ATTACHMENT 4
EXPOSURE AND RISK CALCULATION SPREADSHEETS

PROJECT: UPRR Sacramento Site
PROJECT FILENAME: UPRR001.WK1
LAST SAVED:
DATE: 09/30/91
TIME: 11:48 AM

SITE/STUDY AREA: Current land use
RECEPTOR: Trespasser
TOXIC EFFECT: Carcinogenic and noncarcinogenic
COMMENTS:

PREAMBLE:

This is a risk assessment model for evaluating health risks associated with chemical contamination detected in environmental media (soil, air, groundwater or surface water). This model is designed to evaluate health risks associated with exposures from several different pathways using the guidelines presented in the EPA Risk Assessment Guidance for Superfund (RAGS). This model uses chemical concentrations measured during site investigations or estimated in environmental fate and transport models to estimate health risks.

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Pathway	Description	Label	Value Units
General	Body Weight	BW	70 kg
	Exposure Duration	ED	70 years
	Averaging Time	AT	25550 days
Drinking water ingestion	Ingestion Rate	IR_WATER	0 L/day
	Exposure Frequency	EF_WATER	0 days/year
Ingestion during swimming	Contact Rate	CR	0 L/hour
	Exposure Time	ETS_WM	0 hours/event
	Exposure Frequency	EPS_WM	0 events/year
Dermal contact with surface water - Swimming	Skin Surface Area	SA_DERM_W	0 cm^2
	Exposure Time	ET_DERM_W	0 hours/day
	Exposure Frequency	EF_DERM_W	0 events/year
Dermal contact with surface water - Showering	Skin Surface Area	SA_DERM_S	0 cm^2
	Exposure Time	ET_DERM_S	0 hours/day
	Exposure Frequency	EF_DERM_S	0 events/year
Dermal contact with surface water - Showering	Skin Surface Area	SA_DERM_G	0 cm^2
	Exposure Time	ET_DERM_G	0 hours/day
	Exposure Frequency	EF_DERM_G	0 events/year
Soil ingestion on-site soils	Ingestion Rate	IR_SOIL_ON	0.0001 kg/day
	Fraction Ingested (from contaminated source)	FI_SOIL_ON	1
	Exposure Frequency	EPS_OIL_ON	350 days/year
Dermal contact with on-site soil	Skin Surface Area	SA_DERM_SON	3120 cm^2
	Soil to skin adherence factor	AF	0.00000145 kg/cm^2
	Exposure Frequency	EF_DERM_SON	350 events/year
Soil ingestion off-site soils	Ingestion Rate	IR_SOIL_OFF	0 kg/day
	Fraction Ingested (from contaminated source)	FI_SOIL_OFF	0
	Exposure Frequency	EPS_OIL_OFF	0 days/year
Dermal contact with off-site soil	Skin Surface Area	SA_DERM_SOFF	0 cm^2
	Exposure Frequency	EF_DERM_SOFF	0 events/year
Inhalation of outdoor air	Inhalation Rate	IR_AIR_OUT	0.83 m^3/hr
	Exposure Time	ET_AIR_OUT	16 hours/day

	Exposure Frequency	EFAIR_OUT	350 days/year
Inhalation of indoor air	Inhalation Rate	IRAIR_IN	0 m^3/hr
	Exposure Time	ETAIR_IN	0 hours/day
	Exposure Frequency	EFAIR_IN	0 days/year
Inhalation of indoor air - during showering	Inhalation Rate	IRAIR_SH	0 m^3/hr
	Exposure Time	ETAIR_SH	0 hours/day
	Exposure Frequency	EFAIR_SH	0 days/year
Ingestion of fish/shellfish	Ingestion Rate	IRFISH	0 kg/day
	Fraction Ingested (from contaminated source)	FIFISH	0
	Exposure frequency	EFFISH	0 days/year
Crop ingestion on-site soils	Ingestion Rate	IRCROP_ON	0 kg/day
	Fraction Ingested (from contaminated source)	FICROP_ON	0
	Exposure frequency	EFCROP_ON	0 days/year
Crop ingestion off-site soils	Ingestion Rate	IRCROP_OFF	0 kg/day
	Fraction Ingested (from contaminated source)	FICROP_OFF	0
	Exposure frequency	EFCROP_OFF	0 days/year
Meat/milk/eggs ingestion	Ingestion Rate	IRMEAT	0 kg/day
	Fraction Ingested (from contaminated source)	FIMEAT	0
	Exposure frequency	EFMEAT	0 days/year

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Chemical	Carcinogen Slope Factor (mg/kg/day)^-1		Reference Dose (mg/kg/day)		PC Dermal Permeability Constant (water) (cm/hr)	ABS Dermal Absorption Factor (soil)	Absorption Fractions					
	Ingestion	Inhalation	Ingestion	Inhalation			Soil	Water	Air	Crops	Meat/milk	Fish
Anthracene			0.000571	0.000571		0.132	1.00	1.00	1.00	1.00	1.00	1.00
Antimony			0.0004	0.0004		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Arsenic	1.75	15	0.001	0.001		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Barium			0.01	0.00143		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Benzo(a)anthracene	0.4	0.4	0.000571	0.000571		0.132	1.00	1.00	1.00	1.00	1.00	1.00
Benzo(a)pyrene	0.4	0.4	0.000571	0.000571		0.132	1.00	1.00	1.00	1.00	1.00	1.00
Benzo(b)fluoranthene	0.4	0.4	0.000571	0.000571		0.132	1.00	1.00	1.00	1.00	1.00	1.00
Benzo(g,h,i)perylene			0.000571	0.000571		0.132	1.00	1.00	1.00	1.00	1.00	1.00
Benzo(k)fluoranthene	0.4	0.4	0.000571	0.000571		0.132	1.00	1.00	1.00	1.00	1.00	1.00
Beryllium	4.3	8.4	0.005	0.005		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Cadmium		6.1	0.0005	0.0005		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Carcinogenic PAHs in air	0.4	0.4	0.000571	0.000571		0	1.00	1.00	1.00	1.00	1.00	1.00
Chromium (total)			0.114	0.0571		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Chrysene	0.4	0.4	0.000571	0.000571		0.132	1.00	1.00	1.00	1.00	1.00	1.00
Cobalt						0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Copper			0.114	0.0571		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Dibenzo(a,h)anthracene	0.4	0.4	0.000571	0.000571		0.132	1.00	1.00	1.00	1.00	1.00	1.00
Fluoranthene			0.000571	0.000571		0.132	1.00	1.00	1.00	1.00	1.00	1.00
Indeno(1,2,3-cd)pyrene	0.4	0.4	0.000571	0.000571		0.132	1.00	1.00	1.00	1.00	1.00	1.00
Lead						0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Mercury			0.002	0.00002		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Molybdenum						0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Naphthalene			0.000571	0.000571		0.132	1.00	1.00	1.00	1.00	1.00	1.00
Nickel			0.0114	0.000286		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Noncarcinogenic PAHs in air			0.000571	0.000571		0.132	1.00	1.00	1.00	1.00	1.00	1.00
Phenanthrene			0.000571	0.000571		0.132	1.00	1.00	1.00	1.00	1.00	1.00
Pyrene			0.000571	0.000571		0.132	1.00	1.00	1.00	1.00	1.00	1.00
Selenium			0.003	0.003		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Silver			0.0057	0.0057		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Thallium			0.00007	0.00007		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Toluene			0.0571	0.0571		0.8	1.00	1.00	1.00	1.00	1.00	1.00
TPH						0.8	1.00	1.00	1.00	1.00	1.00	1.00
TPH/Gasoline						0.8	1.00	1.00	1.00	1.00	1.00	1.00
TPHC						0.8	1.00	1.00	1.00	1.00	1.00	1.00
TRHC						0.8	1.00	1.00	1.00	1.00	1.00	1.00

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Chemical	Carcinogen Slope Factor (mg/kg/day)^-1		Reference Dose (mg/kg/day)		PC Dermal Permeability Constant (water) (cm/hr)	ABS Dermal Absorption Factor (soil)	Absorption Fractions					
	Ingestion	Inhalation	Ingestion	Inhalation			Soil	Water	Air	Crops	Meat/milk	Fish
Vanadium			0.007	0.007		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Zinc			0.229	0.229		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
1,1-Dichloroethane		0.091		0.1		0	1.00	1.00	1.00	1.00	1.00	1.00
1,1-Dichloroethene		1.2		0.009		0	1.00	1.00	1.00	1.00	1.00	1.00
Tetrachloroethene		0.0033		0.01		0	1.00	1.00	1.00	1.00	1.00	1.00
Trichloroethene		0.017	0.0002	0.002		0	1.00	1.00	1.00	1.00	1.00	1.00
1,1,1-Trichloroethane			0.00857	0.0857		0	1.00	1.00	1.00	1.00	1.00	1.00
Carbon Tetrachloride		0.13		0.0007		0	1.00	1.00	1.00	1.00	1.00	1.00

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Chemical	Conc. in Groundwater (mg/L)	Conc. in Surface Water (mg/L)	Conc. in Soil on-site (mg/kg)	Conc. in Soil off-site (mg/kg)	Conc. in Air outdoors (mg/m^3)	Conc. in Air indoors (mg/m^3)	Conc. in Air during showering (mg/m^3)	Conc. in Crops on-site soil (mg/kg)	Conc. in Crops off-site soil (mg/kg)	Conc. in Livestock Products (mg/kg)	Conc. in Fish (mg/kg)
Anthracene	0	0	2.55	0	0	0	0	0	0	0	0
Antimony	0	0	31.77	0	0.0000392	0	0	0	0	0	0
Arsenic	0	0	45.91	0	0.0000306	0	0	0	0	0	0
Barium	0	0	297.66	0	0.0000367	0	0	0	0	0	0
Benzo(a)anthracene	0	0	0.32	0	0	0	0	0	0	0	0
Benzo(a)pyrene	0	0	0.44	0	0	0	0	0	0	0	0
Benzo(b)fluoranthene	0	0	0.34	0	0	0	0	0	0	0	0
Benzo(g,h,i)perylene	0	0	0.35	0	0	0	0	0	0	0	0
Benzo(k)fluoranthene	0	0	0.82	0	0	0	0	0	0	0	0
Beryllium	0	0	2.72	0	0.0000043	0	0	0	0	0	0
Cadmium	0	0	1.32	0	0.0000021	0	0	0	0	0	0
Carcinogenic PAHs in air	0	0	0.00	0	0.0000133	0	0	0	0	0	0
Chromium (total)	0	0	39.41	0	0.0000636	0	0	0	0	0	0
Chrysene	0	0	0.52	0	0	0	0	0	0	0	0
Cobalt	0	0	11.58	0	0.0000143	0	0	0	0	0	0
Copper	0	0	429.29	0	0.000529	0	0	0	0	0	0
Dibenzo(a,h)anthracene	0	0	0.81	0	0	0	0	0	0	0	0
Fluoranthene	0	0	0.91	0	0	0	0	0	0	0	0
Indeno(1,2,3-cd)pyrene	0	0	1.03	0	0	0	0	0	0	0	0
Lead	0	0	477.06	0	0	0	0	0	0	0	0
Mercury	0	0	0.09	0	0.0000011	0	0	0	0	0	0
Molybdenum	0	0	14.95	0	0.0000185	0	0	0	0	0	0
Naphthalene	0	0	10.61	0	0	0	0	0	0	0	0
Nickel	0	0	40.24	0	0.0000648	0	0	0	0	0	0
Noncarcinogenic PAHs in	0	0	0.00	0	0.000794	0	0	0	0	0	0
Phenanthrene	0	0	2.69	0	0	0	0	0	0	0	0
Pyrene	0	0	0.93	0	0	0	0	0	0	0	0
Selenium	0	0	0.16	0	0.0000025	0	0	0	0	0	0
Silver	0	0	1.31	0	0.0000162	0	0	0	0	0	0
Thallium	0	0	36.30	0	0.0000448	0	0	0	0	0	0
Toluene	0	0	0.16	0	0	0	0	0	0	0	0
TPH	0	0	37294.72	0	0	0	0	0	0	0	0
TPH/Gasoline	0	0	13560.44	0	0	0	0	0	0	0	0
TPHC	0	0	650.63	0	0	0	0	0	0	0	0
TRHC	0	0	1600.00	0	0	0	0	0	0	0	0

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Chemical	Conc. in Groundwater (mg/L)	Conc. in Surface Water (mg/L)	Conc. in Soil on-site (mg/kg)	Conc. in Soil off-site (mg/kg)	Conc. in Air outdoors (mg/m^3)	Conc. in Air indoors (mg/m^3)	Conc. in Air during showering (mg/m^3)	Conc. in Crops on-site soil (mg/kg)	Conc. in Crops off-site soil (mg/kg)	Conc. in Livestock Products (mg/kg)	Conc. in Fish (mg/kg)
Vanadium	0	0	39.86	0	0.0000492	0	0	0	0	0	0
Zinc	0	0	698.36	0	0.0000861	0	0	0	0	0	0
1,1-Dichloroethane	0	0	0.00	0	0.000019	0	0	0	0	0	0
1,1-Dichloroethene	0	0	0.00	0	0.00004	0	0	0	0	0	0
Tetrachloroethene	0	0	0.00	0	0.0000724	0	0	0	0	0	0
Trichloroethene	0	0	0.00	0	0.0000145	0	0	0	0	0	0
1,1,1-Trichloroethane	0	0	0.00	0	0.0000698	0	0	0	0	0	0
Carbon Tetrachloride	0	0	0.00	0	1.71E-10	0	0	0	0	0	0

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Chemical	Intake from each pathway (mg/kg-day)																	
	Drinking Water Ingestion Ground Water	Drinking Water Ingestion Surface Water	Water Ingestion while Swimming	Dermal Contact Surface water Swimming	Dermal Contact Surface water Showering	Dermal Contact Ground water Showering	Soil Ingestion on-site soil	Soil Ingestion off-site soil	Dermal Contact with on-site soil	Dermal Contact with off-site soil	Inhalation Outdoor Air	Inhalation Indoor Air	Inhalation during showering	Ingestion of Fish and Shellfish	Ingestion of Crops on-site Soil	Ingestion of Crops off-site Soil	Ingestion of meat/ milk/eggs	Total
Anthracene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.5E-06	0.0E+00	2.1E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.4E-05
Antimony	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.4E-05	0.0E+00	1.4E-06	0.0E+00	7.1E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.6E-05
Arsenic	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.3E-05	0.0E+00	2.0E-06	0.0E+00	5.6E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.0E-05
Barium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.1E-04	0.0E+00	1.3E-05	0.0E+00	6.7E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.3E-04
Benzo(a)anthracene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.4E-07	0.0E+00	2.6E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.1E-06
Benzo(a)pyrene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.1E-07	0.0E+00	3.6E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.2E-06
Benzo(b)fluoranthene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.6E-07	0.0E+00	2.8E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.2E-06
Benzo(g,h,i)perylene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.7E-07	0.0E+00	2.8E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.3E-06
Benzo(k)fluoranthene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-06	0.0E+00	6.7E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.8E-06
Beryllium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.7E-06	0.0E+00	1.2E-07	0.0E+00	8.0E-08	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.9E-06
Cadmium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.8E-06	0.0E+00	5.7E-08	0.0E+00	3.9E-08	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.9E-06
Carcinogenic PAHs in	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.4E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.4E-07
Chromium (total)	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.4E-05	0.0E+00	1.7E-06	0.0E+00	1.2E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.7E-05
Chrysene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.2E-07	0.0E+00	4.3E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.0E-06
Cobalt	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.6E-05	0.0E+00	5.0E-07	0.0E+00	2.6E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.7E-05
Copper	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.9E-04	0.0E+00	1.9E-05	0.0E+00	9.6E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.2E-04
Dibenzo(a,h)anthrace	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-06	0.0E+00	6.6E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.7E-06
Fluoranthene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-06	0.0E+00	7.4E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.7E-06
Indeno(1,2,3-cd)pyre	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-06	0.0E+00	8.5E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.9E-06
Lead	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.5E-04	0.0E+00	2.1E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.7E-04
Mercury	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-07	0.0E+00	3.9E-09	0.0E+00	2.0E-08	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.5E-07
Molybdenum	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.0E-05	0.0E+00	6.5E-07	0.0E+00	3.4E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.1E-05
Naphthalene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.5E-05	0.0E+00	8.7E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.0E-04
Nickel	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.5E-05	0.0E+00	1.7E-06	0.0E+00	1.2E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.8E-05
Noncarcinogenic PAHs	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-05
Phenanthrene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.7E-06	0.0E+00	2.2E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.6E-05
Pyrene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-06	0.0E+00	7.6E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.9E-06
Selenium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.1E-07	0.0E+00	6.7E-09	0.0E+00	4.7E-08	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.7E-07
Silver	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.8E-06	0.0E+00	5.7E-08	0.0E+00	2.9E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.1E-06
Thallium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.0E-05	0.0E+00	1.6E-06	0.0E+00	8.1E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.2E-05
Toluene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.2E-07	0.0E+00	8.0E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.3E-06
TPH	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.1E-02	0.0E+00	1.8E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.9E+00
TPH/Gasoline	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.9E-02	0.0E+00	6.7E-01	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.9E-01
TPHC	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.9E-04	0.0E+00	3.2E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.3E-02
TRHC	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.2E-03	0.0E+00	7.9E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.2E-02

PROJECT: UPRR Sacramento Site
PROJECT FILENAME: UPRR001.WK1
LAST SAVED
DATE: 09/30/91
TIME: 11:48 AM

SITE/STUDY AREA: Current land use
RECEPTOR: Trespasser
TOXIC EFFECT: Carcinogenic and noncarcinogenic

Chemical	Intake from each pathway (mg/kg-day)																	
	Drinking Water Ingestion Ground water	Drinking Water Ingestion Surface water	Water Ingestion while Swimming	Dermal Contact Surface water Swimming	Dermal Contact Surface water Showering	Dermal Contact Ground water Showering	Soil Ingestion on-site soil	Soil Ingestion off-site soil	Dermal Contact with on-site soil	Dermal Contact with off-site soil	Inhalation Outdoor Air	Inhalation Indoor Air	Inhalation during showering	Ingestion of Fish and Shellfish	Ingestion of Crops on-site Soil	Ingestion of Crops off-site Soil	Ingestion of meat/ milk/eggs	Total
Vanadium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.5E-05	0.0E+00	1.7E-06	0.0E+00	9.0E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.7E-05
Zinc	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.6E-04	0.0E+00	3.0E-05	0.0E+00	1.6E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.0E-03
1,1-Dichloroethane	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.5E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.5E-06
1,1-Dichloroethene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.3E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.3E-07
Tetrachloroethene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-06
Trichloroethene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.6E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.6E-07
1,1,1-Trichloroethan	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-06
Carbon Tetrachloride	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.1E-11	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.1E-11

PROJECT: UPRR Sacramento Site
PROJECT FILENAME: UPRR001.WK1
LAST SAVED
DATE: 09/30/91
TIME: 11:48 AM

SITE/STUDY AREA: Current land use
RECEPTOR: Trespasser
TOXIC EFFECT: Carcinogenic and noncarcinogenic

Chemical	Lifetime cancer risks from each pathway																		
	Drinking Water Ingestion Ground water	Drinking Water Ingestion Surface water	Water Ingestion while Swimming	Dermal Contact Surface water Swimming	Dermal Contact Surface water Showering	Dermal Contact Ground water Showering	Soil Ingestion on-site soil	Soil Ingestion off-site soil	Dermal Contact with on-site soil	Dermal Contact with off-site soil	Inhalation Outdoor Air	Inhalation Indoor Air	Inhalation during showering	Ingestion of Fish and Shellfish	Ingestion of Crops on-site Soil	Ingestion of Crops off-site Soil	Ingestion of meat/ milk/eggs	Total (Pathway)	Total (Scenario)
Anthracene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.0E-04
Antimony	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Arsenic	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-04	0.0E+00	3.5E-06	0.0E+00	8.4E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.0E-04	
Barium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Benzo(a)anthracene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.8E-07	0.0E+00	1.1E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-06	
Benzo(a)pyrene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.4E-07	0.0E+00	1.5E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.7E-06	
Benzo(b)fluoranthene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.9E-07	0.0E+00	1.1E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-06	
Benzo(g,h,i)perylene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Benzo(k)fluoranthene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.5E-07	0.0E+00	2.7E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.1E-06	
Beryllium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-05	0.0E+00	5.1E-07	0.0E+00	6.7E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.7E-05	
Cadmium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.4E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.4E-07	
Carcinogenic PAHs in	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.7E-08	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.7E-08	
Chromium (total)	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Chrysene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.9E-07	0.0E+00	1.7E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.0E-06	
Cobalt	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Copper	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Dibenzo(a,h)anthrace	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.4E-07	0.0E+00	2.7E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.1E-06	
Fluoranthene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Indeno(1,2,3-cd)pyre	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.7E-07	0.0E+00	3.4E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.9E-06	
Lead	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Mercury	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Molybdenum	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Naphthalene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Nickel	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Noncarcinogenic PAHs	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Phenanthrene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Pyrene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Selenium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Silver	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Thallium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Toluene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
TPH	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
TPH/Gasoline	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
TPHC	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
TRHC	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	

PROJECT: UPRR Sacramento Site
PROJECT FILENAME: UPRR001.WK1
LAST SAVED
DATE: 09/30/91
TIME: 11:48 AM

SITE/STUDY AREA: Current land use
RECEPTOR: Trespasser
TOXIC EFFECT: Carcinogenic and noncarcinogenic

Chemical	Lifetime cancer risks from each pathway																		
	Drinking Water Ingestion Ground water	Drinking Water Ingestion Surface water	Water Ingestion while Swimming	Dermal Contact Surface water Swimming	Dermal Contact Surface water Showering	Dermal Contact Ground water Showering	Soil Ingestion on-site soil	Soil Ingestion off-site soil	Dermal Contact with on-site soil	Dermal Contact with off-site soil	Inhalation Outdoor Air	Inhalation Indoor Air	Inhalation during showering	Ingestion of Fish and Shellfish	Ingestion of Crops on-site Soil	Ingestion of Crops off-site Soil	Ingestion of meat/ milk/eggs	Total (Pathway)	Total (Scenario)
Vanadium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Zinc	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
1,1-Dichloroethane	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.1E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.1E-07	
1,1-Dichloroethene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.7E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.7E-07	
Tetrachloroethene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.3E-09	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.3E-09	
Trichloroethene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.5E-09	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.5E-09	
1,1,1-Trichloroethan	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Carbon Tetrachloride	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.0E-12	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.0E-12	

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	Drinking Water Ingestion Ground water	Drinking Water Ingestion Surface water	Water Ingestion while Swimming	Dermal Contact Surface water Swimming	Dermal Contact Surface water Showering	Dermal Contact Ground Water Showering	Soil Ingestion on-site soil	Soil Ingestion off-site soil	Dermal Contact with on-site soil	Dermal Contact with off-site soil	Inhalation Outdoor Air	Inhalation Indoor Air	Inhalation during showering	Ingestion of Fish and Shellfish	Ingestion of Crops on-site Soil	Ingestion of Crops off-site Soil	Ingestion of meat/ milk/eggs	Total
Anthracene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.1E-03	0.0E+00	3.6E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.3E-02
Antimony	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-01	0.0E+00	3.4E-03	0.0E+00	1.8E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-01
Arsenic	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.3E-02	0.0E+00	2.0E-03	0.0E+00	5.6E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.0E-02
Barium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.1E-02	0.0E+00	1.3E-03	0.0E+00	6.7E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.3E-02
Benzo(a)anthracene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.7E-04	0.0E+00	4.6E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.4E-03
Benzo(a)pyrene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-03	0.0E+00	6.4E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.4E-03
Benzo(b)fluoranthene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.1E-04	0.0E+00	4.8E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.7E-03
Benzo(g,h,i)perylene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.3E-04	0.0E+00	4.9E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.8E-03
Benzo(k)fluoranthene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.0E-03	0.0E+00	1.2E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-02
Beryllium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.5E-04	0.0E+00	2.4E-05	0.0E+00	1.6E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.9E-04
Cadmium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.6E-03	0.0E+00	1.1E-04	0.0E+00	7.7E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.8E-03
Carcinogenic PAHs in	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.2E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.2E-04
Chromium (total)	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.7E-04	0.0E+00	1.5E-05	0.0E+00	1.0E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.0E-04
Chrysene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-03	0.0E+00	7.5E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.8E-03
Cobalt	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Copper	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.2E-03	0.0E+00	1.6E-04	0.0E+00	8.4E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.4E-03
Dibenzo(a,h)anthrace	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.9E-03	0.0E+00	1.2E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-02
Fluoranthene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.2E-03	0.0E+00	1.3E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.5E-02
Indeno(1,2,3-cd)pyre	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.5E-03	0.0E+00	1.5E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.7E-02
Lead	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Mercury	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.2E-05	0.0E+00	2.0E-06	0.0E+00	1.0E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.4E-05
Molybdenum	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Naphthalene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.5E-02	0.0E+00	1.5E-01	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.8E-01
Nickel	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.8E-03	0.0E+00	1.5E-04	0.0E+00	1.0E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.1E-03
Noncarcinogenic PAHs	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.5E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.5E-02
Phenanthrene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.5E-03	0.0E+00	3.9E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.5E-02
Pyrene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.2E-03	0.0E+00	1.3E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.6E-02
Selenium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.1E-05	0.0E+00	2.2E-06	0.0E+00	1.6E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.9E-05
Silver	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.1E-04	0.0E+00	1.0E-05	0.0E+00	5.2E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.8E-04
Thallium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.1E-01	0.0E+00	2.2E-02	0.0E+00	1.2E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.4E-01
Toluene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.9E-06	0.0E+00	1.4E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-04
TPH	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
TPH/Gasoline	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
TPHC	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
TRHC	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00

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Vanadium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.8E-03	0.0E+00	2.5E-04	0.0E+00	1.3E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.2E-03
Zinc	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.2E-03	0.0E+00	1.3E-04	0.0E+00	6.8E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.4E-03
1,1-Dichloroethene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
1,1-Dichloroethane	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Tetrachloroethene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Trichloroethene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-03
1,1,1-Trichloroethan	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.5E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.5E-04
Carbon Tetrachloride	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00

PROJECT: UPRR Sacramento Site
PROJECT FILENAME: UPRR003.WK1
LAST SAVED:
DATE: 09/30/91
TIME: 11:51 AM

SITE/STUDY AREA: Current land use
RECEPTOR: Off-site Resident - Adult
TOXIC EFFECT: Carcinogenic and noncarcinogenic
COMMENTS:

PREAMBLE:

This is a risk assessment model for evaluating health risks associated with chemical contamination detected in environmental media (soil, air, groundwater or surface water). This model is designed to evaluate health risks associated with exposures from several different pathways using the guidelines presented in the EPA Risk Assessment Guidance for Superfund (RAGS). This model uses chemical concentrations measured during site investigations or estimated in environmental fate and transport models to estimate health risks.

PROJECT: LPRR Sacramento Site
PROJECT FILENAME: LPRR003.WK1
LAST SAVED
DATE: 09/30/91
TIME: 11:51 AM

SITE/STUDY AREA: Current land use
RECEPTOR: Off-site Resident - Adult
TOXIC EFFECT: Carcinogenic and noncarcinogenic

Pathway	Description	Label	Value Units
General	Body Weight	BW	70 kg
	Exposure Duration	ED	70 years
	Averaging Time	AT	25550 days
Drinking water ingestion	Ingestion Rate	IRWATER	0 L/day
	Exposure Frequency	EFWATER	0 days/year
Ingestion during swimming	Contact Rate	CR	0 L/hour
	Exposure Time	ETSWIM	0 hours/event
	Exposure Frequency	EFSWIM	0 events/year
Dermal contact with surface water - Swimming	Skin Surface Area	SADERM_W	0 cm^2
	Exposure Time	ETDERM_W	0 hours/day
	Exposure Frequency	EFDERM_W	0 events/year
Dermal contact with surface water - Showering	Skin Surface Area	SADERM_S	0 cm^2
	Exposure Time	ETDERM_S	0 hours/day
	Exposure Frequency	EFDERM_S	0 events/year
Dermal contact with surface water - Showering	Skin Surface Area	SADERM_G	0 cm^2
	Exposure Time	ETDERM_G	0 hours/day
	Exposure Frequency	EFDERM_G	0 events/year
Soil ingestion on-site soils	Ingestion Rate	IRSOIL_ON	0 kg/day
	Fraction Ingested (from contaminated source)	FISOIL_ON	0
	Exposure Frequency	EFSOIL_ON	0 days/year
Dermal contact with on-site soil	Skin Surface Area	SADERM_SON	0 cm^2
	Soil to skin adherence factor	AF	0 kg/cm^2
	Exposure Frequency	EFDERM_SON	0 events/year
Soil ingestion off-site soils	Ingestion Rate	IRSOIL_OFF	0 kg/day
	Fraction Ingested (from contaminated source)	FISOIL_OFF	0
	Exposure Frequency	EFSOIL_OFF	0 days/year
Dermal contact with off-site soil	Skin Surface Area	SADERM_SOFF	0 cm^2
	Exposure Frequency	EFDERM_SOFF	0 events/year
Inhalation of outdoor air	Inhalation Rate	IRAIR_OUT	0.83 m^3/hr
	Exposure Time	ETAIR_OUT	16 hours/day

	Exposure Frequency	EFAIR_OUT	350 days/year
Inhalation of indoor air	Inhalation Rate	IRAIR_IN	0 m^3/hr
	Exposure Time	ETAIR_IN	0 hours/day
	Exposure Frequency	EFAIR_IN	0 days/year
Inhalation of indoor air - during showering	Inhalation Rate	IRAIR_SH	0 m^3/hr
	Exposure Time	ETAIR_SH	0 hours/day
	Exposure Frequency	EFAIR_SH	0 days/year
Ingestion of fish/shellfish	Ingestion Rate	IRFISH	0 kg/day
	Fraction Ingested (from contaminated source)	FIFISH	0
	Exposure frequency	EFFISH	0 days/year
Crop ingestion on-site soils	Ingestion Rate	IRCROP_ON	0 kg/day
	Fraction Ingested (from contaminated source)	FICROP_ON	0
	Exposure frequency	EFCROP_ON	0 days/year
Crop ingestion off-site soils	Ingestion Rate	IRCROP_OFF	0 kg/day
	Fraction Ingested (from contaminated source)	FICROP_OFF	0
	Exposure frequency	EFCROP_OFF	0 days/year
Meat/milk/eggs ingestion	Ingestion Rate	IRMEAT	0 kg/day
	Fraction Ingested (from contaminated source)	FIMEAT	0
	Exposure frequency	EFMEAT	0 days/year

PROJECT: UPRR Sacramento Site
PROJECT FILENAME: UPRR03B.WK1
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SITE/STUDY AREA: Current land use
RECEPTOR: Off-site Resident - Adult
TOXIC EFFECT: Carcinogenic and noncarcinogenic

Chemical	Carcinogen Slope Factor (mg/kg/day)^-1		Reference Dose (mg/kg/day)		PC Dermal Permeability Constant (water) (cm/hr)	ABS Dermal Absorption Factor (soil)	Absorption Fractions					
	Ingestion	Inhalation	Ingestion	Inhalation			Soil	Water	Air	Crops	Meat/milk	Fish
Antimony			0.0004	0.0004		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Arsenic	1.75	15	0.001	0.001		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Barium			0.01	0.0014		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Beryllium	4.3	8.4	0.005	0.005		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Cadmium		6.1	0.0005	0.0005		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Carcinogenic PAHs	0.4	0.4	0.000571	0.000571		0.132	1.00	1.00	1.00	1.00	1.00	1.00
Chromium (total)			1.43	0.0143		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Cobalt						0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Copper			0.114	0.0571		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Lead						0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Mercury			0.002	0.00002		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Molybdenum						0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Nickel			0.0114	0.0000286		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Noncarcinogenic PAHs			0.000571	0.000571		0.132	1.00	1.00	1.00	1.00	1.00	1.00
Selenium			0.003	0.003		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Silver			0.003	0.003		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Thallium			0.00007	0.00007		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Vanadium			0.007	0.007		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Zinc			0.229	0.229		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
1,1-Dichloroethane	0.091			0.1		0	1.00	1.00	1.00	1.00	1.00	1.00
1,1-Dichloroethene	1.2			0.009		0	1.00	1.00	1.00	1.00	1.00	1.00
Tetrachloroethene	0.0033			0.01		0	1.00	1.00	1.00	1.00	1.00	1.00
Trichloroethene	0.017		0.0002	0.002		0	1.00	1.00	1.00	1.00	1.00	1.00
1,1,1-Trichloroethane			0.00857	0.00857		0	1.00	1.00	1.00	1.00	1.00	1.00
Carbon Tetrachloride	0.13			0.0007		0	1.00	1.00	1.00	1.00	1.00	1.00

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SITE/STUDY AREA: Current land use
RECEPTOR: Off-site Resident - Adult
TOXIC EFFECT: Carcinogenic and noncarcinogenic

Chemical	Conc. in Groundwater (mg/L)	Conc. in Surface Water (mg/L)	Conc. in Soil on-site (mg/kg)	Conc. in Soil off-site (mg/kg)	Conc. in Air outdoors (mg/m^3)	Conc. in Air indoors (mg/m^3)	Conc. in Air during showering (mg/m^3)	Conc. in Crops on-site soil (mg/kg)	Conc. in Crops off-site soil (mg/kg)	Conc. in Livestock Products (mg/kg)	Conc. in Fish (mg/kg)
Antimony	0	0	0	0	0.00000392	0	0	0	0	0	0
Arsenic	0	0	0	0	0.0000306	0	0	0	0	0	0
Barium	0	0	0	0	0.0000367	0	0	0	0	0	0
Beryllium	0	0	0	0	0.0000043	0	0	0	0	0	0
Cadmium	0	0	0	0	0.0000021	0	0	0	0	0	0
Carcinogenic PAHs	0	0	0	0	0.0000133	0	0	0	0	0	0
Chromium (total)	0	0	0	0	0.0000636	0	0	0	0	0	0
Cobalt	0	0	0	0	0.0000143	0	0	0	0	0	0
Copper	0	0	0	0	0.000029	0	0	0	0	0	0
Lead	0	0	0	0	0.0001443	0	0	0	0	0	0
Mercury	0	0	0	0	0.0000057	0	0	0	0	0	0
Molybdenum	0	0	0	0	0.0000185	0	0	0	0	0	0
Nickel	0	0	0	0	0.0000648	0	0	0	0	0	0
Noncarcinogenic PAHs	0	0	0	0	0.000079	0	0	0	0	0	0
Selenium	0	0	0	0	0.0000002	0	0	0	0	0	0
Silver	0	0	0	0	0.0000057	0	0	0	0	0	0
Thallium	0	0	0	0	0.0000048	0	0	0	0	0	0
Vanadium	0	0	0	0	0.0000492	0	0	0	0	0	0
Zinc	0	0	0	0	0.000861	0	0	0	0	0	0
1,1-Dichloroethene	0	0	0	0	0.000019	0	0	0	0	0	0
1,1-Dichloroethene	0	0	0	0	0.00004	0	0	0	0	0	0
Tetrachloroethene	0	0	0	0	0.0000724	0	0	0	0	0	0
Trichloroethene	0	0	0	0	0.0000145	0	0	0	0	0	0
1,1,1-Trichloroethane	0	0	0	0	0.0000698	0	0	0	0	0	0
Carbon Tetrachloride	0	0	0	0	1.71E-10	0	0	0	0	0	0

PROJECT: UPRR Sacramento Site
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SITE/STUDY AREA: Current land use
RECEPTOR: Off-site Resident - Adult
TOXIC EFFECT: Carcinogenic and noncarcinogenic

Chemical	Intake from each pathway (mg/kg-day)																
	Drinking Water Ingestion Ground water	Drinking Water Ingestion Surface water	Water Ingestion while Swimming	Dermal Contact Surface water Swimming	Dermal Contact Surface water Showering	Dermal Contact Ground water Showering	Soil Ingestion on-site soil	Soil Ingestion off-site soil	Dermal Contact with on-site soil	Dermal Contact with off-site soil	Inhalation Outdoor Air	Inhalation Indoor Air	Inhalation during showering	Ingestion of Fish and Shellfish	Ingestion of Crops on-site Soil	Ingestion of Crops off-site Soil	Ingestion of meat/ milk/eggs	Total
Antimony	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.1E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.1E-07
Arsenic	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.6E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.6E-06
Barium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.7E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.7E-06
Beryllium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.0E-08	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.0E-08
Cadmium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.9E-08	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.9E-08
Carcinogenic PAHs	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.4E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.4E-07
Chromium (total)	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-06
Cobalt	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.6E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.6E-07
Copper	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.6E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.6E-06
Lead	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.6E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.6E-05
Mercury	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.0E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.0E-07
Molybdenum	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.4E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.4E-07
Nickel	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-06
Noncarcinogenic PAHs	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-05
Selenium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.7E-09	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.7E-09
Silver	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.0E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.0E-07
Thallium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.1E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.1E-07
Vanadium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.0E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.0E-07
Zinc	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.6E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.6E-05
1,1-Dichloroethene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.5E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.5E-06
1,1-Dichloroethene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.3E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.3E-07
Tetrachloroethene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-06
Trichloroethene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.6E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.6E-07
1,1,1-Trichloroethan	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-06
Carbon Tetrachloride	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.1E-11	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.1E-11

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SITE/STUDY AREA: Current land use
RECEPTOR: Off-site Resident - Adult
TOXIC EFFECT: Carcinogenic and noncarcinogenic

Chemical	Lifetime cancer risks from each pathway																	
	Drinking Water Ingestion Ground Water	Drinking Water Ingestion Surface Water	Water Ingestion while Swimming	Dermal Contact Surface Water Swimming	Dermal Contact Surface Water Showering	Dermal Contact Ground Water Showering	Soil Ingestion on-site soil	Soil Ingestion off-site soil	Dermal Contact with on-site soil	Dermal Contact with off-site soil	Inhalation Outdoor Air	Inhalation Indoor Air	Inhalation during showering	Ingestion of Fish and Shellfish	Ingestion of Crops on-site Soil	Ingestion of Crops off-site Soil	Ingestion of meat/ milk/eggs	Total (Pathway)	Total (Scenario)
Antimony	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.5E-05
Arsenic	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.4E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.4E-05	
Barium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Beryllium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.7E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.7E-07	
Cadmium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.4E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.4E-07	
Carcinogenic PAHs	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.7E-08	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.7E-08	
Chromium (total)	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Cobalt	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Copper	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Lead	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Mercury	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Molybdenum	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Nickel	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Noncarcinogenic PAHs	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Selenium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Silver	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Thallium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Vanadium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Zinc	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
1,1-Dichloroethene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.1E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.1E-07	
1,1-Dichloroethene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.7E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.7E-07	
Tetrachloroethene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.3E-09	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.3E-09	
Trichloroethene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.5E-09	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.5E-09	
1,1,1-Trichloroethan	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Carbon Tetrachloride	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.0E-12	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.0E-12	

PROJECT: UPRR Sacramento Site
PROJECT FILENAME: UPRR003.WK1
LAST SAVED
DATE: 09/30/91
TIME: 11:51 AM

SITE/STUDY AREA: Current land use
RECEPTOR: Off-site Resident - Adult
TOXIC EFFECT: Carcinogenic and noncarcinogenic

Chemical	Hazard Index for each pathway																
	Drinking Water Ingestion Ground water	Drinking Water Ingestion Surface water	Water Ingestion while Swimming	Dermal Contact Surface water Swimming	Dermal Contact Surface water Showering	Dermal Contact Ground water Showering	Soil Ingestion on-site soil	Soil Ingestion off-site soil	Dermal Contact with on-site soil	Dermal Contact with off-site soil	Inhalation Outdoor Air	Inhalation Indoor Air	Inhalation during showering	Ingestion of Fish and Shellfish	Ingestion of Crops on-site Soil	Ingestion of Crops off-site Soil	Ingestion of meat/ milk/eggs	Total
Antimony	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.8E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.8E-03
Arsenic	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.6E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.6E-03
Barium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.7E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.7E-04
Beryllium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.6E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.6E-05
Cadmium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.7E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.7E-05
Carcinogenic PAHs	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.2E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.2E-04
Chromium (total)	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.1E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.1E-07
Cobalt	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Copper	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.4E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.4E-05
Lead	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Mercury	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.2E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.2E-05
Molybdenum	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Nickel	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.0E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.0E-04
Noncarcinogenic PAHs	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.5E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.5E-02
Selenium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.6E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.6E-06
Silver	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.5E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.5E-05
Thallium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-02
Vanadium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-04
Zinc	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.8E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.8E-05
1,1-Dichloroethane	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
1,1-Dichloroethene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Tetrachloroethene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Trichloroethene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-03
1,1,1-Trichloroethan	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.5E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.5E-04
Carbon Tetrachloride	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00

PROJECT: UPRR Sacramento Site
PROJECT FILENAME: UPRR004.WK1
LAST SAVED:
DATE: 09/30/91
TIME: 11:53 AM

SITE/STUDY AREA: Current land use
RECEPTOR: Off-site Resident - Child
TOXIC EFFECT: Carcinogenic and noncarcinogenic
COMMENTS:

PREAMBLE:

This is a risk assessment model for evaluating health risks associated with chemical contamination detected in environmental media (soil, air, groundwater or surface water). This model is designed to evaluate health risks associated with exposures from several different pathways using the guidelines presented in the EPA Risk Assessment Guidance for Superfund (RAGS). This model uses chemical concentrations measured during site investigations or estimated in environmental fate and transport models to estimate health risks.

PROJECT: UPRR Sacramento Site
PROJECT FILENAME: UPRR004.WK1
LAST SAVED
DATE: 09/30/91
TIME: 11:53 AM

SITE/STUDY AREA: Current land use
RECEPTOR: Off-site Resident - Child
TOXIC EFFECT: Carcinogenic and noncarcinogenic

Pathway	Description	Label	Value Units
General	Body Weight	BW	15.1 kg
	Exposure Duration	ED	70 years
	Averaging Time	AT	25550 days
Drinking water ingestion	Ingestion Rate	IRWATER	0 L/day
	Exposure Frequency	EFWATER	0 days/year
Ingestion during swimming	Contact Rate	CR	0 L/hour
	Exposure Time	ETSWIM	0 hours/event
	Exposure Frequency	EFSWIM	0 events/year
Dermal contact with surface water - Swimming	Skin Surface Area	SADERM_W	0 cm^2
	Exposure Time	ETDERM_W	0 hours/day
	Exposure Frequency	EFDERM_W	0 events/year
Dermal contact with surface water - Showering	Skin Surface Area	SADERM_S	0 cm^2
	Exposure Time	ETDERM_S	0 hours/day
	Exposure Frequency	EFDERM_S	0 events/year
Dermal contact with surface water - Showering	Skin Surface Area	SADERM_G	0 cm^2
	Exposure Time	ETDERM_G	0 hours/day
	Exposure Frequency	EFDERM_G	0 events/year
Soil ingestion on-site soils	Ingestion Rate	IRSOIL_ON	0 kg/day
	Fraction Ingested (from contaminated source)	FISOIL_ON	0
	Exposure Frequency	EFSOIL_ON	0 days/year
Dermal contact with on-site soil	Skin Surface Area	SADERM_SON	0 cm^2
	Soil to skin adherence factor	AF	0 kg/cm^2
	Exposure Frequency	EFDERM_SON	0 events/year
Soil ingestion off-site soils	Ingestion Rate	IRSOIL_OFF	0 kg/day
	Fraction Ingested (from contaminated source)	FISOIL_OFF	0
	Exposure Frequency	EFSOIL_OFF	0 days/year
Dermal contact with off-site soil	Skin Surface Area	SADERM_SOFF	0 cm^2
	Exposure Frequency	EFDERM_SOFF	0 events/year
Inhalation of outdoor air	Inhalation Rate	IRAIR_OUT	0.8 m^3/hr
	Exposure Time	ETAIR_OUT	16 hours/day

	Exposure Frequency	EFAIR_OUT	350 days/year
Inhalation of indoor air	Inhalation Rate	IRAIR_IN	0 m^3/hr
	Exposure Time	ETAIR_IN	0 hours/day
	Exposure Frequency	EFAIR_IN	0 days/year
Inhalation of indoor air - during showering	Inhalation Rate	IRAIR_SH	0 m^3/hr
	Exposure Time	ETAIR_SH	0 hours/day
	Exposure Frequency	EFAIR_SH	0 days/year
Ingestion of fish/shellfish	Ingestion Rate	IRFISH	0 kg/day
	Fraction Ingested (from contaminated source)	FIFISH	0
	Exposure frequency	EFFISH	0 days/year
Crop ingestion on-site soils	Ingestion Rate	IRCROP_ON	0 kg/day
	Fraction Ingested (from contaminated source)	FICROP_ON	0
	Exposure frequency	EFCROP_ON	0 days/year
Crop ingestion off-site soils	Ingestion Rate	IRCROP_OFF	0 kg/day
	Fraction Ingested (from contaminated source)	FICROP_OFF	0
	Exposure frequency	EFCROP_OFF	0 days/year
Meat/milk/eggs ingestion	Ingestion Rate	IRMEAT	0 kg/day
	Fraction Ingested (from contaminated source)	FIMEAT	0
	Exposure frequency	EFMEAT	0 days/year

PROJECT: UPRR Sacramento Site
PROJECT FILENAME: UPRR004.WK1
LAST SAVED
DATE: 09/30/91
TIME: 11:53 AM

SITE/STUDY AREA: Current land use
RECEPTOR: Off-site Resident - Child
TOXIC EFFECT: Carcinogenic and noncarcinogenic

Chemical	Carcinogen Slope Factor (mg/kg/day)^-1		Reference Dose (mg/kg/day)		PC Dermal Permeability Constant (water) (cm/hr)	ABS Dermal Absorption Factor (soil)	Absorption Fractions					
	Ingestion	Inhalation	Ingestion	Inhalation			Soil	Water	Air	Crops	Meat/milk	Fish
Antimony			0.0004	0.0004		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Arsenic	1.75	15	0.001	0.001		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Barium			0.01	0.0014		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Beryllium	4.3	8.4	0.005	0.005		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Cadmium		6.1	0.0005	0.0005		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Carcinogenic PAHs	0.4	0.4	0.000571	0.000571		0.132	1.00	1.00	1.00	1.00	1.00	1.00
Chromium (total)			1.43	0.0143		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Cobalt						0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Copper			0.114	0.0571		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Lead						0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Mercury			0.002	0.00002		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Molybdenum						0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Nickel			0.0114	0.0000286		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Noncarcinogenic PAHs			0.000571	0.000571		0.132	1.00	1.00	1.00	1.00	1.00	1.00
Selenium			0.005	0.005		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Silver			0.005	0.005		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Thallium			0.00007	0.00007		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Vanadium			0.007	0.007		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Zinc			0.229	0.229		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
1,1-Dichloroethane	0.091			0.1		0	1.00	1.00	1.00	1.00	1.00	1.00
1,1-Dichloroethene	1.2			0.009		0	1.00	1.00	1.00	1.00	1.00	1.00
Tetrachloroethene	0.0033			0.01		0	1.00	1.00	1.00	1.00	1.00	1.00
Trichloroethene	0.017		0.0002	0.002		0	1.00	1.00	1.00	1.00	1.00	1.00
1,1,1-Trichloroethane			0.00857	0.00857		0	1.00	1.00	1.00	1.00	1.00	1.00
Carbon Tetrachloride	0.13			0.0007		0	1.00	1.00	1.00	1.00	1.00	1.00

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SITE/STUDY AREA: Current land use
RECEPTOR: Off-site Resident - Child
TOXIC EFFECT: Carcinogenic and noncarcinogenic

Chemical	Conc. in Groundwater (mg/L)	Conc. in Surface Water (mg/L)	Conc. in Soil on-site (mg/kg)	Conc. in Soil off-site (mg/kg)	Conc. in Air outdoors (mg/m^3)	Conc. in Air indoors (mg/m^3)	Conc. in Air during showering (mg/m^3)	Conc. in Crops on-site soil (mg/kg)	Conc. in Crops off-site soil (mg/kg)	Conc. in Livestock Products (mg/kg)	Conc. in Fish (mg/kg)
Antimony	0	0	0	0	0.0000392	0	0	0	0	0	0
Arsenic	0	0	0	0	0.0000306	0	0	0	0	0	0
Barium	0	0	0	0	0.0000367	0	0	0	0	0	0
Beryllium	0	0	0	0	0.0000043	0	0	0	0	0	0
Cadmium	0	0	0	0	0.0000021	0	0	0	0	0	0
Carcinogenic PAHs	0	0	0	0	0.0000133	0	0	0	0	0	0
Chromium (total)	0	0	0	0	0.0000636	0	0	0	0	0	0
Cobalt	0	0	0	0	0.0000143	0	0	0	0	0	0
Copper	0	0	0	0	0.0000529	0	0	0	0	0	0
Lead	0	0	0	0	0.0001443	0	0	0	0	0	0
Mercury	0	0	0	0	0.0000057	0	0	0	0	0	0
Molybdenum	0	0	0	0	0.0000185	0	0	0	0	0	0
Nickel	0	0	0	0	0.0000648	0	0	0	0	0	0
Noncarcinogenic PAHs	0	0	0	0	0.0000794	0	0	0	0	0	0
Selenium	0	0	0	0	0.0000002	0	0	0	0	0	0
Silver	0	0	0	0	0.0000057	0	0	0	0	0	0
Thallium	0	0	0	0	0.0000048	0	0	0	0	0	0
Vanadium	0	0	0	0	0.0000492	0	0	0	0	0	0
Zinc	0	0	0	0	0.0000861	0	0	0	0	0	0
1,1-Dichloroethane	0	0	0	0	0.000019	0	0	0	0	0	0
1,1-Dichloroethene	0	0	0	0	0.00004	0	0	0	0	0	0
Tetrachloroethene	0	0	0	0	0.0000724	0	0	0	0	0	0
Trichloroethene	0	0	0	0	0.0000145	0	0	0	0	0	0
1,1,1-Trichloroethane	0	0	0	0	0.0000698	0	0	0	0	0	0
Carbon Tetrachloride	0	0	0	0	1.71OE-10	0	0	0	0	0	0

PROJECT: UPRR Sacramento Site
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SITE/STUDY AREA: Current land use
RECEPTOR: Off-site Resident - Child
TOXIC EFFECT: Carcinogenic and noncarcinogenic

Chemical	Intake from each pathway (mg/kg-day)																
	Drinking Water Ingestion Ground water	Drinking Water Ingestion Surface water	Water Ingestion while Swimming	Dermal Contact Surface water Swimming	Dermal Contact Surface water Showering	Dermal Contact Ground water Showering	Soil Ingestion on-site soil	Soil Ingestion off-site soil	Dermal Contact with on-site soil	Dermal Contact with off-site soil	Inhalation Outdoor Air	Inhalation Indoor Air	Inhalation during showering	Ingestion of Fish and Shellfish	Ingestion of Crops on-site Soil	Ingestion of Crops off-site Soil	Ingestion of meat/ milk/eggs	Total
Antimony	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.2E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.2E-06
Arsenic	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.5E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.5E-05
Barium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.0E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.0E-05
Beryllium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.6E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.6E-07
Cadmium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.7E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.7E-07
Carcinogenic PAHs	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-06
Chromium (total)	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.2E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.2E-06
Cobalt	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-06
Copper	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.3E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.3E-05
Lead	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-04
Mercury	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.6E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.6E-07
Molybdenum	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.5E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.5E-06
Nickel	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.3E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.3E-06
Noncarcinogenic PAHs	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.5E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.5E-05
Selenium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.1E-08	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.1E-08
Silver	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.6E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.6E-07
Thallium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.6E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.6E-06
Vanadium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.0E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.0E-06
Zinc	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.0E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.0E-05
1,1-Dichloroethane	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.5E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.5E-05
1,1-Dichloroethene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.3E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.3E-06
Tetrachloroethene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.9E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.9E-06
Trichloroethene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-06
1,1,1-Trichloroethan	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.7E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.7E-06
Carbon Tetrachloride	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-10	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-10

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SITE/STUDY AREA: Current land use
RECEPTOR: Off-site Resident - Child
TOXIC EFFECT: Carcinogenic and noncarcinogenic

Chemical	Lifetime cancer risks from each pathway																	
	Drinking Water Ingestion Ground water	Drinking Water Ingestion Surface water	Water Ingestion while Swimming	Dermal Contact Surface water Swimming	Dermal Contact Surface water Showering	Dermal Contact Ground water Showering	Soil Ingestion on-site soil	Soil Ingestion off-site soil	Dermal Contact with on-site soil	Dermal Contact with off-site soil	Inhalation Outdoor Air	Inhalation Indoor Air	Inhalation during showering	Ingestion of Fish and Shellfish	Ingestion of Crops on-site Soil	Ingestion of Crops off-site Soil	Ingestion of meat/ milk/eggs	Total (Pathway)	Total (Scenario)
Antimony	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.8E-04
Arsenic	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.7E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.7E-04	
Barium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Beryllium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.0E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.0E-06	
Cadmium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-06	
Carcinogenic PAHs	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.3E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.3E-07	
Chromium (total)	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Cobalt	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Copper	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Lead	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Mercury	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Molybdenum	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Nickel	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Noncarcinogenic PAHs	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Selenium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Silver	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Thallium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Vanadium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Zinc	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
1,1-Dichloroethane	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-06	
1,1-Dichloroethene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.9E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.9E-06	
Tetrachloroethene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.9E-08	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.9E-08	
Trichloroethene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.0E-08	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.0E-08	
1,1,1-Trichloroethan	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Carbon Tetrachloride	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.8E-11	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.8E-11	

PROJECT: UPRR Sacramento Site
PROJECT FILENAME: UPRR004.WK1
LAST SAVED
DATE: 09/30/91
TIME: 11:53 AM

SITE/STUDY AREA: Current land use
RECEPTOR: Off-site Resident - Child
TOXIC EFFECT: Carcinogenic and noncarcinogenic

Chemical	Hazard Index for each pathway																	
	Drinking Water Ingestion Ground water	Drinking Water Ingestion Surface water	Water Ingestion while Swimming	Dermal Contact Surface water Swimming	Dermal Contact Surface water Showering	Dermal Contact Ground Water Showering	Soil Ingestion on-site soil	Soil Ingestion off-site soil	Dermal Contact with on-site soil	Dermal Contact with off-site soil	Inhalation Outdoor Air	Inhalation Indoor Air	Inhalation during showering	Ingestion of Fish and Shellfish	Ingestion of Crops on-site Soil	Ingestion of Crops off-site Soil	Ingestion of meat/ milk/eggs	Total
Antimony	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.0E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.0E-03
Arsenic	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.5E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.5E-02
Barium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.0E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.0E-03
Beryllium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.1E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.1E-05
Cadmium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.5E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.5E-04
Carcinogenic PAHs	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.9E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.9E-03
Chromium (total)	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.6E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.6E-06
Cobalt	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Copper	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.8E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.8E-04
Lead	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Mercury	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.3E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.3E-04
Molybdenum	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Nickel	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.6E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.6E-04
Noncarcinogenic PAHs	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-01	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-01
Selenium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.0E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.0E-06
Silver	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.5E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.5E-04
Thallium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.2E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.2E-02
Vanadium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.7E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.7E-04
Zinc	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.1E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.1E-04
1,1-Dichloroethane	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
1,1-Dichloroethene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Tetrachloroethene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Trichloroethene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.9E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.9E-03
1,1,1-Trichloroethan	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.6E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.6E-04
Carbon Tetrachloride	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00

PROJECT: LPRR Sacramento Site
PROJECT FILENAME: LPRR005.WK1
LAST SAVED:
DATE: 09/30/91
TIME: 11:59 AM

SITE/STUDY AREA: Future land use
RECEPTOR: Off-site Resident - Adult
TOXIC EFFECT: Carcinogenic and noncarcinogenic
COMMENTS:

PREAMBLE:

This is a risk assessment model for evaluating health risks associated with chemical contamination detected in environmental media (soil, air, groundwater or surface water). This model is designed to evaluate health risks associated with exposures from several different pathways using the guidelines presented in the EPA Risk Assessment Guidance for Superfund (RAGS). This model uses chemical concentrations measured during site investigations or estimated in environmental fate and transport models to estimate health risks.

PROJECT: UPRR Sacramento Site
PROJECT FILENAME: UPRR005.WK1
LAST SAVED
DATE: 09/30/91
TIME: 11:59 AM

SITE/STUDY AREA: Future land use
RECEPTOR: Off-site Resident - Adult
TOXIC EFFECT: Carcinogenic and noncarcinogenic

Pathway	Description	Label	Value Units
General	Body Weight	BW	70 kg
	Exposure Duration	ED	70 years
	Averaging Time	AT	25550 days
Drinking water ingestion	Ingestion Rate	IR-WATER	2 L/day
	Exposure Frequency	ER-WATER	350 days/year
Ingestion during swimming	Contact Rate	CR	0 L/hour
	Exposure Time	ETSWIM	0 hours/event
	Exposure Frequency	EPSWIM	0 events/year
Dermal contact with surface water - Swimming	Skin Surface Area	SADERM_W	0 cm^2
	Exposure Time	ETDERM_W	0 hours/day
	Exposure Frequency	ERDERM_W	0 events/year
Dermal contact with surface water - Showering	Skin Surface Area	SADERM_S	0 cm^2
	Exposure Time	ETDERM_S	0 hours/day
	Exposure Frequency	ERDERM_S	0 events/year
Dermal contact with ground water - Showering	Skin Surface Area	SADERM_G	19400 cm^2
	Exposure Time	ETDERM_G	0.00069 hours/day
	Exposure Frequency	ERDERM_G	350 events/year
Soil ingestion on-site soils	Ingestion Rate	IRSOIL_ON	0 kg/day
	Fraction Ingested (from contaminated source)	FISOIL_ON	0
	Exposure Frequency	EPSOIL_ON	0 days/year
Dermal contact with on-site soil	Skin Surface Area	SADERM_SON	0 cm^2
	Soil to skin adherence factor	AF	0 kg/cm^2
	Exposure Frequency	ERDERM_SON	0 events/year
Soil ingestion off-site soils	Ingestion Rate	IRSOIL_OFF	0 kg/day
	Fraction Ingested (from contaminated source)	FISOIL_OFF	0
	Exposure Frequency	EFSOIL_OFF	0 days/year
Dermal contact with off-site soil	Skin Surface Area	SADERM_SOFF	0 cm^2
	Exposure Frequency	ERDERM_SOFF	0 events/year
Inhalation of outdoor air	Inhalation Rate	IRAIR_OUT	0.83 m^3/hr
	Exposure Time	ETAIR_OUT	16 hours/day

	Exposure Frequency	EFAIR_OUT	350 days/year
Inhalation of indoor air	Inhalation Rate	IRAIR_IN	0 m^3/hr
	Exposure Time	ETAIR_IN	0 hours/day
	Exposure Frequency	EFAIR_IN	0 days/year
Inhalation of indoor air - during showering	Inhalation Rate	IRAIR_SH	0.6 m^3/hr
	Exposure Time	ETAIR_SH	0.00069 hours/day
	Exposure Frequency	EFAIR_SH	350 days/year
Ingestion of fish/shellfish	Ingestion Rate	IRFISH	0 kg/day
	Fraction Ingested (from contaminated source)	FIFISH	0
	Exposure frequency	EFFISH	0 days/year
Crop ingestion on-site soils	Ingestion Rate	IRCROP_ON	0 kg/day
	Fraction Ingested (from contaminated source)	FICROP_ON	0
	Exposure frequency	EFCROP_ON	0 days/year
Crop ingestion off-site soils	Ingestion Rate	IRCROP_OFF	0 kg/day
	Fraction Ingested (from contaminated source)	FICROP_OFF	0
	Exposure frequency	EFCROP_OFF	0 days/year
Meat/milk/eggs ingestion	Ingestion Rate	IRMEAT	0 kg/day
	Fraction Ingested (from contaminated source)	FIMEAT	0
	Exposure frequency	EFMEAT	0 days/year

PROJECT: UPRR Sacramento Site
PROJECT FILENAME: UPRR005.WK1
LAST SAVED
DATE: 09/30/91
TIME: 11:59 AM

SITE/STUDY AREA: Future land use
RECEPTOR: Off-site Resident - Adult
TOXIC EFFECT: Carcinogenic and noncarcinogenic

Chemical	Carcinogen Slope Factor (mg/kg/day)^-1		Reference Dose (mg/kg/day)		PC Dermal Permeability Constant (water) (cm/hr)	ABS Dermal Absorption Factor (soil)	Absorption Fractions					
	Ingestion	Inhalation	Ingestion	Inhalation			Soil	Water	Air	Crops	Meat/milk	Fish
Antimony			0.0004	0.0004		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Arsenic	1.75	15	0.001	0.001		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Barium			0.05	0.0005		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Beryllium	4.3	8.4	0.005	0.005		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Cadmium		6.1	0.0005	0.0005		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Carcinogenic PAHs	0.4	0.4	0.000571	0.000571		0.132	1.00	1.00	1.00	1.00	1.00	1.00
Chromium (total)			1.43	0.0143		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Cobalt						0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Copper			0.114	0.0571		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Lead						0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Mercury			0.002	0.00002		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Molybdenum						0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Nickel			0.0114	0.0000286		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Noncarcinogenic PAHs			0.000571	0.000571		0.132	1.00	1.00	1.00	1.00	1.00	1.00
Selenium			0.005	0.005		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Silver			0.000571	0.0000571		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Thallium			0.00007	0.00007		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Vanadium			0.007	0.007		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Zinc			0.2	0.2		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
1,1,1-Trichloroethane			0.00857	0.0857	1.01		1.00	1.00	1.00	1.00	1.00	1.00
1,1-Dichloroethane	0.6	1.2	0.009	0.009	1.01		1.00	1.00	1.00	1.00	1.00	1.00
1,2-Dichloroethane	0.091	0.091			1.01		1.00	1.00	1.00	1.00	1.00	1.00
Perchloroethylene	0.051	0.0033	0.01	0.01	1.01		1.00	1.00	1.00	1.00	1.00	1.00
Trichloroethylene	0.011	0.017	0.0002	0.002	1.01		1.00	1.00	1.00	1.00	1.00	1.00
1,1-Dichloroethene	0.091	0.091	0.1	0.1	1.01		1.00	1.00	1.00	1.00	1.00	1.00
Chloroform	0.0061	0.081	0.01	0.01	1.01		1.00	1.00	1.00	1.00	1.00	1.00
Carbon tetrachloride	0.13	0.13	0.0007	0.0007	1.01		1.00	1.00	1.00	1.00	1.00	1.00

PROJECT: UPRR Sacramento Site
PROJECT FILENAME: UPRR005.WK1
LAST SAVED
DATE: 09/30/91
TIME: 11:59 AM

SITE/STUDY AREA: Future land use
RECEPTOR: Off-site Resident - Adult
TOXIC EFFECT: Carcinogenic and noncarcinogenic

Chemical	Conc. in Groundwater (mg/L)	Conc. in Surface Water (mg/L)	Conc. in Soil on-site (mg/kg)	Conc. in Soil off-site (mg/kg)	Conc. in Air outdoors (mg/m^3)	Conc. in Air indoors (mg/m^3)	Conc. in Air during showering (mg/m^3)	Conc. in Crops on-site soil (mg/kg)	Conc. in Crops off-site soil (mg/kg)	Conc. in Livestock Products (mg/kg)	Conc. in Fish (mg/kg)
Antimony	0	0	0	0	0.00000392	0	0	0	0	0	0
Arsenic	0	0	0	0	0.0000306	0	0	0	0	0	0
Barium	0	0	0	0	0.0000367	0	0	0	0	0	0
Beryllium	0	0	0	0	0.0000043	0	0	0	0	0	0
Cadmium	0	0	0	0	0.0000021	0	0	0	0	0	0
Carcinogenic PAHs	0	0	0	0	0.0000133	0	0	0	0	0	0
Chromium (total)	0	0	0	0	0.0000536	0	0	0	0	0	0
Cobalt	0	0	0	0	0.0000143	0	0	0	0	0	0
Copper	0	0	0	0	0.0000529	0	0	0	0	0	0
Lead	0	0	0	0	0.0001443	0	0	0	0	0	0
Mercury	0	0	0	0	0.0000057	0	0	0	0	0	0
Molybdenum	0	0	0	0	0.0000185	0	0	0	0	0	0
Nickel	0	0	0	0	0.0000648	0	0	0	0	0	0
Noncarcinogenic PAHs	0	0	0	0	0.0000794	0	0	0	0	0	0
Selenium	0	0	0	0	0.0000002	0	0	0	0	0	0
Silver	0	0	0	0	0.0000057	0	0	0	0	0	0
Thallium	0	0	0	0	0.0000448	0	0	0	0	0	0
Vanadium	0	0	0	0	0.0000492	0	0	0	0	0	0
Zinc	0	0	0	0	0.0000861	0	0	0	0	0	0
1,1,1-Trichloroethane	0.00379	0	0	0	0.0000698	0	0.118	0	0	0	0
1,1-Dichloroethene	0.041	0	0	0	0.000004	0	1.46	0	0	0	0
1,2-Dichloroethene	0.0049	0	0	0	0	0	0.147	0	0	0	0
Perchloroethylene	0.00054	0	0	0	0.0000724	0	0.016	0	0	0	0
Trichloroethylene	0.0011	0	0	0	0.0000145	0	0.035	0	0	0	0
1,1-Dichloroethane	0.0082	0	0	0	0.000019	0	0.283	0	0	0	0
Chloroform	0.00147	0	0	0	0	0	0.047	0	0	0	0
Carbon tetrachloride	0.00103	0	0	0	1.71E-10	0	0.031	0	0	0	0

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SITE/STUDY AREA: Future land use
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TOXIC EFFECT: Carcinogenic and noncarcinogenic

Chemical	Intake from each pathway (mg/kg-day)																
	Drinking Water Ingestion Ground water	Drinking Water Ingestion Surface water	Water Ingestion while Swimming	Dermal Contact Surface water Swimming	Dermal Contact Surface water Showering	Dermal Contact Ground water Showering	Soil Ingestion on-site soil	Soil Ingestion off-site soil	Dermal Contact with on-site soil	Dermal Contact with off-site soil	Inhalation Outdoor Air	Inhalation Indoor Air	Inhalation during showering	Ingestion of Fish and Shellfish	Ingestion of Crops on-site Soil	Ingestion of Crops off-site Soil	Ingestion of meat/ milk/eggs	Total
Antimony	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.1E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.1E-07
Arsenic	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.6E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.6E-06
Barium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.7E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.7E-06
Beryllium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.0E-08	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.0E-08
Cadmium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.9E-08	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.9E-08
Carcinogenic PAHs	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.4E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.4E-07
Chromium (total)	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-06
Cobalt	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.6E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.6E-07
Copper	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.6E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.6E-06
Lead	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.6E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.6E-05
Mercury	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.0E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.0E-07
Molybdenum	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.4E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.4E-07
Nickel	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-06
Noncarcinogenic PAHs	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-05
Selenium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.7E-09	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.7E-09
Silver	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.0E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.0E-07
Thallium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.1E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.1E-07
Vanadium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.0E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.0E-07
Zinc	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.6E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.6E-05
1,1,1-Trichloroethan	1.0E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.0E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-06	0.0E+00	6.7E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-04
1,1-Dichloroethane	1.1E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.6E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.3E-07	0.0E+00	8.3E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-03
1,2-Dichloroethane	1.3E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.1E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.3E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-04
Perchloroethylene	1.5E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.0E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-06	0.0E+00	9.1E-08	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.6E-05
Trichloroethylene	3.0E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.0E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.6E-07	0.0E+00	2.0E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.1E-05
1,1-Dichloroethane	2.2E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.5E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.5E-06	0.0E+00	1.6E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.3E-04
Chloroform	4.0E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.7E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.7E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.1E-05
Carbon tetrachloride	2.8E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.9E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.1E-11	0.0E+00	1.8E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.9E-05

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RECEPTOR: Off-site Resident - Adult
TOXIC EFFECT: Carcinogenic and noncarcinogenic

Chemical	Lifetime cancer risks from each pathway																		
	Drinking Water Ingestion Ground water	Drinking Water Ingestion Surface water	Water Ingestion while Swimming	Dermal Contact Surface Water Swimming	Dermal Contact Surface water Showering	Dermal Contact Ground Water Showering	Soil Ingestion on-site soil	Soil Ingestion off-site soil	Dermal Contact with on-site soil	Dermal Contact with off-site soil	Inhalation Outdoor Air	Inhalation Indoor Air	Inhalation during showering	Ingestion of Fish and Shellfish	Ingestion of Crops on-site Soil	Ingestion of Crops off-site Soil	Ingestion of meat/ milk/eggs	Total (Pathway)	Total (Scenario)
Antimony	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Arsenic	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.4E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.4E-05	8.1E-04
Barium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Beryllium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.7E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.7E-07	
Cadmium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.4E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.4E-07	
Carcinogenic PAHs	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.7E-08	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.7E-08	
Chromium (total)	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Cobalt	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Copper	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Lead	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Mercury	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Molybdenum	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Nickel	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Noncarcinogenic PAHs	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Selenium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Silver	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Thallium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Vanadium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Zinc	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
1,1,1-Trichloroethan	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
1,1-Dichloroethene	6.7E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.6E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.7E-07	0.0E+00	9.9E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.9E-04	
1,2-Dichloroethene	1.2E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.3E-08	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.6E-08	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-05	
Perchloroethylene	7.5E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.1E-09	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.3E-09	0.0E+00	3.0E-10	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.6E-07	
Trichloroethylene	3.3E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.2E-09	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.5E-09	0.0E+00	3.4E-09	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.4E-07	
1,1-Dichloroethene	2.0E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.1E-07	0.0E+00	1.5E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.1E-05	
Chloroform	2.5E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.7E-09	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.2E-08	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.7E-07	
Carbon tetrachloride	3.7E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.5E-08	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.0E-12	0.0E+00	2.3E-08	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.7E-06	

PROJECT: UPRR Sacramento Site
PROJECT FILENAME: UPRR005.WK1
LAST SAVED
DATE: 09/30/91
TIME: 11:59 AM

SITE/STUDY AREA: Future land use
RECEPTOR: Off-site Resident - Adult
TOXIC EFFECT: Carcinogenic and noncarcinogenic

Chemical	Hazard Index for each pathway																
	Drinking Water Ingestion Ground water	Drinking Water Ingestion Surface water	Water Ingestion while Swimming	Dermal Contact Surface water Swimming	Dermal Contact Surface water Showering	Dermal Contact Ground water Showering	Soil Ingestion on-site soil	Soil Ingestion off-site soil	Dermal Contact with on-site soil	Dermal Contact with off-site soil	Inhalation Outdoor Air	Inhalation Indoor Air	Inhalation during showering	Ingestion of Fish and Shellfish	Ingestion of Crops on-site Soil	Ingestion of Crops off-site Soil	Ingestion of meat/ milk/eggs	Total
Antimony	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.8E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.8E-03
Arsenic	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.6E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.6E-03
Barium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-04
Beryllium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.6E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.6E-05
Cadmium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.7E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.7E-05
Carcinogenic PAHs	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.2E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.2E-04
Chromium (total)	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.1E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.1E-07
Cobalt	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Copper	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.4E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.4E-05
Lead	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Mercury	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.2E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.2E-05
Molybdenum	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Nickel	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.0E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.0E-04
Noncarcinogenic PAHs	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.5E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.5E-02
Selenium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.6E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.6E-06
Silver	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.8E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.8E-04
Thallium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-02
Vanadium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-04
Zinc	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.8E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.8E-05
1,1,1-Trichloroethan	1.2E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.2E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.5E-04	0.0E+00	7.8E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-02
1,1-Dichloroethane	1.2E-01	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.4E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.1E-05	0.0E+00	9.2E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-01
1,2-Dichloroethane	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Perchloroethylene	1.5E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.0E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-04	0.0E+00	9.1E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.6E-03
Trichloroethylene	1.5E-01	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.0E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-03	0.0E+00	9.9E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.5E-01
1,1-Dichloroethene	2.2E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.5E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.5E-05	0.0E+00	1.6E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.3E-03
Chloroform	4.0E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.7E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.7E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.1E-03
Carbon tetrachloride	4.0E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.7E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.4E-08	0.0E+00	2.5E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.1E-02

PROJECT: UPRR Sacramento Site
PROJECT FILENAME: UPRR006.WK1
LAST SAVED:
DATE: 09/30/91
TIME: 12:10 PM

SITE/STUDY AREA: Future land use
RECEPTOR: Off-site Resident - Child
TOXIC EFFECT: Carcinogenic and noncarcinogenic
COMMENTS:

PREAMBLE:

This is a risk assessment model for evaluating health risks associated with chemical contamination detected in environmental media (soil, air, groundwater or surface water). This model is designed to evaluate health risks associated with exposures from several different pathways using the guidelines presented in the EPA Risk Assessment Guidance for Superfund (RAGS). This model uses chemical concentrations measured during site investigations or estimated in environmental fate and transport models to estimate health risks.

PROJECT: UPRR Sacramento Site
PROJECT FILENAME: UPRR006.WK1
LAST SAVED
DATE: 09/30/91
TIME: 12:10 PM

SITE/STUDY AREA: Future land use
RECEPTOR: Off-site Resident - Child
TOXIC EFFECT: Carcinogenic and noncarcinogenic

Pathway	Description	Label	Value Units
General	Body Weight	BW	15.1 kg
	Exposure Duration	ED	70 years
	Averaging Time	AT	25550 days
Drinking water ingestion	Ingestion Rate	IRWATER	1.2 L/day
	Exposure Frequency	ERWATER	350 days/year
Ingestion during swimming	Contact Rate	CR	0 L/hour
	Exposure Time	ETSWIM	0 hours/event
	Exposure Frequency	EFSWIM	0 events/year
Dermal contact with surface water - Swimming	Skin Surface Area	SADERM_W	0 cm^2
	Exposure Time	ETDERM_W	0 hours/day
	Exposure Frequency	ERDERM_W	0 events/year
Dermal contact with surface water - Showering	Skin Surface Area	SADERM_S	0 cm^2
	Exposure Time	ETDERM_S	0 hours/day
	Exposure Frequency	ERDERM_S	0 events/year
Dermal contact with ground water - Showering	Skin Surface Area	SADERM_G	9510 cm^2
	Exposure Time	ETDERM_G	0.00069 hours/day
	Exposure Frequency	ERDERM_G	350 events/year
Soil ingestion on-site soils	Ingestion Rate	IRSOIL_ON	0 kg/day
	Fraction Ingested (from contaminated source)	FISOIL_ON	0
	Exposure Frequency	EFSOIL_ON	0 days/year
Dermal contact with on-site soil	Skin Surface Area	SADERM_SON	0 cm^2
	Soil to skin adherence factor	AF	0 kg/cm^2
	Exposure Frequency	ERDERM_SON	0 events/year
Soil ingestion off-site soils	Ingestion Rate	IRSOIL_OFF	0 kg/day
	Fraction Ingested (from contaminated source)	FISOIL_OFF	0
	Exposure Frequency	EFSOIL_OFF	0 days/year
Dermal contact with off-site soil	Skin Surface Area	SADERM_SOFF	0 cm^2
	Exposure Frequency	ERDERM_SOFF	0 events/year
Inhalation of outdoor air	Inhalation Rate	IRAIR_OUT	0.8 m^3/hr
	Exposure Time	ETAIR_OUT	16 hours/day

	Exposure Frequency	EFAIR_OUT	350 days/year
Inhalation of indoor air	Inhalation Rate	IRAIR_IN	0 m^3/hr
	Exposure Time	ETAIR_IN	0 hours/day
	Exposure Frequency	EFAIR_IN	0 days/year
Inhalation of indoor air - during showering	Inhalation Rate	IRAIR_SH	0 m^3/hr
	Exposure Time	ETAIR_SH	0 hours/day
	Exposure Frequency	EFAIR_SH	0 days/year
Ingestion of fish/shellfish	Ingestion Rate	IRFISH	0 kg/day
	Fraction Ingested (from contaminated source)	FIFISH	0
	Exposure frequency	EFFISH	0 days/year
Crop ingestion on-site soils	Ingestion Rate	IRCROP_ON	0 kg/day
	Fraction Ingested (from contaminated source)	FICROP_ON	0
	Exposure frequency	EFCROP_ON	0 days/year
Crop ingestion off-site soils	Ingestion Rate	IRCROP_OFF	0 kg/day
	Fraction Ingested (from contaminated source)	FICROP_OFF	0
	Exposure frequency	EFCROP_OFF	0 days/year
Meat/milk/eggs ingestion	Ingestion Rate	IRMEAT	0 kg/day
	Fraction Ingested (from contaminated source)	FIMEAT	0
	Exposure frequency	EFMEAT	0 days/year

PROJECT: UPRR Sacramento Site
PROJECT FILENAME: UPRR006.WK1
LAST SAVED
DATE: 09/30/91
TIME: 12:10 PM

SITE/STUDY AREA: Future land use
RECEPTOR: Off-site Resident - Child
TOXIC EFFECT: Carcinogenic and noncarcinogenic

Chemical	Carcinogen Slope Factor (mg/kg/day)^-1		Reference Dose (mg/kg/day)		PC Dermal Permeability Constant (water) (cm/hr)	ABS Dermal Absorption Factor (soil)	Absorption Fractions					
	Ingestion	Inhalation	Ingestion	Inhalation			Soil	Water	Air	Crops	Meat/milk	Fish
Antimony			0.0004	0.0004		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Arsenic	1.75	15	0.001	0.001		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Barium			0.05	0.0005		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Beryllium	4.3	8.4	0.005	0.005		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Cadmium		6.1	0.0005	0.0005		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Carcinogenic PAHs	0.4	0.4	0.000571	0.000571		0.132	1.00	1.00	1.00	1.00	1.00	1.00
Chromium (total)			1.43	0.0143		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Cobalt						0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Copper			0.114	0.0571		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Lead						0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Mercury			0.002	0.00002		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Molybdenum						0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Nickel			0.0114	0.0000286		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Noncarcinogenic PAHs			0.000571	0.000571		0.132	1.00	1.00	1.00	1.00	1.00	1.00
Selenium			0.003	0.005		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Silver			0.000571	0.0000571		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Thallium			0.00007	0.00007		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Vanadium			0.007	0.007		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Zinc			0.2	0.2		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
1,1,1-Trichloroethane			0.00857	0.0857	1.01		1.00	1.00	1.00	1.00	1.00	1.00
1,1-Dichloroethane	0.6	1.2	0.009	0.009	1.01		1.00	1.00	1.00	1.00	1.00	1.00
1,2-Dichloroethane	0.091	0.091			1.01		1.00	1.00	1.00	1.00	1.00	1.00
Perchloroethylene	0.051	0.0033	0.01	0.01	1.01		1.00	1.00	1.00	1.00	1.00	1.00
Trichloroethylene	0.011	0.017	0.0002	0.002	1.01		1.00	1.00	1.00	1.00	1.00	1.00
1,1-Dichloroethene	0.091	0.091	0.1	0.1	1.01		1.00	1.00	1.00	1.00	1.00	1.00
Chloroform	0.0061	0.081	0.01	0.01	1.01		1.00	1.00	1.00	1.00	1.00	1.00
Carbon tetrachloride	0.13	0.13	0.0007	0.0007	1.01		1.00	1.00	1.00	1.00	1.00	1.00

PROJECT: UPRR Sacramento Site
PROJECT FILENAME: UPRR006.WK1
LAST SAVED
DATE: 09/30/91
TIME: 12:10 PM

SITE/STUDY AREA: Future land use
RECEPTOR: Off-site Resident - Child
TOXIC EFFECT: Carcinogenic and noncarcinogenic

Chemical	Conc. in Groundwater (mg/L)	Conc. in Surface Water (mg/L)	Conc. in Soil on-site (mg/kg)	Conc. in Soil off-site (mg/kg)	Conc. in Air outdoors (mg/m^3)	Conc. in Air indoors (mg/m^3)	Conc. in Air during showering (mg/m^3)	Conc. in Crops on-site soil (mg/kg)	Conc. in Crops off-site soil (mg/kg)	Conc. in Livestock Products (mg/kg)	Conc. in Fish (mg/kg)
Antimony	0	0	0	0	0.0000392	0	0	0	0	0	0
Arsenic	0	0	0	0	0.0000306	0	0	0	0	0	0
Barium	0	0	0	0	0.0000367	0	0	0	0	0	0
Beryllium	0	0	0	0	0.0000043	0	0	0	0	0	0
Cadmium	0	0	0	0	0.0000021	0	0	0	0	0	0
Carcinogenic PAHs	0	0	0	0	0.0000133	0	0	0	0	0	0
Chromium (total)	0	0	0	0	0.0000636	0	0	0	0	0	0
Cobalt	0	0	0	0	0.0000143	0	0	0	0	0	0
Copper	0	0	0	0	0.0000629	0	0	0	0	0	0
Lead	0	0	0	0	0.0001443	0	0	0	0	0	0
Mercury	0	0	0	0	0.0000057	0	0	0	0	0	0
Molybdenum	0	0	0	0	0.0000185	0	0	0	0	0	0
Nickel	0	0	0	0	0.0000648	0	0	0	0	0	0
Noncarcinogenic PAHs	0	0	0	0	0.0000794	0	0	0	0	0	0
Selenium	0	0	0	0	0.0000002	0	0	0	0	0	0
Silver	0	0	0	0	0.0000057	0	0	0	0	0	0
Thallium	0	0	0	0	0.0000448	0	0	0	0	0	0
Vanadium	0	0	0	0	0.0000492	0	0	0	0	0	0
Zinc	0	0	0	0	0.0000861	0	0	0	0	0	0
1,1,1-Trichloroethane	0.00379	0	0	0	0.0000698	0	0.118	0	0	0	0
1,1-Dichloroethene	0.041	0	0	0	0.000004	0	1.46	0	0	0	0
1,2-Dichloroethane	0.0049	0	0	0	0	0	0.147	0	0	0	0
Perchloroethylene	0.00054	0	0	0	0.0000724	0	0.016	0	0	0	0
Trichloroethylene	0.0011	0	0	0	0.0000145	0	0.035	0	0	0	0
1,1-Dichloroethane	0.0082	0	0	0	0.000019	0	0.283	0	0	0	0
Chloroform	0.00147	0	0	0	0	0	0.047	0	0	0	0
Carbon tetrachloride	0.00103	0	0	0	1.71E-10	0	0.031	0	0	0	0

PROJECT: UPRR Sacramento Site
PROJECT FILENAME: UPRR006.WK1
LAST SAVED
DATE: 09/30/91
TIME: 12:10 PM

SITE/STUDY AREA: Future land use
RECEPTOR: Off-site Resident - Child
TOXIC EFFECT: Carcinogenic and noncarcinogenic

Chemical	Intake from each pathway (mg/kg-day)																
	Drinking Water Ingestion Ground water	Drinking Water Ingestion Surface water	Water Ingestion while Swimming	Dermal Contact Surface water Swimming	Dermal Contact Surface water Showering	Dermal Contact Ground water Showering	Soil Ingestion on-site soil	Soil Ingestion off-site soil	Dermal Contact with on-site soil	Dermal Contact with off-site soil	Inhalation Outdoor Air	Inhalation Indoor Air	Inhalation during showering	Ingestion of Fish and Shellfish	Ingestion of Crops on-site Soil	Ingestion of Crops off-site Soil	Ingestion of meat/ milk/eggs	Total
Antimony	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.2E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.2E-06
Arsenic	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.5E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.5E-05
Barium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.0E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.0E-05
Beryllium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.6E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.6E-07
Cadmium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.7E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.7E-07
Carcinogenic PAHs	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-06
Chromium (total)	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.2E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.2E-06
Cobalt	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-06
Copper	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.3E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.3E-05
Lead	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-04
Mercury	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.6E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.6E-07
Molybdenum	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.5E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.5E-06
Nickel	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.3E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.3E-06
Noncarcinogenic PAHs	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.5E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.5E-05
Selenium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.1E-08	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.1E-08
Silver	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.6E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.6E-07
Thallium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.6E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.6E-06
Vanadium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.0E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.0E-06
Zinc	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.0E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.0E-05
1,1,1-Trichloroethan	2.9E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.6E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.7E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.0E-04
1,1-Dichloroethane	3.1E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.7E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.3E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.1E-05
1,2-Dichloroethane	3.7E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.0E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.8E-04
Perchloroethylene	4.1E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.2E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.9E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.7E-05
Trichloroethylene	8.4E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.5E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.5E-05
1,1-Dichloroethane	6.2E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.4E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.5E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.4E-04
Chloroform	1.1E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.1E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-04
Carbon tetrachloride	7.8E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.2E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-10	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.9E-05

PROJECT: UPRR Sacramento Site
PROJECT FILENAME: UPRR006.WK1
LAST SAVED
DATE: 09/30/91
TIME: 12:10 PM

SITE/STUDY AREA: Future land use
RECEPTOR: Off-site Resident - Child
TOXIC EFFECT: Carcinogenic and noncarcinogenic

Chemical	Lifetime cancer risks from each pathway																		
	Drinking Water Ingestion Ground water	Drinking Water Ingestion Surface water	Water Ingestion while Swimming	Dermal Contact Surface water Swimming	Dermal Contact Surface water Showering	Dermal Contact Ground water Showering	Soil Ingestion on-site soil	Soil Ingestion off-site soil	Dermal Contact with on-site soil	Dermal Contact with off-site soil	Inhalation Outdoor Air	Inhalation Indoor Air	Inhalation during showering	Ingestion of Fish and Shellfish	Ingestion of Crops on-site Soil	Ingestion of Crops off-site Soil	Ingestion of meat/ milk/eggs	Total (Pathway)	Total (Scenario)
Antimony	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.4E-03
Arsenic	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.7E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.7E-04	
Barium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Beryllium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.0E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.0E-06	
Cadmium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-06	
Carcinogenic PAHs	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.3E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.3E-07	
Chromium (total)	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Cobalt	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Copper	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Lead	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Mercury	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Molybdenum	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Nickel	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Noncarcinogenic PAHs	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Selenium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Silver	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Thallium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Vanadium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Zinc	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
1,1,1-Trichloroethan	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
1,1-Dichloroethane	1.9E-08	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.0E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.9E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.9E-08	
1,2-Dichloroethane	3.4E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.8E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.4E-06	
Perchloroethylene	2.1E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-08	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.9E-08	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.1E-06	
Trichloroethylene	9.2E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.0E-09	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.0E-08	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.5E-07	
1,1-Dichloroethane	5.7E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.1E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.9E-06	
Chloroform	6.8E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.7E-09	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.9E-07	
Carbon tetrachloride	1.0E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.5E-08	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.8E-11	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.0E-05	

PROJECT: UPRR Sacramento Site
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SITE/STUDY AREA: Future land use
RECEPTOR: Off-site Resident - Child
TOXIC EFFECT: Carcinogenic and noncarcinogenic

Chemical	Hazard Index for each pathway																
	Drinking Water Ingestion Ground water	Drinking Water Ingestion Surface water	Water Ingestion while Swimming	Dermal Contact Surface water Swimming	Dermal Contact Surface water Showering	Dermal Contact Ground water Showering	Soil Ingestion on-site soil	Soil Ingestion off-site soil	Dermal Contact with on-site soil	Dermal Contact with off-site soil	Inhalation Outdoor Air	Inhalation Indoor Air	Inhalation during showering	Ingestion of Fish and Shellfish	Ingestion of Crops on-site Soil	Ingestion of Crops off-site Soil	Ingestion of meat/ milk/eggs	Total
Antimony	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.0E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.0E-03
Arsenic	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.5E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.5E-02
Barium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.0E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.0E-04
Beryllium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.1E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.1E-05
Cadmium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.5E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.5E-04
Carcinogenic PAHs	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.9E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.9E-03
Chromium (total)	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.6E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.6E-06
Cobalt	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Copper	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.8E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.8E-04
Lead	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Mercury	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.3E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.3E-04
Molybdenum	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Nickel	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.6E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.6E-04
Noncarcinogenic PAHs	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-01	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-01
Selenium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.0E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.0E-06
Silver	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.1E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.1E-04
Thallium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.2E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.2E-02
Vanadium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.7E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.7E-04
Zinc	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.5E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.5E-04
1,1,1-Trichloroethan	3.4E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.8E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.6E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.5E-02
1,1-Dichloroethene	3.5E-01	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.9E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.6E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.5E-01
1,2-Dichloroethene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Perchloroethylene	4.1E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.2E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.9E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.7E-03
Trichloroethylene	4.2E-01	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.3E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.9E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.3E-01
1,1-Dichloroethane	6.2E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.4E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.5E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.4E-03
Chloroform	1.1E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.1E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-02
Carbon tetrachloride	1.1E-01	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.1E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.0E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-01

PROJECT: UPRR Sacramento Site
PROJECT FILENAME: UPRR007.WK1
LAST SAVED
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SITE/STUDY AREA: Future land use
RECEPTOR: On-site Resident - Adult
TOXIC EFFECT: Carcinogenic and noncarcinogenic

Chemical	Intake from each pathway (mg/kg-day)																	
	Drinking Water Ingestion Ground water	Drinking Water Ingestion Surface Water	Water Ingestion while Swimming	Dermal Contact Surface water Swimming	Dermal Contact Surface water Showering	Dermal Contact Ground water Showering	Soil Ingestion on-site soil	Soil Ingestion off-site soil	Dermal Contact with on-site soil	Dermal Contact with off-site soil	Inhalation Outdoor Air	Inhalation Indoor Air	Inhalation during showering	Ingestion of Fish and Shellfish	Ingestion of Crops on-site Soil	Ingestion of Crops off-site Soil	Ingestion of meat/ milk/eggs	Total
Anthracene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.5E-06	0.0E+00	2.1E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.4E-05
Antimony	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.4E-05	0.0E+00	1.4E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.5E-05
Arsenic	2.0E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.3E-05	0.0E+00	2.0E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.7E-04
Barium	5.2E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+0													

PROJECT: UPRR Sacramento Site
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SITE/STUDY AREA: Future land use
RECEPTOR: On-site Resident - Adult
TOXIC EFFECT: Carcinogenic and noncarcinogenic
COMMENTS:

PREAMBLE:

This is a risk assessment model for evaluating health risks associated with chemical contamination detected in environmental media (soil, air, groundwater or surface water). This model is designed to evaluate health risks associated with exposures from several different pathways using the guidelines presented in the EPA Risk Assessment Guidance for Superfund (RAGS). This model uses chemical concentrations measured during site investigations or estimated in environmental fate and transport models to estimate health risks.

PROJECT: LPRR Sacramento Site
PROJECT FILENAME: LPRR007.WK1
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SITE/STUDY AREA: Future land use
RECEPTOR: On-site Resident - Adult
TOXIC EFFECT: Carcinogenic and noncarcinogenic

Pathway	Description	Label	Value Units
General	Body Weight	BW	70 kg
	Exposure Duration	ED	70 years
	Averaging Time	AT	25550 days
Drinking water ingestion	Ingestion Rate	IR-WATER	2 L/day
	Exposure Frequency	ER-WATER	350 days/year
Ingestion during swimming	Contact Rate	CR	0 L/hour
	Exposure Time	ETSWIM	0 hours/event
	Exposure Frequency	EPSWIM	0 events/year
Dermal contact with surface water - Swimming	Skin Surface Area	SADERM_W	0 cm^2
	Exposure Time	ETDERM_W	0 hours/day
	Exposure Frequency	ERDERM_W	0 events/year
Dermal contact with surface water - Showering	Skin Surface Area	SADERM_S	0 cm^2
	Exposure Time	ETDERM_S	0 hours/day
	Exposure Frequency	ERDERM_S	0 events/year
Dermal contact with ground water - Showering	Skin Surface Area	SADERM_G	19400 cm^2
	Exposure Time	ETDERM_G	0.0069 hours/day
	Exposure Frequency	ERDERM_G	350 events/year
Soil ingestion on-site soils	Ingestion Rate	IRSOIL_ON	0.0001 kg/day
	Fraction Ingested (from contaminated source)	FISOIL_ON	1
	Exposure Frequency	EPSOIL_ON	350 days/year
Dermal contact with on-site soil	Skin Surface Area	SADERM_SON	3120 cm^2
	Soil to skin adherence factor	AF	0.00000145 kg/cm^2
	Exposure Frequency	ERDERM_SON	350 events/year
Soil ingestion off-site soils	Ingestion Rate	IRSOIL_OFF	0 kg/day
	Fraction Ingested (from contaminated source)	FISOIL_OFF	0
	Exposure Frequency	EFSOIL_OFF	0 days/year
Dermal contact with off-site soil	Skin Surface Area	SADERM_SOFF	0 cm^2
	Exposure Frequency	ERDERM_SOFF	0 events/year
Inhalation of outdoor air	Inhalation Rate	IRAIR_OUT	0.83 m^3/hr
	Exposure Time	ETAIR_OUT	16 hours/day

	Exposure Frequency	EFAIR_OUT	350 days/year
Inhalation of indoor air	Inhalation Rate	IRAIR_IN	0 m^3/hr
	Exposure Time	ETAIR_IN	0 hours/day
	Exposure Frequency	EFAIR_IN	0 days/year
Inhalation of indoor air - during showering	Inhalation Rate	IRAIR_SH	0.6 m^3/hr
	Exposure Time	ETAIR_SH	0.0069 hours/day
	Exposure Frequency	EFAIR_SH	350 days/year
Ingestion of fish/shellfish	Ingestion Rate	IRFISH	0 kg/day
	Fraction Ingested (from contaminated source)	FIFISH	0
	Exposure frequency	EFFISH	0 days/year
Crop ingestion on-site soils	Ingestion Rate	IRCROP_ON	0 kg/day
	Fraction Ingested (from contaminated source)	FICROP_ON	0
	Exposure frequency	EFCROP_ON	0 days/year
Crop ingestion off-site soils	Ingestion Rate	IRCROP_OFF	0 kg/day
	Fraction Ingested (from contaminated source)	FICROP_OFF	0
	Exposure frequency	EFCROP_OFF	0 days/year
Meat/milk/eggs ingestion	Ingestion Rate	IRMEAT	0 kg/day
	Fraction Ingested (from contaminated source)	FIMEAT	0
	Exposure frequency	EFMEAT	0 days/year

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SITE/STUDY AREA: Future land use
RECEPTOR: On-site Resident - Adult
TOXIC EFFECT: Carcinogenic and noncarcinogenic

Chemical	Carcinogen Slope Factor (mg/kg/day)^-1		Reference Dose (mg/kg/day)		PC Dermal Permeability Constant (water) (cm/hr)	ABS Dermal Absorption Factor (soil)	Absorption Fractions					
	Ingestion	Inhalation	Ingestion	Inhalation			Soil	Water	Air	Crops	Meat/milk	Fish
Anthracene			0.000571	0.000571		0.132	1.00	1.00	1.00	1.00	1.00	1.00
Antimony			0.0004	0.0004		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Arsenic	1.75	15	0.001	0.001		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Barium			0.01	0.00143		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Benzo(a)anthracene	0.4	0.4	0.000571	0.000571		0.132	1.00	1.00	1.00	1.00	1.00	1.00
Benzo(a)pyrene	0.4	0.4	0.000571	0.000571		0.132	1.00	1.00	1.00	1.00	1.00	1.00
Benzo(b)fluoranthene	0.4	0.4	0.000571	0.000571		0.132	1.00	1.00	1.00	1.00	1.00	1.00
Benzo(g,h,i)perylene			0.000571	0.000571		0.132	1.00	1.00	1.00	1.00	1.00	1.00
Benzo(k)fluoranthene	0.4	0.4	0.000571	0.000571		0.132	1.00	1.00	1.00	1.00	1.00	1.00
Beryllium	4.3	8.4	0.005	0.005		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Cadmium		6.1	0.0005	0.0005		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Carcinogenic PAHs in air	0.4	0.4	0.000571	0.000571		0	1.00	1.00	1.00	1.00	1.00	1.00
Chromium (total)			0.005	0.005		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Chrysene	0.4	0.4	0.000571	0.000571		0.132	1.00	1.00	1.00	1.00	1.00	1.00
Cobalt						0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Copper			0.114	0.0571		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Dibenzo(a,h)anthracene	0.4	0.4	0.000571	0.000571		0.132	1.00	1.00	1.00	1.00	1.00	1.00
Fluoranthene			0.000571	0.000571		0.132	1.00	1.00	1.00	1.00	1.00	1.00
Indeno(1,2,3-cd)pyrene	0.4	0.4	0.000571	0.000571		0.132	1.00	1.00	1.00	1.00	1.00	1.00
Lead						0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Mercury			0.002	0.00002		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Molybdenum						0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Naphthalene			0.000571	0.000571		0.132	1.00	1.00	1.00	1.00	1.00	1.00
Nickel			0.0114	0.0000286		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Noncarcinogenic PAHs in air			0.000571	0.000571		0.132	1.00	1.00	1.00	1.00	1.00	1.00
Phenanthrene			0.000571	0.000571		0.132	1.00	1.00	1.00	1.00	1.00	1.00
Pyrene			0.000571	0.000571		0.132	1.00	1.00	1.00	1.00	1.00	1.00
Selenium			0.003	0.003		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Silver			0.0057	0.000571		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Thallium			0.00007	0.00007		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Toluene			0.057	0.057		0.8	1.00	1.00	1.00	1.00	1.00	1.00
TPH						0.8	1.00	1.00	1.00	1.00	1.00	1.00
TPH/Gasoline						0.8	1.00	1.00	1.00	1.00	1.00	1.00
TPHC						0.8	1.00	1.00	1.00	1.00	1.00	1.00
TRHC						0.8	1.00	1.00	1.00	1.00	1.00	1.00

PROJECT: UPRR Sacramento Site
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LAST SAVED
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SITE/STUDY AREA: Future land use
RECEPTOR: On-site Resident - Adult
TOXIC EFFECT: Carcinogenic and noncarcinogenic

Chemical	Carcinogen Slope Factor (mg/kg/day)^-1		Reference Dose (mg/kg/day)		PC Dermal Permeability Constant (water) (cm/hr)	ABS Dermal Absorption Factor (soil)	Absorption Fractions					
	Ingestion	Inhalation	Ingestion	Inhalation			Soil	Water	Air	Crops	Meat/milk	Fish
Vanadium			0.007	0.007		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Zinc			0.229	0.229		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
1,1,1-Trichloroethane			0.00857	0.0857	1.01		1.00	1.00	1.00	1.00	1.00	1.00
1,1,2-Trichloroethane	0.057	0.057	0.004	0.004	1.01		1.00	1.00	1.00	1.00	1.00	1.00
1,1-Dichloroethane	0.091	0.091	0.1	0.1	1.01		1.00	1.00	1.00	1.00	1.00	1.00
1,1-Dichloroethene	0.6	1.2	0.009	0.009	1.01		1.00	1.00	1.00	1.00	1.00	1.00
1,2-Dichloroethane	0.091	0.091			1.01		1.00	1.00	1.00	1.00	1.00	1.00
1,2-Dichloroethene			0.2	0.2	1.01		1.00	1.00	1.00	1.00	1.00	1.00
1,2-Dichloropropane	0.068	0.068			1.01		1.00	1.00	1.00	1.00	1.00	1.00
Aldrin	17	17	0.00003	0.00003			1.00	1.00	1.00	1.00	1.00	1.00
Benzene	0.029	0.029			1.01		1.00	1.00	1.00	1.00	1.00	1.00
Carbon Tetrachloride	0.13	0.13	0.0007	0.0007	1.01		1.00	1.00	1.00	1.00	1.00	1.00
Chlorobenzene			0.02	0.005	1.01		1.00	1.00	1.00	1.00	1.00	1.00
Chloroform	0.0061	0.081	0.01	0.01	1.01		1.00	1.00	1.00	1.00	1.00	1.00
cis-1,2-Dichloroethene			0.2	0.2	1.01		1.00	1.00	1.00	1.00	1.00	1.00
delta-BHC (HCCH)			0.003	0.003			1.00	1.00	1.00	1.00	1.00	1.00
Ethylbenzene			0.1	0.1	1.01		1.00	1.00	1.00	1.00	1.00	1.00
Freon-113			30	30	1.01		1.00	1.00	1.00	1.00	1.00	1.00
Tetrachloroethene	0.051	0.0033	0.01	0.01	1.01		1.00	1.00	1.00	1.00	1.00	1.00
Trichloroethene	0.011	0.017			1.01		1.00	1.00	1.00	1.00	1.00	1.00
Xylenes			0.0571	0.114	1.01		1.00	1.00	1.00	1.00	1.00	1.00

PROJECT: UPRR Sacramento Site
PROJECT FILENAME: UPRR007.WK1
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TIME: 12:15 PM

SITE/STUDY AREA: Future land use
RECEPTOR: On-site Resident - Adult
TOXIC EFFECT: Carcinogenic and noncarcinogenic

Chemical	Conc. in Groundwater (mg/L)	Conc. in Surface Water (mg/L)	Conc. in Soil on-site (mg/kg)	Conc. in Soil off-site (mg/kg)	Conc. in Air outdoors (mg/m^3)	Conc. in Air indoors (mg/m^3)	Conc. in Air during showering (mg/m^3)	Conc. in Crops on-site soil (mg/kg)	Conc. in Crops off-site soil (mg/kg)	Conc. in Livestock Products (mg/kg)	Conc. in Fish (mg/kg)
Anthracene	0	0	2.55	0	0	0	0	0	0	0	0
Antimony	0	0	31.77	0	0	0	0	0	0	0	0
Arsenic	0.00737	0	45.91	0	0	0	0	0	0	0	0
Barium	0.19135	0	297.66	0	0	0	0	0	0	0	0
Benzo(a)anthracene	0	0	0.32	0	0	0	0	0	0	0	0
Benzo(a)pyrene	0	0	0.44	0	0	0	0	0	0	0	0
Benzo(b)fluoranthene	0	0	0.34	0	0	0	0	0	0	0	0
Benzo(g,h,i)perylene	0	0	0.35	0	0	0	0	0	0	0	0
Benzo(k)fluoranthene	0	0	0.82	0	0	0	0	0	0	0	0
Beryllium	0.00114	0	2.72	0	0	0	0	0	0	0	0
Cadmium	0.000169	0	1.32	0	0	0	0	0	0	0	0
Carcinogenic PAHs in air	0	0	0.00	0	0	0	0	0	0	0	0
Chromium (total)	0.03016	0	39.41	0	0	0	0	0	0	0	0
Chrysene	0	0	0.52	0	0	0	0	0	0	0	0
Cobalt	0.01529	0	11.58	0	0	0	0	0	0	0	0
Copper	0.01078	0	429.29	0	0	0	0	0	0	0	0
Dibenzo(a,h)anthracene	0	0	0.81	0	0	0	0	0	0	0	0
Fluoranthene	0	0	0.91	0	0	0	0	0	0	0	0
Indeno(1,2,3-cd)pyrene	0	0	1.03	0	0	0	0	0	0	0	0
Lead	0.02058	0	477.06	0	0	0	0	0	0	0	0
Mercury	0.0001	0	0.09	0	0	0	0	0	0	0	0
Molybdenum	0.01104	0	14.95	0	0	0	0	0	0	0	0
Naphthalene	0	0	10.61	0	0	0	0	0	0	0	0
Nickel	0.09218	0	40.24	0	0	0	0	0	0	0	0
Noncarcinogenic PAHs in	0	0	0.00	0	0	0	0	0	0	0	0
Phenanthrene	0	0	2.69	0	0	0	0	0	0	0	0
Pyrene	0	0	0.93	0	0	0	0	0	0	0	0
Selenium	0	0	0.16	0	0	0	0	0	0	0	0
Silver	0.00227	0	1.31	0	0	0	0	0	0	0	0
Thallium	0	0	36.30	0	0	0	0	0	0	0	0
Toluene	0.04161	0	0.16	0	0	0	1.47	0	0	0	0
TPH	12.27788	0	37294.72	0	0	0	0	0	0	0	0
TPH/Gasoline	3.951	0	13560.44	0	0	0	0	0	0	0	0
TPHC	0	0	650.63	0	0	0	0	0	0	0	0
TRHC	0	0	1600.00	0	0	0	0	0	0	0	0

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Chemical	Conc. in Groundwater (mg/L)	Conc. in Surface Water (mg/L)	Conc. in Soil on-site (mg/kg)	Conc. in Soil off-site (mg/kg)	Conc. in Air outdoors (mg/m^3)	Conc. in Air indoors (mg/m^3)	Conc. in Air during showering (mg/m^3)	Conc. in Crops on-site soil (mg/kg)	Conc. in Crops off-site soil (mg/kg)	Conc. in Livestock Products (mg/kg)	Conc. in Fish (mg/kg)
Vanadium	0.02632	0	39.86	0	0	0	0	0.0268	0	0	0
Zinc	0.03868	0	698.36	0	0	0	0	141	0	0	0
1,1,1-Trichloroethane	0.0062	0	0	0	0.0000698	0	0.192	0	0	0	0
1,1,2-Trichloroethane	0.0009	0	0	0	0	0	0.0247	0	0	0	0
1,1-Dichloroethane	0.00547	0	0	0	0.000019	0	0.189	0	0	0	0
1,1-Dichloroethene	0.05862	0	0	0	0.000004	0	2.087	0	0	0	0
1,2-Dichloroethane	0.01752	0	0	0	0	0	0.524	0	0	0	0
1,2-Dichloroethene	0.00076	0	0	0	0	0	0.026	0	0	0	0
1,2-Dichloropropane	0.00069	0	0	0	0	0	0.023	0	0	0	0
Aldrin	0.00003	0	0	0	0	0	0	0	0	0	0
Benzene	0.66235	0	0	0	0	0	24.82	0	0	0	0
Carbon Tetrachloride	0.00091	0	0	0	1.71OE-10	0	0.027	0	0	0	0
Chlorobenzene	0.001	0	0	0	0	0	0.032	0	0	0	0
Chloroform	0.00218	0	0	0	0	0	0.069	0	0	0	0
cis-1,2-Dichloroethene	0.0015	0	0	0	0	0	0.051	0	0	0	0
delta-BHC (HCCH)	0.00003	0	0	0	0	0	0	0	0	0	0
Ethylbenzene	0.04657	0	0	0	0	0	1.58	0	0	0	0
Freon-113	0.00374	0	0	0	0	0	0	0	0	0	0
Tetrachloroethene	0.00064	0	0	0	0.0000024	0	0.0185	0	0	0	0
Trichloroethene	0.00201	0	0	0	0.0000145	0	0.063	0	0	0	0
Xylenes	0.0995	0	0	0	0	0	3.33	0	0	0	0

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Chemical	Intake from each pathway (mg/kg-day)																
	Drinking Water Ingestion Ground water	Drinking Water Ingestion Surface water	Water Ingestion while Swimming	Dermal Contact Surface water Swimming	Dermal Contact Surface water Showering	Dermal Contact Ground Water Showering	Soil Ingestion on-site soil	Soil Ingestion off-site soil	Dermal Contact with on-site soil	Dermal Contact with off-site soil	Inhalation Outdoor Air	Inhalation Indoor Air	Inhalation during showering	Ingestion of Fish and Shellfish	Ingestion of Crops on-site Soil	Ingestion of Crops off-site Soil	Ingestion of meat/ milk/eggs	Total
Anthracene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.5E-06	0.0E+00	2.1E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.4E-05
Antimony	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.4E-05	0.0E+00	1.4E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.5E-05
Arsenic	2.0E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.3E-05	0.0E+00	2.0E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.7E-04
Barium	5.2E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.1E-04	0.0E+00	1.3E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.7E-05
Benzo(a)anthracene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.4E-07	0.0E+00	2.6E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.1E-06
Benzo(a)pyrene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.1E-07	0.0E+00	3.6E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.2E-06
Benzo(b)fluoranthene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.6E-07	0.0E+00	2.8E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.2E-06
Benzo(g,h,i)perylene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.7E-07	0.0E+00	2.8E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.3E-06
Benzo(k)fluoranthene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-06	0.0E+00	6.7E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.8E-06
Beryllium	3.1E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.7E-06	0.0E+00	1.2E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.5E-05
Cadmium	4.6E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.8E-06	0.0E+00	5.7E-08	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.5E-06
Carcinogenic PAHs in	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Chromium (total)	8.3E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.4E-05	0.0E+00	1.7E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.8E-04
Chrysene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.2E-07	0.0E+00	4.3E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.0E-06
Cobalt	4.2E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.6E-05	0.0E+00	5.0E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.4E-04
Copper	3.0E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.9E-04	0.0E+00	1.9E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.0E-04
Dibenzo(a,h)anthrace	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-06	0.0E+00	6.6E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.7E-06
Fluoranthene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-06	0.0E+00	7.4E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.7E-06
Indeno(1,2,3-cd)pyre	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-06	0.0E+00	8.5E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.9E-06
Lead	5.6E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.5E-04	0.0E+00	2.1E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-03
Mercury	2.7E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-07	0.0E+00	3.9E-09	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.9E-06
Molybdenum	3.0E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.0E-05	0.0E+00	6.5E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.2E-04
Naphthalene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.5E-05	0.0E+00	8.7E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.0E-04
Nickel	2.5E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.5E-05	0.0E+00	1.7E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.6E-03
Noncarcinogenic PAHs	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Phenanthrene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.7E-06	0.0E+00	2.2E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.6E-05
Pyrene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-06	0.0E+00	7.6E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.9E-06
Selenium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.1E-07	0.0E+00	6.7E-09	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.2E-07
Silver	6.2E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.8E-06	0.0E+00	5.7E-08	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.4E-05
Thallium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.0E-05	0.0E+00	1.6E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.1E-05
Toluene	1.1E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.2E-07	0.0E+00	8.0E-06	0.0E+00	0.0E+00	0.0E+00	8.3E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-03
TPH	3.4E-01	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.1E-02	0.0E+00	1.8E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.2E+00
TPH/Gasoline	1.1E-01	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.9E-02	0.0E+00	6.7E-01	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.0E-01
TPHC	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.9E-04	0.0E+00	3.2E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.3E-02
TRHC	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.2E-03	0.0E+00	7.9E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.2E-02

PROJECT: UPRR Sacramento Site
PROJECT FILENAME: UPRR007.WK1
LAST SAVED
DATE: 09/30/91
TIME: 12:15 PM

SITE/STUDY AREA: Future land use
RECEPTOR: On-site Resident - Adult
TOXIC EFFECT: Carcinogenic and noncarcinogenic

Chemical	Intake from each pathway (mg/kg-day)																	
	Drinking Water Ingestion Ground water	Drinking Water Ingestion Surface water	Water Ingestion while Swimming	Dermal Contact Surface water Swimming	Dermal Contact Surface water Showering	Dermal Contact Ground water Showering	Soil Ingestion on-site soil	Soil Ingestion off-site soil	Dermal Contact with on-site soil	Dermal Contact with off-site soil	Inhalation Outdoor Air	Inhalation Indoor Air	Inhalation during showering	Ingestion of Fish and Shellfish	Ingestion of Crops on-site Soil	Ingestion of Crops off-site Soil	Ingestion of meat/ milk/eggs	Total
Vanadium	7.2E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.5E-05	0.0E+00	1.7E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.8E-04
Zinc	1.1E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.6E-04	0.0E+00	3.0E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.0E-03
1,1,1-Trichloroethan	1.7E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-06	0.0E+00	1.1E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.9E-04
1,1,2-Trichloroethan	2.5E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.7E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.8E-05
1,1-Dichloroethane	1.5E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.0E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.5E-06	0.0E+00	1.1E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.7E-04
1,1-Dichloroethene	1.4E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.3E-07	0.0E+00	1.2E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.8E-03
1,2-Dichloroethene	4.8E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.2E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.0E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.4E-04
1,2-Dichloropropane	2.1E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.5E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.4E-05
Aldrin	1.9E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.1E-05
Benzene	8.2E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.2E-07
Carbon Tetrachloride	1.8E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.1E-02
Chlordenzene	2.5E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.7E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.1E-11	0.0E+00	1.5E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.8E-05
Chloroform	2.7E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.9E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.8E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.1E-05
cis-1,2-Dichloroethe	6.0E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.0E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.9E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.8E-05
delta-BHC (HCCH)	4.1E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.8E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.9E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.7E-05
Ethylbenzene	8.2E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.2E-07
Freon-113	1.3E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.6E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.0E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.5E-03
Tetrachloroethene	1.0E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.9E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-04
Trichloroethene	1.8E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-06	0.0E+00	1.0E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.1E-05
Xylenes	5.5E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.7E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.6E-07	0.0E+00	3.6E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.3E-05
	2.7E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.8E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.9E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.1E-03

PROJECT: UPRR Sacramento Site
PROJECT FILENAME: UPRR007.WK1
LAST SAVED
DATE: 09/30/91
TIME: 12:15 PM

SITE/STUDY AREA: Future land use
RECEPTOR: On-site Resident - Adult
TOXIC EFFECT: Carcinogenic and noncarcinogenic

Chemical	Lifetime cancer risks from each pathway																		
	Drinking Water Ingestion Ground Water	Drinking Water Ingestion Surface Water	Water Ingestion while Swimming	Dermal Contact Surface Water Swimming	Dermal Contact Surface Water Showering	Dermal Contact Ground Water Showering	Soil Ingestion on-site soil	Soil Ingestion off-site soil	Dermal Contact with on-site soil	Dermal Contact with off-site soil	Inhalation Outdoor Air	Inhalation Indoor Air	Inhalation during showering	Ingestion of Fish and Shellfish	Ingestion of Crops on-site Soil	Ingestion of Crops off-site Soil	Ingestion of meat/ milk/eggs	Total (Pathway)	Total (Scenario)
Anthracene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.5E-03
Antimony	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Arsenic	3.5E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-04	0.0E+00	3.5E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.7E-04	
Barium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Benzo(a)anthracene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.8E-07	0.0E+00	1.1E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-06	
Benzo(a)pyrene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.4E-07	0.0E+00	1.5E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.7E-06	
Benzo(b)fluoranthene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.9E-07	0.0E+00	1.1E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-06	
Benzo(g,h,i)perylene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Benzo(k)fluoranthene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.5E-07	0.0E+00	2.7E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.1E-06	
Beryllium	1.3E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.6E-05	0.0E+00	5.1E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.5E-04	
Cadmium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Carcinogenic PAHs in	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Chromium (total)	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Chrysene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.9E-07	0.0E+00	1.7E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.0E-06	
Cobalt	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Copper	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Dibenzo(a,h)anthrace	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.4E-07	0.0E+00	2.7E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.1E-06	
Fluoranthene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Indeno(1,2,3-cd)pyre	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.7E-07	0.0E+00	3.4E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.9E-06	
Lead	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Mercury	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Molybdenum	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Naphthalene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Nickel	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Noncarcinogenic PAHs	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Phenanthrene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Pyrene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Selenium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Silver	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Thallium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Toluene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
TPH	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
TPH/Gasoline	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
TPHC	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
TRHC	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	

PROJECT: UPRR Sacramento Site
PROJECT FILENAME: UPRR007.WK1
LAST SAVED
DATE: 09/30/91
TIME: 12:15 PM

SITE/STUDY AREA: Future land use
RECEPTOR: On-site Resident - Adult
TOXIC EFFECT: Carcinogenic and noncarcinogenic

Chemical	Lifetime cancer risks from each pathway																	
	Drinking Water Ingestion Ground Water	Drinking Water Ingestion Surface Water	Water Ingestion while Swimming	Dermal Contact Surface Water Swimming	Dermal Contact Surface Water Showering	Dermal Contact Ground Water Showering	Soil Ingestion on-site soil	Soil Ingestion off-site soil	Dermal Contact with on-site soil	Dermal Contact with off-site soil	Inhalation Outdoor Air	Inhalation Indoor Air	Inhalation during showering	Ingestion of Fish and Shellfish	Ingestion of Crops on-site Soil	Ingestion of Crops off-site Soil	Ingestion of meat/ milk/eggs	Total (Pathway)	Total (Scenario)
Vanadium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Zinc	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
1,1,1-Trichloroethan	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
1,1,2-Trichloroethan	1.4E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.5E-08	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.0E-08	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.6E-06	
1,1-Dichloroethene	1.4E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.2E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.1E-07	0.0E+00	9.8E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.6E-05	
1,1-Dichloroethene	9.6E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.5E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.7E-07	0.0E+00	1.4E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-03	
1,2-Dichloroethene	4.4E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.0E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.7E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.9E-05	
1,2-Dichloroethene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
1,2-Dichloropropane	1.3E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.7E-08	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.9E-08	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.5E-06	
Aldrin	1.4E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-05	
Benzene	5.3E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.6E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.1E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.0E-04	
Carbon Tetrachloride	3.2E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.2E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.0E-12	0.0E+00	2.0E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.7E-06	
Chlorobenzene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Chloroform	3.6E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.5E-08	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.2E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.1E-07	
cis-1,2-Dichloroethe	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
delta-BHC (HCCH)	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Ethylbenzene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Freon-113	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Tetrachloroethene	8.9E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.0E-08	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.3E-09	0.0E+00	3.5E-09	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.6E-07	
Trichloroethene	6.1E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.1E-08	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.5E-09	0.0E+00	6.1E-08	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.1E-07	
Xylenes	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	

PROJECT: UPRR Sacramento Site
PROJECT FILENAME: UPRR007.WK1
LAST SAVED
DATE: 09/30/91
TIME: 12:15 PM

SITE/STUDY AREA: Future land use
RECEPTOR: On-site Resident - Adult
TOXIC EFFECT: Carcinogenic and noncarcinogenic

Chemical	Hazard Index for each pathway																	
	Drinking Water Ingestion Ground water	Drinking Water Ingestion Surface water	Water Ingestion while Swimming	Dermal Contact Surface water Swimming	Dermal Contact Surface water Showering	Dermal Contact Ground water Showering	Soil Ingestion on-site soil	Soil Ingestion off-site soil	Dermal Contact with on-site soil	Dermal Contact with off-site soil	Inhalation Outdoor Air	Inhalation Indoor Air	Inhalation during showering	Ingestion of Fish and Shellfish	Ingestion of Crops on-site Soil	Ingestion of Crops off-site Soil	Ingestion of meat/ milk/eggs	Total
Anthracene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.1E-03	0.0E+00	3.6E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.3E-02
Antimony	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-01	0.0E+00	3.4E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-01
Arsenic	2.0E-01	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.3E-02	0.0E+00	2.0E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.7E-01
Barium	5.2E-01	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.1E-02	0.0E+00	1.3E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.7E-01
Benzo(a)anthracene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.7E-04	0.0E+00	4.6E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.4E-03
Benzo(a)pyrene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-03	0.0E+00	6.4E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.4E-03
Benzo(b)fluoranthene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.1E-04	0.0E+00	4.8E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.7E-03
Benzo(g,h,i)perylene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.3E-04	0.0E+00	4.9E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.8E-03
Benzo(k)fluoranthene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.0E-03	0.0E+00	1.2E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-02
Beryllium	6.2E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.5E-04	0.0E+00	2.4E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.0E-03
Cadmium	9.3E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.6E-03	0.0E+00	1.1E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-02
Carcinogenic PAHs in	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Chromium (total)	1.7E-01	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-02	0.0E+00	3.4E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.8E-01
Chrysene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-03	0.0E+00	7.5E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.8E-03
Cobalt	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Copper	2.6E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.2E-03	0.0E+00	1.6E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.9E-03
Dibenzo(a,h)anthrace	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.9E-03	0.0E+00	1.2E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-02
Fluoranthene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.2E-03	0.0E+00	1.3E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.5E-02
Indeno(1,2,3-cd)pyre	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.5E-03	0.0E+00	1.5E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.7E-02
Lead	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Mercury	1.4E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.2E-05	0.0E+00	2.0E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-03
Molybdenum	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Naphthalene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.5E-02	0.0E+00	1.5E-01	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.8E-01
Nickel	2.2E-01	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.8E-03	0.0E+00	1.5E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.3E-01
Noncarcinogenic PAHs	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Phenanthrene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.5E-03	0.0E+00	3.9E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.5E-02
Pyrene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.2E-03	0.0E+00	1.3E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.6E-02
Selenium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.1E-05	0.0E+00	2.2E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.3E-05
Silver	1.1E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.1E-04	0.0E+00	1.0E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-02
Thallium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.1E-01	0.0E+00	2.2E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.3E-01
Toluene	2.0E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.9E-06	0.0E+00	1.4E-04	0.0E+00	0.0E+00	0.0E+00	1.5E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.2E-02
TPH	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
TPH/Gasoline	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
TPHC	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
TRHC	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00

PROJECT: UPRR Sacramento Site
PROJECT FILENAME: UPRR007.WK1
LAST SAVED
DATE: 09/30/91
TIME: 12:15 PM

SITE/STUDY AREA: Future land use
RECEPTOR: On-site Resident - Adult
TOXIC EFFECT: Carcinogenic and noncarcinogenic

Chemical	Hazard Index for each pathway																	
	Drinking Water Ingestion Ground water	Drinking Water Ingestion Surface water	Water Ingestion while Swimming	Dermal Contact Surface water Swimming	Dermal Contact Surface water Showering	Dermal Contact Ground Water Showering	Soil Ingestion on-site soil	Soil Ingestion off-site soil	Dermal Contact with on-site soil	Dermal Contact with off-site soil	Inhalation Outdoor Air	Inhalation Indoor Air	Inhalation during showering	Ingestion of Fish and Shellfish	Ingestion of Crops on-site Soil	Ingestion of Crops off-site Soil	Ingestion of meat/ milk/eggs	Total
Vanadium	1.0E-01	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.8E-03	0.0E+00	2.5E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-01
Zinc	4.6E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.2E-03	0.0E+00	1.3E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.9E-03
1,1,1-Trichloroethan	2.0E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.5E-04	0.0E+00	1.3E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.3E-02
1,1,2-Trichloroethan	6.2E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.2E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.5E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.9E-03
1,1-Dichloroethane	1.5E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.0E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.5E-05	0.0E+00	1.1E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.7E-03
1,1-Dichloroethene	1.8E-01	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.1E-05	0.0E+00	1.3E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.0E-01
1,2-Dichloroethane	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
1,2-Dichloroethene	1.0E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.0E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.4E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-04
1,2-Dichloropropane	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Aldrin	2.7E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.7E-02
Benzene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Carbon Tetrachloride	3.6E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.4E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.4E-08	0.0E+00	2.2E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.0E-02
Chlorobenzene	1.4E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.3E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.1E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.6E-03
Chloroform	6.0E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.0E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.9E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.8E-03
cis-1,2-Dichloroethe	2.1E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.3E-04
delta-BHC (HCCH)	2.7E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.7E-04
Ethylbenzene	1.3E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.6E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.0E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.5E-02
Freon-113	3.4E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.3E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.6E-06
Tetrachloroethene	1.8E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-04	0.0E+00	1.0E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.1E-03
Trichloroethene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Xylenes	4.8E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.2E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.3E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.4E-02

PROJECT: UPRR Sacramento Site
PROJECT FILENAME: UPRR08.WK1
LAST SAVED:
DATE: 09/30/91
TIME: 12:24 PM

SITE/STUDY AREA: Future land use
RECEPTOR: On-site Resident - Child
TOXIC EFFECT: Carcinogenic and noncarcinogenic
COMMENTS:

PREAMBLE:

This is a risk assessment model for evaluating health risks associated with chemical contamination detected in environmental media (soil, air, groundwater or surface water). This model is designed to evaluate health risks associated with exposures from several different pathways using the guidelines presented in the EPA Risk Assessment Guidance for Superfund (RAGS). This model uses chemical concentrations measured during site investigations or estimated in environmental fate and transport models to estimate health risks.

PROJECT: UPRR Sacramento Site
PROJECT FILENAME: UPRR08.WK1
LAST SAVED
DATE: 09/30/91
TIME: 12:24 PM

SITE/STUDY AREA: Future land use
RECEPTOR: On-site Resident - Child
TOXIC EFFECT: Carcinogenic and noncarcinogenic

Pathway	Description	Label	Value	Units
General	Body Weight	BW	15.1	kg
	Exposure Duration	ED	70	years
	Averaging Time	AT	25550	days
Drinking water ingestion	Ingestion Rate	IRWATER	1.2	L/day
	Exposure Frequency	EFWATER	350	days/year
Ingestion during swimming	Contact Rate	CR	0	L/hour
	Exposure Time	ETSWIM	0	hours/event
	Exposure Frequency	EFSWIM	0	events/year
Dermal contact with surface water - Swimming	Skin Surface Area	SADERM_W	0	cm^2
	Exposure Time	ETDERM_W	0	hours/day
	Exposure Frequency	EFDERM_W	0	events/year
Dermal contact with surface water - Showering	Skin Surface Area	SADERM_S	0	cm^2
	Exposure Time	ETDERM_S	0	hours/day
	Exposure Frequency	EFDERM_S	0	events/year
Dermal contact with ground water - Showering	Skin Surface Area	SADERM_G	9310	cm^2
	Exposure Time	ETDERM_G	0.0069	hours/day
	Exposure Frequency	EFDERM_G	350	events/year
Soil ingestion on-site soils	Ingestion Rate	IRSOIL_ON	0.0002	kg/day
	Fraction Ingested (from contaminated source)	FISOIL_ON	1	
	Exposure Frequency	EFSOIL_ON	350	days/year
Dermal contact with on-site soil	Skin Surface Area	SADERM_SON	3910	cm^2
	Soil to skin adherence factor	AF	0.00000145	kg/cm^2
	Exposure Frequency	EFDERM_SON	350	events/year
Soil ingestion off-site soils	Ingestion Rate	IRSOIL_OFF	0	kg/day
	Fraction Ingested (from contaminated source)	FISOIL_OFF	0	
	Exposure Frequency	EFSOIL_OFF	0	days/year
Dermal contact with off-site soil	Skin Surface Area	SADERM_SOFF	0	cm^2
	Exposure Frequency	EFDERM_SOFF	0	events/year
Inhalation of outdoor air	Inhalation Rate	IRAIR_OUT	0.8	m^3/hr
	Exposure Time	ETAIR_OUT	16	hours/day

	Exposure Frequency	EFAIR_OUT	350 days/year
Inhalation of indoor air	Inhalation Rate	IRAIR_IN	0 m^3/hr
	Exposure Time	ETAIR_IN	0 hours/day
	Exposure Frequency	EFAIR_IN	0 days/year
Inhalation of indoor air - during showering	Inhalation Rate	IRAIR_SH	0 m^3/hr
	Exposure Time	ETAIR_SH	0 hours/day
	Exposure Frequency	EFAIR_SH	0 days/year
Ingestion of fish/shellfish	Ingestion Rate	IRFISH	0 kg/day
	Fraction Ingested (from contaminated source)	FIFISH	0
	Exposure frequency	EFFISH	0 days/year
Crop ingestion on-site soils	Ingestion Rate	IRCROP_ON	0 kg/day
	Fraction Ingested (from contaminated source)	FICROP_ON	0
	Exposure frequency	EFCROP_ON	0 days/year
Crop ingestion off-site soils	Ingestion Rate	IRCROP_OFF	0 kg/day
	Fraction Ingested (from contaminated source)	FICROP_OFF	0
	Exposure frequency	EFCROP_OFF	0 days/year
Meat/milk/eggs ingestion	Ingestion Rate	IRMEAT	0 kg/day
	Fraction Ingested (from contaminated source)	FIMEAT	0
	Exposure frequency	EFMEAT	0 days/year

PROJECT: UPRR Sacramento Site
PROJECT FILENAME: UPRR008.WK1
LAST SAVED
DATE: 09/30/91
TIME: 12:24 PM

SITE/STUDY AREA: Future land use
RECEPTOR: On-site Resident - Child
TOXIC EFFECT: Carcinogenic and noncarcinogenic

Chemical	Carcinogen Slope Factor (mg/kg/day)^-1		Reference Dose (mg/kg/day)		PC Dermal Permeability Constant (water) (cm/hr)	ABS Dermal Absorption Factor (soil)	Absorption Fractions					
	Ingestion	Inhalation	Ingestion	Inhalation			Soil	Water	Air	Crops	Meat/milk	Fish
Anthracene			0.000571	0.000571		0.132	1.00	1.00	1.00	1.00	1.00	1.00
Antimony			0.0004	0.0004		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Arsenic	1.75	15	0.001	0.001		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Barium			0.01	0.00143		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Benzo(a)anthracene	0.4	0.4	0.000571	0.000571		0.132	1.00	1.00	1.00	1.00	1.00	1.00
Benzo(a)pyrene	0.4	0.4	0.000571	0.000571		0.132	1.00	1.00	1.00	1.00	1.00	1.00
Benzo(b)fluoranthene	0.4	0.4	0.000571	0.000571		0.132	1.00	1.00	1.00	1.00	1.00	1.00
Benzo(g,h,i)perylene			0.000571	0.000571		0.132	1.00	1.00	1.00	1.00	1.00	1.00
Benzo(k)fluoranthene	0.4	0.4	0.000571	0.000571		0.132	1.00	1.00	1.00	1.00	1.00	1.00
Beryllium	4.3	8.4	0.005	0.005		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Cadmium		6.1	0.0005	0.0005		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Carcinogenic PAHs in air	0.4	0.4	0.000571	0.000571		0	1.00	1.00	1.00	1.00	1.00	1.00
Chromium (total)			0.005	0.005		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Chrysene	0.4	0.4	0.000571	0.000571		0.132	1.00	1.00	1.00	1.00	1.00	1.00
Cobalt						0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Copper			0.114	0.0571		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Dibenzo(a,h)anthracene	0.4	0.4	0.000571	0.000571		0.132	1.00	1.00	1.00	1.00	1.00	1.00
Fluoranthene			0.000571	0.000571		0.132	1.00	1.00	1.00	1.00	1.00	1.00
Indeno(1,2,3-cd)pyrene	0.4	0.4	0.000571	0.000571		0.132	1.00	1.00	1.00	1.00	1.00	1.00
Lead						0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Mercury			0.002	0.00002		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Molybdenum						0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Naphthalene			0.000571	0.000571		0.132	1.00	1.00	1.00	1.00	1.00	1.00
Nickel			0.0114	0.0000286		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Noncarcinogenic PAHs in air			0.000571	0.000571		0.132	1.00	1.00	1.00	1.00	1.00	1.00
Phenanthrene			0.000571	0.000571		0.132	1.00	1.00	1.00	1.00	1.00	1.00
Pyrene			0.000571	0.000571		0.132	1.00	1.00	1.00	1.00	1.00	1.00
Selenium			0.003	0.003		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Silver			0.0071	0.000571		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Thallium			0.00007	0.00007		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Toluene			0.0571	0.0571		0.8	1.00	1.00	1.00	1.00	1.00	1.00
TPH						0.8	1.00	1.00	1.00	1.00	1.00	1.00
TPH/Gasoline						0.8	1.00	1.00	1.00	1.00	1.00	1.00
TPHC						0.8	1.00	1.00	1.00	1.00	1.00	1.00
TRHC						0.8	1.00	1.00	1.00	1.00	1.00	1.00

PROJECT: UPRR Sacramento Site
PROJECT FILENAME: UPRR00B.WK1
LAST SAVED
DATE: 09/30/91
TIME: 12:24 PM

SITE/STUDY AREA: Future land use
RECEPTOR: On-site Resident - Child
TOXIC EFFECT: Carcinogenic and noncarcinogenic

Chemical	Carcinogen Slope Factor (mg/kg/day)^-1		Reference Dose (mg/kg/day)		PC Dermal Permeability Constant (water) (cm/hr)	ABS Dermal Absorption Factor (soil)	Absorption Fractions					
	Ingestion	Inhalation	Ingestion	Inhalation			Soil	Water	Air	Crops	Meat/milk	Fish
Vanadium			0.007	0.007		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
Zinc			0.229	0.229		0.0007	1.00	1.00	1.00	1.00	1.00	1.00
1,1,1-Trichloroethane			0.00857	0.0857	1.01		1.00	1.00	1.00	1.00	1.00	1.00
1,1,2-Trichloroethane	0.057	0.057	0.004	0.004	1.01		1.00	1.00	1.00	1.00	1.00	1.00
1,1-Dichloroethane	0.091	0.091	0.1	0.1	1.01		1.00	1.00	1.00	1.00	1.00	1.00
1,1-Dichloroethene	0.6	1.2	0.009	0.009	1.01		1.00	1.00	1.00	1.00	1.00	1.00
1,2-Dichloroethane	0.091	0.091			1.01		1.00	1.00	1.00	1.00	1.00	1.00
1,2-Dichloroethene			0.2	0.2	1.01		1.00	1.00	1.00	1.00	1.00	1.00
1,2-Dichloropropane	0.068	0.068			1.01		1.00	1.00	1.00	1.00	1.00	1.00
Aldrin	17	17	0.00003	0.00003			1.00	1.00	1.00	1.00	1.00	1.00
Benzene	0.029	0.029			1.01		1.00	1.00	1.00	1.00	1.00	1.00
Carbon Tetrachloride	0.13	0.13	0.0007	0.0007	1.01		1.00	1.00	1.00	1.00	1.00	1.00
Chlorobenzene			0.02	0.005	1.01		1.00	1.00	1.00	1.00	1.00	1.00
Chloroform	0.0061	0.081	0.01	0.01	1.01		1.00	1.00	1.00	1.00	1.00	1.00
cis-1,2-Dichloroethene			0.2	0.2	1.01		1.00	1.00	1.00	1.00	1.00	1.00
delta-BHC (HCCH)			0.003	0.003			1.00	1.00	1.00	1.00	1.00	1.00
Ethylbenzene			0.1	0.1	1.01		1.00	1.00	1.00	1.00	1.00	1.00
Freon-113			30	30	1.01		1.00	1.00	1.00	1.00	1.00	1.00
Tetrachloroethene	0.051	0.0033	0.01	0.01	1.01		1.00	1.00	1.00	1.00	1.00	1.00
Trichloroethene	0.011	0.017			1.01		1.00	1.00	1.00	1.00	1.00	1.00
Xylenes			0.0571	0.114	1.01		1.00	1.00	1.00	1.00	1.00	1.00

PROJECT: UPRR Sacramento Site
PROJECT FILENAME: UPRR00B.WK1
LAST SAVED
DATE: 09/30/91
TIME: 12:24 PM

SITE/STUDY AREA: Future land use
RECEPTOR: On-site Resident - Child
TOXIC EFFECT: Carcinogenic and noncarcinogenic

Chemical	Conc. in Groundwater (mg/L)	Conc. in Surface Water (mg/L)	Conc. in Soil on-site (mg/kg)	Conc. in Soil off-site (mg/kg)	Conc. in Air outdoors (mg/m^3)	Conc. in Air indoors (mg/m^3)	Conc. in Air during showering (mg/m^3)	Conc. in Crops on-site soil (mg/kg)	Conc. in Crops off-site soil (ng/kg)	Conc. in Livestock Products (mg/kg)	Conc. in Fish (mg/kg)
Anthracene	0	0	2.55	0	0	0	0	0	0	0	0
Antimony	0	0	31.77	0	0	0	0	0	0	0	0
Arsenic	0.00737	0	45.91	0	0	0	0	0	0	0	0
Barium	0.19135	0	297.66	0	0	0	0	0	0	0	0
Benzo(a)anthracene	0	0	0.32	0	0	0	0	0	0	0	0
Benzo(a)pyrene	0	0	0.44	0	0	0	0	0	0	0	0
Benzo(b)fluoranthene	0	0	0.34	0	0	0	0	0	0	0	0
Benzo(g,h,i)perylene	0	0	0.35	0	0	0	0	0	0	0	0
Benzo(k)fluoranthene	0	0	0.82	0	0	0	0	0	0	0	0
Beryllium	0.00114	0	2.72	0	0	0	0	0	0	0	0
Cadmium	0.000169	0	1.32	0	0	0	0	0	0	0	0
Carcinogenic PAHs in air	0	0	0.00	0	0	0	0	0	0	0	0
Chromium (total)	0.03016	0	39.41	0	0	0	0	0	0	0	0
Chrysene	0	0	0.52	0	0	0	0	0	0	0	0
Cobalt	0.01529	0	11.58	0	0	0	0	0	0	0	0
Copper	0.01078	0	429.29	0	0	0	0	0	0	0	0
Dibenzo(a,h)anthracene	0	0	0.81	0	0	0	0	0	0	0	0
Fluoranthene	0	0	0.91	0	0	0	0	0	0	0	0
Indeno(1,2,3-cd)pyrene	0	0	1.03	0	0	0	0	0	0	0	0
Lead	0.02058	0	477.06	0	0	0	0	0	0	0	0
Mercury	0.0001	0	0.09	0	0	0	0	0	0	0	0
Molybdenum	0.01104	0	14.95	0	0	0	0	0	0	0	0
Naphthalene	0	0	10.61	0	0	0	0	0	0	0	0
Nickel	0.09218	0	40.24	0	0	0	0	0	0	0	0
Noncarcinogenic PAHs in	0	0	0.00	0	0	0	0	0	0	0	0
Phenanthrene	0	0	2.69	0	0	0	0	0	0	0	0
Pyrene	0	0	0.93	0	0	0	0	0	0	0	0
Selenium	0	0	0.16	0	0	0	0	0	0	0	0
Silver	0.00227	0	1.31	0	0	0	0	0	0	0	0
Thallium	0	0	36.30	0	0	0	0	0	0	0	0
Toluene	0.04161	0	0.16	0	0	0	1.47	0	0	0	0
TPH	12.27788	0	37294.72	0	0	0	0	0	0	0	0
TPH/Gasoline	3.951	0	13560.44	0	0	0	0	0	0	0	0
TPHC	0	0	650.63	0	0	0	0	0	0	0	0
TRHC	0	0	1600.00	0	0	0	0	0	0	0	0

PROJECT: UPRR Sacramento Site
PROJECT FILENAME: UPRR008.WK1
LAST SAVED
DATE: 09/30/91
TIME: 12:24 PM

SITE/STUDY AREA: Future land use
RECEPTOR: On-site Resident - Child
TOXIC EFFECT: Carcinogenic and noncarcinogenic

Chemical	Conc. in Groundwater (mg/L)	Conc. in Surface Water (mg/L)	Conc. in Soil on-site (mg/kg)	Conc. in Soil off-site (mg/kg)	Conc. in Air outdoors (mg/m^3)	Conc. in Air indoors (mg/m^3)	Conc. in Air during showering (mg/m^3)	Conc. in Crops on-site soil (mg/kg)	Conc. in Crops off-site soil (mg/kg)	Conc. in Livestock Products (mg/kg)	Conc. in Fish (mg/kg)
Vanadium	0.02632	0	39.86	0	0	0	0	0.0268	0	0	0
Zinc	0.03868	0	698.36	0	0	0	0	141	0	0	0
1,1,1-Trichloroethane	0.0062	0	0	0	0.0000698	0	0.192	0	0	0	0
1,1,2-Trichloroethane	0.0009	0	0	0	0	0	0.0247	0	0	0	0
1,1-Dichloroethane	0.00547	0	0	0	0.000019	0	0.189	0	0	0	0
1,1-Dichloroethene	0.05862	0	0	0	0.00004	0	2.087	0	0	0	0
1,2-Dichloroethane	0.01752	0	0	0	0	0	0.524	0	0	0	0
1,2-Dichloroethene	0.00076	0	0	0	0	0	0.026	0	0	0	0
1,2-Dichloropropane	0.00069	0	0	0	0	0	0.023	0	0	0	0
Aldrin	0.00003	0	0	0	0	0	0	0	0	0	0
Benzene	0.66235	0	0	0	0	0	24.82	0	0	0	0
Carbon Tetrachloride	0.00091	0	0	0	1.71OE-10	0	0.027	0	0	0	0
Chlorobenzene	0.001	0	0	0	0	0	0.032	0	0	0	0
Chloroform	0.00218	0	0	0	0	0	0.069	0	0	0	0
cis-1,2-Dichloroethene	0.0015	0	0	0	0	0	0.051	0	0	0	0
delta-BHC (HCCH)	0.00003	0	0	0	0	0	0	0	0	0	0
Ethylbenzene	0.04657	0	0	0	0	0	1.58	0	0	0	0
Freon-113	0.00374	0	0	0	0	0	0	0	0	0	0
Tetrachloroethene	0.00064	0	0	0	0.0000724	0	0.0185	0	0	0	0
Trichloroethene	0.00201	0	0	0	0.0000145	0	0.063	0	0	0	0
Xylenes	0.0995	0	0	0	0	0	3.33	0	0	0	0

PROJECT: UPRR Sacramento Site
PROJECT FILENAME: UPRR00B.WK1
LAST SAVED
DATE: 09/30/91
TIME: 12:24 PM

SITE/STUDY AREA: Future land use
RECEPTOR: On-site Resident - Child
TOXIC EFFECT: Carcinogenic and noncarcinogenic

Chemical	Intake from each pathway (mg/kg-day)																	
	Drinking Water Ingestion Ground water	Drinking Water Ingestion Surface water	Water Ingestion while Swimming	Dermal Contact Surface water Swimming	Dermal Contact Surface water Showering	Dermal Contact Ground water Showering	Soil Ingestion on-site soil	Soil Ingestion off-site soil	Dermal Contact with on-site soil	Dermal Contact with off-site soil	Inhalation Outdoor Air	Inhalation Indoor Air	Inhalation during showering	Ingestion of Fish and Shellfish	Ingestion of Crops on-site Soil	Ingestion of Crops off-site Soil	Ingestion of meat/ milk/eggs	Total
Anthracene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.2E-05	0.0E+00	1.2E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.5E-04
Antimony	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.0E-04	0.0E+00	8.0E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.1E-04
Arsenic	5.6E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.8E-04	0.0E+00	1.2E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-03
Barium	1.5E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.8E-03	0.0E+00	7.5E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.8E-02
Benzo(a)anthracene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.1E-06	0.0E+00	1.5E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.9E-05
Benzo(a)pyrene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.6E-06	0.0E+00	2.1E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.7E-05
Benzo(b)fluoranthene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.3E-06	0.0E+00	1.6E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.0E-05
Benzo(g,h,i)perylene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.4E-06	0.0E+00	1.6E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.1E-05
Benzo(k)fluoranthene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.0E-05	0.0E+00	3.9E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.9E-05
Beryllium	8.7E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.5E-05	0.0E+00	6.9E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-04
Cadmium	1.3E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.7E-05	0.0E+00	3.3E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.0E-05
Carcinogenic PAHs in	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Chromium (total)	2.3E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.0E-04	0.0E+00	9.9E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.8E-03
Chrysene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.7E-06	0.0E+00	2.5E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.2E-05
Cobalt	1.2E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.5E-04	0.0E+00	2.9E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-03
Copper	8.2E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.5E-03	0.0E+00	1.1E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.4E-03
Dibenzo(a,h)anthrace	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.0E-05	0.0E+00	3.8E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.9E-05
Fluoranthene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-05	0.0E+00	4.3E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.5E-05
Indeno(1,2,3-cd)pyre	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-05	0.0E+00	4.9E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.2E-05
Lead	1.6E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.1E-03	0.0E+00	1.2E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.7E-03
Mercury	7.6E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-06	0.0E+00	2.3E-08	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.8E-06
Molybdenum	8.4E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.9E-04	0.0E+00	3.8E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.0E-03
Naphthalene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-04	0.0E+00	5.0E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.4E-04
Nickel	7.0E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.1E-04	0.0E+00	1.0E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.5E-03
Noncarcinogenic PAHs	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Phenanthrene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.4E-05	0.0E+00	1.3E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.6E-04
Pyrene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-05	0.0E+00	4.4E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.6E-05
Selenium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.0E-06	0.0E+00	3.9E-08	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.0E-06
Silver	1.7E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.7E-05	0.0E+00	3.3E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.9E-04
Thallium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.6E-04	0.0E+00	9.1E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.7E-04
Toluene	3.2E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.1E-06	0.0E+00	4.7E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.2E-03
TPH	9.4E-01	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.7E-01	0.0E+00	1.1E+01	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E+01
TPH/Gasoline	3.0E-01	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.7E-01	0.0E+00	3.9E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.4E+00
TPHC	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.3E-03	0.0E+00	1.9E-01	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.0E-01
TRHC	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.0E-02	0.0E+00	4.6E-01	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.8E-01

PROJECT: UPRR Sacramento Site
PROJECT FILENAME: UPRR08.WK1
LAST SAVED
DATE: 09/30/91
TIME: 12:24 PM

SITE/STUDY AREA: Future land use
RECEPTOR: On-site Resident - Child
TOXIC EFFECT: Carcinogenic and noncarcinogenic

Chemical	Intake from each pathway (mg/kg-day)																	
	Drinking Water Ingestion Ground water	Drinking Water Ingestion Surface water	Water Ingestion while Swimming	Dermal Contact Surface water Swimming	Dermal Contact Surface water Showering	Dermal Contact Ground water Showering	Soil Ingestion on-site soil	Soil Ingestion off-site soil	Dermal Contact with on-site soil	Dermal Contact with off-site soil	Inhalation Outdoor Air	Inhalation Indoor Air	Inhalation during showering	Ingestion of Fish and Shellfish	Ingestion of Crops on-site Soil	Ingestion of Crops off-site Soil	Ingestion of meat/ milk/eggs	Total
Vanadium	2.0E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.1E-04	0.0E+00	1.0E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.5E-03
Zinc	2.9E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.9E-03	0.0E+00	1.8E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-02
1,1,1-Trichloroethan	4.7E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.6E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.7E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.0E-04
1,1,2-Trichloroethan	6.9E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.7E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.2E-05
1,1-Dichloroethane	4.2E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.3E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.5E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.5E-04
1,1-Dichloroethene	4.5E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.4E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.3E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.7E-03
1,2-Dichloroethane	1.3E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.2E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-03
1,2-Dichloroethene	5.8E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.1E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.1E-05
1,2-Dichloropropane	5.3E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.8E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.5E-05
Aldrin	2.3E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.3E-06
Benzene	5.0E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.7E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.3E-02
Carbon Tetrachloride	6.9E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.7E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-10	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.3E-05
Chlorobenzene	7.6E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.1E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.0E-05
Chloroform	1.7E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.0E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.8E-04
cis-1,2-Dichloroethe	1.1E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.2E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-04
delta-BHC (HCCH)	2.3E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.3E-06
Ethylbenzene	3.5E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.9E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.7E-03
Freon-113	2.9E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.5E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.0E-04
Tetrachloroethene	4.9E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.6E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.9E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.7E-05
Trichloroethene	1.5E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.3E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.6E-04
Xylenes	7.6E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.1E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.0E-03

PROJECT: UPRR Sacramento Site
PROJECT FILENAME: UPRR00B.WK1
LAST SAVED
DATE: 09/30/91
TIME: 12:24 PM

SITE/STUDY AREA: Future land use
RECEPTOR: On-site Resident - Child
TOXIC EFFECT: Carcinogenic and noncarcinogenic

Chemical	Lifetime cancer risks from each pathway																		
	Drinking Water Ingestion Ground water	Drinking Water Ingestion Surface water	Water Ingestion while Swimming	Dermal Contact Surface water Swimming	Dermal Contact Surface water Showering	Dermal Contact Ground water Showering	Soil Ingestion on-site soil	Soil Ingestion off-site soil	Dermal Contact with on-site soil	Dermal Contact with off-site soil	Inhalation Outdoor Air	Inhalation Indoor Air	Inhalation during showering	Ingestion of Fish and Shellfish	Ingestion of Crops on-site Soil	Ingestion of Crops off-site Soil	Ingestion of meat/ milk/eggs	Total (Pathway)	Total (Scenario)
Anthracene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.3E-03
Antimony	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Arsenic	9.8E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.0E-03	0.0E+00	2.0E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.0E-03	
Barium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Benzo(a)anthracene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.6E-06	0.0E+00	6.1E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.8E-06	
Benzo(a)pyrene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.3E-06	0.0E+00	8.4E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-05	
Benzo(b)fluoranthene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.7E-06	0.0E+00	6.4E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.1E-06	
Benzo(g,h,i)perylene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Benzo(k)fluoranthene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.2E-06	0.0E+00	1.6E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.0E-05	
Beryllium	3.7E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.5E-04	0.0E+00	3.0E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.3E-04	
Cadmium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Carcinogenic PAHs in	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Chromium (total)	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Chrysene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.7E-06	0.0E+00	1.0E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-05	
Cobalt	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Copper	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Dibenzo(a,h)anthrace	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.1E-06	0.0E+00	1.5E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.0E-05	
Fluoranthene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Indeno(1,2,3-cd)pyre	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.3E-06	0.0E+00	2.0E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.5E-05	
Lead	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Mercury	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Molybdenum	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Naphthalene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Nickel	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Noncarcinogenic PAHs	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Phenanthrene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Pyrene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Selenium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Silver	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Thallium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Toluene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
TPH	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
TPH/Gasoline	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
TPHC	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
TRHC	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	

PROJECT: UPRR Sacramento Site
PROJECT FILENAME: UPRR008.WK1
LAST SAVED
DATE: 09/30/91
TIME: 12:24 PM

SITE/STUDY AREA: Future land use
RECEPTOR: On-site Resident - Child
TOXIC EFFECT: Carcinogenic and noncarcinogenic

Chemical	Lifetime cancer risks from each pathway																	
	Drinking Water Ingestion Ground water	Drinking Water Ingestion Surface water	Water Ingestion while Swimming	Dermal Contact Surface water Swimming	Dermal Contact Surface water Showering	Dermal Contact Ground water Showering	Soil Ingestion on-site soil	Soil Ingestion off-site soil	Dermal Contact with on-site soil	Dermal Contact with off-site soil	Inhalation Outdoor Air	Inhalation Indoor Air	Inhalation during showering	Ingestion of Fish and Shellfish	Ingestion of Crops on-site Soil	Ingestion of Crops off-site Soil	Ingestion of meat/ milk/eggs	Total (Pathway)	Total (Scenario)
Vanadium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Zinc	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
1,1,1-Trichloroethan	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
1,1,2-Trichloroethan	3.9E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.1E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.1E-06	
1,1-Dichloroethane	3.8E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.1E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.1E-05	
1,1-Dichloroethene	2.7E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.9E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.8E-03	
1,2-Dichloroethane	1.2E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.6E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-04	
1,2-Dichloroethene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
1,2-Dichloropropane	3.6E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.9E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.8E-06	
Aldrin	3.9E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.9E-05	
Benzene	1.5E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.9E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.5E-03	
Carbon Tetrachloride	9.0E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.9E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.8E-11	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.5E-06	
Chlorobenzene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Chloroform	1.0E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.5E-08	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-06	
cis-1,2-Dichloroethe	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
delta-BHC (HCCH)	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Ethylbenzene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Freon-113	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	
Tetrachloroethene	2.5E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.9E-08	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.6E-06	
Trichloroethene	1.7E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.1E-08	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.0E-08	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.8E-06	
Xylenes	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	

PROJECT: UPRR Sacramento Site
PROJECT FILENAME: UPRR008.WK1
LAST SAVED
DATE: 09/30/91
TIME: 12:24 PM

SITE/STUDY AREA: Future land use
RECEPTOR: On-site Resident - Child
TOXIC EFFECT: Carcinogenic and noncarcinogenic

Chemical	Hazard Index for each pathway																	
	Drinking Water Ingestion Ground water	Drinking Water Ingestion Surface water	Water Ingestion while Swimming	Dermal Contact Surface water Swimming	Dermal Contact Surface water Showering	Dermal Contact Ground Water Showering	Soil Ingestion on-site soil	Soil Ingestion off-site soil	Dermal Contact with on-site soil	Dermal Contact with off-site soil	Inhalation Outdoor Air	Inhalation Indoor Air	Inhalation during showering	Ingestion of Fish and Shellfish	Ingestion of Crops on-site Soil	Ingestion of Crops off-site Soil	Ingestion of meat/ milk/eggs	Total
Anthracene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.7E-02	0.0E+00	2.1E-01	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.7E-01
Antimony	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.0E+00	0.0E+00	2.0E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.0E+00
Arsenic	5.6E-01	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.8E-01	0.0E+00	1.2E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E+00
Barium	1.5E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.8E-01	0.0E+00	7.5E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.8E+00
Benzo(a)anthracene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.2E-03	0.0E+00	2.7E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.4E-02
Benzo(a)pyrene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.9E-03	0.0E+00	3.7E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.7E-02
Benzo(b)fluoranthene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.5E-03	0.0E+00	2.8E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.6E-02
Benzo(g,h,i)perylene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.7E-03	0.0E+00	2.9E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.6E-02
Benzo(k)fluoranthene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.8E-02	0.0E+00	6.8E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.7E-02
Beryllium	1.7E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.9E-03	0.0E+00	1.4E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.4E-02
Cadmium	2.6E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.3E-02	0.0E+00	6.6E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.0E-02
Carcinogenic PAHs in	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Chromium (total)	4.6E-01	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.0E-01	0.0E+00	2.0E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.6E-01
Chrysene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-02	0.0E+00	4.4E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.5E-02
Cobalt	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Copper	7.2E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.8E-02	0.0E+00	9.5E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.6E-02
Dibenzo(a,h)anthrace	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.8E-02	0.0E+00	6.7E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.5E-02
Fluoranthene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.0E-02	0.0E+00	7.6E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.6E-02
Indeno(1,2,3-cd)pyre	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.3E-02	0.0E+00	8.6E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-01
Lead	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Mercury	3.8E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.8E-04	0.0E+00	1.1E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.4E-03
Molybdenum	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Naphthalene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.4E-01	0.0E+00	8.8E-01	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E+00
Nickel	6.2E-01	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.5E-02	0.0E+00	8.9E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.6E-01
Noncarcinogenic PAHs	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Phenanthrene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.0E-02	0.0E+00	2.2E-01	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.8E-01
Pyrene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.1E-02	0.0E+00	7.7E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.8E-02
Selenium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.6E-04	0.0E+00	1.3E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.7E-04
Silver	3.0E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.9E-03	0.0E+00	5.8E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.3E-02
Thallium	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.6E+00	0.0E+00	1.3E-01	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.7E+00
Toluene	5.6E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.6E-05	0.0E+00	8.2E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.6E-02
TPH	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
TPH/Gasoline	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
TPHC	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
TRHC	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00

PROJECT: UPRR Sacramento Site
PROJECT FILENAME: UPRR008.WK1
LAST SAVED
DATE: 09/30/91
TIME: 12:24 PM

SITE/STUDY AREA: Future land use
RECEPTOR: On-site Resident - Child
TOXIC EFFECT: Carcinogenic and noncarcinogenic

Chemical	Hazard Index for each pathway																	
	Drinking Water Ingestion Ground water	Drinking Water Ingestion Surface water	Water Ingestion while Swimming	Dermal Contact Surface water Swimming	Dermal Contact Surface water Showering	Dermal Contact Ground Water Showering	Soil Ingestion on-site soil	Soil Ingestion off-site soil	Dermal Contact with on-site soil	Dermal Contact with off-site soil	Inhalation Outdoor Air	Inhalation Indoor Air	Inhalation during showering	Ingestion of Fish and Shellfish	Ingestion of Crops on-site Soil	Ingestion of Crops off-site Soil	Ingestion of meat/ milk/eggs	Total
Vanadium	2.9E-01	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.2E-02	0.0E+00	1.4E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.6E-01
Zinc	1.3E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.9E-02	0.0E+00	7.7E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.2E-02
1,1,1-Trichloroethan	5.5E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.0E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.6E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.9E-02
1,1,2-Trichloroethan	1.7E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.3E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.8E-02
1,1-Dichloroethane	4.2E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.3E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.5E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.5E-03
1,1-Dichloroethene	5.0E-01	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.7E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.6E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.2E-01
1,2-Dichloroethane	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
1,2-Dichloroethane	2.9E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.6E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.1E-04
1,2-Dichloropropane	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Aldrin	7.6E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.6E-02
Benzene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Carbon Tetrachloride	9.9E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.4E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.0E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.0E-01
Chlorobenzene	3.8E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.1E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.0E-03
Chloroform	1.7E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.0E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.8E-02
cis-1,2-Dichloroethe	5.7E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.1E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.0E-04
delta-BHC (HCCH)	7.6E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.6E-04
Ethylbenzene	3.5E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.9E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.7E-02
Freon-113	9.5E-06	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.1E-07	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.0E-05
Tetrachloroethene	4.9E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.6E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.9E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.7E-03
Trichloroethene	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Xylenes	1.3E-01	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.2E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-01

PROJECT: UPRR Sacramento Site
PROJECT FILENAME: UPRR009.WK1
LAST SAVED:
DATE: 10/30/91
TIME: 10:45 AM

SITE/STUDY AREA: Future land use - worst-case PCB scenario
RECEPTOR: On-site Resident - Adult
TOXIC EFFECT: Carcinogenic and noncarcinogenic
COMMENTS:

PREAMBLE:

This is a risk assessment model for evaluating health risks associated with chemical contamination detected in environmental media (soil, air, groundwater or surface water). This model is designed to evaluate health risks associated with exposures from several different pathways using the guidelines presented in the EPA Risk Assessment Guidance for Superfund (RAGS). This model uses chemical concentrations measured during site investigations or estimated in environmental fate and transport models to estimate health risks.

PROJECT: UPRR Sacramento Site
PROJECT FILENAME: UPRR009.WK1
LAST SAVED
DATE: 10/30/91
TIME: 10:45 AM

SITE/STUDY AREA: Future land use - worst-case PCB scenario
RECEPTOR: On-site Resident - Adult
TOXIC EFFECT: Carcinogenic and noncarcinogenic

Pathway	Description	Label	Value	Units
General	Body Weight	BW	70	kg
	Exposure Duration	ED	70	years
	Averaging Time	AT	25550	days
Drinking water ingestion	Ingestion Rate	IRWATER	2	L/day
	Exposure Frequency	EFWATER	350	days/year
Ingestion during swimming	Contact Rate	CR	0	L/hour
	Exposure Time	ETSWIM	0	hours/event
	Exposure Frequency	EPSWIM	0	events/year
Dermal contact with surface water - Swimming	Skin Surface Area	SADERM_W	0	cm^2
	Exposure Time	ETDERM_W	0	hours/day
	Exposure Frequency	EFDERM_W	0	events/year
Dermal contact with surface water - Showering	Skin Surface Area	SADERM_S	0	cm^2
	Exposure Time	ETDERM_S	0	hours/day
	Exposure Frequency	EFDERM_S	0	events/year
Dermal contact with ground water - Showering	Skin Surface Area	SADERM_G	19400	cm^2
	Exposure Time	ETDERM_G	0.0069	hours/day
	Exposure Frequency	EFDERM_G	350	events/year
Soil ingestion on-site soils	Ingestion Rate	IRSOIL_ON	0.0001	kg/day
	Fraction Ingested (from contaminated source)	FISOIL_ON	1	
	Exposure Frequency	EFSOIL_ON	350	days/year
Dermal contact with on-site soil	Skin Surface Area	SADERM_SON	3120	cm^2
	Soil to skin adherence factor	AF	0.00000145	kg/cm^2
	Exposure Frequency	EFDERM_SON	350	events/year
Soil ingestion off-site soils	Ingestion Rate	IRSOIL_OFF	0	kg/day
	Fraction Ingested (from contaminated source)	FISOIL_OFF	0	
	Exposure Frequency	EFSOIL_OFF	0	days/year
Dermal contact with off-site soil	Skin Surface Area	SADERM_SOFF	0	cm^2
	Exposure Frequency	EFDERM_SOFF	0	events/year
Inhalation of outdoor air	Inhalation Rate	IRAIR_OUT	0.83	m^3/hr
	Exposure Time	ETAIR_OUT	16	hours/day

	Exposure Frequency	EFAIR_OUT	350 days/year
Inhalation of indoor air	Inhalation Rate	IRAIR_IN	0 m^3/hr
	Exposure Time	ETAIR_IN	0 hours/day
	Exposure Frequency	EFAIR_IN	0 days/year
Inhalation of indoor air - during showering	Inhalation Rate	IRAIR_SH	0.6 m^3/hr
	Exposure Time	ETAIR_SH	0.0069 hours/day
	Exposure Frequency	EFAIR_SH	350 days/year
Ingestion of fish/shellfish	Ingestion Rate	IRFISH	0 kg/day
	Fraction Ingested (from contaminated source)	FIFISH	0
	Exposure frequency	EFFISH	0 days/year
Crop ingestion on-site soils	Ingestion Rate	IRCROP_ON	0 kg/day
	Fraction Ingested (from contaminated source)	FICROP_ON	0
	Exposure frequency	EFCROP_ON	0 days/year
Crop ingestion off-site soils	Ingestion Rate	IRCROP_OFF	0 kg/day
	Fraction Ingested (from contaminated source)	FICROP_OFF	0
	Exposure frequency	EFCROP_OFF	0 days/year
Meat/milk/eggs ingestion	Ingestion Rate	IRMEAT	0 kg/day
	Fraction Ingested (from contaminated source)	FIMEAT	0
	Exposure frequency	EFMEAT	0 days/year

PROJECT: UPRR Sacramento Site
PROJECT FILENAME: UPRR009.WK1
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DATE: 10/30/91
TIME: 10:45 AM

SITE/STUDY AREA: Future land use - worst-case PCB scenario
RECEPTOR: On-site Resident - Adult
TOXIC EFFECT: Carcinogenic and noncarcinogenic

Chemical	Carcinogen Slope Factor (mg/kg/day)^-1		Reference Dose (mg/kg/day)		PC Dermal Permeability Constant (water) (cm/hr)	ABS Dermal Absorption Factor (soil)	Absorption Fractions					
	Ingestion	Inhalation	Ingestion	Inhalation			Soil	Water	Air	Crops	Meat/milk	Fish
PCBs	7.7					0.06	1.00	1.00	1.00	1.00	1.00	1.00

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SITE/STUDY AREA: Future land use - worst-case PCB scenario
RECEPTOR: On-site Resident - Adult
TOXIC EFFECT: Carcinogenic and noncarcinogenic

Chemical	Conc. in Groundwater (mg/L)	Conc. in Surface Water (mg/L)	Conc. in Soil on-site (mg/kg)	Conc. in Soil off-site (mg/kg)	Conc. in Air outdoors (mg/m^3)	Conc. in Air indoors (mg/m^3)	Conc. in Air during showering (mg/m^3)	Conc. in Crops on-site soil (mg/kg)	Conc. in Crops off-site soil (mg/kg)	Conc. in Livestock Products (mg/kg)	Conc. in Fish (mg/kg)
PCBs	0	0	5.70	0	0	0	0	0	0	0	0

PROJECT: UPRR Sacramento Site
PROJECT FILENAME: UPRR009.WK1
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DATE: 10/30/91
TIME: 10:45 AM

SITE/STUDY AREA: Future land use - worst-case PCB scenario
RECEPTOR: On-site Resident - Adult
TOXIC EFFECT: Carcinogenic and noncarcinogenic

Chemical	Intake from each pathway (mg/kg-day)																
	Drinking Water Ingestion Ground water	Drinking Water Ingestion Surface water	Water Ingestion while Swimming	Dermal Contact Surface water Swimming	Dermal Contact Surface water Showering	Dermal Contact Ground water Showering	Soil Ingestion on-site soil	Soil Ingestion off-site soil	Dermal Contact with on-site soil	Dermal Contact with off-site soil	Inhalation Outdoor Air	Inhalation Indoor Air	Inhalation during showering	Ingestion of Fish and Shellfish	Ingestion of Crops on-site Soil	Ingestion of Crops off-site Soil	Ingestion of meat/ milk/eggs	Total
PCBs	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.8E-06	0.0E+00	2.8E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.6E-05

PROJECT: UPRR Sacramento Site
PROJECT FILENAME: UPRR009.WK1
LAST SAVED
DATE: 10/30/91
TIME: 10:45 AM

SITE/STUDY AREA: Future land use - worst-case PCB scenario
RECEPTOR: On-site Resident - Adult
TOXIC_EFFECT: Carcinogenic and noncarcinogenic

Chemical	Lifetime cancer risks from each pathway																		
	Drinking Water Ingestion Ground water	Drinking Water Ingestion Surface water	Water Ingestion while Swimming	Dermal Contact Surface water Swimming	Dermal Contact Surface water Showering	Dermal Contact Ground water Showering	Soil Ingestion on-site soil	Soil Ingestion off-site soil	Dermal Contact with on-site soil	Dermal Contact with off-site soil	Inhalation Outdoor Air	Inhalation Indoor Air	Inhalation during showering	Ingestion of Fish and Shellfish	Ingestion of Crops on-site Soil	Ingestion of Crops off-site Soil	Ingestion of meat/ milk/eggs	Total (Pathway)	Total (Scenario)
PCBs	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.0E-05	0.0E+00	2.2E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.8E-04	2.8E-04

PROJECT: UPRR Sacramento Site
PROJECT FILENAME: UPRR010.WK1
LAST SAVED:
DATE: 10/30/91
TIME: 10:48 AM

SITE/STUDY AREA: Future land use - worst-case PCB scenario
RECEPTOR: parameter
TOXIC EFFECT: Carcinogenic and noncarcinogenic
COMMENTS:

PREAMBLE:

This is a risk assessment model for evaluating health risks associated with chemical contamination detected in environmental media (soil, air, groundwater or surface water). This model is designed to evaluate health risks associated with exposures from several different pathways using the guidelines presented in the EPA Risk Assessment Guidance for Superfund (RAGS). This model uses chemical concentrations measured during site investigations or estimated in environmental fate and transport models to estimate health risks.

PROJECT: UPRR Sacramento Site
PROJECT FILENAME: UPRR010.WK1
LAST SAVED
DATE: 10/30/91
TIME: 10:48 AM

SITE/STUDY AREA: Future land use - worst-case PCB scenario
RECEPTOR: parameter
TOXIC EFFECT: Carcinogenic and noncarcinogenic

Pathway	Description	Label	Value	Units
General	Body Weight	BW	70	kg
	Exposure Duration	ED	70	years
	Averaging Time	AT	25550	days
Drinking water ingestion	Ingestion Rate	IRWATER	2	L/day
	Exposure Frequency	EFWATER	350	days/year
Ingestion during swimming	Contact Rate	CR	0	L/hour
	Exposure Time	ETSWIM	0	hours/event
	Exposure Frequency	EPSWIM	0	events/year
Dermal contact with surface water - Swimming	Skin Surface Area	SADERM_W	0	cm^2
	Exposure Time	ETDERM_W	0	hours/day
	Exposure Frequency	EFDERM_W	0	events/year
Dermal contact with surface water - Showering	Skin Surface Area	SADERM_S	0	cm^2
	Exposure Time	ETDERM_S	0	hours/day
	Exposure Frequency	EFDERM_S	0	events/year
Dermal contact with ground water - Showering	Skin Surface Area	SADERM_G	19400	cm^2
	Exposure Time	ETDERM_G	0.0069	hours/day
	Exposure Frequency	EFDERM_G	350	events/year
Soil ingestion on-site soils	Ingestion Rate	IRSOIL_ON	0.0002	kg/day
	Fraction Ingested (from contaminated source)	FISOIL_ON	1	
	Exposure Frequency	EFSOIL_ON	350	days/year
Dermal contact with on-site soil	Skin Surface Area	SADERM_SON	3910	cm^2
	Soil to skin adherence factor	AF	0.00000145	kg/cm^2
	Exposure Frequency	EFDERM_SON	350	events/year
Soil ingestion off-site soils	Ingestion Rate	IRSOIL_OFF	0	kg/day
	Fraction Ingested (from contaminated source)	FISOIL_OFF	0	
	Exposure Frequency	EFSOIL_OFF	0	days/year
Dermal contact with off-site soil	Skin Surface Area	SADERM_SOFF	0	cm^2
	Exposure Frequency	EFDERM_SOFF	0	events/year
Inhalation of outdoor air	Inhalation Rate	IRAIR_OUT	0.83	m^3/hr
	Exposure Time	ETAIR_OUT	16	hours/day

	Exposure Frequency	EFAIR_OUT	350 days/year
Inhalation of indoor air	Inhalation Rate	IRAIR_IN	0 m^3/hr
	Exposure Time	ETAIR_IN	0 hours/day
	Exposure Frequency	EFAIR_IN	0 days/year
Inhalation of indoor air - during showering	Inhalation Rate	IRAIR_SH	0.6 m^3/hr
	Exposure Time	ETAIR_SH	0.0069 hours/day
	Exposure Frequency	EFAIR_SH	350 days/year
Ingestion of fish/shellfish	Ingestion Rate	IRFISH	0 kg/day
	Fraction Ingested (from contaminated source)	FIFISH	0
	Exposure frequency	EFFISH	0 days/year
Crop ingestion on-site soils	Ingestion Rate	IRCROP_ON	0 kg/day
	Fraction Ingested (from contaminated source)	FICROP_ON	0
	Exposure frequency	EFCROP_ON	0 days/year
Crop ingestion off-site soils	Ingestion Rate	IRCROP_OFF	0 kg/day
	Fraction Ingested (from contaminated source)	FICROP_OFF	0
	Exposure frequency	EFCROP_OFF	0 days/year
Meat/milk/eggs ingestion	Ingestion Rate	IRMEAT	0 kg/day
	Fraction Ingested (from contaminated source)	FIMEAT	0
	Exposure frequency	EFMEAT	0 days/year

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PROJECT FILENAME: UPRR010.WK1
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DATE: 10/30/91
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SITE/STUDY AREA: Future land use - worst-case PCB scenario
RECEPTOR: parameter
TOXIC EFFECT: Carcinogenic and noncarcinogenic

Chemical	Carcinogen Slope Factor (mg/kg/day)^-1		Reference Dose (mg/kg/day)		PC Dermal Permeability Constant (water) (cm/hr)	ABS Dermal Absorption Factor (soil)	Absorption Fractions					
	Ingestion	Inhalation	Ingestion	Inhalation			Soil	Water	Air	Crops	Meat/milk	Fish
PCBs	7.7					0.08	1.00	1.00	1.00	1.00	1.00	1.00

PROJECT: UPRR Sacramento Site
PROJECT FILENAME: UPRR010.WK1
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DATE: 10/30/91
TIME: 10:48 AM

SITE/STUDY AREA: Future land use - worst-case PCB scenario
RECEPTOR: parameter
TOXIC EFFECT: Carcinogenic and noncarcinogenic

Chemical	Conc. in Groundwater (mg/L)	Conc. in Surface Water (mg/L)	Conc. in Soil on-site (mg/kg)	Conc. in Soil off-site (mg/kg)	Conc. in Air outdoors (mg/m^3)	Conc. in Air indoors (mg/m^3)	Conc. in Air during showering (mg/m^3)	Conc. in Crops on-site soil (mg/kg)	Conc. in Crops off-site soil (mg/kg)	Conc. in Livestock Products (mg/kg)	Conc. in Fish (mg/kg)
PCBs	0	0	5.70	0	0	0	0	0	0	0	0

PROJECT: UPRR Sacramento Site
PROJECT FILENAME: UPRR010.WK1
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DATE: 10/30/91
TIME: 10:48 AM

SITE/STUDY AREA: Future land use - worst-case PCB scenario
RECEPTOR: parameter
TOXIC EFFECT: Carcinogenic and noncarcinogenic

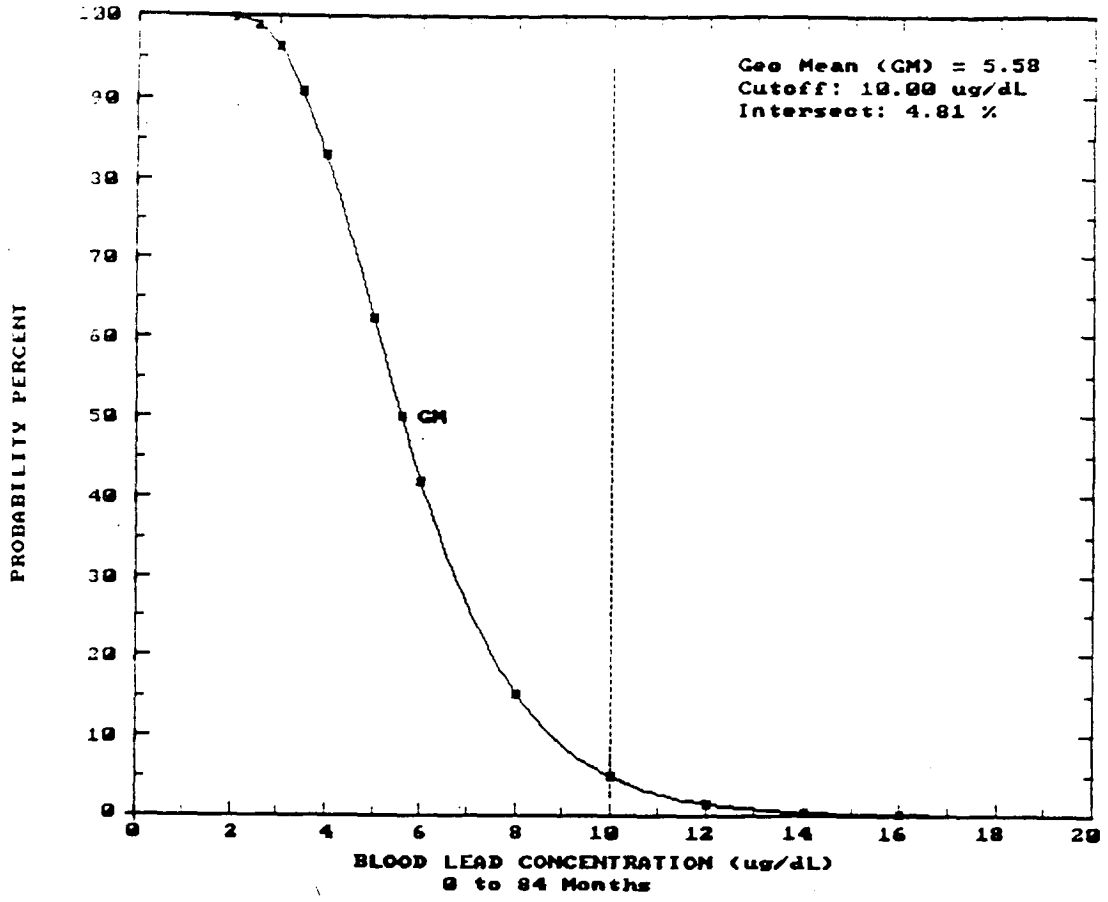
Chemical	Intake from each pathway (mg/kg-day)																
	Drinking Water Ingestion Ground water	Drinking Water Ingestion Surface water	Water Ingestion while Swimming	Dermal Contact Surface water Swimming	Dermal Contact Surface water Showering	Dermal Contact Ground Water Showering	Soil Ingestion on-site soil	Soil Ingestion off-site soil	Dermal Contact with on-site soil	Dermal Contact with off-site soil	Inhalation Outdoor Air	Inhalation Indoor Air	Inhalation during showering	Ingestion of Fish and Shellfish	Ingestion of Crops on-site Soil	Ingestion of Crops off-site Soil	Ingestion of meat/ milk/eggs	Total
PCBs	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.6E-05	0.0E+00	3.5E-05	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.1E-05

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SITE/STUDY AREA: Future land use - worst-case PCB scenario
RECEPTOR: parameter
TOXIC EFFECT: Carcinogenic and noncarcinogenic

Chemical	Lifetime cancer risks from each pathway																		
	Drinking Water Ingestion Ground water	Drinking Water Ingestion Surface water	Water Ingestion while Swimming	Dermal Contact Surface water Swimming	Dermal Contact Surface water Showering	Dermal Contact Ground water Showering	Soil Ingestion on-site soil	Soil Ingestion off-site soil	Dermal Contact with on-site soil	Dermal Contact with off-site soil	Inhalation Outdoor Air	Inhalation Indoor Air	Inhalation during showering	Ingestion of Fish and Shellfish	Ingestion of Crops on-site Soil	Ingestion of Crops off-site Soil	Ingestion of meat/ milk/eggs	Total (Pathway)	Total (Scenario)
PCBs	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-04	0.0E+00	2.7E-04	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.9E-04	3.9E-04

ATTACHMENT 5
IU-BK MODEL OUTPUT



BLOOD-LEAD CONCENTRATIONS ASSOCIATED WITH A EXPOSURE CONCENTRATION of 477 mg/kg in SOIL

ABSORPTION METHODOLOGY: Non-Linear Active-Passive

AIR CONCENTRATION: 0.200 ug Pb/m3 DEFAULT

Indoor AIR Pb Conc: 30.0 percent of outdoor.

Other AIR Parameters:

Age	Time Outdoors (hr)	Vent. Rate (m3/day)	Lung Abs. (%)
0-1	1.0	2.0	32.0
1-2	2.0	3.0	32.0
2-3	3.0	5.0	32.0
3-4	4.0	5.0	32.0
4-5	4.0	5.0	32.0
5-6	4.0	7.0	32.0
6-7	4.0	7.0	32.0

DIET: DEFAULT

DRINKING WATER Conc: 4.00 ug Pb/L

WATER Consumption: DEFAULT

SOIL & DUST:

Soil: constant conc.

Dust: constant conc.

Age	Soil (ug Pb/g)	House Dust (ug Pb/g)
0-1	477.0	477.0
1-2	477.0	477.0
2-3	477.0	477.0
3-4	477.0	477.0
4-5	477.0	477.0
5-6	477.0	477.0
6-7	477.0	477.0

Additional Dust Sources: None DEFAULT

PAINT Intake: 0.00 ug Pb/day DEFAULT

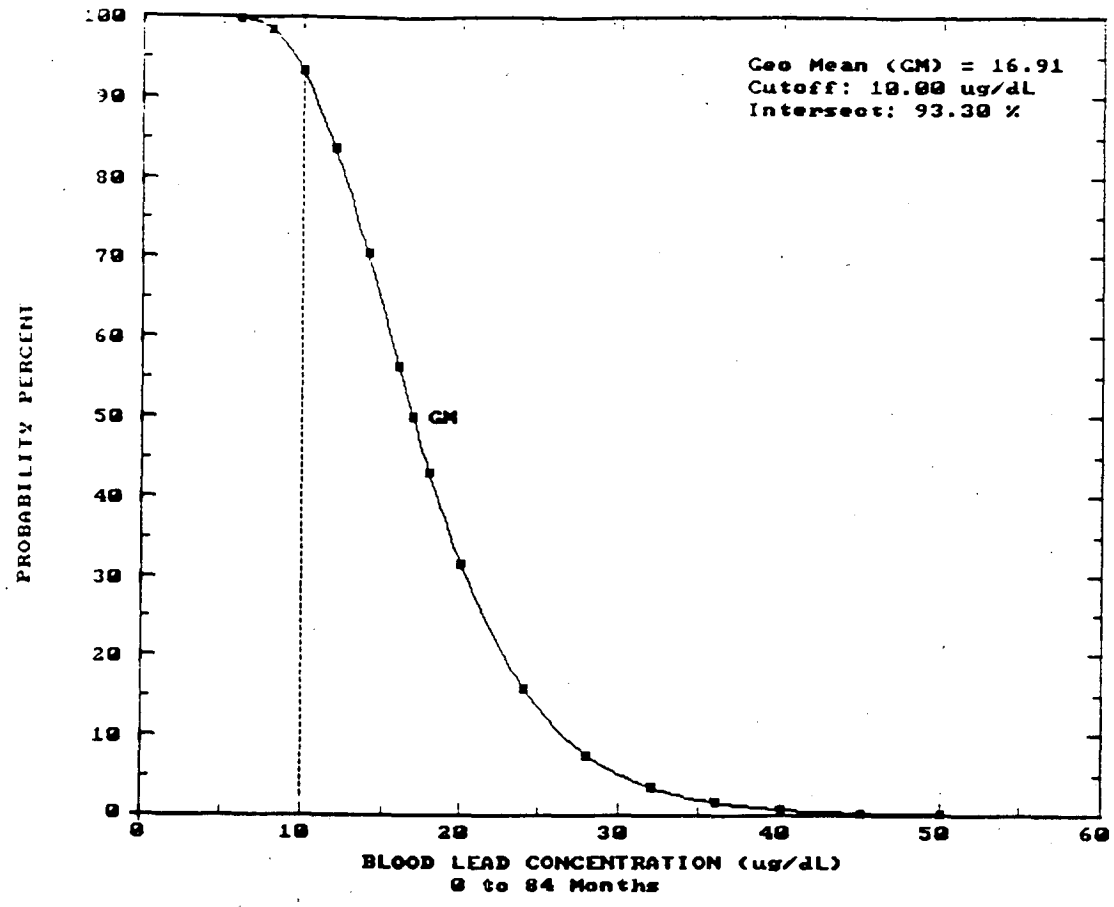
MATERNAL CONTRIBUTION: Infant Model

Maternal Blood Conc: 7.50 ug Pb/dL

CALCULATED BLOOD Pb and Pb UPTAKES:

YEAR	Blood Level (ug/dL)	Total Uptake (ug/day)	Soil+Dust Uptake (ug/day)
0.5-1:	5.70	17.69	14.31
1-2:	5.46	18.33	14.30
2-3:	5.37	18.86	14.30
3-4:	5.44	18.77	14.30
4-5:	5.61	18.70	14.29
5-6:	5.62	19.00	14.28
6-7:	5.62	19.38	14.27

YEAR	Diet Uptake (ug/day)	Water Uptake (ug/day)	Paint Uptake (ug/day)	Air Uptake (ug/day)
0.5-1:	2.94	0.40	0.00	0.04
1-2:	2.96	1.00	0.00	0.07
2-3:	3.39	1.04	0.00	0.12
3-4:	3.28	1.06	0.00	0.13
4-5:	3.18	1.10	0.00	0.13
5-6:	3.37	1.16	0.00	0.19
6-7:	3.74	1.18	0.00	0.19



BLOOD-LEAD CONCENTRATIONS ASSOCIATED WITH AN EXPOSURE CONCENTRATION OF 1,899 mg/kg IN SOIL

ABSORPTION METHODOLOGY: Non-Linear Active-Passive

AIR CONCENTRATION: 0.200 ug Pb/m3 DEFAULT

Indoor AIR Pb Conc: 30.0 percent of outdoor.

Other AIR Parameters:

Age	Time Outdoors (hr)	Vent. Rate (m3/day)	Lung Abs. (%)
0-1	1.0	2.0	32.0
1-2	2.0	3.0	32.0
2-3	3.0	5.0	32.0
3-4	4.0	5.0	32.0
4-5	4.0	5.0	32.0
5-6	4.0	7.0	32.0
6-7	4.0	7.0	32.0

DIET: DEFAULT

DRINKING WATER Conc: 20.58 ug Pb/L

WATER Consumption: DEFAULT

SOIL & DUST:
Soil: constant conc.
Dust: constant conc.

Age	Soil (ug Pb/g)	House Dust (ug Pb/g)
0-1	1899.0	1899.0
1-2	1899.0	1899.0
2-3	1899.0	1899.0
3-4	1899.0	1899.0
4-5	1899.0	1899.0
5-6	1899.0	1899.0
6-7	1899.0	1899.0

Additional Dust Sources: None DEFAULT

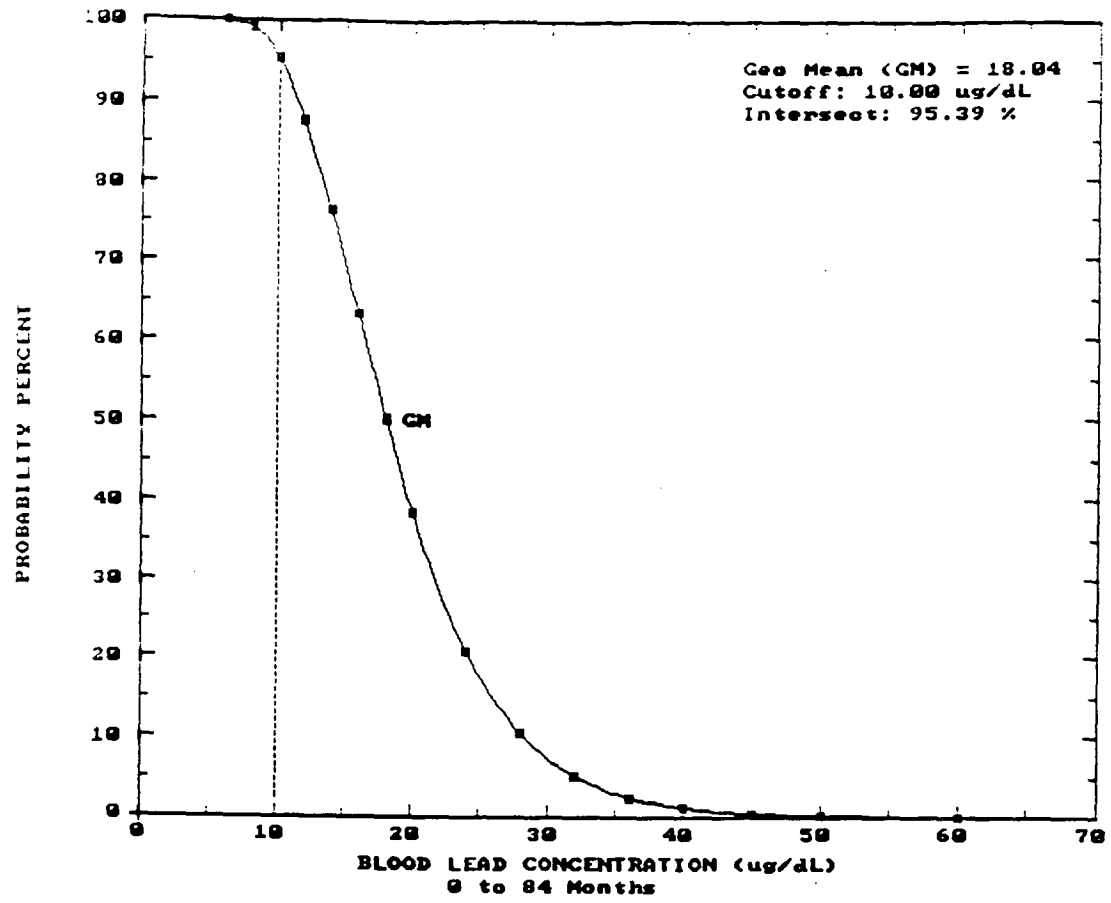
PAINT Intake: 0.00 ug Pb/day DEFAULT

MATERNAL CONTRIBUTION: Infant Model
Maternal Blood Conc: 7.50 ug Pb/dL

CALCULATED BLOOD Pb and Pb UPTAKES:

YEAR	Blood Level (ug/dL)	Total Uptake (ug/day)	Soil+Dust Uptake (ug/day)
0.5-1:	18.39	61.58	56.54
1-2:	18.78	63.93	55.76
2-3:	18.40	63.73	54.86
3-4:	18.38	62.66	53.79
4-5:	18.71	61.48	52.51
5-6:	18.37	60.58	51.05
6-7:	17.82	59.48	49.48

YEAR	Diet Uptake (ug/day)	Water Uptake (ug/day)	Paint Uptake (ug/day)	Air Uptake (ug/day)
0.5-1:	2.94	2.06	0.00	0.04
1-2:	2.96	5.14	0.00	0.07
2-3:	3.39	5.35	0.00	0.12
3-4:	3.28	5.45	0.00	0.13
4-5:	3.18	5.66	0.00	0.13
5-6:	3.37	5.97	0.00	0.19
6-7:	3.74	6.07	0.00	0.19



BLOOD-LEAD CONCENTRATIONS
ASSOCIATED WITH EXPOSURE CONCENTRATIONS
OF 1,899 mg/kg IN SOIL and 20.58 ug/L
IN GROUND WATER

ABSORPTION METHODOLOGY: Non-Linear Active-Passive

AIR CONCENTRATION: 0.200 ug Pb/m3 DEFAULT

Indoor AIR Pb Conc: 30.0 percent of outdoor.

Other AIR Parameters:

Age	Time Outdoors (hr)	Vent. Rate (m3/day)	Lung Abs. (%)
0-1	1.0	2.0	32.0
1-2	2.0	3.0	32.0
2-3	3.0	5.0	32.0
3-4	4.0	5.0	32.0
4-5	4.0	5.0	32.0
5-6	4.0	7.0	32.0
6-7	4.0	7.0	32.0

DIET: DEFAULT

DRINKING WATER Conc: 4.00 ug Pb/L

WATER Consumption: DEFAULT

SOIL & DUST:

Soil: constant conc.

Dust: constant conc.

Age	Soil (ug Pb/g)	House Dust (ug Pb/g)
0-1	1899.0	1899.0
1-2	1899.0	1899.0
2-3	1899.0	1899.0
3-4	1899.0	1899.0
4-5	1899.0	1899.0
5-6	1899.0	1899.0
6-7	1899.0	1899.0

Additional Dust Sources: None DEFAULT

PAINT Intake: 0.00 ug Pb/day DEFAULT

MATERNAL CONTRIBUTION: Infant Model

Maternal Blood Conc: 7.50 ug Pb/dL

CALCULATED BLOOD Pb and Pb UPTAKES:

YEAR	Blood Level (ug/dL)	Total Uptake (ug/day)	Soil+Dust Uptake (ug/day)
0.5-1:	17.91	59.92	56.54
1-2:	17.83	59.79	55.76
2-3:	17.22	59.42	54.86
3-4:	17.12	58.27	53.79
4-5:	17.37	56.92	52.51
5-6:	16.97	55.78	51.05
6-7:	16.39	54.59	49.48

YEAR	Diet Uptake (ug/day)	Water Uptake (ug/day)	Paint Uptake (ug/day)	Air Uptake (ug/day)
0.5-1:	2.94	0.40	0.00	0.04
1-2:	2.96	1.00	0.00	0.07
2-3:	3.39	1.04	0.00	0.12
3-4:	3.28	1.06	0.00	0.13
4-5:	3.18	1.10	0.00	0.13
5-6:	3.37	1.16	0.00	0.19
6-7:	3.74	1.18	0.00	0.19

ATTACHMENT 6
SAMPLE CALCULATIONS

CALCULATION OF INTAKE FROM INHALATION
(EXAMPLE FOR TRESPASSER - UPRR001.WK1 IN ATTACHMENT 4)

$$I = \frac{CA \times IR \times ET \times EF \times ED}{BW \times AT}$$

Where:

I = Intake (mg/kg/day)
CA = Contaminant concentration in Air (mg/m^3)
IR = Inhalation rate (m^3/hour)
ET = Exposure time (hours/day)
EF = Exposure frequency (days/year)
ED = Exposure duration (years)
AT = Averaging time (period over which exposure is averaged–days)
BW = Body weight (kg)

Example for Trespasser, Arsenic (hand calculation for UPRR001.WK1)

CA = 3.06×10^{-5} mg/m^3
IR = 0.83 m^3/hr
ET = 16 hr/day
EF = 350 day/yr
ED = 70 yr
BW = 70 kg
AT = 25,550 days

$$I = \frac{3.06 \times 10^{-5} mg/m^3 \times 0.83 m^3/hr \times 16 hr/day \times 350 day/yr \times 70 yr}{70 kg \times 25{,}550 days}$$

= 5.6×10^{-6} mg/kg-day

CALCULATION OF DERMAL CONTACT WITH SOIL
(EXAMPLE FOR TRESPASSER - UPRR001.WK1 IN ATTACHMENT 4)

$$Absorbed\ Dose(mg/kg\text{-}day) = \frac{CS \times SA \times AF \times ABS \times EF \times ED}{BW \times AT}$$

Where:

CS = Chemical concentration in soil (mg/kg)
SA = Skin surface area available for contact (cm^2/event)
AF = Soil to skin adherence factor (kg/cm^2)
ABS = Absorption fraction (unitless)
EF = Exposure frequency (events/year)
ED = Exposure duration (years)
BW = Body weight (kg)
AT = Averaging time (period over which exposure is averaged--days)

Example for Trespasser, Arsenic (hand calculation for UPRR001.WK1)

CS = 45.91 mg/kg
AF = 1.45×10^{-6} kg/cm^2
SA = 3,120 cm^2/event
EF = 350 event/yr
ED = 70 yr
ABS = 0.0007
BW = 70 kg
AT = 25,550 days

$$I = \frac{45.91\,mg/kg \times 1.45 \times 10^{-6} \times 3{,}120\,cm^2/event \times 350\,event/yr \times 70\,yr\,0.0007}{70\,kg \times 25{,}550\,days}$$

$$= \quad 2.0 \times 10^{-6}\ mg/kg\text{-}day$$

CALCULATION OF INTAKE FROM SOIL INGESTION
(EXAMPLE FOR TRESPASSER - UPRR001.WK1 IN ATTACHMENT 4)

$$I = \frac{CS \times IR \times CF \times FI \times EF \times ED}{AT \times BW}$$

Where:

I = Intake (mg/kg/day)
CS = Chemical concentration in soil (mg/kg)
IR = Soil ingestion rate (mg soil/day)
CF = Conversion factor (10^{-6} kg/mg)
FI = Fraction ingested from contaminated source (unitless)
EF = Exposure frequency (days/year)
ED = Exposure duration (years)
AT = Averaging time (period over which exposure is averaged--days)
BW = Body Weight (kg)

Example for Trespasser, Arsenic (hand calculation for UPRR001.WK1)

CS = 45.91 mg/kg
IR = 0.0001 kg/day
EF = 350 days/yr
ED = 70 yr
FI = 1.0
BW = 70 kg
AT = 25,550 days

$$I = \frac{45.91\,mg/kg \times 0.0001\,kg/day \times 350\,day/yr \times 70\,yr \times 1.0}{70\,kg \times 25{,}550\,days}$$

= 6.3 x 10^{-5} mg/kg-day

TOTAL INTAKE AND ESTIMATED RISKS
(EXAMPLE FOR TRESPASSER - UPRR001.WK1 IN ATTACHMENT 4)

Total Intake

Pathway	Intake (mg/kg/day)
Soil Ingestion	6.3×10^{-5}
Dermal Contact	2.0×10^{-6}
Inhalation	5.6×10^{-6}
Total Intake	7.0×10^{-5}

Calculation of Cancer Risks

Ingestion slope factor (also used for dermal pathway) = 1.75 $(mg/kg\text{-}day)^{-1}$

Inhalation slope factor =

50 $(mg/kg\text{-}day)^{-1}$ x 0.3 (pulmonary absorption factor) = 15 $(mg/kg\text{-}day)^{-1}$

Soil Ingestion Risk = 6.3×10^{-5} mg/kg-day x 1.75 $(mg/kg\text{-}day)^{-1}$
= 1.1×10^{-4}

Dermal Contact = 2.0×10^{-6} mg/kg-day x 1.75 $(mg/kg\text{-}day)^{-1}$
= 3.5×10^{-6}

Inhalation = 5.6×10^{-6} mg/kg-day x 15 $(mg/kg\text{-}day)^{-1}$
= 8.4×10^{-5}

Total Risk = 2.0×10^{-4}

CALCULATION OF INTAKE FROM INGESTION OF GROUND WATER
(EXAMPLE FOR HYPOTHETICAL FUTURE ON-SITE ADULT RESIDENT - UPRR007.WK1 IN ATTACHMENT 4)

$$I = \frac{CW \times IR \times EF \times ED}{BW \times AT}$$

Where,

I = Intake (mg/kg-day)
CW = Contaminant concentration in water (mg/liter)
IR = Ingestion rate (liter/day)
EF = Exposure frequency (days/year)
ED = Exposure duration (years)
BW = Body weight (kg)
AT = Averaging time (period over which exposure is averaged--days)

Example for 1,1-dichloroethene

CW = 0.05862 mg/L
IR = 2 L/day
EF = 350 days/year
ED = 70 years
BW = 70 kg
AT = 25,550 days

$$I = \frac{0.05862\,mg/L \times 2\,L/day \times 350\,days/yr \times 70\,yr}{70\,kg \times 25{,}550\,days}$$

= 1.6×10^{-3} mg/kg-day

Slope factor = 0.6 $(mg/kg\text{-}day)^{-1}$

Risk = 1.6×10^{-3} mg/kg-day x 0.6 $(mg/kg\text{-}day)^{-1}$
= 9.6×10^{-4}

CALCULATION OF INTAKE FROM DERMAL CONTACT DURING SHOWERING
(EXAMPLE FOR HYPOTHETICAL FUTURE ON-SITE ADULT RESIDENT - UPRR007.WK1 IN ATTACHMENT 4)

$$Absorbed\ Dose(mg/kg\text{-}day) = \frac{CW \times SA \times PC \times ET \times EF \times ED \times CF}{BW \times AT}$$

Where:

CW = Chemical concentration in water (mg/liter)
SA = Skin surface area available for contact (cm^2)
PC = Chemical-specific dermal permeability constant (cm/hr)
ET = Exposure time (hours/day)
EF = Exposure frequency (days/year)
ED = Exposure duration (years)
CF = Volumetric conversion factor for water (1 liter/1000 cm^3)
BW = Body weight (kg)
AT = Averaging time (period over which exposure is averaged--days)

Example for 1,1-dichloroethene

CW = 0.05862 mg/L
SA = 19,400 cm^2
PC = 1.01 cm/hr
ET = 0.0069 hr
EF = 350 day/yr
ED = 70 yr
CF = 1 L/1,000 cm^3
BW = 70 kg
AT = 25,550 days

$$I = \frac{0.05862\,mg/L \times 19{,}400\,cm^2 \times 1.01\,cm/hr \times 0.0069\,hr \times 350\,days/yr \times 70\,yr \times 0.001\,L/cm^3}{70\,kg \times 25{,}550\,days}$$

= 1.1×10^{-4} mg/kg-day

Slope factor = $0.6\ (mg/kg\text{-}day)^{-1}$

Risk = 1.1×10^{-4} mg/kg-day x $0.6\ (mg/kg\text{-}day)^{-1}$
= 6.6×10^{-5}

CALCULATION IN INTAKE FROM INHALATION DURING SHOWERING
(EXAMPLE FOR HYPOTHETICAL FUTURE ON-SITE ADULT RESIDENT - UPRR007.WK1 IN ATTACHMENT 4)

$$I = \frac{CA \times IR \times ET \times EF \times ED}{BW \times AT}$$

Where:

I = Intake (mg/kg/day)
CA = Contaminant concentration in air during showering (mg/m^3)
IR = Inhalation rate (m^3/hour)
ET = Exposure time (hours/day)
EF = Exposure frequency (days/year)
ED = Exposure duration (years)
AT = Averaging time (period over which exposure is averaged--days)
BW = Body weight (kg)

Example for 1,1-DCE

CA = 2.087 mg/m^3
IR = 0.6 m^3/hr
ET = 0.0069 hr/day
EF = 350 day/yr
ED = 70 yr
AT = 25,550 days
BW = 70 kg

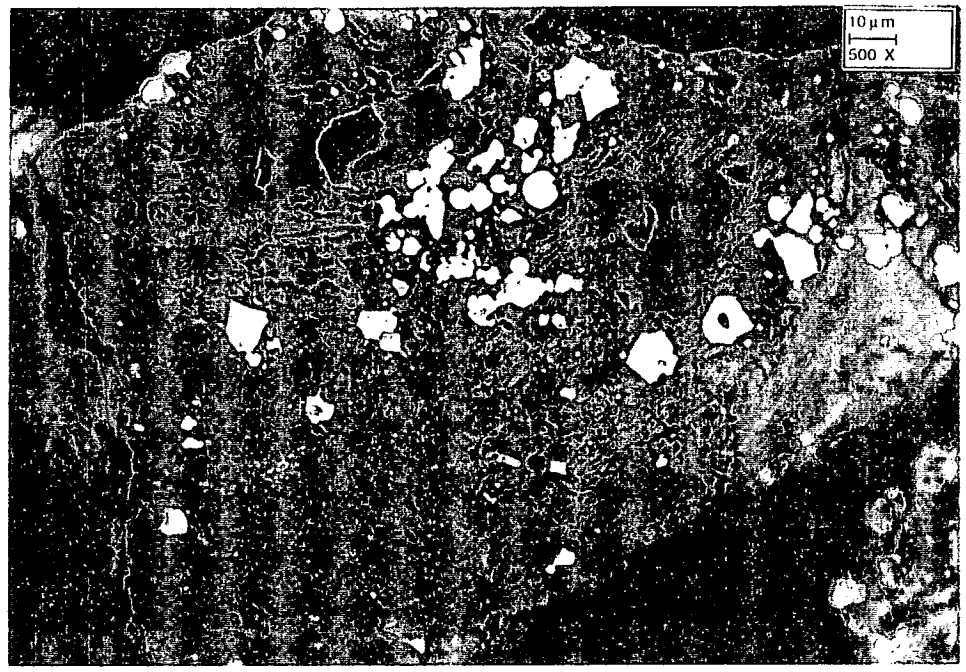
$$I = \frac{2.087\,mg/m^3 \times 0.6\,m^3/day \times 0.0069\,hr/day \times 350\,day/yr \times 70\,yr}{70\,kg \times 25{,}550\,days}$$

= 1.2×10^{-4} mg/kg-day

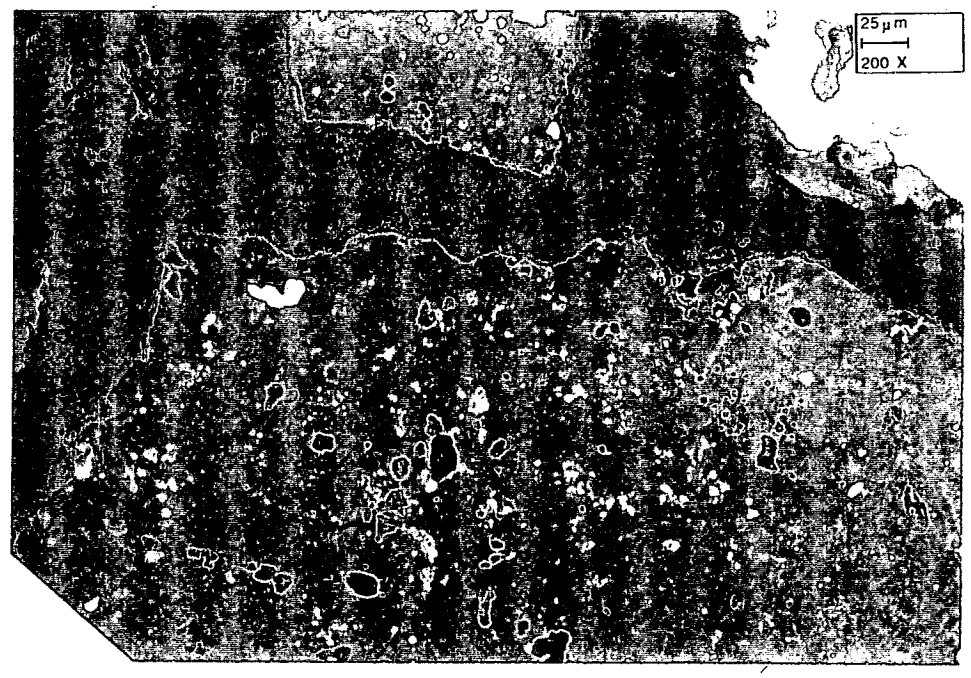
Slope factor = 1.2 (mg/kg-day)$^{-1}$

Risk = 1.2×10^{-4} mg/kg-day x 1.2 (mg/kg-day)$^{-1}$
= 1.4×10^{-4}

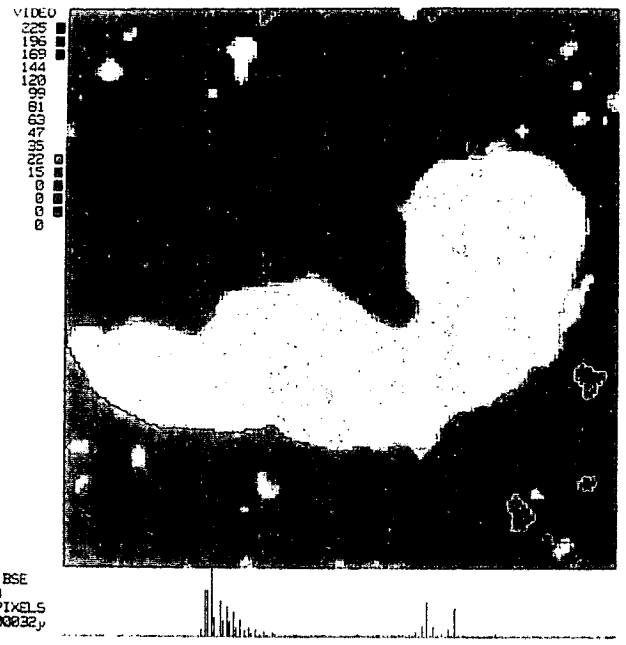
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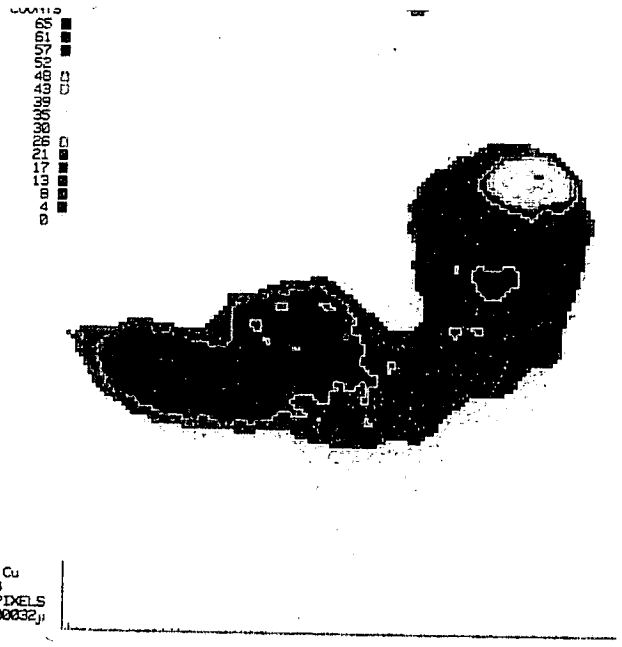
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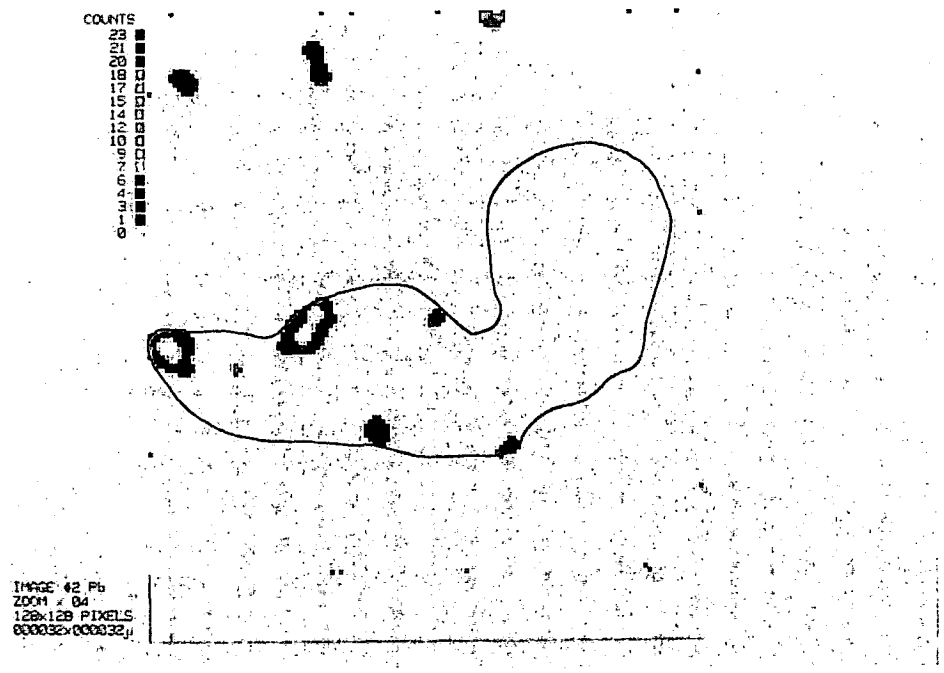
3.


VIDEO
225
196
169
144
120
99
81
65
51
39
30
22
15
9
4
0
AGE #3 BSE
OM x 04
8x128 PIXELS
0032x000032µ

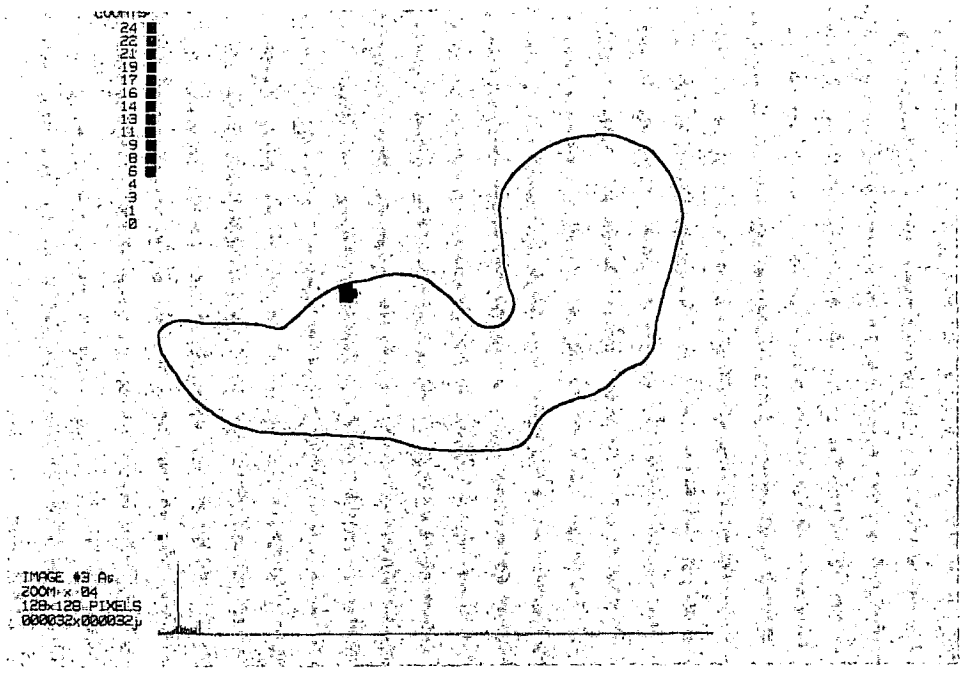
4.


65
61
57
52
48
43
39
34
30
26
21
17
13
8
4
0
AGE #2 Cu
OM x 04
8x128 PIXELS
0032x000032µ

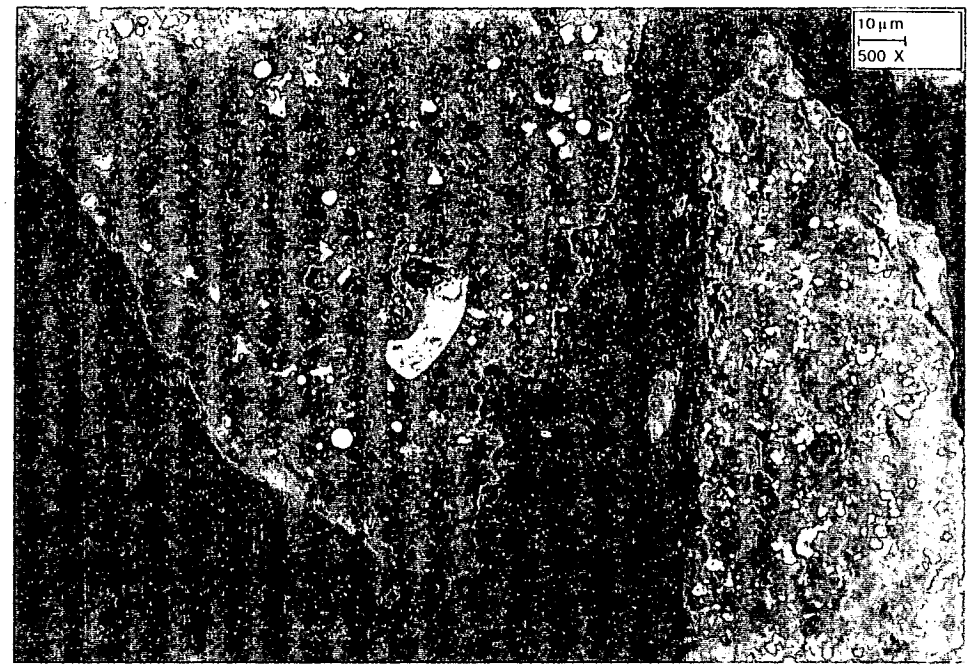
5.


COUNTS
23
21
20
18
17
15
14
12
10
9
7
6
4
3
1
0
IMAGE #2 Pb
ZOOM x 04
128x128 PIXELS
000032x000032µ

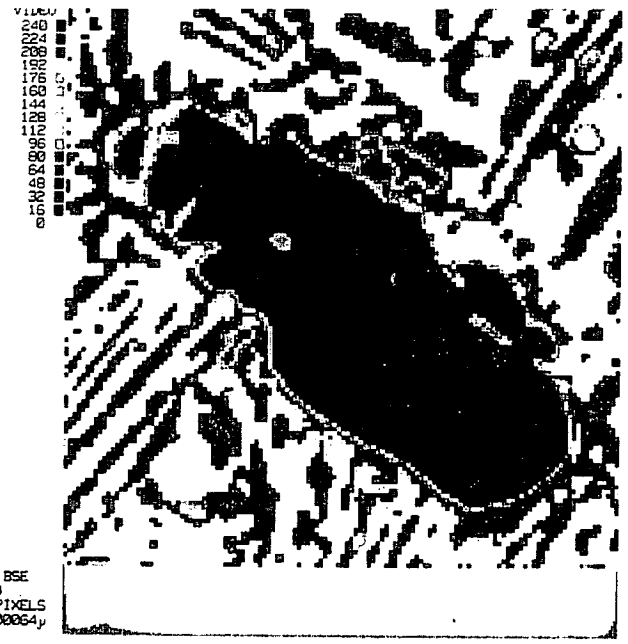
6.


24
22
21
19
17
16
14
13
11
9
8
6
4
3
1
0
IMAGE #3 Ag
ZOOM x 04
128x128 PIXELS
000032x000032µ

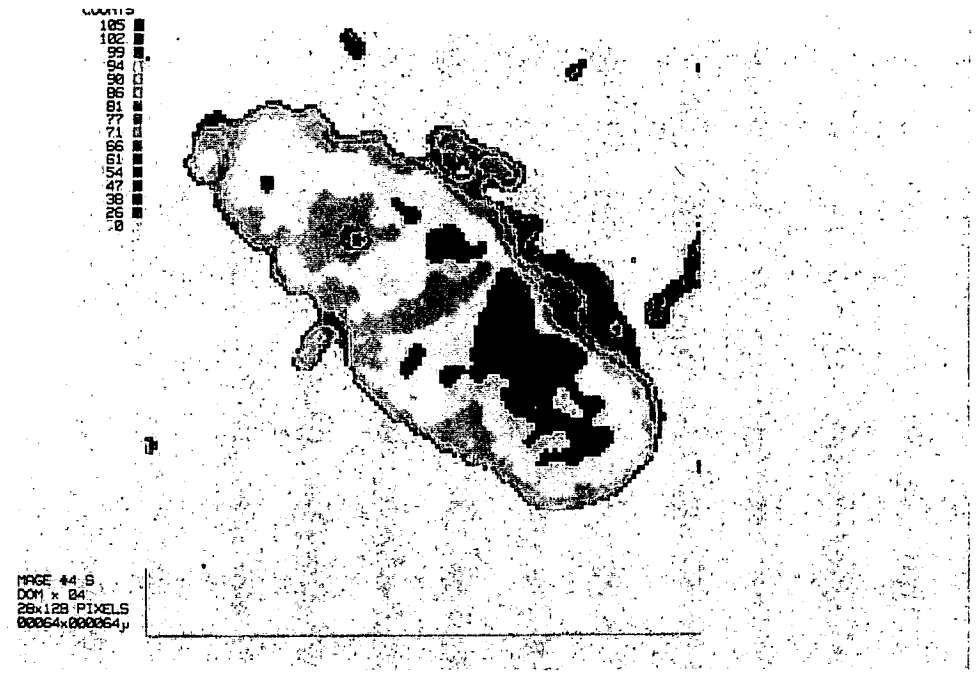
7.


10 µm
500 X

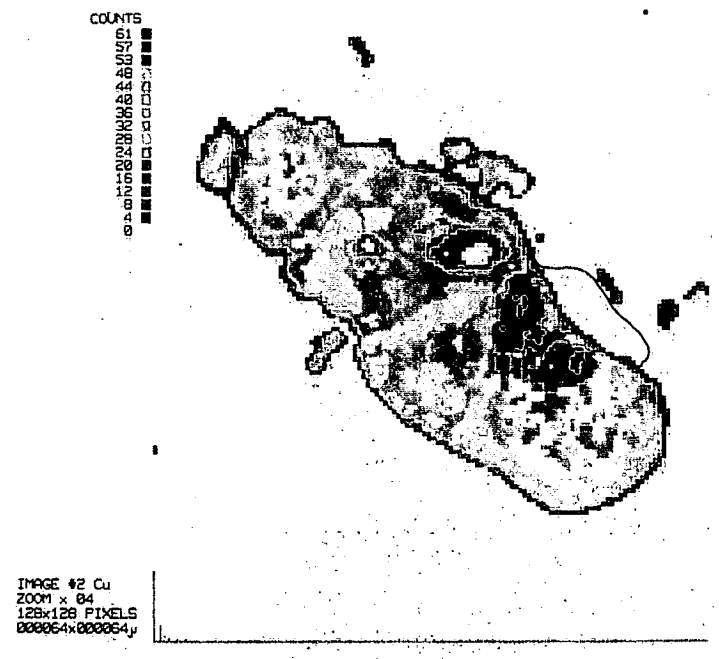
8.


IMAGE #2 BSE
ZOOM x 04
128x128 PIXELS
000064x000064µ

9.


105
102
99
54
50
86
81
77
71
66
91
54
47
38
26
0
MAGE 44 S
DOM x 04
28x128 PIXELS
00064x000064µ

10.


COUNTS
61
57
53
48
44
40
36
32
28
24
20
16
12
8
4
0
IMAGE #2 Cu
ZOOM x 04
128x128 PIXELS
000064x000064µ

11.


COUNTS
99
83
77
71
65
59
53
47
41
35
29
23
17
11
5
0
IMAGE #4 Zn
ZOOM x .04
128x128 PIXELS
000064x000064µ

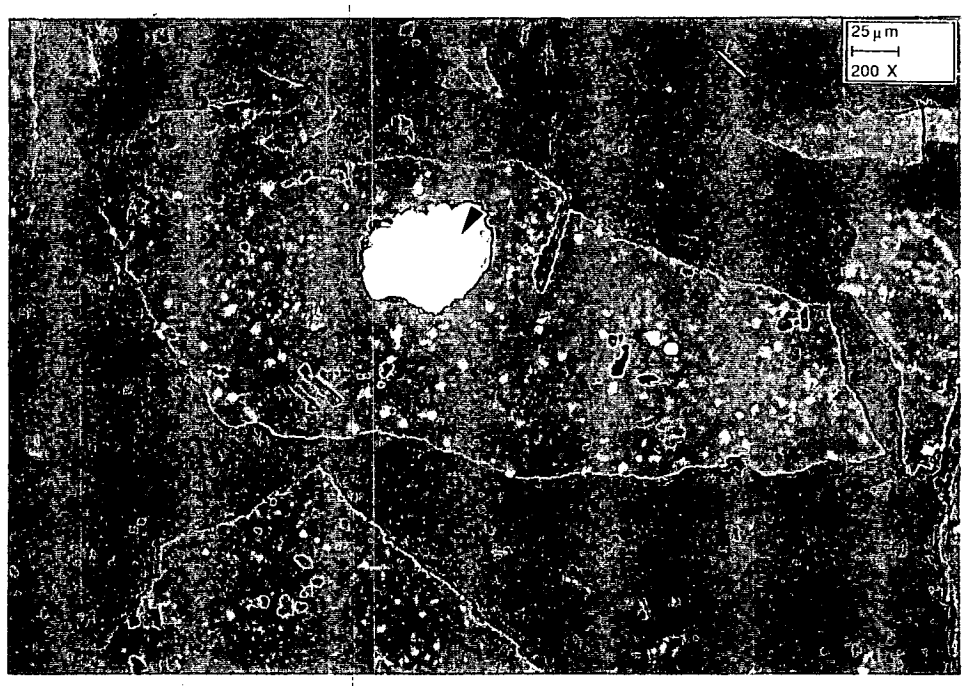
12.


COUNTS
28
26
24
22
20
18
16
15
13
11
9
7
5
3
0
IMAGE #1 Pb
ZOOM x .04
128x128 PIXELS
000064x000064µ

13.


38
36
34
31
28
26
23
21
18
15
13
10
7
5
2
0
MAGE #2:As
OOM x 84.
28x128 PIXELS
00064x000064µ

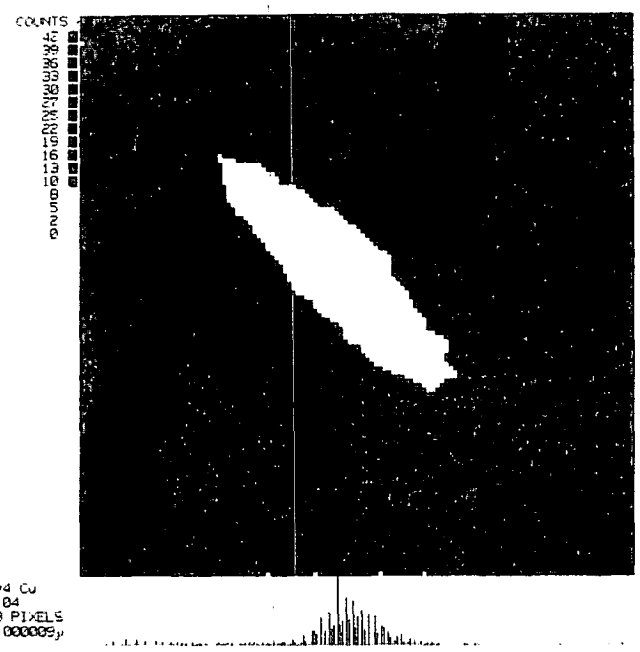
14.


25 µm
200 X

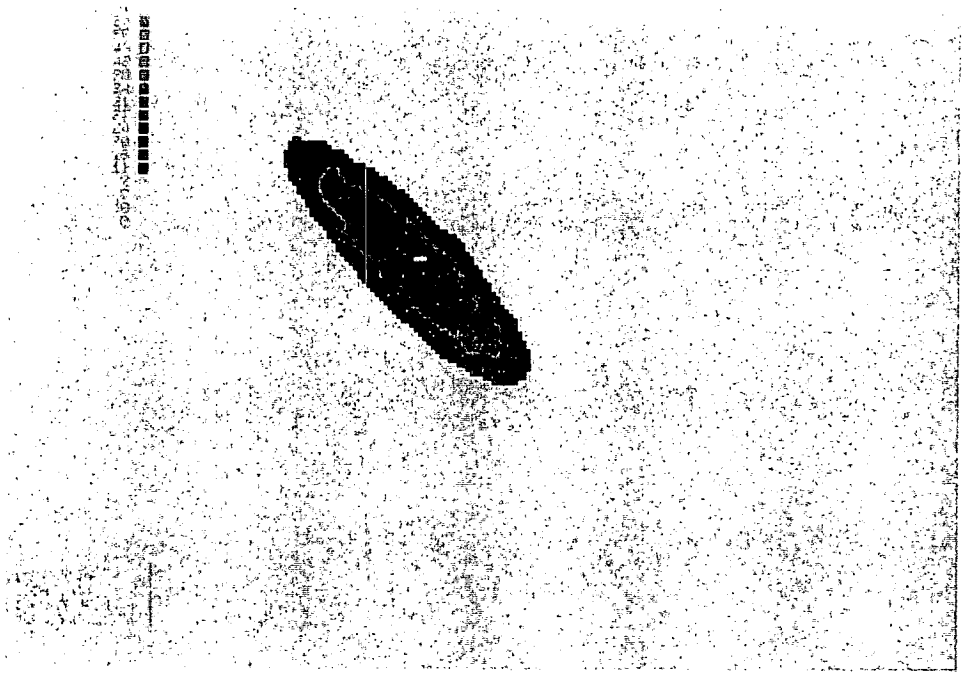
15.


VIDEO
226
197
170
145
121
100
81
64
49
36
25
16
9
4
1
0
IMAGE #4 BSE
ZOOM x 04
128x128 PIXELS
000009x000009µ

16.


COUNTS
IMAGE #4 Cu
ZOOM x 04
128x128 PIXELS
000009.000009µ

17.



Date: July 12, 1991

To: Tim Parker
Dames & Moore
Engineering & Environmental Consultants
9300 Tech Center Drive, Suite 100
Sacramento, CA 95860

From: E. U. Petersen

Re: Chemical Composition of Silicates in Slag Sample P-281 [7-1DTP91.R]

SUMMARY

1. The silicates identified are olivine (fayalite end-member), clinopyroxene (hedenbergite end-member), and glass. Near end-member magnetite was confirmed.

2. Arsenic, lead, and copper occur in highest concentration in interstitial glassy material. In the other silicates arsenic, lead, and copper are at or below the detection limit in the principal slag fragment studied.

3. A mass balance approach is recommended to determine the proportion of heavy metals hosted by the various phases in the slag.

OBJECTIVE

The silicate and oxide minerals in a sample of slag, P-281, were analyzed by electron microprobe. The objective was to determine their chemical composition especially with respect to their arsenic, lead, zinc, and copper content.

METHODS

The sample described in Petersen (1991) was used in this project. The silicates and oxides were analyzed for Na, K, Ca, Fe, Mg, Ti, Al, Si, Zn, Cu, Pb, and As with a Cameca SX-50 electron microprobe with a 15 kV accelerating potential, 30nA beam current, and a 1μm or smaller spot size. Standards used were Diopside (Si, Mg, Ca), Sanadine (Al, K, Na), Cu_2O (Cu), Sphalerite (Zn), Galena (Pb), Rutile (Ti), and gallium arsenide (As).

RESULTS

Figure 1, a photomicrograph of parts of two slag fragments, shows the area examined in detail. Sulfides appear yellow, magnetite appears very light gray (at tip of arrow), material **A** is light gray (A), material **B** is medium gray (B), and material **C** appears dark gray (C). A diagonal row of five faint dots in field **B** marks analysis spots

(analysis 7 through 11, lower right to upper left, respectively). Figure 2, an backscattered electron image of the area outlined in figure 1, shows a wealth of detail not as easily seen on the photomicrograph (Fig. 1). The three main silicates show up as green and yellow (material **A**), pale blue (Material **B**, row of deep blue spots in material **B** are holes), and deep blue (material **C**). Material **C** is commonly finely intergrown with type **A** and **B** material. Figure 2 also shows the location of many of the electron microprobe analyses given in the Appendix. Figures 3 to 6 are element X-ray maps of the same area shown in figure 2. A summary of the electron microprobe analyses is given in Table 1.

Material **A** is olivine (close to the fayalite end-member in composition, Fe_2SiO_4). It contains 1 to 2 weight percent zinc but copper, lead, and arsenic are at or below the detection limit. Similar material from one adjacent grain has slightly higher values for lead and arsenic.

Material **B** is a clinopyroxene (close to the hedenbergite end-member in composition, $CaFeSi_2O_6$). It contains about 1 weight percent zinc, but copper, lead, and arsenic are at or below the detection limit. Similar material from one adjacent grain has slightly higher values for lead and arsenic.

Material **C** is most likely glass. No common mineral formula could be calculated from the chemical analysis. Typically it occurs as an interstitial material indicating that it was the last material to solidify. Glass contains relatively large concentrations of incompatible elements (large atomic radius elements) such as Ca, K, Pb, and As. The "incompatible" elements typically are accommodated in low temperature and/or late crystallizing crystalline materials or in glasses (High-temperature and/or early crystallizing minerals such as those of the olivine group only accommodate small atoms such as iron and magnesium). Glass is relatively soft, forming topographic depression in the polished epoxy plug. The small, topographically rough surfaces presented by glass make analysis difficult and give rise to low analytical totals.

Magnetite is relatively pure and close to its end-member composition (Fe_3O_4).

The "composite" analyses are three analyses, on a different slag fragment, which represent a multi-mineral aggregate.

Arsenic, lead, and copper are highest in glass, regions of intermediate calcium content (Fig. 3, dark blue), high aluminum content (Fig. 4, orange), low magnesium content (Fig. 5, white), and low iron content (Fig. 6, dark blue). Zinc is highest in olivine (Table 1).

DISCUSSION AND RECOMMENDATIONS

Arsenic, lead, and copper occur in highest concentration in interstitial glassy material. In the other silicates arsenic, lead, and copper are at or below the detection limit in the principal slag fragment studied. The few analyses obtained on other slag fragments appear to indicate that some chemical variability exists and in particular that some clinopyroxne may contain substantial arsenic (Table 1, Appendix, Clinopyroxene Group II).

Optically glass appears to be the least abundant material. Yet, if this material is truly amorphous, a true glass, then is also likely to be the material most susceptible to weathering or alteration. Olivine would be the next most susceptible material to alteration. Clinopyroxene is probably the mineral least susceptible to alteration.

The work done to date suggests that the heavy metals zinc, copper, arsenic, and lead are present primarily in sulfide segregations and glass. Although, we now have a good idea of the compositions of the silicates, glass and magnetite (This report), we do not have a good way of determining the proportions of these minerals, and even though we know what sulfides are present in the sulfide segregations (Petersen, 1991) we do not know their relative proportions. Hence, we cannot determine the distribution of heavy metals between the various hosts (ie. to say that 60% of all the arsenic in the sample is in a given material). Several approaches to the problem are possible each with different drawbacks. It may be possible to determine the proportion of silicate minerals by X-ray diffraction. This would require the use of some appropriate standards. The main drawbacks would be that if glass were truly amorphous it could not be quantified by X-ray diffraction and the amount of sulfide segregations could not be determined. Standard optical methods of determining mineral proportions would bog down due to the extremely fine nature of the mineral intergrowths. However, it may be possible to examine backscattered electron images by image analysis techniques. If a sufficiently representative number of frames could be examined, a reliable "point count" could be obtained. For the moment, I think the best approach for determining the relative distribution of heavy metals between silicates, glass and sulfide segregations is through the use of mass balance equations. Given a "total sample" analysis for heavy metals (Zn, Cu, As, Pb), sulfur, and at least as many other elements (elements not present in the sulfide segregations such as Ca, Na, K, Mg, Fe, Ti, Al, Si) as there are minerals in the slag a series of linear equations could be set up to give a unique solution stating the percentage and composition of each mineral. This solution would contain the information needed to determine the distribution of arsenic and lead by mineral host. The main drawback could be that mineral compositions may not be sufficiently constant, but at least this could be checked.

PHOTOS AND ELECTRON MICROPROBE IMAGES

Figure 1. Photomicrograph of P-281 slag showing various minerals and textures. Sample was carbon coated before it was photographed and therefore contrast has been minimized. **A** is olivine, **B** is clinopyroxene, and **C** is glass. Crinkly band cutting from bottom left to top center is beam-damaged epoxy. Outlined area is enlarged in figure 2. Box is 121μm on a side.

Figure 2. Backscattered electron image (256 x 256 pixels, 15ms analysis/pixel). Field of view is 121μm. Analysis numbers correspond to those listed in the Appendix. Size of dot represents size of area analyzed.

Figure 3. Calcium X-ray map. Same field as figure 2. Green indicates clinopyroxene containing about 10 weight percent calcium. Glass, containing about 5 weight percent, calcium shows up in dark blue.

Figure 4. Aluminum X-ray map. Same field as figure 2. Orange areas clearly define the areas of glass, as glass contains about 7 weight percent aluminum. Blue areas are clinopyroxene containing about 2 weight percent aluminum.

Figure 5. Magnesium X-ray map. Same field as figure 2. Orange, yellow, and green clearly highlight olivine which has the highest levels of magnesium (>2 weight percent). Light blue highlights clinopyroxene with only a few tenths of a weight percent of magnesium.

Figure 6. Iron X-ray map. Same field as figure 2. Orange and yellow, clearly highlight olivine which has the highest levels of iron (50 weight percent). Light blue highlights clinopyroxene (25 weight percent iron). Dark blue shows glass with only 8 weight percent iron.

TABLE AND APPENDIX

Table 1 is a summary of some of the data presented in the Appendix. The Appendix list the individual analyses (**Anal**, some of which are indicated on the electron microprobe images). **Loc** refers to general locations. **Type** and **Comment** provide a descriptive code and comment, respectively. Next **element weight percent** and **mineral formulae** are presented. Olivine is normalized to 3 cations, pyroxene to 4 cations, magnetite to 3 cations, and glass arbitrarily to 4 cations.

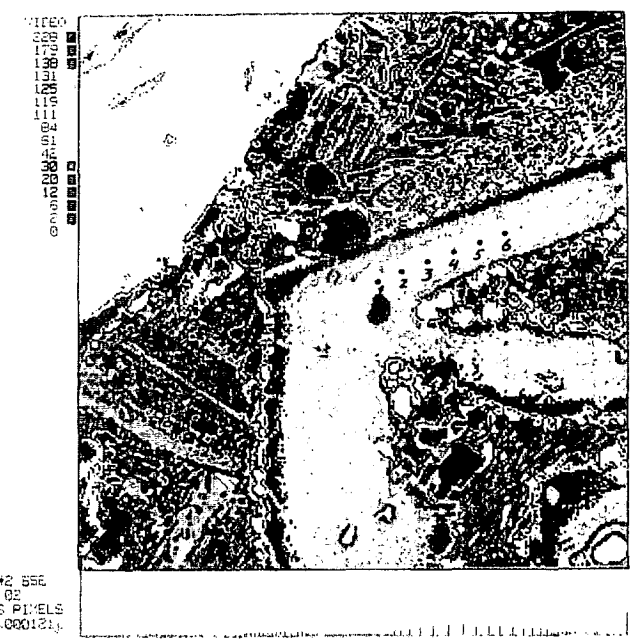
REFERENCES

Petersen, E.U., 1991, The form of lead, arsenic, copper, and zinc in Slag P-281. Report 6-1DDM91.R, June 24, 1991, 13 p.

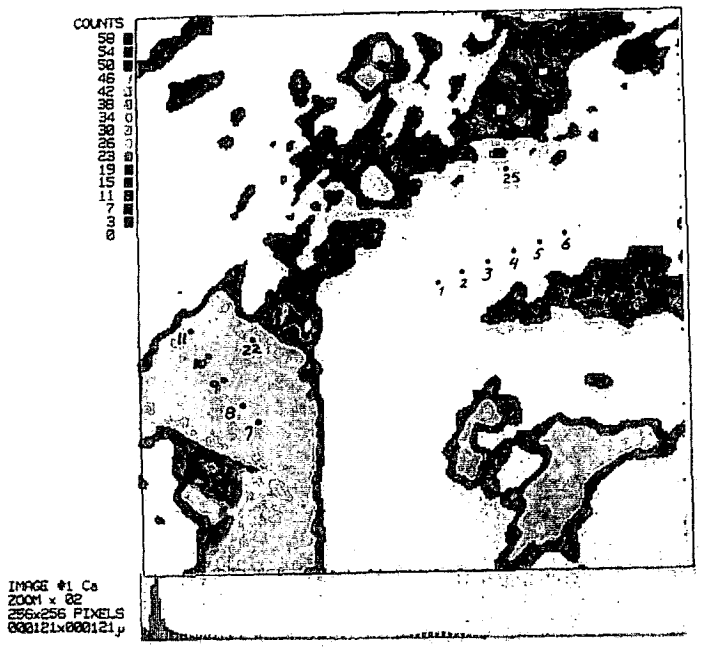
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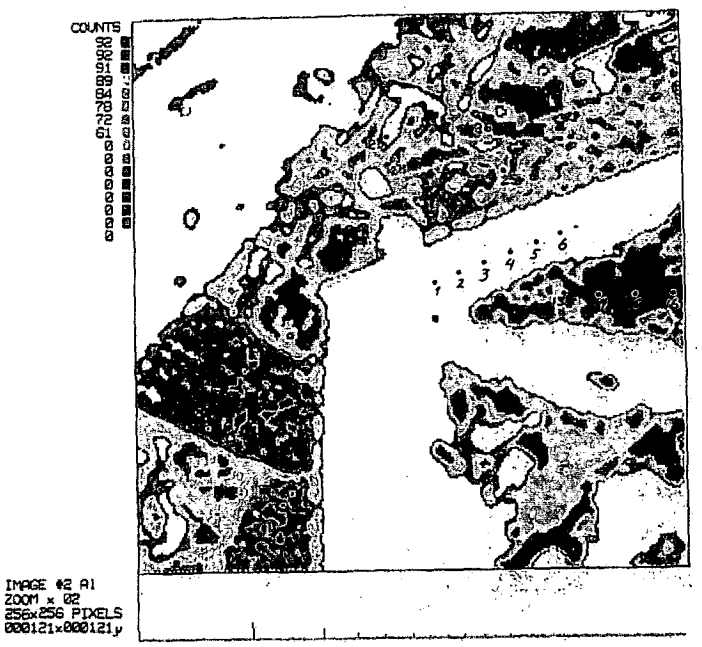
2.


VIDEO
238
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138
151
125
115
111
84
61
46
30
20
12
IMAGE #2 BSE
ZOOM x 02
256x256 PIXELS

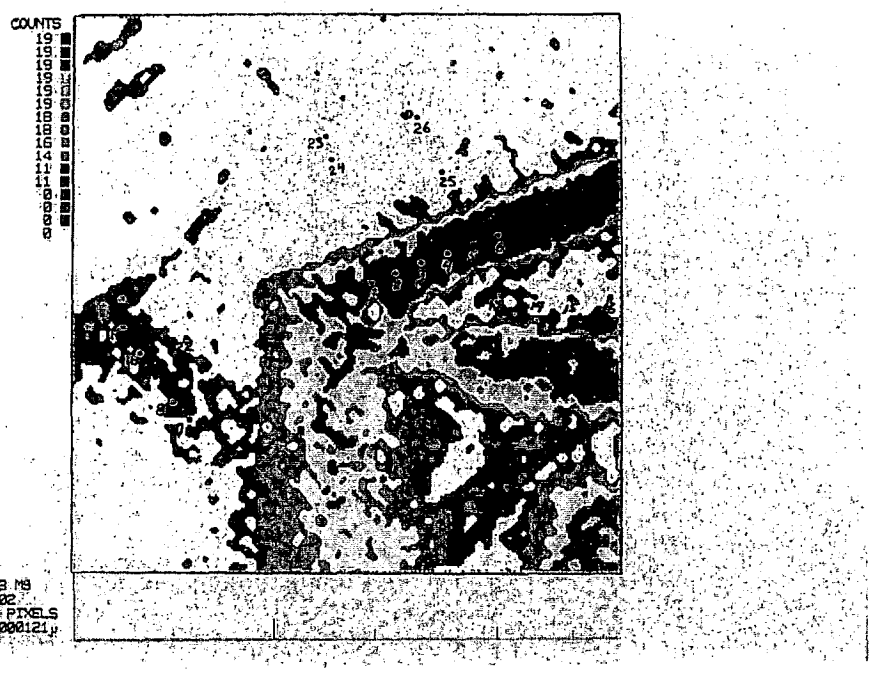
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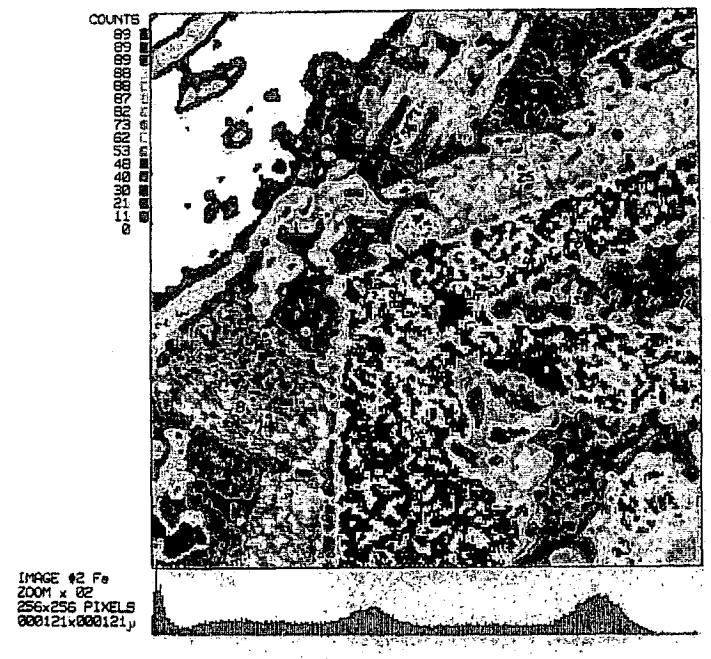
4.


COUNTS
IMAGE #2 A1
ZOOM x 02
256x256 PIXELS
000121x000121µ

5.


COUNTS
19
19
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19
19
19
18
18
16
14
11
11
0
0
0
0
23
24
25
26
IMAGE #3 M9
ZOOM x 02
256x256 PIXELS
000121x000121µ

6.


COUNTS
89
89
88
88
88
87
87
86
85
84
83
82
81
80
80
21
11
0
IMAGE #2 Fe
ZOOM x 02
256x256 PIXELS
000121x000121µ

ACCULAB ENVIRONMENTAL SERVICES
3700 Lakeville Highway, Petaluma, CA 94952
P. O. Box 808024, Petaluma, CA, 94975-8024
Phone: (707) 763-8245 FAX: (707) 763-4065

SAMPLE CHAIN OF CUSTODY / WORK ORDER

Client's Name Dames & Moore SAC Phone (916) 361-8678
Address 9300 Tech Center Dr. Suite 100
City, State, Zip Sacramento CA 95826
Client's or Representative's Signature Mark Zu
(signature authorizes the work and terms listed below)

All samples remain the property of the client who is responsible for disposal. A disposal fee may be imposed if client fails to pick up samples.

Lot 1

PROJ. NO. 00173-064-044 | PROJECT NAME UPRR SAC. West Side Lot

SAMPLERS (Signature) Mark Zu

STA. NO.	DATE 1991	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	Archive	Total As (CAM)17	Total Pb (CAM)17	Total Cu (CAM)17			REMARKS / LAB USE ONLY LAB NO.
	1/18				Composit #1 (MZ1-1, MZ1-2, MZ1-3, MZ1-4, MZ1-5)	5		X	X	X			
	1/18				Composit #2 (MZ1-6, MZ1-7, MZ1-16, MZ1-17)	4		X	X	X			
	1/18				Composit #3 (MZ1-8, MZ1-9, MZ1-10, MZ1-18, MZ1-19 MZ1-20)	6		X	X	X			
	1/18				Composit #4 (MZ1-11, MZ1-12, MZ1-13, MZ1-14, MZ1-15, MZ1-21 MZ1-22, MZ1-23, MZ1-24)	9		X	X	X			
	1/18				Composit #5 (MZ1-24, MZ1-25, MZ1-30, MZ1-31 MZ1-34, MZ1-35)	6		X	X	X			

Relinquished by: (Signature)	DATE	TIME	Received by: (Signature)
Mark Zu DAC			
Relinquished by: (Signature)	DATE	TIME	Received by: (Signature)
Relinquished by: (Signature)	DATE	TIME	Received by: (Signature)

General Remarks:
Take small portion of sample for Composit. Retain samples in original containers Archive for 60 days

FIELD COPY

ACCULAB ENVIRONMENTAL SERVICES
3700 Lakeville Highway, Petaluma, CA 94952
P. O. Box 808024, Petaluma, CA, 94975-8024
Phone: (707) 763-8245 FAX: (707) 763-4065

SAMPLE CHAIN OF CUSTODY / WORK ORDER

Client's Name Dames & Moore SAC Phone (916) 361-8698
Address 4300 Tech Center Dr Suite 100
City, State, Zip Sacramento CA 95826
Client's or Representative's Signature
(signature authorizes the work and terms listed below)

All samples remain the property of the client who is responsible for disposal. A disposal fee may be imposed if client fails to pick up samples.

PROJ. NO. 00173-064-044 | PROJECT NAME OPRR SAC West Side Lot

SAMPLERS (Signature)

STA. NO.	DATE 1991	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	Total As (AA) TTLC	Total Pb (AA) TTLC	Total Cu (AA) TTLC	REMARKS / LAB USE ONLY LAB NO.
	1/18				Composit #6 (MZ1-26, MZ1-27, MZ1-28, MZ1-32, MZ1-33)	5	X	X	X	
	1/18				Composit #7 (MZ6-1, MZ6-2, MZ6-3, MZ6-4, MZ6-5)	5	X	X	X	
	1/18				Composit #8 (MZ6-6, MZ6-7, [redacted], MZ6-16, MZ6-17)	4	X	X	X	
	1/18				Composit #9 (MZ6-8, MZ6-9, MZ6-10, MZ6-18, MZ6-19, MZ6-20)	6	X	X	X	
	1/18				Composit #10 (MZ6-11, MZ6-12, MZ6-13, MZ6-14, MZ6-15, MZ6-21, MZ6-22, MZ6-23, MZ6-24)	9	X	X	X	

Relinquished by: (Signature)	DATE	TIME	Received by: (Signature)
Relinquished by: (Signature)	DATE	TIME	Received by: (Signature)
Relinquished by: (Signature)	DATE	TIME	Received by: (Signature)

General Remarks: See page 1 of 3

FIELD COPY

ACCULAB ENVIRONMENTAL SERVICES
3700 Lakeville Highway, Petaluma, CA 94952
P.O. Box 808024, Petaluma, CA. 94975-8024
Phone: (707)763-8245 FAX: (707)763-4065

3 of 3

SAMPLE CHAIN OF CUSTODY / WORK ORDER

Client's Name Dames & Moore Phone (916) 361 8698
Address 7500 Tech Center Dr Suite 100
City, State, Zip Sacramento Ca 95826
Client's or Representative's Signature
(signature authorizes the work and terms listed below)

All samples remain the property of the client who is responsible for disposal. A disposal fee may be imposed if client fails to pick up samples.

PROJ. NO. 00179-064-044 | PROJECT NAME UPRR SAC West Side Lot | SAMPLERS (Signature)

STA. NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	Total As (AA) TCLP	Total Pb (AA) TCLP	Total Cr (AA) TCLP	REMARKS / LAB USE ONLY LAB NO.
	1/18				Composit #11 (MZ6-24, MZ6-25, MZ6-30, MZ6-31, MZ6-34 MZ6-35)	6	X	X	X	
	1/18				Composit #12 (MZ6-26, MZ6-27, MZ6-28, MZ6-32, MZ6-33)	5	X	X	X	

Relinquished by: (Signature)	DATE	TIME	Received by: (Signature)
Relinquished by: (Signature)	DATE	TIME	Received by: (Signature)
Relinquished by: (Signature)	DATE	TIME	Received by: (Signature)

General Remarks: See Page 1 of 3

FIELD COPY

ENVIRONMENTAL SERVICES

3700 Lakeville Highway, Petaluma, CA 94954
P.O. Box 808024, Petaluma, CA 94975-8024
Telephone: (707) 763-8245 FAX: (707) 763-4065

Tim Parker
Dames & Moore
9300 Tech Center Dr., Suite 100
Sacramento, CA 95826

Client Code: DAMM7
Survey #
UPRR/Sacramento
Project/Release # 00173-064-044

L A B O R A T O R Y R E S U L T S

Date Collected: 01/18/91
Date Extracted: 03/29/91
Date Analyzed: 04/11/91

Laboratory Job No.: 911335
Date Received: 03/15/91
Date Reported: 04/15/91

ASSAY:
ARSENIC (EPA 7060)
COPPER (EPA 7210)
LEAD (EPA 7420)

MATRIX: SOIL, CA EXTRACT

LABNO	SMPLNO	COMPOUND	FOUND mg/L	CA STLC LEV	DET.LIM. mg/L
9731	COMPOSITE-1	AS	0.6	5.0	0.5
		CU	1.61	25	0.02
		PB	3.85	5.0	0.10
9732	COMPOSITE-3	AS	4	5	1
		CU	18.0	25	0.02
		PB	15.3	5.0	0.10
9733	COMPOSITE-4	AS	2.6	5.0	0.5
		CU	7.46	25	0.02
		PB	7.77	5.0	0.10
9734	COMPOSITE-5	AS	1.0	5.0	0.5
		CU	1.08	25	0.02
		PB	4.50	5.0	0.10
9735	COMPOSITE-6	AS	3.2	5.0	0.5
		CU	17.44	25	0.02
		PB	2.54	5.0	0.10

THIS REPORT HAS BEEN REVIEWED AND APPROVED FOR RELEASE.

ENVIRONMENTAL SERVICES

3700 Lakeville Highway, Petaluma, CA 94954
P.O. Box 808024, Petaluma, CA 94975-8024
Telephone: (707) 763-8245 FAX: (707) 763-4065

L A B O R A T O R Y R E S U L T S

Laboratory Job No.: 911335

LABNO	SMPLNO	COMPOUND	FOUND mg/L	CA STLC LEV	DET.LIM. mg/L
9736	COMPOSITE-7	AS	0.2	5.0	0.1
		CU	0.62	25	0.02
		PB	1.97	5.0	0.10
9737	COMPOSITE-9	AS	1.3	5.0	0.5
		CU	2.15	25	0.02
		PB	7.02	5.0	0.10
9738	COMPOSITE-10	AS	4	5	1
		CU	8.20	25	0.02
		PB	9.30	5.0	0.10
9739	COMPOSITE-12	AS	1.7	5.0	0.5
		CU	36.0	25	0.4
		PB	36.81	5.0	0.10
9740	CM	AS	ND		0.1
		CU	0.03		0.02
		PB	ND		0.10
				SPIKE LEVELS	
9741	CMS	AS	0.2	0.200 mg/L	0.1
		CU	9.67	10.0 mg/L	0.02
		PB	10.09	10.0 mg/L	0.10
9742	CMSD	AS	0.2	0.200 mg/L	0.1
		CU	9.51	10.0 mg/L	0.02
		PB	9.94	10.0 mg/L	0.10
9743	MB	AS	ND		0.1
		CU	ND		0.02
		PB	ND		0.10

ACCULAB
3700 Lakeville Highway, Petaluma, CA 94952
P.O. Box 808024, Petaluma, CA. 94975-8024
Telephone: (707) 763-8245 FAX: (707) 763-4065

~~372-~~ Fay 362-7987

SAMPLE CHAIN OF CUSTODY / WORK ORDER

Client's Name DAMES & MOORE Phone 364-9532
Address 9300 TECH CENTER DRIVE, SUITE 100
City, State, Zip SACTO, CA, 95826
Client's or Representative's Signature [signature]
(signature authorizes the work and terms listed below)

All samples remain the property of the client who is responsible for disposal. A disposal fee may be imposed if client fails to pick up samples.

PROJ. NO. 00173-064-044
PROJECT NAME UPRR-SACRAMENTO
SAMPLERS (Signature) [signature]

STA. NO.	DATE	TIME	COMP	GRAB	~~STATION LOCATION~~ SAMPLE I.D.	NO. OF CON-TAINERS	CCR Metals-TTLC						REMARKS	LAB USE ONLY LAB NO.
	1/18/91			X	MZO-1	1	X							

Relinquished by: (Signature)	DATE	TIME	Received by: (Signature)
[signature]	1/24/91	0815	[signature]
Relinquished by: (Signature)	DATE	TIME	Received by: (Signature)
Relinquished by: (Signature)	DATE	TIME	Received by: (Signature)

General Remarks: 1st grind sample, prep + run by AA ($230 quote) - Archive 60 days.

CLIENT COPY

California Analytical
Laboratory

Enseco
A CORNING Company

February 8, 1991
Lab ID: 056608

Tim Parker
Dames & Moore
9300 Tech Center Dr.
Suite 100
Sacramento, CA 95826

Dear Mr. Parker:

Enclosed is the report for the one solid sample for your UPRR-Sacramento Project, #00173-064-044, which was received at Enseco-Cal Lab on 22 January 1991.

The report consists of the following sections:

I Sample Description
II Analysis Request
III Quality Control Report
IV Analysis Results

If you have any questions, please feel free to call.

Sincerely,

Janet Harlan

Janet Harlan
Program Administrator

du

Enseco Incorporated
2544 Industrial Boulevard
West Sacramento, California 95691
916/372-1393 Fax: 916/372-7768

Enseco
A Corning Company

I Sample Description

See the attached Sample Description Information.

The sample was received under chain-of-custody.

II Analysis Request

The following analytical tests were requested.

Lab ID	Analysis Description
056608-1	C.C.R. Selected Metals, TTLC
	C.C.R. Selected Metals, STLC
	TCLP C.C.R. Selected Metals, STLC

III Quality Control

A. Project Specific QC. No project specific QC (i.e., spikes and/or duplicates) was requested.

B. Method Blank Results. A method blank is a laboratory-generated sample which assesses the degree to which laboratory operations and procedures cause false-positive analytical results for your sample.

No target parameters were detected in the method blanks associated with your sample at the reporting limit levels noted on the attached Method Blank Report.

C. Laboratory Control Samples - The LCS Program

Duplicate Control Samples. A DCS is a well-characterized matrix (blank water, sand or celite) which is spiked with certain target parameters and analyzed at approximately 10% of the sample load in order to establish method-specific control limits. The DCS results associated with your sample are on the attached Duplicate Control Sample Report.

Single Control Samples. An SCS consists of a control matrix that is spiked with surrogate compounds appropriate to the method being used. In cases where no surrogate is available, (e.g. metals or conventional analyses) a single control sample identical to the DCS serves as the control sample. An SCS is prepared for each sample lot. Accuracy is calculated identically to the DCS. The SCS results associated with your sample are on the attached Single Control Sample Report.

Accuracy is measured by Percent Recovery as in:

$$\% \text{ recovery} = \frac{(\text{measured concentration})}{(\text{actual concentration})} \times 100$$

Precision is measured using duplicate tests by Relative Percent Difference (RPD) as in:

$$\text{RPD} = \frac{(\% \text{ recovery test 1} - \% \text{ recovery test 2})}{(\% \text{ recovery test 1} + \% \text{ recovery test 2})/2} \times 100$$

Control limits for accuracy (percent recovery) are based on the average, historical percent recovery +/-3 standard deviation units. Control limits for precision (relative percent difference) range from 0 (identical duplicate DCS results) to the average, historical relative percent difference + 3 standard deviation units. In cases where there is not enough historical data, EPA limits or advisory limits are set, with the approval of the Quality Assurance department.

IV Analysis Results

Test methods may include minor modifications of published EPA Methods such as reporting limits or parameter lists. Reporting limits are adjusted to reflect dilution of the sample, when appropriate. Solid and waste samples are reported on an "as received" basis; i.e., no correction is made for moisture content, unless the method requires or the client requests that such correction be made.

Results are on the attached data sheets.

Enseco
A Corning Company

SAMPLE DESCRIPTION INFORMATION
for
Dames & Moore

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
056608-0001-SA	MZO-1	SOLID	18 JAN 91		22 JAN 91

Enseco
A Corning Company

QC LOT ASSIGNMENT REPORT
Metals Analysis and Preparation

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
056608-0001-SA	SOIL	ICP-S	29 JAN 91-N	04 FEB 91-A
056608-0001-SA	SOIL	AS-FAA-S	04 FEB 91-A	04 FEB 91-A
056608-0001-SA	SOIL	PB-FAA-S	04 FEB 91-A	04 FEB 91-A
056608-0001-SA	SOIL	SE-FAA-S	04 FEB 91-A	04 FEB 91-A
056608-0001-SA	SOIL	TL-FAA-S	04 FEB 91-A	04 FEB 91-A
056608-0001-SA	SOIL	HG-CVAA-S	04 FEB 91-A	04 FEB 91-A

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METHOD BLANK REPORT
Metals Analysis and Preparation

Analyte	Result	Units	Reporting Limit
Test: ICP-CAMT-HI-S			
Matrix: SOLID			
QC Lot: 29 JAN 91-N QC Run: 04 FEB 91-A			
Antimony	ND	mg/kg	15.0
Barium	ND	mg/kg	100
Beryllium	ND	mg/kg	0.75
Cadmium	ND	mg/kg	1.0
Chromium	ND	mg/kg	5.0
Cobalt	ND	mg/kg	80.0
Copper	ND	mg/kg	25.0
Molybdenum	ND	mg/kg	350
Nickel	ND	mg/kg	20.0
Silver	ND	mg/kg	5.0
Vanadium	ND	mg/kg	24.0
Zinc	ND	mg/kg	250
Test: AS-FAA-CAMT-HI-S			
Matrix: SOLID			
QC Lot: 04 FEB 91-A QC Run: 04 FEB 91-A			
Arsenic	ND	mg/kg	5.0
Test: PB-FAA-CAMT-HI-S			
Matrix: SOLID			
QC Lot: 04 FEB 91-A QC Run: 04 FEB 91-A			
Lead	ND	mg/kg	5.0
Test: SE-FAA-CAMT-HI-S			
Matrix: SOLID			
QC Lot: 04 FEB 91-A QC Run: 04 FEB 91-A			
Selenium	ND	mg/kg	1.0

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METHOD BLANK REPORT
Metals Analysis and Preparation (cont.)

Analyte	Result	Units	Reporting Limit
Test: TL-FAA-CAMT-HI-S Matrix: SOLID QC Lot: 04 FEB 91-A QC Run: 04 FEB 91-A			
Thallium	ND	mg/kg	7.0
Test: HG-CVAA-CAMT-HI-S Matrix: SOLID QC Lot: 04 FEB 91-A QC Run: 04 FEB 91-A			
Mercury	ND	mg/kg	0.20

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DUPLICATE CONTROL SAMPLE REPORT
Metals Analysis and Preparation

Analyte	Concentration Spiked	Measured DCS1	Measured DCS2	Measured AVG	Accuracy Average(%) DCS	Accuracy Average(%) Limits	Precision (RPD) DCS	Precision (RPD) Limit
Category: ICP-S Matrix: SOIL QC Lot: 29 JAN 91-N Concentration Units: mg/kg								
Aluminum	200	194	190	192	96	84-115	1.9	11
Antimony	50	43.6	41.5	42.5	85	81-115	4.8	10
Arsenic	50	48.4	47.2	47.8	96	82-115	2.7	10
Barium	200	199	194	196	98	85-115	2.4	10
Beryllium	5.0	4.61	4.58	4.59	92	70-110	0.7	10
Boron	100	106	106	106	106	85-115	0.2	10
Cadmium	5.0	5.22	5.22	5.22	104	81-118	0.0	15
Calcium	10000	10400	10200	10300	103	85-115	2.1	10
Chromium	20	19.1	18.7	18.9	94	84-115	2.4	17
Cobalt	50	49.5	48.3	48.9	98	80-115	2.5	10
Copper	25	24.5	24.2	24.4	97	81-115	1.4	10
Iron	100	97.7	94.8	96.3	96	85-115	3.0	14
Lead	50	50.2	48.8	49.5	99	80-115	3.0	11
Lithium	20.0	20.0	19.2	19.6	98	85-115	4.2	10
Magnesium	5000	5340	5250	5290	106	85-115	1.8	10
Manganese	50.0	49.5	48.3	48.9	98	80-115	2.5	10
Molybdenum	20.0	19.5	18.9	19.2	96	85-115	3.3	10
Nickel	50.0	49.3	49.0	49.1	98	80-115	0.6	10
Potassium	5000	5060	5010	5030	101	82-115	1.0	10
Selenium	200.0	196	188	192	96	84-115	3.7	10
Silver	5.0	4.86	4.96	4.91	98	62-115	1.9	10
Sodium	10000	10300	10200	10200	102	85-115	0.8	10
Thallium	200	196	194	195	97	68-110	1.1	10
Tin	400	380	373	377	94	80-122	1.7	10
Titanium	20.0	16.9	16.4	16.6	83#	85-115	3.0	10
Vanadium	50.0	49.8	48.9	49.4	99	85-115	1.7	10
Zinc	50	50.6	49.8	50.2	100	82-115	1.6	10
Category: AS-FAA-S Matrix: SOIL QC Lot: 04 FEB 91-A Concentration Units: mg/kg								
Arsenic	4.0	3.80	4.01	3.90	98	80-120	5.4	15

= Recovery outside QC Limits

Calculations are performed before rounding to avoid round-off errors in calculated results.

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DUPLICATE CONTROL SAMPLE REPORT
Metals Analysis and Preparation (cont.)

Analyte	Concentration Spiked	Measured DCS1	Measured DCS2	Measured AVG	Accuracy Average(%) DCS	Accuracy Average(%) Limits	Precision (RPD) DCS	Precision (RPD) Limit
Category: PB-FAA-S Matrix: SOIL QC Lot: 04 FEB 91-A Concentration Units: mg/kg								
Lead	2.0	2.17	2.04	2.10	105	80-120	6.2	20
Category: SE-FAA-S Matrix: SOIL QC Lot: 04 FEB 91-A Concentration Units: mg/kg								
Selenium	1.0	1.12	1.07	1.10	110	80-120	4.6	19
Category: TL-FAA-S Matrix: SOIL QC Lot: 04 FEB 91-A Concentration Units: mg/kg								
Thallium	5.0	4.01	4.14	4.08	82	80-120	3.2	10
Category: HG-CVAA-S Matrix: SOIL QC Lot: 04 FEB 91-A Concentration Units: mg/kg								
Mercury	0.50	0.520	0.541	0.530	106	84-126	4.0	30

Calculations are performed before rounding to avoid round-off errors in calculated results.

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SINGLE CONTROL SAMPLE REPORT
Metals Analysis and Preparation

Analyte	Concentration Spiked	Concentration Measured	Accuracy(%) SCS	Accuracy(%) Limits
Category: ICP-S				
Matrix: SOIL				
QC Lot: 29 JAN 91-N QC Run: 04 FEB 91-A				
Concentration Units: mg/Kg				
Aluminum	200	181	91	84-115
Antimony	50.0	42.2	85	81-115
Arsenic	50.0	47.1	94	82-115
Barium	200	189	95	85-115
Beryllium	5.00	4.46	90	70-110
Boron	100	101	102	85-115
Cadmium	5.00	4.95	100	81-118
Calcium	10000	10200	103	85-115
Chromium	20.0	18.9	96	84-115
Cobalt	50.0	48.1	97	80-115
Copper	25.0	24.0	97	81-115
Iron	100	97.5	98	85-115
Lead	50.0	47.3	96	80-115
Lithium	20.0	17.8	90	85-115
Magnesium	5000	4960	100	85-115
Manganese	50.0	48.2	97	80-115
Molybdenum	20.0	19.1	96	85-115
Nickel	50.0	48.5	98	80-115
Potassium	5000	4640	94	82-115
Selenium	200	196	99	84-115
Silver	5.00	5.01	101	62-115
Sodium	10000	9380	95	85-115
Thallium	200	190	96	68-110
Tin	400	366	92	80-122
Titanium	20.0	21.1	106	85-115
Vanadium	50.0	49.1	99	85-115
Zinc	50.0	49.6	100	82-115

Calculations are performed before rounding to avoid round-off errors in calculated results.

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C.C.R. METALS
California Title 22 (Title 26) Protocol
TTLC (Total) Data Sheet

Client Name: Dames & Moore
Client ID: MZO-1
Lab ID: 056608-0001-SA
Matrix: SOLID — Sampled: 18 JAN 91 — Received: 22 JAN 91
Authorized: 28 JAN 91 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Wet wt. Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date	
Antimony	114	mg/kg	15.0	6010	04 FEB 91	06 FEB 91	
Arsenic	428	mg/kg	100	7060	04 FEB 91	05 FEB 91	R
Barium	716	mg/kg	100	6010	04 FEB 91	06 FEB 91	
Beryllium	ND	mg/kg	0.75	6010	04 FEB 91	06 FEB 91	
Cadmium	ND	mg/kg	1.0	6010	04 FEB 91	06 FEB 91	
Chromium	24.5	mg/kg	5.0	6010	04 FEB 91	06 FEB 91	
Cobalt	93.1	mg/kg	80.0	6010	04 FEB 91	06 FEB 91	
Copper	2480	mg/kg	25.0	6010	04 FEB 91	06 FEB 91	
Lead	1810	mg/kg	500	7421	04 FEB 91	05 FEB 91	R
Mercury	ND	mg/kg	0.20	7471	04 FEB 91	05 FEB 91	
Molybdenum	ND	mg/kg	350	6010	04 FEB 91	06 FEB 91	
Nickel	25.5	mg/kg	20.0	6010	04 FEB 91	06 FEB 91	
Selenium	ND	mg/kg	1.5	7740	04 FEB 91	06 FEB 91	G
Silver	ND	mg/kg	5.0	6010	04 FEB 91	06 FEB 91	
Thallium	ND	mg/kg	7.0	7841	04 FEB 91	06 FEB 91	
Vanadium	ND	mg/kg	24.0	6010	04 FEB 91	06 FEB 91	
Zinc	2850	mg/kg	250	6010	04 FEB 91	06 FEB 91	

Note R : Raised reporting limit(s) due to high analyte level(s).

Note G : Reporting Limit raised due to matrix interference.

ND = Not detected
NA = Not applicable

Reported By: Mei Lai — Approved By: Barry Votaw

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

C.C.R. METALS
California Title 22 (Title 26) Protocol
STLC Data Sheet (Citrate Buffer Leachate)

Client Name: Dames & Moore
Client ID: MZO-1
Lab ID: 056608-0001-SA
Matrix: SOLID — Sampled: 18 JAN 91 — Received: 22 JAN 91
Authorized: 28 JAN 91 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Wet wt. Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Antimony	ND	mg/L	1.0	200.7	01 FEB 91	01 FEB 91
Arsenic	ND	mg/L	1.0	200.7	01 FEB 91	01 FEB 91
Barium	ND	mg/L	5.0	200.7	01 FEB 91	01 FEB 91
Beryllium	ND	mg/L	0.050	200.7	01 FEB 91	01 FEB 91
Cadmium	ND	mg/L	0.050	200.7	01 FEB 91	01 FEB 91
Chromium	ND	mg/L	0.50	200.7	01 FEB 91	01 FEB 91
Cobalt	ND	mg/L	5.0	200.7	01 FEB 91	01 FEB 91
Copper	ND	mg/L	2.0	200.7	01 FEB 91	01 FEB 91
Lead	3.3	mg/L	0.50	200.7	01 FEB 91	01 FEB 91
Mercury	ND	mg/L	0.020	245.2	01 FEB 91	05 FEB 91
Molybdenum	ND	mg/L	30.0	200.7	01 FEB 91	01 FEB 91
Nickel	ND	mg/L	2.0	200.7	01 FEB 91	01 FEB 91
Selenium	ND	mg/L	0.20	7740	01 FEB 91	01 FEB 91
Silver	ND	mg/L	0.50	200.7	01 FEB 91	01 FEB 91
Thallium	ND	mg/L	2.0	200.7	01 FEB 91	01 FEB 91
Vanadium	ND	mg/L	2.0	200.7	01 FEB 91	01 FEB 91
Zinc	ND	mg/L	20.0	200.7	01 FEB 91	01 FEB 91

ND = Not detected
NA = Not applicable

Reported By: Evin Mckinney — Approved By: Barry Votaw

The cover letter is an integral part of this report.
Rev 230787

ATTN: JANET HARLAND

CCULAB
2700 Lakeville Highway, Petaluma, CA 94952
Box 806024, Petaluma, CA, 94975-8024
Telephone: (707) 763-8245 FAX: (707) 763-4065

SAMPLE CHAIN OF CUSTODY / WORK ORDER

Client's Name DAMES & MOORE Phone 364-8698
Address 9300 TECH CENTER DR., STE 100
City, State, Zip SACRAMENTO, CA 95826
Client's or Representative's Signature David Moiser
(signature authorizes the work and terms listed below)

All samples remain the property of the client who is responsible for disposal. A disposal fee may be imposed if client fails to pick up samples.

PROJ. NO. 00173-064-04A | PROJECT NAME UPRR-SAC
SAMPLERS (Signature) David Moiser

	STA. NO.	DATE 1991	TIME	COMP	GRAB	STATION LOCATION		NO. OF CONTAINERS	REMARKS / LAB USE ONLY LAB NO.
✓	2206-1	5/24			X	2206-1	6th Ave	1	
✓	2206-2	"			X	2206-2		1	
✓	2206-3	"			X	2206-3		1	
✓	2206-4	"			X	2206-4		1	
✓	2206-5	"			X	2206-5		1	
	2206-6	"			X	2206-6		1	
✓	2206-7	"			X	2206-7		1	
✓	2206-8	"			X	2206-8		1	
✓	1416A-1	"			X	1416A-1	Lot 3	1	
✓	1416A-2	"			X	1416A-2		1	
✓	1416A-3	"			X	1416A-3		1	
✓	1416A-4	"			X	1416A-4		1	
✓	1416A-5	"			X	1416A-5		1	
✓	1416A-6	"			X	1416A-6		1	
	~~1416A-7~~								
	~~1416A-~~								
✓	2212-1	5/24			X	2212-1	7th Ave	1	
✓	2212-2	"			X	2212-2		1	
✓	2212-3	"			X	2212-3		1	
✓	2212-4	"			X	2212-4		1	
✓	2212-5	"			X	2212-5		1	

Relinquished by: (Signature)	DATE	TIME	Received by: (Signature)
David Moiser	5/24/91	1830	
Relinquished by: (Signature)	DATE	TIME	Received by: (Signature)
Relinquished by: (Signature)	DATE	TIME	Received by: (Signature)
	5-24-91	1830	

General Remarks:
Please refrigerate samples until notified of analysis type
5/28/91

CLIENT COPY

ATTN.: JANET HARLAND

3700 Lakeville Highway, Petaluma, CA 94952
Box 808024, Petaluma, CA, 94975-8024
Phone: (707) 763-8248 FAX: (707) 763-4065

SAMPLE CHAIN OF CUSTODY / WORK ORDER

Client's Name DAMES & MOORE Phone 364-8698
Address 9300 TECH CENTER DR., STE 100
City, State, Zip SACRAMENTO, CA 95826
Client's or Representative's Signature David Moier
(signature authorizes the work and terms listed below)

All samples remain the property of the client who is responsible for disposal. A disposal fee may be imposed if client fails to pick up samples.

PROJ. NO. 00173-064-044 | PROJECT NAME UPRR-SAC
SAMPLERS (Signature) David Moier

	STA. NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	REMARKS / LAB USE ONLY LAB NO.
✓	2212-6	5/24			X	2212-6 }	1	
✓	2212-7	"			X	2212-7	1	
✓	2212-8	"			X	2212-8 } 7th Ave	1	
✓	2212-9	"			X	2212-9	1	
✓	2212-10	"			X	2212-10 }	1	
✓	1406D-1	5/24			X	1406D-1 }	1	
✓	1406D-2	"			X	1406D-2	1	
✓	1406D-3	"			X	1406D-3 } Lot 4	1	
✓	1406D-4	"			X	1406D-4	1	
✓	1406D-5	"			X	1406D-5	1	
✓	1406D-6	"			X	1406D-6 }	1	
	~~1406D-~~							

Relinquished by: (Signature)	DATE	TIME	Received by: (Signature)
David Moier	5/24/91		
...quished by: (Signature)	DATE	TIME	Received by: (Signature)
Relinquished by: (Signature)	DATE	TIME	Received by: (Signature)
	5/24/91	1830	

General Remarks:
Please refrigerate samples until notified of analyses type 5/28/91

CLIENT COPY

California Analytical
Laboratory

Enseco
A CORNING Company

soil samples for locations: 2206, 1416F, 1212, and 1406D.

May 30, 1991
Lab ID: 058560

David Morier
Dames & Moore
9300 Tech Center Dr.
Suite 100
Sacramento, CA 95826

Dear Mr. Morier:

Enclosed is the report for the thirty soil samples for your UPRR-SAC Project, #00173-064-044, which were received at Enseco-Cal Lab on 24 May 1991.

The report consists of the following sections:

I Sample Description
II Analysis Request
III Quality Control Report
IV Analysis Results

Results were sent to you via facsimile on 29 May 1991.

If you have any questions, please feel free to call.

Sincerely,

Janet Harlan

Janet Harlan
Program Administrator

du

Enseco Incorporated
2544 Industrial Boulevard
West Sacramento, California 95691
916/372-1393 Fax: 916/372-7768

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I Sample Description

See the attached Sample Description Information.

The samples were received under chain-of-custody.

II Analysis Request

The following analytical tests were requested.

Lab ID	Analysis Description
058560-1 thru 30	Arsenic
	Lead

III Quality Control

A. Project Specific QC. No project specific QC (i.e., spikes and/or duplicates) was requested.

B. Method Blank Results. A method blank is a laboratory-generated sample which assesses the degree to which laboratory operations and procedures cause false-positive analytical results for your samples.

No target parameters were detected in the method blanks associated with your samples at the reporting limit levels noted on the attached Method Blank Report.

C. Laboratory Control Samples - The LCS Program

Duplicate Control Samples. A DCS is a well-characterized matrix (blank water, sand or celite) which is spiked with certain target parameters and analyzed at approximately 10% of the sample load in order to establish method-specific control limits. The DCS results associated with your samples are on the attached Duplicate Control Sample Report.

Accuracy is measured by Percent Recovery as in:

$$\% \text{ recovery} = \frac{(\text{measured concentration})}{(\text{actual concentration})} \times 100$$

Precision is measured using duplicate tests by Relative Percent Difference (RPD) as in:

$$\text{RPD} = \frac{(\% \text{ recovery test 1} - \% \text{ recovery test 2})}{(\% \text{ recovery test 1} + \% \text{ recovery test 2})/2} \times 100$$

Control limits for accuracy (percent recovery) are based on the average, historical percent recovery +/-3 standard deviation units. Control limits for precision (relative percent difference) range from 0 (identical duplicate DCS results) to the average, historical relative percent difference + 3 standard deviation units. In cases where there is not enough historical data, EPA limits or advisory limits are set, with the approval of the Quality Assurance department.

IV Analysis Results

Test methods may include minor modifications of published EPA Methods such as reporting limits or parameter lists. Reporting limits are adjusted to reflect dilution of the sample, when appropriate. Solid and waste samples are reported on an "as received" basis; i.e., no correction is made for moisture content, unless the method requires or the client requests that such correction be made.

Results are on the attached data sheets.

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SAMPLE DESCRIPTION INFORMATION
for
Dames & Moore

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
058560-0001-SA	2206-1	SOIL	24 MAY 91		24 MAY 91
058560-0002-SA	2206-2	SOIL	24 MAY 91		24 MAY 91
058560-0003-SA	2206-3	SOIL	24 MAY 91		24 MAY 91
058560-0004-SA	2206-4	SOIL	24 MAY 91		24 MAY 91
058560-0005-SA	2206-5	SOIL	24 MAY 91		24 MAY 91
058560-0006-SA	2206-6	SOIL	24 MAY 91		24 MAY 91
058560-0007-SA	2206-7	SOIL	24 MAY 91		24 MAY 91
058560-0008-SA	2206-8	SOIL	24 MAY 91		24 MAY 91
058560-0009-SA	1416A-1	SOIL	24 MAY 91		24 MAY 91
058560-0010-SA	1416A-2	SOIL	24 MAY 91		24 MAY 91
058560-0011-SA	1416A-3	SOIL	24 MAY 91		24 MAY 91
058560-0012-SA	1416A-4	SOIL	24 MAY 91		24 MAY 91
058560-0013-SA	1416A-5	SOIL	24 MAY 91		24 MAY 91
058560-0014-SA	1416A-6	SOIL	24 MAY 91		24 MAY 91
058560-0015-SA	2212-1	SOIL	24 MAY 91		24 MAY 91
058560-0016-SA	2212-2	SOIL	24 MAY 91		24 MAY 91
058560-0017-SA	2212-3	SOIL	24 MAY 91		24 MAY 91
058560-0018-SA	2212-4	SOIL	24 MAY 91		24 MAY 91
058560-0019-SA	2212-5	SOIL	24 MAY 91		24 MAY 91
058560-0020-SA	2212-6	SOIL	24 MAY 91		24 MAY 91
058560-0021-SA	2212-7	SOIL	24 MAY 91		24 MAY 91
058560-0022-SA	2212-8	SOIL	24 MAY 91		24 MAY 91
058560-0023-SA	2212-9	SOIL	24 MAY 91		24 MAY 91
058560-0024-SA	2212-10	SOIL	24 MAY 91		24 MAY 91
058560-0025-SA	1406D-1	SOIL	24 MAY 91		24 MAY 91
058560-0026-SA	1406D-2	SOIL	24 MAY 91		24 MAY 91
058560-0027-SA	1406D-3	SOIL	24 MAY 91		24 MAY 91
058560-0028-SA	1406D-4	SOIL	24 MAY 91		24 MAY 91
058560-0029-SA	1406D-5	SOIL	24 MAY 91		24 MAY 91
058560-0030-SA	1406D-6	SOIL	24 MAY 91		24 MAY 91

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QC LOT ASSIGNMENT REPORT
Metals Analysis and Preparation

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
058560-0001-SA	SOIL	AS-FAA-S	28 MAY 91-A	28 MAY 91-A
058560-0001-SA	SOIL	PB-FAA-S	28 MAY 91-A	28 MAY 91-A
058560-0002-SA	SOIL	AS-FAA-S	28 MAY 91-A	28 MAY 91-A
058560-0002-SA	SOIL	PB-FAA-S	28 MAY 91-A	28 MAY 91-A
058560-0003-SA	SOIL	AS-FAA-S	28 MAY 91-A	28 MAY 91-A
058560-0003-SA	SOIL	PB-FAA-S	28 MAY 91-A	28 MAY 91-A
058560-0004-SA	SOIL	AS-FAA-S	28 MAY 91-A	28 MAY 91-A
058560-0004-SA	SOIL	PB-FAA-S	28 MAY 91-A	28 MAY 91-A
058560-0005-SA	SOIL	AS-FAA-S	28 MAY 91-A	28 MAY 91-A
058560-0005-SA	SOIL	PB-FAA-S	28 MAY 91-A	28 MAY 91-A
058560-0006-SA	SOIL	AS-FAA-S	28 MAY 91-A	28 MAY 91-A
058560-0006-SA	SOIL	PB-FAA-S	28 MAY 91-A	28 MAY 91-A
058560-0007-SA	SOIL	AS-FAA-S	28 MAY 91-A	28 MAY 91-A
058560-0007-SA	SOIL	PB-FAA-S	28 MAY 91-A	28 MAY 91-A
058560-0008-SA	SOIL	AS-FAA-S	28 MAY 91-A	28 MAY 91-A
058560-0008-SA	SOIL	PB-FAA-S	28 MAY 91-A	28 MAY 91-A
058560-0009-SA	SOIL	AS-FAA-S	28 MAY 91-A	28 MAY 91-A
058560-0009-SA	SOIL	PB-FAA-S	28 MAY 91-A	28 MAY 91-A
058560-0010-SA	SOIL	AS-FAA-S	28 MAY 91-A	28 MAY 91-A
058560-0010-SA	SOIL	PB-FAA-S	28 MAY 91-A	28 MAY 91-A
058560-0011-SA	SOIL	AS-FAA-S	28 MAY 91-A	28 MAY 91-A
058560-0011-SA	SOIL	PB-FAA-S	28 MAY 91-A	28 MAY 91-A
058560-0012-SA	SOIL	AS-FAA-S	28 MAY 91-A	28 MAY 91-A
058560-0012-SA	SOIL	PB-FAA-S	28 MAY 91-A	28 MAY 91-A
058560-0013-SA	SOIL	AS-FAA-S	28 MAY 91-A	28 MAY 91-A
058560-0013-SA	SOIL	PB-FAA-S	28 MAY 91-A	28 MAY 91-A
058560-0014-SA	SOIL	AS-FAA-S	28 MAY 91-A	28 MAY 91-A
058560-0014-SA	SOIL	PB-FAA-S	28 MAY 91-A	28 MAY 91-A
058560-0015-SA	SOIL	AS-FAA-S	28 MAY 91-A	28 MAY 91-A
058560-0015-SA	SOIL	PB-FAA-S	28 MAY 91-A	28 MAY 91-A
058560-0016-SA	SOIL	AS-FAA-S	28 MAY 91-A	28 MAY 91-A
058560-0016-SA	SOIL	PB-FAA-S	28 MAY 91-A	28 MAY 91-A
058560-0017-SA	SOIL	AS-FAA-S	28 MAY 91-A	28 MAY 91-A
058560-0017-SA	SOIL	PB-FAA-S	28 MAY 91-A	28 MAY 91-A
058560-0018-SA	SOIL	AS-FAA-S	28 MAY 91-A	28 MAY 91-A
058560-0018-SA	SOIL	PB-FAA-S	28 MAY 91-A	28 MAY 91-A
058560-0019-SA	SOIL	AS-FAA-S	28 MAY 91-A	28 MAY 91-A
058560-0019-SA	SOIL	PB-FAA-S	28 MAY 91-A	28 MAY 91-A
058560-0020-SA	SOIL	AS-FAA-S	28 MAY 91-A	28 MAY 91-A
058560-0020-SA	SOIL	PB-FAA-S	28 MAY 91-A	28 MAY 91-A
058560-0021-SA	SOIL	AS-FAA-S	28 MAY 91-B	28 MAY 91-B
058560-0021-SA	SOIL	PB-FAA-S	28 MAY 91-B	28 MAY 91-B
058560-0022-SA	SOIL	AS-FAA-S	28 MAY 91-B	28 MAY 91-B
058560-0022-SA	SOIL	PB-FAA-S	28 MAY 91-B	28 MAY 91-B
058560-0023-SA	SOIL	AS-FAA-S	28 MAY 91-B	28 MAY 91-B
058560-0023-SA	SOIL	PB-FAA-S	28 MAY 91-B	28 MAY 91-B
058560-0024-SA	SOIL	AS-FAA-S	28 MAY 91-B	28 MAY 91-B

Enseco
A Corning Company

QC LOT ASSIGNMENT REPORT
Metals Analysis and Preparation (cont.)

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
058560-0024-SA	SOIL	PB-FAA-S	28 MAY 91-B	28 MAY 91-B
058560-0025-SA	SOIL	AS-FAA-S	28 MAY 91-B	28 MAY 91-B
058560-0025-SA	SOIL	PB-FAA-S	28 MAY 91-B	28 MAY 91-B
058560-0026-SA	SOIL	AS-FAA-S	28 MAY 91-B	28 MAY 91-B
058560-0026-SA	SOIL	PB-FAA-S	28 MAY 91-B	28 MAY 91-B
058560-0027-SA	SOIL	AS-FAA-S	28 MAY 91-B	28 MAY 91-B
058560-0027-SA	SOIL	PB-FAA-S	28 MAY 91-B	28 MAY 91-B
058560-0028-SA	SOIL	AS-FAA-S	28 MAY 91-B	28 MAY 91-B
058560-0028-SA	SOIL	PB-FAA-S	28 MAY 91-B	28 MAY 91-B
058560-0029-SA	SOIL	AS-FAA-S	28 MAY 91-B	28 MAY 91-B
058560-0029-SA	SOIL	PB-FAA-S	28 MAY 91-B	28 MAY 91-B
058560-0030-SA	SOIL	AS-FAA-S	28 MAY 91-B	28 MAY 91-B
058560-0030-SA	SOIL	PB-FAA-S	28 MAY 91-B	28 MAY 91-B

Enseco
A Corning Company

METHOD BLANK REPORT
Metals Analysis and Preparation

Analyte	Result	Units	Reporting Limit
Test: AS-FAA-S Matrix: SOIL QC Lot: 28 MAY 91-A QC Run: 28 MAY 91-A			
Arsenic	ND	mg/kg	0.50
Test: PB-FAA-S Matrix: SOIL QC Lot: 28 MAY 91-A QC Run: 28 MAY 91-A			
Lead	ND	mg/kg	0.50
Test: AS-FAA-S Matrix: SOIL QC Lot: 28 MAY 91-B QC Run: 28 MAY 91-B			
Arsenic	ND	mg/kg	0.50
Test: PB-FAA-S Matrix: SOIL QC Lot: 28 MAY 91-B QC Run: 28 MAY 91-B			
Lead	ND	mg/kg	0.50

Enseco
A Coming Company

DUPLICATE CONTROL SAMPLE REPORT
Metals Analysis and Preparation

Analyte	Concentration Spiked	Measured DCS1	Measured DCS2	Measured AVG	Accuracy Average(%) DCS	Accuracy Average(%) Limits	Precision (RPD) DCS	Precision (RPD) Limit
Category: AS-FAA-S Matrix: SOIL QC Lot: 28 MAY 91-A Concentration Units: mg/kg								
Arsenic	4.0	4.43	4.22	4.32	108	80-120	4.9	15
Category: PB-FAA-S Matrix: SOIL QC Lot: 28 MAY 91-A Concentration Units: mg/kg								
Lead	2.0	1.87	1.88	1.88	94	80-120	0.5	20
Category: AS-FAA-S Matrix: SOIL QC Lot: 28 MAY 91-B Concentration Units: mg/kg								
Arsenic	4.0	3.71	3.60	3.66	91	80-120	3.0	15
Category: PB-FAA-S Matrix: SOIL QC Lot: 28 MAY 91-B Concentration Units: mg/kg								
Lead	2.0	2.19	2.18	2.18	109	80-120	0.5	20

Calculations are performed before rounding to avoid round-off errors in calculated results.

Enseco
A Corning Company

Arsenic, Furnace AA

Method 7060

Client Name: Dames & Moore
Matrix: SOIL
Units: mg/kg

Received: 24 MAY 91
Authorized: 28 MAY 91

Lab ID	Client ID	Result	Reporting Limit	Date Prepared	Date Analyzed	
058560-0001-SA	2206-1	4.6	0.50	28 MAY 91	28 MAY 91	
058560-0002-SA	2206-2	4.2	0.50	28 MAY 91	28 MAY 91	
058560-0003-SA	2206-3	5.7	0.50	28 MAY 91	28 MAY 91	
058560-0004-SA	2206-4	12.5	2.0	28 MAY 91	28 MAY 91	R
058560-0005-SA	2206-5	7.5	0.50	28 MAY 91	28 MAY 91	
058560-0006-SA	2206-6	99.2	10.0	28 MAY 91	28 MAY 91	R
058560-0007-SA	2206-7	28.6	2.0	28 MAY 91	28 MAY 91	R
058560-0008-SA	2206-8	6.1	1.0	28 MAY 91	28 MAY 91	G
058560-0009-SA	1416A-1	3.7	1.0	28 MAY 91	28 MAY 91	G
058560-0010-SA	1416A-2	2.9	0.50	28 MAY 91	28 MAY 91	
058560-0011-SA	1416A-3	2.7	1.0	28 MAY 91	28 MAY 91	G
058560-0012-SA	1416A-4	88.4	10.0	28 MAY 91	28 MAY 91	R
058560-0013-SA	1416A-5	67.5	25.0	28 MAY 91	28 MAY 91	R
058560-0014-SA	1416A-6	135	10.0	28 MAY 91	28 MAY 91	R
058560-0015-SA	2212-1	11.0	1.0	28 MAY 91	28 MAY 91	R
058560-0016-SA	2212-2	11.6	1.0	28 MAY 91	28 MAY 91	R
058560-0017-SA	2212-3	5.0	1.0	28 MAY 91	28 MAY 91	G
058560-0018-SA	2212-4	2.8	1.0	28 MAY 91	28 MAY 91	G
058560-0019-SA	2212-5	2.9	1.0	28 MAY 91	28 MAY 91	G
058560-0020-SA	2212-6	5.3	1.0	28 MAY 91	28 MAY 91	G
058560-0021-SA	2212-7	3.4	2.0	28 MAY 91	28 MAY 91	G
058560-0022-SA	2212-8	5.7	2.0	28 MAY 91	28 MAY 91	G
058560-0023-SA	2212-9	5.3	1.0	28 MAY 91	28 MAY 91	G
058560-0024-SA	2212-10	4.5	1.0	28 MAY 91	28 MAY 91	G
058560-0025-SA	1406D-1	3.7	2.5	28 MAY 91	28 MAY 91	G
058560-0026-SA	1406D-2	4.5	2.0	28 MAY 91	28 MAY 91	G
058560-0027-SA	1406D-3	2.8	1.0	28 MAY 91	28 MAY 91	G
058560-0028-SA	1406D-4	4.6	1.0	28 MAY 91	28 MAY 91	G
058560-0029-SA	1406D-5	2.7	1.0	28 MAY 91	28 MAY 91	G
058560-0030-SA	1406D-6	4.6	2.0	28 MAY 91	28 MAY 91	G

Note R : Raised reporting limit(s) due to high analyte level(s).

Note G : Reporting Limit raised due to matrix interference.

ND = Not detected
NA = Not applicable

Reported By: Fely Francis

Approved By: Mei Lai

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

Lead, Furnace AA

Method 7421

Client Name: Dames & Moore
Matrix: SOIL
Units: mg/kg

Received: 24 MAY 91
Authorized: 28 MAY 91

Lab ID	Client ID	Result	Reporting Limit	Date Prepared	Date Analyzed	
058560-0001-SA	2206-1	70.5	25.0	28 MAY 91	28 MAY 91	R
058560-0002-SA	2206-2	70.0	25.0	28 MAY 91	28 MAY 91	R
058560-0003-SA	2206-3	51.4	10.0	28 MAY 91	28 MAY 91	R
058560-0004-SA	2206-4	52.8	10.0	28 MAY 91	28 MAY 91	R
058560-0005-SA	2206-5	57.0	10.0	28 MAY 91	28 MAY 91	R
058560-0006-SA	2206-6	108	10.0	28 MAY 91	28 MAY 91	R
058560-0007-SA	2206-7	43.5	10.0	28 MAY 91	28 MAY 91	R
058560-0008-SA	2206-8	53.4	10.0	28 MAY 91	28 MAY 91	R
058560-0009-SA	1416A-1	32.4	10.0	28 MAY 91	28 MAY 91	R
058560-0010-SA	1416A-2	101	25.0	28 MAY 91	28 MAY 91	R
058560-0011-SA	1416A-3	4.3	0.50	28 MAY 91	28 MAY 91	
058560-0012-SA	1416A-4	299	25.0	28 MAY 91	28 MAY 91	R
058560-0013-SA	1416A-5	208	25.0	28 MAY 91	28 MAY 91	R
058560-0014-SA	1416A-6	9.6	2.5	28 MAY 91	28 MAY 91	R
058560-0015-SA	2212-1	33.0	10.0	28 MAY 91	28 MAY 91	R
058560-0016-SA	2212-2	58.8	10.0	28 MAY 91	28 MAY 91	R
058560-0017-SA	2212-3	32.6	10.0	28 MAY 91	28 MAY 91	R
058560-0018-SA	2212-4	36.7	5.0	28 MAY 91	28 MAY 91	R
058560-0019-SA	2212-5	11.4	2.0	28 MAY 91	28 MAY 91	R
058560-0020-SA	2212-6	66.4	10.0	28 MAY 91	28 MAY 91	R
058560-0021-SA	2212-7	40.8	10.0	28 MAY 91	28 MAY 91	R
058560-0022-SA	2212-8	77.2	10.0	28 MAY 91	28 MAY 91	R
058560-0023-SA	2212-9	76.0	10.0	28 MAY 91	28 MAY 91	R
058560-0024-SA	2212-10	60.8	10.0	28 MAY 91	28 MAY 91	R
058560-0025-SA	1406D-1	29.0	10.0	28 MAY 91	28 MAY 91	R
058560-0026-SA	1406D-2	23.0	2.5	28 MAY 91	28 MAY 91	R
058560-0027-SA	1406D-3	59.2	10.0	28 MAY 91	28 MAY 91	R
058560-0028-SA	1406D-4	44.0	10.0	28 MAY 91	28 MAY 91	R
058560-0029-SA	1406D-5	76.8	10.0	28 MAY 91	28 MAY 91	R
058560-0030-SA	1406D-6	72.6	10.0	28 MAY 91	28 MAY 91	R

Note R : Raised reporting limit(s) due to high analyte level(s).

ND = Not detected
NA = Not applicable

Reported By: Fely Francis

Approved By: Mei Lai

CALLAB-058560

Enseco, Inc. - Cal Lab Analytical
2544 Industrial Bvd.
Sacramento, California 95691
(916) 372-1393

Date Received : 24 MAY 91 18:30

Mr. David Morier
Dames & Moore -
9300 Tech Center Dr.
Suite 100
Sacramento, California 95826

(916) 364-8698

Project ID,
EPA Case, RMA Lot : LEAD AND ARSENIC
00173-064-044 48Hr. rush
P.O. Number : 00173-064-044
Delivered By :
Storage Location : R4
Logged in by : PISAEFF

Thirty soil samples received under COC in good condition.
Delivered by Client.

Sample ID	Enseco ID	Client's label info	Date/Time Samp.	Containers
058560-0001-SA	194436	2206-1	24 MAY 91	6"CT
058560-0002-SA	194437	2206-2	24 MAY 91	6"CT
058560-0003-SA	194438	2206-3	24 MAY 91	6"CT
058560-0004-SA	194439	2206-4	24 MAY 91	6"CT
058560-0005-SA	194440	2206-5	24 MAY 91	6"CT
058560-0006-SA	194441	2206-6	24 MAY 91	6"CT
058560-0007-SA	194442	2206-7	24 MAY 91	6"CT
058560-0008-SA	194443	2206-8	24 MAY 91	6"CT
058560-0009-SA	194444	1416A-1	24 MAY 91	6"CT
058560-0010-SA	194445	1416A-2	24 MAY 91	6"CT
058560-0011-SA	194446	1416A-3	24 MAY 91	6"CT
058560-0012-SA	194447	1416A-4	24 MAY 91	6"CT
058560-0013-SA	194448	1416A-5	24 MAY 91	6"CT
058560-0014-SA	194449	1416A-6	24 MAY 91	6"CT
058560-0015-SA	194450	2212-1	24 MAY 91	6"CT
058560-0016-SA	194451	2212-2	24 MAY 91	6"CT
058560-0017-SA	194452	2212-3	24 MAY 91	6"CT
058560-0018-SA	194453	2212-4	24 MAY 91	6"CT
058560-0019-SA	194454	2212-5	24 MAY 91	6"CT
058560-0020-SA	194455	2212-6	24 MAY 91	6"CT
058560-0021-SA	194456	2212-7	24 MAY 91	6"CT
058560-0022-SA	194457	2212-8	24 MAY 91	6"CT
058560-0023-SA	194458	2212-9	24 MAY 91	6"CT
058560-0024-SA	194459	2212-10	24 MAY 91	6"CT
058560-0025-SA	194460	1406D-1	24 MAY 91	6"CT

Samples not destroyed in testing are retained a maximum of thirty (30) days unless otherwise requested.

Client Manager: Janet Harlan

RECEIVED
DAMES & MOORE

Sample ID	Enseco ID	Client's label info	Date/Time Samp.	Containers
0_ 50-0026-SA	194461	1406D-2	24 MAY 91	6"CT
058560-0027-SA	194462	1406D-3	24 MAY 91	6"CT
058560-0028-SA	194463	1406D-4	24 MAY 91	6"CT
058560-0029-SA	194464	1406D-5	24 MAY 91	6"CT
058560-0030-SA	194465	1406D-6	24 MAY 91	6"CT

Samples not destroyed in testing are retained a maximum of thirty (30) days unless otherwise requested.

Client Manager: Janet Harlan

California Analytical
Laboratory

Enseco
A CORNING Company

Resample
2206-6
2206-7

June 6, 1991
Lab ID: 058628

David Morier
Dames & Moore
9300 Tech Center Dr.
Suite 100
Sacramento, CA 95826

Dear Mr. Morier:

Enclosed is the report for the two soil samples for your P.O. Number 00173-064-044, which were originally submitted under Enseco-Cal Lab ID 058560 and re-logged on 31 May 1991.

The report consists of the following sections:

I	Sample Description
II	Analysis Request
III	Quality Control Report
IV	Analysis Results

If you have any questions, please feel free to call.

Sincerely,

Janet Harlan

Janet Harlan
Program Administrator

ak

Enseco Incorporated
2544 Industrial Boulevard
West Sacramento, California 95691
916/372-1393 Fax: 916/372-7768

I Sample Description

See the attached Sample Description Information.

The samples were originally received under chain-of-custody.

II Analysis Request

The following analytical test was requested.

Lab ID	Analysis Description
058628-1,2	Arsenic

III Quality Control

A. Project Specific QC. No project specific QC (i.e., spikes and/or duplicates) was requested.

B. Method Blank Results. A method blank is a laboratory-generated sample which assesses the degree to which laboratory operations and procedures cause false-positive analytical results for your samples.

No target parameters were detected in the method blank associated with your samples at the reporting limit levels noted on the data sheet in the Method Blank Report.

C. Laboratory Control Samples - The LCS Program

Duplicate Control Samples. A DCS is a well-characterized matrix (blank water, sand or celite) which is spiked with certain target parameters and analyzed at approximately 10% of the sample load in order to establish method-specific control limits. The DCS results associated with your samples are on the attached Duplicate Control Sample Report.

Accuracy is measured by Percent Recovery as in:

$$\% \text{ recovery} = \frac{\text{(measured concentration)}}{\text{(actual concentration)}} \times 100$$

Precision is measured using duplicate tests by Relative Percent Difference (RPD) as in:

$$\text{RPD} = \frac{\text{(\% recovery test 1 - \% recovery test 2)}}{\text{(\% recovery test 1 + \% recovery test 2)/2}} \times 100$$

Control limits for accuracy (percent recovery) are based on the average, historical percent recovery +/-3 standard deviation units. Control limits for precision (relative percent difference) range from 0 (identical duplicate DCS results) to the average, historical relative percent difference + 3 standard deviation units. In cases where there is not enough historical data, EPA limits or advisory limits are set, with the approval of the Quality Assurance department.

IV Analysis Results

Test methods may include minor modifications of published EPA Methods such as reporting limits or parameter lists. Reporting limits are adjusted to reflect dilution of the sample, when appropriate. Solid and waste samples are reported on an "as received" basis; i.e., no correction is made for moisture content, unless the method requires or the client requests that such correction be made.

Results are on the attached data sheet.

Enseco
A Corning Company

SAMPLE DESCRIPTION INFORMATION
for
Dames & Moore

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
058628-0001-SA	2206-6	SOIL	24 MAY 91		31 MAY 91
058628-0002-SA	2206-7	SOIL	24 MAY 91		31 MAY 91

Enseco
A Corning Company

QC LOT ASSIGNMENT REPORT
Metals Analysis and Preparation

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
058628-0001-SA	SOIL	AS-FAA-S	31 MAY 91-N	31 MAY 91-N
058628-0002-SA	SOIL	AS-FAA-S	31 MAY 91-N	31 MAY 91-N

Enseco
A Corning Company

METHOD BLANK REPORT
Metals Analysis and Preparation

Analyte	Result	Units	Reporting Limit
Test: AS-FAA-S			
Matrix: SOIL			
QC Lot: 31 MAY 91-N QC Run: 31 MAY 91-N			
Arsenic	ND	mg/kg	0.50

Enseco
A Corning Company

DUPLICATE CONTROL SAMPLE REPORT
Metals Analysis and Preparation

Analyte	Concentration Spiked	Measured DCS1	Measured DCS2	Measured AVG	Accuracy Average(%) DCS	Accuracy Limits	Precision (RPD) DCS	Precision Limit
Category: AS-FAA-S Matrix: SOIL QC Lot: 31 MAY 91-N Concentration Units: mg/kg								
Arsenic	4.0	4.11	4.08	4.10	102	80-120	0.7	15

Calculations are performed before rounding to avoid round-off errors in calculated results.

Enseco
A Corning Company

Arsenic, Furnace AA

Method 7060

Client Name: Dames & Moore
Matrix: SOIL
Units: mg/kg

Received: 31 MAY 91
Authorized: 31 MAY 91

Lab ID	Client ID	Result	Reporting Limit	Date Prepared	Date Analyzed	
058628-0001-SA	2206-6	119	20.0	31 MAY 91	03 JUN 91	R
058628-0002-SA	2206-7	29.1	5.0	31 MAY 91	03 JUN 91	R

Note R : Raised reporting limit(s) due to high analyte level(s).

ND = Not detected
NA = Not applicable

Reported By: Ron Hubbartt

Approved By: Fely Francis

The cover letter is an integral part of this report.
Rev 230787

Enseco, Inc. - Cal Lab Analytical
2544 Industrial Bvd.
Sacramento, California 95691
(916) 372-1393

JUN

Date Received : 31 MAY 91 12:00

Mr. David Morier
Dames & Moore -
9300 Tech Center Dr.
Suite 100
Sacramento, California
95826

(916) 364-8698

Project ID,
EPA Case, RMA Lot : DAMCA47 00173-064-044
SOIL Rush Resubmittal
P.O. Number : 00173-064-044

Delivered By :

Storage Location : R4

Logged in by : RBONALY

Two soil samples, 58560-006 and -007, resubmitted for arsenic analysis.

Sample ID	Enseco ID	Client's label info	Date/Time Samp.	Containers
058628-0001-SA	194932	2206-6	24 MAY 91	6"CT
058628-0002-SA	194933	2206-7	24 MAY 91	6"CT

Samples not destroyed in testing are retained a maximum of thirty (30) days unless otherwise requested.

Client Manager: Janet Harlan

ACCULAB ENVIRONMENTAL SERVICES
3700 Lakeville Highway, Petaluma, CA 94952
P. 808024, Petaluma, CA. 94975-8024
Telephone: (707)763-8245 FAX: (707)763-4065

SAMPLE CHAIN OF CUSTODY / WORK ORDER

Client's Name DAMES & MOORE Phone 916/364-8698
Address 9300 TECH CENTER DRIVE, STE 100
City, State, Zip SACRAMENTO, CA 95826
Client's or Representative's Signature David Mosier
(signature authorizes the work and terms listed below)

All samples remain the property of the client who is responsible for disposal. A disposal fee may be imposed if client fails to pick up samples.

PROJ. NO. 00173-064-044 | PROJECT NAME UPRR - SACRAMENTO
SAMPLERS (Signature) David Mosier

STA. NO.	DATE 1991	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	ICP	LEAD - Graphite AA	ARSENIC - Graphite AA				REMARKS / LAB USE ONLY LAB NO.
	6/25				2206-9/1.0	1	X	X					SAMPLES REC'D intact AND in good CONDITION.
	6/25				2206-10/1.0	1	X	X					
	6/25				2206-11/1.0	1	X	X					
	6/25				2206-12/1.0	1	X	X					
	6/25				2206-13/1.0	1	X	X					
	6/25				2206-14/1.0	1	X	X					
	6/25				2206-15/0.5	6th 1Ave	X	X					
	6/25				2206-15/1.0	1	X	X					
	6/25				2206-16/0.5	1	X	X					
	6/25				2206-16/1.0	1	X	X					
	6/25				2206-17/0.5	1	X	X					
	6/25				2206-17/1.0	1	X	X					
	6/25				2206-18/0.5	1	X	X					
	6/25				2206-18/1.0	1	X	X					

Relinquished by: (Signature)	DATE	TIME	Received by: (Signature)
David F. Mosier	6/25/91	1730	
Relinquished by: (Signature)	DATE	TIME	Received by: (Signature)
Relinquished by: (Signature)	DATE	TIME	Received by: (Signature)

General Remarks: Please ~~soon~~ perform all analysis on 5 day turnaround, send results attn: TIM PARKER at above address.

CLIENT COPY * TOTAL

Enseco

July 3, 1991
Lab ID: 059036

Tim Parker
Dames & Moore
9300 Tech Center Dr.
Suite 100
Sacramento, CA 95826

Dear Mr. Parker:

Enclosed is the report for the fourteen soil samples for your UPRR-Sacramento Project (#00173-064-044), which were received at Enseco-Cal Lab on 25 June 1991.

The report consists of the following sections:

I	Sample Description
II	Analysis Request
III	Quality Control Report
IV	Analysis Results

If you have any questions, please feel free to call.

Sincerely,

Janet Harlan

Janet Harlan
Program Administrator

ak

2545 Boatman Avenue
West Sacramento, California 95691
916/371-9017 Fax: 916/372-7768

I Sample Description

See the attached Sample Description Information.

The samples were received under chain-of-custody.

II Analysis Request

The following analytical tests were requested.

Lab ID	Analysis Description
059036-1 thru 14	Lead
	Arsenic

III Quality Control

A. Project Specific QC. No project specific QC (i.e., spikes and/or duplicates) was requested.

B. Method Blank Results. A method blank is a laboratory-generated sample which assesses the degree to which laboratory operations and procedures cause false-positive analytical results for your samples.

No target parameters were detected in the method blanks associated with your samples at the reporting limit levels noted on the data sheet in Method Blank Report.

C. Laboratory Control Samples - The LCS Program

Duplicate Control Samples. A DCS is a well-characterized matrix (blank water, sand or celite) which is spiked with certain target parameters and analyzed at approximately 10% of the sample load in order to establish method-specific control limits. The DCS results associated with your samples are on the attached Duplicate Control Sample Report.

Accuracy is measured by Percent Recovery as in:

$$\% \text{ recovery} = \frac{\text{(measured concentration)}}{\text{(actual concentration)}} \times 100$$

Precision is measured using duplicate tests by Relative Percent Difference (RPD) as in:

$$\text{RPD} = \frac{\text{(\% recovery test 1 - \% recovery test 2)}}{\text{(\% recovery test 1 + \% recovery test 2)/2}} \times 100$$

Control limits for accuracy (percent recovery) are based on the average, historical percent recovery +/-3 standard deviation units. Control limits for precision (relative percent difference) range from 0 (identical duplicate DCS results) to the average, historical relative percent difference + 3 standard deviation units. In cases where there is not enough historical data, EPA limits or advisory limits are set, with the approval of the Quality Assurance department.

IV Analysis Results

Test methods may include minor modifications of published EPA Methods such as reporting limits or parameter lists. Reporting limits are adjusted to reflect dilution of the sample, when àppropriate. Solid and waste samples are reported on an "as received" basis; i.e., no correction is made for moisture content, unless the method requires or the client requests that such correction be made.

Results are on the attached data sheets.

Enseco
A Corning Company

SAMPLE DESCRIPTION INFORMATION
for
Dames & Moore

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
059036-0001-SA	2206-9/1.0	SOIL	25 JUN 91		25 JUN 91
059036-0002-SA	2206-10/1.0	SOIL	25 JUN 91		25 JUN 91
059036-0003-SA	2206-11/1.0	SOIL	25 JUN 91		25 JUN 91
059036-0004-SA	2206-12/1.0	SOIL	25 JUN 91		25 JUN 91
059036-0005-SA	2206-13/1.0	SOIL	25 JUN 91		25 JUN 91
059036-0006-SA	2206-14/1.0	SOIL	25 JUN 91		25 JUN 91
059036-0007-SA	2206-15/0.5	SOIL	25 JUN 91		25 JUN 91
059036-0008-SA	2206-15/1.0	SOIL	25 JUN 91		25 JUN 91
059036-0009-SA	2206-16/0.5	SOIL	25 JUN 91		25 JUN 91
059036-0010-SA	2206-16/1.0	SOIL	25 JUN 91		25 JUN 91
059036-0011-SA	2206-17/0.5	SOIL	25 JUN 91		25 JUN 91
059036-0012-SA	2206-17/1.0	SOIL	25 JUN 91		25 JUN 91
059036-0013-SA	2206-18/0.5	SOIL	25 JUN 91		25 JUN 91
059036-0014-SA	2206-18/1.0	SOIL	25 JUN 91		25 JUN 91

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LOT ASSIGNMENT REPORT
Metals Analysis and Preparation

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
059036-0001-SA	SOIL	ICP-S	26 JUN 91-A	26 JUN 91-A
059036-0001-SA	SOIL	AS-FAA-S	26 JUN 91-A	26 JUN 91-A
059036-0002-SA	SOIL	ICP-S	26 JUN 91-A	26 JUN 91-A
059036-0002-SA	SOIL	AS-FAA-S	26 JUN 91-A	26 JUN 91-A
059036-0003-SA	SOIL	ICP-S	26 JUN 91-A	26 JUN 91-A
059036-0003-SA	SOIL	AS-FAA-S	26 JUN 91-A	26 JUN 91-A
059036-0004-SA	SOIL	ICP-S	26 JUN 91-A	26 JUN 91-A
059036-0004-SA	SOIL	AS-FAA-S	26 JUN 91-A	26 JUN 91-A
059036-0005-SA	SOIL	ICP-S	26 JUN 91-A	26 JUN 91-A
059036-0005-SA	SOIL	AS-FAA-S	26 JUN 91-A	26 JUN 91-A
059036-0006-SA	SOIL	ICP-S	26 JUN 91-A	26 JUN 91-A
059036-0006-SA	SOIL	AS-FAA-S	26 JUN 91-A	26 JUN 91-A
059036-0007-SA	SOIL	ICP-S	26 JUN 91-A	26 JUN 91-A
059036-0007-SA	SOIL	AS-FAA-S	26 JUN 91-A	26 JUN 91-A
059036-0008-SA	SOIL	ICP-S	26 JUN 91-A	26 JUN 91-A
059036-0008-SA	SOIL	AS-FAA-S	26 JUN 91-A	26 JUN 91-A
059036-0009-SA	SOIL	ICP-S	26 JUN 91-A	26 JUN 91-A
059036-0009-SA	SOIL	AS-FAA-S	26 JUN 91-A	26 JUN 91-A
059036-0010-SA	SOIL	ICP-S	26 JUN 91-A	26 JUN 91-A
059036-0010-SA	SOIL	AS-FAA-S	26 JUN 91-A	26 JUN 91-A
059036-0011-SA	SOIL	ICP-S	26 JUN 91-A	26 JUN 91-A
059036-0011-SA	SOIL	AS-FAA-S	26 JUN 91-A	26 JUN 91-A
059036-0012-SA	SOIL	ICP-S	26 JUN 91-A	26 JUN 91-A
059036-0012-SA	SOIL	AS-FAA-S	26 JUN 91-A	26 JUN 91-A
059036-0013-SA	SOIL	ICP-S	26 JUN 91-A	26 JUN 91-A
059036-0013-SA	SOIL	AS-FAA-S	26 JUN 91-A	26 JUN 91-A
059036-0013-SA	SOIL	ICP-S	26 JUN 91-A	26 JUN 91-A
059036-0013-SA	SOIL	AS-FAA-S	26 JUN 91-A	26 JUN 91-A
059036-0014-SA	SOIL	ICP-S	26 JUN 91-A	26 JUN 91-A
059036-0014-SA	SOIL	AS-FAA-S	26 JUN 91-A	26 JUN 91-A

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METHOD BLANK REPORT
Metals Analysis and Preparation

Analyte	Result	Units	Reporting Limit
Test: PB-ICP-S Matrix: SOIL QC Lot: 26 JUN 91-A QC Run: 26 JUN 91-A			
Lead	ND	mg/kg	5.0
Test: AS-FAA-S Matrix: SOIL QC Lot: 26 JUN 91-A QC Run: 26 JUN 91-A			
Arsenic	ND	mg/kg	0.50

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"PLICATE CONTROL SAMPLE REPORT
als Analysis and Preparation

Analyte	Concentration Spiked	Measured DCS1	Measured DCS2	Measured AVG	Accuracy Average(%) DCS	Accuracy Limits	Precision (RPD) DCS	Precision Limit
Category: ICP-S Matrix: SOIL QC Lot: 26 JUN 91-A Concentration Units: mg/kg								
Aluminum	200	190	190	190	95	84-115	0.3	11
Antimony	50	48.4	48.0	48.2	96	81-115	0.9	10
Arsenic	50	48.1	50.0	49.0	98	82-115	3.9	10
Barium	200	199	198	198	99	85-115	0.4	10
Beryllium	5.0	5.00	4.95	4.97	99	70-110	1.1	10
Boron	100	98.9	101	99.8	100	85-115	1.7	10
Cadmium	5.0	4.51	4.51	4.51	90	81-118	0.0	15
Calcium	10000	9910	9900	9900	99	85-115	0.0	10
Chromium	20	19.6	19.5	19.6	98	84-115	0.1	17
Cobalt	50	47.9	48.2	48.1	96	80-115	0.6	10
Copper	25	26.9	26.7	26.8	107	81-115	0.8	10
Iron	100	96.2	96.0	96.1	96	85-115	0.2	14
Lead	50	47.7	48.5	48.1	96	80-115	1.7	11
Lithium	20.0	19.9	19.7	19.8	99	85-115	1.1	10
M[illegible]nesium	5000	5130	5140	5130	103	85-115	0.1	10
[illegible]ganese	50.0	48.4	48.3	48.3	97	80-115	0.2	10
Molybdenum	20.0	19.5	19.4	19.5	97	85-115	0.4	10
Nickel	50.0	47.6	47.3	47.4	95	80-115	0.6	10
Potassium	5000	5140	5240	5190	104	82-115	1.8	10
Selenium	200.0	184	184	184	92	84-115	0.3	10
Silver	5.0	4.44	4.46	4.45	89	62-115	0.5	10
Sodium	10000	10000	10000	10000	100	85-115	0.1	10
Thallium	200	191	193	192	96	68-110	0.7	10
Tin	400	368	367	367	92	80-122	0.3	10
Titanium	200.0	191	190	190	95	85-115	0.4	10
Vanadium	50.0	48.8	48.7	48.7	97	85-115	0.1	10
Zinc	50	46.2	46.2	46.2	92	82-115	0.1	10
Category: AS-FAA-S Matrix: SOIL QC Lot: 26 JUN 91-A Concentration Units: mg/kg								
Arsenic	4.0	4.13	4.24	4.18	105	80-120	2.6	15

Calculations are performed before rounding to avoid round-off errors in calculated results.

Enseco
A Corning Company

Lead ICP

Method 6010

Client Name: Dames & Moore
Matrix: SOIL
Units: mg/kg

Received: 25 JUN 91
Authorized: 25 JUN 91

Lab ID	Client ID	Result	Reporting Limit	Date Prepared	Date Analyzed
059036-0001-SA	2206-9/1.0	11.9	5.0	26 JUN 91	26 JUN 91
059036-0002-SA	2206-10/1.0	58.2	5.0	26 JUN 91	26 JUN 91
059036-0003-SA	2206-11/1.0	32.6	5.0	26 JUN 91	26 JUN 91
059036-0004-SA	2206-12/1.0	614	5.0	26 JUN 91	26 JUN 91
059036-0005-SA	2206-13/1.0	190	5.0	26 JUN 91	26 JUN 91
059036-0006-SA	2206-14/1.0	22.7	5.0	26 JUN 91	26 JUN 91
059036-0007-SA	2206-15/0.5	265	5.0	26 JUN 91	26 JUN 91
059036-0008-SA	2206-15/1.0	5.3	5.0	26 JUN 91	26 JUN 91
059036-0009-SA	2206-16/0.5	392	5.0	26 JUN 91	26 JUN 91
059036-0010-SA	2206-16/1.0	8.0	5.0	26 JUN 91	26 JUN 91
059036-0011-SA	2206-17/0.5	414	5.0	26 JUN 91	26 JUN 91
059036-0012-SA	2206-17/1.0	328	5.0	26 JUN 91	26 JUN 91
059036-0013-SA	2206-18/0.5	211	5.0	26 JUN 91	26 JUN 91
059036-0014-SA	2206-18/1.0	214	5.0	26 JUN 91	26 JUN 91

ND = Not detected
NA = Not applicable

Reported By: Evin Mckinney

Approved By: Barry Votaw

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

Arsenic, Furnace AA

Method 7060

Client Name: Dames & Moore
Matrix: SOIL
Units: mg/kg

Received: 25 JUN 91
Authorized: 25 JUN 91

Lab ID	Client ID	Result	Reporting Limit	Date Prepared	Date Analyzed	
059036-0001-SA	2206-9/1.0	2.8	1.0	26 JUN 91	27 JUN 91	G
059036-0002-SA	2206-10/1.0	5.2	2.0	26 JUN 91	27 JUN 91	G
059036-0003-SA	2206-11/1.0	5.0	1.0	26 JUN 91	27 JUN 91	G
059036-0004-SA	2206-12/1.0	5.2	1.0	26 JUN 91	27 JUN 91	G
059036-0005-SA	2206-13/1.0	140	25.0	26 JUN 91	27 JUN 91	R
059036-0006-SA	2206-14/1.0	5.6	1.0	26 JUN 91	27 JUN 91	G
059036-0007-SA	2206-15/0.5	74.0	10.0	26 JUN 91	27 JUN 91	R
059036-0008-SA	2206-15/1.0	1.9	0.50	26 JUN 91	27 JUN 91	
059036-0009-SA	2206-16/0.5	152	25.0	26 JUN 91	27 JUN 91	R
059036-0010-SA	2206-16/1.0	2.6	1.0	26 JUN 91	27 JUN 91	G
059036-0011-SA	2206-17/0.5	136	10.0	26 JUN 91	27 JUN 91	R
059036-0012-SA	2206-17/1.0	142	25.0	26 JUN 91	27 JUN 91	R
059036-0013-SA	2206-18/0.5	146	25.0	26 JUN 91	27 JUN 91	R
059036-0014-SA	2206-18/1.0	222	25.0	26 JUN 91	27 JUN 91	R

Note G : Reporting Limit raised due to matrix interference.

Note R : Raised reporting limit(s) due to high analyte level(s).

ND = Not detected
NA = Not applicable

.eported By: Gara Sahakian Approved By: Ron Hubbartt

The cover letter is an integral part of this report.
Rev 230787

RECEIVED
JUL 1 1991

CALLAB-059036

Enseco, Inc. - Cal Lab Analytical
2544 Industrial Bvd.
We Sacramento, California 95691
(9 , 372-1393

Date Received : 25 JUN 91 17:30

Mr. Tim Parker
Dames & Moore -
9300 Tech Center Dr.
Suite 100
Sacramento, California
95826

(916) 364-8698

Project ID,
EPA Case, RMA Lot : LEAD AND ARSENIC
00173-064-044 5 Day Rush
P.O. Number : 00173-064-044

Delivered By :

Storage Location : R22

Logged in by : LTELLERS

Fourteen soil samples received in good condition under c.o.c..
Delivered by Client.

Sample ID	Enseco ID	Client's label info	Date/Time Samp.	Containers
059036-0001-SA	198298	2206-9/1.0	25 JUN 91	6" Core Tube
059036-0002-SA	198299	2206-10/1.0	25 JUN 91	6" Core Tube
059 -0003-SA	198300	2206-11/1.0	25 JUN 91	6" Core Tube
059 -0004-SA	198301	2206-12/1.0	25 JUN 91	6" Core Tube
059036-0005-SA	198302	2206-13/1.0	25 JUN 91	500CGJ
059036-0006-SA	198303	2206-14/1.0	25 JUN 91	500CGJ
059036-0007-SA	198304	2206-15/0.5	25 JUN 91	500CGJ
059036-0008-SA	198305	2206-15/1.0	25 JUN 91	6" Core Tube
059036-0009-SA	198306	2206-16/0.5	25 JUN 91	500CGJ
059036-0010-SA	198307	2206-16/1.0	25 JUN 91	6" Core Tube
059036-0011-SA	198308	2206-17/0.5	25 JUN 91	500CGJ
059036-0012-SA	198309	2206-17/1.0	25 JUN 91	500CGJ
059036-0013-SA	198310	2206-18/0.5	25 JUN 91	500CGJ
059036-0014-SA	198311	2206-18/1.0	25 JUN 91	500CGJ

Samples not destroyed in testing are retained a maximum
of thirty (30) days unless otherwise requested.

lient Manager: Janet Harlan

ACCULAB
ENVIRONMENTAL SERVICES
3700 Lakeville Highway, Petaluma, CA 94952
Box 808024, Petaluma, CA. 94975-8024
Phone: (707) 763-8245 FAX: (707) 763-4065

SAMPLE CHAIN OF CUSTODY / WORK ORDER

Client's Name JAMES & MOORE Phone 364-9527
Address 4300 TECH CENTER #100 Fax 362-7987
City, State, Zip SACTO, CA

Client's or Representative's Signature _____
(signature authorizes the work and terms listed below)

All samples remain the property of the client who is responsible for disposal. A disposal fee may be imposed if client fails to pick up samples.

PROJ. NO. 00173-04.4-044 PROJECT NAME UPRR - SACTO
SAMPLERS (Signature)

STA. NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	Ag - Graphite furnace	Pb - Graphite furnace					REMARKS	LAB USE ONLY LAB NO.
	3/20/91				2207-1	1	X	X						
	"				2207-2	1	X	X						
	"				2207-3	1	X	X						
	"				2207-4	1	X	X						
	"				2207-5	1	X	X						
	"				2207-6	1	X	X						
	"				2207-7	1	X	X						
	"				2207-8	1	X	X						

See Janet Hanlon at Eriez CO w/ any questions

Relinquished by: (Signature)	DATE	TIME	Received by: (Signature)
	3/20/91	4:30p	Donald P. Wall
Donald P. Wall	3/20/91	1650	
Relinquished by: (Signature)	DATE	TIME	Received by: (Signature)

General Remarks:
RECEIVED INTACT AND in GOOD CONDITION.

CLIENT COPY

California Analytical
Laboratory

Enseco
A CORNING Company

May 23, 1991
Lab ID: 058424

Tim Parker
Dames & Moore
9300 Tech Center Drive
Suite 100
Sacramento, CA 95826

Dear Mr. Parker:

Enclosed is the report for the eight soil samples for your UPRR Project, Number 00173-064-044, which were received at Enseco-Cal Lab on 20 May 1991.

The report consists of the following sections:

I Sample Description
II Analysis Request
III Quality Control Report
IV Analysis Results

If you have any questions, please feel free to call.

Sincerely,

Janet Harlan

Janet Harlan
Program Administrator

sh

Enseco Incorporated
2544 Industrial Boulevard
West Sacramento, California 95691
916/372-1393 Fax: 916/372-7768

Enseco
A Corning Company

I Sample Description

See the attached Sample Description Information.

The samples were received under chain-of-custody.

II Analysis Request

The following analytical tests were requested.

Lab ID	Analysis Description
058424-1 thru 8	Arsenic
	Lead

III Quality Control

A. **Project Specific QC.** No project specific QC (i.e., spikes and/or duplicates) was requested.

B. **Method Blank Results.** A method blank is a laboratory-generated sample which assesses the degree to which laboratory operations and procedures cause false-positive analytical results for your samples.

No target parameters were detected in the method blanks associated with your samples at the reporting limit levels noted on the attached Method Blank Report.

C. **Laboratory Control Samples - The LCS Program**

Duplicate Control Samples. A DCS is a well-characterized matrix (blank water, sand or celite) which is spiked with certain target parameters and analyzed at approximately 10% of the sample load in order to establish method-specific control limits. The DCS results associated with your samples are on the attached Duplicate Control Sample Report.

Accuracy is measured by Percent Recovery as in:

$$\% \text{ recovery} = \frac{(\text{measured concentration})}{(\text{actual concentration})} \times 100$$

Precision is measured using duplicate tests by Relative Percent Difference (RPD) as in:

$$\text{RPD} = \frac{(\% \text{ recovery test 1} - \% \text{ recovery test 2})}{(\% \text{ recovery test 1} + \% \text{ recovery test 2})/2} \times 100$$

Control limits for accuracy (percent recovery) are based on the average, historical percent recovery +/-3 standard deviation units. Control limits for precision (relative percent difference) range from 0 (identical duplicate DCS results) to the average, historical relative percent difference + 3 standard deviation units. In cases where there is not enough historical data, EPA limits or advisory limits are set, with the approval of the Quality Assurance department.

IV Analysis Results

Test methods may include minor modifications of published EPA Methods such as reporting limits or parameter lists. Reporting limits are adjusted to reflect dilution of the sample, when appropriate. Solid and waste samples are reported on an "as received" basis; i.e., no correction is made for moisture content, unless the method requires or the client requests that such correction be made.

Results are on the attached data sheets.

Enseco
A Corning Company

SAMPLE DESCRIPTION INFORMATION
for
Dames & Moore

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
058424-0001-SA	2207-1	SOIL	20 MAY 91		20 MAY 91
058424-0002-SA	2207-2	SOIL	20 MAY 91		20 MAY 91
058424-0003-SA	2207-3	SOIL	20 MAY 91		20 MAY 91
058424-0004-SA	2207-4	SOIL	20 MAY 91		20 MAY 91
058424-0005-SA	2207-5	SOIL	20 MAY 91		20 MAY 91
058424-0006-SA	2207-6	SOIL	20 MAY 91		20 MAY 91
058424-0007-SA	2207-7	SOIL	20 MAY 91		20 MAY 91
058424-0008-SA	2207-8	SOIL	20 MAY 91		20 MAY 91

Enseco
A Corning Company

QC LOT ASSIGNMENT REPORT
Metals Analysis and Preparation

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
058424-0001-SA	SOIL	AS-FAA-S	20 MAY 91-N	20 MAY 91-N
058424-0001-SA	SOIL	PB-FAA-S	20 MAY 91-N	20 MAY 91-N
058424-0002-SA	SOIL	AS-FAA-S	20 MAY 91-N	20 MAY 91-N
058424-0002-SA	SOIL	PB-FAA-S	20 MAY 91-N	20 MAY 91-N
058424-0003-SA	SOIL	AS-FAA-S	20 MAY 91-N	20 MAY 91-N
058424-0003-SA	SOIL	PB-FAA-S	20 MAY 91-N	20 MAY 91-N
058424-0004-SA	SOIL	AS-FAA-S	20 MAY 91-N	20 MAY 91-N
058424-0004-SA	SOIL	PB-FAA-S	20 MAY 91-N	20 MAY 91-N
058424-0005-SA	SOIL	AS-FAA-S	20 MAY 91-N	20 MAY 91-N
058424-0005-SA	SOIL	PB-FAA-S	20 MAY 91-N	20 MAY 91-N
058424-0006-SA	SOIL	AS-FAA-S	20 MAY 91-N	20 MAY 91-N
058424-0006-SA	SOIL	PB-FAA-S	20 MAY 91-N	20 MAY 91-N
058424-0007-SA	SOIL	AS-FAA-S	20 MAY 91-N	20 MAY 91-N
058424-0007-SA	SOIL	PB-FAA-S	20 MAY 91-N	20 MAY 91-N
058424-0008-SA	SOIL	AS-FAA-S	20 MAY 91-N	20 MAY 91-N
058424-0008-SA	SOIL	PB-FAA-S	20 MAY 91-N	20 MAY 91-N

Enseco
A Corning Company

METHOD BLANK REPORT
Metals Analysis and Preparation

Analyte	Result	Units	Reporting Limit
Test: AS-FAA-S Matrix: SOIL QC Lot: 20 MAY 91-N QC Run: 20 MAY 91-N			
Arsenic	ND	mg/kg	0.50
Test: PB-FAA-S Matrix: SOIL QC Lot: 20 MAY 91-N QC Run: 20 MAY 91-N			
Lead	ND	mg/kg	0.50

Enseco
A Corning Company

DUPLICATE CONTROL SAMPLE REPORT
Metals Analysis and Preparation

Analyte	Concentration Spiked	Measured DCS1	Measured DCS2	Measured AVG	Accuracy Average(%) DCS	Accuracy Average(%) Limits	Precision (RPD) DCS	Precision (RPD) Limit
Category: AS-FAA-S Matrix: SOIL QC Lot: 20 MAY 91-N Concentration Units: mg/kg								
Arsenic	4.0	3.59	3.60	3.60	90	80-120	0.3	15
Category: PB-FAA-S Matrix: SOIL QC Lot: 20 MAY 91-N Concentration Units: mg/kg								
Lead	2.0	2.29	2.38	2.34	117	80-120	3.9	20

Calculations are performed before rounding to avoid round-off errors in calculated results.

Enseco
A Corning Company

METALS

(Soil/Solid - Total)

Client Name: Dames & Moore
Client ID: 2207-1
Lab ID: 058424-0001-SA
Matrix: SOIL
Authorized: 20 MAY 91

Sampled: 20 MAY 91
Prepared: See Below

Received: 20 MAY 91
Analyzed: See Below

Parameter	Result	Wet wt. Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date	
Arsenic	5.7	mg/kg	1.0	7060	20 MAY 91	20 MAY 91	G
Lead	86.4	mg/kg	10.0	7421	20 MAY 91	21 MAY 91	R

Note G : Reporting Limit raised due to matrix interference.

Note R : Raised reporting limit(s) due to high analyte level(s).

ND = Not detected
NA = Not applicable

Reported By: Gara Sahakian

Approved By: Fely Francis

The cover letter is an integral part of this report.
Rev 230787

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A Corning Company

METALS

(Soil/Solid - Total)

Client Name: Dames & Moore
Client ID: 2207-2
Lab ID: 058424-0002-SA
Matrix: SOIL — Sampled: 20 MAY 91 — Received: 20 MAY 91
Authorized: 20 MAY 91 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Wet wt. Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date	
Arsenic	6.2	mg/kg	1.0	7060	20 MAY 91	20 MAY 91	G
Lead	94.2	mg/kg	10.0	7421	20 MAY 91	21 MAY 91	R

Note G : Reporting Limit raised due to matrix interference.

Note R : Raised reporting limit(s) due to high analyte level(s).

ND = Not detected
NA = Not applicable

Reported By: Gara Sahakian — Approved By: Fely Francis

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

METALS

(Soil/Solid - Total)

Client Name: Dames & Moore
Client ID: 2207-3
Lab ID: 058424-0003-SA
Matrix: SOIL
Authorized: 20 MAY 91

Sampled: 20 MAY 91
Prepared: See Below

Received: 20 MAY 91
Analyzed: See Below

Parameter	Result	Wet wt. Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Arsenic	9.8	mg/kg	2.5	7060	20 MAY 91	21 MAY 91 R
Lead	54.6	mg/kg	5.0	7421	20 MAY 91	21 MAY 91 R

Note R : Raised reporting limit(s) due to high analyte level(s).

ND = Not detected
NA = Not applicable

Reported By: Gara Sahakian

Approved By: Fely Francis

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

METALS

(Soil/Solid - Total)

Client Name: Dames & Moore
Client ID: 2207-4
Lab ID: 058424-0004-SA
Matrix: SOIL — Sampled: 20 MAY 91 — Received: 20 MAY 91
Authorized: 20 MAY 91 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Wet wt. Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Arsenic	7.0	mg/kg	1.5	7060	20 MAY 91	21 MAY 91 G
Lead	172	mg/kg	25.0	7421	20 MAY 91	21 MAY 91 R

Note G : Reporting Limit raised due to matrix interference.

Note R : Raised reporting limit(s) due to high analyte level(s).

ND = Not detected
NA = Not applicable

Reported By: Fely Francis — Approved By: Mei Lai

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

METALS

(Soil/Solid - Total)

Client Name: Dames & Moore
Client ID: 2207-5
Lab ID: 058424-0005-SA
Matrix: SOIL — Sampled: 20 MAY 91 — Received: 20 MAY 91
Authorized: 20 MAY 91 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Wet wt. Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Arsenic	14.2	mg/kg	1.5	7060	22 MAY 91	21 MAY 91 R
Lead	320	mg/kg	50.0	7421	22 MAY 91	21 MAY 91 R

Note R : Raised reporting limit(s) due to high analyte level(s).

ND = Not detected
NA = Not applicable

Reported By: Gara Sahakian — Approved By: Fely Francis

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

METALS

(Soil/Solid - Total)

Client Name: Dames & Moore
Client ID: 2207-6
Lab ID: 058424-0006-SA
Matrix: SOIL — Sampled: 20 MAY 91 — Received: 20 MAY 91
Authorized: 20 MAY 91 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Wet wt. Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Arsenic	16.0	mg/kg	2.5	7060	22 MAY 91	21 MAY 91 R
Lead	200	mg/kg	25.0	7421	22 MAY 91	21 MAY 91 R

Note R : Raised reporting limit(s) due to high analyte level(s).

ND = Not detected
NA = Not applicable

Reported By: Fely Francis — Approved By: Mei Lai

The cover letter is an integral part of this report.
Rev 230787

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A Corning Company

METALS

(Soil/Solid - Total)

Client Name: Dames & Moore
Client ID: 2207-7
Lab ID: 058424-0007-SA
Matrix: SOIL
Authorized: 20 MAY 91

Sampled: 20 MAY 91
Prepared: See Below

Received: 20 MAY 91
Analyzed: See Below

Parameter	Result	Wet wt. Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Arsenic	25.0	mg/kg	2.5	7060	22 MAY 91	21 MAY 91 R
Lead	220	mg/kg	25.0	7421	22 MAY 91	21 MAY 91 R

Note R : Raised reporting limit(s) due to high analyte level(s).

ND = Not detected
NA = Not applicable

Reported By: Fely Francis

Approved By: Mei Lai

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

METALS

(Soil/Solid - Total)

Client Name: Dames & Moore
Client ID: 2207-8
Lab ID: 058424-0008-SA
Matrix: SOIL — Sampled: 20 MAY 91 — Received: 20 MAY 91
Authorized: 20 MAY 91 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Wet wt. Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Arsenic	30.0	mg/kg	2.5	7060	22 MAY 91	21 MAY 91 R
Lead	186	mg/kg	15.0	7421	22 MAY 91	21 MAY 91 R

Note R : Raised reporting limit(s) due to high analyte level(s).

ND = Not detected
NA = Not applicable

Reported By: Gara Sahakian — Approved By: Fely Francis

The cover letter is an integral part of this report.
Rev 230787

California Analytical
Laboratory

Enseco
A CORNING Company

May 28, 1991
Lab ID: 058493

Tim Parker
Dames and Moore
9300 Tech Center Dr.
Suite 100
Sacramento, CA 95826

Dear Mr. Parker:

Enclosed is the report for the four soil samples for your Purchase Order Number 00173-064-044, which were re-submitted at Enseco-Cal Lab on 22 May 1991.

The report consists of the following sections:

I	Sample Description
II	Analysis Request
III	Quality Control Report
IV	Analysis Results

If you have any questions, please feel free to call.

Sincerely,

Janet Harlan

Janet Harlan
Program Administrator

sf

Enseco Incorporated
2544 Industrial Boulevard
West Sacramento, California 95691
916/372-1393 Fax: 916/372-7768

Enseco
A Corning Company

I Sample Description

See the attached Sample Description Information.

The samples were originally received under chain-of-custody.

II Analysis Request

The following analytical tests were requested.

Lab ID	Analysis Description
058493-0001	Lead
-0002	Arsenic, Lead
-0003	Arsenic

III Quality Control

A. **Project Specific QC.** No project specific QC (i.e., spikes and/or duplicates) was requested.

B. **Method Blank Results.** A method blank is a laboratory-generated sample which assesses the degree to which laboratory operations and procedures cause false-positive analytical results for your samples.

No target parameters were detected in the method blanks associated with your samples at the reporting limit levels noted on the Method Blank Report.

Repetitions of method blanks (with identical QC Lot No.s and Run No.s) have been reported but do not indicate unique determinations.

C. **Laboratory Control Samples - The LCS Program**

Duplicate Control Samples. A DCS is a well-characterized matrix (blank water, sand or celite) which is spiked with certain target parameters and analyzed at approximately 10% of the sample load in order to establish method-specific control limits. The DCS results associated with your samples are on the attached Duplicate Control Sample Report.

Accuracy is measured by Percent Recovery as in:

$$\% \text{ recovery} = \frac{\text{(measured concentration)}}{\text{(actual concentration)}} \times 100$$

Precision is measured using duplicate tests by Relative Percent Difference (RPD) as in:

$$RPD = \frac{(\%\ \text{recovery test 1} - \%\ \text{recovery test 2})}{(\%\ \text{recovery test 1} + \%\ \text{recovery test 2})/2} \times 100$$

Control limits for accuracy (percent recovery) are based on the average, historical percent recovery +/-3 standard deviation units. Control limits for precision (relative percent difference) range from 0 (identical duplicate DCS results) to the average, historical relative percent difference + 3 standard deviation units. In cases where there is not enough historical data, EPA limits or advisory limits are set, with the approval of the Quality Assurance department.

IV Analysis Results

Test methods may include minor modifications of published EPA Methods such as reporting limits or parameter lists. Reporting limits are adjusted to reflect dilution of the sample, when appropriate. Solid and waste samples are reported on an "as received" basis, i.e., no correction is made for moisture content, unless the method requires or the client requests that such correction be made.

Results are on the attached data sheets.

Enseco
A Corning Company

SAMPLE DESCRIPTION INFORMATION
for
Dames & Moore

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
058493-0001-SA	2207-5	SOIL	20 MAY 91		22 MAY 91
058493-0002-SA	2207-7	SOIL	20 MAY 91		22 MAY 91
058493-0003-SA	2207-8	SOIL	20 MAY 91		22 MAY 91
058493-0004-SA	2207-6	SOIL	20 MAY 91		22 MAY 91

Enseco
A Corning Company

QC LOT ASSIGNMENT REPORT
Metals Analysis and Preparation

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
058493-0001-SA	SOIL	PB-FAA-S	22 MAY 91-N	22 MAY 91-N
058493-0002-SA	SOIL	PB-FAA-S	22 MAY 91-N	22 MAY 91-N
058493-0002-SA	SOIL	AS-FAA-S	22 MAY 91-N	22 MAY 91-N
058493-0003-SA	SOIL	AS-FAA-S	22 MAY 91-N	22 MAY 91-N

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METHOD BLANK REPORT
Metals Analysis and Preparation

Analyte	Result	Units	Reporting Limit
Test: PB-FAA-S Matrix: SOIL QC Lot: 22 MAY 91-N QC Run: 22 MAY 91-N			
Lead	ND	mg/kg	0.50
Test: PB-FAA-S Matrix: SOIL QC Lot: 22 MAY 91-N QC Run: 22 MAY 91-N			
Lead	ND	mg/kg	0.50
Test: AS-FAA-S Matrix: SOIL QC Lot: 22 MAY 91-N QC Run: 22 MAY 91-N			
Arsenic	ND	mg/kg	0.50
Test: AS-FAA-S Matrix: SOIL QC Lot: 22 MAY 91-N QC Run: 22 MAY 91-N			
Arsenic	ND	mg/kg	0.50

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A Corning Company

DUPLICATE CONTROL SAMPLE REPORT
Metals Analysis and Preparation

Analyte	Concentration Spiked	Measured DCS1	Measured DCS2	Measured AVG	Accuracy Average(%) DCS	Accuracy Average(%) Limits	Precision (RPD) DCS	Precision (RPD) Limit
Category: PB-FAA-S Matrix: SOIL QC Lot: 22 MAY 91-N Concentration Units: mg/kg								
Lead	2.0	2.20	2.22	2.21	111	80-120	0.9	20
Category: AS-FAA-S Matrix: SOIL QC Lot: 22 MAY 91-N Concentration Units: mg/kg								
Arsenic	4.0	3.46	3.65	3.56	89	80-120	5.3	15

Calculations are performed before rounding to avoid round-off errors in calculated results.

Enseco
A Corning Company

METALS

(Soil/Solid - Total)

Client Name: Dames & Moore
Client ID: 2207-5
Lab ID: 058493-0001-SA
Matrix: SOIL — Sampled: 20 MAY 91 — Received: 22 MAY 91
Authorized: 23 MAY 91 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Lead	225	mg/kg	50.0	7421	22 MAY 91	23 MAY 91 R

Note R : Raised reporting limit(s) due to high analyte level(s).

ND = Not detected
NA = Not applicable

Reported By: Ron Hubbartt — Approved By: Fely Francis

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

METALS

(Soil/Solid - Total)

Client Name: Dames & Moore
Client ID: 2207-7
Lab ID: 058493-0002-SA
Matrix: SOIL — Sampled: 20 MAY 91 — Received: 22 MAY 91
Authorized: 23 MAY 91 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Wet wt. Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Arsenic	38.6	mg/kg	10.0	7060	22 MAY 91	23 MAY 91 R
Lead	200	mg/kg	50.0	7421	22 MAY 91	23 MAY 91 R

Note R : Raised reporting limit(s) due to high analyte level(s).

ND = Not detected
NA = Not applicable

Reported By: Ron Hubbartt — Approved By: Mei Lai

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

METALS

(Soil/Solid - Total)

Client Name: Dames & Moore
Client ID: 2207-8
Lab ID: 058493-0003-SA
Matrix: SOIL — Sampled: 20 MAY 91 — Received: 22 MAY 91
Authorized: 23 MAY 91 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Wet wt. Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Arsenic	12.3	mg/kg	2.5	7060	23 MAY 91	22 MAY 91 R

Note R : Raised reporting limit(s) due to high analyte level(s).

ND = Not detected
NA = Not applicable

Reported By: Gara Sahakian — Approved By: Fely Francis

The cover letter is an integral part of this report.
Rev 230787

ACCULAB ENVIRONMENTAL SERVICES
3700 Lakeville Highway, Petaluma, CA 94952
ox 808024, Petaluma, CA, 94975-8024
one: (707) 763-8245 FAX: (707) 763-4065

RECEIVED
D&M LABORATORIES
1991 JUL -3 AM 10:14

SAMPLE CHAIN OF CUSTODY / WORK ORDER

Client's Name Daniel B. Moore Phone (916) 364-8698
Address 500 Tech Center Dr. Suite 100
City, State, Zip Sacramento CA 95826
Client's or Representative's Signature
(signature authorizes the work and terms listed below)

All samples remain the property of the client who is responsible for disposal. A disposal fee may be imposed if client fails to pick up samples.

PROJ. NO. 0173-06U C111 | PROJECT NAME Union Pacific Railroad Sacramento
SAMPLERS (Signature)

STA. NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	TCL (602)	Pb (7420)	As (7060)	Ni (7520)	Cr (7191)	Pb (7421)	REMARKS	LAB USE ONLY LAB NO.
	7/2/91			X	2171-3	1		X	X				Soil	
	"			X	2171-7	1		X	X				"	
	"			X	2171-8	1		X	X				"	
	"			X	2171-9	1		X	X				"	
	"			X	2171-10	1		X	X				"	
	"			X	2171-11	1		X	X				"	
	"			X	2171-12	1		X	X				"	
	"			X	MW-34	5	X		X	X	X	X	Water	
	"			X	MW-35	5	X		X	X	X	X	"	

Relinquished by: (Signature)	DATE	TIME	Received by: (Signature)
	7/2/91	15:00	
Relinquished by: (Signature)	DATE	TIME	Received by: (Signature)
Relinquished by: (Signature)	DATE	TIME	Received by: (Signature)

General Remarks:
Send Results Attn: Tim Parker
Fax results within 10 working days
Full Sample I.D. numbers will be faxed later for Soils

LAB COPY

ENVIRONMENTAL AND INDUSTRIAL HYGIENE SERVICES

3700 Lakeville Highway, Petaluma, CA 94954
P.O. Box 808024, Petaluma, CA 94975-8024
Telephone: (707) 763-8245
FAX (707) 763-4065

L A B O R A T O R Y R E S U L T S

Laboratory Job No.: 913595
Date Collected: 07/02/91
Date Received: 07/03/91
Date Analyzed: 07/20/91
Date Reported: 07/23/91

ASSAY:
ARSENIC (EPA 7060)
LEAD (EPA 7420)

MATRIX: SOIL

LABNO	SMPLNO	COMPOUND	FOUND mg/kg	DET.LIM. mg/kg
24692	217-2	AS	11	5
		PB	ND	15
24693	217-7	AS	21	5
		PB	99	15
24694	217-8	AS	27	5
		PB	ND	15
24695	217-9	AS	13	5
		PB	100	15
24696	217-10	AS	37	5
		PB	120	15
24697	217-11	AS	190	50
		PB	490	15
24698	217-12	AS	130	50
		PB	8,200	30
24701	MB	AS	ND	0.5
		PB	ND	15
24702	MBS	AS	1.9	0.5
		PB	95	15

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FAX (707) 763-4065

L A B O R A T O R Y R E S U L T S

Laboratory Job No.: 913595

LABNO	SMPLNO	COMPOUND	FOUND mg/kg	DET.LIM. mg/kg
24703	MX	AS	11	5.0
		PB	15	15
24704	MS	AS	10	5.0
		PB	110	15
24705	MSD	AS	14	5.0
		PB	100	15

NOTE: MBS, MS AND MSD WERE SPIKED AT 2.0 mg/kg FOR ARSENIC AND 100 mg/kg FOR LEAD. DUE TO THE HIGH AMOUNT OF ARSENIC IN THE SPIKED SAMPLE, THE RECOVERIES FOR MS AND MSD WERE DILUTED OUT.

91-0405

DAMA 37

00173-062-044

16 COCs.

RECEIVED
ACCULAB
91 JAN 24 AM 10: 16

ACCULAB ENVIRONMENTAL SERVICES
3700 Lakeville Highway, Petaluma, CA 94952
Box 808024, Petaluma, CA. 94975-8024
Phone: (707) 763-8245 FAX: (707) 763-4065

SAMPLE CHAIN OF CUSTODY / WORK ORDER

Client's Name DAMES + MOORE / CHRIS LONERGAN Phone (916) 364-8698
Address 9300 TECH CENTER DR. STE. 100
City, State, Zip SACTO, CA 95826
Client's or Representative's Signature Chris Lonergan
(signature authorizes the work and terms listed below)

All samples remain the property of the client who is responsible for disposal. A disposal fee may be imposed if client fails to pick up samples.

PROJ. NO. 00173-062-044
PROJECT NAME UPRR-SACTO
SAMPLERS (Signature) Chris Lonergan, Darrell Hawkins

STA. NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CON-TAINERS	601	602	As, Cd, Ni, Pb			REMARKS / LAB USE ONLY LAB NO.
	1/21	1400		✓	MW-1	5	✓	✓	✓			003240
	1/22	1200		✓	MW-2	5	✓	✓	✓			003241
	"	1030		✓	MW-3	5	✓	✓	✓			003242
	"	1330		✓	MW-5	1			✓			003243
	1/23	1100		✓	MW-21	3	✓		✓			003244
	"	1200		✓	MW-22	3	✓		✓			003245
	"	1500		✓	MW-23	1			✓			003246
	"	1600		✓	MW-24	1			✓			003247
	"	0800		✓	TB-1	1	✓					003248
												* NOTE! STANDARD TURNAROUND ON ALL SAMPLES PLEASE
						CM						003249
						CMS						003250
						CMSD						003251
						EMB						003252
												D+L credit $19.80

RECEIVED
ACCULAB
91 JAN 24 AM 10: 16

Relinquished by: (Signature)	DATE	TIME	Received by: (Signature)
Chris Lonergan	1/23/91	1530	Laura Baker
Relinquished by: (Signature)	DATE	TIME	Received by: (Signature)
Relinquished by: (Signature)	DATE	TIME	Received by: (Signature)

General Remarks:
SEND RESULTS TO TIM PARKER AT ABOVE D+M ADDRESS.

CLIENT COPY

00173-064-044
LAB ANAL Records/COCs

ENVIRONMENTAL SERVICES

3700 Lakeville Highway, Petaluma, CA 94954
P.O. Box 808024, Petaluma, CA 94975-8024
Telephone: (707) 763-8245 FAX: (707) 763-4065

FEB 19 1991

Tim Parker
Dames & Moore
9300 Tech Center Dr., Suite 100
Sacramento, CA 95826

ACCULAB Environmental Services has received a shipment of samples as described below. Sample identification and requested analyses are listed based on information received with the samples. Please notify us immediately if there is any discrepancy between this information and your records. Thank you for choosing ACCULAB for your analytical needs.

Debbie Fisher has been assigned as the ACCULAB Project Manager for your samples. Any questions you may have concerning technical aspects of the analysis or invoicing can be directed to her. Our receptionist will be able to help you with questions regarding the status of your samples in the laboratory.

Laboratory Job Number:	910405
Date Received:	1/24/91
PO/Contract Number:	
Project/Release Number:	00173-062-044
Project Name/Survey:	UPPER-SACTO
Date/Time Logged:	1/24/91 13:29
Expected Completion Date/Time:	2/07/91 17:00
Turn Around Time:	Routine
Quote Number:	

Laboratory Sample Number	Client Sample Number	Analysis
3240	MW-1	Arsenic (EPA 7060) Chromium (EPA 7190) Lead (EPA 7420) Nickel (EPA 7520) Purge. Hydrocarb./Aromat. (EPA 601/602)
3241	MW-2	Arsenic (EPA 7060) Chromium (EPA 7190) Lead (EPA 7420) Nickel (EPA 7520) Purge. Hydrocarb./Aromat. (EPA 601/602)

ENVIRONMENTAL SERVICES

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Telephone: (707) 763-8245 FAX: (707) 763-4065

Laboratory job number: 910405

Laboratory Sample Number	Client Sample Number	Analysis
3242	MW-3	Arsenic (EPA 7060) Chromium (EPA 7190) Lead (EPA 7420) Nickel (EPA 7520) Purge. Hydrocarb./Aromat. (EPA 601/602)
3243	MW-5	Arsenic (EPA 7060) Chromium (EPA 7190) Lead (EPA 7420) Nickel (EPA 7520)
3244	MW-21	Arsenic (EPA 7060) Chromium (EPA 7190) Lead (EPA 7420) Nickel (EPA 7520) Purgeable Halocarbons (EPA 601)
3245	MW-22	Arsenic (EPA 7060) Chromium (EPA 7190) Lead (EPA 7420) Nickel (EPA 7520) Purgeable Halocarbons (EPA 601)
3246	MW-23	Arsenic (EPA 7060) Chromium (EPA 7190) Lead (EPA 7420) Nickel (EPA 7520)
3247	MW-24	Arsenic (EPA 7060) Chromium (EPA 7190) Lead (EPA 7420) Nickel (EPA 7520)
3248	TB-1 (Field Hank)	Purgeable Halocarbons (EPA 601)
3249	CM	Arsenic (EPA 7060) Chromium (EPA 7190) Lead (EPA 7420) Nickel (EPA 7520) Purgeable Halocarbons (EPA 601) Purge. Hydrocarb./Aromat. (EPA 601/602)

ENVIRONMENTAL SERVICES

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P.O. Box 808024, Petaluma, CA 94975-8024
Telephone: (707) 763-8245 FAX: (707) 763-4065

Laboratory job number: 910405

Laboratory Sample Number	Client Sample Number	Analysis
3252	MB	Arsenic (EPA 7060) Chromium (EPA 7190) Lead (EPA 7420) Nickel (EPA 7520) Purgeable Halocarbons (EPA 601) Purge. Hydrocarb./Aromat. (EPA 601/602)

FEB 2 9 1991

ENVIRONMENTAL SERVICES

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Telephone: (707) 763-8245 FAX: (707) 763-4065

Tim Parker
Dames & Moore
9300 Tech Center Dr., Suite 100
Sacramento, CA 95826

Client Code: DAMM7
Survey # UPPER-SACTO
Project/Release # 00173-062-044

L A B O R A T O R Y R E S U L T S

Laboratory Job No.: 910405
Date Collected: 01/21/91
Date Analyzed: 01/29/91
Date Received: 01/24/91
Date Reported: 02/15/91

ASSAY:
ARSENIC (EPA 7060),3020 ACID DIGEST
CHROMIUM (EPA 7190),3020 ACID DIGEST
LEAD (EPA 7420),3020 ACID DIGEST
NICKEL (EPA 7520),3020 ACID DIGEST

MATRIX: WATER

LABNO	SMPLNO	COMPOUND	FOUND mg/L	CA STLC LEV	DET.LIM. mg/L
3240	MW-1	AS	ND	5.0	0.005
		CR(TOTAL)	ND	560	0.1
		PB	ND	5.0	0.07
		NI	ND	20	0.1
3241	MW-2	AS	ND	5.0	0.005
		CR(TOTAL)	ND	560	0.1
		PB	ND	5.0	0.07
		NI	ND	20	0.1
3242	MW-3	AS	ND	5.0	0.005
		CR(TOTAL)	ND	560	0.1
		PB	ND	5.0	0.07
		NI	ND	20	0.1
3243	MW-5	AS	ND	5.0	0.005
		CR(TOTAL)	ND	560	0.1
		PB	ND	5.0	0.07
		NI	0.1	20	0.1

THIS REPORT HAS BEEN REVIEWED
AND APPROVED FOR RELEASE.
DLF

ENVIRONMENTAL SERVICES

3700 Lakeville Highway, Petaluma, CA 94954
P.O. Box 808024, Petaluma, CA 94975-8024
Telephone: (707) 763-8245 FAX: (707) 763-4065

L A B O R A T O R Y R E S U L T S

Laboratory Job No.: 910405

LABNO	SMPLNO	COMPOUND	FOUND mg/L	CA STLC LEV	DET.LIM. mg/L
3244	MW-21	AS	0.005	5.0	0.005
		CR(TOTAL)	ND	560	0.1
		PB	ND	5.0	0.07
		NI	0.3	20	0.1
3245	MW-22	AS	ND	5.0	0.005
		CR(TOTAL)	ND	560	0.1
		PB	ND	5.0	0.07
		NI	ND	20	0.1
3246	MW-23	AS	ND	5.0	0.005
		CR(TOTAL)	ND	560	0.1
		PB	ND	5.0	0.07
		NI	0.4	20	0.1
3247	MW-24	AS	ND	5.0	0.005
		CR(TOTAL)	ND	560	0.1
		PB	ND	5.0	0.07
		NI	0.1	20	0.1
3249	CM	AS	ND		0.005
		CR(TOTAL)	ND		0.1
		PB	ND		0.07
		NI	ND		0.1
3250	CMS	AS	0.03		0.005
		CR(TOTAL)	9.8		0.1
		PB	9.9		0.07
		NI	9.8		0.1
3251	CMSD	AS	0.03		0.005
		CR(TOTAL)	10		0.1
		PB	10		0.07
		NI	10		0.1

ENVIRONMENTAL SERVICES

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P.O. Box 808024, Petaluma, CA 94975-8024
Telephone: (707) 763-8245 FAX: (707) 763-4065

L A B O R A T O R Y R E S U L T S

Laboratory Job No.: 910405

LABNO SMPLNO	COMPOUND	FOUND mg/L	CA STLC LEV	DET.LIM. mg/L
3252 MB	AS	ND		0.005
	CR(TOTAL)	ND		0.1
	PB	ND		0.07
	NI	ND		0.1

NOTE: SPIKE LEVELS FOR CMS AND CMSD:

LEAD, CHROMIUM AND NICKEL 10.0 mg/L.
ARSENIC 0.025 mg/L.

ENVIRONMENTAL SERVICES

3700 Lakeville Highway, Petaluma, CA 94954
P.O. Box 808024, Petaluma, CA 94975-8024
Telephone: (707) 763-8245 FAX: (707) 763-4065

L A B O R A T O R Y R E S U L T S

Date Collected: 01/21/91
Date Extracted: 01/31/91
Date Analyzed: 01/31/91

Laboratory Job No.: 910405
Date Received: 01/24/91
Date Reported: 02/15/91

ASSAY:
PURGEABLES IN WATER (EPA 5030/601)

COMPOUNDS:	LAB#	3240	DET.	3241	DET.	3242	DET.
	SMP#	MW-1	LIM.	MW-2	LIM.	MW-3	LIM.
	dil.	1		1		1	
PURGEABLES		ug/L		ug/L		ug/L	
BROMODICHLOROMETHANE		ND	0.5	ND	0.5	ND	0.5
BROMOFORM		ND	0.5	ND	0.5	ND	0.5
BROMOMETHANE		ND	1.0	ND	1.0	ND	1.0
CARBON TETRACHLORIDE		ND	0.5	ND	0.5	ND	0.5
CHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5
CHLOROETHANE		ND	1.0	ND	1.0	ND	1.0
CHLOROFORM		0.8	0.5	ND	0.5	ND	0.5
CHLOROMETHANE		ND	1.0	ND	1.0	ND	1.0
DIBROMOCHLOROMETHANE		ND	0.5	ND	0.5	ND	0.5
1,4-DICHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5
1,3-DICHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5
1,2-DICHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5
1,1-DICHLOROETHANE		ND	0.5	ND	0.5	ND	0.5
1,2-DICHLOROETHANE		ND	0.5	ND	0.5	ND	0.5
1,1-DICHLOROETHENE		ND	0.5	ND	0.5	ND	0.5
CIS-1,2-DICHLOROETHENE		ND	0.5	ND	0.5	ND	0.5
TRANS-1,2-DICHLOROETHENE		ND	0.5	ND	0.5	ND	0.5
1,2-DICHLOROPROPANE		ND	0.5	ND	0.5	ND	0.5
CIS-1,3-DICHLOROPROPENE		ND	0.5	ND	0.5	ND	0.5
TRANS-1,3-DICHLOROPROPENE		ND	0.5	ND	0.5	ND	0.5
METHYLENE CHLORIDE		ND	0.5	ND	0.5	ND	0.5
1,1,2,2-TETRACHLOROETHANE		ND	0.5	ND	0.5	ND	0.5
TETRACHLOROETHENE		ND	0.5	ND	0.5	ND	0.5
1,1,1-TRICHLOROETHANE		ND	0.5	ND	0.5	ND	0.5
1,1,2-TRICHLOROETHANE		ND	0.5	ND	0.5	ND	0.5
TRICHLOROETHENE		ND	0.5	ND	0.5	ND	0.5
TRICHLOROFLUOROMETHANE		ND	1.0	ND	1.0	ND	1.0
VINYL CHLORIDE		ND	1.0	ND	1.0	ND	1.0

ENVIRONMENTAL SERVICES

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L A B O R A T O R Y R E S U L T S

Laboratory Job No.: 910405

COMPOUNDS:	LAB#	3244	DET.	3245	DET.	3248	DET.
	SMP#	MW-21	LIM.	MW-22	LIM.	TB-1	LIM.
	dil.	1		1		1	
PURGEABLES		ug/L		ug/L		ug/L	
BROMODICHLOROMETHANE		ND	0.5	ND	0.5	ND	0.5
BROMOFORM		ND	0.5	ND	0.5	ND	0.5
BROMOMETHANE		ND	1.0	ND	1.0	ND	1.0
CARBON TETRACHLORIDE		ND	0.5	ND	0.5	ND	0.5
CHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5
CHLOROETHANE		ND	1.0	ND	1.0	ND	1.0
CHLOROFORM		2.4	0.5	5.2	0.5	ND	0.5
CHLOROMETHANE		ND	1.0	ND	1.0	ND	1.0
DIBROMOCHLOROMETHANE		ND	0.5	ND	0.5	ND	0.5
1,4-DICHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5
1,3-DICHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5
1,2-DICHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5
1,1-DICHLOROETHANE		ND	0.5	ND	0.5	ND	0.5
1,2-DICHLOROETHANE		ND	0.5	ND	0.5	ND	0.5
1,1-DICHLOROETHENE		0.8	0.5	ND	0.5	ND	0.5
CIS-1,2-DICHLOROETHENE		ND	0.5	ND	0.5	ND	0.5
TRANS-1,2-DICHLOROETHENE		ND	0.5	ND	0.5	ND	0.5
1,2-DICHLOROPROPANE		ND	0.5	ND	0.5	ND	0.5
CIS-1,3-DICHLOROPROPENE		ND	0.5	ND	0.5	ND	0.5
TRANS-1,3-DICHLOROPROPENE		ND	0.5	ND	0.5	ND	0.5
METHYLENE CHLORIDE		ND	0.5	ND	0.5	ND	0.5
1,1,2,2-TETRACHLOROETHANE		ND	0.5	ND	0.5	ND	0.5
TETRACHLOROETHENE		ND	0.5	ND	0.5	ND	0.5
1,1,1-TRICHLOROETHANE		ND	0.5	ND	0.5	ND	0.5
1,1,2-TRICHLOROETHANE		ND	0.5	ND	0.5	ND	0.5
TRICHLOROETHENE		ND	0.5	ND	0.5	ND	0.5
TRICHLOROFLUOROMETHANE		ND	1.0	ND	1.0	ND	1.0
VINYL CHLORIDE		ND	1.0	ND	1.0	ND	1.0

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L A B O R A T O R Y R E S U L T S

Laboratory Job No.: 910405

COMPOUNDS:	LAB#	3249	DET.	3250	DET.	3251	DET.	3252	DET.
	SMP#	CM	LIM.	CMS	LIM.	CMSD	LIM.	MB	LIM.
	dil.	1		1		1		1	
PURGEABLES		ug/L		ug/L		ug/L		ug/L	
BROMODICHLOROMETHANE		4.4	0.5	5.5	0.5	5.3	0.5	ND	0.5
BROMOFORM		1.3	0.5	1.1	0.5	1.0	0.5	ND	0.5
BROMOMETHANE		ND	1.0	ND	1.0	ND	1.0	ND	1.0
CARBON TETRACHLORIDE		ND	0.5	ND	0.5	ND	0.5	ND	0.5
CHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5	ND	0.5
CHLOROETHANE		ND	1.0	ND	1.0	ND	1.0	ND	1.0
CHLOROFORM		1.5	0.5	1.5	0.5	1.5	0.5	ND	0.5
CHLOROMETHANE		ND	1.0	ND	1.0	ND	1.0	ND	1.0
DIBROMOCHLOROMETHANE		6.3	0.5	5.9	0.5	6.1	0.5	ND	0.5
1,4-DICHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5	ND	0.5
1,3-DICHLOROBENZENE		ND	0.5	20	0.5	20	0.5	ND	0.5
1,2-DICHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5	ND	0.5
1,1-DICHLOROETHANE		ND	0.5	17	0.5	17	0.5	ND	0.5
1,2-DICHLOROETHANE		ND	0.5	ND	0.5	ND	0.5	ND	0.5
1,1-DICHLOROETHENE		ND	0.5	ND	0.5	ND	0.5	ND	0.5
CIS-1,2-DICHLOROETHENE		ND	0.5	ND	0.5	ND	0.5	ND	0.5
TRANS-1,2-DICHLOROETHENE		ND	0.5	ND	0.5	ND	0.5	ND	0.5
1,2-DICHLOROPROPANE		ND	0.5	ND	0.5	ND	0.5	ND	0.5
CIS-1,3-DICHLOROPROPENE		ND	0.5	ND	0.5	ND	0.5	ND	0.5
TRANS-1,3-DICHLOROPROPENE		ND	0.5	ND	0.5	ND	0.5	ND	0.5
METHYLENE CHLORIDE		ND	0.5	ND	0.5	ND	0.5	ND	0.5
1,1,2,2-TETRACHLOROETHANE		ND	0.5	ND	0.5	ND	0.5	ND	0.5
TETRACHLOROETHENE		ND	0.5	ND	0.5	ND	0.5	ND	0.5
1,1,1-TRICHLOROETHANE		ND	0.5	ND	0.5	ND	0.5	ND	0.5
1,1,2-TRICHLOROETHANE		ND	0.5	ND	0.5	ND	0.5	ND	0.5
TRICHLOROETHENE		ND	0.5	19	0.5	19	0.5	ND	0.5
TRICHLOROFLUOROMETHANE		ND	1.0	ND	1.0	ND	1.0	ND	1.0
VINYL CHLORIDE		ND	1.0	ND	1.0	ND	1.0	ND	1.0

NOTE: CMS AND CMSD WERE SPIKED AT 20 ug/L.

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L A B O R A T O R Y R E S U L T S

Date Collected: 01/21/91
Date Extracted: 01/31/91
Date Analyzed: 01/31/91

Laboratory Job No.: 910405
Date Received: 01/24/91
Date Reported: 02/15/91

ASSAY:
PURGEABLE AROMATICS IN WATER (EPA 5030/602)

COMPOUNDS:	LAB#	3240	DET.	3241	DET.	3242	DET.	3249	DET.
	SMP#	MW-1	LIM.	MW-2	LIM.	MW-3	LIM.	CM	LIM.
	dil.	1		1		1		1	
PURGEABLES		ug/L		ug/L		ug/L		ug/L	
BENZENE		ND	0.5	ND	0.5	ND	0.5	ND	0.5
CHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5	ND	0.5
1,2-DICHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5	ND	0.5
1,3-DICHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5	ND	0.5
1,4-DICHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5	ND	0.5
ETHYL BENZENE		ND	0.5	ND	0.5	ND	0.5	ND	0.5
TOLUENE		ND	0.5	ND	0.5	ND	0.5	ND	0.5
XYLENE		ND	0.5	ND	0.5	ND	0.5	ND	0.5

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L A B O R A T O R Y R E S U L T S

Laboratory Job No.: 910405

COMPOUNDS:	LAB#	3250	DET.	3251	DET.	3252	DET.
	SMP#	CMS	LIM.	CMSD	LIM.	MB	LIM.
	dil.	1		1		1	
PURGEABLES		ug/L		ug/L		ug/L	
BENZENE		21	0.5	20	0.5	ND	0.5
CHLOROBENZENE		21	0.5	20	0.5	ND	0.5
1,2-DICHLOROBENZENE		22	0.5	22	0.5	ND	0.5
1,3-DICHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5
1,4-DICHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5
ETHYL BENZENE		ND	0.5	ND	0.5	ND	0.5
TOLUENE		ND	0.5	ND	0.5	ND	0.5
XYLENE		ND	0.5	ND	0.5	ND	0.5

NOTE: CMS AND CMSD WERE SPIKED AT 20 ug/L.

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Dames & Moore
ATTN: Accounts Payable
9300 Tech Center Dr., Suite 100
Sacramento, CA 95826

C U S T O M E R I N V O I C E

Mail Payment to:
ACCULAB Environmental Services
ATTN: Accounting
P. O. Box 808024
Petaluma, CA 94975-8024

Invoice Date 02/15/91

Please refer to invoice number 132221
on remittance and correspondence.

Our IRS number is 95-1686276.

Client Code: DAMM7
Survey No.: UPPER-SACTO
Laboratory No.: 910405
Contract/PO No.:
Release No.: 00173-062-044

Terms: Net Cash 30 days
Overdue accounts subject to
maximum allowable interest.

Qty	Service	Unit Cost	Amount
8	ARSENIC (EPA 7060),3020 ACID DIGEST	$23.00	$184.00
8	CHROMIUM (EPA 7190),3020 ACID DIGEST	$12.00	$96.00
8	LEAD (EPA 7420),3020 ACID DIGEST	$12.00	$96.00
8	NICKEL (EPA 7520),3020 ACID DIGEST	$12.00	$96.00
8	SMPL PREP CHG	$18.00	$144.00
1	LESS 10% QUANTITY DISCOUNT	-61.60	-61.60
6	PURGEABLES IN WATER (EPA 5030/601)	$110.00	$660.00
1	LESS 10% QUANTITY DISCOUNT	-66.00	-66.00
3	PURGEABLE AROMATICS IN WATER (EPA 5030/602)	$100.00	$300.00
1	LESS 1/2 DHL SHIPPING CHG	-19.80	-19.80
		Please Pay This Amount >>	$1,428.60

REMITTANCE COPY

ACCULAB ENVIRONMENTAL SERVICES
3700 Lakeville Highway, Petaluma, CA 94952
P.O. Box 808024, Petaluma, CA. 94975-8024
Telephone: (707) 763-8245 FAX: (707) 763-4065

91-0520

FEB 4 1991

RECEIVED ACCULAB
91 JAN 31 AM 10:38

SAMPLE CHAIN OF CUSTODY / WORK ORDER

Client's Name DAMES & MOORE / CHRIS LONERGAN Phone (916) 364-8698
Address 3000 TECH CENTER DR. STE. 100
City, State, Zip SACRAMENTO, CA 95826
Client's or Representative's Signature Chris Lonergan
(signature authorizes the work and terms listed below)

All samples remain the property of the client who is responsible for disposal. A disposal fee may be imposed if client fails to pick up samples.

PROJ. NO. 00173-062-044 | PROJECT NAME UPRR - SACRAMENTO
SAMPLERS (Signature) Chris Lonergan / David Morien

STA. NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	601	602	As Cr Ni Pb				REMARKS	LAB USE ONLY LAB NO.
	1/24	0800		✓	TB-2	1	✓							
	"	1100		✓	MW-6	1		✓						
	"	1300		✓	MW-15	3	✓	✓						
	"	1400		✓	MW-16	3	✓	✓						
	"	1500		✓	MW-19	3	✓	✓						
	"	1600		✓	MW-20	3	✓	✓						
	1/25	0800		✓	MW-17R	2	✓							
	"	1100		✓	MW-17	5	✓	✓						
	"	1200		✓	MW-18	5	✓	✓						
	1/29	0800		✓	MW-27R	3	✓	✓						
	"	1200		✓	MW-27	3	✓	✓						
	"	1500		✓	MW-25	3	✓	✓						
	"	1600		✓	MW-26	3	✓	✓						
	1/30	1100		✓	MW-8	3	✓	✓						
	"	1200		✓	MW-7	3	✓	✓						
	"	1430		✓	MW-11	3	✓	✓						
	"	1630		✓	MW-33	5	✓	✓	✓					

NORMAL TURNAROUND ON ALL SAMPLES PLEASE.

Relinquished by: (Signature)	DATE	TIME	Received by: (Signature)
Chris Lonergan	1/30/91	1630	
Relinquished by: (Signature)	DATE	TIME	Received by: (Signature)
Relinquished by: (Signature)	DATE	TIME	Received by: (Signature)

General Remarks: SEND RESULTS TO TIM PARKER IN SACTO D&M OFFICE. THANKS, Chris

CLIENT COPY

GROUNDWATER SAMPLE ANALYSIS REQUESTED/PERFORMED

Dames & Moore Samples	601	602	Pb	As	Ni	Cr	
TB-2	1/24 X 2/14	/	/	/	/	/	
MW-6	/	/	1/24 X 2/13	1/24 X 2/13	1/24 X 2/13	1/24 X 2/13	
MW-15	1/24 X 2/14	/	1/24 X 2/13	1/24 X 2/13	1/24 X 2/13	1/24 X 2/13	
MW-16	1/24 X 2/14	/	1/24 X 2/13	1/24 X 2/13	1/24 X 2/13	1/24 X 2/13	
MW-19	1/24 X 2/14	/	1/24 X 2/13	1/24 X 2/13	1/24 X 2/13	1/24 X 2/13	
MW-20	1/24 X 2/14	/	1/24 X 2/13	1/24 X 2/13	1/24 X 2/13	1/24 X 2/13	
MW-17R	1/25 X 2/14	/	/	/	/	/	
MW-17	1/25 X 2/14	1/25 X 2/14	1/25 X 2/13	1/25 X 2/13	1/25 X 2/13	1/25 X 2/13	
MW-18	1/25 X 2/14	1/25 X 2/14	1/25 X 2/13	1/25 X 2/13	1/25 X 2/13	1/25 X 2/13	
MW-27R	1/29 X 2/14	/	1/29 X 2/13	1/29 X 2/13	1/29 X 2/13	1/29 X 2/13	
MW-27	1/29 X 2/14	/	1/29 X 2/13	1/29 X 2/13	1/29 X 2/13	1/29 X 2/13	
MW-25	1/29 X 2/14	/	1/29 X 2/13	1/29 X 2/13	1/29 X 2/13	1/29 X 2/13	
MW-26	1/29 X 2/14	/	1/29 X 2/13	1/29 X 2/13	1/29 X 2/13	1/29 X 2/13	
MW-8	1/30 X 2/14	/	1/30 X 2/13	1/30 X 2/13	1/30 X 2/13	1/30 X 2/13	
MW-7	1/30 X 2/14	/	1/30 X 2/13	1/30 X 2/13	1/30 X 2/13	1/30 X 2/13	
MW-11	1/30 X 2/14	/	1/30 X 2/13	1/30 X 2/13	1/30 X 2/13	1/30 X 2/13	
MW-33	1/30 X 2/14	1/30 X 2/14	1/30 X 2/13	1/30 X 2/13	1/30 X 2/13	1/30 X 2/13	
	/	/	/	/	/	/	

Explanation:

Date Sampled — X — Analysis Received by D&M.

Date Analyzed

☑ Report Complete

SAC12.060
February 27, 1991

ENVIRONMENTAL SERVICES

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Telephone: (707) 763-8245 FAX: (707) 763-4065

FEB 6 1991

Tim Parker
Dames & Moore
9300 Tech Center Dr., Suite 100
Sacramento, CA 95826

ACCULAB Environmental Services has received a shipment of samples as described below. Sample identification and requested analyses are listed based on information received with the samples. Please notify us immediately if there is any discrepancy between this information and your records. Thank you for choosing ACCULAB for your analytical needs.

Debbie Fisher has been assigned as the ACCULAB Project Manager for your samples. Any questions you may have concerning technical aspects of the analysis or invoicing can be directed to her. Our receptionist will be able to help you with questions regarding the status of your samples in the laboratory.

Laboratory Job Number:	910520
Date Received:	1/31/91
PO/Contract Number:	
Project/Release Number:	00173-062-044
Project Name/Survey:	UPRR-SACRAMENTO
Date/Time Logged:	1/31/91 14:36
Expected Completion Date/Time:	2/14/91 17:00
Turn Around Time:	Routine
Quote Number:	

Laboratory Sample Number	Client Sample Number	Analysis
3913	TB-2	Purgeable Halocarbons (EPA 601)
3914	MW-6	Arsenic (EPA 7060) Chromium (EPA 7190) Lead (EPA 7420) Nickel (EPA 7520)
3915	MW-15	Arsenic (EPA 7060) Chromium (EPA 7190) Lead (EPA 7420) Nickel (EPA 7520) Purgeable Halocarbons (EPA 601)

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Laboratory job number: 910520

Laboratory Sample Number	Client Sample Number	Analysis
3916	MW-16	Arsenic (EPA 7060) Chromium (EPA 7190) Lead (EPA 7420) Nickel (EPA 7520) Purgeable Halocarbons (EPA 601)
3917	MW-19	Arsenic (EPA 7060) Chromium (EPA 7190) Lead (EPA 7420) Nickel (EPA 7520) Purgeable Halocarbons (EPA 601)
3918	MW-20	Arsenic (EPA 7060) Chromium (EPA 7190) Lead (EPA 7420) Nickel (EPA 7520) Purgeable Halocarbons (EPA 601)
3919	MW-17R (rinsate blank)	Purgeable Halocarbons (EPA 601)
3920	MW-17	Arsenic (EPA 7060) Chromium (EPA 7190) Lead (EPA 7420) Nickel (EPA 7520) Purge. Hydrocarb./Aromat. (EPA 601/602)
3921	MW-18	Arsenic (EPA 7060) Chromium (EPA 7190) Lead (EPA 7420) Nickel (EPA 7520) Purge. Hydrocarb./Aromat. (EPA 601/602)
3922	MW-27R (rinsate blank)	Arsenic (EPA 7060) Chromium (EPA 7190) Lead (EPA 7420) Nickel (EPA 7520) Purgeable Halocarbons (EPA 601)
3923	MW-27	Arsenic (EPA 7060) Chromium (EPA 7190)

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Laboratory job number: 910520

Laboratory Sample Number	Client Sample Number	Analysis
3923	MW-27	(continued) Lead (EPA 7420) Nickel (EPA 7520) Purgeable Halocarbons (EPA 601)
3924	MW-25	Arsenic (EPA 7060) Chromium (EPA 7190) Lead (EPA 7420) Nickel (EPA 7520) Purgeable Halocarbons (EPA 601)
3925	MW-26	Arsenic (EPA 7060) Chromium (EPA 7190) Lead (EPA 7420) Nickel (EPA 7520) Purgeable Halocarbons (EPA 601)
3926	MW-8	Arsenic (EPA 7060) Chromium (EPA 7190) Lead (EPA 7420) Nickel (EPA 7520) Purgeable Halocarbons (EPA 601)
3927	MW-7	Arsenic (EPA 7060) Chromium (EPA 7190) Lead (EPA 7420) Nickel (EPA 7520) Purgeable Halocarbons (EPA 601)
3928	MW-11	Arsenic (EPA 7060) Chromium (EPA 7190) Lead (EPA 7420) Nickel (EPA 7520) Purgeable Halocarbons (EPA 601)
3929	MW-33	Arsenic (EPA 7060) Chromium (EPA 7190) Lead (EPA 7420) Nickel (EPA 7520) Purge. Hydrocarb./Aromat. (EPA 601/602)
3930	CM	Arsenic (EPA 7060)

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Laboratory job number: 910520

Laboratory Sample Number	Client Sample Number	Analysis
3930	CM	(continued)
		Chromium (EPA 7190)
		Lead (EPA 7420)
		Nickel (EPA 7520)
		Purge. Hydrocarb./Aromat. (EPA 601/602)
3933	MB	Arsenic (EPA 7060)
		Chromium (EPA 7190)
		Lead (EPA 7420)
		Nickel (EPA 7520)
		Purge. Hydrocarb./Aromat. (EPA 601/602)

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FEB 2 1 1991

Tim Parker
Dames & Moore
9300 Tech Center Dr., Suite 100
Sacramento, CA 95826

Client Code: DAMM7
Survey #
UPRR-SACRAMENTO
Project/Release # 00173-062-044

L A B O R A T O R Y R E S U L T S

Laboratory Job No.: 910520
Date Collected: 01/24/91
Date Analyzed: 02/13/91
Date Received: 01/31/91
Date Reported: 02/15/91

ASSAY:
LEAD (EPA 7420),3020 ACID DIGEST
CHROMIUM (EPA 7190),3020 ACID DIGEST
NICKEL (EPA 7520),3020 ACID DIGEST
ARSENIC (EPA 7060),3020 ACID DIGEST

MATRIX: WATER

LABNO	SMPLNO	COMPOUND	FOUND mg/L	CA STLC LEV	DET.LIM. mg/L
3914	MW-6	PB	ND	5.0	0.07
		CR(TOTAL)	ND	560	0.1
		NI	ND	20	0.1
		AS	0.007	5.0	0.005
3915	MW-15	PB	ND	5.0	0.07
		CR(TOTAL)	ND	560	0.1
		NI	ND	20	0.1
		AS	ND	5.0	0.005
3916	MW-16	PB	ND	5.0	0.07
		CR(TOTAL)	ND	560	0.1
		NI	ND	20	0.1
		AS	0.007	5.0	0.005
3917	MW-19	PB	ND	5.0	0.07
		CR(TOTAL)	ND	560	0.1
		NI	ND	20	0.1
		AS	0.01	5.0	0.005

THIS REPORT HAS BEEN REVIEWED
AND APPROVED FOR RELEASE.
DF

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L A B O R A T O R Y R E S U L T S

Laboratory Job No.: 910520

LABNO	SMPLNO	COMPOUND	FOUND mg/L	CA STLC LEV	DET.LIM. mg/L
3918	MW-20	PB	ND	5.0	0.07
		CR(TOTAL)	ND	560	0.1
		NI	ND	20	0.1
		AS	0.007	5.0	0.005
3920	MW-17	PB	ND	5.0	0.07
		CR(TOTAL)	ND	560	0.1
		NI	0.2	20	0.1
		AS	0.007	5.0	0.005
3921	MW-18	PB	ND	5.0	0.07
		CR(TOTAL)	ND	560	0.1
		NI	ND	20	0.1
		AS	0.006	5.0	0.005
3922	MW-27R	PB	ND	5.0	0.07
		CR(TOTAL)	ND	560	0.1
		NI	ND	20	0.1
		AS	0.006	5.0	0.005
3923	MW-27	PB	ND	5.0	0.07
		CR(TOTAL)	ND	560	0.1
		NI	ND	20	0.1
		AS	ND	5.0	0.005
3924	MW-25	PB	ND	5.0	0.07
		CR(TOTAL)	ND	560	0.1
		NI	0.3	20	0.1
		AS	0.008	5.0	0.005
3925	MW-26	PB	ND	5.0	0.07
		CR(TOTAL)	ND	560	0.1
		NI	0.3	20	0.1
		AS	ND	5.0	0.005
3926	MW-8	PB	0.07	5.0	0.07
		CR(TOTAL)	ND	560	0.1
		NI	ND	20	0.1
		AS	0.006	5.0	0.005

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L A B O R A T O R Y R E S U L T S

Laboratory Job No.: 910520

LABNO	SMPLNO	COMPOUND	FOUND mg/L	CA STLC LEV	DET.LIM. mg/L
3927	MW-7	PB	ND	5.0	0.07
		CR(TOTAL)	0.2	560	0.1
		NI	0.2	20	0.1
		AS	0.007	5.0	0.005
3928	MW-11	PB	ND	5.0	0.07
		CR(TOTAL)	0.2	560	0.1
		NI	ND	20	0.1
		AS	ND	5.0	0.005
3929	MW-33	PB	ND	5.0	0.07
		CR(TOTAL)	0.2	560	0.1
		NI	ND	20	0.1
		AS	0.008	5.0	0.005
3930	CM	PB	0.07		0.07
		CR(TOTAL)	0.2		0.1
		NI	ND		0.1
		AS	ND		0.005
3931	CMS	PB	10		0.07
		CR(TOTAL)	9.6		0.1
		NI	9.5		0.1
		AS	0.024		0.005
3932	CMSD	PB	10		0.07
		CR(TOTAL)	9.8		0.1
		NI	9.6		0.1
		AS	0.026		0.005
3933	MB	PB	ND		0.07
		CR(TOTAL)	ND		0.1
		NI	ND		0.1
		AS	ND		0.005

SPIKE LEVELS FOR CMS AND CMSD:

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L A B O R A T O R Y R E S U L T S

Laboratory Job No.: 910520

LABNO	SMPLNO	COMPOUND	FOUND mg/L	CA STLC LEV	DET.LIM. mg/L

LEAD, CHROMIUM, NICKEL =10.0 mg/L.
ARSENIC = 0.025 mg/L.

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L A B O R A T O R Y R E S U L T S

Date Collected: 01/24/91
Date Extracted: 02/04/91
Date Analyzed: 02/04/91

Laboratory Job No.: 910520
Date Received: 01/31/91
Date Reported: 02/15/91

ASSAY:
PURGEABLES IN WATER (EPA 5030/601)

COMPOUNDS:	LAB#	3913	DET.	3915	DET.	3916	DET.
	SMP#	TB-2	LIM.	MW-15	LIM.	MW-16	LIM.
	dil. (field blank)	1		1		1	
PURGEABLES		ug/L		ug/L		ug/L	
BROMODICHLOROMETHANE		ND	0.5	ND	0.5	ND	0.5
BROMOFORM		ND	0.5	ND	0.5	ND	0.5
BROMOMETHANE		ND	1.0	ND	1.0	ND	1.0
CARBON TETRACHLORIDE		ND	0.5	ND	0.5	ND	0.5
CHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5
CHLOROETHANE		ND	1.0	ND	1.0	ND	1.0
CHLOROFORM		1.6	0.5	ND	0.5	ND	0.5
CHLOROMETHANE		ND	1.0	ND	1.0	ND	1.0
DIBROMOCHLOROMETHANE		ND	0.5	ND	0.5	ND	0.5
1,4-DICHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5
1,3-DICHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5
1,2-DICHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5
1,1-DICHLOROETHANE		ND	0.5	ND	0.5	ND	0.5
1,2-DICHLOROETHANE		ND	0.5	ND	0.5	ND	0.5
1,1-DICHLOROETHENE		ND	0.5	1.2	0.5	2.6	0.5
CIS-1,2-DICHLOROETHENE		ND	0.5	ND	0.5	ND	0.5
TRANS-1,2-DICHLOROETHENE		ND	0.5	ND	0.5	ND	0.5
1,2-DICHLOROPROPANE		ND	0.5	ND	0.5	ND	0.5
CIS-1,3-DICHLOROPROPENE		ND	0.5	ND	0.5	ND	0.5
TRANS-1,3-DICHLOROPROPENE		ND	0.5	ND	0.5	ND	0.5
METHYLENE CHLORIDE		ND	0.5	ND	0.5	ND	0.5
1,1,2,2-TETRACHLOROETHANE		ND	0.5	ND	0.5	ND	0.5
TETRACHLOROETHENE		ND	0.5	6.8	0.5	ND	0.5
1,1,1-TRICHLOROETHANE		ND	0.5	0.7	0.5	ND	0.5
1,1,2-TRICHLOROETHANE		ND	0.5	ND	0.5	ND	0.5
TRICHLOROETHENE		ND	0.5	ND	0.5	ND	0.5
TRICHLOROFLUOROMETHANE		ND	1.0	ND	1.0	ND	1.0
VINYL CHLORIDE		ND	1.0	ND	1.0	ND	1.0

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L A B O R A T O R Y R E S U L T S

Laboratory Job No.: 910520

COMPOUNDS:	LAB#	3917	DET.	3918	DET.	3919	DET.
	SMP#	MW-19	LIM.	MW-20	LIM.	MW-17R	LIM.
	dil.	1		1		1	
PURGEABLES		ug/L		ug/L		ug/L	
BROMODICHLOROMETHANE		ND	0.5	ND	0.5	ND	0.5
BROMOFORM		ND	0.5	ND	0.5	ND	0.5
BROMOMETHANE		ND	1.0	ND	1.0	ND	1.0
CARBON TETRACHLORIDE		ND	0.5	ND	0.5	ND	0.5
CHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5
CHLOROETHANE		ND	1.0	ND	1.0	ND	1.0
CHLOROFORM		ND	0.5	ND	0.5	1.3	0.5
CHLOROMETHANE		ND	1.0	ND	1.0	ND	1.0
DIBROMOCHLOROMETHANE		ND	0.5	ND	0.5	ND	0.5
1,4-DICHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5
1,3-DICHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5
1,2-DICHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5
1,1-DICHLOROETHANE		ND	0.5	ND	0.5	ND	0.5
1,2-DICHLOROETHANE		ND	0.5	ND	0.5	ND	0.5
1,1-DICHLOROETHENE		5.9	0.5	9.8	0.5	ND	0.5
CIS-1,2-DICHLOROETHENE		ND	0.5	ND	0.5	ND	0.5
TRANS-1,2-DICHLOROETHENE		ND	0.5	ND	0.5	ND	0.5
1,2-DICHLOROPROPANE		ND	0.5	ND	0.5	ND	0.5
CIS-1,3-DICHLOROPROPENE		ND	0.5	ND	0.5	ND	0.5
TRANS-1,3-DICHLOROPROPENE		ND	0.5	ND	0.5	ND	0.5
METHYLENE CHLORIDE		ND	0.5	ND	0.5	ND	0.5
1,1,2,2-TETRACHLOROETHANE		ND	0.5	ND	0.5	ND	0.5
TETRACHLOROETHENE		1.7	0.5	ND	0.5	ND	0.5
1,1,1-TRICHLOROETHANE		ND	0.5	ND	0.5	ND	0.5
1,1,2-TRICHLOROETHANE		ND	0.5	ND	0.5	ND	0.5
TRICHLOROETHENE		ND	0.5	ND	0.5	ND	0.5
TRICHLOROFLUOROMETHANE		ND	1.0	ND	1.0	ND	1.0
VINYL CHLORIDE		ND	1.0	ND	1.0	ND	1.0

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L A B O R A T O R Y R E S U L T S

Laboratory Job No.: 910520

COMPOUNDS:	LAB#	3920	DET.	3921	DET.	3922	DET.
	SMP#	MW-17	LIM.	MW-18	LIM.	MW-27R	LIM.
	dil.	1		1		1	
PURGEABLES		ug/L		ug/L		ug/L	
BROMODICHLOROMETHANE		ND	0.5	ND	0.5	ND	0.5
BROMOFORM		ND	0.5	ND	0.5	ND	0.5
BROMOMETHANE		ND	1.0	ND	1.0	ND	1.0
CARBON TETRACHLORIDE		ND	0.5	ND	0.5	ND	0.5
CHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5
CHLOROETHANE		ND	1.0	ND	1.0	ND	1.0
CHLOROFORM		ND	0.5	ND	0.5	2.2	0.5
CHLOROMETHANE		ND	1.0	ND	1.0	ND	1.0
DIBROMOCHLOROMETHANE		ND	0.5	ND	0.5	ND	0.5
1,4-DICHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5
1,3-DICHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5
1,2-DICHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5
1,1-DICHLOROETHANE		ND	0.5	1.4	0.5	ND	0.5
1,2-DICHLOROETHANE		ND	0.5	ND	0.5	ND	0.5
1,1-DICHLOROETHENE		3.0	0.5	22	0.5	ND	0.5
CIS-1,2-DICHLOROETHENE		ND	0.5	ND	0.5	ND	0.5
TRANS-1,2-DICHLOROETHENE		ND	0.5	ND	0.5	ND	0.5
1,2-DICHLOROPROPANE		ND	0.5	ND	0.5	ND	0.5
CIS-1,3-DICHLOROPROPENE		ND	0.5	ND	0.5	ND	0.5
TRANS-1,3-DICHLOROPROPENE		ND	0.5	ND	0.5	ND	0.5
METHYLENE CHLORIDE		ND	0.5	ND	0.5	ND	0.5
1,1,2,2-TETRACHLOROETHANE		ND	0.5	ND	0.5	ND	0.5
TETRACHLOROETHENE		ND	0.5	ND	0.5	ND	0.5
1,1,1-TRICHLOROETHANE		ND	0.5	0.9	0.5	ND	0.5
1,1,2-TRICHLOROETHANE		ND	0.5	ND	0.5	ND	0.5
TRICHLOROETHENE		ND	0.5	2.9	0.5	ND	0.5
TRICHLOROFLUOROMETHANE		ND	1.0	ND	1.0	ND	1.0
VINYL CHLORIDE		ND	1.0	ND	1.0	ND	1.0

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L A B O R A T O R Y R E S U L T S

Laboratory Job No.: 910520

COMPOUNDS:	LAB#	3923	DET.	3924	DET.	3925	DET.
	SMP#	MW-27	LIM.	MW-25	LIM.	MW-26	LIM.
	dil.	1		1		1	
PURGEABLES		ug/L		ug/L		ug/L	
BROMODICHLOROMETHANE		ND	0.5	ND	0.5	ND	0.5
BROMOFORM		ND	0.5	ND	0.5	ND	0.5
BROMOMETHANE		ND	1.0	ND	1.0	ND	1.0
CARBON TETRACHLORIDE		ND	0.5	ND	0.5	ND	0.5
CHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5
CHLOROETHANE		ND	1.0	ND	1.0	ND	1.0
CHLOROFORM		0.7	0.5	1.1	0.5	1.0	0.5
CHLOROMETHANE		ND	1.0	ND	1.0	ND	1.0
DIBROMOCHLOROMETHANE		ND	0.5	ND	0.5	ND	0.5
1,4-DICHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5
1,3-DICHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5
1,2-DICHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5
1,1-DICHLOROETHANE		ND	0.5	1.3	0.5	1.6	0.5
1,2-DICHLOROETHANE		ND	0.5	ND	0.5	ND	0.5
1,1-DICHLOROETHENE		ND	0.5	2.3	0.5	3.6	0.5
CIS-1,2-DICHLOROETHENE		ND	0.5	ND	0.5	ND	0.5
TRANS-1,2-DICHLOROETHENE		ND	0.5	ND	0.5	ND	0.5
1,2-DICHLOROPROPANE		ND	0.5	ND	0.5	ND	0.5
CIS-1,3-DICHLOROPROPENE		ND	0.5	ND	0.5	ND	0.5
TRANS-1,3-DICHLOROPROPENE		ND	0.5	ND	0.5	ND	0.5
METHYLENE CHLORIDE		ND	0.5	ND	0.5	ND	0.5
1,1,2,2-TETRACHLOROETHANE		ND	0.5	ND	0.5	ND	0.5
TETRACHLOROETHENE		ND	0.5	ND	0.5	ND	0.5
1,1,1-TRICHLOROETHANE		ND	0.5	ND	0.5	ND	0.5
1,1,2-TRICHLOROETHANE		ND	0.5	ND	0.5	ND	0.5
TRICHLOROETHENE		ND	0.5	ND	0.5	ND	0.5
TRICHLOROFLUOROMETHANE		ND	1.0	ND	1.0	ND	1.0
VINYL CHLORIDE		ND	1.0	ND	1.0	ND	1.0

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L A B O R A T O R Y R E S U L T S

Laboratory Job No.: 910520

COMPOUNDS:	LAB#	3926	DET.	3927	DET.	3928	DET.
	SMP#	MW-8	LIM.	MW-7	LIM.	MW-11	LIM.
	dil.	1		1		1	
PURGEABLES		ug/L		ug/L		ug/L	
BROMODICHLOROMETHANE		ND	0.5	ND	0.5	ND	0.5
BROMOFORM		ND	0.5	ND	0.5	ND	0.5
BROMOMETHANE		ND	1.0	ND	1.0	ND	1.0
CARBON TETRACHLORIDE		ND	0.5	ND	0.5	ND	0.5
CHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5
CHLOROETHANE		ND	1.0	ND	1.0	ND	1.0
CHLOROFORM		ND	0.5	2.6	0.5	ND	0.5
CHLOROMETHANE		ND	1.0	ND	1.0	ND	1.0
DIBROMOCHLOROMETHANE		ND	0.5	ND	0.5	ND	0.5
1,4-DICHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5
1,3-DICHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5
1,2-DICHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5
1,1-DICHLOROETHANE		ND	0.5	4.3	0.5	16	0.5
1,2-DICHLOROETHANE		ND	0.5	ND	0.5	ND	0.5
1,1-DICHLOROETHENE		1.8	0.5	15	0.5	46	0.5
CIS-1,2-DICHLOROETHENE		ND	0.5	ND	0.5	ND	0.5
TRANS-1,2-DICHLOROETHENE		ND	0.5	ND	0.5	ND	0.5
1,2-DICHLOROPROPANE		ND	0.5	ND	0.5	ND	0.5
CIS-1,3-DICHLOROPROPENE		ND	0.5	ND	0.5	ND	0.5
TRANS-1,3-DICHLOROPROPENE		ND	0.5	ND	0.5	ND	0.5
METHYLENE CHLORIDE		ND	0.5	ND	0.5	ND	0.5
1,1,2,2-TETRACHLOROETHANE		ND	0.5	ND	0.5	ND	0.5
TETRACHLOROETHENE		3.2	0.5	ND	0.5	ND	0.5
1,1,1-TRICHLOROETHANE		ND	0.5	5.1	0.5	2.8	0.5
1,1,2-TRICHLOROETHANE		ND	0.5	ND	0.5	ND	0.5
TRICHLOROETHENE		ND	0.5	ND	0.5	2.5	0.5
TRICHLOROFLUOROMETHANE		ND	1.0	ND	1.0	ND	1.0
VINYL CHLORIDE		ND	1.0	ND	1.0	ND	1.0

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L A B O R A T O R Y R E S U L T S

Laboratory Job No.: 910520

COMPOUNDS:	LAB#	3929	DET.	3930	DET.	3931	DET.
	SMP#	MW-33	LIM.	CM	LIM.	CMS	LIM.
	dil.	5		1		1	
PURGEABLES		ug/L		ug/L		ug/L	
BROMODICHLOROMETHANE		ND	2.5	ND	0.5	ND	0.5
BROMOFORM		ND	2.5	ND	0.5	ND	0.5
BROMOMETHANE		ND	5.0	ND	1.0	ND	1.0
CARBON TETRACHLORIDE		ND	2.5	ND	0.5	ND	0.5
CHLOROBENZENE		ND	2.5	ND	0.5	ND	0.5
CHLOROETHANE		ND	5.0	ND	1.0	ND	1.0
CHLOROFORM		ND	2.5	ND	0.5	ND	0.5
CHLOROMETHANE		ND	5.0	ND	1.0	ND	1.0
DIBROMOCHLOROMETHANE		ND	2.5	ND	0.5	ND	0.5
1,4-DICHLOROBENZENE		ND	2.5	ND	0.5	ND	0.5
1,3-DICHLOROBENZENE		ND	2.5	ND	0.5	21	0.5
1,2-DICHLOROBENZENE		ND	2.5	ND	0.5	ND	0.5
1,1-DICHLOROETHANE		ND	2.5	ND	0.5	17	0.5
1,2-DICHLOROETHANE		ND	2.5	ND	0.5	ND	0.5
1,1-DICHLOROETHENE		120	2.5	ND	0.5	ND	0.5
CIS-1,2-DICHLOROETHENE		ND	2.5	ND	0.5	ND	0.5
TRANS-1,2-DICHLOROETHENE		ND	2.5	ND	0.5	ND	0.5
1,2-DICHLOROPROPANE		ND	2.5	ND	0.5	ND	0.5
CIS-1,3-DICHLOROPROPENE		ND	2.5	ND	0.5	ND	0.5
TRANS-1,3-DICHLOROPROPENE		ND	2.5	ND	0.5	ND	0.5
METHYLENE CHLORIDE		ND	2.5	ND	0.5	ND	0.5
1,1,2,2-TETRACHLOROETHANE		ND	2.5	ND	0.5	ND	0.5
TETRACHLOROETHENE		ND	2.5	ND	0.5	ND	0.5
1,1,1-TRICHLOROETHANE		3.4	2.5	ND	0.5	ND	0.5
1,1,2-TRICHLOROETHANE		ND	2.5	ND	0.5	ND	0.5
TRICHLOROETHENE		ND	2.5	ND	0.5	19	0.5
TRICHLOROFLUOROMETHANE		ND	5.0	ND	1.0	ND	1.0
VINYL CHLORIDE		ND	5.0	ND	1.0	ND	1.0

ENVIRONMENTAL SERVICES

3700 Lakeville Highway, Petaluma, CA 94954
P.O. Box 808024, Petaluma, CA 94975-8024
Telephone: (707) 763-8245 FAX: (707) 763-4065

L A B O R A T O R Y R E S U L T S

Laboratory Job No.: 910520

COMPOUNDS:	LAB#	3932	DET.	3933	DET.
	SMP#	CMSD	LIM.	MB	LIM.
	dil.	1		1	
PURGEABLES		ug/L		ug/L	
BROMODICHLOROMETHANE		ND	0.5	ND	0.5
BROMOFORM		ND	0.5	ND	0.5
BROMOMETHANE		ND	1.0	ND	1.0
CARBON TETRACHLORIDE		ND	0.5	ND	0.5
CHLOROBENZENE		ND	0.5	ND	0.5
CHLOROETHANE		ND	1.0	ND	1.0
CHLOROFORM		ND	0.5	ND	0.5
CHLOROMETHANE		ND	1.0	ND	1.0
DIBROMOCHLOROMETHANE		ND	0.5	ND	0.5
1,4-DICHLOROBENZENE		ND	0.5	ND	0.5
1,3-DICHLOROBENZENE		20	0.5	ND	0.5
1,2-DICHLOROBENZENE		ND	0.5	ND	0.5
1,1-DICHLOROETHANE		17	0.5	ND	0.5
1,2-DICHLOROETHANE		ND	0.5	ND	0.5
1,1-DICHLOROETHENE		ND	0.5	ND	0.5
CIS-1,2-DICHLOROETHENE		ND	0.5	ND	0.5
TRANS-1,2-DICHLOROETHENE		ND	0.5	ND	0.5
1,2-DICHLOROPROPANE		ND	0.5	ND	0.5
CIS-1,3-DICHLOROPROPENE		ND	0.5	ND	0.5
TRANS-1,3-DICHLOROPROPENE		ND	0.5	ND	0.5
METHYLENE CHLORIDE		ND	0.5	ND	0.5
1,1,2,2-TETRACHLOROETHANE		ND	0.5	ND	0.5
TETRACHLOROETHENE		ND	0.5	ND	0.5
1,1,1-TRICHLOROETHANE		ND	0.5	ND	0.5
1,1,2-TRICHLOROETHANE		ND	0.5	ND	0.5
TRICHLOROETHENE		18	0.5	ND	0.5
TRICHLOROFLUOROMETHANE		ND	1.0	ND	1.0
VINYL CHLORIDE		ND	1.0	ND	1.0

NOTE: CMS AND CMSD WERE SPIKED AT 20 ug/L.

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L A B O R A T O R Y R E S U L T S

Date Collected: 01/24/91
Date Extracted: 02/06/91
Date Analyzed: 02/06/91

Laboratory Job No.: 910520
Date Received: 01/31/91
Date Reported: 02/15/91

ASSAY:
PURGEABLE AROMATICS IN WATER (EPA 5030/602)

COMPOUNDS:	LAB#	3920	DET.	3921	DET.	3929	DET.	3930	DET.
	SMP#	MW-17	LIM.	MW-18	LIM.	MW-33	LIM.	CM	LIM.
	dil.	1		1		5		1	
PURGEABLES		ug/L		ug/L		ug/L		ug/L	
BENZENE		ND	0.5	ND	0.5	ND	2	ND	0.5
CHLOROBENZENE		ND	0.5	ND	0.5	ND	2	ND	0.5
1,2-DICHLOROBENZENE		ND	0.5	ND	0.5	ND	2	ND	0.5
1,3-DICHLOROBENZENE		ND	0.5	ND	0.5	ND	2	ND	0.5
1,4-DICHLOROBENZENE		ND	0.5	ND	0.5	ND	2	ND	0.5
ETHYL BENZENE		ND	0.5	ND	0.5	ND	2	ND	0.5
TOLUENE		ND	0.5	ND	0.5	ND	2	ND	0.5
XYLENE		ND	0.5	ND	0.5	ND	2	ND	0.5

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L A B O R A T O R Y R E S U L T S

Laboratory Job No.: 910520

COMPOUNDS:	LAB#	3931	DET.	3932	DET.	3933	DET.
	SMP#	CMS	LIM.	CMSD	LIM.	MB	LIM.
	dil.	1		1		1	
PURGEABLES		ug/L		ug/L		ug/L	
BENZENE		20	0.5	19	0.5	ND	0.5
CHLOROBENZENE		20	0.5	19	0.5	ND	0.5
1,2-DICHLOROBENZENE		21	0.5	20	0.5	ND	0.5
1,3-DICHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5
1,4-DICHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5
ETHYL BENZENE		ND	0.5	ND	0.5	ND	0.5
TOLUENE		ND	0.5	ND	0.5	ND	0.5
XYLENE		ND	0.5	ND	0.5	ND	0.5

NOTE: CMS AND CMSD WERE SPIKED AT 20 ug/L.

ENVIRONMENTAL SERVICES

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Telephone: (707) 763-8245 FAX: (707) 763-4065

Dames & Moore
ATTN: Accounts Payable
9300 Tech Center Dr., Suite 100
Sacramento, CA 95826

C U S T O M E R I N V O I C E

Mail Payment to:
ACCULAB Environmental Services
ATTN: Accounting
P. O. Box 808024
Petaluma, CA 94975-8024

Invoice Date 02/15/91

Please refer to invoice number 132225
on remittance and correspondence.

Our IRS number is 95-1686276.

Client Code: DAMM7
Survey No.: UPRR-SACRAMENTO
Laboratory No.: 910520
Contract/PO No.:
Release No.: 00173-062-044

Terms: Net Cash 30 days
Overdue accounts subject to maximum allowable interest.

Qty	Service	Unit Cost	Amount
15	LEAD (EPA 7420),3020 ACID DIGEST	$12.00	$180.00
15	CHROMIUM (EPA 7190),3020 ACID DIGEST	$12.00	$180.00
15	NICKEL (EPA 7520),3020 ACID DIGEST	$12.00	$180.00
15	ARSENIC (EPA 7060),3020 ACID DIGEST	$23.00	$345.00
15	SMPL PREP CHG	$18.00	$270.00
1	LESS 15% QUANTITY DISCOUNT	-173.25	-173.25
16	PURGEABLES IN WATER (EPA 5030/601)	$110.00	$1760.00
1	LESS 15% QUANTITY DISCOUNT	-264.00	-264.00
3	PURGEABLE AROMATICS IN WATER (EPA 5030/602)	$100.00	$300.00
1	LESS 1/2 DHL SHIPPING CHG	-23.70	-23.70
		Please Pay This Amount >>	$2,754.05

REMITTANCE COPY

Tim Parker C0173-064-044
Lab Results + COCs
Jan-Feb Groundwater Monitoring

ACCULAB ENVIRONMENTAL SERVICES
3700 Lakeville Highway, Petaluma, CA 94952
P.O. Box 808024, Petaluma, CA, 94975-8024
Telephone: (707)763-8245 FAX: (707)763-4065

FEB 11 1991

RECEIVED ACCULAB
91 FEB -7 AM 11:22

SAMPLE CHAIN OF CUSTODY / WORK ORDER

Client's Name DAMES & MOORE / CHRIS LONERGAN Phone (916) 364-8698
Address 9300 TECH CENTER DR. STE. 100
City, State, Zip SACRAMENTO, CA 95826
Client's or Representative's Signature Chris Lonergan
(signature authorizes the work and terms listed below)

All samples remain the property of the client who is responsible for disposal. A disposal fee may be imposed if client fails to pick up samples. #91-0701

PROJ. NO. C0173-064-044 | PROJECT NAME UPRR-SACTO
SAMPLERS (Signature) Chris Lonergan

STA. NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	601	602	As, Cr, Ni, Pb				REMARKS	LAB USE ONLY LAB NO.
	2/1	0800		✓	TB-3	1	✓							
	"	"		✓	MW-28R	2	✓							
	"	1200		✓	MW-28	5	✓	✓	✓					
	"	1300		✓	MW-29	5	✓	✓	✓				NOTE: METALS	
	"	1400		✓	MW-32	5	✓	✓	✓				SAMPLES TO BE	
	"	1500		✓	MW-31	5	✓	✓	✓				FILTERED - USING	
	"	1600		✓	MW-35	5	✓	✓	✓				0.45 μm FILTER -	
	2/4	0800		✓	MW-12R	4	✓	✓					THEN ACIDIFIED	
	"	1000		✓	MW-34	5	✓	✓	✓				WITH HNO_3 - PER	
	"	1200		✓	MW-30	5	✓	✓	✓				DEBBIE FISHER -	
	"	1400		✓	MW-14	5	✓	✓	✓				ALSO - DEBBIE	
	"	1600		✓	MW-12	5	✓	✓	✓				FISHER IS TO	
	2/5	1100		✓	MW-13	5	✓	✓	✓				CHECK RESULTS	
	"	1200		✓	MW-4	5	✓	✓	✓				BEFORE THEY	
													ARE TRANSMITTED.	
													NORMAL TURNAROUND	
													ON ALL SAMPLES	
													PLEASE.	

Relinquished by: (Signature)	DATE	TIME	Received by: (Signature)	DATE	TIME
Chris Lonergan	2/6/91	1500	V.D. Wilson	2/8/91	11:45
Relinquished by: (Signature)	DATE	TIME	Received by: (Signature)		
Relinquished by: (Signature)	DATE	TIME	Received by: (Signature)		

General Remarks:
SEND RESULTS TO TIM PARKER IN SACTO D+M OFFICE.
THANKS, Chris

CLIENT COPY

ACCULAB DATA PACKAGE TRACKING FORM

Union Pacific Railroad - Sacramento Quarterly Groundwater Monitoring

Job No. 00173-064-044

ACCULAB LABORATORY JOB NO. 916701

DATES SAMPLED 2/1, 2/4 & 2/5/91

DATE RECEIVED BY ACCULAB 2/7/91

DATE RECEIVED BY DAMES & MOORE OF:

CONFIRMATION LETTER _____ LAB RESULTS 3/14/91 INVOICE 3/14/91

ARE LAB REPORTS COMPLETE? (YES) NO

IF NO, WHAT IS MISSING? _____

DATE DATA PACKAGE ENTERED INTO DATA BASE 3/8/91 JQ

DATE QUALITY CHECK ON DATA ENTRY COMPLETED 3/11/9 Mark E.

SAMPLES CONTAINED IN DATA PACKAGE (From Chain-of-Custody)

TB-1	MW-31	MW-14
MW-28R	MW-35	MW-12
MW-28	MW-12R	MW-13
MW-29	MW-34	MW-4
MW-32	MW-30	

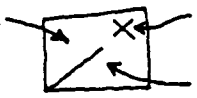
Prepared by: David T. Morris Reviewed by: _____

SAC12.058

GROUNDWATER SAMPLE ANALYSIS REQUESTED/PERFORMED

Dames & Moore Samples	601	602	Pb	As	Ni	Cr	
TB-1	2/1 2/14	/	/	/	/	/	
MW-25R	2/1 2/14	/	/	/	/	/	
MW-28	2/1 2/14	2/1 2/14	2/1 3/1	2/1 3/1	2/1 3/1	2/1 3/1	
MW-29	2/1 2/14	2/1 2/14	2/1 3/1	2/1 3/1	2/1 3/1	2/1 3/1	
MW-32	2/1 2/14	2/1 2/14	2/1 3/1	2/1 3/1	2/1 3/1	2/1 3/1	
MW-31	2/1 2/14	2/1 2/14	2/1 3/1	2/1 3/1	2/1 3/1	2/1	
MW-35	2/1 2/14	2/1 2/14	2/1 3/1	2/1 3/1	2/1 3/1	2/1 3/1	
MW-12R	2/4 2/14	2/4 2/14	/	/	/	/	
MW-34	2/4 2/14	2/4 2/14	2/4 3/1	2/4 3/1	2/4 3/1	2/4 3/1	
MW-30	2/4 2/14	2/4 2/14	2/4 3/1	2/4 3/1	2/4 3/1	2/4 3/1	
MW-14	2/4 2/14	2/4 2/14	2/4 3/1	2/4 3/1	2/4 3/1	2/4 3/1	
MW-12	2/4 2/14	2/4 2/14	2/4 3/1	2/4 3/1	2/4 3/1	2/4 3/1	
MW-13	2/5 2/14	2/5 2/14	2/5 3/1	2/5 3/1	2/5 3/1	2/5 3/1	
MW-4	2/5 2/14	2/5 2/14	2/5 3/1	2/5 3/1	2/5 3/1	2/5 3/1	
	/	/	/	/	/	/	
	/	/	/	/	/	/	
	/	/	/	/	/	/	
	/	/	/	/	/	/	

Explanation:



☑ Report Complete

ACCULAB ENVIRONMENTAL SERVICES
3700 Lakeville Highway, Petaluma, CA 94952
P.O. Box 808024, Petaluma, CA, 94975-8024
Phone: (707) 763-8245 FAX: (707) 763-4065

SAMPLE CHAIN OF CUSTODY / WORK ORDER

Client's Name DAMES + MOORE / CHRIS LOVERGAN Phone (916) 364-3698
Address 9300 TECH CENTER DR. STE. 100
City, State, Zip SACRAMENTO, CA 95826
Client's or Representative's Signature Chris Lovergan
(signature authorizes the work and terms listed below)

All samples remain the property of the client who is responsible for disposal. A disposal fee may be imposed if client fails to pick up samples.

PROJ. NO. 00173-064-044 PROJECT NAME UPRR - SACTO
SAMPLERS (Signature) Chris Lovergan

STA. NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	601	602	Ni, Pb	REMARKS / LAB USE ONLY LAB NO.
	2/1	0830		✓	TB-3	1	✓			
	"	"		✓	MW-28R	2	✓			
	"	1200		✓	MW-28	5	✓	✓	✓	
	"	1300		✓	MW-29	5	✓	✓	✓	NOTE: METALS
	"	1400		✓	MW-32	5	✓	✓	✓	SAMPLES TO BE
	"	1500		✓	MW-31	5	✓	✓	✓	FILTERED - USING
	"	1600		✓	MW-35	5	✓	✓	✓	0.45 um FILTER -
	2/4	0800		✓	MW-12R	4	✓	✓		THEN ACIDIFIED
	"	1000		✓	MW-34	5	✓	✓	✓	WITH HNO3 - PER
	"	1200		✓	MW-30	5	✓	✓	✓	DEBBIE FISHER -
	"	1400		✓	MW-14	5	✓	✓	✓	ALSO - DEBBIE
	"	1600		✓	MW-12	5	✓	✓	✓	FISHER IS TO
	2/5	1100		✓	MW-13	5	✓	✓	✓	CHECK RESULTS
	"	1200		✓	MW-4	5	✓	✓	✓	BEFORE THEY
										ARE TRANSMITTED.
										NORMAL TURNAROUND
										ON ALL SAMPLES
										PLEASE.

Relinquished by: (Signature)	DATE	TIME	Received by: (Signature)
Chris Lovergan	2/6/91	1500	
Relinquished by: (Signature)	DATE	TIME	Received by: (Signature)
Relinquished by: (Signature)	DATE	TIME	Received by: (Signature)

General Remarks:
SEND RESULTS TO TIM PARKER IN SACTO D+M OFFICE.
THANKS, Chris

FIELD COPY

MAR 14 1991

3700 Lakeville Highway, Petaluma, CA 94954
P.O. Box 808024, Petaluma, CA 94975-8024
Telephone: (707) 763-8245 FAX: (707) 763-4065

Tim Parker
Dames & Moore
9300 Tech Center Dr., Suite 100
Sacramento, CA 95826

Client Code: DAMM7
Survey # UPRR-SACTO
Project/Release # 00173-064-044

L A B O R A T O R Y R E S U L T S

Laboratory Job No.: 910701
Date Collected: 02/01/91
Date Received: 02/07/91
Date Analyzed: 03/01/91
Date Reported: 03/05/91

ASSAY:
LEAD (EPA 7420),3020 ACID DIGEST
CHROMIUM (EPA 7190),3020 ACID DIGEST
NICKEL (EPA 7520),3020 ACID DIGEST
ARSENIC (EPA 7060),3020 ACID DIGEST

MATRIX: WATER

LABNO	SMPLNO	COMPOUND	FOUND mg/L	CA STLC LEV	DET.LIM. mg/L
5044	MW-28	PB	ND	5.0	0.15
		CR(TOTAL)	ND	560	0.1
		NI	ND	20	0.1
		AS	ND	5.0	0.005
5045	MW-29	PB	ND	5.0	0.15
		CR(TOTAL)	ND	560	0.1
		NI	ND	20	0.1
		AS	ND	5.0	0.005
5046	MW-32	PB	ND	5.0	0.15
		CR(TOTAL)	ND	560	0.1
		NI	0.2	20	0.1
		AS	ND	5.0	0.005
5047	MW-31	PB	ND	5.0	0.15
		CR(TOTAL)	ND	560	0.1
		NI	0.2	20	0.1
		AS	ND	5.0	0.005

THIS REPORT HAS BEEN REVIEWED
AND APPROVED FOR RELEASE.
DLF

ENVIRONMENTAL SERVICES

3700 Lakeville Highway, Petaluma, CA 94954
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L A B O R A T O R Y R E S U L T S

Laboratory Job No.: 910701

LABNO	SMPLNO	COMPOUND	FOUND mg/L	CA STLC LEV	DET.LIM. mg/L
5048	MW-35	PB	ND	5.0	0.15
		CR(TOTAL)	ND	560	0.1
		NI	0.2	20	0.1
		AS	ND	5.0	0.005
5050	MW-34	PB	ND	5.0	0.15
		CR(TOTAL)	ND	560	0.1
		NI	0.1	20	0.1
		AS	ND	5.0	0.005
5051	MW-30	PB	ND	5.0	0.15
		CR(TOTAL)	ND	560	0.1
		NI	0.2	20	0.1
		AS	ND	5.0	0.005
5052	MW-14	PB	ND	5.0	0.15
		CR(TOTAL)	ND	560	0.1
		NI	0.3	20	0.1
		AS	ND	5.0	0.005
5053	MW-12	PB	ND	5.0	0.15
		CR(TOTAL)	ND	560	0.1
		NI	0.2	20	0.1
		AS	ND	5.0	0.005
5054	MW-13	PB	ND	5.0	0.15
		CR(TOTAL)	ND	560	0.1
		NI	0.1	20	0.1
		AS	0.02	5.0	0.005
5055	MW-4	PB	ND	5.0	0.15
		CR(TOTAL)	0.1	560	0.1
		NI	0.2	20	0.1
		AS	ND	5.0	0.005
5056	CM	PB	ND		0.15
		CR(TOTAL)	0.1		0.1
		NI	ND		0.1
		AS	ND		0.005

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Telephone: (707) 763-8245 FAX: (707) 763-4065

L A B O R A T O R Y R E S U L T S

Laboratory Job No.: 910701

LABNO	SMPLNO	COMPOUND	FOUND mg/L	CA STLC LEV	DET.LIM. mg/L
5057	CMS	PB	10.0		0.07
		CR(TOTAL)	10.0		0.1
		NI	9.5		0.1
		AS	0.008		0.005
5058	CMSD	PB	10.0		0.07
		CR(TOTAL)	10.0		0.1
		NI	9.4		0.1
		AS	0.007		0.005
5059	MB	PB	ND		0.07
		CR(TOTAL)	ND		0.1
		NI	ND		0.1
		AS	ND		0.005

NOTE: SPIKE LEVELS FOR CMS AND CMSD:

LEAD, CHROMIUM, & NICKEL	10.0	mg/L
ARSENIC	0.010	mg/L

NOTE: SAMPLES WERE FILTERED IN THE LABORATORY PER CLIENT'S REQUEST USING .45 MICRON MEMBRANE FILTER.

ENVIRONMENTAL SERVICES

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Telephone: (707) 763-8245 FAX: (707) 763-4065

L A B O R A T O R Y R E S U L T S

Date Collected: 02/01/91
Date Extracted: 02/14/91
Date Analyzed: 02/14/91

Laboratory Job No.: 910701
Date Received: 02/07/91
Date Reported: 03/05/91

ASSAY:
PURGEABLES IN WATER (EPA 5030/601)

COMPOUNDS:	LAB#	5042	DET.	5043	DET.	5044	DET.
	SMP#	TB-3	LIM.	MW-28R	LIM.	MW-28	LIM.
	dil.	1		1		1	
PURGEABLES		ug/L		ug/L		ug/L	
BROMODICHLOROMETHANE		ND	0.5	ND	0.5	ND	0.5
BROMOFORM		ND	0.5	ND	0.5	ND	0.5
BROMOMETHANE		ND	1.0	ND	1.0	ND	1.0
CARBON TETRACHLORIDE		ND	0.5	ND	0.5	ND	0.5
CHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5
CHLOROETHANE		ND	1.0	ND	1.0	ND	1.0
CHLOROFORM		2.5	0.5	3.0	0.5	ND	0.5
CHLOROMETHANE		ND	1.0	ND	1.0	ND	1.0
DIBROMOCHLOROMETHANE		ND	0.5	ND	0.5	ND	0.5
1,4-DICHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5
1,3-DICHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5
1,2-DICHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5
1,1-DICHLOROETHANE		ND	0.5	ND	0.5	13	0.5
1,2-DICHLOROETHANE		ND	0.5	ND	0.5	ND	0.5
1,1-DICHLOROETHENE		ND	0.5	ND	0.5	4.3	0.5
CIS-1,2-DICHLOROETHENE		ND	0.5	ND	0.5	ND	0.5
TRANS-1,2-DICHLOROETHENE		ND	0.5	ND	0.5	ND	0.5
1,2-DICHLOROPROPANE		ND	0.5	ND	0.5	ND	0.5
CIS-1,3-DICHLOROPROPENE		ND	0.5	ND	0.5	ND	0.5
TRANS-1,3-DICHLOROPROPENE		ND	0.5	ND	0.5	ND	0.5
METHYLENE CHLORIDE		ND	0.5	ND	0.5	ND	0.5
1,1,2,2-TETRACHLOROETHANE		ND	0.5	ND	0.5	ND	0.5
TETRACHLOROETHENE		ND	0.5	ND	0.5	ND	0.5
1,1,1-TRICHLOROETHANE		ND	0.5	ND	0.5	ND	0.5
1,1,2-TRICHLOROETHANE		ND	0.5	ND	0.5	ND	0.5
TRICHLOROETHENE		ND	0.5	ND	0.5	ND	0.5
TRICHLOROFLUOROMETHANE		ND	1.0	ND	1.0	ND	1.0
VINYL CHLORIDE		ND	1.0	ND	1.0	ND	1.0

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L A B O R A T O R Y R E S U L T S

Laboratory Job No.: 910701

COMPOUNDS:	LAB#	5045	DET.	5046	DET.
	SMP#	MW-29	LIM.	MW-32	LIM.
	dil.	2		10	
PURGEABLES		ug/L		ug/L	
BROMODICHLOROMETHANE		ND	1.0	ND	5.0
BROMOFORM		ND	1.0	ND	5.0
BROMOMETHANE		ND	2.0	ND	10.0
CARBON TETRACHLORIDE		ND	1.0	ND	5.0
CHLOROBENZENE		ND	1.0	ND	5.0
CHLOROETHANE		ND	2.0	ND	10.0
CHLOROFORM		ND	1.0	ND	5.0
CHLOROMETHANE		ND	2.0	ND	10.0
DIBROMOCHLOROMETHANE		ND	1.0	ND	5.0
1,4-DICHLOROBENZENE		ND	1.0	ND	5.0
1,3-DICHLOROBENZENE		ND	1.0	ND	5.0
1,2-DICHLOROBENZENE		ND	1.0	ND	5.0
1,1-DICHLOROETHANE		1.9	1.0	6.1	5.0
1,2-DICHLOROETHANE		4.7	1.0	ND	5.0
1,1-DICHLOROETHENE		33	1.0	130	5.0
CIS-1,2-DICHLOROETHENE		ND	1.0	ND	5.0
TRANS-1,2-DICHLOROETHENE		ND	1.0	ND	5.0
1,2-DICHLOROPROPANE		ND	1.0	ND	5.0
CIS-1,3-DICHLOROPROPENE		ND	1.0	ND	5.0
TRANS-1,3-DICHLOROPROPENE		ND	1.0	ND	5.0
METHYLENE CHLORIDE		ND	1.0	ND	5.0
1,1,2,2-TETRACHLOROETHANE		ND	1.0	ND	5.0
TETRACHLOROETHENE		ND	1.0	ND	5.0
1,1,1-TRICHLOROETHANE		ND	1.0	ND	5.0
1,1,2-TRICHLOROETHANE		ND	1.0	ND	5.0
TRICHLOROETHENE		ND	1.0	5.0	5.0
TRICHLOROFLUOROMETHANE		ND	2.0	ND	10.0
VINYL CHLORIDE		ND	2.0	ND	10.0

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L A B O R A T O R Y R E S U L T S

Laboratory Job No.: 910701

COMPOUNDS:	LAB#	5047	DET.	5048	DET.
	SMP#	MW-31	LIM.	MW-35	LIM.
	dil.	10		10	
PURGEABLES		ug/L		ug/L	
BROMODICHLOROMETHANE		ND	5.0	ND	5.0
BROMOFORM		ND	5.0	ND	5.0
BROMOMETHANE		ND	10.0	ND	10.0
CARBON TETRACHLORIDE		ND	5.0	ND	5.0
CHLOROBENZENE		ND	5.0	ND	5.0
CHLOROETHANE		ND	10.0	ND	10.0
CHLOROFORM		ND	5.0	ND	5.0
CHLOROMETHANE		ND	10.0	ND	10.0
DIBROMOCHLOROMETHANE		ND	5.0	ND	5.0
1,4-DICHLOROBENZENE		ND	5.0	ND	5.0
1,3-DICHLOROBENZENE		ND	5.0	ND	5.0
1,2-DICHLOROBENZENE		ND	5.0	ND	5.0
1,1-DICHLOROETHANE		7.6	5.0	7.7	5.0
1,2-DICHLOROETHANE		ND	5.0	ND	5.0
1,1-DICHLOROETHENE		150	5.0	150	5.0
CIS-1,2-DICHLOROETHENE		ND	5.0	ND	5.0
TRANS-1,2-DICHLOROETHENE		ND	5.0	ND	5.0
1,2-DICHLOROPROPANE		ND	5.0	ND	5.0
CIS-1,3-DICHLOROPROPENE		ND	5.0	ND	5.0
TRANS-1,3-DICHLOROPROPENE		ND	5.0	ND	5.0
METHYLENE CHLORIDE		ND	5.0	ND	5.0
1,1,2,2-TETRACHLOROETHANE		ND	5.0	ND	5.0
TETRACHLOROETHENE		ND	5.0	ND	5.0
1,1,1-TRICHLOROETHANE		ND	5.0	ND	5.0
1,1,2-TRICHLOROETHANE		ND	5.0	ND	5.0
TRICHLOROETHENE		ND	5.0	ND	5.0
TRICHLOROFLUOROMETHANE		ND	10.0	ND	10.0
VINYL CHLORIDE		ND	10.0	ND	10.0

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L A B O R A T O R Y R E S U L T S

Laboratory Job No.: 910701

COMPOUNDS:	LAB#	5049	DET.	5050	DET.
	SMP#	MW-12R	LIM.	MW-34	LIM.
	dil.	1		1	
PURGEABLES		ug/L		ug/L	
BROMODICHLOROMETHANE		ND	0.5	ND	0.5
BROMOFORM		ND	0.5	ND	0.5
BROMOMETHANE		ND	1.0	ND	1.0
CARBON TETRACHLORIDE		ND	0.5	ND	0.5
CHLOROBENZENE		ND	0.5	ND	0.5
CHLOROETHANE		ND	1.0	ND	1.0
CHLOROFORM		1.0	0.5	ND	0.5
CHLOROMETHANE		ND	1.0	ND	1.0
DIBROMOCHLOROMETHANE		ND	0.5	ND	0.5
1,4-DICHLOROBENZENE		ND	0.5	ND	0.5
1,3-DICHLOROBENZENE		ND	0.5	ND	0.5
1,2-DICHLOROBENZENE		ND	0.5	ND	0.5
1,1-DICHLOROETHANE		ND	0.5	15	0.5
1,2-DICHLOROETHANE		ND	0.5	ND	0.5
1,1-DICHLOROETHENE		ND	0.5	52	0.5
CIS-1,2-DICHLOROETHENE		ND	0.5	ND	0.5
TRANS-1,2-DICHLOROETHENE		ND	0.5	ND	0.5
1,2-DICHLOROPROPANE		ND	0.5	ND	0.5
CIS-1,3-DICHLOROPROPENE		ND	0.5	ND	0.5
TRANS-1,3-DICHLOROPROPENE		ND	0.5	ND	0.5
METHYLENE CHLORIDE		ND	0.5	ND	0.5
1,1,2,2-TETRACHLOROETHANE		ND	0.5	ND	0.5
TETRACHLOROETHENE		ND	0.5	ND	0.5
1,1,1-TRICHLOROETHANE		ND	0.5	ND	0.5
1,1,2-TRICHLOROETHANE		ND	0.5	ND	0.5
TRICHLOROETHENE		ND	0.5	15	0.5
TRICHLOROFLUOROMETHANE		ND	1.0	ND	1.0
VINYL CHLORIDE		ND	1.0	ND	1.0

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L A B O R A T O R Y R E S U L T S

Laboratory Job No.: 910701

COMPOUNDS:	LAB#	5051	DET.	5052	DET.
	SMP#	MW-30	LIM.	MW-14	LIM.
	dil.	5		1	
PURGEABLES		ug/L		ug/L	
BROMODICHLOROMETHANE		ND	2.5	ND	0.5
BROMOFORM		ND	2.5	ND	0.5
BROMOMETHANE		ND	5.0	ND	1.0
CARBON TETRACHLORIDE		ND	2.5	ND	0.5
CHLOROBENZENE		ND	2.5	ND	0.5
CHLOROETHANE		ND	5.0	ND	1.0
CHLOROFORM		ND	2.5	ND	0.5
CHLOROMETHANE		ND	5.0	ND	1.0
DIBROMOCHLOROMETHANE		ND	2.5	ND	0.5
1,4-DICHLOROBENZENE		ND	2.5	ND	0.5
1,3-DICHLOROBENZENE		ND	2.5	ND	0.5
1,2-DICHLOROBENZENE		ND	2.5	ND	0.5
1,1-DICHLOROETHANE		8.2	2.5	4.4	0.5
1,2-DICHLOROETHANE		ND	2.5	ND	0.5
1,1-DICHLOROETHENE		160	2.5	47	0.5
CIS-1,2-DICHLOROETHENE		ND	2.5	ND	0.5
TRANS-1,2-DICHLOROETHENE		ND	2.5	ND	0.5
1,2-DICHLOROPROPANE		ND	2.5	ND	0.5
CIS-1,3-DICHLOROPROPENE		ND	2.5	ND	0.5
TRANS-1,3-DICHLOROPROPENE		ND	2.5	ND	0.5
METHYLENE CHLORIDE		ND	2.5	ND	0.5
1,1,2,2-TETRACHLOROETHANE		ND	2.5	ND	0.5
TETRACHLOROETHENE		ND	2.5	ND	0.5
1,1,1-TRICHLOROETHANE		6.3	2.5	1.3	0.5
1,1,2-TRICHLOROETHANE		ND	2.5	ND	0.5
TRICHLOROETHENE		2.8	2.5	6.2	0.5
TRICHLOROFLUOROMETHANE		ND	5.0	ND	1.0
VINYL CHLORIDE		ND	5.0	ND	1.0

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L A B O R A T O R Y R E S U L T S

Laboratory Job No.: 910701

COMPOUNDS:	LAB#	5053	DET.		5054	DET.
	SMP#	MW-12	LIM.		MW-13	LIM.
	dil.	1			1	
PURGEABLES		ug/L			ug/L	
BROMODICHLOROMETHANE		ND	0.5		ND	0.5
BROMOFORM		ND	0.5		ND	0.5
BROMOMETHANE		ND	1.0		ND	1.0
CARBON TETRACHLORIDE		ND	0.5		ND	0.5
CHLOROBENZENE		ND	0.5		ND	0.5
CHLOROETHANE		ND	1.0		ND	1.0
CHLOROFORM		ND	0.5		ND	0.5
CHLOROMETHANE		ND	1.0		ND	1.0
DIBROMOCHLOROMETHANE		ND	0.5		ND	0.5
1,4-DICHLOROBENZENE		ND	0.5		ND	0.5
1,3-DICHLOROBENZENE		ND	0.5		ND	0.5
1,2-DICHLOROBENZENE		ND	0.5		ND	0.5
1,1-DICHLOROETHANE		13	0.5		36	0.5
1,2-DICHLOROETHANE		ND	0.5	*	96	50.0
1,1-DICHLOROETHENE		47	0.5		25	0.5
CIS-1,2-DICHLOROETHENE		ND	0.5		3.8	0.5
TRANS-1,2-DICHLOROETHENE		ND	0.5		ND	0.5
1,2-DICHLOROPROPANE		ND	0.5		ND	0.5
CIS-1,3-DICHLOROPROPENE		ND	0.5		ND	0.5
TRANS-1,3-DICHLOROPROPENE		ND	0.5		ND	0.5
METHYLENE CHLORIDE		ND	0.5		ND	0.5
1,1,2,2-TETRACHLOROETHANE		ND	0.5		ND	0.5
TETRACHLOROETHENE		ND	0.5		ND	0.5
1,1,1-TRICHLOROETHANE		ND	0.5		0.6	0.5
1,1,2-TRICHLOROETHANE		ND	0.5		ND	0.5
TRICHLOROETHENE		14	0.5		ND	0.5
TRICHLOROFLUOROMETHANE		ND	1.0		ND	1.0
VINYL CHLORIDE		ND	1.0		ND	1.0

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L A B O R A T O R Y R E S U L T S

Laboratory Job No.: 910701

COMPOUNDS:	LAB#	5055	DET.	5056	DET.	5057	DET.
	SMP#	MW-4	LIM.	CM	LIM.	CMS	LIM.
	dil.	1		1		1	
PURGEABLES		ug/L		ug/L		ug/L	
BROMODICHLOROMETHANE		ND	0.5	8.4	0.5	8.8	0.5
BROMOFORM		ND	0.5	0.8	0.5	0.8	0.5
BROMOMETHANE		ND	1.0	ND	1.0	ND	1.0
CARBON TETRACHLORIDE		ND	0.5	ND	0.5	ND	0.5
CHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5
CHLOROETHANE		ND	1.0	ND	1.0	ND	1.0
CHLOROFORM		ND	0.5	4.5	0.5	4.3	0.5
CHLOROMETHANE		ND	1.0	ND	1.0	ND	1.0
DIBROMOCHLOROMETHANE		ND	0.5	8.2	0.5	8.1	0.5
1,4-DICHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5
1,3-DICHLOROBENZENE		ND	0.5	ND	0.5	24	0.5
1,2-DICHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5
1,1-DICHLOROETHANE		6.0	0.5	ND	0.5	23	0.5
1,2-DICHLOROETHANE		16	0.5	ND	0.5	ND	0.5
1,1-DICHLOROETHENE		45	0.5	ND	0.5	ND	0.5
CIS-1,2-DICHLOROETHENE		ND	0.5	ND	0.5	ND	0.5
TRANS-1,2-DICHLOROETHENE		ND	0.5	ND	0.5	ND	0.5
1,2-DICHLOROPROPANE		ND	0.5	ND	0.5	ND	0.5
CIS-1,3-DICHLOROPROPENE		ND	0.5	ND	0.5	ND	0.5
TRANS-1,3-DICHLOROPROPENE		ND	0.5	ND	0.5	ND	0.5
METHYLENE CHLORIDE		ND	0.5	ND	0.5	ND	0.5
1,1,2,2-TETRACHLOROETHANE		ND	0.5	ND	0.5	ND	0.5
TETRACHLOROETHENE		ND	0.5	ND	0.5	ND	0.5
1,1,1-TRICHLOROETHANE		1.2	0.5	ND	0.5	ND	0.5
1,1,2-TRICHLOROETHANE		ND	0.5	ND	0.5	ND	0.5
TRICHLOROETHENE		4.2	0.5	ND	0.5	24	0.5
TRICHLOROFLUOROMETHANE		ND	1.0	ND	1.0	ND	1.0
VINYL CHLORIDE		ND	1.0	ND	1.0	ND	1.0

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L A B O R A T O R Y R E S U L T S

Laboratory Job No.: 910701

COMPOUNDS:	LAB#	5058	DET.	5059	DET.
	SMP#	CMSD	LIM.	MB	LIM.
	dil.	1		1	
PURGEABLES		ug/L		ug/L	
BROMODICHLOROMETHANE		8.1	0.5	ND	0.5
BROMOFORM		0.7	0.5	ND	0.5
BROMOMETHANE		ND	1.0	ND	1.0
CARBON TETRACHLORIDE		ND	0.5	ND	0.5
CHLOROBENZENE		ND	0.5	ND	0.5
CHLOROETHANE		ND	1.0	ND	1.0
CHLOROFORM		4.0	0.5	ND	0.5
CHLOROMETHANE		ND	1.0	ND	1.0
DIBROMOCHLOROMETHANE		7.2	0.5	ND	0.5
1,4-DICHLOROBENZENE		ND	0.5	ND	0.5
1,3-DICHLOROBENZENE		21	0.5	ND	0.5
1,2-DICHLOROBENZENE		ND	0.5	ND	0.5
1,1-DICHLOROETHANE		20	0.5	ND	0.5
1,2-DICHLOROETHANE		ND	0.5	ND	0.5
1,1-DICHLOROETHENE		ND	0.5	ND	0.5
CIS-1,2-DICHLOROETHENE		ND	0.5	ND	0.5
TRANS-1,2-DICHLOROETHENE		ND	0.5	ND	0.5
1,2-DICHLOROPROPANE		ND	0.5	ND	0.5
CIS-1,3-DICHLOROPROPENE		ND	0.5	ND	0.5
TRANS-1,3-DICHLOROPROPENE		ND	0.5	ND	0.5
METHYLENE CHLORIDE		ND	0.5	ND	0.5
1,1,2,2-TETRACHLOROETHANE		ND	0.5	ND	0.5
TETRACHLOROETHENE		ND	0.5	ND	0.5
1,1,1-TRICHLOROETHANE		ND	0.5	ND	0.5
1,1,2-TRICHLOROETHANE		ND	0.5	ND	0.5
TRICHLOROETHENE		22	0.5	ND	0.5
TRICHLOROFLUOROMETHANE		ND	1.0	ND	1.0
VINYL CHLORIDE		ND	1.0	ND	1.0

NOTE: CMS AND CMSD WERE SPIKED AT 20 ug/L.

NOTE: *1,2-DICHLOROETHANE WAS QUANTITATED FROM A DIFFERENT RUN ON WHICH THE LEVEL WAS WITHIN LINEAR RANGE OF THE INSTRUMENT.

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L A B O R A T O R Y R E S U L T S

Date Collected: 02/01/91
Date Extracted: 02/14/91
Date Analyzed: 02/14/91

Laboratory Job No.: 910701
Date Received: 02/07/91
Date Reported: 03/05/91

ASSAY:
PURGEABLE AROMATICS IN WATER (EPA 5030/602)

COMPOUNDS:	LAB#	5044	DET.	5045	DET.
	SMP#	MW-28	LIM.	MW-29	LIM.
	dil.	1		1	
PURGEABLES		ug/L		ug/L	
BENZENE		ND	0.5	ND	0.5
CHLOROBENZENE		ND	0.5	ND	0.5
1,2-DICHLOROBENZENE		ND	0.5	ND	0.5
1,3-DICHLOROBENZENE		ND	0.5	ND	0.5
1,4-DICHLOROBENZENE		ND	0.5	ND	0.5
ETHYL BENZENE		ND	0.5	ND	0.5
TOLUENE		ND	0.5	ND	0.5
XYLENE		ND	0.5	ND	0.5

COMPOUNDS:	LAB#	5046	DET.	5047	DET.
	SMP#	MW-32	LIM.	MW-31	LIM.
	dil.	1		10	
PURGEABLES		ug/L		ug/L	
BENZENE		ND	0.5	ND	5.0
CHLOROBENZENE		ND	0.5	ND	5.0
1,2-DICHLOROBENZENE		ND	0.5	ND	5.0
1,3-DICHLOROBENZENE		ND	0.5	ND	5.0
1,4-DICHLOROBENZENE		ND	0.5	ND	5.0
ETHYL BENZENE		ND	0.5	ND	5.0
TOLUENE		ND	0.5	ND	5.0
XYLENE		ND	0.5	ND	5.0

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L A B O R A T O R Y R E S U L T S

Laboratory Job No.: 910701

COMPOUNDS:	LAB#	5048	DET.	5049	DET.	5050	DET.
	SMP#	MW-35	LIM.	MW-12R	LIM.	MW-34	LIM.
	dil.	1		1		1	
PURGEABLES		ug/L		ug/L		ug/L	
BENZENE		ND	0.5	ND	0.5	ND	0.5
CHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5
1,2-DICHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5
1,3-DICHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5
1,4-DICHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5
ETHYL BENZENE		ND	0.5	ND	0.5	ND	0.5
TOLUENE		ND	0.5	ND	0.5	ND	0.5
XYLENE		ND	0.5	ND	0.5	ND	0.5

COMPOUNDS:	LAB#	5051	DET.	5052	DET.
	SMP#	MW-30	LIM.	MW-14	LIM.
	dil.	1		1	
PURGEABLES		ug/L		ug/L	
BENZENE		ND	0.5	ND	0.5
CHLOROBENZENE		ND	0.5	ND	0.5
1,2-DICHLOROBENZENE		ND	0.5	ND	0.5
1,3-DICHLOROBENZENE		ND	0.5	ND	0.5
1,4-DICHLOROBENZENE		ND	0.5	ND	0.5
ETHYL BENZENE		ND	0.5	ND	0.5
TOLUENE		ND	0.5	ND	0.5
XYLENE		ND	0.5	ND	0.5

ENVIRONMENTAL SERVICES

3700 Lakeville Highway, Petaluma, CA 94954
P.O. Box 808024, Petaluma, CA 94975-8024
Telephone: (707) 763-8245 FAX: (707) 763-4065

L A B O R A T O R Y R E S U L T S

Laboratory Job No.: 910701

COMPOUNDS:	LAB#	5053	DET.	5054	DET.
	SMP#	MW-12	LIM.	MW-13	LIM.
	dil.	1		500	
PURGEABLES		ug/L		ug/L	
BENZENE		ND	0.5	10000	200.0
CHLOROBENZENE		ND	0.5	ND	200.0
1,2-DICHLOROBENZENE		ND	0.5	ND	200.0
1,3-DICHLOROBENZENE		ND	0.5	ND	200.0
1,4-DICHLOROBENZENE		ND	0.5	ND	200.0
ETHYL BENZENE		ND	0.5	ND	200.0
TOLUENE		ND	0.5	390	200.0
XYLENE		ND	0.5	600	200.0

COMPOUNDS:	LAB#	5055	DET.	5056	DET.	5057	DET.
	SMP#	MW-4	LIM.	CM	LIM.	CMS	LIM.
	dil.	1		1		1	
PURGEABLES		ug/L		ug/L		ug/L	
BENZENE		17	0.5	ND	0.5	22	0.5
CHLOROBENZENE		ND	0.5	ND	0.5	21	0.5
1,2-DICHLOROBENZENE		ND	0.5	ND	0.5	20	0.5
1,3-DICHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5
1,4-DICHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5
ETHYL BENZENE		ND	0.5	ND	0.5	ND	0.5
TOLUENE		ND	0.5	ND	0.5	ND	0.5
XYLENE		ND	0.5	ND	0.5	ND	0.5

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L A B O R A T O R Y R E S U L T S

Laboratory Job No.: 910701

COMPOUNDS:	LAB#	5058	DET.	5059	DET.
	SMP#	CMSD	LIM.	MB	LIM.
	dil.	1		1	
PURGEABLES		ug/L		ug/L	
BENZENE		22	0.5	ND	0.5
CHLOROBENZENE		22	0.5	ND	0.5
1,2-DICHLOROBENZENE		21	0.5	ND	0.5
1,3-DICHLOROBENZENE		ND	0.5	ND	0.5
1,4-DICHLOROBENZENE		ND	0.5	ND	0.5
ETHYL BENZENE		ND	0.5	ND	0.5
TOLUENE		ND	0.5	ND	0.5
XYLENE		ND	0.5	ND	0.5

NOTE: CMS AND CMSD WERE SPIKED AT 20 ug/L.

MAR 14 1991

ENVIRONMENTAL SERVICES

3700 Lakeville Highway, Petaluma, CA 94954
P.O. Box 808024, Petaluma, CA 94975-8024
Telephone: (707) 763-8245 FAX: (707) 763-4065

Dames & Moore
ATTN: Accounts Payable
9300 Tech Center Dr., Suite 100
Sacramento, CA 95826

C U S T O M E R I N V O I C E

Mail Payment to:
ACCULAB Environmental Services
ATTN: Accounting
P. O. Box 808024
Petaluma, CA 94975-8024

Invoice Date 03/05/91

Please refer to invoice number 132450
on remittance and correspondence.

Our IRS number is 95-1686276.

Client Code: DAMM7
Survey No.: UPRR-SACTO
Laboratory No.: 910701
Contract/PO No.:
Release No.: 00173-064-044

Terms: Net Cash 30 days
Overdue accounts subject to
maximum allowable interest.

Qty	Service	Unit Cost	Amount
11	LEAD (EPA 7420),3020 ACID DIGEST	$12.00	$132.00
11	CHROMIUM (EPA 7190),3020 ACID DIGEST	$12.00	$132.00
11	NICKEL (EPA 7520),3020 ACID DIGEST	$12.00	$132.00
11	ARSENIC (EPA 7060),3020 ACID DIGEST	$23.00	$253.00
11	SMPL PREP CHG	$18.00	$198.00
11	FILTRATION CHG	$9.00	$99.00
1	LESS 15% QUANTITY DISCOUNT	-141.90	-141.90
14	PURGEABLES IN WATER (EPA 5030/601)	$110.00	$1540.00
1	LESS 15% QUANTITY DISCOUNT	-231.00	-231.00
12	PURGEABLE AROMATICS IN WATER (EPA 5030/602)	$100.00	$1200.00
1	LESS 15% QUANTITY DISCOUNT	-180.00	-180.00
1	LESS 1/2 DHL SHIPPING CHG	-22.80	-22.80
		Please Pay This Amount >>	$3,110.30

REMITTANCE COPY

00173-062-004
Lab. Anal. Rpts
Jan/Feb 91 Groundwater Monitoring

APR 1 1 1991

ENVIRONMENTAL SERVICES

3700 Lakeville Highway, Petaluma, CA 94954
P.O. Box 808024, Petaluma, CA 94975-8024
Telephone: (707) 763-8245 FAX: (707) 763-4065

Tim Parker
Dames & Moore
9300 Tech Center Dr., Suite 100
Sacramento, CA 95826

Client Code: DAMM7
Survey # UPPER SACTO.
Project/Release # 00173-062-004

L A B O R A T O R Y R E S U L T S

Laboratory Job No.: 911274
Date Collected: 01/22/91
Date Analyzed: 04/03/91
Date Received: 03/13/91
Date Reported: 04/05/91

ASSAY:
LEAD (EPA 7421),3020 ACID DIGEST
CHROMIUM (EPA 7191),3020 ACID DIGEST

MATRIX: WATER

LABNO	SMPLNO	COMPOUND	FOUND mg/L	CA STLC LEV	DET.LIM. mg/L
9216	MW-3	PB	ND	5.0	0.001
9217	MW-4	PB	ND	5.0	0.001
		CR	0.033	560	0.005
9218	MW-5	CR	0.011	560	0.005
9219	MW-6	CR	0.015	560	0.005
9220	MW-7	PB	ND	5.0	0.001
9221	MW-11	PB	ND	5.0	0.001
9222	MW-12	PB	ND	5.0	0.001
		CR	0.050	560	0.025
9223	MW-14	CR	0.021	560	0.005
9224	MW-15	PB	ND	5.0	0.001
		CR	0.012	560	0.005
9225	MW-16	CR	0.011	560	0.005

THIS REPORT HAS BEEN REVIEWED
AND APPROVED FOR RELEASE.
DLJ

ENVIRONMENTAL SERVICES

3700 Lakeville Highway, Petaluma, CA 94954
P.O. Box 808024, Petaluma, CA 94975-8024
Telephone: (707) 763-8245 FAX: (707) 763-4065

L A B O R A T O R Y R E S U L T S

Laboratory Job No.: 911274

LABNO	SMPLNO	COMPOUND	FOUND mg/L	CA STLC LEV	DET.LIM. mg/L
9226	MW-17	PB	ND	5.0	0.001
		CR	0.009	560	0.005
9227	MW-18	PB	ND	5.0	0.001
		CR	0.007	560	0.005
9228	MW-19	PB	ND	5.0	0.001
9229	MW-20	PB	ND	5.0	0.001
9230	MW-21	PB	ND	5.0	0.001
		CR	0.007	560	0.005
9231	MW-22	PB	ND	5.0	0.001
9232	MW-23	PB	ND	5.0	0.001
9233	MW-24	PB	0.002	5.0	0.001
9234	MW-25	CR	0.010	560	0.005
9235	MW-27	PB	ND	5.0	0.001
		CR	0.008	560	0.005
9236	MW-28	PB	0.001	5.0	0.001
		CR	0.010	560	0.005
9237	MW-29	PB	0.010	5.0	0.001
9238	MW-30	PB	0.002	5.0	0.001
9239	MW-31	PB	0.001	5.0	0.001
9240	MW-32	PB	0.004	5.0	0.001
		CR	0.040	560	0.005
9241	MW-33	PB	ND	5.0	0.001

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Telephone: (707) 763-8245 FAX: (707) 763-4065

L A B O R A T O R Y R E S U L T S

Laboratory Job No.: 911274

LABNO	SMPLNO	COMPOUND	FOUND mg/L	CA STLC LEV	DET.LIM. mg/L
9242	CM	PB	0.001		0.001
		CR	ND		0.005
9243	CMS	PB	0.010		0.001
		CR	0.012		0.005
9244	CMSD	PB	0.010		0.001
		CR	0.011		0.005
9245	MB	PB	ND		0.001
		CR	ND		0.005
9246	CM-1	PB	ND		0.001
		CR	ND		0.005
9247	CMS-1	PB	0.012		0.001
		CR	0.012		0.005
9248	CMSD-1	PB	0.012		0.001
		CR	0.011		0.005
9249	MB-1	PB	ND		0.001
		CR	ND		0.005

NOTE: CMS AND CMSD WERE SPIKED AT 0.010 mg/L.

Enseco Page ____ of ____

CHAIN-OF-CUSTODY RECORD

SAMPLER: (*Signature*) J. DAVIS ZIBER Date Shipped _____ Carrier _____

Phone _____ Airbill No. _____ Cooler No. _____

SHIP TO:
Enseco-Cal Lab
2544 Industrial Blvd.
West Sacramento, CA 95691
(916) 372-1393
ATTENTION: _____

SEND RESULTS TO:
Client Name TONY MINDLING
Company DAMES + MOORE
Address 9300 Tech Center Dr Suite 100
Phone 916-364-6699

PROJECT NAME UPRR SAC Quarterly Sampling **PROJECT NO.** 00173-064-044 **P.O. NO.** _____

Relinquished by: (*Signature*)	Received by: (*Signature*)	Date	Time
J. Davis Ziber	[illegible]	4-22-91	1740
Relinquished by: (*Signature*)	Received by: (*Signature*)	Date	Time
Relinquished by: (*Signature*)	Received at lab by: (*Signature*)	Date	Time
	[illegible]	4-22-91	1740
Relinquished from lab by: (*Signature*)	Received by: (*Signature*)	Date	Time

ANALYSIS REQUEST

Sample ID Number	Sample Description	Date/Time Sampled	Analysis Requested	Sample Condition Upon Receipt
MW-1	1-500mL plastic	4-22/1340	Metals As, Cr, Ni, Pb	MCD - Samples rec'd intact.
MW-2	1-500 mL plastic	4-22/1630	Metals As, Cr, Ni, Pb	
MW-2	4-40mL VOA's	4-22/1630	601, 602 ~~Kyle 624, 625~~	

Special Instructions/Comments:

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT

Expected Analytical T.A.T's: ____ Immediate Attention (200% surcharge) ____ RUSH (50-100% surcharge) X Standard

Cal Lab ID Number: *(for lab use only)*

Client Retains White Copy Only (Revised 1/87)

California Analytical
Laboratory

Enseco
A CORNING Company

May 13, 1991
Lab ID: 057939

Anthony J. Mindling
Dames & Moore
9300 Tech Center Dr.
Suite 100
Sacramento, CA 95826

Dear Mr. Mindling:

Enclosed is the report for the two aqueous samples for your UPRR SAC Quarterly Sampling Project (#00173-064-044), which were received at Enseco-Cal Lab on 22 April 1991.

The report consists of the following sections:

I	Sample Description
II	Analysis Request
III	Quality Control Report
IV	Analysis Results

If you have any questions, please feel free to call.

Sincerely,

Janet Harlan

Janet Harlan
Program Administrator

ak

Enseco Incorporated
2544 Industrial Boulevard
West Sacramento, California 95691
916/372-1393 Fax: 916/372-7768

I Sample Description

See the attached Sample Description Information.

The samples were received under chain-of-custody.

II Analysis Request

The following analytical tests were requested.

Lab ID	Analysis Description
057939-1,2	Arsenic, Chromium, Lead, Nickel
-2	Halogenated Volatile Organics
-2	Aromatic Volatile Organics

III Quality Control

A. Project Specific QC. No project specific QC (i.e., spikes and/or duplicates) was requested.

B. Method Blank Results. A method blank is a laboratory-generated sample which assesses the degree to which laboratory operations and procedures cause false-positive analytical results for your samples.

No target parameters were detected in the method blanks associated with your samples at the reporting limit levels noted on the data sheets in the Method Blank Report.

Repetitions of method blanks (with identical QC Lot No.s and Run No.s) have been reported but do not indicate unique determinations.

C. Laboratory Control Samples - The LCS Program

Duplicate Control Samples. A DCS is a well-characterized matrix (blank water, sand or celite) which is spiked with certain target parameters and analyzed at approximately 10% of the sample load in order to establish method-specific control limits. The DCS results associated with your samples are on the attached Duplicate Control Sample Report.

Control limits for accuracy (percent recovery) are based on the average, historical percent recovery +/-3 standard deviation units. Control limits for precision (relative percent difference) range from 0 (identical duplicate DCS results) to the average, historical relative percent difference + 3 standard deviation units. In cases where there is not enough historical data, EPA limits or advisory limits are set, with the approval of the Quality Assurance department.

IV Analysis Results

Test methods may include minor modifications of published EPA Methods such as reporting limits or parameter lists. Reporting limits are adjusted to reflect dilution of the sample, when appropriate. Solid and waste samples are reported on an "as received" basis; i.e., no correction is made for moisture content, unless the method requires or the client requests that such correction be made.

Results are on the attached data sheets.

Enseco
A Corning Company

SAMPLE DESCRIPTION INFORMATION
for
Dames & Moore

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
057939-0001-SA	MW-1	AQUEOUS	22 APR 91	13:40	22 APR 91
057939-0002-SA	MW-2	AQUEOUS	22 APR 91	16:30	22 APR 91

Enseco
A Corning Company

QC LOT ASSIGNMENT REPORT
Metals Analysis and Preparation

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
057939-0001-SA	AQUEOUS	AS-FAA-AT	30 APR 91-A	30 APR 91-A
057939-0001-SA	AQUEOUS	CR-FAA-AT	30 APR 91-A	30 APR 91-A
057939-0001-SA	AQUEOUS	NI-FAA-AT	30 APR 91-A	30 APR 91-A
057939-0001-SA	AQUEOUS	PB-FAA-AT	30 APR 91-A	30 APR 91-A
057939-0002-SA	AQUEOUS	AS-FAA-AT	30 APR 91-A	30 APR 91-A
057939-0002-SA	AQUEOUS	CR-FAA-AT	30 APR 91-A	30 APR 91-A
057939-0002-SA	AQUEOUS	NI-FAA-AT	30 APR 91-A	30 APR 91-A
057939-0002-SA	AQUEOUS	PB-FAA-AT	30 APR 91-A	30 APR 91-A

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A Corning Company

METHOD BLANK REPORT
Metals Analysis and Preparation

Analyte	Result	Units	Reporting Limit
Test: GF-ASCP-TAL-AT Matrix: AQUEOUS QC Lot: 30 APR 91-A QC Run: 30 APR 91-A			
Arsenic	ND	mg/L	0.0050
Test: GF-CRCP-TAL-AT Matrix: AQUEOUS QC Lot: 30 APR 91-A QC Run: 30 APR 91-A			
Chromium	ND	mg/L	0.0010
Test: GF-NICP-TAL-AT Matrix: AQUEOUS QC Lot: 30 APR 91-A QC Run: 30 APR 91-A			
Nickel	ND	mg/L	0.0050
Test: GF-PBCP-TAL-AT Matrix: AQUEOUS QC Lot: 30 APR 91-A QC Run: 30 APR 91-A			
Lead	ND	mg/L	0.0050
Test: GF-ASCP-TAL-AT Matrix: AQUEOUS QC Lot: 30 APR 91-A QC Run: 30 APR 91-A			
Arsenic	ND	mg/L	0.0050
Test: GF-CRCP-TAL-AT Matrix: AQUEOUS QC Lot: 30 APR 91-A QC Run: 30 APR 91-A			
Chromium	ND	mg/L	0.0010

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METHOD BLANK REPORT
Metals Analysis and Preparation (cont.)

Analyte	Result	Units	Reporting Limit
Test: GF-NICP-TAL-AT Matrix: AQUEOUS QC Lot: 30 APR 91-A QC Run: 30 APR 91-A			
Nickel	ND	mg/L	0.0050
Test: GF-PBCP-TAL-AT Matrix: AQUEOUS QC Lot: 30 APR 91-A QC Run: 30 APR 91-A			
Lead	ND	mg/L	0.0050

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A Corning Company

DUPLICATE CONTROL SAMPLE REPORT
Metals Analysis and Preparation

Analyte	Concentration Spiked	Measured DCS1	Measured DCS2	Measured AVG	Accuracy Average(%) DCS	Accuracy Limits	Precision (RPD) DCS	Precision Limit
Category: AS-FAA-AT Matrix: AQUEOUS QC Lot: 30 APR 91-A Concentration Units: mg/L								
Arsenic	0.040	0.0343	0.0334	0.0338	85	84-115	2.7	10
Category: CR-FAA-AT Matrix: AQUEOUS QC Lot: 30 APR 91-A Concentration Units: mg/L								
Chromium	0.02	0.0199	0.0202	0.0200	100	75-125	1.5	20
Category: DEFAULT Matrix: AQUEOUS QC Lot: 30 APR 91-A Concentration Units: mg/L								
Nickel	0.02	0.0192	0.0198	0.0195	98	75-125	3.2	20
Category: PB-FAA-AT Matrix: AQUEOUS QC Lot: 30 APR 91-A Concentration Units: mg/L								
Lead	0.020	0.0177	0.0186	0.0182	91	82-115	5.0	11

Calculations are performed before rounding to avoid round-off errors in calculated results.

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A Corning Company

QC LOT ASSIGNMENT REPORT
Volatile Organics by GC

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
057939-0002-SA	AQUEOUS	601-A	02 MAY 91-38A	05 MAY 91-38A
057939-0002-SA	AQUEOUS	602-A	19 APR 91-11A	30 APR 91-11A

Enseco
A Corning Company

METHOD BLANK REPORT
Volatile Organics by GC

Analyte	Result	Units	Reporting Limit
Test: 601-A			
Matrix: AQUEOUS			
QC Lot: 02 MAY 91-38A QC Run: 05 MAY 91-38A			
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	0.50
1,1-Dichloroethane	ND	ug/L	0.50
1,2-Dichloroethene (cis/trans)	ND	ug/L	0.50
Chloroform	ND	ug/L	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
1,2-Dibromoethane	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0
Test: 602-A			
Matrix: AQUEOUS			
QC Lot: 19 APR 91-11A QC Run: 30 APR 91-11A			
Benzene	ND	ug/L	0.50
Toluene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	0.50
Ethylbenzene	ND	ug/L	0.50
Xylenes (total)	ND	ug/L	1.0
1,3-Dichlorobenzene	ND	ug/L	1.0
1,4-Dichlorobenzene	ND	ug/L	1.0
1,2-Dichlorobenzene	ND	ug/L	1.0

Enseco
A Corning Company

METHOD BLANK REPORT
Volatile Organics by GC (cont.)

Analyte	Result	Units	Reporting Limit

Test: 602-A
Matrix: AQUEOUS
QC Lot: 19 APR 91-11A QC Run: 30 APR 91-11A

Enseco
A Corning Company

DUPLICATE CONTROL SAMPLE REPORT
Volatile Organics by GC

Analyte	Concentration Spiked	Measured DCS1	Measured DCS2	Measured AVG	Accuracy Average(%) DCS	Accuracy Limits	Precision (RPD) DCS	Precision Limit
Category: 601-A Matrix: AQUEOUS QC Lot: 02 MAY 91-38A Concentration Units: ug/L								
1,1-Dichloroethane	5.0	5.38	5.37	5.38	108	70-138	0.2	24
Chloroform	5.0	5.27	5.24	5.26	105	83-124	0.6	18
Bromodichloromethane	10.0	10.4	10.7	10.6	106	78-132	2.8	21
Trichloroethene	5.0	5.69	5.57	5.63	113	82-122	2.1	16
Chlorobenzene	5.0	5.35	5.63	5.49	110	80-126	5.1	19
Category: 602-A Matrix: AQUEOUS QC Lot: 19 APR 91-11A Concentration Units: ug/L								
Benzene	5.0	5.34	5.54	5.44	109	82-112	3.7	11
Toluene	5.0	5.24	5.34	5.29	106	81-114	1.9	13
1,3-Dichlorobenzene	5.0	5.84	5.82	5.83	117	68-124	0.3	13
Ethylbenzene	5.0	5.48	5.63	5.56	111	73-117	2.7	11
Xylenes (total)	15.0	16.2	17.0	16.6	111	75-120	4.8	10

Calculations are performed before rounding to avoid round-off errors in calculated results.

Enseco
A Corning Company

SINGLE CONTROL SAMPLE REPORT
Volatile Organics by GC

Analyte	Concentration Spiked	Measured	Accuracy(%) SCS	Limits
Category: 601-A Matrix: AQUEOUS QC Lot: 02 MAY 91-38A QC Run: 05 MAY 91-38A Concentration Units: ug/L				
Bromochloromethane	5.00	4.70	94	68-121
Category: 602-A Matrix: AQUEOUS QC Lot: 19 APR 91-11A QC Run: 30 APR 91-11A Concentration Units: ug/L				
a,a,a-Trifluorotoluene	5.00	5.03	101	20-160

Calculations are performed before rounding to avoid round-off errors in calculated results.

Enseco
A Corning Company

Total Metals

Client Name: Dames & Moore
Client ID: MW-1
Lab ID: 057939-0001-SA
Matrix: AQUEOUS Sampled: 22 APR 91 Received: 22 APR 91
Authorized: 23 APR 91 Prepared: See Below Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Arsenic	ND	mg/L	0.0050	7060	30 APR 91	07 MAY 91
Chromium	0.0050	mg/L	0.0010	7191	30 APR 91	01 MAY 91
Lead	ND	mg/L	0.0050	7421	30 APR 91	01 MAY 91
Nickel	0.13	mg/L	0.050	7521	30 APR 91	01 MAY 91 R

Note R : Raised reporting limit(s) due to high analyte level(s).

ND = Not detected
NA = Not applicable

Reported By: Gara Sahakian Approved By: Mei Lai

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

Total Metals

Client Name: Dames & Moore
Client ID: MW-2
Lab ID: 057939-0002-SA
Matrix: AQUEOUS Sampled: 22 APR 91 Received: 22 APR 91
Authorized: 23 APR 91 Prepared: See Below Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Arsenic	ND	mg/L	0.0050	7060	30 APR 91	07 MAY 91
Chromium	0.0057	mg/L	0.0010	7191	30 APR 91	01 MAY 91
Lead	ND	mg/L	0.0050	7421	30 APR 91	01 MAY 91
Nickel	0.14	mg/L	0.050	7521	30 APR 91	01 MAY 91 R

Note R : Raised reporting limit(s) due to high analyte level(s).

ND = Not detected
NA = Not applicable

Reported By: Gara Sahakian Approved By: Mei Lai

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

Halogenated Volatile Organics

Method 601

Client Name: Dames & Moore
Client ID: MW-2
Lab ID: 057939-0002-SA
Matrix: AQUEOUS — Sampled: 22 APR 91 — Received: 22 APR 91
Authorized: 23 APR 91 — Prepared: NA — Analyzed: 05 MAY 91

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	0.50
1,1-Dichloroethane	ND	ug/L	0.50
1,2-Dichloroethene (cis/trans)	ND	ug/L	0.50
Chloroform	ND	ug/L	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
1,2-Dibromoethane	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0

Surrogate	Recovery	
Bromochloromethane	99	%

ND = Not detected
NA = Not applicable

Reported By: Mike Harrison — Approved By: Sharon Campbell

The cover letter is an integral part of this report.
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Enseco
A Corning Company

Aromatic Volatile Organics

Method 602

Client Name: Dames & Moore
Client ID: MW-2
Lab ID: 057939-0002-SA
Matrix: AQUEOUS Sampled: 22 APR 91 Received: 22 APR 91
Authorized: 23 APR 91 Prepared: NA Analyzed: 30 APR 91

Parameter	Result	Units	Reporting Limit
Benzene	ND	ug/L	0.50
Toluene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	0.50
Ethylbenzene	ND	ug/L	0.50
Xylenes (total)	ND	ug/L	1.0
1,3-Dichlorobenzene	ND	ug/L	1.0
1,4-Dichlorobenzene	ND	ug/L	1.0
1,2-Dichlorobenzene	ND	ug/L	1.0

Surrogate	Recovery	
a,a,a-Trifluorotoluene	93	%

ND = Not detected
NA = Not applicable

Reported By: Dan Orovich Approved By: Sharon Campbell

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Page ____ of ____

CHAIN-OF-CUSTODY RECORD

SAMPLER: (*Signature*) J. Ronald Zuber

Date Shipped _____ Carrier _____

Phone _____ Airbill No. _____ Cooler No. _____

SHIP TO:

Enseco-Cal Lab
2544 Industrial Blvd.
West Sacramento, CA 95691
(916) 372-1393

ATTENTION: _____

SEND RESULTS TO:

Client Name TONY MINDLING
Company DAMES + MOORE
Address 9300 Tech Center Dr. Suite 100

Phone 916-364-8698

PROJECT NAME UPRR SAC Quarterly Sampling **PROJECT NO.** 0073-064044 **P.O. NO.** _____

Relinquished by: (*Signature*)	Received by: (*Signature*)	Date	Time
J. Ronald Zuber		4-23	1715
Relinquished by: (*Signature*)	Received by: (*Signature*)	Date	Time
Relinquished by: (*Signature*)	Received at lab by: (*Signature*)	Date	Time
	Tony Todd	4-23-91	1715
Relinquished from lab by: (*Signature*)	Received by: (*Signature*)	Date	Time

ANALYSIS REQUEST

Sample ID Number	Sample Description	Date/Time Sampled	Analysis Requested	Sample Condition Upon Receipt
MW-3	1-500ml - HNO_3	4-23/1025	As, Cr, Ni, Pb ✓	Good
MW-5	1-500ml - HNO_3	4-23/1206	As, Cr, Ni, Pb ✓	
MW-6	1-500ml - HNO_3	4-23/1415	As, Cr, Ni, Pb ✓	
MW-23	1-500 ml HNO_3	4-23/1556	As, Cr, Ni, Pb ✓	
MW-23	2-40ml HCl	4-23/1550	601 ✓	
TB-1	1-40ml HCl	4-19	601 ✓	

Special Instructions/Comments:

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT

Expected Analytical T.A.T's: _____ Immediate Attention (200% surcharge) _____ RUSH (50-100% surcharge) X Standard

Cal Lab ID Number: *(for lab use only)*

Client Retains White Copy Only

(Revised 1/87)

California Analytical
Laboratory

Enseco
A CORNING Company

May 13, 1991
Lab ID: 057940

Anthony J. Mindling
Dames & Moore
9300 Tech Center Dr.
Suite 100
Sacramento, CA 95826

Dear Mr. Mindling:

Enclosed is the report for the five aqueous samples for your UPRR SAC Quarterly Sampling Project, Number 00173-064-044, which were received at Enseco-Cal Lab on 23 April 1991.

The report consists of the following sections:

I	Sample Description
II	Analysis Request
III	Quality Control Report
IV	Analysis Results

If you have any questions, please feel free to call.

Sincerely,

Janet Harlan

Janet Harlan
Program Administrator

svf

Enseco Incorporated
2544 Industrial Boulevard
West Sacramento, California 95691
916/372-1393 Fax: 916/372-7768

I Sample Description

See the attached Sample Description Information.

The samples were received under chain-of-custody.

II Analysis Request

The following analytical tests were requested.

Lab ID	Analysis Description
057940-1 thru 4	Selected Metals
-4, 5	Halogenated Volatile Organics

III Quality Control

A. Project Specific QC. No project specific QC (i.e., spikes and/or duplicates) was requested.

B. Method Blank Results. A method blank is a laboratory-generated sample which assesses the degree to which laboratory operations and procedures cause false-positive analytical results for your samples.

No target parameters were detected in the method blanks associated with your samples at the reporting limit levels noted on the Method Blank Report.

Repetitions of method blanks (with identical QC Lot No.s and Run No.s) have been reported but do not indicate unique determinations.

C. Laboratory Control Samples - The LCS Program

Duplicate Control Samples. A DCS is a well-characterized matrix (blank water, sand or celite) which is spiked with certain target parameters and analyzed at approximately 10% of the sample load in order to establish method-specific control limits. The DCS results associated with your samples are on the attached Duplicate Control Sample Report.

Single Control Sample. An SCS consists of a control matrix that is spiked with surrogate compounds appropriate to the method being used. In cases where no surrogate is available, (e.g. metals or conventional analyses) a single control sample identical to the DCS serves as the control sample. An SCS is prepared for each sample lot. Accuracy is calculated identically to the DCS. The SCS results associated with your samples are on the attached Single Control Sample Report.

Accuracy is measured by Percent Recovery as in:

$$\% \text{ recovery} = \frac{\text{(measured concentration)}}{\text{(actual concentration)}} \times 100$$

Precision is measured using duplicate tests by Relative Percent Difference (RPD) as in:

$$\text{RPD} = \frac{\text{(\% recovery test 1 - \% recovery test 2)}}{\text{(\% recovery test 1 + \% recovery test 2)/2}} \times 100$$

Control limits for accuracy (percent recovery) are based on the average, historical percent recovery +/-3 standard deviation units. Control limits for precision (relative percent difference) range from 0 (identical duplicate DCS results) to the average, historical relative percent difference + 3 standard deviation units. In cases where there is not enough historical data, EPA limits or advisory limits are set, with the approval of the Quality Assurance department.

IV Analysis Results

Test methods may include minor modifications of published EPA Methods such as reporting limits or parameter lists. Reporting limits are adjusted to reflect dilution of the sample, when appropriate. Solid and waste samples are reported on an "as received" basis, i.e., no correction is made for moisture content, unless the method requires or the client requests that such correction be made.

Results are on the attached data sheets.

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SAMPLE DESCRIPTION INFORMATION
for
Dames & Moore

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
057940-0001-SA	MW-3	AQUEOUS	23 APR 91	10:25	23 APR 91
057940-0002-SA	MW-5	AQUEOUS	23 APR 91	12:00	23 APR 91
057940-0003-SA	MW-6	AQUEOUS	23 APR 91	14:15	23 APR 91
057940-0004-SA	MW-23	AQUEOUS	23 APR 91	15:50	23 APR 91
057940-0005-SA	TB-1	AQUEOUS	19 APR 91		23 APR 91

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QC LOT ASSIGNMENT REPORT
Metals Analysis and Preparation

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
057940-0001-SA	AQUEOUS	AS-FAA-AT	30 APR 91-A	30 APR 91-A
057940-0001-SA	AQUEOUS	CR-FAA-AT	30 APR 91-A	30 APR 91-A
057940-0001-SA	AQUEOUS	NI-FAA-AT	30 APR 91-A	30 APR 91-A
057940-0001-SA	AQUEOUS	PB-FAA-AT	30 APR 91-A	30 APR 91-A
057940-0002-SA	AQUEOUS	AS-FAA-AT	30 APR 91-A	30 APR 91-A
057940-0002-SA	AQUEOUS	CR-FAA-AT	30 APR 91-A	30 APR 91-A
057940-0002-SA	AQUEOUS	NI-FAA-AT	30 APR 91-A	30 APR 91-A
057940-0002-SA	AQUEOUS	PB-FAA-AT	30 APR 91-A	30 APR 91-A
057940-0003-SA	AQUEOUS	AS-FAA-AT	30 APR 91-A	30 APR 91-A
057940-0003-SA	AQUEOUS	CR-FAA-AT	30 APR 91-A	30 APR 91-A
057940-0003-SA	AQUEOUS	NI-FAA-AT	30 APR 91-A	30 APR 91-A
057940-0003-SA	AQUEOUS	PB-FAA-AT	30 APR 91-A	30 APR 91-A
057940-0004-SA	AQUEOUS	AS-FAA-AT	30 APR 91-A	30 APR 91-A
057940-0004-SA	AQUEOUS	CR-FAA-AT	30 APR 91-A	30 APR 91-A
057940-0004-SA	AQUEOUS	NI-FAA-AT	30 APR 91-A	30 APR 91-A
057940-0004-SA	AQUEOUS	PB-FAA-AT	30 APR 91-A	30 APR 91-A

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METHOD BLANK REPORT
Metals Analysis and Preparation

Analyte	Result	Units	Reporting Limit
Test: GF-ASCP-TAL-AT Matrix: AQUEOUS QC Lot: 30 APR 91-A QC Run: 30 APR 91-A			
Arsenic	ND	mg/L	0.0050
Test: GF-CRCP-TAL-AT Matrix: AQUEOUS QC Lot: 30 APR 91-A QC Run: 30 APR 91-A			
Chromium	ND	mg/L	0.0010
Test: GF-NICP-TAL-AT Matrix: AQUEOUS QC Lot: 30 APR 91-A QC Run: 30 APR 91-A			
Nickel	ND	mg/L	0.0050
Test: GF-PBCP-TAL-AT Matrix: AQUEOUS QC Lot: 30 APR 91-A QC Run: 30 APR 91-A			
Lead	ND	mg/L	0.0050
Test: GF-ASCP-TAL-AT Matrix: AQUEOUS QC Lot: 30 APR 91-A QC Run: 30 APR 91-A			
Arsenic	ND	mg/L	0.0050
Test: GF-CRCP-TAL-AT Matrix: AQUEOUS QC Lot: 30 APR 91-A QC Run: 30 APR 91-A			
Chromium	ND	mg/L	0.0010

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METHOD BLANK REPORT
Metals Analysis and Preparation (cont.)

Analyte	Result	Units	Reporting Limit
Test: GF-NICP-TAL-AT Matrix: AQUEOUS QC Lot: 30 APR 91-A QC Run: 30 APR 91-A			
Nickel	ND	mg/L	0.0050
Test: GF-PBCP-TAL-AT Matrix: AQUEOUS QC Lot: 30 APR 91-A QC Run: 30 APR 91-A			
Lead	ND	mg/L	0.0050

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DUPLICATE CONTROL SAMPLE REPORT
Metals Analysis and Preparation

Analyte	Concentration Spiked	Measured DCS1	Measured DCS2	Measured AVG	Accuracy Average(%) DCS	Accuracy Limits	Precision (RPD) DCS	Precision (RPD) Limit
Category: AS-FAA-AT Matrix: AQUEOUS QC Lot: 30 APR 91-A Concentration Units: mg/L								
Arsenic	0.040	0.0343	0.0334	0.0338	85	84-115	2.7	10
Category: CR-FAA-AT Matrix: AQUEOUS QC Lot: 30 APR 91-A Concentration Units: mg/L								
Chromium	0.02	0.0199	0.0202	0.0200	100	75-125	1.5	20
Category: DEFAULT Matrix: AQUEOUS QC Lot: 30 APR 91-A Concentration Units: mg/L								
Nickel	0.02	0.0192	0.0198	0.0195	98	75-125	3.2	20
Category: PB-FAA-AT Matrix: AQUEOUS QC Lot: 30 APR 91-A Concentration Units: mg/L								
Lead	0.020	0.0177	0.0186	0.0182	91	82-115	5.0	11

Calculations are performed before rounding to avoid round-off errors in calculated results.

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QC LOT ASSIGNMENT REPORT
Volatile Organics by GC

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
057940-0004-SA	AQUEOUS	601-A	01 MAY 91-38A	30 APR 91-38A
057940-0005-SA	AQUEOUS	601-A	01 MAY 91-38A	30 APR 91-38A

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METHOD BLANK REPORT
Volatile Organics by GC

Analyte	Result	Units	Reporting Limit
Test: 601-A Matrix: AQUEOUS QC Lot: 01 MAY 91-38A QC Run: 30 APR 91-38A			
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	0.50
1,1-Dichloroethane	ND	ug/L	0.50
1,2-Dichloroethene (cis/trans)	ND	ug/L	0.50
Chloroform	ND	ug/L	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
1,2-Dibromoethane	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0
Test: 601-A Matrix: AQUEOUS QC Lot: 01 MAY 91-38A QC Run: 30 APR 91-38A			
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	0.50
1,1-Dichloroethane	ND	ug/L	0.50
1,2-Dichloroethene (cis/trans)	ND	ug/L	0.50

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METHOD BLANK REPORT
Volatile Organics by GC (cont.)

Analyte	Result	Units	Reporting Limit
Test: 601-A			
Matrix: AQUEOUS			
QC Lot: 01 MAY 91-38A QC Run: 30 APR 91-38A			
Chloroform	ND	ug/L	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
1,2-Dibromoethane	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0

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DUPLICATE CONTROL SAMPLE REPORT
Volatile Organics by GC

Analyte	Concentration Spiked	Measured DCS1	Measured DCS2	AVG	Accuracy Average(%) DCS	Accuracy Limits	Precision (RPD) DCS	Precision Limit
Category: 601-A Matrix: AQUEOUS QC Lot: 01 MAY 91-38A Concentration Units: ug/L								
1,1-Dichloroethane	5.0	4.66	4.79	4.72	95	70-138	2.8	24
Chloroform	5.0	4.80	4.89	4.84	97	83-124	1.9	18
Bromodichloromethane	10.0	10.5	10.7	10.6	106	78-132	1.9	21
Trichloroethene	5.0	4.74	4.76	4.75	95	82-122	0.4	16
Chlorobenzene	5.0	4.70	4.86	4.78	96	80-126	3.3	19

Calculations are performed before rounding to avoid round-off errors in calculated results.

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SINGLE CONTROL SAMPLE REPORT
Volatile Organics by GC

Analyte	Concentration Spiked	Measured	Accuracy(%) SCS	Limits
Category: 601-A				
Matrix: AQUEOUS				
QC Lot: 01 MAY 91-38A QC Run: 30 APR 91-38A				
Concentration Units: ug/L				
Bromochloromethane	5.00	4.17	83	68-121

Calculations are performed before rounding to avoid round-off errors in calculated results.

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METALS

(Water - Total)

Client Name: Dames & Moore
Client ID: MW-3
Lab ID: 057940-0001-SA
Matrix: AQUEOUS Sampled: 23 APR 91 Received: 23 APR 91
Authorized: 23 APR 91 Prepared: See Below Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Arsenic	ND	mg/L	0.0050	7060	30 APR 91	06 MAY 91
Chromium	0.0015	mg/L	0.0010	7191	30 APR 91	02 MAY 91
Lead	ND	mg/L	0.0050	7421	30 APR 91	02 MAY 91
Nickel	ND	mg/L	0.0050	7521	30 APR 91	02 MAY 91

ND = Not detected
NA = Not applicable

Reported By: Gara Sahakian Approved By: Barry Votaw

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METALS

(Water - Total)

Client Name: Dames & Moore
Client ID: MW-5
Lab ID: 057940-0002-SA
Matrix: AQUEOUS
Authorized: 23 APR 91

Sampled: 23 APR 91
Prepared: See Below

Received: 23 APR 91
Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Arsenic	ND	mg/L	0.0050	7060	30 APR 91	06 MAY 91
Chromium	0.0072	mg/L	0.0010	7191	30 APR 91	02 MAY 91
Lead	ND	mg/L	0.0050	7421	30 APR 91	02 MAY 91
Nickel	0.081	mg/L	0.025	7521	30 APR 91	02 MAY 91 R

Note R : Raised reporting limit(s) due to high analyte level(s).

ND = Not detected
NA = Not applicable

Reported By: Gara Sahakian

Approved By: Barry Votaw

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METALS

(Water - Total)

Client Name: Dames & Moore
Client ID: MW-6
Lab ID: 057940-0003-SA
Matrix: AQUEOUS — Sampled: 23 APR 91 — Received: 23 APR 91
Authorized: 23 APR 91 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Arsenic	0.0058	mg/L	0.0050	7060	30 APR 91	06 MAY 91
Chromium	0.0054	mg/L	0.0010	7191	30 APR 91	02 MAY 91
Lead	ND	mg/L	0.0050	7421	30 APR 91	02 MAY 91
Nickel	0.040	mg/L	0.020	7521	30 APR 91	02 MAY 91 R

Note R : Raised reporting limit(s) due to high analyte level(s).

ND = Not detected
NA = Not applicable

Reported By: Gara Sahakian — Approved By: Barry Votaw

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METALS

(Water - Total)

Client Name: Dames & Moore
Client ID: MW-23
Lab ID: 057940-0004-SA
Matrix: AQUEOUS
Authorized: 23 APR 91

Sampled: 23 APR 91
Prepared: See Below

Received: 23 APR 91
Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Arsenic	ND	mg/L	0.0050	7060	30 APR 91	06 MAY 91
Chromium	0.0065	mg/L	0.0010	7191	30 APR 91	02 MAY 91
Lead	ND	mg/L	0.0050	7421	30 APR 91	02 MAY 91
Nickel	0.36	mg/L	0.15	7521	30 APR 91	02 MAY 91 R

Note R : Raised reporting limit(s) due to high analyte level(s).

ND = Not detected
NA = Not applicable

Reported By: Gara Sahakian

Approved By: Barry Votaw

The cover letter is an integral part of this report.

Enseco
A Corning Company

Halogenated Volatile Organics

Method 601

Client Name: Dames & Moore
Client ID: MW-23
Lab ID: 057940-0004-SA
Matrix: AQUEOUS Sampled: 23 APR 91 Received: 23 APR 91
Authorized: 23 APR 91 Prepared: NA Analyzed: 30 APR 91

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	0.50
1,1-Dichloroethane	0.67	ug/L	0.50
1,2-Dichloroethene (cis/trans)	ND	ug/L	0.50
Chloroform	3.0	ug/L	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
1,2-Dibromoethane	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0

Surrogate	Recovery	
Bromochloromethane	91	%

ND = Not detected
NA = Not applicable

Reported By: Dan Orovich Approved By: Sharon Campbell

The cover letter is an integral part of this report.
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A Corning Company

Halogenated Volatile Organics

Method 601

Client Name: Dames & Moore
Client ID: TB-1
Lab ID: 057940-0005-SA
Matrix: AQUEOUS Sampled: 19 APR 91 Received: 23 APR 91
Authorized: 23 APR 91 Prepared: NA Analyzed: 30 APR 91

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	0.50
1,1-Dichloroethane	ND	ug/L	0.50
1,2-Dichloroethene (cis/trans)	ND	ug/L	0.50
Chloroform	ND	ug/L	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
1,2-Dibromoethane	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0

Surrogate	Recovery	
Bromochloromethane	86	%

ND = Not detected
NA = Not applicable

Reported By: Dan Orovich Approved By: Sharon Campbell

The cover letter is an integral part of this report.
Rev 230787

Enseco

Page ____ of ____

CHAIN-OF-CUSTODY RECORD

SAMPLER: (*Signature*) _____ Date Shipped _____ Carrier _____

Phone _____ Airbill No. _____ Cooler No. _____

SHIP TO:
Enseco-Cal Lab
2544 Industrial Blvd.
West Sacramento, CA 95691
(916) 372-1393
ATTENTION: _____

SEND RESULTS TO:
Client Name Tony Mingling
Company Dames + Moore
Address 9300 Tech Centre Dr #100 Sac. 95826
Phone 916-364-5698

PROJECT NAME VPRA SAC Quarterly **PROJECT NO.** 00173-064-044 **P.O. NO.** _____

Relinquished by: (*Signature*)	Received by: (*Signature*)	Date	Time
		4/24	1700
Relinquished by: (*Signature*)	Received by: (*Signature*)	Date	Time
Relinquished by: (*Signature*)	Received at lab by: (*Signature*)	Date	Time
		4/24/91	1700
Relinquished from lab by: (*Signature*)	Received by: (*Signature*)	Date	Time

ANALYSIS REQUEST

Sample ID Number	Sample Description	Date/Time Sampled	Analysis Requested	Sample Condition Upon Receipt
MW-24	1-500ml (HNO_3)	4-24/1020	As, Cr, Ni, Pb ✓	ELTACD
MW-27	1-500ml (HNO_3)	4-24/1200	As, Cr, Ni, Pb ✓	
MW-27	2-40ml (HCl)	4-24/1200	601 ✓	
MW-25	1-500ml (HNO_3)	" 1500	As, Cr, Ni, Pb ✓	
MW-25	2-40ml (HCl)	" 1500	601 ✓	
MW-26	1-500ml (HNO_3)	" 1540	As, Cr, Ni, Pb ✓	
MW-26	2-40ml (HCl)	" 1540	601 ✓	
TB-2	1-40ml	[illegible]	601 ✓	4-19-91 ✓ BUBBLES in (1) VOA.
FB-1	2-40ml (HCl)	" 1600	601 ✓	
RB-1	2-40ml (HCl)	" 1630	601 ✓	

Special Instructions/Comments:

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT

Expected Analytical T.A.T's: _____ Immediate Attention (200% surcharge) _____ RUSH (50-100% surcharge) X Standard

Cal Lab ID Number: *(for lab use only)*

Client Retains White Copy Only

(Revised 1/87)

California Analytical
Laboratory

Enseco
A CORNING Company

May 10, 1991
Lab ID: 057964

Anthony J. Mindling
Dames & Moore
9300 Tech Center Dr.
Suite 100
Sacramento, CA 95826

Dear Mr. Mindling:

Enclosed is the report for the ten aqueous samples for your UPRR SAC Quarterly Sampling Project, Number 00173-064-044, which were received at Enseco-Cal Lab on 24 April 1991.

The report consists of the following sections:

I	Sample Description
II	Analysis Request
III	Quality Control Report
IV	Analysis Results

If you have any questions, please feel free to call.

Sincerely,

Janet Harlan

Janet Harlan
Program Administrator

svf

Enseco Incorporated
2544 Industrial Boulevard
West Sacramento, California 95691
916/372-1393 Fax: 916/372-7768

I Sample Description

See the attached Sample Description Information.

The samples were received under chain-of-custody.

II Analysis Request

The following analytical tests were requested.

Lab ID	Analysis Description
057964-1,2,4,6	Total Metals
-3,5,7 thru 10	Halogenated Volatile Organics

III Quality Control

A. Project Specific QC. No project specific QC (i.e., spikes and/or duplicates) was requested.

B. Method Blank Results. A method blank is a laboratory-generated sample which assesses the degree to which laboratory operations and procedures cause false-positive analytical results for your samples.

No target parameters were detected in the method blanks associated with your samples at the reporting limit levels noted on the Method Blank Report.

C. Laboratory Control Samples - The LCS Program

Duplicate Control Samples. A DCS is a well-characterized matrix (blank water, sand or celite) which is spiked with certain target parameters and analyzed at approximately 10% of the sample load in order to establish method-specific control limits. The DCS results associated with your samples are on the attached Duplicate Control Sample Report.

Single Control Sample. An SCS consists of a control matrix that is spiked with surrogate compounds appropriate to the method being used. In cases where no surrogate is available, (e.g. metals or conventional analyses) a single control sample identical to the DCS serves as the control sample. An SCS is prepared for each sample lot. Accuracy is calculated identically to the DCS. The SCS results associated with your samples are on the attached Single Control Sample Report.

Accuracy is measured by Percent Recovery as in:

$$\% \text{ recovery} = \frac{\text{(measured concentration)}}{\text{(actual concentration)}} \times 100$$

Precision is measured using duplicate tests by Relative Percent Difference (RPD) as in:

$$\text{RPD} = \frac{\text{(\% recovery test 1 - \% recovery test 2)}}{\text{(\% recovery test 1 + \% recovery test 2)/2}} \times 100$$

Control limits for accuracy (percent recovery) are based on the average, historical percent recovery +/-3 standard deviation units. Control limits for precision (relative percent difference) range from 0 (identical duplicate DCS results) to the average, historical relative percent difference + 3 standard deviation units. In cases where there is not enough historical data, EPA limits or advisory limits are set, with the approval of the Quality Assurance department.

IV Analysis Results

Test methods may include minor modifications of published EPA Methods such as reporting limits or parameter lists. Reporting limits are adjusted to reflect dilution of the sample, when appropriate. Solid and waste samples are reported on an "as received" basis, i.e., no correction is made for moisture content, unless the method requires or the client requests that such correction be made.

Results are on the attached data sheets.

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SAMPLE DESCRIPTION INFORMATION
for
Dames & Moore

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
057964-0001-SA	MW-24	AQUEOUS	24 APR 91	10:20	24 APR 91
057964-0002-SA	MW-27	AQUEOUS	24 APR 91	12:00	24 APR 91
057964-0003-SA	MW-27	AQUEOUS	24 APR 91	12:00	24 APR 91
057964-0004-SA	MW-25	AQUEOUS	24 APR 91	15:00	24 APR 91
057964-0005-SA	MW-25	AQUEOUS	24 APR 91	15:00	24 APR 91
057964-0006-SA	MW-26	AQUEOUS	24 APR 91	15:40	24 APR 91
057964-0007-SA	MW-26	AQUEOUS	24 APR 91	15:40	24 APR 91
057964-0008-SA	TB-2	AQUEOUS	19 APR 91	15:40	24 APR 91
057964-0009-SA	FB-1	AQUEOUS	24 APR 91	16:00	24 APR 91
057964-0010-SA	RB-1	AQUEOUS	24 APR 91	16:30	24 APR 91

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QC LOT ASSIGNMENT REPORT
Metals Analysis and Preparation

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
057964-0001-SA	AQUEOUS	AS-FAA-AT	30 APR 91-A	30 APR 91-A
057964-0001-SA	AQUEOUS	CR-FAA-AT	30 APR 91-A	30 APR 91-A
057964-0001-SA	AQUEOUS	NI-FAA-AT	30 APR 91-A	30 APR 91-A
057964-0001-SA	AQUEOUS	PB-FAA-AT	30 APR 91-A	30 APR 91-A
057964-0002-SA	AQUEOUS	AS-FAA-AT	30 APR 91-A	30 APR 91-A
057964-0002-SA	AQUEOUS	CR-FAA-AT	30 APR 91-A	30 APR 91-A
057964-0002-SA	AQUEOUS	NI-FAA-AT	30 APR 91-A	30 APR 91-A
057964-0002-SA	AQUEOUS	PB-FAA-AT	30 APR 91-A	30 APR 91-A
057964-0004-SA	AQUEOUS	AS-FAA-AT	30 APR 91-A	30 APR 91-A
057964-0004-SA	AQUEOUS	CR-FAA-AT	30 APR 91-A	30 APR 91-A
057964-0004-SA	AQUEOUS	NI-FAA-AT	30 APR 91-A	30 APR 91-A
057964-0004-SA	AQUEOUS	PB-FAA-AT	30 APR 91-A	30 APR 91-A
057964-0006-SA	AQUEOUS	AS-FAA-AT	30 APR 91-A	30 APR 91-A
057964-0006-SA	AQUEOUS	CR-FAA-AT	30 APR 91-A	30 APR 91-A
057964-0006-SA	AQUEOUS	NI-FAA-AT	30 APR 91-A	30 APR 91-A
057964-0006-SA	AQUEOUS	PB-FAA-AT	30 APR 91-A	30 APR 91-A

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METHOD BLANK REPORT
Metals Analysis and Preparation

Analyte	Result	Units	Reporting Limit
Test: GF-ASCP-TAL-AT Matrix: AQUEOUS QC Lot: 30 APR 91-A QC Run: 30 APR 91-A			
Arsenic	ND	mg/L	0.0050
Test: GF-CRCP-TAL-AT Matrix: AQUEOUS QC Lot: 30 APR 91-A QC Run: 30 APR 91-A			
Chromium	ND	mg/L	0.0010
Test: GF-NICP-TAL-AT Matrix: AQUEOUS QC Lot: 30 APR 91-A QC Run: 30 APR 91-A			
Nickel	ND	mg/L	0.0050
Test: GF-PBCP-TAL-AT Matrix: AQUEOUS QC Lot: 30 APR 91-A QC Run: 30 APR 91-A			
Lead	ND	mg/L	0.0050

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DUPLICATE CONTROL SAMPLE REPORT
Metals Analysis and Preparation

Analyte	Concentration Spiked	Measured DCS1	Measured DCS2	Measured AVG	Accuracy Average(%) DCS	Accuracy Average(%) Limits	Precision (RPD) DCS	Precision (RPD) Limit
Category: AS-FAA-AT Matrix: AQUEOUS QC Lot: 30 APR 91-A Concentration Units: mg/L								
Arsenic	0.040	0.0343	0.0334	0.0338	85	84-115	2.7	10
Category: CR-FAA-AT Matrix: AQUEOUS QC Lot: 30 APR 91-A Concentration Units: mg/L								
Chromium	0.02	0.0199	0.0202	0.0200	100	75-125	1.5	20
Category: DEFAULT Matrix: AQUEOUS QC Lot: 30 APR 91-A Concentration Units: mg/L								
Nickel	0.02	0.0192	0.0198	0.0195	98	75-125	3.2	20
Category: PB-FAA-AT Matrix: AQUEOUS QC Lot: 30 APR 91-A Concentration Units: mg/L								
Lead	0.020	0.0177	0.0186	0.0182	91	82-115	5.0	11

Calculations are performed before rounding to avoid round-off errors in calculated results.

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QC LOT ASSIGNMENT REPORT
Volatile Organics by GC

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
057964-0003-SA	AQUEOUS	601-A	01 MAY 91-38A	30 APR 91-38A
057964-0005-SA	AQUEOUS	601-A	01 MAY 91-38A	30 APR 91-38A
057964-0007-SA	AQUEOUS	601-A	01 MAY 91-38A	30 APR 91-38A
057964-0008-SA	AQUEOUS	601-A	01 MAY 91-38A	30 APR 91-38A
057964-0009-SA	AQUEOUS	601-A	01 MAY 91-38A	30 APR 91-38A
057964-0010-SA	AQUEOUS	601-A	01 MAY 91-38A	30 APR 91-38A

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METHOD BLANK REPORT
Volatile Organics by GC

Test: 601-A
Matrix: AQUEOUS
QC Lot: 01 MAY 91-38A QC Run: 30 APR 91-38A

Analyte	Result	Units	Reporting Limit
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	0.50
1,1-Dichloroethane	ND	ug/L	0.50
1,2-Dichloroethene (cis/trans)	ND	ug/L	0.50
Chloroform	ND	ug/L	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
1,2-Dibromoethane	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0

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DUPLICATE CONTROL SAMPLE REPORT
Volatile Organics by GC

Analyte	Concentration Spiked	Measured DCS1	Measured DCS2	AVG	Accuracy Average(%) DCS	Accuracy Limits	Precision (RPD) DCS	Precision Limit
Category: 601-A								
Matrix: AQUEOUS								
QC Lot: 01 MAY 91-38A								
Concentration Units: ug/L								
1,1-Dichloroethane	5.0	4.66	4.79	4.72	95	70-138	2.8	24
Chloroform	5.0	4.80	4.89	4.84	97	83-124	1.9	18
Bromodichloromethane	10.0	10.5	10.7	10.6	106	78-132	1.9	21
Trichloroethene	5.0	4.74	4.76	4.75	95	82-122	0.4	16
Chlorobenzene	5.0	4.70	4.86	4.78	96	80-126	3.3	19

Calculations are performed before rounding to avoid round-off errors in calculated results.

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SINGLE CONTROL SAMPLE REPORT
Volatile Organics by GC

Analyte	Concentration Spiked	Measured	Accuracy(%) SCS	Limits
Category: 601-A				
Matrix: AQUEOUS				
QC Lot: 01 MAY 91-38A QC Run: 30 APR 91-38A				
Concentration Units: ug/L				
Bromochloromethane	5.00	4.17	83	68-121

Calculations are performed before rounding to avoid round-off errors in calculated results.

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A Corning Company

Total Metals

Client Name: Dames & Moore
Client ID: MW-24
Lab ID: 057964-0001-SA
Matrix: AQUEOUS Sampled: 24 APR 91 Received: 24 APR 91
Authorized: 24 APR 91 Prepared: See Below Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Arsenic	ND	mg/L	0.0050	7060	30 APR 91	30 APR 91
Chromium	0.0029	mg/L	0.0010	7191	30 APR 91	02 MAY 91
Lead	ND	mg/L	0.0050	7421	30 APR 91	30 APR 91
Nickel	0.24	mg/L	0.10	7521	30 APR 91	02 MAY 91 R

Note R : Raised reporting limit(s) due to high analyte level(s).

ND = Not detected
NA = Not applicable

Reported By: Gara Sahakian Approved By: Barry Votaw

The cover letter is an integral part of this report.
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Total Metals

Client Name: Dames & Moore
Client ID: MW-27
Lab ID: 057964-0002-SA
Matrix: AQUEOUS Sampled: 24 APR 91 Received: 24 APR 91
Authorized: 24 APR 91 Prepared: See Below Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Arsenic	ND	mg/L	0.0050	7060	30 APR 91	30 APR 91
Chromium	0.0061	mg/L	0.0010	7191	30 APR 91	02 MAY 91
Lead	ND	mg/L	0.0050	7421	30 APR 91	30 APR 91
Nickel	0.038	mg/L	0.015	7521	30 APR 91	02 MAY 91 R

Note R : Raised reporting limit(s) due to high analyte level(s).

ND = Not detected
NA = Not applicable

Reported By: Gara Sahakian Approved By: Barry Votaw

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Total Metals

Client Name: Dames & Moore
Client ID: MW-25
Lab ID: 057964-0004-SA
Matrix: AQUEOUS — Sampled: 24 APR 91 — Received: 24 APR 91
Authorized: 24 APR 91 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Arsenic	ND	mg/L	0.0050	7060	30 APR 91	30 APR 91
Chromium	ND	mg/L	0.0020	7191	30 APR 91	01 MAY 91 R
Lead	ND	mg/L	0.0050	7421	30 APR 91	30 APR 91
Nickel	0.24	mg/L	0.10	7521	30 APR 91	02 MAY 91 R

Note R : Raised reporting limit(s) due to high analyte level(s).

ND = Not detected
NA = Not applicable

Reported By: Gara Sahakian — Approved By: Barry Votaw

The cover letter is an integral part of this report.
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Total Metals

Client Name: Dames & Moore
Client ID: MW-26
Lab ID: 057964-0006-SA
Matrix: AQUEOUS Sampled: 24 APR 91 Received: 24 APR 91
Authorized: 24 APR 91 Prepared: See Below Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Arsenic	ND	mg/L	0.0050	7060	30 APR 91	30 APR 91
Chromium	0.0080	mg/L	0.0010	7191	30 APR 91	02 MAY 91
Lead	ND	mg/L	0.0050	7421	30 APR 91	30 APR 91
Nickel	0.24	mg/L	0.075	7521	30 APR 91	02 MAY 91 R

Note R : Raised reporting limit(s) due to high analyte level(s).

ND = Not detected
NA = Not applicable

Reported By: Gara Sahakian Approved By: Barry Votaw

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Halogenated Volatile Organics

Method 601

Client Name: Dames & Moore
Client ID: MW-27
Lab ID: 057964-0003-SA
Matrix: AQUEOUS Sampled: 24 APR 91 Received: 24 APR 91
Authorized: 24 APR 91 Prepared: NA Analyzed: 30 APR 91

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	1.1	ug/L	0.50
1,1-Dichloroethane	ND	ug/L	0.50
1,2-Dichloroethene (cis/trans)	ND	ug/L	0.50
Chloroform	1.4	ug/L	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
1,2-Dibromoethane	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0

Surrogate	Recovery	
Bromochloromethane	83	%

ND = Not detected
NA = Not applicable

Reported By: Dan Orovich Approved By: Sharon Campbell

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

Halogenated Volatile Organics

Method 601

Client Name: Dames & Moore
Client ID: MW-25
Lab ID: 057964-0005-SA
Matrix: AQUEOUS Sampled: 24 APR 91 Received: 24 APR 91
Authorized: 24 APR 91 Prepared: NA Analyzed: 30 APR 91

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	2.5	ug/L	0.50
1,1-Dichloroethane	2.1	ug/L	0.50
1,2-Dichloroethene (cis/trans)	ND	ug/L	0.50
Chloroform	1.4	ug/L	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
1,2-Dibromoethane	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0

Surrogate	Recovery	
Bromochloromethane	84	%

ND = Not detected
NA = Not applicable

Reported By: Dan Orovich Approved By: Sharon Campbell

The cover letter is an integral part of this report.
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A Corning Company

Halogenated Volatile Organics

Method 601

Client Name: Dames & Moore
Client ID: MW-26
Lab ID: 057964-0007-SA
Matrix: AQUEOUS Sampled: 24 APR 91 Received: 24 APR 91
Authorized: 24 APR 91 Prepared: NA Analyzed: 30 APR 91

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	3.4	ug/L	0.50
1,1-Dichloroethane	2.4	ug/L	0.50
1,2-Dichloroethene (cis/trans)	ND	ug/L	0.50
Chloroform	1.4	ug/L	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
1,2-Dibromoethane	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0

Surrogate	Recovery	
Bromochloromethane	86	%

ND = Not detected
NA = Not applicable

Reported By: Dan Orovich Approved By: Sharon Campbell

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

Halogenated Volatile Organics

Method 601

Client Name: Dames & Moore
Client ID: TB-2
Lab ID: 057964-0008-SA
Matrix: AQUEOUS Sampled: 19 APR 91 Received: 24 APR 91
Authorized: 24 APR 91 Prepared: NA Analyzed: 30 APR 91

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	0.50
1,1-Dichloroethane	ND	ug/L	0.50
1,2-Dichloroethene (cis/trans)	ND	ug/L	0.50
Chloroform	ND	ug/L	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
1,2-Dibromoethane	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0

Surrogate	Recovery	
Bromochloromethane	83	%

ND = Not detected
NA = Not applicable

Reported By: Dan Orovich Approved By: Sharon Campbell

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

Halogenated Volatile Organics

Method 601

Client Name: Dames & Moore
Client ID: FB-1
Lab ID: 057964-0009-SA
Matrix: AQUEOUS Sampled: 24 APR 91 Received: 24 APR 91
Authorized: 24 APR 91 Prepared: NA Analyzed: 01 MAY 91

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	0.50
1,1-Dichloroethane	ND	ug/L	0.50
1,2-Dichloroethene (cis/trans)	ND	ug/L	0.50
Chloroform	ND	ug/L	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
1,2-Dibromoethane	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0

Surrogate	Recovery	
Bromochloromethane	95	%

ND = Not detected
NA = Not applicable

Reported By: Dan Orovich Approved By: Sharon Campbell

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

Halogenated Volatile Organics

Method 601

Client Name: Dames & Moore
Client ID: RB-1
Lab ID: 057964-0010-SA
Matrix: AQUEOUS Sampled: 24 APR 91 Received: 24 APR 91
Authorized: 24 APR 91 Prepared: NA Analyzed: 01 MAY 91

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	0.50
1,1-Dichloroethane	ND	ug/L	0.50
1,2-Dichloroethene (cis/trans)	ND	ug/L	0.50
Chloroform	ND	ug/L	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
1,2-Dibromoethane	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0

Surrogate	Recovery	
Bromochloromethane	89	%

ND = Not detected
NA = Not applicable

Reported By: Dan Orovich Approved By: Sharon Campbell

The cover letter is an integral part of this report.
Rev 230787

Enseco

Page ____ of ____

CHAIN-OF-CUSTODY RECORD

SAMPLER: (*Signature*) _____ Date Shipped _____ Carrier _____

Phone _____ Airbill No. _____ Cooler No. _____

SHIP TO:

Enseco-Cal Lab
2544 Industrial Blvd.
West Sacramento, CA 95691
(916) 372-1393

ATTENTION: _____

SEND RESULTS TO:

Client Name TONY MINDLING

Company DAMES + MOORE

Address 9300 Tech Center Dr Suite 100

Phone 916-364-8698

PROJECT NAME VPRR Sac Quarterly Sampling **PROJECT NO.** 00773-064-044 **P.O. NO.** _____

Relinquished by: (*Signature*)	Received by: (*Signature*)	Date	Time
		4-25-91	1620
Relinquished by: (*Signature*)	Received by: (*Signature*)	Date	Time
Relinquished by: (*Signature*)	Received at lab by: (*Signature*)	Date	Time
		4-25-91	16:20
Relinquished from lab by: (*Signature*)	Received by: (*Signature*)	Date	Time

ANALYSIS REQUEST

Sample ID Number	Sample Description	Date/Time Sampled	Analysis Requested		Sample Condition Upon Receipt
MW-15	2-40ml (HCl)	4-25/1010	601	✓	Good
"	1-500 ml (HNO_3)	" /1010	As, Cr, Ni, Pb	✓	
MW-40	2-40 ml (HCl)	" /0930	601	✓	
"	1-500 ml (HNO_3)	" /0930	As, Cr, Ni, Pb	✓	
MW-16	2-40 ml (HCl)	" /1100	601	✓	
"	1-500ml (HNO_3)	" /1100	As, Cr, Ni, Pb	✓	
MW-21	2-40 ml (HCl)	" /1415	601	✓	
"	1-500 ml (HNO_3)	" /1415	As, Cr, Ni, Pb	✓	
MW-22	2-40 ml (HCl)	" /1500	601	✓	
"	1-500 ml (HNO_3)	" /1500	As, Cr, Ni, Pb	✓	
Special Instructions/Comments:				✓	
TB-3	1-40ml (HCl)	4-19/—	601		

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT

Expected Analytical T.A.T's: _____ Immediate Attention (200% surcharge) _____ RUSH (50-100% surcharge) X Standard

Cal Lab ID Number: *(for lab use only)*

Client Retains White Copy Only

(Revised 1/87)

California Analytical
Laboratory

Enseco
A CORNING Company

May 14, 1991
Lab ID: 057986

Anthony J. Mindling
Dames & Moore
9300 Tech Center Drive
Suite 100
Sacramento, CA 95826

Dear Mr. Mindling:

Enclosed is the report for the six aqueous samples for your UPRR Sac Quarterly Sampling Project, Number 00173-064-044, which were received at Enseco-Cal Lab on 25 April 1991.

The report consists of the following sections:

I Sample Description
II Analysis Request
III Quality Control Report
IV Analysis Results

If you have any questions, please feel free to call.

Sincerely,

Janet Harlan

Janet Harlan
Program Administrator

sh

Enseco Incorporated
2544 Industrial Boulevard
West Sacramento, California 95691
916/372-1393 Fax: 916/372-7768

Enseco
A Corning Company

I Sample Description

See the attached Sample Description Information.

The samples were received under chain-of-custody.

II Analysis Request

The following analytical tests were requested.

Lab ID	Analysis Description
057986-1 thru 5	Selected Metals
-1 thru 6	Halogenated Volatile Organics

III Quality Control

A. Project Specific QC. No project specific QC (i.e., spikes and/or duplicates) was requested.

B. Method Blank Results. A method blank is a laboratory-generated sample which assesses the degree to which laboratory operations and procedures cause false-positive analytical results for your samples.

No target parameters were detected in the method blanks associated with your samples at the reporting limit levels noted on the attached Method Blank Report.

C. Laboratory Control Samples - The LCS Program

Duplicate Control Samples. A DCS is a well-characterized matrix (blank water, sand or celite) which is spiked with certain target parameters and analyzed at approximately 10% of the sample load in order to establish method-specific control limits. The DCS results associated with your samples are on the attached Duplicate Control Sample Report.

Single Control Samples. An SCS consists of a control matrix that is spiked with surrogate compounds appropriate to the method being used. In cases where no surrogate is available, (e.g. metals or conventional analyses) a single control sample identical to the DCS serves as the control sample. An SCS is prepared for each sample lot. Accuracy is calculated identically to the DCS. The SCS results associated with your samples are on the attached Single Control Sample Report.

Accuracy is measured by Percent Recovery as in:

$$\% \text{ recovery} = \frac{(\text{measured concentration})}{(\text{actual concentration})} \times 100$$

Precision is measured using duplicate tests by Relative Percent Difference (RPD) as in:

$$\text{RPD} = \frac{(\% \text{ recovery test 1} - \% \text{ recovery test 2})}{(\% \text{ recovery test 1} + \% \text{ recovery test 2})/2} \times 100$$

Control limits for accuracy (percent recovery) are based on the average, historical percent recovery +/-3 standard deviation units. Control limits for precision (relative percent difference) range from 0 (identical duplicate DCS results) to the average, historical relative percent difference + 3 standard deviation units. In cases where there is not enough historical data, EPA limits or advisory limits are set, with the approval of the Quality Assurance department.

IV Analysis Results

Test methods may include minor modifications of published EPA Methods such as reporting limits or parameter lists. Reporting limits are adjusted to reflect dilution of the sample, when appropriate. Solid and waste samples are reported on an "as received" basis; i.e., no correction is made for moisture content, unless the method requires or the client requests that such correction be made.

Results are on the attached data sheets.

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SAMPLE DESCRIPTION INFORMATION
for
Dames & Moore

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
057986-0001-SA	MW-15	AQUEOUS	25 APR 91	10:10	25 APR 91
057986-0002-SA	MW-40	AQUEOUS	25 APR 91	09:30	25 APR 91
057986-0003-SA	MW-16	AQUEOUS	25 APR 91	11:00	25 APR 91
057986-0004-SA	MW-21	AQUEOUS	25 APR 91	14:15	25 APR 91
057986-0005-SA	MW-22	AQUEOUS	25 APR 91	15:00	25 APR 91
057986-0006-SA	TB-3	AQUEOUS	19 APR 91		25 APR 91

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QC LOT ASSIGNMENT REPORT
Volatile Organics by GC

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
057986-0001-SA	AQUEOUS	601-A	01 MAY 91-38A	30 APR 91-38A
057986-0002-SA	AQUEOUS	601-A	01 MAY 91-38A	30 APR 91-38A
057986-0003-SA	AQUEOUS	601-A	01 MAY 91-38A	30 APR 91-38A
057986-0004-SA	AQUEOUS	601-A	01 MAY 91-38A	30 APR 91-38A
057986-0005-SA	AQUEOUS	601-A	01 MAY 91-38A	30 APR 91-38A
057986-0006-SA	AQUEOUS	601-A	01 MAY 91-38A	30 APR 91-38A

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METHOD BLANK REPORT
Volatile Organics by GC

Analyte	Result	Units	Reporting Limit
Test: 601-A			
Matrix: AQUEOUS			
QC Lot: 01 MAY 91-38A QC Run: 30 APR 91-38A			
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	0.50
1,1-Dichloroethane	ND	ug/L	0.50
1,2-Dichloroethene (cis/trans)	ND	ug/L	0.50
Chloroform	ND	ug/L	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
1,2-Dibromoethane	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0
Test: 601-A			
Matrix: AQUEOUS			
QC Lot: 01 MAY 91-38A QC Run: 30 APR 91-38A			
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	0.50
1,1-Dichloroethane	ND	ug/L	0.50
1,2-Dichloroethene (cis/trans)	ND	ug/L	0.50

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METHOD BLANK REPORT
Volatile Organics by GC (cont.)

Analyte	Result	Units	Reporting Limit
Test: 601-A			
Matrix: AQUEOUS			
QC Lot: 01 MAY 91-38A QC Run: 30 APR 91-38A			
Chloroform	ND	ug/L	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
1,2-Dibromoethane	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0

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DUPLICATE CONTROL SAMPLE REPORT
Volatile Organics by GC

Analyte	Concentration Spiked	Measured DCS1	Measured DCS2	Measured AVG	Accuracy Average(%) DCS	Accuracy Average(%) Limits	Precision (RPD) DCS	Precision (RPD) Limit
Category: 601-A Matrix: AQUEOUS QC Lot: 01 MAY 91-38A Concentration Units: ug/L								
1,1-Dichloroethane	5.0	4.66	4.79	4.72	95	70-138	2.8	24
Chloroform	5.0	4.80	4.89	4.84	97	83-124	1.9	18
Bromodichloromethane	10.0	10.5	10.7	10.6	106	78-132	1.9	21
Trichloroethene	5.0	4.74	4.76	4.75	95	82-122	0.4	16
Chlorobenzene	5.0	4.70	4.86	4.78	96	80-126	3.3	19

Calculations are performed before rounding to avoid round-off errors in calculated results.

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A Corning Company

SINGLE CONTROL SAMPLE REPORT
Volatile Organics by GC

Analyte	Concentration Spiked	Measured	Accuracy(%) SCS	Limits
Category: 601-A				
Matrix: AQUEOUS				
QC Lot: 01 MAY 91-38A QC Run: 30 APR 91-38A				
Concentration Units: ug/L				
Bromochloromethane	5.00	4.17	83	68-121

Calculations are performed before rounding to avoid round-off errors in calculated results.

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QC LOT ASSIGNMENT REPORT
Metals Analysis and Preparation

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
057986-0001-SA	AQUEOUS	AS-FAA-AT	30 APR 91-A	30 APR 91-A
057986-0001-SA	AQUEOUS	CR-FAA-AT	30 APR 91-A	30 APR 91-A
057986-0001-SA	AQUEOUS	NI-FAA-AT	30 APR 91-A	30 APR 91-A
057986-0001-SA	AQUEOUS	PB-FAA-AT	30 APR 91-A	30 APR 91-A
057986-0002-SA	AQUEOUS	AS-FAA-AT	30 APR 91-A	30 APR 91-A
057986-0002-SA	AQUEOUS	CR-FAA-AT	30 APR 91-A	30 APR 91-A
057986-0002-SA	AQUEOUS	NI-FAA-AT	30 APR 91-A	30 APR 91-A
057986-0002-SA	AQUEOUS	PB-FAA-AT	30 APR 91-A	30 APR 91-A
057986-0003-SA	AQUEOUS	AS-FAA-AT	30 APR 91-A	30 APR 91-A
057986-0003-SA	AQUEOUS	CR-FAA-AT	30 APR 91-A	30 APR 91-A
057986-0003-SA	AQUEOUS	NI-FAA-AT	30 APR 91-A	30 APR 91-A
057986-0003-SA	AQUEOUS	PB-FAA-AT	30 APR 91-A	30 APR 91-A
057986-0004-SA	AQUEOUS	AS-FAA-AT	30 APR 91-A	30 APR 91-A
057986-0004-SA	AQUEOUS	CR-FAA-AT	30 APR 91-A	30 APR 91-A
057986-0004-SA	AQUEOUS	NI-FAA-AT	30 APR 91-A	30 APR 91-A
057986-0004-SA	AQUEOUS	PB-FAA-AT	30 APR 91-A	30 APR 91-A
057986-0005-SA	AQUEOUS	AS-FAA-AT	30 APR 91-A	30 APR 91-A
057986-0005-SA	AQUEOUS	CR-FAA-AT	30 APR 91-A	30 APR 91-A
057986-0005-SA	AQUEOUS	NI-FAA-AT	30 APR 91-A	30 APR 91-A
057986-0005-SA	AQUEOUS	PB-FAA-AT	30 APR 91-A	30 APR 91-A

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A Corning Company

METHOD BLANK REPORT
Metals Analysis and Preparation

Analyte	Result	Units	Reporting Limit
Test: GF-ASCP-TAL-AT Matrix: AQUEOUS QC Lot: 30 APR 91-A QC Run: 30 APR 91-A			
Arsenic	ND	mg/L	0.0050
Test: GF-CRCP-TAL-AT Matrix: AQUEOUS QC Lot: 30 APR 91-A QC Run: 30 APR 91-A			
Chromium	ND	mg/L	0.0010
Test: GF-NICP-TAL-AT Matrix: AQUEOUS QC Lot: 30 APR 91-A QC Run: 30 APR 91-A			
Nickel	ND	mg/L	0.0050
Test: GF-PBCP-TAL-AT Matrix: AQUEOUS QC Lot: 30 APR 91-A QC Run: 30 APR 91-A			
Lead	ND	mg/L	0.0050

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A Corning Company

DUPLICATE CONTROL SAMPLE REPORT
Metals Analysis and Preparation

Analyte	Concentration Spiked	Measured DCS1	Measured DCS2	Measured AVG	Accuracy Average(%) DCS	Accuracy Limits	Precision (RPD) DCS	Precision Limit
Category: AS-FAA-AT Matrix: AQUEOUS QC Lot: 30 APR 91-A Concentration Units: mg/L								
Arsenic	0.040	0.0343	0.0334	0.0338	85	84-115	2.7	10
Category: CR-FAA-AT Matrix: AQUEOUS QC Lot: 30 APR 91-A Concentration Units: mg/L								
Chromium	0.02	0.0199	0.0202	0.0200	100	75-125	1.5	20
Category: DEFAULT Matrix: AQUEOUS QC Lot: 30 APR 91-A Concentration Units: mg/L								
Nickel	0.02	0.0192	0.0198	0.0195	98	75-125	3.2	20
Category: PB-FAA-AT Matrix: AQUEOUS QC Lot: 30 APR 91-A Concentration Units: mg/L								
Lead	0.020	0.0177	0.0186	0.0182	91	82-115	5.0	11

Calculations are performed before rounding to avoid round-off errors in calculated results.

Enseco
A Corning Company

Halogenated Volatile Organics

Method 601

Client Name: Dames & Moore
Client ID: MW-15
Lab ID: 057986-0001-SA
Matrix: AQUEOUS Sampled: 25 APR 91 Received: 25 APR 91
Authorized: 25 APR 91 Prepared: NA Analyzed: 01 MAY 91

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	0.75	ug/L	0.50
1,1-Dichloroethane	ND	ug/L	0.50
1,2-Dichloroethene (cis/trans)	ND	ug/L	0.50
Chloroform	ND	ug/L	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
1,2-Dibromoethane	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	6.1	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0

Surrogate	Recovery	
Bromochloromethane	91	%

ND = Not detected
NA = Not applicable

Reported By: Dan Orovich Approved By: Sharon Campbell

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

Halogenated Volatile Organics

Method 601

Client Name: Dames & Moore
Client ID: MW-40
Lab ID: 057986-0002-SA
Matrix: AQUEOUS
Authorized: 25 APR 91

Sampled: 25 APR 91
Prepared: NA

Received: 25 APR 91
Analyzed: 01 MAY 91

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	0.82	ug/L	0.50
1,1-Dichloroethane	ND	ug/L	0.50
1,2-Dichloroethene (cis/trans)	ND	ug/L	0.50
Chloroform	ND	ug/L	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	0.53	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
1,2-Dibromoethane	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	6.7	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0

Surrogate	Recovery	
Bromochloromethane	95	%

ND = Not detected
NA = Not applicable

Reported By: Dan Orovich

Approved By: Sharon Campbell

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

Halogenated Volatile Organics

Method 601

Client Name: Dames & Moore
Client ID: MW-16
Lab ID: 057986-0003-SA
Matrix: AQUEOUS Sampled: 25 APR 91 Received: 25 APR 91
Authorized: 25 APR 91 Prepared: NA Analyzed: 01 MAY 91

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	2.8	ug/L	0.50
1,1-Dichloroethane	ND	ug/L	0.50
1,2-Dichloroethene (cis/trans)	ND	ug/L	0.50
Chloroform	ND	ug/L	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	0.83	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
1,2-Dibromoethane	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0

Surrogate	Recovery	
Bromochloromethane	92	%

ND = Not detected
NA = Not applicable

Reported By: Dan Orovich Approved By: Sharon Campbell

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

Halogenated Volatile Organics

Method 601

Client Name: Dames & Moore
Client ID: MW-21
Lab ID: 057986-0004-SA
Matrix: AQUEOUS Sampled: 25 APR 91 Received: 25 APR 91
Authorized: 25 APR 91 Prepared: NA Analyzed: 01 MAY 91

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	4.7	ug/L	0.50
1,1-Dichloroethane	0.74	ug/L	0.50
1,2-Dichloroethene (cis/trans)	ND	ug/L	0.50
Chloroform	2.5	ug/L	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
1,2-Dibromoethane	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0

Surrogate	Recovery	
Bromochloromethane	89	%

ND = Not detected
NA = Not applicable

Reported By: Dan Orovich Approved By: Sharon Campbell

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

Halogenated Volatile Organics

Method 601

Client Name: Dames & Moore
Client ID: MW-22
Lab ID: 057986-0005-SA
Matrix: AQUEOUS Sampled: 25 APR 91 Received: 25 APR 91
Authorized: 25 APR 91 Prepared: NA Analyzed: 01 MAY 91

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	0.50
1,1-Dichloroethane	ND	ug/L	0.50
1,2-Dichloroethene (cis/trans)	ND	ug/L	0.50
Chloroform	4.8	ug/L	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
1,2-Dibromoethane	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0

Surrogate	Recovery	
Bromochloromethane	90	%

ND = Not detected
NA = Not applicable

Reported By: Dan Orovich Approved By: Sharon Campbell

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

Halogenated Volatile Organics

Method 601

Client Name: Dames & Moore
Client ID: TB-3
Lab ID: 057986-0006-SA
Matrix: AQUEOUS Sampled: 19 APR 91 Received: 25 APR 91
Authorized: 25 APR 91 Prepared: NA Analyzed: 30 APR 91

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	0.50
1,1-Dichloroethane	ND	ug/L	0.50
1,2-Dichloroethene (cis/trans)	ND	ug/L	0.50
Chloroform	ND	ug/L	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
1,2-Dibromoethane	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0

Surrogate	Recovery	
Bromochloromethane	87	%

ND = Not detected
NA = Not applicable

Reported By: Dan Orovich Approved By: Sharon Campbell

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Enseco
A Corning Company

Total Metals

Client Name: Dames & Moore
Client ID: MW-15
Lab ID: 057986-0001-SA
Matrix: AQUEOUS — Sampled: 25 APR 91 — Received: 25 APR 91
Authorized: 25 APR 91 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Arsenic	ND	mg/L	0.0050	7060	30 APR 91	08 MAY 91
Chromium	0.011	mg/L	0.0010	7191	30 APR 91	02 MAY 91
Lead	ND	mg/L	0.0050	7421	30 APR 91	02 MAY 91
Nickel	0.051	mg/L	0.020	7521	30 APR 91	07 MAY 91 R

Note R : Raised reporting limit(s) due to high analyte level(s).

ND = Not detected
NA = Not applicable

Reported By: Fely Francis — Approved By: Barry Votaw

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Rev 230787

Enseco
A Corning Company

Total Metals

Client Name: Dames & Moore
Client ID: MW-40
Lab ID: 057986-0002-SA
Matrix: AQUEOUS
Authorized: 25 APR 91

Sampled: 25 APR 91
Prepared: See Below

Received: 25 APR 91
Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Arsenic	ND	mg/L	0.0050	7060	30 APR 91	08 MAY 91
Chromium	0.011	mg/L	0.0010	7191	30 APR 91	02 MAY 91
Lead	ND	mg/L	0.0050	7421	30 APR 91	02 MAY 91
Nickel	0.045	mg/L	0.020	7521	30 APR 91	07 MAY 91 R

Note R : Raised reporting limit(s) due to high analyte level(s).

ND = Not detected
NA = Not applicable

Reported By: Fely Francis

Approved By: Barry Votaw

The cover letter is an integral part of this report.
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Enseco
A Corning Company

Total Metals

Client Name: Dames & Moore
Client ID: MW-16
Lab ID: 057986-0003-SA
Matrix: AQUEOUS Sampled: 25 APR 91 Received: 25 APR 91
Authorized: 25 APR 91 Prepared: See Below Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Arsenic	ND	mg/L	0.0050	7060	30 APR 91	08 MAY 91
Chromium	0.0057	mg/L	0.0010	7191	30 APR 91	02 MAY 91
Lead	ND	mg/L	0.0050	7421	30 APR 91	02 MAY 91
Nickel	0.020	mg/L	0.020	7521	30 APR 91	07 MAY 91 R

Note R : Raised reporting limit(s) due to high analyte level(s).

ND = Not detected
NA = Not applicable

Reported By: Fely Francis Approved By: Barry Votaw

The cover letter is an integral part of this report.
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Enseco
A Corning Company

Total Metals

Client Name: Dames & Moore
Client ID: MW-21
Lab ID: 057986-0004-SA
Matrix: AQUEOUS
Authorized: 25 APR 91

Sampled: 25 APR 91
Prepared: See Below

Received: 25 APR 91
Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date	
Arsenic	ND	mg/L	0.0050	7060	30 APR 91	08 MAY 91	
Chromium	0.0084	mg/L	0.0010	7191	30 APR 91	02 MAY 91	
Lead	ND	mg/L	0.010	7421	30 APR 91	02 MAY 91	G
Nickel	0.31	mg/L	0.10	7521	30 APR 91	07 MAY 91	R

Note G : Reporting Limit raised due to matrix interference.

Note R : Raised reporting limit(s) due to high analyte level(s).

ND = Not detected
NA = Not applicable

Reported By: Fely Francis

Approved By: Barry Votaw

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

Total Metals

Client Name: Dames & Moore
Client ID: MW-22
Lab ID: 057986-0005-SA
Matrix: AQUEOUS Sampled: 25 APR 91 Received: 25 APR 91
Authorized: 25 APR 91 Prepared: See Below Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Arsenic	ND	mg/L	0.0050	7060	30 APR 91	08 MAY 91
Chromium	0.0069	mg/L	0.0010	7191	30 APR 91	02 MAY 91
Lead	ND	mg/L	0.0050	7421	30 APR 91	02 MAY 91
Nickel	0.0096	mg/L	0.0050	7521	30 APR 91	10 MAY 91

ND = Not detected
NA = Not applicable

Reported By: Gara Sahakian Approved By: Mei Lai

The cover letter is an integral part of this report.
Rev 230787

Enseco Page ____ of ____

CHAIN-OF-CUSTODY RECORD

SAMPLER: (*Signature*) _____ Date Shipped _____ Carrier _____

Phone _____ Airbill No. _____ Cooler No. _____

SHIP TO:
Enseco-Cal Lab
2544 Industrial Blvd.
West Sacramento, CA 95691
(916) 372-1393
ATTENTION: _____

SEND RESULTS TO:
Client Name TERRY HUDDLESTON
Company BAMEX - MOFFETT
Address Zero Tech Control, Inc. - KO
Phone 916-244-8097

PROJECT NAME LF-AC QUARTERLY SAMPLING **PROJECT NO.** 1172-64-44 **P.O. NO.** _____

		Date	Time
Relinquished by: (*Signature*)	Received by: (*Signature*)		
Relinquished by: (*Signature*)	Received by: (*Signature*)		
Relinquished by: (*Signature*)	Received at lab by: (*Signature*) Robert Sandy	4/24/91	1420
Relinquished from lab by: (*Signature*)	Received by: (*Signature*)		

ANALYSIS REQUEST

Sample ID Number	Sample Description	Date/Time Sampled	Analysis Requested	Sample Condition Upon Receipt
MW-7	2-40mL (HCl)	4/23-1000	601	Good
"	1-500mL (HNO_3)	-1000	As, Cr, Ni, Pb - GFAA	
MW-11	2-40mL (HCl)	-1145	601	
"	1-500mL (HNO_3)	-1145	As Cr, Ni, Pb - GFAA	
MW-7	2-40mL (HCl)	-1300	601 BUBBLES in (1) VOA.	
"	1-500mL (HNO_3)	-1300	As, Cr, Ni, Pb - GFAA	
RB-2	2-40mL (HCl)	-1330	601 (1) VOA LABELED RB-1. BUBBLES in (1) VOA	
FB-2	2-40mL (HCl)	-1345	601	
TB-4		4-19-91	601	

Special Instructions/Comments:

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT

Expected Analytical T.A.T's: _____ Immediate Attention (200% surcharge) _____ RUSH (50-100% surcharge) _____ Standard

Cal Lab ID Number: *(for lab use only)*

Client Retains White Copy Only (Revised 1/87)

California Analytical
Laboratory

Enseco
A CORNING Company

May 16, 1991
Lab ID: 058017

Anthony J. Mindling
Dames & Moore
9300 Tech Center Drive
Suite 100
Sacramento, CA 95826

Dear Mr. Mindling:

Enclosed is the report for the six aqueous samples for your UPSAC Quarterly Sampling Project, Number 00173-064-044, which were received at Enseco-Cal Lab on 26 April 1991.

The report consists of the following sections:

I Sample Description
II Analysis Request
III Quality Control Report
IV Analysis Results

If you have any questions, please feel free to call.

Sincerely,

Janet Harlan

Janet Harlan
Program Administrator

sh

Enseco Incorporated
2544 Industrial Boulevard
West Sacramento, California 95691
916/372-1393 Fax: 916/372-7768

Enseco
A Corning Company

I Sample Description

See the attached Sample Description Information.

The samples were received under chain-of-custody.

II Analysis Request

The following analytical tests were requested.

Lab ID	Analysis Description
058017-1 thru 4	Arsenic, Chromium, Lead, Nickel
-1 thru 6	Halogenated Volatile Organics

III Quality Control

A. Project Specific QC. No project specific QC (i.e., spikes and/or duplicates) was requested.

B. Method Blank Results. A method blank is a laboratory-generated sample which assesses the degree to which laboratory operations and procedures cause false-positive analytical results for your samples.

No target parameters were detected in the method blanks associated with your samples at the reporting limit levels noted on the attached Method Blank Report.

C. Laboratory Control Samples - The LCS Program

Duplicate Control Samples. A DCS is a well-characterized matrix (blank water, sand or celite) which is spiked with certain target parameters and analyzed at approximately 10% of the sample load in order to establish method-specific control limits. The DCS results associated with your samples are on the attached Duplicate Control Sample Report.

Single Control Samples. An SCS consists of a control matrix that is spiked with surrogate compounds appropriate to the method being used. In cases where no surrogate is available, (e.g. metals or conventional analyses) a single control sample identical to the DCS serves as the control sample. An SCS is prepared for each sample lot. Accuracy is calculated identically to the DCS. The SCS results associated with your samples are on the attached Single Control Sample Report.

Accuracy is measured by Percent Recovery as in:

$$\% \text{ recovery} = \frac{(\text{measured concentration})}{(\text{actual concentration})} \times 100$$

Precision is measured using duplicate tests by Relative Percent Difference (RPD) as in:

$$\text{RPD} = \frac{(\% \text{ recovery test 1} - \% \text{ recovery test 2})}{(\% \text{ recovery test 1} + \% \text{ recovery test 2})/2} \times 100$$

Control limits for accuracy (percent recovery) are based on the average, historical percent recovery +/-3 standard deviation units. Control limits for precision (relative percent difference) range from 0 (identical duplicate DCS results) to the average, historical relative percent difference + 3 standard deviation units. In cases where there is not enough historical data, EPA limits or advisory limits are set, with the approval of the Quality Assurance department.

IV Analysis Results

Test methods may include minor modifications of published EPA Methods such as reporting limits or parameter lists. Reporting limits are adjusted to reflect dilution of the sample, when appropriate. Solid and waste samples are reported on an "as received" basis; i.e., no correction is made for moisture content, unless the method requires or the client requests that such correction be made.

Results are on the attached data sheets.

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SAMPLE DESCRIPTION INFORMATION
for
Dames & Moore

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
058017-0001-SA	MW-8	AQUEOUS	23 APR 91	10:00	26 APR 91
058017-0002-SA	MW-11	AQUEOUS	23 APR 91	11:45	26 APR 91
058017-0003-SA	MW-7	AQUEOUS	24 APR 91	13:00	26 APR 91
058017-0004-SA	RB-2	AQUEOUS	23 APR 91	13:30	26 APR 91
058017-0005-SA	FB-2	AQUEOUS	23 APR 91	13:45	26 APR 91
058017-0006-SA	TB-4	AQUEOUS	19 APR 91		26 APR 91

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QC LOT ASSIGNMENT REPORT
Metals Analysis and Preparation

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
058017-0001-SA	AQUEOUS	AS-FAA-AT	03 MAY 91-A	03 MAY 91-A
058017-0001-SA	AQUEOUS	CR-FAA-AT	03 MAY 91-A	03 MAY 91-A
058017-0001-SA	AQUEOUS	NI-FAA-AT	03 MAY 91-A	03 MAY 91-A
058017-0001-SA	AQUEOUS	PB-FAA-AT	03 MAY 91-A	03 MAY 91-A
058017-0002-SA	AQUEOUS	AS-FAA-AT	03 MAY 91-A	03 MAY 91-A
058017-0002-SA	AQUEOUS	CR-FAA-AT	03 MAY 91-A	03 MAY 91-A
058017-0002-SA	AQUEOUS	NI-FAA-AT	03 MAY 91-A	03 MAY 91-A
058017-0002-SA	AQUEOUS	PB-FAA-AT	03 MAY 91-A	03 MAY 91-A
058017-0003-SA	AQUEOUS	AS-FAA-AT	03 MAY 91-A	03 MAY 91-A
058017-0003-SA	AQUEOUS	CR-FAA-AT	03 MAY 91-A	03 MAY 91-A
058017-0003-SA	AQUEOUS	NI-FAA-AT	03 MAY 91-A	03 MAY 91-A
058017-0003-SA	AQUEOUS	PB-FAA-AT	03 MAY 91-A	03 MAY 91-A

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A Corning Company

METHOD BLANK REPORT
Metals Analysis and Preparation

Analyte	Result	Units	Reporting Limit
Test: GF-ASCP-TAL-AT Matrix: AQUEOUS QC Lot: 03 MAY 91-A QC Run: 03 MAY 91-A			
Arsenic	ND	mg/L	0.0050
Test: GF-CRCP-TAL-AT Matrix: AQUEOUS QC Lot: 03 MAY 91-A QC Run: 03 MAY 91-A			
Chromium	ND	mg/L	0.0010
Test: GF-NICP-TAL-AT Matrix: AQUEOUS QC Lot: 03 MAY 91-A QC Run: 03 MAY 91-A			
Nickel	ND	mg/L	0.0050
Test: GF-PBCP-TAL-AT Matrix: AQUEOUS QC Lot: 03 MAY 91-A QC Run: 03 MAY 91-A			
Lead	ND	mg/L	0.0050

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A Corning Company

DUPLICATE CONTROL SAMPLE REPORT
Metals Analysis and Preparation

Analyte	Concentration Spiked	Measured DCS1	Measured DCS2	Measured AVG	Accuracy Average(%) DCS	Accuracy Limits	Precision (RPD) DCS	Precision Limit
Category: AS-FAA-AT Matrix: AQUEOUS QC Lot: 03 MAY 91-A Concentration Units: mg/L								
Arsenic	0.040	0.0343	0.0349	0.0346	87	84-115	1.7	10
Category: CR-FAA-AT Matrix: AQUEOUS QC Lot: 03 MAY 91-A Concentration Units: mg/L								
Chromium	0.02	0.0190	0.0188	0.0189	95	75-125	1.3	20
Category: NI-FAA-AT Matrix: AQUEOUS QC Lot: 03 MAY 91-A Concentration Units: mg/L								
Nickel	0.02	0.0200	0.0196	0.0198	99	75-125	2.0	20
Category: PB-FAA-AT Matrix: AQUEOUS QC Lot: 03 MAY 91-A Concentration Units: mg/L								
Lead	0.020	0.0175	0.0186	0.0180	90	82-115	6.1	11

Calculations are performed before rounding to avoid round-off errors in calculated results.

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A Corning Company

QC LOT ASSIGNMENT REPORT
Volatile Organics by GC

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
058017-0001-SA	AQUEOUS	601-A	01 MAY 91-38A	01 MAY 91-38A
058017-0002-SA	AQUEOUS	601-A	01 MAY 91-38A	01 MAY 91-38A
058017-0003-SA	AQUEOUS	601-A	01 MAY 91-38A	01 MAY 91-38A
058017-0004-SA	AQUEOUS	601-A	01 MAY 91-38A	01 MAY 91-38A
058017-0005-SA	AQUEOUS	601-A	01 MAY 91-38A	01 MAY 91-38A
058017-0006-SA	AQUEOUS	601-A	01 MAY 91-38A	01 MAY 91-38A

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A Corning Company

METHOD BLANK REPORT
Volatile Organics by GC

Analyte	Result	Units	Reporting Limit
Test: 601-A Matrix: AQUEOUS QC Lot: 01 MAY 91-38A QC Run: 01 MAY 91-38A			
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	0.50
1,1-Dichloroethane	ND	ug/L	0.50
1,2-Dichloroethene (cis/trans)	ND	ug/L	0.50
Chloroform	ND	ug/L	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
1,2-Dibromoethane	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0
Test: 601-A Matrix: AQUEOUS QC Lot: 01 MAY 91-38A QC Run: 01 MAY 91-38A			
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	0.50
1,1-Dichloroethane	ND	ug/L	0.50
1,2-Dichloroethene (cis/trans)	ND	ug/L	0.50

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METHOD BLANK REPORT
Volatile Organics by GC (cont.)

Analyte	Result	Units	Reporting Limit
Test: 601-A			
Matrix: AQUEOUS			
QC Lot: 01 MAY 91-38A QC Run: 01 MAY 91-38A			
Chloroform	ND	ug/L	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
1,2-Dibromoethane	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0

Enseco
A Corning Company

DUPLICATE CONTROL SAMPLE REPORT
Volatile Organics by GC

Analyte	Concentration Spiked	Measured DCS1	Measured DCS2	Measured AVG	Accuracy Average(%) DCS	Accuracy Limits	Precision (RPD) DCS	Precision (RPD) Limit
Category: 601-A Matrix: AQUEOUS QC Lot: 01 MAY 91-38A Concentration Units: ug/L								
1,1-Dichloroethane	5.0	4.66	4.79	4.72	95	70-138	2.8	24
Chloroform	5.0	4.80	4.89	4.84	97	83-124	1.9	18
Bromodichloromethane	10.0	10.5	10.7	10.6	106	78-132	1.9	21
Trichloroethene	5.0	4.74	4.76	4.75	95	82-122	0.4	16
Chlorobenzene	5.0	4.70	4.86	4.78	96	80-126	3.3	19

Calculations are performed before rounding to avoid round-off errors in calculated results.

Enseco
A Corning Company

SINGLE CONTROL SAMPLE REPORT
Volatile Organics by GC

Analyte	Concentration Spiked	Measured	Accuracy(%) SCS	Limits
Category: 601-A				
Matrix: AQUEOUS				
QC Lot: 01 MAY 91-38A QC Run: 01 MAY 91-38A				
Concentration Units: ug/L				
Bromochloromethane	5.00	4.46	89	68-121

Calculations are performed before rounding to avoid round-off errors in calculated results.

Enseco
A Corning Company

Total Metals

Client Name: Dames & Moore
Client ID: MW-8
Lab ID: 058017-0001-SA
Matrix: AQUEOUS Sampled: 23 APR 91 Received: 26 APR 91
Authorized: 26 APR 91 Prepared: See Below Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Arsenic	ND	mg/L	0.0050	7060	03 MAY 91	08 MAY 91
Chromium	0.0088	mg/L	0.0010	7191	03 MAY 91	10 MAY 91
Lead	ND	mg/L	0.0050	7421	03 MAY 91	10 MAY 91
Nickel	0.029	mg/L	0.010	7521	03 MAY 91	07 MAY 91 R

Note R : Raised reporting limit(s) due to high analyte level(s).

ND = Not detected
NA = Not applicable

Reported By: Fely Francis Approved By: Barry Votaw

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

Total Metals

Client Name: Dames & Moore
Client ID: MW-11
Lab ID: 058017-0002-SA
Matrix: AQUEOUS — Sampled: 23 APR 91 — Received: 26 APR 91
Authorized: 26 APR 91 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date	
Arsenic	ND	mg/L	0.0050	7060	03 MAY 91	08 MAY 91	
Chromium	0.038	mg/L	0.0040	7191	03 MAY 91	10 MAY 91	R
Lead	ND	mg/L	0.0050	7421	03 MAY 91	10 MAY 91	
Nickel	0.032	mg/L	0.010	7521	03 MAY 91	07 MAY 91	R

Note R : Raised reporting limit(s) due to high analyte level(s).

ND = Not detected
NA = Not applicable

Reported By: Fely Francis — Approved By: Barry Votaw

The cover letter is an integral part of this report.
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Enseco
A Corning Company

Total Metals

Client Name: Dames & Moore
Client ID: MW-7
Lab ID: 058017-0003-SA
Matrix: AQUEOUS Sampled: 24 APR 91 Received: 26 APR 91
Authorized: 26 APR 91 Prepared: See Below Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Arsenic	ND	mg/L	0.0050	7060	03 MAY 91	08 MAY 91
Chromium	0.018	mg/L	0.0020	7191	03 MAY 91	10 MAY 91 R
Lead	ND	mg/L	0.0050	7421	03 MAY 91	10 MAY 91
Nickel	0.13	mg/L	0.050	7521	03 MAY 91	07 MAY 91 R

Note R : Raised reporting limit(s) due to high analyte level(s).

ND = Not detected
NA = Not applicable

Reported By: Fely Francis Approved By: Barry Votaw

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Halogenated Volatile Organics

Method 601

Client Name: Dames & Moore
Client ID: MW-8
Lab ID: 058017-0001-SA
Matrix: AQUEOUS Sampled: 23 APR 91 Received: 26 APR 91
Authorized: 26 APR 91 Prepared: NA Analyzed: 01 MAY 91

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	1.8	ug/L	0.50
1,1-Dichloroethane	ND	ug/L	0.50
1,2-Dichloroethene (cis/trans)	ND	ug/L	0.50
Chloroform	ND	ug/L	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
1,2-Dibromoethane	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	3.7	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0

Surrogate	Recovery	
Bromochloromethane	86	%

ND = Not detected
NA = Not applicable

Reported By: Dan Orovich Approved By: Kris Rogers

The cover letter is an integral part of this report.
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A Corning Company

Halogenated Volatile Organics

Method 601

Client Name: Dames & Moore
Client ID: MW-11
Lab ID: 058017-0002-SA
Matrix: AQUEOUS Sampled: 23 APR 91 Received: 26 APR 91
Authorized: 26 APR 91 Prepared: NA Analyzed: 01 MAY 91

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	62	ug/L	0.50
1,1-Dichloroethane	19	ug/L	0.50
1,2-Dichloroethene (cis/trans)	1.1	ug/L	0.50
Chloroform	ND	ug/L	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	4.5	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	3.5	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
1,2-Dibromoethane	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	0.59	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0

Surrogate	Recovery	
Bromochloromethane	93	%

ND = Not detected
NA = Not applicable

Reported By: Dan Orovich Approved By: Kris Rogers

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Halogenated Volatile Organics

Method 601

Client Name: Dames & Moore
Client ID: MW-7
Lab ID: 058017-0003-SA
Matrix: AQUEOUS
Authorized: 26 APR 91

Sampled: 24 APR 91
Prepared: NA

Received: 26 APR 91
Analyzed: 01 MAY 91

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	11	ug/L	0.50
1,1-Dichloroethane	4.5	ug/L	0.50
1,2-Dichloroethene (cis/trans)	ND	ug/L	0.50
Chloroform	3.0	ug/L	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	4.6	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
1,2-Dibromoethane	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0

Surrogate	Recovery	
Bromochloromethane	99	%

ND = Not detected
NA = Not applicable

Reported By: Dan Orovich

Approved By: Kris Rogers

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A Corning Company

Halogenated Volatile Organics

Method 601

Client Name: Dames & Moore
Client ID: RB-2
Lab ID: 058017-0004-SA
Matrix: AQUEOUS Sampled: 23 APR 91 Received: 26 APR 91
Authorized: 26 APR 91 Prepared: NA Analyzed: 01 MAY 91

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	0.50
1,1-Dichloroethane	ND	ug/L	0.50
1,2-Dichloroethene (cis/trans)	ND	ug/L	0.50
Chloroform	ND	ug/L	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
1,2-Dibromoethane	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0

Surrogate	Recovery	
Bromochloromethane	85	%

ND = Not detected
NA = Not applicable

Reported By: Dan Orovich Approved By: Kris Rogers

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A Corning Company

Halogenated Volatile Organics

Method 601

Client Name: Dames & Moore
Client ID: FB-2
Lab ID: 058017-0005-SA
Matrix: AQUEOUS Sampled: 23 APR 91 Received: 26 APR 91
Authorized: 26 APR 91 Prepared: NA Analyzed: 02 MAY 91

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	0.50
1,1-Dichloroethane	ND	ug/L	0.50
1,2-Dichloroethene (cis/trans)	ND	ug/L	0.50
Chloroform	ND	ug/L	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
1,2-Dibromoethane	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0

Surrogate	Recovery	
Bromochloromethane	81	%

ND = Not detected
NA = Not applicable

Reported By: Dan Orovich Approved By: Kris Rogers

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Halogenated Volatile Organics

Method 601

Client Name: Dames & Moore
Client ID: TB-4
Lab ID: 058017-0006-SA
Matrix: AQUEOUS Sampled: 19 APR 91 Received: 26 APR 91
Authorized: 26 APR 91 Prepared: NA Analyzed: 02 MAY 91

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	0.50
1,1-Dichloroethane	ND	ug/L	0.50
1,2-Dichloroethene (cis/trans)	ND	ug/L	0.50
Chloroform	ND	ug/L	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
1,2-Dibromoethane	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0

Surrogate	Recovery	
Bromochloromethane	86	%

ND = Not detected
NA = Not applicable

Reported By: Dan Orovich Approved By: Kris Rogers

The cover letter is an integral part of this report.
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Enseco

CHAIN-OF-CUSTODY RECORD

SAMPLER: (*Signature*) _____ Date Shipped _____ Carrier _____

Phone _____ Airbill No. _____ Cooler No. _____

SHIP TO:

Enseco-Cal Lab
2544 Industrial Blvd.
West Sacramento, CA 95691
(916) 372-1393

ATTENTION: _____

SEND RESULTS TO:

Client Name TONY MINDLING

Company DAMES + MOORE

Address 9300 Tech Center Dr #100
Sacramento, CA 95826

Phone 916 364 8698

PROJECT NAME M173-164-044 **PROJECT NO.** [illegible] **P.O. NO.** _____

Relinquished by: (*Signature*)	Received by: (*Signature*)	Date	Time
Relinquished by: (*Signature*)	Received by: (*Signature*)	Date	Time
Relinquished by: (*Signature*)	Received at lab by: (*Signature*)	Date	Time
		4-29-91	1650
Relinquished from lab by: (*Signature*)	Received by: (*Signature*)	Date	Time

ANALYSIS REQUEST

Sample ID Number	Sample Description	Date/Time Sampled	Analysis Requested	Sample Condition Upon Receipt
MW-19	2-40ml HCl	4-29/1015	601	INTACT
"	1-500ml HNO_3	/ "	As Cr Ni Pb GFAA	
MW-41	2-40ml HCl	/0930	601	
"	1-500ml HNO_3	/ "	As Cr Ni Pb GFAA	
MW-20	2-40ml HCl	/1100	601	
"	1-500ml HNO_3	/ "	As Cr Ni Pb GFAA	
MW-17	4-40ml HCl	/1415	601, 602	BUBBLES in (2) VOA's.
"	1-500ml HNO_3	/ "	As Cr Ni Pb GFAA	
MW-18	4-40ml HCl	/1500	601, 602	BUBBLES in (3) VOA's.
"	1-500ml HNO_3	/ "	As Cr Ni Pb GFAA	

Special Instructions/Comments:

TB-5	1 40ml HCl	4-19-91	601	

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT

Expected Analytical T.A.T's: _____ Immediate Attention (200% surcharge) _____ RUSH (50-100% surcharge) X Standard

Cal Lab ID Number: *(for lab use only)*

Client Retains White Copy Only

(Revised 1/87)

California Analytical
Laboratory

Enseco
A CORNING Company

May 20, 1991
Lab ID: 058036

Anthony Mindling
Dames & Moore
9300 Tech Center Dr.
Suite 100
Sacramento, CA 95826

Dear Mr. Mindling:

Enclosed is the report for the six aqueous samples for your UPOR Quarterly Project, #00173-064-044, which were received at Enseco-Cal Lab on 29 April 1991.

The report consists of the following sections:

I Sample Description
II Analysis Request
III Quality Control Report
IV Analysis Results

If you have any questions, please feel free to call.

Sincerely,

Janet Harlan

Janet Harlan
Program Administrator

du

Enseco Incorporated
2544 Industrial Boulevard
West Sacramento, California 95691
916/372-1393 Fax: 916/372-7768

Enseco
A Corning Company

I Sample Description

See the attached Sample Description Information.

The samples were received under chain-of-custody.

II Analysis Request

The following analytical tests were requested.

Lab ID	Analysis Description
058036-1 thru 6	Halogenated Volatile Organics
-1 thru 5	Arsenic, Chromium, Lead, Nickel
-4, 5	Aromatic Volatile Organics

III Quality Control

A. **Project Specific QC.** No project specific QC (i.e., spikes and/or duplicates) was requested.

B. **Method Blank Results.** A method blank is a laboratory-generated sample which assesses the degree to which laboratory operations and procedures cause false-positive analytical results for your samples.

No target parameters were detected in the method blanks associated with your samples at the reporting limit levels noted on the attached Method Blank Report.

Repetitions of method blanks (with identical QC Lot No.s) have been reported but do not indicate unique determinations.

C. **Laboratory Control Samples - The LCS Program**

Duplicate Control Samples. A DCS is a well-characterized matrix (blank water, sand or celite) which is spiked with certain target parameters and analyzed at approximately 10% of the sample load in order to establish method-specific control limits. The DCS results associated with your samples are on the attached Duplicate Control Sample Report.

Single Control Samples. An SCS consists of a control matrix that is spiked with surrogate compounds appropriate to the method being used. In cases where no surrogate is available, (e.g. metals or conventional analyses) a single control sample identical to the DCS serves as the control sample. An SCS is prepared for each sample lot. Accuracy is calculated identically to the DCS. The SCS results associated with your samples are on the attached Single Control Sample Report.

Accuracy is measured by Percent Recovery as in:

$$\% \text{ recovery} = \frac{(\text{measured concentration})}{(\text{actual concentration})} \times 100$$

Precision is measured using duplicate tests by Relative Percent Difference (RPD) as in:

$$\text{RPD} = \frac{(\% \text{ recovery test 1} - \% \text{ recovery test 2})}{(\% \text{ recovery test 1} + \% \text{ recovery test 2})/2} \times 100$$

Control limits for accuracy (percent recovery) are based on the average, historical percent recovery +/-3 standard deviation units. Control limits for precision (relative percent difference) range from 0 (identical duplicate DCS results) to the average, historical relative percent difference + 3 standard deviation units. In cases where there is not enough historical data, EPA limits or advisory limits are set, with the approval of the Quality Assurance department.

IV Analysis Results

Test methods may include minor modifications of published EPA Methods such as reporting limits or parameter lists. Reporting limits are adjusted to reflect dilution of the sample, when appropriate. Solid and waste samples are reported on an "as received" basis; i.e., no correction is made for moisture content, unless the method requires or the client requests that such correction be made.

Results are on the attached data sheets.

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SAMPLE DESCRIPTION INFORMATION
for
Dames & Moore

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
058036-0001-SA	MW-19	AQUEOUS	29 APR 91	10:15	29 APR 91
058036-0002-SA	MW-41	AQUEOUS	29 APR 91	09:30	29 APR 91
058036-0003-SA	MW-20	AQUEOUS	29 APR 91	11:00	29 APR 91
058036-0004-SA	MW-17	AQUEOUS	29 APR 91	14:15	29 APR 91
058036-0005-SA	MW-18	AQUEOUS	29 APR 91	15:00	29 APR 91
058036-0006-SA	TB-5	AQUEOUS	19 APR 91		29 APR 91

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QC LOT ASSIGNMENT REPORT
Volatile Organics by GC

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
058036-0001-SA	AQUEOUS	601-A	06 MAY 91-38A	06 MAY 91-38A
058036-0002-SA	AQUEOUS	601-A	06 MAY 91-38A	06 MAY 91-38A
058036-0003-SA	AQUEOUS	601-A	06 MAY 91-38A	06 MAY 91-38A
058036-0004-SA	AQUEOUS	601-A	06 MAY 91-38A	06 MAY 91-38A
058036-0004-SA	AQUEOUS	602-A	29 APR 91-11A	01 MAY 91-11A
058036-0005-SA	AQUEOUS	601-A	06 MAY 91-38A	06 MAY 91-38A
058036-0005-SA	AQUEOUS	602-A	29 APR 91-11A	01 MAY 91-11A
058036-0006-SA	AQUEOUS	601-A	06 MAY 91-38A	06 MAY 91-38A

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A Corning Company

METHOD BLANK REPORT
Volatile Organics by GC

Analyte	Result	Units	Reporting Limit
Test: 601-A			
Matrix: AQUEOUS			
QC Lot: 06 MAY 91-38A QC Run: 06 MAY 91-38A			
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	0.50
1,1-Dichloroethane	ND	ug/L	0.50
1,2-Dichloroethene (cis/trans)	ND	ug/L	0.50
Chloroform	ND	ug/L	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
1,2-Dibromoethane	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0
Test: 601-A			
Matrix: AQUEOUS			
QC Lot: 06 MAY 91-38A QC Run: 06 MAY 91-38A			
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	0.50
1,1-Dichloroethane	ND	ug/L	0.50
1,2-Dichloroethene (cis/trans)	ND	ug/L	0.50

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METHOD BLANK REPORT
Volatile Organics by GC (cont.)

Analyte	Result	Units	Reporting Limit
Test: 601-A			
Matrix: AQUEOUS			
QC Lot: 06 MAY 91-38A QC Run: 06 MAY 91-38A			
Chloroform	ND	ug/L	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
1,2-Dibromoethane	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0
Test: 602-A			
Matrix: AQUEOUS			
QC Lot: 29 APR 91-11A QC Run: 01 MAY 91-11A			
Benzene	ND	ug/L	0.50
Toluene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	0.50
Ethylbenzene	ND	ug/L	0.50
Xylenes (total)	ND	ug/L	1.0
1,3-Dichlorobenzene	ND	ug/L	1.0
1,4-Dichlorobenzene	ND	ug/L	1.0
1,2-Dichlorobenzene	ND	ug/L	1.0
Test: 601-A			
Matrix: AQUEOUS			
QC Lot: 06 MAY 91-38A QC Run: 06 MAY 91-38A			
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0

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METHOD BLANK REPORT
Volatile Organics by GC (cont.)

Test: 601-A
Matrix: AQUEOUS
QC Lot: 06 MAY 91-38A QC Run: 06 MAY 91-38A

Analyte	Result	Units	Reporting Limit
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	0.50
1,1-Dichloroethane	ND	ug/L	0.50
1,2-Dichloroethene (cis/trans)	ND	ug/L	0.50
Chloroform	ND	ug/L	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
1,2-Dibromoethane	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0

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DUPLICATE CONTROL SAMPLE REPORT
Volatile Organics by GC

Analyte	Concentration Spiked	Measured DCS1	Measured DCS2	Measured AVG	Accuracy Average(%) DCS	Accuracy Average(%) Limits	Precision (RPD) DCS	Precision (RPD) Limit
Category: 601-A Matrix: AQUEOUS QC Lot: 06 MAY 91-38A Concentration Units: ug/L								
1,1-Dichloroethane	5.0	4.58	4.69	4.64	93	70-138	2.4	24
Chloroform	5.0	4.65	4.80	4.72	95	83-124	3.2	18
Bromodichloromethane	10.0	10.2	10.4	10.3	103	78-132	1.9	21
Trichloroethene	5.0	4.56	4.57	4.56	91	82-122	0.2	16
Chlorobenzene	5.0	4.47	4.43	4.45	89	80-126	0.9	19
Category: 602-A Matrix: AQUEOUS QC Lot: 29 APR 91-11A Concentration Units: ug/L								
Benzene	5.0	5.28	5.37	5.32	107	82-112	1.7	11
Toluene	5.0	5.08	5.15	5.12	102	81-114	1.4	13
1,3-Dichlorobenzene	5.0	4.59	5.00	4.80	96	68-124	8.6	13
Ethylbenzene	5.0	5.23	5.16	5.20	104	73-117	1.3	11
Xylenes (total)	15.0	15.7	16.1	15.9	106	75-120	2.5	10

Calculations are performed before rounding to avoid round-off errors in calculated results.

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SINGLE CONTROL SAMPLE REPORT
Volatile Organics by GC

Analyte	Concentration Spiked	Measured	Accuracy(%) SCS	Limits
Category: 601-A Matrix: AQUEOUS QC Lot: 06 MAY 91-38A QC Run: 06 MAY 91-38A Concentration Units: ug/L				
Bromochloromethane	5.00	4.19	84	68-121
Category: 602-A Matrix: AQUEOUS QC Lot: 29 APR 91-11A QC Run: 01 MAY 91-11A Concentration Units: ug/L				
a,a,a-Trifluorotoluene	5.00	5.07	101	20-160

Calculations are performed before rounding to avoid round-off errors in calculated results.

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QC LOT ASSIGNMENT REPORT
Metals Analysis and Preparation

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
058036-0001-SA	AQUEOUS	AS-FAA-AT	03 MAY 91-A	03 MAY 91-A
058036-0001-SA	AQUEOUS	CR-FAA-AT	03 MAY 91-A	03 MAY 91-A
058036-0001-SA	AQUEOUS	NI-FAA-AT	03 MAY 91-A	03 MAY 91-A
058036-0001-SA	AQUEOUS	PB-FAA-AT	03 MAY 91-A	03 MAY 91-A
058036-0002-SA	AQUEOUS	AS-FAA-AT	03 MAY 91-A	03 MAY 91-A
058036-0002-SA	AQUEOUS	CR-FAA-AT	03 MAY 91-A	03 MAY 91-A
058036-0002-SA	AQUEOUS	NI-FAA-AT	03 MAY 91-A	03 MAY 91-A
058036-0002-SA	AQUEOUS	PB-FAA-AT	03 MAY 91-A	03 MAY 91-A
058036-0003-SA	AQUEOUS	AS-FAA-AT	03 MAY 91-A	03 MAY 91-A
058036-0003-SA	AQUEOUS	CR-FAA-AT	03 MAY 91-A	03 MAY 91-A
058036-0003-SA	AQUEOUS	NI-FAA-AT	03 MAY 91-A	03 MAY 91-A
058036-0003-SA	AQUEOUS	PB-FAA-AT	03 MAY 91-A	03 MAY 91-A
058036-0004-SA	AQUEOUS	AS-FAA-AT	03 MAY 91-A	03 MAY 91-A
058036-0004-SA	AQUEOUS	CR-FAA-AT	03 MAY 91-A	03 MAY 91-A
058036-0004-SA	AQUEOUS	NI-FAA-AT	03 MAY 91-A	03 MAY 91-A
058036-0004-SA	AQUEOUS	PB-FAA-AT	03 MAY 91-A	03 MAY 91-A
058036-0005-SA	AQUEOUS	AS-FAA-AT	03 MAY 91-A	03 MAY 91-A
058036-0005-SA	AQUEOUS	CR-FAA-AT	03 MAY 91-A	03 MAY 91-A
058036-0005-SA	AQUEOUS	NI-FAA-AT	03 MAY 91-A	03 MAY 91-A
058036-0005-SA	AQUEOUS	PB-FAA-AT	03 MAY 91-A	03 MAY 91-A

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METHOD BLANK REPORT
Metals Analysis and Preparation

Analyte	Result	Units	Reporting Limit
Test: GF-ASCP-TAL-AT			
Matrix: AQUEOUS			
QC Lot: 03 MAY 91-A QC Run: 03 MAY 91-A			
Arsenic	ND	mg/L	0.0050
Test: GF-CRCP-TAL-AT			
Matrix: AQUEOUS			
QC Lot: 03 MAY 91-A QC Run: 03 MAY 91-A			
Chromium	ND	mg/L	0.0010
Test: GF-NICP-TAL-AT			
Matrix: AQUEOUS			
QC Lot: 03 MAY 91-A QC Run: 03 MAY 91-A			
Nickel	ND	mg/L	0.0050
Test: GF-PBCP-TAL-AT			
Matrix: AQUEOUS			
QC Lot: 03 MAY 91-A QC Run: 03 MAY 91-A			
Lead	ND	mg/L	0.0050
Test: GF-ASCP-TAL-AT			
Matrix: AQUEOUS			
QC Lot: 03 MAY 91-A QC Run: 03 MAY 91-A			
Arsenic	ND	mg/L	0.0050
Test: GF-CRCP-TAL-AT			
Matrix: AQUEOUS			
QC Lot: 03 MAY 91-A QC Run: 03 MAY 91-A			
Chromium	ND	mg/L	0.0010

METHOD BLANK REPORT
Metals Analysis and Preparation (cont.)

Analyte	Result	Units	Reporting Limit
Test: GF-NICP-TAL-AT Matrix: AQUEOUS QC Lot: 03 MAY 91-A QC Run: 03 MAY 91-A			
Nickel	ND	mg/L	0.0050
Test: GF-PBCP-TAL-AT Matrix: AQUEOUS QC Lot: 03 MAY 91-A QC Run: 03 MAY 91-A			
Lead	ND	mg/L	0.0050

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DUPLICATE CONTROL SAMPLE REPORT
Metals Analysis and Preparation

Analyte	Concentration Spiked	Measured DCS1	Measured DCS2	Measured AVG	Accuracy Average(%) DCS	Accuracy Average(%) Limits	Precision (RPD) DCS	Precision (RPD) Limit
Category: AS-FAA-AT Matrix: AQUEOUS QC Lot: 03 MAY 91-A Concentration Units: mg/L								
Arsenic	0.040	0.0343	0.0349	0.0346	87	84-115	1.7	10
Category: CR-FAA-AT Matrix: AQUEOUS QC Lot: 03 MAY 91-A Concentration Units: mg/L								
Chromium	0.02	0.0190	0.0188	0.0189	95	75-125	1.3	20
Category: NI-FAA-AT Matrix: AQUEOUS QC Lot: 03 MAY 91-A Concentration Units: mg/L								
Nickel	0.02	0.0200	0.0196	0.0198	99	75-125	2.0	20
Category: PB-FAA-AT Matrix: AQUEOUS QC Lot: 03 MAY 91-A Concentration Units: mg/L								
Lead	0.020	0.0175	0.0186	0.0180	90	82-115	6.1	11

Calculations are performed before rounding to avoid round-off errors in calculated results.

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A Corning Company

Halogenated Volatile Organics

Method 601

Client Name: Dames & Moore
Client ID: MW-19
Lab ID: 058036-0001-SA
Matrix: AQUEOUS Sampled: 29 APR 91 Received: 29 APR 91
Authorized: 29 APR 91 Prepared: NA Analyzed: 07 MAY 91

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	4.2	ug/L	0.50
1,1-Dichloroethane	ND	ug/L	0.50
1,2-Dichloroethene (cis/trans)	ND	ug/L	0.50
Chloroform	ND	ug/L	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
1,2-Dibromoethane	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	1.9	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0

Surrogate	Recovery	
Bromochloromethane	73	%

ND = Not detected
NA = Not applicable

Reported By: Dan Orovich Approved By: Kris Rogers

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Halogenated Volatile Organics

Method 601

Client Name: Dames & Moore
Client ID: MW-41
Lab ID: 058036-0002-SA
Matrix: AQUEOUS Sampled: 29 APR 91 Received: 29 APR 91
Authorized: 29 APR 91 Prepared: NA Analyzed: 07 MAY 91

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	4.2	ug/L	0.50
1,1-Dichloroethane	ND	ug/L	0.50
1,2-Dichloroethene (cis/trans)	ND	ug/L	0.50
Chloroform	ND	ug/L	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
1,2-Dibromoethane	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	1.6	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0

Surrogate	Recovery	
Bromochloromethane	74	%

ND = Not detected
NA = Not applicable

Reported By: Dan Orovich Approved By: Kris Rogers

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Halogenated Volatile Organics

Method 601

Client Name: Dames & Moore
Client ID: MW-20
Lab ID: 058036-0003-SA
Matrix: AQUEOUS Sampled: 29 APR 91 Received: 29 APR 91
Authorized: 29 APR 91 Prepared: NA Analyzed: 07 MAY 91

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	8.9	ug/L	0.50
1,1-Dichloroethane	ND	ug/L	0.50
1,2-Dichloroethene (cis/trans)	ND	ug/L	0.50
Chloroform	ND	ug/L	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	0.51	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
1,2-Dibromoethane	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0

Surrogate	Recovery	
Bromochloromethane	71	%

ND = Not detected
NA = Not applicable

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Halogenated Volatile Organics

Method 601

Client Name: Dames & Moore
Client ID: MW-17
Lab ID: 058036-0004-SA
Matrix: AQUEOUS Sampled: 29 APR 91 Received: 29 APR 91
Authorized: 29 APR 91 Prepared: NA Analyzed: 07 MAY 91

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	3.8	ug/L	0.50
1,1-Dichloroethane	ND	ug/L	0.50
1,2-Dichloroethene (cis/trans)	ND	ug/L	0.50
Chloroform	ND	ug/L	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
1,2-Dibromoethane	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0

Surrogate	Recovery	
Bromochloromethane	82	%

ND = Not detected
NA = Not applicable

Reported By: Dan Orovich Approved By: Kris Rogers

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Halogenated Volatile Organics

Method 601

Client Name: Dames & Moore
Client ID: MW-18
Lab ID: 058036-0005-SA
Matrix: AQUEOUS Sampled: 29 APR 91 Received: 29 APR 91
Authorized: 29 APR 91 Prepared: NA Analyzed: 07 MAY 91

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	20	ug/L	0.50
1,1-Dichloroethane	1.1	ug/L	0.50
1,2-Dichloroethene (cis/trans)	ND	ug/L	0.50
Chloroform	ND	ug/L	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	0.94	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	2.3	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
1,2-Dibromoethane	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0

Surrogate	Recovery	
Bromochloromethane	97	%

ND = Not detected
NA = Not applicable

Reported By: Dan Orovich Approved By: Kris Rogers

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Halogenated Volatile Organics

Method 601

Client Name: Dames & Moore
Client ID: TB-5
Lab ID: 058036-0006-SA
Matrix: AQUEOUS Sampled: 19 APR 91 Received: 29 APR 91
Authorized: 29 APR 91 Prepared: NA Analyzed: 02 MAY 91

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	0.50
1,1-Dichloroethane	ND	ug/L	0.50
1,2-Dichloroethene (cis/trans)	ND	ug/L	0.50
Chloroform	ND	ug/L	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
1,2-Dibromoethane	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0

Surrogate	Recovery	
Bromochloromethane	85	%

ND = Not detected
NA = Not applicable

Reported By: Dan Orovich Approved By: Kris Rogers

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Total Metals

Client Name: Dames & Moore
Client ID: MW-19
Lab ID: 058036-0001-SA
Matrix: AQUEOUS
Authorized: 29 APR 91

Sampled: 29 APR 91
Prepared: See Below

Received: 29 APR 91
Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Arsenic	ND	mg/L	0.0050	7060	03 MAY 91	10 APR 91
Chromium	0.016	mg/L	0.0010	7191	03 MAY 91	10 MAY 91
Lead	ND	mg/L	0.0050	7421	03 MAY 91	10 MAY 91
Nickel	0.069	mg/L	0.025	7521	03 MAY 91	10 MAY 91 R

Note R : Raised reporting limit(s) due to high analyte level(s).

ND = Not detected
NA = Not applicable

Reported By: Fely Francis

Approved By: Mei Lai

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

Total Metals

Client Name: Dames & Moore
Client ID: MW-41
Lab ID: 058036-0002-SA
Matrix: AQUEOUS — Sampled: 29 APR 91 — Received: 29 APR 91
Authorized: 29 APR 91 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Arsenic	ND	mg/L	0.0050	7060	03 MAY 91	10 APR 91
Chromium	0.0074	mg/L	0.0010	7191	03 MAY 91	10 MAY 91
Lead	ND	mg/L	0.0050	7421	03 MAY 91	10 MAY 91
Nickel	0.067	mg/L	0.025	7521	03 MAY 91	10 MAY 91 R

Note R : Raised reporting limit(s) due to high analyte level(s).

ND = Not detected
NA = Not applicable

Reported By: Fely Francis — Approved By: Mei Lai

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

Total Metals

Client Name: Dames & Moore
Client ID: MW-20
Lab ID: 058036-0003-SA
Matrix: AQUEOUS — Sampled: 29 APR 91 — Received: 29 APR 91
Authorized: 29 APR 91 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Arsenic	ND	mg/L	0.0050	7060	03 MAY 91	10 APR 91
Chromium	0.015	mg/L	0.0010	7191	03 MAY 91	10 MAY 91
Lead	ND	mg/L	0.0050	7421	03 MAY 91	10 MAY 91
Nickel	0.0053	mg/L	0.0050	7521	03 MAY 91	10 MAY 91

ND = Not detected
NA = Not applicable

Reported By: Gara Sahakian — Approved By: Mei Lai

The cover letter is an integral part of this report.
Rev 230787

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Total Metals

Client Name: Dames & Moore
Client ID: MW-17
Lab ID: 058036-0004-SA
Matrix: AQUEOUS Sampled: 29 APR 91 Received: 29 APR 91
Authorized: 29 APR 91 Prepared: See Below Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Arsenic	ND	mg/L	0.0050	7060	03 MAY 91	10 APR 91
Chromium	0.0069	mg/L	0.0010	7191	03 MAY 91	10 MAY 91
Lead	ND	mg/L	0.0050	7421	03 MAY 91	10 MAY 91
Nickel	0.17	mg/L	0.050	7521	03 MAY 91	10 MAY 91 R

Note R : Raised reporting limit(s) due to high analyte level(s).

ND = Not detected
NA = Not applicable

Reported By: Fely Francis Approved By: Mei Lai

The cover letter is an integral part of this report.
Rev 230787

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Total Metals

Client Name: Dames & Moore
Client ID: MW-18
Lab ID: 058036-0005-SA
Matrix: AQUEOUS Sampled: 29 APR 91 Received: 29 APR 91
Authorized: 29 APR 91 Prepared: See Below Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Arsenic	ND	mg/L	0.0050	7060	03 MAY 91	10 APR 91
Chromium	0.0065	mg/L	0.0010	7191	03 MAY 91	10 MAY 91
Lead	ND	mg/L	0.0050	7421	03 MAY 91	10 MAY 91
Nickel	0.024	mg/L	0.010	7521	03 MAY 91	10 MAY 91 R

Note R : Raised reporting limit(s) due to high analyte level(s).

ND = Not detected
NA = Not applicable

Reported By: Fely Francis Approved By: Mei Lai

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

Aromatic Volatile Organics

Method 602

Client Name: Dames & Moore
Client ID: MW-17
Lab ID: 058036-0004-SA
Matrix: AQUEOUS
Authorized: 29 APR 91

Sampled: 29 APR 91
Prepared: NA

Received: 29 APR 91
Analyzed: 02 MAY 91

Parameter	Result	Units	Reporting Limit
Benzene	ND	ug/L	0.50
Toluene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	0.50
Ethylbenzene	ND	ug/L	0.50
Xylenes (total)	ND	ug/L	1.0
1,3-Dichlorobenzene	ND	ug/L	1.0
1,4-Dichlorobenzene	ND	ug/L	1.0
1,2-Dichlorobenzene	ND	ug/L	1.0

Surrogate	Recovery	
a,a,a-Trifluorotoluene	97	%

ND = Not detected
NA = Not applicable

Reported By: Dan Orovich

Approved By: Lisa Stafford

The cover letter is an integral part of this report.
Rev 230787

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Aromatic Volatile Organics

Method 602

Client Name: Dames & Moore
Client ID: MW-18
Lab ID: 058036-0005-SA
Matrix: AQUEOUS Sampled: 29 APR 91 Received: 29 APR 91
Authorized: 29 APR 91 Prepared: NA Analyzed: 02 MAY 91

Parameter	Result	Units	Reporting Limit
Benzene	ND	ug/L	0.50
Toluene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	0.50
Ethylbenzene	ND	ug/L	0.50
Xylenes (total)	ND	ug/L	1.0
1,3-Dichlorobenzene	ND	ug/L	1.0
1,4-Dichlorobenzene	ND	ug/L	1.0
1,2-Dichlorobenzene	ND	ug/L	1.0

Surrogate	Recovery	
a,a,a-Trifluorotoluene	99	%

ND = Not detected
NA = Not applicable

Reported By: Dan Orovich Approved By: Lisa Stafford

The cover letter is an integral part of this report.
Rev 230787

Enseco

CHAIN-OF-CUSTODY RECORD

SAMPLER: (*Signature*) _____ Date Shipped _____ Carrier _____

Phone _____ Airbill No. _____ Cooler No. _____

SHIP TO:

Enseco-Cal Lab
2544 Industrial Blvd.
West Sacramento, CA 95691
(916) 372-1393

ATTENTION: _____

SEND RESULTS TO:

Client Name TONY MINDLING

Company DAMES + MOORE

Address 9300 Tech Center Dr #100
SACRAMENTO CA

Phone 916 364-8698

PROJECT NAME _____ **PROJECT NO.** _____ **P.O. NO.** _____

Relinquished by: (*Signature*)	Received by: (*Signature*)	Date	Time
Relinquished by: (*Signature*)	Received by: (*Signature*)	Date	Time
Relinquished by: (*Signature*)	Received at lab by: (*Signature*)	Date	Time
		4-30-91	1750
Relinquished from lab by: (*Signature*)	Received by: (*Signature*)	Date	Time

ANALYSIS REQUEST

Sample ID Number	Sample Description	Date/Time Sampled	Analysis Requested	Sample Condition Upon Receipt
MW-30	4-40mL (HCl)	4-30-91 1400	601/602	INTACT
✓	1-1000mL	1400	ION BALANCE	
"	1-500mL (HNO3)	1400	AS, Cr, Pb, Ni, Fe TOTAL	
MW-13	4-40mL (HCl)	1600	601/602	
"	1-1000mL	1600	ION BALANCE	
	1-500mL (HNO3)	1600	AS, Cr, Pb, Ni, Fe TOTAL	
EB-3	2-40mL (HCl)	1630	601	
FD-3	2-40mL (HCl)	1615	601	
TB-6	2-40mL (HCl)	4-19-91	601	

Special Instructions/Comments:

JP
AS, Cr, Pb, Ni 4
Fe 4
(1) 9
602 4

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT

Expected Analytical T.A.T.'s: _____ Immediate Attention (200% surcharge) _____ RUSH (50-100% surcharge) ✓ Standard

Cal Lab ID Number: *(for lab use only)*

Client Retains White Copy Only

(Revised 1/87)

California Analytical
Laboratory

Enseco
A CORNING Company

May 23, 1991
Lab ID: 058067

Anthony J. Mindling
Dames & Moore
9300 Tech Center Drive
Suite 100
Sacramento, CA 95826

Dear Mr. Mindling:

Enclosed is the report for the nine aqueous samples for your UPSAC Quarterly Sampling, Number 00173-064-044, which were received at Enseco-Cal Lab on 30 April 1991.

The report consists of the following sections:

I Sample Description
II Analysis Request
III Quality Control Report
IV Analysis Results

If you have any questions, please feel free to call.

Sincerely,

Janet Harlan

Janet Harlan
Program Administrator

sh

Enseco Incorporated
2544 Industrial Boulevard
West Sacramento, California 95691
916/372-1393 Fax: 916/372-7768

Enseco
A Corning Company

I Sample Description

See the attached Sample Description Information.

The samples were received under chain-of-custody.

II Analysis Request

The following analytical tests were requested.

Lab ID	Analysis Description
058067-1 thru 9	Halogenated Volatile Organics
-1 thru 6	Aromatic Volatile Organics Total Metals
-1,4,5,6	Calcium, Magnesium, Potassium, Sodium General Inorganics

III Quality Control

A. **Project Specific QC.** No project specific QC (i.e., spikes and/or duplicates) was requested.

B. **Method Blank Results.** A method blank is a laboratory-generated sample which assesses the degree to which laboratory operations and procedures cause false-positive analytical results for your samples.

No target parameters were detected in the method blanks associated with your samples at the reporting limit levels noted on the attached Method Blank Report.

C. **Laboratory Control Samples - The LCS Program**

Duplicate Control Samples. A DCS is a well-characterized matrix (blank water, sand or celite) which is spiked with certain target parameters and analyzed at approximately 10% of the sample load in order to establish method-specific control limits. The DCS results associated with your samples are on the attached Duplicate Control Sample Report.

Single Control Samples. An SCS consists of a control matrix that is spiked with surrogate compounds appropriate to the method being used. In cases where no surrogate is available, (e.g. metals or conventional analyses) a single control sample identical to the DCS serves as the control sample. An SCS is prepared for each sample lot. Accuracy is calculated identically to the DCS. The SCS results associated with your samples are on the attached Single Control Sample Report.

Accuracy is measured by Percent Recovery as in:

$$\% \text{ recovery} = \frac{\text{(measured concentration)}}{\text{(actual concentration)}} \times 100$$

Precision is measured using duplicate tests by Relative Percent Difference (RPD) as in:

$$\text{RPD} = \frac{\text{(\% recovery test 1 - \% recovery test 2)}}{\text{(\% recovery test 1 + \% recovery test 2)/2}} \times 100$$

Control limits for accuracy (percent recovery) are based on the average, historical percent recovery +/-3 standard deviation units. Control limits for precision (relative percent difference) range from 0 (identical duplicate DCS results) to the average, historical relative percent difference + 3 standard deviation units. In cases where there is not enough historical data, EPA limits or advisory limits are set, with the approval of the Quality Assurance department.

IV Analysis Results

Test methods may include minor modifications of published EPA Methods such as reporting limits or parameter lists. Reporting limits are adjusted to reflect dilution of the sample, when appropriate. Solid and waste samples are reported on an "as received" basis; i.e., no correction is made for moisture content, unless the method requires or the client requests that such correction be made.

Results are on the attached data sheets.

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SAMPLE DESCRIPTION INFORMATION
for
Dames & Moore

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
058067-0001-SA	MW-33	AQUEOUS	30 APR 91	09:30	30 APR 91
058067-0002-SA	MW-28	AQUEOUS	30 APR 91	11:30	30 APR 91
058067-0003-SA	MW-42	AQUEOUS	30 APR 91	09:30	30 APR 91
058067-0004-SA	MW-29	AQUEOUS	30 APR 91	11:45	30 APR 91
058067-0005-SA	MW-30	AQUEOUS	30 APR 91	14:00	30 APR 91
058067-0006-SA	MW-13	AQUEOUS	30 APR 91	16:00	30 APR 91
058067-0007-SA	RB-3	AQUEOUS	30 APR 91	16:30	30 APR 91
058067-0008-SA	FB-3	AQUEOUS	30 APR 91	16:15	30 APR 91
058067-0009-SA	TB-6	AQUEOUS	19 APR 91		30 APR 91

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QC LOT ASSIGNMENT REPORT
Volatile Organics by GC

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
058067-0001-SA	AQUEOUS	601-A	07 MAY 91-39A	07 MAY 91-39A
058067-0001-SA	AQUEOUS	602-A	01 MAY 91-11A	02 MAY 91-11A
058067-0002-SA	AQUEOUS	601-A	07 MAY 91-39A	07 MAY 91-39A
058067-0002-SA	AQUEOUS	602-A	01 MAY 91-11A	02 MAY 91-11A
058067-0003-SA	AQUEOUS	601-A	07 MAY 91-39A	07 MAY 91-39A
058067-0003-SA	AQUEOUS	602-A	01 MAY 91-11A	02 MAY 91-11A
058067-0004-SA	AQUEOUS	601-A	07 MAY 91-39A	07 MAY 91-39A
058067-0004-SA	AQUEOUS	602-A	01 MAY 91-11A	02 MAY 91-11A
058067-0005-SA	AQUEOUS	601-A	07 MAY 91-39A	07 MAY 91-39A
058067-0005-SA	AQUEOUS	602-A	01 MAY 91-11A	02 MAY 91-11A
058067-0006-SA	AQUEOUS	601-A	07 MAY 91-39A	07 MAY 91-39A
058067-0006-SA	AQUEOUS	602-A	01 MAY 91-11A	02 MAY 91-11A
058067-0007-SA	AQUEOUS	601-A	07 MAY 91-39A	07 MAY 91-39A
058067-0008-SA	AQUEOUS	601-A	07 MAY 91-39A	07 MAY 91-39A
058067-0009-SA	AQUEOUS	601-A	07 MAY 91-39A	07 MAY 91-39A

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METHOD BLANK REPORT
Volatile Organics by GC

Analyte	Result	Units	Reporting Limit
Test: 601-A			
Matrix: AQUEOUS			
QC Lot: 07 MAY 91-39A QC Run: 07 MAY 91-39A			
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	0.50
1,1-Dichloroethane	ND	ug/L	0.50
1,2-Dichloroethene (cis/trans)	ND	ug/L	0.50
Chloroform	ND	ug/L	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
1,2-Dibromoethane	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0
Test: 602-A			
Matrix: AQUEOUS			
QC Lot: 01 MAY 91-11A QC Run: 02 MAY 91-11A			
Benzene	ND	ug/L	0.50
Toluene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	0.50
Ethylbenzene	ND	ug/L	0.50
Xylenes (total)	ND	ug/L	1.0
1,3-Dichlorobenzene	ND	ug/L	1.0
1,4-Dichlorobenzene	ND	ug/L	1.0
1,2-Dichlorobenzene	ND	ug/L	1.0

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METHOD BLANK REPORT
Volatile Organics by GC (cont.)

Test: 602-A
Matrix: AQUEOUS
QC Lot: 01 MAY 91-11A QC Run: 02 MAY 91-11A

Test: 601-A
Matrix: AQUEOUS
QC Lot: 07 MAY 91-39A QC Run: 07 MAY 91-39A

Analyte	Result	Units	Reporting Limit
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	0.50
1,1-Dichloroethane	ND	ug/L	0.50
1,2-Dichloroethene (cis/trans)	ND	ug/L	0.50
Chloroform	ND	ug/L	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
1,2-Dibromoethane	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0

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METHOD BLANK REPORT
Volatile Organics by GC (cont.)

Analyte	Result	Units	Reporting Limit
Test: 602-A			
Matrix: AQUEOUS			
QC Lot: 01 MAY 91-11A QC Run: 02 MAY 91-11A			
Benzene	ND	ug/L	0.50
Toluene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	0.50
Ethylbenzene	ND	ug/L	0.50
Xylenes (total)	ND	ug/L	1.0
1,3-Dichlorobenzene	ND	ug/L	1.0
1,4-Dichlorobenzene	ND	ug/L	1.0
1,2-Dichlorobenzene	ND	ug/L	1.0
Test: 601-A			
Matrix: AQUEOUS			
QC Lot: 07 MAY 91-39A QC Run: 07 MAY 91-39A			
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	0.50
1,1-Dichloroethane	ND	ug/L	0.50
1,2-Dichloroethene (cis/trans)	ND	ug/L	0.50
Chloroform	ND	ug/L	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
1,2-Dibromoethane	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0

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DUPLICATE CONTROL SAMPLE REPORT
Volatile Organics by GC

Analyte	Concentration Spiked	Measured DCS1	Measured DCS2	Measured AVG	Accuracy Average(%) DCS	Accuracy Limits	Precision (RPD) DCS	Precision Limit
Category: 601-A Matrix: AQUEOUS QC Lot: 07 MAY 91-39A Concentration Units: ug/L								
1,1-Dichloroethane	5.0	4.72	4.54	4.63	93	70-138	3.9	24
Chloroform	5.0	4.62	4.55	4.58	92	83-124	1.5	18
Bromodichloromethane	10.0	9.76	9.51	9.64	96	78-132	2.6	21
Trichloroethene	5.0	4.69	4.34	4.52	90	82-122	7.8	16
Chlorobenzene	5.0	4.95	4.45	4.70	94	80-126	11	19
Category: 602-A Matrix: AQUEOUS QC Lot: 01 MAY 91-11A Concentration Units: ug/L								
Benzene	5.0	4.45	4.51	4.48	90	82-112	1.3	11
Toluene	5.0	4.38	4.36	4.37	87	81-114	0.5	13
1,3-Dichlorobenzene	5.0	4.22	4.35	4.28	86	68-124	3.0	[illegible]
Ethylbenzene	5.0	4.36	4.39	4.38	88	73-117	0.7	[illegible]
Xylenes (total)	15.0	13.4	13.6	13.5	90	75-120	1.5	10

Calculations are performed before rounding to avoid round-off errors in calculated results.

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SINGLE CONTROL SAMPLE REPORT
Volatile Organics by GC

Analyte	Concentration Spiked	Measured	Accuracy(%) SCS	Limits
Category: 601-A Matrix: AQUEOUS QC Lot: 07 MAY 91-39A QC Run: 07 MAY 91-39A Concentration Units: ug/L				
Bromochloromethane	5.00	4.06	81	68-121
Category: 602-A Matrix: AQUEOUS QC Lot: 01 MAY 91-11A QC Run: 02 MAY 91-11A Concentration Units: ug/L				
a,a,a-Trifluorotoluene	5.00	4.22	84	20-160

Calculations are performed before rounding to avoid round-off errors in calculated results.

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QC LOT ASSIGNMENT REPORT
Metals Analysis and Preparation

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
058067-0001-SA	AQUEOUS	AS-FAA-AT	03 MAY 91-A	03 MAY 91-A
058067-0001-SA	AQUEOUS	CR-FAA-AT	03 MAY 91-A	03 MAY 91-A
058067-0001-SA	AQUEOUS	NI-FAA-AT	03 MAY 91-A	03 MAY 91-A
058067-0001-SA	AQUEOUS	PB-FAA-AT	03 MAY 91-A	03 MAY 91-A
058067-0001-SA	AQUEOUS	ICP-AT	03 MAY 91-A	03 MAY 91-A
058067-0001-SA	AQUEOUS	ICP-AT	10 MAY 91-Y	-
058067-0002-SA	AQUEOUS	AS-FAA-AT	03 MAY 91-A	03 MAY 91-A
058067-0002-SA	AQUEOUS	CR-FAA-AT	03 MAY 91-A	03 MAY 91-A
058067-0002-SA	AQUEOUS	NI-FAA-AT	03 MAY 91-A	03 MAY 91-A
058067-0002-SA	AQUEOUS	PB-FAA-AT	03 MAY 91-A	03 MAY 91-A
058067-0003-SA	AQUEOUS	AS-FAA-AT	03 MAY 91-A	03 MAY 91-A
058067-0003-SA	AQUEOUS	CR-FAA-AT	03 MAY 91-A	03 MAY 91-A
058067-0003-SA	AQUEOUS	NI-FAA-AT	03 MAY 91-A	03 MAY 91-A
058067-0003-SA	AQUEOUS	PB-FAA-AT	03 MAY 91-A	03 MAY 91-A
058067-0004-SA	AQUEOUS	AS-FAA-AT	03 MAY 91-A	03 MAY 91-A
058067-0004-SA	AQUEOUS	CR-FAA-AT	03 MAY 91-A	03 MAY 91-A
058067-0004-SA	AQUEOUS	NI-FAA-AT	03 MAY 91-A	03 MAY 91-A
058067-0004-SA	AQUEOUS	PB-FAA-AT	03 MAY 91-A	03 MAY 91-A
058067-0004-SA	AQUEOUS	ICP-AT	03 MAY 91-A	03 MAY 91-A
058067-0004-SA	AQUEOUS	ICP-AT	10 MAY 91-Y	-
058067-0005-SA	AQUEOUS	AS-FAA-AT	03 MAY 91-A	03 MAY 91-A
058067-0005-SA	AQUEOUS	CR-FAA-AT	03 MAY 91-A	03 MAY 91-A
058067-0005-SA	AQUEOUS	NI-FAA-AT	03 MAY 91-A	03 MAY 91-A
058067-0005-SA	AQUEOUS	PB-FAA-AT	03 MAY 91-A	03 MAY 91-A
058067-0005-SA	AQUEOUS	ICP-AT	03 MAY 91-A	03 MAY 91-A
058067-0005-SA	AQUEOUS	ICP-AT	10 MAY 91-Y	-
058067-0006-SA	AQUEOUS	AS-FAA-AT	03 MAY 91-A	03 MAY 91-A
058067-0006-SA	AQUEOUS	CR-FAA-AT	03 MAY 91-A	03 MAY 91-A
058067-0006-SA	AQUEOUS	NI-FAA-AT	03 MAY 91-A	03 MAY 91-A
058067-0006-SA	AQUEOUS	PB-FAA-AT	03 MAY 91-A	03 MAY 91-A
058067-0006-SA	AQUEOUS	ICP-AT	03 MAY 91-A	03 MAY 91-A
058067-0006-SA	AQUEOUS	ICP-AT	10 MAY 91-Y	-

Enseco
A Corning Company

METHOD BLANK REPORT
Metals Analysis and Preparation

Analyte	Result	Units	Reporting Limit
Test: GF-ASCP-TAL-AT Matrix: AQUEOUS QC Lot: 03 MAY 91-A QC Run: 03 MAY 91-A			
Arsenic	ND	mg/L	0.0050
Test: GF-CRCP-TAL-AT Matrix: AQUEOUS QC Lot: 03 MAY 91-A QC Run: 03 MAY 91-A			
Chromium	ND	mg/L	0.0010
Test: GF-NICP-TAL-AT Matrix: AQUEOUS QC Lot: 03 MAY 91-A QC Run: 03 MAY 91-A			
Nickel	ND	mg/L	0.0050
Test: GF-PBCP-TAL-AT Matrix: AQUEOUS QC Lot: 03 MAY 91-A QC Run: 03 MAY 91-A			
Lead	ND	mg/L	0.0050
Test: FE-ICP-AT Matrix: AQUEOUS QC Lot: 03 MAY 91-A QC Run: 03 MAY 91-A			
Iron	ND	mg/L	0.10
Test: GF-ASCP-TAL-AT Matrix: AQUEOUS QC Lot: 03 MAY 91-A QC Run: 03 MAY 91-A			
Arsenic	ND	mg/L	0.0050

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METHOD BLANK REPORT
Metals Analysis and Preparation (cont.)

Analyte	Result	Units	Reporting Limit
Test: GF-CRCP-TAL-AT Matrix: AQUEOUS QC Lot: 03 MAY 91-A QC Run: 03 MAY 91-A			
Chromium	ND	mg/L	0.0010
Test: GF-NICP-TAL-AT Matrix: AQUEOUS QC Lot: 03 MAY 91-A QC Run: 03 MAY 91-A			
Nickel	ND	mg/L	0.0050
Test: GF-PBCP-TAL-AT Matrix: AQUEOUS QC Lot: 03 MAY 91-A QC Run: 03 MAY 91-A			
Lead	ND	mg/L	0.0050

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DUPLICATE CONTROL SAMPLE REPORT
Metals Analysis and Preparation

Analyte	Concentration Spiked	Measured DCS1	Measured DCS2	Measured AVG	Accuracy Average(%) DCS	Accuracy Limits	Precision (RPD) DCS	Precision Limit
Category: AS-FAA-AT Matrix: AQUEOUS QC Lot: 03 MAY 91-A Concentration Units: mg/L								
Arsenic	0.040	0.0343	0.0349	0.0346	87	84-115	1.7	10
Category: CR-FAA-AT Matrix: AQUEOUS QC Lot: 03 MAY 91-A Concentration Units: mg/L								
Chromium	0.02	0.0190	0.0188	0.0189	95	75-125	1.3	20
Category: NI-FAA-AT Matrix: AQUEOUS QC Lot: 03 MAY 91-A Concentration Units: mg/L								
Nickel	0.02	0.0200	0.0196	0.0198	99	75-125	2.0	20
Category: PB-FAA-AT Matrix: AQUEOUS QC Lot: 03 MAY 91-A Concentration Units: mg/L								
Lead	0.020	0.0175	0.0186	0.0180	90	82-115	6.1	11
Category: ICP-AT Matrix: AQUEOUS QC Lot: 03 MAY 91-A Concentration Units: mg/L								
Aluminum	2.00	1.82	1.82	1.82	91	85-115	0.0	10
Antimony	0.50	0.488	0.484	0.486	97	85-115	0.8	10
Arsenic	0.5	0.430	0.455	0.442	89	85-115	5.6	10
Barium	2.0	1.91	1.92	1.92	96	85-115	0.5	10
Beryllium	0.050	0.0504	0.0511	0.0508	102	80-115	1.4	10
Boron	1.0	1.04	1.06	1.05	105	85-115	1.9	10
Cadmium	0.050	0.0466	0.0453	0.0460	92	81-118	2.8	10
Calcium	100	98.5	99.0	98.8	99	85-115	0.5	10

Calculations are performed before rounding to avoid round-off errors in calculated results.

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DUPLICATE CONTROL SAMPLE REPORT
Metals Analysis and Preparation (cont.)

Analyte	Concentration Spiked	Measured DCS1	Measured DCS2	Measured AVG	Accuracy Average(%) DCS	Accuracy Limits	Precision (RPD) DCS	Precision Limit
Category: ICP-AT Matrix: AQUEOUS QC Lot: 03 MAY 91-A Concentration Units: mg/L								
Chromium	0.20	0.186	0.187	0.186	93	85-115	0.5	10
Cobalt	0.50	0.475	0.483	0.479	96	85-115	1.7	10
Copper	0.25	0.245	0.246	0.246	98	85-115	0.4	10
Iron	1.0	0.961	0.963	0.962	96	85-115	0.2	10
Lead	0.50	0.462	0.463	0.462	93	85-115	0.2	10
Lithium	0.20	0.190	0.193	0.192	96	85-115	1.6	10
Magnesium	50	50.1	50.3	50.2	100	85-115	0.4	10
Manganese	0.50	0.478	0.478	0.478	96	85-115	0.0	10
Molybdenum	0.20	0.181	0.180	0.180	90	85-115	0.6	10
Nickel	0.50	0.472	0.461	0.466	93	83-115	2.4	10
Potassium	50	46.2	46.9	46.6	93	83-115	1.5	10
Selenium	2.0	1.96	1.97	1.96	98	85-115	0.5	10
Silver	0.050	0.0430	0.0434	0.0432	86	56-116	0.9	35
Sodium	100	95.4	96.3	95.8	96	85-115	0.9	10
Thallium	2.0	1.83	1.85	1.84	92	84-118	1.1	[illegible]
Tin	4.0	3.21	2.74	2.98	74#	80-115	16*	[illegible]
Titanium	0.20	0.172	0.171	0.172	86	85-115	0.6	10
Vanadium	0.50	0.474	0.474	0.474	95	82-115	0.0	20
Zinc	0.50	0.475	0.478	0.476	95	80-115	0.6	20
Category: ICP-AT Matrix: AQUEOUS QC Lot: 10 MAY 91-Y Concentration Units: mg/L								
Aluminum	2.00	1.89	1.87	1.88	94	85-115	0.9	10
Antimony	0.50	0.422	0.426	0.424	85	85-115	0.8	10
Arsenic	0.5	0.447	0.435	0.441	88	85-115	2.9	10
Barium	2.0	2.02	1.99	2.01	100	85-115	1.7	10
Beryllium	0.050	0.0467	0.0455	0.0461	92	80-115	2.7	10
Boron	1.0	1.03	1.02	1.02	102	85-115	1.2	10
Cadmium	0.050	0.0464	0.0446	0.0455	91	81-118	3.9	10
Calcium	100	102	102	102	102	85-115	0.5	10
Chromium	0.20	0.188	0.185	0.186	93	85-115	2.1	10
Cobalt	0.50	0.480	0.476	0.478	96	85-115	0.9	10
Copper	0.25	0.263	0.257	0.260	104	85-115	2.5	10
Iron	1.0	0.987	0.973	0.980	98	85-115	1.5	10
Lead	0.50	0.457	0.469	0.463	93	85-115	2.8	10
Lithium	0.20	0.209	0.205	0.207	103	85-115	1.6	10

= Recovery outside QC Limits
* = RPD outside QC Limits

Calculations are performed before rounding to avoid round-off errors in calculated results.

DUPLICATE CONTROL SAMPLE REPORT
Metals Analysis and Preparation (cont.)

Analyte	Concentration Spiked	Measured DCS1	Measured DCS2	Measured AVG	Accuracy Average(%) DCS	Accuracy Limits	Precision (RPD) DCS	Precision Limit
Category: ICP-AT Matrix: AQUEOUS QC Lot: 10 MAY 91-Y Concentration Units: mg/L								
Magnesium	50	51.7	51.7	51.7	103	85-115	0.0	10
Manganese	0.50	0.477	0.474	0.475	95	85-115	0.6	10
Molybdenum	0.20	0.184	0.182	0.183	92	85-115	1.3	10
Nickel	0.50	0.496	0.477	0.486	97	83-115	3.9	10
Potassium	50	50.6	50.2	50.4	101	83-115	0.8	10
Selenium	2.0	1.84	1.82	1.83	92	85-115	1.1	10
Silver	0.050	0.0355	0.0366	0.0361	72	56-116	3.2	35
Sodium	100	102	101	102	102	85-115	0.7	10
Thallium	2.0	1.94	1.93	1.94	97	84-118	0.2	10
Tin	4.0	3.21	3.25	3.23	81	80-115	1.2	15
Titanium	0.20	0.197	0.195	0.196	98	85-115	0.9	10
Vanadium	0.50	0.477	0.474	0.476	95	82-115	0.6	20
Zinc	0.50	0.463	0.463	0.463	93	80-115	0.1	20

Calculations are performed before rounding to avoid round-off errors in calculated results.

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QC LOT ASSIGNMENT REPORT
Wet Chemistry Analysis and Preparation

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
058067-0001-SA	AQUEOUS	IC-A	02 MAY 91-A	02 MAY 91-A
058067-0001-SA	AQUEOUS	IC-A	02 MAY 91-A	02 MAY 91-A
058067-0001-SA	AQUEOUS	IC-A	02 MAY 91-A	02 MAY 91-A
058067-0001-SA	AQUEOUS	IC-A	02 MAY 91-A	02 MAY 91-A
058067-0004-SA	AQUEOUS	IC-A	02 MAY 91-A	02 MAY 91-A
058067-0004-SA	AQUEOUS	IC-A	02 MAY 91-A	02 MAY 91-A
058067-0004-SA	AQUEOUS	IC-A	02 MAY 91-A	02 MAY 91-A
058067-0004-SA	AQUEOUS	IC-A	02 MAY 91-A	02 MAY 91-A
058067-0005-SA	AQUEOUS	IC-A	02 MAY 91-A	02 MAY 91-A
058067-0005-SA	AQUEOUS	IC-A	02 MAY 91-A	02 MAY 91-A
058067-0005-SA	AQUEOUS	IC-A	02 MAY 91-A	02 MAY 91-A
058067-0005-SA	AQUEOUS	IC-A	02 MAY 91-A	02 MAY 91-A
058067-0006-SA	AQUEOUS	IC-A	02 MAY 91-A	02 MAY 91-A
058067-0006-SA	AQUEOUS	IC-A	02 MAY 91-A	02 MAY 91-A
058067-0006-SA	AQUEOUS	IC-A	02 MAY 91-A	02 MAY 91-A
058067-0006-SA	AQUEOUS	IC-A	02 MAY 91-A	02 MAY 91-A

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METHOD BLANK REPORT
Wet Chemistry Analysis and Preparation

Analyte	Result	Units	Reporting Limit
Test: CL-IC-A Matrix: AQUEOUS QC Lot: 02 MAY 91-A QC Run: 02 MAY 91-A			
Chloride	ND	mg/L	1.0
Test: SO4-IC-A Matrix: AQUEOUS QC Lot: 02 MAY 91-A QC Run: 02 MAY 91-A			
Sulfate	ND	mg/L	1.0
Test: NO3-IC-A Matrix: AQUEOUS QC Lot: 02 MAY 91-A QC Run: 02 MAY 91-A			
Nitrate as N	ND	mg/L	0.050
Test: NO2-IC-A Matrix: AQUEOUS QC Lot: 02 MAY 91-A QC Run: 02 MAY 91-A			
Nitrite as N	ND	mg/L	0.050

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DUPLICATE CONTROL SAMPLE REPORT
Wet Chemistry Analysis and Preparation

Analyte	Concentration Spiked	Measured DCS1	Measured DCS2	AVG	Accuracy Average(%) DCS	Accuracy Limits	Precision (RPD) DCS	Precision Limit
Category: IC-A								
Matrix: AQUEOUS								
QC Lot: 02 MAY 91-A								
Concentration Units: mg/L								
Fluoride	2.0	1.94	2.06	2.00	100	84-115	6.0	8
Chloride	3.0	3.11	3.09	3.10	103	83-116	0.6	19
Nitrite as N	2.0	2.02	2.08	2.05	103	85-115	2.9	15
Bromide	2.0	NA	NA	NC	NC	85-115	NC	10
Nitrate as N	2.0	2.01	1.98	2.00	100	85-115	1.5	12
Sulfate	8.0	8.11	8.02	8.06	101	85-115	1.1	12
Orthophosphate as P	10.0	10.4	10.1	10.3	103	85-115	3.1	13

ND = Not detected.
NC = Not calculated, calculation not applicable.
NA = Not applicable.

Calculations are performed before rounding to avoid round-off errors in calculated results.

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Halogenated Volatile Organics

Method 601

Client Name: Dames & Moore
Client ID: MW-33
Lab ID: 058067-0001-SA
Matrix: AQUEOUS Sampled: 30 APR 91 Received: 30 APR 91
Authorized: 30 APR 91 Prepared: NA Analyzed: 09 MAY 91

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	31	ug/L	0.50
1,1-Dichloroethane	2.0	ug/L	0.50
1,2-Dichloroethene (cis/trans)	ND	ug/L	0.50
Chloroform	ND	ug/L	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	2.3	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
1,2-Dibromoethane	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0

Surrogate	Recovery	
Bromochloromethane	83	%

ND = Not detected
NA = Not applicable

Reported By: Dan Orovich Approved By: Kris Rogers

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Halogenated Volatile Organics

Method 601

Client Name: Dames & Moore
Client ID: MW-28
Lab ID: 058067-0002-SA
Matrix: AQUEOUS Sampled: 30 APR 91 Received: 30 APR 91
Authorized: 30 APR 91 Prepared: NA Analyzed: 08 MAY 91

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	3.9	ug/L	0.50
1,1-Dichloroethane	8.1	ug/L	0.50
1,2-Dichloroethene (cis/trans)	ND	ug/L	0.50
Chloroform	ND	ug/L	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
1,2-Dibromoethane	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0

Surrogate	Recovery	
Bromochloromethane	91	%

ND = Not detected
NA = Not applicable

Reported By: Dan Orovich Approved By: Kris Rogers

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Halogenated Volatile Organics

Method 601

Client Name: Dames & Moore
Client ID: MW-42
Lab ID: 058067-0003-SA
Matrix: AQUEOUS
Authorized: 30 APR 91

Sampled: 30 APR 91
Prepared: NA

Received: 30 APR 91
Analyzed: 09 MAY 91

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	33	ug/L	0.50
1,1-Dichloroethane	2.1	ug/L	0.50
1,2-Dichloroethene (cis/trans)	ND	ug/L	0.50
Chloroform	ND	ug/L	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	2.4	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
1,2-Dibromoethane	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0

Surrogate	Recovery	
Bromochloromethane	91	%

ND = Not detected
NA = Not applicable

Reported By: Dan Orovich

Approved By: Kris Rogers

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Halogenated Volatile Organics

Method 601

Client Name: Dames & Moore
Client ID: MW-29
Lab ID: 058067-0004-SA
Matrix: AQUEOUS Sampled: 30 APR 91 Received: 30 APR 91
Authorized: 30 APR 91 Prepared: NA Analyzed: 08 MAY 91

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	16	ug/L	0.50
1,1-Dichloroethane	2.4	ug/L	0.50
1,2-Dichloroethene (cis/trans)	ND	ug/L	0.50
Chloroform	0.57	ug/L	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	6.6	ug/L	1.0
1,1,1-Trichloroethane	1.0	ug/L	0.50
Carbon tetrachloride	0.68	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
1,2-Dibromoethane	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0

Surrogate	Recovery	
Bromochloromethane	93	%

ND = Not detected
NA = Not applicable

Reported By: Dan Orovich Approved By: Kris Rogers

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Halogenated Volatile Organics

Method 601

Client Name: Dames & Moore
Client ID: MW-30
Lab ID: 058067-0005-SA
Matrix: AQUEOUS Sampled: 30 APR 91 Received: 30 APR 91
Authorized: 30 APR 91 Prepared: NA Analyzed: 08 MAY 91

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	75	ug/L	0.50
1,1-Dichloroethane	9.0	ug/L	0.50
1,2-Dichloroethene (cis/trans)	ND	ug/L	0.50
Chloroform	ND	ug/L	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	5.9	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	5.8	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
1,2-Dibromoethane	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0

Surrogate	Recovery	
Bromochloromethane	85	%

ND = Not detected
NA = Not applicable

Reported By: Dan Orovich Approved By: Kris Rogers

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Halogenated Volatile Organics

Method 601

Client Name: Dames & Moore
Client ID: MW-13
Lab ID: 058067-0006-SA
Matrix: AQUEOUS — Sampled: 30 APR 91 — Received: 30 APR 91
Authorized: 30 APR 91 — Prepared: NA — Analyzed: 10 MAY 91

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	14	ug/L	0.50
1,1-Dichloroethane	17	ug/L	0.50
1,2-Dichloroethene (cis/trans)	3.5	ug/L	0.50
Chloroform	ND	ug/L	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	120	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
1,2-Dibromoethane	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0

Surrogate	Recovery	
Bromochloromethane	75	%

ND = Not detected
NA = Not applicable

Reported By: Dan Orovich — Approved By: Kris Rogers

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A Corning Company

Halogenated Volatile Organics

Method 601

Client Name: Dames & Moore
Client ID: RB-3
Lab ID: 058067-0007-SA
Matrix: AQUEOUS Sampled: 30 APR 91 Received: 30 APR 91
Authorized: 30 APR 91 Prepared: NA Analyzed: 10 MAY 91

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	0.50
1,1-Dichloroethane	ND	ug/L	0.50
1,2-Dichloroethene (cis/trans)	ND	ug/L	0.50
Chloroform	ND	ug/L	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
1,2-Dibromoethane	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0

Surrogate	Recovery	
Bromochloromethane	77	%

ND = Not detected
NA = Not applicable

Reported By: Dan Orovich Approved By: Kris Rogers

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

Halogenated Volatile Organics

Method 601

Client Name: Dames & Moore
Client ID: FB-3
Lab ID: 058067-0008-SA
Matrix: AQUEOUS — Sampled: 30 APR 91 — Received: 30 APR 91
Authorized: 30 APR 91 — Prepared: NA — Analyzed: 10 MAY 91

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	0.50
1,1-Dichloroethane	ND	ug/L	0.50
1,2-Dichloroethene (cis/trans)	ND	ug/L	0.50
Chloroform	ND	ug/L	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
1,2-Dibromoethane	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0

Surrogate	Recovery	
Bromochloromethane	81	%

ND = Not detected
NA = Not applicable

Reported By: Dan Orovich — Approved By: Kris Rogers

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

Halogenated Volatile Organics

Method 601

Client Name: Dames & Moore
Client ID: TB-6
Lab ID: 058067-0009-SA
Matrix: AQUEOUS Sampled: 19 APR 91 Received: 30 APR 91
Authorized: 30 APR 91 Prepared: NA Analyzed: 02 MAY 91

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	0.50
1,1-Dichloroethane	ND	ug/L	0.50
1,2-Dichloroethene (cis/trans)	ND	ug/L	0.50
Chloroform	ND	ug/L	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
1,2-Dibromoethane	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0

Surrogate	Recovery	
Bromochloromethane	80	%

ND = Not detected
NA = Not applicable

Reported By: Dan Orovich Approved By: Kris Rogers

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

Aromatic Volatile Organics

Method 602

Client Name: Dames & Moore
Client ID: MW-33
Lab ID: 058067-0001-SA
Matrix: AQUEOUS Sampled: 30 APR 91 Received: 30 APR 91
Authorized: 30 APR 91 Prepared: NA Analyzed: 02 MAY 91

Parameter	Result	Units	Reporting Limit
Benzene	ND	ug/L	0.50
Toluene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	0.50
Ethylbenzene	ND	ug/L	0.50
Xylenes (total)	ND	ug/L	1.0
1,3-Dichlorobenzene	ND	ug/L	1.0
1,4-Dichlorobenzene	ND	ug/L	1.0
1,2-Dichlorobenzene	ND	ug/L	1.0

Surrogate	Recovery	
a,a,a-Trifluorotoluene	93	%

ND = Not detected
NA = Not applicable

Reported By: Dan Orovich Approved By: Lisa Stafford

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

Aromatic Volatile Organics

Method 602

Client Name: Dames & Moore
Client ID: MW-28
Lab ID: 058067-0002-SA
Matrix: AQUEOUS Sampled: 30 APR 91 Received: 30 APR 91
Authorized: 30 APR 91 Prepared: NA Analyzed: 02 MAY 91

Parameter	Result	Units	Reporting Limit
Benzene	ND	ug/L	0.50
Toluene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	0.50
Ethylbenzene	ND	ug/L	0.50
Xylenes (total)	ND	ug/L	1.0
1,3-Dichlorobenzene	ND	ug/L	1.0
1,4-Dichlorobenzene	ND	ug/L	1.0
1,2-Dichlorobenzene	ND	ug/L	1.0

Surrogate	Recovery	
a,a,a-Trifluorotoluene	93	%

ND = Not detected
NA = Not applicable

Reported By: Dan Orovich Approved By: Lisa Stafford

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

Aromatic Volatile Organics

Method 602

Client Name: Dames & Moore
Client ID: MW-42
Lab ID: 058067-0003-SA
Matrix: AQUEOUS Sampled: 30 APR 91 Received: 30 APR 91
Authorized: 30 APR 91 Prepared: NA Analyzed: 02 MAY 91

Parameter	Result	Units	Reporting Limit
Benzene	ND	ug/L	0.50
Toluene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	0.50
Ethylbenzene	ND	ug/L	0.50
Xylenes (total)	ND	ug/L	1.0
1,3-Dichlorobenzene	ND	ug/L	1.0
1,4-Dichlorobenzene	ND	ug/L	1.0
1,2-Dichlorobenzene	ND	ug/L	1.0

Surrogate	Recovery	
a,a,a-Trifluorotoluene	103	%

ND = Not detected
NA = Not applicable

Reported By: Dan Orovich Approved By: Lisa Stafford

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

Aromatic Volatile Organics

Method 602

Client Name: Dames & Moore
Client ID: MW-29
Lab ID: 058067-0004-SA
Matrix: AQUEOUS Sampled: 30 APR 91 Received: 30 APR 91
Authorized: 30 APR 91 Prepared: NA Analyzed: 02 MAY 91

Parameter	Result	Units	Reporting Limit
Benzene	ND	ug/L	0.50
Toluene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	0.50
Ethylbenzene	ND	ug/L	0.50
Xylenes (total)	ND	ug/L	1.0
1,3-Dichlorobenzene	ND	ug/L	1.0
1,4-Dichlorobenzene	ND	ug/L	1.0
1,2-Dichlorobenzene	ND	ug/L	1.0

Surrogate	Recovery	
a,a,a-Trifluorotoluene	98	%

ND = Not detected
NA = Not applicable

Reported By: Dan Orovich Approved By: Lisa Stafford

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

Aromatic Volatile Organics

Method 602

Client Name: Dames & Moore
Client ID: MW-30
Lab ID: 058067-0005-SA
Matrix: AQUEOUS Sampled: 30 APR 91 Received: 30 APR 91
Authorized: 30 APR 91 Prepared: NA Analyzed: 02 MAY 91

Parameter	Result	Units	Reporting Limit
Benzene	ND	ug/L	0.50
Toluene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	0.50
Ethylbenzene	ND	ug/L	0.50
Xylenes (total)	ND	ug/L	1.0
1,3-Dichlorobenzene	ND	ug/L	1.0
1,4-Dichlorobenzene	ND	ug/L	1.0
1,2-Dichlorobenzene	ND	ug/L	1.0

Surrogate	Recovery	
a,a,a-Trifluorotoluene	94	%

ND = Not detected
NA = Not applicable

Reported By: Dan Orovich Approved By: Lisa Stafford

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

Aromatic Volatile Organics

Method 602

Client Name: Dames & Moore
Client ID: MW-13
Lab ID: 058067-0006-SA
Matrix: AQUEOUS Sampled: 30 APR 91 Received: 30 APR 91
Authorized: 30 APR 91 Prepared: NA Analyzed: 02 MAY 91

Parameter	Result	Units	Reporting Limit
Benzene	7900	ug/L	50
Toluene	260	ug/L	5.0
Chlorobenzene	ND	ug/L	5.0
Ethylbenzene	340	ug/L	5.0
Xylenes (total)	520	ug/L	10
1,3-Dichlorobenzene	ND	ug/L	10
1,4-Dichlorobenzene	ND	ug/L	10
1,2-Dichlorobenzene	ND	ug/L	10

Surrogate	Recovery	
a,a,a-Trifluorotoluene	116	%

ND = Not detected
NA = Not applicable

Reported By: Dan Orovich Approved By: Lisa Stafford

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

Total Metals

Client Name: Dames & Moore
Client ID: MW-33
Lab ID: 058067-0001-SA
Matrix: AQUEOUS Sampled: 30 APR 91 Received: 30 APR 91
Authorized: 30 APR 91 Prepared: See Below Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Arsenic	ND	mg/L	0.0050	7060	03 MAY 91	10 APR 91
Chromium	0.0035	mg/L	0.0010	7191	03 MAY 91	10 MAY 91
Iron	ND	mg/L	0.10	200.7	03 MAY 91	09 MAY 91
Lead	ND	mg/L	0.0050	7421	03 MAY 91	11 MAY 91
Nickel	0.056	mg/L	0.020	7521	03 MAY 91	10 MAY 91 R

Note R : Raised reporting limit(s) due to high analyte level(s).

ND = Not detected
NA = Not applicable

Reported By: Fely Francis Approved By: Mei Lai

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

Total Metals

Client Name: Dames & Moore
Client ID: MW-28
Lab ID: 058067-0002-SA
Matrix: AQUEOUS Sampled: 30 APR 91 Received: 30 APR 91
Authorized: 30 APR 91 Prepared: See Below Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Arsenic	ND	mg/L	0.0050	7060	03 MAY 91	10 APR 91
Chromium	0.0060	mg/L	0.0010	7191	03 MAY 91	10 MAY 91
Lead	ND	mg/L	0.0050	7421	03 MAY 91	11 MAY 91
Nickel	0.032	mg/L	0.020	7521	03 MAY 91	10 MAY 91 R

Note R : Raised reporting limit(s) due to high analyte level(s).

ND = Not detected
NA = Not applicable

Reported By: Fely Francis Approved By: Mei Lai

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

Total Metals

Client Name: Dames & Moore
Client ID: MW-42
Lab ID: 058067-0003-SA
Matrix: AQUEOUS Sampled: 30 APR 91 Received: 30 APR 91
Authorized: 30 APR 91 Prepared: See Below Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date	
Arsenic	ND	mg/L	0.0050	7060	03 MAY 91	10 APR 91	
Chromium	0.0040	mg/L	0.0010	7191	03 MAY 91	10 MAY 91	
Lead	ND	mg/L	0.010	7421	03 MAY 91	11 MAY 91	G
Nickel	0.053	mg/L	0.020	7521	03 MAY 91	10 MAY 91	R

Note G : Reporting Limit raised due to matrix interference.

Note R : Raised reporting limit(s) due to high analyte level(s).

ND = Not detected
NA = Not applicable

Reported By: Fely Francis Approved By: Mei Lai

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

Total Metals

Client Name: Dames & Moore
Client ID: MW-29
Lab ID: 058067-0004-SA
Matrix: AQUEOUS Sampled: 30 APR 91 Received: 30 APR 91
Authorized: 30 APR 91 Prepared: See Below Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date	
Arsenic	ND	mg/L	0.0050	7060	03 MAY 91	10 APR 91	
Chromium	0.0030	mg/L	0.0010	7191	03 MAY 91	10 MAY 91	
Iron	ND	mg/L	0.10	200.7	03 MAY 91	09 MAY 91	
Lead	ND	mg/L	0.010	7421	03 MAY 91	11 MAY 91	G
Nickel	0.058	mg/L	0.020	7521	03 MAY 91	10 MAY 91	R

Note G : Reporting Limit raised due to matrix interference.

Note R : Raised reporting limit(s) due to high analyte level(s).

ND = Not detected
NA = Not applicable

Reported By: Fely Francis Approved By: Mei Lai

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

Total Metals

Client Name: Dames & Moore
Client ID: MW-30
Lab ID: 058067-0005-SA
Matrix: AQUEOUS Sampled: 30 APR 91 Received: 30 APR 91
Authorized: 30 APR 91 Prepared: See Below Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Arsenic	ND	mg/L	0.0050	7060	03 MAY 91	10 APR 91
Chromium	0.0079	mg/L	0.0010	7191	03 MAY 91	10 MAY 91
Iron	ND	mg/L	0.10	200.7	03 MAY 91	09 MAY 91
Lead	ND	mg/L	0.0050	7421	03 MAY 91	11 MAY 91
Nickel	0.13	mg/L	0.040	7521	03 MAY 91	10 MAY 91 R

Note R : Raised reporting limit(s) due to high analyte level(s).

ND = Not detected
NA = Not applicable

Reported By: Fely Francis Approved By: Mei Lai

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

Total Metals

Client Name: Dames & Moore
Client ID: MW-13
Lab ID: 058067-0006-SA
Matrix: AQUEOUS — Sampled: 30 APR 91 — Received: 30 APR 91
Authorized: 30 APR 91 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date	
Arsenic	0.033	mg/L	0.0050	7060	03 MAY 91	10 APR 91	
Chromium	ND	mg/L	0.0010	7191	03 MAY 91	10 MAY 91	
Iron	4.2	mg/L	0.10	200.7	03 MAY 91	09 MAY 91	
Lead	ND	mg/L	0.010	7421	03 MAY 91	11 MAY 91	G
Nickel	0.0072	mg/L	0.0050	7521	03 MAY 91	10 MAY 91	

Note G : Reporting Limit raised due to matrix interference.

ND = Not detected
NA = Not applicable

Reported By: Fely Francis — Approved By: Mei Lai

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

METALS

(Water - Dissolved)

Client Name: Dames & Moore
Client ID: MW-33
Lab ID: 058067-0001-SA
Matrix: AQUEOUS
Authorized: 30 APR 91

Sampled: 30 APR 91
Prepared: See Below

Received: 30 APR 91
Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Calcium	62.1	mg/L	0.10	200.7	NA	15 MAY 91
Magnesium	31.3	mg/L	0.20	200.7	NA	15 MAY 91
Potassium	ND	mg/L	5.0	200.7	NA	15 MAY 91
Sodium	22.7	mg/L	5.0	200.7	NA	15 MAY 91

ND = Not detected
NA = Not applicable

Reported By: Grace Chang

Approved By: Barry Votaw

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

METALS

(Water - Dissolved)

Client Name: Dames & Moore
Client ID: MW-29
Lab ID: 058067-0004-SA
Matrix: AQUEOUS — Sampled: 30 APR 91 — Received: 30 APR 91
Authorized: 30 APR 91 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Calcium	102	mg/L	0.10	200.7	NA	15 MAY 91
Magnesium	50.0	mg/L	0.20	200.7	NA	15 MAY 91
Potassium	ND	mg/L	5.0	200.7	NA	15 MAY 91
Sodium	28.5	mg/L	5.0	200.7	NA	15 MAY 91

ND = Not detected
NA = Not applicable

Reported By: Grace Chang — Approved By: Barry Votaw

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Coming Company

METALS

(Water - Dissolved)

Client Name: Dames & Moore
Client ID: MW-30
Lab ID: 058067-0005-SA
Matrix: AQUEOUS — Sampled: 30 APR 91 — Received: 30 APR 91
Authorized: 30 APR 91 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Calcium	95.2	mg/L	0.10	200.7	NA	10 MAY 91
Magnesium	56.8	mg/L	0.20	200.7	NA	10 MAY 91
Potassium	5.0	mg/L	5.0	200.7	NA	10 MAY 91
Sodium	99.1	mg/L	5.0	200.7	NA	10 MAY 91

ND = Not detected
NA = Not applicable

Reported By: Evin Mckinney — Approved By: Barry Votaw

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

METALS

(Water - Dissolved)

Client Name: Dames & Moore
Client ID: MW-13
Lab ID: 058067-0006-SA
Matrix: AQUEOUS — Sampled: 30 APR 91 — Received: 30 APR 91
Authorized: 30 APR 91 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Calcium	130	mg/L	0.10	200.7	NA	10 MAY 91
Magnesium	60.6	mg/L	0.20	200.7	NA	10 MAY 91
Potassium	ND	mg/L	5.0	200.7	NA	10 MAY 91
Sodium	28.1	mg/L	5.0	200.7	NA	10 MAY 91

ND = Not detected
NA = Not applicable

Reported By: Evin Mckinney — Approved By: Barry Votaw

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

GENERAL INORGANICS

(Water)

Client Name: Dames & Moore
Client ID: MW-33
Lab ID: 058067-0001-SA
Matrix: AQUEOUS
Authorized: 30 APR 91

Sampled: 30 APR 91
Prepared: See Below

Received: 30 APR 91
Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date	
Alkalinity, Bicarb. as CaCO3	209	mg/L	5.0	310.1	NA	07 MAY 91	
Alkalinity, Carb. as CaCO3	ND	mg/L	5.0	310.1	NA	07 MAY 91	
Alkalinity, Hydrox. as CaCO3	ND	mg/L	5.0	310.1	NA	07 MAY 91	
Alkalinity, Total as CaCO3	209	mg/L	5.0	310.1	NA	07 MAY 91	
Calcium	62.1	mg/L	0.10	200.7	NA	15 MAY 91	
Chloride	24.6	mg/L	1.0	300.0	NA	02 MAY 91	
Ion Balance Difference	5.8	%		200.7	NA	15 MAY 91	
Magnesium	31.3	mg/L	0.20	200.7	NA	15 MAY 91	
Nitrate as N	3.6	mg/L	0.050	300.0	NA	02 MAY 91	
Nitrite as N	ND	mg/L	0.050	300.0	NA	02 MAY 91	
pH	7.5	units	NA	150.1	NA	01 MAY 91	
Potassium	ND	mg/L	5.0	200.7	NA	15 MAY 91	
Sodium	22.7	mg/L	5.0	200.7	NA	15 MAY 91	
Specific Conductance at 25 deg. C	533	umhos/cm	1.0	120.1	NA	08 MAY 91	
Sulfate	38.6	mg/L	10.0	300.0	NA	02 MAY 91	R
Total Anions	5.9	mg/L	1.0	Standard Method	NA	15 MAY 91	
Total Cations	6.7	mg/L	1.0	Standard Method	NA	15 MAY 91	
Total Dissolved Solids	421	mg/L	10.0	160.1	NA	06 MAY 91	

Note R : Raised reporting limit(s) due to high analyte level(s).

ND = Not detected
NA = Not applicable

Reported By: Darlene Ogburn

Approved By: Josefina Jones

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

GENERAL INORGANICS

(Water)

Client Name: Dames & Moore
Client ID: MW-29
Lab ID: 058067-0004-SA
Matrix: AQUEOUS
Authorized: 30 APR 91

Sampled: 30 APR 91
Prepared: See Below

Received: 30 APR 91
Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date	
Alkalinity, Bicarb. as CaCO3	286	mg/L	5.0	310.1	NA	07 MAY 91	
Alkalinity, Carb. as CaCO3	ND	mg/L	5.0	310.1	NA	07 MAY 91	
Alkalinity, Hydrox. as CaCO3	ND	mg/L	5.0	310.1	NA	07 MAY 91	
Alkalinity, Total as CaCO3	286	mg/L	5.0	310.1	NA	07 MAY 91	
Calcium	102	mg/L	0.10	200.7	NA	15 MAY 91	
Chloride	68.0	mg/L	10.0	300.0	NA	02 MAY 91	R
Ion Balance Difference	4.2	%		200.7	NA	15 MAY 91	
Magnesium	50.0	mg/L	0.20	200.7	NA	15 MAY 91	
Nitrate as N	6.9	mg/L	0.50	300.0	NA	02 MAY 91	R
Nitrite as N	ND	mg/L	0.050	300.0	NA	02 MAY 91	
pH	7.4	units	NA	150.1	NA	01 MAY 91	
Potassium	ND	mg/L	5.0	200.7	NA	15 MAY 91	
Sodium	28.5	mg/L	5.0	200.7	NA	15 MAY 91	
Specific Conductance at 25 deg. C	847	umhos/cm	1.0	120.1	NA	08 MAY 91	
Sulfate	71.1	mg/L	10.0	300.0	NA	02 MAY 91	R
Total Anions	9.6	mg/L	1.0	Standard Method	NA	15 MAY 91	
Total Cations	10.4	mg/L	1.0	Standard Method	NA	15 MAY 91	
Total Dissolved Solids	564	mg/L	10.0	160.1	NA	06 MAY 91	

Note R : Raised reporting limit(s) due to high analyte level(s).

ND = Not detected
NA = Not applicable

Reported By: Darlene Ogburn

Approved By: Josefina Jones

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

GENERAL INORGANICS

(Water)

Client Name: Dames & Moore
Client ID: MW-30
Lab ID: 058067-0005-SA
Matrix: AQUEOUS
Authorized: 30 APR 91

Sampled: 30 APR 91
Prepared: See Below

Received: 30 APR 91
Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date	
Alkalinity, Bicarb. as CaCO3	322	mg/L	5.0	310.1	NA	07 MAY 91	
Alkalinity, Carb. as CaCO3	ND	mg/L	5.0	310.1	NA	07 MAY 91	
Alkalinity, Hydrox. as CaCO3	ND	mg/L	5.0	310.1	NA	07 MAY 91	
Alkalinity, Total as CaCO3	322	mg/L	5.0	310.1	NA	07 MAY 91	
Calcium	95.2	mg/L	0.10	200.7	NA	10 MAY 91	
Chloride	67.8	mg/L	10.0	300.0	NA	02 MAY 91	R
Ion Balance Difference	6.1	%		200.7	NA	15 MAY 91	
Magnesium	56.8	mg/L	0.20	200.7	NA	10 MAY 91	
Nitrate as N	12.8	mg/L	0.50	300.0	NA	02 MAY 91	R
Nitrite as N	ND	mg/L	0.050	300.0	NA	02 MAY 91	
pH	7.4	units	NA	150.1	NA	01 MAY 91	
Potassium	5.0	mg/L	5.0	200.7	NA	10 MAY 91	
Sodium	99.1	mg/L	5.0	200.7	NA	10 MAY 91	
Specific Conductance at 25 deg. C	1060	umhos/cm	1.0	120.1	NA	08 MAY 91	
Sulfate	144	mg/L	10.0	300.0	NA	02 MAY 91	R
Total Anions	12.3	mg/L	1.0	Standard Method	NA	15 MAY 91	
Total Cations	13.9	mg/L	1.0	Standard Method	NA	15 MAY 91	
Total Dissolved Solids	763	mg/L	10.0	160.1	NA	06 MAY 91	

Note R : Raised reporting limit(s) due to high analyte level(s).

ND = Not detected
NA = Not applicable

Reported By: Darlene Ogburn

Approved By: Josefina Jones

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

GENERAL INORGANICS

(Water)

Client Name: Dames & Moore
Client ID: MW-13
Lab ID: 058067-0006-SA
Matrix: AQUEOUS — Sampled: 30 APR 91 — Received: 30 APR 91
Authorized: 30 APR 91 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Alkalinity, Bicarb. as CaCO3	554	mg/L	5.0	310.1	NA	07 MAY 91
Alkalinity, Carb. as CaCO3	ND	mg/L	5.0	310.1	NA	07 MAY 91
Alkalinity, Hydrox. as CaCO3	ND	mg/L	5.0	310.1	NA	07 MAY 91
Alkalinity, Total as CaCO3	554	mg/L	5.0	310.1	NA	07 MAY 91
Calcium	130	mg/L	0.10	200.7	NA	10 MAY 91
Chloride	12.7	mg/L	10.0	300.0	NA	02 MAY 91 G
Ion Balance Difference	4.8	%		200.7	NA	15 MAY 91
Magnesium	60.6	mg/L	0.20	200.7	NA	10 MAY 91
Nitrate as N	ND	mg/L	0.050	300.0	NA	02 MAY 91
Nitrite as N	ND	mg/L	0.050	300.0	NA	02 MAY 91
pH	7.0	units	NA	150.1	NA	01 MAY 91
Potassium	ND	mg/L	5.0	200.7	NA	10 MAY 91
Sodium	28.1	mg/L	5.0	200.7	NA	10 MAY 91
Specific Conductance at 25 deg. C	932	umhos/cm	1.0	120.1	NA	08 MAY 91
Sulfate	4.2	mg/L	1.0	300.0	NA	02 MAY 91
Total Anions	11.5	mg/L	1.0	Standard Method	NA	15 MAY 91
Total Cations	12.7	mg/L	1.0	Standard Method	NA	15 MAY 91
Total Dissolved Solids	698	mg/L	10.0	160.1	NA	06 MAY 91

Note G : Reporting Limit raised due to matrix interference.

ND = Not detected
NA = Not applicable

Reported By: Darlene Ogburn — Approved By: Josefina Jones

The cover letter is an integral part of this report.
Rev 230787

5F067

Page 1 of 2

Enseco

CHAIN-OF-CUSTODY RECORD

SAMPLER: (*Signature*) [illegible] Date Shipped _____ Carrier _____

Phone _____ Airbill No. _____ Cooler No. _____

SHIP TO:

Enseco-Cal Lab
2544 Industrial Blvd.
West Sacramento, CA 95691
(916) 372-1393

ATTENTION: _____

SEND RESULTS TO:

Client Name TOM MUDGE

Company DAMES & MOORE

Address 3000 TOWN CENTER DR.
SACRAMENTO, CA

Phone 916-924-8699

PROJECT NAME UPDOC QUARTERLY SAMPLING **PROJECT NO.** 00173-004-004 **P.O. NO.** _____

Relinquished by: (*Signature*)	Received by: (*Signature*)	Date	Time
J. Frank Zuber			
Relinquished by: (*Signature*)	Received by: (*Signature*)	Date	Time
Relinquished by: (*Signature*)	Received at lab by: (*Signature*)	Date	Time
	Tony Tom	4-30-91	1720
Relinquished from lab by: (*Signature*)	Received by: (*Signature*)	Date	Time

ANALYSIS REQUEST

Sample ID Number	Sample Description	Date/Time Sampled	Analysis Requested	Sample Condition Upon Receipt
MW-33	2-40 mL VOA (HCl)	4/30 0930	601	INTACT
"	1000 mL	0930	ION BALANCE (GFAA)	
"	500 mL (HNO3)	0930	As Cr Pb Ni, Fe (TOTAL)	
MW-38	2-40 mL VOA	1130	601/602	
"	1-500 mL (HNO3)	1130	As Cr Pb Ni (GFAA)	
MW-42	2-40 mL VOA (HCl)	0930	601	
"	1-500 mL (HNO3)	0930	As Cr Pb Ni (GFAA)	
MW-29	4-40 mL VOA (HCl)	1145	601/602	
"	1-1000 mL	1145	ION BALANCE	
"	1-500 mL HNO3	1145	As, Cr, Pb, Ni, Fe (TOTAL) GFAA	

Special Instructions/Comments:

IB	1
As, Cr, Pb, Ni	4
Fe	4
601	9
602	4

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT

Expected Analytical T.A.T's: _____ Immediate Attention (200% surcharge) _____ RUSH (50-100% surcharge) ✓ Standard

Cal Lab ID Number: *(for lab use only)*

Client Retains White Copy Only

(Revised 1/87)

Enseco

CHAIN-OF-CUSTODY RECORD

SAMPLER: (*Signature*) [signature] Date Shipped _____ Carrier _____

Phone _____ Airbill No. _____ Cooler No. _____

SHIP TO:

Enseco-Cal Lab
2544 Industrial Blvd.
West Sacramento, CA 95691
(916) 372-1393

ATTENTION: _____

SEND RESULTS TO:

Client Name Tom Madison

Company Jones-Mack E

Address 500 Third Center Dr #100

Phone 714 368-6269

PROJECT NAME USAC Quarterly Sampling **PROJECT NO.** 0172-064-124 **P.O. NO.** _____

Relinquished by: (*Signature*)	Received by: (*Signature*)	Date	Time
[signature]			
Relinquished by: (*Signature*)	Received by: (*Signature*)	Date	Time
Relinquished by: (*Signature*)	Received at lab by: (*Signature*) [signature]	Date 5/11/91	Time 1830
Relinquished from lab by: (*Signature*)	Received by: (*Signature*)	Date	Time

ANALYSIS REQUEST

Sample ID Number	Sample Description	Date/Time Sampled	Analysis Requested	Sample Condition Upon Receipt
MW-32	1-500 mL	5-1/1515	As, Ni, Cr, Pb, Fe total GFAA	
"	1-1000 mL	/ "	Ion Balance	
MW-43	4-40 mL	/1400	601, 602	
	1-500 mL	/ "	As, Ni, Cr, Pb GFAA	
MW-31	4-40 mL	/1630	601, 602	
"	1-500 mL	/ "	As, Ni, Cr, Pb, Fe (total) GFAA	
"	1-1000 mL	/ "	Ion Balance	
FB-4	2-40 mL	/1615	601	
RB-4	2-40 mL	/1630	601	
TB-7	1-40 mL	4-19-91	601	

Special Instructions/Comments:

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT

Expected Analytical T.A.T's: _____ Immediate Attention (200% surcharge) _____ RUSH (50-100% surcharge) X Standard

Cal Lab ID Number: *(for lab use only)*

Client Retains White Copy Only

(Revised 1/87)

California Analytical
Laboratory

Enseco
A CORNING Company

May 24, 1991
Lab ID: 058087

Anthony J. Mindling
Dames & Moore
9300 Tech Center Drive
Suite 100
Sacramento, CA 95826

Dear Mr. Mindling:

Enclosed is the report for the nine aqueous samples for your UPSAC Quarterly Sampling Project, Number 00173-064-044, which were received at Enseco-Cal Lab on 1 May 1991.

The report consists of the following sections:

I Sample Description
II Analysis Request
III Quality Control Report
IV Analysis Results

If you have any questions, please feel free to call.

Sincerely,

Janet Harlan

Janet Harlan
Program Administrator

sh

Enseco Incorporated
2544 Industrial Boulevard
West Sacramento, California 95691
916/372-1393 Fax: 916/372-7768

Enseco
A Corning Company

I Sample Description

See the attached Sample Description Information.

The samples were received under chain-of-custody.

II Analysis Request

The following analytical tests were requested.

Lab ID	Analysis Description
058087-1 thru 9	Halogenated Volatile Organics
-2 thru 6	Aromatic Volatile Organics
-1 thru 6	Total Metals
-2,3,4,6	Calcium, Magnesium, Potassium, Sodium General Inorganics

III Quality Control

A. Project Specific QC. No project specific QC (i.e., spikes and/or duplicates) was requested.

B. Method Blank Results. A method blank is a laboratory-generated sample which assesses the degree to which laboratory operations and procedures cause false-positive analytical results for your samples.

No target parameters were detected in the method blanks associated with your samples at the reporting limit levels noted on the attached Method Blank Report.

Repetitions of method blanks (with identical QC Lot No.s) have been reported but do not indicate unique determinations.

C. Laboratory Control Samples - The LCS Program

Duplicate Control Samples. A DCS is a well-characterized matrix (blank water, sand or celite) which is spiked with certain target parameters and analyzed at approximately 10% of the sample load in order to establish method-specific control limits. The DCS results associated with your samples are on the attached Duplicate Control Sample Report.

Single Control Samples. An SCS consists of a control matrix that is spiked with surrogate compounds appropriate to the method being used. In cases where no surrogate is available, (e.g. metals or conventional analyses) a single control sample identical to the DCS serves as the control sample. An SCS is prepared for each sample lot. Accuracy is calculated identically to the DCS. The SCS results associated with your samples are on the attached Single Control Sample Report.

Accuracy is measured by Percent Recovery as in:

$$\% \text{ recovery} = \frac{\text{(measured concentration)}}{\text{(actual concentration)}} \times 100$$

Precision is measured using duplicate tests by Relative Percent Difference (RPD) as in:

$$\text{RPD} = \frac{\text{(\% recovery test 1 - \% recovery test 2)}}{\text{(\% recovery test 1 + \% recovery test 2)/2}} \times 100$$

Control limits for accuracy (percent recovery) are based on the average, historical percent recovery +/-3 standard deviation units. Control limits for precision (relative percent difference) range from 0 (identical duplicate DCS results) to the average, historical relative percent difference + 3 standard deviation units. In cases where there is not enough historical data, EPA limits or advisory limits are set, with the approval of the Quality Assurance department.

IV Analysis Results

Test methods may include minor modifications of published EPA Methods such as reporting limits or parameter lists. Reporting limits are adjusted to reflect dilution of the sample, when appropriate. Solid and waste samples are reported on an "as received" basis; i.e., no correction is made for moisture content, unless the method requires or the client requests that such correction be made.

Results are on the attached data sheets.

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SAMPLE DESCRIPTION INFORMATION
for
Dames & Moore

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
058087-0001-SA	MW-12	AQUEOUS	01 MAY 91	09:30	01 MAY 91
058087-0002-SA	MW-14	AQUEOUS	01 MAY 91	10:50	01 MAY 91
058087-0003-SA	MW-4	AQUEOUS	01 MAY 91	12:45	01 MAY 91
058087-0004-SA	MW-32	AQUEOUS	01 MAY 91	15:15	01 MAY 91
058087-0005-SA	MW-43	AQUEOUS	01 MAY 91	14:00	01 MAY 91
058087-0006-SA	MW-31	AQUEOUS	01 MAY 91	16:30	01 MAY 91
058087-0007-SA	FB-4	AQUEOUS	01 MAY 91	16:15	01 MAY 91
058087-0008-SA	RB-4	AQUEOUS	01 MAY 91	16:30	01 MAY 91
058087-0009-SA	TB-7	AQUEOUS	19 APR 91		01 MAY 91

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QC LOT ASSIGNMENT REPORT
Volatile Organics by GC

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
058087-0001-SA	AQUEOUS	601-A	06 MAY 91-38A	09 MAY 91-38B
058087-0002-SA	AQUEOUS	601-A	06 MAY 91-38A	09 MAY 91-38B
058087-0002-SA	AQUEOUS	602-A	03 MAY 91-11A	03 MAY 91-11A
058087-0003-SA	AQUEOUS	601-A	06 MAY 91-38A	09 MAY 91-38B
058087-0003-SA	AQUEOUS	602-A	03 MAY 91-11A	03 MAY 91-11A
058087-0004-SA	AQUEOUS	601-A	06 MAY 91-38A	09 MAY 91-38B
058087-0004-SA	AQUEOUS	602-A	03 MAY 91-11A	03 MAY 91-11A
058087-0005-SA	AQUEOUS	601-A	06 MAY 91-38A	09 MAY 91-38B
058087-0005-SA	AQUEOUS	602-A	03 MAY 91-11A	03 MAY 91-11A
058087-0006-SA	AQUEOUS	601-A	06 MAY 91-38A	09 MAY 91-38B
058087-0006-SA	AQUEOUS	602-A	03 MAY 91-11A	03 MAY 91-11A
058087-0007-SA	AQUEOUS	601-A	06 MAY 91-38A	09 MAY 91-38B
058087-0008-SA	AQUEOUS	601-A	06 MAY 91-38A	09 MAY 91-38B
058087-0009-SA	AQUEOUS	601-A	06 MAY 91-38A	09 MAY 91-38B

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METHOD BLANK REPORT
Volatile Organics by GC

Analyte	Result	Units	Reporting Limit
Test: 601-A Matrix: AQUEOUS QC Lot: 06 MAY 91-38A QC Run: 09 MAY 91-38B			
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	0.50
1,1-Dichloroethane	ND	ug/L	0.50
1,2-Dichloroethene (cis/trans)	ND	ug/L	0.50
Chloroform	ND	ug/L	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
1,2-Dibromoethane	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0
Test: 601-A Matrix: AQUEOUS QC Lot: 06 MAY 91-38A QC Run: 09 MAY 91-38B			
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	0.50
1,1-Dichloroethane	ND	ug/L	0.50
1,2-Dichloroethene (cis/trans)	ND	ug/L	0.50

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METHOD BLANK REPORT
Volatile Organics by GC (cont.)

Analyte	Result	Units	Reporting Limit
Test: 601-A Matrix: AQUEOUS QC Lot: 06 MAY 91-38A QC Run: 09 MAY 91-38B			
Chloroform	ND	ug/L	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
1,2-Dibromoethane	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0
Test: 602-A Matrix: AQUEOUS QC Lot: 03 MAY 91-11A QC Run: 03 MAY 91-11A			
Benzene	ND	ug/L	0.50
Toluene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	0.50
Ethylbenzene	ND	ug/L	0.50
Xylenes (total)	ND	ug/L	1.0
1,3-Dichlorobenzene	ND	ug/L	1.0
1,4-Dichlorobenzene	ND	ug/L	1.0
1,2-Dichlorobenzene	ND	ug/L	1.0
Test: 601-A Matrix: AQUEOUS QC Lot: 06 MAY 91-38A QC Run: 09 MAY 91-38B			
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0

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METHOD BLANK REPORT
Volatile Organics by GC (cont.)

Analyte	Result	Units	Reporting Limit
Test: 601-A			
Matrix: AQUEOUS			
QC Lot: 06 MAY 91-38A QC Run: 09 MAY 91-38B			
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	0.50
1,1-Dichloroethane	ND	ug/L	0.50
1,2-Dichloroethene (cis/trans)	ND	ug/L	0.50
Chloroform	ND	ug/L	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
1,2-Dibromoethane	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0
Test: 602-A			
Matrix: AQUEOUS			
QC Lot: 03 MAY 91-11A QC Run: 03 MAY 91-11A			
Benzene	ND	ug/L	0.50
Toluene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	0.50
Ethylbenzene	ND	ug/L	0.50
Xylenes (total)	ND	ug/L	1.0
1,3-Dichlorobenzene	ND	ug/L	1.0
1,4-Dichlorobenzene	ND	ug/L	1.0
1,2-Dichlorobenzene	ND	ug/L	1.0

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METHOD BLANK REPORT
Volatile Organics by GC (cont.)

Analyte	Result	Units	Reporting Limit
Test: 601-A			
Matrix: AQUEOUS			
QC Lot: 06 MAY 91-38A QC Run: 09 MAY 91-38B			
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	0.50
1,1-Dichloroethane	ND	ug/L	0.50
1,2-Dichloroethene (cis/trans)	ND	ug/L	0.50
Chloroform	ND	ug/L	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
1,2-Dibromoethane	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0

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A Corning Company

DUPLICATE CONTROL SAMPLE REPORT
Volatile Organics by GC

Analyte	Concentration Spiked	Measured DCS1	Measured DCS2	AVG	Accuracy Average(%) DCS	Accuracy Limits	Precision (RPD) DCS	Precision Limit
Category: 601-A Matrix: AQUEOUS QC Lot: 06 MAY 91-38A Concentration Units: ug/L								
1,1-Dichloroethane	5.0	4.58	4.69	4.64	93	70-138	2.4	24
Chloroform	5.0	4.65	4.80	4.72	95	83-124	3.2	18
Bromodichloromethane	10.0	10.2	10.4	10.3	103	78-132	1.9	21
Trichloroethene	5.0	4.56	4.57	4.56	91	82-122	0.2	16
Chlorobenzene	5.0	4.47	4.43	4.45	89	80-126	0.9	19
Category: 602-A Matrix: AQUEOUS QC Lot: 03 MAY 91-11A Concentration Units: ug/L								
Benzene	5.0	4.92	4.72	4.82	96	82-112	4.1	11
Toluene	5.0	4.90	4.70	4.80	96	81-114	4.2	13
1,3-Dichlorobenzene	5.0	4.53	4.34	4.44	89	68-124	4.3	1
Ethylbenzene	5.0	4.81	4.74	4.78	96	73-117	1.5	1
Xylenes (total)	15.0	14.4	14.0	14.2	95	75-120	2.8	10

Calculations are performed before rounding to avoid round-off errors in calculated results.

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SINGLE CONTROL SAMPLE REPORT
Volatile Organics by GC

Analyte	Concentration Spiked	Measured	Accuracy(%) SCS	Limits
Category: 601-A Matrix: AQUEOUS QC Lot: 06 MAY 91-38A QC Run: 09 MAY 91-38B Concentration Units: ug/L				
Bromochloromethane	5.00	4.06	81	68-121
Category: 602-A Matrix: AQUEOUS QC Lot: 03 MAY 91-11A QC Run: 03 MAY 91-11A Concentration Units: ug/L				
a,a,a-Trifluorotoluene	5.00	4.30	86	20-160

Calculations are performed before rounding to avoid round-off errors in calculated results.

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QC LOT ASSIGNMENT REPORT
Metals Analysis and Preparation

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
058087-0001-SA	AQUEOUS	AS-FAA-AT	03 MAY 91-B	03 MAY 91-B
058087-0001-SA	AQUEOUS	CR-FAA-AT	03 MAY 91-B	03 MAY 91-B
058087-0001-SA	AQUEOUS	NI-FAA-AT	03 MAY 91-B	03 MAY 91-B
058087-0001-SA	AQUEOUS	PB-FAA-AT	03 MAY 91-B	03 MAY 91-B
058087-0002-SA	AQUEOUS	AS-FAA-AT	03 MAY 91-B	03 MAY 91-B
058087-0002-SA	AQUEOUS	CR-FAA-AT	03 MAY 91-B	03 MAY 91-B
058087-0002-SA	AQUEOUS	NI-FAA-AT	03 MAY 91-B	03 MAY 91-B
058087-0002-SA	AQUEOUS	PB-FAA-AT	03 MAY 91-B	03 MAY 91-B
058087-0002-SA	AQUEOUS	ICP-AT	03 MAY 91-A	03 MAY 91-A
058087-0002-SA	AQUEOUS	ICP-AT	17 MAY 91-Y	-
058087-0003-SA	AQUEOUS	AS-FAA-AT	03 MAY 91-B	03 MAY 91-B
058087-0003-SA	AQUEOUS	CR-FAA-AT	03 MAY 91-B	03 MAY 91-B
058087-0003-SA	AQUEOUS	NI-FAA-AT	03 MAY 91-B	03 MAY 91-B
058087-0003-SA	AQUEOUS	PB-FAA-AT	03 MAY 91-B	03 MAY 91-B
058087-0003-SA	AQUEOUS	ICP-AT	03 MAY 91-A	03 MAY 91-A
058087-0003-SA	AQUEOUS	ICP-AT	17 MAY 91-Y	-
058087-0004-SA	AQUEOUS	AS-FAA-AT	03 MAY 91-B	03 MAY 91-B
058087-0004-SA	AQUEOUS	CR-FAA-AT	03 MAY 91-B	03 MAY 91-B
058087-0004-SA	AQUEOUS	NI-FAA-AT	03 MAY 91-B	03 MAY 91-B
058087-0004-SA	AQUEOUS	PB-FAA-AT	03 MAY 91-B	03 MAY 91-B
058087-0004-SA	AQUEOUS	ICP-AT	03 MAY 91-A	03 MAY 91-A
058087-0004-SA	AQUEOUS	ICP-AT	17 MAY 91-Y	-
058087-0005-SA	AQUEOUS	AS-FAA-AT	03 MAY 91-B	03 MAY 91-B
058087-0005-SA	AQUEOUS	CR-FAA-AT	03 MAY 91-B	03 MAY 91-B
058087-0005-SA	AQUEOUS	NI-FAA-AT	03 MAY 91-B	03 MAY 91-B
058087-0005-SA	AQUEOUS	PB-FAA-AT	03 MAY 91-B	03 MAY 91-B
058087-0006-SA	AQUEOUS	AS-FAA-AT	03 MAY 91-B	03 MAY 91-B
058087-0006-SA	AQUEOUS	CR-FAA-AT	03 MAY 91-B	03 MAY 91-B
058087-0006-SA	AQUEOUS	NI-FAA-AT	03 MAY 91-B	03 MAY 91-B
058087-0006-SA	AQUEOUS	PB-FAA-AT	03 MAY 91-B	03 MAY 91-B
058087-0006-SA	AQUEOUS	ICP-AT	14 MAY 91-A	14 MAY 91-A
058087-0006-SA	AQUEOUS	ICP-AT	17 MAY 91-Y	-

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METHOD BLANK REPORT
Metals Analysis and Preparation

Analyte	Result	Units	Reporting Limit
Test: GF-ASCP-TAL-AT Matrix: AQUEOUS QC Lot: 03 MAY 91-B QC Run: 03 MAY 91-B			
Arsenic	ND	mg/L	0.0050
Test: GF-CRCP-TAL-AT Matrix: AQUEOUS QC Lot: 03 MAY 91-B QC Run: 03 MAY 91-B			
Chromium	ND	mg/L	0.0010
Test: GF-NICP-TAL-AT Matrix: AQUEOUS QC Lot: 03 MAY 91-B QC Run: 03 MAY 91-B			
Nickel	ND	mg/L	0.0050
Test: GF-PBCP-TAL-AT Matrix: AQUEOUS QC Lot: 03 MAY 91-B QC Run: 03 MAY 91-B			
Lead	ND	mg/L	0.0050
Test: GF-ASCP-TAL-AT Matrix: AQUEOUS QC Lot: 03 MAY 91-B QC Run: 03 MAY 91-B			
Arsenic	ND	mg/L	0.0050
Test: GF-CRCP-TAL-AT Matrix: AQUEOUS QC Lot: 03 MAY 91-B QC Run: 03 MAY 91-B			
Chromium	ND	mg/L	0.0010

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METHOD BLANK REPORT
Metals Analysis and Preparation (cont.)

Analyte	Result	Units	Reporting Limit
Test: GF-NICP-TAL-AT Matrix: AQUEOUS QC Lot: 03 MAY 91-B QC Run: 03 MAY 91-B			
Nickel	ND	mg/L	0.0050
Test: GF-PBCP-TAL-AT Matrix: AQUEOUS QC Lot: 03 MAY 91-B QC Run: 03 MAY 91-B			
Lead	ND	mg/L	0.0050
Test: FE-ICP-AT Matrix: AQUEOUS QC Lot: 03 MAY 91-A QC Run: 03 MAY 91-A			
Iron	ND	mg/L	0.10
Test: GF-ASCP-TAL-AT Matrix: AQUEOUS QC Lot: 03 MAY 91-B QC Run: 03 MAY 91-B			
Arsenic	ND	mg/L	0.0050
Test: GF-CRCP-TAL-AT Matrix: AQUEOUS QC Lot: 03 MAY 91-B QC Run: 03 MAY 91-B			
Chromium	ND	mg/L	0.0010
Test: GF-NICP-TAL-AT Matrix: AQUEOUS QC Lot: 03 MAY 91-B QC Run: 03 MAY 91-B			
Nickel	ND	mg/L	0.0050

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METHOD BLANK REPORT
Metals Analysis and Preparation (cont.)

Analyte	Result	Units	Reporting Limit
Test: GF-PBCP-TAL-AT Matrix: AQUEOUS QC Lot: 03 MAY 91-B QC Run: 03 MAY 91-B			
Lead	ND	mg/L	0.0050
Test: FE-ICP-AT Matrix: AQUEOUS QC Lot: 14 MAY 91-A QC Run: 14 MAY 91-A			
Iron	ND	mg/L	0.10

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DUPLICATE CONTROL SAMPLE REPORT
Metals Analysis and Preparation

Analyte	Concentration Spiked	Measured DCS1	Measured DCS2	Measured AVG	Accuracy Average(%) DCS	Accuracy Limits	Precision (RPD) DCS	Precision (RPD) Limit
Category: AS-FAA-AT Matrix: AQUEOUS QC Lot: 03 MAY 91-B Concentration Units: mg/L								
Arsenic	0.040	0.0391	0.0401	0.0396	99	84-115	2.5	10
Category: CR-FAA-AT Matrix: AQUEOUS QC Lot: 03 MAY 91-B Concentration Units: mg/L								
Chromium	0.02	0.0162	0.0172	0.0167	84	75-125	6.0	20
Category: NI-FAA-AT Matrix: AQUEOUS QC Lot: 03 MAY 91-B Concentration Units: mg/L								
Nickel	0.02	0.0191	0.0191	0.0191	95	75-125	0.0	2
Category: PB-FAA-AT Matrix: AQUEOUS QC Lot: 03 MAY 91-B Concentration Units: mg/L								
Lead	0.020	0.0204	0.0205	0.0204	102	82-115	0.5	11
Category: ICP-AT Matrix: AQUEOUS QC Lot: 03 MAY 91-A Concentration Units: mg/L								
Aluminum	2.00	1.82	1.82	1.82	91	85-115	0.0	10
Antimony	0.50	0.488	0.484	0.486	97	85-115	0.8	10
Arsenic	0.5	0.430	0.455	0.442	89	85-115	5.6	10
Barium	2.0	1.91	1.92	1.92	96	85-115	0.5	10
Beryllium	0.050	0.0504	0.0511	0.0508	102	80-115	1.4	10
Boron	1.0	1.04	1.06	1.05	105	85-115	1.9	10
Cadmium	0.050	0.0466	0.0453	0.0460	92	81-118	2.8	10
Calcium	100	98.5	99.0	98.8	99	85-115	0.5	10

Calculations are performed before rounding to avoid round-off errors in calculated results.

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DUPLICATE CONTROL SAMPLE REPORT
Metals Analysis and Preparation (cont.)

Analyte	Concentration Spiked	Measured DCS1	Measured DCS2	Measured AVG	Accuracy Average(%) DCS	Accuracy Limits	Precision (RPD) DCS	Precision Limit
Category: ICP-AT Matrix: AQUEOUS QC Lot: 03 MAY 91-A Concentration Units: mg/L								
Chromium	0.20	0.186	0.187	0.186	93	85-115	0.5	10
Cobalt	0.50	0.475	0.483	0.479	96	85-115	1.7	10
Copper	0.25	0.245	0.246	0.246	98	85-115	0.4	10
Iron	1.0	0.961	0.963	0.962	96	85-115	0.2	10
Lead	0.50	0.462	0.463	0.462	93	85-115	0.2	10
Lithium	0.20	0.190	0.193	0.192	96	85-115	1.6	10
Magnesium	50	50.1	50.3	50.2	100	85-115	0.4	10
Manganese	0.50	0.478	0.478	0.478	96	85-115	0.0	10
Molybdenum	0.20	0.181	0.180	0.180	90	85-115	0.6	10
Nickel	0.50	0.472	0.461	0.466	93	83-115	2.4	10
Potassium	50	46.2	46.9	46.6	93	83-115	1.5	10
Selenium	2.0	1.96	1.97	1.96	98	85-115	0.5	10
Silver	0.050	0.0430	0.0434	0.0432	86	56-116	0.9	35
Sodium	100	95.4	96.3	95.8	96	85-115	0.9	10
Thallium	2.0	1.83	1.85	1.84	92	84-118	1.1	10
Tin	4.0	3.21	2.74	2.98	74#	80-115	16*	15
Titanium	0.20	0.172	0.171	0.172	86	85-115	0.6	10
Vanadium	0.50	0.474	0.474	0.474	95	82-115	0.0	20
Zinc	0.50	0.475	0.478	0.476	95	80-115	0.6	20
Category: ICP-AT Matrix: AQUEOUS QC Lot: 17 MAY 91-Y Concentration Units: mg/L								
Aluminum	2.00	1.91	1.90	1.90	95	85-115	0.5	10
Antimony	0.50	0.501	0.494	0.497	99	85-115	1.3	10
Arsenic	0.5	0.519	0.515	0.517	103	85-115	0.7	10
Barium	2.0	1.92	1.90	1.91	96	85-115	0.9	10
Beryllium	0.050	0.0525	0.0518	0.0521	104	80-115	1.4	10
Boron	1.0	1.02	1.02	1.02	102	85-115	0.2	10
Cadmium	0.050	0.0520	0.0515	0.0518	104	81-118	0.9	10
Calcium	100	101	101	101	101	85-115	0.6	10
Chromium	0.20	0.198	0.197	0.198	99	85-115	0.5	10
Cobalt	0.50	0.498	0.499	0.498	100	85-115	0.2	10
Copper	0.25	0.262	0.252	0.257	103	85-115	4.1	10
Iron	1.0	0.957	0.945	0.951	95	85-115	1.3	10
Lead	0.50	0.521	0.504	0.512	102	85-115	3.4	10
Lithium	0.20	0.191	0.189	0.190	95	85-115	1.1	10

= Recovery outside QC Limits
* = RPD outside QC Limits

Calculations are performed before rounding to avoid round-off errors in calculated results.

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DUPLICATE CONTROL SAMPLE REPORT
Metals Analysis and Preparation (cont.)

Analyte	Concentration Spiked	Measured DCS1	Measured DCS2	Measured AVG	Accuracy Average(%) DCS	Accuracy Limits	Precision (RPD) DCS	Precision Limit
Category: ICP-AT Matrix: AQUEOUS QC Lot: 17 MAY 91-Y Concentration Units: mg/L								
Magnesium	50	53.5	53.3	53.4	107	85-115	0.4	10
Manganese	0.50	0.499	0.495	0.497	99	85-115	0.7	10
Molybdenum	0.20	0.188	0.187	0.187	94	85-115	0.7	10
Nickel	0.50	0.512	0.500	0.506	101	83-115	2.4	10
Potassium	50	50.0	49.5	49.7	99	83-115	1.0	10
Selenium	2.0	1.89	1.88	1.88	94	85-115	0.7	10
Silver	0.050	0.0471	0.0464	0.0468	94	56-116	1.4	35
Sodium	100	98.0	97.6	97.8	98	85-115	0.5	10
Thallium	2.0	1.91	1.91	1.91	95	84-118	0.3	10
Tin	4.0	3.76	3.74	3.75	94	80-115	0.8	15
Titanium	2.0	1.87	1.85	1.86	93	85-115	0.8	10
Vanadium	0.50	0.499	0.496	0.497	99	82-115	0.6	20
Zinc	0.50	0.526	0.514	0.520	104	80-115	2.2	20
Category: ICP-AT Matrix: AQUEOUS QC Lot: 14 MAY 91-A Concentration Units: mg/L								
Aluminum	2.00	1.97	1.97	1.97	98	85-115	0.1	10
Antimony	0.50	0.471	0.477	0.474	95	85-115	1.1	10
Arsenic	0.5	0.476	0.468	0.472	94	85-115	1.7	10
Barium	2.0	1.90	1.93	1.92	96	85-115	1.5	10
Beryllium	0.050	0.0473	0.0493	0.0483	97	80-115	4.2	10
Boron	1.0	0.954	0.973	0.964	96	85-115	2.0	10
Cadmium	0.050	0.0525	0.0486	0.0506	101	81-118	7.6	10
Calcium	100	103	104	104	104	85-115	1.1	10
Chromium	0.20	0.182	0.185	0.183	92	85-115	1.7	10
Cobalt	0.50	0.470	0.477	0.473	95	85-115	1.4	10
Copper	0.25	0.245	0.248	0.247	99	85-115	1.2	10
Iron	1.0	0.939	0.949	0.944	94	85-115	1.0	10
Lead	0.50	0.475	0.484	0.479	96	85-115	1.9	10
Lithium	0.20	0.200	0.202	0.201	100	85-115	1.3	10
Magnesium	50	52.2	52.4	52.3	105	85-115	0.4	10
Manganese	0.50	0.469	0.474	0.471	94	85-115	1.1	10
Molybdenum	0.20	0.187	0.188	0.187	94	85-115	0.6	10
Nickel	0.50	0.493	0.490	0.491	98	83-115	0.7	10
Potassium	50	49.7	50.1	49.9	100	83-115	0.8	10
Selenium	2.0	1.84	1.90	1.87	93	85-115	3.1	10

Calculations are performed before rounding to avoid round-off errors in calculated results.

DUPLICATE CONTROL SAMPLE REPORT
Metals Analysis and Preparation (cont.)

Analyte	Concentration Spiked	Measured DCS1	Measured DCS2	Measured AVG	Accuracy Average(%) DCS	Accuracy Limits	Precision (RPD) DCS	Precision Limit
Category: ICP-AT								
Matrix: AQUEOUS								
QC Lot: 14 MAY 91-A								
Concentration Units: mg/L								
Silver	0.050	0.0450	0.0450	0.0450	90	56-116	0.0	35
Sodium	100	99.1	99.5	99.3	99	85-115	0.4	10
Thallium	2.0	1.94	1.99	1.97	98	84-118	2.2	10
Tin	4.0	3.62	3.63	3.62	91	80-115	0.2	15
Titanium	2.0	1.83	1.85	1.84	92	85-115	1.3	10
Vanadium	0.50	0.473	0.478	0.476	95	82-115	1.2	20
Zinc	0.50	0.486	0.489	0.487	97	80-115	0.8	20

Calculations are performed before rounding to avoid round-off errors in calculated results.

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QC LOT ASSIGNMENT REPORT
Wet Chemistry Analysis and Preparation

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
058087-0002-SA	AQUEOUS	IC-A	02 MAY 91-A	02 MAY 91-A
058087-0002-SA	AQUEOUS	IC-A	02 MAY 91-A	02 MAY 91-A
058087-0002-SA	AQUEOUS	IC-A	02 MAY 91-A	02 MAY 91-A
058087-0002-SA	AQUEOUS	IC-A	02 MAY 91-A	02 MAY 91-A
058087-0003-SA	AQUEOUS	IC-A	02 MAY 91-A	02 MAY 91-A
058087-0003-SA	AQUEOUS	IC-A	02 MAY 91-A	02 MAY 91-A
058087-0003-SA	AQUEOUS	IC-A	02 MAY 91-A	02 MAY 91-A
058087-0003-SA	AQUEOUS	IC-A	02 MAY 91-A	02 MAY 91-A
058087-0004-SA	AQUEOUS	IC-A	02 MAY 91-A	02 MAY 91-A
058087-0004-SA	AQUEOUS	IC-A	02 MAY 91-A	02 MAY 91-A
058087-0004-SA	AQUEOUS	IC-A	02 MAY 91-A	02 MAY 91-A
058087-0004-SA	AQUEOUS	IC-A	02 MAY 91-A	02 MAY 91-A
058087-0006-SA	AQUEOUS	IC-A	02 MAY 91-A	02 MAY 91-A
058087-0006-SA	AQUEOUS	IC-A	02 MAY 91-A	02 MAY 91-A
058087-0006-SA	AQUEOUS	IC-A	02 MAY 91-A	02 MAY 91-A
058087-0006-SA	AQUEOUS	IC-A	02 MAY 91-A	02 MAY 91-A

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METHOD BLANK REPORT
Wet Chemistry Analysis and Preparation

Analyte	Result	Units	Reporting Limit
Test: CL-IC-A Matrix: AQUEOUS QC Lot: 02 MAY 91-A QC Run: 02 MAY 91-A			
Chloride	ND	mg/L	1.0
Test: SO4-IC-A Matrix: AQUEOUS QC Lot: 02 MAY 91-A QC Run: 02 MAY 91-A			
Sulfate	ND	mg/L	1.0
Test: NO3-IC-A Matrix: AQUEOUS QC Lot: 02 MAY 91-A QC Run: 02 MAY 91-A			
Nitrate as N	ND	mg/L	0.050
Test: NO2-IC-A Matrix: AQUEOUS QC Lot: 02 MAY 91-A QC Run: 02 MAY 91-A			
Nitrite as N	ND	mg/L	0.050

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DUPLICATE CONTROL SAMPLE REPORT
Wet Chemistry Analysis and Preparation

Analyte	Concentration Spiked	Measured DCS1	Measured DCS2	AVG	Accuracy Average(%) DCS	Accuracy Limits	Precision (RPD) DCS	Precision Limit
Category: IC-A								
Matrix: AQUEOUS								
QC Lot: 02 MAY 91-A								
Concentration Units: mg/L								
Fluoride	2.0	1.94	2.06	2.00	100	84-115	6.0	8
Chloride	3.0	3.11	3.09	3.10	103	83-116	0.6	19
Nitrite as N	2.0	2.02	2.08	2.05	103	85-115	2.9	15
Bromide	2.0	NA	NA	NC	NC	85-115	NC	10
Nitrate as N	2.0	2.01	1.98	2.00	100	85-115	1.5	12
Sulfate	8.0	8.11	8.02	8.06	101	85-115	1.1	12
Orthophosphate as P	10.0	10.4	10.1	10.3	103	85-115	3.1	13

ND = Not detected.
NC = Not calculated, calculation not applicable.
NA = Not applicable.

Calculations are performed before rounding to avoid round-off errors in calculated results.

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Halogenated Volatile Organics

Method 601

Client Name: Dames & Moore
Client ID: MW-12
Lab ID: 058087-0001-SA
Matrix: AQUEOUS Sampled: 01 MAY 91 Received: 01 MAY 91
Authorized: 02 MAY 91 Prepared: NA Analyzed: 10 MAY 91

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	39	ug/L	0.50
1,1-Dichloroethane	12	ug/L	0.50
1,2-Dichloroethene (cis/trans)	ND	ug/L	0.50
Chloroform	ND	ug/L	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	0.55	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	13	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
1,2-Dibromoethane	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0

Surrogate	Recovery	
Bromochloromethane	94	%

ND = Not detected
NA = Not applicable

Reported By: Dan Orovich Approved By: Marcia Reed

The cover letter is an integral part of this report.
Rev 230787

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Halogenated Volatile Organics

Method 601

Client Name: Dames & Moore
Client ID: MW-14
Lab ID: 058087-0002-SA
Matrix: AQUEOUS Sampled: 01 MAY 91 Received: 01 MAY 91
Authorized: 02 MAY 91 Prepared: NA Analyzed: 10 MAY 91

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	18	ug/L	0.50
1,1-Dichloroethane	3.1	ug/L	0.50
1,2-Dichloroethene (cis/trans)	ND	ug/L	0.50
Chloroform	ND	ug/L	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	0.88	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	4.9	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
1,2-Dibromoethane	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0

Surrogate	Recovery	
Bromochloromethane	86	%

ND = Not detected
NA = Not applicable

Reported By: Dan Orovich Approved By: Marcia Reed

The cover letter is an integral part of this report.
Rev 230787

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A Corning Company

Halogenated Volatile Organics

Method 601

Client Name: Dames & Moore
Client ID: MW-4
Lab ID: 058087-0003-SA
Matrix: AQUEOUS Sampled: 01 MAY 91 Received: 01 MAY 91
Authorized: 02 MAY 91 Prepared: NA Analyzed: 10 MAY 91

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	15	ug/L	0.50
1,1-Dichloroethane	11	ug/L	0.50
1,2-Dichloroethene (cis/trans)	0.77	ug/L	0.50
Chloroform	ND	ug/L	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	93	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	0.89	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
1,2-Dibromoethane	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0

Surrogate	Recovery	
Bromochloromethane	97	%

ND = Not detected
NA = Not applicable

Reported By: Dan Orovich Approved By: Marcia Reed

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

Halogenated Volatile Organics

Method 601

Client Name: Dames & Moore
Client ID: MW-32
Lab ID: 058087-0004-SA
Matrix: AQUEOUS Sampled: 01 MAY 91 Received: 01 MAY 91
Authorized: 02 MAY 91 Prepared: NA Analyzed: 10 MAY 91

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	160	ug/L	0.50
1,1-Dichloroethane	11	ug/L	0.50
1,2-Dichloroethene (cis/trans)	ND	ug/L	0.50
Chloroform	ND	ug/L	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	6.4	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	11	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
1,2-Dibromoethane	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0

Surrogate	Recovery	
Bromochloromethane	48	%

ND = Not detected
NA = Not applicable

Reported By: Dan Orovich Approved By: Marcia Reed

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

Halogenated Volatile Organics

Method 601

Client Name: Dames & Moore
Client ID: MW-43
Lab ID: 058087-0005-SA
Matrix: AQUEOUS Sampled: 01 MAY 91 Received: 01 MAY 91
Authorized: 02 MAY 91 Prepared: NA Analyzed: 10 MAY 91

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	130	ug/L	0.50
1,1-Dichloroethane	11	ug/L	0.50
1,2-Dichloroethene (cis/trans)	ND	ug/L	0.50
Chloroform	ND	ug/L	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	5.9	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	11	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
1,2-Dibromoethane	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0

Surrogate	Recovery	
Bromochloromethane	103	%

ND = Not detected
NA = Not applicable

Reported By: Dan Orovich Approved By: Marcia Reed

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

Halogenated Volatile Organics

Method 601

Client Name: Dames & Moore
Client ID: MW-31
Lab ID: 058087-0006-SA
Matrix: AQUEOUS Sampled: 01 MAY 91 Received: 01 MAY 91
Authorized: 02 MAY 91 Prepared: NA Analyzed: 10 MAY 91

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	110	ug/L	0.50
1,1-Dichloroethane	12	ug/L	0.50
1,2-Dichloroethene (cis/trans)	ND	ug/L	0.50
Chloroform	ND	ug/L	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	5.9	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	7.3	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
1,2-Dibromoethane	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0

Surrogate	Recovery	
Bromochloromethane	84	%

ND = Not detected
NA = Not applicable

Reported By: Dan Orovich Approved By: Marcia Reed

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

Halogenated Volatile Organics

Method 601

Client Name: Dames & Moore
Client ID: FB-4
Lab ID: 058087-0007-SA
Matrix: AQUEOUS Sampled: 01 MAY 91 Received: 01 MAY 91
Authorized: 02 MAY 91 Prepared: NA Analyzed: 10 MAY 91

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	0.50
1,1-Dichloroethane	ND	ug/L	0.50
1,2-Dichloroethene (cis/trans)	ND	ug/L	0.50
Chloroform	5.6	ug/L	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
1,2-Dibromoethane	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0

Surrogate	Recovery	
Bromochloromethane	102	%

ND = Not detected
NA = Not applicable

Reported By: Dan Orovich Approved By: Marcia Reed

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

Halogenated Volatile Organics

Method 601

Client Name: Dames & Moore
Client ID: RB-4
Lab ID: 058087-0008-SA
Matrix: AQUEOUS Sampled: 01 MAY 91 Received: 01 MAY 91
Authorized: 02 MAY 91 Prepared: NA Analyzed: 10 MAY 91

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	0.50
1,1-Dichloroethane	ND	ug/L	0.50
1,2-Dichloroethene (cis/trans)	ND	ug/L	0.50
Chloroform	3.8	ug/L	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
1,2-Dibromoethane	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0

Surrogate	Recovery	
Bromochloromethane	99	%

ND = Not detected
NA = Not applicable

Reported By: Dan Orovich Approved By: Marcia Reed

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

Halogenated Volatile Organics

Method 601

Client Name: Dames & Moore
Client ID: TB-7
Lab ID: 058087-0009-SA
Matrix: AQUEOUS Sampled: 19 APR 91 Received: 01 MAY 91
Authorized: 02 MAY 91 Prepared: NA Analyzed: 03 MAY 91

Parameter	Result	Units	Reporting Limit
Chloromethane	ND	ug/L	5.0
Bromomethane	ND	ug/L	5.0
Vinyl chloride	ND	ug/L	1.0
Chloroethane	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	0.50
1,1-Dichloroethane	ND	ug/L	0.50
1,2-Dichloroethene (cis/trans)	ND	ug/L	0.50
Chloroform	ND	ug/L	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	1.0
1,2-Dichloropropane	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
Trichloroethene	ND	ug/L	0.50
Dibromochloromethane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	2.0
1,1,2-Trichloroethane	ND	ug/L	1.0
1,2-Dibromoethane	ND	ug/L	2.0
Bromoform	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	2.0

Surrogate	Recovery	
Bromochloromethane	75	%

ND = Not detected
NA = Not applicable

Reported By: Dan Orovich Approved By: Marcia Reed

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

Aromatic Volatile Organics

Method 602

Client Name: Dames & Moore
Client ID: MW-14
Lab ID: 058087-0002-SA
Matrix: AQUEOUS Sampled: 01 MAY 91 Received: 01 MAY 91
Authorized: 02 MAY 91 Prepared: NA Analyzed: 03 MAY 91

Parameter	Result	Units	Reporting Limit
Benzene	ND	ug/L	0.50
Toluene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	0.50
Ethylbenzene	ND	ug/L	0.50
Xylenes (total)	ND	ug/L	1.0
1,3-Dichlorobenzene	ND	ug/L	1.0
1,4-Dichlorobenzene	ND	ug/L	1.0
1,2-Dichlorobenzene	ND	ug/L	1.0

Surrogate	Recovery	
a,a,a-Trifluorotoluene	92	%

ND = Not detected
NA = Not applicable

Reported By: Dan Orovich Approved By: Sharon Campbell

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

Aromatic Volatile Organics

Method 602

Client Name: Dames & Moore
Client ID: MW-4
Lab ID: 058087-0003-SA
Matrix: AQUEOUS Sampled: 01 MAY 91 Received: 01 MAY 91
Authorized: 02 MAY 91 Prepared: NA Analyzed: 03 MAY 91

Parameter	Result	Units	Reporting Limit	
Benzene	580	ug/L	5.0	R
Toluene	ND	ug/L	5.0	
Chlorobenzene	ND	ug/L	5.0	
Ethylbenzene	12	ug/L	5.0	
Xylenes (total)	24	ug/L	10	
1,3-Dichlorobenzene	ND	ug/L	10	
1,4-Dichlorobenzene	ND	ug/L	10	
1,2-Dichlorobenzene	ND	ug/L	10	

Surrogate	Recovery	
a,a,a-Trifluorotoluene	112	%

Note R : Raised reporting limit(s) due to high analyte level(s).

ND = Not detected
NA = Not applicable

Reported By: Dan Orovich Approved By: Sharon Campbell

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

Aromatic Volatile Organics

Method 602

Client Name: Dames & Moore
Client ID: MW-32
Lab ID: 058087-0004-SA
Matrix: AQUEOUS Sampled: 01 MAY 91 Received: 01 MAY 91
Authorized: 02 MAY 91 Prepared: NA Analyzed: 03 MAY 91

Parameter	Result	Units	Reporting Limit
Benzene	ND	ug/L	0.50
Toluene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	0.50
Ethylbenzene	ND	ug/L	0.50
Xylenes (total)	ND	ug/L	1.0
1,3-Dichlorobenzene	ND	ug/L	1.0
1,4-Dichlorobenzene	ND	ug/L	1.0
1,2-Dichlorobenzene	ND	ug/L	1.0

Surrogate	Recovery	
a,a,a-Trifluorotoluene	91	%

ND = Not detected
NA = Not applicable

Reported By: Dan Orovich Approved By: Sharon Campbell

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

Aromatic Volatile Organics

Method 602

Client Name: Dames & Moore
Client ID: MW-43
Lab ID: 058087-0005-SA
Matrix: AQUEOUS Sampled: 01 MAY 91 Received: 01 MAY 91
Authorized: 02 MAY 91 Prepared: NA Analyzed: 03 MAY 91

Parameter	Result	Units	Reporting Limit
Benzene	ND	ug/L	0.50
Toluene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	0.50
Ethylbenzene	ND	ug/L	0.50
Xylenes (total)	ND	ug/L	1.0
1,3-Dichlorobenzene	ND	ug/L	1.0
1,4-Dichlorobenzene	ND	ug/L	1.0
1,2-Dichlorobenzene	ND	ug/L	1.0

Surrogate	Recovery	
a,a,a-Trifluorotoluene	96	%

ND = Not detected
NA = Not applicable

Reported By: Dan Orovich Approved By: Sharon Campbell

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

Aromatic Volatile Organics

Method 602

Client Name: Dames & Moore
Client ID: MW-31
Lab ID: 058087-0006-SA
Matrix: AQUEOUS Sampled: 01 MAY 91 Received: 01 MAY 91
Authorized: 02 MAY 91 Prepared: NA Analyzed: 04 MAY 91

Parameter	Result	Units	Reporting Limit
Benzene	ND	ug/L	0.50
Toluene	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	0.50
Ethylbenzene	ND	ug/L	0.50
Xylenes (total)	ND	ug/L	1.0
1,3-Dichlorobenzene	ND	ug/L	1.0
1,4-Dichlorobenzene	ND	ug/L	1.0
1,2-Dichlorobenzene	ND	ug/L	1.0

Surrogate	Recovery	
a,a,a-Trifluorotoluene	93	%

ND = Not detected
NA = Not applicable

Reported By: Dan Orovich Approved By: Sharon Campbell

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

Total Metals

Client Name: Dames & Moore
Client ID: MW-12
Lab ID: 058087-0001-SA
Matrix: AQUEOUS Sampled: 01 MAY 91 Received: 01 MAY 91
Authorized: 02 MAY 91 Prepared: See Below Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Arsenic	ND	mg/L	0.0050	7060	03 MAY 91	13 MAY 91
Chromium	0.0066	mg/L	0.0010	7191	03 MAY 91	13 MAY 91
Lead	ND	mg/L	0.0050	7421	03 MAY 91	13 MAY 91
Nickel	0.078	mg/L	0.040	7521	03 MAY 91	10 MAY 91 R

Note R : Raised reporting limit(s) due to high analyte level(s).

ND = Not detected
NA = Not applicable

Reported By: Fely Francis Approved By: Mei Lai

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

Total Metals

Client Name: Dames & Moore
Client ID: MW-14
Lab ID: 058087-0002-SA
Matrix: AQUEOUS Sampled: 01 MAY 91 Received: 01 MAY 91
Authorized: 02 MAY 91 Prepared: See Below Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date	
Arsenic	ND	mg/L	0.0050	7060	03 MAY 91	13 MAY 91	
Chromium	0.037	mg/L	0.0050	7191	03 MAY 91	13 MAY 91	R
Iron	ND	mg/L	0.10	200.7	03 MAY 91	09 MAY 91	
Lead	ND	mg/L	0.0050	7421	03 MAY 91	11 MAY 91	
Nickel	0.098	mg/L	0.050	7521	03 MAY 91	10 MAY 91	R

Note R : Raised reporting limit(s) due to high analyte level(s).

ND = Not detected
NA = Not applicable

Reported By: Fely Francis Approved By: Mei Lai

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

Total Metals

Client Name: Dames & Moore
Client ID: MW-4
Lab ID: 058087-0003-SA
Matrix: AQUEOUS Sampled: 01 MAY 91 Received: 01 MAY 91
Authorized: 02 MAY 91 Prepared: See Below Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Arsenic	0.0061	mg/L	0.0050	7060	03 MAY 91	13 MAY 91
Chromium	ND	mg/L	0.0010	7191	03 MAY 91	13 MAY 91
Iron	ND	mg/L	0.10	200.7	03 MAY 91	09 MAY 91
Lead	ND	mg/L	0.0050	7421	03 MAY 91	13 MAY 91
Nickel	0.011	mg/L	0.0050	7521	03 MAY 91	10 MAY 91

ND = Not detected
NA = Not applicable

Reported By: Fely Francis Approved By: Mei Lai

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

Total Metals

Client Name: Dames & Moore
Client ID: MW-32
Lab ID: 058087-0004-SA
Matrix: AQUEOUS
Authorized: 02 MAY 91

Sampled: 01 MAY 91
Prepared: See Below

Received: 01 MAY 91
Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date	
Arsenic	ND	mg/L	0.0050	7060	03 MAY 91	13 MAY 91	
Chromium	0.011	mg/L	0.0010	7191	03 MAY 91	13 MAY 91	
Iron	ND	mg/L	0.10	200.7	03 MAY 91	09 MAY 91	
Lead	ND	mg/L	0.010	7421	03 MAY 91	13 MAY 91	G
Nickel	0.065	mg/L	0.040	7521	03 MAY 91	10 MAY 91	R

Note G : Reporting Limit raised due to matrix interference.

Note R : Raised reporting limit(s) due to high analyte level(s).

ND = Not detected
NA = Not applicable

Reported By: Fely Francis

Approved By: Mei Lai

The cover letter is an integral part of this report.

Enseco
A Corning Company

Total Metals

Client Name: Dames & Moore
Client ID: MW-43
Lab ID: 058087-0005-SA
Matrix: AQUEOUS — Sampled: 01 MAY 91 — Received: 01 MAY 91
Authorized: 02 MAY 91 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Arsenic	ND	mg/L	0.0050	7060	03 MAY 91	13 MAY 91
Chromium	0.012	mg/L	0.0010	7191	03 MAY 91	13 MAY 91
Lead	ND	mg/L	0.0050	7421	03 MAY 91	13 MAY 91
Nickel	0.063	mg/L	0.040	7521	03 MAY 91	10 MAY 91 R

Note R : Raised reporting limit(s) due to high analyte level(s).

ND = Not detected
NA = Not applicable

Reported By: Fely Francis — Approved By: Mei Lai

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

Total Metals

Client Name: Dames & Moore
Client ID: MW-31
Lab ID: 058087-0006-SA
Matrix: AQUEOUS Sampled: 01 MAY 91 Received: 01 MAY 91
Authorized: 02 MAY 91 Prepared: See Below Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date	
Arsenic	ND	mg/L	0.0050	7060	03 MAY 91	13 MAY 91	
Chromium	0.013	mg/L	0.0010	7191	03 MAY 91	13 MAY 91	
Iron	ND	mg/L	0.10	200.7	14 MAY 91	14 MAY 91	
Lead	ND	mg/L	0.0050	7421	03 MAY 91	13 MAY 91	
Nickel	0.073	mg/L	0.040	7521	03 MAY 91	10 MAY 91	R

Note R : Raised reporting limit(s) due to high analyte level(s).

ND = Not detected
NA = Not applicable

Reported By: Fely Francis Approved By: Mei Lai

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

METALS

(Water - Dissolved)

Client Name: Dames & Moore
Client ID: MW-14
Lab ID: 058087-0002-SA
Matrix: AQUEOUS — Sampled: 01 MAY 91 — Received: 01 MAY 91
Authorized: 02 MAY 91 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Calcium	78.6	mg/L	0.10	200.7	NA	17 MAY 91
Magnesium	54.0	mg/L	0.20	200.7	NA	17 MAY 91
Potassium	12.4	mg/L	5.0	200.7	NA	17 MAY 91
Sodium	130	mg/L	5.0	200.7	NA	17 MAY 91

ND = Not detected
NA = Not applicable

Reported By: Evin Mckinney — Approved By: Barry Votaw

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

METALS

(Water - Dissolved)

Client Name: Dames & Moore
Client ID: MW-4
Lab ID: 058087-0003-SA
Matrix: AQUEOUS — Sampled: 01 MAY 91 — Received: 01 MAY 91
Authorized: 02 MAY 91 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Calcium	50.6	mg/L	0.10	200.7	NA	17 MAY 91
Magnesium	30.0	mg/L	0.20	200.7	NA	17 MAY 91
Potassium	25.1	mg/L	5.0	200.7	NA	17 MAY 91
Sodium	119	mg/L	5.0	200.7	NA	17 MAY 91

ND = Not detected
NA = Not applicable

Reported By: Evin Mckinney — Approved By: Barry Votaw

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

METALS

(Water - Dissolved)

Client Name: Dames & Moore
Client ID: MW-32
Lab ID: 058087-0004-SA
Matrix: AQUEOUS — Sampled: 01 MAY 91 — Received: 01 MAY 91
Authorized: 02 MAY 91 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Calcium	93.7	mg/L	0.10	200.7	NA	17 MAY 91
Magnesium	59.7	mg/L	0.20	200.7	NA	17 MAY 91
Potassium	ND	mg/L	5.0	200.7	NA	17 MAY 91
Sodium	70.0	mg/L	5.0	200.7	NA	17 MAY 91

ND = Not detected
NA = Not applicable

Reported By: Evin Mckinney — Approved By: Barry Votaw

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

METALS

(Water - Dissolved)

Client Name: Dames & Moore
Client ID: MW-31
Lab ID: 058087-0006-SA
Matrix: AQUEOUS — Sampled: 01 MAY 91 — Received: 01 MAY 91
Authorized: 02 MAY 91 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Calcium	93.9	mg/L	0.10	200.7	NA	17 MAY 91
Magnesium	60.9	mg/L	0.20	200.7	NA	17 MAY 91
Potassium	ND	mg/L	5.0	200.7	NA	17 MAY 91
Sodium	82.1	mg/L	5.0	200.7	NA	17 MAY 91

ND = Not detected
NA = Not applicable

Reported By: Evin Mckinney — Approved By: Barry Votaw

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

GENERAL INORGANICS

(Water)

Client Name: Dames & Moore
Client ID: MW-14
Lab ID: 058087-0002-SA
Matrix: AQUEOUS — Sampled: 01 MAY 91 — Received: 01 MAY 91
Authorized: 02 MAY 91 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Alkalinity, Bicarb. as CaCO3	311	mg/L	5.0	310.1	NA	15 MAY 91
Alkalinity, Carb. as CaCO3	ND	mg/L	5.0	310.1	NA	15 MAY 91
Alkalinity, Hydrox. as CaCO3	ND	mg/L	5.0	310.1	NA	15 MAY 91
Alkalinity, Total as CaCO3	311	mg/L	5.0	310.1	NA	15 MAY 91
Chloride	84.7	mg/L	10.0	300.0	NA	02 MAY 91 R
Ion Balance Difference	5.2	%		200.7	NA	18 MAY 91
Nitrate as N	14.7	mg/L	0.50	300.0	NA	02 MAY 91 R
Nitrite as N	ND	mg/L	0.050	300.0	NA	02 MAY 91
pH	7.4	units	NA	150.1	NA	02 MAY 91
Specific Conductance at 25 deg. C	1200	umhos/cm	1.0	120.1	NA	15 MAY 91
Sulfate	156	mg/L	10.0	300.0	NA	02 MAY 91 R
Total Dissolved Solids	809	mg/L	10.0	160.1	NA	08 MAY 91
Total Anions	12.9	mg/L	1.0	Standard Method	NA	18 MAY 91
Total Cations	14.3	mg/L	1.0	Standard Method	NA	18 MAY 91

Note R : Raised reporting limit(s) due to high analyte level(s).

ND = Not detected
NA = Not applicable

Reported By: Barry Votaw — Approved By: Barry Votaw

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

GENERAL INORGANICS

(Water)

Client Name: Dames & Moore
Client ID: MW-4
Lab ID: 058087-0003-SA
Matrix: AQUEOUS
Authorized: 02 MAY 91

Sampled: 01 MAY 91
Prepared: See Below

Received: 01 MAY 91
Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Alkalinity, Bicarb. as CaCO3	357	mg/L	5.0	310.1	NA	15 MAY 91
Alkalinity, Carb. as CaCO3	30.2	mg/L	5.0	310.1	NA	15 MAY 91
Alkalinity, Hydrox. as CaCO3	ND	mg/L	5.0	310.1	NA	15 MAY 91
Alkalinity, Total as CaCO3	387	mg/L	5.0	310.1	NA	15 MAY 91
Chloride	37.6	mg/L	10.0	300.0	NA	02 MAY 91 R
Ion Balance Difference	3.8	%		200.7	NA	18 MAY 91
Nitrate as N	3.2	mg/L	0.050	300.0	NA	02 MAY 91
Nitrite as N	ND	mg/L	0.050	300.0	NA	02 MAY 91
pH	8.5	units	NA	150.1	NA	02 MAY 91
Specific Conductance at 25 deg. C	928	umhos/cm	1.0	120.1	NA	15 MAY 91
Sulfate	48.0	mg/L	10.0	300.0	NA	02 MAY 91 R
Total Dissolved Solids	556	mg/L	10.0	160.1	NA	08 MAY 91
Total Anions	10.0	mg/L	1.0	Standard Method	NA	18 MAY 91
Total Cations	10.8	mg/L	1.0	Standard Method	NA	18 MAY 91

Note R : Raised reporting limit(s) due to high analyte level(s).

ND = Not detected
NA = Not applicable

Reported By: Barry Votaw

Approved By: Barry Votaw

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Rev 230787

Enseco
A Corning Company

GENERAL INORGANICS

(Water)

Client Name: Dames & Moore
Client ID: MW-32
Lab ID: 058087-0004-SA
Matrix: AQUEOUS
Authorized: 02 MAY 91

Sampled: 01 MAY 91
Prepared: See Below

Received: 01 MAY 91
Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Alkalinity, Bicarb. as CaCO3	317	mg/L	5.0	310.1	NA	15 MAY 91
Alkalinity, Carb. as CaCO3	ND	mg/L	5.0	310.1	NA	15 MAY 91
Alkalinity, Hydrox. as CaCO3	ND	mg/L	5.0	310.1	NA	15 MAY 91
Alkalinity, Total as CaCO3	317	mg/L	5.0	310.1	NA	15 MAY 91
Chloride	69.1	mg/L	10.0	300.0	NA	02 MAY 91 R
Ion Balance Difference	5.1	%		200.7	NA	18 MAY 91
Nitrate as N	8.8	mg/L	0.50	300.0	NA	02 MAY 91 R
Nitrite as N	ND	mg/L	0.050	300.0	NA	02 MAY 91
pH	7.2	units	NA	150.1	NA	02 MAY 91
Specific Conductance at 25 deg. C	1020	umhos/cm	1.0	120.1	NA	15 MAY 91
Sulfate	124	mg/L	10.0	300.0	NA	02 MAY 91 R
Total Dissolved Solids	641	mg/L	10.0	160.1	NA	08 MAY 91
Total Anions	11.5	mg/L	1.0	Standard Method	NA	18 MAY 91
Total Cations	12.7	mg/L	1.0	Standard Method	NA	18 MAY 91

Note R : Raised reporting limit(s) due to high analyte level(s).

ND = Not detected
NA = Not applicable

Reported By: Barry Votaw

Approved By: Barry Votaw

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

GENERAL INORGANICS

(Water)

Client Name: Dames & Moore
Client ID: MW-31
Lab ID: 058087-0006-SA
Matrix: AQUEOUS — Sampled: 01 MAY 91 — Received: 01 MAY 91
Authorized: 02 MAY 91 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Alkalinity, Bicarb. as CaCO3	324	mg/L	5.0	310.1	NA	15 MAY 91
Alkalinity, Carb. as CaCO3	ND	mg/L	5.0	310.1	NA	15 MAY 91
Alkalinity, Hydrox. as CaCO3	ND	mg/L	5.0	310.1	NA	15 MAY 91
Alkalinity, Total as CaCO3	324	mg/L	5.0	310.1	NA	15 MAY 91
Chloride	70.6	mg/L	10.0	300.0	NA	02 MAY 91 R
Ion Balance Difference	4.3	%		200.7	NA	18 MAY 91
Nitrate as N	11.6	mg/L	0.50	300.0	NA	02 MAY 91 R
Nitrite as N	ND	mg/L	0.050	300.0	NA	02 MAY 91
pH	7.2	units	NA	150.1	NA	02 MAY 91
Specific Conductance at 25 deg. C	1080	umhos/cm	1.0	120.1	NA	15 MAY 91
Sulfate	143	mg/L	10.0	300.0	NA	02 MAY 91 R
Total Dissolved Solids	724	mg/L	10.0	160.1	NA	08 MAY 91
Total Anions	12.3	mg/L	1.0	Standard Method	NA	18 MAY 91
Total Cations	13.4	mg/L	1.0	Standard Method	NA	18 MAY 91

Note R : Raised reporting limit(s) due to high analyte level(s).

ND = Not detected
NA = Not applicable

Reported By: Barry Votaw — Approved By: Barry Votaw

The cover letter is an integral part of this report.
Rev 230787

Enseco Page 1 of 2

CHAIN-OF-CUSTODY RECORD

SAMPLER: (*Signature*) [signature] Date Shipped _____ Carrier _____

Phone _____ Airbill No. _____ Cooler No. _____

SHIP TO:
Enseco-Cal Lab
2544 Industrial Blvd.
West Sacramento, CA 95691
(916) 372-1393
ATTENTION: _____

SEND RESULTS TO:
Client Name [illegible]
Company [illegible]
Address [illegible]
Phone [illegible]

PROJECT NAME [illegible] Quarterly Sampling **PROJECT NO.** [illegible] **P.O. NO.** _____

Relinquished by: (*Signature*)	Received by: (*Signature*)	Date	Time
[signature]			
Relinquished by: (*Signature*)	Received by: (*Signature*)	Date	Time
Relinquished by: (*Signature*)	Received at lab by: (*Signature*)	Date	Time
	[signature]	5/1/91	18:30
Relinquished from lab by: (*Signature*)	Received by: (*Signature*)	Date	Time

ANALYSIS REQUEST

Sample ID Number	Sample Description	Date/Time Sampled	Analysis Requested	Sample Condition Upon Receipt
MW-12	2-40ml	5-1 /0930	601	
"	1-500ml	/ "	As, Ni, Cr, Pb GFAA	
MW-14	4-40ml	/1050	601, 602	
	1-500ml	/ "	As, Ni, Cr, Pb, Fe (Total) GFAA	
	1-1000ml	/ "	Ion Balance	
MW-4	4-40ml	/1245	601, 602	
	1-500ml	/ "	As, Ni, Cr, Pb, Fe (Total) GFAA	
	1-1000ml	/ "	Ion Balance	
MW-32	4-40ml	/1515	601, 602	

Special Instructions/Comments:

6c1	9
6c2	5
As, Cr, Fe, Ni	6
IB	4
Fe	4

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT

Expected Analytical T.A.T's: _____ Immediate _____ Attention (200% surcharge) _____ RUSH (50-100% surcharge) X Standard

Cal Lab ID Number: *(for lab use only)*

Client Retains White Copy Only (Revised 1/87)

ACCULAB
ENVIRONMENTAL SERVICES
[redacted]00 Lakeville Highway, Petaluma, CA 94952
[redacted]. Box 808024, Petaluma, CA. 94975-8024
Telephone: (707) 763-8245 FAX: (707) 763-4065

SAMPLE CHAIN OF CUSTODY / WORK ORDER

Client's Name Dames & Moore Phone (916) 364-8698
Address 9300 Tech Center Dr. Suite 100
City, State, Zip Sacramento, CA 95826
Client's or Representative's Signature
(signature authorizes the work and terms listed below)

All samples remain the property of the client who is responsible for disposal. A disposal fee may be imposed if client fails to pick up samples.

91-3595

PROJ. NO. 00173-064 044
PROJECT NAME Union Pacific Railroad Sacramento
SAMPLERS (Signature)

STA. NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	601,602	Pb (7420)	As (7060)	Ni (7520)	Cr (7191)	Pb (7421)	REMARKS	LAB USE ONLY LAB NO.
	7/2/91			X	217_-2	1		X	X				Soil	
	"			X	217_-7	1		X	X				"	
	"			X	217_-8	1		X	X				"	
	"			X	217_-9	1		X	X				"	
	"			X	217_-10	1		X	X				"	
	"			X	217_-11	1		X	X				"	
	"			X	217_-12	1		X	X				"	
	"			X	MW-34	5	X		X	X	X	X	Water	
	"			X	MW-35	5	X		X	X	X	X	"	

37297 9073 Airborne —

Relinquished by: (Signature)	DATE	TIME	Received by: (Signature)	General Remarks:
[signature]	7/2/91	15:00	V.D. Wilson 7/3/91 1:25	Send Results Attn: Tim Parker
Relinquished by: (Signature)	DATE	TIME	Received by: (Signature)	Fax results within 10 working days
Relinquished by: (Signature)	DATE	TIME	Received by: (Signature)	Full Sample I.D. numbers will be faxed later for Soils

CLIENT COPY

3700 Lakeville Highway, Petaluma, CA 94954
P.O. Box 808024, Petaluma, CA 94975-8024
Telephone: (707) 763-8245
FAX (707) 763-4065

Tim Parker
Dames & Moore
9300 Tech Center Dr., Suite 100
Sacramento, CA 95826

Client Code: DAMM7
Survey #
UPRR/Sacramento
Project/Release # 00173-064-044

L A B O R A T O R Y R E S U L T S

Laboratory Job No.: 913595
Date Collected: 07/02/91
Date Analyzed: 07/19/91
Date Received: 07/03/91
Date Reported: 07/23/91

ASSAY:
NICKEL (EPA 7520),3020 ACID DIGEST

MATRIX: WATER

LABNO	SMPLNO	COMPOUND	FOUND mg/L	CA STLC LEV	DET.LIM. mg/L
24699	MW-34	NI	0.3	20	0.1
24700	MW-35	NI	ND	20	0.1
24701	MB	NI	ND		0.1
24702	MBS	NI	10		0.1
24703	MX	NI	ND		0.1
24704	MS	NI	10		0.1
24705	MSD	NI	10		0.1

NOTE: MBS, MS AND MSD WERE SPIKED AT 10.0 mg/L.

THIS REPORT HAS BEEN REVIEWED
AND APPROVED FOR RELEASE.
DLF

ENVIRONMENTAL AND
INDUSTRIAL HYGIENE SERVICES

3700 Lakeville Highway, Petaluma, CA 94954
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Telephone: (707) 763-8245
FAX (707) 763-4065

L A B O R A T O R Y R E S U L T S

Laboratory Job No.: 913595
Date Collected: 07/02/91
Date Analyzed: 07/20/91
Date Received: 07/03/91
Date Reported: 07/23/91

ASSAY:
ARSENIC (EPA 7060)
LEAD (EPA 7420)

MATRIX: SOIL

LABNO	SMPLNO	COMPOUND	FOUND mg/kg	DET.LIM. mg/kg
24692	217-2	AS	11	5
		PB	ND	15
24693	217-7	AS	21	5
		PB	99	15
24694	217-8	AS	27	5
		PB	ND	15
24695	217-9	AS	13	5
		PB	100	15
24696	217-10	AS	37	5
		PB	120	15
24697	217-11	AS	190	50
		PB	490	15
24698	217-12	AS	130	50
		PB	8,200	30
24701	MB	AS	ND	0.5
		PB	ND	15
24702	MBS	AS	1.9	0.5
		PB	95	15

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L A B O R A T O R Y R E S U L T S

Laboratory Job No.: 913595

LABNO	SMPLNO	COMPOUND	FOUND mg/kg	DET.LIM. mg/kg
24703	MX	AS	11	5.0
		PB	15	15
24704	MS	AS	10	5.0
		PB	110	15
24705	MSD	AS	14	5.0
		PB	100	15

NOTE: MBS, MS AND MSD WERE SPIKED AT 2.0 mg/kg FOR ARSENIC AND 100 mg/kg FOR LEAD. DUE TO THE HIGH AMOUNT OF ARSENIC IN THE SPIKED SAMPLE, THE RECOVERIES FOR MS AND MSD WERE DILUTED OUT.

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L A B O R A T O R Y R E S U L T S

Laboratory Job No.: 913595
Date Collected: 07/02/91
Date Analyzed: 07/20/91
Date Received: 07/03/91
Date Reported: 07/23/91

ASSAY:
ARSENIC (EPA 7060),3020 ACID DIGEST
CHROMIUM (EPA 7191),3020 ACID DIGEST
LEAD (EPA 7421),3020 ACID DIGEST

MATRIX: WATER

LABNO	SMPLNO	COMPOUND	FOUND mg/L	DET.LIM. mg/L
24699	MW-34	AS	ND	0.005
		CR	0.007	0.005
		PB	ND	0.001
24700	MW-35	AS	ND	0.005
		CR	0.005	0.005
		PB	ND	0.001
24706	MB-2	AS	ND	0.005
		CR	ND	0.005
		PB	ND	0.001
24707	MBS-2	AS	0.020	0.005
		CR	0.019	0.005
		PB	0.010	0.001
24708	MX-2	AS	ND	0.005
		CR	0.017	0.005
		PB	ND	0.001
24709	MS-2	AS	0.026	0.005
		CR	0.043	0.005
		PB	0.010	0.001

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L A B O R A T O R Y R E S U L T S

Laboratory Job No.: 913595

LABNO	SMPLNO	COMPOUND	FOUND mg/L	DET.LIM. mg/L
24710	MSD-2	AS	0.027	0.005
		CR	0.048	0.005
		PB	0.009	0.001

NOTE: MBS, MS AND MSD WERE SPIKED AT 0.025 mg/L FOR ARSENIC AND CHROMIUM, AND 0.010 mg/L FOR LEAD.

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L A B O R A T O R Y R E S U L T S

Laboratory Job No.: 913595
Date Collected: 07/02/91
Date Received: 07/03/91
Date Analyzed: 07/12/91
Date Reported: 07/23/91

ASSAY:
PURGEABLES BY GC/MS(EPA 624)

COMPOUNDS:	LAB#	24699	DET.	24700	DET.	24701	DET.
	SMP#	MW-34	LIM.	MW-35	LIM.	MB	LIM.
	DIL.	1		1		1	
PURGEABLES		ug/L		ug/L		ug/L	
BENZENE		ND	0.5	ND	0.5	ND	0.5
BROMODICHLOROMETHANE		ND	0.5	ND	0.5	ND	0.5
BROMOFORM		ND	0.5	ND	0.5	ND	0.5
BROMOMETHANE		ND	0.5	ND	0.5	ND	0.5
CARBON TETRACHLORIDE		ND	0.5	ND	0.5	ND	0.5
CHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5
CHLOROETHANE		ND	0.5	ND	0.5	ND	0.5
CHLOROFORM		1.2	0.5	0.7	0.5	ND	0.5
CHLOROMETHANE		ND	0.5	ND	0.5	ND	0.5
DIBROMOCHLOROMETHANE		ND	0.5	ND	0.5	ND	0.5
1,2-DICHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5
1,3-DICHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5
1,4-DICHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5
1,1-DICHLOROETHANE		17	0.5	4.8	0.5	ND	0.5
1,2-DICHLOROETHANE		ND	0.5	ND	0.5	ND	0.5
1,1-DICHLOROETHENE		* 470	0.2	* 220	0.2	ND	0.2
TRANS-1,2-DICHLOROETHENE		ND	0.5	1.0	0.5	ND	0.5
1,2-DICHLOROPROPANE		ND	0.5	ND	0.5	ND	0.5
CIS-1,3-DICHLOROPROPENE		ND	0.5	ND	0.5	ND	0.5
TRANS-1,3-DICHLOROPROPENE		ND	0.5	ND	0.5	ND	0.5
ETHYL BENZENE		ND	0.5	ND	0.5	ND	0.5
METHYLENE CHLORIDE		ND	0.5	ND	0.5	ND	0.5
1,1,2,2-TETRACHLOROETHANE		ND	0.5	ND	0.5	ND	0.5
TETRACHLOROETHENE		ND	0.5	ND	0.5	ND	0.5
TOLUENE		ND	0.5	ND	0.5	ND	0.5
1,1,1-TRICHLOROETHANE		17	0.5	6.8	0.5	ND	0.5
1,1,2-TRICHLOROETHANE		1.3	0.5	ND	0.5	ND	0.5
TRICHLOROETHENE		15	0.5	3.8	0.5	ND	0.5

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L A B O R A T O R Y R E S U L T S

Laboratory Job No.: 913595

COMPOUNDS:	LAB#	24699	DET.	24700	DET.	24701	DET.
	SMP#	MW-34	LIM.	MW-35	LIM.	MB	LIM.
	DIL.	1		1		1	
PURGEABLES		ug/L		ug/L		ug/L	
TRICHLOROFLUOROMETHANE		ND	0.5	ND	0.5	ND	0.5
VINYL CHLORIDE		ND	1.0	ND	1.0	ND	1.0
XYLENES		ND	0.5	ND	0.5	ND	0.5

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L A B O R A T O R Y R E S U L T S

Laboratory Job No.: 913595

COMPOUNDS:	LAB#	24702	DET.	24703	DET.	24704	DET.
	SMP#	MBS	LIM.	MX	LIM.	MS	LIM.
	DIL.	1		1		1	
PURGEABLES		ug/L		ug/L		ug/L	
BENZENE		9.0	0.5	ND	0.5	10	0.5
BROMODICHLOROMETHANE		ND	0.5	ND	0.5	ND	0.5
BROMOFORM		ND	0.5	ND	0.5	ND	0.5
BROMOMETHANE		ND	0.5	ND	0.5	ND	0.5
CARBON TETRACHLORIDE		ND	0.5	ND	0.5	ND	0.5
CHLOROBENZENE		9.2	0.5	ND	0.5	12	0.5
CHLOROETHANE		ND	0.5	ND	0.5	ND	0.5
CHLOROFORM		ND	0.5	ND	0.5	ND	0.5
CHLOROMETHANE		ND	0.5	ND	0.5	ND	0.5
DIBROMOCHLOROMETHANE		ND	0.5	ND	0.5	ND	0.5
1,2-DICHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5
1,3-DICHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5
1,4-DICHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5
1,1-DICHLOROETHANE		ND	0.5	ND	0.5	ND	0.5
1,2-DICHLOROETHANE		ND	0.5	ND	0.5	ND	0.5
1,1-DICHLOROETHENE		17	0.2	ND	0.2	12	0.2
TRANS-1,2-DICHLOROETHENE		ND	0.5	ND	0.5	ND	0.5
1,2-DICHLOROPROPANE		ND	0.5	ND	0.5	ND	0.5
CIS-1,3-DICHLOROPROPENE		ND	0.5	ND	0.5	ND	0.5
TRANS-1,3-DICHLOROPROPENE		ND	0.5	ND	0.5	ND	0.5
ETHYL BENZENE		ND	0.5	ND	0.5	ND	0.5
METHYLENE CHLORIDE		ND	0.5	ND	0.5	ND	0.5
1,1,2,2-TETRACHLOROETHANE		ND	0.5	ND	0.5	ND	0.5
TETRACHLOROETHENE		ND	0.5	ND	0.5	ND	0.5
TOLUENE		9.8	0.5	ND	0.5	9.5	0.5
1,1,1-TRICHLOROETHANE		ND	0.5	ND	0.5	ND	0.5
1,1,2-TRICHLOROETHANE		ND	0.5	ND	0.5	ND	0.5
TRICHLOROETHENE		9.2	0.5	ND	0.5	9.6	0.5
TRICHLOROFLUOROMETHANE		ND	0.5	ND	0.5	ND	0.5
VINYL CHLORIDE		ND	1.0	ND	1.0	ND	1.0
XYLENES		ND	0.5	ND	0.5	ND	0.5

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FAX (707) 763-4065

L A B O R A T O R Y R E S U L T S

Laboratory Job No.: 913595

COMPOUNDS:	LAB#	24705	DET.
	SMP#	MSD	LIM.
	DIL.	1	
PURGEABLES		ug/L	
BENZENE		9.1	0.5
BROMODICHLOROMETHANE		ND	0.5
BROMOFORM		ND	0.5
BROMOMETHANE		ND	0.5
CARBON TETRACHLORIDE		ND	0.5
CHLOROBENZENE		9.8	0.5
CHLOROETHANE		ND	0.5
CHLOROFORM		ND	0.5
CHLOROMETHANE		ND	0.5
DIBROMOCHLOROMETHANE		ND	0.5
1,2-DICHLOROBENZENE		ND	0.5
1,3-DICHLOROBENZENE		ND	0.5
1,4-DICHLOROBENZENE		ND	0.5
1,1-DICHLOROETHANE		ND	0.5
1,2-DICHLOROETHANE		ND	0.5
1,1-DICHLOROETHENE		11	0.2
TRANS-1,2-DICHLOROETHENE		ND	0.5
1,2-DICHLOROPROPANE		ND	0.5
CIS-1,3-DICHLOROPROPENE		ND	0.5
TRANS-1,3-DICHLOROPROPENE		ND	0.5
ETHYL BENZENE		ND	0.5
METHYLENE CHLORIDE		ND	0.5
1,1,2,2-TETRACHLOROETHANE		ND	0.5
TETRACHLOROETHENE		ND	0.5
TOLUENE		9.1	0.5
1,1,1-TRICHLOROETHANE		ND	0.5
1,1,2-TRICHLOROETHANE		ND	0.5
TRICHLOROETHENE		9.2	0.5
TRICHLOROFLUOROMETHANE		ND	0.5
VINYL CHLORIDE		ND	1.0
XYLENES		ND	0.5

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L A B O R A T O R Y R E S U L T S

Laboratory Job No.: 913595

NOTE: ND MEANS NOT DETECTED

THE MATRIX SPIKE COMPOUNDS FOUND IN THE CMS AND CMSD SAMPLES WERE SPIKED AT THE FOLLOWING LEVELS:

5 COMPOUNDS AT 10 ug/L

* THESE COMPOUNDS WERE CALCULATED FROM A GREATER DILUTION.

ACCULAB
ENVIRONMENTAL SERVICES
3700 Lakeville Highway, Petaluma, CA 94952
P.O. Box 808024, Petaluma, CA. 94975-8024
Phone: (707)763-8245 FAX: (707)763-4065

JUL [illegible]

SAMPLE CHAIN OF CUSTODY / WORK ORDER

Client's Name B Dames & Moore Phone (916)-364-8698
Address 9300 Tech Center Dr., Suite 100
City, State, Zip Sacramento, CA 95826
Client's or Representative's Signature David Mowen
(signature authorizes the work and terms listed below)

All samples remain the property of the client who is responsible for disposal. A disposal fee may be imposed if client fails to pick up samples.

91-3525

PROJ. NO. 00173-064 044
PROJECT NAME Union Pacific Railroad Sac Yard
SAMPLERS (Signature) [illegible]

STA. NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	601, 8240	As (7060), Pb (7421), Ni (7520), Cr (7191), Ca, Mg, Mn, K, Na, Fe, Anion Scan, Alkalinity, TDS, Hardness	602	REMARKS	LAB USE ONLY LAB NO.
MW-39	6/28*			X	MW-39	6	X	X X X X X X	X		
MW-41	"			X	MW-41	5	X	X X	X		
MW-40	"			X	MW-40	5	X	X X	X		
MW-42	"			X	MW-42	5	X	X X	X		
MW-42B	"			X	MW-42B	5 4*	X	X X	X		
MW-43	"			X	MW-43	6	X	X X X X X	X		
RB-1	"			X	RB-1	3	X	X X			
TC-1	"*			X	TC-1	1	X				
					*Trip blanks	2					

Relinquished by: (Signature)	DATE	TIME	Received by: (Signature)	General Remarks:
David Mowen	6/28/91	1730	V.O. Wilson 7/1/91 11:35	*1 broken VOA - MW-39
Relinquished by: (Signature)	DATE	TIME	Received by: (Signature)	*no TC-1 came with samp
Relinquished by: (Signature)	DATE	TIME	Received by: (Signature)	*2 Tripblanks

CLIENT COPY

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Telephone: (707) 763-8245
FAX (707) 763-4065

Tim Parker
Dames & Moore
9300 Tech Center Dr., Suite 100
Sacramento, CA 95826

Client Code: DAMM7
Survey #
UPRR/Sacramento
Project/Release # 00173-064-044

L A B O R A T O R Y R E S U L T S

Laboratory Job No.: 913525
Date Collected: 06/28/91
Date Received: 07/01/91
Date Analyzed: 07/10/91
Date Reported: 07/22/91

ASSAY:
ALKALINITY (EPA 310.1)

		ALKALINITY, mg CaCO3/L		
LABNO	SMPLNO	pH 8.3	pH 4.5 (TOTAL)	pH 4.5 DET. LIMIT
24205	MW-39	0	166	5
24210	MW-43	0	791	5
24213	MB	0	ND	5
24214	MBS	0	49	5
24215	MX	0	145	5
24216	MS	0	194	5
24217	MSD	0	196	5

NOTE: CMS AND CMSD WERE SPIKED AT 53 mg/L.

THIS REPORT HAS BEEN REVIEWED
AND APPROVED FOR RELEASE.
DF

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Telephone: (707) 763-8245
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L A B O R A T O R Y R E S U L T S

Date Collected: 06/28/91
Date Extracted: 07/03/91
Date Analyzed: 07/08/91

Laboratory Job No.: 913525
Date Received: 07/01/91
Date Reported: 07/22/91

ASSAY: TOTAL DISSOLVED SOLIDS (EPA 160.1)

LABNO	SMPLNO	FOUND mg/L	DET. LIM. mg/L
24205	MW-39	431	10
24210	MW-43	2950	10
24213	MB	ND	10
24214	MBS	89	10
24215	MX	458	10
24216	MS	552	10
24217	MSD	553	10

NOTE: MBS, MS, AND MSD WERE SPIKED AT 100 mg/L.

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L A B O R A T O R Y R E S U L T S

Laboratory Job No.: 913525
Date Collected: 06/28/91
Date Received: 07/01/91
Date Analyzed: 07/10/91
Date Reported: 07/22/91

ASSAY:METAL SCAN BY ICP(EPA 6010)

LABNO	SMPLNO-ID	RESULTS		DET.LIM.
24205	MW-39 WATER			
	HARDNESS(Ca,Mg)	295.5	mg/L	5
24210	MW-43 WATER			
	HARDNESS(Ca,Mg)	1529.8	mg/L	20
24213	MB WATER			
	HARDNESS(Ca,Mg)	ND		5
24214	MBS WATER			
	HARDNESS(Ca,Mg)	36.4	mg/L	5
24215	MX WATER			
	HARDNESS(Ca,Mg)	286.7	mg/L	5
24216	MS WATER			
	HARDNESS(Ca,Mg)	320.6	mg/L	5
24217	MSD WATER			

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L A B O R A T O R Y R E S U L T S

Laboratory Job No.: 913525

LABNO	SMPLNO-ID	RESULTS		DET.LIM.
	HARDNESS(Ca,Mg)	318.0	mg/L	5

NOTE: MBS, MS AND MSD WERE SPIKED AT 33.3 mg/L.

ND=Not Detected

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L A B O R A T O R Y R E S U L T S

Laboratory Job No.: 913525
Date Collected: 06/28/91
Date Analyzed: 07/20/91
Date Received: 07/01/91
Date Reported: 07/22/91

ASSAY:
CHROMIUM (EPA 7191),3020 ACID DIGEST
LEAD (EPA 7421),3020 ACID DIGEST

MATRIX: WATER

LABNO	SMPLNO	COMPOUND	FOUND mg/L		DET.LIM. mg/L
24205	MW-39	CR	0.017		0.002
		PB	0.001		0.001
24206	MW-41	CR	0.005		0.001
		PB	ND		0.001
24207	MW-40	CR	0.004		0.001
		PB	ND		0.001
24208	MW-42	CR	ND		0.001
		PB	0.001		0.001
24209	MW-42B	CR	ND		0.001
		PB	0.001		0.001
24210	MW-43	CR	ND		0.001
		PB	ND		0.001
24211	RB-1	CR	0.002		0.001
		PB	ND		0.001
24213	MB	CR	ND		0.001
		PB	ND		0.001
				SPIKE LEVELS	
24214	MBS	CR	0.026	0.025 mg/L	0.001
		PB	0.011	0.010 mg/L	0.001

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L A B O R A T O R Y R E S U L T S

Laboratory Job No.: 913525

LABNO	SMPLNO	COMPOUND	FOUND mg/L		DET.LIM. mg/L
24215	MX	CR	0.014		0.002
		PB	0.001		0.001
				SPIKE LEVELS	
24216	MS	CR	0.034	0.025 mg/L	0.002
		PB	0.010	0.010 mg/L	0.001
24217	MSD	CR	0.039	0.025 mg/L	0.002
		PB	0.010	0.010 mg/L	0.001

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L A B O R A T O R Y R E S U L T S

Laboratory Job No.: 913525
Date Collected: 06/28/91
Date Analyzed: 07/19/91
Date Received: 07/01/91
Date Reported: 07/22/91

ASSAY:
ARSENIC (EPA 7060),3020 ACID DIGEST
CALCIUM (EPA 215.1)
IRON (EPA 236.1)
MANGANESE (EPA 243.1),3020 ACID DIGEST
MAGNESIUM (EPA 242.1)
SODIUM (EPA 273.1)
POTASSIUM (EPA 258.1)
NICKEL (EPA 7520),3020 ACID DIGEST

MATRIX: WATER

LABNO	SMPLNO	COMPOUND	FOUND mg/L	CA STLC LEV	DET.LIM. mg/L
24205	MW-39	AS	0.010	5.0	0.005
		CA	67		1
		FE	0.05		0.05
		MN	ND		0.02
		MG	26		1
		NA	28		0.4
		K	5.8		0.03
		NI	ND	20	0.1
24206	MW-41	AS	0.015	5.0	0.005
		NI	ND	20	0.1
24207	MW-40	AS	0.005	5.0	0.005
		NI	ND	20	0.1
24208	MW-42	AS	ND	5.0	0.005
		NI	0.2	20	0.1
24209	MW-42B	AS	0.008	5.0	0.005
		NI	0.2	20	0.1

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Laboratory Job No.: 913525

LABNO	SMPLNO	COMPOUND	FOUND mg/L	CA STLC LEV	DET.LIM. mg/L
24210	MW-43	AS	0.010	5.0	0.005
		CA	325		1
		FE	ND		0.05
		MN	4.0		0.02
		MG	167		5
		NA	405		2
		K	4.7		0.03
		NI	0.2	20	0.1
24211	RB-1	AS	ND	5.0	0.005
		NI	ND	20	0.1
24213	MB	AS	ND		0.005
		CA	0.08		0.05
		FE	ND		0.05
		MN	ND		0.02
		MG	ND		0.05
		NA	0.03		0.02
		K	ND		0.03
		NI	ND		0.1
			SPIKE LEVELS		
24214	MBS	AS	0.020	0.025 mg/L	0.005
		CA	8.8	10.0 mg/L	0.05
		FE	10.0	10.0 mg/L	0.05
		MN	10.2	10.0 mg/L	0.02
		MG	9.8	10.0 mg/L	0.5
		NA	9.7	10.0 mg/L	0.2
		K	11	10.0 mg/L	0.1
		NI	10	10.0 mg/L	0.1

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L A B O R A T O R Y R E S U L T S

Laboratory Job No.: 913525

LABNO	SMPLNO	COMPOUND	FOUND mg/L	CA STLC LEV	DET.LIM. mg/L
24215	MX	AS	ND		0.005
		CA	23		0.5
		FE	0.05		0.05
		MN	ND		0.02
		MG	14		0.5
		NA	9.5		0.2
		K	1		0.3
		NI	ND		0.1
				SPIKE LEVELS	
24216	MS	AS	0.026	0.025 mg/L	0.005
		CA	31	10.0 mg/L	0.5
		FE	10.0	10.0 mg/L	0.05
		MN	10.2	10.0 mg/L	0.02
		MG	23	10.0 mg/L	1
		NA	19	10.0 mg/L	0.4
		K	13	10.0 mg/L	0.3
		NI	10	10.0 mg/L	0.1
24217	MSD	AS	0.027	0.025 mg/L	0.005
		CA	31	10.0 mg/L	0.5
		FE	10.1	10.0 mg/L	0.05
		MN	10.3	10.0 mg/L	0.02
		MG	23	10.0 mg/L	1
		NA	19	10.0 mg/L	0.4
		K	13	10.0 mg/L	0.3
		NI	10	10.0 mg/L	0.1

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L A B O R A T O R Y R E S U L T S

Laboratory Job No.: 913525

LABNO	SMPLNO	RESULTS	DET.LIM.	
24214	MBS			SPIKE LEVELS
	F	1.00 mg/L	0.10 mg/L	0.75 mg/L
	CL	1.10 mg/L	0.20 mg/L	1.0 mg/L
	BR	2.61 mg/L	0.10 mg/L	3.0 mg/L
	NO3	2.56 mg/L	0.10 mg/L	3.0 mg/L
	PO4	6.50 mg/L	0.20 mg/L	8.0 mg/L
	SO4	3.66 mg/L	0.50 mg/L	4.0 mg/L
24215	MX			
	F	ND	0.10 mg/L	
	CL	92 mg/L	5.0 mg/L	
	BR	ND	0.10 mg/L	
	NO3	ND	0.10 mg/L	
	PO4	ND	5.0 mg/L	
	SO4	83 mg/L	12 mg/L	
24216	MS			SPIKE LEVELS
	F	21 mg/L	0.10 mg/L	18.7 mg/L
	CL	119 mg/L	5.0 mg/L	25 mg/L
	BR	67 mg/L	2.5 mg/L	75 mg/L
	NO3	66 mg/L	2.5 mg/L	75 mg/L
	PO4	161 mg/L	5.0 mg/L	200 mg/L
	SO4	172 mg/L	12 mg/L	100 mg/L
24217	MSD			SPIKE LEVELS
	F	21 mg/L	0.10 mg/L	18.7 mg/L
	CL	115 mg/L	5.0 mg/L	25 mg/L
	BR	65 mg/L	2.5 mg/L	75 mg/L
	NO3	65 mg/L	2.5 mg/L	75 mg/L
	PO4	156 mg/L	5.0 mg/L	200 mg/L
	SO4	166 mg/L	12 mg/L	100

D&M LABORATORIES
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Tim Parker
Dames & Moore
9300 Tech Center Dr., Suite 100
Sacramento, CA 95826

Client Code: DAMM7
Survey # UPRR-SACTO.

L A B O R A T O R Y R E S U L T S

Laboratory Job No.: 913537
Date Received: 07/01/91
Date Reported: 07/24/91

Date Collected: 06/28/91

ASSAY:
PURGEABLE HALOCARBONS (EPA 601)
PURGEABLE AROMATICS (EPA 602)

LABNO	SMPLNO
07-036-1	MW-39
07-036-2	MW-41
07-036-3	MW-40
07-036-4	MW-42
07-036-5	MW-42B
07-036-6	MW-43
07-036-7	RB-1
07-036-8	TRIP BLANK

SEE ATTACHED RESULTS

THIS REPORT HAS BEEN REVIEWED
AND APPROVED FOR RELEASE.
DLF

Analytical Report

LOG NO: E91-07-036

Received: 02 JUL 91

Mailed: JUL 12 1991

Ms. Deborah Fisher
Acculab
3700 Lakeville Highway
Petaluma, California 94975-8024

Project: 91-3537

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, GROUND WATER SAMPLES	DATE SAMPLED
07-036-1	MW-39	28 JUN 91
07-036-2	MW-41	28 JUN 91
07-036-3	MW-40	28 JUN 91
07-036-4	MW-42	28 JUN 91
07-036-5	MW-42B	28 JUN 91

PARAMETER	07-036-1	07-036-2	07-036-3	07-036-4	07-036-5
Halocarbons (EPA 601)					
Date Analyzed	07.03.91	07.03.91	07.03.91	07.03.91	07.03.91
Confirmation Date	07.05.91	---	07.05.91	07.05.91	07.05.91
Dilution Factor, Times	1	1	2	5	5
1,1,1-Trichloroethane, ug/L	0.6	<0.5	4	11	11
1,1,2,2-Tetrachloroethane, ug/L	<0.5	<0.5	<1	<2	<2
1,1,2-Trichloroethane, ug/L	<0.5	<0.5	<1	<2	<2
1,1-Dichloroethane, ug/L	<0.5	<0.5	19	110	110
1,1-Dichloroethene, ug/L	0.7	<0.5	110	330	340
1,2-Dichloroethane, ug/L	2.9	<0.5	<1	<2	<2
1,2-Dichlorobenzene, ug/L	<0.5	<0.5	<1	<2	<2
1,2-Dichloroethene (Total), ug/L	<0.5	<0.5	<1	<2	<2
1,2-Dichloropropane, ug/L	<0.5	<0.5	<1	<2	<2
1,3-Dichlorobenzene, ug/L	<0.5	<0.5	<1	<2	<2
1,4-Dichlorobenzene, ug/L	<0.5	<0.5	<1	<2	<2
2-Chloroethylvinylether, ug/L	<0.5	<0.5	<1	<2	<2
Bromodichloromethane, ug/L	<0.5	<0.5	<1	<2	<2
Bromomethane, ug/L	<0.5	<0.5	<1	<2	<2
Bromoform, ug/L	<0.5	<0.5	<1	<2	<2
Chlorobenzene, ug/L	<0.5	<0.5	<1	<2	<2
Carbon Tetrachloride, ug/L	1.8	<0.5	<1	<2	<2
Chloroethane, ug/L	<0.5	<0.5	<1	<2	<2
Chloroform, ug/L	4.0	<0.5	<1	<2	2
Chloromethane, ug/L	<0.5	<0.5	<1	<2	<2

1255 Powell Street
Emeryville, CA 94608

415/428-2300
Fax: 415/547-3643

BCA B C Analytical

Analytical Report

LOG NO: E91-07-036

Received: 02 JUL 91

Ms. Deborah Fisher
Acculab
3700 Lakeville Highway
Petaluma, California 94975-8024

Project: 91-3537

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, GROUND WATER SAMPLES	DATE SAMPLED
07-036-1	MW-39	28 JUN 91
07-036-2	MW-41	28 JUN 91
07-036-3	MW-40	28 JUN 91
07-036-4	MW-42	28 JUN 91
07-036-5	MW-42B	28 JUN 91

PARAMETER	07-036-1	07-036-2	07-036-3	07-036-4	07-036-5
Dibromochloromethane, ug/L	<0.5	<0.5	<1	<2	<2
Dichlorodifluoromethane, ug/L	<0.5	<0.5	<1	<2	<2
Freon 113, ug/L	<0.5	<0.5	<1	<2	<2
Methylene chloride, ug/L	<0.5	<0.5	<1	<2	<2
Trichloroethene, ug/L	<0.5	<0.5	46	4	3
Trichlorofluoromethane, ug/L	<0.5	<0.5	<1	<2	<2
Tetrachloroethene, ug/L	<0.5	<0.5	<1	<2	<2
Vinyl chloride, ug/L	<0.5	<0.5	<1	<2	<2
cis-1,2-Dichloroethene, ug/L	<0.5	<0.5	<1	<2	<2
cis-1,3-Dichloropropene, ug/L	<0.5	<0.5	<1	<2	<2
trans-1,2-Dichloroethene, ug/L	<0.5	<0.5	<1	<2	<2
trans-1,3-Dichloropropene, ug/L	<0.5	<0.5	<1	<2	<2

Analytical Report

LOG NO: E91-07-036

Received: 02 JUL 91

Ms. Deborah Fisher
Acculab
3700 Lakeville Highway
Petaluma, California 94975-8024

Project: 91-3537

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, GROUND WATER SAMPLES	DATE SAMPLED
07-036-1	MW-39	28 JUN 91
07-036-2	MW-41	28 JUN 91
07-036-3	MW-40	28 JUN 91
07-036-4	MW-42	28 JUN 91
07-036-5	MW-42B	28 JUN 91

PARAMETER	07-036-1	07-036-2	07-036-3	07-036-4	07-036-5
Vol.Aromatics (EPA-602)					
Date Analyzed	07.03.91	07.03.91	07.03.91	07.03.91	07.03.91
Dilution Factor, Times	1	1	2	5	5
1,2-Dichlorobenzene, ug/L	<0.5	<0.5	<1	<2	<2
1,3-Dichlorobenzene, ug/L	<0.5	<0.5	<1	<2	<2
1,4-Dichlorobenzene, ug/L	<0.5	<0.5	<1	<2	<2
Benzene, ug/L	<0.5	<0.5	<1	<2	<2
Chlorobenzene, ug/L	<0.5	<0.5	<1	<2	<2
Ethylbenzene, ug/L	<0.5	<0.5	<1	<2	<2
Toluene, ug/L	<0.5	<0.5	<1	<2	<2
Total Xylene Isomers, ug/L	<0.5	<0.5	<1	<2	<2
Other Vol.Aromatics (EPA-602)	---	---	---	---	---

1255 Powell Street
Emeryville, CA 94608

415/428-2300
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BCA B C Analytical

Analytical Report

LOG NO: E91-07-036

Received: 02 JUL 91

Ms. Deborah Fisher
Acculab
3700 Lakeville Highway
Petaluma, California 94975-8024

Project: 91-3537

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, GROUND WATER SAMPLES	DATE SAMPLED
07-036-6	MW-43	28 JUN 91
07-036-7	RB-1	28 JUN 91

PARAMETER	07-036-6	07-036-7
Halocarbons (EPA 601)		
Date Analyzed	07.05.91	07.03.91
Confirmation Date	07.05.91	07.05.91
Dilution Factor, Times	10	1
1,1,1-Trichloroethane, ug/L	<5	<0.5
1,1,2,2-Tetrachloroethane, ug/L	<5	<0.5
1,1,2-Trichloroethane, ug/L	<5	<0.5
1,1-Dichloroethane, ug/L	330	<0.5
1,1-Dichloroethene, ug/L	33	<0.5
1,2-Dichloroethane, ug/L	<5	<0.5
1,2-Dichlorobenzene, ug/L	<5	<0.5
1,2-Dichloroethene (Total), ug/L	<5	<0.5
1,2-Dichloropropane, ug/L	<5	<0.5
1,3-Dichlorobenzene, ug/L	<5	<0.5
1,4-Dichlorobenzene, ug/L	<5	<0.5
2-Chloroethylvinylether, ug/L	<5	<0.5
Bromodichloromethane, ug/L	<5	<0.5
Bromomethane, ug/L	<5	<0.5
Bromoform, ug/L	<5	<0.5
Chlorobenzene, ug/L	<5	<0.5
Carbon Tetrachloride, ug/L	<5	<0.5
Chloroethane, ug/L	<5	<0.5
Chloroform, ug/L	<5	5.3
Chloromethane, ug/L	<5	<0.5
Dibromochloromethane, ug/L	<5	<0.5
Dichlorodifluoromethane, ug/L	<5	<0.5
Freon 113, ug/L	<5	<0.5

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BCA *B C Analytical*

Analytical Report

LOG NO: E91-07-036

Received: 02 JUL 91

Ms. Deborah Fisher
Acculab
3700 Lakeville Highway
Petaluma, California 94975-8024

Project: 91-3537

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, GROUND WATER SAMPLES	DATE SAMPLED
07-036-6	MW-43	28 JUN 91
07-036-7	RB-1	28 JUN 91

PARAMETER	07-036-6	07-036-7
Methylene chloride, ug/L	<5	<0.5
Trichloroethene, ug/L	<5	<0.5
Trichlorofluoromethane, ug/L	<5	<0.5
Tetrachloroethene, ug/L	<5	<0.5
Vinyl chloride, ug/L	<5	<0.5
cis-1,2-Dichloroethene, ug/L	<5	<0.5
cis-1,3-Dichloropropene, ug/L	<5	<0.5
trans-1,2-Dichloroethene, ug/L	<5	<0.5
trans-1,3-Dichloropropene, ug/L	<5	<0.5
Vol.Aromatics (EPA-602)		
Date Analyzed	07.05.91	---
Dilution Factor, Times	10	---
1,2-Dichlorobenzene, ug/L	<5	---
1,3-Dichlorobenzene, ug/L	<5	---
1,4-Dichlorobenzene, ug/L	<5	---
Benzene, ug/L	<5	---
Chlorobenzene, ug/L	<5	---
Ethylbenzene, ug/L	<5	---
Toluene, ug/L	<5	---
Total Xylene Isomers, ug/L	<5	---
Other Vol.Aromatics (EPA-602)	---	---

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Analytical Report

LOG NO: E91-07-036

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Ms. Deborah Fisher
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3700 Lakeville Highway
Petaluma, California 94975-8024

Project: 91-3537

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, BLANK WATER SAMPLES	DATE SAMPLED
07-036-8	Trip Blank	

PARAMETER	07-036-8
Halocarbons (EPA 601)	
Date Analyzed	07.03.91
Dilution Factor, Times	1
1,1,1-Trichloroethane, ug/L	<0.5
1,1,2,2-Tetrachloroethane, ug/L	<0.5
1,1,2-Trichloroethane, ug/L	<0.5
1,1-Dichloroethane, ug/L	<0.5
1,1-Dichloroethene, ug/L	<0.5
1,2-Dichloroethane, ug/L	<0.5
1,2-Dichlorobenzene, ug/L	<0.5
1,2-Dichloroethene (Total), ug/L	<0.5
1,2-Dichloropropane, ug/L	<0.5
1,3-Dichlorobenzene, ug/L	<0.5
1,4-Dichlorobenzene, ug/L	<0.5
2-Chloroethylvinylether, ug/L	<0.5
Bromodichloromethane, ug/L	<0.5
Bromomethane, ug/L	<0.5
Bromoform, ug/L	<0.5
Chlorobenzene, ug/L	<0.5
Carbon Tetrachloride, ug/L	<0.5
Chloroethane, ug/L	<0.5
Chloroform, ug/L	<0.5
Chloromethane, ug/L	<0.5
Dibromochloromethane, ug/L	<0.5
Dichlorodifluoromethane, ug/L	<0.5
Freon 113, ug/L	<0.5
Methylene chloride, ug/L	<0.5
Trichloroethene, ug/L	<0.5

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BCA B C Analytical

Analytical Report

LOG NO: E91-07-036

Received: 02 JUL 91

Ms. Deborah Fisher
Acculab
3700 Lakeville Highway
Petaluma, California 94975-8024

Project: 91-3537

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, BLANK WATER SAMPLES	DATE SAMPLED
07-036-8	Trip Blank	

PARAMETER	07-036-8
Trichlorofluoromethane, ug/L	<0.5
Tetrachloroethene, ug/L	<0.5
Vinyl chloride, ug/L	<0.5
cis-1,2-Dichloroethene, ug/L	<0.5
cis-1,3-Dichloropropene, ug/L	<0.5
trans-1,2-Dichloroethene, ug/L	<0.5
trans-1,3-Dichloropropene, ug/L	<0.5
Other Halocarbons (EPA 601)	---

Sim D. Lessley, Ph.D., Laboratory Director

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BCA B C Analytical

BATCH QC REPORT: Definitions and Terms

Accuracy	The ability of a procedure to determine the "true" concentration of an analyte
Precision	The reproducibility of a procedure demonstrated by the agreement between analyses performed on either duplicates of the same sample or a pair of duplicate spikes
Batch	A group of samples analyzed sequentially using the same calibration curve, reagents, and instrument
Laboratory Control Standard (LCS)	Laboratory reagent water spiked with known compounds and subjected to the same procedures as the samples. The LCS thus indicates the accuracy of the analytical method and, because it is prepared from a different source than the standard used to calibrate the instrument, it also serves to double-check the calibration
Matrix QC	Quality control tests performed on actual client samples. For most inorganic analyses, the laboratory uses a pair of duplicate samples and a spiked sample. For most organic analyses, the laboratory uses a pair of spiked samples (duplicate spikes)
LC Result	Laboratory result of an LCS analysis
LT Result	Expected result, or true value, of the LCS analysis
R1, R2 Result:	Result of the analysis of replicate aliquots of a sample, with R1 indicating the first analysis of the sample and R2 its corresponding duplicate; used to determine precision
S1, S2 Result	Result of the analysis of replicate spiked aliquots, with S1 indicating one spike of the sample and S2 the second spike; used to determine precision and accuracy
R Bar Result	The average of replicate analysis results
S Bar Result:	The average of spike analysis results
True value	The theoretical, or expected, result of a spike sample analysis
Percent Recovery	The percentage of analyte recovered. For LCS, the percent recovery calculation is: $LC \div LT \times 100$ For spike recoveries, the percent recovery calculatiion is: $\frac{(\text{S Bar - Sample Concentration})}{\text{Spike Amount}} \times 100$
Relative Percent Difference (RPD)	Calculated using one of the following: $\frac{(R1 - R2) \times 100}{(R1 + R2) \div 2}$ $\frac{(S1 - S2) \times 100}{(S1 + S2) \div 2}$
Blank Result	The result of the analysis of a method blank,which is reagent water that is analysed using the same reagents, instruments and procedures as the samples in a batch; used to determine laboratory contamination
Reporting Detection Limit (RDL)	BCA-assigned limit based on—but not the same as—method detection limits (MDLs) determined using EPA guidelines

: ORDER PLACED FOR CLIENT: Acculab 9107036 :
: BC ANALYTICAL : EMVL LAB : 10:50:02 12 JUL 1991 - P. 1 :

SAMPLES...	SAMPLE DESCRIPTION..	DETERM.....	DATE.... ANALYZED	METHOD.....	EQUIP.	BATCH	ID.NO
9107036*1	MW-39	VH.601	07.03.91	601	516-12	416	7553
		VA.602	07.03.91	602	516-12	416	7553
9107036*2	MW-41	VH.601	07.03.91	601	516-12	416	7553
		VA.602	07.03.91	602	516-12	416	7553
9107036*3	MW-40	VH.601	07.03.91	601	516-20	418	6917
		VA.602	07.03.91	602	516-20	418	6917
9107036*4	MW-42	VH.601	07.03.91	601	516-20	418	6917
		VA.602	07.03.91	602	516-20	418	6917
9107036*5	MW-42B	VH.601	07.03.91	601	516-20	418	6917
		VA.602	07.03.91	602	516-20	418	6917
9107036*6	MW-43	VH.601	07.05.91	601	516-20	419	7504
		VA.602	07.05.91	602	516-20	419	7504
9107036*7	RB-1	VH.601	07.03.91	601	516-12	416	7553
9107036*8	Trip Blank	VH.601	07.03.91	601	516-12	416	7553

***

Notes: Equipment = BC Analytical identification number for a particular piece of analytical equipment.

ID.NO = BC Analytical employee identification number of analyst.

BC ANALYTICAL

BATCH QC REPORT
ORDER: E9107036

DATE REPORTED : 07/12/91

LABORATORY CONTROL STANDARDS

PARAMETER	DATE ANALYZED	BATCH NUMBER	LC RESULT	LT RESULT	UNIT	PERCENT RECOVERY
Halocarbons (EPA 601)						
Dilution Factor	07.03.91	416	1	1	Times	100
1,1,1-Trichloroethane	07.03.91	416	22	20	ug/L	110
1,1,2,2-Tetrachloroethane	07.03.91	416	19	20	ug/L	95
1,1,2-Trichloroethane	07.03.91	416	21	20	ug/L	105
1,1-Dichloroethane	07.03.91	416	24	20	ug/L	120
1,1-Dichloroethene	07.03.91	416	16	20	ug/L	80
1,2-Dichloroethane	07.03.91	416	20	20	ug/L	100
1,2-Dichlorobenzene	07.03.91	416	20	20	ug/L	100
1,2-Dichloroethene (Total)	07.03.91	416	39	40	ug/L	98
1,2-Dichloropropane	07.03.91	416	20	20	ug/L	100
1,3-Dichlorobenzene	07.03.91	416	16	20	ug/L	80
1,4-Dichlorobenzene	07.03.91	416	21	20	ug/L	105
2-Chloroethylvinylether	07.03.91	416	13	20	ug/L	65
Bromodichloromethane	07.03.91	416	20	20	ug/L	100
Bromomethane	07.03.91	416	13	20	ug/L	65
Bromoform	07.03.91	416	18	20	ug/L	90
Chlorobenzene	07.03.91	416	20	20	ug/L	100
Carbon Tetrachloride	07.03.91	416	18	20	ug/L	90
Chloroethane	07.03.91	416	20	20	ug/L	100
Chloroform	07.03.91	416	21	20	ug/L	105
Chloromethane	07.03.91	416	17	20	ug/L	85
Dibromochloromethane	07.03.91	416	19	20	ug/L	95
Dichlorodifluoromethane	07.03.91	416	21	20	ug/L	105
Freon 113	07.03.91	416	15	20	ug/L	75
Methylene chloride	07.03.91	416	17	20	ug/L	85
Trichloroethene	07.03.91	416	19	20	ug/L	95
Trichlorofluoromethane	07.03.91	416	21	20	ug/L	105
Tetrachloroethene	07.03.91	416	19	20	ug/L	95
Vinyl chloride	07.03.91	416	23	20	ug/L	115
cis-1,2-Dichloroethene	07.03.91	416	19	20	ug/L	95
cis-1,3-Dichloropropene	07.03.91	416	27	32	ug/L	84
trans-1,2-Dichloroethene	07.03.91	416	20	20	ug/L	100
trans-1,3-Dichloropropene	07.03.91	416	7.6	8.0	ug/L	95
Vol.Aromatics (EPA-602)						
Dilution Factor	07.03.91	416	1	1	Times	100
1,2-Dichlorobenzene	07.03.91	416	20	20	ug/L	100
1,3-Dichlorobenzene	07.03.91	416	20	20	ug/L	100
1,4-Dichlorobenzene	07.03.91	416	22	20	ug/L	110

...continued

BC ANALYTICAL

BATCH QC REPORT
ORDER: E9107036

DATE REPORTED : 07/12/91

LABORATORY CONTROL STANDARDS

PARAMETER	DATE ANALYZED	BATCH NUMBER	LC RESULT	LT RESULT	UNIT	PERCENT RECOVERY
Benzene	07.03.91	416	20	20	ug/L	100
Chlorobenzene	07.03.91	416	21	20	ug/L	105
Ethylbenzene	07.03.91	416	19	20	ug/L	95
Toluene	07.03.91	416	19	20	ug/L	95
Total Xylene Isomers	07.03.91	416	44	40	ug/L	110
Halocarbons (EPA 601)						
Dilution Factor	07.03.91	418	1	1	Times	100
1,1,1-Trichloroethane	07.03.91	418	20	20	ug/L	100
1,1,2,2-Tetrachloroethane	07.03.91	418	22	20	ug/L	110
1,1,2-Trichloroethane	07.03.91	418	23	20	ug/L	115
1,1-Dichloroethane	07.03.91	418	21	20	ug/L	105
1,1-Dichloroethene	07.03.91	418	22	20	ug/L	110
1,2-Dichloroethane	07.03.91	418	22	20	ug/L	110
1,2-Dichlorobenzene	07.03.91	418	22	20	ug/L	110
1,2-Dichloroethene (Total)	07.03.91	418	38	40	ug/L	95
1,2-Dichloropropane	07.03.91	418	22	20	ug/L	110
1,3-Dichlorobenzene	07.03.91	418	19	20	ug/L	95
1,4-Dichlorobenzene	07.03.91	418	23	20	ug/L	115
2-Chloroethylvinylether	07.03.91	418	14	20	ug/L	70
Bromodichloromethane	07.03.91	418	21	20	ug/L	105
Bromomethane	07.03.91	418	23	20	ug/L	115
Bromoform	07.03.91	418	18	20	ug/L	90
Chlorobenzene	07.03.91	418	19	20	ug/L	95
Carbon Tetrachloride	07.03.91	418	20	20	ug/L	100
Chloroethane	07.03.91	418	23	20	ug/L	115
Chloroform	07.03.91	418	26	20	ug/L	130
Chloromethane	07.03.91	418	16	20	ug/L	80
Dibromochloromethane	07.03.91	418	20	20	ug/L	100
Dichlorodifluoromethane	07.03.91	418	26	20	ug/L	130
Freon 113	07.03.91	418	19	20	ug/L	95
Methylene chloride	07.03.91	418	21	20	ug/L	105
Trichloroethene	07.03.91	418	22	20	ug/L	110
Trichlorofluoromethane	07.03.91	418	20	20	ug/L	100
Tetrachloroethene	07.03.91	418	23	20	ug/L	115
Vinyl chloride	07.03.91	418	27	20	ug/L	135
cis-1,2-Dichloroethene	07.03.91	418	19	20	ug/L	95
cis-1,3-Dichloropropene	07.03.91	418	32	32	ug/L	100
trans-1,2-Dichloroethene	07.03.91	418	19	20	ug/L	95

BC ANALYTICAL

BATCH QC REPORT
ORDER: E9107036

DATE REPORTED : 07/12/91

LABORATORY CONTROL STANDARDS

PARAMETER	DATE ANALYZED	BATCH NUMBER	LC RESULT	LT RESULT	UNIT	PERCENT RECOVERY
trans-1,3-Dichloropropene	07.03.91	418	8.4	8.0	ug/L	105
Vol.Aromatics (EPA-602)						
Dilution Factor	07.03.91	418	1	1	Times	100
1,2-Dichlorobenzene	07.03.91	418	20	20	ug/L	100
1,3-Dichlorobenzene	07.03.91	418	18	20	ug/L	90
1,4-Dichlorobenzene	07.03.91	418	21	20	ug/L	105
Benzene	07.03.91	418	18	20	ug/L	90
Chlorobenzene	07.03.91	418	20	20	ug/L	100
Ethylbenzene	07.03.91	418	19	20	ug/L	95
Toluene	07.03.91	418	17	20	ug/L	85
Total Xylene Isomers	07.03.91	418	43	40	ug/L	108
EPA Method 601						
Analyst ID	07.05.91	419	6917	6917	No.	100
Detection Limit	07.05.91	419	0.5	0.5	ug/L	100
Dilution Factor	07.05.91	419	1	1	Times	100
1,1,1-Trichloroethane	07.05.91	419	20	20	ug/L	100
1,1,2,2-Tetrachloroethane	07.05.91	419	21	20	ug/L	105
1,1,2-Trichloroethane	07.05.91	419	24	20	ug/L	120
1,1-Dichloroethane	07.05.91	419	20	20	ug/L	100
1,1-Dichloroethene	07.05.91	419	22	20	ug/L	110
1,2-Dichloroethane	07.05.91	419	23	20	ug/L	115
1,2-Dichlorobenzene	07.05.91	419	22	20	ug/L	110
1,2-Dichloroethene (Total)	07.05.91	419	35	40	ug/L	88
1,2-Dichloropropane	07.05.91	419	23	20	ug/L	115
1,3-Dichlorobenzene	07.05.91	419	19	20	ug/L	95
1,4-Dichlorobenzene	07.05.91	419	22	20	ug/L	110
2-Chloroethylvinylether	07.05.91	419	16	20	ug/L	80
Bromodichloromethane	07.05.91	419	22	20	ug/L	110
Bromomethane	07.05.91	419	20	20	ug/L	100
Bromoform	07.05.91	419	17	20	ug/L	85
Chlorobenzene	07.05.91	419	21	20	ug/L	105
Carbon Tetrachloride	07.05.91	419	21	20	ug/L	105
Chloroethane	07.05.91	419	20	20	ug/L	100
Chloroform	07.05.91	419	23	20	ug/L	115
Chloromethane	07.05.91	419	13	20	ug/L	65
Dibromochloromethane	07.05.91	419	21	20	ug/L	105
Dichlorodifluoromethane	07.05.91	419	19	20	ug/L	95
Freon 113	07.05.91	419	19	20	ug/L	95
Methylene chloride	07.05.91	419	21	20	ug/L	105

BC ANALYTICAL

BATCH QC REPORT
ORDER: E9107036

DATE REPORTED : 07/12/91

LABORATORY CONTROL STANDARDS

PARAMETER	DATE ANALYZED	BATCH NUMBER	LC RESULT	LT RESULT	UNIT	PERCENT RECOVERY
Trichloroethene	07.05.91	419	24	20	ug/L	120
Trichlorofluoromethane	07.05.91	419	21	20	ug/L	105
Tetrachloroethene	07.05.91	419	26	20	ug/L	130
Vinyl chloride	07.05.91	419	22	20	ug/L	110
cis-1,2-Dichloroethene	07.05.91	419	17	20	ug/L	85
cis-1,3-Dichloropropene	07.05.91	419	34	32	ug/L	106
trans-1,2-Dichloroethene	07.05.91	419	18	20	ug/L	90
trans-1,3-Dichloropropene	07.05.91	419	9.4	8.0	ug/L	118
EPA Method 602						
Analyst ID	07.05.91	419	6917	6917	No.	100
Detection Limit	07.05.91	419	0.5	0.5	ug/L	100
Dilution Factor	07.05.91	419	1	1	Times	100
1,2-Dichlorobenzene	07.05.91	419	22	20	ug/L	110
1,3-Dichlorobenzene	07.05.91	419	20	20	ug/L	100
1,4-Dichlorobenzene	07.05.91	419	23	20	ug/L	115
Benzene	07.05.91	419	20	20	ug/L	100
Chlorobenzene	07.05.91	419	22	20	ug/L	110
Ethylbenzene	07.05.91	419	21	20	ug/L	105
Toluene	07.05.91	419	20	20	ug/L	100
Total Xylene Isomers	07.05.91	419	48	40	ug/L	120

BC ANALYTICAL

BATCH QC REPORT
ORDER: E9107036

DATE REPORTED : 07/12/91

MATRIX QC PRECISION (DUPLICATE SPIKES)

PARAMETER	DATE ANALYZED	BATCH NUMBER	S1 RESULT	S2 RESULT	UNIT	RELATIVE ZDIFF
Halocarbons (EPA 601)						
Dilution Factor	07.03.91	416	1	1	Times	0
1,1,1-Trichloroethane	07.03.91	416	15	14	ug/L	7
1,1-Dichloroethane	07.03.91	416	12	12	ug/L	0
1,1-Dichloroethene	07.03.91	416	10	10	ug/L	0
1,2-Dichloroethane	07.03.91	416	14	13	ug/L	7
1,2-Dichloropropane	07.03.91	416	14	13	ug/L	7
Bromodichloromethane	07.03.91	416	14	13	ug/L	7
Bromoform	07.03.91	416	12	12	ug/L	0
Carbon Tetrachloride	07.03.91	416	11	10	ug/L	10
Chloroform	07.03.91	416	16	15	ug/L	6
Dibromochloromethane	07.03.91	416	13	13	ug/L	0
Methylene chloride	07.03.91	416	11	11	ug/L	0
Trichloroethene	07.03.91	416	14	12	ug/L	15
Tetrachloroethene	07.03.91	416	13	13	ug/L	0
Vol.Aromatics (EPA-602)						
Dilution Factor	07.03.91	416	1	1	Times	0
1,2-Dichlorobenzene	07.03.91	416	12	12	ug/L	0
1,3-Dichlorobenzene	07.03.91	416	12	12	ug/L	0
1,4-Dichlorobenzene	07.03.91	416	13	13	ug/L	0
Benzene	07.03.91	416	12	12	ug/L	0
Chlorobenzene	07.03.91	416	13	13	ug/L	0
Ethylbenzene	07.03.91	416	12	11	ug/L	9
Toluene	07.03.91	416	12	11	ug/L	9
Total Xylene Isomers	07.03.91	416	26	26	ug/L	0
Halocarbons (EPA 601)						
Dilution Factor	07.03.91	418	5	5	Times	0
1,1,1-Trichloroethane	07.03.91	418	61	71	ug/L	15
1,1-Dichloroethane	07.03.91	418	55	61	ug/L	10
1,1-Dichloroethene	07.03.91	418	60	63	ug/L	5
1,2-Dichloroethane	07.03.91	418	84	89	ug/L	6
1,2-Dichloropropane	07.03.91	418	73	79	ug/L	8
Bromodichloromethane	07.03.91	418	64	69	ug/L	8
Bromoform	07.03.91	418	51	60	ug/L	16
Carbon Tetrachloride	07.03.91	418	58	64	ug/L	10
Chloroform	07.03.91	418	86	110	ug/L	24
Dibromochloromethane	07.03.91	418	60	66	ug/L	10
Methylene chloride	07.03.91	418	56	63	ug/L	12
Trichloroethene	07.03.91	418	69	79	ug/L	14
Tetrachloroethene	07.03.91	418	67	73	ug/L	9

BC ANALYTICAL

BATCH QC REPORT
ORDER: E9107036

DATE REPORTED : 07/12/91

MATRIX QC PRECISION (DUPLICATE SPIKES)

PARAMETER	DATE ANALYZED	BATCH NUMBER	S1 RESULT	S2 RESULT	UNIT	RELATIVE %DIFF
cis-1,2-Dichloroethene	07.03.91	418	340	290	ug/L	16
Vol.Aromatics (EPA-602)						
Dilution Factor	07.03.91	418	5	5	Times	0
1,2-Dichlorobenzene	07.03.91	418	55	61	ug/L	10
1,3-Dichlorobenzene	07.03.91	418	50	55	ug/L	10
1,4-Dichlorobenzene	07.03.91	418	57	64	ug/L	12
Benzene	07.03.91	418	51	56	ug/L	9
Chlorobenzene	07.03.91	418	54	61	ug/L	12
Ethylbenzene	07.03.91	418	51	57	ug/L	11
Toluene	07.03.91	418	49	54	ug/L	10
Total Xylene Isomers	07.03.91	418	120	130	ug/L	8
Halocarbons (EPA 601)						
Dilution Factor	07.05.91	419	10	10	Times	0
1,1,1-Trichloroethane	07.05.91	419	140	150	ug/L	7
1,1-Dichloroethane	07.05.91	419	150	160	ug/L	6
1,1-Dichloroethene	07.05.91	419	130	150	ug/L	14
1,2-Dichloroethane	07.05.91	419	160	180	ug/L	12
1,2-Dichloropropane	07.05.91	419	150	170	ug/L	13
Bromodichloromethane	07.05.91	419	150	160	ug/L	6
Bromoform	07.05.91	419	130	130	ug/L	0
Carbon Tetrachloride	07.05.91	419	140	150	ug/L	7
Chloroform	07.05.91	419	180	200	ug/L	11
Dibromochloromethane	07.05.91	419	140	140	ug/L	0
Methylene chloride	07.05.91	419	150	150	ug/L	0
Trichloroethene	07.05.91	419	160	170	ug/L	6
Tetrachloroethene	07.05.91	419	160	180	ug/L	12
Vol.Aromatics (EPA-602)						
Dilution Factor	07.05.91	419	10	10	Times	0
1,2-Dichlorobenzene	07.05.91	419	140	140	ug/L	0
1,3-Dichlorobenzene	07.05.91	419	120	130	ug/L	8
1,4-Dichlorobenzene	07.05.91	419	150	160	ug/L	6
Benzene	07.05.91	419	130	140	ug/L	7
Chlorobenzene	07.05.91	419	140	150	ug/L	7
Ethylbenzene	07.05.91	419	130	140	ug/L	7
Toluene	07.05.91	419	120	140	ug/L	15
Total Xylene Isomers	07.05.91	419	300	320	ug/L	6

BC ANALYTICAL

BATCH QC REPORT
ORDER: E9107036

DATE REPORTED : 07/12/91

MATRIX QC ACCURACY (SPIKES)

PARAMETER	DATE ANALYZED	BATCH NUMBER	SBAR RESULT	TRUE RESULT	RBAR RESULT	UNIT	PERCENT RECOVERY
Halocarbons (EPA 601)							
1,1,1-Trichloroethane	07.03.91	416	14.5	12	<0.5	ug/L	121
1,1-Dichloroethane	07.03.91	416	12	12	<0.5	ug/L	100
1,1-Dichloroethene	07.03.91	416	10	12	<0.5	ug/L	83
1,2-Dichloroethane	07.03.91	416	13.5	12	<0.5	ug/L	113
1,2-Dichloropropane	07.03.91	416	13.5	12	<0.5	ug/L	113
Bromodichloromethane	07.03.91	416	13.5	12	<0.5	ug/L	113
Bromoform	07.03.91	416	12	12	<0.5	ug/L	100
Carbon Tetrachloride	07.03.91	416	10.5	12	<0.5	ug/L	88
Chloroform	07.03.91	416	15.5	12	<0.5	ug/L	129
Dibromochloromethane	07.03.91	416	13	12	<0.5	ug/L	108
Methylene chloride	07.03.91	416	11	12	<0.5	ug/L	92
Trichloroethene	07.03.91	416	13	12	<0.5	ug/L	108
Tetrachloroethene	07.03.91	416	13	12	<0.5	ug/L	108
Vol.Aromatics (EPA-602)							
1,2-Dichlorobenzene	07.03.91	416	12	12	<0.5	ug/L	100
1,3-Dichlorobenzene	07.03.91	416	12	12	<0.5	ug/L	100
1,4-Dichlorobenzene	07.03.91	416	13	12	<0.5	ug/L	108
Benzene	07.03.91	416	12	12	<0.5	ug/L	100
Chlorobenzene	07.03.91	416	13	12	<0.5	ug/L	108
Ethylbenzene	07.03.91	416	11.5	12	<0.5	ug/L	96
Toluene	07.03.91	416	11.5	12	<0.5	ug/L	96
Total Xylene Isomers	07.03.91	416	26	24	<0.5	ug/L	108
Halocarbons (EPA 601)							
1,1,1-Trichloroethane	07.03.91	418	66	60	<2	ug/L	110
1,1-Dichloroethane	07.03.91	418	58	60	<2	ug/L	97
1,1-Dichloroethene	07.03.91	418	61.5	60	<2	ug/L	103
1,2-Dichloroethane	07.03.91	418	86.5	76	16	ug/L	118
1,2-Dichloropropane	07.03.91	418	76	66	6	ug/L	117
Bromodichloromethane	07.03.91	418	66.5	60	<2	ug/L	111
Bromoform	07.03.91	418	55.5	60	<2	ug/L	93
Carbon Tetrachloride	07.03.91	418	61	60	<2	ug/L	102
Chloroform	07.03.91	418	98	60	<2	ug/L	163
Dibromochloromethane	07.03.91	418	63	60	<2	ug/L	105
Methylene chloride	07.03.91	418	59.5	60	<2	ug/L	99
Trichloroethene	07.03.91	418	74	62	2	ug/L	120
Tetrachloroethene	07.03.91	418	70	60	<2	ug/L	117
Vol.Aromatics (EPA-602)							
1,2-Dichlorobenzene	07.03.91	418	58	60	<2	ug/L	97
1,3-Dichlorobenzene	07.03.91	418	52.5	60	<2	ug/L	88
1,4-Dichlorobenzene	07.03.91	418	60.5	60	<2	ug/L	101

BC ANALYTICAL

BATCH QC REPORT
ORDER: E9107036

DATE REPORTED : 07/12/91

MATRIX QC ACCURACY (SPIKES)

PARAMETER	DATE ANALYZED	BATCH NUMBER	SBAR RESULT	TRUE RESULT	RBAR RESULT	UNIT	PERCENT RECOVERY
Benzene	07.03.91	418	53.5	60	<2	ug/L	89
Chlorobenzene	07.03.91	418	57.5	60	<2	ug/L	96
Ethylbenzene	07.03.91	418	54	60	<2	ug/L	90
Toluene	07.03.91	418	51.5	60	<2	ug/L	86
Total Xylene Isomers	07.03.91	418	125	120	<2	ug/L	104
Halocarbons (EPA 601)							
1,1,1-Trichloroethane	07.05.91	419	145	120	<5	ug/L	121
1,1-Dichloroethane	07.05.91	419	155	120	<5	ug/L	129
1,1-Dichloroethene	07.05.91	419	140	120	<5	ug/L	117
1,2-Dichloroethane	07.05.91	419	170	120	<5	ug/L	142
1,2-Dichloropropane	07.05.91	419	160	120	<5	ug/L	133
Bromodichloromethane	07.05.91	419	155	120	<5	ug/L	129
Bromoform	07.05.91	419	130	120	<5	ug/L	108
Carbon Tetrachloride	07.05.91	419	145	120	<5	ug/L	121
Chloroform	07.05.91	419	190	120	<5	ug/L	158
Dibromochloromethane	07.05.91	419	140	120	<5	ug/L	117
Methylene chloride	07.05.91	419	150	120	<5	ug/L	125
Trichloroethene	07.05.91	419	165	120	<5	ug/L	138
Tetrachloroethene	07.05.91	419	170	120	<5	ug/L	142
Vol.Aromatics (EPA-602)							
1,2-Dichlorobenzene	07.05.91	419	140	120	<5	ug/L	117
1,3-Dichlorobenzene	07.05.91	419	125	120	<5	ug/L	104
1,4-Dichlorobenzene	07.05.91	419	155	120	<5	ug/L	129
Benzene	07.05.91	419	135	120	<5	ug/L	113
Chlorobenzene	07.05.91	419	145	120	<5	ug/L	121
Ethylbenzene	07.05.91	419	135	120	<5	ug/L	113
Toluene	07.05.91	419	130	120	<5	ug/L	108
Total Xylene Isomers	07.05.91	419	310	240	<5	ug/L	129

BC ANALYTICAL

BATCH QC REPORT
ORDER: E9107036

DATE REPORTED : 07/12/91

METHOD BLANKS AND REPORTING DETECTION LIMIT (RDL)

PARAMETER	DATE ANALYZED	BATCH NUMBER	BLANK RESULT	RDL	UNIT
Halocarbons (EPA 601)					
1,1,1-Trichloroethane	07.03.91	416	0	0.5	ug/L
1,1,2,2-Tetrachloroethane	07.03.91	416	0	0.5	ug/L
1,1,2-Trichloroethane	07.03.91	416	0	0.5	ug/L
1,1-Dichloroethane	07.03.91	416	0	0.5	ug/L
1,1-Dichloroethene	07.03.91	416	0	0.5	ug/L
1,2-Dichloroethane	07.03.91	416	0	0.5	ug/L
1,2-Dichlorobenzene	07.03.91	416	0	0.5	ug/L
1,2-Dichloroethene (Total)	07.03.91	416	0	0.5	ug/L
1,2-Dichloropropane	07.03.91	416	0	0.5	ug/L
1,3-Dichlorobenzene	07.03.91	416	0	0.5	ug/L
1,4-Dichlorobenzene	07.03.91	416	0	0.5	ug/L
2-Chloroethylvinylether	07.03.91	416	0	0.5	ug/L
Bromodichloromethane	07.03.91	416	0	0.5	ug/L
Bromomethane	07.03.91	416	0	0.5	ug/L
Bromoform	07.03.91	416	0	0.5	ug/L
Chlorobenzene	07.03.91	416	0	0.5	ug/L
Carbon Tetrachloride	07.03.91	416	0	0.5	ug/L
Chloroethane	07.03.91	416	0	0.5	ug/L
Chloroform	07.03.91	416	0	0.5	ug/L
Chloromethane	07.03.91	416	0	0.5	ug/L
Dibromochloromethane	07.03.91	416	0	0.5	ug/L
Dichlorodifluoromethane	07.03.91	416	0	0.5	ug/L
Freon 113	07.03.91	416	0	0.5	ug/L
Methylene chloride	07.03.91	416	0	0.5	ug/L
Trichloroethene	07.03.91	416	0	0.5	ug/L
Trichlorofluoromethane	07.03.91	416	0	0.5	ug/L
Tetrachloroethene	07.03.91	416	0	0.5	ug/L
Vinyl chloride	07.03.91	416	0	0.5	ug/L
cis-1,2-Dichloroethene	07.03.91	416	0	0.5	ug/L
cis-1,3-Dichloropropene	07.03.91	416	0	0.5	ug/L
trans-1,2-Dichloroethene	07.03.91	416	0	0.5	ug/L
trans-1,3-Dichloropropene	07.03.91	416	0	0.5	ug/L
Vol.Aromatics (EPA-602)					
1,2-Dichlorobenzene	07.03.91	416	0	0.5	ug/L
1,3-Dichlorobenzene	07.03.91	416	0	0.5	ug/L
1,4-Dichlorobenzene	07.03.91	416	0	0.5	ug/L
Benzene	07.03.91	416	0	0.5	ug/L
Chlorobenzene	07.03.91	416	0	0.5	ug/L

BC ANALYTICAL

BATCH QC REPORT
ORDER: E9107036

DATE REPORTED : 07/12/91

METHOD BLANKS AND REPORTING DETECTION LIMIT (RDL)

PARAMETER	DATE ANALYZED	BATCH NUMBER	BLANK RESULT	RDL	UNIT
Ethylbenzene	07.03.91	416	0	0.5	ug/L
Toluene	07.03.91	416	0	0.5	ug/L
Total Xylene Isomers	07.03.91	416	0	0.5	ug/L
Halocarbons (EPA 601)					
1,1,1-Trichloroethane	07.03.91	418	0	0.5	ug/L
1,1,2,2-Tetrachloroethane	07.03.91	418	0	0.5	ug/L
1,1,2-Trichloroethane	07.03.91	418	0	0.5	ug/L
1,1-Dichloroethane	07.03.91	418	0	0.5	ug/L
1,1-Dichloroethene	07.03.91	418	0	0.5	ug/L
1,2-Dichloroethane	07.03.91	418	0	0.5	ug/L
1,2-Dichlorobenzene	07.03.91	418	0	0.5	ug/L
1,2-Dichloroethene (Total)	07.03.91	418	0	0.5	ug/L
1,2-Dichloropropane	07.03.91	418	0	0.5	ug/L
1,3-Dichlorobenzene	07.03.91	418	0	0.5	ug/L
1,4-Dichlorobenzene	07.03.91	418	0	0.5	ug/L
2-Chloroethylvinylether	07.03.91	418	0	0.5	ug/L
Bromodichloromethane	07.03.91	418	0	0.5	ug/L
Bromomethane	07.03.91	418	0	0.5	ug/L
Bromoform	07.03.91	418	0	0.5	ug/L
Chlorobenzene	07.03.91	418	0	0.5	ug/L
Carbon Tetrachloride	07.03.91	418	0	0.5	ug/L
Chloroethane	07.03.91	418	0	0.5	ug/L
Chloroform	07.03.91	418	0	0.5	ug/L
Chloromethane	07.03.91	418	0	0.5	ug/L
Dibromochloromethane	07.03.91	418	0	0.5	ug/L
Dichlorodifluoromethane	07.03.91	418	0	0.5	ug/L
Freon 113	07.03.91	418	0	0.5	ug/L
Methylene chloride	07.03.91	418	0	0.5	ug/L
Trichloroethene	07.03.91	418	0	0.5	ug/L
Trichlorofluoromethane	07.03.91	418	0	0.5	ug/L
Tetrachloroethene	07.03.91	418	0	0.5	ug/L
Vinyl chloride	07.03.91	418	0	0.5	ug/L
cis-1,2-Dichloroethene	07.03.91	418	0	0.5	ug/L
cis-1,3-Dichloropropene	07.03.91	418	0	0.5	ug/L
trans-1,2-Dichloroethene	07.03.91	418	0	0.5	ug/L
trans-1,3-Dichloropropene	07.03.91	418	0	0.5	ug/L
Vol.Aromatics (EPA-602)					
1,2-Dichlorobenzene	07.03.91	418	0	0.5	ug/L
1,3-Dichlorobenzene	07.03.91	418	0	0.5	ug/L

BC ANALYTICAL

BATCH QC REPORT
ORDER: E9107036

DATE REPORTED : 07/12/91

METHOD BLANKS AND REPORTING DETECTION LIMIT (RDL)

PARAMETER	DATE ANALYZED	BATCH NUMBER	BLANK RESULT	RDL	UNIT
1,4-Dichlorobenzene	07.03.91	418	0	0.5	ug/L
Benzene	07.03.91	418	0	0.5	ug/L
Chlorobenzene	07.03.91	418	0	0.5	ug/L
Ethylbenzene	07.03.91	418	0	0.5	ug/L
Toluene	07.03.91	418	0	0.5	ug/L
Total Xylene Isomers	07.03.91	418	0	0.5	ug/L
EPA Method 601					
1,1,1-Trichloroethane	07.05.91	419	0	0.5	ug/L
1,1,2,2-Tetrachloroethane	07.05.91	419	0	0.5	ug/L
1,1,2-Trichloroethane	07.05.91	419	0	0.5	ug/L
1,1-Dichloroethane	07.05.91	419	0	0.5	ug/L
1,1-Dichloroethene	07.05.91	419	0	0.5	ug/L
1,2-Dichloroethane	07.05.91	419	0	0.5	ug/L
1,2-Dichlorobenzene	07.05.91	419	0	0.5	ug/L
1,2-Dichloroethene (Total)	07.05.91	419	0	0.5	ug/L
1,2-Dichloropropane	07.05.91	419	0	0.5	ug/L
1,3-Dichlorobenzene	07.05.91	419	0	0.5	ug/L
1,4-Dichlorobenzene	07.05.91	419	0	0.5	ug/L
2-Chloroethylvinylether	07.05.91	419	0	0.5	ug/L
Bromodichloromethane	07.05.91	419	0	0.5	ug/L
Bromomethane	07.05.91	419	0	0.5	ug/L
Bromoform	07.05.91	419	0	0.5	ug/L
Chlorobenzene	07.05.91	419	0	0.5	ug/L
Carbon Tetrachloride	07.05.91	419	0	0.5	ug/L
Chloroethane	07.05.91	419	0	0.5	ug/L
Chloroform	07.05.91	419	0	0.5	ug/L
Chloromethane	07.05.91	419	0	0.5	ug/L
Dibromochloromethane	07.05.91	419	0	0.5	ug/L
Dichlorodifluoromethane	07.05.91	419	0	0.5	ug/L
Freon 113	07.05.91	419	0	0.5	ug/L
Methylene chloride	07.05.91	419	0	0.5	ug/L
Trichloroethene	07.05.91	419	0	0.5	ug/L
Trichlorofluoromethane	07.05.91	419	0	0.5	ug/L
Tetrachloroethene	07.05.91	419	0	0.5	ug/L
Vinyl chloride	07.05.91	419	0	0.5	ug/L
cis-1,2-Dichloroethene	07.05.91	419	0	0.5	ug/L
cis-1,3-Dichloropropene	07.05.91	419	0	0.5	ug/L
trans-1,2-Dichloroethene	07.05.91	419	0	0.5	ug/L

BC ANALYTICAL

BATCH QC REPORT
ORDER: E9107036

DATE REPORTED : 07/12/91

METHOD BLANKS AND REPORTING DETECTION LIMIT (RDL)

PARAMETER	DATE ANALYZED	BATCH NUMBER	BLANK RESULT	RDL	UNIT
trans-1,3-Dichloropropene	07.05.91	419	0	0.5	ug/L
EPA Method 602					
1,2-Dichlorobenzene	07.05.91	419	0	0.5	ug/L
1,3-Dichlorobenzene	07.05.91	419	0	0.5	ug/L
1,4-Dichlorobenzene	07.05.91	419	0	0.5	ug/L
Benzene	07.05.91	419	0	0.5	ug/L
Chlorobenzene	07.05.91	419	0	0.5	ug/L
Ethylbenzene	07.05.91	419	0	0.5	ug/L
Toluene	07.05.91	419	0	0.5	ug/L
Total Xylene Isomers	07.05.91	419	0	0.5	ug/L

Enseco
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☐ 2810 Bunsen Ave., Unit A Ventura, CA 93003, (805) 650-0546
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☐ 9537 Telstar Ave., Unit 118, El Monte, CA 91731, (818) 442-8400
☒ Mobile Labs, (800) ENSECO-8

CHAIN OF CUSTODY RECORD

Date 2/19/91 Page 1 of 1
Lab Number MC15

CLIENT Dames & Moore
ADDRESS 9300 Tech Center Dr, Suite 100
Sacramento, CA 95826
PROJECT NAME
UPRR Sacramento
CONTRACT / PURCHASE ORDER / QUOTE #

PROJECT MANAGER
Mark Eisen
PHONE NUMBER
364-8698
SITE CONTACT

ANALYSES

Sample No. / Identification	Date	Time	Lab Sample Number	SAMPLE TYPE LIQ.	AIR	SOLID	No. of Containers	601 Targets	Sample Condition/ REMARKS
HP-76-35.5	2/19/91	10:15	E02154,-1	X			4	X	
HP-76-62.5	2/19/91	10:55	-2	X			4	X	
HP-77-40.5	2/19/91	14:30	-3	X			4	X	
HP-77-65.5	2/19/91	15:25	-4	X			4	X	
HP-78-41.5	2/19/91	17:30	-5	X			4	X	
HP-78-60	2/19/91	1730	-6	X			4	X	

SAMPLERS: (Signature) Mark Eisen

Relinquished by: (Signature) Mark Eisen — Received by: (Signature) — Date — Time

Relinquished by: (Signature) — Received by: (Signature) — Date — Time

The delivery of samples and the signature on this chain of custody form constitutes authorization to perform the analyses specified above under the Enseco Terms and Conditions, unless a contract or purchase order has been executed and is cited above.

Relinquished by: (Signature) — Date — Time — Received for Laboratory by: John E. Schroll

Date RECEIVED — Time — Date ACCEPTED 2/19/91 — Time 18:15

Method of Shipment:

Special Instructions:

SAMPLE DISPOSITION:
1. Storage time requested:_____days
(Samples will be stored for 30 days without additional charges; thereafter storage charges will be billed at the published rates.)
2. Sample to be returned to client: Y N
(Enseco will dispose of unreturned samples at no extra charge. Disposal will be by incineration wherever possible; otherwise, as appropriate, according to legal requirements.)

DISTRIBUTION: White with report, Yellow to Enseco, Pink to Courier, Gold to Sample Control

Enseco - Mobile Laboratories
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(714) 898-6370 ● (800) ENSECO-8
FAX: (714) 893-6709

7-MAR-91

DAMES & MOORE
9300 TECH CENTER DR., #100
SACRAMENTO, CA 95826

BATCH: E172
ANALYSES: 601 TARGETED

ATTN: MR. MARK EISEN

PROJECT: UPRR SACRAMENTO

Enclosed with this letter is the report on the analyses performed on samples M-E021991-001/006.

The samples were received by Enseco intact and with the chain-of-custody record attached.

Please note that ND means not detected at the detection limit stated.

Dat Kommers
REVIEWED AND APPROVED

3-7-91
DATE

The Report Cover Letter is an integral part of this report.
This report pertains only to the samples investigated and does not necessarily apply to other apparently identical or similar materials. This report is submitted for the exclusive use of the client to whom it is addressed. Any reproduction of this report or use of this Laboratory's name for advertising or publicity purposes without authorization is prohibited.

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Laboratory Report

DAMES & MOORE
9300 TECH CENTER DR., #100
SACRAMENTO, CA 95826
ATTN: MR. MARK EISEN

Analysis No.: M-E021991-001
Date Sampled: 19-FEB-1991
Date Sample Rec'd: 19-FEB-1991
Sample Type: LIQUID
Date Prepared: 19-FEB-1991
Prep Method: EPA 601 By: JS
Date Analyzed: 19-FEB-1991 By: JS

Project: UPRR SACRAMENTO
Sample ID: HP-76-35.5

Halogenated Volatile Organics, EPA 601

Units: ug/l

Parameter	Sample Result	Sample RL	Blank Result	Blank RL
1,1-Dichloroethene	18	1	ND	1
1,1-Dichloroethane	42	1	ND	1
Chloroform	ND	1	ND	1
1,2-Dichloroethane	ND	1	ND	1
1,1,1-Trichloroethane	ND	1	ND	1
Carbon Tetrachloride	ND	1	ND	1
Tetrachloroethene	ND	1	ND	1

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Laboratory Report

DAMES & MOORE
9300 TECH CENTER DR., #100
SACRAMENTO, CA 95826
ATTN: MR. MARK EISEN

Analysis No.: M-E021991-002
Date Sampled: 19-FEB-1991
Date Sample Rec'd: 19-FEB-1991
Sample Type: LIQUID
Date Prepared: 19-FEB-1991
Prep Method: EPA 601 By: JS
Date Analyzed: 19-FEB-1991 By: JS

Project: UPRR SACRAMENTO
Sample ID: HP-76-62.5

Halogenated Volatile Organics, EPA 601

Units: ug/l

Parameter	Sample Result	Sample RL	Blank Result	Blank RL
1,1-Dichloroethene	ND	1	ND	1
1,1-Dichloroethane	ND	1	ND	1
Chloroform	ND	1	ND	1
1,2-Dichloroethane	ND	1	ND	1
1,1,1-Trichloroethane	ND	1	ND	1
Carbon Tetrachloride	ND	1	ND	1
Tetrachloroethene	ND	1	ND	1

Enseco
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Laboratory Report

DAMES & MOORE
9300 TECH CENTER DR., #100
SACRAMENTO, CA 95826
ATTN: MR. MARK EISEN

Analysis No.: M-E021991-003
Date Sampled: 19-FEB-1991
Date Sample Rec'd: 19-FEB-1991
Sample Type: LIQUID
Date Prepared: 19-FEB-1991
Prep Method: EPA 601 By: JS
Date Analyzed: 19-FEB-1991 By: JS

Project: UPRR SACRAMENTO
Sample ID: HP-77-40.5

Halogenated Volatile Organics, EPA 601

Units: ug/l

Parameter	Sample Result	Sample RL	Blank Result	Blank RL
1,1-Dichloroethene	ND	1	ND	1
1,1-Dichloroethane	ND	1	ND	1
Chloroform	ND	1	ND	1
1,2-Dichloroethane	ND	1	ND	1
1,1,1-Trichloroethane	ND	1	ND	1
Carbon Tetrachloride	ND	1	ND	1
Tetrachloroethene	ND	1	ND	1

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Laboratory Report

DAMES & MOORE
9300 TECH CENTER DR., #100
SACRAMENTO, CA 95826
ATTN: MR. MARK EISEN

Analysis No.: M-E021991-004
Date Sampled: 19-FEB-1991
Date Sample Rec'd: 19-FEB-1991
Sample Type: LIQUID
Date Prepared: 19-FEB-1991
Prep Method: EPA 601 By: JS
Date Analyzed: 19-FEB-1991 By: JS

Project: UPRR SACRAMENTO
Sample ID: HP-77-65.5

Halogenated Volatile Organics, EPA 601

Units: ug/l

Parameter	Sample Result	Sample RL	Blank Result	Blank RL
1,1-Dichloroethene	ND	1	ND	1
1,1-Dichloroethane	ND	1	ND	1
Chloroform	ND	1	ND	1
1,2-Dichloroethane	ND	1	ND	1
1,1,1-Trichloroethane	ND	1	ND	1
Carbon Tetrachloride	ND	1	ND	1
Tetrachloroethene	ND	1	ND	1

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Laboratory Report

DAMES & MOORE
9300 TECH CENTER DR., #100
SACRAMENTO, CA 95826
ATTN: MR. MARK EISEN

Analysis No.: M-E021991-005
Date Sampled: 19-FEB-1991
Date Sample Rec'd: 19-FEB-1991
Sample Type: LIQUID
Date Prepared: 19-FEB-1991
Prep Method: EPA 601 By: JS
Date Analyzed: 19-FEB-1991 By: JS

Project: UPRR SACRAMENTO
Sample ID: HP-78-41.5

Halogenated Volatile Organics, EPA 601

Units: ug/l

Parameter	Sample Result	Sample RL	Blank Result	Blank RL
1,1-Dichloroethene	260	1	ND	1
1,1-Dichloroethane	160	1	ND	1
Chloroform	ND	1	ND	1
1,2-Dichloroethane	ND	1	ND	1
1,1,1-Trichloroethane	10	1	ND	1
Carbon Tetrachloride	ND	1	ND	1
Trichloroethene	4	1	ND	1
Tetrachloroethene	ND	1	ND	1

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Laboratory Report

DAMES & MOORE
9300 TECH CENTER DR., #100
SACRAMENTO, CA 95826
ATTN: MR. MARK EISEN

Analysis No.: M-E021991-006
Date Sampled: 19-FEB-1991
Date Sample Rec'd: 19-FEB-1991
Sample Type: LIQUID
Date Prepared: 19-FEB-1991
Prep Method: EPA 601 By: JS
Date Analyzed: 19-FEB-1991 By: JS

Project: UPRR SACRAMENTO
Sample ID: HP-78-60

Halogenated Volatile Organics, EPA 601

Units: ug/l

Parameter	Sample Result	Sample RL	Blank Result	Blank RL
1,1-Dichloroethene	ND	1	ND	1
1,1-Dichloroethane	ND	1	ND	1
Chloroform	ND	1	ND	1
1,2-Dichloroethane	ND	1	ND	1
1,1,1-Trichloroethane	ND	1	ND	1
Carbon Tetrachloride	ND	1	ND	1
Tetrachloroethene	ND	1	ND	1

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Laboratory Report

DAMES & MOORE
9300 TECH CENTER DR., #100
SACRAMENTO, CA 95826
ATTN: MR. MARK EISEN
Project: UPRR SACRAMENTO

Analysis No.: M-E021991-001/006
Date Sampled: 19-FEB-1991
Date Sample Rec'd: 19-FEB-1991
Sample Type: LIQUID

Laboratory Control Sample Report

QC Batch	Parameter (Method)	Amt. Spiked	Units	Avg. Spike Recov.	Acceptable Range	Rel. Pct. Diff.	Acceptable Range
L91058002	1,1-DICHLOROETHANE (EPA 601)	13.3	ug/L	84.	69-153	14.	20
L91058002	CHLOROFORM (EPA 601)	13.3	ug/L	88.	42-158	2.	37
L91058002	CARBON TETRACHLORIDE (EPA 601)	13.3	ug/L	88.	63-161	9.	48
L91058002	TRICHLOROETHENE (EPA 601)	13.3	ug/L	81.	59-155	5.	23
L91058002	TETRACHLOROETHENE (EPA 601)	13.3	ug/L	80.	44-172	0	16

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Laboratory Control Sample Report Cross-Reference

QC Batch	Date	Parameter (Method)	Sample Nos.
L91058002	19-FEB-1991	1,1-DICHLOROETHANE (EPA 601)	M-E021991-001
			M-E021991-002
			M-E021991-003
			M-E021991-004
			M-E021991-005
			M-E021991-006
		CHLOROFORM (EPA 601)	M-E021991-001
			M-E021991-002
			M-E021991-003
			M-E021991-004
			M-E021991-005
			M-E021991-006
		CARBON TETRACHLORIDE (EPA 601)	M-E021991-001
			M-E021991-002
			M-E021991-003
			M-E021991-004
			M-E021991-005
			M-E021991-006
		TRICHLOROETHENE (EPA 601)	M-E021991-001
			M-E021991-002
			M-E021991-003
			M-E021991-004
			M-E021991-005
			M-E021991-006

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☐ 2325 Skyway Dr., Unit K, Santa Maria, CA 93455, (805) 922-2776
☐ 9537 Telstar Ave., Unit 118, El Monte, CA 91731, (818) 442-8400
☐ Mobile Labs, (800) ENSECO-8

CHAIN OF CUSTODY RECORD

Date 2/20/91 Page 1 of 1
Lab Number Me15

CLIENT Dames & Moore
ADDRESS 9300 Tech Center Dr, Suite 100
Sacramento, CA 95826
PROJECT NAME
Union Pacific Railroad Sacramento
CONTRACT / PURCHASE ORDER / QUOTE #
00173-064-044

PROJECT MANAGER
Tim Parker
PHONE NUMBER
364-8698
SITE CONTACT
Mark Eisen

ANALYSES: 601 Target

Sample No. / Identification	Date	Time	Lab Sample Number	SAMPLE TYPE LIQ.	AIR	SOLID	No. of Containers	601 Target	Sample Condition/ REMARKS
HP-79-40	2/20/91	8:45	EO22091-1	X			4	X	
HP-79-59.5	2/20/91	9:30	-2	X			4	X	
HP-80-37	2/20/91	10:45	-3	X			3 MS	X	
HP-80-56	2/20/91	11:50	-4	X			4	X	
HP-81-38	2/20/91	1:15	-5	X			4	X	
HP-81-56	2/20/91	2:00	-6	X			4	X	
HP-82-56	2/20/91	3:30	-7	X			4	X	
HP-83-37.5	2/20/91	4:20	-8	X			3 TB	X	

SAMPLERS: (Signature)

Relinquished by: (Signature)	Received by: (Signature)	Date	Time
Relinquished by: (Signature)	Received by: (Signature)	Date	Time
Relinquished by: (Signature)	Received for Laboratory by: John E Schell	Date RECEIVED	Time

Date ACCEPTED 2/20/91 Time 17:40

The delivery of samples and the signature on this chain of custody form constitutes authorization to perform the analyses specified above under the Enseco Terms and Conditions, unless a contract or purchase order has been executed and is cited above.

Method of Shipment:

Special Instructions:

SAMPLE DISPOSITION:
1. Storage time requested: _____ days
(Samples will be stored for 30 days without additional charges; thereafter storage charges will be billed at the published rates.)
2. Sample to be returned to client: Y N
(Enseco will dispose of unreturned samples at no extra charge. Disposal will be by incineration wherever possible; otherwise, as appropriate, according to legal requirements.)

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MAR 1 1 1991

6-MAR-91

DAMES & MOORE
9300 TECH CENTER DR., #100
SACRAMENTO, CA 95826

BATCH: E173
ANALYSES: 601 TARGETED

ATTN: MR. MARK EISEN

PROJECT: UPRR SACRAMENTO

Enclosed with this letter is the report on the analyses performed on samples M-E022091-001/008.

The samples were received by Enseco intact and with the chain-of-custody record attached.

Please note that ND means not detected at the detection limit stated.

Pat Kammeyer
REVIEWED AND APPROVED

3-6-91
DATE

The Report Cover Letter is an integral part of this report.

This report pertains only to the samples investigated and does not necessarily apply to other apparently identical or similar materials. This report is submitted for the exclusive use of the client to whom it is addressed. Any reproduction of this report or use of this Laboratory's name for advertising or publicity purposes without authorization is prohibited.

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Laboratory Report

DAMES & MOORE
9300 TECH CENTER DR., #100
SACRAMENTO, CA 95826
ATTN: MR.MARK EISEN

Analysis No.: M-E022091-001
Date Sampled: 20-FEB-1991
Date Sample Rec'd: 20-FEB-1991
Sample Type: LIQUID
Date Prepared: 20-FEB-1991
Prep Method: EPA 601 By: JS
Date Analyzed: 20-FEB-1991 By: JS

Project: UPRR SACRAMENTO
Sample ID: HP-79-40

Halogenated Volatile Organics, EPA 601

Units: ug/l

Parameter	Sample Result	Sample RL	Blank Result	Blank RL
1,1-Dichloroethene	ND	1	ND	1
1,1-Dichloroethane	ND	1	ND	1
Chloroform	ND	1	ND	1
1,2-Dichloroethane	ND	1	ND	1
1,1,1-Trichloroethane	ND	1	ND	1
Carbon Tetrachloride	ND	1	ND	1
Tetrachloroethene	ND	1	ND	1

Enseco
A Corning Company

Laboratory Report

DAMES & MOORE
9300 TECH CENTER DR., #100
SACRAMENTO, CA 95826
ATTN: MR.MARK EISEN

Analysis No.: M-E022091-002
Date Sampled: 20-FEB-1991
Date Sample Rec'd: 20-FEB-1991
Sample Type: LIQUID
Date Prepared: 20-FEB-1991
Prep Method: EPA 601 By: JS
Date Analyzed: 20-FEB-1991 By: JS

Project: UPRR SACRAMENTO
Sample ID: HP-79-59.5

Halogenated Volatile Organics, EPA 601

Units: ug/l

Parameter	Sample Result	Sample RL	Blank Result	Blank RL
1,1-Dichloroethene	ND	1	ND	1
1,1-Dichloroethane	ND	1	ND	1
Chloroform	ND	1	ND	1
1,2-Dichloroethane	ND	1	ND	1
1,1,1-Trichloroethane	ND	1	ND	1
Carbon Tetrachloride	ND	1	ND	1
Tetrachloroethene	ND	1	ND	1

Enseco
A Corning Company

Laboratory Report

DAMES & MOORE
9300 TECH CENTER DR., #100
SACRAMENTO, CA 95826
ATTN: MR.MARK EISEN

Analysis No.: M-E022091-003
Date Sampled: 20-FEB-1991
Date Sample Rec'd: 20-FEB-1991
Sample Type: LIQUID
Date Prepared: 20-FEB-1991
Prep Method: EPA 601 By: JS
Date Analyzed: 20-FEB-1991 By: JS

Project: UPRR SACRAMENTO
Sample ID: HP-80-37

Halogenated Volatile Organics, EPA 601

Units: ug/l

Parameter	Sample Result	Sample RL	Blank Result	Blank RL
1,1-Dichloroethene	ND	1	ND	1
1,1-Dichloroethane	ND	1	ND	1
Chloroform	ND	1	ND	1
1,2-Dichloroethane	ND	1	ND	1
1,1,1-Trichloroethane	ND	1	ND	1
Carbon Tetrachloride	ND	1	ND	1
Tetrachloroethene	ND	1	ND	1

Enseco
A Corning Company

Laboratory Report

DAMES & MOORE
9300 TECH CENTER DR., #100
SACRAMENTO, CA 95826
ATTN: MR.MARK EISEN

Analysis No.: M-E022091-004
Date Sampled: 20-FEB-1991
Date Sample Rec'd: 20-FEB-1991
Sample Type: LIQUID
Date Prepared: 20-FEB-1991
Prep Method: EPA 601 By: JS
Date Analyzed: 20-FEB-1991 By: JS

Project: UPRR SACRAMENTO
Sample ID: HP-80-56

Halogenated Volatile Organics, EPA 601

Units: ug/l

Parameter	Sample Result	Sample RL	Blank Result	Blank RL
1,1-Dichloroethene	ND	1	ND	1
1,1-Dichloroethane	ND	1	ND	1
Chloroform	ND	1	ND	1
1,2-Dichloroethane	ND	1	ND	1
1,1,1-Trichloroethane	ND	1	ND	1
Carbon Tetrachloride	ND	1	ND	1
Tetrachloroethene	ND	1	ND	1

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A Corning Company

Laboratory Report

DAMES & MOORE
9300 TECH CENTER DR., #100
SACRAMENTO, CA 95826
ATTN: MR.MARK EISEN

Analysis No.: M-E022091-005
Date Sampled: 20-FEB-1991
Date Sample Rec'd: 20-FEB-1991
Sample Type: LIQUID
Date Prepared: 20-FEB-1991
Prep Method: EPA 601 By: JS
Date Analyzed: 20-FEB-1991 By: JS

Project: UPRR SACRAMENTO
Sample ID: HP-81-38

Halogenated Volatile Organics, EPA 601

Units: ug/l

Parameter	Sample Result	Sample RL	Blank Result	Blank RL
1,1-Dichloroethene	74	1	ND	1
1,1-Dichloroethane	2	1	ND	1
Chloroform	ND	1	ND	1
1,2-Dichloroethane	ND	1	ND	1
1,1,1-Trichloroethane	ND	1	ND	1
Carbon Tetrachloride	ND	1	ND	1
Tetrachloroethene	ND	1	ND	1

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Laboratory Report

DAMES & MOORE
9300 TECH CENTER DR., #100
SACRAMENTO, CA 95826
ATTN: MR.MARK EISEN

Analysis No.: M-E022091-006
Date Sampled: 20-FEB-1991
Date Sample Rec'd: 20-FEB-1991
Sample Type: LIQUID
Date Prepared: 20-FEB-1991
Prep Method: EPA 601 By: JS
Date Analyzed: 20-FEB-1991 By: JS

Project: UPRR SACRAMENTO
Sample ID: HP-81-56

Halogenated Volatile Organics, EPA 601

Units: ug/l

Parameter	Sample Result	Sample RL	Blank Result	Blank RL
1,1-Dichloroethene	ND	1	ND	1
1,1-Dichloroethane	ND	1	ND	1
Chloroform	ND	1	ND	1
1,2-Dichloroethane	ND	1	ND	1
1,1,1-Trichloroethane	ND	1	ND	1
Carbon Tetrachloride	ND	1	ND	1
Tetrachloroethene	ND	1	ND	1

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Laboratory Report

DAMES & MOORE
9300 TECH CENTER DR., #100
SACRAMENTO, CA 95826
ATTN: MR.MARK EISEN

Analysis No.: M-E022091-007
Date Sampled: 20-FEB-1991
Date Sample Rec'd: 20-FEB-1991
Sample Type: LIQUID
Date Prepared: 20-FEB-1991
Prep Method: EPA 601 By: JS
Date Analyzed: 20-FEB-1991 By: JS

Project: UPRR SACRAMENTO
Sample ID: HP-82-56

Halogenated Volatile Organics, EPA 601

Units: ug/l

Parameter	Sample Result	Sample RL	Blank Result	Blank RL
1,1-Dichloroethene	ND	1	ND	1
1,1-Dichloroethane	ND	1	ND	1
Chloroform	ND	1	ND	1
1,2-Dichloroethane	ND	1	ND	1
1,1,1-Trichloroethane	ND	1	ND	1
Carbon Tetrachloride	ND	1	ND	1
Tetrachloroethene	ND	1	ND	1

Enseco
A Corning Company

Laboratory Report

DAMES & MOORE
9300 TECH CENTER DR., #100
SACRAMENTO, CA 95826
ATTN: MR.MARK EISEN

Analysis No.: M-E022091-008
Date Sampled: 20-FEB-1991
Date Sample Rec'd: 20-FEB-1991
Sample Type: LIQUID
Date Prepared: 20-FEB-1991
Prep Method: EPA 601 By: JS
Date Analyzed: 20-FEB-1991 By: JS

Project: UPRR SACRAMENTO
Sample ID: HP-83-37.5

Halogenated Volatile Organics, EPA 601

Units: ug/l

Parameter	Sample Result	Sample RL	Blank Result	Blank RL
1,1-Dichloroethene	160	1	ND	1
1,1-Dichloroethane	230	1	ND	1
Chloroform	ND	1	ND	1
1,2-Dichloroethane	ND	1	ND	1
1,1,1-Trichloroethane	ND	1	ND	1
Carbon Tetrachloride	1	1	ND	1
Tetrachloroethene	ND	1	ND	1

Enseco
A Corning Company

Laboratory Report

DAMES & MOORE
9300 TECH CENTER DR., #100
SACRAMENTO, CA 95826
ATTN: MR.MARK EISEN
Project: UPRR SACRAMENTO

Analysis No.: M-E022091-001/008
Date Sampled: 20-FEB-1991
Date Sample Rec'd: 20-FEB-1991
Sample Type: LIQUID

Laboratory Control Sample Report

QC Batch	Parameter (Method)	Amt. Spiked	Units	Avg. Spike Recov.	Acceptable Range	Rel. Pct. Diff.	Acceptable Range
L91058003	1,1-DICHLOROETHANE (EPA 601)	13.3	ug/L	119.	69-153	11.	20
L91058003	CHLOROFORM (EPA 601)	13.3	ug/L	105.	42-158	12.	37
L91058003	CARBON TETRACHLORIDE (EPA 601)	13.3	ug/L	97.	63-161	1.	48
L91058003	TRICHLOROETHENE (EPA 601)	13.3	ug/L	97.	59-155	5.	23
L91058003	TETRACHLOROETHENE (EPA 601)	13.3	ug/L	105.	64-153	14.	22

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Laboratory Control Sample Report Cross-Reference

QC Batch	Date	Parameter (Method)	Sample Nos.
L91058003	20-FEB-1991	1,1-DICHLOROETHANE (EPA 601)	M-E022091-001
			M-E022091-002
			M-E022091-003
			M-E022091-004
			M-E022091-005
			M-E022091-006
			M-E022091-007
			M-E022091-008
		CHLOROFORM (EPA 601)	M-E022091-001
			M-E022091-002
			M-E022091-003
			M-E022091-004
			M-E022091-005
			M-E022091-006
			M-E022091-007
			M-E022091-008
		CARBON TETRACHLORIDE (EPA 601)	M-E022091-001
			M-E022091-002
			M-E022091-003
			M-E022091-004
			M-E022091-005
			M-E022091-006
			M-E022091-007
			M-E022091-008
		TRICHLOROETHENE (EPA 601)	M-E022091-001
			M-E022091-002
			M-E022091-003
			M-E022091-004
			M-E022091-005
			M-E022091-006
			M-E022091-007
			M-E022091-008
		TETRACHLOROETHENE (EPA 601)	M-E022091-001
			M-E022091-002
			M-E022091-003
			M-E022091-004
			M-E022091-005
			M-E022091-006
			M-E022091-007
			M-E022091-008

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☐ 7440 Lincoln Way, Garden Grove, CA 92641, (714) 898-6370
☐ 2810 Bunsen Ave., Unit A Ventura, CA 93003, (805) 650-0546
☐ 2325 Skyway Dr., Unit K, Santa Maria, CA 93455, (805) 922-2776
☐ 9537 Telstar Ave., Unit 118, El Monte, CA 91731, (818) 442-8400
☒ Mobile Labs, (800) ENSECO-8

CHAIN OF CUSTODY RECORD

Date 2/21/91 Page 1 of 1
Lab Number Mel5

CLIENT Dames & Moore
ADDRESS 9300 Tech Center Dr, Suite 100
Sac CA 95826
PROJECT NAME
UPRR Sac
CONTRACT / PURCHASE ORDER / QUOTE #

PROJECT MANAGER
Tim Parker
PHONE NUMBER
364-8698
SITE CONTACT
Mark Ebsen

ANALYSES: 601 Targets

Sample No. / Identification	Date	Time	Lab Sample Number	SAMPLE TYPE LIQ.	AIR	SOLID	No. of Containers	601 Targets	Sample Condition/ REMARKS
HP-83-48.5	2/21/91	8:45	E022191-1	X			4	X	
HP-84-36	2/21/91	10:30	-2	X			4	X	
HP-85-35.5	2/21/91	1:15	-3	X			4	X	

SAMPLERS: (Signature)

Relinquished by: (Signature)	Received by: (Signature)	Date	Time
Relinquished by: (Signature)	Received by: (Signature)	Date	Time
Relinquished by: (Signature)	Received for Laboratory by: John S Kehrl	Date 2/21/91 RECEIVED	Time 17:30
		Date ACCEPTED	Time

The delivery of samples and the signature on this chain of custody form constitutes authorization to perform the analyses specified above under the Enseco Terms and Conditions, unless a contract or purchase order has been executed and is cited above.

Method of Shipment:

Special Instructions:

SAMPLE DISPOSITION:
1. Storage time requested:_____days
(Samples will be stored for 30 days without additional charges; thereafter storage charges will be billed at the published rates.)
2. Sample to be returned to client: Y N
(Enseco will dispose of unreturned samples at no extra charge. Disposal will be by incineration wherever possible; otherwise, as appropriate, according to legal requirements.)

DISTRIBUTION: White with report, Yellow to Enseco, Pink to Courier, Gold to Sample Control

Enseco - Mobile Laboratories
7440 Lincoln Way • Garden Grove, CA 92641
(714) 898-6370 • (800) ENSECO-8
FAX: (714) 893-6709

7-MAR-91

DAMES & MOORE
9300 TECH CENTER DR., #100
SACRAMENTO, CA 95826

BATCH: E174
ANALYSES: 601 TARGETED

ATTN: MR. MARK EISEN

PROJECT: UPRR SACRAMENTO

Enclosed with this letter is the report on the analyses performed on samples M-E022191-001/003.

The samples were received by Enseco intact and with the chain-of-custody record attached.

Please note that ND means not detected at the detection limit stated.

Dat Hammerer
REVIEWED AND APPROVED

3-7-91
DATE

The Report Cover Letter is an integral part of this report.

This report pertains only to the samples investigated and does not necessarily apply to other apparently identical or similar materials. This report is submitted for the exclusive use of the client to whom it is addressed. Any reproduction of this report or use of this Laboratory's name for advertising or publicity purposes without authorization is prohibited.

Enseco
A Corning Company

Laboratory Report

DAMES & MOORE
9300 TECH CENTER DR., #100
SACRAMENTO, CA 95826
ATTN: MR. MARK EISEN

Analysis No.: M-E022191-001
Date Sampled: 21-FEB-1991
Date Sample Rec'd: 21-FEB-1991
Sample Type: LIQUID
Date Prepared: 21-FEB-1991
Prep Method: EPA 601 By: JS
Date Analyzed: 21-FEB-1991 By: JS

Project: UPRR SACRAMENTO
Sample ID: HP-83-48.5

Halogenated Volatile Organics, EPA 601

Units: ug/l

Parameter	Sample Result	Sample RL	Blank Result	Blank RL
1,1-Dichloroethene	ND	1	ND	1
1,1-Dichloroethane	ND	1	ND	1
Chloroform	ND	1	ND	1
1,2-Dichloroethane	ND	1	ND	1
1,1,1-Trichloroethane	ND	1	ND	1
Carbon Tetrachloride	ND	1	ND	1
Tetrachloroethene	ND	1	ND	1

Enseco
A Corning Company

Laboratory Report

DAMES & MOORE
9300 TECH CENTER DR., #100
SACRAMENTO, CA 95826
ATTN: MR. MARK EISEN

Analysis No.: M-E022191-002
Date Sampled: 21-FEB-1991
Date Sample Rec'd: 21-FEB-1991
Sample Type: LIQUID
Date Prepared: 21-FEB-1991
Prep Method: EPA 601 By: JS
Date Analyzed: 21-FEB-1991 By: JS

Project: UPRR SACRAMENTO
Sample ID: HP-84-38

Halogenated Volatile Organics, EPA 601

Units: ug/l

Parameter	Sample Result	Sample RL	Blank Result	Blank RL
1,1-Dichloroethene	5	1	ND	1
1,1-Dichloroethane	ND	1	ND	1
Chloroform	ND	1	ND	1
1,2-Dichloroethane	ND	1	ND	1
1,1,1-Trichloroethane	ND	1	ND	1
Carbon Tetrachloride	ND	1	ND	1
Tetrachloroethene	ND	1	ND	1

Enseco
A Corning Company

Laboratory Report

DAMES & MOORE
9300 TECH CENTER DR., #100
SACRAMENTO, CA 95826
ATTN: MR. MARK EISEN

Analysis No.: M-E022191-003
Date Sampled: 21-FEB-1991
Date Sample Rec'd: 21-FEB-1991
Sample Type: LIQUID
Date Prepared: 21-FEB-1991
Prep Method: EPA 601 By: JS
Date Analyzed: 21-FEB-1991 By: JS

Project: UPRR SACRAMENTO
Sample ID: HP-85-39.5

Halogenated Volatile Organics, EPA 601

Units: ug/l

Parameter	Sample Result	Sample RL	Blank Result	Blank RL
1,1-Dichloroethene	53	1	ND	1
1,1-Dichloroethane	ND	1	ND	1
Chloroform	9	1	ND	1
1,2-Dichloroethane	ND	1	ND	1
1,1,1-Trichloroethane	ND	1	ND	1
Carbon Tetrachloride	4	1	ND	1
Tetrachloroethene	ND	1	ND	1

Enseco
A Corning Company

Laboratory Report

DAMES & MOORE
9300 TECH CENTER DR., #100
SACRAMENTO, CA 95826
ATTN: MR. MARK EISEN
Project: UPRR SACRAMENTO

Analysis No.: M-E022191-001/003
Date Sampled: 21-FEB-1991
Date Sample Rec'd: 21-FEB-1991
Sample Type: LIQUID

Laboratory Control Sample Report

QC Batch	Parameter (Method)	Amt. Spiked	Units	Avg. Spike Recov.	Acceptable Range	Rel. Pct. Diff.	Acceptable Range
L91058004	CHLOROFORM (EPA 601)	13.3	ug/L	110.	42-158	20.	37
L91058004	1,2-DICHLOROETHANE (EPA 601)	13.3	ug/L	93.	60-149	23.	42
L91058004	CARBON TETRACHLORIDE (EPA 601)	13.3	ug/L	109.	63-161	5.	48
L91058004	TRICHLOROETHENE (EPA 601)	13.3	ug/L	119.	59-155	18.	23
L91058004	TETRACHLOROETHENE (EPA 601)	13.3	ug/L	102.	64-153	21.	22

Enseco
A Corning Company

Laboratory Control Sample Report Cross-Reference

QC Batch	Date	Parameter (Method)	Sample Nos.
L91058004	21-FEB-1991	CHLOROFORM (EPA 601)	M-E022191-001
			M-E022191-002
			M-E022191-003
		1,2-DICHLOROETHANE (EPA 601)	M-E022191-001
			M-E022191-002
			M-E022191-003
		CARBON TETRACHLORIDE (EPA 601)	M-E022191-001
			M-E022191-002
			M-E022191-003
		TRICHLOROETHENE (EPA 601)	M-E022191-001
			M-E022191-002
			M-E022191-003
		TETRACHLOROETHENE (EPA 601)	M-E022191-001
			M-E022191-002
			M-E022191-003

ACCULAB
ENVIRONMENTAL SERVICES
3336 Lakeville Highway, Petaluma, CA 94952
P.O. Box 808024, Petaluma, CA 94975-8024
Telephone: (707) 763-8245 FAX: (707) 763-8065

53231

RECEIVED

MAR 08 1991

DAMES & MOORE

SAMPLE CHAIN OF CUSTODY / WORK ORDER

Client's Name Dames & Moore (916) 364-8698
Address 9300 Tech Center Dr. Suite 100
City, State, Zip Sacramento, CA 95826
Client's or Representative's Signature
(signature authorizes the work and terms listed below)

All samples remain the property of the client who is responsible for disposal. A disposal fee may be imposed if client fails to pick up samples.

PROJ. NO.	PROJECT NAME	NO. OF CON-TAINERS	601	REMARKS / LAB USE ONLY LAB NO.
00173-064 044	Union Pacific Railroad, Sacramento			

SAMPLERS (Signature)

STA. NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CON-TAINERS	601	REMARKS / LAB USE ONLY LAB NO.
	2/20/91	4:20		X	HP-83-37.5	2	X	
	2/20/91	1:15		X	HP-81-38	2	X	

Broken sample was received that way. The customer was notified that the sample was frozen in the cooler upon delivery. RP 2/25/91

Please initial: RP
Samples Stored in ice.
Appropriate containers.
Samples preserved.
VOA's without headspace.
Comments:

Relinquished by: (Signature)	DATE	TIME	Received by: (Signature)
	2/21/91	4:15	Erma Walter
Erma Walter			
			From Htz

General Remarks:
Please return ice and ice chest
Send Results Attn: Mark Eisen

CLIENT COPY

SUPERIOR ANALYTICAL LABORATORY, INC.
1555 BURKE, UNIT I · SAN FRANCISCO, CA 94124 · PHONE (415) 647-2081 DOHS #1332

RECEIVED
MAR 08 1991
DAMES & MOORE

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 53231-2
CLIENT: Dames & Moore
JOB NO.: 00173064044

DATE SAMPLED: 02/20/91
DATE RECEIVED: 02/25/91
DATE ANALYZED: 03/01/91

EPA SW-846 METHOD 8010
HALOGENATED VOLATILE ORGANICS
SAMPLE:HP-81-38

Compound	MDL (ug/L)	RESULTS (ug/l)
Chloromethane/Vinyl Chloride	1.0	ND
Bromomethane/Chloroethane	1.0	ND
Trichlorofluoromethane	0.5	ND
1,1-Dichloroethene	0.5	90
Methylene Chloride	0.5	ND
trans-1,2-Dichloroethene	0.5	ND
1,1-Dichloroethane	0.5	3
Chloroform	0.5	ND
1,1,1-Trichloroethane	0.5	2
Carbon tetrachloride	0.5	ND
1,2-Dichloroethane	0.5	ND
Trichloroethylene	0.5	ND
1,2-Dichloropropane	0.5	ND
Bromodichloromethane	0.5	ND
Cis-1,3-Dichloropropene	0.5	ND
trans-1,3-Dichloropropene	0.5	ND
1,1,2-Trichloroethane	0.5	ND
Tetrachloroethene	0.5	ND
Dibromochloromethane	0.5	ND
Chlorobenzene	0.5	ND
Bromoform	0.5	ND
1,1,2,2-Tetrachloroethane	0.5	ND
1,3-Dichlorobenzene	0.5	ND
1,2-Dichlorobenzene	0.5	ND
1,4-Dichlorobenzene	0.5	ND
Cis-1,2-Dichloroethene	0.5	ND

MDL = Method Detection Limit
ug/l = parts per billion (ppb)
QA/QC Summary: Daily Standard RPD = <15
MS/MSD average recovery = 89 % :MS/MSD RPD =< 5 %

Richard Srna, Ph.D.
Laboratory Director

OUTSTANDING QUALITY AND SERVICE

Enseco Page ___ of ___

CHAIN-OF-CUSTODY RECORD

SAMPLER: *(Signature)* _____ Date Shipped _____ Carrier _____

Phone _____ Airbill No. _____ Cooler No. _____

SHIP TO:
Enseco-Cal Lab
2544 Industrial Blvd.
West Sacramento, CA 95691
(916) 372-1393
ATTENTION: _____

SEND RESULTS TO:
Client Name Dames & Moore Mark Eisen
Company _____
Address 9300 Tech Center Dr, Suite DC
Sacramento, CA 95826
Phone 916-364-6696

PROJECT NAME Union Pacific Railroad **PROJECT NO.** 00173-064-041 **P.O. NO.** _____

Relinquished by: *(Signature)*	Received by: *(Signature)*	Date	Time
Mark Eisen			
Relinquished by: *(Signature)*	Received by: *(Signature)*	Date	Time
Relinquished by: *(Signature)*	Received at lab by: *(Signature)*	Date	Time
	Peter Bonfiglio	5/16/91	0930
Relinquished from lab by: *(Signature)*	Received by: *(Signature)*	Date	Time

ANALYSIS REQUEST

Sample ID Number	Sample Description	Date/Time Sampled	Analysis Requested	Sample Condition Upon Receipt
MW-41 Cuttings	Saturated Soil	5/10/91 9:15	8010, 8020	Intact

Special Instructions/Comments:
Fax results Attn: Tim Parker

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT

Expected Analytical T.A.T's: ___ **Immediate Attention** (200% surcharge) ___X___ **RUSH** (50-100% surcharge) ___ **Standard**

Cal Lab ID Number: *(for lab use only)*

Client Retains White Copy Only **(Revised 1/87)**

California Analytical
Laboratory

Enseco
A CORNING Company

May 16, 1991
Lab ID: 058248

Mark Eisen
Dames & Moore
9300 Tech Center Drive
Suite 100
Sacramento, CA 95826

Dear Mr. Eisen:

Enclosed is the report for the one soil sample for your Union Pacific Railroad Project, Number 00173-064-044, which was received at Enseco-Cal Lab on 10 May 1991.

The report consists of the following sections:

I Sample Description
II Analysis Request
III Quality Control Report
IV Analysis Results

If you have any questions, please feel free to call.

Sincerely,

Janet Harlan

Janet Harlan
Program Administrator

sh

Enseco Incorporated
2544 Industrial Boulevard
West Sacramento, California 95691
916/372-1393 Fax: 916/372-7768

I Sample Description

See the attached Sample Description Information.

The sample was received under chain-of-custody.

II Analysis Request

The following analytical tests were requested.

Lab ID	Analysis Description
058248-0001	Halogenated Volatile Organics
	Aromatic Volatile Organics

III Quality Control

A. Project Specific QC. No project specific QC (i.e., spikes and/or duplicates) was requested.

B. Method Blank Results. A method blank is a laboratory-generated sample which assesses the degree to which laboratory operations and procedures cause false-positive analytical results for your sample.

No target parameters were detected in the method blanks associated with your sample at the reporting limit levels noted on the attached Method Blank Report.

C. Laboratory Control Samples - The LCS Program

Duplicate Control Samples. A DCS is a well-characterized matrix (blank water, sand or celite) which is spiked with certain target parameters and analyzed at approximately 10% of the sample load in order to establish method-specific control limits. The DCS results associated with your sample are on the attached Duplicate Control Sample Report.

Single Control Samples. An SCS consists of a control matrix that is spiked with surrogate compounds appropriate to the method being used. In cases where no surrogate is available, (e.g. metals or conventional analyses) a single control sample identical to the DCS serves as the control sample. An SCS is prepared for each sample lot. Accuracy is calculated identically to the DCS. The SCS results associated with your sample are on the attached Single Control Sample Report.

Accuracy is measured by Percent Recovery as in:

$$\% \text{ recovery} = \frac{\text{(measured concentration)}}{\text{(actual concentration)}} \times 100$$

Precision is measured using duplicate tests by Relative Percent Difference (RPD) as in:

$$RPD = \frac{(\%\ \text{recovery test 1} - \%\ \text{recovery test 2})}{(\%\ \text{recovery test 1} + \%\ \text{recovery test 2})/2} \times 100$$

Control limits for accuracy (percent recovery) are based on the average, historical percent recovery +/-3 standard deviation units. Control limits for precision (relative percent difference) range from 0 (identical duplicate DCS results) to the average, historical relative percent difference + 3 standard deviation units. In cases where there is not enough historical data, EPA limits or advisory limits are set, with the approval of the Quality Assurance department.

IV Analysis Results

Test methods may include minor modifications of published EPA Methods such as reporting limits or parameter lists. Reporting limits are adjusted to reflect dilution of the sample, when appropriate. Solid and waste samples are reported on an "as received" basis; i.e., no correction is made for moisture content, unless the method requires or the client requests that such correction be made.

Results are on the attached data sheets.

Enseco
A Corning Company

SAMPLE DESCRIPTION INFORMATION
for
Dames & Moore

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
058248-0001-SA	MW-41 Cuttings	SOIL	10 MAY 91	09:15	10 MAY 91

Enseco
A Corning Company

QC LOT ASSIGNMENT REPORT
Volatile Organics by GC

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
058248-0001-SA	SOIL	8010-S	24 APR 91-38A	10 MAY 91-38A
058248-0001-SA	SOIL	8020-S	13 MAY 91-3A	13 MAY 91-3A

Enseco
A Corning Company

METHOD BLANK REPORT
Volatile Organics by GC

Analyte	Result	Units	Reporting Limit
Test: 8010-S			
Matrix: SOIL			
QC Lot: 24 APR 91-38A QC Run: 10 MAY 91-38A			
Chloromethane	ND	ug/kg	500
Bromomethane	ND	ug/kg	500
Vinyl chloride	ND	ug/kg	100
Chloroethane	ND	ug/kg	500
Methylene chloride	ND	ug/kg	500
1,1-Dichloroethene	ND	ug/kg	50
1,1-Dichloroethane	ND	ug/kg	50
1,2-Dichloroethene (cis/trans)	ND	ug/kg	50
Chloroform	ND	ug/kg	50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/kg	100
1,2-Dichloroethane	ND	ug/kg	100
1,1,1-Trichloroethane	ND	ug/kg	50
Carbon tetrachloride	ND	ug/kg	50
Bromodichloromethane	ND	ug/kg	100
1,2-Dichloropropane	ND	ug/kg	100
trans-1,3-Dichloropropene	ND	ug/kg	100
Trichloroethene	ND	ug/kg	50
Dibromochloromethane	ND	ug/kg	100
cis-1,3-Dichloropropene	ND	ug/kg	200
1,1,2-Trichloroethane	ND	ug/kg	100
1,2-Dibromoethane	ND	ug/kg	200
Bromoform	ND	ug/kg	500
1,1,2,2-Tetrachloroethane	ND	ug/kg	100
Tetrachloroethene	ND	ug/kg	50
Chlorobenzene	ND	ug/kg	200
Test: 8020-S			
Matrix: SOIL			
QC Lot: 13 MAY 91-3A QC Run: 13 MAY 91-3A			
Benzene	ND	ug/kg	50
Toluene	ND	ug/kg	50
Chlorobenzene	ND	ug/kg	50
Ethylbenzene	ND	ug/kg	50
Xylenes (total)	ND	ug/kg	100
1,3-Dichlorobenzene	ND	ug/kg	100
1,4-Dichlorobenzene	ND	ug/kg	100
1,2-Dichlorobenzene	ND	ug/kg	100

Enseco
A Corning Company

DUPLICATE CONTROL SAMPLE REPORT
Volatile Organics by GC

Analyte	Concentration Spiked	Measured DCS1	Measured DCS2	AVG	Accuracy Average(%) DCS	Accuracy Limits	Precision (RPD) DCS	Precision Limit
Category: 8010-S Matrix: SOIL QC Lot: 24 APR 91-38A Concentration Units: ug/kg								
1,1-Dichloroethane	500	523	529	526	105	58-142	1.1	22
Chloroform	500	528	541	534	107	71-133	2.4	22
Bromodichloromethane	1000	1270	1260	1260	127	64-134	0.8	20
Trichloroethene	500	561	553	557	111	65-131	1.4	16
Chlorobenzene	500	562	562	562	112	65-130	0.0	24
Category: 8020-S Matrix: SOIL QC Lot: 13 MAY 91-3A Concentration Units: ug/kg								
Benzene	500	447	422	434	87	75-123	5.8	13
Toluene	500	467	445	456	91	74-126	4.8	18
Ethylbenzene	500	486	457	472	94	74-126	6.2	18
Xylenes (total)	1500	1500	1400	1450	97	74-126	6.9	18
1,3-Dichlorobenzene	500	453	444	448	90	75-133	2.0	1[illegible]

Calculations are performed before rounding to avoid round-off errors in calculated results.

Enseco
A Corning Company

SINGLE CONTROL SAMPLE REPORT
Volatile Organics by GC

Analyte	Concentration Spiked	Measured	Accuracy(%) SCS	Limits
Category: 8010-S Matrix: SOIL QC Lot: 24 APR 91-38A QC Run: 10 MAY 91-38A Concentration Units: ug/Kg				
Bromochloromethane	500	410	82	20-160
Category: 8020-S Matrix: SOIL QC Lot: 13 MAY 91-3A QC Run: 13 MAY 91-3A Concentration Units: ug/Kg				
a,a,a-Trifluorotoluene	500	483	97	20-160

Calculations are performed before rounding to avoid round-off errors in calculated results.

Enseco
A Corning Company

Halogenated Volatile Organics

Method 8010

Client Name: Dames & Moore
Client ID: MW-41 Cuttings
Lab ID: 058248-0001-SA
Matrix: SOIL
Authorized: 10 MAY 91

Sampled: 10 MAY 91
Prepared: 10 MAY 91

Received: 10 MAY 91
Analyzed: 11 MAY 91

Parameter	Result	Wet wt. Units	Reporting Limit
Chloromethane	ND	ug/kg	500
Bromomethane	ND	ug/kg	500
Vinyl chloride	ND	ug/kg	100
Chloroethane	ND	ug/kg	500
Methylene chloride	ND	ug/kg	500
1,1-Dichloroethene	ND	ug/kg	50
1,1-Dichloroethane	ND	ug/kg	50
1,2-Dichloroethene (cis/trans)	ND	ug/kg	50
Chloroform	ND	ug/kg	50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/kg	100
1,2-Dichloroethane	ND	ug/kg	100
1,1,1-Trichloroethane	ND	ug/kg	50
Carbon tetrachloride	ND	ug/kg	50
Bromodichloromethane	ND	ug/kg	100
1,2-Dichloropropane	ND	ug/kg	100
trans-1,3-Dichloropropene	ND	ug/kg	100
Trichloroethene	ND	ug/kg	50
Dibromochloromethane	ND	ug/kg	100
cis-1,3-Dichloropropene	ND	ug/kg	200
1,1,2-Trichloroethane	ND	ug/kg	100
1,2-Dibromoethane	ND	ug/kg	200
Bromoform	ND	ug/kg	500
1,1,2,2-Tetrachloroethane	ND	ug/kg	100
Tetrachloroethene	ND	ug/kg	50
Chlorobenzene	ND	ug/kg	200

Surrogate	Recovery	
Bromochloromethane	86	%

ND = Not detected
NA = Not applicable

Reported By: Mike Harrison

Approved By: Kris Rogers

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

Aromatic Volatile Organics

Method 8020

Client Name: Dames & Moore
Client ID: MW-41 Cuttings
Lab ID: 058248-0001-SA
Matrix: SOIL — Sampled: 10 MAY 91 — Received: 10 MAY 91
Authorized: 10 MAY 91 — Prepared: 10 MAY 91 — Analyzed: 10 MAY 91

Parameter	Result	Wet wt. Units	Reporting Limit
Benzene	ND	ug/kg	50
Toluene	ND	ug/kg	50
Chlorobenzene	ND	ug/kg	50
Ethylbenzene	ND	ug/kg	50
Xylenes (total)	ND	ug/kg	100
1,3-Dichlorobenzene	ND	ug/kg	100
1,4-Dichlorobenzene	ND	ug/kg	100
1,2-Dichlorobenzene	ND	ug/kg	100
Surrogate	**Recovery**		
a,a,a-Trifluorotoluene	93	%	

ND = Not detected
NA = Not applicable

Reported By: Jennifer Neeley — Approved By: Kris Rogers

The cover letter is an integral part of this report.
Rev 230787

ACCULAB ENVIRONMENTAL SERVICES

3700 Lakeville Highway, Petaluma, CA 949[illegible]
P.O. Box 808024, Petaluma, CA, 94975-8024
Telephone: (707)763-8245 FAX: (707)763-4065

91-2710

RECEIVED ACCULAB 1991 MAY 21 AM 9:49

MAY 22 1991

SAMPLE CHAIN OF CUSTODY / WORK ORDER

Client's Name Dames & Moore Phone 364-8698
Address 9300 Tech Center Dr. Suite 100
City, State, Zip Sacramento, CA. 95628
Client's or Representative's Signature Duane C. Balch
(signature authorizes the work and terms listed below)

All samples remain the property of the client who is responsible for disposal. A disposal fee may be imposed if client fails to pick up samples.

PROJ. NO. 00173-064-044
PROJECT NAME Union Pacific - Sacramento
SAMPLERS (Signature) Duane Balch

STA. NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CON-TAINERS	8010	8020					REMARKS	LAB USE ONLY LAB NO.
MW-41	5/20	1245		X	Saturated Drilling Mud & soils.	1	X	X						

1 soil

Airborne 494 886 604

RECEIVED ACCULAB 1991 MAY 21 AM 9:49

Relinquished by: (Signature)	DATE	TIME	Received by: (Signature)
Duane Balch	5/20/91	1558	Laura Baker
Relinquished by: (Signature)	DATE	TIME	Received by: (Signature)
Relinquished by: (Signature)	DATE	TIME	Received by: (Signature)

General Remarks: Please rush as per our conversation (Fisher/Balch 5/20). Phone & fax results to D.C. Balch or Tina Parker at SAC D&M Fax 916-362-7987

CLIENT COPY

ENVIRONMENTAL SERVICES

3700 Lakeville Highway, Petaluma, CA 94954
P.O. Box 808024, Petaluma, CA 94975-8024
Telephone: (707) 763-8245 FAX: (707) 763-4065

Duane Balch
Dames & Moore
9300 Tech Center Dr., Suite 100
Sacramento, CA 95826

Client Code: DAMM12
Survey #
UNION PACIFIC-SACTO.
Project/Release # 00173-064-044

L A B O R A T O R Y R E S U L T S

Date Collected: 05/20/91
Date Extracted: 05/22/91
Date Analyzed: 05/22/91

Laboratory Job No.: 912710
Date Received: 05/21/91
Date Reported: 05/23/91

ASSAY:
PURGEABLES IN SOIL (EPA 5030/8010)

COMPOUNDS:	LAB#	18284	DET.	18285	DET.	18286	DET.
	SMP#	MW-41	LIM.	CM	LIM.	CMS	LIM.
	dil.	40		40		40	
PURGEABLES		ug/kg		ug/kg		ug/kg	
BROMODICHLOROMETHANE		ND	20.0	ND	20.0	ND	20.0
BROMOFORM		ND	20.0	ND	20.0	ND	20.0
BROMOMETHANE		ND	40.0	ND	40.0	ND	40.0
CARBON TETRACHLORIDE		ND	20.0	ND	20.0	ND	20.0
CHLOROBENZENE		ND	20.0	ND	20.0	ND	20.0
CHLOROETHANE		ND	40.0	ND	40.0	ND	40.0
CHLOROFORM		ND	20.0	ND	20.0	ND	20.0
CHLOROMETHANE		ND	40.0	ND	40.0	ND	40.0
DIBROMOCHLOROMETHANE		ND	20.0	ND	20.0	ND	20.0
1,4-DICHLOROBENZENE		ND	20.0	ND	20.0	ND	20.0
1,3-DICHLOROBENZENE		ND	20.0	ND	20.0	200	20.0
1,2-DICHLOROBENZENE		ND	20.0	ND	20.0	ND	20.0
1,1-DICHLOROETHANE		ND	20.0	ND	20.0	220	20.0
1,2-DICHLOROETHANE		ND	20.0	ND	20.0	ND	20.0
1,1-DICHLOROETHENE		ND	20.0	ND	20.0	ND	20.0
CIS-1,2-DICHLOROETHENE		ND	20.0	ND	20.0	ND	20.0
TRANS-1,2-DICHLOROETHENE		ND	20.0	ND	20.0	ND	20.0
1,2-DICHLOROPROPANE		ND	20.0	ND	20.0	ND	20.0
CIS-1,3-DICHLOROPROPENE		ND	20.0	ND	20.0	ND	20.0
TRANS-1,3-DICHLOROPROPENE		ND	20.0	ND	20.0	ND	20.0
METHYLENE CHLORIDE		ND	20.0	ND	20.0	ND	20.0
1,1,2,2-TETRACHLOROETHANE		ND	20.0	ND	20.0	ND	20.0
TETRACHLOROETHENE		ND	20.0	ND	20.0	ND	20.0
1,1,1-TRICHLOROETHANE		ND	20.0	ND	20.0	ND	20.0

THIS REPORT HAS BEEN REVIEWED AND APPROVED FOR RELEASE.
DLF

ENVIRONMENTAL SERVICES

3700 Lakeville Highway, Petaluma, CA 94954
P.O. Box 808024, Petaluma, CA 94975-8024
Telephone: (707) 763-8245 FAX: (707) 763-4065

L A B O R A T O R Y R E S U L T S

Laboratory Job No.: 912710

COMPOUNDS:	LAB#	18284	DET.	18285	DET.	18286	DET.
	SMP#	MW-41	LIM.	CM	LIM.	CMS	LIM.
	dil.	40		40		40	
PURGEABLES		ug/kg		ug/kg		ug/kg	
1,1,2-TRICHLOROETHANE		ND	20.0	ND	20.0	ND	20.0
TRICHLOROETHENE		ND	20.0	ND	20.0	210	20.0
TRICHLOROFLUOROMETHANE		ND	40.0	ND	40.0	ND	40.0
VINYL CHLORIDE		ND	40.0	ND	40.0	ND	40.0

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L A B O R A T O R Y R E S U L T S

Laboratory Job No.: 912710

COMPOUNDS:	LAB#	18287	DET.	18288	DET.
	SMP#	CMSD	LIM.	MB	LIM.
	dil.	40		1	
PURGEABLES		ug/kg		ug/kg	
BROMODICHLOROMETHANE		ND	20.0	ND	0.5
BROMOFORM		ND	20.0	ND	0.5
BROMOMETHANE		ND	40.0	ND	1.0
CARBON TETRACHLORIDE		ND	20.0	ND	0.5
CHLOROBENZENE		ND	20.0	ND	0.5
CHLOROETHANE		ND	40.0	ND	1.0
CHLOROFORM		ND	20.0	ND	0.5
CHLOROMETHANE		ND	40.0	ND	1.0
DIBROMOCHLOROMETHANE		ND	20.0	ND	0.5
1,4-DICHLOROBENZENE		ND	20.0	ND	0.5
1,3-DICHLOROBENZENE		190	20.0	ND	0.5
1,2-DICHLOROBENZENE		ND	20.0	ND	0.5
1,1-DICHLOROETHANE		220	20.0	ND	0.5
1,2-DICHLOROETHANE		ND	20.0	ND	0.5
1,1-DICHLOROETHENE		ND	20.0	ND	0.5
CIS-1,2-DICHLOROETHENE		ND	20.0	ND	0.5
TRANS-1,2-DICHLOROETHENE		ND	20.0	ND	0.5
1,2-DICHLOROPROPANE		ND	20.0	ND	0.5
CIS-1,3-DICHLOROPROPENE		ND	20.0	ND	0.5
TRANS-1,3-DICHLOROPROPENE		ND	20.0	ND	0.5
METHYLENE CHLORIDE		ND	20.0	ND	0.5
1,1,2,2-TETRACHLOROETHANE		ND	20.0	ND	0.5
TETRACHLOROETHENE		ND	20.0	ND	0.5
1,1,1-TRICHLOROETHANE		ND	20.0	ND	0.5
1,1,2-TRICHLOROETHANE		ND	20.0	ND	0.5
TRICHLOROETHENE		210	20.0	ND	0.5
TRICHLOROFLUOROMETHANE		ND	40.0	ND	1.0
VINYL CHLORIDE		ND	40.0	ND	1.0

NOTE: CMS AND CMSD WERE SPIKED AT 200 ug/kg.

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L A B O R A T O R Y R E S U L T S

Date Collected: 05/20/91
Date Extracted: 05/22/91
Date Analyzed: 05/22/91

Laboratory Job No.: 912710
Date Received: 05/21/91
Date Reported: 05/23/91

ASSAY:
PURGEABLE AROMATICS IN SOIL (EPA 8020)

COMPOUNDS:	LAB#	18284	DET.	18285	DET.	18286	DET.	18287	DET.
	SMP#	MW-41	LIM.	CM	LIM.	CMS	LIM.	CMSD	LIM.
	dil.	40		40		40		40	
PURGEABLES		ug/kg		ug/kg		ug/kg		ug/kg	
BENZENE		ND	20.0	ND	20.0	170	20.0	180	20.0
CHLOROBENZENE		ND	20.0	ND	20.0	210	20.0	220	20.0
1,2-DICHLOROBENZENE		ND	20.0	ND	20.0	210	20.0	210	20.0
1,3-DICHLOROBENZENE		ND	20.0	ND	20.0	ND	20.0	ND	20.0
1,4-DICHLOROBENZENE		ND	20.0	ND	20.0	ND	20.0	ND	20.0
ETHYL BENZENE		ND	20.0	ND	20.0	ND	20.0	ND	20.0
TOLUENE		ND	20.0	ND	20.0	ND	20.0	ND	20.0
XYLENE		ND	20.0	ND	20.0	ND	20.0	ND	20.0

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L A B O R A T O R Y R E S U L T S

Laboratory Job No.: 912710

COMPOUNDS:	LAB#	18288	DET.
	SMP#	MB	LIM.
	dil.	1	
PURGEABLES		ug/kg	
BENZENE		ND	0.5
CHLOROBENZENE		ND	0.5
1,2-DICHLOROBENZENE		ND	0.5
1,3-DICHLOROBENZENE		ND	0.5
1,4-DICHLOROBENZENE		ND	0.5
ETHYL BENZENE		ND	0.5
TOLUENE		ND	0.5
XYLENE		ND	0.5

NOTE: CMS AND CMSD WERE SPIKED AT 200 ug/kg.

Enseco

CHAIN-OF-CUSTODY RECORD

SAMPLER: (*Signature*) _____ Date Shipped _____ Carrier _____

Phone 364-8698 Airbill No. _____ Cooler No. _____

SHIP TO:

Enseco-Cal Lab
2544 Industrial Blvd.
West Sacramento, CA 95691
(916) 372-1393

ATTENTION: _____

SEND RESULTS TO:

Client Name Dames & Moore

Company _____

Address 9300 Tech Center Dr., Suite 1008

Phone (916)-364-8698

PROJECT NAME Union Pacific Railroad **PROJECT NO.** 00173-064-044-7108 **P.O. NO.** _____

Relinquished by: (*Signature*)	Received by: (*Signature*)	Date	Time
		5/28/91	17:00
Relinquished by: (*Signature*)	Received by: (*Signature*)	Date	Time
Relinquished by: (*Signature*)	Received at lab by: (*Signature*)	Date	Time
		5-28-91	1700
Relinquished from lab by: (*Signature*)	Received by: (*Signature*)	Date	Time

ANALYSIS REQUEST

Sample ID Number	Sample Description	Date/Time Sampled	Analysis Requested	Sample Condition Upon Receipt
MW-40-Cuttings	Drill mud/cuttings	15:30 5-28-91	8010, 8020	Good

Special Instructions/Comments:

Send Results Attn: Tim Parker

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT

Expected Analytical T.A.T's: _____ Immediate Attention (200% surcharge) X RUSH (50-100% surcharge) _____ Standard

Cal Lab ID Number: *(for lab use only)*

Client Retains White Copy Only

(Revised 1/87)

Enseco
A CORNING Company

June 4, 1991
Lab ID: 058571

Tim Parker
Dames & Moore
9300 Tech Center Dr.
Suite 100
Sacramento, CA 95826

Dear Mr. Parker:

Enclosed is the report for the one soil sample for your Union Pacific Railroad Project, Number 00173-064-044-7108, which was received at Enseco-Cal Lab on 28 may 1991.

The report consists of the following sections:

I	Sample Description
II	Analysis Request
III	Quality Control Report
IV	Analysis Results

If you have any questions, please feel free to call.

Sincerely,

Janet Harlan

Janet Harlan
Program Administrator

svf

Enseco Incorporated
2544 Industrial Boulevard
West Sacramento, California 95691
916/372-1393 Fax: 916/372-7768

I Sample Description

See the attached Sample Description Information.

The sample was received under chain-of-custody.

II Analysis Request

The following analytical tests were requested.

Lab ID	Analysis Description
058571-0001	Halogenated Volatile Organics
	Aromatic Volatile Organics

III Quality Control

A. Project Specific QC. No project specific QC (i.e., spikes and/or duplicates) was requested.

B. Method Blank Results. A method blank is a laboratory-generated sample which assesses the degree to which laboratory operations and procedures cause false-positive analytical results for your sample.

No target parameters were detected in the method blanks associated with your sample at the reporting limit levels noted on the Method Blank Report.

C. Laboratory Control Samples - The LCS Program

Duplicate Control Samples. A DCS is a well-characterized matrix (blank water, sand or celite) which is spiked with certain target parameters and analyzed at approximately 10% of the sample load in order to establish method-specific control limits. The DCS results associated with your sample are on the attached Duplicate Control Sample Report.

Single Control Sample. An SCS consists of a control matrix that is spiked with surrogate compounds appropriate to the method being used. In cases where no surrogate is available, (e.g. metals or conventional analyses) a single control sample identical to the DCS serves as the control sample. An SCS is prepared for each sample lot. Accuracy is calculated identically to the DCS. The SCS results associated with your sample are on the attached Single Control Sample Report.

Accuracy is measured by Percent Recovery as in:

$$\% \text{ recovery} = \frac{\text{(measured concentration)}}{\text{(actual concentration)}} \times 100$$

Precision is measured using duplicate tests by Relative Percent Difference (RPD) as in:

$$\text{RPD} = \frac{\text{(\% recovery test 1 - \% recovery test 2)}}{\text{(\% recovery test 1 + \% recovery test 2)/2}} \times 100$$

Control limits for accuracy (percent recovery) are based on the average, historical percent recovery +/-3 standard deviation units. Control limits for precision (relative percent difference) range from 0 (identical duplicate DCS results) to the average, historical relative percent difference + 3 standard deviation units. In cases where there is not enough historical data, EPA limits or advisory limits are set, with the approval of the Quality Assurance department.

IV Analysis Results

Test methods may include minor modifications of published EPA Methods such as reporting limits or parameter lists. Reporting limits are adjusted to reflect dilution of the sample, when appropriate. Solid and waste samples are reported on an "as received" basis, i.e., no correction is made for moisture content, unless the method requires or the client requests that such correction be made.

Results are on the attached data sheets.

Enseco
A Corning Company

SAMPLE DESCRIPTION INFORMATION
for
Dames & Moore

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
058571-0001-SA	MW-40 Cuttings	SOIL	28 MAY 91	16:30	28 MAY 91

Enseco
A Corning Company

QC LOT ASSIGNMENT REPORT
Volatile Organics by GC

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
058571-0001-SA	SOIL	8010-S	30 MAY 91-38A	29 MAY 91-38A
058571-0001-SA	SOIL	8020-S	20 MAY 91-11A	30 MAY 91-11A

Enseco
A Corning Company

METHOD BLANK REPORT
Volatile Organics by GC

Analyte	Result	Units	Reporting Limit
Test: 8010-S			
Matrix: SOIL			
QC Lot: 30 MAY 91-38A QC Run: 29 MAY 91-38A			
Chloromethane	ND	ug/kg	500
Bromomethane	ND	ug/kg	500
Vinyl chloride	ND	ug/kg	100
Chloroethane	ND	ug/kg	500
Methylene chloride	ND	ug/kg	500
1,1-Dichloroethene	ND	ug/kg	50
1,1-Dichloroethane	ND	ug/kg	50
1,2-Dichloroethene (cis/trans)	ND	ug/kg	50
Chloroform	ND	ug/kg	50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/kg	100
1,2-Dichloroethane	ND	ug/kg	100
1,1,1-Trichloroethane	ND	ug/kg	50
Carbon tetrachloride	ND	ug/kg	50
Bromodichloromethane	ND	ug/kg	100
1,2-Dichloropropane	ND	ug/kg	100
trans-1,3-Dichloropropene	ND	ug/kg	100
Trichloroethene	ND	ug/kg	50
Dibromochloromethane	ND	ug/kg	100
cis-1,3-Dichloropropene	ND	ug/kg	200
1,1,2-Trichloroethane	ND	ug/kg	100
1,2-Dibromoethane	ND	ug/kg	200
Bromoform	ND	ug/kg	500
1,1,2,2-Tetrachloroethane	ND	ug/kg	100
Tetrachloroethene	ND	ug/kg	50
Chlorobenzene	ND	ug/kg	200
Test: 8020-S			
Matrix: SOIL			
QC Lot: 20 MAY 91-11A QC Run: 30 MAY 91-11A			
Benzene	ND	ug/kg	50
Toluene	ND	ug/kg	50
Chlorobenzene	ND	ug/kg	50
Ethylbenzene	ND	ug/kg	50
Xylenes (total)	ND	ug/kg	100
1,3-Dichlorobenzene	ND	ug/kg	100
1,4-Dichlorobenzene	ND	ug/kg	100
1,2-Dichlorobenzene	ND	ug/kg	100

Enseco
A Corning Company

DUPLICATE CONTROL SAMPLE REPORT
Volatile Organics by GC

Analyte	Concentration Spiked	Measured DCS1	Measured DCS2	Measured AVG	Accuracy Average(%) DCS	Accuracy Limits	Precision (RPD) DCS	Precision Limit
Category: 8010-S Matrix: SOIL QC Lot: 30 MAY 91-38A Concentration Units: ug/kg								
1,1-Dichloroethane	500	443	487	465	93	58-142	9.5	22
Chloroform	500	438	471	454	91	71-133	7.3	22
Bromodichloromethane	1000	868	960	914	91	64-134	10	20
Trichloroethene	500	455	499	477	95	65-131	9.2	16
Chlorobenzene	500	493	504	498	100	65-130	2.2	24
Category: 8020-S Matrix: SOIL QC Lot: 20 MAY 91-11A Concentration Units: ug/kg								
Benzene	500	521	511	516	103	75-123	1.9	13
Toluene	500	537	543	540	108	74-126	1.1	18
Ethylbenzene	500	582	575	578	116	74-126	1.2	18
Xylenes (total)	1500	1690	1710	1700	113	74-126	1.2	[illegible]
1,3-Dichlorobenzene	500	584	647	616	123	75-133	10	[illegible]

Calculations are performed before rounding to avoid round-off errors in calculated results.

Enseco
A Corning Company

SINGLE CONTROL SAMPLE REPORT
Volatile Organics by GC

Analyte	Concentration Spiked	Measured	Accuracy(%) SCS	Limits
Category: 8010-S Matrix: SOIL QC Lot: 30 MAY 91-38A QC Run: 29 MAY 91-38A Concentration Units: ug/Kg				
Bromochloromethane	500	539	108	20-160
Category: 8020-S Matrix: SOIL QC Lot: 20 MAY 91-11A QC Run: 30 MAY 91-11A Concentration Units: ug/Kg				
a,a,a-Trifluorotoluene	500	535	107	20-160

Calculations are performed before rounding to avoid round-off errors in calculated results.

Enseco
A Corning Company

Halogenated Volatile Organics

Method 8010

Client Name: Dames & Moore
Client ID: MW-40 Cuttings
Lab ID: 058571-0001-SA
Matrix: SOIL — Sampled: 28 MAY 91 — Received: 28 MAY 91
Authorized: 28 MAY 91 — Prepared: 29 MAY 91 — Analyzed: 30 MAY 91

Parameter	Result	Wet wt. Units	Reporting Limit
Chloromethane	ND	ug/kg	500
Bromomethane	ND	ug/kg	500
Vinyl chloride	ND	ug/kg	100
Chloroethane	ND	ug/kg	500
Methylene chloride	ND	ug/kg	500
1,1-Dichloroethene	ND	ug/kg	50
1,1-Dichloroethane	ND	ug/kg	50
1,2-Dichloroethene (cis/trans)	ND	ug/kg	50
Chloroform	ND	ug/kg	50
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/kg	100
1,2-Dichloroethane	ND	ug/kg	100
1,1,1-Trichloroethane	ND	ug/kg	50
Carbon tetrachloride	ND	ug/kg	50
Bromodichloromethane	ND	ug/kg	100
1,2-Dichloropropane	ND	ug/kg	100
trans-1,3-Dichloropropene	ND	ug/kg	100
Trichloroethene	ND	ug/kg	50
Dibromochloromethane	ND	ug/kg	100
cis-1,3-Dichloropropene	ND	ug/kg	200
1,1,2-Trichloroethane	ND	ug/kg	100
1,2-Dibromoethane	ND	ug/kg	200
Bromoform	ND	ug/kg	500
1,1,2,2-Tetrachloroethane	ND	ug/kg	100
Tetrachloroethene	ND	ug/kg	50
Chlorobenzene	ND	ug/kg	200

Surrogate	Recovery	
Bromochloromethane	112	%

ND = Not detected
NA = Not applicable

Reported By: Scott Barmby — Approved By: Kris Rogers

The cover letter is an integral part of this report.
Rev 230787

Enseco
A Corning Company

Aromatic Volatile Organics

Method 8020

Client Name: Dames & Moore
Client ID: MW-40 Cuttings
Lab ID: 058571-0001-SA
Matrix: SOIL
Authorized: 28 MAY 91

Sampled: 28 MAY 91
Prepared: 29 MAY 91

Received: 28 MAY 91
Analyzed: 30 MAY 91

Parameter	Result	Wet wt. Units	Reporting Limit
Benzene	ND	ug/kg	50
Toluene	ND	ug/kg	50
Chlorobenzene	ND	ug/kg	50
Ethylbenzene	ND	ug/kg	50
Xylenes (total)	ND	ug/kg	100
1,3-Dichlorobenzene	ND	ug/kg	100
1,4-Dichlorobenzene	ND	ug/kg	100
1,2-Dichlorobenzene	ND	ug/kg	100
Surrogate	**Recovery**		
a,a,a-Trifluorotoluene	94	%	

ND = Not detected
NA = Not applicable

Reported By: Dan Orovich

Approved By: Marcia Reed

The cover letter is an integral part of this report.
Rev 230787

Anlab
ANALYTICAL LABORATORY
1910 S STREET, SACRAMENTO, CALIFORNIA 95814 • 916-447-2946 • FAX 916-447-8321

RECEIVED
JUN 17 1991

PURGEABLE HALOCARBONS
EPA #601

Client: Dames & Moore
Address: 9300 Tech Center Drive, Suite #100
Sacramento, CA 95826

Attn: Attn: Mark Eisen
Purchase Order #: NA
Job Number: NA
Location: NA
Sample Number: 135257-1a
Sample Description: UP Sac Development Water

Report #: 135257
Date of Report: June 13, 1991
Date/Time Sampled: 06/10/91, 1600
Date/Time Sample Rec'd: 06/10/91, 1615
Date Extracted: NA
Date Analyzed: 06/10/91
Units: ug/L

COMPOUND	CONCENTRATION	MDL
Bromodichloromethane	ND	0.5
Bromoform	ND	0.5
Bromomethane	ND	0.5
Carbon tetrachloride	ND	0.5
Chlorobenzene	ND	0.5
Chloroethane	ND	0.5
2-Chloroethylvinyl ether	ND	1.0
Chloroform	ND	0.5
Chloromethane	ND	0.5
Dibromochloromethane	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
Dichlorodifluoromethane	ND	0.5
1,1-Dichloroethane	10	0.5
1,2-Dichloroethane	ND	0.5
1,1-Dichloroethene	22	0.2
trans-1,2-Dichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
cis-1,3-Dichloropropene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
Methylene chloride	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
Tetrachloroethene	ND	0.5
1,1,1-Trichloroethane	2.4	0.5
1,1,2-Trichloroethane	ND	0.5
Trichloroethene	ND	0.5
Trichlorofluoromethane	ND	0.5
Vinyl Chloride	ND	1.0

NA = Not Applicable
ND = Not Detected
NOTE: Analysis was run by EPA 502.2.

Data Certified by Kimberlie J. Daly Report Approved by Michael V. Tebbe

:kad

This report is applicable only to the sample received by the laboratory. The liability of the laboratory is limited to the amount paid for this report. This report is for the exclusive use of the client to whom it is addressed and upon the condition that the client assumes all liability for the further distribution of the report or its contents.

Anlab
ANALYTICAL LABORATORY
1910 S STREET, SACRAMENTO, CALIFORNIA 95814 • 916-447-2946 • FAX 916-447-8321

PURGEABLE AROMATICS
EPA #602

Client: Dames & Moore
Address: 9300 Tech Center Drive, Suite #100
Sacramento, CA 95826

Attn: Attn: Mark Eisen
Purchase Order #: NA
Job Number: NA
Location: NA
Sample Number: 135257-1b
Sample Description: UP Sac Development Water

Report #: 135257
Date of Report: June 13, 1991
Date/Time Sampled: 06/10/91, 1600
Date/Time Sample Rec'd: 06/10/91, 1615
Date Extracted: NA
Date Analyzed: 06/10/91
Units: ug/L

COMPOUND	CONCENTRATION	MDL
Benzene	ND	0.5
Chlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
Ethylbenzene	ND	0.5
Toluene	ND	0.5
Xylenes	ND	0.5

NA = Not Applicable
ND = Not Detected

NOTE: Analysis was run by EPA 502.2.

Data Certified by _____

Report Approved by _____

:kad

This report is applicable only to the sample received by the laboratory. The liability of the laboratory is limited to the amount paid for this report. This report is for the exclusive use of the client to whom it is addressed and upon the condition that the client assumes all liability for the further distribution of the report or its contents.

ACCULAB
ENVIRONMENTAL SERVICES
3700 Lakeville Highway, Petaluma, CA 94952
P.O. Box 808024, Petaluma, CA, 94975-8024
Telephone: (707) 763-8245 FAX: (707) 763-4085

SAMPLE CHAIN OF CUSTODY / WORK ORDER

Client's Name Dames & Moore Phone (916)-761-8698
Address 4300 Tech Center Dr, Suite 100
City, State, Zip Sacramento, CA 95826
Client's or Representative's Signature
(signature authorizes the work and terms listed below)

All samples remain the property of the client who is responsible for disposal. A disposal fee may be imposed if client fails to pick up samples.

PROJ. NO. 00175-064 0411
PROJECT NAME Union Pacific Railroad Sacramento
SAMPLERS (Signature)

STA. NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	EPTY Sceen	Soil Oil + Grease	TCL + Nec	REMARKS	LAB USE ONLY LAB NO.
	6/7/10	6:30		X	MW-3U, 5S, 6U, 12U, 13 Development Water	2	X				

Relinquished by: (Signature) DATE TIME Received by: (Signature)
Relinquished by: (Signature) DATE TIME Received by: (Signature)
Relinquished by: (Signature) DATE TIME Received by: (Signature)

General Remarks:
Please Start Today (6/14) per conversation with Laurie
Please Return Ice Chest
Send Results ATTN: Tom Taylor
Fax Results ASAP to (916) 761-8644

RECEIVED
JUN 20 1991

NORTH COAST LABORATORIES LTD.

Date: 18 June 1991

Report to: Dames & Moore
9300 Tech Center Dr., Suite 100
Sacramento, CA 95826

Attn: Tim Parker

Sample Description: 00173-064-044/MW-34, 35, 39, 42, 43 Dev. Water

NCL #: 91-06-240-01A

Date Received: 06-14-91 Date Sampled: 06-13-91

HAZARDOUS WASTE BIOASSAY SCREENING TEST

Supporting Data:

	Control		250 mg/L		750 mg/L		Units
	#1	#2	#1	#2	#1	#2	
Initial							
pH	7.5	7.6	7.6	7.6	7.6	7.8	pH units
DO	9.4	9.6	9.3	9.3	9.3	9.3	mg/L
24 Hour							
pH	7.8	7.9	7.8	7.9	7.9	7.9	pH units
DO	9.4	9.4	9.1	9.6	9.4	9.4	mg/L
Total dead	0	0	0	0	0	0	
48 Hour							
pH	7.8	7.9	7.9	7.9	7.9	7.9	pH units
DO	9.2	8.9	9.0	9.0	8.9	9.0	mg/L
Total dead	0	0	0	0	0	0	
72 Hour							
pH	7.6	7.6	7.7	7.7	7.7	7.7	pH units
DO	9.0	8.6	8.7	9.0	8.8	9.0	mg/L
Total dead	0	0	0	0	0	0	
96 Hour							
pH	7.5	7.5	7.6	7.7	7.7	7.7	pH units
DO	8.6	8.6	8.6	8.9	8.5	8.7	mg/L
Total dead	0	0	0	0	0	0	
Survival	100%	100%	100%	100%	100%	100%	

Fish Data:
Average Length: 27 mm Max. Length: 34 mm Min. Length: 21 mm
Average Weight: 0.24g Max. Weight: 0.27g Min. Weight: 0.20g
Acclimatization: 3 days
Species: Fathead Minnow, Pimephales promelas
Date Started: 06-14-91
2 tanks per dilution, 10 fish per tank
Samples were maintained at 20 ± 2°C

Laura Miller (for DL)
Laboratory Supervisor(s)

Michelle Dostal
QA Officer

George Moon, Mgr
Jesse G. Chaney, Jr.
Laboratory Director

5680 West End Road • Arcata California 95521 • 707-822-4649 • FAX 707-822-6831

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NCL #: 91-06-240-01A

Date Received: 06-14-91 Date Sampled: 06-13-91

HAZARDOUS WASTE BIOASSAY SCREENING TEST

Supporting Data: Hardness and alkalinity (run only on controls and highest concentration).

	Control		750 mg/L		Units
	#1	#2	#1	#2	
Hardness Initial	48	48	48	48	mgCaCO3/L
Hardness Final	50	49	54	54	mgCaCO3/L
Alkalinity Initial	73	73	73	73	mgCaCO3/L
Alkalinity Final	74	74	78	78	mgCaCO3/L

Fish Data:

Average Length: 27 mm Max. Length: 34 mm Min Length: 21 mm
Average Weight: 0.24g Max. Weight: 0.27g Min Weight: 0.20g
Acclimatization: 3 days
Species: Fathead Minnow, Pimephales promelas
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Laura Miller (for JC)
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Michelle Dostal
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