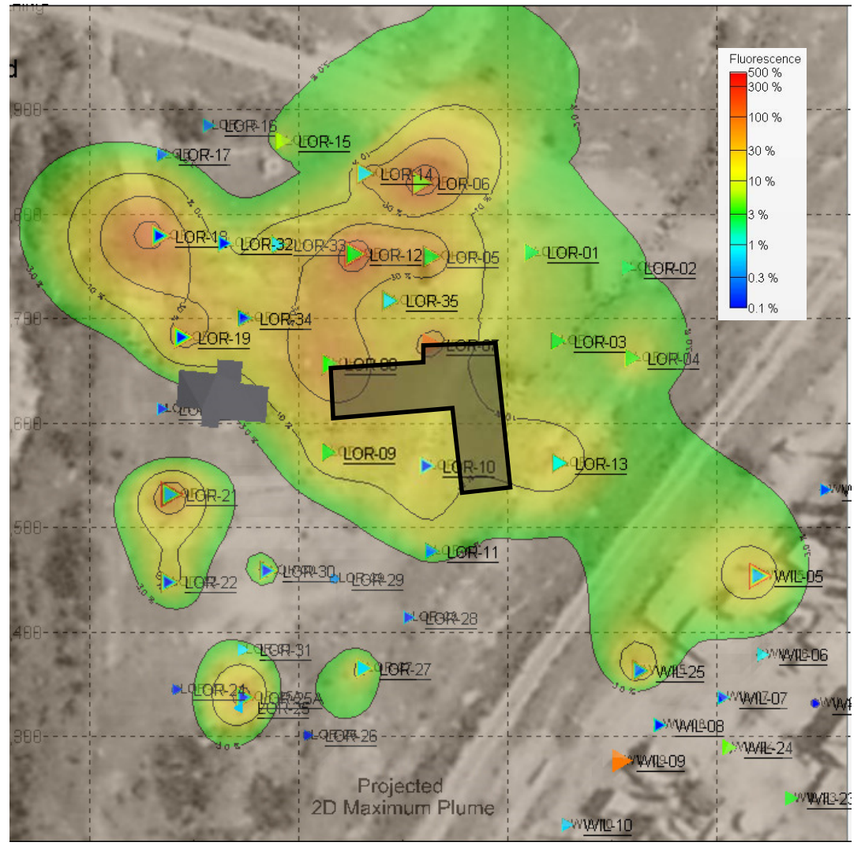
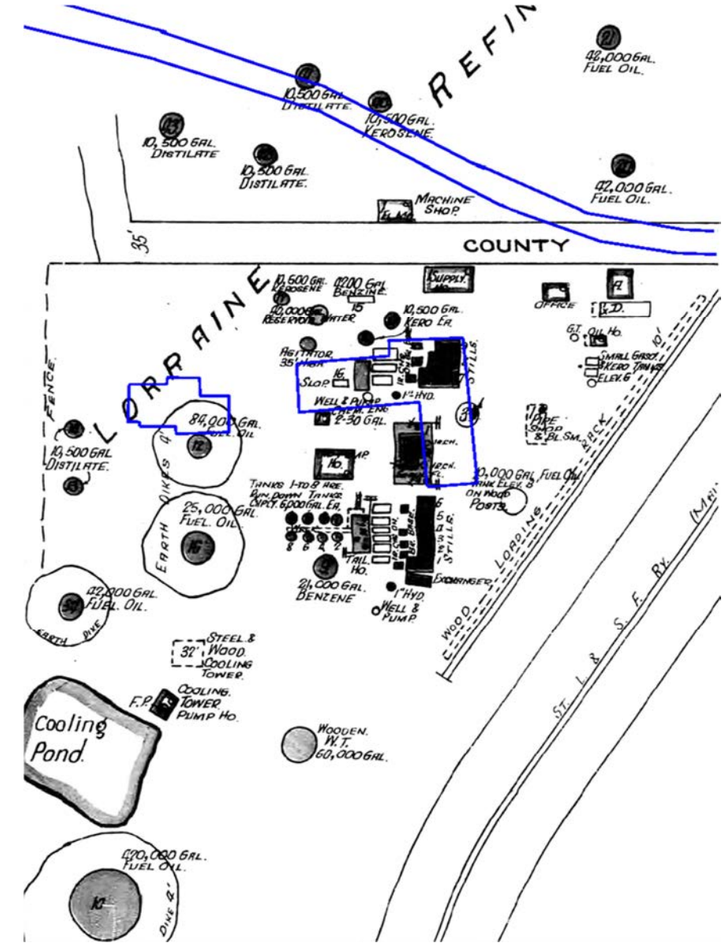
Sample Location Map



2-D Max Fluorescence Results



1923 Sanborn Map

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Scientific Engineering Response and Analytical Services
EP-W-09-031 W.A. #0-277

9751455

LORRAINE REFINERY

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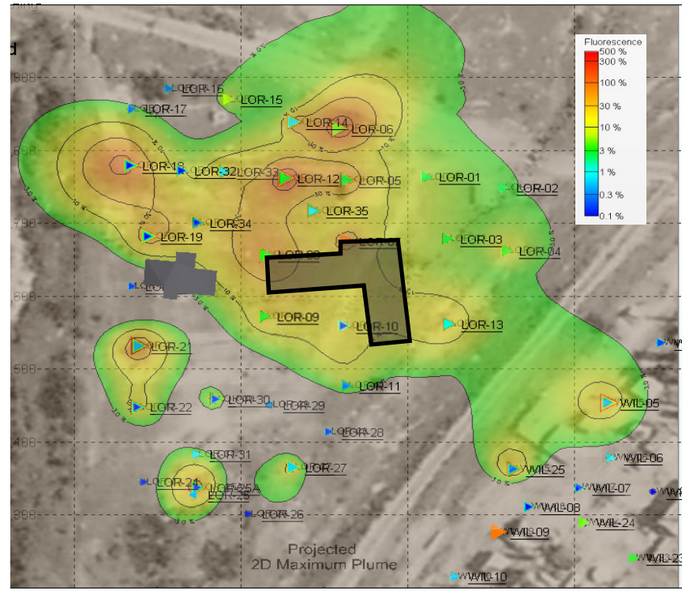
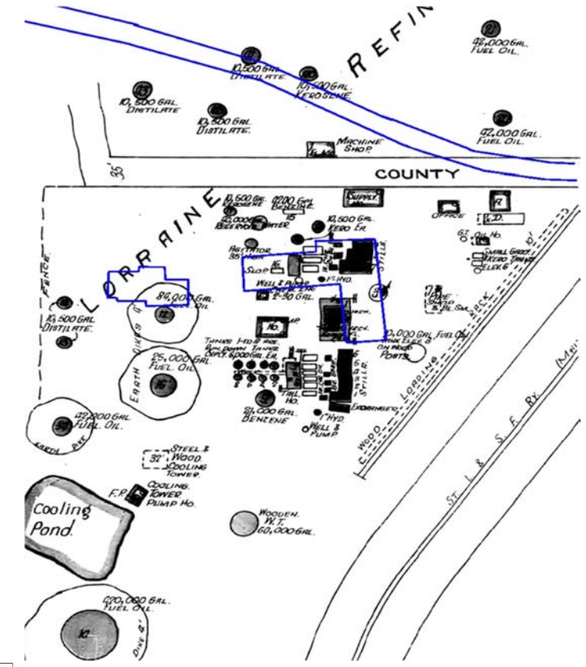
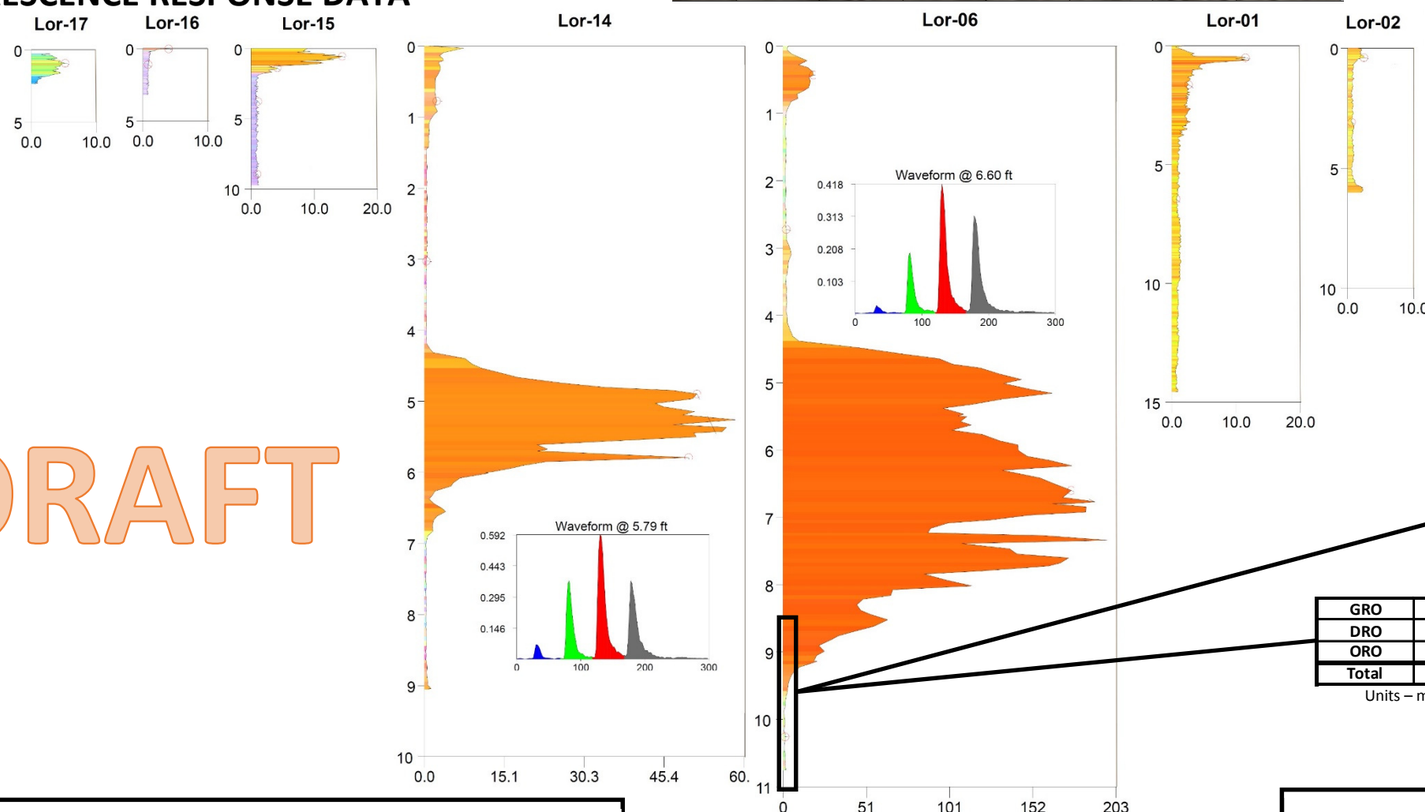




FLUORESCENCE RESPONSE DATA



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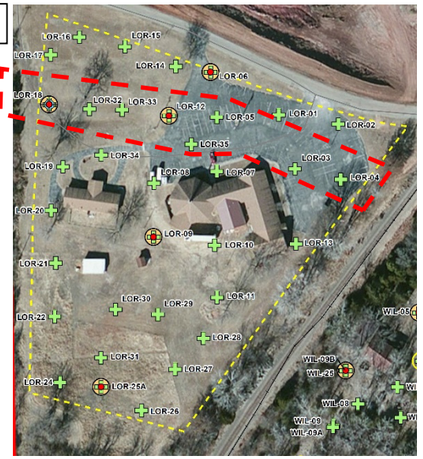
GRO	180
DRO	5200
ORO	1200
Total	6580

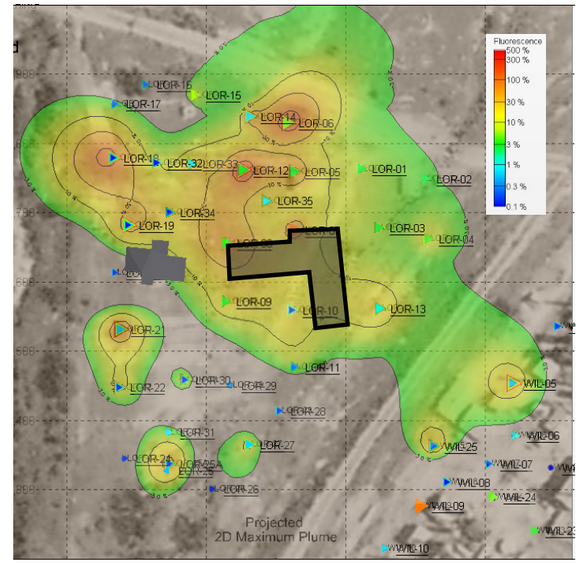
Units – mg/kg

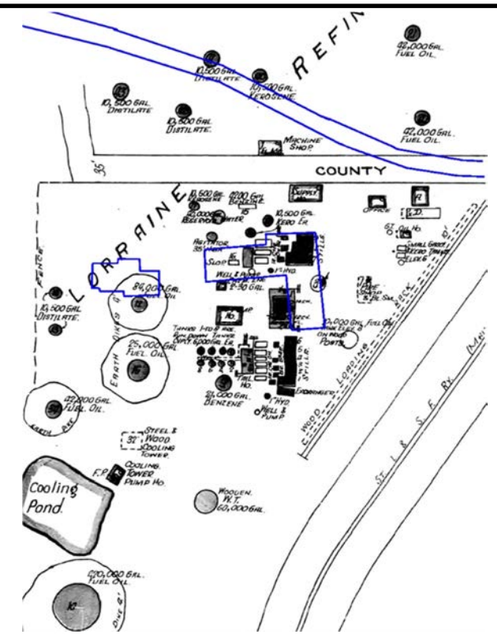
Loc	Analyte	Result	Q	Action Limit	AC
LOR-06 7.5 to 10 Ft bgs	Cyclohexane	**130**	LJ	6500000	HI=1
	Methylcyclohexane	**800**		NP	HI=1
	1,2-Dibromoethane	270	U	36	1E6
	Isopropylbenzene	**110**	LJ	1900000	HI=1
	1,2-Dibromo-3-chloropropane	270	U	5.3	1E6
	2,2'-Oxybis(1-chloropropane)	7600	U*	4900	1E6
	Hexachloroethane	3900	U*	1800	1E6
	Naphthalene	**410**	*	130000	HI=1
	Naphthalene	**860**		130000	HI=1
	4-Chloroaniline	7600	U*	2700	1E6
	Hexachlorobutadiene	3900	U*	1200	1E6
	2-Methylnaphthalene	**4200**	*	240000	HI=1
	2-Methylnaphthalene	**2400**	*	240000	HI=1
	Hexachlorocyclo-pentadiene	7600	U	1800	HI=1
	2,6-Dinitrotoluene	3900	U*	360	1E6
	2,4-Dinitrotoluene	3900	U*	1700	1E6
	Fluorene	**470**	J	2400000	HI=1
	4-Chlorophenyl-phenyl ether	3900	U	NP	HI=1
	4,6-Dinitro-2-methylphenol	7600	U*	5100	HI=1
	Hexachlorobenzene	3900	U*	210	1E6
	Atrazine	7600	U*	2400	1E6
	Phenanthrene	**1400**	*	NP	HI=1
	Phenanthrene	**2400**		NP	HI=1
	Anthracene	**450**		18000000	HI=1
	Pyrene	**230**		1800000	HI=1
	3,3'-Dichlorobenzidine	7600	U*	1200	1E6
	Benzo(a)anthracene	3900	U*	160	1E6
	Chrysene	**440**		15000	1E6
	Benzo(b)fluoranthene	3900	U*	160	1E6
	Benzo(b)fluoranthene	**82**		160	1E6
	Benzo(k)fluoranthene	**30**	LJ	1600	1E6
	Benzo(k)fluoranthene	3900	U*	1600	1E6
	Benzo(a)pyrene	39	U	16	1E6
	Benzo(a)pyrene	3900	U*	16	1E6
	Indeno(1,2,3-cd)pyrene	**13**	LJ	160	1E6
	Indeno(1,2,3-cd)pyrene	3900	U*	160	1E6
	Dibenzo(a,h)anthracene	39	U	16	1E6
	Dibenzo(a,h)anthracene	3900	U*	16	1E6
	Benzo(g,h,i)perylene	**23**	LJ	NP	HI=1

Units – µg/kg

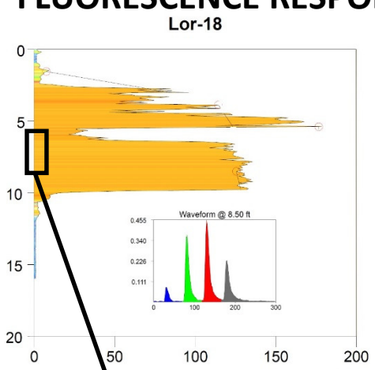
This Sheet





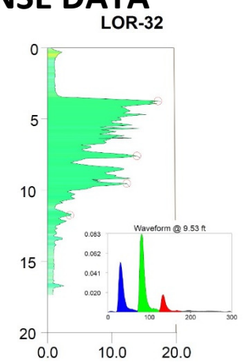


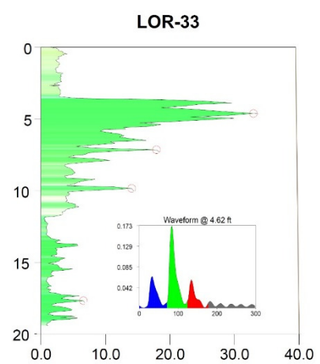
FLUORESCENCE RESPONSE DATA

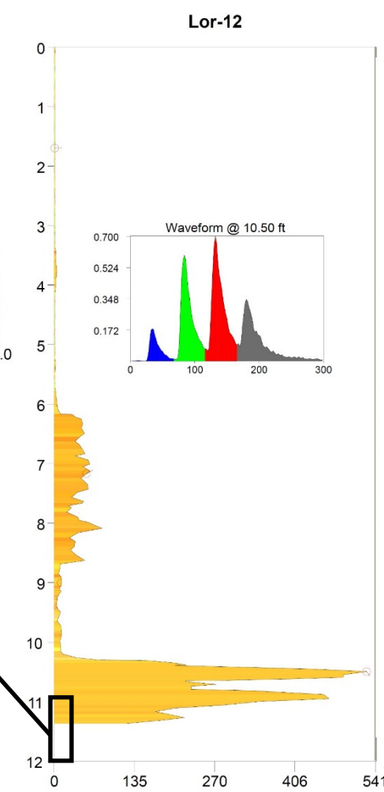


GRO	910
DRO	6000
ORO	630
Total	7540

Units – mg/kg
See Sheet 3B for
Analytical Results

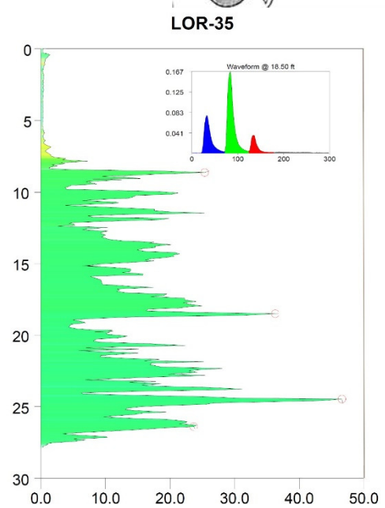


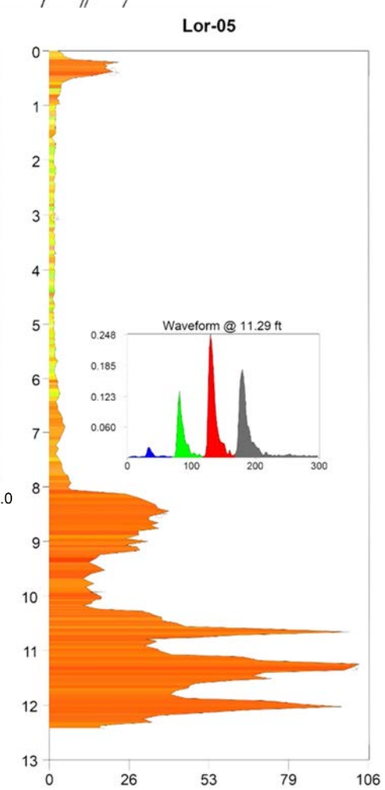


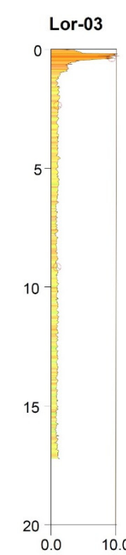


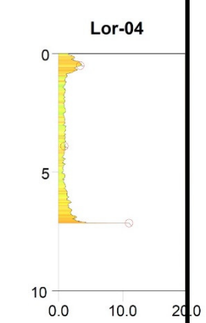
GRO	670
DRO	580
ORO	27
Total	1277

Units – mg/kg
See Sheet 3B for
Analytical Results









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LORRAINE REFINERY
Sheet 3A of 5

Loc	Analyte	Result	Q	Action Limit	AC
LOR-18 6 to 8 Ft bgs	Bromodichloromethane	300	U	290	1E6
	1,2-Dibromoethane	300	U	36	1E6
	Isopropylbenzene	**2700**		1900000	HI=1
	1,2-Dibromo-3-chloropropane	300	U	5.3	1E6
	2,2'-Oxybis(1-chloropropane)	7700	U*	4900	1E6
	Hexachloroethane	4000	U*	1800	1E6
	Naphthalene	**960**	*	130000	HI=1
	Naphthalene	**740**		130000	HI=1
	4-Chloroaniline	7700	U*	2700	1E6
	Hexachlorobutadiene	4000	U*	1200	1E6
	2-Methylnaphthalene	**1400**	*	240000	HI=1
	2-Methylnaphthalene	**740**	*	240000	HI=1
	2-Methylnaphthalene	**1100**		240000	HI=1
	Hexachlorocyclo-pentadiene	7700	U	1800	HI=1
	2,6-Dinitrotoluene	4000	U*	360	1E6
	Dibenzofuran	**220**	*	73000	HI=1
	Dibenzofuran	**250**		73000	HI=1
	2,4-Dinitrotoluene	4000	U*	1700	1E6
	Fluorene	**510**	*	2400000	HI=1
	Fluorene	**590**	J	2400000	HI=1
	4-Chlorophenyl-phenyl ether	4000	U	NP	HI=1
	4,6-Dinitro-2-methylphenol	7700	U*	5100	HI=1
	Hexachlorobenzene	4000	U*	210	1E6
	Atrazine	7700	U*	2400	1E6
	Phenanthrene	**1500**	*	NP	HI=1
	Phenanthrene	**880**	*	NP	HI=1
	Phenanthrene	**1900**		NP	HI=1
	Fluoranthene	**120**	*	2400000	HI=1
	Fluoranthene	**220**		2400000	HI=1
	Pyrene	**270**	*	1800000	HI=1
	Pyrene	**350**		1800000	HI=1
	3,3'-Dichlorobenzidine	7700	U*	1200	1E6
	Benzo(a)anthracene	**75**	*	160	1E6
	Benzo(a)anthracene	4000	U*	160	1E6
	Benzo(a)anthracene	**82**		160	1E6
	Chrysene	**230**	*	15000	1E6
	Chrysene	**220**		15000	1E6
	Benzo(b)fluoranthene	**80**	*	160	1E6
	Benzo(b)fluoranthene	4000	U*	160	1E6
	Benzo(b)fluoranthene	**79**		160	1E6
	Benzo(k)fluoranthene	**21**	*	1600	1E6
	Benzo(k)fluoranthene	**24**	LJ	1600	1E6
	Benzo(k)fluoranthene	4000	U*	1600	1E6
	Benzo(a)pyrene	43	*	16	1E6
	Benzo(a)pyrene	4000	U*	16	1E6
	Benzo(a)pyrene	48		16	1E6
	Indeno(1,2,3-cd)pyrene	**8.8**	*	160	1E6
	Indeno(1,2,3-cd)pyrene	**12**	LJ	160	1E6
	Indeno(1,2,3-cd)pyrene	4000	U*	160	1E6
	Dibenzo(a,h)anthracene	**8.6**	*	16	1E6
	Dibenzo(a,h)anthracene	40	U	16	1E6
	Dibenzo(a,h)anthracene	4000	U*	16	1E6
	Benzo(g,h,i)perylene	**19**	*	NP	HI=1
	Benzo(g,h,i)perylene	**30**	LJ	NP	HI=1

Units - µg/kg

Loc	Analyte	Result	Q	Action Limit	AC
LOR-12 11 to 14 Ft bgs	Chloroform	410	U	320	1E6
	Cyclohexane	**1300**		6500000	HI=1
	Methylcyclohexane	**11000**		NP	HI=1
	Bromodichloromethane	410	U	290	1E6
	1,2-Dibromoethane	410	U	36	1E6
	m, p-Xylene	410	U	NP	HI=1
	Isopropylbenzene	**1200**		1900000	HI=1
	1,2-Dibromo-3-chloropropane	410	U	5.3	1E6
	2,2'-Oxybis(1-chloropropane)	7500	U*	4900	1E6
	Hexachloroethane	3900	U*	1800	1E6
	Naphthalene	**900**		130000	HI=1
	4-Chloroaniline	7500	U*	2700	1E6
	Hexachlorobutadiene	3900	U*	1200	1E6
	2-Methylnaphthalene	**5200**	*	240000	HI=1
	2-Methylnaphthalene	**2600**	*	240000	HI=1
	Hexachlorocyclo-pentadiene	7500	U	1800	HI=1
	2,6-Dinitrotoluene	3900	U*	360	1E6
	Dibenzofuran	**210**		73000	HI=1
	2,4-Dinitrotoluene	3900	U*	1700	1E6
	Fluorene	**170**		2400000	HI=1
	4-Chlorophenyl-phenyl ether	3900	U	NP	HI=1
	4,6-Dinitro-2-methylphenol	7500	U*	5100	HI=1
	Hexachlorobenzene	3900	U*	210	1E6
	Atrazine	7500	U*	2400	1E6
	Phenanthrene	**210**		NP	HI=1
	Anthracene	**40**		18000000	HI=1
	Pyrene	**19**	LJ	1800000	HI=1
	3,3'-Dichlorobenzidine	7500	U*	1200	1E6
	Benzo(a)anthracene	3900	U*	160	1E6
	Benzo(b)fluoranthene	3900	U*	160	1E6
	Benzo(k)fluoranthene	3900	U*	1600	1E6
	Benzo(a)pyrene	39	U	16	1E6
	Benzo(a)pyrene	3900	U*	16	1E6
	Indeno(1,2,3-cd)pyrene	3900	U*	160	1E6
	Dibenzo(a,h)anthracene	39	U	16	1E6
	Dibenzo(a,h)anthracene	3900	U*	16	1E6

Units - µg/kg

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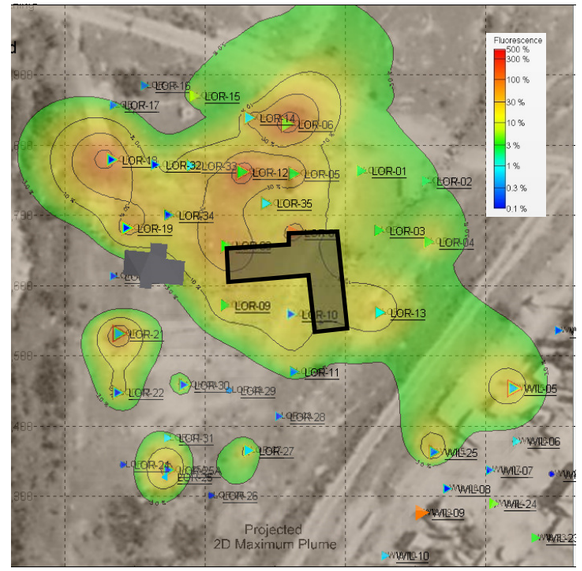
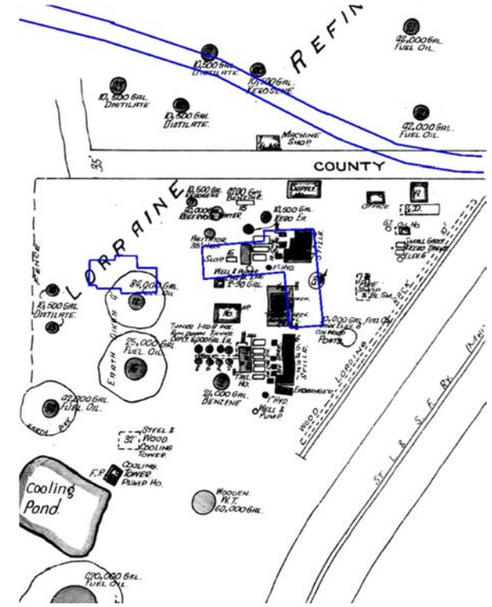
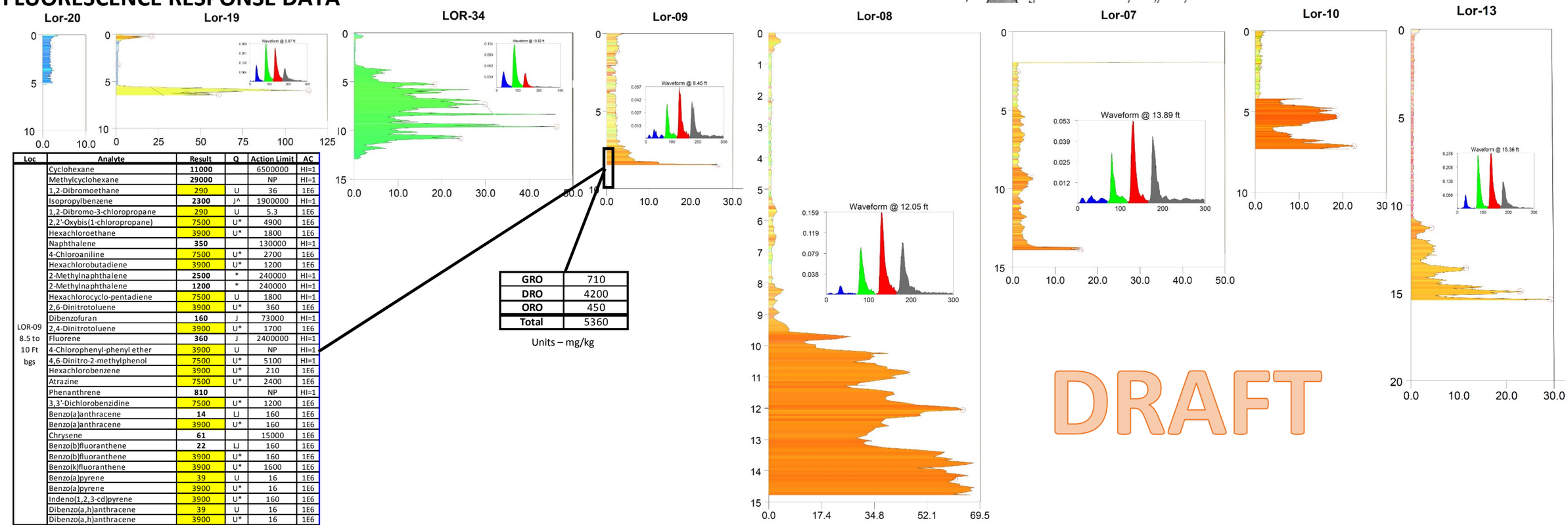




FLUORESCENCE RESPONSE DATA



Loc	Analyte	Result	Q	Action Limit	AC
LOR-09 8.5 to 10 Ft bgs	Cyclohexane	**11000**		6500000	HI=1
	Methylcyclohexane	**29000**		NP	HI=1
	1,2-Dibromoethane	290	U	36	1E6
	Isopropylbenzene	**2300**	J^	1900000	HI=1
	1,2-Dibromo-3-chloropropane	290	U	5.3	1E6
	2,2'-Oxybis(1-chloropropane)	7500	U*	4900	1E6
	Hexachloroethane	3900	U*	1800	1E6
	Naphthalene	**350**		130000	HI=1
	4-Chloroaniline	7500	U*	2700	1E6
	Hexachlorobutadiene	3900	U*	1200	1E6
	2-Methylnaphthalene	**2500**	*	240000	HI=1
	2-Methylnaphthalene	**1200**	*	240000	HI=1
	Hexachlorocyclo-pentadiene	7500	U	1800	HI=1
	2,6-Dinitrotoluene	3900	U*	360	1E6
	Dibenzofuran	**160**	J	73000	HI=1
	2,4-Dinitrotoluene	3900	U*	1700	1E6
	Fluorene	**360**	J	2400000	HI=1
	4-Chlorophenyl-phenyl ether	3900	U	NP	HI=1
	4,6-Dinitro-2-methylphenol	7500	U*	5100	HI=1
	Hexachlorobenzene	3900	U*	210	1E6
	Atrazine	7500	U*	2400	1E6
	Phenanthrene	**810**		NP	HI=1
	3,3'-Dichlorobenzidine	7500	U*	1200	1E6
	Benzo(a)anthracene	**14**	LJ	160	1E6
	Benzo(a)anthracene	3900	U*	160	1E6
	Chrysene	**61**		15000	1E6
	Benzo(b)fluoranthene	**22**	LJ	160	1E6
	Benzo(b)fluoranthene	3900	U*	160	1E6
	Benzo(k)fluoranthene	3900	U*	1600	1E6
	Benzo(a)pyrene	39	U	16	1E6
	Benzo(a)pyrene	3900	U*	16	1E6
	Indeno(1,2,3-cd)pyrene	3900	U*	160	1E6
	Dibenzo(a,h)anthracene	39	U	16	1E6
	Dibenzo(a,h)anthracene	3900	U*	16	1E6

Units – µg/kg

GRO	710
DRO	4200
ORO	450
Total	5360

Units – mg/kg

U.S. EPA Environmental Response Team
Scientific Engineering Response and Analytical Services
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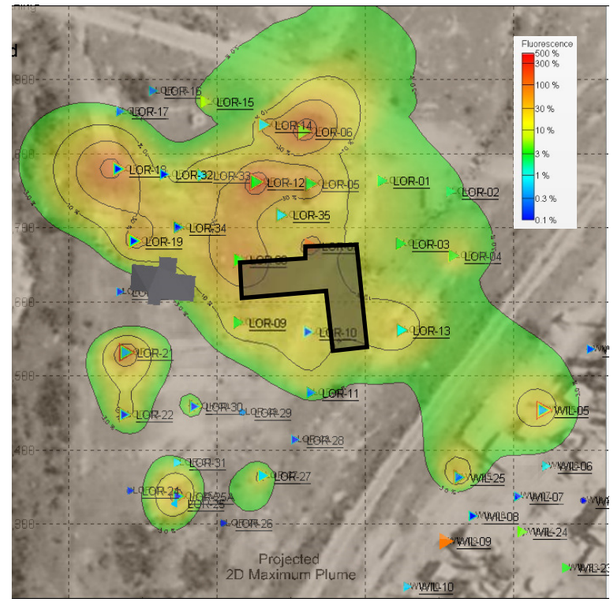
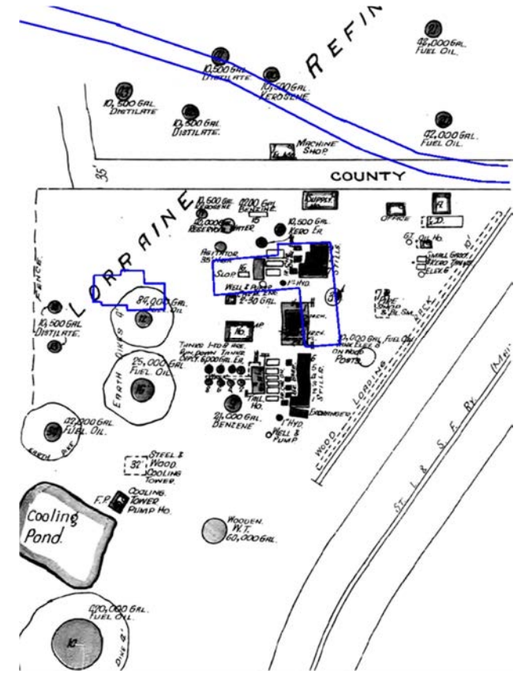
LORRAINE REFINERY

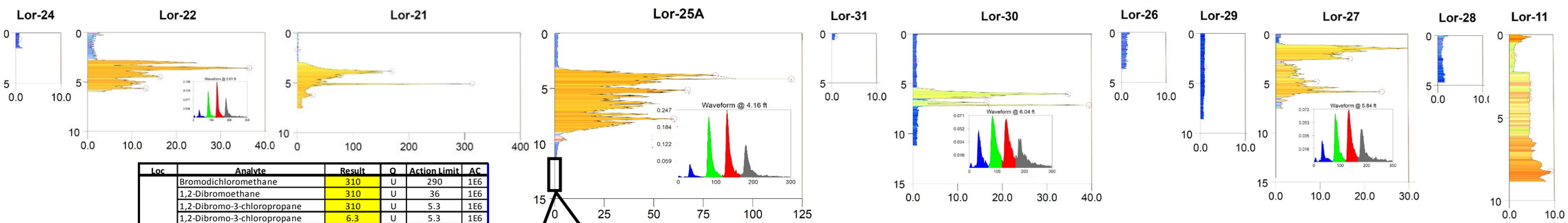
Sheet 4 of 5

This Sheet





FLUORESCENCE RESPONSE DATA



Loc	Analyte	Result	Q	Action Limit	AC
LOR-25A 12 to 14 Ft bgs	Bromodichloromethane	310	U	290	1E6
	1,2-Dibromoethane	310	U	36	1E6
	1,2-Dibromo-3-chloropropane	310	U	5.3	1E6
	1,2-Dibromo-3-chloropropane	6.3	U	5.3	1E6
	Hexachlorocyclo-pentadiene	1900	U	1800	HI=1
	2,6-Dinitrotoluene	990	U*	360	1E6
	Hexachlorobenzene	990	U*	210	1E6
	3,3'-Dichlorobenzidine	1900	U*	1200	1E6
	Benzo(a)anthracene	990	U*	160	1E6
	Benzo(a)anthracene	200	U*	160	1E6
	Benzo(b)fluoranthene	990	U*	160	1E6
	Benzo(b)fluoranthene	200	U*	160	1E6
	Benzo(a)pyrene	40	U	16	1E6
	Benzo(a)pyrene	39	U	16	1E6
	Benzo(a)pyrene	990	U*	16	1E6
	Benzo(a)pyrene	200	U*	16	1E6
	Indeno(1,2,3-cd)pyrene	990	U*	160	1E6
	Indeno(1,2,3-cd)pyrene	200	U*	160	1E6
	Dibenzo(a,h)anthracene	40	U	16	1E6
	Dibenzo(a,h)anthracene	39	U	16	1E6
	Dibenzo(a,h)anthracene	990	U*	16	1E6
	Dibenzo(a,h)anthracene	200	U*	16	1E6

Units – µg/kg

GRO	86
DRO	430
ORO	28
Total	544

Units – mg/kg

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LORRAINE REFINERY
Sheet 5 of 5