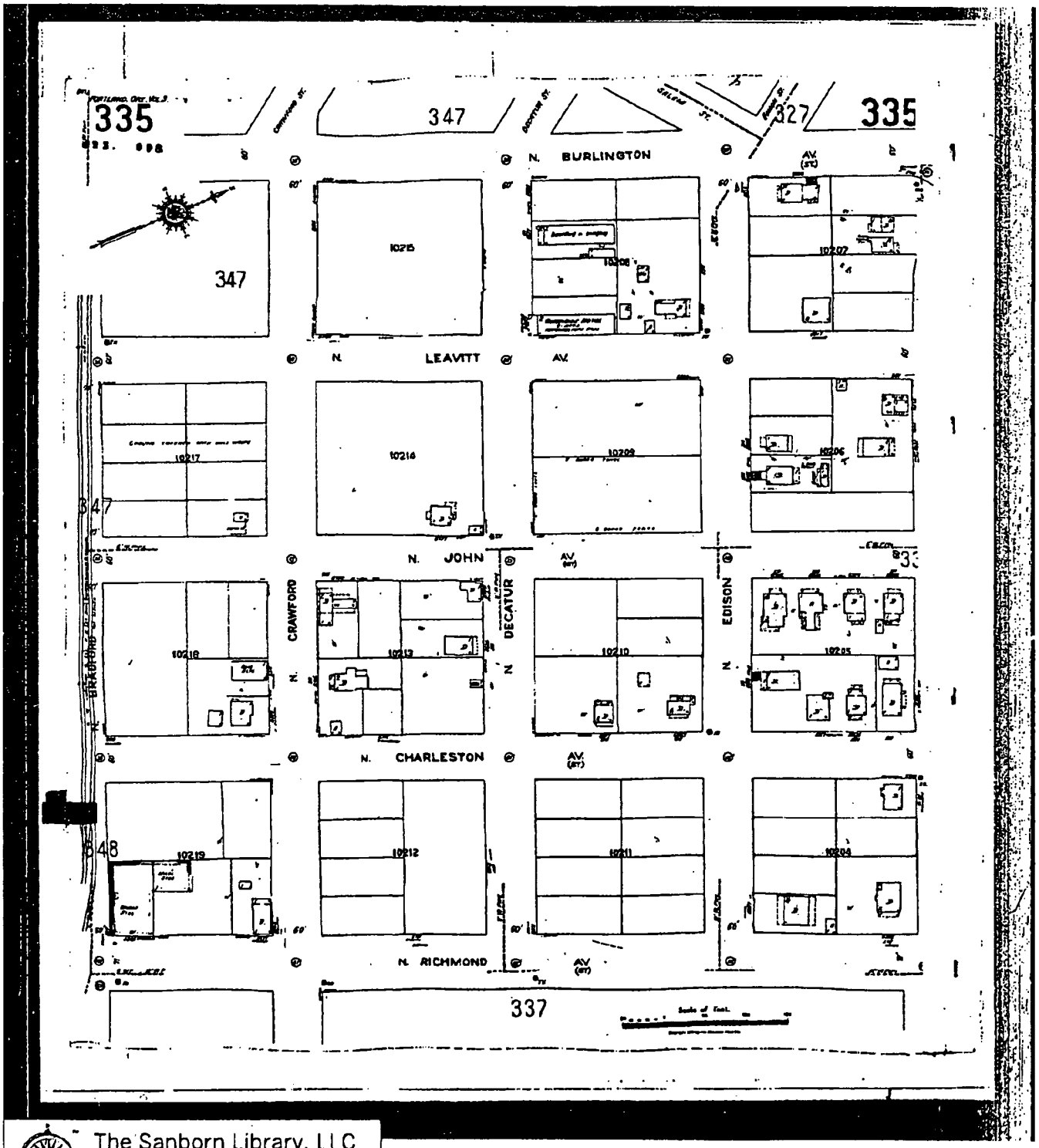

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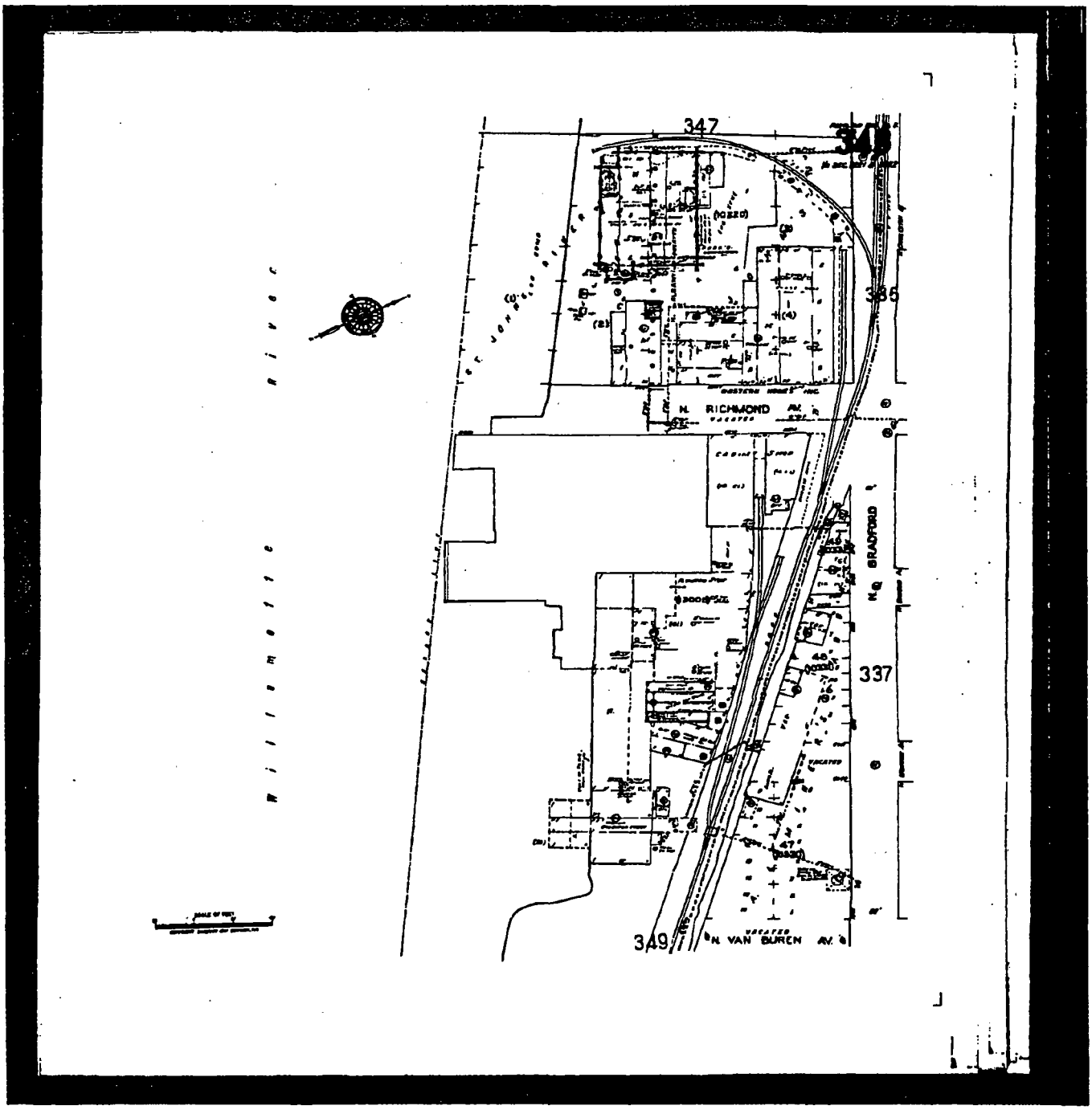

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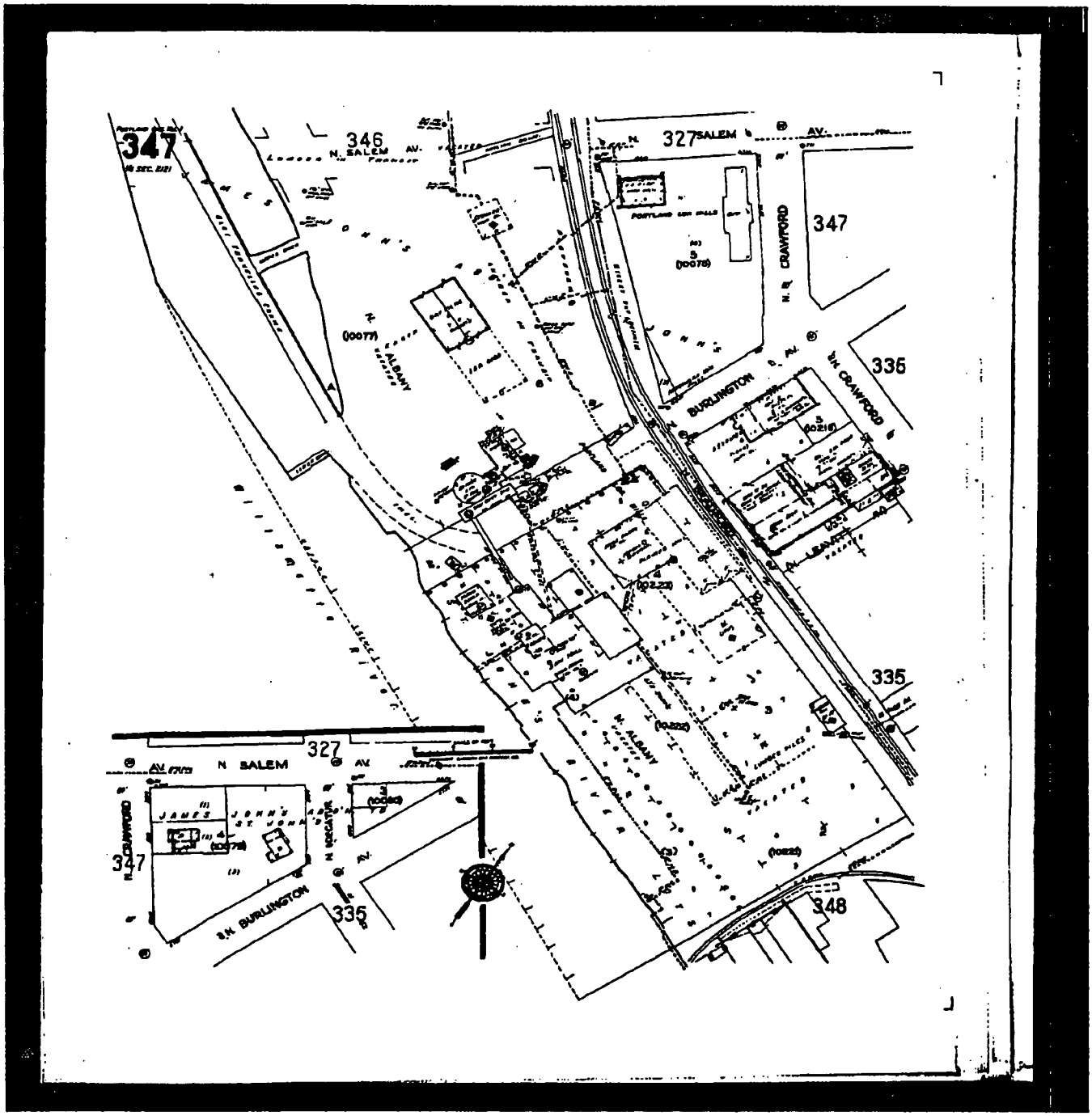

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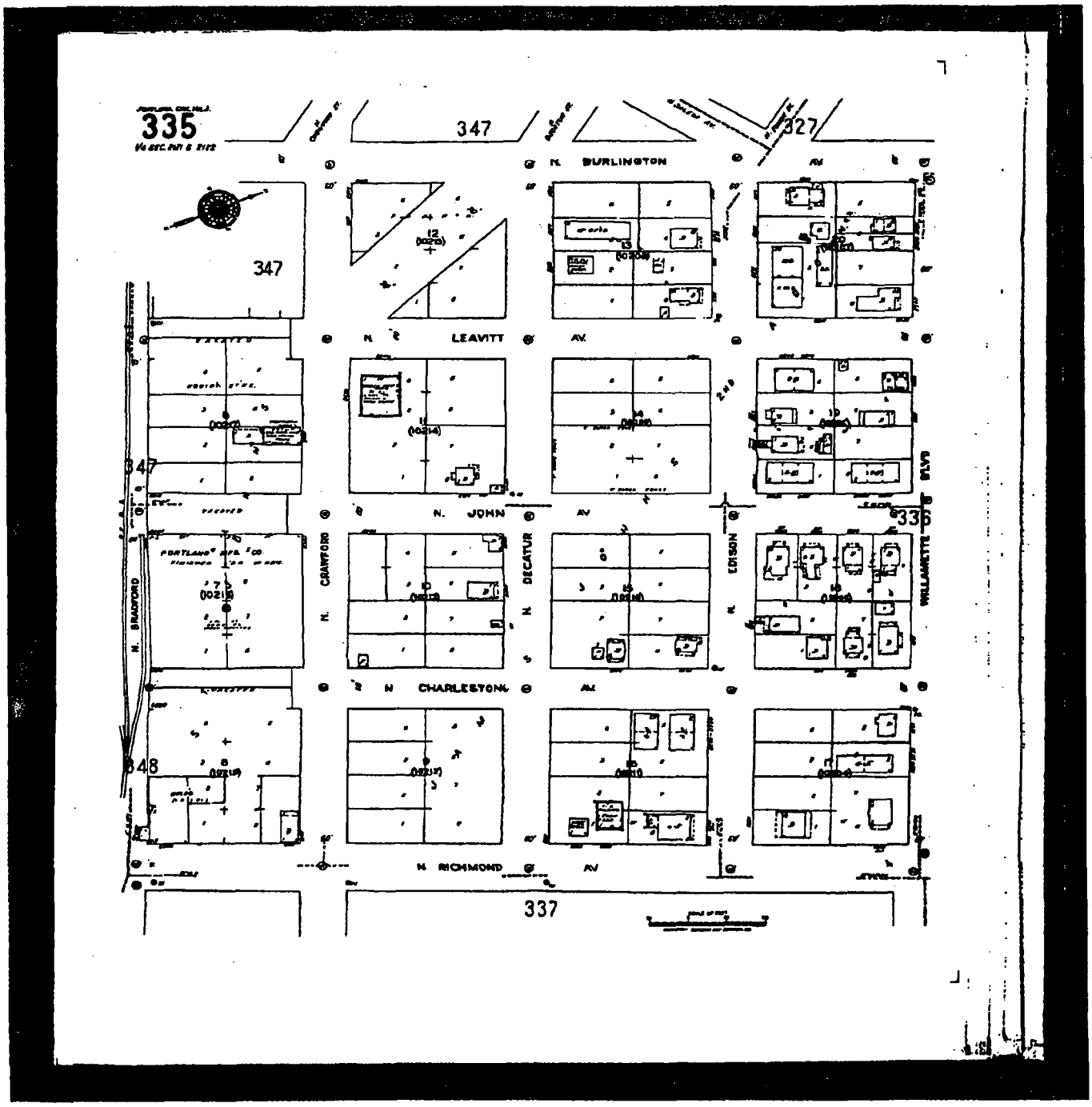

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APPENDIX D

APRIL 4, 1988, SWEET EDWARDS/EMCON REPORT FOR PROPOSED MANUFACTURING MANAGEMENT INC. SITE, (LAMPROS STEEL)

ENVIRONMENTAL EVALUATION
PROPOSED MANUFACTURING MANAGEMENT, INC. SITE
(LAMPROS STEEL)
ST. JOHNS DISTRICT, PORTLAND, OREGON

April 4, 1988

Submitted To Attorneys For:

Manufacturing Management, Inc.
4927 NW Front Avenue
Portland, Oregon 97210

Submitted By:

Sweet-Edwards/EMCON, Inc.
P.O. Drawer B
Kelso, Washington 98626

REGISTERED PROFESSIONAL GEOLOGIST
OREGON
RUSSELL C BUNKER

T2401.02

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INTRODUCTION

PURPOSE

Attorneys for Manufacturing Management, Inc. (MMI) commissioned Sweet-Edwards/EMCON (SE/E) to conduct an environmental audit of an industrial property in the St. Johns district of Portland, Oregon, for the purposes of preparing a legal opinion and to determine if onsite soil and/or ground water contamination existed because of past onsite or nearby offsite activities. Figure 1 shows the location of the site.

SCOPE OF WORK

Work began with an initial reconnaissance visit to the site on November 10, 1987. After that visit, a work scope and cost proposal were prepared and submitted on November 13, 1987 to N. Webb (MMI). The proposal addressed a documents search and review of historical aerial photography. The purpose of the search/review was to document activities that may have affected soil and/or ground water quality at the site. Work began on the search/review on December 10, 1987. Table 1 lists information sources used to document site-area activities and conditions. Table 2 lists the aerial photographs that were examined to partly reconstruct the site's history.

Physical features observed onsite and information developed during the search/review suggested that underground storage tanks may have been present at the site. Two other concerns were also identified. Part of the site was covered with angular, black medium to coarse sand. The sand had been placed as fill in an

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area where a building had been demolished. The chemical characteristics of the sand were unknown, as were its potential impacts on soil and ground water. Also, a former building had been served with a private septic tank and drainfield. Potential impacts to ground water beneath the drainfield were unknown.

The search/review process thus evolved into 1) exploring for underground storage tanks, 2) field sampling of soil and ground water in specific "target" areas and 3) laboratory testing of soil and ground water to determine the extent of potential contamination. This report describes the site history as developed from the search/review, and goes on to describe the methods and results of the field program.

SITE DESCRIPTION

TOPOGRAPHY AND DRAINAGE

The site is L-shaped (Figure 1), most of it being in a rectangular area occurring as a bench about 20 to 30 feet above the Willamette River. The rectangular area is approximately 400 by 1000 feet. The "foot" of the L-shaped area is at the eastern end of the site and lies on a gentle southwest-facing slope that rises to an elevation of 50 to 60 feet mean sea level (MSL). The "foot" is approximately 150 by 250 feet. A warehouse building is on its western end. The entire site drains to the Willamette River, the major stream in the site area. There are no surface drains or streams that drain the site directly to the river.

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GEOLOGY/HYDROGEOLOGY

The site was mapped as being underlain by Willamette River deposits (Trimble, 1963), but exposures along the bluff overlooking the river forming the site's southern boundary suggest the bench portion of the site is immediately underlain by 20 feet of manmade fill. The river deposits and their veneer of fill are inset against older river deposits. The older river deposits extend to elevations below present sea level, where they overlie gravels of the upper part of the Troutdale Formation. The Troutdale is the most productive aquifer in the St. Johns area. However, its upper gravels occur at roughly elevation -100 feet MSL in the St. Johns area. The aquifer is probably not used near the site area because 1) no records exist at the Oregon Water Resources Department for wells near the site area and 2) the area is served by City of Portland drinking water.

PRESENT-DAY SITE ACTIVITIES

There are no present activities at most of the site. It has been vacated. The warehouse present in the "foot" is used by the Portland Development Commission (PDC) for storage.

SITE HISTORY

Review of title records supplied by N. Webb (MMI) shows that the site has been industrialized since the late 1800s. Table 3 partially lists past ownership through the 1960s-late 1970s of the blocks that comprise the site. Figure 2 shows the locations

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of the blocks. The past owners listed in Table 3 are only those having business names. Individual owners are not listed. The business names permit broad inferences to be drawn concerning the nature of past onsite business activities.

Most businesses were lumber mills. Other businesses were warehousing and unknown manufacturing and possible shipbuilding work. The latter is suggested by the name "Marine Iron Works" in the title records.

U.S. Army Corps of Engineers photographs (Table 2) document site activities since 1936, the earliest year of photographic coverage. Mill buildings occupied parts of the site since at least 1936. From 1936 to the early 1950s, buildings were present in the eastern end of the main, rectangular part of the site. They were part of a plywood plant complex, most of which was offsite east of North Richmond Avenue. Building "7" (Figure 3) was one of these buildings. It was used variously for wool scouring, plywood storage, and most recently, by "Fibron Insulation" in the late 1970s-early 1980s. Other buildings were also present in the area between building "7" and the river.

A planing mill, sawmill and chip bin had been built by the early 1950s at the western end of the main site area (Buildings "4", "5", "6"; Figure 3). The present PDC warehouse had been built by 1961. By 1973, portions of the mill complex were being dismantled, beginning in the eastern half of the main area. The planing mill and sawmill at the west end of the main area were torn down during 1977-1978 by the last business to operate them, Brand S Corporation. The "Fibron" building was still standing in 1983, but was torn down by 1986, only its foundation remaining. The PDC warehouse is the only remaining onsite structure.

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A site visit and interview with a former employee of the former sawmill provided additional detail concerning site history. The former employee provided critical information about two areas at the site. First, the former "Fibron" building had been served by a private septic tank and drainfield that lay between that building and the river.

The second key piece of information concerned the sand that had been placed as fill in the area where the former sawmill (Figure 3, Building "6") had stood. The former employee explained that the sand was placed during demolition of the sawmill in 1977-1978. The former sawmill got the sand from a local sandblasting company. The sand had been used to clean oil tanks on land and in ships. When the sand was placed as fill, it was oily. Winter rains flushed oil from the sand and oily water ran into the Willamette River, creating an oil slick. The Coast Guard warned the sawmill owner and no more sand was placed as fill. The oil slick eventually disappeared.

POTENTIAL CONTAMINANT SOURCES

ONSITE SOURCES

Sand Fill

The sandblast sand placed in the area of the former sawmill created an oil slick on the Willamette River when it was placed in the winter of 1977-78. Residual oil may still locally be present in the sand. The chemical character of the oil is unknown. The oil may be contaminated with solvents or PCBs. Oil

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is regulated as a hazardous substance under the new Oregon "Superfund" law, ORS 466.540(9).

Suspected Underground Storage Tank Pipes

Six pipes project vertically out of the ground or out of former floor slabs at the former planing mill and sawmill sites. The pipes range in inside diameter from 6 to 8 inches. All were capped by steel plates secured to flanges with bolts. The purpose of the pipes was unknown. They may have been fill or distribution pipes for underground fuel storage tanks.

Possible Unknown Underground Storage Tanks

Because the site is so large and has been the scene of so many different industrial businesses for essentially 100 years, it was felt by N. Webb (MMI) and SE/E that underground storage tanks probably existed somewhere onsite.

Drainfield

The former "Fibron" building was served by a local septic tank and drainfield. The nature of that building's drain-piping system is unknown. It is possible that chemical spills may have been discharged to the drainfield along with "domestic" sewage.

OFFSITE SOURCES

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Union Pacific Railroad (UPRR) Pipeline

Figure 3 shows the location of an eight-inch pipeline operated by UPRR. The pipeline carries diesel according to Ted Haskill (UPRR). It runs down the middle of North Crawford Street and so is in the presumed upgradient direction for ground water flow with respect to the site. If the pipe has leaked, it would be an upgradient source of diesel.

Former Underground Storage Tanks, Asset Recovery and Columbia Forge

Three tanks were present at Asset Recovery and Columbia Forge along North Crawford Street. Figure 3 shows their former locations. One diesel tank was at Asset Recovery, whereas two tanks, one gasoline and one diesel, were at Columbia Forge. The tanks were removed in March 1987. Appendix 1 contains information on the tanks submitted to the Oregon Department of Environmental Quality (DEQ).

Samples were taken of 1) soil beneath the tanks and 2) the tanks' contents. The test results are in Appendix 1. The gasoline tank at Columbia Forge reportedly had a small hole in it. Soil from beneath the gasoline tanks contained 16 mg/kg gasoline, <1 mg/kg diesel and 30 mg/kg lead. The meaning of the lead sample is uncertain because another soil sample from beneath the tank was tested at <0.1 mg/kg of lead using the EP Toxicity test. The greater value of 30 mg/kg may be due to a different extraction procedure having been used. Allowing for this uncertainty, the other results still suggest that the tank had evidently leaked.

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The time of the leak is uncertain because the tank had been empty since 1960 according to information filed with DEQ.

St. Johns Truck and Equipment Repair

This business at 8435 North Crawford Street is directly across from Columbia Forge and, like the UPRR diesel pipeline, is upgradient of the site with respect to ground water flow. One fuel pump is visible at the west side of the repair shop. It presumably serves an underground tank holding gasoline or diesel. No information exists at DEQ on the probable tank.

A second potential contaminant source exists at this business. It is a large metal box in which truck equipment is placed for steam cleaning. The condensate runs into a drain. Where the water drains to is unknown. The condition of the drain piping is unknown.

Oil-Contaminated Soil; Railroad Tracks and Columbia Forge

Two main buildings comprise the Columbia Forge operation. The westernmost building was formerly used by Skookum, a logging equipment manufacturer. The eastern part of that building contained a paint shop. The shop was cleaned by hosing the floor with water. The water ran into a drain that ran out to the southeastern corner of the building and onto ground just north of railroad tracks that are south of the building (Figure 3, location "D").

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Oil was carried with the water, resulting in oil seeping into the ground where the drain discharged near the tracks. The affected area is at least 10 feet wide by several tens of feet long. When it rains, stormwater runoff is carried to the area by the drain and a large puddle forms. Oil moves out of the soil and forms an oil slick on the puddle.

Compressor Blowdown, Columbia Forge

An air compressor is located outside the east wall of the easternmost building at Columbia Forge (Figure 3, location "E"). Oil has been blown out from the compressor onto the ground surface south of the plant building.

FIELD INVESTIGATION

ORGANIZATION

Seven discrete work elements, some with subelements, comprised the field investigation. They are described below in the order in which they were performed.

SURFACE GRAB SAMPLES OF SAND FILL

Three samples of the sand fill were taken at the ground surface on November 10, 1987. They were combined into one composite sample to test whether the sand had the characteristics of an Environmental Protection Agency (EPA) characteristic waste as

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determined by the EP Toxicity test. Figure 3 shows the locations of the samples that were combined into the composite test sample.

RIVER BLUFF TRAVERSE

The bluff overlooking the Willamette River was traversed on December 11, 1987 to search for possible springs or seeps. No seeps or springs of ground water or chemical products were observed.

SUSPECTED UNDERGROUND STORAGE TANK PIPES

Four of the suspected fill/distribution pipes were sampled on December 21, 1987. All six pipes were opened, but only four contained enough water to sample. The sampling procedure is described in Appendix 2. Water in the pipes was slightly rusty. Thin, discontinuous oil films were present on the water in two pipes. The pipes were not fill pipes. They did not go straight down into tanks, but instead became horizontal about 2 feet below ground surface.

GEOPHYSICS SEARCH

Geophysical techniques were used to search for possible underground storage tanks in the main area of the site. No geophysical exploration was done in the "foot" area because heavy brush there prevented access. A ground-penetrating radar survey was attempted on December 26, 1987 by Williamson and Associates (Seattle, WA) under SE/E's direction. However, the attempt

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failed. Reasons for the failure are discussed in Williamson and Associates' report in Appendix 4.

An electromagnetic (EM) induction survey was run on December 27, 1987 by Geo-Recon (Seattle, WA) under SE/E's direction. Geo-Recon's report is in Appendix 5. The EM survey identified several electrically conductive targets that might have been underground tanks or piping. The targets were marked on the ground with spray paint at the time of their detection. The actual presence or absence of underground tanks was confirmed later by digging.

TEST DRILLING AND GROUND WATER SAMPLING

Drainfield Area

One test boring was drilled on January 4, 1988 in the general area of the former "Fibron" building's drainfield for the purpose of determining if shallow ground water in that area had been affected by the drainfield. The boring is named T-1. Figure 3 shows T-1's location. Appendix 2 describes 1) boring and sample nomenclature and 2) drilling and sampling methods. T-1's boring log is in Appendix 1.

Total depth of T-1 was 41 feet. Ground water was found at depth 34 feet. A sample of ground water was taken within the upper few feet of the saturated zone.

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Sand-Fill Area

One test boring, T-2 (Figure 3), was drilled on January 4, 1988 in the center of the area of thickest (as judged by nearby bluff exposures) sand fill to determine if oil contamination from the sand fill had penetrated underlying materials, perhaps reaching ground water. Appendix 3 contains T-2's boring log.

Total depth of T-2 was 44.5 feet. Ground water was encountered at depth 32.4 feet. The sand fill extends to an approximate depth of 6 feet. Other fill materials are interpreted as occurring from 6 to 20 feet, below which are river deposits of sand and clayey silt. No evidence of oil, oily water or oil-stained soil was observed. Two samples of ground water were taken from the upper part of the saturated zone.

TEST PIT EXPLORATION

Geophysical Targets

Seven test pits were dug on January 6, 1988 to investigate EM-identified targets. The pits were dug using a rubber-tired John Deere 410 backhoe equipped with a 36-inch smooth bucket. The backhoe and operator were from John L. Jersey Excavating (Portland, OR). All but one of the targets were pieces of scrap metal or nails in boards. The remaining target was explored by digging test pit (TP) 2 (Figure 3). A steel tank was found in TP-2 at depth 4 feet. The tank was not completely exposed at the time it was found. Digging was confined only to confirming the presence of the tank. TP-7 and all other test pits were

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immediately backfilled with the material dug from them and were loosely compacted using the backhoe's bucket.

Sand-Fill Area

Test pits 6, 7, 8, 9, 10 and 11 were dug in the sand fill at the former sawmill. Figure 4 shows the pits' locations with respect to 1) the overall fill area and 2) the area of thickest sand fill. The pits were dug to determine 1) the thickness of the sand and 2) if any residual oil saturation of the sand existed. Table 4 describes general material types found in test pits 6-11.

All pits but TP-7 were dry. In TP-7, the upper 3 feet consisted of dry sand fill. Mixed sand fill, silt and chaotic jumbles of lumber occurred from 3 to 6 feet (Figure 5). Gray clayey silt was encountered from 6 to 6.5 feet, the final depth of TP-7.

Voids existed between pieces of lumber. While the pit was being opened between depths 3 and 6 feet, water was released from some voids and drained into the pit's bottom. The water had a thin oil slick on it, smelled strongly of oil and had a brownish white foam.

organic odor from deteriorating wood?

Two soil samples were collected from TP-7. Sample S-1 was of dry sand fill at depth 3 feet. Sample S-2 was of gray clayey silt at depth 6 feet. Sample S-2 was wet and oily.

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Underground Storage Tank at Test Pit 2

With PDC's advance approval, MMI contracted with Crosby and Overton (C&O) (Portland, OR) to remove the underground tank discovered at TP-2. R. Paul of C&O met with R. Bunker (SE/E) at the site on January 8, 1988 to be shown where the tank was located. C&O reopened the excavation and sampled the tank's contents. C&O submitted the sample to Northwest Testing Laboratories (Portland, OR). However, SE/E took the sample from Northwest Testing on January 11, 1988 at N. Webb's (MMI) request and resubmitted it to Columbia Analytical Services (Longview, WA). The sample was of oil. It was tested for 1) PCBs, 2) benzene, 3) toluene, 4) ethyl benzene, 5) total xylene, 6) total tetrachlorophenol, 7) pentachlorophenol, 8) total organic halogens (TOX), 9) EPA Priority Pollutant metals, 10) total suspended solids, 11) percent water and 12) the EPA characteristic waste categories of corrosivity, ignitability and reactivity. The test results are in Appendix 6 (report dated February 2, 1988? January 21, 1988). The tests were done to determine if the oil was a hazardous waste. It was not; and arrangements were made by C&O to dispose of the oil at Merit Oil (Portland, OR).

The tank and its contents were removed on January 18, 1988. A representative from SE/E watched C&O perform the removal. A representative of the PDC also observed the removal. A Komatsu PC 2000 trackhoe reopened the excavation and exposed the top of the tank. The contents were pumped into a C&O vacuum truck and later transferred to 55-gallon drums for temporary storage at Columbia Forge at N. Webb's instructions to C&O. Approximately 1550 gallons of oil was removed. The tank's dimensions were 12.5 feet long and about 5.8 feet wide. Its capacity was estimated by

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C&O at 2500 gallons. Figure 6 shows a cross-sectional view of the tank in the excavation dug to remove it.

After the tank had been emptied and removed from the ground, the trackhoe was used to scrape away one foot of soil that had immediately underlain the tank. The trackhoe bucket was then used to sample soil at two locations at that horizon. Figure 7 shows the sample locations. These samples were named Tank 1 and Tank 2, "Tank" indicating that the soil sample was from the tank excavation. These samples were submitted for percent oil-and-grease testing. No evidence of the tank having leaked was observed. The tank did not have any observable holes in it, nor was there any oil staining or odor in the soil beneath the tank. However, a two-inch metal pipe was found paralleling the top of the tank, running in a northeast-southwest direction. It bent southeastward at the southern end of the excavation and disappeared into the earth at depth 3 feet. Soil surrounding the pipe was discolored and black. However, there was no odor. One sample was taken of the discolored soil at the southwestern corner of the excavation. It was named the "Tank 3" sample because it was the third soil sample collected from the tank excavation. The excavation was backfilled with the soil excavated from it and with crushed rock.

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RESULTS OF FIELD INVESTIGATION

SAND-FILL GRAB SAMPLES; EP TOXICITY TESTING

The results of the EP Toxicity testing of the grab samples of the sand fill are in Appendix 6 (report dated November 13, 1987). None of the test parameters exceeded maximum allowed levels.

SUSPECTED UNDERGROUND STORAGE TANK PIPES

Water from three of the suspected fill/distribution pipes was tested for pH and specific conductance. The test results are in Appendix 6 (report dated December 30, 1987). Conductance ranged from 68 to 88 micromhos/cm; pH ranged from 5.5 to 5.9. These values suggested that the water in the pipes was not polluted. These results and the fact that the pipes did not go into tanks made it unlikely the pipes were in any way related to underground storage tanks. Proof of this was provided by a former employee of the sawmill, who said that the pipes were distribution lines for fire-protection systems at the former sawmill and planing mill.

GROUND WATER SAMPLES

Ground water from borings T-1 and T-2 was tested for nitrate-nitrogen, total organic carbon (TOC) and TOX. The results are in Appendix 6 (report dated January 11, 1988). The sample from T-1 does not show any obvious impacts on water quality due to the drainfield.

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Two vertically overlapping water samples were taken immediately below the water table at T-2. The results for both samples are essentially identical, an expected result given the samples' vertical proximity. Both samples have larger TOC and TOX concentrations than at boring T-1, but neither sample shows any clear indication that shallow ground water has been affected by oil from the overlying sand fill, the bottom of which is 26 feet above the water table at the location of boring T-2.

TEST PIT 7 SOIL SAMPLES

S-1 400 mg/kg
S-2 500 mg/kg

Samples S-1 and S-2 were both tested for 1) weight-percent oil and grease, 2) TOX and 3) volatile organics (by EPA methods 8010 and 8020). Sample S-1 was also tested for PCBs. The results are in Appendix 6 (report dated January 19, 1988). Only sample S-1, of dry sand at depth 3 feet, shows any test constituent concentrations of note. The sample has a TOX concentration of 294 ppm and a total xylenes concentration of 310 ppb. The TOX concentration is not explained by the xylenes because xylenes do not contain halogens. This unexplained TOX value prompted an additional test on S-1 for PCBs. PCBs were measured as being <0.2 ppm. The TOX value remains unexplained.

UNDERGROUND STORAGE TANK AT TEST PIT 2

The results of tests on the contents of the tank were discussed in a preceding section. The contents did not fail the hazardous waste tests that were conducted and appeared to be diesel oil.

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The two soil samples taken from a depth one foot below the bottom of the former tank and from discolored soil near the 2-inch pipe were tested for weight-percent oil and grease. The results are in Appendix 6.

The samples from beneath the tank, Tank 1 and Tank 2, had 0.01 (100 mg/kg) and 0.02 (200 mg/kg) percent oil and grease. Tank 3, the soil sample from near the 2-inch pipe, had 0.02 percent oil and grease. These low percentages indicate that there is no contamination problem due to potential past leaks from the tank.

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CONCLUSIONS

1. The sand fill did not fail the EP Toxicity test.

2. A single sample of dry sand from TP-7 shows evidence of 1) contamination with xylenes and 2) potential contamination with halogenated compounds, as indicated by a TOX value of 294 ppm. The value is not explained by PCBs because a test on the sample did not detect PCBs.

3. Samples S-1 and S-2 from TP-7 are characterized by low weight percentages of oil and grease, and are not saturated. However, enough oil is present to create localized zones of oily water. The water is rain and/or runon that has infiltrated the sand fill and become perched atop a clayey silt layer at depth 6 feet.

4. To fully determine the extent of any potential contamination problem with the sand fill requires that 1) additional exploration be done to determine the sand's areal extent and thickness and/or the presence of any other localized zones of oily water and 2) the sand be characterized chemically by determining the extent of oil and grease and the other compound(s) responsible for the TOX value observed in sample S-1 in TP-7.

5. Shallow ground water beneath the drainfield and sand-fill area shows no obvious impacts due to the drainfield and oil in the overlying sand fill, respectively. The water quality results from the sand-fill area are supported by the lack of evidence of oil staining in unsaturated soil beneath the sand fill and above the water table.

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6. A geophysical survey located one underground storage tank. Its contents were not identified as hazardous waste, but instead appeared to be diesel. The tank was removed and its contents disposed of by C&O.

7. No impacts on soil and/or ground water quality due to offsite activities were investigated by field sampling and laboratory testing as part of this study.

LIMITATIONS

The analysis, conclusions and recommendations contained in this report are based on site conditions as they existed at the time of these investigations. All work was carried out by or under the direction of a professional geologist. All work was completed to the normal standards of the profession and in accordance with generally accepted geological principles and practices. If, during additional investigation, data or conditions at the site differing materially from those indicated in this report are known or become available, Sweet-Edwards/EMCON should be contacted promptly to facilitate a review and investigation of those conditions in order to determine if any modifications of findings, conclusions and/or recommendations are warranted.

REFERENCE

Trimble, D.E., 1963, Geology of Portland, Oregon and adjacent areas: U.S. Geological Survey Bulletin 1119.

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TABLE 1

INFORMATION SOURCES

Environmental Problems

Oregon Department of Environmental Quality--Underground Storage Tank Program and Northwest Region Office.

Geology/Hydrogeology

Trimble (1963)--General Site Area Geology

Oregon Water Resources Division--Water Well Records (on file at U.S. Geological Survey, Portland)

Land Use

City of Portland--Sewer Locations

Ted Haskill, Union Pacific Railroad (UPRR)--UPRR diesel pipeline near site

Former Employee of former onsite sawmill

Dave Aldrich, Transamerica Title--Title records

U.S. Army Corps of Engineers, Cartography and Remote Sensing Section--Historical aerial photographs

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TABLE 2
U.S. ARMY CORPS OF ENGINEERS
AERIAL PHOTOGRAPHS REVIEWED
FOR HISTORICAL LAND USES

YEAR	PHOTOGRAPH	SCALE
1936	38-5863	1:15,000
1939	4673	1:10,200
1940	40-5889	1:10,600
1948	589VV162PL, R391, 353 R6	Unknown
1957	57-3303	1:8,500
1961	61-1172	1:8,300
1963	63-2810	1:12,000
1967	67-955	1:12,000
1970	70-1058	1:25,000
1971	71-3292	1:3,000
1972	72-2795	1:6,000
1973	73-2192	1:24,000
1976	76-173	1:48,000
1977	77-485	1:24,000
1979	79-1636*	1:30,000
1980	80-285	1:12,000
1981	81-1536*	1:48,000
1983	83-1000*	1:24,000
1986	86-289	1:48,000

* Color infrared photograph. All others black and white.

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TABLE 3
LIST OF PAST ONSITE PROPERTY OWNERSHIP
BY BUSINESSES

Block 1

Oregon Barrel Co., Marine Iron Works, Star Sand Co., American Marine Iron Works, Western Wool Warehouse, Portland Manufacturing Co., Portland Wood Products, Portland Woolen Mills, Lawrence Warehouse Co.

Block 2

Oregon Barrel Co., Central Lumber Co., Marine Iron Works, St. Johns Lumber Co., Marine Iron Works, American Marine Iron Works, Western Wool Warehouse, Beaver-Linnton Mills, L.B. Menefee Lumber Co., Lawrence Warehouse Co., Portland Woolen Mills, Portland Spruce Mills

Block 3

Central Lumber Co., St. Johns Lumber Co., Beaver-Linnton Mills, L.B. Menefee Lumber Co., Portland Spruce Mills, Skookum (logging equipment), Portland Lumber Co., Portland Manufacturing Co., Simpson Lumber Co.

Block 4

St. Johns Lumber Co., Beaver-Linnton Mills, Portland Lumber Mills, Portland Manufacturing Co., Portland Spruce Mills

Block 7

Portland General Electric, Portland Railway, Light and Power Co., Penninsula Iron Works, Portland Lumber Mills, Brand S Corp.

Block 8

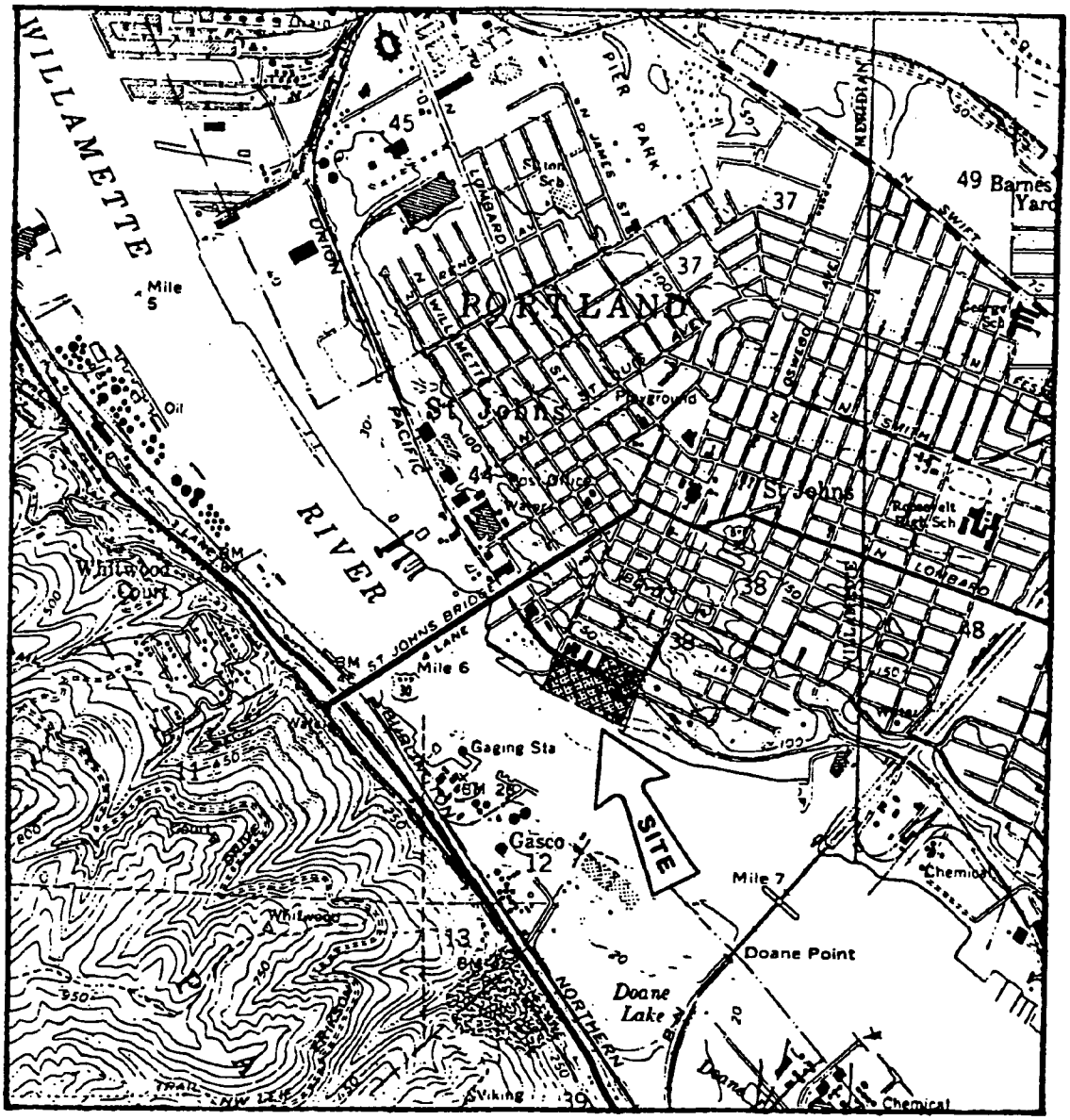
Portland Steel Shipbuilding, Portland Stove and Range Manufacturing Co., Portland Lumber Mills

River Lots

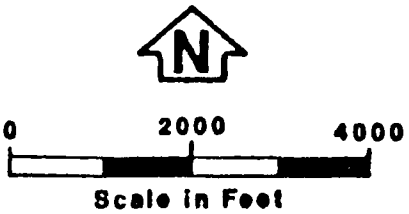
Oregon Barrel Co., Central Lumber Co., Marine Iron Works, American Marine Iron Works, St. Johns Lumber Co., Western Wool Warehouse, Beaver-Linnton Mills, L.B. Menefee Lumber Co., Portland Manufacturing Co., Portland Spruce Mills, Portland Wood Products Co.

TABLE 4
TEST PIT DESCRIPTIONS

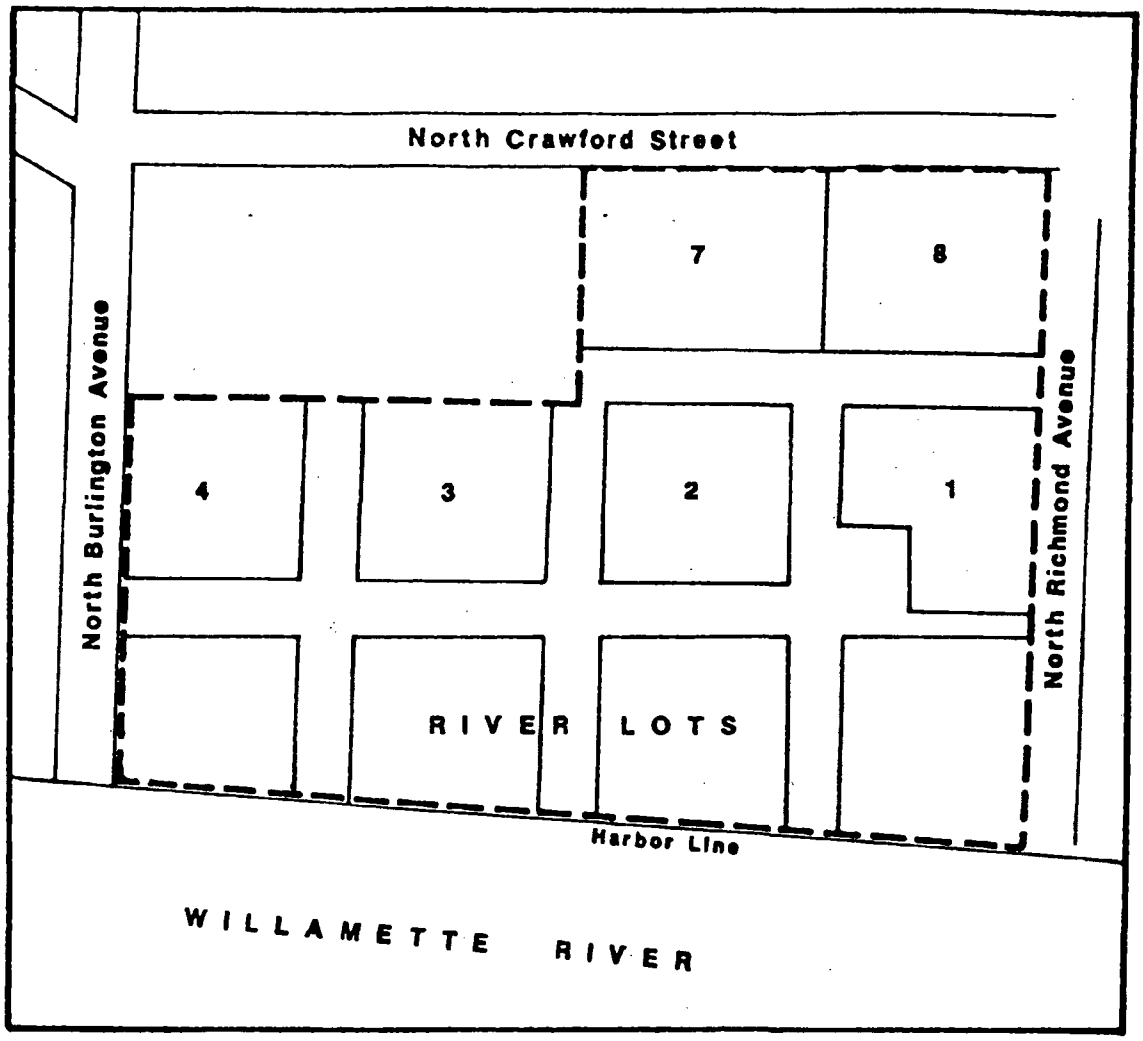
TEST PIT	DEPTH (ft.)	DESCRIPTION
6	0-4	Black sand fill.
	4	Final depth; top of concrete slab.
7	0-3	Black sand fill.
	3-6	Mixed black sand fill, silt, and timber.
	6->6.5	Gray clayey silt.
8	0-1	Black sand fill.
	1	Final depth; top of concrete slab.
9	0-5	Black sand fill.
	5-8	Brown clayey, sandy silt.
10	0-10	Brown silt, sand, metal debris, and bricks.
11	0-1	Black sand fill.
	1-2	Mixed clayey silt, sand, cobbles, and bricks.



Base map U.S. Geological Survey Linton/Portland, Oregon 7.5-minute quad



MMI (Lampros Steel Site)		
Location Map		
Sweet-Edwards / EMCON, Inc.		
	INITIALS	DATE
DRAWN BY	JK	2/1/88
CHECKED BY		
REVISED		
Figure 1		



EXPLANATION

— — — Site Boundary

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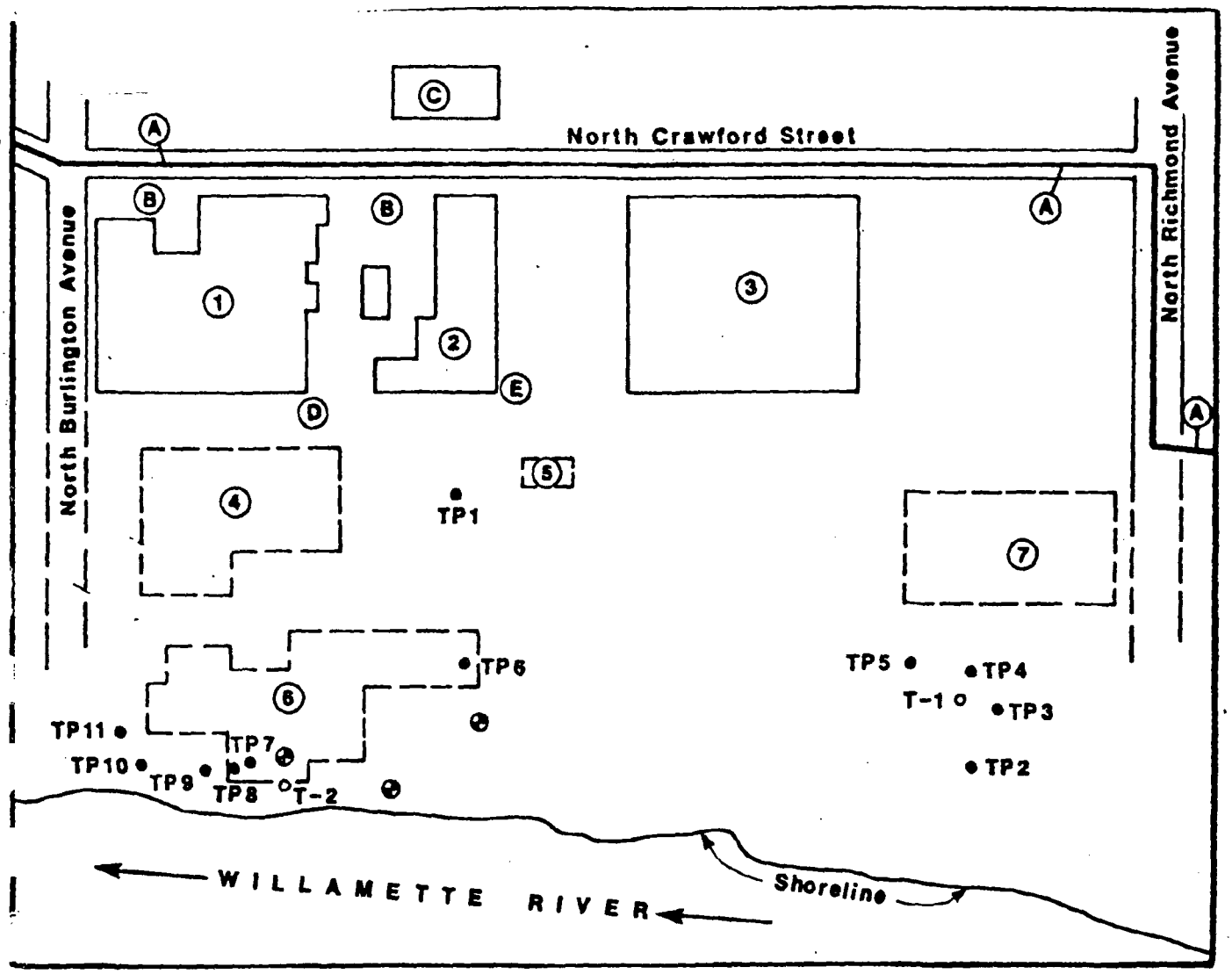
MMI (Lampros Steel Site)		
Block and Lot Locations		
Sweet-Edwards / EMCON, Inc.		
	INITIALS	DATE
DRAWN BY	jf	2/2/88
CHECKED BY	jf	
REVISED		
Figure 2		



EXPLANATION

POTENTIAL OFFSITE CONTAMINANT SOURCES

- (A) 8-inch Union Pacific Railroad diesel pipeline
- (B) Former underground storage tanks
- (C) Underground storage tank and steamcleaning area, St. Johns Truck Service
- (D) Oily soil and surface water runoff
- (E) Compressor-blowdown oil, Columbia Forge

CURRENT AND FORMER (F) BUISNESS BUILDING

- (1) Skookum (F), Asset Recovery, Columbia Forge
- (2) Columbia Forge
- (3) Dry Shed (F), warehouse
- (4) Planing Mill (F)
- (5) Chip Bin (F)
- (6) Sawmill (F)
- (7) Wool Scouring (F), plywood storage (F), "Fibron Insulation" (F)

SAMPLE SITES

- Surface grab sample of sand fill. Samples composited for EP Toxicity Testing.
- ● Test Pit
- ○ Test Boring

N

0 125 250

Scale in Feet

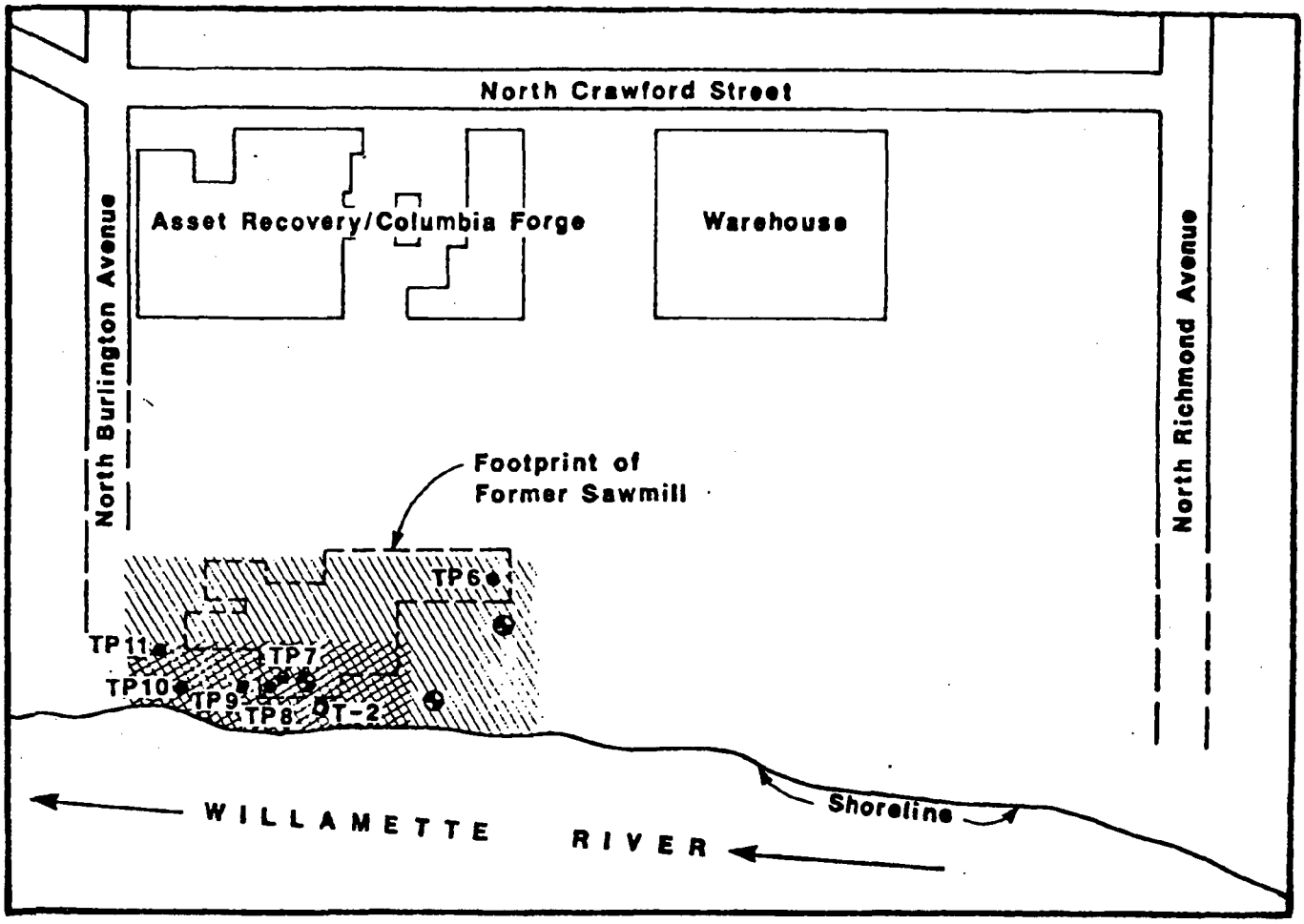
≈ 164 ft

MMI (Lampros Steel Site)
Site Map
Sweet-Edwards / EMCON, Inc.

	INITIALS	DATE
DRAWN BY	jfc	2/2/88
CHECKED BY		
REVISED		

Figure 3

CRAW00016980



Base From: Corps of Engineers aerial photograph 77-485 (9 May 1977)

EXPLANATION

- ● Test Pit
- ○ Reconnaissance Test Boring
- Surface grab sample of sand fill. Samples composited into single sample for EP Toxicity Testing.
- Approximate Maximum Area of Sand Fill
- Approximate Area of Thickest (>2-3 ft) of Sand Fill

N

0 125 250

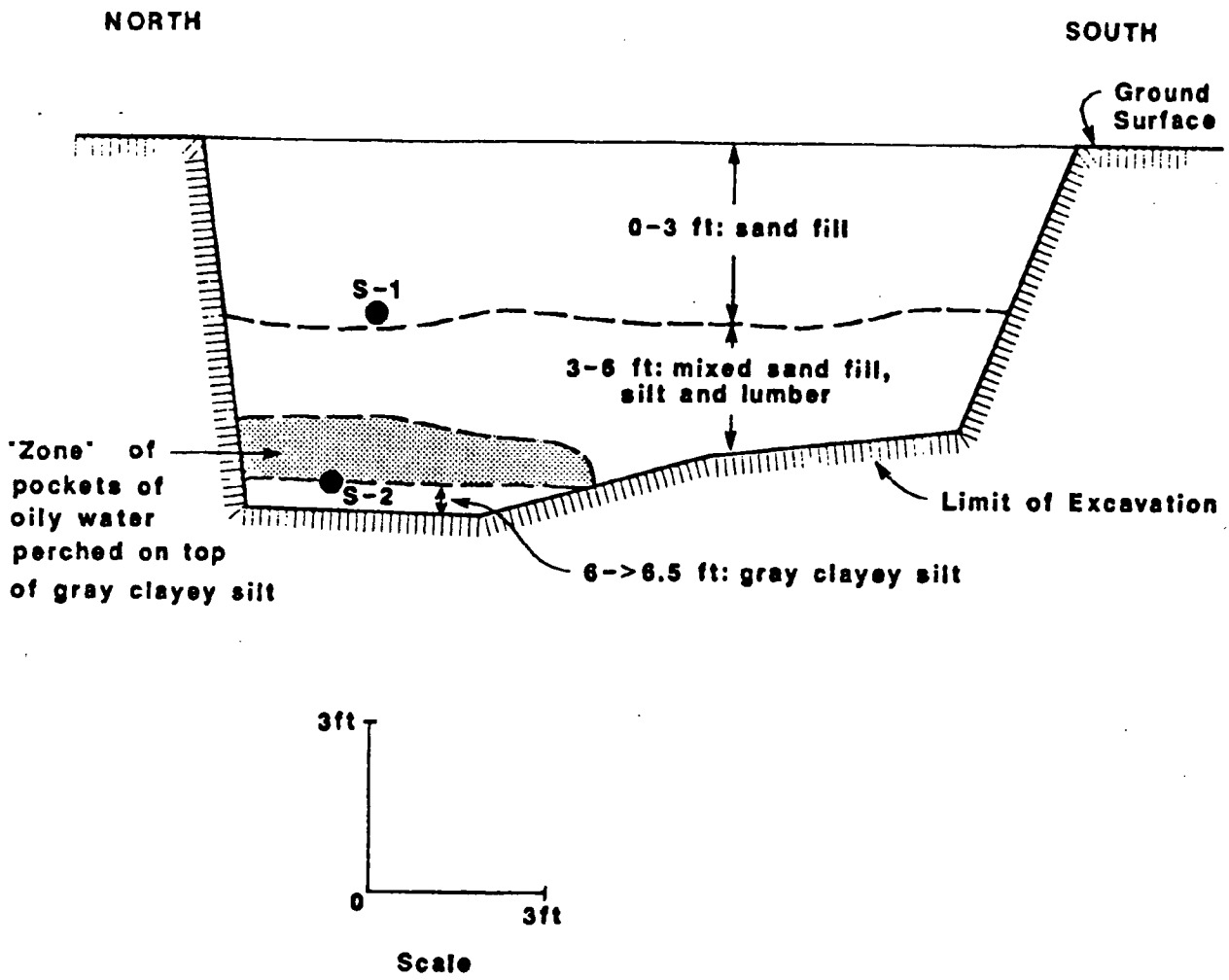
Scale in Feet

≈ 171 ft.

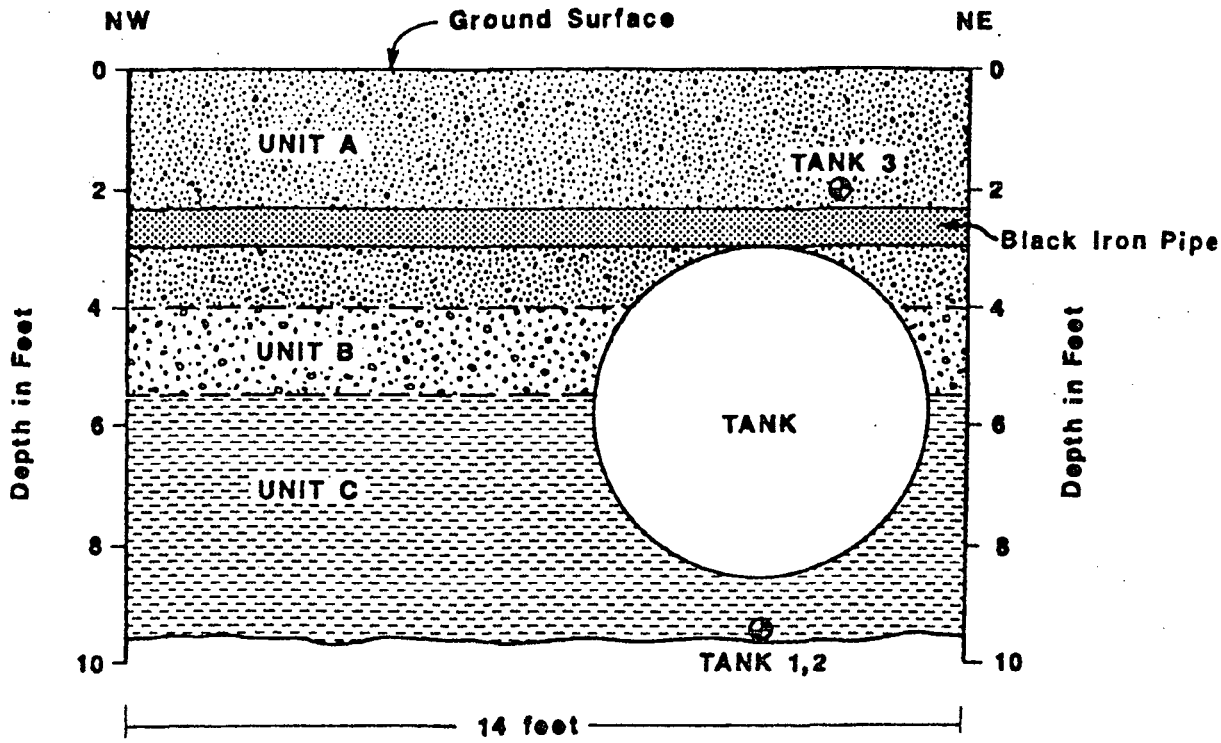
MMI (Lampros Steel Site)
Test Pit, Reconnaissance Test Boring, Sand-Fill Area Locations
Sweet-Edwards / EMCON, Inc.

	INITIALS	DATE
DRAWN BY	jf	2/2/88
CHECKED BY		
REVISED		

Figure 4



MMI (Lampros Steel Site)		
Cross Section, Test Pit 7, Sand-Fill Area		
Sweet-Edwards / EMCON, Inc.		
	INITIALS	DATE
DRAWN BY	jf	2/2/90
CHECKED BY	jf	
REVISED		
Figure 5		



EXPLANATION

⊕ Sample Location

UNIT A 0-4.0' GRAVELLY SAND, 30% rounded GRAVELS, 80% coarse to medium SAND, brown to dark brown, organics, dry to moist.

UNIT B 4.0-5.5' GRAVELLY SAND, 20% pebble size GRAVEL, 80% coarse to medium SAND, brown to dark brown, damp.

UNIT C 5.5-9.6' CLAYEY SILT, slightly plastic, 60-70% SILT, 30-40% CLAY, light brown, dense, moist.

TANK not to scale

0 3 6

Scale in Feet

No Vertical Exaggeration

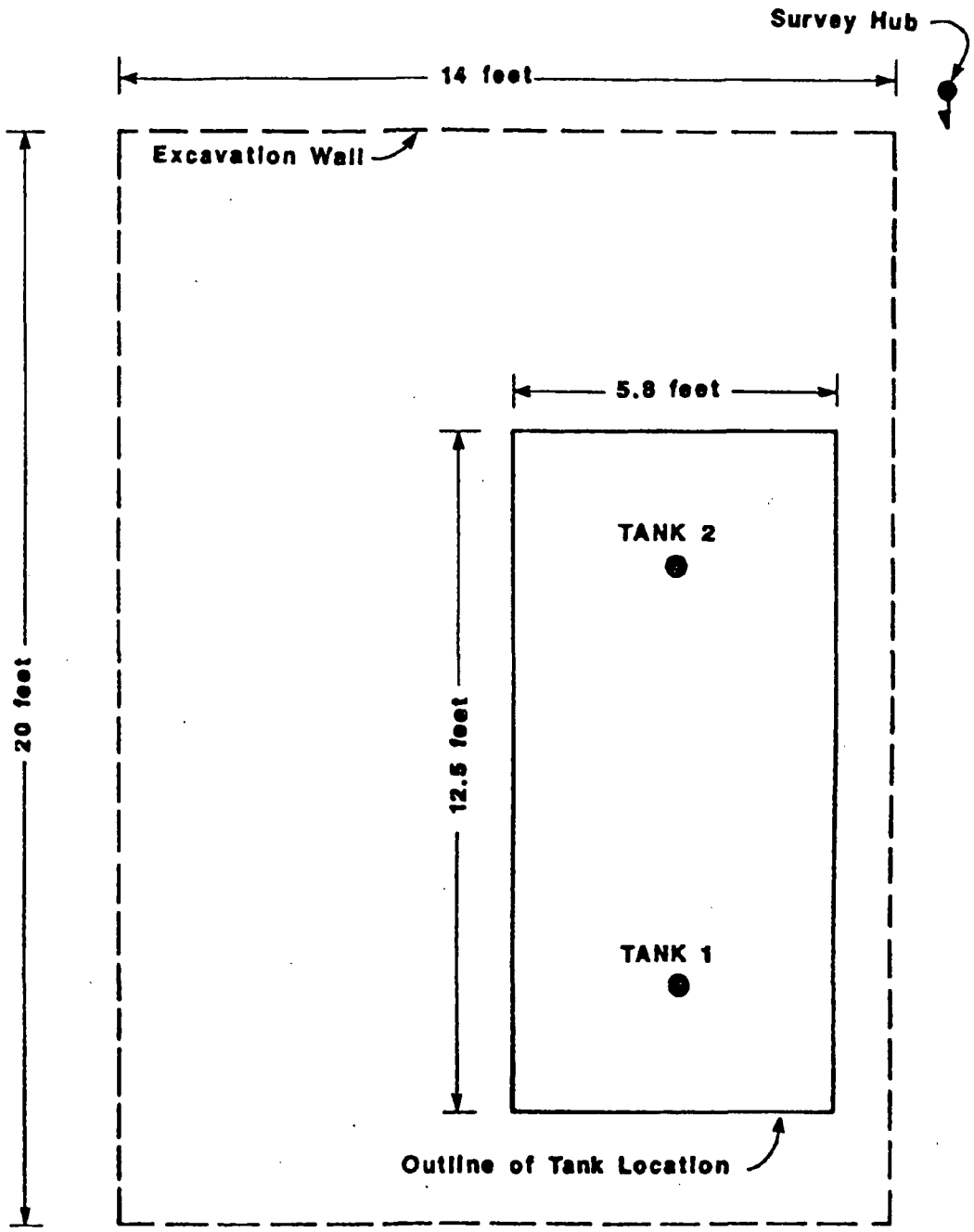
MMI (Lampros Steel Site)

Tank Excavation Cross Section

Sweet-Edwards / EMCON, Inc.

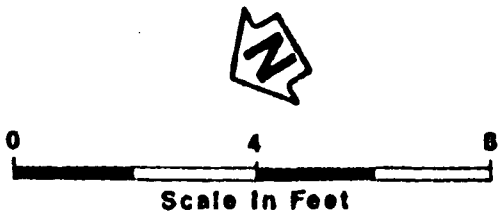
	INITIALS	DATE
DRAWN BY	jg	2/1/89
CHECKED BY		
REVISED		

Figure 6



EXPLANATION

● Soil Sample Location Below Tank



MMI (Lamproa Steel Site)	
Plan View Tank Excavation	
Sweet-Edwards / EMCON, Inc.	
INITIALS / DATE	
DRAWN BY jf	1/25/88
CHECKED BY	
REVISED	
	Figure 7

APPENDIX 1

Notification Forms and Laboratory Test Results
Asset Recovery/Columbia Forge Underground Storage Tanks

Notification for Underground Storage Tanks

To: Oregon Department of Environmental Quality
Underground Storage Tank Program
P.O. Box 1760
Portland, Oregon 97207

STATE USE ONLY
I.D. Number
Date Received

GENERAL INFORMATION

Notification is required by Federal law for all underground tanks that have been used to store regulated substances since January 1, 1974, that are in the ground as of May 8, 1986, or that are brought into use after May 8, 1986. The information requested is required by Section 9002 of the Resource Conservation and Recovery Act, (RCRA), as amended.

The primary purpose of this notification program is to locate and evaluate underground tanks that store or have stored petroleum or hazardous substances. It is expected that the information you provide will be based on reasonably available records, or, in the absence of such records, your knowledge, belief, or recollection.

Who Must Notify? Section 9002 of RCRA, as amended, requires that, unless exempted, owners of underground tanks that store regulated substances must notify designated State or local agencies of the existence of their tanks. Owner means—

(a) In the case of an underground storage tank in use on November 8, 1984, or brought into use after that date, any person who owns an underground storage tank used for the storage, use, or dispensing of regulated substances, and

(b) In the case of any underground storage tank in use before November 8, 1984, but no longer in use on that date, any person who owned such tank immediately before the discontinuation of its use.

What Tanks Are Included? Underground storage tank is defined as any one or combination of tanks that (1) is used to contain an accumulation of "regulated substances," and (2) whose volume (including connected underground piping) is 10% or more beneath the ground. Some examples are underground tanks storing: 1. gasoline, used oil, or diesel fuel, and 2. industrial solvents, pesticides, herbicides or fumigants.

What Tanks Are Excluded? Tanks removed from the ground are not subject to notification. Other tanks excluded from notification are:

1. farm or residential tanks of 1,100 gallons or less capacity used for storing motor fuel for noncommercial purposes;
2. tanks used for storing heating oil for consumptive use on the premises where stored;
3. septic tanks;
4. pipeline facilities (including gathering lines) regulated under the Natural Gas Pipeline Safety Act of 1968, or the Hazardous Liquid Pipeline Safety Act of 1979, or which is an intrastate pipeline facility regulated under State laws;
5. surface impoundments, pits, ponds, or lagoons;
6. storm water or waste water collection systems;
7. flow-through process tanks;
8. liquid traps or associated gathering lines directly related to oil or gas production and gathering operations;
9. storage tanks situated in an underground area (such as a basement, cellar, mineworking drift, shaft, or tunnel) if the storage tank is situated upon or above the surface of the floor.

What Substances are Covered? The notification requirements apply to underground storage tanks that contain regulated substances. This includes any substance defined as hazardous in section 101 (14) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), with the exception of those substances regulated as hazardous waste under Subtitle C of RCRA. It also includes petroleum, e.g., crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute).

Where To Notify? Completed notification forms should be sent to the address given at the top of this page.

When To Notify? 1. Owners of underground storage tanks in use or that have been taken out of operation after January 1, 1974, but still in the ground, must notify by May 8, 1986. 2. Owners who bring underground storage tanks into use after May 8, 1986, must notify within 30 days of bringing the tanks into use.

Penalties: Any owner who knowingly fails to notify or submits false information shall be subject to a civil penalty not to exceed $10,000 for each tank for which notification is not given or for which false information is submitted.

INSTRUCTIONS

Please type or print in ink all items except "signature" in Section V. This form must be completed for each location containing underground storage tanks. If more than 5 tanks are owned at this location, photocopy the reverse side, and staple continuation sheets to this form.

Indicate number of continuation sheets attached: 0

I. OWNERSHIP OF TANK(S)

Owner Name (Corporation, Individual, Public Agency, or Other Entity): COLUMBIA FORGE + MACH. WORKS

Street Address: 8424 N. CRAWFORD

County: MULTNOMAH

City: PORTLAND State: OR. Zip Code: 97203

Area Code Phone Number: (503) 286-3621

Type of Owner (Mark all that apply ☒)

☒ Current ☐ Former

☐ State or Local Gov't. ☐ Federal Gov't. (GSA facility I.D. no.) _____

☒ Private or Corporate ☐ Ownership uncertain

II. LOCATION OF TANK(S)

(If same as Section I, mark box here ☒)

Facility Name or Company Site Identifier, as applicable

Street Address or State Road, as applicable

County

City (nearest) State Zip Code

Indicate number of tanks at this location: 2

Mark box here if tank(s) are located on land within an Indian reservation or on other Indian trust lands ☐

III. CONTACT PERSON AT TANK LOCATION

Name (If same as Section I, mark box here ☐): HENRY STROMQUIST

Job Title: GENERAL MANAGER

Area Code: (503) Phone Number: 286-3621

IV. TYPE OF NOTIFICATION

☐ Mark box here only if this is an amended or subsequent notification for this location.

V. CERTIFICATION (Read and sign after completing Section VI.)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete.

Name and official title of owner or owner's authorized representative	Signature	Date Signed
HENRY STROMQUIST — GEN MGR	Henry Stromquist	1/19/87

CONTINUE ON REVERSE SIDE

Form 7530-1 (11-85)

Please complete the voluntary UST Survey on Page 4.

(from Section I) COLUMBIA FORGE Location (from Section II) PORTLAND, OR. Page No. 2 of 3 Pages

VI. DESCRIPTION OF UNDERGROUND STORAGE TANKS (Complete for each tank at this location.)

Tank Identification No. (e.g., ABC-123), or Arbitrarily Assigned Sequential No. (e.g., 1, 2, 3...)	Tank No. 1	Tank No. 2	Tank No.	Tank No.	Tank No.
1. Status of Tank (Mark all that apply ☒) Currently in Use	☐	☐	☐	☐	☐
Temporarily Out of Use	☐	☐	☐	☐	☐
Permanently Out of Use	☒	☒	☐	☐	☐
Brought into Use after 5/8/86	☐	☐	☐	☐	☐
2. Estimated Age (Years)	19	35			
3. Estimated Total Capacity (Gallons)	1000	1000			
4. Material of Construction (Mark one ☒) Steel	☒	☒	☐	☐	☐
Concrete	☐	☐	☐	☐	☐
Fiberglass Reinforced Plastic	☐	☐	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
Other, Please Specify					
5. Internal Protection (Mark all that apply ☒) Cathodic Protection	☐	☐	☐	☐	☐
Interior Lining (e.g., epoxy resins)	☐	☐	☐	☐	☐
None	☒	☒	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
Other, Please Specify					
6. External Protection (Mark all that apply ☒) Cathodic Protection	☐	☐	☐	☐	☐
Painted (e.g., asphaltic)	☐	☐	☐	☐	☐
Fiberglass Reinforced Plastic Coated	☐	☐	☐	☐	☐
None	☒	☒	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
Other, Please Specify					
7. Piping (Mark all that apply ☒) Bare Steel	☒	☒	☐	☐	☐
Galvanized Steel	☐	☐	☐	☐	☐
Fiberglass Reinforced Plastic	☐	☐	☐	☐	☐
Cathodically Protected	☐	☐	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
Other, Please Specify					
8. Substance Currently or Last Stored in Greatest Quantity by Volume (Mark all that apply ☒) a. Empty	☐	☒	☐	☐	☐
b. Petroleum					
Diesel	☐	☐	☐	☐	☐
Kerosene	☐	☐	☐	☐	☐
Gasoline (including alcohol blends)	☐	☒	☐	☐	☐
Used Oil	☒	☐	☐	☐	☐
Other, Please Specify	BUNKER OIL				
c. Hazardous Substance	☐	☐	☐	☐	☐
Please Indicate Name of Principal CERCLA Substance or Chemical Abstract Service (CAS) No.					
Mark box ☒ if tank stores a mixture of substances	☐	☐	☐	☐	☐
d. Unknown	☐	☐	☐	☐	☐
Additional Information (for tanks permanently taken out of service) a. Estimated date last used (mo/yr)	1975	1960	/	/	/
Estimate quantity of substance remaining (gal.)	100	EMPTY			
c. Mark box ☒ if tank was filled with inert material (e.g., sand, concrete)	☐	☒	☐	☐	☐

rm 7530-1 (11-85) Reverse

THANK YOU FOR YOUR ASSISTANCE

Name (from Section I EPA Form) COLUMBIA FORGE Location (from Section II EPA form) PORTLAND OR. Page 3 of 3 Pages

OREGON UNDERGROUND STORAGE TANK (UST) SURVEY

The underground storage tank program will soon include performance standards for new tanks and regulations for leak detection/prevention and corrective actions which will affect owners and operators of underground storage tanks. In preparation for these new requirements, the Department has prepared a state-wide survey. The Department requests that owners of underground storage tanks complete the survey questions.

Your response to these questions will assist the Department in developing a cost-effective and responsive state-wide regulatory program. In addition, owners of underground storage tanks may find the survey useful in the management of such tanks.

INSTRUCTIONS

Please type or print in ink all items. Please complete one survey form for each location containing underground storage tanks. Tank I.D. should correspond to Tank I.D. on EPA form 7530-1 for the respective facility location. If more than five tanks are owned at this location, photocopy this survey or request additional forms from DEQ, and staple continuation sheets to this survey.

Tank Identification No.	Tank No. 1	Tank No. 2	Tank No.	Tank No.	Tank No.
1. Status of Tank (Check One) — If temporarily out of use, Estimated time out of use:					
1 month - 6 months	☐	☐	☐	☐	☐
6 months - 1 year	☐	☐	☐	☐	☐
1 year - 5 years	☐	☐	☐	☐	☐
5 years or more	X	X	☐	☐	☐
Estimated date to be brought back into use (mo/yr)	/	/	/	/	/
2. Was tank new at time of installation? (Y/N)	UNKNOWN	UNKNOWN			
3. Containment Systems (check one) — Single-walled tank	X	X	☐	☐	☐
Double-walled tank	☐	☐	☐	☐	☐
Pit-lining system	☐	☐	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
4. Leak Detection System (check all that apply) — Visual	☐	☐	☐	☐	☐
Stock inventory	☐	☐	☐	☐	☐
Tile drain	☐	☐	☐	☐	☐
Vapor wells	☐	☐	☐	☐	☐
Sensor instrument (specify type):					
In-ground detector	☐	☐	☐	☐	☐
Within walls of double-walled tank	☐	☐	☐	☐	☐
Ground water monitoring wells	☐	☐	☐	☐	☐
Continuous in piping	☐	☐	☐	☐	☐
Pressure test	☐	☐	☐	☐	☐
Internal inspection	☐	☐	☐	☐	☐
Other, specify					
None	X	X	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
5. Overfill Protection (Yes/No)	NO	NO			
6. Location of Piping (check all that apply) — No parts in contact with soil	☐	☐	☐	☐	☐
Parts contacting the soil which are:					
Unprotected metal	X	X	☐	☐	☐
Made of corrosion resistant materials	☐	☐	☐	☐	☐
Corrosion-resisted coated	☐	☐	☐	☐	☐
Cathodically protected	☐	☐	☐	☐	☐
Double-walled	☐	☐	☐	☐	☐
Within a secondary containment	☐	☐	☐	☐	☐
Interior lined	☐	☐	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
7. History of Tank Repairs (check one except as indicated) — If tank repaired, indicate date of last repairs (mo/yr)	/	/	/	/	/
None	X	X	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
8. History of Pipe Repairs (check one except as indicated) — If pipe repaired, indicate date (mo/yr)	/	/	/	/	/
None	X	X	☐	☐	☐
Unknown	☐	☐	☐	☐	☐

THANK YOU FOR YOUR ASSISTANCE

Notification for Underground Storage Tanks

APPROVAL EXPIRES 6-30-93

Oregon Department of Environmental Quality
Underground Storage Tank Program
P.O. Box 1760
Portland, Oregon 97207

STATE USE ONLY
I.D. Number
Date Received

GENERAL INFORMATION

Notification is required by Federal law for all underground tanks that have been in use to store regulated substances since January 1, 1974, that are in the ground as of May 8, 1986, or that are brought into use after May 8, 1986. The information requested is required by Section 9002 of the Resource Conservation and Recovery Act, (RCRA), as amended.

The primary purpose of this notification program is to locate and evaluate underground tanks that store or have stored petroleum or hazardous substances. It is expected that the information you provide will be based on reasonably available records, or, in the absence of such records, your knowledge, belief, or recollection.

Who Must Notify? Section 9002 of RCRA, as amended, requires that, unless exempted, owners of underground tanks that store regulated substances must notify designated State or local agencies of the existence of their tanks. Owner means—

1. In the case of an underground storage tank in use on November 8, 1984, or brought into use after that date, any person who owns an underground storage tank used for the storage, use, or dispensing of regulated substances, and
2. In the case of any underground storage tank in use before November 8, 1984, but no longer in use on that date, any person who owned such tank immediately before the discontinuation of its use.

What Tanks Are Included? Underground storage tank is defined as any one or combination of tanks that (1) is used to contain an accumulation of "regulated substances," and (2) whose volume (including connected underground piping) is 10 or more beneath the ground. Some examples are underground tanks storing 1. gasoline, used oil, or diesel fuel, and 2. industrial solvents, pesticides, herbicides or preservatives.

What Tanks Are Excluded? Tanks removed from the ground are not subject to notification. Other tanks excluded from notification are:

1. farm or residential tanks of 1,100 gallons or less capacity used for storing motor fuel for noncommercial purposes;
2. tanks used for storing heating oil for consumptive use on the premises where stored;
3. septic tanks;
4. pipeline facilities (including gathering lines) regulated under the Natural Gas Pipeline Safety Act of 1968, or the Hazardous Liquid Pipeline Safety Act of 1979, or which is an intrastate pipeline facility regulated under State laws;
5. surface impoundments, pits, ponds, or lagoons;
6. storm water or waste water collection systems;
7. flow-through process tanks;
8. liquid traps or associated gathering lines directly related to oil or gas production and gathering operations;
9. storage tanks situated in an underground area (such as a basement, cellar, mineworking drift, shaft, or tunnel) if the storage tank is situated upon or above the surface of the floor.

What Substances are Covered? The notification requirements apply to underground storage tanks that contain regulated substances. This includes any substance defined as hazardous in section 101 (14) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), with the exception of those substances regulated as hazardous waste under Subtitle C of RCRA. It also includes petroleum, e.g., crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute).

Where To Notify? Completed notification forms should be sent to the address given at the top of this page.

When To Notify? 1. Owners of underground storage tanks in use or that have been taken out of operation after January 1, 1974, but still in the ground, must notify by May 8, 1986. 2. Owners who bring underground storage tanks into use after May 8, 1986, must notify within 30 days of bringing the tanks into use.

Penalties: Any owner who knowingly fails to notify or submits false information shall be subject to a civil penalty not to exceed $10,000 for each tank for which notification is not given or for which false information is submitted.

INSTRUCTIONS

Please type or print in ink all items except "signature" in Section V. This form must be completed for each location containing underground storage tanks. If more than 5 tanks are owned at this location, photocopy the reverse side, and staple continuation sheets to this form.

Indicate number of continuation sheets attached. 0

I. OWNERSHIP OF TANK(S)

Owner Name (Corporation, Individual, Public Agency, or Other Entity): CRAWFORD STREET CORP.

Street Address: 4927 NW FRONT AVE

County: MULTNOMAH

City: PORTLAND State: OR Zip Code: 97210

Area Code Phone Number: (503) 227-4313

Type of Owner (Mark all that apply ☒)

Current: ☐ State or Local Gov't. ☐ Federal Gov't. ☐ (GSA facility I.D. no.) ☒ Private or Corporate ☐ Ownership uncertain

Former: _____

II. LOCATION OF TANK(S)

(If same as Section 1, mark box here ☐)

Facility Name or Company Site Identifier, as applicable: CRAWFORD STREET CORP.

Street Address or State Road, as applicable: 8524 N. CRAWFORD

County: MULTNOMAH

City (nearest): PORTLAND State: OR Zip Code: 97203

Indicate number of tanks at this location: 1

Mark box here if tank(s) are located on land within an Indian reservation or other Indian trust lands ☐

III. CONTACT PERSON AT TANK LOCATION

Name (If same as Section 1, mark box here ☐): HENRY STROMQUIST

Job Title: GENERAL MANAGER

Area Code Phone Number: (503) 286-3621

IV. TYPE OF NOTIFICATION

☐ Mark box here only if this is an amended or subsequent notification for this location.

V. CERTIFICATION (Read and sign after completing Section VI.)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete.

Name and official title of owner or owner's authorized representative: HENRY STROMQUIST - GEN. MGR.

Signature: [signature]

Date Signed: 1/19/87

CONTINUE ON REVERSE SIDE

Form 7530-1 (11-85)

Please complete the voluntary UST Survey on Page 4.

Name (from Section I) CRAWFORD STREET CORP Location (from Section II) PORTLAND OR Page No. 2 of 3 Pages

VI. DESCRIPTION OF UNDERGROUND STORAGE TANKS (Complete for each tank at this location.)

Tank Identification No. (e.g., ABC-123), or Arbitrarily Assigned Sequential No. (e.g., 1,2,3...)	Tank No.	Tank No.	Tank No.	Tank No.	Tank No.
1. Status of Tank (Mark all that apply ☒) Currently in Use	☐	☐	☐	☐	☐
Temporarily Out of Use	☐	☐	☐	☐	☐
Permanently Out of Use	☒	☐	☐	☐	☐
Brought into Use after 5/8/86	☐	☐	☐	☐	☐
2. Estimated Age (Years)	50				
3. Estimated Total Capacity (Gallons)	5000				
4. Material of Construction (Mark one ☒) Steel	☒	☐	☐	☐	☐
Concrete	☐	☐	☐	☐	☐
Fiberglass Reinforced Plastic	☐	☐	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
Other, Please Specify					
5. Internal Protection (Mark all that apply ☒) Cathodic Protection	☐	☐	☐	☐	☐
Interior Lining (e.g., epoxy resins)	☐	☐	☐	☐	☐
None	☒	☐	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
Other, Please Specify					
6. External Protection (Mark all that apply ☒) Cathodic Protection	☐	☐	☐	☐	☐
Painted (e.g., asphaltic)	☐	☐	☐	☐	☐
Fiberglass Reinforced Plastic Coated	☐	☐	☐	☐	☐
None	☒	☐	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
Other, Please Specify					
7. Piping (Mark all that apply ☒) Bare Steel	☒	☐	☐	☐	☐
Galvanized Steel	☐	☐	☐	☐	☐
Fiberglass Reinforced Plastic	☐	☐	☐	☐	☐
Cathodically Protected	☐	☐	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
Other, Please Specify					
8. Substance Currently or Last Stored in Greatest Quantity by Volume (Mark all that apply ☒) a. Empty	☒	☐	☐	☐	☐
b. Petroleum					
Diesel	☒	☐	☐	☐	☐
Kerosene	☐	☐	☐	☐	☐
Gasoline (including alcohol blends)	☐	☐	☐	☐	☐
Used Oil	☐	☐	☐	☐	☐
Other, Please Specify					
Please c. Hazardous Substance	☐	☐	☐	☐	☐
Indicate Name of Principal CERCLA Substance					
or Chemical Abstract Service (CAS) No.					
Mark box ☒ if tank stores a mixture of substances	☐	☐	☐	☐	☐
d. Unknown	☐	☐	☐	☐	☐
Additional Information (for tanks permanently taken out of service) a. Estimated date last used (mo/yr)	6/1985	/	/	/	/
Estimate quantity of substance remaining (gal.)	EMPTY				
c. Mark box ☒ if tank was filled with inert material (e.g., sand, concrete)	☐	☐	☐	☐	☐

Form 7530-1 (11-85) Reverse

THANK YOU FOR YOUR ASSISTANCE

Owner Name (from Section I EPA Form) CRAWFORD STREET CORP. Location (from Section II EPA form) PORTLAND OR Page 3 of 3 Pages

OREGON UNDERGROUND STORAGE TANK (UST) SURVEY

The underground storage tank program will soon include performance standards for new tanks and regulations for leak detection/prevention and corrective actions which will affect owners and operators of underground storage tanks. In preparation for these new requirements, the Department has prepared a state-wide survey. The Department requests that owners of underground storage tanks complete the survey questions.

Your response to these questions will assist the Department in developing a cost-effective and responsive state-wide regulatory program. In addition, owners of underground storage tanks may find the survey useful in the management of such tanks.

INSTRUCTIONS

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Tank Identification No.	Tank No.	Tank No.	Tank No.	Tank No.	Tank No.
1. Status of Tank (Check One) — If temporarily out of use, Estimated time out of use:					
1 month - 6 months	☐	☐	☐	☐	☐
6 months - 1 year	☐	☐	☐	☐	☐
1 year - 5 years	☐	☐	☐	☐	☐
5 years or more	☒	☐	☐	☐	☐
Estimated date to be brought back into use (mo/yr)	— / —	/	/	/	/
2. Was tank new at time of installation? (Y/N)					
3. Containment Systems (check one) — Single-walled tank	☒	☐	☐	☐	☐
Double-walled tank	☐	☐	☐	☐	☐
Pit-lining system	☐	☐	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
4. Leak Detection System (check all that apply) — Visual	☐	☐	☐	☐	☐
Stock inventory	☐	☐	☐	☐	☐
Tile drain	☐	☐	☐	☐	☐
Vapor wells	☐	☐	☐	☐	☐
Sensor instrument (specify type):					
In-ground detector	☐	☐	☐	☐	☐
Within walls of double-walled tank	☐	☐	☐	☐	☐
Ground water monitoring wells	☐	☐	☐	☐	☐
Continuous in piping	☐	☐	☐	☐	☐
Pressure test	☐	☐	☐	☐	☐
Internal inspection	☐	☐	☐	☐	☐
Other, specify					
None	☒	☐	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
5. Overfill Protection (Yes/No)	UNKNOWN				
6. Location of Piping (check all that apply) — No parts in contact with soil	☐	☐	☐	☐	☐
Parts contacting the soil which are:					
Unprotected metal	☒	☐	☐	☐	☐
Made of corrosion resistant materials	☐	☐	☐	☐	☐
Corrosion-resisted coated	☐	☐	☐	☐	☐
Cathodically protected	☐	☐	☐	☐	☐
Double-walled	☐	☐	☐	☐	☐
Within a secondary containment	☐	☐	☐	☐	☐
Interior lined	☐	☐	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
7. History of Tank Repairs (check one except as indicated) — If tank repaired, indicate date of last repairs (mo/yr)	/	/	/	/	/
None	☐	☐	☐	☐	☐
Unknown	☒	☐	☐	☐	☐
8. History of Pipe Repairs (check one except as indicated) — If pipe repaired, indicate date (mo/yr)	/	/	/	/	/
None	☐	☐	☐	☐	☐
Unknown	☒	☐	☐	☐	☐

THANK YOU FOR YOUR ASSISTANCE

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

March 13, 1987
Log #A870305-I
PO#: 2789

Columbia Forge & Machine
8434 N. Crawform St.
Portland, Oregon 97203

ATTENTION: John Shore

SUBJECT: EP TOXICITY ANALYSIS

SOIL BENEATH DIESEL TANK, COLUMBIA FORGE

METHOD: Federal Register, Vol. 45 No. 98, Monday, May 19, 1980, Rules and Regulations, Appendix II, Page 33127.

FIELD DATA: Sample ID: 8000 gal Tank, 3/5/87
Collected by: Sample collected and delivered by client.

Sample Received: March 5, 1987

ANALYSIS	RESULTS	LIMIT
Arsenic	< 0.100	5.0
Barium	0.028	100
Cadmium	0.015	1.0
Chromium	< 0.010	5.0
Lead	< 0.100	5.0
Mercury	< 0.100	0.2
Selenium	< 0.100	1.0
Silver	< 0.010	5.0

< denotes "less than" the detection limit for the method.
Results are reported in milligrams per liter (mg/L)

REPORT CONTINUES

Weld shop - liquid initial test (no rush)

This report is for the sole and exclusive use of the above client. Samples are retained a maximum of 15 days from the date of this letter.

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

March 13, 1987
Log #A8700305-I
PO#: 2789

Columbia Forge & Supply
Page Two
Attention: John Shore

Analysis Requested: Solvent Scan

Sample ID: 8000 gal. Tank

-CONTENTS-
DIESEL TANK, COLUMBIA FORGE

Sample Received: March 5, 1987

ANALYSIS	RESULTS
Acetone	< 500
1,1,2,2-Tetrachloroethane	< 100
m-Dichlorobenzene	< 100
n-Butyl acetate	< 100
O-Dichlorobenzene	< 100
Chlorobenzene	< 100
Diethyl ether	< 500
Ethanol	< 500
Ethyl acetate	< 500
Ethyl benzene	< 100
Freon 113	< 100
Isopropyl alcohol	< 500
Methanol	< 500
Methyl ethyl ketone	< 300
Methyl isobutyl ketone	< 100
Methylene chloride	< 100
Tetrachloroethylene	< 100
Toluene	< 100
Trichloroethylene	< 100
1,1,1-Trichloroethane	< 100
Xylenes	< 100

Results in mg/L

Analysis by carbon disulfide extraction, GC/FID and methanol extraction GC/MSD.

The less than "<" symbol means none detected at or above the indicated value and represents the detection limit for the method.

REPORT CONTINUES

This report is for the sole and exclusive use of the above client. Samples are retained a maximum of 15 days from the date of this letter.

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

March 13, 1987
Log #A870305-I
PO#: 2789

Columbia Forge & Machine
Page Three

CONTENTS, DIESEL TANK, COLUMBIA FORGE

Attention: John Shore

Sample ID: 8000 gal. Tank

Sample Date: March 5, 1987

Sample Received: March 5, 1987

ANALYSIS	METHOD	RESULTS
Flash Point	ASTM D97-77	> 150 degrees F
Diesel	*	4300 mg/L
Polychlorinated Biphenyls	**	< 1 mg/kg
Reactivity	---	None Detected
Corrosivity	---	None Detected

* Analysis by Methylene chloride extraction, capillary GC/FID.

** Analysis by GC/ECD and comparison with standard Aroclor solutions.

> denoted "greater than"

The less than "<" symbol means none detected at or above the indicated value and represents the detection limit for the method.

Sincerely,

Susan M. Coffey

Susan M. Coffey,
President

SMC/gs

This report is for the sole and exclusive use of the above client. Samples are retained a maximum of 15 days from the date of this letter.

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

March 19, 1987
Log #A870316-B1-2
PO#: 2842

Columbia Forge & Machine
8424 N. Crawford St.
Portland, Oregon 97203

$285 CF+MW
$220 Crawford

Attention: John Shore

Sample ID: #1 - Skookum, 3/13/87
#2 - Yard, 3/13/87

Samples Received: March 13, 1987

Samples Collected by: Crosby & Overton

SOIL ANALYSIS. #1 = Diesel tank at Skookum. #2 = gasoline tank @ Columbia Forge

ANALYSIS	SKOOKUM / DIESEL SAMPLE #1	COL. FORGE / GASOLINE SAMPLE #2
Gasoline*	< 1.0	16**
Diesel*	< 1.0	< 1.0
Lead	---	30.0

Results in mg/kg

* Analysis by extraction capillary GC/FID.

** Appears to contain some other high boiling oil and possibly some kerosene.

The less than "<" symbol means none detected at or above the indicated value and represents the detection limit for the method.

Approved by,

Susan M. Brillante

Susan M. Brillante,
Laboratory Director

Sincerely,

Susan M. Coffey

Susan M. Coffey,
President

Soil analysis yard + skoo

SMC/gs

This report is for the sole and exclusive use of the above client. (no luc
Samples are retained a maximum of 15 days from the date of this letter.

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

March 24, 1987
Log #A870309-F

Columbia Forge & Machine
8424 N. Crawford St.
Portland, Oregon 97203

SOIL BENEATH GASOLINE TANK, COLUMBIA FORGE

ATTENTION: John Shore

SUBJECT: EP TOXICITY ANALYSIS

METHOD: Federal Register, Vol. 45 No. 98, Monday, May 19, 1980, Rules and Regulations, Appendix II, Page 33127.

FIELD DATA: Sample ID: #2 Tank, 3/9/87, 1230
Collected by: Sample collected and delivered by client.

Sample Received: March 9, 1987

ANALYSIS	RESULTS	LIMIT
Arsenic	< 0.100	5.0
Barium	0.031	100
Cadmium	< 0.010	1.0
Chromium	< 0.010	5.0
Lead	< 0.100	5.0
Mercury	< 0.100	0.2
Selenium	< 0.100	1.0
Silver	< 0.010	5.0

The less than "<" symbol means none detected at or above the indicated value and represents the detection limit for the method.

Results are reported in milligrams per liter (mg/L)

REPORT CONTINUES

This report is for the sole and exclusive use of the above client. Samples are retained a maximum of 15 days from the date of this letter.

Crawford
0800 -

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

March 24, 1987
Log #A870316-B1-2

Columbia Forge & Machine
8424 N. Crawford St.
Portland, Oregon 97203

ATTENTION: John Shore

SOIL BENEATH GASOLINE TANK, COLUMBIA FORGE

SUBJECT: EP TOXICITY ANALYSIS

METHOD: Federal Register, Vol. 45 No. 98, Monday, May 19, 1980, Rules and Regulations, Appendix II, Page 33127.

FIELD DATA: Sample ID: #2 - Yard
Collected by: Sample collected and delivered by client.

Sample Received: March 16, 1987

ANALYSIS	RESULTS	LIMIT
Lead	< 0.100	5.0

The less than "<" symbol means none detected at or above the indicated value and represents the detection limit for the method.

Results are reported in milligrams per liter (mg/L)

Sincerely,

Susan M. Coffey

Susan M. Coffey,
President

SMC/gs

2nd soil OK

This report is for the sole and exclusive use of the above client. Samples are retained a maximum of 15 days from the date of this letter.

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

March 24, 1987
Log #A870319-K
PO#: 2864

Columbia Forge & Machine
8424 N. Crawford St.
Portland, Oregon 97203

Attention: John Shore

SOIL BENEATH DIESEL TANK, COLUMBIA FORGE

Analysis Requested: Total Hydrocarbons

Sample ID: #3 Weld Shop

Sample Date: March 19, 1987

Sample Received: March 19, 1987

ANALYSIS	RESULTS
Gasoline	< 4 mg/kg
Diesel	< 4 mg/kg

Analysis by capillary GC/FID

The less than "<" symbol means none detected at or above the indicated value and represents the detection limit for the method.

Approved,

Susan M. Brillante

Susan M. Brillante,
Laboratory Director

Sincerely,

Susan M. Coffey

Susan M. Coffey,
President

SMC/gs

soil analysis weld shop (no rush)

This report is for the sole and exclusive use of the above client. Samples are retained a maximum of 15 days from the date of this letter.

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

March 24, 1987
Log #A870309-F

Columbia Forge & Machine
Page Two

Attention: John Shore

Analysis Requested: Solvent Scan

Sample ID: #2 Tank, 3/9/87, 1230

CONTENTS / DIESEL TAN
COLUMBIA FORGE

Sample Received: March 9, 1987

ANALYSIS	RESULTS
Acetone	< 500
Chlorobenzene	< 100
M-Dichlorobenzene	< 100
O-Dichlorobenzene	< 100
Ethanol	< 500
Ethyl benzene	< 100
Freon 113	< 100
Isopropyl alcohol	< 500
Methanol	3600
Methylene chloride	< 100
Methyl ethyl ketone	< 300
Methyl isobutyl ketone	< 200
1,1,2,2-Tetrachloroethane	< 100
Tetrachloroethylene	< 100
Toluene	< 100
1,1,1-Trichloroethane	< 100
Trichloroethylene	< 100
Xylene	< 300

Results in mg/L

Analysis by carbon disulfide extraction, GC/FID and methanol extraction GC/HECD.

The less than "<" symbol means none detected at or above the indicated value and represents the detection limit for the method.

REPORT CONTINUES

This report is for the sole and exclusive use of the above client. Samples are retained a maximum of 15 days from the date of this letter.

Crawford

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

March 24, 1987
Log #A870309-F

Columbia Forge & Machine
Page Three

CONTENTS, DIESEL TANK, COLUMBIA FORGE

Attention: John Shore

Sample ID: #2 Tank, 3/9/87, 1230

Sample Received: March 9, 1987

ANALYSIS	METHOD	RESULTS
Flash Point	ASTM D97-77 Closed-cup	> 150 degrees F
Reactivity	---	None
Corrosivity	---	None
Gasoline	*	5.0 mg/L
Diesel	*	< 1.0 mg/L

* Analysis by extraction capillary GC/FID.

> denotes "greater than"

The less than "<" symbol means none detected at or above the indicated value and represents the detection limit for the method.

Approved,

Susan M. Brillante

Susan M. Brillante,
Laboratory Director

Sincerely,

Susan M. Coffey

Susan M. Coffey
President

SMC/gs

liquid yard
not rush

This report is for the sole and exclusive use of the above client. Samples are retained a maximum of 15 days from the date of this letter.

APPENDIX 2

Sampling Methods

APPENDIX 2
SAMPLING METHODS

Water Samples; Suspected Fill/Distribution Tank Pipes

The four water samples collected from the suspected tank fill/ distribution pipes at the former sawmill and planing mill were collected using a single check-valve Teflon bailer. Monofilament nylon ("Weedeater") cord was used to lower the bailer in and out of the pipes. The bailer and cord were cleaned before use in each pipe by disassembling the bailer and washing it and the cord with 1) a dilute non-phosphatic detergent solution, 2) a rinse with distilled water, 3) a rinse with methanol, and 4) a final rinse with distilled water. The bailer was also rinsed once with sample water before filling any sample bottles. The tested samples are named AT-1, AT-2, and AT-3. The "AT" means "assumed tank"; the number indicates sample location in the serial order the location was sampled.

Boring and Soil Sample Nomenclature

The borings are named T-1 and T-2. The "T" denotes that it was a reconnaissance, or "test," boring; the number designates the serial order in which the borings were drilled. Soil samples from the borings were labelled S-1, S-2, etc., the "S" indicating a soil sample and the number designating the serial order in which the samples were collected. The shallowest sample is labelled S-1. Soil samples from test pit 7 were named in the same manner.

Drilling Method

The borings were drilled using a truck-mounted CME 55 drilling rig equipped with 3.75-in inside-diameter hollow-stem auger. The rig and crew were from Geo-Tech Explorations (North Plains, OR). The drill rig, downhole equipment and hand tools that contacted the rig or downhole equipment were steam cleaned onsite before drilling the boring. The water used for steam cleaning was obtained from a faucet at Columbia Forge and was stored in a water tank on the rig prior to use.

Soil samples were collected at five-foot intervals using standard split-spoon samplers. The samplers were pushed, not driven, into the soil. The samplers were steam cleaned before their initial use and between borings, but were washed with tap water from the drill rig's water tank between the collection of individual samples in each boring.

The samples were described and logged in the field by a Sweet-Edwards/EMCON geologist. Each sample was described as to soil type(s), moisture content, geologic bedding, its content of manmade objects and its appearance with respect to possible visual evidence of contamination. Each soil sample was placed in a separate "Ziplock"-style plastic bag, labelled as to identity, project and date of collection. The samples were archived.

After the borings were drilled to their final depths and had been sampled for ground water, the borings were abandoned by backfilling with Baroid-brand bentonite chips. The chips were placed by slowly pouring them down the inside of the auger and gradually backpulling the auger until all auger was out of the ground and the boring filled to within one foot of the ground surface. The remaining foot was filled with soil. Cuttings from the borings were left by the boreholes and were smoothed out on the ground using shovels.

LAMP2-APP.226bg

Ground Water Sampling Method

Once the water table was reached, as judged by the moisture content of soil samples and drill cuttings, the borings were deepened to provide about four feet of water inside the auger. A small-diameter metal dart-valve bailer was tripped in and out of the auger several times to remove thick, slurry-like cuttings before collecting the ground water samples. A single check-valve Teflon bailer was lowered into the auger to fill with water for the purpose of collecting the actual samples. The bailer was then withdrawn from the auger; its contents were then poured into the sample containers. Monofilament nylon ("Weedeater") cord was used to lower the bailer in and out of the auger. A second water sample was taken at boring T-2. After the first sample was taken, T-2 was deepened 10 feet. However, the driller mistakenly pulled back the auger too much and the bottom of the unsupported borehole collapsed. The result was that the second water sample at T-2 was taken from a shallower depth than originally intended and in fact partly overlapped the depth from which the first sample was taken.

All ground water sampling equipment was cleaned before use by disassembling it and washing it with a dilute non-phosphatic detergent solution, rinsing with distilled water, rinsing with methanol, and rinsing again with distilled water. This applied to the Teflon bailer and the cord used to lower it. The bailer was also rinsed once with sample water before filling any sample bottles.

After collection, the sample bottles were stored on ice and transported to Columbia Analytical Services. Chain of Custody forms were used to track handling of the samples; the relevant custody forms are attached in the original laboratory reports in Appendix 6.

LAMP2-APP.226bg

APPENDIX 3

Boring Logs

Sweet, Edwards & Associates, Inc.

BORING LOG

PROJECT MMI (Lampros Steel Site)

Location See plan **Boring No.** T-1

Surface Elevation Approximately 30ft. **Drilling Method** Hollow-stem auger

Total Depth 41 ft. **Drilled By** Geo-Tech Explorations

Date Completed January 4, 1988 **Logged By** J. Morales

WELL DETAILS	PENE-TRATION TIME/ RATE	DEPTH (FEET)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	WATER SAMPLE	SYMBOL	LITHOLOGIC DESCRIPTION	WATER LEVEL
Backfilled with bentonite chips		5	S1	SS			4.5-6.0' SILT, 10-15% fine sand, light brown, slightly moist. Dark gray 5.2-6.0 ft. with wood fragments.	
		10	S2	SS			9.5-10.0' SILT, 10-15% fine sand, light brown, slightly moist. Grades down to sand. 10-10.5' FINE SAND, 5-15% silt, <5% clay, light brown, slightly moist, color banding.	
		15	S3	SS			14.5-16.0' SILTY FINE SAND, 30-35% silt, light brown to dark gray, dry, micaceous, sandier with depth.	
		20	S4	SS			19.5-21.0' SILTY FINE SAND, 20-30% silt, green-brown, moist, bedded with bed contact at 20.5 ft.	
		25	S5	SS			24.5-26.0' SANDY SILT, 20% fine sand, brown-green, moist, local laminations, root traces, micaceous.	
		30	S6	SS			29.5-31.0' CLAYEY SILT, 20% clay, brown-green, moist, less clayey with depth.	
		35						▽ 34 ft. below ground

SEA-300-02a

Sweet, Edwards & Associates, Inc.

BORING LOG

PROJECT MMI (Lampros Steel Site)

Boring No. T-1

WELL DETAILS	PENE-TRATION TIME/ RATE	DEPTH (FEET)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	WATER SAMPLE	SYMBOL	LITHOLOGIC DESCRIPTION	WATER LEVEL
Backfilled with bentonite chips		35	S7	SS	W-1		34.5-36.0' CLAYEY SILT, <10% fine sand, 60-70% silt, 20-30% clay, brown-green, saturated, mottled.	
		40	S8	SS			39.5-41.0' FINE SAND, 10% silt, blue-green, saturated, micaceous.	
		45					SS = Split Spoon Sample. All soil samples taken by pushing sampler into ground.	

SEA-300-02b

Sweet, Edwards & Associates, Inc.

BORING LOG

PROJECT MMI (Lampros Steel Site)

Location See plan

Boring No. T-2

Surface Elevation Approximately 30ft.

Drilling Method Hollow-stem auger

Total Depth 44.5 ft.

Drilled By Geo-Tech Explorations

Date Completed January 4, 1988

Logged By J. Morales

WELL DETAILS	PENE-TRATION TIME/ RATE	DEPTH (FEET)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	WATER SAMPLE	SYMBOL	LITHOLOGIC DESCRIPTION	WATER LEVEL
Backfilled with bentonite chips		5	S1	SS			4.5-6.0' MEDIUM-COARSE BLACK SAND, 20% wood fragments, slightly moist.	
		10	S2	SS			9.5-10.5' CLAYEY SILT, 30% clay, blue-green, slightly moist, sticky, interlayered wood waste. Soil is mottled. 10.5-11.0' MEDIUM SAND, 10% silt, dark gray to black, slightly moist.	
		15	S3	SS			14.5-16.0' CLAYEY SILT, 5% fine sand, 20% clay, blue-green, slightly moist, interlayered wood fibers in silt.	
		20	S4	SS			19.5-20.5' CLAYEY SILT, 20% clay, blue-green, moist. 20.5-21.0' SILT, 18% fine sand, dark brown to black mottled, micaceous. Wood fiber banding at 21.0 ft.	
		25	S5	SS			24.5-26.0' CLAYEY SILT, 15-20% clay, glue-green, moist.	
		30	S6	SS			29.5-30.0' CLAYEY SILT, 20-30% clay, green-brown, moist, common laminations and mottling. 30.0-31.0' FINE MEDIUM SAND, 10% silt, dark brown to black, moist.	▽ 32.4 ft. below ground
		35			W-1			

SEA-300-02a

Sweet, Edwards & Associates, Inc.

BORING LOG

PROJECT MMI (Lampros Steel Site)

Boring No. T-2

WELL DETAILS	PENE-TRATION TIME/ RATE	DEPTH (FEET)	SOIL SAMPLE NO.	SOIL SAMPLE TYPE	WATER SAMPLE	SYMBOL	LITHOLOGIC DESCRIPTION	WATER LEVEL
Backfilled with bentonite chips		35	S7	SS	W-1		34.5-36.0' SILTY FINE SAND, 20-30% silt, light brown, saturated.	
					W-2			
		40	S8	SS			39.5-41.0' SAND, 10% silt, blue-green, saturated, micaceous.	
		45					SS = Split Spoon Sample. All samples taken by pushing sample into ground.	

SEA-300-02b

APPENDIX 4

Ground-penetrating Radar Survey
Williamson and Associates Report

FOCT2401.02

WILLIAMSON & ASSOCIATES, INC.

OCEANOGRAPHY AND MARINE GEOPHYSICS

1219 Westlake Ave. N.
Suite 111
Seattle, WA 98109
(206) 282-2396

Sweet, Edwards & Associates, Inc.
P.O. Box, Drawer D
Kelso, WA 98626

January 5, 1988

ATTENTION: Mr. Russ Bunker, R.G.

On December 26th, 1987, Williamson and Associates mobilized a geophysical survey team and a ground penetrating radar system to a site on the Willamete River, near St. Johns Oregon.

The purpose of the geophysical survey was to determine if Ground Penetrating Radar could be used to locate buried utilities, tanks or drums or other anomalous subsurface soil conditions at the site.

A series of test runs were made with the GPR over known targets of known depth, over various surficial soil types and across concrete structures.

Analysis of these data indicated that the GPR was only capable of achieveing 6 to 9 feet of penetration over most of the area of interest. Tests prior to mobilizing and after returning from the site provided 30 feet of penetration assuring us that the system was fully operational. We felt that 15 to 20 feet of penetration was needed to be sure that no subsurface targets were missed.

We believe that the lack of penetration is a result of attenuation by the black-top surface which covers most of the site as well as the sand used for a grinding compound. We were unable to obtain any penetration into the concrete which is probably due to the internal rebar and screening.

We appreciated the opportunity to evaluate the GPR on this project and hope that we will have a chance to work with you again where the results will prove more successful.

Sincerely;

Richard E. Sylwester

Williamson and Associates
Richard B. Sylwester
Senior Geophysicist

APPENDIX 5

Electromagnetic (EM) Induction Survey
Geo-Recon Report

LAMP2-TP.404bg

GEO RECON INTERNATIONAL

geophysics archeology geology

December 28, 1987

Sweet & Edwards, Inc.
506 Royal Street, West
Kelso, WA 98626

Re: St. Johns, Oregon Plant site.

Gentlemen:

At your request we completed an electromagnetic study of a site in St. Johns, Oregon adjacent to the Willamette River. The purpose of this study was to determine the probability for the existence of buried tanks within the confines of the site. The site was traversed at approximate ten foot spacings and any probable targets were not on the ground with survey paint. This was accomplished on December 27, 1987 by a two person field crew from Geo Recon.

Four possible targets were located and indicated to your field representative at the end of the study. An area south of the large building floor pad was also noted as having significantly different characteristics than the remainder of the site and may represent different deposits such as wasted concrete containing rebar or other metallic debris. Several subsurface pipes and a buried railroad track were also noted.

We trust this is sufficient for your needs and appreciate the opportunity to work for your firm again.

For: Geo Recon International Ltd.

Clyde A. Ringstad

Clyde A. Ringstad
Principal Geophysicist

P.O.Box 55189 Seattle, Wa. 98155 USA (206) 362-9484

APPENDIX 6

Laboratory Report
Soil and Ground Water Testing

LAMP2-TP.404bg

Columbia Analytical Services, Inc.

1152 3rd Avenue • Longview, WA 98632 • (206) 577-7222

February 2, 1988

Block sand composite sample

Randy Sweet
Sweet & Edwards
P.O. Box Drawer B
Kelso, WA 98626

RE: MMI (LAMPROS STEEL SITE); CAS Work Order # 87728

Dear Randy:

Enclosed are the results of samples submitted to our lab on November 11, 1987. For your reference, our service request number for this work is 87728.

Please call if you have any questions.

Respectfully submitted:
COLUMBIA ANALYTICAL SERVICES, INC.

Mike Shelton

Mike Shelton

COLUMBIA ANALYTICAL SERVICES, INC.
1152 3RD AVE. LONGVIEW, WA 98632
(206) 577-7222

CLIENT: Sweet & Edwards
--Randy Sweet

February 2, 1988

PROJECT: MMI (LAMPROS STEEL SITE)

WORK ORDER #: 87728

Analytical Report
mg/L in EP extract

Sample Name:	~~Black Sand~~	Black Sand
Lab Code:		11/11/87 728-1
Test Parameters	Maximum Level	
Arsenic	5.0	<0.01
Barium	100	0.31
Cadmium	5.0	<0.005
Chromium	5.0	<0.01
Lead	5.0	<0.05
Mercury	0.2	<0.001
Selenium	1.0	<0.01
Silver	5.0	<0.01

Approved by: Mike Shelton Date: 2/2/88

Columbia Analytical Services, Inc.
1152 3rd Avenue • Longview, WA 98632 • (206) 577-7222

February 2, 1988

T2401.02
(Suspected Tank-Fill Pipes: Water Samples)

Russ Bunker
Sweet & Edwards
P.O. Box 328
Kelso, WA 98626

RE: MMI (LAMPROS STEEL SITE)

Dear Russ:

Listed below are the results of samples submitted to our lab on December 22, 1987. For your reference, our service request number for this work is 87817.

Please call if you have any questions.

Analytical Report
mg/L

Sample Name:	AT-3	AT-4	AT-5
Lab Code:	817-1	817-2	817-3
pH	5.8	5.5	5.9
Conductivity umhos/cm	80	68	88

Respectfully submitted:
COLUMBIA ANALYTICAL SERVICES, INC.

Mike Shelton

Mike Shelton

Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Laboratory Analysis Request

DATE 12/21/87 PAGE 1 OF 1

PROJECT Lenox Trading # [illegible]
CLIENT INFO. CONTACT [illegible] Norm Webb
ADDRESS —
TELEPHONE# —
SAMPLERS NAME Bunker PHONE# 206-423-3580
SAMPLERS SIGNATURE R. Bunker

ANALYSIS REQUESTED — GENERAL CHEMISTRY (Specify) — OTHER (Specify)

SAMPLE I.D.	DATE	TIME	LAB I.D.	TYPE	BASE/NEU/ACID ORGAN. GC/MS/625/8270	VOLATILE ORGANICS GC/MS/624/8240	HALOGENATED VOLATILE ORGANICS 601/8010	PHENOLICS 604/8040	POLYNUCLEAR AROMATIC 610/8310	TOTAL ORGANIC CARBON (TOC) 415/9060	TOTAL ORGANIC HALIDE (TOX) 9020	EP TOX/TCLP METALS (Circle One)	METALS (TOTAL) (See Special Inst.)	TCLP ORGANICS	pH, COND ALK	NO_3/NO_2, Cl SO_4	Ca, Mg, Na, K	Vol/GC	PCBs					NUMBER OF CONTAINERS
1. AT-3	12/21/87	BIK	817-1	WTR														✓						2
2. AT-3	"	"	-1	"									✓											1
3. AT-3	"	"	-1	"														✓						1
4.																								
5.																								
6.																								
7.																								
8.																								

Relinquished By Sweet, Edwards & Assoc.	Relinquished By	Relinquished By	PROJECT INFORMATION	SAMPLE RECEIPT
R. Bunker				
Signature: Russell C. Bunker	Signature	Signature	Shipping I.D. No.	Total No. of Containers
Printed Name: Sweet-Edwards	Printed Name	Printed Name		Chain of Custody Seals
Firm: 12/21/87 1720	Firm	Firm	VIA	Received in good condition
Date/Time	Date/Time	Date/Time	Project	LAB NO.

Received By	Received By	Received By	SPECIAL INSTRUCTIONS/COMMENTS
[illegible]			
Signature: [illegible]	Signature	Signature	
Printed Name: [illegible]	Printed Name	Printed Name	
Firm: [illegible]	Firm	Firm	
Date/Time	Date/Time	Date/Time	

DISTRIBUTION: WHITE - return to originator; YELLOW - lab; PINK - retained by originator.

SEA-400-05

CRAW00017018

Sweet, Edwards & Associates, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Laboratory Analysis Request

DATE 12/21/17 PAGE 1 OF 1

PROJECT Home Trading # T24 C1 & 2
CLIENT INFO. CONTACT Kim Wolf
ADDRESS –
TELEPHONE# –
SAMPLERS NAME R Bunker PHONE# 206-423-3580
SAMPLERS SIGNATURE R Bunker

ANALYSIS REQUESTED — GENERAL CHEMISTRY (Specify) — OTHER (Specify)

SAMPLE I.D.	DATE	TIME	LAB I.D.	TYPE	BASE/NEU/ACID ORGAN. GC/MS/625/8270	VOLATILE ORGANICS GC/MS/624/8240	HALOGENATED VOLATILE ORGANICS 601/8010	PHENOLICS 604/8040	POLYNUCLEAR AROMATIC 610/8310	TOTAL ORGANIC CARBON (TOC) 415/9060	TOTAL ORGANIC HALIDE (TOX) 9020	EP TOX/TCLP METALS (Circle One)	METALS (TOTAL) (See Special Inst.)	TCLP ORGANICS	pH, COND ALK	NO_3/NO_2, Cl SO_4	Ca, Mg, Na, K	volatiles	PCBs					NUMBER OF CONTAINERS
1. AT-4	12/21/17	1345	817-2	WTR														✓						2
2. AT-4	"	"	-2	"															✓					1
3. AT-4	"	"	-2	"								✓												1
4.																								
5.																								
6.																								
7.																								
8.																								

Relinquished By Sweet, Edwards & Assoc.	Relinquished By	Relinquished By	PROJECT INFORMATION	SAMPLE RECEIPT
Signature: R Bunker	Signature	Signature	Shipping I.D. No.	Total No. of Containers
Printed Name: Russ Bunker	Printed Name	Printed Name	VIA	Chain of Custody Seals
Firm: Sweet-Edwards	Firm	Firm	Project	Received in good condition
Date/Time: 12/21/17 1770	Date/Time	Date/Time		LAB NO.

Received By	Received By	Received By	SPECIAL INSTRUCTIONS/COMMENTS
Signature: [illegible]	Signature	Signature	
Printed Name: [illegible]	Printed Name	Printed Name	
Firm: [illegible] 1735	Firm	Firm	
Date/Time	Date/Time	Date/Time	

DISTRIBUTION: WHITE - return to originator; YELLOW - lab; PINK - retained by originator.

SEA-400-05

CRAW00017019

Swe[illegible], Edw[illegible] & Associates, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Laboratory Analysis Request

DATE 12/21/87 PAGE 1 OF 1

PROJECT [illegible] #T24[illegible]
CLIENT INFO. CONTACT [illegible]
ADDRESS —
TELEPHONE# —
SAMPLERS NAME P Brinker PHONE# 206-423-3580
SAMPLERS SIGNATURE PCBrinker

ANALYSIS REQUESTED — GENERAL CHEMISTRY (Specify) — OTHER (Specify)

SAMPLE I.D.	DATE	TIME	LAB I.D.	TYPE	BASE/NEU/ACID ORGAN. GC/MS/625/8270	VOLATILE ORGANICS GC/MS/624/8240	HALOGENATED VOLATILE ORGANICS 601/8010	PHENOLICS 604/8040	POLYNUCLEAR AROMATIC 610/8310	TOTAL ORGANIC CARBON (TOC) 415/9060	TOTAL ORGANIC HALIDE (TOX) 9020	EP TOX/TCLP METALS (Circle One)	METALS (TOTAL) (See Special Inst.)	TCLP ORGANICS	pH, COND ALK	NO_3/NO_2, Cl SO_4	Ca, Mg, Na, K	Volatiles	PCB					NUMBER OF CONTAINERS
1. AT-5	12/21/87	1400	817-3	WTR														✓						2
2. AT-5	"	"	-3	"															✓					1
3. AT-5	"	"	-3	"									✓											1
4.																								
5.																								
6.																								
7.																								
8.																								

Relinquished By Sweet, Edwards & Assoc.	Relinquished By	Relinquished By	PROJECT INFORMATION	SAMPLE RECEIPT
PCBrinker				
Signature: Russ Brinker	Signature	Signature	Shipping I.D. No.	Total No. of Containers
Printed Name: Sweet-Edwards	Printed Name	Printed Name	VIA	Chain of Custody Seals
Firm: 12/21/87 1720	Firm	Firm	Project	Received in good condition
Date/Time	Date/Time	Date/Time		LAB NO.

Received By	Received By	Received By	SPECIAL INSTRUCTIONS/COMMENTS
[illegible]			
Signature: [illegible]	Signature	Signature	
Printed Name: [illegible]	Printed Name	Printed Name	
Firm: [illegible]	Firm	Firm	
Date/Time	Date/Time	Date/Time	

DISTRIBUTION: WHITE - return to originator; YELLOW - lab; PINK - retained by originator.

SEA-400-05

CRAW00017020

Columbia Analytical Services, Inc.

1152 3rd Avenue • Longview, WA 98632 • (206) 577-7222

T2461.02

February 2, 1988

(Ground-water samples, Test borings, T-1, T-2)

Russ Bunker
Sweet & Edwards
P.O. Box Drawer B
Kelso, WA 98626

Groundwater samples from T-1, T-2 borings

RE: MMI (LAMPROS STEEL SITE)

Dear Russ:

Listed below are the results of samples submitted to our lab on January 5, 1987. For your reference, our service request number for this work is 88002.

Please call if you have any questions.

Analytical Report

		Drainfield	— Black Sand —	
Sample Name:		T-1/W-1	T-2/W-1	T-2/W-2
Lab Code:		002-1	002-2	002-3
Nitrate-N	mg/L	2.4	0.14	0.10
Total Organic Carbon	mg/L	2.0	25	56
TOX	ppb	<5	11.5	13.8

Respectfully submitted:
COLUMBIA ANALYTICAL SERVICES, INC.

Mike Shelton

Mike Shelton

Sweet, Edwards & Associates, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Laboratory Analysis Request

DATE 1-5-88 PAGE 1 OF 1

PROJECT Acme Trading # T2401.02
CLIENT INFO. CONTACT Russ Bunker
ADDRESS Sweet-Edwards / EMCON
TELEPHONE# 206-423-3580
SAMPLERS NAME R Bunker PHONE# 206-423-3580
SAMPLERS SIGNATURE RBunker

ANALYSIS REQUESTED

SAMPLE I.D.	DATE	TIME	LAB I.D.	TYPE	BASE/NEU/ACID ORGAN. GC/MS/625/8270	VOLATILE ORGANICS GC/MS/624/8240	HALOGENATED VOLATILE ORGANICS 601/8010	PHENOLICS 604/8040	POLYNUCLEAR AROMATIC 610/8310	TOTAL ORGANIC CARBON (TOC) 415/9060	TOTAL ORGANIC HALIDE (TOX) 9020	EP TOX/TCLP METALS (Circle One)	METALS (TOTAL) (See Special Inst.)	TCLP ORGANICS	pH, COND ALK	NO_3/NO_2, Cl SO_4	Ca, Mg, Na, K	GENERAL CHEMISTRY (Specify) NO_3, TOC	TOX	OTHER (Specify)				NUMBER OF CONTAINERS
1. T-1 /W-1	1-4-88	1140	002-1	WTR														✓						1
2. T-1 /W-1	"	1140	002-1	WTR															✓					1
3. T-2/W-1	"	1600	002-2	WTR														✓						1
4. T-2/W-1	"	1600	002-2	WTR															✓					1
5. T-2/W-2	"	1700	002-3	WTR														✓						1
6. T-2/W-2	"	1700	002-3	WTR															✓					1
7.																								
8.																								

Relinquished By Sweet, Edwards & Assoc.	Relinquished By	Relinquished By	PROJECT INFORMATION	SAMPLE RECEIPT
Signature RC Bunker	Signature	Signature		
Printed Name Russ Bunker	Printed Name	Printed Name	Shipping I.D. No.	Total No. of Containers
Firm Sweet-Edwards	Firm	Firm	VIA	Chain of Custody Seals
Date/Time 1-5-88 1015	Date/Time	Date/Time	Project	Received in good condition
				LAB NO.

Received By	Received By	Received By	SPECIAL INSTRUCTIONS/COMMENTS
Signature Steve Vincent	Signature	Signature	Analyze wtr from settled sample, i.e., do not test sediment
Printed Name CAS	Printed Name	Printed Name	
Firm 1-5-88 1015	Firm	Firm	
Date/Time	Date/Time	Date/Time	

DISTRIBUTION: WHITE - return to originator; YELLOW - lab; PINK - retained by originator.

SEA-400-05

CRAW00017022

Columbia Analytical Services, Inc.
1152 3rd Avenue • Longview, WA 98632 • (206) 577-7222

February 2, 1988

Test Pit Soil Samples
Drainfield
Black Sand

Russ Bunker
Sweet & Edwards
P.O. Box Drawer B
Kelso, WA 98626

RE: MMI (LAMPROS STEEL SITE)

Dear Russ:

Enclosed are the results of samples, including PCB results, submitted to our lab on January 6, 1988. For your reference, our service request number for this work is 88012.

Please call if you have any questions.

Respectfully submitted:
COLUMBIA ANALYTICAL SERVICES, INC.

Colin Elliot /mls

Colin Elliott

COLUMBIA ANALYTICAL SERVICES, INC.
1152 3RD AVE. LONGVIEW, WA 98632
(206) 577-7222

CLIENT: Sweet & Edwards
--Russ Bunker
PROJECT: MMI (LAMPROS STEEL SITE)

February 2, 1988
WORK ORDER #: 88012

Analytical Report
(dry basis)

Sample Name	Lab Code	Oil & Grease %	TOX ppm	PCB ppm
TP-1/S-1	012-1	<0.01	<2	-
TP-4/S-2 Dam field	012-2	<0.01	<2	-
TP-7/S-1 Black Sand	012-3	0.04	294	<0.2
TP-7/S-2	012-4	0.05	2.9	-

Approved by: Mike Shelton Date: 2/2/88

COLUMBIA ANALYTICAL SERVICES, INC.
1152 3RD AVE. LONGVIEW, WA 98632
(206) 577-7222

CLIENT: Sweet & Edwards
--Russ Bunker
PROJECT: MMI (LAMPROS STEEL SITE)

February 2, 1988
WORK ORDER #: 88012

Volatile Organics Results
ug/Kg (ppb)

Sample Name:	TP-1/S-1	TP-4/S-1 Dennfield	TP-7/S-1 Black Sand	TP-7/S-2
Lab Code:	012-1	012-2	012-3	012-4
Chloromethane	<50	<50	<50	<50
Vinyl Chloride	<50	<50	<50	<50
Bromomethane	<50	<50	<50	<50
Chloroethane	<50	<50	<50	<50
1,1-Dichloroethene	<50	<50	<50	<50
Methylene Chloride	<200	<200	<200	<200
Trans 1,2-Dichloroethene	<50	<50	<50	<50
1,1-Dichloroethane	<50	<50	<50	<50
Chloroform	<50	<50	<50	<50
1,1,1-Trichloroethane	<50	<50	<50	<50
Carbon Tetrachloride	<50	<50	<50	<50
Benzene	<50	<50	<50	<50
1,2-Dichloroethane	<50	<50	<50	<50
Trichloroethene	<50	<50	<50	<50
1,2-Dichloropropane	<50	<50	<50	<50
Bromodichloromethane	<50	<50	<50	<50
2-Chloroethylvinyl ether	<500	<500	<500	<500
Trans 1,3-Dichloropropene	<50	<50	<50	<50
Toluene	<50	<50	<50	<50
Cis 1,3-Dichloropropene	<50	<50	<50	<50
1,1,2-Trichloroethane	<50	<50	<50	<50
Tetrachloroethene	<50	<50	<50	<50
Dibromochloromethane	<50	<50	<50	<50
Chlorobenzene	<50	<50	<50	<50
Ethylbenzene	<50	<50	<50	<50
Bromoform	<50	<50	<50	<50
1,1,2,2-Tetrachloroethane	<50	<50	<50	<50
1,3 Dichlorobenzene	<50	<50	<50	<50
1,4 Dichlorobenzene	<50	<50	<50	<50
1,2 Dichlorobenzene	<50	<50	<50	<50
Acetone	<500	<500	<500	<500
Total xylenes	<100	<100	310	<100
Methyl Ethyl Ketone	<500	<500	<500	<500
Methyl Isobutyl Ketone	<500	<500	<500	<500

Approved by: Mike Pelton Date: 2/2/88

Kelso, WA (206) 423-3560
Redmond, WA (206) 881-0415

Laboratory Analysis Request

DATE 1-6-88 PAGE 2 OF 2

PROJECT Acme Trading # T2401.02
CLIENT INFO. CONTACT RBunker
ADDRESS Sweet-Edwards
TELEPHONE# 206-423-3560
SAMPLERS NAME RBunker PHONE# 206-423-3560
SAMPLERS SIGNATURE RBunker

ANALYSIS REQUESTED

SAMPLE I.D.	DATE	TIME	LAB I.D.	TYPE	BASE/NEU/ACID ORGAN. GC/MS/625/8270	VOLATILE ORGANICS GC/MS/624/8240	HALOGENATED VOLATILE ORGANICS 601/8010	PHENOLICS 604/8040	POLYNUCLEAR AROMATIC 610/8310	TOTAL ORGANIC CARBON (TOC) 415/9060	TOTAL ORGANIC HALIDE (TOX) 9020	EP TOX/TCLP METALS (Circle One)	METALS (TOTAL) (See Special Inst.)	TCLP ORGANICS	pH, COND ALK	NO_3/NO_2, Cl SO_4	Ca, Mg, Na, K	GENERAL CHEMISTRY (Specify) 8010, 8020 VOCs	TOX; oil & grease		OTHER (Specify) PCB (CBE)			NUMBER OF CONTAINERS
1. TP-5/S-1	1/6/88	0950		SOIL														✓						1
2. TP-5/S-1	"	0950		"															✓					1
3. TP-7/S-1	"	1025		"														✓			✓			1
4. TP-7/S-1	"	1025		"															✓					1
5. TP-7/S-2	"			"														✓						1
6. TP-7/S-2	"			"															✓					1
7.																								
8.																								

Relinquished By Sweet, Edwards & Assoc.	Relinquished By	Relinquished By	PROJECT INFORMATION	SAMPLE RECEIPT
Signature Russ Bunker	Signature	Signature	Shipping I.D. No.	Total No. of Containers
Printed Name Sweet-Edwards	Printed Name	Printed Name	VIA	Chain of Custody Seals
Firm 1-6-88, 1545	Firm	Firm	Project	Received in good condition
Date/Time	Date/Time	Date/Time		LAB NO.
Received By	**Received By**	**Received By**	**SPECIAL INSTRUCTIONS/COMMENTS**	
Signature	Signature	Signature	As of today (1/6/88) analyze only:	
Printed Name CAS	Printed Name	Printed Name	① TP-1/S-1	
Firm	Firm	Firm	② TP-4/S-2	
Date/Time	Date/Time	Date/Time	③ TP-7/S-1	
			TP-7/S-2	

DISTRIBUTION: WHITE - return to originator; YELLOW - lab; PINK - retained by originator.

SEA-400-05

CRAW00017026

Columbia Analytical Services, Inc.

1152 3rd Avenue • Longview, WA 98632 • (206) 577-7222

FEB 03 1988

Contents of UST at TP-2

February 2, 1988

Russ Bunker
Sweet & Edwards
P.O. Box Drawer B
Kelso, WA 98626

RE: MMI (LAMPROS STEEL SITE)

Dear Russ:

Enclosed are the results of samples submitted to our lab on January 12, 1988 for rush analysis. For your reference, our service request number for this work is 88023.

Please call if you have any questions.

Respectfully submitted:
COLUMBIA ANALYTICAL SERVICES, INC.

Mike Shelton

Mike Shelton

COLUMBIA ANALYTICAL SERVICES, INC.
1152 3RD AVE. LONGVIEW, WA 98632
(206) 577-7222

Contents of UST at TP-2

CLIENT: Sweet & Edwards
--Russ Bunker

February 2, 1988

PROJECT: MMI (LAMPROS STEEL SITE)

WORK ORDER #: 88023

Analytical Report

Sample Name:	Units	Columbia Forge
Lab Code:		023-1
Organic Constituents		
PCB	mg/kg	<0.5
Benzene	mg/kg	<1.0
Toluene	mg/kg	5.72
Ethyl Benzene	mg/kg	10.3
Total Xylene	mg/kg	85.0
Total TCP	mg/kg	<0.035
Pentachlorophenol	mg/kg	<0.010
TOX	mg/kg	32
Metals		
Antimony	mg/kg	<1
Arsenic	mg/kg	<1
Beryllium	mg/kg	<4
Cadmium	mg/kg	<1
Chromium	mg/kg	<2
Copper	mg/kg	60
Lead	mg/kg	<10
Mercury	mg/kg	<0.5
Nickel	mg/kg	63
Selenium	mg/kg	<1
Silver	mg/kg	<10
Thallium	mg/kg	<1
Zinc	mg/kg	<8

Approved by: Mike Tilton Date: 2/2/88

COLUMBIA ANALYTICAL SERVICES, INC.
1152 3RD AVE. LONGVIEW, WA 98632
(206) 577-7222

CLIENT: Sweet & Edwards
--Russ Bunker
PROJECT: MMI (LAMPROS STEEL SITE)

February 2, 1988
WORK ORDER #: 88023

Analytical Report

Sample Name:	Units	Columbia Forge
Lab Code:		023-1
Other Constituents		
TSS	%	11
Water	%	<0.2

Corrosivity

The pH of this non-aqueous sample is 5.0.

Ignitability

Closed cup flash point was greater than 140 deg. F.

Reactivity

Sample Characteristics

Will not detonate.
Does not react violently with water.
Does not generate sulfides upon acidification.
Cyanides found to be less than 1.0 mg/kg.

Approved by: Mike Shelton Date: 2/2/88

Sweet, Edwards & Associates, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Chain of Custody / Laboratory Analysis Request

DATE 1-11-62 PAGE ____ OF ____

PROJECT T2401.02
CLIENT INFO. CONTACT Howard Holmes/NW Testing Labs
ADDRESS 5405 N. Lagoon Ave
TELEPHONE# 503-289-1778
SAMPLERS NAME ____ PHONE# ____
SAMPLERS SIGNATURE ____

ANALYSIS REQUESTED

SAMPLE I.D.	DATE	TIME	LAB I.D.	TYPE	BASE/NEU/ACID ORGAN. GC/MS/625/8270	VOLATILE ORGANICS GC/MS/624/8240	HALOGENATED VOLATILE ORGANICS 601/8010	PHENOLICS 604/8040	POLYNUCLEAR AROMATIC 610/8310	TOTAL ORGANIC CARBON (TOC) 415/9060	TOTAL ORGANIC HALIDE (TOX) 9020	EP TOX/TCLP METALS (Circle One)	METALS (TOTAL) (See Special Inst.)	TCLP ORGANICS	GENERAL CHEMISTRY (Specify): pH, COND ALK	NO_3/NO_2, Cl SO_4	Ca, Mg, Na, K	OTHER (Specify)						NUMBER OF CONTAINERS
1. Columbia Forge				Oil																				
2.																								
3.																								
4.																								
5.																								
6.																								
7.																								
8.																								

Relinquished By	Relinquished By	Relinquished By	PROJECT INFORMATION	SAMPLE RECEIPT
Northwest Testing Labs				
Signature: Howard B. Holmes	Signature: Holmes Morales	Signature	Shipping I.D. No.	Total No. of Containers
Printed Name: Howard B. Holmes	Printed Name	Printed Name		Chain of Custody Seals
Firm: Northwest Testing Labs	Firm: 1-12-87 0810	Firm	VIA	Received in good condition
Date/Time: Jan 11, 1988 / 1630	Date/Time	Date/Time	Project	LAB NO.
Received By	Received By	Received By	SPECIAL INSTRUCTIONS/COMMENTS	
Signature: [illegible]	Signature: [illegible]	Signature		
Printed Name: [illegible]	Printed Name: CAS	Printed Name		
Firm: JAN 11 1988 / [illegible]	Firm: 1/12/89 0813	Firm		
Date/Time	Date/Time	Date/Time		

DISTRIBUTION: WHITE - return to originator; YELLOW - lab; PINK - retained by originator

CRAW00017030

Columbia Analytical Services, Inc.
1152 3rd Avenue • Longview, WA 98632 • (206) 577-7222

FEB 03 1988

February 2, 1988

Russ Bunker
Sweet & Edwards
P.O. Box Drawer B
Kelso, WA 98626

Soil samples from UST excavation at TP-2

RE: MMI (LAMPROS STEEL SITE)

Dear Russ:

Listed below are the results of samples submitted to our lab on January 19, 1988. For your reference, our service request number for this work is 88039.

Please call if you have any questions.

Analytical Report
Units = % As Rec'd

Sample Name	Lab Code	Oil & Grease		Solids
Tank 1	039-1	0.01	100 mg/kg	75.2
Tank 2	039-2	0.02	200 mg/kg	89.5
Tank 3	039-3	0.02	100 mg/kg	78.5

Respectfully submitted:
COLUMBIA ANALYTICAL SERVICES, INC.

Mike Shelton

Mike Shelton

Sweet, Edwards & Associates, Inc.
Kelso, WA (206) 423-3580
Redmond, WA (206) 881-0415

Chain of Custody / Laboratory Analysis Request

DATE [illegible] PAGE 1 OF 1

PROJECT [illegible] #[illegible]
CLIENT INFO.
CONTACT
ADDRESS
TELEPHONE#
SAMPLERS NAME [illegible] PHONE# [illegible]
SAMPLERS SIGNATURE [illegible]

ANALYSIS REQUESTED

SAMPLE I.D.	DATE	TIME	LAB I.D.	TYPE	BASE/NEU/ACID ORGAN. GC/MS/625/8270	VOLATILE ORGANICS GC/MS/624/8240	HALOGENATED VOLATILE ORGANICS 601/8010	PHENOLICS 604/8040	POLYNUCLEAR AROMATIC 610/8310	TOTAL ORGANIC CARBON (TOC) 415/9060	TOTAL ORGANIC HALIDE (TOX) 9020	EP TOX/TCLP METALS (Circle One)	METALS (TOTAL) (See Special Inst.)	TCLP ORGANICS	GENERAL CHEMISTRY (Specify): pH, COND ALK	NO_3/NO_2, Cl SO_4	Ca, Mg, Na, K	OTHER (Specify)						NUMBER OF CONTAINERS
1. [illegible]	[illegible]																							[illegible]
2. [illegible]	[illegible]			[illegible]																				[illegible]
3. [illegible]				[illegible]																				[illegible]
4.																								
5.																								
6.																								
7.																								
8.																								

Relinquished By Sweet, Edwards & Assoc.	Relinquished By	Relinquished By
Signature [illegible]	Signature [illegible]	Signature
Printed Name [illegible]	Printed Name [illegible]	Printed Name
Firm [illegible]	Firm [illegible]	Firm
Date/Time	Date/Time	Date/Time

Received By [illegible]	Received By [illegible]	Received By
Signature [illegible]	Signature [illegible]	Signature
Printed Name [illegible]	Printed Name [illegible]	Printed Name
Firm [illegible]	Firm [illegible]	Firm
Date/Time	Date/Time	Date/Time

PROJECT INFORMATION
Shipping I.D. No.
VIA
Project

SAMPLE RECEIPT
Total No. of Containers
Chain of Custody Seals
Received in good condition
LAB NO.

SPECIAL INSTRUCTIONS/COMMENTS
[illegible]

DISTRIBUTION: WHITE - return to originator; YELLOW - lab; PINK - retained by originator.

SEA-400-05

CRAW00017032

APPENDIX E

ANALYTICAL LABORATORY REPORT FOR UNDERGROUND STORAGE TANK REMOVAL SOIL SAMPLES

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

March 19, 1987
Log #A870316-B1-2
PO#: 2842

Columbia Forge & Machine
8424 N. Crawford St.
Portland, Oregon 97203

Attention: John Shore

Sample ID: #1 - Skookum, 3/13/87
#2 - Yard, 3/13/87

Samples Received: March 13, 1987

Samples Collected by: Crosby & Overton

ANALYSIS	SAMPLE #1	SAMPLE #2
Gasoline*	< 1.0	16**
Diesel*	< 1.0	< 1.0
Lead	---	30.0

Results in mg/kg

* Analysis by extraction capillary GC/FID.

** Appears to contain some other high boiling oil and possibly some kerosene.

The less than "<" symbol means none detected at or above the indicated value and represents the detection limit for the method.

Approved by,

Susan M. Brillante

Susan M. Brillante,
Laboratory Director

Sincerely,

Susan M. Coffey

Susan M. Coffey,
President

Soil analy
yard c

SMC/gs

This report is for the sole and exclusive use of the above client. (no
Samples are retained a maximum of 15 days from the date of this letter.

B 11587

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

March 24, 1987
Log #A870316-B1-2

Columbia Forge & Machine
8424 N. Crawford St.
Portland, Oregon 97203

ATTENTION: John Shore

SUBJECT: EP TOXICITY ANALYSIS

METHOD: Federal Register, Vol. 45 No. 98, Monday, May 19, 1980, Rules and Regulations, Appendix II, Page 33127.

FIELD DATA: Sample ID: #2 - Yard
Collected by: Sample collected and delivered by client.

Sample Received: March 16, 1987

ANALYSIS	RESULTS	LIMIT
Lead	< 0.100	5.0

The less than "<" symbol means none detected at or above the indicated value and represents the detection limit for the method.

Results are reported in milligrams per liter (mg/L)

Sincerely,

Susan M. Coffey

Susan M. Coffey,
President

SMC/gs

ordered rush for [illegible]
2nd soil ok
ile only E[illegible] done.

This report is for the sole and exclusive use of the above client. Samples are retained a maximum of 15 days from the date of this letter.

B 11588

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

March 24, 1987
Log #A870319-K
PO#: 2864

Columbia Forge & Machine
8424 N. Crawford St.
Portland, Oregon 97203

Attention: John Shore

Analysis Requested: Total Hydrocarbons

Sample ID: #3 Weld Shop

Sample Date: March 19, 1987

Sample Received: March 19, 1987

ANALYSIS	RESULTS
Gasoline	< 4 mg/kg
Diesel	< 4 mg/kg

Analysis by capillary GC/FID

The less than "<" symbol means none detected at or above the indicated value and represents the detection limit for the method.

Approved,

Susan M. Brillante

Susan M. Brillante,
Laboratory Director

Sincerely,

Susan M. Coffey

Susan M. Coffey
President

SMC/gs

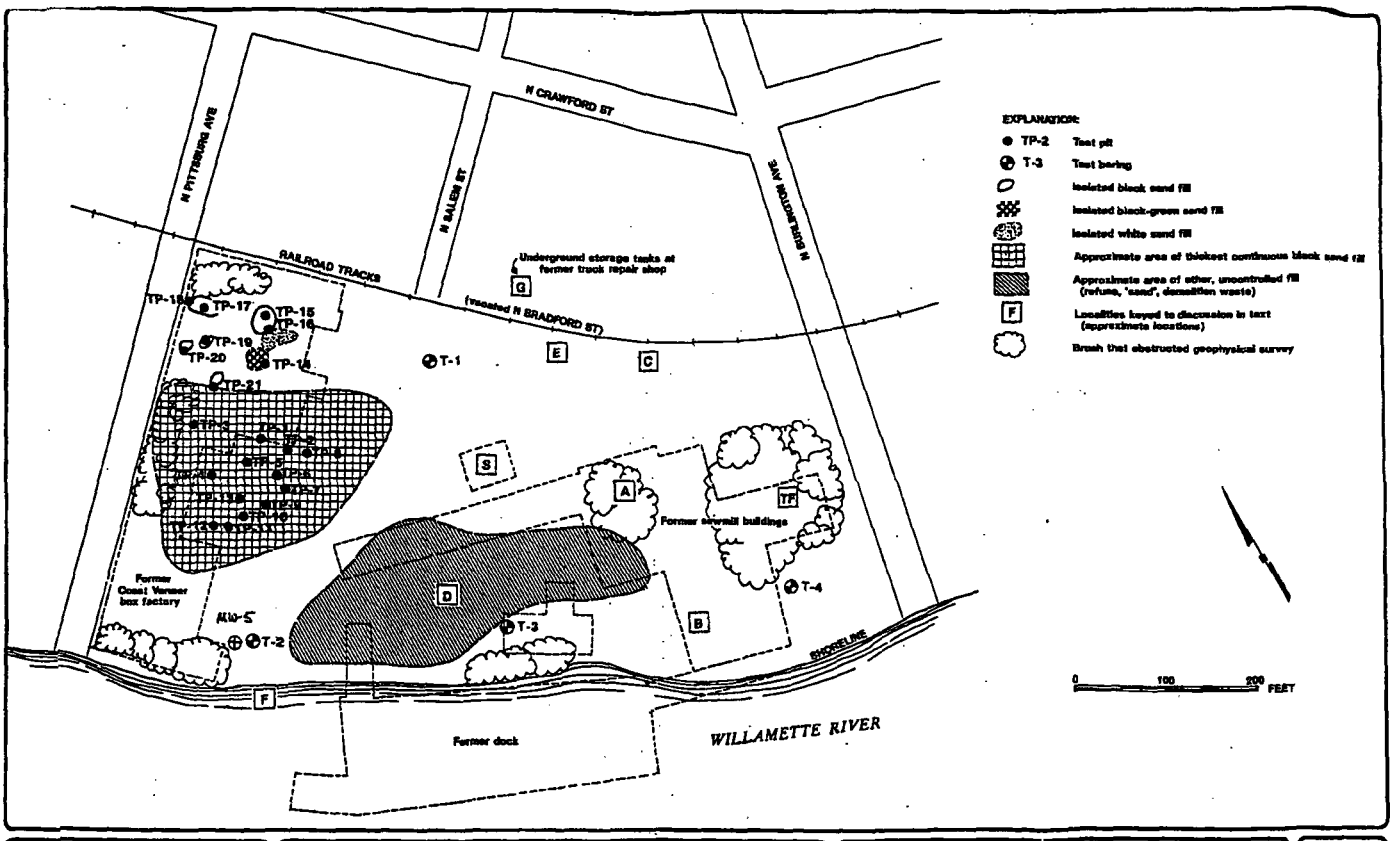
soil analy
weld st
(no i

This report is for the sole and exclusive use of the above client. Samples are retained a maximum of 15 days from the date of this letter.

B 11592

APPENDIX G

FIGURE 2 FROM JULY 20, 1989 SWEET-EDWARDS/EMCON REPORT



Sweet-Edwards
EMCON

PDC PROPERTY
PORTLAND, OREGON
Site Map

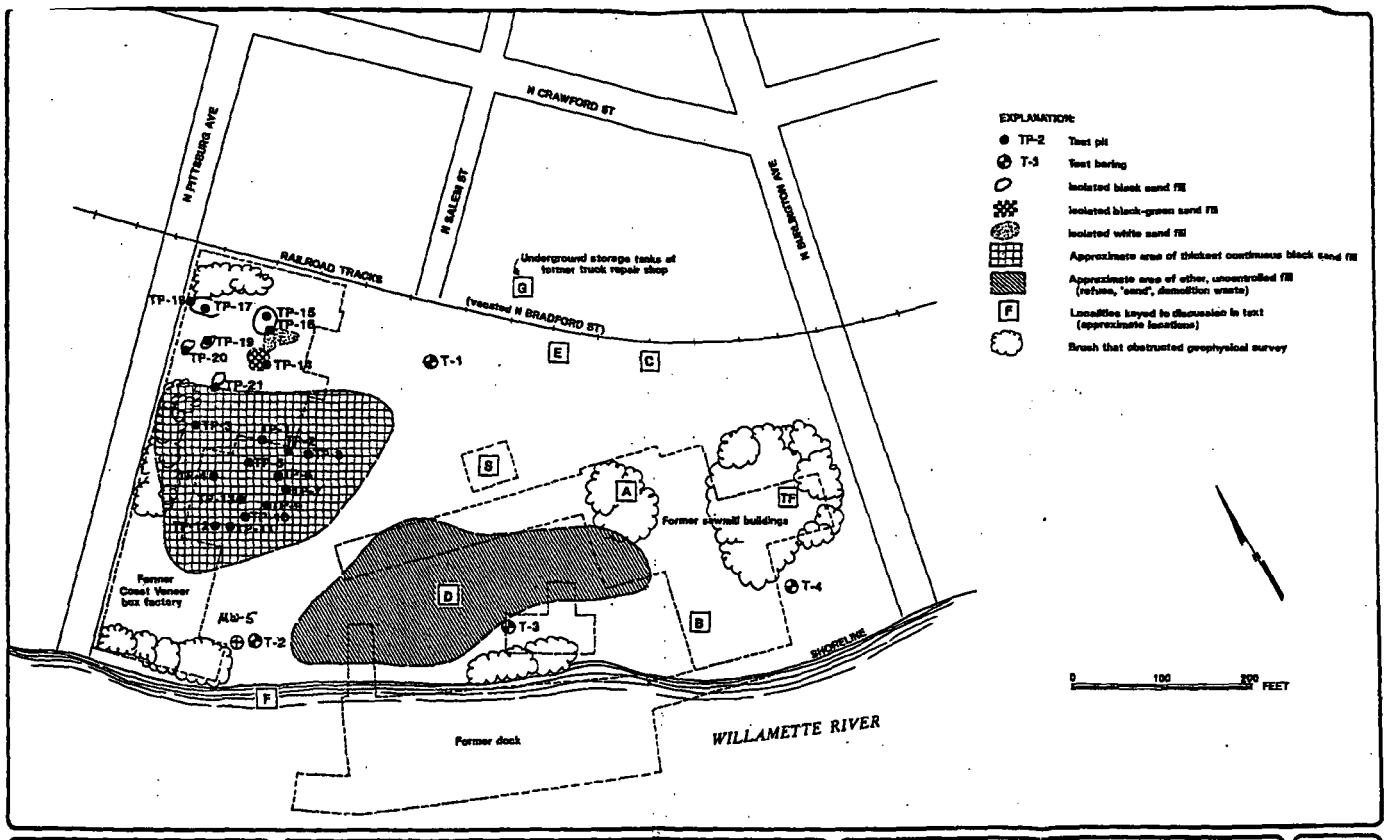
Figure 2

DATE 7/89
DWN.
APPR.
REVIS.
PROJECT NO. T2403.01

CRAW00017055

APPENDIX G

FIGURE 2 FROM JULY 20, 1989 SWEET-EDWARDS/EMCON REPORT

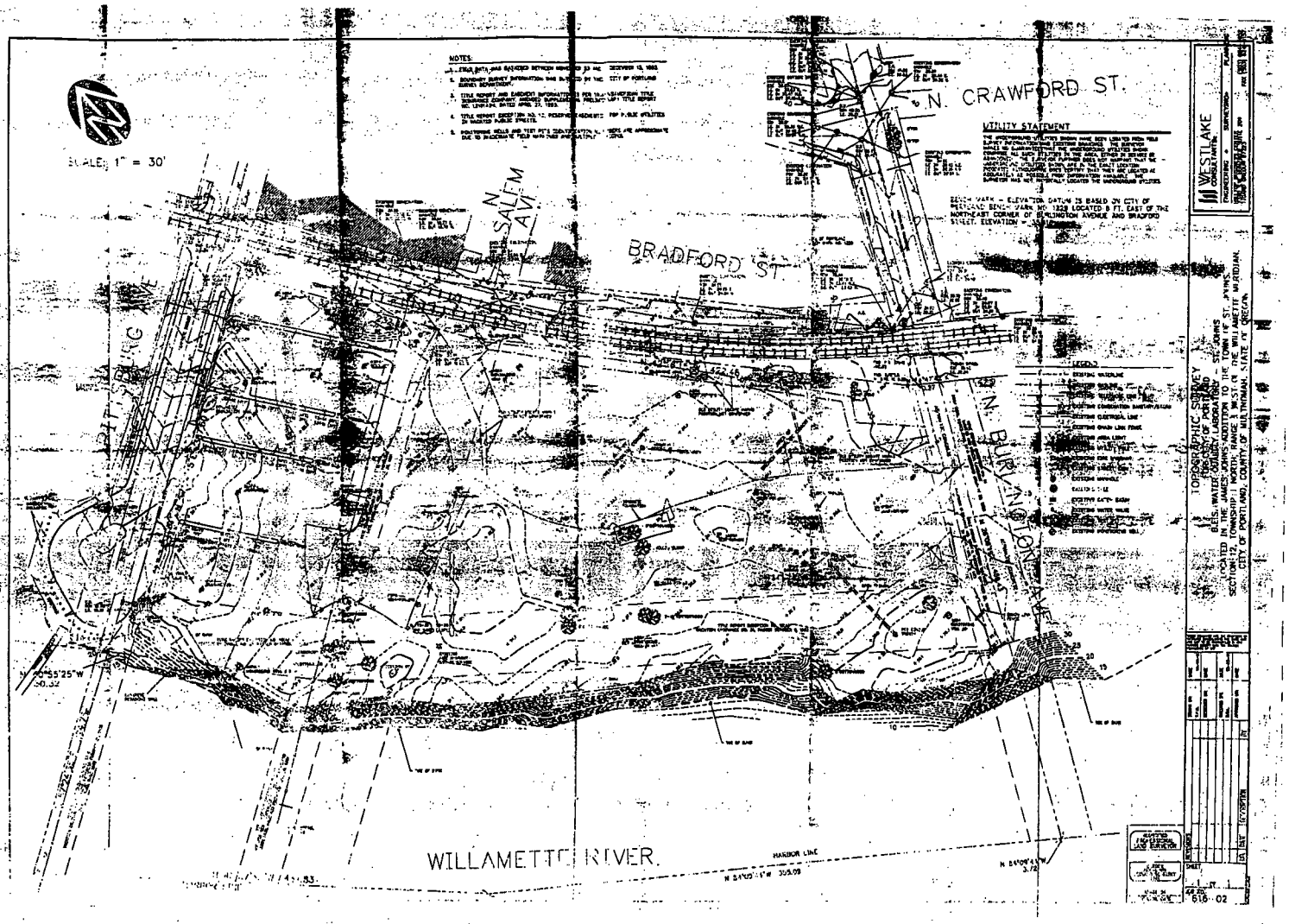


Sweet-Edwards
EMCON

PDC PROPERTY
PORTLAND, OREGON
Site Map
Figure 2

DATE 7/89
DWN.
APPR.
REVIS.
PROJECT NO. TZ402.01

CRAW00017057


SCALE: 1" = 30'
NOTES:
UTILITY STATEMENT
N. CRAWFORD ST.
N. SALEM AVE.
BRADFORD ST.
N. BURLINGTON AVE.
WILLAMETTE RIVER.
HARBOR LINE
LEGEND
WESTLAKE CONSULTANTS
TOPOGRAPHIC SURVEY
FOR CITY OF PORTLAND
BLEIS, WATER QUALITY LABORATORY - ST. JOHNS
LOCATED IN THE JAMES JOHNS ADDITION TO THE TOWN OF ST. JOHNS
SECTION 12, TOWNSHIP 1 NORTH, RANGE 1 WEST OF THE WILLAMETTE MERIDIAN,
CITY OF PORTLAND, COUNTY OF MULTNOMAH, STATE OF OREGON
616-02

Attachment 1
Site Plan Figure

COLUMBIA FORGE
AND MACHINE WORKS
8424 N. CRAWFORD ST.
PORTLAND, OR 97203

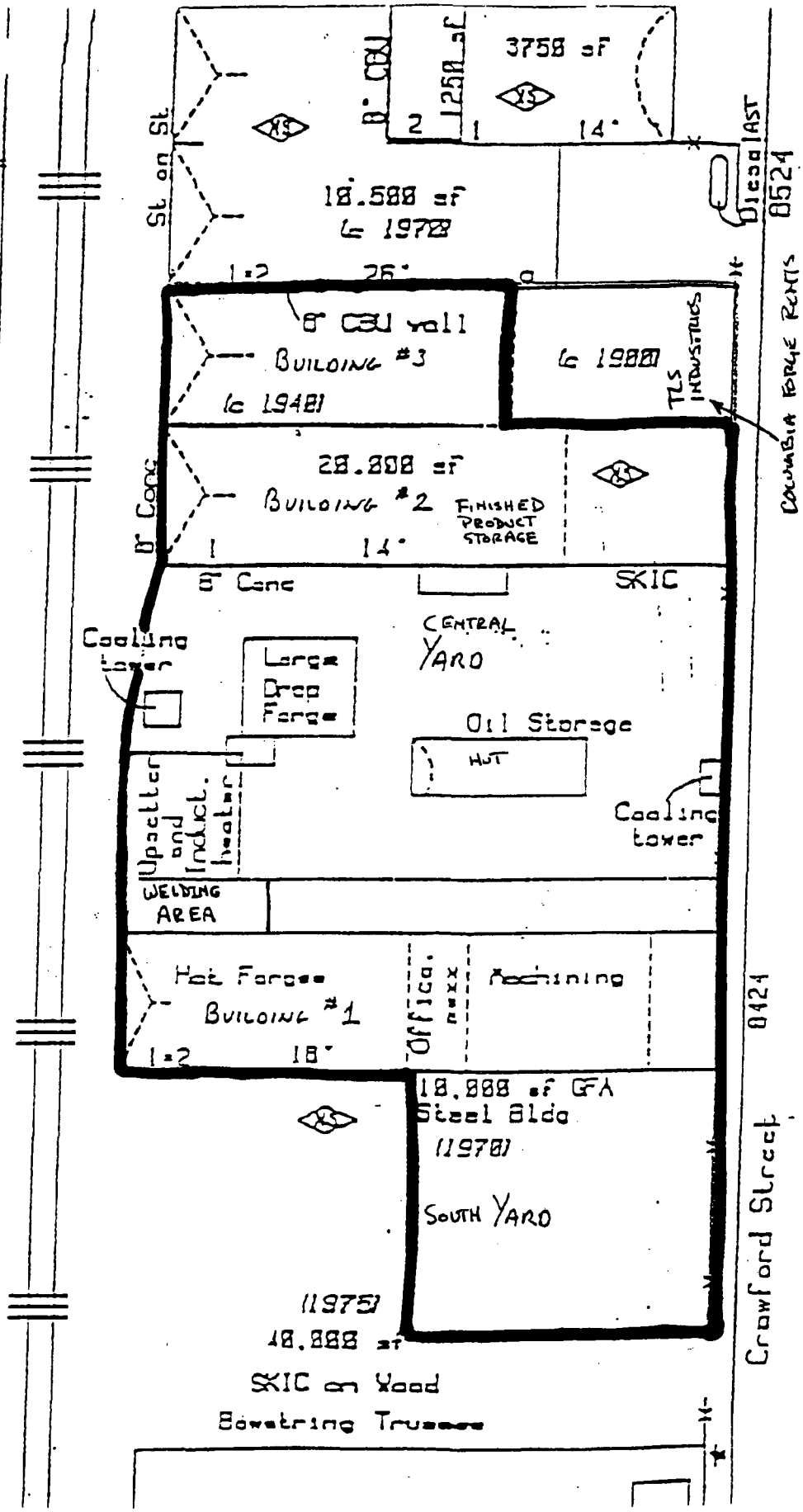
THE SITE CONSISTS OF THREE BUILDINGS AND TWO YARDS.

PARKING IS ON CITY STREETS.

NO CHANGES OR ADDITIONS ARE PLANNED.

COLUMBIA FORGE
TOTAL SF = 57,000
BUILDING SF = 27,000

23 OCT 91



CRAW00017162

Attachment 2
Underground Storage Tank Notification Form

Notification for Underground Storage Tanks

APPROVAL EXPIRES 6-30-88

Return To: **Oregon Department of Environmental Quality**
Underground Storage Tank Program
P.O. Box 1760
Portland, Oregon 97207

STATE USE ONLY
I.D. No.
Date Received

GENERAL INFORMATION

Notification is required by Federal law for all underground tanks that have been used to store regulated substances since January 1, 1974, that are in the ground as of May 8, 1986, or that are brought into use after May 8, 1986. The information requested is required by Section 9002 of the Resource Conservation and Recovery Act, (RCRA), as amended.

The primary purpose of this notification program is to locate and evaluate underground tanks that store or have stored petroleum or hazardous substances. It is expected that the information you provide will be based on reasonably available records, or, in the absence of such records, your knowledge, belief, or recollection.

Who Must Notify? Section 9002 of RCRA, as amended, requires that, unless exempted, owners of underground tanks that store regulated substances must notify designated State or local agencies of the existence of their tanks. Owner means—

(a) in the case of an underground storage tank in use on November 8, 1984, or brought into use after that date, any person who owns an underground storage tank used for the storage, use, or dispensing of regulated substances, and

(b) in the case of any underground storage tank in use before November 8, 1984, but no longer in use on that date, any person who owned such tank immediately before the discontinuation of its use.

What Tanks Are Included? Underground storage tank is defined as any one or combination of tanks that (1) is used to contain an accumulation of "regulated substances," and (2) whose volume (including connected underground piping) is 10% or more beneath the ground. Some examples are underground tanks storing: 1. gasoline, used oil, or diesel fuel, and 2. industrial solvents, pesticides, herbicides or fumigants.

What Tanks Are Excluded? Tanks removed from the ground are not subject to notification. Other tanks excluded from notification are:

1. farm or residential tanks of 1,100 gallons or less capacity used for storing motor fuel for noncommercial purposes;
2. tanks used for storing heating oil for consumptive use on the premises where stored;
3. septic tanks;
4. pipeline facilities (including gathering lines) regulated under the Natural Gas Pipeline Safety Act of 1968, or the Hazardous Liquid Pipeline Safety Act of 1979, or which is an intrastate pipeline facility regulated under State laws;
5. surface impoundments, pits, ponds, or lagoons;
6. storm water or waste water collection systems;
7. flow-through process tanks;
8. liquid traps or associated gathering lines directly related to oil or gas production and gathering operations;
9. storage tanks situated in an underground area (such as a basement, cellar, mineworking drift, shaft, or tunnel) if the storage tank is situated upon or above the surface of the floor.

What Substances are Covered? The notification requirements apply to underground storage tanks that contain regulated substances. This includes any substance defined as hazardous in section 101 (14) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), with the exception of those substances regulated as hazardous waste under Subtitle C of RCRA. It also includes petroleum, e.g., crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute).

Where To Notify? Completed notification forms should be sent to the address given at the top of this page.

When To Notify? 1. Owners of underground storage tanks in use or that have been taken out of operation after January 1, 1974, but still in the ground, must notify by May 8, 1986. 2. Owners who bring underground storage tanks into use after May 8, 1986, must notify within 30 days of bringing the tanks into use.

Penalties: Any owner who knowingly fails to notify or submits false information shall be subject to a civil penalty not to exceed $10,000 for each tank for which notification is not given or for which false information is submitted.

INSTRUCTIONS

Please type or print in ink all items except "signature" in Section V. **This form must be completed for each location containing underground storage tanks.** If more than 5 tanks are owned at this location, photocopy the reverse side, and staple continuation sheets to this form.

Indicate number of continuation sheets attached. 0

I. OWNERSHIP OF TANK(S)

Owner Name (Corporation, Individual, Public Agency, or Other Entity)
COLUMBIA FORGE + MACH. WORKS

Street Address
8424 N. CRAWFORD

County
MULTNOMAH

City: PORTLAND State: OR. Zip Code: 97203

Area Code Phone Number: (503) 286-3621

Type of Owner (*Mark all that apply* ☒)

☒ Current ☐ Former

☐ State or Local Gov't. ☐ Federal Gov't. ☐ (GSA facility I.D. no.) _____)

☒ Private or Corporate ☐ Ownership uncertain

II. LOCATION OF TANK(S)

(If same as Section 1, mark box here ☒)

Facility Name or Company Site Identifier, as applicable

Street Address or State Road, as applicable

County

City (nearest) State Zip Code

Indicate number of tanks at this location 2

Mark box here if tank(s) are located on land within an Indian reservation or other Indian trust lands ☐

III. CONTACT PERSON AT TANK LOCATION

Name (If same as Section 1, mark box here ☐): HENRY STROMQUIST
Job Title: GENERAL MANAGER
Area Code: (503) Phone Number: 286-3621

IV. TYPE OF NOTIFICATION

☐ Mark box here only if this is an amended or subsequent notification for this location.

V. CERTIFICATION (Read and sign after completing Section VI.)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete.

Name and official title of owner or owner's authorized representative	Signature	Date Signed
HENRY STROMQUIST — GEN. MGR	Henry Stromquist	1/19/87

CONTINUE ON REVERSE SIDE

EPA Form 7530-1(11-85)

Please complete the voluntary UST Survey on Page 4.

B 11575

CRAW00017164

Owner Name (from Section I) COLUMBIA FORGE Location (from Section II) PORTLAND, OR. Page No. 2 of 3 Pages

VI. DESCRIPTION OF UNDERGROUND STORAGE TANKS *(Complete for each tank at this location.)*

Tank Identification No. (e.g., ABC-123), or Arbitrarily Assigned Sequential No. (e.g., 1,2,3...)	Tank No. 1	Tank No. 2	Tank No.	Tank No.	Tank No.
1. Status of Tank *(Mark all that apply ☒)* Currently in Use					
Temporarily Out of Use					
Permanently Out of Use	X	X			
Brought into Use after 5/8/86					
2. Estimated Age (Years)	19	35			
3. Estimated Total Capacity (Gallons)	1000	1000			
4. Material of Construction *(Mark one ☒)* Steel	X	X			
Concrete					
Fiberglass Reinforced Plastic					
Unknown					
Other, Please Specify					
5. Internal Protection *(Mark all that apply ☒)* Cathodic Protection					
Interior Lining (e.g., epoxy resins)					
None	X	X			
Unknown					
Other, Please Specify					
6. External Protection *(Mark all that apply ☒)* Cathodic Protection					
Painted (e.g., asphaltic)					
Fiberglass Reinforced Plastic Coated					
None	X	X			
Unknown					
Other, Please Specify					
7. Piping *(Mark all that apply ☒)* Bare Steel	X	X			
Galvanized Steel					
Fiberglass Reinforced Plastic					
Cathodically Protected					
Unknown					
Other, Please Specify					
8. Substance Currently or Last Stored in Greatest Quantity by Volume *(Mark all that apply ☒)* **a. Empty**		X			
b. Petroleum Diesel					
Kerosene					
Gasoline (including alcohol blends)		X			
Used Oil	X				
Other, Please Specify	BUNKER OIL				
Please **c. Hazardous Substance**					
Indicate Name of Principal CERCLA Substance					
or Chemical Abstract Service (CAS) No.					
Mark box ☒ if tank stores a mixture of substances					
d. Unknown					
9. Additional Information (for tanks permanently taken out of service) a. Estimated date last used (mo/yr)	1975	1960	/	/	/
b. Estimate quantity of substance remaining (gal.)	100	EMPTY			
c. Mark box ☒ if tank was filled with inert material (e.g., sand, concrete)		X			

Form 7530-1 (11-85) Reverse

THANK YOU FOR YOUR ASSISTANCE

B 11576

CRAW00017165

Owner Name (from Section I EPA Form) COLUMBIA FORGE Location (from Section II EPA form) PORTLAND OR. Page 3 of 3 Pages

OREGON UNDERGROUND STORAGE TANK (UST) SURVEY

The underground storage tank program will soon include performance standards for new tanks and regulations for leak detection/prevention and corrective actions which will affect owners and operators of underground storage tanks. In preparation for these new requirements, the Department has prepared a state-wide survey. The Department requests that owners of underground storage tanks complete the survey questions.

Your response to these questions will assist the Department in developing a cost-effective and responsive state-wide regulatory program. In addition, owners of underground storage tanks may find the survey useful in the management of such tanks.

INSTRUCTIONS

Please type or print in ink all items. Please complete one survey form for each location containing underground storage tanks. Tank I.D. should correspond to Tank I.D. on EPA form 7530-1 for the respective facility location. If more than five tanks are owned at this location, photocopy this survey or request additional forms from DEQ, and staple continuation sheets to this survey.

Tank Identification No.	Tank No. 1	Tank No. 2	Tank No.	Tank No.	Tank No.
1. Status of Tank *(Check One)* — If temporarily out of use, Estimated time out of use:					
1 month - 6 months	☐	☐	☐	☐	☐
6 months - 1 year	☐	☐	☐	☐	☐
1 year - 5 years	☐	☐	☐	☐	☐
5 years or more	X	X	☐	☐	☐
Estimated date to be brought back into use (mo/yr)	/	/	/	/	/
2. Was tank new at time of installation? (Y/N)	UNKNOWN	UNKNOWN			
3. Containment Systems *(check one)* — Single-walled tank	X	X	☐	☐	☐
Double-walled tank	☐	☐	☐	☐	☐
Pit-lining system	☐	☐	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
4. Leak Detection System *(check all that apply)* — Visual	☐	☐	☐	☐	☐
Stock inventory	☐	☐	☐	☐	☐
Tile drain	☐	☐	☐	☐	☐
Vapor wells	☐	☐	☐	☐	☐
Sensor instrument (specify type):					
In-ground detector	☐	☐	☐	☐	☐
Within walls of double-walled tank	☐	☐	☐	☐	☐
Ground water monitoring wells	☐	☐	☐	☐	☐
Continuous in piping	☐	☐	☐	☐	☐
Pressure test	☐	☐	☐	☐	☐
Internal inspection	☐	☐	☐	☐	☐
Other, specify					
None	X	X	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
5. Overfill Protection (Yes/No)	NO	NO			
6. Location of Piping *(check all that apply)* — No parts in contact with soil	☐	☐	☐	☐	☐
Parts contacting the soil which are:					
Unprotected metal	X	X	☐	☐	☐
Made of corrosion resistant materials	☐	☐	☐	☐	☐
Corrosion-resisted coated	☐	☐	☐	☐	☐
Cathodically protected	☐	☐	☐	☐	☐
Double-walled	☐	☐	☐	☐	☐
Within a secondary containment	☐	☐	☐	☐	☐
Interior lined	☐	☐	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
7. History of Tank Repairs *(check one except as indicated)* — If tank repaired, indicate date of last repairs (mo/yr)	/	/	/	/	/
None	X	X	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
8. History of Pipe Repairs *(check one except as indicated)* — If pipe repaired, indicate date (mo/yr)	/	/	/	/	/
None	X	X	☐	☐	☐
Unknown	☐	☐	☐	☐	☐

THANK YOU FOR YOUR ASSISTANCE

B 11577

Attachment 3
Fire Marshall Survey and Other Documentation

FORM COMPANY

Due Date: NOVEMBER 30, 1998 | 1997-1998 | Facility ID Number 005730

OREGON STATE FIRE MARSHAL
HAZARDOUS SUBSTANCE INFORMATION SURVEY

PLEASE TYPE OR PRINT ONLY CHANGES OR ADDITIONS IN THE [BRACKETED] AREAS TO THE RIGHT OR BELOW THE PREPRINTED DATA

SECTION A HAZARDOUS SUBSTANCE PRESENCE Check the correct box to the left.

☑ YES ☐ NO Are there hazardous substances present at this site in reportable quantities?
If yes, complete sections A, B, C, and D. If no, complete sections A, B and C.
A hazardous substance is any substance for which a Material Safety Data Sheet (MSDS) is required. If a previously reported substance is no longer present, see instructions for Section A.

☐ YES ☑ NO Are there Extremely Hazardous Substances (EHS) at this site that meet the threshold planning quantities?

☐ YES ☑ NO Is this facility subject to the reporting requirements of Section 112(r) of the Clean Air Act?

SECTION B DEMOGRAPHIC DATA Complete, correct or add information in the [bracketed] areas.

1. SIC CODE 1: 3462 DEFINITION: IRON AND STEEL FORGINGS-MFG
2. SIC CODE 2: DEFINITION:
3. BUSINESS ACTIVITY: STEEL FORGING
4. DUN & BRADSTREET #: 00-902-2104
5. MANAGER'S NAME: ~~VINCE SCHILE - MGR~~ [DOUG McMULLIN GEN. MGR.]
6. SEND TO ATTENTION OF: ~~VINCE SCHILE - MGR~~ [DOUG McMULLIN GEN. MGR]
7. E-MAIL ADDRESS: [dmcmullin@schn.com]
8. BUSINESS NAME: COLUMBIA FORGE & MACHINE
9. DEPT OR DIV:
10. SITE ADDRESS: 3424 N CRAWFORD
CITY: PORTLAND
COUNTY: MULTNOMAH
STATE: OR ZIP CODE: 97203
11. MAILING ADDRESS: 3424 N CRAWFORD
CITY: PORTLAND
COUNTY: MULTNOMAH
STATE: OR ZIP CODE: 97203
12. BUSINESS PHONE: 503-236-3621
13. NUMBER OF EMPLOYEES AT THIS SITE: ~~15~~ 17 [17]
14. EMERGENCY ASSISTANCE CONTACT PERSON FOR THIS SITE: ~~VINCE SCHILE~~ [DOUG McMULLIN]
15. EMERGENCY CONTACT PHONES: (503) DAY 503-236-3621 NIGHT ~~360-256-3351~~ (503) 289-5011
16. RESPONSIBLE FIRE DEPARTMENT: PORTLAND FIRE BUREAU

SPECIAL FIRE DEPARTMENT INFORMATION This section is for information the fire service needs to know in case of an emergency.

17. ☐ YES ☑ NO WRITTEN EMERGENCY PLAN. IF YES, LOCATION:
18. ☐ YES ☑ NO AUTOMATIC FIRE SUPPRESSION SYSTEM PRESENT; e.g., sprinklered, halon system, etc.
19. ☐ YES ☑ NO ARE STORAGE BUILDINGS/TANKS/AREAS PLACARDED ACCORDING TO NFPA 704?
20. ☐ YES ☑ NO ARE OTHER TYPES OF PLACARDS USED?

SECTION C PERSON COMPLETING FORM
This person will be contacted to answer any questions needing clarification.

1. PRINT NAME: DOUG McMULLIN
2. SIGNATURE (REQUIRED): Doug McMullin
3. DATE SURVEY COMPLETED: 11/30/98

DOUG McMULLIN
~~VINCE SCHILE~~ - MGR
COLUMBIA FORGE & MACHINE
3424 N CRAWFORD
PORTLAND OR 97203

RETAIN A COPY OF THIS SURVEY FOR 3 YEARS

PLEASE TYPE OR PRINT ALL ANSWERS. THANK YOU!

FORM
CHEMICAL

7-1998 OREGON STATE FIRE MAR AL
HAZARDOUS SUBSTANCE INFORMATION SURVEY

Facility ID Numbe
005730

SECTION D

SUBSTANCE INFORMATION - TYPE OR PRINT ONLY CHANGES IN THE [BRACKETED] AREAS

COMMON NAME/TRADE NAME: ARGON 75%/CARBON DIOXIDE 25%
HAZARDOUS INGREDIENT IN HIGHEST CONCENTRATION: ARGON

EHS	PHYSICAL STATE (USE TABLE I)	UNIT OF MEASURE (USE TABLE II)	AVG. AMT. CODE (USE TABLE III)	MAX. AMT. CODE (USE TABLE III)	AMT. IN CODE (USE TABLE III)	AMT. OUT CODE (USE TABLE III)	NUMBER OF DAYS ON SITE (3 DIGIT NO.)	STORAGE CODE (USE TABLES IV & V)	HAZARD CLASSES (USE TABLE VI)	CAS NO. (IF KNOWN)
2 (1 - PURE, 2 - MIXTURE)	3	3	10	20			365	L 2 4	2.2	0007440-37-
(1 - NEW, 2 - NO LONGER REPORTABLE)				11	10	00				

STORAGE LOCATIONS AT SITE: WELDING AREA AT REAR OF MAIN BLDG

UN/NA NO. (IF KNOWN): 1956

COMMON NAME/TRADE NAME: ARGON 98%/OXYGEN 2%
HAZARDOUS INGREDIENT IN HIGHEST CONCENTRATION: ARGON

EHS	PHYSICAL STATE (USE TABLE I)	UNIT OF MEASURE (USE TABLE II)	AVG. AMT. CODE (USE TABLE III)	MAX. AMT. CODE (USE TABLE III)	AMT. IN CODE (USE TABLE III)	AMT. OUT CODE (USE TABLE III)	NUMBER OF DAYS ON SITE (3 DIGIT NO.)	STORAGE CODE (USE TABLES IV & V)	HAZARD CLASSES (USE TABLE VI)	CAS NO. (IF KNOWN)
2 (1 - PURE, 2 - MIXTURE)	3	3	10	20			365	L 2 4	2.2	0007440-37-
(1 - NEW, 2 - NO LONGER REPORTABLE)			20		21	00				

STORAGE LOCATIONS AT SITE: WELDING AREA AT REAR OF MAIN BLDG

UN/NA NO. (IF KNOWN): 1956

COMMON NAME/TRADE NAME: DEGREASER 853
HAZARDOUS INGREDIENT IN HIGHEST CONCENTRATION: 2-BUTOXYETHANOL

EHS	PHYSICAL STATE (USE TABLE I)	UNIT OF MEASURE (USE TABLE II)	AVG. AMT. CODE (USE TABLE III)	MAX. AMT. CODE (USE TABLE III)	AMT. IN CODE (USE TABLE III)	AMT. OUT CODE (USE TABLE III)	NUMBER OF DAYS ON SITE (3 DIGIT NO.)	STORAGE CODE (USE TABLES IV & V)	HAZARD CLASSES (USE TABLE VI)	CAS NO. (IF KNOWN)
2 (1 - PURE, 2 - MIXTURE)	2	2	02	02			365	D 1 4	4.5 6.3	0000111-76-
(1 - NEW, 2 - NO LONGER REPORTABLE)					00	00				

STORAGE LOCATIONS AT SITE: OIL STORAGE AREA IN CENTER OF MAIN YARD

UN/NA NO. (IF KNOWN): 0000

COMMON NAME/TRADE NAME: HYDRAULIC OIL
HAZARDOUS INGREDIENT IN HIGHEST CONCENTRATION: HIGHLY REFINED BASE LUBRICATING OILS

EHS	PHYSICAL STATE (USE TABLE I)	UNIT OF MEASURE (USE TABLE II)	AVG. AMT. CODE (USE TABLE III)	MAX. AMT. CODE (USE TABLE III)	AMT. IN CODE (USE TABLE III)	AMT. OUT CODE (USE TABLE III)	NUMBER OF DAYS ON SITE (3 DIGIT NO.)	STORAGE CODE (USE TABLES IV & V)	HAZARD CLASSES (USE TABLE VI)	CAS NO. (IF KNOWN)
2 (1 - PURE, 2 - MIXTURE)	2	2	10	10			365	D 1 4	4.5	0064742-65-
(1 - NEW, 2 - NO LONGER REPORTABLE)					20	20				

STORAGE LOCATIONS AT SITE: VARIOUS TYPES IN OIL STORAGE AREA IN CENTER OF MAIN YARD

UN/NA NO. (IF KNOWN): 1270

FORM
CHEMICAL

1998 OREGON STATE FIRE MARSHAL
HAZARDOUS SUBSTANCE INFORMATION SURVEY

Facility ID Number
005730

SECTION D

SUBSTANCE INFORMATION - TYPE OR PRINT ONLY CHANGES IN THE [BRACKETED] AREAS

COMMON NAME/TRADE NAME: MOTOR OIL
HAZARDOUS INGREDIENT
HIGHEST CONCENTRATION: HIGHLY REFINED BASE OILS

EHS	PHYSICAL STATE (USE TABLE I)	UNIT OF MEASURE (USE TABLE II)	AVG. AMT. CODE (USE TABLE III)	MAX. AMT. CODE (USE TABLE III)	AMT. IN CODE (USE TABLE III)	AMT. OUT CODE (USE TABLE III)	NUMBER OF DAYS ON SITE (3 DIGIT NO.)	STORAGE CODE (USE TABLES IV & V)	HAZARD CLASSES (USE TABLE VI)	CAS NO. (IF KNOWN)
2	2	2	04	04	10	10	365	0 1 4	4.5	0064742-54-7

STORAGE LOCATIONS AT SITE: OIL STORAGE AREA IN CENTER OF MAIN YARD

UN/NA NO. (IF KNOWN): 1270

COMMON NAME/TRADE NAME: ORGANIC COMPOUND 135
HAZARDOUS INGREDIENT
HIGHEST CONCENTRATION: NONE AS PER 29CFR 1910.1200

EHS	PHYSICAL STATE (USE TABLE I)	UNIT OF MEASURE (USE TABLE II)	AVG. AMT. CODE (USE TABLE III)	MAX. AMT. CODE (USE TABLE III)	AMT. IN CODE (USE TABLE III)	AMT. OUT CODE (USE TABLE III)	NUMBER OF DAYS ON SITE (3 DIGIT NO.)	STORAGE CODE (USE TABLES IV & V)	HAZARD CLASSES (USE TABLE VI)	CAS NO. (IF KNOWN)
2	2	2	03	03	04	00	365	0 1 4	9.0	

STORAGE LOCATIONS AT SITE: OIL STORAGE AREA IN CENTER OF MAIN YARD

UN/NA NO. (IF KNOWN): 0000

COMMON NAME/TRADE NAME: OXYGEN
HAZARDOUS INGREDIENT
HIGHEST CONCENTRATION: OXYGEN

EHS	PHYSICAL STATE (USE TABLE I)	UNIT OF MEASURE (USE TABLE II)	AVG. AMT. CODE (USE TABLE III)	MAX. AMT. CODE (USE TABLE III)	AMT. IN CODE (USE TABLE III)	AMT. OUT CODE (USE TABLE III)	NUMBER OF DAYS ON SITE (3 DIGIT NO.)	STORAGE CODE (USE TABLES IV & V)	HAZARD CLASSES (USE TABLE VI)	CAS NO. (IF KNOWN)
1	3	3	20	20	21	00	365	L 2 4	2.2 5.1	0007782-44-7

STORAGE LOCATIONS AT SITE: WELDING AREA AT REAR OF MAIN BLDG

UN/NA NO. (IF KNOWN): 1072

COMMON NAME/TRADE NAME: PROPANE
HAZARDOUS INGREDIENT
HIGHEST CONCENTRATION: PROPANE

EHS	PHYSICAL STATE (USE TABLE I)	UNIT OF MEASURE (USE TABLE II)	AVG. AMT. CODE (USE TABLE III)	MAX. AMT. CODE (USE TABLE III)	AMT. IN CODE (USE TABLE III)	AMT. OUT CODE (USE TABLE III)	NUMBER OF DAYS ON SITE (3 DIGIT NO.)	STORAGE CODE (USE TABLES IV & V)	HAZARD CLASSES (USE TABLE VI)	CAS NO. (IF KNOWN)
1	3	2	10	10	20	00	365	A 2 4	2.1 6.3	0000074-98-6

STORAGE LOCATIONS AT SITE: TANK LOCATED BY FENCE IN CENTER OF MAIN YARD

UN/NA NO. (IF KNOWN): 1075

FORM
CHEMICAL

7-1998 OREGON STATE FIRE MAR AL
HAZARDOUS SUBSTANCE INFORMATION SURVEY

Facility ID Numbe
005730

SECTION D

SUBSTANCE INFORMATION - TYPE OR PRINT ONLY CHANGES IN THE [BRACKETED] AREAS

COMMON NAME/TRADE NAME: PROPANE
HAZARDOUS INGREDIENT
IN HIGHEST CONCENTRATION: PROPANE

EHS	PHYSICAL STATE (USE TABLE I)	UNIT OF MEASURE (USE TABLE II)	AVG. AMT. CODE (USE TABLE III)	MAX. AMT. CODE (USE TABLE III)	AMT. IN CODE (USE TABLE III)	AMT. OUT CODE (USE TABLE III)	NUMBER OF DAYS ON SITE (3 DIGIT NO.)	STORAGE CODE (USE TABLES IV & V)	HAZARD CLASSES (USE TABLE VI)	CAS NO. (IF KNOWN)
1 - PURE / 2 - MIXTURE	3	2	03	03			365	L 2 4	2.1 3.3	0000074-98-6
1 - NEW / 2 - NO LONGER REPORTABLE				04	11	00				

STORAGE LOCATIONS AT SITE: WELDING AREA AT REAR OF MAIN BLDG

UN/NA NO. (IF KNOWN): 1075

COMMON NAME/TRADE NAME: THINNER 350B
HAZARDOUS INGREDIENT
IN HIGHEST CONCENTRATION: PETROLEUM NAPHTHA

EHS	PHYSICAL STATE (USE TABLE I)	UNIT OF MEASURE (USE TABLE II)	AVG. AMT. CODE (USE TABLE III)	MAX. AMT. CODE (USE TABLE III)	AMT. IN CODE (USE TABLE III)	AMT. OUT CODE (USE TABLE III)	NUMBER OF DAYS ON SITE (3 DIGIT NO.)	STORAGE CODE (USE TABLES IV & V)	HAZARD CLASSES (USE TABLE VI)	CAS NO. (IF KNOWN)
1 - PURE / 2 - MIXTURE	2	2	04	04			365	D 1 4	3.3	0064742-47-8
1 - NEW / 2 - NO LONGER REPORTABLE					04	04				

STORAGE LOCATIONS AT SITE: OIL STORAGE AREA IN CENTER OF MAIN YARD

UN/NA NO. (IF KNOWN): 1255

COMMON NAME/TRADE NAME:
HAZARDOUS INGREDIENT
IN HIGHEST CONCENTRATION:

EHS	PHYSICAL STATE (USE TABLE I)	UNIT OF MEASURE (USE TABLE II)	AVG. AMT. CODE (USE TABLE III)	MAX. AMT. CODE (USE TABLE III)	AMT. IN CODE (USE TABLE III)	AMT. OUT CODE (USE TABLE III)	NUMBER OF DAYS ON SITE (3 DIGIT NO.)	STORAGE CODE (USE TABLES IV & V)	HAZARD CLASSES (USE TABLE VI)	CAS NO. (IF KNOWN)
1 - PURE / 2 - MIXTURE										
1 - NEW / 2 - NO LONGER REPORTABLE										

STORAGE LOCATIONS AT SITE

UN/NA NO. (IF KNOWN)

COMMON NAME/TRADE NAME:
HAZARDOUS INGREDIENT
IN HIGHEST CONCENTRATION:

EHS	PHYSICAL STATE (USE TABLE I)	UNIT OF MEASURE (USE TABLE II)	AVG. AMT. CODE (USE TABLE III)	MAX. AMT. CODE (USE TABLE III)	AMT. IN CODE (USE TABLE III)	AMT. OUT CODE (USE TABLE III)	NUMBER OF DAYS ON SITE (3 DIGIT NO.)	STORAGE CODE (USE TABLES IV & V)	HAZARD CLASSES (USE TABLE VI)	CAS NO. (IF KNOWN)
1 - PURE / 2 - MIXTURE										
1 - NEW / 2 - NO LONGER REPORTABLE										

STORAGE LOCATIONS AT SITE

UN/NA NO. (IF KNOWN)

FORM
CHEMICAL

1 /-1998 OREGON STATE FIRE MAR AL

Facility ID Numbe:
005730

HAZARDOUS SUBSTANCE INFORMATION SURVEY

SECTION D

SUBSTANCE INFORMATION - TYPE OR PRINT ONLY CHANGES IN THE [BRACKETED] AREAS

'OMMON NAME/TRADE NAME:
HAZARDOUS INGREDIENT
N HIGHEST CONCENTRATION:

EHS	112(r)	PHYSICAL STATE	UNIT OF MEASURE	AVG. AMT. CODE	MAX. AMT. CODE	AMT. IN CODE	AMT. OUT CODE	NUMBER OF DAYS ON SITE	STORAGE CODE	HAZARD CLASSES	CAS NO. (IF KNOWN)
		USE TABLE II	USE TABLE II	USE TABLE III	USE TABLE III	USE TABLE III	USE TABLE III	3 DIGIT NO.	USE TABLES IV & V	USE TABLE VI	
1 - PURE 2 - MIXTURE											
1 - NEW 2 - NO LONGER REPORTABLE											

STORAGE LOCATIONS AT SITE

UN/NA NO. (IF KNOWN)

:OMMON NAME/TRADE NAME:
HAZARDOUS INGREDIENT
N HIGHEST CONCENTRATION:

EHS	112(r)	PHYSICAL STATE	UNIT OF MEASURE	AVG. AMT. CODE	MAX. AMT. CODE	AMT. IN CODE	AMT. OUT CODE	NUMBER OF DAYS ON SITE	STORAGE CODE	HAZARD CLASSES	CAS NO. (IF KNOWN)
		USE TABLE II	USE TABLE II	USE TABLE III	USE TABLE III	USE TABLE III	USE TABLE III	3 DIGIT NO.	USE TABLES IV & V	USE TABLE VI	
1 - PURE 2 - MIXTURE											
1 - NEW 2 - NO LONGER REPORTABLE											

STORAGE LOCATIONS AT SITE

UN/NA NO. (IF KNOWN

:OMMON NAME/TRADE NAME:
HAZARDOUS INGREDIENT
N HIGHEST CONCENTRATION:

EHS	112(r)	PHYSICAL STATE	UNIT OF MEASURE	AVG. AMT. CODE	MAX. AMT. CODE	AMT. IN CODE	AMT. OUT CODE	NUMBER OF DAYS ON SITE	STORAGE CODE	HAZARD CLASSES	CAS NO. (IF KNOWN
		USE TABLE II	USE TABLE II	USE TABLE III	USE TABLE III	USE TABLE III	USE TABLE III	3 DIGIT NO.	USE TABLES IV & V	USE TABLE VI	
1 - PURE 2 - MIXTURE											
1 - NEW 2 - NO LONGER REPORTABLE											

STORAGE LOCATIONS AT SITE

UN/NA NO. (IF KNOWN

:OMMON NAME/TRADE NAME:
HAZARDOUS INGREDIENT
N HIGHEST CONCENTRATION:

EHS	112(r)	PHYSICAL STATE	UNIT OF MEASURE	AVG. AMT. CODE	MAX. AMT. CODE	AMT. IN CODE	AMT. OUT CODE	NUMBER OF DAYS ON SITE	STORAGE CODE	HAZARD CLASSES	CAS NO. (IF KNOWN
		USE TABLE II	USE TABLE II	USE TABLE III	USE TABLE III	USE TABLE III	USE TABLE III	3 DIGIT NO.	USE TABLES IV & V	USE TABLE VI	
1 - PURE 2 - MIXTURE											
1 - NEW 2 - NO LONGER REPORTABLE											

STORAGE LOCATIONS AT SITE

UN/NA NO. (IF KNOWN

CT OF

PORTLAND, OREGON

FIRE PREVENTION DIVISION

Track #	Account #
151	E08-074-001

CITY OF PORTLAND
Hazardous Substance Possession Fee

Please Remit: $*450.00

Must be received by: 01/15/90

COLUMBIA FORGE & MACHINE
8424 N CRAWFORD
PORTLAND, OR 97203

Late payments will be assessed an additional 1% per month after the due date.

Check Payable to: CITY TREASURER
Remit to: Portland Fire Bureau
55 S.W. Ash Street
Portland, Oregon 97204

ach and return upper portion with remittance ·····>

State and Federal laws have been enacted to provide state and local emergency services and the community with information concerning hazardous substance locations and hazards. The legislation also provides that the local community participate and plan for responding to hazardous substance incidents.

Hazardous substance fees collected by the City of Portland will be used to fund a local data storage and retrieval system for hazardous chemical information provided by the state. This system will provide emergency responders with timely on-site information which will enable them to effectively manage incidents while minimizing the danger to emergency response personnel and the public.

This fee is not a permit fee and does not indicate that the occupancy and use of a building is in compliance with Fire and Building Regulations. The fees collected for this purpose are not a duplication of fees charged by the Department of Environmental Quality or the State Fire Marshal's Office.

The annual hazardous substance fee will be used to administer a local information and protection program in accordance with Title 31 of the City Code, Fire Regulations, sections 31.80.010-31.80.070, "Hazardous Substances Emergency Planning." The fees will provide the Portland Bureau of Fire, Rescue & Emergency Services with a computerized information system that will be used by ALL emergency responders. This system will also ensure that emergency personnel have immediate access to information concerning the type of material, location, degree of hazard, available emergency systems and associated information so that they may effectively and safely deal with hazardous substance emergencies.

You are entitled to appeal specific requirements of these regulations by written notification as set forth in section 31.10.150 of the City Code, Title 31.

Appeals should be directed to: Hazardous Substance Section
55 S.W. Ash Street
Portland, Oregon 97204

RECEIVED COLUMBIA FORGE & MACHINE NOV 8 89

If you have any questions about this bill, please call the Hazardous Substance Section at 760-1081.

B 11289 Track: 151 Account: E08-074-001

Billing: 11/15/89 Due: 01/15/90 Amount: $*450.00

Late payments will be assessed an additional 1% per month after the due date.

HAZARDOUS INVENTORY DATA

CHEMICAL NAME:	CHEMICAL HAZARD CLASS:	STATE QTY. RANGE:	QUANTITY RANGE:	FEE:
** 151 005730, COLUMBIA FORGE & MACHINE				
8424 N CRAWFORD				
DEGREASER 853	UNKNOWN, PROBABLY CLASS C	0-99	0-199	0.00
ORGANIC COMPOUND 135	UNKNOWN, PROBABLY CLASS C	100-999	200-999	50.00
PROPANE	2.1, FLAMMABLE GAS	100-999	200-999	50.00
PROPYLENE	2.1, FLAMMABLE GAS	0-99	0-199	0.00
BLUE SHIELD 4	2.2, NONFLAMMABLE GAS	1,000-9,999	1,000-9,999	100.00
BLUE SHIELD 8	2.2, NONFLAMMABLE GAS	1,000-9,999	1,000-9,999	100.00
THINNER 350B	3.2, FLAMM. LIQ. FP 0-73 F	0-99	0-199	0.00
HYDRAULIC OIL	4.2, COMBUSTIBLE MATERIAL	100-999	200-999	50.00
MOTOR OIL	4.2, COMBUSTIBLE MATERIAL	0-99	0-199	0.00
GAS AIR FUEL	5.1, OXIDIZERS	0-99	0-199	0.00
OXYGEN	5.1, OXIDIZERS	1,000-9,999	1,000-9,999	100.00
** Subtotal **				450.00
*** Total ***				450.00

B 11290

ORDINANCE 162225

Chapter 31.40
(and a new Table 40-B is substituted to read:)

CHAPTER 31.40

TABLE 40 - B

(A) RADIOACTIVE SUBSTANCES OR RADIOACTIVE WASTES

(S) SOLIDS (in pounds)	(L) LIQUIDS (in gallons)	(G) GASES COMPRESSED (cu. ft. at STP)	FEE
>0 - 99	>0 - 99	>0 - 99	$ 50
100 - 999	100 - 999	100 - 999	100
1,000 - 9,999	1,000 - 9,999	1,000 - 9,999	200
10,000 - 99,999	10,000 - 99,999	10,000 - 99,999	600
100,000 - 999,999	100,000 - 999,999	100,000 - 999,999	1,000
1,000,000 - up	1,000,000 - up	1,000,000 - up	1,400

(B) CLASS A & B POISONS; IRRITATING MATERIALS; CLASS A, B & C EXPLOSIVES, BLASTING AGENTS AND HIGHLY TOXIC SUBSTANCES

(S) SOLIDS (in pounds)	(L) LIQUIDS (in gallons)	(G) GASES COMPRESSED (cu. ft. at STP)	FEE
>0 - 9	>0 - 4	>0 - 19	$ 25
10 - 99	5 - 99	20 - 99	50
100 - 999	100 - 999	100 - 999	100
1,000 - 9,999	1,000 - 9,999	1,000 - 9,999	200
10,000 - 99,999	10,000 - 99,999	10,000 - 99,999	600
100,000 - 999,999	100,000 - 999,999	100,000 - 999,999	1,000
1,000,000 - up	1,000,000 - up	1,000,000 - up	1,400

* (C) ALL OTHER REGULATED HAZARDOUS SUBSTANCES, MATERIALS AND WASTES

(S) SOLIDS (in pounds)	(L) LIQUIDS (in gallons)	(G) GASES COMPRESSED (cu. ft. at STP)	FEE
0 - 499	0 - 54	0 - 199	$ 0
500 - 999	55 - 999	200 - 999	50
1,000 -9,999	1,000 - 9,999	1,000 - 9,999	100
10,000 - 99,999	10,000 - 99,999	10,000 - 99,999	200
100,000 - 999,999	100,000 - 999,999	100,000 - 999,999	600
1,000,000 - up	1,000,000 - up	1,000,000 - up	1,000

* Permit fees for ordinary flammable and combustible liquids such as motor fuels contained in approved underground storage tanks are $25 per tank per year. Heating fuels stored in approved underground tanks are exempt from this fee schedule.

CRAW00017175

V. LIST OF HAZARDOUS CHEMICALS (con't.)

HAZARDOUS CHEMICALS	LOCATION
G. Miscellaneous	
Quick Set Adhesive 404	Maint. Area
Never-seez Anti-Seize Compound	Maint. Area
Floor Dry	Warehouse
Loctite Adhesive/Sealant 271	Maint. Area
Crack Check Cleaner C-F (Spray)	Supply Closet
Crack Check Developer D-NF (Spray)	Supply Closet
Crack Check Penetrant P-HF (Spray	Supply Closet
Thread Sealant w/Teflon 14H,14D,14F	Maint. Area
Propane	Center Yard
Fel-Pro N-500 Antiseize	Maint. Area
Devon Plastic Steel Putty	Maint. Area
50 Hardhat Aeorsol Spray	Supply Closet

V. LIST OF HAZARDOUS CHEMICALS (con't.)

HAZARDOUS CHEMICALS	LOCATION
F. Furnace Construction Materials	
Marinite M Calcium Silicate Board	Warehouse
Lytherm Ceremic Fiber Papers	Warehouse
Mizzou Castable Plus	Warehouse
A.P. Green: Refractory Bricks or Slopes	Warehouse
A.P. Green: Insulating Fire Brick: G 3	Warehouse
A.P. Green: High Duty Fireclay Brick: Idaho	Warehouse
Cerachrome Blanket Refractory	Warehouse
K-FAC 19 Board	Warehouse
Sairset Mortar	Warehouse
Durablanket 2600	Warehouse

V. LIST OF HAZARDOUS CHEMICALS (con't.)

HAZARDOUS CHEMICALS	LOCATION
E. Paints	
Sparvar Spray Paint - Metallic Item Nos. S-121,S-122,S-123	Supply Closet
Sparvar Fluorescent Spray Paint Item Nos. S-311,S-312	Supply Closet
Sparvar Spray Paint - Flat Item No. S-111	Supply Closet
Sparvar Spray Paint Item Nos. S-101,S-103,S-117,S-118	Supply Closet
Sparvar Spray Paint Covers 25 Items	Supply Closet
Rodda Alkyd Enamel 817	Warehouse
Rodda Alkyd Enamel 812Spray Paint	Supply Closet
Rodda Alkyd Primer Red Oxide	Supply Closet

V. LIST OF HAZARDOUS CHEMICALS (con't.)

HAZARDOUS CHEMICALS	LOCATION
D. Welding and Soldering Supplies	
Oxygen	Welding Area
Liquid Air Fuel Gas	Welding Area
Blue Shield Nos.6,7 or 8 gas mixture	Welding Area
Blue Shield Nos. 4 or 5 gas mixture	Welding Area
Welco 1620 Auto Spatter Compound	Welding Area
Fleetweld 35 Welding rod	Welding Area
UTP 653 Stainless welding rod	Welding Area
UTP 65 312 Stainless Welding rod	Welding Area
Jet-LH78 Welding Rod (E7018)	Welding Area
Stainless Steel Welding Electrodes	Welding Area
Stainless Steel Welding Wire	Welding Area
WeldMold Stick Electrode	Welding Area
Silvaloy 45 Silver Solder	Welding Area
Ultra Flux	Welding Area
Braze Welding Wire & Rod	Welding Area
E7024 Welding Rod	Welding Area
E6013 Welding Rod	Welding Area
Tool Steel Flux-Cored Wire	Welding Area
Dual Shield T-1 and T-2 Flux-Cored Welding Rods	Welding Area
Mild and Low Alloy Steel Welding Wire	Welding Area
Fuel-Gas-Propylene	Welding Area

V. LIST OF HAZARDOUS CHEMICALS (con't.)

HAZARDOUS CHEMICALS	LOCATION
C. Solvents and Thinners	
Chevron Thinner 350 B	Oil Storage
Rodda Thinner: Synthetic Reducer	Warehouse==
853 Degreaser	Oil Storage

V. LIST OF HAZARDOUS CHEMICALS (con't.)

HAZARDOUS CHEMICALS	LOCATION
B. Oils and Lubricants	
Unocal Unax AW 68	Oil Storage
Unocal Unax AW 46	Oil Storage
Unocal Turbine Oil 68	Oil Storage
Unocal Unoba EP Grease 2	Oil Storage
Unocal Marok 68 Oil	Oil Storage
Cimperial 1011 Coolant	Oil Storage
Cimclean 30 Coolant cleaner	Oil Storage
Soluble Organic Compound #135-	Oil Storage
die lube	Oil Storage
Unocal Soluble Oil 10 coolant	Oil Storage
Unocal Heavy Duty Motor Oil 30	Oil Storage
Chevron Insulating Oil	Oil Storage
Lubrizol 5525	Oil Storage
Unocal Hydraulic Oil AW 68	Oil Storage
Unocal Koolkut II HD	Oil Storage
Unocal Marok 220	Oil Storage
Anderal 500 Oil	Oil Storage
29 Moly Cart	Oil Storage
81 BP-2 (formerly 81 EP LIght)	Oil Storage
Union Turbine Oil 100, 150	Oil Storage

Attachment 4
Transformer Spill Documentation

Attachment 5
Underground Storage Tank Lab Reports

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

March 24, 1987
Log #A870319-K
PO#: 2864

Columbia Forge & Machine
8424 N. Crawford St.
Portland, Oregon 97203

Attention: John Shore

Analysis Requested: Total Hydrocarbons

Sample ID: #3 Weld Shop

Sample Date: March 19, 1987

Sample Received: March 19, 1987

ANALYSIS	RESULTS
Gasoline	< 4 mg/kg
Diesel	< 4 mg/kg

Analysis by capillary GC/FID

The less than "<" symbol means none detected at or above the indicated value and represents the detection limit for the method.

Approved,

Susan M. Brillante

Susan M. Brillante,
Laboratory Director

Sincerely,

Susan M. Coffey

Susan M. Coffey,
President

SMC/gs

soil analy
weld sh
(no

This report is for the sole and exclusive use of the above client. Samples are retained a maximum of 15 days from the date of this letter.

B 11592

Attachment 6
Transformer Sampling and Analysis Reports

CROSBY & OVERTON, INC.

5420 N. LAGOON
PORTLAND, OREGON 97217
283-1150 or 289-5749

HEAVY DUTY CLEANING

24 HOUR SERVICE

P.O. BOX 1085
20245 76th
SOUTH KENT, WA 98031

January 15, 1988

John Shore
Production Manager
Columbia Forge & Machine Works, Inc.
8424 N. Crawford Street
Portland, OR 97203

RE: Cleaning of PCB contaminated transformer; job summary

Dear John:

On December 14, 1987 Crosby & Overton removed a transformer from a piece of equipment at your facility. The transformer was brought to C & O's shop where it was cleaned; subsequently a wipe sample was taken (N.W.T. report #310693). Because of the past difficulties with cleaning this transformer and the fact that PCB's were still detectable after this thorough cleaning, Randy Rees (of this office) advised the cleaning process be repeated (as discussed with you on or about December 21, 1988). December 21 the transformer was cleaned and sampled a second time (N.W.T. report #310875).

As you can see from the attached lab analysis the transformer appeared dirtier the after the second sampling than it had after the first. Apparently, the location of the first wipe sample was unrepresentative of the overall cleanliness of the transformer.

Cleaning method

The transformer was cleaned twice using the same methodology. First the unit was completely wiped using rags and liberal amount of Power Cleaner 155, a Penetone Corp. product. Power Cleaner is a heavy duty alkaline liquid cleaner designed for cleaning PCB contaminated materials. Then the unit was thoroughly steam cleaned. Then a second washing was completed using kerosene and rags (a common method of cleaning up PCB spills) followed by a second steam cleaning.

B 11443

Currently, the transformer is back at your facility awaiting final disposition. Due to the inability to get it clean, a suitable disposal facility is being sought, at your request.

Sincerely,

CROSBY & OVERTON, INC.

Jeffrey T. Wallace
Hazmat Technical Supervisor

JTW:dk

d30.jw

B 11444

NORTHWEST TESTING LABORATORIES, INC.

CONSTRUCTION INSPECTION
MATERIALS INSPECTION
CHEMICAL ANALYSIS
PHYSICAL TESTING

5405 N. Lagoon Avenue
P.O. Box 17126
Portland, Oregon 97217-0126
Phone: (503) 289-1778

NON-DESTRUCTIVE TESTING
WELDING CERTIFICATION
SOIL TESTING
ASSAYING

December 22, 1987

Crosby & Overton
5420 N. Lagoon
Portland, Oregon 97217

Attention: Mr. Jeff Wallace

Subject: Analysis on one (1) sample received on 12-14-87, per your P.O. Number 22041

REPORT:

Item: Hexane Wipe -120

Reference: Columbia Forge

Analysis:

Total PCB's, micrograms 7.5

Respectfully,
NORTHWEST TESTING LABORATORIES, INC.

Howard B. Holmes,
Assistant Supervisor, Chemistry

Report Number: 310693

B 11445

NORTHWEST TESTING LABORATORIES, INC.

CONSTRUCTION INSPECTION
MATERIALS INSPECTION
CHEMICAL ANALYSIS
PHYSICAL TESTING

5405 N. Lagoon Avenue
P.O. Box 17126
Portland, Oregon 97217-0126
Phone: (503) 289-1778

NON-DESTRUCTIVE TESTING
WELDING CERTIFICATION
SOIL TESTING
ASSAYING

December 28, 1987

Crosby & Overton
5420 N. Lagoon
Portland, Oregon 97217

Attention: Mr. Jeff Wallace

Subject: Analysis on three (3) samples received on 12-21-87, per your P.O. Number 22041.

REPORT:

Item: Hexane Swab Sample

Reference: Columbia Forge

Analysis:

	TOTAL PCB's (1260) micrograms
121 (Blank)	2.5
122 (Transformer Bottom)	12
123 (Transformer Side)	270

Respectfully,
NORTHWEST TESTING LABORATORIES, INC.

Fred Thomas, Chemist

Howard B. Holmes
Howard B. Holmes
Assistant Supervisor, Chemistry

Report Number: 310875

B 11446

AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE

Water, Food & Research Lab, Inc.

Laboratory: 13015 S.W. Pacific Hwy., Tigard, Oregon 97223
Mailing Address: P.O. Box 19700, Portland, Oregon 97219
Telephone (503) 639-9311

Problem Solvers

COLUMBIA FORGE & MACHINE WORKS, INC.
ATTN: HENRY STROMQUIST, GEN MGR.
8424 N. CRAWFORD STREET
PORTLAND, OR 97203

SAMPLE NO # 4720

PHONE 286-3621

CC: MANUFACTURING MANAGEMENT, INC.
ATTN: NORMAN WEBB, CORP. ENV. OFFICER
444 PORT AVENUE
ST HELENS, OREGON 97051

241-4796

CHEMICAL CONTAMINANTS LABORATORY REPORT
********** OF JUNE 1987 **********

SAMPLE: SPECIAL SAMPLE -LEAK FROM TRANSFORMER ON EQUIPMENT

SAMPLER: CERTIFIED SAMPLED BY PBS FROM LAB

LOCATION: UNDER TRANSFORMER ON EQUIPMENT, LIQUID POOLED IN PAN.

DATE SAMPLED: 05-28-87 AT 1130 HRS BY PS

DATE RECEIVED: 05-28-87 (PRIORITY ANALYSIS

CONTAMINANT	EPA METHOD	LIMIT	RESULTS	ANAL DATE	ANALYST
**********	******	*PPM*	* ****PPM*****	*********	*******
PCB'S	EPA		990,000 PPM	05-29-87	L.G.
			(99% PURE, AL 1254)		

****

CERTIFIED BY:

TESTED BY EPA CERTIFIED LAB, COL LAB ID # 14817

RECOMMENDATIONS: SPECIAL CLEANUP PERSONNEL NEEDED TO HANDLE HAZARDOUS WASTE MATERIAL.

PAUL B. STEVENS
Microbiologist/Biochemist
LAB DIRECTOR (EPA/OSHD # 24)

< = LESS THAN OR NONE DETECTED
ALL RESULTS IN PPM = MG/L

B 11458

CERTIFIED

Attachment 7
BES Storm Water Sample Results

City of Portland
Water Pollution Control Laboratory
Laboratory Analysis Report

Sample Date/Time	6/17/97 17:10	**System ID** AB12647	**Sample ID** SRP970116

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Proj./Company Name:	BES INVESTIGATIONS	**Date Received:**	6/17/97
Address/Location:	COLUMBIA FORGING N CRAWFORD	**Sample Status:**	REPORT QUEUE
Proj Subcategory:	ENVIRONMENTAL COMPLIANCE	**Sample Type:**	GRAB
Sample Point Code:	0	**Sample Matrix:**	SURFWTR
IMS File:	3050.004	**Collected By:**	RMC

Comments:

Test Parameter	Result	Units	MDL	Method
MET ICP METALS (HIGH-LEVEL)				
CADMIUM	<0.001	mg/L	0.001	EPA 200.7
CHROMIUM	<0.003	mg/L	0.003	EPA 200.7
COPPER	0.010	mg/L	0.004	EPA 200.7
LEAD	<0.020	mg/L	0.020	EPA 200.7
MOLYBDENUM	<0.003	mg/L	0.003	EPA 200.7
NICKEL	<0.004	mg/L	0.004	EPA 200.7
SELENIUM	0.047	mg/L	0.020	EPA 200.7
ZINC	0.065	mg/L	0.001	EPA 200.7

End of Report for Sample ID: SRP970116

6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656

Report Date: 7/1/97