Northwest EnviroService Inc.

Western Blower Property

RCRA Closure Sampling Results

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Introduction

From 1987 until 1995, Northwest EnviroService Inc. (NWES) operated a hazardous waste treatment and storage facility whose operations were regulated by the Washington State Department of Ecology (Ecology) under the Resource Conservation and Recovery Act (RCRA). NWES discontinued its hazardous waste operations in February 1995. Currently, NWES is proceeding with RCRA closure of the facility. This report summarizes the sampling results conducted in support of closure for that portion of the NWES facility known as the Western Blower property, located at 1700 Airport Way South.

Operations Conducted on the Western Blower Property

Hazardous waste operations have not been conducted on the Western Blower property since 1995. The Western Blower property encompasses former NWES operational areas 11 and 12. Areas 11 and 12 were covered with concrete pavement before NWES commenced operations in 1987. The pavement was routinely inspected and repaired (i.e., crack sealing). Care of the pavement, combined with spill prevention practices reduced the likelihood of any contaminated release to subpavement soils.

The RCRA regulated activities that historically have occurred in Areas 11 and 12 are described below:

- Blending of paint and paint-related wastes was conducted in Area 11. These activities were performed in compliance with the Dangerous Waste Regulations recycling exemptions (WAC 173-303). These wastes were processed and pumped to a dedicated tank located within the South Tank farm on the NWES property adjacent to the Western Blower property or repackaged and stored on the adjacent NWES property. All the paint related wastes were shipped offsite to a permitted energy recovery facility or to a permitted disposal facility.
- A solids energy recovery program also occurred in Area 11. F-listed solvent rags were received by NWES as solid wastes. The rags were compacted in a rag baler and then shipped to an offsite incinerator. The liquids collected from the compactor were transferred to the dedicated tank located within the South Tank Farm for later shipment to the offsite energy recovery facility.
- Area 11 was also the location where aerosol cans were depressurized. Empty cans were punctured. Gas residues were collected in activated carbon filters and liquids were transferred to a tank located within the South Tank Farm for offsite energy recovery.

- Administrative and warehousing activities were conducted in Area 12. Sealed, containerized wastes were unloaded from trucks at the load/unload dock and transported to the adjacent NWES property for processing.

Soil and Concrete Sample Collection - Field Sampling and Analytical Methods

Samples were collected to determine if NWES operations on the Western Blower property impacted the environment. Three concrete samples were collected from the loading dock surface and four soil samples were collected from beneath the driveway in Areas 11 and 12 on January 23 and 25, 1996. Sampling procedures were conducted according to Appendix A, Field Sampling and Analysis Plan of the draft *NWES Interim Status Closure Plan, July, 1995.*

As agreed with Ecology and US EPA Region 10, the samples were analyzed for 40 CFR 264, Appendix IX compounds that have comparable Model Toxics Control Act (MTCA) Method B soil cleanup levels (CULs) and were associated with NWES operations. A total of 172 chemical constituents were analyzed for including:

- volatile organic compounds
- semivolatile organic compounds
- pesticides /PCBs
- organophosphorous pesticides
- sulfide
- TPH
- dioxins
- metals and cyanide

Because total petroleum hydrocarbons (TPH) are not either Method B or Appendix IX compound MTCA Method A soils cleanup levels were used for comparison. Table A-1 in Appendix A lists these compounds by analytical group. Table A-2 in Appendix A summarizes all of the detected compounds. Appendix B contains the analytical data quality assurance/quality control summary, and Appendix C contains the Laboratory Data Reports.

Out of all the compounds tested for, only six constituents were detected at levels exceeding their respective cleanup levels. This included:

One semivolatile compound (benzo(a)pyrene), four inorganic compounds (arsenic, beryllium, cadmium, and lead), and TPH were detected at concentrations above their respective MTCA Method B CUL. Table 1 presents these results. A discussion of these results and their significance follows:

Table 1
Western Blower Sampling Results - MTCA Method B Soil CULs Exceedance

Sample ID	Chemical Group	Parameter	MTCA Method B Soil Cleanup Level (mg/kg)	NWES Sample Concentration (mg/kg)	Lab Qualifier
A11-S001	Inorganics	ARSENIC	1.667	7.800	
A11-S001	Inorganics	LEAD	250	315	N*J
A11-S001	Semivolatiles	BENZO(a)PYRENE	0.137	0.33	J
A11-S001	TPH	TPH	200*	580	
A11-S002	Inorganics	ARSENIC	1.667	5.3	
A11-S-002	Inorganics	BERYLLIUM	0.233	0.27	B
A12-C-001	Inorganics	ARSENIC	1.667	7	B
A12-C-001	Inorganics	BERYLLIUM	0.233	0.28	B
A12-C-001	TPH	TPH	200	410	J
A12-C-002	Inorganics	ARSENIC	1.667	6.2	BJ
A12-C-002	Inorganics	BERYLLIUM	0.233	0.31	BJ
A12-C-002	Inorganics	CADMIUM	80	200	J
A12-C-002	TPH	TPH	200	1100	J
A12-C-003	Inorganics	ARSENIC	1.667	15.3	
A12-C-003	Inorganics	BERYLLIUM	0.233	0.26	B
A12-C-003	TPH	TPH	200	550	
A12-S-001	Inorganics	ARSENIC	1.667	6	
A12-S-001	Semivolatiles	BENZO(A)PYRENE	0.137	0.15	J
A12-S-002	Inorganics	ARSENIC	1.667	4.7	J
A12-S-002	TPH	TPH	200	350	J

*Value listed is for MTCA Method A CUL for Diesel.

Organic Compounds

Benzo(a)pyrene. Two soil samples exceeded the MTCA Method B soil CUL level of 0.137 mg/kg for benzo(a)pyrene: A11-S-001 (0.33 mg/kg) and A12-S-001 (0.15 mg/kg). Both sample concentrations were flagged as estimates by the analytical laboratory because the concentrations were below the analytical reporting limit (see Table B-1 in Appendix B).

Benzo(a)pyrene, a polynuclear aromatic hydrocarbon (PAH) compound, is not associated with past facility treatment operations. Further, there are no recorded spills or releases which would account for its presence at the facility. Consequently, the presence of PAHs is believed to be due to background sources. Benzo(a)pyrene, along with several other PAH compounds have been detected throughout the Puget Sound Region. The presence of PAH compounds in the soil sampled at NWES may be attributable to past industrial activities in the Puget Sound Region or be naturally occurring. The industrial activities include coal shipping or air pollution from coal combustion which was not uncommon in the Puget

Sound Region during the first half of the 20th century. A data review of five industrial facilities located along the Duwamish River found that PAHs were detected in all five sites in both soil and groundwater (CH2M HILL, February 1995).

It is also possible that benzo(a)pyrene detected in the two soil samples may be derived from natural weathering of regional coal-bearing formations, including those that drained into the Duwamish River. The source of fill material on which the Western Blower property is situated has been documented to be characteristic of the land surfaces that align the Duwamish Waterway (NWES RFI Workplan, June 1994).

Total Petroleum Hydrocarbon. TPH was reported in five samples: two soil samples (350 and 580 mg/kg) and three concrete samples (410, 550, and 1100 mg/kg). NWES did not treat oily wastes on the Western Blower property. These detections are also believed to be indicative of background conditions.

While TPH was detected in thesesamples, subsequent analyses for volatiles and semivolatile constituent failed to identify chemical compounds which are typically associated with petroleum products (i.e., naphthalene) above MTCA Method B soils CULs.

Incidental emissions and drips from areas where vehicles routinely operated is a more plausible source of TPH contaminants. The results obtained during this sampling effort are believed to be comparable to any other parking lot or roadway were vehicles are stored or operated. Another possible explanation is that the TPH analytical method 418.1 is known to give false positive results in soils due to interference from naturally occurring organic matter. Based on this information, Ecology has recently recommended that soils not be analyzed by Method 418.1 but instead be analyzed for the individual chemical compounds normally associated with petroleum compounds NWES has completed these analyses and no constituents above MTCA Method B soil CULs were detected.

Inorganic Compounds

Four metals (arsenic, beryllium, cadmium, and lead) were detected above their respective MTCA Method B soil cleanup levels.

Because metals are naturally occurring in soils, it is useful to compare measured concentrations to natural levels Ecology has determined to be acceptable (*Natural Background Soil Metals Concentration in Washington State* Pub. #94-115, 10/94). NWES has evaluated the inorganic compound results in accordance with the following Ecology guidance, "If a Method A, B, or C cleanup level is a lower concentration than natural background, the cleanup level can be established at a concentration equal to the natural background concentration." "If background levels are used as cleanup levels, no single sample should be greater than twice the 90th percentile value and less than 10% of samples should exceed the 90th percentile value" (WAC 173-340-740(7)(e). The 90th percentile is a conservative default value. Ecology anticipates that 10% will exceed this value.

Arsenic

Arsenic was detected in all 7 samples. All soils met Ecology's background criterion. One concrete sample slightly exceeded twice the 90th percentile values (15.3 versus 14.6 mg/kg). All results were below the maximum level reported for natural background levels for the Puget Sound Basin.

Beryllium

Beryllium was detected in 1 soil and 3 concrete samples at concentrations slightly above its respective MTCA Method B soil CUL (0.23 mg/kg). Like arsenic, beryllium is commonly found in the Puget Sound Region. Based on Ecology's survey, the natural background concentration of beryllium in surficial soil in the Puget Sound Basin was found to be 0.6 mg/kg. The concentration reported in the soil at NWES (0.27 mg/kg) is below the conservative 90th percentile value.

Beryllium was found in all three concrete samples in the range of 0.26 to 0.31 mg/kg. The concentrations found in the concrete samples are also below the natural background soils levels established by Ecology for Puget Sound.

Cadmium

One concrete sample exceeded the respective MTCA Method B CUL of 80 mg/kg for cadmium: A12-C-002 (200 mg/kg). Likewise, these levels exceeded the 90th percentile value for cadmium in soil (0.8 mg/kg). Cadmium was not related to facility operations and no known spills have occurred in Area 12 involving cadmium. Further, there was no visible evidence of spills or contamination that might be a source of this detected compound. (It is possible that the metal bit used to collect the concrete sample or the presence of yellow striping paint on the loading dock are sources of these anomalous detections. Both materials contain cadmium.

Lead

The natural background level of lead (90th percentile) found in the Puget Sound Basin is 24 mg/kg with a maximum concentration 207 mg/kg. Lead was detected in one NWES soil sample (315 mg/kg) above its MTCA Method A soil CUL (250 mg/kg), and above the reported background value. Lead is not associated with NWES practices. A possible explanation for the presence of lead include natural levels in fill material and/or the very close proximity of the site to Interstate 5 and Airport Way South. The major traffic volumes using these two roadways and the corresponding vehicle emissions which would contain lead is a more likely source than NWES activities. This lead concentration is comparable with lead results obtained by any EPA from three surface soil samples they collected along Airport Way South in July of 1988 (NWES RFI Workplan, June 1994).

Groundwater Sampling

On April 21, 1994, four groundwater monitoring wells (MW-1, MW-2, MW-3, and MW-4), located at the NWES facility, were sampled. Monitoring wells MW-1 and MW-2 are located on the Western Blower property. MW-3 and 4 are located on the adjacent NWES property. Each groundwater sample was analyzed for 199 chemical compounds from the Appendix IX list.

Manganese was detected in MW-1 and MW-2 samples above the MTCA Method B groundwater cleanup level of 80 µg/l. All other chemical compounds analyzed for in MW-1 and MW-2 were below their respective MTCA Method B groundwater cleanup levels. Ecology has indicated that manganese is a common constituent in soils and groundwater in Western Washington. In a recent publication by Ecology, *Natural Background Soil Metals Concentrations in Washington State* (Ecology, October 1994), manganese in soil was detected

at concentrations ranging from 90 - 2,750 mg/kg. No similar background data is available for manganese in groundwater. Manganese was detected in MW-1 and MW-2 at 570 and 3400 µg/l, respectively.

Conclusion

The only organic compound detected in the NWES samples above its respective closure performance standard is benzo(a)pyrene. Since benzo(a)pyrene was not associated with past plant operations, the presence of this benzo(a)pyrene in the soil is most likely attributable to the natural weathering of regional coal-bearing formations and/or the historical use of coal in regional industrial activities.

Metal analytes that exceeded their respective closure performance standards include cadmium and lead.

The presence of cadmium (one concrete sample) and lead (one soil sample) above their MTCA CULs is believed to be anomalous detections and are also not associated with NWES activities.

TPH is detected in five of the seven samples collected above MTCA Method A CULs. The likely source of these TPH detections is most likely a result of petroleum and residuals ubiguitous throughout developed areas. There is no evidence of petroleum spills or visible product in the area sampled.

This concludes the closure sampling of NWES areas 11 and 12 located on the Western Blower Property. NWES believes that the sampling has demonstrated that the facility has met the Clean Closure Performance Standard as required in 40 CFR 265 Subpart G and WAC 173-303-610.

Appendix A

Analyte List
Detected Compounds

Table A-1 Compounds Analyzed for Western Blower RCRA Closure			
Chemical Group	Parameter	Cas Number	MTCA Method B Soil Cleanup Level (UG/KG)
Volatiles	1,1,1,2-TETRACHLOROETHANE	630-20-6	38461.53846
Volatiles	1,1,1-TRICHLOROETHANE	71-55-6	7200000
Volatiles	1,1,2,2-TETRACHLOROETHANE	79-34-5	5000
Volatiles	1,1,2-TRICHLOROETHANE	79-00-5	17543.85965
Volatiles	1,1-DICHLOROETHANE	75-34-3	8000000
Volatiles	1,1-DICHLOROETHENE	75-35-4	1666.666667
Volatiles	1,2,3-TRICHLOROPROPANE	96-18-4	480000
Volatiles	1,2-DIBROMO-3-CHLOROPROPANE	96-12-8	714.2857143
Volatiles	1,2-DIBROMOETHANE	106-93-4	11.76470588
Volatiles	1,2-DICHLOROETHANE	107-06-2	10989.01099
Volatiles	1,2-DICHLOROPROPANE	78-87-5	14705.88235
Volatiles	1,4-DIOXANE	123-91-1	90909.09091
Volatiles	2-BUTANONE	78-93-3	48000000
Volatiles	3-CHLOROPROPENE	107-05-1	4000000
Volatiles	4-METHYL-2-PENTANONE	108-10-1	4000000
Volatiles	ACETONE	67-64-1	8000000
Volatiles	ACETONITRILE	75-05-8	480000
Volatiles	ACROLEIN	107-02-8	1600000
Volatiles	ACRYLONITRILE	107-13-1	1851.851852
Volatiles	BENZENE	71-43-2	34482.75862
Volatiles	BROMODICHLOROMETHANE	75-27-4	16129.03226
Volatiles	BROMOFORM	75-25-2	126582.2785
Volatiles	BROMOMETHANE	74-83-9	112000
Volatiles	CARBON DISULFIDE	75-15-0	8000000
Volatiles	CARBON TETRACHLORIDE	56-23-5	7692.307692
Volatiles	CHLOROBENZENE	108-90-7	1600000
Volatiles	CHLOROFORM	67-66-3	163934.4262
Volatiles	CHLOROMETHANE	74-87-3	76923.07692
Volatiles	CHLOROPRENE	126-99-8	1600000
Volatiles	DIBROMOCHLOROMETHANE	124-48-1	11904.7619
Volatiles	DIBROMOMETHANE	74-95-3	800000
Volatiles	DICHLORODIFLUOROMETHANE	75-71-8	16000000
Volatiles	ETHYL METHACRYLATE	97-63-2	7200000
Volatiles	ETHYLBENZENE	100-41-4	8000000
Volatiles	ISOBUTYL ALCOHOL	78-83-1	24000000
Volatiles	METHACRYLONITRILE	126-98-7	8000
Volatiles	METHYL METHACRYLATE	80-62-6	6400000
Volatiles	METHYLENE CHLORIDE	75-09-2	133333.3333
Volatiles	STYRENE	100-42-5	404.8582996
Volatiles	TETRACHLOROETHENE	127-18-4	19607.84314
Volatiles	TOLUENE	108-88-3	16000000
Volatiles	TRANS-1,2-DICHLOROETHENE	156-60-5	1600000
Volatiles	TRICHLOROETHENE	79-01-6	90909.09091
Volatiles	TRICHLOROFLUOROMETHANE	75-69-4	24000000
Volatiles	VINYL ACETATE	108-05-4	80000000
Volatiles	VINYL CHLORIDE	75-01-4	526.3157895
Volatiles	XYLENE (TOTAL)	1330-20-7	160000000

Table A-1 Compounds Analyzed for Western Blower RCRA Closure			
Chemical Group	Parameter	Cas Number	MTCA Method B Soil Cleanup Level (UG/KG)
Semivolatiles	1,2,4,5-TETRACHLOROBENZENE	95-94-3	24000
Semivolatiles	1,2,4-TRICHLOROBENZENE	120-82-1	800000
Semivolatiles	1,2-DICHLOROBENZENE	95-50-1	7200000
Semivolatiles	1,3,5-TRINITROBENZENE	99-35-4	4000
Semivolatiles	1,3-DICHLOROBENZENE	541-73-1	7120000
Semivolatiles	1,3-DINITROBENZENE	99-65-0	8000
Semivolatiles	1,4-DICHLOROBENZENE	106-46-7	41666.66667
Semivolatiles	1,4-PHENYLENEDIAMINE	106-50-3	15200000
Semivolatiles	1-NAPHTHYLAMINE	134-32-7	
Semivolatiles	2,2'-OXYBIS(1-CHLOROPROP (1)	108-60-1	
Semivolatiles	2,3,4,6-TETRACHLOROPHENOL	58-90-2	2400000
Semivolatiles	2,4,5-TRICHLOROPHENOL	95-95-4	8000000
Semivolatiles	2,4,6-TRICHLOROPHENOL	88-06-2	90909.09091
Semivolatiles	2,4-DICHLOROPHENOL	120-83-2	240000
Semivolatiles	2,4-DIMETHYLPHENOL	105-67-9	1600000
Semivolatiles	2,4-DINITROPHENOL	51-28-5	160000
Semivolatiles	2,4-DINITROTOLUENE	121-14-2	1470.588235
Semivolatiles	2,6-DINITROTOLUENE	606-20-2	1470.588235
Semivolatiles	2-CHLORONAPHTHALENE	91-58-7	6400000
Semivolatiles	2-CHLOROPHENOL	95-57-8	400000
Semivolatiles	2-METHYLPHENOL	95-48-7	4000000
Semivolatiles	3 & 4-METHYLPHENOL	N/A	400000
Semivolatiles	3,3'-DICHLOROBENZIDINE	91-94-1	2222.222222
Semivolatiles	3,3'-DIMETHYLBENZIDINE	119-93-7	108.6956522
Semivolatiles	4-CHLOROANILINE	106-47-8	320000
Semivolatiles	4-NITROPHENOL	100-02-7	640000
Semivolatiles	5-NITRO-O-TOLUIDINE	99-55-8	30303.0303
Semivolatiles	ACENAPHTHENE	83-32-9	4800000
Semivolatiles	ACETOPHENONE	98-86-2	8000000
Semivolatiles	ANILINE	62-53-3	175438.5965
Semivolatiles	ANTHRACENE	120-12-7	24000000
Semivolatiles	ARAMITE	140-57-8	40000
Semivolatiles	BENZO(A)ANTHRACENE	56-55-3	1369.863014
Semivolatiles	BENZO(A)PYRENE	50-32-8	136.9863014
Semivolatiles	BENZO(B)FLUORANTHENE	205-99-2	1369.863014
Semivolatiles	BENZO(K)FLUORANTHENE	207-08-9	13698.63014
Semivolatiles	BENZYL ALCOHOL	100-51-6	24000000
Semivolatiles	BIS(2-CHLOROETHYL)ETHER	111-44-4	909.0909091
Semivolatiles	BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	71428.57143
Semivolatiles	BUTYLBENZYLPHTHALATE	85-68-7	16000000
Semivolatiles	CHRYSENE	218-01-9	136986.3014
Semivolatiles	DI-N-BUTYLPHTHALATE	84-74-2	8000000
Semivolatiles	DI-N-OCTYLPHTHALATE	117-84-0	1600000
Semivolatiles	DIBENZ(A,H)ANTHRACENE	53-70-3	136.9863014
Semivolatiles	DIBENZOFURAN	132-64-9	320000
Semivolatiles	DIETHYLPHTHALATE	84-66-2	64000000
Semivolatiles	DIMETHYLPHTHALATE	131-11-3	800000000
Semivolatiles	FLUORANTHENE	206-44-0	3200000

Table A-1 Compounds Analyzed for Western Blower RCRA Closure			
Chemical Group	Parameter	Cas Number	MTCA Method B Soil Cleanup Level (UG/KG)
Semivolatiles	FLUORENE	86-73-7	3200000
Semivolatiles	HEXACHLOROBENZENE	118-74-1	625
Semivolatiles	HEXACHLOROBUTADIENE	87-68-3	12820.51282
Semivolatiles	HEXACHLOROCYCLOPENTADIENE	77-47-4	560000
Semivolatiles	HEXACHLOROETHANE	67-72-1	71428.57143
Semivolatiles	HEXACHLOROPHENE	70-30-4	24000
Semivolatiles	INDENO(1,2,3-CD)PYRENE	193-39-5	1369.863014
Semivolatiles	ISOPHORONE	78-59-1	1052631.579
Semivolatiles	N-NITROSO-DI-N-BUTYLAMINE	924-16-3	185.1851852
Semivolatiles	N-NITROSO-DI-N-PROPYLAMINE	621-64-7	142.8571429
Semivolatiles	N-NITROSODIETHYLAMINE	55-18-5	6.666666667
Semivolatiles	N-NITROSODIMETHYLAMINE	62-75-9	19.60784314
Semivolatiles	N-NITROSODIPHENYLAMINE (3)	86-30-6	204081.6327
Semivolatiles	N-NITROSOMETHYLETHYLAMINE	10595-95-6	45.45454545
Semivolatiles	N-NITROSOPYRROLIDINE	930-55-2	476.1904762
Semivolatiles	NAPHTHALENE	91-20-3	3200000
Semivolatiles	NITROBENZENE	98-95-3	40000
Semivolatiles	O-TOLUIDINE	95-53-4	4166.666667
Semivolatiles	PENTACHLOROBENZENE	608-93-5	64000
Semivolatiles	PENTACHLORONITROBENZENE	82-68-8	3846.153846
Semivolatiles	PENTACHLOROPHENOL	87-86-5	8333.333333
Semivolatiles	PHENOL	108-95-2	48000000
Semivolatiles	PRONAMIDE	23950-58-5	6000000
Semivolatiles	PYRENE	129-00-0	2400000
Semivolatiles	PYRIDINE	110-86-1	80000
Pesticides/PCBs	4,4'-DDD	72-54-8	4166.666667
Pesticides/PCBs	4,4'-DDE	72-55-9	2941.176471
Pesticides/PCBs	4,4'-DDT	50-29-3	2941.176471
Pesticides/PCBs	ALDRIN	309-00-2	58.82352941
Pesticides/PCBs	ALPHA-BHC	319-84-6	158.7301587
Pesticides/PCBs	AROCLOR - 1016	12674-11-2	5600
Pesticides/PCBs	AROCLOR - 1221	11104-28-2	
Pesticides/PCBs	AROCLOR - 1232	11141-16-5	
Pesticides/PCBs	AROCLOR - 1242	53469-21-9	
Pesticides/PCBs	AROCLOR - 1248	12672-29-6	
Pesticides/PCBs	AROCLOR - 1254	11097-69-1	1600
Pesticides/PCBs	AROCLOR - 1260	11096-82-5	
Pesticides/PCBs	BETA-BHC	319-85-7	555.5555556
Pesticides/PCBs	CHLORDANE	57-74-9	769.2307692
Pesticides/PCBs	CHLOROBENZILATE	510-15-6	3703.703704
Pesticides/PCBs	DIALLATE	2303-16-4	16393.44262
Pesticides/PCBs	DIELDRIN	60-57-1	62.5
Pesticides/PCBs	ENDOSULFAN I	959-98-8	
Pesticides/PCBs	ENDOSULFAN SULFATE	1031-07-8	
Pesticides/PCBs	ENDRIN	72-20-8	24000
Pesticides/PCBs	GAMMA-BHC (LINDANE)	58-89-9	769.2307692
Pesticides/PCBs	HEPTACHLOR	76-44-8	222.2222222
Pesticides/PCBs	HEPTACHLOR EPOXIDE	1024-57-3	109.8901099

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Chemical Group	**Parameter**	**Cas Number**	**MTCA Method B Soil Cleanup Level (UG/KG)**
Pesticides/PCBs	METHOXYCHLOR	72-43-5	400000
Pesticides/PCBs	TOXAPHENE	8001-35-2	909.0909091
O. Pesticides	DIMETHOATE	60-51-5	16000
O. Pesticides	DISULFOTON	298-04-4	3200
O. Pesticides	ETHYL PARATHION	56-38-2	480000
O. Pesticides	METHYL PARATHION	298-00-0	20000
O. Pesticides	PHORATE	298-02-2	16000
C. Herbicides	2,4,5-T	93-76-5	800000
C. Herbicides	2,4-D	94-75-7	800000
C. Herbicides	DINOSEB	88-85-7	80000
C. Herbicides	SILVEX	93-72-1	640000
General Chemistry	SULFIDE	N/A	
TPH	TOTAL PETROLEUM HYDROCARBONS	N/A	
Dioxin	2,3,7,8-TCDD	1746-01-6	0.006666667
Inorganics	ANTIMONY	7440-36-0	32000
Inorganics	ARSENIC	7440-38-2	1666.666667
Inorganics	BARIUM	7440-39-3	5600000
Inorganics	BERYLLIUM	7440-41-7	232.5581395
Inorganics	CADMIUM	7440-43-9	40000
Inorganics	CHROMIUM	7440-47-3	80000000
Inorganics	COBALT	7440-48-4	
Inorganics	COPPER	7440-50-8	2960000
Inorganics	CYANIDE	N/A	1600000
Inorganics	LEAD	7439-92-1	250000
Inorganics	MERCURY	7439-97-6	24000
Inorganics	NICKEL	7440-02-0	1600000
Inorganics	SELENIUM	7782-49-2	400000
Inorganics	SILVER	7440-22-4	400000
Inorganics	THALLIUM	7440-28-0	5600
Inorganics	TIN	7440-31-5	48000000
Inorganics	VANADIUM	7440-62-2	560000
Inorganics	ZINC	7440-66-6	24000000

Table A-2
Western Blower Sampling Results - All Detects

Sample ID	Chemical Group	Parameter	Concentration (ug/kg)	Qualifier
A11-S-001	C. Herbicides	DINOSEB	14	J
A11-S-001	Inorganics	ARSENIC	7800	
A11-S-001	Inorganics	BARIUM	131000	
A11-S-001	Inorganics	BERYLLIUM	220	B
A11-S-001	Inorganics	CHROMIUM	72100	
A11-S-001	Inorganics	COBALT	12000	B
A11-S-001	Inorganics	COPPER	98600	
A11-S-001	Inorganics	CYANIDE	4100	
A11-S-001	Inorganics	LEAD	315000	N*J
A11-S-001	Inorganics	MERCURY	1200	
A11-S-001	Inorganics	NICKEL	50700	
A11-S-001	Inorganics	TIN	8100	B
A11-S-001	Inorganics	VANADIUM	44200	
A11-S-001	Inorganics	ZINC	243000	E
A11-S-001	Semivolatiles	ACENAPHTHENE	980	
A11-S-001	Semivolatiles	ANTHRACENE	700	J
A11-S-001	Semivolatiles	BENZO(A)ANTHRACENE	620	J
A11-S-001	Semivolatiles	BENZO(A)PYRENE	330	J
A11-S-001	Semivolatiles	BENZO(B)FLUORANTHENE	430	J
A11-S-001	Semivolatiles	BENZO(K)FLUORANTHENE	290	J
A11-S-001	Semivolatiles	BIS(2-ETHYLHEXYL)PHTHALATE	940	J
A11-S-001	Semivolatiles	CHRYSENE	760	J
A11-S-001	Semivolatiles	DIBENZ(A,H)ANTHRACENE	96	J
A11-S-001	Semivolatiles	FLUORANTHENE	3100	
A11-S-001	Semivolatiles	FLUORENE	930	
A11-S-001	Semivolatiles	INDENO(1,2,3-CD)PYRENE	190	J
A11-S-001	Semivolatiles	NAPHTHALENE	260	J
A11-S-001	Semivolatiles	PYRENE	1500	J
A11-S-001	TPH	TOTAL PETROLEUM HYDROCARBONS	580000	
A11-S-001	Volatiles	ACETONE	61	
A11-S-001	Volatiles	ETHYLBENZENE	2	J
A11-S-001	Volatiles	TOLUENE	2	J
A11-S-001	Volatiles	XYLENE (TOTAL)	10	
A11-S-002	Inorganics	ARSENIC	5300	
A11-S-002	Inorganics	BARIUM	93000	
A11-S-002	Inorganics	BERYLLIUM	270	B
A11-S-002	Inorganics	CADMIUM	1400	
A11-S-002	Inorganics	CHROMIUM	46300	
A11-S-002	Inorganics	COBALT	12900	
A11-S-002	Inorganics	COPPER	32100	
A11-S-002	Inorganics	LEAD	28200	N*J
A11-S-002	Inorganics	MERCURY	70	B
A11-S-002	Inorganics	ZINC	407000	E
A11-S-002	Semivolatiles	BIS(2-ETHYLHEXYL)PHTHALATE	310	J
A11-S-002	Semivolatiles	CHRYSENE	86	J
A11-S-002	Semivolatiles	FLUORANTHENE	130	J
A11-S-002	Semivolatiles	PYRENE	110	J
A11-S-002	Volatiles	1,1,2,2-TETRACHLOROETHANE	2	J

Table A-2
Western Blower Sampling Results - All Detects

Sample ID	Chemical Group	Parameter	Concentration (ug/kg)	Qualifier
A11-S-002	Volatiles	1,1,2-TRICHLOROETHANE	1	J
A11-S-002	Volatiles	ACETONE	11	J
A11-S-002	Volatiles	TRICHLOROETHENE	2	J
A12-C-001	C. Herbicides	2,4-D	19	J
A12-C-001	Inorganics	ANTIMONY	4500	BNJ
A12-C-001	Inorganics	ARSENIC	7000	B
A12-C-001	Inorganics	BARIUM	149000	
A12-C-001	Inorganics	BERYLLIUM	280	B
A12-C-001	Inorganics	CADMIUM	1800	
A12-C-001	Inorganics	CHROMIUM	33700	
A12-C-001	Inorganics	COBALT	7100	B
A12-C-001	Inorganics	COPPER	27200	
A12-C-001	Inorganics	LEAD	6300	N*J
A12-C-001	Inorganics	NICKEL	24300	
A12-C-001	Inorganics	SILVER	3200	
A12-C-001	Inorganics	VANADIUM	46500	
A12-C-001	Inorganics	ZINC	46500	EJ
A12-C-001	Pesticides/PCBs	4,4'-DDE	3	
A12-C-001	Pesticides/PCBs	AROCLOR - 1260	31	
A12-C-001	Semivolatiles	BIS(2-ETHYLHEXYL)PHTHALATE	110	J
A12-C-001	TPH	TOTAL PETROLEUM HYDROCARBONS	410000	
A12-C-001	Volatiles	ACETONE	12	J
A12-C-002	C. Herbicides	2,4-D	13	J
A12-C-002	Inorganics	ARSENIC	6200	BJ
A12-C-002	Inorganics	BARIUM	147000	J
A12-C-002	Inorganics	BERYLLIUM	310	BJ
A12-C-002	Inorganics	CADMIUM	200000	J
A12-C-002	Inorganics	CHROMIUM	28200	J
A12-C-002	Inorganics	COBALT	7100	BJ
A12-C-002	Inorganics	COPPER	252000	J
A12-C-002	Inorganics	LEAD	4200	N*J
A12-C-002	Inorganics	NICKEL	44200	J
A12-C-002	Inorganics	SILVER	241000	J
A12-C-002	Inorganics	VANADIUM	52600	J
A12-C-002	Inorganics	ZINC	254000	EJ
A12-C-002	Pesticides/PCBs	4,4'-DDE	8.5	J
A12-C-002	Pesticides/PCBs	AROCLOR - 1260	66	J
A12-C-002	TPH	TOTAL PETROLEUM HYDROCARBONS	1100000	J
A12-C-002	Volatiles	ACETONE	13	J
A12-C-003	C. Herbicides	2,4-D	16	J
A12-C-003	Inorganics	ARSENIC	15300	
A12-C-003	Inorganics	BARIUM	113000	
A12-C-003	Inorganics	BERYLLIUM	260	B
A12-C-003	Inorganics	CADMIUM	1300	
A12-C-003	Inorganics	CHROMIUM	28100	
A12-C-003	Inorganics	COBALT	6800	B
A12-C-003	Inorganics	COPPER	42000	
A12-C-003	Inorganics	LEAD	4200	N*J

Table A-2
Western Blower Sampling Results - All Detects

Sample ID	Chemical Group	Parameter	Concentration (ug/kg)	Qualifier
A12-C-003	Inorganics	NICKEL	26500	
A12-C-003	Inorganics	SILVER	2100	
A12-C-003	Inorganics	VANADIUM	55000	
A12-C-003	Inorganics	ZINC	89900	E
A12-C-003	Pesticides/PCBs	4,4'-DDE	6.5	
A12-C-003	Pesticides/PCBs	AROCLOR - 1260	30	
A12-C-003	Semivolatiles	BIS(2-ETHYLHEXYL)PHTHALATE	190	J
A12-C-003	TPH	TOTAL PETROLEUM HYDROCARBONS	550000	
A12-C-003	Volatiles	ACETONE	8	J
A12-S-001	Inorganics	ARSENIC	6000	
A12-S-001	Inorganics	BARIUM	74400	
A12-S-001	Inorganics	BERYLLIUM	200	B
A12-S-001	Inorganics	CADMIUM	2400	
A12-S-001	Inorganics	CHROMIUM	22100	
A12-S-001	Inorganics	COBALT	14400	
A12-S-001	Inorganics	COPPER	32800	
A12-S-001	Inorganics	CYANIDE	930	
A12-S-001	Inorganics	LEAD	69800	N*J
A12-S-001	Inorganics	MERCURY	60	B
A12-S-001	Inorganics	NICKEL	30200	
A12-S-001	Inorganics	TIN	3400	B
A12-S-001	Inorganics	VANADIUM	31600	
A12-S-001	Inorganics	ZINC	98500	E
A12-S-001	Pesticides/PCBs	CHLOROBENZILATE	31	
A12-S-001	Semivolatiles	BENZO(A)ANTHRACENE	110	J
A12-S-001	Semivolatiles	BENZO(A)PYRENE	150	J
A12-S-001	Semivolatiles	BENZO(B)FLUORANTHENE	130	J
A12-S-001	Semivolatiles	BENZO(K)FLUORANTHENE	95	J
A12-S-001	Semivolatiles	CHRYSENE	140	J
A12-S-001	Semivolatiles	FLUORANTHENE	160	J
A12-S-001	Semivolatiles	INDENO(1,2,3-CD)PYRENE	140	J
A12-S-001	Semivolatiles	PYRENE	170	J
A12-S-002	Inorganics	ARSENIC	4700	J
A12-S-002	Inorganics	BARIUM	73100	J
A12-S-002	Inorganics	BERYLLIUM	160	BJ
A12-S-002	Inorganics	CADMIUM	1400	J
A12-S-002	Inorganics	CHROMIUM	20500	J
A12-S-002	Inorganics	COBALT	10500	BJ
A12-S-002	Inorganics	COPPER	45100	J
A12-S-002	Inorganics	CYANIDE	1200	J
A12-S-002	Inorganics	LEAD	103000	N*J
A12-S-002	Inorganics	MERCURY	120	J
A12-S-002	Inorganics	NICKEL	22600	J
A12-S-002	Inorganics	SILVER	11400	J
A12-S-002	Inorganics	TIN	3800	BJ
A12-S-002	Inorganics	VANADIUM	30300	J

Table A-2
Western Blower Sampling Results - All Detects

Sample ID	Chemical Group	Parameter	Concentration (ug/kg)	Qualifier
A12-S-002	Inorganics	ZINC	145000	EJ
A12-S-002	Semivolatiles	BENZO(K)FLUORANTHENE	81	J
A12-S-002	Semivolatiles	BIS(2-ETHYLHEXYL)PHTHALATE	190	J
A12-S-002	Semivolatiles	CHRYSENE	84	J
A12-S-002	Semivolatiles	FLUORANTHENE	79	J
A12-S-002	Semivolatiles	INDENO(1,2,3-CD)PYRENE	76	J
A12-S-002	TPH	TOTAL PETROLEUM HYDROCARBONS	350000	J
A12-S-002	Volatiles	TETRACHLOROETHENE	3	J
A12-S-002	Volatiles	TRICHLOROETHENE	2	J

Table A-2
Western Blower Sampling Results - All Detects

Sample ID	Chemical Group	Parameter	Concentration (ug/kg)	Qualifier
A12-C-003	Inorganics	NICKEL	26500	
A12-C-003	Inorganics	SILVER	2100	
A12-C-003	Inorganics	VANADIUM	55000	
A12-C-003	Inorganics	ZINC	89900	E
A12-C-003	Pesticides/PCBs	4,4'-DDE	6.5	
A12-C-003	Pesticides/PCBs	AROCLOR - 1260	30	
A12-C-003	Semivolatiles	BIS(2-ETHYLHEXYL)PHTHALATE	190	J
A12-C-003	TPH	TOTAL PETROLEUM HYDROCARBONS	550000	
A12-C-003	Volatiles	ACETONE	8	J
A12-S-001	Inorganics	ARSENIC	6000	
A12-S-001	Inorganics	BARIUM	74400	
A12-S-001	Inorganics	BERYLLIUM	200	B
A12-S-001	Inorganics	CADMIUM	2400	
A12-S-001	Inorganics	CHROMIUM	22100	
A12-S-001	Inorganics	COBALT	14400	
A12-S-001	Inorganics	COPPER	32800	
A12-S-001	Inorganics	CYANIDE	930	
A12-S-001	Inorganics	LEAD	69800	N*J
A12-S-001	Inorganics	MERCURY	60	B
A12-S-001	Inorganics	NICKEL	30200	
A12-S-001	Inorganics	TIN	3400	B
A12-S-001	Inorganics	VANADIUM	31600	
A12-S-001	Inorganics	ZINC	98500	E
A12-S-001	Pesticides/PCBs	CHLOROBENZILATE	31	
A12-S-001	Semivolatiles	BENZO(A)ANTHRACENE	110	J
A12-S-001	Semivolatiles	BENZO(A)PYRENE	150	J
A12-S-001	Semivolatiles	BENZO(B)FLUORANTHENE	130	J
A12-S-001	Semivolatiles	BENZO(K)FLUORANTHENE	95	J
A12-S-001	Semivolatiles	CHRYSENE	140	J
A12-S-001	Semivolatiles	FLUORANTHENE	160	J
A12-S-001	Semivolatiles	INDENO(1,2,3-CD)PYRENE	140	J
A12-S-001	Semivolatiles	PYRENE	170	J
A12-S-002	Inorganics	ARSENIC	4700	J
A12-S-002	Inorganics	BARIUM	73100	J
A12-S-002	Inorganics	BERYLLIUM	160	BJ
A12-S-002	Inorganics	CADMIUM	1400	J
A12-S-002	Inorganics	CHROMIUM	20500	J
A12-S-002	Inorganics	COBALT	10500	BJ
A12-S-002	Inorganics	COPPER	45100	J
A12-S-002	Inorganics	CYANIDE	1200	J
A12-S-002	Inorganics	LEAD	103000	N*J
A12-S-002	Inorganics	MERCURY	120	J
A12-S-002	Inorganics	NICKEL	22600	J
A12-S-002	Inorganics	SILVER	11400	J
A12-S-002	Inorganics	TIN	3800	BJ
A12-S-002	Inorganics	VANADIUM	30300	J

Table A-2
Western Blower Sampling Results - All Detects

Sample ID	Chemical Group	Parameter	Concentration (ug/kg)	Qualifier
A12-S-002	Inorganics	ZINC	145000	EJ
A12-S-002	Semivolatiles	BENZO(K)FLUORANTHENE	81	J
A12-S-002	Semivolatiles	BIS(2-ETHYLHEXYL)PHTHALATE	190	J
A12-S-002	Semivolatiles	CHRYSENE	84	J
A12-S-002	Semivolatiles	FLUORANTHENE	79	J
A12-S-002	Semivolatiles	INDENO(1,2,3-CD)PYRENE	76	J
A12-S-002	TPH	TOTAL PETROLEUM HYDROCARBONS	350000	J
A12-S-002	Volatiles	TETRACHLOROETHENE	3	J
A12-S-002	Volatiles	TRICHLOROETHENE	2	J

Appendix B

Laboratory QA/QC

Laboratory Quality Assurance/Quality Control

The samples were analyzed by Quality Analytical Laboratory (QAL) located in Redding, California, according to the specifications of the Laboratory Statement of Work (SOW) provided to the laboratory prior to the start of the project. Several analytical parameters including Organophosphorous Pesticides, Herbicides, and Total Petroleum Hydrocarbons were subcontracted to ATI/Fort Collins by QAL. These parameters were also performed according to the specifications of the SOW as requested. Any analytical exceptions are listed in the data validation reports. Electronic data deliverable (EDD) were provided by the laboratory as requested.

Data reduction, validation and reporting were conducted according to the QAPP. Data validation reports were prepared for each parameter. For parameters covered by the Contract Laboratory Program (CLP), data validation followed the USEPA CLP *National Functional Guidelines for Organic Data Review* and *National Functional Guidelines for Inorganic Data Review* (February 1994). For parameters not covered by the CLP, data were reviewed for calibrations, accuracy measurements, precision measurements, and blank sample measurements. These reports are included in the project files. Data qualifiers are incorporated into the NWES closure sampling database.

Data Assessment

The validated data have met the project quality assurance objectives described in the QAPP. The data are over 90 percent complete; that is, 90 percent of the data met the target goals for precision, accuracy, and representativeness.

Data Qualifiers

The meaning of the data qualifiers are as follows:

- U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
- J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R - The sample results are rejected. The presence or absence of the analyte can not be verified.

In addition to the above data qualifiers, the database also includes data-reporting qualifiers originating from the laboratory. These are laboratory-specific qualifiers for inorganic data

which are procedural in nature and may or may not address data quality. A list of these data reporting qualifiers and their meaning is included below:

- B - The reported value obtained was less than the contract required detection limit, but greater than or equal to the instrument detection limit.
- E - The reported value is estimated because of interference.
- N - Spiked sample recovery not within control limits.

* - Duplicate analysis not within control limits.

Detection Limits

For 12 semivolatile compounds, the laboratory reporting limits (or PQLs) are slightly higher than the target detection limits, i.e., SW-846 Practical Quantitation Limits (PQLs) due to correction for soil moisture levels. A list of these compounds with reporting limits that exceed MTCA Method B Soil Cleanup Levels are shown in Table B-1. MTCA states "Where cleanup levels are below the PQL, compliance with cleanup standards will be based upon the PQL" (WAC 173-340-700(6)). Furthermore, MTCA states that "If those situation arise and the PQL is higher than the cleanup level the cleanup level shall be considered to have been attained ..." (WAC 173-340-707). In an implementation memorandum addressed to Ecology staff dated November 23, 1993, Ecology provided guidelines on using PQLs as cleanup standards. In it Ecology presented the results of a laboratory survey on Method Detection Limits (MDLs) and PQLs and compared them to SW-846 PQLs and MTCA Method B Cleanup Levels. In all cases, the PQLs reported in the NWES Areas 11 and 12 closure samples were within the range of PQLs found in the Ecology laboratory survey when soil moisture levels were taken into account.

As can be observed from Table B-1, 10 of the 12 compounds were not detected suggesting their respective cleanup level was achieved. Benzo(a)pyrene was detected in two soil samples both at estimated concentrations above the MTCA Method B CULs. Dibenz(a,h)anthracene was detected in 1 soil sample at below the MTCA Method B CULs. Both of these compounds are polynuclear aromatic hydrocarbons (PAH) compounds and their presence in the soil are discussed in the report.

Table B-1

PQL Comparisons

Target Compound	MTCA Method B Soil Cleanup Level (µg/kg)	SW846 PQL (µg/kg)[c]	Ecology Lab Survey PQL Range (µg/kg)[c]	NWES PQL Range (µg/kg)[a]	NWES Sample Concentration Range (µg/kg)
3,3-Dimethylbenzidine	109	1000	330-1000	690-850	ND
Benzo(a)Pyrene	137	660	5-660	690-850	150J - 330J
Dibenz(a,h)anthracene	137	660	10-660	690-850	96J
Hexachlorobenzene	625	660	17-660	690-850	ND
Hexachlorophene	24000	Not listed	Not listed	35000-44000	ND
N-Nitroso-di-n-butylamine	186	1300	330-1300	690-850	ND
N-Nitroso-di-n-propylamine	143	1300	33-1300	690-850	ND
N-Nitrosodiethylamine	6.7	1300	33-1300	690-850	ND
N-Nitrosodimethylamine	19.6	1300	33-1300	690-850	ND
N-Nitrosomethylethylamine	45.5	1300	33-1300	690-850	ND
N-Nitrosophyrrolidine	476	1300	33-1300	690-850	ND
Pentachloronitrobenzene	3846	Not listed	Not listed	4100-4400	ND

ND - Non-detect

[a] Multiple PQLs are available for each compounds due to the variation in moisture levels in the soil samples. PQLs for diluted samples are not included.

[b] SW-846 Method PQLs are listed. The PQLs are reported on dry weight basis. In cases where there are no known PQL values, a factor of 10 times the MDL is used for the PQL value.

[c] The range of 13 responses out of a survey conducted by Ecology is listed.

QAL ITY ANALYTICAL RATORIES, INC.

CHAIN OF CUSTODY RECORD AND AGREEMENT TO PERFORM SERVICES

Project #	Purchase Order #
106099.03.ZZ	

Project Name: NWES - RCRA CLOSURE SAMPLING

Company Name: SEA

Project Manager or Contact & Phone #	Report Copy to:
CAROLYN KOSIK/SEA	GLEN VEDERA/SEA

Requested Completion Date:	Site ID	Sample Disposal: Dispose	Return
AS AGREEMENT		☑	☐

LGN
One Innovation Drive, Suite C
Alachua, FL 32615-9586
(904) 462-3050 FAX (904) 462-1670

LRD
5090 Caterpillar Road
Redding, CA 96003-1412
(916) 244-5227 FAX (916) 244-4109

LMG
2567 Fairlane Drive
Montgomery, AL 36116-1622
(334) 271-2440 FAX (334) 271-3428

LKW
Canviro Analytical Laboratories, Inc.
50 Bathurst, Unit 12
Waterloo, Ontario, Canada N2V 2C5
(519) 747-2575 FAX (519) 747-3806

THIS AREA FOR LAB USE ONLY

Lab #	Page	of

Client Service	Price Source A P Q S

Acct Code	Test Group

Project Code	Ack. Gen.

LIMS Ver	Login	Mult.

COC Review	

Sampling Date	Sampling Time	Type COMP	Type GRAB	Matrix WATER	Matrix SOIL	CLIENT SAMPLE ID (9 CHARACTERS)	QC ID (3 CHAR)	# OF CONTAINERS	SW 3240 ACR. 1X	SW 3290 ACR 1X	EPA 413.1	SW 9080 ACR 1X	SW 3140 ACR 1X	SW 3270 ACR. 1X	SW 8150 ACR 1X	METALS ACR. 1X	CYANIDE, SULFIDE	SAMPLE REMARKS	LAB 1 ID	LAB 2 ID
1/23/96	1310		✓			A12-C-001		7	✓	✓	✓	✓	✓	✓	✓	✓	✓			
1/23/96	1415		✓			A12-C-002		7	✓	✓	✓	✓	✓	✓	✓	✓	✓			
1/23/96	1625		✓			A12-C-003		7	✓	✓	✓	✓	✓	✓	✓	✓	✓			
1/23/96	1341		✓		✓	A12-S-001		7	✓	✓	✓	✓	✓	✓	✓	✓	✓			
1/24/96	1400		✓	✓		A12TRIPBL		3	✓											
1/25/96	1410		✓		✓	A12-S-002		7	✓	✓	✓	✓	✓	✓	✓	✓	✓			
1/25/96	1555		✓		✓	A11-S-001		7	✓	✓	✓	✓	✓	✓	✓	✓	✓			
1/25/96	1620		✓		✓	A11-S-002		7	✓	✓	✓	✓	✓	✓	✓	✓	✓			

Sampled By & Title (Please sign and print name)	Date/Time
Glen T. Vedera GLEN T. VEDERA	1/23-1/25/96 AS AGREE

Received By (Please sign and print name)	Date/Time

Received By (Please sign and print name)	Date/Time

Received By (Please sign and print name)	Date/Time

Relinquished By (Please sign and print name)	Date/Time
Glen T. Vedera GLEN T. VEDERA	1/26/96 1505

Relinquished By (Please sign and print name)	Date/Time

Relinquished By (Please sign and print name)	Date/Time

Shipped Via UPS Fed-Ex Other	Shipping #

HAZWRAP/NESSA: Y N	
EDATA: Y N	
QC LEVEL 1 2 3 OTHER	
pH	Ice
Custody Seal	Temp

Batch Remarks: REPORT AS DRY WEIGHT

Instructions and Agreement Provisions on Reverse Side

DISTRIBUTION: Original - LAB, Yellow - LAB, Pink - Client
REV 5/95 LAB FORM 340

CHMHILL **PHOTO RECORD FILE INDEX**

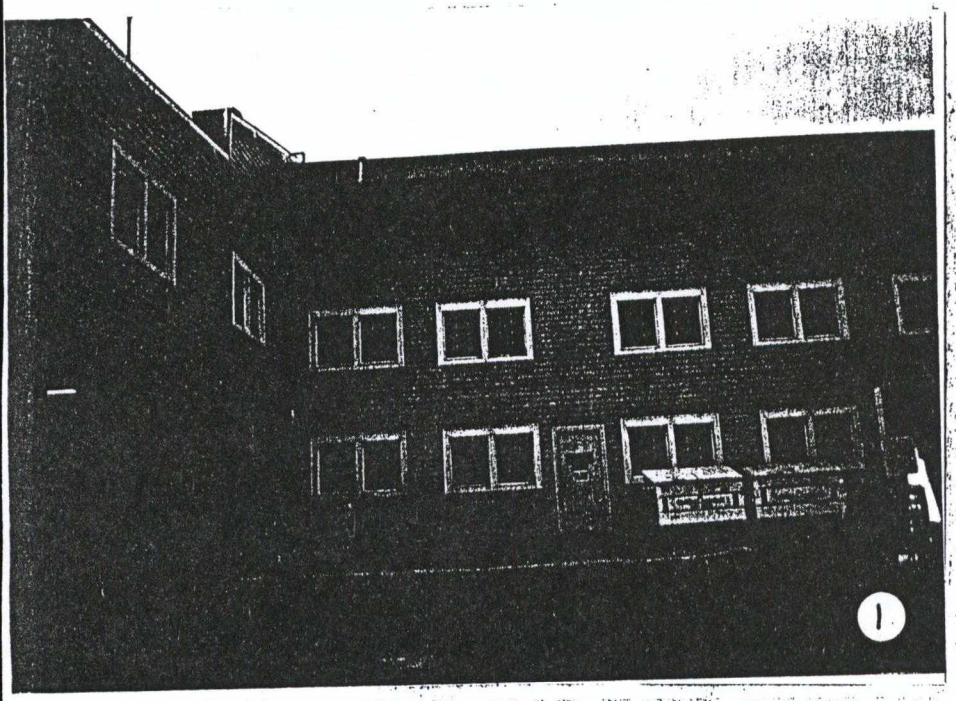
ROLL NO. _____

PERIOD FROM _____ TO ____ 19 ____

PROJECT: NWES RCRA CLOSURE PROJECT NO. 106099.03.ZZ

PREPARED BY: GLEN VEDERA

PICTURE NUMBER	PHOTO DESCRIPTION/LOCATION	DATE	DAILY LOG NUMBER
1	OVERVIEW OF LOAD/UNLOAD AREA, ADMIN. BLDG, AREA 12	1/23/96	
2	SAMPLE LOCATION A12-C-003	1/23/96	
3	SAMPLE LOCATION A12-C-001	1/23/96	
4	SAMPLE LOCATION A12-C-002	1/23/96	
5	OVERVIEW SAMPLE LOCATION A12 S-001	1/25/96	
6	CLOSE-UP OF SAMPLE LOCATION A12S-001	1/25/96	
7	OVERVIEW SAMPLE LOCATION A12-S-002	1/25/96	
8	CLOSE-UP OF SAMPLE LOCATION A12-S-002	1/25/96	
9	OVERVIEW AT SAMPLE LOCATION A11-S-001	1/25/96	
10	CLOSE-UP OF SAMPLE LOCATION A11-S-001	1/25/96	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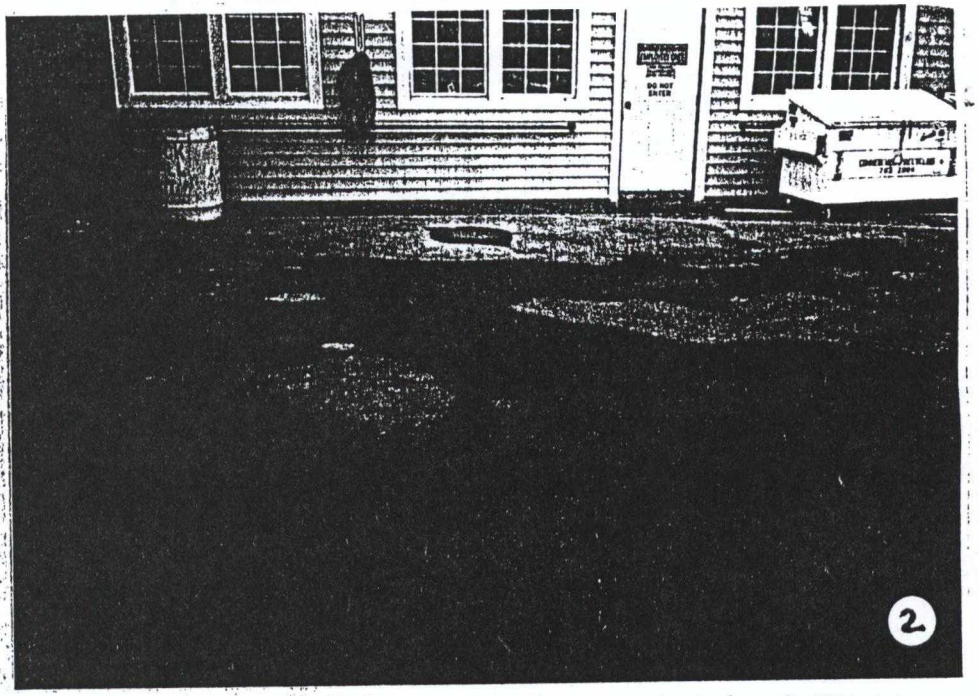
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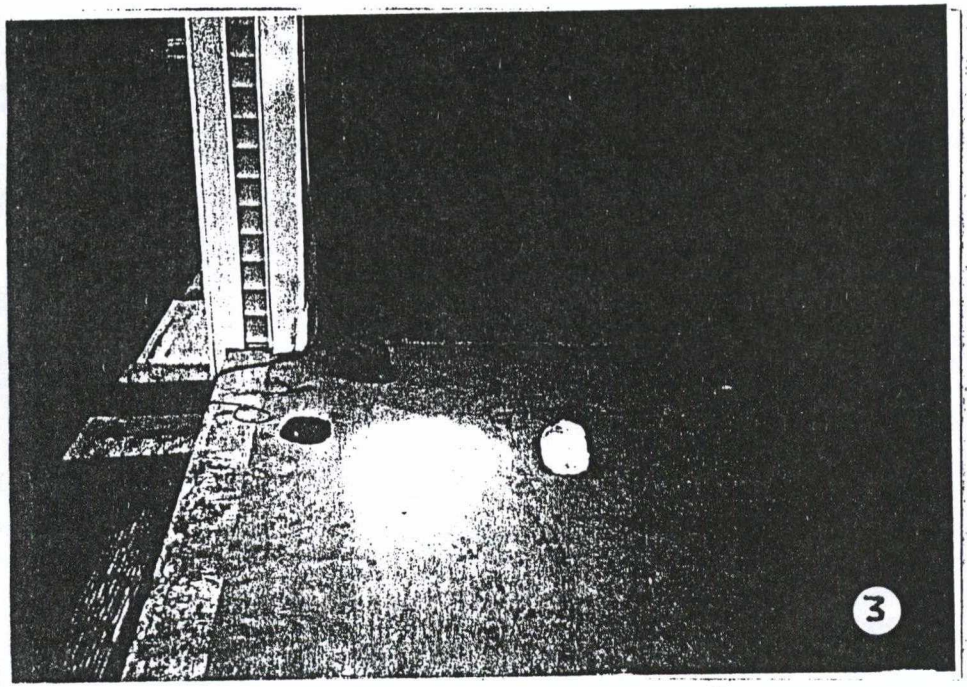
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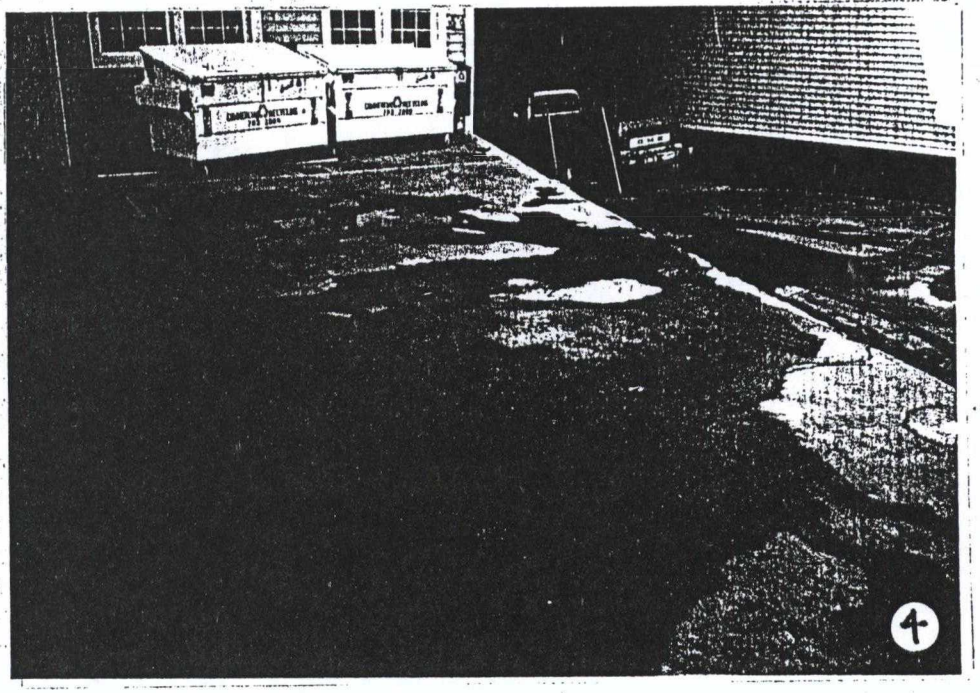
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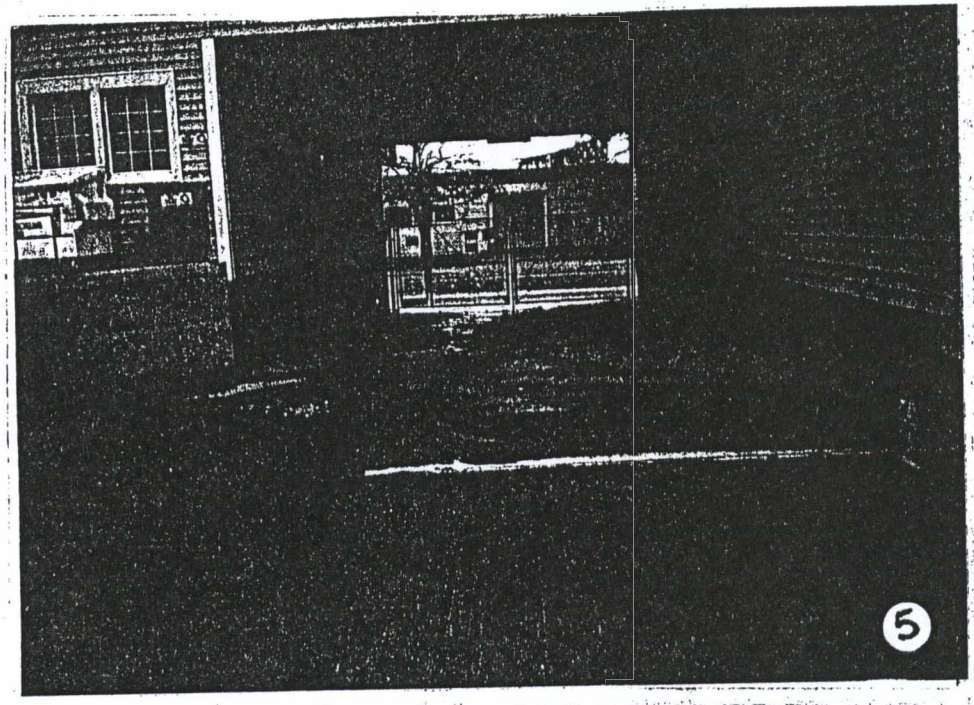
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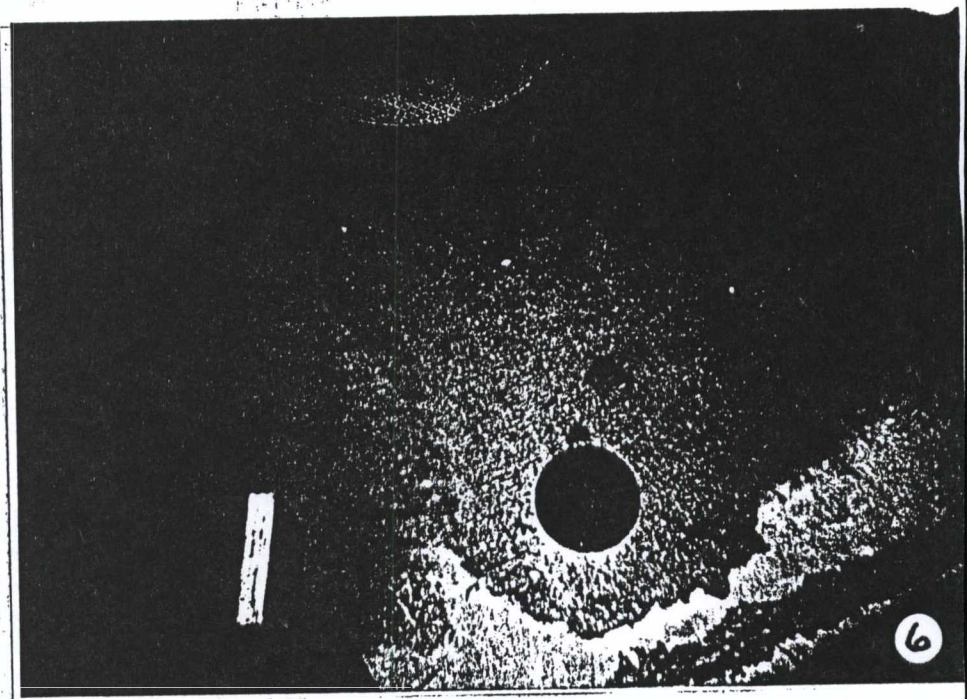
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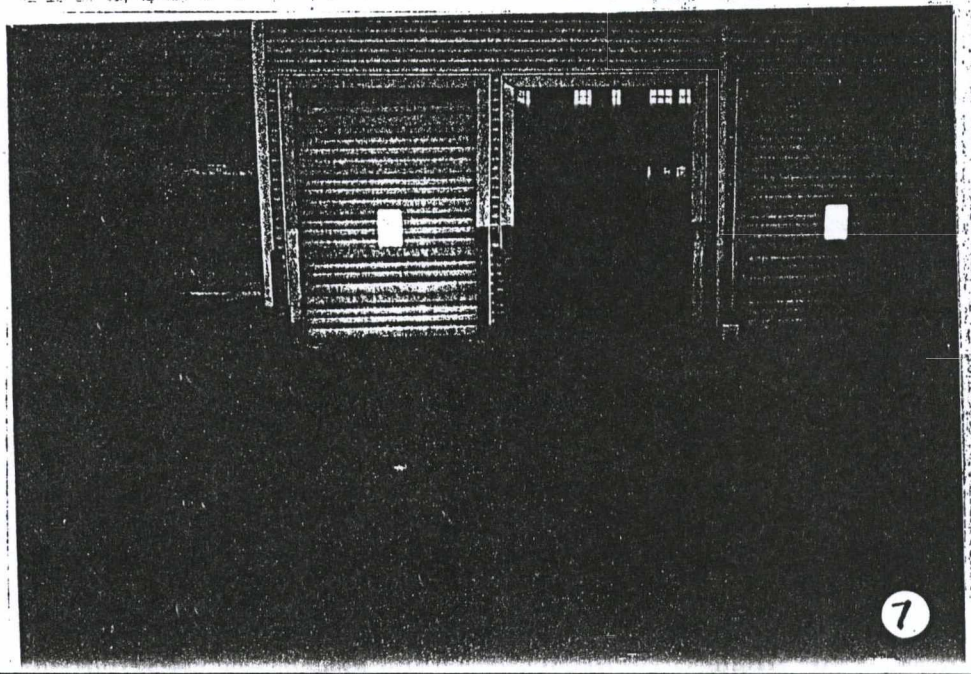
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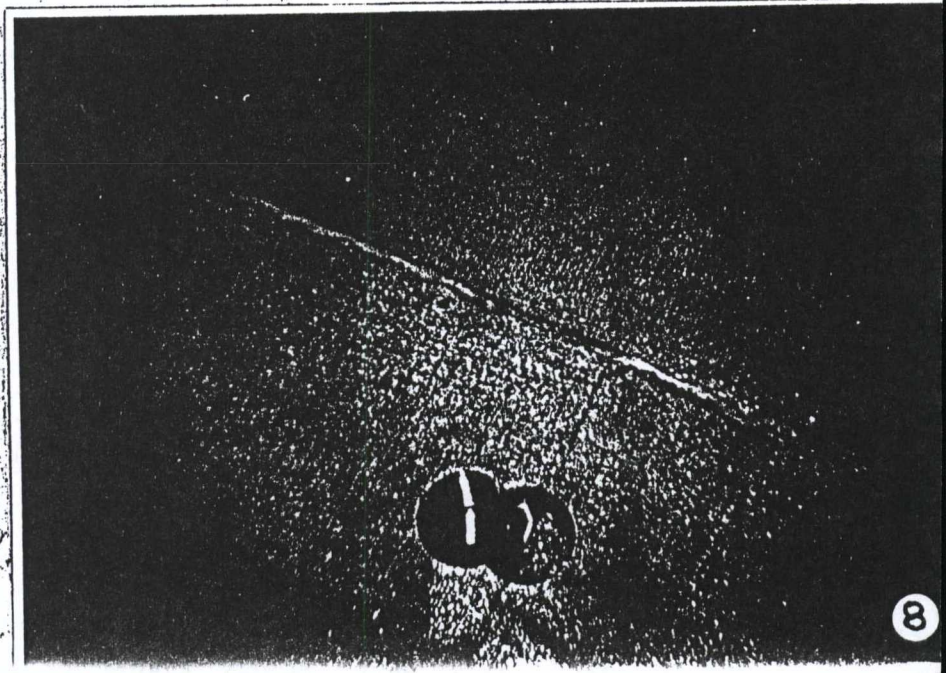
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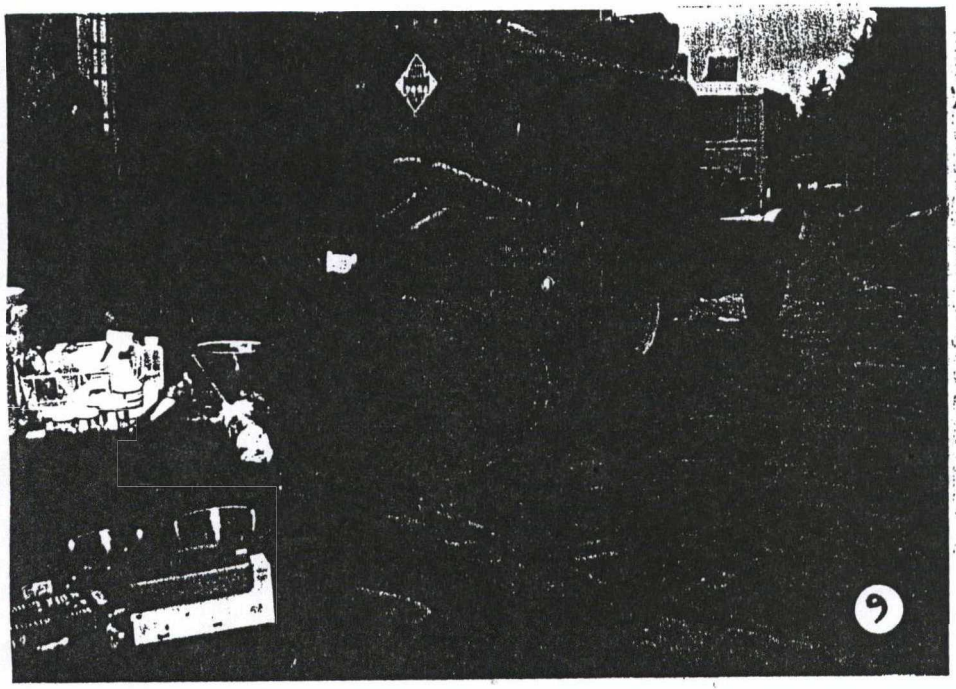
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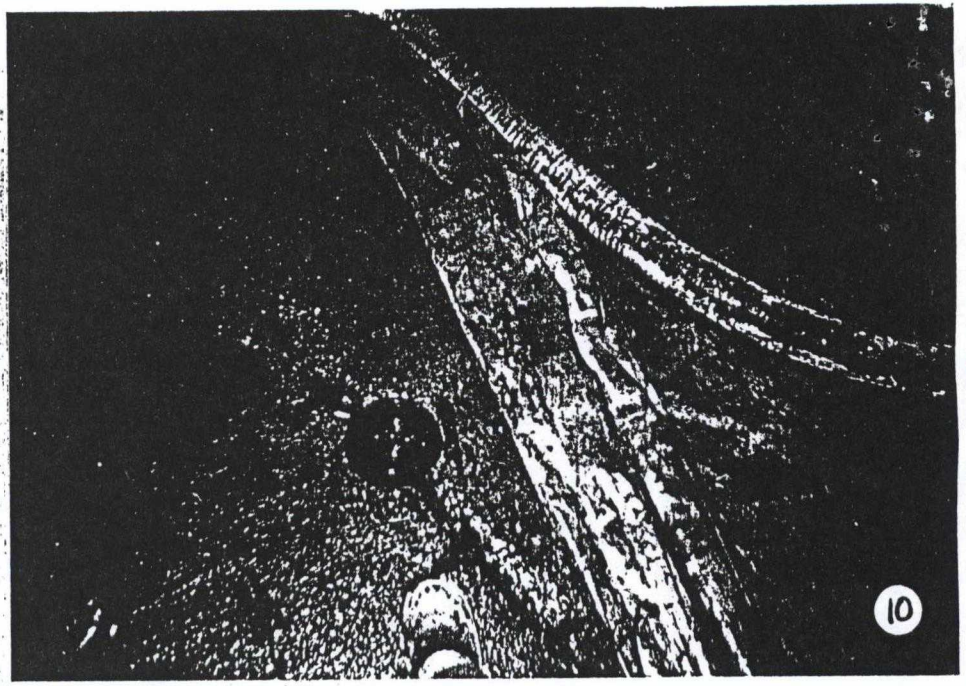
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CH2MHILL **PHOTO RECORD FILE INDEX**

ROLL NO. 1

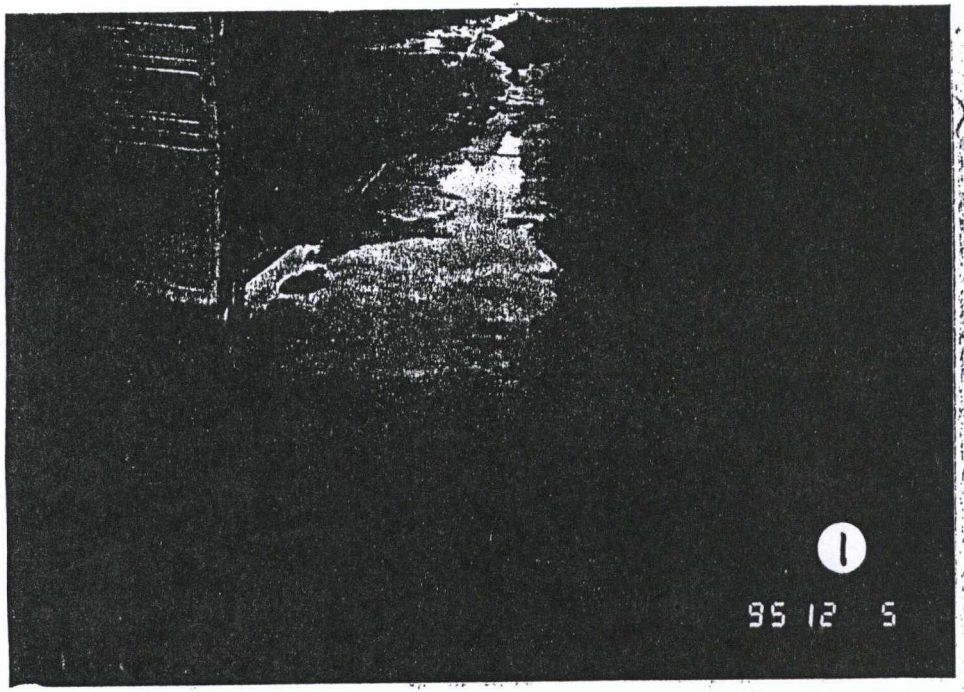
PERIOD FROM 12/5 TO ____ 19 ____

PROJECT: NWES RCRA CLOSURE PROJECT NO. 106099.03.ZZ

PREPARED BY: GLEN VEDERA

PICTURE NUMBER	PHOTO DESCRIPTION/LOCATION	DATE	DAILY LOG NUMBER
1	PREPARING TO CORE CONCRETE IN RR TRACK		
	AREA OPPOSITE THE STORES BUILDING. AREA A12	12/5	
2	A12, CORING IN ACTION AT LOCATION 002, NOTE		
	DISCOLORATION FROM CUTTING INTO RR TIE	12/5	
3	A11, LOCATION 001, OPPOSITE LEAN TO		
4	A11-001, CUTTING IN ACTION	12/5	
5	A11-001, PROXIMITY TO SUMP	12/5	
6	A11-001, CLOSE UP	12/5	
7	A11, LOCATION 002, BOTTOM OF SUMP AT BACK		
	OF LEAN TO	12/5	
8	A12, LOCATION 001, ADJACENT TO VAULT A7	12/5	

REV 1/87 FORM 303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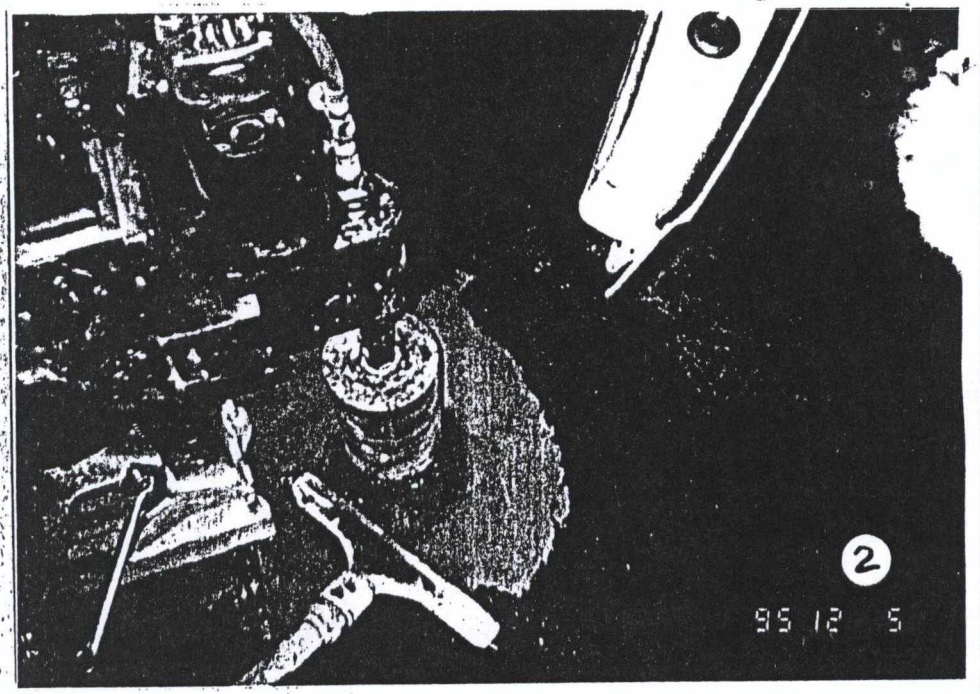
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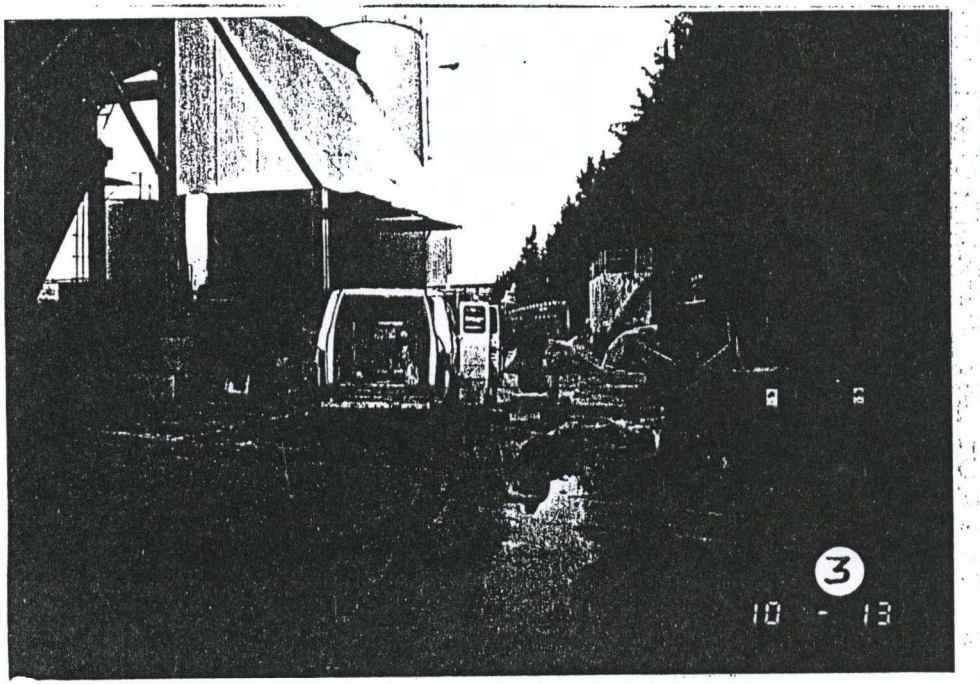
95 12 5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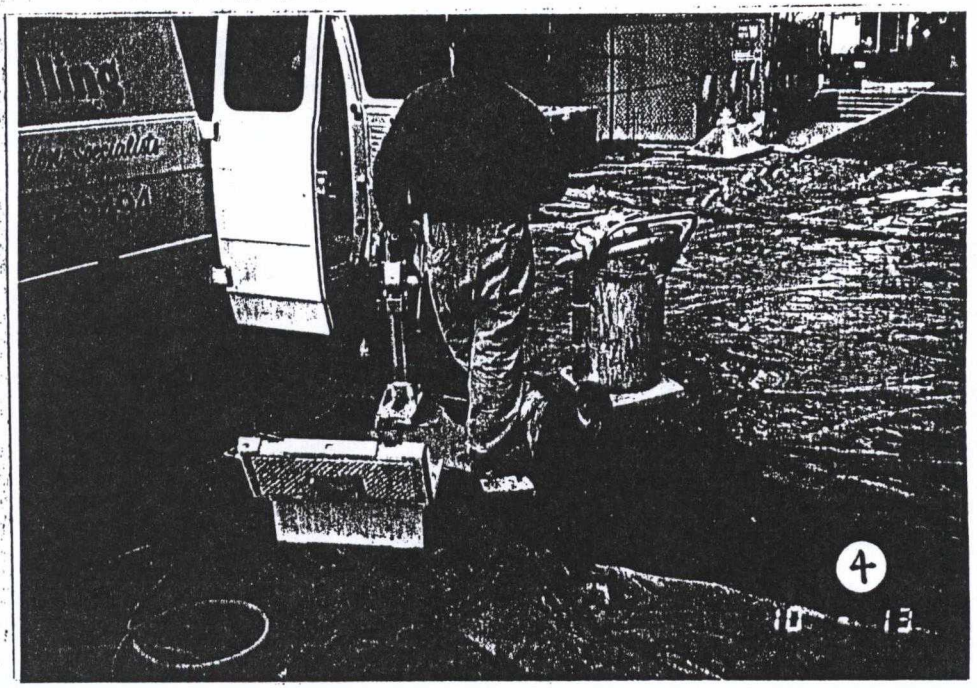
10 - 13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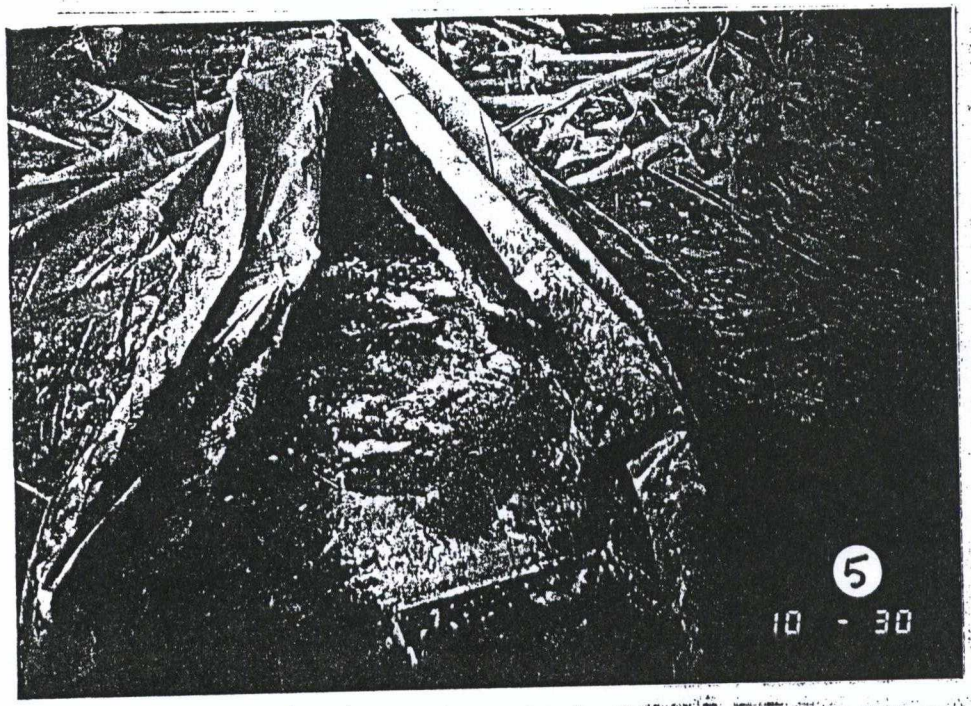
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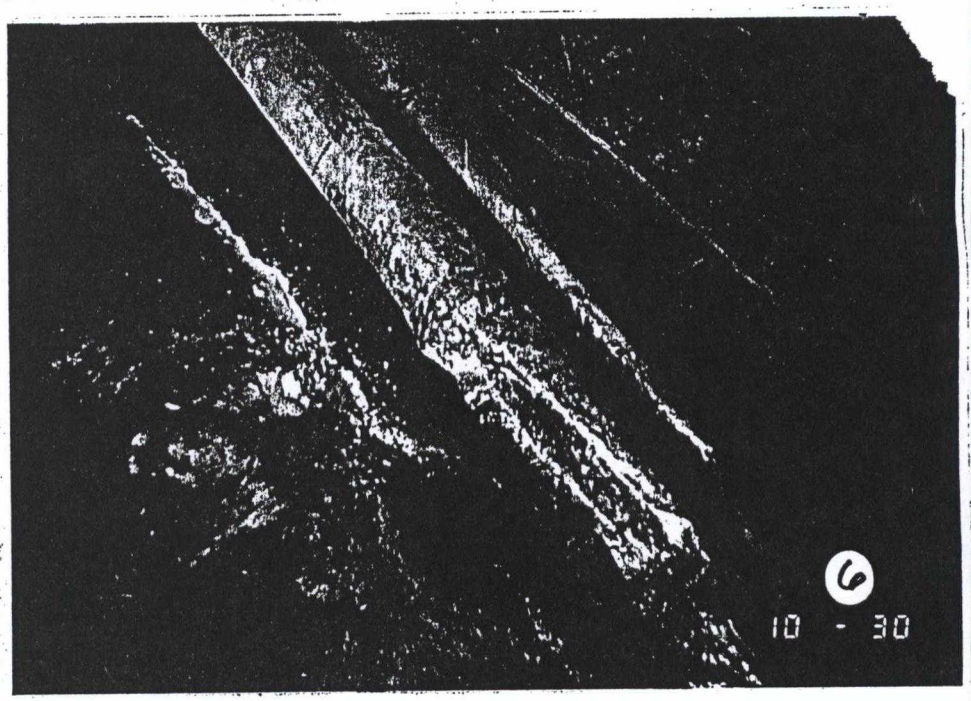
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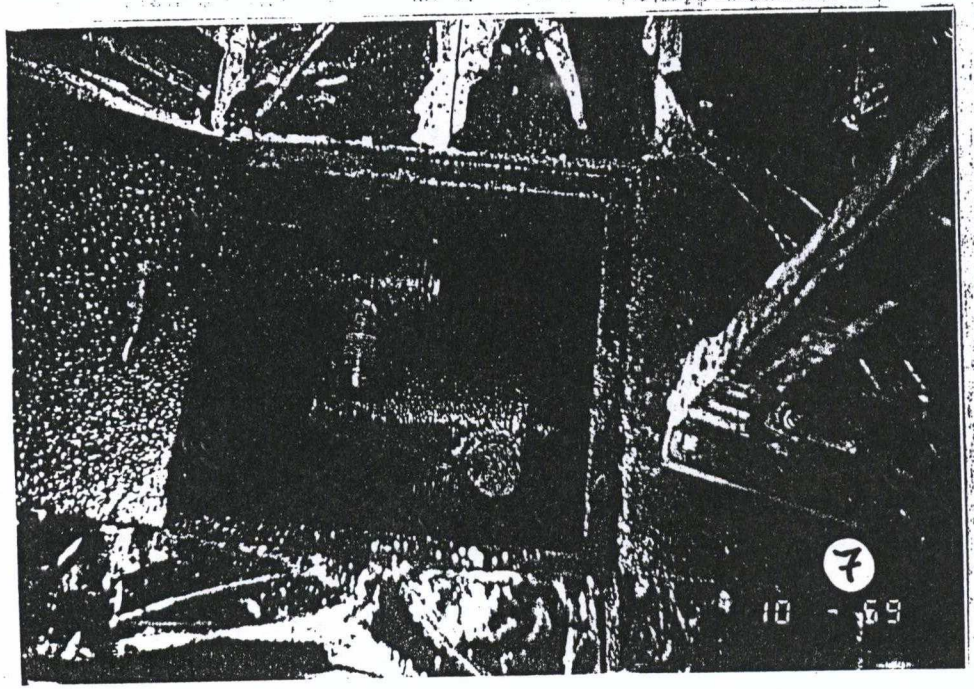
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10 - 69


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12 - 19

PROJECT NWES 106099.03.ZZ RCRA CLOSURE Continued From Page

1/23/96

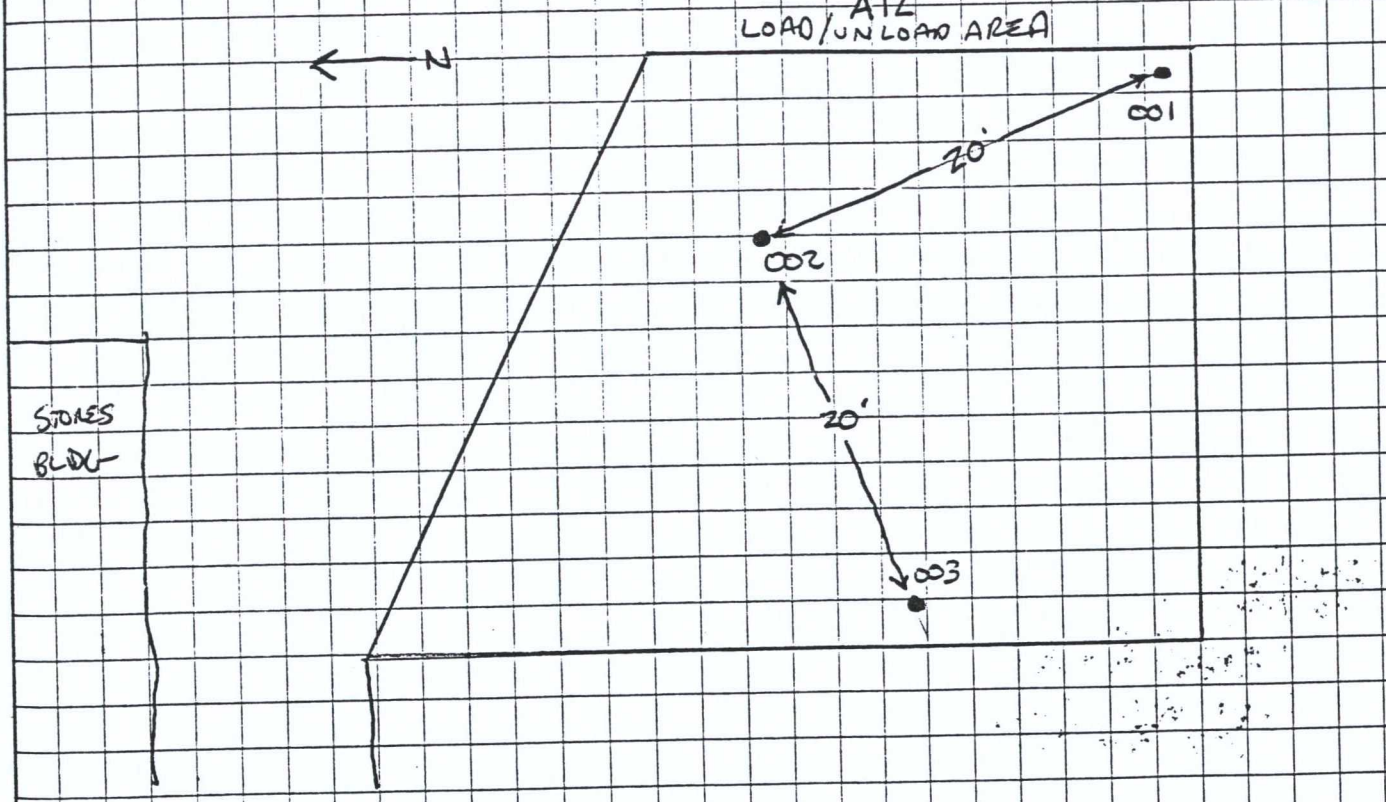
1120 VEDERA/SEA ONSITE FOR AREAS A12 RED ROSA MARK - LOAD/UNLOAD AREA

WEATHER: CLOUDY CHANGING TO RAIN

H&S: LEVEL D PPE, NO MONITORING EQUIPMENT REQD FOR CONCRETE CHIP SAMPLING.

CASSWELL MIMS/NWES-WESTAC IS MY BUDDY

LAY OUT GRID PER SAP (FIGURE A-3)



METHOD: USED ROTO HAMMAR WITH NEW DEDICATED BIT AT EACH LOCATION. DECON PER PLAN BUT ADDED HEXANE AND 10% NITRIC ACID RINSE STEPS. DRILLED SERIES OF HOLES TO ~0.6cm BELOW SURFACE AND COLLECTED DUST AND CHIPS (MIXED PRIOR TO COLLECTION)

Continued on Page

Read and Understood By

Signed	Date	Signed	Date
[signature]	1/23/96		

Notebook No. _____

PROJECT 106099.03.ZZ RCRA CLOSURE

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1310 A12-C-001

2oz	FOR:	8240 APP IX
4oz		8290 APP IX
4oz		418.1
4oz		8080 APP IX
4oz		8140 APP IX
8oz		8270 AND 8150 APP IX
8oz		APP IX METALS, CYANIDE AND SULFIDE

1415 A12-C-002 HEAVY RAIN DOWNPOUR OCCURRED MIDWAY THRU SAMPLING. PORTION OF SAMPLES DRY AND PORTION ARE MOIST TO WET.

2oz	FOR:	8240 APP-IX
4oz		8290 APP IX
4oz		418.1
4oz		8080 APP. IX
4oz		8140 APP. IX
8oz		8270 AND 8150 APP IX
8oz		APP IX METALS, CYANIDE AND SULFIDE

1625 A12-C-003

2 oz	FOR	8240 APP IX
4 oz		8290 APP IX
4 oz		418.1
4 oz		8080 APP IX
4 oz		8140 APP IX
8 oz		8270 AND 8150 APP IX
8 oz		APP IX METALS, CYANIDE AND SULFIDE

1710 OFFSITE - SECURED STORES BLDG & CASWELL LOCKED GATE

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1/25/96

1125 G. VEDERA AND W. LINDELL (SEA) ONSITE FOR SOIL SAMPLING IN AREAS A12 AND A11
WEATHER: OVERCAST AT FIRST WITH RAINSHOWERS LATER
LINDELL IS VEDERA'S BUDDY AND SIGNS H&S ADDENDUM AFTER REVIEW OF H&S PLAN

CALIB. H&S EQUIPMENT:

CGI MSA 260 HAZCO # 5804
CALIB W/ 0.75% PENTANE (HAZCO LOT # 39692)
ALARM @ 10% LEL
0.75% PENTANE READS 50 % LEL

O2 READS 21% OK

BLOCK END OF SAMPLE TUBE AND PUMP BALL DROPS (NO LEAKS) OK

FID FOX BOX 128 HAZCO # 3021
CALIB. W/ 100 PPM METHANE (ALPHA GAS LOT # 35323)
100PPM STANDARD CAL. GAS READS 98PPM
1150 lbs H_2 IN UNIT

1300-1325 REVIEW H&S PLAN WITH W. LINDELL. REVIEW SAMPLING PLAN AND WORK OUT OUR PLAN OF ATTACK

1340 SET-UP ON A12-001. COLLECTED SAMPLE WITH PREVIOUSLY DECONNED STAINLESS STEEL (SS) BOWL AND SPOON PER THE FIELD SAMPLING AND ANALYSIS PLAN. THIS IS THE LOCATION OF A ~~CRACK~~ SUMP IN THE SUMP IS MONOLITHIC, THEREFORE THE SAMPLE LOCATION IS TO ONE SIDE (EAST)

1341 A12-5-001 WELL GRADED SAND AND GRAVEL, MEDIUM BROWN, NO ODOR

2 oz CWM - 8240
4 oz CWM - 8290
4 oz CWM - 418.1
4 oz CWM - 8080
4 oz CWM - 8140
8 oz CWM - 8270 AND 8150
8 oz CWM - METALS/CYHIDE/SULFIDE

CGI = BG
OVA = 0.0 PPM

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T. Vedera — 1/25/96
Signed — Date

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Notebook No. _____

PROJECT 106099.03.ZZ RCRA CLOSURE

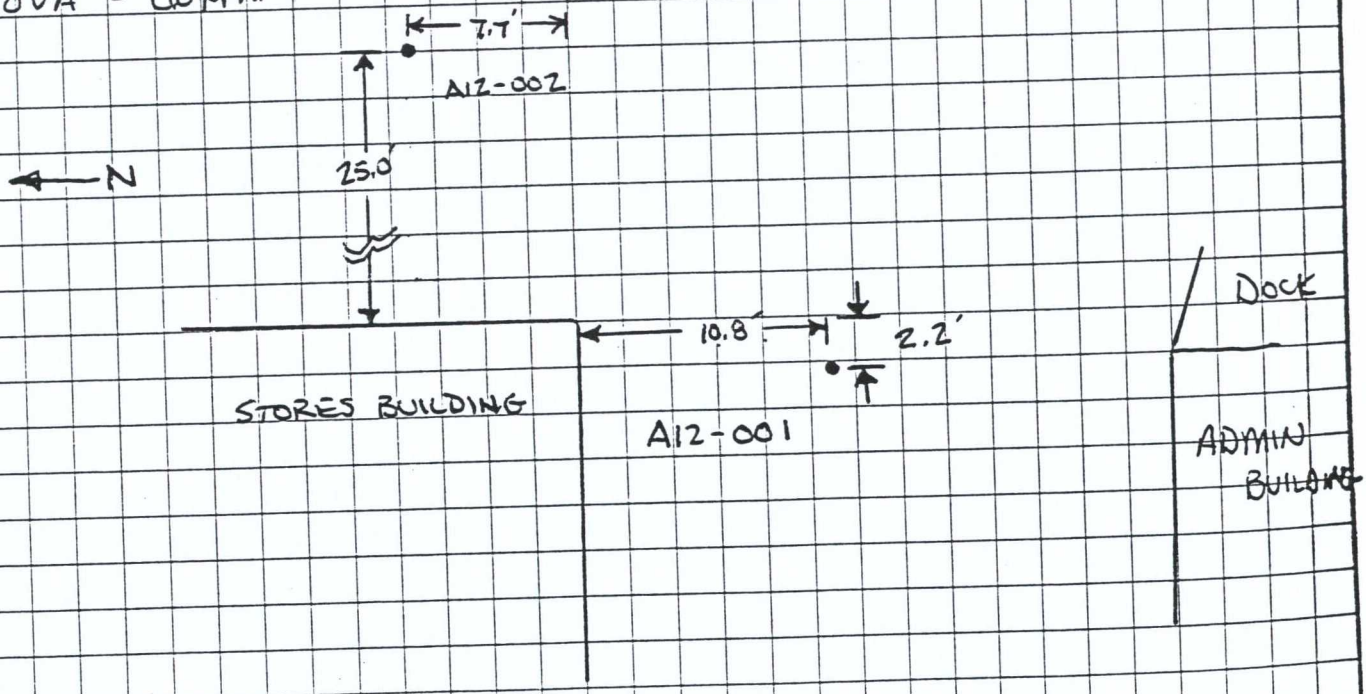
Continued From Page _____

1410 SET-UP AT A12-002. SAME PROCEDURES AS @ A12-001. THIS LOCATION IS NEXT TO A RAILROAD TIE AND THE AREA UNDER THE CONCRETE IS FLOODED WITH WATER. A SUMP PUMP DISCHARGE PIPE IS NEAR BY. THE WATER IN THE BORE HOLE APPEARS TO CYCLE WITH THE OPERATION ON THE PUMP. THIS IS THE LOCATION OF A CRACK IN THE CONCRETE COVER

1410 A12-S-002 WELL GRADED SAND AND GRAVEL, BROWN

2oz CWM - 8240
4oz CWM - 8290
4oz CWM - 418.1
4oz CWM - 8080
4oz CWM - 8140
8oz CWM - 8270 AND 8150
8oz CWM - METALS/CYANIDE/SULFIDE

CGI = BG
OVA = 00 PPM



A12 SAMPLE LOCATION PLOT

Continued on Page

Read and Understood By

J. T. Ueda — Signed
1/25/96 — Date
_____ — Signed
_____ — Date

1520-1540 USED VAC TRUCK TO REMOVE STANDING WATER AT A11-001. THIS OPERATION WAS DONE TWICE. NOTED SHEEN ON SURFACE. SAMPLE EQUIPMENT OTHERWISE SAME AS AT A12. THIS LOCATION IS TO SAMPLE UNDER A CRACK IN CONCRETE

1550 A11-S-001 TOP 1 INCH APPEARS STAINED DARK GRAY TO BLACK GRAY SILT, SAND, AND ROUNDED GRAVEL WITH SMALL WOOD DEBRIS. BELOW THIS IS BROWN SAND, SILT AND GRAVEL. SMELLS LIKE OLD PETROLEUM PRODUCT.

CGI = BG
OVA = 0.0 PPM

2 OZ CWM - 8240
4 OZ CWM - 8290
4 OZ CWM - 418.1
4 OZ CWM - 8080
4 OZ CWM - 8140
8 OZ CWM - 8270 AND 8150
8 OZ CWM - METALS/CYANIDE/SULFIDE

1620 A11-002 IS AT THE BOTTOM OF A SUMP AT THE BACK SOUTHWEST CORNER OF THE LEAN TO BUILDING. HAD TO USE A VAC TRUCK TO REMOVE STANDING WATER IN THE SUMP. NOTED A "SWAMPY" OOZE COLLECTED SAMPLE WITH SS AUGER

CGI = BG
OVA = 0.0 PPM

2 OZ CWM - 8240
4 OZ CWM - 8290
4 OZ CWM - 418.1
4 OZ CWM - 8080
4 OZ CWM - 8140
8 OZ CWM - 8270 AND 8150
8 OZ CWM - METALS/CYANIDE/SULFIDE

PACK SAMPLES AND DEMOB EQUIPMENT

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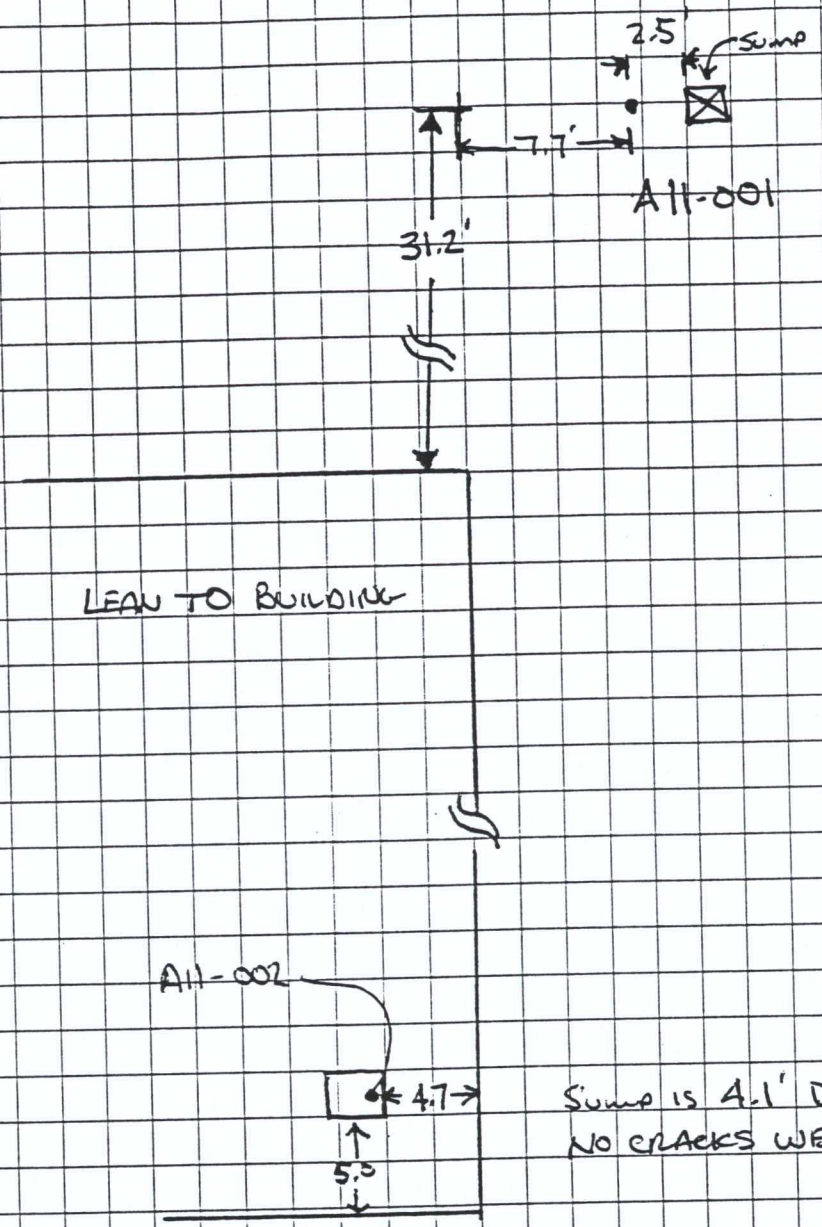
OJECT 106099.03.ZZ RCRA CLOSURE



SUMP IS 4.1' DEEP FROM RIM TO BOTTOM
NO CRACKS WERE VISABLE

A11 SAMPLE LOCATION PLOT

1710 VEDERA OFFSITE, LINDELL TO LOCK UP AND FOLLOW

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T. Veder	1/25/96		
Signed	Date	Signed	Date