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Darrin Fost Business Manager 310.816.8812

March 31, 2021

Mr. Anwar Ali Compliance Project Manager California Energy Commission 1516 Ninth Street Sacramento, CA 95814

Subject: 2020 Annual Compliance Report

Watson Cogeneration Project (85-AFC-01C)

Dear Mr. Ali,

Attached is the Annual Compliance Report for 2020 pursuant to the requirements of the California Energy Commission's Conditions of Certification for the Watson Cogeneration Company.

If you have any questions regarding this report, please contact me via telephone at (310) 816-8812 or via e-mail at DFost@Marathonpetroleum.com.

Sincerely,

Darrin Fost

Darrin Fost Business Manager Watson Cogeneration Company

AIR QUALITY CONDITIONS OF CERTIFICATION

AQ-25 A continuous monitoring system must be installed and operated to monitor and record the fuel consumption and the mass ratio of steam-to-fuel for each fuel being fired in each gas Turbines 1, 2, 3, 4 and 5. This system must be accurate to within +5.0 percent and calibrated once every 12 months.

Verification: The owner/operator shall maintain records of continuous fuel consumption and the steam-to-fuel mass ratio monitoring. These records will be maintained on file for at least two years and shall be made available to the SCAQMD and CEC staff upon request. CEM Relative Accuracy Test report will be submitted to the CEC annually.

Response: Instrumentation is in place for the purpose of continuous monitoring and recording of fuel consumption and steam injection to each of the four gas turbines at the facility (#5 was never constructed). The systems undergo regular calibration. A summary of fuel consumption and steam injection to each of the turbines is included below.

AQ-25	Unit 91						Unit 92				
	NG/RFG	<u>Butane</u>	Total Fuel	DeNOx Steam	Steam : Fuel	NG/RFG	<u>Butane</u>	Total Fuel	DeNOx Steam	Steam : Fuel	
	lb/sec	<u>lb/sec</u>	<u>lb/sec</u>	<u>lb/sec</u>	<u>Ratio</u>	<u>lb/sec</u>	<u>lb/sec</u>	<u>lb/sec</u>	<u>lb/sec</u>	<u>Ratio</u>	
Jan-20	11.503	0.324	11.827	14.200	1.201	10.393	0.696	11.089	12.805	1.100	
Feb-20	7.943	0.235	8.178	9.995	2.182	11.433	0.696	12.129	14.300	1.179	
Mar-20	11.516	0.371	11.887	14.288	1.202	11.582	0.696	12.278	14.521	1.182	
Apr-20	11.454	0.447	11.901	14.278	1.200	11.548	0.696	12.244	14.560	1.189	
May-20	6.359	0.242	6.602	8.212	2.070	11.524	0.696	12.220	14.585	1.193	
Jun-20	11.408	0.365	11.773	14.316	1.216	11.473	0.696	12.169	14.508	1.192	
Jul-20	9.083	0.185	9.268	11.632	1.925	11.628	0.696	12.324	14.856	1.205	
Aug-20	11.453	0.294	11.747	14.511	1.235	11.482	0.696	12.178	14.654	1.203	
Sep-20	11.331	0.323	11.654	14.202	1.219	11.400	0.696	12.096	14.423	1.192	
Oct-20	3.962	0.229	4.192	5.348	3.924	11.394	0.696	12.090	14.372	1.189	
Nov-20	10.799	0.080	10.879	13.384	1.234	11.479	0.696	12.174	14.310	1.175	
Dec-20	11.329	0.095	11.424	13.928	1.219	11.382	0.696	12.078	14.075	1.165	
			Unit	93		Unit 94					
	NG/RFG	<u>Butane</u>	Total Fuel	<u>DeNOx Steam</u>	Steam : Fuel	NG/RFG	<u>Butane</u>	Total Fuel	<u>DeNOx Steam</u>	<u>Steam : Fuel</u>	
	<u>lb/sec</u>	<u>lb/sec</u>	<u>lb/sec</u>	<u>lb/sec</u>	<u>Ratio</u>	<u>lb/sec</u>	<u>lb/sec</u>	<u>lb/sec</u>	<u>lb/sec</u>	<u>Ratio</u>	
Jan-20	11.209	0.508	11.717	13.585	1.159	11.453	0.192	11.645	14.076	1.209	
Feb-20	5.849	0.330	6.179	7.118	1.642	11.231	0.402	11.633	13.817	1.188	
Mar-20	11.221	0.360	11.581	13.726	1.185	11.368	0.214	11.582	13.989	1.208	
Apr-20	11.117	0.416	11.532	13.622	1.181	11.318	0.190	11.508	13.984	1.215	
May-20	10.102	0.527	10.629	12.540	1.390	11.319	0.324	11.643	14.062	1.208	
Jun-20	11.268	0.517	11.785	13.971	1.185	11.239	0.205	11.444	13.960	1.220	
Jul-20	11.425	0.551	11.976	14.343	1.198	11.376	0.174	11.550	14.276	1.236	
Aug-20	11.261	0.541	11.801	14.090	1.194	11.255	0.244	11.499	14.095	1.226	
Sep-20	11.047	0.461	11.508	13.643	1.186	11.096	0.232	11.328	13.728	1.212	
Oct-20	10.971	0.543	11.514	13.413	1.165	11.093	0.329	11.422	13.682	1.198	
Nov-20	10.668	0.425	11.093	12.787	1.153	11.295	0.172	11.466	14.015	1.222	
Dec-20	10.497	0.456	10.953	12.355	1.128	11.245	0.165	11.410	13.971	1.224	

AQ-42 No more than one of the cogeneration units 1, 2, 3, 4 or 5 shall startup or shutdown in any one day. For Turbine Trains 1, 2, 3 and 4, start up shall not exceed 8 hours and shutdown shall not exceed 4 hours. For Turbine Train 5, neither start up nor

shutdown shall exceed 4 hours in duration.

Verification: The owner/operator shall maintain an operation log for the facility which, at a minimum, will identify startup and shutdown occurrences for each cogeneration unit. The owner/operator shall submit in its Annual Compliance Report to the CEC a summary of the operational log demonstrating compliance with this condition 5. (97-0924-4; 88-0525-18b)

Response: In the 2020 calendar year, APPC/Watson had 10 startups and 10 shutdowns. No startups exceeded an 8 hour duration and no shutdowns exceeded a 4 hour duration. Startup and shutdown dates shown in the tables below.

А	AQ-42: Shutdown Summary - 2020							
Unit	Date	Duration < 4 Hours						
91	1/31/2020	Yes						
91	5/3/2020	Yes						
91	5/13/2020	Yes						
91	7/24/2020	Yes						
91	10/9/2020	Yes						
91	11/6/2020	Yes						
91	11/13/2020	Yes						
92	1/24/2020	Yes						
93	2/15/2020	Yes						
93	5/11/2020	Yes						

	AQ-42: Startup Summary - 2020							
Unit	Date	Duration < 8 Hours						
91	2/9/2020	Yes						
91	5/9/2020	Yes						
91	5/21/2020	Yes						
91	7/31/2020	Yes						
91	10/29/2020	Yes						
91	11/7/2020	Yes						
91	11/13/2020	Yes						
92	1/27/2020	Yes						
93	2/28/2020	Yes						
93	5/14/2020	Yes						

AQ-43 The duct burner of the cogeneration units 1, 2, 3, 4 and 5 shall not be fired during the startup mode of operation.

Verification: The owner/operator shall maintain an operation log for the facility which, at minimum will identify the hours of operation of the duct burners. The owner/operator shall submit in its Annual Compliance Report to the CEC a summary of the operational log

demonstrating compliance with this condition.

Response: During the 2020 calendar year, APPC/Watson had 10 startups. Duct burners were not fired during the startup mode of operation for any of the 10 startup events. Startup dates shown in the table below.

	AQ-43: Startup Summary - 2020								
Unit	Date	Duct Fuel After Startup							
91	2/9/2020	Yes							
91	5/9/2020	Yes							
91	5/21/2020	Yes							
91	7/31/2020	Yes							
91	10/29/2020	Yes							
91	11/7/2020	Yes							
91	11/13/2020	Yes							
92	1/27/2020	Yes							
93	2/28/2020	Yes							
93	5/14/2020	Yes							

BIOLOGICAL RESOURCES CONDITIONS OF CERTIFICATION

APPC shall monitor daily the zinc content, total volume and duration of all discharges from the ARCO Watson Refinery into the Dominguez Channel, which contain commingled cogeneration project cooling tower blowdown. The initial period of monitoring shall cover the first three years during which water is discharged into the Dominguez Channel. The need for subsequent monitoring will be determined by the CEC based on an evaluation of the zinc content of samples collected during the first three years of discharge. APPC shall take remedial action if monitored zinc levels exceed the EPA standard for salt water aquatic life.

Verification: APPC shall notify the CEC within 30 days of any discharge which exceeds EPA levels for zinc describing the cause of the exceedance and action taken to prevent similar occurrences. APPC shall submit written reports for the first three years during which APPC discharges to Dominguez Channel. The report shall contain the date, time, volume, duration and zinc content of the discharge. These reports can be appended to the annual compliance report for the years during which discharges to Dominguez Channel occurred. The reports shall be Submitted to the CEC and the Port of Los Angeles.

Response: APPC/Watson does not have its own NPDES permit. Low Volume Waste (LVW; boiler blowdown) from the Cogen are authorized to be discharged to the Dominguez Channel under the Tesoro Los Angeles Refinery – Carson Operations NPDES permit (Order No. R4-2015-0295, NPDES No. CA0000680). Zinc is listed in the permit with an effluent limitation; therefore, a discharge would be analyzed for zinc. A copy of the annual NPDES report has been included

at the end of this annual compliance report.

COGENERATION CONDITIONS OF CERTIFICATION

COG-1 ARCO Petroleum Products Company (APPC) shall operate the facility as a cogeneration system in accordance with the definition of cogeneration contained in PRC Section 25134(a) and (b) and Title 18 CFR, Section 292.205(a)(1) and (a)(2)(i)(B).

Verification: APPC shall file with the CEC during each calendar year an annual report in which monthly average values of the following plant operating parameters will be given:

- a. Gas turbine, MW (gross) at the generator terminals for each unit
- b. Gas turbine operating hours for each unit
- c. For each CTG and each HRSG duct burner provide fuel input including:
 - type, natural gas, refinery gas or butane
 - rate, lb/hr
 - heating value (low), Btu/lb
 - firing hours
- d. Inlet air flow, lb/hr
- e. Combustion turbine exhaust gas temperature, Deg F
- f. NOx steam injection rate, lb/hr
- g. Stack exiting flue gas temperature, Deg F
- h. Steam turbine, MW (gross)
- i. Steam turbine operating hours
- j. Plant auxiliary load, MW (total)
- k. For the process steam:
 - process steam demand, lb/hr
 - demand hours
 - process steam temperature (Deg F), quality (%), pressure (PSIA)and enthalpy (Btu/lb) at plant boundary
- I. Feedwater rate (lb/hr), temperature (Deg F)
- m. Condensate return rate (lb/hr), temperature (Deg F)
- n. Process steam from auxiliary boilers, lb/hr; auxiliary boiler's operating hours

Or APPC may, with CEC concurrence, submit the following operating parameters:

- o. Monthly fuel use (includes quantity and Btu value) as evidenced by an invoice from the gas supplier
- p. Monthly electrical sales (includes kWh) as evidenced by an invoice to Southern California Edison Company
- q. Monthly steam sales (includes quantity and Btu value) as evidenced by an invoice (or equivalent) to APPC
- r. If the rate of items o, p, or q above differs by more than +5, +15, and +10 percent, respectively, from rated conditions, APPC shall provide, at the specific written request of the CEC Staff, an explanation of such anomaly
- s. Feedwater rate (lb/hr) and temperature (Deg F)
- t. Condensate return rate (lbs/hr) and temperature (Deg F)
- u. Process steam from auxiliary boilers, lb/hr; auxiliary boiler's operating hours.

Not less than thirty (30) days prior to the scheduled date for the CEC Decision on the AFC, APPC shall notify the CEC of APPC's preference for either conditions a-n, or o-u.

This report shall also provide information for each month on any partial or total power and/or process steam production curtailment, including duration of curtailment and reasons for

curtailment. The report shall be certified by the plant manager.

Response: Monthly average values of the above listed plant operating parameters are included in the tables below. Please note that parameter n. (auxiliary boilers) is not applicable, as there are no auxiliary boilers at this location.

COG-1 (a-n)							Un	it 91						
Subsection:	а	b					С				d	е	f	g
					GTG				HRSG		Inlet	GTG	DeNOx	Stack
			NG/RFG	Butane	Total	HHV	Firing	NG/RFG	HHV	Firing	Air Flow	Exhaust	Steam	Exhaust
	MW	Op Hours	<u>lb/hr</u>	<u>lb/hr</u>	<u>lb/hr</u>	BTU/lb	<u>Hours</u>	<u>lb/hr</u>	BTU/lb	<u>Hours</u>	<u>lb/hr</u>	deg F	<u>Ib/sec</u>	<u>deg F</u>
Jan-20	86.6	744	41412	1167	42579	20391	744	68.8	20391	744	2293699	1004	14.2	340
Feb-20	59.1	489	28595	848	29442	20656	489	104.6	20656	638	2293699	714	10.0	262
Mar-20	86.5	743	41458	1336	42794	20488	743	83.9	20488	743	2293699	1012	14.3	340
Apr-20	85.3	720	41234	1609	42843	20171	720	77.5	20171	719	2293699	1014	14.3	341
May-20	45.8	413	22894	873	23767	20389	413	68.3	20389	410	2293699	606	8.2	245
Jun-20	84.5	720	41067	1314	42381	20345	720	90.5	20345	720	2293699	1018	14.3	337
Jul-20	67.1	587	32697	668	33365	20524	587	84.4	20524	586	2293699	823	11.6	832
Aug-20	83.2	744	41232	1059	42291	19972	744	88.3	19972	744	2293699	1023	14.5	337
Sep-20	83.7	720	40793	1162	41955	20338	720	82.2	20338	720	2293699	1022	14.2	338
Oct-20	27.6	266	14264	826	15090	20230	266	27.0	20230	266	2293699	420	5.3	190
Nov-20	80.4	693	38876	288	39165	20187	693	60.7	20187	691	2293699	970	13.4	329
Dec-20	84.8	743	40785	342	41128	19696	743	86.6	19696	743	2293699	1007	13.9	331
COG-1 (a-n)	-	L .						it 92			- 4	_	f	_
Subsection:	а	b			GTG		С	1	HRSG		d Inlet	e GTG	DeNOx	g Ctools
			NC/DEC	Dutono		11111/	Fising	NC/DEC		Fisin a				Stack
	MW	On Hours	NG/RFG lb/hr	Butane Ib/br	Total	HHV BTU/lb	Firing	NG/RFG lb/hr	HHV BTU/lb	Firing	Air Flow lb/hr	Exhaust	Steam lb/sec	Exhaust
Jan-20	79.0	Op Hours 683	37416	<u>lb/hr</u> 2505	<u>lb/hr</u> 39922	20391	Hours 683	64.6	20391	Hours 745	2293699	<u>deg F</u> 928	12.8	<u>deg F</u> 326
Feb-20	87.8	696	41157	2505	43663	20391	696	160.3	20656	696	2293699	1030	14.3	336
Mar-20	88.4	743	41157	2505	44202	20656	743	89.0	20488	743	2293699	1030	14.5	337
Apr-20	88.4 87.4	743	41573	2505	44202	20488	743	74.1	20488	743	2293699	1017	14.5	337
May-20	86.3	744	41573	2505	43993	20171	744	151.9	20171	719	2293699	1019	14.6	333
Jun-20	86.0	720	41303	2505	43808	20345	720	86.2	20345	720	2293699	1023	14.5	336
Jul-20	85.7	744	41862	2505	44367	20524	744	127.9	20524	743	2293699	1024	14.9	335
Aug-20	84.7	744	41336	2505	43841	19972	744	86.2	19972	744	2293699	1028	14.7	336
Sep-20	85.6	720	41041	2505	43547	20338	720	77.6	20338	720	2293699	1027	14.4	337
Oct-20	85.0	744	41020	2505	43525	20230	744	129.1	20230	744	2293699	1027	14.4	336
Nov-20	87.5	720	41323	2505	43828	20187	720	67.5	20187	720	2293699	1020	14.3	341
Dec-20	86.7													
	80.7	1 /43	40975	2505	43480	19696	/43	86.0	19696	/43	2293699	1011	14.1	340
	80.7	743	40975	2505	43480	19696	743 Un	86.0 it 93	19696	743	2293699	1011	14.1	340
COG-1 (a-n) Subsection:	a	/43	40975	2505	43480		Un	it 93	19696	/43	2293699 d	e e	14.1 f	
COG-1 (a-n)			40975	2505	43480 GTG				19696 HRSG	/43		e	f	g Stack
COG-1 (a-n)			NG/RFG	Butane			Un			743 Firing	d			g
COG-1 (a-n)					GTG		Un c	it 93	HRSG		d Inlet	e GTG	f DeNOx	g Stack
COG-1 (a-n)	a	b	NG/RFG	Butane	GTG Total	HHV	Un c Firing	NG/RFG	HRSG HHV	Firing	d Inlet Air Flow	e GTG Exhaust	f DeNOx Steam	g Stack Exhaust
COG-1 (a-n) Subsection:	а <u>МW</u>	b Op Hours	NG/RFG <u>lb/hr</u>	Butane lb/hr	GTG Total <u>lb/hr</u>	HHV BTU/lb	C Firing Hours	NG/RFG	HRSG HHV BTU/lb	Firing <u>Hours</u>	d Inlet Air Flow	e GTG Exhaust deg F	f DeNOx Steam lb/sec	g Stack Exhaust deg F
COG-1 (a-n) Subsection:	<u>MW</u> 81.7	b Op Hours 745	NG/RFG <u>lb/hr</u> 40353	Butane lb/hr 1828	GTG Total <u>lb/hr</u> 42181	HHV <u>BTU/lb</u> 20391	Firing Hours 745	NG/RFG <u>lb/hr</u> 84.9	HRSG HHV BTU/lb 20391	Firing Hours 745	d Inlet Air Flow <u>lb/hr</u> 2293699	e GTG Exhaust deg F 1015	f DeNOx Steam lb/sec 13.6	g Stack Exhaust deg F 348
Subsection: Jan-20 Feb-20	MW 81.7 41.1	b <u>Op Hours</u> 745 363	NG/RFG <u>lb/hr</u> 40353 21057	Butane <u>lb/hr</u> 1828 1189	GTG Total <u>lb/hr</u> 42181 22245	HHV <u>BTU/lb</u> 20391 20656	Firing Hours 745 363	NG/RFG <u>Ib/hr</u> 84.9 82.5	HRSG HHV <u>BTU/lb</u> 20391 20656	Firing Hours 745 542	d Inlet Air Flow <u>lb/hr</u> 2293699 2293699	e GTG Exhaust deg F 1015 569	f DeNOx Steam lb/sec 13.6 7.1	g Stack Exhaust deg F 348 220
Jan-20 Feb-20 Mar-20	<u>MW</u> 81.7 41.1 82.3	0p Hours 745 363 743	NG/RFG <u>lb/hr</u> 40353 21057 40397	Butane <u>lb/hr</u> 1828 1189 1296	GTG Total lb/hr 42181 22245 41693	HHV <u>BTU/lb</u> 20391 20656 20488 20171 20389	Firing Hours 745 363 743	NG/RFG <u>lb/hr</u> 84.9 82.5 81.8	HRSG HHV BTU/lb 20391 20656 20488	Firing Hours 745 542 743	d Inlet Air Flow <u>lb/hr</u> 2293699 2293699 2293699 2293699 2293699	e GTG Exhaust deg F 1015 569 1024	f DeNOx Steam <u>lb/sec</u> 13.6 7.1 13.7	g Stack Exhaust deg F 348 220 340
Jan-20 Feb-20 Mar-20 Apr-20	MW 81.7 41.1 82.3 80.7	b Op Hours 745 363 743 720	NG/RFG <u>lb/hr</u> 40353 21057 40397 40020	Butane lb/hr 1828 1189 1296 1497 1898 1860	GTG Total lb/hr 42181 22245 41693 41516	HHV BTU/lb 20391 20656 20488 20171	Firing Hours 745 363 743 720	NG/RFG <u>lb/hr</u> 84.9 82.5 81.8 69.8	HRSG HHV BTU/lb 20391 20656 20488 20171	Firing Hours 745 542 743 719	d Inlet Air Flow <u>lb/hr</u> 2293699 2293699 2293699 2293699	e GTG Exhaust deg F 1015 569 1024 1028	f DeNOx Steam lb/sec 13.6 7.1 13.7	g Stack Exhaust deg F 348 220 340 341
Jan-20 Feb-20 Mar-20 Apr-20 May-20 Jun-20 Jul-20	MW 81.7 41.1 82.3 80.7 72.5 81.6 81.5	0p Hours 745 363 743 720 671 720 744	NG/RFG lb/hr 40353 21057 40397 40020 36366 40565 41130	Butane lb/hr 1828 1189 1296 1497 1898 1860 1985	GTG Total lb/hr 42181 22245 41693 41516 38264 42425 43115	HHV BTU/lb 20391 20656 20488 20171 20389 20345 20524	Firing Hours 745 363 743 720 671 720 744	NG/RFG b/hr 84.9 82.5 81.8 69.8 131.5 86.5 128.0	HRSG HHV BTU/lb 20391 20656 20488 20171 20389 20345 20524	Firing Hours 745 542 743 719 660 720	d Inlet Air Flow <u>lb/hr</u> 2293699 2293699 2293699 2293699 2293699 2293699 2293699	e GTG Exhaust deg F 1015 569 1024 1028 936 1028 1029	f DeNOx Steam lb/sec 13.6 7.1 13.7 13.6 12.5 14.0 14.3	g Stack Exhaust deg F 348 220 340 341 321 340 339
Jan-20 Feb-20 Mar-20 May-20 Jun-20 Jun-20 Jun-20 Jun-20 Jul-20 Aug-20	MW 81.7 41.1 82.3 80.7 72.5 81.6 81.5 80.0	0p Hours 745 363 743 720 671 720 744 744	NG/RFG b/hr 40353 21057 40397 40020 36366 40565 41130 40538	Butane b/hr 1828 1189 1296 1497 1898 1860 1985 1947	GTG Total b/hr 42181 22245 41693 41516 38264 42425 43115 42485	HHV BTU/lb 20391 20656 20488 20171 20389 20345 20524 19972	Firing Hours 745 363 743 720 671 720 744	NG/RFG b/hr 84.9 82.5 81.8 69.8 131.5 86.5 128.0 86.1	HRSG HHV BTU/lb 20391 20656 20488 20171 20389 20345 20524 19972	Firing Hours 745 542 743 719 660 720 744	d Inlet Air Flow b/hr 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699	e GTG Exhaust deg F 1015 569 1024 1028 936 1028 1029	f DeNOx Steam lb/sec 13.6 7.1 13.7 13.6 12.5 14.0 14.3	g Stack Exhaust deg F 348 220 340 341 321 340 339 340
Jan-20 Feb-20 Mar-20 May-20 Jun-20 Jun-20 May-20 Jun-20 Jul-20 Aug-20 Sep-20	a 81.7 41.1 82.3 80.7 72.5 81.6 81.5 80.0 79.7	0p Hours 745 363 743 720 671 720 744 744 720	NG/RFG lb/hr 40353 21057 40397 40020 36366 40565 41130 40538 39769	Butane b/hr 1828 1189 1296 1497 1898 1860 1985 1947 1659	GTG Total lb/hr 42181 22245 41693 41516 38264 42425 43115 42485 41428	HHV BTU/lb 20391 20656 20488 20171 20389 20345 20524 19972 20338	Firing Hours 745 363 743 720 671 720 744 744 720	NG/RFG b/hr 84.9 82.5 81.8 69.8 131.5 86.5 128.0 86.1 77.6	HRSG HHV BTU/lb 20391 20656 20488 20171 20389 20345 20524 19972 20338	Firing Hours 745 542 743 719 660 720 744 744	d Inlet Air Flow <u>lb/hr</u> 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699	e GTG Exhaust deg F 1015 569 1024 1028 936 1028 1029 1032	f DeNOx Steam <u>lb/sec</u> 13.6 7.1 13.7 13.6 12.5 14.0 14.3 14.1	8 Stack Exhaust deg F 348 220 340 341 321 340 339 340 340
Jan-20 Feb-20 Mar-20 Apr-20 Jul-20 Jul-20 Aug-20 Jul-20 Aug-20 Sep-20 Oct-20	81.7 41.1 82.3 80.7 72.5 81.6 81.5 80.0 79.7 78.6	0p Hours 745 363 743 720 671 720 744 744 720	NG/RFG <u>lb/hr</u> 40353 21057 40397 40020 36366 40565 41130 40538 39769 39495	Butane b/hr 1828 1189 1296 1497 1898 1860 1985 1947 1659 1954	GTG Total b/hr 42181 22245 41693 41516 42425 43115 42485 41428 41450	HHV BTU/lb 20391 20656 20488 20171 20389 20345 20524 19972 20338 20230	Firing Hours 745 363 743 720 671 720 744 744 720 744	NG/RFG b/hr 84.9 82.5 81.8 69.8 131.5 86.5 128.0 86.1 77.6 128.7	HRSG HHV BTU/lb 20391 20656 20488 20171 20389 20345 20524 19972 20338 20230	Firing Hours 745 542 743 719 660 720 744 744 720	d Inlet Air Flow <u>lb/hr</u> 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699	e GTG Exhaust deg F 1015 569 1024 1028 1028 1029 1032 1031 1025	f DeNOx Steam Ib/sec 13.6 7.1 13.7 13.6 12.5 14.0 14.3 14.1 13.6 13.4	g Stack Exhaust deg F 348 220 340 341 321 340 339 340 340 339
Jan-20 Feb-20 Mar-20 Apr-20 Jul-20 Jul-20 Jul-20 Aug-20 Sep-20 Oct-20 Nov-20	81.7 41.1 82.3 80.7 72.5 81.6 81.5 80.0 79.7 78.6 77.6	0p Hours 745 363 743 720 671 720 744 744 720 744	NG/RFG b/hr 40353 21057 40397 40020 40020 40565 41130 40538 39769 39495 38403	Butane b/hr 1828 1189 1296 1497 1898 1860 1985 1947 1659 1954 1530	GTG Total b/hr 42181 22245 41693 41516 38264 42425 43115 42485 41428 41450 39933	HHV BTU/lb 20391 20656 20488 20171 20389 20345 20524 19972 20338 20230 20187	Firing Hours 745 363 743 720 671 720 744 744 720 744 720	NG/RFG b/hr 84.9 82.5 81.8 69.8 131.5 86.5 128.0 86.1 77.6 128.7 68.7	HRSG HHV BTU/lb 20391 20656 20488 20171 20389 20345 20524 19972 20338 20230 20187	Firing Hours 745 542 743 719 660 720 744 744 720	d Inlet Air Flow <u>lb/hr</u> 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699	e GTG Exhaust deg F 1015 569 1024 1028 936 1028 1029 1032 1031 1025	f DeNOx Steam Ib/sec 13.6 7.1 13.7 13.6 12.5 14.0 14.3 14.1 13.6 13.4	8 Stack Exhaust deg F 348 220 340 341 321 340 339 340 340 339 340
Jan-20 Feb-20 Mar-20 Apr-20 Jun-20 Jun-20 Jul-20 Aug-20 Sep-20 Oct-20 Nov-20 Dec-20	81.7 41.1 82.3 80.7 72.5 81.6 81.5 80.0 79.7 78.6	0p Hours 745 363 743 720 671 720 744 744 720	NG/RFG <u>lb/hr</u> 40353 21057 40397 40020 36366 40565 41130 40538 39769 39495	Butane b/hr 1828 1189 1296 1497 1898 1860 1985 1947 1659 1954	GTG Total b/hr 42181 22245 41693 41516 42425 43115 42485 41428 41450	HHV BTU/lb 20391 20656 20488 20171 20389 20345 20524 19972 20338 20230	Firing Hours 745 363 743 720 671 720 744 720 744 720 744 720 744 720 744 720	NG/RFG b/hr 84.9 82.5 81.8 69.8 131.5 86.5 128.0 86.1 77.6 128.7 68.7 86.1	HRSG HHV BTU/lb 20391 20656 20488 20171 20389 20345 20524 19972 20338 20230	Firing Hours 745 542 743 719 660 720 744 744 720	d Inlet Air Flow <u>lb/hr</u> 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699	e GTG Exhaust deg F 1015 569 1024 1028 1028 1029 1032 1031 1025	f DeNOx Steam Ib/sec 13.6 7.1 13.7 13.6 12.5 14.0 14.3 14.1 13.6 13.4	g Stack Exhaust deg F 348 220 340 341 321 340 339 340 340 339
Jan-20 Feb-20 Mar-20 Apr-20 Jun-20 Jun-20 Jun-20 Sep-20 Oct-20 Nov-20 Dec-20 COG-1 (a-n)	a 81.7 41.1 82.3 80.7 72.5 81.6 81.5 80.0 79.7 78.6 77.6	0p Hours 745 363 743 720 671 720 744 744 720 744 720 743	NG/RFG b/hr 40353 21057 40397 40020 40020 40565 41130 40538 39769 39495 38403	Butane b/hr 1828 1189 1296 1497 1898 1860 1985 1947 1659 1954 1530	GTG Total b/hr 42181 22245 41693 41516 38264 42425 43115 42485 41428 41450 39933	HHV BTU/lb 20391 20656 20488 20171 20389 20345 20524 19972 20338 20230 20187 19696	Firing Hours 745 363 743 720 671 720 744 720 744 720 744 720 744 720 743 Un	NG/RFG b/hr 84.9 82.5 81.8 69.8 131.5 86.5 128.0 86.1 77.6 128.7 68.7	HRSG HHV BTU/lb 20391 20656 20488 20171 20389 20345 20524 19972 20338 20230 20187	Firing Hours 745 542 743 719 660 720 744 744 720	d Inlet Air Flow <u>lb/hr</u> 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699	e GTG Exhaust deg E 1015 569 1024 1028 936 1028 1029 1032 1031 1025 1001	f DeNOx Steam lb/sec 13.6 7.1 13.7 13.6 12.5 14.0 14.3 14.1 13.6 13.4 12.8	8 Stack Exhaust deg F 348 220 340 341 321 340 339 340 340 339 340 340 340 340 340
Jan-20 Feb-20 Mar-20 Apr-20 Jul-20 Jul-20 Aug-20 Sep-20 Oct-20 Nov-20 Dec-20	81.7 41.1 82.3 80.7 72.5 81.6 81.5 80.0 79.7 78.6 77.6	0p Hours 745 363 743 720 671 720 744 744 720 744	NG/RFG b/hr 40353 21057 40397 40020 40020 40565 41130 40538 39769 39495 38403	Butane b/hr 1828 1189 1296 1497 1898 1860 1985 1947 1659 1954 1530	GTG Total b/hr 42181 22245 41693 41516 38264 42425 43115 42485 414420 39933 39430	HHV BTU/lb 20391 20656 20488 20171 20389 20345 20524 19972 20338 20230 20187 19696	Firing Hours 745 363 743 720 671 720 744 720 744 720 744 720 744 720 744 720	NG/RFG b/hr 84.9 82.5 81.8 69.8 131.5 86.5 128.0 86.1 77.6 128.7 68.7 86.1	HRSG HHV BTU/lb 20391 20656 20488 20171 20389 20345 20524 19972 20338 20230 20187	Firing Hours 745 542 743 719 660 720 744 744 720	d Inlet Air Flow b/hr 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699	e GTG Exhaust deg F 1015 569 1024 1028 936 1028 1029 1032 1031 1025 1001 973	f DeNOx Steam lb/sec 13.6 7.1 13.7 13.6 12.5 14.0 14.3 14.1 13.6 13.4 12.8 12.4	g Stack Exhaust deg F 348 220 340 341 321 340 339 340 340 349 340 340 340 340 340 340 340 340 340 340
GOG-1 (a-n) Subsection: Jan-20 Feb-20 Mar-20 Apr-20 Jul-20 Jul-20 Aug-20 Sep-20 Oct-20 Nov-20 Dec-20 COG-1 (a-n)	a 81.7 41.1 82.3 80.7 72.5 81.6 81.5 80.0 79.7 78.6 77.6	0p Hours 745 363 743 720 671 720 744 744 720 744 720 743	NG/RFG lb/hr 40353 21057 40397 40020 36366 40565 41130 40538 39769 39495 38403 37788	Butane b/hr 1828 1189 1296 1497 1898 1860 1985 1947 1659 1954 1530 1643	GTG Total b/hr 42181 22245 41693 41516 38264 42425 43115 42485 41428 41428 41450 39933 39430	HHV BTU/lb 20391 20656 20488 20171 20389 20345 20524 19972 20338 20230 20187	Firing Hours 745 363 743 720 671 720 744 744 720 744 720 743 Un	NG/RFG b/hr 84.9 82.5 81.8 69.8 131.5 86.5 128.0 86.1 77.6 128.7 86.1 it 94	HRSG HHV BTU/lb 20391 20656 20488 20171 20389 20345 20524 19972 20338 20230 20187 19696	Firing Hours 745 542 743 719 660 720 744 744 720 743	d Inlet Air Flow b/hr 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699	e GTG Exhaust deg F 1015 569 1024 1028 936 1028 1029 1032 1031 1025 1001 973	f DeNOx Steam b/sec 13.6 7.1 13.7 13.6 12.5 14.0 14.3 14.1 13.6 13.4 12.8 12.4	g Stack Exhaust deg F 348 220 340 341 321 340 339 340 340 342 342 343
GOG-1 (a-n) Subsection: Jan-20 Feb-20 Mar-20 Apr-20 Jul-20 Jul-20 Aug-20 Sep-20 Oct-20 Nov-20 Dec-20 COG-1 (a-n)	81.7 41.1 82.3 80.7 72.5 81.6 81.5 80.0 79.7 78.6 77.6	Dp Hours 745 363 743 720 671 720 744 744 720 744 720 743	NG/RFG lb/hr 40353 21057 40020 36366 40565 41130 40538 39769 39495 38403 37788	Butane b/hr 1828 1189 1296 1497 1898 1860 1985 1947 1659 1954 1530 1643 Butane	GTG Total b/hr 42181 22245 41693 41516 38264 42425 43115 42485 41428 41450 39933 39430 GTG Total	HHV BTU/ib 20391 20656 20488 20171 20389 20345 20524 19972 20338 20230 20187 19696	Firing Hours 745 363 743 720 671 720 744 744 720 744 720 743 Un C	NG/RFG b/hr 84.9 82.5 81.8 69.8 131.5 86.5 128.0 86.1 77.6 128.7 68.7 18.7 19.8	HRSG HHV BTU/lb 20391 20656 20488 20171 20389 20345 20524 19972 20338 20230 20187 19696 HRSG HHV	Firing Hours 745 542 743 719 660 720 744 744 720 743 Firing	d Inlet Air Flow Ib/hr 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2193699 2293699 2293699 2193699 2293699	e GTG Exhaust deg F 1015 569 1024 1028 936 1028 1029 1032 1031 1025 1001 973	f DeNOx Steam lb/sec 13.6 7.1 13.7 13.6 12.5 14.0 14.3 14.1 13.6 12.4 f DeNOx Steam	g Stack Exhaust deg F 348 220 340 341 321 340 339 340 340 349 342 343
Jan-20 Feb-20 Mar-20 Jul-20 Jul-20 Jul-20 Jul-20 Jul-20 Aug-20 Sep-20 Oct-20 Nov-20 Dec-20 COG-1 (a-n) Subsection:	81.7 41.1 82.3 80.7 72.5 81.6 81.5 80.0 79.7 78.6 77.6 76.2	b	NG/RFG lb/hr 40353 21057 40020 36366 40565 41130 40538 39769 39495 38403 37788	Butane b/hr 1828 1189 1296 1497 1898 1860 1985 1947 1659 1954 1530 1643 Butane b/hr	GTG Total b/hr 42181 22245 41693 41516 38264 42425 43115 42485 41428 41450 39933 39430 GTG Total b/hr	HHV BTU/Ib 20391 20656 20488 20171 20389 20345 20524 19972 20338 20230 20187 19696	Firing Hours 745 363 743 720 671 720 744 720 744 720 744 720 743 Un c	NG/RFG b/hr 84.9 82.5 81.8 69.8 131.5 86.5 128.0 86.1 77.6 128.7 68.7 86.1 it 94 NG/RFG b/hr	HRSG HHV BTU/lb 20391 20656 20488 20171 20389 20345 20524 19972 20338 20230 20187 19696 HRSG HHV BTU/lb	Firing Hours 745 542 743 719 660 720 744 744 720 744 720 743 Firing Hours	d Inlet Air Flow b/hr 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699	e GTG Exhaust deg F 1015 569 1024 1028 936 1028 1029 1032 1031 1025 1001 973 e GTG Exhaust deg F	f DeNOx Steam lb/sec 13.6 7.1 13.7 13.6 12.5 14.0 14.3 14.1 13.6 12.8 12.4 f DeNOx Steam lb/sec	g Stack Exhaust deg F 348 220 340 341 321 340 339 340 340 339 342 343 349 342 343
Jan-20 Feb-20 Mar-20 Apr-20 Jul-20 Jul-20 Jul-20 Aug-20 Sep-20 Oct-20 Nov-20 Dec-20 COG-1 (a-n) Subsection:	81.5 80.0 79.7 78.6 77.6 76.2 80.0	b	NG/RFG b/hr 40353 21057 40020 36366 40565 41130 40538 39769 39495 38403 37788 NG/RFG b/hr 41230	Butane b/hr 1828 1189 1296 1497 1898 1860 1985 1947 1659 1954 1530 1643 Butane b/hr 693	GTG Total b/hr 42181 22245 41693 41516 38264 42425 43115 42485 41428 41450 39933 39430 GTG Total b/hr 41922	HHV BTU/lb 20391 20656 20488 20171 20389 20345 20524 19972 20338 20230 20187 19696	Firing Hours 745 363 743 720 671 720 744 720 744 720 744 720 745 Un c Firing Hours 745	NG/RFG b/hr 84.9 82.5 81.8 69.8 131.5 86.5 128.0 86.1 77.6 128.7 68.7 86.1 it 94 NG/RFG b/hr 73.6	HRSG HHV BTU/lb 20391 20656 20488 20171 20389 20345 20524 19972 20338 20230 20187 19696 HRSG HHV BTU/lb 20391	Firing Hours 745 542 743 719 660 720 744 744 720 744 720 743 Firing Hours 745	d Inlet Air Flow b/hr 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699	e GTG Exhaust deg F 1015 569 1024 1028 936 1029 1032 1031 1025 1001 973 e GTG Exhaust deg F 1020	f DeNOx Steam lb/sec 13.6 7.1 13.7 13.6 12.5 14.0 14.3 14.1 13.6 12.8 12.4 f DeNOx Steam lb/sec 14.1	## Stack Exhaust
Jan-20 Feb-20 Mar-20 Jul-20 Jul-20 Jul-20 Jul-20 Aug-20 Sep-20 Oct-20 Nov-20 Dec-20 COG-1 (a-n) Subsection: Jan-20 Feb-20	81.7 41.1 82.3 80.7 72.5 81.6 81.5 80.0 79.7 78.6 77.6 76.2 a	745 363 745 363 740 671 720 744 744 720 744 720 743 b Op Hours 745 696	NG/RFG lb/hr 40353 21057 40397 40020 36366 40565 41130 40538 39769 39495 38403 37788 NG/RFG lb/hr 41230 40433	Butane b/hr 1828 1189 1296 1497 1898 1860 1985 1947 1659 1954 1530 1643 Butane b/hr 693 1446	GTG Total b/hr 42181 22245 41693 41516 38264 42425 43115 42485 41428 41450 39933 39430 GTG Total b/hr 41922 41880	HHV BTU/lb 20391 20656 20488 20171 20389 20345 20524 19972 20338 20230 20187 19696 HHV BTU/lb 20391 20656	Firing Hours 745 363 743 720 671 720 744 744 720 744 720 743 Un c Firing Hours 745 696	NG/RFG b/hr 84.9 82.5 81.8 69.8 131.5 86.5 128.0 86.1 77.6 128.7 68.7 86.1 it 94 NG/RFG b/hr 73.6 155.9	HRSG HHV BTU/lb 20391 20656 20488 20171 20389 20345 20524 19972 20338 20230 20187 19696 HRSG HHV BTU/lb 20391 20656	Firing Hours 745 542 743 719 660 720 744 744 720 744 720 743 Firing Hours 745 696	d Inlet Air Flow b/hr 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699	e GTG Exhaust deg F 1015 569 1024 1028 936 1029 1032 1031 1025 1001 973 e GTG Exhaust deg F 1020 1026	f DeNOx Steam b/sec 13.6 7.1 13.7 13.6 12.5 14.0 14.3 14.1 13.6 13.4 12.8 12.4 f DeNOx Steam b/sec 14.1 13.8	## Stack Exhaust
Jan-20 Feb-20 Mar-20 Jul-20 Jul-20 Jul-20 Jul-20 Aug-20 Sep-20 Oct-20 Nov-20 Dec-20 COG-1 (a-n) Subsection: Jan-20 Feb-20 Mar-20	81.7 41.1 82.3 80.7 72.5 81.6 81.5 80.0 79.7 78.6 77.6 76.2 a	745 363 743 743 720 671 720 744 744 720 743 b Op Hours 745 696 743	NG/RFG b/hr 40353 21057 40397 40397 40020 36366 40565 41130 40538 39769 39495 38403 37788 NG/RFG b/hr 41230 40433 40926	Butane b/hr 1828 1189 1296 1497 1898 1860 1985 1947 1659 1954 1530 1643 Butane b/hr 693 1446 769	GTG Total b/hr 42181 22245 41693 41516 42425 43115 42485 41428 41450 39933 39430 GTG Total b/hr 41922 41880 41695	HHV BTU/lb 20391 20656 20488 20171 20389 20345 20524 19972 20338 20230 20187 19696 HHV BTU/lb 20391 20656 20488	Firing Hours 745 363 743 720 671 720 744 744 720 744 720 743 Un c	NG/RFG b/hr 84.9 82.5 81.8 69.8 131.5 86.5 128.0 86.1 77.6 128.7 68.7 86.1 it 94 NG/RFG b/hr 73.6 155.9 83.1	HRSG HHV BTU/lb 20391 20656 20488 20171 20389 20345 20524 19972 20338 20230 20187 19696 HRSG HHV BTU/lb 20391 20656 20488	Firing Hours 745 542 743 719 660 720 744 744 720 744 720 743 Firing Hours 745 696 743	d Inlet Air Flow b/hr 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699	e GTG Exhaust deg F 1015 569 1024 1028 1029 1032 1031 1025 1001 973 e GTG Exhaust deg F 1020 1026 1026	f DeNOx Steam lb/sec 13.6 7.1 13.7 13.6 12.5 14.0 14.3 14.1 13.6 13.4 12.8 12.4 f DeNOx Steam lb/sec 14.1 13.8 14.0	## Stack Exhaust deg F 348 220 340 341 321 340 339 340 340 340 340 340 340 340 340 340 340 340 350 360 3
Jan-20 Feb-20 Mar-20 Jul-20 Jul-20 Jul-20 Jul-20 Aug-20 Sep-20 Oct-20 Nov-20 Dec-20 COG-1 (a-n) Subsection: Jan-20 Feb-20 Mar-20 Aug-20	MW 81.7 41.1 82.3 80.7 72.5 81.6 81.5 80.0 79.7 78.6 77.6 76.2 a	745 363 743 720 671 720 744 744 720 743 b Op Hours 745 696 743	NG/RFG b/hr 40353 21057 40397 40397 40306 40565 41130 40538 39769 39495 38403 37788 NG/RFG b/hr 41230 40433 40926 40744	Butane b/hr 1828 1189 1296 1497 1898 1860 1985 1947 1659 1954 1530 1643 Butane b/hr 693 1446 769 685	GTG Total b/hr 42181 22245 41693 41516 42425 43115 42485 41428 41450 39933 39430 GTG Total b/hr 41922 41880 41695 41429	HHV BTU/lb 20391 20656 20488 20171 20389 20345 20524 19972 20338 20230 20187 19696 HHV BTU/lb 20391 20656 20488 20171	Firing Hours 745 363 743 720 671 720 744 744 720 744 720 743 Un c Firing Hours 745 696 743 720	NG/RFG b/hr 84.9 82.5 81.8 69.8 131.5 86.5 128.0 86.1 77.6 128.7 68.7 86.1 it 94 NG/RFG b/hr 73.6 155.9 83.1 70.9	HRSG HHV BTU/lb 20391 20656 20488 20171 20389 20345 20524 19972 20338 20230 20187 19696 HRSG HHV BTU/lb 20391 20656 20488 20171	Firing Hours 745 542 743 719 660 720 744 744 720 743 Firing Hours 745 696 743 720	d Inlet Air Flow b/hr 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699	e GTG Exhaust deg F 1015 569 1024 1028 1029 1032 1031 1025 1001 973 e GTG Exhaust deg F 1020 1026	f DeNOx Steam b/sec 13.6 7.1 13.7 13.6 12.5 14.0 14.3 14.1 13.6 13.4 12.8 12.4 f DeNOx Steam b/sec 14.1 13.8 14.0 14.0	g Stack Exhaust deg F 348 220 340 341 321 340 339 340 340 349 340 340 349 340 349 342 343
COG-1 (a-n) Subsection: Jan-20 Feb-20 Mar-20 Apr-20 Jun-20 Jul-20 Aug-20 Sep-20 Oct-20 Nov-20 Dec-20 COG-1 (a-n) Subsection: Jan-20 Feb-20 Mar-20 Apr-20 Mar-20 Mar-20 Mar-20 Mar-20 May-20	MW 81.7 41.1 82.3 80.7 72.5 81.6 81.5 80.0 79.7 78.6 76.2 a MW 86.2 84.7 85.2 84.2	b	NG/RFG b/hr 40353 21057 40397 40020 36366 40565 41130 40538 39769 39495 38403 37788 NG/RFG b/hr 41230 40433 40926 40744 40749	Butane b/hr 1828 1189 1296 1497 1898 1860 1985 1947 1659 1954 1530 1643 Butane b/hr 693 1446 769 685 1167	GTG Total b/hr 42181 22245 41693 41516 38264 42425 43115 42485 41428 41428 GTG Total b/hr 41922 41880 41695 41429 41916	HHV BTU/lb 20391 20656 20488 20171 20389 20345 20524 19972 20338 20230 20187 19696 HHV BTU/lb 20391 20656 20488 20171 20389	Firing Hours 745 363 743 720 671 720 744 744 720 743 Un c Firing Hours 745 696 743 720 744	NG/RFG b/hr 84.9 84.9 82.5 81.8 69.8 131.5 86.5 128.0 86.1 77.6 128.7 86.1 it 94 NG/RFG b/hr 73.6 155.9 83.1 70.9	HRSG HHV BTU/lb 20391 20556 20488 20171 20389 20345 20524 19972 20338 20230 20187 19696 HRSG HHV BTU/lb 20391 20656 20488 20171 20389	Firing Hours 745 542 743 719 660 720 744 744 720 743 Firing Hours 745 696 743 720 743	d Inlet Air Flow b/hr 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699	e GTG Exhaust deg F 1015 569 1024 1028 936 1029 1032 1031 1001 973 e GTG Exhaust deg F 1026 1026 1023	f DeNOx Steam b/sec 13.6 7.1 13.7 13.6 12.5 14.0 14.3 14.1 13.6 13.4 12.8 12.4 f DeNOx Steam b/sec 14.1 13.8 14.0 14.0 14.1	g Stack Exhaust deg F 348 220 340 341 321 340 339 340 340 349 342 343 5 5 5 5 6 6 7 8 9 8 9 8 9 8 9 9 9 9 9 9 9 9 9 9 9 9
GOG-1 (a-n) Subsection: Jan-20 Feb-20 Mar-20 Apr-20 Jun-20 Jul-20 Aug-20 Oct-20 Nov-20 Dec-20 COG-1 (a-n) Subsection: Jan-20 Feb-20 Mar-20 Apr-20 Jun-20	MW 81.7 41.1 82.3 80.7 72.5 81.6 81.5 80.0 79.7 78.6 76.2 a MW 86.2 84.7 85.2 84.2 83.4	b	NG/RFG b/hr 40353 21057 40397 40020 36366 40565 41130 40538 39769 39495 38403 37788 NG/RFG b/hr 41230 40433 40926 40744 40749 40460	Butane b/hr 1828 1189 1296 1497 1898 1860 1985 1947 1659 1954 1530 1643 Butane b/hr 693 1446 769 685 1167 737	GTG Total b/hr 42181 22245 41693 41516 38264 42425 43115 42485 41428 41428 GTG Total b/hr 41922 41800 41695 41429 41916 41197	HHV BTU/lb 20391 20656 20488 20171 20389 20345 20524 19972 20338 20230 20187 19696 HHV BTU/lb 20391 20656 20488 20171 20389 20345	Firing Hours 745 363 743 720 671 720 744 744 720 743 Un c Firing Hours 745 696 743 720 744 720 744 745	NG/RFG b/hr 84.9 84.9 82.5 81.8 69.8 131.5 86.5 128.0 86.1 77.6 128.7 86.1 it 94 NG/RFG b/hr 73.6 155.7 85.5	HRSG HHV BTU/lb 20391 20656 20488 20171 20389 20345 20524 19972 20338 20230 19696 HRSG HHV BTU/lb 20391 20656 20488 20171 20389 20345	Firing Hours 745 542 743 719 660 720 744 744 720 744 720 743 Firing Hours 745 696 743 720 743	d Inlet Air Flow b/hr 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699	e GTG Exhaust deg F 1015 569 1024 1028 1028 1029 1032 1031 1025 1001 973 e GTG Exhaust deg F 1020 1026 1023 1026 1023	f DeNOx Steam b/sec 13.6 7.1 13.7 13.6 12.5 14.0 14.3 14.1 13.6 12.4 f DeNOx Steam b/sec 14.1 13.6 12.4 14.1 14.0 14.1	g Stack Exhaust deg F 348 220 340 341 321 340 339 340 340 343 342 343 5tack Exhaust deg F 352 348 348 348
GOG-1 (a-n) Subsection: Jan-20 Feb-20 Mar-20 Apr-20 Jun-20 Jul-20 Aug-20 Sep-20 Oct-20 Nov-20 Dec-20 COG-1 (a-n) Subsection: Jan-20 Feb-20 Mar-20 Apr-20 Jul-20 Jul-20 Jul-20 Jul-20 Jul-20 Jul-20 Jul-20 Jul-20	MW 81.7 41.1 82.3 80.7 72.5 81.6 81.5 80.0 79.7 78.6 77.6 2 4 86.2 84.7 85.2 84.2 83.4 82.8 82.5	b	NG/RFG b/hr 40353 21057 40020 36366 40565 41130 40538 39769 38403 37788 NG/RFG b/hr 41230 40433 40926 40744 40749 40460 40954	Butane b/hr 1828 1189 1296 1497 1898 1860 1985 1947 1659 1954 1530 1643 Butane b/hr 693 1446 769 685 1167 737 627	GTG Total b/hr 42181 22245 41693 41516 38264 42425 43115 42485 41428 41429 4180 GTG Total b/hr 41922 41880 41695 41429 41916 41197 41581	HHV BTU/lb 20391 20656 20488 20171 20389 20345 20524 19972 20338 20230 20187 19696 HHV BTU/lb 20391 20656 20488 20171 20389 20345 20524	Firing	NG/RFG b/hr 84.9 82.5 81.8 69.8 131.5 86.5 128.0 86.1 77.6 128.7 68.7 86.1 it 94 NG/RFG b/hr 73.6 155.9 83.1 70.9 155.7	HRSG HHV BTU/lb 20391 20656 20488 20171 20389 20345 20524 19972 20338 20230 20187 19696 HRSG HHV BTU/lb 20391 20656 20488 20171 20389 20345 20524	Firing Hours 745 542 743 719 660 720 744 744 720 743 Firing Hours 745 696 743 720 743	d Inlet Air Flow Ib/hr 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699	e GTG Exhaust deg F 1015 569 1024 1028 936 1028 1029 1032 1031 1025 1001 973 e GTG Exhaust deg F 1020 1020 1020 1020 1020 1020 1020 102	f DeNOx Steam b/sec 13.6 7.1 13.7 13.6 12.5 14.0 14.3 14.1 13.6 13.4 12.4 f DeNOx Steam b/sec 14.1 13.8 14.0 14.1 14.0 14.1	g Stack Exhaust deg F 348 220 340 341 321 340 339 340 340 349 349 342 343 349 342 343 8 Stack Exhaust deg F 352 348 348 348 348 347 346
GOG-1 (a-n) Subsection: Jan-20 Feb-20 Mar-20 Apr-20 Jun-20 Jul-20 Aug-20 Sep-20 Oct-20 Nov-20 Dec-20 COG-1 (a-n) Subsection: Jan-20 Feb-20 Mar-20 Apr-20 Mar-20 Apr-20 Jul-20 Apr-20 Apr-20 Jul-20 Aug-20 Jul-20 Aug-20 Jul-20 Aug-20	MW 81.7 41.1 82.3 80.7 72.5 81.6 81.5 80.0 79.7 78.6 77.6 76.2 a MW 86.2 84.7 85.2 84.2 83.4 82.8 82.5 81.5	b	NG/RFG b/hr 40353 21057 40397 40020 36366 40565 41130 40538 39769 39495 38403 37788 NG/RFG b/hr 41230 40434 40744 40749 40460 40954 40519	Butane b/hr 1828 1189 1296 1497 1898 1860 1985 1947 1659 1954 1530 1643 Butane b/hr 693 1446 769 685 1167 737 627 877	GTG Total lb/hr 42181 22245 41693 41516 38264 42425 43115 42485 41428 41450 39933 39430 GTG Total lb/hr 41922 41880 41695 41429 41916 41197 41581 41396	HHV BTU/lb 20391 20656 20488 20171 20389 20345 20524 19972 20338 20230 20187 19696 HHV BTU/lb 20391 20656 20488 20171 20389 20488 20171 20389 20345	Firing	NG/RFG b/hr 84.9 82.5 81.8 69.8 131.5 86.5 128.0 86.1 77.6 128.7 68.7 86.1 it 94 NG/RFG b/hr 73.6 155.9 83.1 70.9 155.7 85.5 127.1 84.2	HRSG HHV BTU/lb 20391 20656 20488 20171 20389 20345 20524 19972 20338 20230 20187 19696 HRSG HHV BTU/lb 20391 20656 20488 20171 20389 20345 20488 20171 20389	Firing Hours 745 542 743 719 660 720 744 744 720 743 Firing Hours 745 696 743 720 743 720 743 720 744	d Inlet Air Flow Ib/hr 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699 2293699	e GTG Exhaust deg F 1015 569 1024 1028 936 1028 1029 1031 1025 1001 973 • e GTG Exhaust deg F 1020 1026 1026 1028 1029 1020 1026 1020 1026 1020 1026 1020 1026 1020 1026 1020 1020	f DeNOx Steam b/sec 13.6 7.1 13.7 13.6 12.5 14.0 14.3 14.1 13.6 12.8 12.4 f DeNOx Steam b/sec 14.1 13.8 14.0 14.0 14.1 14.0 14.3 14.1	g Stack Exhaust deg F 348 220 340 341 321 340 339 340 340 349 349 342 343 8 Stack Exhaust deg F 352 348 348 348 348 345 347
GOG-1 (a-n) Subsection: Jan-20 Feb-20 Mar-20 Apr-20 Jul-20 Jul-20 Aug-20 Sep-20 Oct-20 Nov-20 Dec-20 COG-1 (a-n) Subsection: Jan-20 Feb-20 Mar-20 Apr-20 Jul-20 Aug-20 Sep-20 Sep-20 Sep-20 Geg-20	MW 81.7 41.1 82.3 80.7 72.5 81.6 81.5 80.0 79.7 78.6 77.6 76.2 MW 86.2 84.7 85.2 84.7 85.2 84.8 82.8 82.5 81.5	Dp Hours 745 363 743 720 671 720 744 744 720 744 720 745 8 Dp Hours 745 696 743 720 744 720 744 720 744 720 744 720 744 720	NG/RFG b/hr 40353 21057 40020 36366 40565 41130 40538 39769 39495 38403 37788 NG/RFG b/hr 41230 40433 40926 40749 40460 40954 40519 39945	Butane b/hr 1828 1189 1296 1497 1898 1860 1985 1947 1659 1954 1530 1643 Butane b/hr 693 1446 769 685 1167 737 627 877 835	GTG Total b/hr 42181 22245 41693 41516 38264 42425 43115 42485 41428 41450 39933 39430 GTG Total b/hr 41922 41880 41695 41429 41916 41197 41581 41396 40780	HHV BTU/Ib 20391 20656 20488 20171 20389 20345 20524 19972 20338 20230 20187 19696 HHV BTU/Ib 20391 20656 20488 20171 20389 20345 20524	Firing Hours 745 363 743 720 671 720 744 720 744 720 745 8696 743 720 744 720 744 720 745 696 743 720 744 720 744 720 744 720	NG/RFG b/hr 84.9 82.5 81.8 69.8 131.5 86.5 128.0 86.1 77.6 128.7 68.7 86.1 it 94 NG/RFG b/hr 73.6 155.9 83.1 70.9 155.7 85.5 127.1 84.2 74.6	HRSG HHV BTU/lb 20391 20656 20488 20171 20389 20345 20524 19972 20338 20230 20187 19696 HRSG HHV BTU/lb 20391 20656 20488 20171 20389 20345 20524	Firing Hours 745 542 743 719 660 720 744 744 720 744 720 743 Firing Hours 745 696 743 720 743 720 744 720 744 720	d Inlet Air Flow b/hr 2293699	e GTG Exhaust deg F 1015 569 1024 1028 936 1028 1029 1032 1031 1025 1001 973 e GTG Exhaust deg F 1020 1026 1026 1026 1026 1028 1029 1020 1026 1020 1026 1020 1026 1026 1027 1027 1028 1028 1029 1029 1020 1020 1020 1020 1020 1020	f DeNOx Steam lb/sec 13.6 7.1 13.7 13.6 12.5 14.0 14.3 14.1 13.6 12.8 12.4 f DeNOx Steam lb/sec 14.1 13.8 14.0 14.0 14.3 14.1 13.7	g Stack Exhaust deg F 348 220 340 341 321 340 339 340 340 349 340 349 349 342 343 g Stack Exhaust deg F 352 348 348 348 348 348 348
Jan-20 Feb-20 May-20 Jul-20 Aug-20 Sep-20 Oct-20 Mar-20 COG-1 (a-n) Subsection: Jan-20 Aug-20 Sep-20 Oct-20 Jul-20 Aug-20 Sep-20 Oct-20 Jul-20 Jul-20 Aug-20 Sep-20 COG-1 (a-n) Subsection:	MW 81.7 41.1 82.3 80.7 72.5 81.6 81.5 80.0 79.7 78.6 77.6 76.2 MW 86.2 84.7 85.2 84.2 83.4 82.8 82.5 81.5	Name	NG/RFG b/hr 40353 21057 40320 36366 40565 41130 40538 39769 39495 38403 37788 NG/RFG b/hr 41230 4033 40926 40744 40749 40460 40954 40519 39945 39933	Butane b/hr 1828 1189 1296 1497 1898 1860 1985 1947 1659 1954 1530 1643 Butane b/hr 693 1446 769 685 1167 737 627 877 835 1184	GTG Total b/hr 42181 22245 41693 41516 38264 42425 43115 42485 41428 41450 39933 39430 GTG Total b/hr 41922 41880 41695 41429 41916 41197 41581 41396 40780 41118	HHV BTU/lb 20391 20656 20488 20171 20389 20345 20524 19972 20338 20230 20187 19696 HHV BTU/lb 20391 20656 20488 20171 20389 20345 20524 19972 20338 20230	Firing Hours 745 363 743 720 671 720 744 720 744 720 745 696 743 720 745 696 743 720 744 720 744 720 744 720 744 720 744	NG/RFG b/hr 84.9 82.5 81.8 69.8 131.5 86.5 128.0 86.1 77.6 128.7 68.7 86.1 it 94 NG/RFG b/hr 73.6 155.9 83.1 70.9 155.7 85.5 127.1 84.2 74.6 126.5	HRSG HHV BTU/lb 20391 20656 20488 20171 20389 20345 20524 19972 20338 20230 20187 19696 HRSG HHV BTU/lb 20391 20656 20488 20171 20390 20345 20524 19972 20338 20230	Firing Hours 745 542 743 719 660 720 744 744 720 744 720 743 Firing Hours 745 696 743 720 744 720 744 720 744 720 744 744 720 744	d Inlet Air Flow b/hr 2293699	e GTG Exhaust deg F 1015 569 1024 1028 936 1029 1032 1031 1025 1001 973 e GTG Exhaust deg E 1020 1026 1023 1026 1028 1029 1020 1020 1020 1020 1020 1020 1020	f DeNOx Steam lb/sec 13.6 7.1 13.7 13.6 12.5 14.0 14.3 14.1 13.6 12.8 12.4 f DeNOx Steam lb/sec 14.1 13.8 14.0 14.0 14.3 14.1 13.7 13.7	## Stack Exhaust
GOG-1 (a-n) Subsection: Jan-20 Feb-20 Mar-20 Apr-20 Jul-20 Jul-20 Aug-20 Sep-20 Oct-20 Nov-20 Dec-20 COG-1 (a-n) Subsection: Jan-20 Feb-20 Mar-20 Apr-20 Jul-20 Aug-20 Sep-20 Sep-20 Sep-20 Geg-20	MW 81.7 41.1 82.3 80.7 72.5 81.6 81.5 80.0 79.7 78.6 77.6 76.2 MW 86.2 84.7 85.2 84.7 85.2 84.8 82.8 82.5 81.5	Dp Hours 745 363 743 720 671 720 744 744 720 744 720 745 8 Dp Hours 745 696 743 720 744 720 744 720 744 720 744 720 744 720	NG/RFG b/hr 40353 21057 40020 36366 40565 41130 40538 39769 39495 38403 37788 NG/RFG b/hr 41230 40433 40926 40749 40460 40954 40519 39945	Butane b/hr 1828 1189 1296 1497 1898 1860 1985 1947 1659 1954 1530 1643 Butane b/hr 693 1446 769 685 1167 737 627 877 835	GTG Total b/hr 42181 22245 41693 41516 38264 42425 43115 42485 41428 41450 39933 39430 GTG Total b/hr 41922 41880 41695 41429 41916 41197 41581 41396 40780	HHV BTU/Ib 20391 20656 20488 20171 20389 20345 20524 19972 20338 20230 20187 19696 HHV BTU/Ib 20391 20656 20488 20171 20389 20345 20524	Firing Hours 745 363 743 720 671 720 744 720 744 720 745 8696 743 720 744 720 744 720 745 696 743 720 744 720 744 720 744 720	NG/RFG b/hr 84.9 82.5 81.8 69.8 131.5 86.5 128.0 86.1 77.6 128.7 68.7 86.1 it 94 NG/RFG b/hr 73.6 155.9 83.1 70.9 155.7 85.5 127.1 84.2 74.6	HRSG HHV BTU/lb 20391 20656 20488 20171 20389 20345 20524 19972 20338 20230 20187 19696 HRSG HHV BTU/lb 20391 20656 20488 20171 20389 20345 20524	Firing Hours 745 542 743 719 660 720 744 744 720 744 720 743 Firing Hours 745 696 743 720 743 720 744 720 744 720	d Inlet Air Flow b/hr 2293699	e GTG Exhaust deg F 1015 569 1024 1028 936 1028 1029 1032 1031 1025 1001 973 e GTG Exhaust deg F 1020 1026 1026 1026 1026 1028 1029 1020 1026 1020 1026 1020 1026 1026 1027 1027 1028 1028 1029 1029 1020 1020 1020 1020 1020 1020	f DeNOx Steam lb/sec 13.6 7.1 13.7 13.6 12.5 14.0 14.3 14.1 13.6 12.8 12.4 f DeNOx Steam lb/sec 14.1 13.8 14.0 14.0 14.3 14.1 13.7	g Stack Exhaust deg F 348 220 340 341 321 340 339 340 340 349 349 349 349 342 343 g Stack Exhaust deg F 352 348 348 348 348 348 348

COG-1 (a-n)	STG 1		STG 2 Plant Load			600# Steam				150# 9	Steam		
Subsection:	h	i	h	ï	j		ı	(ı	(
	<u>MW</u>	<u>Hours</u>	MW	<u>Hours</u>	MW	mlb/hr	<u>Hours</u>	<u>PSIG</u>	deg F	mlb/hr	<u>Hours</u>	<u>PSIG</u>	deg F
Jan-20	19	745	0	0	80	1020	744	622	750	12	744	162	498
Feb-20	19	694	0	0	82	1029	696	622	751	10	696	162	498
Mar-20	17	741	0	0	70	1109	744	622	749	18	744	161	506
Apr-20	13	592	4	155	64	1085	720	621	750	22	720	161	514
May-20	16	682	1	38	73	1133	744	621	750	8	744	154	391
Jun-20	3	141	17	718	83	1110	720	622	750	0	720	152	363
Jul-20	5	94	17	742	74	1073	744	622	750	2	744	152	364
Aug-20	2	41	18	744	74	1100	744	622	750	3	744	152	361
Sep-20	9	345	14	521	88	1040	720	621	750	4	720	152	360
Oct-20	9	444	9	326	89	1010	744	620	750	0	744	153	360
Nov-20	16	714	0	0	84	1069	720	620	750	0	720	152	358
Dec-20	15	721	0	0	77	1144	744	620	750	0	744	152	358

COG-1 (a-n)	Total Fe	edwater	Total Co	Total Condensate		
Subsection:	1 1		m	m	n	
	mlb/hr	<u>deg F</u>	mlb/hr	<u>deg F</u>		
Jan-20	1636	250	426	1	N/A	
Feb-20	1583	250	452	-	N/A	
Mar-20	1749	250	481	-	N/A	
Apr-20	1689	250	540	1	N/A	
May-20	1683	250	522	-	N/A	
Jun-20	1765	250	428	1	N/A	
Jul-20	1746	250	374	1	N/A	
Aug-20	1738	250	395	1	N/A	
Sep-20	1702	250	391	-	N/A	
Oct-20	1561	250	403	-	N/A	
Nov-20	1664	250	444	-	N/A	
Dec-20	1741	250	438	-	N/A	

DEMAND CONFORMANCE CONDITIONS OF CERTIFICATION

DC-2 The Energy Commission shall retain jurisdiction to require ARCO to periodically report on the performance of its facility and the payments made by SCE to purchase power from the facility.

Verification: On an annual basis following construction, ARCO shall report the monthly generation provided to SCE and the monthly payments received from SCE. Payments shall be disaggregated by capacity (firm and as-available), start-up and energy. ARCO shall provide the CEC a copy of the Prescribed Dispatch Schedule for the facility.

Response: Monthly values for generation provided to SCE and monthly payments disaggregated by capacity (firm and as-available) are included in the table below. Watson no longer follows a Prescribed Dispatch Schedule from SCE. All power is baseload firm under current PPA.

	DC-2: Demand Conformance Conditions of Certification - 2020								
	SCE Sales	Energy	Capacity Payment -	Capacity Payment -					
Month	Volume	Payment	Firm	As Available					
	MWh	\$	\$	\$					
Jan-20	197,621	\$9,195,768.56	\$359,000.47	\$0.00					
Feb-20	141,511	\$4,023,950.41	\$299,762.69	\$0.00					
Mar-20	209,708	\$4,957,690.20	\$359,000.47	\$0.00					
Apr-20	204,261	\$4,222,426.39	\$359,000.47	\$0.00					
May-20	168,349	\$4,015,641.87	\$295,875.58	\$0.00					
Jun-20	190,026	\$4,500,261.93	\$3,791,891.48	\$0.00					
Jul-20	191,400	\$4,607,259.64	\$3,674,579.92	\$0.00					
Aug-20	198,322	\$8,698,851.57	\$3,791,891.48	\$0.00					
Sep-20	186,533	\$7,215,997.21	\$3,791,538.22	\$0.00					
Oct-20	145,782	\$5,847,864.58	\$262,719.94	\$0.00					
Nov-20	183,740	\$7,637,319.29	\$339,205.90	\$0.00					
Dec-20	<u>195,153</u>	\$9,322,230.9 <u>5</u>	<u>\$357,597.73</u>	<u>\$0.00</u>					
Total	2,212,407	\$74,245,262.60	\$17,682,064.35	\$0.00					

PUBLIC HEALTH CONDITIONS OF CERTIFICATION

PH-2 APPC shall comply with all emission regulations established by the U.S. Environmental Protection Agency (EPA), South Coast Air Quality Management District (SCAQMD), and the California Air Resources Board (CARB) regarding the use of a non-chromium treatment method as an anti-fouling/corrosive agent in the cooling towers, and the prohibition of Hexavalent Chromium additives.

Verification: APPC shall submit to the CEC, within the Annual Compliance Report, documentation of their compliance with all EPA, SCAQMD, and CARB emission regulations for use of antifouling/corrosive agents in the cooling towers.

Response: In compliance with EPA, SCAQMD and CARB emission regulations for the use of antifouling/corrosive agents in cooling towers, APPC/Watson does not use any chemical products that contain chromium in its cooling towers. It is currently using Nalco 3D TRASAR 3DT199, a non-chromium product, as an anti-fouling agent in its cooling towers.

POWER PLANT RELIABILITY CONDITIONS OF CERTIFICATION

RELI-3 APPC shall file with the CEC an annual report documenting the plant availability and capacity factors achieved.

Verification: Beginning with commercial operation, APPC shall file an annual report containing the following:

- a. Operating hours, outage hours, cause of outage and downtime for each piece of major equipment including the following:
 - Combustion turbine/generators Heat recovery steam generators
 - Feedwater pumps

- Steam turbine/generators
- Condensers
- Condensate pumps
- Cooling water pumps
- Controls
- b. For each forced outage, a precise identification of the equipment whose failure resulted in the forced outage and the resulting forced outage hours.
- c. Identification of equipment or other causes (such as curtailment) for which planned outage was instituted in any given month.
- d. Annual plant availability and capacity factors, per EPRI definitions.

Response: Information regarding operating hours, outage causes, downtime and annual plant availability and capacity factors are shown in the two tables below.

RELI-3: Power P	RELI-3: Power Plant Reliability - 2020								
CEC Generator									
Unit ID	Event Type	Start Date	End Date	Duration	Cause Code				
GN91	MO - Maintenance	01/31/2020 23:05 PPT	02/09/2020 15:12 PPT	16:07	6090 - Other HRSG tube Problems				
GN91	MO - Maintenance	05/03/2020 21:10 PPT	05/09/2020 15:37 PPT	18:27	0410 - Other burner problems				
GN91	U1 - Forced - Immediate	05/13/2020 12:02 PPT	05/21/2020 14:05 PPT	194:03:00	4700 - Generator voltage control				
GN91	MO - Maintenance	07/24/2020 23:25 PPT	07/31/2020 10:56 PPT	155:31:00	1350 - Other miscellaneous boiler tube problems				
GN91	PO - Planned	10/09/2020 21:02 PPT	10/23/2020 13:56 PPT	328:54:00	5670 - Hot end inspection A				
GN91	SF - Startup Failure	10/23/2020 13:57 PPT	10/29/2020 17:44 PPT	3:47	4740 - Emergency generator trip devices				
GN91	MO - Maintenance	11/06/2020 21:00 PPT	11/07/2020 11:14 PPT	14:14:00	5109 - Other exhaust problems (including high exhaust system temperature not attributable to a specific problem)				
GN91	U2 - Forced - Delayed	11/13/2020 09:03 PPT	11/13/2020 21:50 PPT	12:47	0520 - Other main steam valves (including vent and drain valves but not including the turbine stop valves) A				
GN92	MO - Maintenance	01/24/2020 21:00 PPT	01/27/2020 11:17 PPT	14:17	5509 - Other exhaust problems (including high exhaust temperature not attributable to a specific problem)				
GN93	PO - Planned	02/14/2020 21:02 PPT	02/28/2020 17:50 PPT	332:48:00	5670 - Hot end inspection A				
GN93	MO - Maintenance	05/10/2020 21:05 PPT	05/13/2020 23:47 PPT	2:42	0410 - Other burner problems				
GN95	U1 - Forced - Immediate	05/30/2020 08:35 PPT	06/10/2020 13:56 PPT	269:21:00	4305 - Automatic turbine control systems - mechanical - hydraulic				
GN95	U1 - Forced - Immediate	06/16/2020 10:39 PPT	07/08/2020 11:20 PPT	528:41:00	4305 - Automatic turbine control systems - mechanical - hydraulic				
GN95	RS - Reserve Shutdown	07/24/2020 18:40 PPT	08/17/2020 10:54 PPT	16:14	0000 - Reserve shutdown				
GN95	RS - Reserve Shutdown	08/21/2020 18:12 PPT	09/06/2020 07:18 PPT	373:06:00	0000 - Reserve shutdown				
GN95	U1 - Forced - Immediate	09/08/2020 18:58 PPT	09/17/2020 07:53 PPT	204:55:00	4260 - Main stop valves				
GN95	RS - Reserve Shutdown	10/02/2020 22:24 PPT	10/14/2020 13:22 PPT	278:58:00	0000 - Reserve shutdown				
GN96	RS - Reserve Shutdown	01/01/2020 00:00 PPT	04/21/2020 10:36 PPT	2673:36:00	0000 - Reserve shutdown				
GN96	RS - Reserve Shutdown	04/27/2020 21:20 PPT	05/30/2020 09:04 PPT	779:44:00	0000 - Reserve shutdown				
GN96	RS - Reserve Shutdown	09/17/2020 07:48 PPT	09/25/2020 11:14 PPT	195:26:00	0000 - Reserve shutdown				
GN96	RS - Reserve Shutdown	10/14/2020 16:32 PPT	11/27/2020 07:00 PPT	1047:28:00	0000 - Reserve shutdown				
GN96	PO - Planned	11/27/2020 07:01 PPT	12/31/2020 23:59 PPT	832:58:00	4400 - Major turbine overhaul (720 hrs or longer) (use for non-specific overhaul only; see page B-1)				

RELI-3	RELI-3: Operating Hours and Availability - 2020							
CEC Generator Unit ID	2020 Operating Hours	2020 Availability						
GN91	7,584	86.4%						
GN92	8,721	99.3%						
GN93	8,377	95.2%						
GN94	8,784	100.0%						
GN95	6,443	73.4%						
GN96	3,254	37.0%						
2020 Annual Pla	ant Availability	81.87%						
2020 Capacity F	actor	84.83%						

PUBLIC AND WORKER SAFETY CONDITIONS OF CERTIFICATION

SAFETY-11 APPC and the Los Angeles County Fire Department shall annually reexamine the fire protection program.

Verification: APPC shall note and summarize the joint re-examination to the fire protection program in its annual compliance report to the CEC.

Response: APPC/Watson's fire protection program is covered by a permit issued by the County of Los Angeles Fire Department and follows their standard review/renewal cycle. This review/renewal process is jointly conducted with the on-site Fire Chief responsible for the APPC/Watson facility. Fire protection equipment at the facility is inspected, tested and maintained in accordance with NFPA, ANSI and OSHA standards.

SAFETY-13 APPC shall facilitate onsite worker safety inspections conducted by Cal/DOSH during construction and operation of the facility when an employee complaint has been received.

Verification: APPC shall request Cal/DOSH to notify the CEC in writing in the event of a violation that will involve Cal/DOSH action affecting the construction and operation schedule and shall notify the CEC of the necessary corrective action. APPC shall note any Cal/DOSH inspections and actions in its periodic compliance reports.

Response: In the calendar year of 2020, APPC/Watson Cogen has not had any violations or nor received any complaints that would need to be reported to Cal/DOSH.

TRAFFIC AND TRANSPORTATION CONDITIONS OF CERTIFICATION

TRANS-1 ARCO Petroleum Products Corporation (APPC) shall comply with the California Department of Transportation (Caltrans) and Los Angeles County restrictions on oversize or overweight vehicles using state, county and City of Carson roadways. APPC shall obtain overload permits, as necessary, from Caltrans and the County of Los Angeles.

Verification: APPC shallow in its annual compliance report, notify the California Energy Commission (CEC) of any overload permits obtained from Caltrans and the County of Los Angeles.

Response: In the 2020 calendar year, APPC/Watson is not aware of any overload permits being obtained from Caltrans and the County of Los Angeles.

TRANS-2 APPC shall comply with the City of Carson encroachment and excavation permit and franchise requirements for installation of utility services (transmission line, natural gas pipeline) of the proposed project in or over city-owned rights-of-way.

Verification: APPC shall, in its annual compliance report, notify the CEC that the requirements

for obtaining encroachment and excavation permits from the City of Carson have been satisfied. APPC shall file any required or requested information with the City of Carson.

Response: In the 2020 calendar year, APPC/Watson is not aware of any filings for encroachment and/or excavation permits from the City of Carson.

WASTE MANAGEMENT CONDITIONS OF CERTIFICATION

WASTE-5 If APPC intends to store hazardous wastes on-site for more than 90 days, it shall obtain a determination from DHS that the requirements of a hazardous waste facility have been satisfied. Storage of such wastes shall be in accordance with DHS regulations. APPC shall file any required or requested information with the Los Angeles County Fire Department, Hazardous Materials Unit.

Verification: APPC shall notify the CEC in the Annual Compliance Report if APPC applies for, or obtains, a Hazardous Waste Facility permit.

Response: APPC/Watson does not store bulk hazardous waste onsite for more than 90 days and therefore does not require a Hazardous Waste Facility Permit.

WASTE-6 APPC shall ensure that hazardous wastes are hauled by a permitted hazardous wastes hauler and disposed of in a proper manner at a site permitted by DHS and the Regional Water Quality Control Board, Los Angeles Region, for the disposal of hazardous wastes.

Verification: In the Annual Compliance Report, APPC shall submit to the CEC a verification that hazardous wastes have been transported by a DHS-licensed hazardous waste hauler, and that the wastes were disposed of at appropriate sites.

Response: Hazardous waste generated by APPC/Watson is transported by a DTSC licensed hazardous waste hauler and is disposed of in a proper manner at permitted hazardous waste facilities.

WATER QUALITY CONDITIONS OF CERTIFICATION

WQ-4 The project owner shall provide a copy of the revised or new National Pollutant Discharge Elimination System Permit for the Watson Cogeneration Project and the ARCO Los Angeles Refinery approved by the Los Angeles Regional Water Quality Control Board to the CEC Compliance Project Manager. The project owner shall also provide a copy of the annual monitoring report required by the NPDES Permit for all wastewater, with the exception of stormwater runoff, that is commingled with cooling tower blowdown from the Watson Cogeneration Plant and discharged to the Dominguez Channel.

Verification: The project owner shall provide a copy of the new NPDES Permit to the CEC

Compliance Project Manager within one month of its approval by the Los Angeles Regional Water Quality Control Board. Annual NPDES Permit monitoring reports shall be provided to the CEC Compliance Project Manager with the annual compliance report.

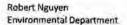
Response: Annual NPDES reports for the Carson facility are submitted electronically on the California Integrated Water Quality System (CIWQS). A copy of the annual NPDES report has been included at the end of this annual compliance report. A copy of the updated NPDES permit can be provided if requested by the CEC.

WATER RESOURCES CONDITIONS OF CERTIFICATION

WATER-3 The project owner will demonstrate that all feasible and practical measures to reduce additional water demand have been incorporated into the design of the fifth train. The measures may include, but are not limited to, recycling and reuse.

Verification: The project owner shall submit a report discussing all measures, whether adopted or not, considered to reduce project water demand. This report shall be contained in the first annual compliance report following the start of operation of the fifth train.

Response: Water-3 is not applicable as APPC/Watson did not construct a fifth train.





Tesoro Refining & Marketing Company LLC

A subsidiary of Marathon Petroleum Corporation

Los Angeles Refinery – Carson Operations 2350 E. 223rd Street Carson, California 90810 310-816-8100

January 25, 2021

VIA Certified Mail Return Receipt Requested

California Regional Water Quality Control Board Los Angeles Region 320 W. 4th Street, Suite 200 Los Angeles, CA 90013 Attn: Information Technology Unit NPDES Permit No. CA0000680 Order No. R4-2015-0259

NO DISCHARGE DURING MONITORING PERIOD

Re: 2020 Annual NPDES Self-Monitoring Report

Tesoro Refining and Marketing Company LLC Los Angeles Refinery – Carson Operations 1801 East Sepulveda Boulevard, Carson, California Reporting Period: January 1, 2020 – December 31, 2020

To Whom It May Concern,

Please find enclosed the Annual NPDES Self-Monitoring Report for the Tesoro Refining and Marketing Company, Los Angeles Refinery – Carson Operations for the period of January 1, 2020 through December 31, 2020.

During the 2020 reporting period all process wastewater and wastewater commingled with storm water was discharged to the Los Angeles County Sanitation District (LACSD) in compliance with Industrial Wastewater Permit No. 21299. Discharge of Low Volume Waste to the Dominguez Channel Estuary, as authorized by NPDES Order No. R4-2015-0259, did not occur during the 2020 reporting year at any of the permitted Outfalls.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

If you have any questions, please contact me by phone at 310-847-5645 or by email at RTNguyen@marathonpetroleum.com.

California Regional Water Quality Control Board January 25, 2021 Page 2 of 2

Sincerely,

Robert Nguyen
Environmental Manager

Enclosure

Env File 4E03 cc:

NPDES Annual Self-Monitoring Report

Tesoro Refining & Marketing Company LLC Tesoro Los Angeles Refinery – Carson Operations 1801 East Sepulveda Boulevard Carson, California 90749

NPDES Permit No. CA0000680 Order No. R4-2015-0259

Reporting Period: January 1, 2020 – December 31, 2020

> Report Prepared On: January 21, 2021

Table of Contents

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Part 2 – Summary of Monitoring Parameters	.1
Part 3 – Other Monitoring	.1
Certification	.4

Attachments

Attachment 1: Annual Comprehensive Site Compliance Evaluation

Attachment 2: Annual Rainfall Data

Attachment 3: Sediment Monitoring Report

2020 Annual NPDES Self-Monitoring Report Tesoro Los Angeles Refinery – Carson Operations NPDES Permit No. CA0000680 Order Number R4-2015-0259 Page 1 of 4

Part I - Compliance Summary

NPDES Permit Compliance Summary

There were no discharges of Low Volume Wastes through Discharge Points 001, 002, 003, 004 or 005 or Process Wastewater Commingled with Storm Water and Boiler Blowdown through Discharge Points 003 or 004 to the Dominguez Channel Estuary at the Los Angeles Refinery – Carson Operations (LARC) in calendar year 2020. Therefore, there were no violations of discharge limits or Waste Discharge Requirements (WDRs).

2. NPDES Incident Release Report

Table 1 provides incidental releases to the Dominguez Channel Estuary during the 2020 calendar year.

TABLE 1: 2020 Spills to the Dominguez Channel Estuary									
Date	Time	Material	Spill Amount	Comments					
6/24/2020	13:05	Firewater	Approximately 1,000 gal	On 6/24/2020 a brush fire ignited in the channel while a county contractor was clearing the overgrowth from the channel. LARC responded using firewater to extinguish the fire.					

Part 2 - Summary of Monitoring Parameters

1. Presentation of Effluent Monitoring Data

There were no discharges of Low Volume Wastes through Discharge Points 001, 002, 003, 004 or 005 or Process Wastewater Commingled with Storm Water and Boiler Blowdown through Discharge Points 003 or 004 to the Dominguez Channel Estuary at LARC in calendar year 2020. Therefore, no effluent monitoring was required.

2. Changes in Discharge

There were no discharges of Low Volume Wastes through Discharge Points 001, 002, 003, 004 or 005 or Process Wastewater Commingled with Storm Water and Boiler Blowdown through Discharge Points 003 or 004 to the Dominguez Channel Estuary at LARC in calendar year 2020. There were no changes in the discharge as described in Order R4-2015-0259.

Part 3 - Other Monitoring

1. SWPPP, BMPP, and Spill Contingency Plan and Effectiveness Report

There were no discharges of Low Volume Wastes through Discharge Points 001, 002, 003, 004 or 005 or Process Wastewater Commingled with Storm Water and Boiler Blowdown through Discharge Points 003 or 004 to the Dominguez Channel Estuary at LARC in calendar year 2020. Therefore, there were no issues with the effectiveness of the Storm Water

2020 Annual NPDES Self-Monitoring Report Tesoro Los Angeles Refinery – Carson Operations NPDES Permit No. CA0000680 Order Number R4-2015-0259 Page 2 of 4

However, internal policy dictates the annual review of all facility environmental plans. The SWPPP, which also serves as the Best Management Practices Plan (BMPP), was reviewed in September 2020. The Spill Contingency Plan (Spill Prevention Control & Countermeasure (SPCC) Plan) was last reviewed in January 2020 with a Technical Amendment planned for July 2021.

2. Chemical Use Report

Table 2 provides the chemical usage report summarizing the quantities of all chemicals used at the facility, which are discharged or have the potential to be discharged. There were no discharges of Low Volume Wastes, including chemicals, through Discharge Points 001, 002, 003, 004 or 005 to the Dominguez Channel Estuary at LARC during the 2020 calendar year. LARC diverts cooling tower blowdown, boiler blowdown, and commingled storm water/wastewater to the wastewater treatment system before discharging to the Los Angeles County Sanitation District (LACSD) under Industrial Wastewater Permit No. 21299.

TABLE 2: Chemical Usage Report								
Product ID	Chemical Name/Common Name	Amount	Units					
3DT129	3D Trasar™ 3DT129/Corrosion inhibitor	161,547	LBS					
Ultam120	Neutralizing Amine	338,782	LBS					
7357	NALCO® 7357/Corrosion inhibitor	8,404	LBS					
71D5Plus	NALCO® 71D5 Plus/Antifoam	7,055	LBS					
73550	Biodispersant/Surfactant	54,743	LBS					
7330	Non-oxidizing Biocide	1,711	LBS					
1338	ACTI-BROM™ 1338/Bromine Biocide	60,021	LBS					
8735	NALCO® 8735/Alkalinity Source	59,661	LBS					
1742	NALCO® 1742/Boiler Water Treatment	43,175	LBS					
72350	Neutralizing Amine	8,025	LBS					
1720	NALCO® 1720/Oxygen Scavenger	59,381	LBS					
22341	NALCO® 22341/Boiler Water Treatment	58,661	LBS					
352	Neutralizing Amine	1,896	LBS					
EC1001A	Neutralizing Amine	58,015	LBS					
22310	NexGuard® 22310/Boiler Water Treatment	98,541	LBS					
3DT304	3D Trasar™ 3DT041/Scale Inhibitor	442,948	LBS					
3DT184	3D Trasar™ 3DT184/Corrosion Inhibitor	18,940	LBS					

2020 Annual NPDES Self-Monitoring Report Tesoro Los Angeles Refinery – Carson Operations NPDES Permit No. CA0000680 Order Number R4-2015-0259 Page 3 of 4

TABLE 2: Chemical Usage Report								
Product ID	Chemical Name/Common Name	Amount	Units					
3DT199	3D Trasar™ 3DT199/ Corrosion Inhibitor	7,822	LBS					
3DT391	3D Trasar™ 3DT391/Scale Inhibitor	62,781	LBS					
3DT180	3D Trasar™ 3DT80/Corrosion inhibitor	6,329	LBS					
Eliminox	NALCO® ELIMIN-OXTM/Oxygen Scavenger	51,304	LBS					
N/A	Bleach	4,046,534	LBS					
N/A	Sulfuric Acid ²	4,330	LBS					

3. Receiving Water Monitoring

There were no discharges of Low Volume Wastes through Discharge Points 001, 002, 003, 004 or 005 or Process Wastewater Commingled with Storm Water and Boiler Blowdown through Discharge Points 003 or 004 to the Dominguez Channel Estuary at LARC in calendar year 2020. Therefore, no receiving water sampling and associated visual observation was required.

Visual observations of the upstream and downstream receiving water sampling points was performed during 2020. Visual observations were performed at least monthly during January through December. No findings related to facility operations were reported on the visual observation logs.

4. Annual Comprehensive Site Compliance Evaluation

The Annual Comprehensive Site Compliance Evaluation (ACSCE) was conducted by qualified personnel on January 13, 2021. See Attachment 1 for documentation.

5. Storm Water/Rainfall Monitoring

Daily rainfall data for the 2020 calendar year as provided by the National Oceanic and Atmospheric Administration (NOAA) for the Long Beach Airport is included in Attachment 2.

Sediment Monitoring

Although there were no discharges of Low Volume Wastes through Discharge Points 001, 002, 003, 004 or 005 or Process Wastewater Commingled with Storm Water and Boiler Blowdown through Discharge Points 003 or 004 to the Dominguez Channel Estuary at LARC in calendar year 2020, sediment monitoring was conducted on April 30, 2020 and

¹ This quantity assumes 20% of total annual facility bleach usage for use in cooling towers and boders.

² This quantity assumes 1% of total annual facility sulfinic acid usage for use in cooling towers and boilers.

2020 Annual NPDES Self-Monitoring Report Tesoro Los Angeles Refinery – Carson Operations NPDES Permit No. CA0000680 Order Number R4-2015-0259 Page 4 of 4

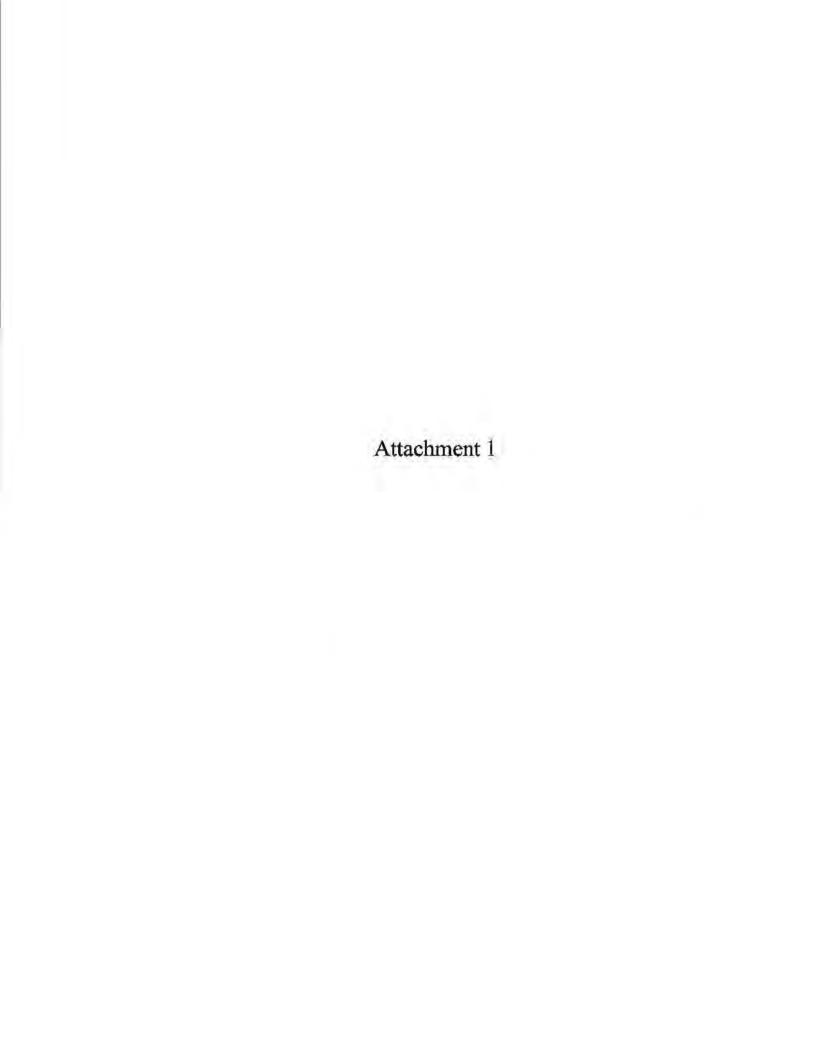
October 8, 2020 in accordance with Attachment E, Section VIII.D of the permit order. Copies of the sediment reports are included in <u>Attachment 3</u>.

Certification

We report that there were no discharges of Low Volume Wastes to the Dominguez Channel Estuary through Discharge Points 001, 002, 003, 004 or 005 or Process Wastewater Commingled with Storm Water and Boiler Blowdown through Discharge Points 003 or 004 during the reporting period of January 1, 2020 – December 31, 2020, under the above-mentioned order.

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Robert Nguyen	
(Print Name)	
Environmental Manager	
(Title)	
Certified via CIWQS	
(Signature)	

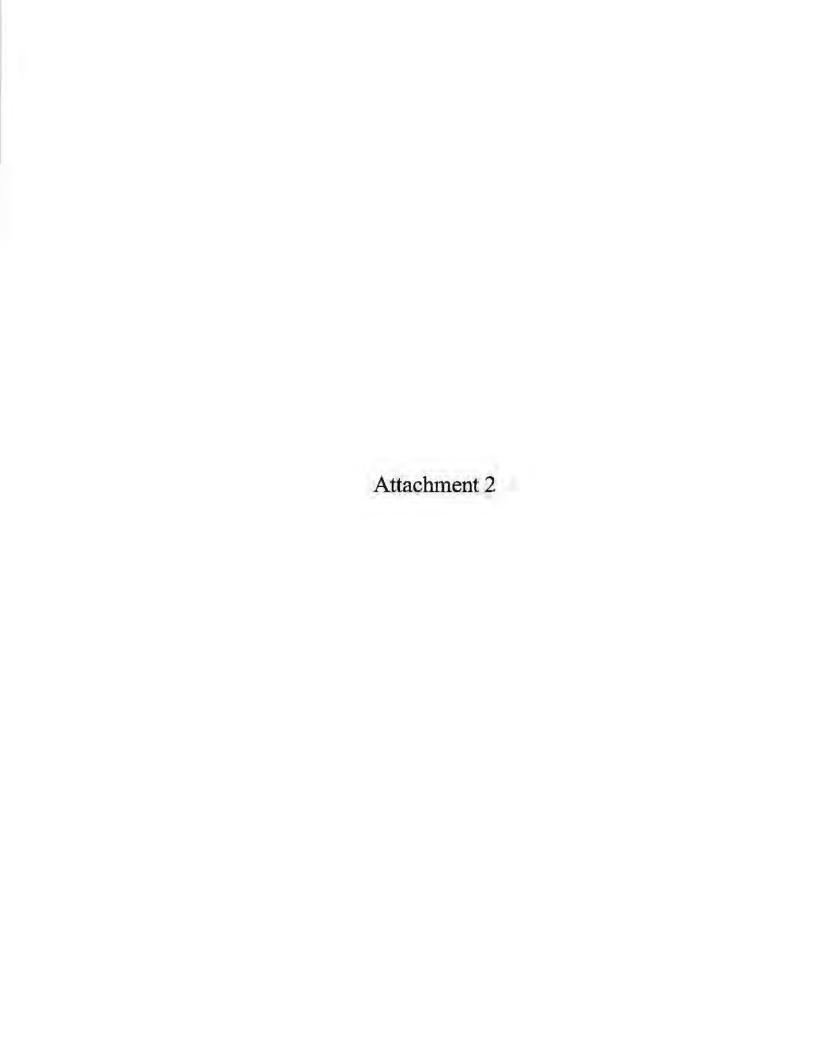


Annual Comprehensive Site Compliance Evaluation (ACSCE)								
Facility Name:	Tesoro Los Angeles Refinery - Carson Operations	Date:	1-13-2020	Page <u>1</u> of <u>3</u>				
Inspector's Name/Signature:	Tesoro Los Angeles Refinery - Carson Operations amber Ballrot Common selle	Inspector's Title:	Environmental Com	pliance Specialist				
Has it been 8-16 m	onths since the last Annual Evaluation?			YES □ NO □ N/A				
Was a review of al	YES NO NA							
Were all industrial water conveyance	ĭ YES ☐ NO ☐ N/A							
Were all drainage	areas previously identified as having no exposure to industrial acti	vities and materials	inspected?					
Was all equipment	used to implement BMPs inspected?			✓ YES ☐ NO ☐ N/A				
Were all BMPs ins	✓ YES ☐ NO ☐ N/A							
Was the Storm Wa	ĭ YES ☐ NO ☐ N/A							
Are revisions to th	¥YES □ NO □ N/A							

Section/Page Number	Date Revised or Planned Date of Revision	Revision Description
Section 3.1	July 2021	Update Pollution Prevention Team, as applicable
Attachment B	July 2021	Update spill list, as applicable

Attach an avnland	Annual Comprehensive S tion page if more room is needed. Plea		THE PLANT OF THE	RANGE CONTROL OF	Page 2 of 3	
Potential Pollutant Source/Industrial Activity (as identified in your SWPPP)	Have any BMPs not been fully implemented?	YES NO If yes, to any of		Describe deficiencies in BMPs or BMP implementation	Describe additional/revised BMPs or corrective actions and their date(s) of implementation	
Northeast facility Area - Gas flaves - Cooling Towers - Railroad - lineos Polypropylene	Are any BMPs not effective in reducing and preventing pollutants in storm water discharges and NSWDs?	☐ YES ☐ NO	the three questions, complete the next two			
	Are additional/revised BMPs necessary?	YES NO	columns of this form.			
Potential Pollutant Source/Industrial Activity as identified in your SWPPP)	Have any BMPs not been fully implemented?	☐ YES NO	If yes, to any of the three	Describe deficiencies in BMPs or BMP implementation	Describe additional/revised BMPs or corrective actions and their date(s) of implementation	
Northwest Faulity Area - Coyen - Maintenance	Are any BMPs not effective in reducing and preventing pollutants in storm water discharges and NSWDs?	☐ YES ☑ NO	questions, complete the next two			
- Wavehousing - Hydrocracker/ FCC/LRU	Are additional/revised BMPs necessary?	☐ YES 図 NO	columns of this form.			
Potential Pollutant Source/Industrial Activity (as identified in your SWPPP)	Have any BMPs not been fully implemented?	☐ YES ☑ NO	If yes, to any of the three	Describe deficiencies in BMPs or BMP implementation	Describe additional/revised BMPs or corrective actions and their date(s) of implementation	
Tank Farm	Are any BMPs not effective in reducing and preventing pollutants in storm water discharges and NSWDs?	☐ YES ☑ NO	questions, complete the next two			
	Are additional/revised BMPs		columns of this form.			

	Annual Comprehensive S	site Compli	ance Evaluation (ACSCE) continued	
Attach an explana	ation page if more room is needed. Ple	ase make co	py of form if more	rows are needed.	Page 3 of 3
Potential Pollutant Source/Industrial Activity (as identified in your SWPPP)	Have any BMPs not been fully implemented?	YES	If yes, to any of	Describe deficiencies in BMPs or BMP implementation	Describe additional/revised BMPs or corrective actions and their date(s) of implementation
Discharge Pant	Are any BMPs not effective in reducing and preventing pollutants in storm water discharges and NSWDs?	☐ YES NO	questions, complete the next two		
003	Are additional/revised BMPs necessary?	☐ YES ☑ NO	columns of this form.		



Explanation of the Preliminary Monthly Climate Data (F6) Product

These data are preliminary and have not undergone final quality control by the National Climatic Data Center (NCDC). Therefore, these data are subject to revision. Final and certified climate data can be accessed at the NCDC - http://www.ncdc.noaa.gov.

WFO Monthly/Daily Climate Data

000 CXUS56 KLOX 011655 CF6LGB PRELIMINARY LOCAL CLIMATOLOGICAL DATA (WS FORM: F-6)

STATION: LONG BEACH AIRPORT CA

MONTH: JANUARY
YEAR: 2020
LATITUDE: 33 49 N
LONGITUDE: 118 9 W

	TEMPE			2000	200		:PCPN:		SNOW:	MIN	7.			SHINE			:PK	7
1	2	3	4	5	6A		7	8	9 12Z	10	11	12 2MIN			15	16	17	700
DY	MAX	MIN	AVG	DEP	HDD	CDD	WTR	SNW	DPTH	SPD	SPD	DIR	MIN	PSBL	5-5	WX	SPD	DR
22				2223	2322		*****	3233	****	****	922	2222	930		222	23591		200
1	65	45	55	-1	10	0	0.00	0.0	0	2.4	9	100	М	M	0	18	12	200
2	65	48	57	1	8	0	0.00	0.0	0	2.5	9	170	M	M	1	1	11	176
3		46	58	2	7	0	0.00	0.0	0	1.9	8	190	M	M	0	18	11	176
4	-	44	56	0	-	0	0.00	0.0	0	1.8	9	290	M	M	0	18	11	296
5	7.7	43	56	0		0	0.00	0.0	0	2.1		300	M	M	2	128	12	216
6	78	42	60	4	5	0	0.00	0.0	0	5.3	15	50	M	M	0		20	36
7	77	49	63	7	2	0	0.00	0.0	0	4.2	13	290	M	M	0		15	298
8	61	48	55	-2	10	0	0.00	0.0	0	2.4	9	220	M	M	3	12	13	200
9	61	48	55	-2	10	0	T	M	0	4.1	16	280	M	M	3		22	286
10	61	43	52	-5	13	0	0.00	0.0	0	2.2	9	210	M	M	1	18	17	146
11	61	42	52	-5	13	0	0.00	0.0	0	1.7	12	150	M	M	2	18	16	146
12	62	43	53	-4	12	0	0.00	0.0	0	2.3	12	190	M	M	1	18	15	216
13	62	47	55	-2	10	0	0.00	0.0	0	2.2	10	200	M	M	3	18	13	200
14	63	43	53	-4	12	0	0.00	0.0	0	2.3	10	220	M	M	1	18	14	226
15	64	43	54	-3	11	0	0.00	0.0	0	2.2	9	290	M	M	0	18	12	200
16	59	45	52	-5	13	0	0.06	M	0	4.0	13	290	M	M	8	18	16	296
17	60	46	53	-4	12	0	0.15	M	0	3.1	10	50	M	M	4	1	12	56
18	72	45	59	2	6	0	0.00	0.0	0	4.6	10	330	M	M	0		13	306
19	74	45	60	3	5	0	0.00	0.0	0	3.3	9	300	M	M	0		11	300
20	62	52	57	0	8	0	0.00	0.0	0	3.0	9	130	M	M	4	18	12	278
21	60	49	55	-2	10	0	0.10	M	0	2.7	12	300	M	M	7	1	15	300
22	61	46	54	-3	11	0	0.00	0.0	0	1.9	10	180	M	M	2	18	13	196
23	74	47	61	4	4	0	0.00	0.0	0	4.4	13	300	M	M	0	1	15	290
24	66	47	57	0	8	0	0.00	0.0	0	3.0	9	190	M	M	3	18	12	186
25	64	50	57	0	8	0	0.00	0.0	0	3.3	8	130	M	M	5	128	11	340
26	58	52	55	-2	10	0	0.00	0.0	0	3.4	. 8	220	M	M	8	18	10	120
27	70	46	58	1	7	0	0.00	0.0	0	2.6	13	280	M	M	1	18	16	290
28	75	48	62	5	3	0	0.00	0.0	0	3.3	15	300	M	M	0		16	310
29	72	44	58	1	7	0	0.00	0.0	0	3.3	13	200	M	M	0		17	180
30	73	43	58	1	7	0	0.00	0.0	0	2.2	10	200	M	M.	0		14	200
31	81	44	63	6	2	2.	0.00	0.0	0		100	300	M	M	0			310
	2066				262	0	0.31	HHER	0.0	90.9			M	*****	59	1922	98898	1525
-0.0		2/2							-			****		*****	-			
AV	66.7	45.	9							2.9	FA	STST	M	M	2	N	AX (MPH	1)

NOTES:

LAST OF SEVERAL OCCURRENCES

COLUMN 17 PEAK WIND IN M.P.H.

PRELIMINARY LOCAL CLIMATOLOGICAL DATA (WS FORM: F-6) , PAGE 2

STATION: LONG BEACH AIRPORT CA

MONTH: JANUARY
YEAR: 2020
LATITUDE: 33 49 N

LONGITUDE: 118 9 W [TEMPERATURE DATA] [PRECIPITATION DATA] SYMBOLS USED IN COLUMN 16 AVERAGE MONTHLY: 56.3 TOTAL FOR MONTH: 0.31 1 = FOG OR MIST DPTR FM NORMAL: -0.4 DPTR FM NORMAL: 2 = FOG REDUCING VISIBILITY -2.29 HIGHEST: 81 ON 31 GRTST 24HR 0.15 ON 17-17 TO 1/4 MILE OR LESS 42 ON 11, 6 3 = THUNDER LOWEST: SNOW, ICE PELLETS, HAIL 4 = ICE PELLETS 5 = HAIL TOTAL MONTH: 0.0 INCH GRTST 24HR 0.0 6 = FREEZING RAIN OR DRIZZLE GRTST DEPTH: 0 7 = DUSTSTORM OR SANDSTORM: VSBY 1/2 MILE OR LESS 8 = SMOKE OR HAZE [NO. OF DAYS WITH] [WEATHER - DAYS WITH] 9 = BLOWING SNOW X = TORNADO 0 0.01 INCH OR MORE: MAX 32 OR BELOW: 3 MAX 90 OR ABOVE: 0 0.10 INCH OR MORE: 2 MIN 32 OR BELOW: 0 0.50 INCH OR MORE: 0 0 1.00 INCH OR MORE: 0 MIN Ø OR BELOW: [HDD (BASE 65)] CLEAR (SCALE 0-3) 23 TOTAL THIS MO. 262 3 PTCLDY (SCALE 4-7) 6 DPTR FM NORMAL TOTAL FM JUL 1 644 CLOUDY (SCALE 8-10) DPTR FM NORMAL -35

[REMARKS] #FINAL-01-20#

[CDD (BASE 65)] TOTAL THIS MO.

DPTR FM NORMAL

TOTAL FM JAN 1

DPTR FM NORMAL

0

0

0

-3

[PRESSURE DATA]

HIGHEST SLP 30.37 ON 4

LOWEST SLP 29.88 ON 1

These data are preliminary and have not undergone final quality control by the National Climatic Data Center (NCDC). Therefore, these data are subject to revision. Final and certified climate data can be accessed at the NCDC - http://www.ncdc.noaa.gov.

Climatological Report (Monthly)

000 CXUS56 KLOX 011527 CLMLGB

CLIMATE REPORT
NATIONAL WEATHER SERVICE LOS ANGELES/OXNARD CA
726 AM PST SAT FEB 1 2020

... THE LONG BEACH AIRPORT CA CLIMATE SUMMARY FOR THE MONTH OF JANUARY 2020...

CLIMATE NORMAL PERIOD 1981 TO 2010 CLIMATE RECORD PERIOD 1958 TO 2020

WEATHER	OBSERVE		NORMAL				
	VALUE	DATE(S)	VALUE	FROM NORMAL	VALUE		

TEMPERATURE (F)		1940 AZA					
HIGHEST	81	01/31					
LOWEST	42	01/11					
		01/06					
AVG. MAXIMUM	66.6		67.4	-0.8			
AVG. MINIMUM	45.9		46.1	-0.2			
MEAN	56.3		56.7	-0.4			
DAYS MAX >= 90	0						
DAYS MAX <= 32	0						
DAYS MIN <= 32	0						
DAYS MIN <= 0	0						
PRECIPITATION (INCHES)						
TOTALS	0.31		2.60	-2.29			
DAILY AVG.	0.01						
DAYS >= .01	3						
DAYS >= .10	2						
DAYS >= .50	0						
DAYS >= 1.00	0						
GREATEST							
24 HR. TOTAL	0.15	01/17 TO	01/17				
STORM TOTAL	MM						
(MM/DD(HH))							
DEGREE DAYS							
HEATING TOTAL	262		259	3	213		
SINCE 7/1	644		679	-35	426		
COOLING TOTAL	0		3	-3	0		
SINCE 1/1	0		0	0	0		
WIND (MDH)							

WIND (MPH)

AVERAGE WIND SPEED 2.9

HIGHEST WIND SPEED/DIRECTION 16/280 DATE 01/09
HIGHEST GUST SPEED/DIRECTION 22/280 DATE 01/09

```
SKY COVER
POSSIBLE SUNSHINE (PERCENT)
                              MM
AVERAGE SKY COVER
                            0.20
NUMBER OF DAYS FAIR
                              25
NUMBER OF DAYS PC
                               4
NUMBER OF DAYS CLOUDY
                               2
AVERAGE RH (PERCENT)
WEATHER CONDITIONS. NUMBER OF DAYS WITH
  2
  0
  0
  0
  0
  3
                         17
HAZE
- INDICATES NEGATIVE NUMBERS.
R INDICATES RECORD WAS SET OR TIED.
MM INDICATES DATA IS MISSING.
```

T INDICATES TRACE AMOUNT.

Explanation of the Preliminary Monthly Climate Data (F6) Product

These data are preliminary and have not undergone final quality control by the National Climatic Data Center (NCDC). Therefore, these data are subject to revision. Final and certified climate data can be accessed at the NCDC - http://www.ucdc.noaa.gov.

WFO Monthly/Daily Climate Data

000 CXUS56 KLOX 020714 CF6LGB PRELIMINARY LOCAL CLIMATOLOGICAL DATA (WS FORM: F-6)

STATION: LONG BEACH AIRPORT CA

MONTH: FEBRUARY 2020 YEAR: LATITUDE: 33 49 N LONGITUDE: 118 9 W

1	2	3	4	5	бА	6B	7	8	9		11		13	14	15	16	17	18
DY	MAX	MIN	AVG	DEP	HDD	CDD	WTR	SNW	12Z DPTH	12.00	60Z×		MIN	PSBL	5-5	WX	SPD	DR
20	1	0.6	4000	200	2.20	200		2,000		200	200	4.0						
1	84	47	66	9	0	1	0.00	0.0	0	2.8	13	300	М	M	0		14	30
2	65	48	57	0	8	0	T	M	0	3.9	20	320	M	M	4	128	25	32
3	63	47	55	-2	10	0	0.00	0.0	0	14.7	26	340	M	M	1		33	32
4	61	44	53	-4	12	0	0.00	0.0	0	7.1	17	80	M	M	0		22	8
5	59	39	49	-8	16	0	0,00	0.0	0	2.6	12	210	M	M	0		15	21
6	63	42	53	-4	12	0	0.00	0.0	0	2.3	10	220	M	M	0	1	13	22
7	66	42	54	-3	11	0	0.00	0.0	0	2.6		300	M	M	-	18		15
8	66	47	57	0	8	0	0.00	0.0	0	3.3	15	300	M	M	3	128	17	31
9	57	53	55	-2	10	0	0.30	0.0	0	6.9	23	110	M	M	10	1	30	14
0	71	50	61	4	4	0	0.02	0.0	0	3.3	12	290	M	M	3		16	31
1	73	48	61	4	4	Ø	0.00	0.0	0	5.2	14	300	M	M	0	1	18	25
2	62	45	54	-3	11	0	0.00	0.0	0	2.6	10	190	M	M	0		14	17
.3	68	45	57	0	8	0	0.00	0.0	0	3.9	13	300	M	M	1	18	16	29
4	67	45	56	-2	9	0	0.00	0.0	0	2.8	16	300	M	M	1	18	18	36
.5	67	45	56	-2	9	0	0.00	0.0	0	3.2	13	300	M	M	2	128	14	32
6	66	47	57	-1	8	0	0.00	0.0	0	3.6	10	310	M	M	3	128	14	21
7	65	49	57	-1	8	0	0.00	0.0	0			200	M	M	3	128		26
8	67	53	60	2	5	0	0.00	0.0	0	3.4	13	190	M	M	5	18	16	19
9	65	54	60	2	5	0	0.00	0.0	0	3.6	10	170	M	M	4	8	14	18
0	77	49	63	5	2	0	0.00	0.0	0	2.8	9	310	M	M	1	18	11	36
1	71	51	61	3	4	0	1	0.0	0	5.0	13	180	M	M	5	138	18	17
22	63	55	59	1	6	0	0.01	0.0	0	5.4	15	290	M	M	8	3	19	25
13	65	54	60	2	5	0	0.00	0.0	0	3.9	12	300	M	M	4		15	21
4	70	48	59	1	6	0	0.00	0.0	0	2.9	14	300	M	M	0	Y.	16	29
25	81	49	65	7	0	0	0.00	0.0	0	2.6	12	290	M	M	0	18	13	29
26	80	52	66	8	0	1	0.00	0.0	0	5.3	18	290	M	M	0		21	29
27	84	51	68	10	0	3	0.00	0.0	9	3.8	10	40	M	M	0		12	33
28	86	57	72	14	0	7	0.00	0.0	0	4.1	12	180	M	M	0		16	19
29	66	55	61	3	4	9	T	0.0	0	1		170	M	M	3			15
	1998				185		0.33		0.0 1				M		61	223	D35035	022
				-													======	
v	68.9	48.	/							4.2	FA.	STST	M	M	2		MAX (MPI	H)

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NOTES:
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[REMARKS] #FINAL-02-20#

LAST OF SEVERAL OCCURRENCES

COLUMN 17 PEAK WIND IN M.P.H.

PRELIMINARY LOCAL CLIMATOLOGICAL DATA (WS FORM: F-6) , PAGE 2

STATION: LONG BEACH AIRPORT CA

MONTH: FEBRUARY
YEAR: 2020
LATITUDE: 33 49 N
LONGITUDE: 118 9 W

[TEMPERATURE DATA]	[PRECIPITATION DATA]	SYMBOLS USED IN COLUMN 16
	SNOW, ICE PELLETS, HAIL	2 = FOG REDUCING VISIBILITY TO 1/4 MILE OR LESS 3 = THUNDER 4 = ICE PELLETS
	GRTST DEPTH: 0	5 = HAIL 6 = FREEZING RAIN OR DRIZZLE 7 = DUSTSTORM OR SANDSTORM: VSBY 1/2 MILE OR LESS 8 = SMOKE OR HAZE
[NO. OF DAYS WITH]	[WEATHER - DAYS WITH]	9 = BLOWING SNOW X = TORNADO
MAX 32 OR BELOW: 0	0.01 INCH OR MORE: 3	11 2 14 11 11
MAX 90 OR ABOVE: 0	0.10 INCH OR MORE: 1	
	0.50 INCH OR MORE: 0	
MIN Ø OR BELOW: Ø	1.00 INCH OR MORE: 0	
[HDD (BASE 65)]		
	CLEAR (SCALE 0-3) 20	
DPTR FM NORMAL -27	PTCLDY (SCALE 4-7) 8	
TOTAL FM JUL 1 829	CLOUDY (SCALE 8-10) 1	
DPTR FM NORMAL -69	The state of the s	
[CDD (BASE 65)]		
TOTAL THIS MO. 12		
DPTR FM NORMAL 7	[PRESSURE DATA]	
TOTAL FM JAN 1 12	HIGHEST SLP 30.32 ON 26	
DPTR FM NORMAL 4	LOWEST SLP 29.75 ON 9	
4447.77.77.77		

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NORMAL DEPART LAST YEAR'S

Climatological Report (Monthly)

000 CXUS56 KLOX 020712 CLMLGB

WEATHER

CLIMATE REPORT NATIONAL WEATHER SERVICE LOS ANGELES/OXNARD CA 1111 PM PST SUN MAR 1 2020

... THE LONG BEACH AIRPORT CA CLIMATE SUMMARY FOR THE MONTH OF FEBRUARY 2020...

CLIMATE NORMAL PERIOD 1981 TO 2010 CLIMATE RECORD PERIOD 1958 TO 2020

OBSERVED

	VALUE	DATE(S)	VALUE	FROM NORMA	(V)00 CE)	
		********			***********	
TEMPERATURE (F)		VIZ LT				
HIGHEST	86	02/28				
LOWEST	39	02/05				
AVG. MAXIMUM	68.9	4.76.10	67.2	1.7		
AVG. MINIMUM	48.7		48.0	0.7		
MEAN	58.8		57.6	1.2		
DAYS MAX >= 90	0					
DAYS MAX <= 32	0					
DAYS MIN <= 32	0					
DAYS MIN <= 0	Ø					
PRECIPITATION (INCHES)					
TOTALS	0.33		3.09	-2.76		
DAILY AVG.	0.01					
DAYS >= .01	3					
DAYS >= .10	1					
DAYS >= .50	0					
DAYS >= 1.00	0					
GREATEST						
24 HR. TOTAL	0.30	02/09 TO	02/09			
STORM TOTAL (MM/DD(HH))	MM	30.90.44				
DEGREE DAYS						
HEATING TOTAL	185		212	-27	325	
SINCE 7/1	829		898	-69	751	
COOLING TOTAL	12		5	7	Ø	
SINCE 1/1	12		8	4	0	
*************	******		*****			
WIND (MPH)						
AVERAGE WIND SP		1.2				
HIGHEST WIND SP			6/340		02/03	
HIGHEST GUST SPI	EED/DIRE	CTION 3	33/320	DATE	02/03	

```
SKY COVER
POSSIBLE SUNSHINE (PERCENT)
AVERAGE SKY COVER
                            0.20
NUMBER OF DAYS FAIR
                              22
NUMBER OF DAYS PC
                               5
NUMBER OF DAYS CLOUDY
                               2
AVERAGE RH (PERCENT)
WEATHER CONDITIONS. NUMBER OF DAYS WITH
  0
  1
  0
  0
  0
  0
  5
HAZE
                         13
- INDICATES NEGATIVE NUMBERS.
```

- R INDICATES RECORD WAS SET OR TIED.
- MM INDICATES DATA IS MISSING.
- T INDICATES TRACE AMOUNT.

Explanation of the Preliminary Monthly Climate Data (F6) Product

These data are preliminary and have not undergone final quality control by the National Climatic Data Center (NCDC). Therefore, these data are subject to revision. Final and certified climate data can be accessed at the NCDC - http://www.ncdc.noaa.gov.

WFO Monthly/Daily Climate Data

000 CXUSS6 KLOX 011655 CF6LGB PRELIMINARY LOCAL CLIMATOLOGICAL DATA (WS FORM: F-6)

STATION: LONG BEACH AIRPORT CA

MONTH: MARCH YEAR: 2020 LATITUDE: 33 49 N LONGITUDE: 118 9 W

TEMPERATURE IN F:			:PCPN: SNOW:							SHINE	:PK WND							
1	2	3	4		6A	6B	7	8	9	10 AVG	11	12	13	14	100	16	2.44	100
DY	MAX	MIN	AVG	DEP	HDD	CDD	WTR	SNW	DPTH	SPD	SPD	DIR	MIN	PSBL	5-5	WX	SPD	DR
==		****			****	1855		dade.					****					244
1	61	51	56	-2	9	0	0.04	0.0	0	6.3	16	260	M	M	7	8	21	260
2	72	46	59	0	6	0	0.00	0.0	0	4.5	18	60	M	M	1		25	6
3	78	45	62	3	3	0	0.00	0.0	0	11/2		290		M	0		18	28
4	66	52	59	0	6	0	0.00	0.0	0	3.5	13	200	M	М	3	1	16	23
5	7.5	56	66	7	0	_1	0.00	0.0	A	5.6	17	290	M	M	4	18	20	28
6	65	55	60	1	5	0	0.00	0.0	0	6.1	13	310	M	M		18	17	180
7	64	55	60	1	5	0	T	0.0	0	7.1	15	130	M	M	7		21	23
8	64	52	58	-1	7	0	0.00	0.0	0	3.8	14	220	M	M	3		19	220
9	72	50	61	2	4	0	0.09	0.0	0	3.7	18	170	M	M	2		27	15
10	65	56	61	2	4	0	0.08	0.0	0	0.10		150	M	M	10	1	21	17
11	70	58	64	5	1	0	T	0.0	0			230	M	M	5	1	15	20
12	59	54	57	-2	8	0	1.23	0.0	0	5.2	31	350	M	M	6	18	35	350
13	60	53	57	-2	8	0	0.50	0.0	0	2.2		10	M	M	10	1	11	20
14	61	55	58	-1	7	0	0.01	0.0	0	3.9	13	250	M	M	10		16	27
15	65	54	60	0	5		0.03	0.0	0	4.7	14	220	M	M	8	1	21	22
16	63	52	58	-2	7	0	0.27	0.0	0	7.6	20	150	M	M	9	1	29	16
17	60	47	54	-6	11	0	T	M	0	3.6	14	320	M	M	4		17	19
18	63	44	54	-6	11	0	0.00	0.0	0	8.6	20	280	M	M	0		27	28
19	61	52	57	-3	8	0	0.03	0.0	0	7.4	17	220	M	M	6	1	22	260
20	63	50	57	-3	8	0	0.00	0.0	0	5.3	12	160	M	M	4	1	17	150
21	65	52	59	-1	6	0	0.00	0.0	0	4.4	13	220	M	M	4		17	200
22	67	50	59	-1	6	0	0.71	0.0	0	4.6	14	100	M	M	5	1	18	96
23	64	52	58	-2	7	0	0.02	0.0	0	5.8	15	200	M	M	5		18	216
24	63	50	57	-3	8	0	T	0.0	0	5.3	15	290	M	M	7	18	19	286
25	63	53	58	-2	7	0	T	0.0	0	8.2	21	280	M	M	9		25	296
26	61	46	54	-6	11	0	0.00	0.0	0	9.0	22	260	M	M	0		30	260
27	65	45	55	-5	10	0	0.00	0.0	0	7.3	16	290	M	M	0		M	M
28	64	48	56	-4	9	0	0.00	0.0	0	5.0	15	300	M	M	1		17	300
29	66	49	58	-2	7	0	0.00	0.0	0	7.5	20	280	M	M	1		27	270
30	71	50	61	0	4	0	0.00	0.0	0	4.4	17	290	M	M	0		20	296
31	76	52	64	3	1		0.00	0.0	0	_939.5		190	M	М		18	0.000	196
	2032			****	199	1	3.01		0.0				M	11222	136	-		
						1	2,577		200	-	===							
AV	65.6	51.	1							5.5	FA	STST	M	M	4		MAX (MPH	(1)

35 350

NOTES

LAST OF SEVERAL OCCURRENCES

COLUMN 17 PEAK WIND IN M.P.H.

PRELIMINARY LOCAL CLIMATOLOGICAL DATA (WS FORM: F-6) , PAGE 2

STATION: LONG BEACH AIRPORT CA

MONTH: MARCH YEAR: 2020 LATITUDE: 33 49 N LONGITUDE: 118 9 W

	201102102	-,, - , ,,
[TEMPERATURE DATA]	[PRECIPITATION DATA]	SYMBOLS USED IN COLUMN 16
AVERAGE MONTHLY: 58.3	TOTAL FOR MONTH: 3.01	1 = FOG OR MIST
	DPTR FM NORMAL: 1.14	2 = FOG REDUCING VISIBILITY
HIGHEST: 78 ON 3	GRTST 24HR 1.23 ON 12-12	TO 1/4 MILE OR LESS
LOWEST: 44 ON 18		3 = THUNDER
	SNOW, ICE PELLETS, HAIL	4 = ICE PELLETS
	TOTAL MONTH: 0.0 INCH	5 = HAIL
	GRTST 24HR 0.0	6 = FREEZING RAIN OR DRIZZLE
	GRTST DEPTH: 0	7 = DUSTSTORM OR SANDSTORM: VSBY 1/2 MILE OR LESS
		8 = SMOKE OR HAZE
[NO. OF DAYS WITH]	[WEATHER - DAYS WITH]	9 = BLOWING SNOW
		X = TORNADO
MAX 32 OR BELOW: Ø	0.01 INCH OR MORE: 11	
MAX 90 OR ABOVE: 0	0.10 INCH OR MORE: 4	
MIN 32 OR BELOW: 0	0.50 INCH OR MORE: 3	
MIN 0 OR BELOW: 0	1.00 INCH OR MORE: 1	

[CDD (BASE 65)]

[HDD (BASE 65)]

TOTAL THIS MO.

TOTAL FM JUL 1

DPTR FM NORMAL

TOTAL THIS MO. 1

DPTR FM NORMAL -9 [PRESSURE DATA]

1028

-42

TOTAL FM JAN 1 13 HIGHEST SLP 30.25 DN 30 DPTR FM NORMAL -5 LOWEST SLP 29.74 ON 12

199 CLEAR (SCALE 0-3) 12

20 PTCLDY (SCALE 4-7) 14

CLOUDY (SCALE 8-10) 5

[REMARKS] #FINAL-03-20#

Climatological Report (Monthly)

452 CXUS56 KLOX 011436 CLMLGB

CLIMATE REPORT NATIONAL WEATHER SERVICE LOS ANGELES/OXNARD CA 735 AM PDT WED APR 1 2020

... THE LONG BEACH AIRPORT CA CLIMATE SUMMARY FOR THE MONTH OF MARCH 2020...

CLIMATE NORMAL PERIOD 1981 TO 2010 CLIMATE RECORD PERIOD 1958 TO 2020

WEATHER	OBSERVE	D	NORMAL	DEPART	LAST YEAR'S
	VALUE	DATE(S)	VALUE	FROM NORMAL	VALUE
		*********	*****	*****	*******
TEMPERATURE (F)		02022			
HIGHEST	78	03/03			
LOWEST	44	03/18	6303		
AVG. MAXIMUM	65.5		68,6	-3.1	
AVG. MINIMUM	51.1		50.5	0.6	
MEAN	58.3		59.6	-1.3	
DAYS MAX >= 90	0				
DAYS MAX <= 32	0				
DAYS MIN <= 32	0				
DAYS MIN <= 0	0				
PRECIPITATION (INCHES)				
TOTALS	3.01		1.87	1.14	
DAILY AVG.	0.10				
DAYS >= .01	11				
DAYS >= .10	4				
DAYS >= .50	3				
DAYS >= 1.00	1				
GREATEST	-				
24 HR. TOTAL	1.23	03/12 TO	03/12		
STORM TOTAL	MM	05, 12 10	03/ 12		
(MM/DD(HH))	1.00				
DEGREE DAYS					
HEATING TOTAL	199		179	20	139
SINCE 7/1	1028		1070	-42	890
COOLING TOTAL	1		10	-9	12
SINCE 1/1	13		18	-5	12
WIND (MPH)					
AVERAGE WIND SP	FED	5	. 5		

AVERAGE WIND SPEED 5.5

HIGHEST WIND SPEED/DIRECTION 31/350 DATE 03/12 HIGHEST GUST SPEED/DIRECTION 35/350 DATE 03/12

```
SKY COVER
POSSIBLE SUNSHINE (PERCENT)
AVERAGE SKY COVER
                           0.40
NUMBER OF DAYS FAIR
                             12
NUMBER OF DAYS PC
                             13
NUMBER OF DAYS CLOUDY
                              6
AVERAGE RH (PERCENT)
                        66
WEATHER CONDITIONS. NUMBER OF DAYS WITH
  0
  5
  0
  0
  0
  0
  0
HAZE
                        6
   INDICATES NEGATIVE NUMBERS.
```

- R INDICATES RECORD WAS SET OR TIED.
- MM INDICATES DATA IS MISSING.
- T INDICATES TRACE AMOUNT.

These data are preliminary and have not undergone final quality control by the National Climatic Data Center (NCDC). Therefore, these data are subject to revision. Final and certified climate data can be accessed at the NCDC - http://www.ncdc.noaa.gov.

WFO Monthly/Daily Climate Data

000 CXUS56 KLOX 011655 CF6LGB

PRELIMINARY LOCAL CLIMATOLOGICAL DATA (WS FORM: F-6)

STATION: LONG BEACH AIRPORT CA

MONTH: APRIL YEAR: 2020 LATITUDE: 33 49 N LONGITUDE: 118 9 W

	TEMPE	-	17.00	-			:PCPN:		SNOW:	WIN	-		4	SHINE	-		:PK	
1	2	3			6A		7	8	9 127	10	11		13			16	5 17	18
DY	MAX	MIN	AVG	DEP	HDD	CDD	WTR	SNW	DPTH	SPD	SPD	DIR	MIN	PSBL	5-5	WX	SPD	DR
==	****		****										HE. R. C.					
1	66	57	62	1	3	0	0.00	0.0	0	6.4	12	120	М	M	5	1	16	210
2	7.5	58	63	2	2	-	0.00	0.0	0		-	160	M	M	7		-	180
3	-77	55	61	0	4	0	0.00	0.0	0	200	7 / TIME	220	M	M	3		-	326
4		54	60	-1	5	0	T	0.0	0	1000		200	M	M	6			176
5	71.0	55	60	-1	5	0	0.14	0.0	0			210	М	M		1		186
6		55	58	-3		0	0.74	0.0	0			160	M	M	9	1	23	156
7	63	50	57	-4	8	0	0.82	0.0	0			290	M	M	10		25	256
8		50	56	-6	9	0	0.08	0.0	0	5.1	. 16	300	М	M	4	1	20	216
9	56	50	53	-9	12	0	0.89	0.0	0	5.7	12	80	M	M	3.0	1	14	96
10	63	50	57	-5	8	0	0.36	0.0	0	6.7	17	40	M	M	8	1	23	356
11	65	50	58	-4	7	0	0.00	0.0	0	5.6	14	200	M	M	2		21	166
12	62	57	60	-2	5	0	0.00	0.0	0	4.5	10	210	M	M	10		14	216
13	64	54	59	-3	6	0	0.00	0.0	0	4.6	10	310	M	M	7		15	216
14	74	51	63	1	2	0	0.00	0.0	0	5.6	17	290	M	M	2	18	20	286
15	80	53	67	5	0	2	0.00	0.0	0	4.6	18	300	M	M	0		22	296
16	67	55	61	-1	4	0	0.00	0.0	0	5.2	12	200	M	M	1	1	16	200
17	66	55	61	-2	4	0	0.00	0.0	0	6.2	14	220	M	M	5		M	M
18	65	58	62	-1	3	0	0.00	0.0	0	7.2	16	290	M	M	9		20	300
19	66	56	61	-2	4	0	0.00	0.0	0	6.7	17	300	M	M	7		23	326
20	67	57	62	-1	3	0	0.00	0.0	0	6.6	15	290	M	M	6		21	300
21	69	54	62	-1	3	0	0.00	0.0	0	5.4	15	290	M	M	1		19	316
22	80	55	68	5	0	3	0.00	0.0	0	4.2	16	290	M	M	0		20	296
23	85	59	72	9	0	7	0.00	0.0	0	3.8	12	150	M	M	0		13	216
24	93	61	77	13	0	12	0.00	0.0	0	5.8	18	290	M	M	0		22	300
25	80	59	70	6	0	5	0.00	0.0	0	5.1	10	180	M	M	1	1	13	200
26	82	58	70	6	0	5	0.00	0.0	0	4.6	12	290	M	M	5	128	1 13	300
27	70	59	65	1	0	0	0.00	0.0	0	4.6	13	220	M	M	4	18	19	200
28	72	61	67	3	0	2	0.00	0.0	0	5.5	13	180	M	M	4	18	17	178
29	70	61	66	2	0	1	0.00	0.0	0			200	M	M	6	18	18	200
30	72	61	67	3	0		0.00	0.0	0	7 1 1 3		210	M	М	10.5	18		180
- 3																		
TUU	2081	100	72		104	39	3.03		0.0 1			-===	M		145			
	69.4					-70						STST	M	М	5		MAX (MP	
								MTC		. #	19	290				#	25 256	2

NOTES

LAST OF SEVERAL OCCURRENCES

COLUMN 17 PEAK WIND IN M.P.H.

PRELIMINARY LOCAL CLIMATOLOGICAL DATA (WS FORM: F-6) , PAGE 2

STATION: LONG BEACH AIRPORT CA

MONTH: APRIL
YEAR: 2020
LATITUDE: 33 49 N
LONGITUDE: 118 9 W

[TEMPERATURE DATA] [PRECIPITATION DATA] SYMBOLS USED IN COLUMN 16

AVERAGE MONTHLY: 62.5 TOTAL FOR MONTH: 3.03
DPTR FM NORMAL: 0.1 DPTR FM NORMAL: 2.43
HIGHEST: 93 0N 24 GRTST 24HR 0.89 0N 9- 9

LOWEST: 50 ON 11,10 SNOW, ICE PELLETS, HAIL

TOTAL MONTH: 0.0 INCH
GRTST 24HR 0.0
GRTST DEPTH: 0

[NO. OF DAYS WITH] [WEATHER - DAYS WITH]

MAX 32 OR BELOW: 0 0.01 INCH OR MORE: 6
MAX 90 OR ABOVE: 1 0.10 INCH OR MORE: 5
MIN 32 OR BELOW: 0 0.50 INCH OR MORE: 3
MIN 0 OR BELOW: 0 1.00 INCH OR MORE: 0

[HDD (BASE 65)]

TOTAL THIS MO. 104 CLEAR (SCALE 0-3) 10
DPTR FM NORMAL -2 PTCLDY (SCALE 4-7) 14
TOTAL FM JUL 1 1132 CLOUDY (SCALE 8-10) 6
DPTR FM NORMAL -44

[CDD (BASE 65)] TOTAL THIS MO. 39

DPTR FM NORMAL 10 [PRESSURE DATA]

TOTAL FM JAN 1 52 HIGHEST SLP 30.15 ON 14 DPTR FM NORMAL 5 LOWEST SLP 29.82 ON 24

[REMARKS] #FINAL-04-20# 1 = FOG OR MIST

2 = FOG REDUCING VISIBILITY TO 1/4 MILE OR LESS

3 = THUNDER 4 = ICE PELLETS

5 = HAIL

6 = FREEZING RAIN OR DRIZZLE 7 = DUSTSTORM OR SANDSTORM: VSBY 1/2 MILE OR LESS

8 = SMOKE OR HAZE 9 = BLOWING SNOW X = TORNADO

Climatological Report (Monthly)

826 CXUS56 KLOX 020530 CLMLGB

CLIMATE REPORT NATIONAL WEATHER SERVICE LOS ANGELES/OXNARD CA 1029 PM PDT FRI MAY 1 2020

... THE LONG BEACH AIRPORT CA CLIMATE SUMMARY FOR THE MONTH OF APRIL 2020...

CLIMATE NORMAL PERIOD 1981 TO 2010 CLIMATE RECORD PERIOD 1958 TO 2020

WEATHER	OBSERVE VALUE	D DATE(S)	NORMAL VALUE	DEPART FROM	LAST YEAR'S
	VALUE	DATE(S)	VALUE	NORMAL	VALUE
TEMPERATURE (F)		12			
HIGHEST	93	04/24			
LOWEST	50	04/11			
		04/10			
		04/09			
AVG. MAXIMUM	69.4		71.7	-2.3	
AVG. MINIMUM	55.6		53.2	2.4	
MEAN	62.5		62.4	0.1	
DAYS MAX >= 90	1				
DAYS MAX <= 32	0				
DAYS MIN <= 32	0				
DAYS MIN <= 0	0				
PRECIPITATION (INCHES)				
TOTALS	3.03R		0.60	2.43	
DAILY AVG.	0.10				
DAYS >= .01	6				
DAYS >= .10	5				
DAYS >= .50	3				
DAYS >= 1.00	0				
GREATEST	2				
24 HR. TOTAL	0.89	04/09 TO	04/09		
STORM TOTAL	MM				
(MM/DD(HH))					
DEGREE DAYS					
HEATING TOTAL	104		106	-2	32
SINCE 7/1	1132		1176	-44	922
COOLING TOTAL	39		29	10	36
SINCE 1/1	52		47	5	48
			*******		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
WIND (MPH)					

WIND (MPH)

AVERAGE WIND SPEED 5.6

HIGHEST WIND SPEED/DIRECTION 18/290 DATE 04/24

HIGHEST GUST SPEED/DIRECTION 25/250 DATE 04/07

SKY COVER

POSSIBLE SUNSHINE (PERCENT) MM AVERAGE SKY COVER 0.50

NUMBER OF DAYS FAIR 10 NUMBER OF DAYS PC

NUMBER OF DAYS CLOUDY

13 7

AVERAGE RH (PERCENT)

WEATHER CONDITIONS. NUMBER OF DAYS WITH

0

4

0

0

0

0 1

HAZE

6

INDICATES NEGATIVE NUMBERS. R INDICATES RECORD WAS SET OR TIED.

MM INDICATES DATA IS MISSING.

T INDICATES TRACE AMOUNT.

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WFO Monthly/Daily Climate Data

000
CXUSS6 KLOX 011655
CF6LGB
PRELIMINARY LULAL CLIMATULUGICAL DATA (WS FURM: F-6)

STATION: LONG BEACH AIRPORT CA

MONTH: MAY
YEAR: 2020
LATITUDE: 33 49 N
LONGITUDE: 118 9 W

NOTES:

LAST OF SEVERAL OCCURRENCES

COLUMN 17 PEAK WIND IN M.P.H.

PRELIMINARY LOCAL CLIMATOLOGICAL DATA (WS FORM: F-6) , PAGE 2

STATION: LONG BEACH AIRPORT CA

MONTH: MAY
YEAR: 2020
LATITUDE: 33 49 N
LONGITUDE: 118 9 W

[TEMPERATURE DATA]

[PRECIPITATION DATA]

SYMBOLS USED IN COLUMN 16

AVERAGE MONTHLY: 68.4 TOTAL FOR MONTH: 0.04 1 = FOG OR MIST DPTR FM NORMAL: 2.8 DPTR FM NORMAL: -0.17 2 = FOG REDUCING HIGHEST: 93 ON 6 GRTST 24HR 0.04 ON 18-18 TO 1/4 MILE LOWEST: 56 ON 20,12 SNOW, ICE PELLETS, HAIL TOTAL MONTH: 0.0 INCH GRTST 24HR 0.0 GRTST DEPTH: [NO. OF DAYS WITH] [WEATHER - DAYS WITH] MAX 32 OR BELOW: 0.01 INCH OR MORE: MAX 90 OR ABOVE: 2 0.10 INCH OR MORE: 0 MIN 32 OR BELOW: 0 0.50 INCH OR MORE: 0 1.00 INCH OR MORE: MIN 0 OR BELOW: 0 [HDD (BASE 65)] TOTAL THIS MO. 2 DPTR FM NORMAL -35 CLEAR (SCALE 0-3) 19 PTCLDY (SCALE 4-7) 11 2 TOTAL FM JUL 1 1134 CLOUDY (SCALE 8-10) 1 DPTR FM NORMAL -79 [CDD (BASE 65)] TOTAL THIS MO. 117 DPTR FM NORMAL 61 [PRESSURE DATA] HIGHEST SLP 30.07 ON 20 LOWEST SLP 29.80 ON 7 TOTAL FM JAN 1 169 DPTR FM NORMAL 66

[REMARKS] #FINAL-05-20#

2 = FOG REDUCING VISIBILITY TO 1/4 MILE OR LESS

3 = THUNDER

4 = ICE PELLETS

5 = HATL

6 = FREEZING RAIN OR DRIZZLE 7 = DUSTSTORM OR SANDSTORM:

VSBY 1/2 MILE OR LESS

8 = SMOKE OR HAZE

9 = BLOWING SNOW

X = TORNADO

Climatological Report (Monthly)

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999
CXUS56 KLOX 100534
CLMLGB
CLIMATE REPORT
NATIONAL WEATHER SERVICE LOS ANGELES/OXNARD CA
1034 PM PDT TUE JUN 9 2020
... THE LONG BEACH AIRPORT CA CLIMATE SUMMARY FOR THE MONTH OF MAY 2020 ...
CLIMATE NORMAL PERIOD 1981 TO 2010
CLIMATE RECORD PERTOD 1958 TO 2020
WEATHER
                OBSERVED
                                   NORMAL
                                           DEPART
                                                   LAST YEAR'S
                 VALUE DATE(S) VALUE
                                           FROM
                                                   VALUE
                                           NORMAL
TEMPERATURE (F)
HIGHEST
                   93
                        05/06
LOWEST
                   56
                        05/20
                        05/12
                        05/04
                                             3.2
AVG. MAXIMUM
                 76.8
                                    73.6
AVG. MINIMUM
                 60.0
                                    57.6
                                             2.4
MEAN
                 68.4
                                             2.8
                                    65.6
DAYS MAX >= 90
                    2
DAYS MAX <= 32
                    0
DAYS MIN <= 32
                    0
DAYS MIN <= 0
PRECIPITATION (INCHES)
TOTALS
                 0.04
                                    0.21
                                           -0.17
DAILY AVG.
                 0.00
DAYS >= .01
                    1
DAYS >= .10
                    0
DAYS >= .50
                    0
DAYS >= 1.00
                    0
GREATEST
 24 HR. TOTAL
                        05/18 TO 05/18
                 0.94
 STORM TOTAL
                   MM
 (MM/DD(HH))
DEGREE DAYS
HEATING TOTAL
                    2
                                     37
                                             -35
                                                       34
SINCE 7/1
                 1134
                                    1213
                                             -79
                                                      956
COOLING TOTAL
                  117
                                     56
                                              61
                                                       11
SINCE 1/1
                                     103
                                                       59
                  169
                                              66
WIND (MPH)
AVERAGE WIND SPEED
HIGHEST WIND SPEED/DIRECTION
                                22/290
                                           DATE 05/30
HIGHEST GUST SPEED/DIRECTION
                                           DATE 05/30
                                28/300
SKY COVER
POSSIBLE SUNSHINE (PERCENT)
                              MM
AVERAGE SKY COVER
                            9.30
NUMBER OF DAYS FAIR
                              19
NUMBER OF DAYS PC
                               9
NUMBER OF DAYS CLOUDY
                               3
AVERAGE RH (PERCENT)
                         54
WEATHER CONDITIONS. NUMBER OF DAYS WITH
  0
  0
  0
```

0

0 0 1 HAZE

9

- INDICATES NEGATIVE NUMBERS.
R INDICATES RECORD WAS SET OR TIED.
MM INDICATES DATA IS MISSING.
T INDICATES TRACE AMOUNT.

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WFO Monthly/Daily Climate Data

000 CXUS56 KLOX 011655 CF6LGB PRELIMINARY LOCAL CLIMATOLOGICAL DATA (WS FORM: F-6)

STATION: LONG BEACH AIRPORT CA

MONTH: JUNE
YEAR: 2020
LATITUDE: 33 49 N
LONGITUDE: 118 9 W

NOTES:

AV 77.5 62.4

LAST OF SEVERAL OCCURRENCES

COLUMN 17 PEAK WIND IN M.P.II.

PRELIMINARY LOCAL CLIMATOLOGICAL DATA (WS FORM: F-6) , PAGE 2

STATION: LONG BEACH AIRPORT CA

MONTH: JUNE
YEAR: 2020
LATITUDE: 33 49 N
LONGITUDE: 118 9 W

6.4 FASTST M

MISC ----> # 23 290

[TEMPERATURE DATA]

[PRECIPITATION DATA]

SYMBOLS USED IN COLUMN 16

M

MAX(MPH)

28 290

TOTAL FOR MONTH: T 1 = FOG OR MIST
DPTR FM NORMAL: -0.07 2 = FOG REDUCING
GRTST 24HR T ON 29-29 TO 1/4 MILE AVERAGE MONTHLY: 69.9 DPTR FM NORMAL: 1.0 HIGHEST: 97 ON 9 59 ON 8 LOWEST: SNOW, ICE PELLETS, HAIL TOTAL MONTH: 0.0 INCH GRTST 24HR 0.0 0.0 GRTST DEPTH: 0 [NO. OF DAYS WITH] [WEATHER - DAYS WITH] MAX 32 OR BELOW: 0 0.01 INCH OR MORE: MAX 90 OR ABOVE: 3 0.10 INCH OR MORE: MIN 32 OR BELOW: 0 0.50 INCH OR MORE: MIN Ø OR BELOW: 0 1.90 INCH OR MORE: 0 [HDD (BASE 65)] CLEAR (SCALE 0-3) 11 PTCLDY (SCALE 4-7) 16 CLOUDY (SCALE 8-10) 3 TOTAL THIS MO. -6 DPTR FM NORMAL TOTAL FM JUL 1 1134 DPTR FM NORMAL -85 [CDD (BASE 65)] TOTAL THIS MO. 155 DPTR FM NORMAL [PRESSURE DATA] 34 HIGHEST SLP M ON M TOTAL FM JAN 1 324 DPTR FM NORMAL 100 LOWEST SLP 29.72 ON 28

[REMARKS] #FINAL-06-20#

2 = FOG REDUCING VISIBILITY TO 1/4 MILE OR LESS

3 = THUNDER

4 = ICE PELLETS

5 = HAIL

6 = FREEZING RAIN OR DRIZZLE

7 = DUSTSTORM OR SANDSTORM: VSBY 1/2 MILE OR LESS

8 = SMOKE OR HAZE

9 = BLOWING SNOW

X = TORNADO

Climatological Report (Monthly)

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094
CXUS56 KLOX 011631
CLMLGB
CLIMATE REPORT
NATIONAL WEATHER SERVICE LOS ANGELES/OXNARD CA
931 AM POI WED JUL 1 2020
... THE LONG BEACH AIRPORT CA CLIMATE SUMMARY FOR THE MONTH OF JUNE 2020...
CLIMATE NORMAL PERIOD 1981 TO 2010
CLIMATE RECORD PERIOD 1958 TO 2020
                                                   LAST YEAR'S
WEATHER
                OBSERVED
                                   NORMAL
                                           DEPART
                 VALUE
                         DATE(S)
                                   VALUE
                                           FROM
                                                    VALUE
                                           NORMAL
TEMPERATURE (F)
                   97
                         96/99
HIGHEST
LOWEST
                   59
                         06/08
AVG. MAXIMUM
                 77.5
                                    76.7
                                             0.8
AVG. MINIMUM
                                             1.4
                 62.4
                                    61.0
                 69.9
MEAN
                                    68.9
                                             1.0
DAYS MAX >= 90
                    3
DAYS MAX <= 32
                    0
DAYS MIN <= 32
DAYS MIN <= 0
PRECIPITATION (INCHES)
TOTALS
                                    0.97
                                           -0.07
DAILY AVG.
DAYS >= .01
                    0
DAYS >= .10
                    0
DAYS >= .50
                    0
DAYS >= 1.00
                    0
GREATEST
24 HR. TOTAL
                        96/29 TO 96/29
                        96/28 TO 96/28
                        06/18 TO 06/18
 STORM TOTAL
 (MM/DD(HH))
DEGREE_DAYS
HEATING TOTAL
                    0
                                                        2
                                    1219
                                             -85
                                                      958
SINCE 7/1
                 1134
COOLING TOTAL
                  155
                                    121
                                              34
                                                      127
SINCE 1/1
                  324
                                     224
                                             100
                                                      186
WIND (MPH)
AVERAGE WIND SPEED
                                 6.4
HIGHEST WIND SPEED/DIRECTION
                                 23/290
                                           DATE
                                                 06/09
HIGHEST GUST SPEED/DIRECTION
                                 28/290
                                           DATE
                                                 86/81
SKY COVER
POSSIBLE SUNSHINE (PERCENT)
                              MM
AVERAGE SKY COVER
                            9.40
NUMBER OF DAYS FAIR
                              11
NUMBER OF DAYS PC
                              15
NUMBER OF DAYS CLOUDY
                               4
AVERAGE RH (PERCENT)
WEATHER CONDITIONS. NUMBER OF DAYS WITH
 0
  0
 0
 0
```

9 HAZE

- INDICATES NEGATIVE NUMBERS.
 R INDICATES RECORD WAS SET OR TIED,
 MM INDICATES DATA IS MISSING.
 T INDICATES TRACE AMOUNT.

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WFO Monthly/Daily Climate Data

146
CXUS56 KLOX Ø11655
CF6LGB
PRELIMINARY LOCAL CLIMATOLOGICAL DATA (WS FORM: F-6)

STATION: LONG BEACH AIRPORT CA

MONTH: JULY
YEAR: 2020
LATITUDE: 33 49 N
LONGITUDE: 118 9 W

4	TEMPE	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,					:PCPN:		SNOW:		-		7.4.0	SHINE			:PK I	
1	2	1927	4		100	6B	7	8	9 12Z	10	11	12	13	14	15	16	17	18
DY	MAX	MIN	AVG	DEP	HDD	CDD	WTR	SNW	DPTH	SPD	SPD	DIR	MIN	PSBL	S-S	WX	SPD	DR
==					====						===	ER==				****		
1	73	64	69	-3	0	4	0.00	0.0	0	4.9	10	190	М	М	7		16	186
2	78	64	71	-1	0	6	0.00	0.0	0	6.9	13	280	M	M	5		16	198
3	83	61	72	0	0	7	0.00	0.0	0	7.6	14	290	M	M	0		17	300
4	87	63	75	3		10	0.00	0.0	0	5.4	16	310	M	M	0	8	19	296
5	88	64	76	4	0	11	0.00	0.0	9	4.7	13	300	M	M	0	1	15	328
6	85	64	75	3	0	10	0.00	0.0	0	5.5	10	310	M	M	2	18	15	166
7	81	66	74	2	0	9	0.00	0.0	0	5.3	13	190	M	M	2	8	17	186
8	75	66	71	-2	0	6	0.00	0.0	0	6.6	12	170	M	M	3		18	216
9	84	66	75	2	0	10	0.00	0.0	0	5.8	14	210	M	M	3	8	19	200
10	89	65	77	4	0	12	0.00	0.0	0	5.4	12	310	M	M	3	18	15	278
11	94	65	80	7	0	15	0.00	0.0	0	5.9	16	290	M	M	0		19	310
12	92	68	80	7	0	15	0.00	0.0	0	5.1	15	310	M	M	0		17	310
13	79	67	73	0	0	8	0.00	0.0	0	6.9	13	290	M	M	3		16	198
14	80	65	73	0	0	8	0.00	0.0	0	6.2	14	290	M	M	5		16	300
15	80	64	72	-1	0	7	0.00	0.0	0	7.0	15	300	M	M	4		20	300
16	80	63	72	-1	0	7	0.00	0.0	0	6.9	14	310	M	M	3		17	266
17	81	65	73	-1	0	8	0.00	0.0	0	7.0	16	300	M	M	4		22	286
18	82	63	73	-1	0	8	0.00	0.0	0	6.9	15	290	M	M	0		21	290
19	81	62	72	-2	0	7	0.00	0.0	0	6.6	16	290	M	M	1		21	340
20	80	62	71	-3	0	6	0.00	0.0	0	6.3	14	290	M	M	1		16	180
21	78	63	71	-3	0	6	0.00	0.0	0	5.9	17	300	M	M	1		19	300
22	76	61	69	-5	0	4	0.00	0.0	0	4.9	12	290	M	M	6	1	20	238
23	73	63	68	-6	0	3	0.00	0.0	0	5.7	12	300	M	M	6		15	180
24	76	62	69	-5	0	4	0.00	0.0	0	6.0	13	280	M	M	5		17	210
25	80	63	72	-2	0		0.00	0.0	0	6.2	14	290	M	M	4		18	310
26	81	61	71	-3	0	6	0.00	0.0	0	6.8	16	310	M	M	2	18	19	280
27	79	62	71	-3	0	6	0.00	0.0	0	5.9	14	300	M	M	0		17	300
28	80	61	71	-3	0	6	0.00	0.0	0	5.7	12	310	M	M	3	18	17	300
29	81	61	71	-3	0	6	0.00	0.0	0	5.5	14	300	M	M	1	1	18	300
30	85	60	73	-1	0		0.00	0.0	0	6.4	16	290	M	M	4	18	20	280
31	90	64	77	3	0	1.42	0.00	0.0	0			310	М	M	0			290
	2531					242			0.0				М		78	POHE		
200																	AAV/MDI	
AV	81.7	63.	. 5							6.6	FA.	STST	M	M	3	- 1	MAX (MPH	7)

22 280

NOTES

LAST OF SEVERAL OCCURRENCES

COLUMN 17 PEAK WIND IN M.P.H.

PRELIMINARY LOCAL CLIMATOLOGICAL DATA (WS FORM: F-6) , PAGE 2

STATION: LONG BEACH AIRPORT CA

MONTH: JULY YEAR: 2020 LATITUDE: 33 49 N

LONGITUDE: 118 9 W

[TEMPERATURE DATA]	[PRECIPITATION DATA]	SYMBOLS USED IN COLUMN 16
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AVERAGE MONTHLY: 72.6 TOTAL FOR MONTH: 0.00 DPTR FM NORMAL: -0.6 DPTR FM NORMAL: -0.03 HIGHEST: 94 ON 11 GRTST 24HR 0.00 ON 31-31 LOWEST: 60 ON 30

> SNOW, ICE PELLETS, HAIL TOTAL MONTH: 0.0 INCH GRTST 24HR 0.0 GRTST DEPTH: 0

[WEATHER - DAYS WITH]

TO 1/4 MILE OR LESS
3 = THUNDER
4 = ICE PELLETS
5 = HAIL

9 = BLOWING SNOW X = TORNADO

1 = FOG OR MIST

6 = FREEZING RAIN OR DRIZZLE 7 = DUSTSTORM OR SANDSTORM: VSBY 1/2 MILE OR LESS 8 = SMOKE OR HAZE

2 = FOG REDUCING VISIBILITY

0.01 INCH OR MORE: MAX 32 OR BELOW: 0 0 MAX 90 OR ABOVE: 0.10 INCH OR MORE: 3 0 MIN 32 OR BELOW: 0.50 INCH OR MORE: 0 0 MIN Ø OR BELOW: 0 1.00 INCH OR MORE: 0

[HDD (BASE 65)]
TOTAL THIS MO. 0 CLEAR (SCALE 0-3) 21
DPTR FM NORMAL 0 PTCLDY (SCALE 4-7) 10
TOTAL FM JUL 1 0 CLOUDY (SCALE 8-10) 0
DPTR FM NORMAL 0

[CDD (BASE 65)]
TOTAL THIS MO. 242
DPTR FM NORMAL -12 [PRESSURE DATA]
TOTAL FM JAN 1 566 HIGHEST SLP M ON M
DPTR FM NORMAL 88 LOWEST SLP 29.75 ON 21

[REMARKS] #FINAL-07-20#

[NO. OF DAYS WITH]

Climatological Report (Monthly)

555 CXUS56 KLOX 040445 CLMLGB

CLIMATE REPORT
NATIONAL WEATHER SERVICE LOS ANGELES/OXNARD CA
945 PM PDT MON AUG 3 2020

... THE LONG BEACH AIRPORT CA CLIMATE SUMMARY FOR THE MONTH OF JULY 2020...

CLIMATE NORMAL PERIOD 1981 TO 2010 CLIMATE RECORD PERIOD 1958 TO 2020

WEATHER	OBSERVE VALUE	D DATE((5)		DEPART FROM NORMAL	VALUE
	******		***			
TEMPERATURE (F)						
HIGHEST	94	07/11				
LOWEST	60	07/30				
AVG. MAXIMUM	81.6			81.9	-0.3	
AVG, MINIMUM	63.5			64.5	-1.0	
MEAN	72.6			73.2	-0.6	
DAYS MAX >= 90	3					
DAYS MAX <= 32	0					
DAYS MIN <= 32	0					
DAYS MIN <= 0	0					
PRECIPITATION (INCHES)					
TOTALS	0.00			0.03	-0.03	
DAILY AVG.	0.00					
DAYS >= .01	0					
DAYS >= .10	0					
DAYS >= .50	0					
DAYS >= 1.00	0					
GREATEST						
24 HR. TOTAL	0.00	07/31	TO 6	7/31		
		07/30				
		07/29		7.10		
STORM TOTAL	MM	12.06.00				
(MM/DD(HH))						
DEGREE DAYS						
HEATING TOTAL	0			0	0	0
SINCE 7/1	0			0	0	0
COOLING TOTAL	242			254	-12	303
SINCE 1/1	566			478	88	489
JANCE 1/1			2000	470		405
100300500000					10166333	Ce3100016333
JIMP (MDU)						

WIND (MPH)

AVERAGE WIND SPEED 6.0

HIGHEST WIND SPEED/DIRECTION 17/300 DATE 07/21

HIGHEST GUST SPEED/DIRECTION 22/280 DATE 07/17

SKY COVER

POSSIBLE SUNSHINE (PERCENT) AVERAGE SKY COVER 0.20 NUMBER OF DAYS FAIR 21 NUMBER OF DAYS PC 10 NUMBER OF DAYS CLOUDY 0

AVERAGE RH (PERCENT)

WEATHER CONDITIONS. NUMBER OF DAYS WITH

0

0 0

0

0 0

HAZE

8 INDICATES NEGATIVE NUMBERS.

R INDICATES RECORD WAS SET OR TIED.

MM INDICATES DATA IS MISSING.

T INDICATES TRACE AMOUNT.

These data are preliminary and have not undergone final quality control by the National Climatic Data Center (NCDC). Therefore, these data are subject to revision. Final and certified climate data can be accessed at the NCDC - http://www.ncdc.noaa.gov.

WFO Monthly/Daily Climate Data

506 CXUS56 KLOX 011655 CF6LGB PRELIMINARY LOCAL CLIMATOLOGICAL DATA (WS FORM: F-6)

STATION: LONG BEACH AIRPORT CA

MONTH: AUGUST YEAR: 2020 LATITUDE: 33 49 N LONGITUDE: 118 9 W

12Z AVG MX 2MIN DY MAX MIN AVG DEP HDD CDD WTR SNW DPTH SPD SPD DIR MIN PSBL S-S W 1 78 63 71 -3 0 6 0.00 0.0 0 4.9 15 150 M M 1 12 2 75 62 69 -5 0 4 0.00 0.0 0 5.4 13 190 M M 5 13 3 76 65 71 -3 0 6 0.00 0.0 0 5.4 13 190 M M 4 13 4 75 65 70 -4 0 5 0.00 0.0 0 5.4 12 180 M M 6 1 5 77 64 71 -3 0 6 0.00 0.0 0 5.4 12 180 M M 6 1 5 77 64 70 -4 0 5 0.00 0.0 0 5.4 12 180 M M 5 7 81 62 72 -2 0 7 0.00 0.0 0 5.8 14 290 M M 0 1 8 82 63 73 -1 0 8 0.00 0.0 0 5.8 14 290 M M 0 1 8 82 63 73 -1 0 8 0.00 0.0 0 5.8 14 290 M M 0 1 9 81 62 72 -2 0 7 0.00 0.0 0 6.8 13 290 M M 0 1 9 81 62 72 -2 0 7 0.00 0.0 0 6.8 13 290 M M 0 1 11 78 61 70 -4 0 5 0.00 0.0 0 6.3 16 320 M M 0 1 12 86 61 74 0 0 9 0.00 0.0 0 5.0 15 290 M M 0 1 13 93 69 81 7 0 16 0.00 0.0 0 5.7 16 290 M M 0 1 14 96 69 83 9 0 18 0.00 0.0 0 5.7 16 290 M M 0 1 15 90 71 81 7 0 16 0.00 0.0 0 5.7 16 290 M M 0 1 16 86 70 78 4 0 13 0.00 0.0 0 5.7 14 160 M 0 2 17 89 70 80 6 0 15 0.00 0.0 0 5.7 14 160 M 0 2 17 89 70 80 6 0 15 0.00 0.0 0 5.7 14 160 M 0 2 18 100 70 85 11 0 20 0.00 0.0 0 5.1 14 180 M M 0 1 20 93 73 83 9 0 18 0.00 0.0 0 5.1 14 180 M M 0 1 21 86 77 78 4 0 13 0.00 0.0 0 5.1 14 180 M M 0 1 22 90 73 82 8 0 17 0.00 0.0 0 5.1 14 180 M M 1 8 23 91 73 82 8 0 17 0.00 0.0 0 5.1 14 180 M M 3 24 84 71 78 4 0 13 0.00 0.0 0 5.1 14 190 M M 1 8 25 87 70 79 5 0 14 0.00 0.0 0 5.7 15 300 M M 0 1 26 89 67 78 4 0 13 0.00 0.0 0 5.7 15 300 M M 0 1 27 91 68 80 6 0 15 0.00 0.0 0 5.7 15 300 M M 0 1 26 89 67 78 4 0 13 0.00 0.0 0 5.7 15 300 M M 0 1 26 89 67 78 4 0 13 0.00 0.0 0 5.7 15 300 M M 0 1 27 91 68 80 6 0 15 0.00 0.0 0 5.7 15 300 M M 0 1 28 85 64 75 1 0 10 0.00 0.0 0 5.7 15 300 M M 0 0	: PK WND			SHINE					SNOW:	- 44.	PCPN					75.07	TEMPE	
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8 82 63 73 -1 0 8 0.00 0.0 0 5.8 14 290 M M 0 15 9 81 62 72 -2 0 7 0.00 0.0 0 6.8 13 290 M M 0 10 82 62 72 -2 0 7 0.00 0.0 0 6.8 13 290 M M 0 11 78 61 70 -4 0 5 0.00 0.0 0 6.3 16 320 M M 0 12 86 61 74 0 0 9 0.00 0.0 0 6.3 16 320 M M 0 13 93 69 81 7 0 16 0.00 0.0 0 5.0 15 290 M M 0 14 96 69 83 9 0 18 0.00 0.0 0 5.7 16 290 M M 0 15 90 71 81 7 0 16 0.00 0.0 0 5.7 16 290 M M 0 15 90 71 81 7 0 16 0.00 0.0 0 5.7 16 290 M M 0 15 90 71 81 7 0 16 0.00 0.0 0 5.7 14 160 M M 2 17 89 70 80 6 0 15 0.00 0.0 0 5.7 14 160 M M 2 17 89 70 80 6 0 15 0.00 0.0 0 4.6 14 310 M M 0 18 100 70 85 11 0 20 0.00 0.0 0 4.6 14 310 M M 0 19 94 73 84 10 0 19 0.00 0.0 0 6.3 15 310 M M 0 20 93 73 83 9 0 18 0.00 0.0 0 6.3 15 310 M M 0 20 93 73 83 9 0 18 0.00 0.0 0 5.1 14 180 M M 3 21 86 72 79 5 0 14 0.00 0.0 0 5.2 14 190 M M 1 8 23 91 73 82 8 0 17 0.00 0.0 0 5.2 14 190 M M 1 8 23 91 73 82 8 0 17 0.00 0.0 0 6.3 16 310 M M 3 24 84 71 78 4 0 13 0.00 0.0 0 6.3 16 310 M M 3 24 84 71 78 4 0 13 0.00 0.0 0 8.6 16 300 M M 2 16 89 67 78 4 0 13 0.00 0.0 0 6.1 14 310 M M 0 12 7 91 68 80 6 0 15 0.00 0.0 0 6.1 14 310 M M 0 12 7 91 68 80 6 0 15 0.00 0.0 0 6.2 14 300 M M 0 8 28 85 64 75 1 0 10 0.00 0.0 0 6.2 14 300 M M 0 0	16 23		5	M	M	300	12	5.7	0	0.0	0.00	5	0	-4	70	64	76	6
9 81 62 72 -2 0 7 0.00 0.0 0 6.8 13 290 M M 0 10 82 62 72 -2 0 7 0.00 0.0 0 6.2 15 320 M M 2 13 11 78 61 70 -4 0 5 0.00 0.0 0 6.3 16 320 M M 0 12 86 61 74 0 0 9 0.00 0.0 0 5.0 15 290 M M 0 13 13 93 69 81 7 0 16 0.00 0.0 0 5.0 15 290 M M 0 14 96 69 83 9 0 18 0.00 0.0 0 5.7 16 290 M M 0 15 90 71 81 7 0 16 0.00 0.0 0 5.7 16 290 M M 0 15 16 86 70 78 4 0 13 0.00 0.0 0 5.7 14 160 M M 2 17 89 70 80 6 0 15 0.00 0.0 0 5.7 14 160 M M 2 18 100 70 85 11 0 20 0.00 0.0 0 4.6 14 310 M M 0 18 100 70 85 11 0 20 0.00 0.0 0 4.9 17 180 M M 3 18 19 94 73 84 10 0 19 0.00 0.0 0 5.1 14 180 M M 0 20 93 73 83 9 0 18 0.00 0.0 0 5.1 14 180 M M 3 12 18 18 100 70 85 10 10 10 10 0.0 0 0 5.1 14 180 M M 3 18 10 18 10 19 10 10 10 10 10 10 10 10 10 10 10 10 10	17 29	1	0	M	M	290	14	5.8	0	0.0	0.00	7	0	-2	72	62	81	7
10 82 62 72 -2 0 7 0.00 0.0 0 6.2 15 320 M M 2 13 11 78 61 70 -4 0 5 0.00 0.0 0 6.3 16 320 M M 0 12 86 61 74 0 0 9 9 0.00 0.0 0 5.0 15 290 M M 0 13 13 93 69 81 7 0 16 0.00 0.0 0 5.0 15 290 M M 0 14 96 69 83 9 0 18 0.00 0.0 0 5.7 16 290 M M 0 15 90 71 81 7 0 16 0.00 0.0 0 5.7 16 290 M M 0 15 90 71 81 7 0 16 0.00 0.0 0 5.5 13 150 M M 1 16 86 70 78 4 0 13 0.00 0.0 0 5.7 14 160 M M 2 17 89 70 80 6 0 15 0.00 0.0 0 4.6 14 310 M M 0 18 100 70 85 11 0 20 0.00 0.0 0 4.9 17 180 M M 3 18 19 94 73 84 10 0 19 0.00 0.0 0 6.3 15 310 M M 0 20 93 73 83 9 0 18 0.00 0.0 0 5.1 14 180 M M 3 12 18 6 72 79 5 0 14 0.00 0.0 0 5.1 14 180 M M 3 21 86 72 79 5 0 14 0.00 0.0 0 5.2 14 190 M M 1 8 22 90 73 82 8 0 17 0.00 0.0 0 5.2 14 190 M M 1 8 23 91 73 82 8 0 17 0.00 0.0 0 6.3 16 310 M M 3 24 84 71 78 4 0 13 0.00 0.0 0 8.6 16 300 M M 3 24 84 71 78 4 0 13 0.00 0.0 0 8.6 16 300 M M 3 24 84 71 78 4 0 13 0.00 0.0 0 6.1 14 310 M M 2 16 26 89 67 78 4 0 13 0.00 0.0 0 6.1 14 310 M M 0 12 7 91 68 80 6 0 15 0.00 0.0 0 6.1 14 310 M M 0 12 7 91 68 80 6 0 15 0.00 0.0 0 6.2 14 300 M M 0 8 28 85 64 75 1 0 10 0.00 0.0 0 6.2 14 300 M M 0 0	15 28	18	0	M	M	290	14	5.8	0	0.0	0.00	8	0	-1	73	63	82	8
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14 96 69 83 9 0 18 0.00 0.0 0 5.7 16 290 M M 0 0 15 90 71 81 7 0 16 0.00 0.0 0 5.5 13 150 M M 1 1 16 86 70 78 4 0 13 0.00 0.0 0 5.7 14 160 M M 2 17 89 70 80 6 0 15 0.00 0.0 0 4.6 14 310 M M 0 18 100 70 85 11 0 20 0.00 0.0 0 4.9 17 180 M M 3 18 19 94 73 84 10 0 19 0.00 0.0 0 6.3 15 310 M M 0 20 93 73 83 9 0 18 0.00 0.0 0 5.1 14 180 M M 3 21 86 72 79 5 0 14 0.00 0.0 0 5.1 14 180 M M 1 8 22 90 73 82 8 0 17 0.00 0.0 0 5.2 14 190 M M 1 8 23 91 73 82 8 0 17 0.00 0.0 0 5.2 14 190 M M 1 8 23 91 73 82 8 0 17 0.00 0.0 0 6.3 16 310 M M 3 24 84 71 78 4 0 13 0.00 0.0 0 8.6 16 300 M M 4 18 25 87 70 79 5 0 14 0.00 0.0 0 8.6 16 300 M M 4 18 25 87 70 79 5 0 14 0.00 0.0 0 0 6.1 14 310 M M 3 24 84 71 78 4 0 13 0.00 0.0 0 8.6 16 300 M M 2 18 26 89 67 78 4 0 13 0.00 0.0 0 6.1 14 310 M M 0 1 27 91 68 80 6 0 15 0.00 0.0 0 6.2 14 300 M M 0 8	18 28	18	0	M	M	290	15	5.0	0	0.0	0.00	9	0	0	74	61	86	12
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18 100 70 85 11 0 20 0.00 0.0 0 4.9 17 180 M M 3 18 19 94 73 84 10 0 19 0.00 0.0 0 6.3 15 310 M M 0 20 93 73 83 9 0 18 0.00 0.0 0 5.1 14 180 M M 3 21 86 72 79 5 0 14 0.00 0.0 0 5.1 14 180 M M 1 8 22 90 73 82 8 0 17 0.00 0.0 0 5.2 14 190 M M 1 8 23 91 73 82 8 0 17 0.00 0.0 0 6.3 16 310 M M 3 24 84 71 78 4 0 13 0.00 0.0 0 8.6 16 300 M M 4 18 25 87 70 79 5 0 14 0.00 0.0 0 8.6 16 300 M M 4 18 26 89 67 78 4 0 13 0.00 0.0 0 7.0 17 300 M M 2 18 26 89 67 78 4 0 13 0.00 0.0 0 6.1 14 310 M M 0 1 27 91 68 80 6 0 15 0.00 0.0 0 5.7 15 300 M M 0 8 28 85 64 75 1 0 10 0.00 0.0 0 6.2 14 300 M M 0	19 16		2	M	M	160	14	5.7	0	0.0	0.00	13	0	4	78	70	86	16
19 94 73 84 10 0 19 0.00 0.0 0 6.3 15 310 M M 0 20 93 73 83 9 0 18 0.00 0.0 0 5.1 14 180 M M 3 21 86 72 79 5 0 14 0.00 0.0 0 5.2 14 180 M M 1 8 22 90 73 82 8 0 17 0.00 0.0 0 5.2 14 190 M M 1 8 23 91 73 82 8 0 17 0.00 0.0 0 6.3 16 310 M M 3 24 84 71 78 4 0 13 0.00 0.0 0 8.6 16 300 M M 4 18 25 87 70 79 5 0 14 0.00 0.0 0 8.6 16 300 M M 4 18 26 89 67 78 4 0 13 0.00 0.0 0 7.0 17 300 M M 2 18 26 89 67 78 4 0 13 0.00 0.0 0 6.1 14 310 M M 0 1 27 91 68 80 6 0 15 0.00 0.0 0 5.7 15 300 M M 0 8 28 85 64 75 1 0 10 0.00 0.0 0 6.2 14 300 M M	16 30		0	M	M	310	14	4.6	0	0.0	0.00	15	0	6	80	70	89	17
20 93 73 83 9 0 18 0.00 0.0 0 5.1 14 180 M M 3 21 86 72 79 5 0 14 0.00 0.0 0 4.6 14 180 M M 1 8 22 90 73 82 8 0 17 0.00 0.0 0 5.2 14 190 M M 1 8 23 91 73 82 8 0 17 0.00 0.0 0 6.3 16 310 M M 3 24 84 71 78 4 0 13 0.00 0.0 0 8.6 16 300 M M 4 18 25 87 70 79 5 0 14 0.00 0.0 0 7.0 17 300 M M 2 18 26 89 67 78 4 0 13<	22 19	18	3	M	M	180	17	4.9	0	0.0	0.00	20	0	11	85	70	100	18
21 86 72 79 5 0 14 0.00 0.0 0 4.6 14 180 M M 1 8 22 90 73 82 8 0 17 0.00 0.0 0 5.2 14 190 M M 1 8 23 91 73 82 8 0 17 0.00 0.0 0 6.3 16 310 M M 3 24 84 71 78 4 0 13 0.00 0.0 0 8.6 16 300 M M 4 18 25 87 70 79 5 0 14 0.00 0.0 0 7.0 17 300 M M 2 18 26 89 67 78 4 0 13 0.00 0.0 0 6.1 14 310 M M 0 1 27 91 68 80 6 0 15 0.00 0.0 0 5.7 15 300 M M 0 8 28 85 64 75 1 0 10 0.00 0.0 0 6.2 14 300 M M	19 31		0	M	M	310	15	6.3	0	0.0	0.00	19	0	10	84	73	94	19
22 90 73 82 8 0 17 0.00 0.0 0 5.2 14 190 M M 1 8 23 91 73 82 8 0 17 0.00 0.0 0 6.3 16 310 M M 3 24 84 71 78 4 0 13 0.00 0.0 0 8.6 16 300 M M 4 18 25 87 70 79 5 0 14 0.00 0.0 0 7.0 17 300 M M 2 18 26 89 67 78 4 0 13 0.00 0.0 0 6.1 14 310 M M 0 1 27 91 68 80 6 0 15 0.00 0.0 0 5.7 15 300 M M 0 28 85 64 75 1 0 10<	20 15		3	M	M	180	14	5.1	0	0.0	0.00	18	0	9	83	73	93	20
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24 84 71 78 4 0 13 0.00 0.0 0 8.6 16 300 M M 4 11 25 87 70 79 5 0 14 0.00 0.0 0 7.0 17 300 M M 2 18 26 89 67 78 4 0 13 0.00 0.0 0 6.1 14 310 M M 0 1 27 91 68 80 6 0 15 0.00 0.0 0 5.7 15 300 M M 0 28 85 64 75 1 0 10 0.00 0 0 6.2 14 300 M M 0	19 18	8	1	M	M	190	14	5.2	0	0.0	0.00	17	0	8	82	73	90	22
25 87 70 79 5 0 14 0.00 0.0 0 7.0 17 300 M M 2 18 26 89 67 78 4 0 13 0.00 0.0 0 6.1 14 310 M M 0 1 27 91 68 80 6 0 15 0.00 0.0 0 5.7 15 300 M M 0 8 28 85 64 75 1 0 10 0.00 0.0 0 6.2 14 300 M M 0	20 30		3	M	M	310	16	6.3	0	0.0	0.00	17	0	8	82	73	91	23
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27 91 68 80 6 0 15 0.00 0.0 0 5.7 15 300 M M 0 8 28 85 64 75 1 0 10 0.00 0.0 0 6.2 14 300 M M 0	M M	18	2	M	M	300	17	7.0	0	0.0	0.00	14	0	5	79	70	87	25
27 91 68 80 6 0 15 0.00 0.0 0 5.7 15 300 M M 0 8 28 85 64 75 1 0 10 0.00 0.0 0 6.2 14 300 M M 0	17 29	1	0	M	-				0	27.7	2.1327			- 7	78	67	89	300
28 85 64 75 1 0 10 0.00 0.0 0 6.2 14 300 M M 0	19 30	8	0	M	M	300	15	5.7		- X	0.00	15	0	6	80	68	91	
맛입니다 가장 그 이렇게 되고 있다. 이렇게 그렇게 되고 하면서 이렇게 이렇게 되었다. 그 그렇게 다양하는 데 그렇게 되었다. 그렇게 되었다고 살아내고 있다. 그 사람이 없다는 그 사람이 없다. 그	19 28		0	M	M				0		36 732			100	75	64	85	28
		18		M	M	FELIN		COV. T	0	2017	0.00	-	100		4.77	64	0.763	200
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31 80 65 73 -1 0 8 0.00 0.0 0 6.5 14 300 M M 3 8	24 30			М	M	300	14	6.5	0	0.0	0.00	8	0	-1	73	65	80	31
SM 2633 2071		22.2		22224										225				
AV 84.9 66.8 5.7 FASTST M M 2	MAX(MPH)	===									*****							

24 300

NOTES

LAST OF SEVERAL OCCURRENCES

COLUMN 17 PEAK WIND IN M.P.H.

PRELIMINARY LOCAL CLIMATOLOGICAL DATA (WS FORM: F-6) , PAGE 2

STATION: LONG BEACH AIRPORT CA

MONTH: AUGUST YEAR: 2020 LATITUDE: 33 49 N LONGITUDE: 118 9 W

	22.18.20.5	
[TEMPERATURE DATA]	[PRECIPITATION DATA]	SYMBOLS USED IN COLUMN 16
DPTR FM NORMAL: 1.6	GRTST 24HR 0.00 ON 31-31 SNOW, ICE PELLETS, HAIL TOTAL MONTH: 0.0 INCH GRTST 24HR 0.0	2 = FOG REDUCING VISIBILITY TO 1/4 MILE OR LESS 3 = THUNDER 4 = ICE PELLETS
[NO. OF DAYS WITH]		8 = SMOKE OR HAZE 9 = BLOWING SNOW X = TORNADO
Manager and the second and an arranged at the second at th	0.01 INCH OR MORE: 0	
	21 TE (211 T) TO (171 T)	
MIN 0 OR BELOW: 0	0.50 INCH OR MORE: 0 1.00 INCH OR MORE: 0	
[HDD (BASE 65)]		
TOTAL THIS MO. 0	CLEAR (SCALE 0-3) 22	
	PTCLDY (SCALE 4-7) 9	
	CLOUDY (SCALE 8-10) 0	
DPTR FM NORMAL 0	5255744742 Am. A.	
[CDD (BASE 65)]		
TOTAL THIS MO. 347		
DPTR FM NORMAL 57	[PRESSURE DATA]	
TOTAL FM JAN 1 913	HIGHEST SLP M ON M	

DPTR FM NORMAL 145 LOWEST SLP 29,64 ON 20

[REMARKS] #FINAL-08-20#

Climatological Report (Monthly)

000 CXUS56 KLOX 011931 CLMLGB

CLIMATE REPORT
NATIONAL WEATHER SERVICE LOS ANGELES/OXNARD CA
1231 PM PDT TUE SEP 1 2020

..........

... THE LONG BEACH AIRPORT CA CLIMATE SUMMARY FOR THE MONTH OF AUGUST 2020...

CLIMATE NORMAL PERIOD 1981 TO 2010 CLIMATE RECORD PERIOD 1958 TO 2020

WEATHER	OBSERVE	Contractor to the Contractor of the Contractor o	NORMAL	DEPART	LAST YEAR'S
	VALUE	DATE(S) VALUE	FROM NORMAL	VALUE
**********	******	*******			
TEMPERATURE (F)		Two area			
HIGHEST	100	08/18			
LOWEST	61	08/12 08/11			
AVG. MAXIMUM	84.9	00/11	83.8	1.1	
AVG. MINIMUM	66.8		64.9	1.9	
MEAN	75.9		74.3	1.6	
DAYS MAX >= 90	9				
DAYS MAX <= 32	0				
DAYS MIN <= 32	0				
DAYS MIN <= 0	0				
PRECIPITATION (INCHES)				
TOTALS	9.00		0.03	-0.03	
DAILY AVG.	0.00		-0.575	1200	
DAYS >= .01	0				
DAYS >= .10	0				
DAYS >= .50	0				
DAYS >= 1.00	0				
GREATEST					
24 HR. TOTAL	0.00	08/31 TO	08/31		
62 C M. S. CALCO	7107	08/30 TO			
		08/29 TO			
STORM TOTAL	MM				
(MM/DD(HH))	- 400				
DEGREE_DAYS					
HEATING TOTAL	0		0	0	0
SINCE 7/1	0		0	0	0
COOLING TOTAL	347		290	57	353
SINCE 1/1	913		768	145	842

WIND (MPH)

AVERAGE WIND SPEED

5.7

HAZE

DATE 08/25

DATE 08/31

HIGHEST WIND SPEED/DIRECTION 17/300 HIGHEST GUST SPEED/DIRECTION 24/300 SKY COVER POSSIBLE SUNSHINE (PERCENT) 0.20 AVERAGE SKY COVER NUMBER OF DAYS FAIR 24 NUMBER OF DAYS PC 7 NUMBER OF DAYS CLOUDY 0 AVERAGE RH (PERCENT) WEATHER CONDITIONS. NUMBER OF DAYS WITH 0 0 0 0 0 1

- INDICATES NEGATIVE NUMBERS.
- R INDICATES RECORD WAS SET OR TIED.

14

- MM INDICATES DATA IS MISSING.
- T INDICATES TRACE AMOUNT.

These data are preliminary and have not undergone final quality control by the National Climatic Data Center (NCDC). Therefore, these data are subject to revision. Final and certified climate data can be accessed at the NCDC - http://www.ncdc.noaa.gov.

WFO Monthly/Daily Climate Data

000
CXUS56 KLOX 011655
CF6LGB
PRELIMINARY LOCAL CLIMATOLOGICAL DATA (WS FORM: F-6)

STATION: LONG BEACH AIRPORT CA

MONTH: SEPTEMBER
YEAR: 2020
LATITUDE: 33 49 N
LONGITUDE: 118 9 W

	TEMP						PCPN:		SNOW:	9:	ID-			SHINE			:PK I	
1	2	3	4	5	6A	6B	7	8	9 12Z	10	11	12 2MIN	13	14	15	16	17	18
DY	MAX	MIN	AVG	DEP	HDD	CDD	WTR	SNW		0.20 T		-1.	MIN	PSBL	S-S	WX	SPD	DR
==				uns												-==		
1	79	65	72	-2	0	7	0.00	0.0	0	6.8	15	310	M	М	4		18	196
2	80	64	72	-2	0	7	0.00	0.0	0	6.2	16	290	M	M	1		19	316
3	82	64	73	-1	0	8	0.00	0.0	0	4.8	14	310	M	M	1	18	17	326
4	89	65	77	3	0	12	0.00	0.0	0	4.4	15	310	M	M	0	18	17	316
5	102	69	86	12	0	21	0.00	0.0	0	6.0	21	290	M	M	0	8	25	286
6	104	73	89	15	0	24	0.00	0.0	0	4.3	12	150	M	M	0		17	176
7	77	71	74	0	0	9	0.00	0.0	0	6.5	14	160	M	M	5	1	20	190
8	76	70	73	-1	0	8	0.00	0.0	0	5.0	10	190	M	M	8		14	160
9	87	66	77	3	0	12	0.00	0.0	0	3.9	15	290	M	M	2	18	18	298
10	82	61	72	-2	0	7	0.00	0.0	0	4.1	13	290	M	M	3	128	15	296
11	87	60	74	1	0	9	0.00	0.0	0	3.3	15	300	M	M	0	18	17	300
12	85	60	73	0	0	8	0.00	0.0	0	3.9	14	310	M	M	0	18	15	316
13	84	61	73	0	0	8	0.00	0.0	0	3.7	14	290	M	M	2	18	18	276
14	86	60	73	0	0	8	0.00	0.0	0	3.6	14	310	M	M	0	18	16	316
15	90	61	76	3	0	11	0.00	0.0	0	3.9	14	310	M	M	0	18	16	326
16	95	61	78	5	0	13	0.00	0.0	0	3.7	17	300	M	M	0	8	21	300
17	95	62	79	6	0	14	0.00	0.0	0	3.5	16	300	M	M	0	8	19	316
18	92	65	79	7	0	14	0.00	0.0	0	5.5	17	290	M	M	0		21	296
19	86	65	76	4	0	11	0.00	0.0	0	3.8	10	300	M	M	0		13	150
20	77	62	70	-2	0	5	0.00	0.0	0	4.0	10	210	M	M	2	18	14	220
21	81	64	73	1	0	8	0.00	0.0	0	4.8	14	290	M	M	4	8	16	280
22	84	65	75	3	0	10	0.00	0.0	0	5.2	14	290	M	M	3	18	16	298
23	86	64	75	3	0	10	0.00	0.0	0	5.2	14	280	M	M	0	18	17	298
24	81	62	72	0	0	7	0.00	0.0	0	4.4	10	200	M	M	1	18	13	216
25	77	65	71	0	0	6	0.00	0.0	0	4.8	12	200	M	M	4	18	16	200
26	76	65	71	0	0	6	0.00	0.0	0			170	M	M	4		14	210
27	75	67	71	0	0		0.00	0.0	0	4.4	12	180	M	M	6		15	190
28	88	66	77	6	0		0.00	0.0	0			310	M	M		18		290
29	92	64	78	7	0	100	0.00	0.0	0	25.7		320	M	M	-	18	7.7	260
30	105	66	86	16	0	21	0.00	0.0	0	4.9	20	290	M	M	0		23	300
	2580						0.00		0.0 1				M	zenze	54			
-		2000		-										-			*****	
AV	86.0	64.	4							4.7	FA	STST	M	M	2		MAX (MPH	1)
								MTSC	-	> #	21	290				#	25 286	•

NOTES

LAST OF SEVERAL OCCURRENCES

COLUMN 17 PEAK WIND IN M.P.H.

PRELIMINARY LOCAL CLIMATOLOGICAL DATA (WS FORM: F-6) , PAGE 2

STATION: LONG BEACH AIRPORT CA

MONTH: SEPTEMBER YEAR: 2020 LATITUDE: 33 49 N LONGITUDE: 118 9 W

	LONGITUD	E: 118 9 W
[TEMPERATURE DATA]	[PRECIPITATION DATA]	SYMBOLS USED IN COLUMN 16
	SNOW, ICE PELLETS, HAIL TOTAL MONTH: 0.0 INCH GRTST 24HR 0.0	2 = FOG REDUCING VISIBILITY TO 1/4 MILE OR LESS 3 = THUNDER 4 = ICE PELLETS 5 = HAIL
[NO. OF DAYS WITH]	GRTST DEPTH: 0 [WEATHER - DAYS WITH]	VSBY 1/2 MILE OR LESS 8 = SMOKE OR HAZE 9 = BLOWING SNOW X = TORNADO
MAX 32 OR BELOW: 0	0.01 INCH OR MORE: 0	
	0.10 INCH OR MORE: 0	
MIN 32 OR BELOW: 0	Add with all that the	
MIN Ø OR BELOW: Ø	1.00 INCH OR MORE: 0	
[HDD (BASE 65)]		
	CLEAR (SCALE 0-3) 22	
DPTR FM NORMAL -1	PTCLDY (SCALE 4-7) 8	
CONTRACTOR OF THE STATE OF THE		

CLOUDY (SCALE 8-10) 0

[CDD (BASE 65)] TOTAL THIS MO. 315

DPTR FM NORMAL

TOTAL FM JUL 1 0

DPTR FM NORMAL 84 [PRESSURE DATA]

-1

TOTAL FM JAN 1 1228 HIGHEST SLP 30.05 ON 15 DPTR FM NORMAL 229 LOWEST SLP 29.65 ON 8

[REMARKS] #FINAL-09-20#

Climatological Report (Monthly)

000 CXUS56 KLOX 191234 CLMLGB

CLIMATE REPORT
NATIONAL WEATHER SERVICE LOS ANGELES/OXNARD CA
534 AM PDT MON OCT 19 2020

... THE LONG BEACH AIRPORT CA CLIMATE SUMMARY FOR THE MONTH OF SEPTEMBER 2020...

CLIMATE NORMAL PERIOD 1981 TO 2010 CLIMATE RECORD PERIOD 1958 TO 2020

..........

WEATHER	OBSERVE		NORMAL	DEPART	LAST YEAR'S
	VALUE	DATE(S) VALUE	FROM NORMAL	VALUE
**************************************					**********
TEMPERATURE (F)		00/20			
HIGHEST	105	09/30			
LOWEST	60	09/14			
		09/12			
AUG MAYTMIM	05.0	09/11	82.1	3.9	
AVG. MAXIMUM	86.0				
AVG. MINIMUM	64.4		63.2	1.2	
MEAN	75.2		72.7	2.5	
DAYS MAX >= 90	8				
DAYS MAX <= 32	0				
DAYS MIN <- 32	0				
DAYS MIN <= 0	0				
PRECIPITATION (INCHES)				
TOTALS	0.00		0.18	-0.18	
DAILY AVG.	0.00				
DAYS >= .01	0				
DAYS >= .10	0				
DAYS >= .50	0				
DAYS >= 1.00	0				
GREATEST					
24 HR. TOTAL	0.00	09/30 T	0 09/30		
		09/29 T	0 09/29		
		09/28 T	0 09/28		
STORM TOTAL (MM/DD(HH))	MM				
DEGREE DAYS					
HEATING TOTAL	0		1	-1	0
SINCE 7/1	0		ī	-1	0
COOLING TOTAL	315		231	84	336
SINCE 1/1	1228		999	229	1178
		20100110	050050050		22022222222

WIND (MPH)

DATE 09/05

DATE 09/05

```
AVERAGE WIND SPEED
                                4.7
HIGHEST WIND SPEED/DIRECTION
                                21/290
HIGHEST GUST SPEED/DIRECTION
                                25/280
SKY COVER
POSSIBLE SUNSHINE (PERCENT)
                            0.20
AVERAGE SKY COVER
NUMBER OF DAYS FAIR
                              23
NUMBER OF DAYS PC
                               6
NUMBER OF DAYS CLOUDY
                               1
AVERAGE RH (PERCENT)
                      65
WEATHER CONDITIONS, NUMBER OF DAYS WITH
 0
 0
 0
  0
  0
 1
HAZE
                         20
  INDICATES NEGATIVE NUMBERS.
```

R INDICATES RECORD WAS SET OR TIED.

MM INDICATES DATA IS MISSING.

T INDICATES TRACE AMOUNT.

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WFO Monthly/Daily Climate Data

000 CXUS56 KLOX 020653 CF6LGB PRELIMINARY LOCAL CLIMATOLOGICAL DATA (WS FORM: F-6)

STATION: LONG BEACH AIRPORT CA

MONTH: OCTOBER
YEAR: 2020
LATITUDE: 33 49 N
LONGITUDE: 118 9 W

1	2	3	4	5	6A	6B	7	8	9 12Z	10 AVG	11	12	13	14	15	16	17	18
DY	MAX	MIN	AVG	DEP	HDD	CDD	WTR	SNW	DPTH	20 DT	7110	-1,1	MIN	PSBL	5-5	WX	SPD	DR
==:											50.7				7		****	===
1	96	65	81	11	0	16	0.00	0.0	0	3.3	13	300	М	M	0	18	14	30
2	91	67	79	9	0	14	0.00	0.0	0	2.7	10	200	M	M	0	1	14	21
3	87	64	76	6	0	11	0.00	0.0	0	3.5	1	190	M	M	2	128	13	18
4	92	64	78	8	0	13	0.00	0.0	0	2.3		290	M	M		128	11	18
5	91	66	79	9	0	14	0.00	0.0	0	4.3	13	320	M	M	0	18	16	31
5	87	64	76	7	0	11	0.00	0.0	0	4.5	12	300	M	M	0	18	14	18
7	75	63	69	0	0	4	0.00	0.0	0	4.4	12	200	M	M	4	128	15	20
8	76	66	71	2	0	6	0.00	0.0	0	5.3	13	280	M	M	5		17	18
9	75	66	71	2	0	6	0.00	0.0	0	4.6	14	290	М	M		8	16	29
10	75	65	70	1	0	5	0.00	0.0	0	4.8	14	300	M	M	6		19	29
11	77	61	69	0	0	4	0.00	0.0	0	4.6	14	300	M	M	2		15	30
12	92	62	77	9	0	12	0.00	0.0	0	4.4	16	310	M	M		18	18	32
13	94	63	79	11	0	14	0.00	0.0	0	4.4	13	320	M	M	1	1	15	32
14	87	62	75	7	0	10	0.00	0.0	0	3.0		200	M	M	0	1	12	20
15	95	64	80	12	0	15	0.00	0.0	0	3.6	13	310	M	M	2	128	15	32
16	87	64	76	8	0	11	0.00	0.0	0	3.8	12	310	M	M	3	128	14	31
17	80	65	73	5	0	8	0.00	0.0	0	4.4	10	180	M	M	4	128	13	20
18	81	66	74	6	0	9	0.00	0.0	0	4.0	12	290	M	M	4	18	15	29
19	79	64	72	5	0	7	0.00	0.0	0	4.6	13	300	M	M	3	18	15	31
20	76	65	71	4	0	6	0.00	0.0	0	4.5	13	290	M	M	5	18	16	30
21	74	65	70	3	0	5	0.00	0.0	0	3.9	10	200	M	M	8	18	14	20
22	74	66	70	3	0	5	0.00	0.0	0	3.2	10	190	M	M	7		13	17
23	72	65	69	2	0	4	0.00	0.0	0	3.9	12	290	M	M	8		14	30
24	71	65	68	2	0	3	0.00	0.0	0	5.1	14	300	M	M	10		M	M
25	68	59	64	-2	1	0	0.03	0.0	0	5,8	16	290	M	M	8	1	19	29
26	73	53	63	-3	2	0	0.00	0.0	0	5.0	22	70	M	M	9	8	27	7
27	80	50	65	-1	0	0	0.00	0.0	0	4.4	18	290	M	M	6	8	21	29
28	75	53	64	-2	1	0	0.00	0.0	M	3.8	13	290	M	M	0	8		30
29	81	51	66	0	0	1	0.00	0.0	0			310	M	M	0	8	13	100
30	79	56	68	3	0	3	0.00	0.0	0	3.5	12	320	M	M	3	128	15	190
31	78	53	66	1	0	250	0.00	0.0	0	2.7		140	М	М		128		120
	2518					218	0.03		0.0 1				М		115			

27 70

NOTES:

LAST OF SEVERAL OCCURRENCES

COLUMN 17 PEAK WIND IN M.P.H.

PRELIMINARY LOCAL CLIMATOLOGICAL DATA (WS FORM: F-6) , PAGE 2

STATION: LONG BEACH AIRPORT CA

MONTH: OCTOBER
YEAR: 2020
LATITUDE: 33 49 N
LONGITUDE: 118 9 W

	CONGITODE. IIS 5 W									
[TEMPERATURE DATA]	[PRECIPITATION DATA]	SYMBOLS USED IN COLUMN 16								
DPTR FM NORMAL: 3.9	GRTST 24HR 0.03 ON 25-25 SNOW, ICE PELLETS, HAIL TOTAL MONTH: 0.0 INCH GRTST 24HR 0.0 GRTST DEPTH: 0	2 = FOG REDUCING VISIBILITY TO 1/4 MILE OR LESS 3 = THUNDER 4 = ICE PELLETS 5 = HAIL 6 = FREEZING RAIN OR DRIZZLE 7 = DUSTSTORM OR SANDSTORM: VSBY 1/2 MILE OR LESS								
[NO. OF DAYS WITH]	[WEATHER - DAYS WITH]	8 = SMOKE OR HAZE 9 = BLOWING SNOW X = TORNADO								
MAX 90 OR ABOVE: 7	0.01 INCH OR MORE: 1 0.10 INCH OR MORE: 0 0.50 INCH OR MORE: 0 1.00 INCH OR MORE: 0									
DPTR FM NORMAL -16	CLEAR (SCALE 0-3) 15 PTCLDY (SCALE 4-7) 13 CLOUDY (SCALE 8-10) 3									
[CDD (BASE 65)] TOTAL THIS MO, 218 DPTR FM NORMAL 113 TOTAL FM JAN 1 1446	[PRESSURE DATA] HIGHEST SLP 30.10 ON 28 LOWEST SLP 29.78 ON 2									

[REMARKS] #FINAL-10-20#

Climatological Report (Monthly)

000 CXUS56 KLOX 020655 CLMLGB

CLIMATE REPORT
NATIONAL WEATHER SERVICE LOS ANGELES/OXNARD CA
1055 PM PST SUN NOV 1 2020

... THE LONG BEACH AIRPORT CA CLIMATE SUMMARY FOR THE MONTH OF OCTOBER 2020...

CLIMATE NORMAL PERIOD 1981 TO 2010 CLIMATE RECORD PERIOD 1958 TO 2020

WEATHER					LAST YEAR'S
	VALUE	DATE(S)		FROM NORMAL	
	*****		******		
TEMPERATURE (F)		2012			
HIGHEST	96	10/01			
LOWEST		10/27		5.7	
AVG. MAXIMUM			10.00	4.0	
AVG. MINIMUM				3.7	
MEAN			67.7	3.9	
DAYS MAX >= 90					
DAYS MAX <= 32	0				
DAYS MIN <= 32	0				
DAYS MIN <= 0	0				
PRECIPITATION (INCHES)				
TOTALS	0.03		0.63	-0.60	
DATI V AVG	a aa				
DAYS >= .01	1				
DAYS >= .10	10				
DAYS >= .50	0				
DAYS >= 1.00	0				
GREATEST					
24 HR. TOTAL	0.03	10/25 TO	10/25		
STORM TOTAL	MM				
(MM/DD(HH))					
DEGREE DAYS					
HEATING TOTAL	4		20	-16	3
STNCF 7/1	4		21	-17	3
COOLING TOTAL	218			113	
SINCE 1/1					1378
,,,,,,,,,,,,,,,,			.,,,,,,,		
WIND (MPH)					
AVERAGE WIND SP		4	. 0		
HIGHEST WIND SP				DATE	19/26
		5		500	22422

27/070

DATE 10/26

HIGHEST GUST SPEED/DIRECTION

```
SKY COVER
POSSIBLE SUNSHINE (PERCENT)
AVERAGE SKY COVER
                            0.40
NUMBER OF DAYS FAIR
                              16
NUMBER OF DAYS PC
                               9
NUMBER OF DAYS CLOUDY
                               6
AVERAGE RH (PERCENT)
                         65
WEATHER CONDITIONS. NUMBER OF DAYS WITH
 0
 0
 0
 0
 0
 8
HAZE
                         21
```

- INDICATES NEGATIVE NUMBERS.
- R INDICATES RECORD WAS SET OR TIED.
- MM INDICATES DATA IS MISSING.
- T INDICATES TRACE AMOUNT.

These data are preliminary and have not undergone final quality control by the National Climatic Data Center (NCDC). Therefore, these data are subject to revision. Final and certified climate data can be accessed at the NCDC - http://www.ncdc.noaa.gov.

WFO Monthly/Daily Climate Data

000 CXUSS6 KLOX 011655 CF6LGB PRELIMINARY LOCAL CLIMATOLOGICAL DATA (WS FORM: F-6)

STATION: LONG BEACH AIRPORT CA

MONTH: NOVEMBER
YEAR: 2020
LATITUDE: 33 49 N
LONGITUDE: 118 9 W

1	2			5		6B	7	8	9		11		13				5 17	
1	7					~~		-	12Z			2MIN	-	-	-	-	-	
DY	MAX	MIN	AVG	DEP	HDD	CDD	WTR	SNW	DPTH	SPD	SPD	DIR	MIN	PSBL	5-5	WX	SPD	DR
==		====															*******	
1	1007 751	57	73	8	0	8	0.00	0.0	0	3.2	13	290	M	M	3	18	14	30
2		55	64	-1	-		0.00	0.0	0	10.77		190	M	M	77.	128		21
3		60	69	5	0	4	0.00	0.0	0	3.4	13	300	M	M	4	18	14	30
4	83	56	70	6	0	5	0.00	0.0	0	3.3	15	310	M	M	0	18	16	31
5	2.7	58	77	13	0	12	0.00	0.0	0	3.8	15	290	M	M		8	17	29
6		58	64	0	-	0	T	0.0	0	9.4	21	260	M	M	7	1	29	27
7	62	54	58	-6	7	0	0.04	0.0	0	10.6	24	290	M	M	4		31	26
8	63	51	57	-6	8	0	T	0.0	0	13.1	. 32	280	M	M	5		43	29
9	61	43	52	-11	13	0	0.00	0.0	0	4.2	12	180	M	M	0		15	19
10	68	45	57	-6	8	0	0.00	0.0	0	3.8	16	300	M	M	0		19	29
11	65	43	54	-9	11	U	0.00	0.0	0	2.6		200	M	M	0		12	19
12	71	46	59	-3	6	0	0.00	0.0	0	3.6	15	290	M	M	0	18	17	29
13	66	47	57	-5	8	0	0.00	0.0	0	3.6	13	290	M	M	0	18		27
14	70	49	60	-2	5	0	0.00	0.0	0	3.7	10	310	M	M	0	1	12	28
15	87	49	68	6	0	3	0.00	0.0	0	4.5	14	290	M	M	0	18	16	29
16	92	56	74	13	0	9	0.00	0.0	0	3.6	12	200	M	M	0		15	20
17	74	51	63	2	2	0	0.00	0.0	0	3.4	10	300	M	M	0	1	12	31
18	67	55	61	0	4	0	0.00	0.0	0	4.2	13	290	M	M	7	18	16	29
19	70	55	63	3	2	0	0.00	0.0	0	4.3	10	300	M	M	4	18	13	31
20	75	52	64	4	1	0	0.00	0.0	0	2.6	12	310	M	M	0	18	16	30
21	75	50	63	3	2	0	0.00	0.0	0	1.7	9	300	M	M	1	128	10	31
22	67	49	58	-2	7	0	0.00	0.0	0	3.5	9	200	M	M	4	128	11	15
23	63	52	58	-2	7	0	0.00	0.0	0	3.2	8	190	M	M	- 5	128	12	18
24	66	52	59	0	6	0	0.00	0.0	0	2.3	9	180	M	M	2	18	14	20
25	66	48	57	-2	8	0	0.00	0.0	0	2.6	9	200	M	M	2	18	13	20
26	72	51	62	3	3	0	0.00	0.0	0	6.3	23	70	M	M	5	18	30	8
27	72	45	59	0	6	0	0.00	0.0	0	4.2	14	290	M	M	0		17	29
28	76	45	61	3	4	0	0.00	0.0	0	4.1	10	290	M	M	0		13	30
29	79	42	61	3	4	0	0.00	0.0	0	2.9	14	290	M	M	0		16	29
30	80	46	63	5	2	0	0.00	0.0	0	2.8	14	290	M	M	0		16	30
	2192		3	-	126	41	0.04		0.0 1			2222	M		56	====		
			37.0						1200				-		-			
٩V	73.1	50.	7									STST	M	M	2		MAX (MPH	
								MISC	فعدت ا	> #	32	280				#	43 296	3

NOTES:

LAST OF SEVERAL OCCURRENCES

COLUMN 17 PEAK WIND IN M.P.H.

PRELIMINARY LOCAL CLIMATOLOGICAL DATA (WS FORM: F-6) , PAGE 2

STATION: LONG BEACH AIRPORT CA

MONTH: NOVEMBER YEAR: 2020 LATITUDE: 33 49 N LONGITUDE: 118 9 W

	LONGITUD	E: 118 9 W
[TEMPERATURE DATA]	[PRECIPITATION DATA]	SYMBOLS USED IN COLUMN 16
DPTR FM NORMAL: 0.5	GRTST 24HR 0.04 ON 7-7 SNOW, ICE PELLETS, HAIL TOTAL MONTH: 0.0 INCH GRTST 24HR 0.0 GRTST DEPTH: 0	2 = FOG REDUCING VISIBILITY TO 1/4 MILE OR LESS 3 = THUNDER 4 = ICE PELLETS
[NO. OF DAYS WITH]	[WEATHER - DAYS WITH]	
MAX 90 OR ABOVE: 2	0.01 INCH OR MORE: 1 0.10 INCH OR MORE: 0 0.50 INCH OR MORE: 0 1.00 INCH OR MORE: 0	N = TONNADO
DPTR FM NORMAL -2	CLEAR (SCALE 0-3) 20 PTCLDY (SCALE 4-7) 10 CLOUDY (SCALE 8-10) 0	
[CDD (BASE 65)]		

[PRESSURE DATA]

HIGHEST SLP 30.20 ON 28

LOWEST SLP 29.63 ON 6

[REMARKS] #FINAL-11-20#

TOTAL THIS MO.

DPTR FM NORMAL

TOTAL FM JAN 1 1487 DPTR FM NORMAL

41

20

362

Climatological Report (Monthly)

877 CXUS56 KLOX 170202 CLMLGB

CLIMATE REPORT
NATIONAL WEATHER SERVICE LOS ANGELES/OXNARD
602 PM PST WED DEC 16 2020

... THE LONG BEACH AIRPORT CA CLIMATE SUMMARY FOR THE MONTH OF NOVEMBER 2020...

CLIMATE NORMAL PERIOD: 1981 TO 2010 CLIMATE RECORD PERIOD: 1958 TO 2020

WEATHER	OBSERV	CONTRACTOR STATES	NORMAL	100000	The state of the s
	VALUE	DATE(S)	VALUE	FROM NORMA	C C C C C C C C C C C C C C C C C C C

TEMPERATURE (F)					
HIGHEST	95	11/05			
LOWEST	42	11/29			
AVG. MAXIMUM	73.1		72.1	1.0	
AVG. MINIMUM	50.7		50.8	-0.1	
MEAN	61.9		61.4	0.5	
DAYS MAX >= 90	2				
DAYS MAX <= 32	0				
DAYS MIN <= 32	0				
DAYS MIN <= 0	0				
PRECIPITATION (INCHES)				
TOTALS	0.04		1.00	-0.96	
DAILY AVG.	0.00				
DAYS >= .01	1				
DAYS >= .10	0				
DAYS >= .50	0				
DAYS >= 1.00	0				
GREATEST					
24 HR. TOTAL	0.04	11/07 TO	11/07		
STORM TOTAL	0.04	200 200 200	270 27		
DECREE BAVE					
DEGREE DAYS	***		400	-	100
1 mile of 25 per 1 4 2 0 miles	126		128	-2	
SINCE 7/1	130		149	-19	
COOLING TOTAL	41		21	20	9.475
SINCE 1/1	1487		1125	362	1418
nana mani					
WIND (MPH)	200		3.4		
AVERAGE WIND SP			4.2	(30.00-	VO.DUS
HIGHEST WIND SP			32/280	DATE	
HIGHEST GUST SP	EED/DIR	ECTION	43/290	DATE	11/08
ATM C MANAGE					

POSSIBLE SUNSHINE (PERCENT) MM
AVERAGE SKY COVER 0.18
NUMBER OF DAYS FAIR 21
NUMBER OF DAYS PC 9
NUMBER OF DAYS CLOUDY 0

AVERAGE RH (PERCENT) 62

WEATHER CONDITIONS.	NUMBER OF	DAYS WITH	
THUNDERSTORM	0	MIXED PRECIP	0
HEAVY RAIN	0	RAIN	0
LIGHT RAIN	3	FREEZING RAIN	0
LT FREEZING RAIN	0	HAIL	0
HEAVY SNOW	0	SNOW	0
LIGHT SNOW	0	SLEET	0
FOG	19	FOG W/VIS <= 1/4 MILE	4
HAZE	17		

⁻ INDICATES NEGATIVE NUMBERS.

R INDICATES RECORD WAS SET OR TIED.

MM INDICATES DATA IS MISSING.

T INDICATES TRACE AMOUNT.

These data are preliminary and have not undergone final quality control by the National Climatic Data Center (NCDC). Therefore, these data are subject to revision. Final and certified climate data can be accessed at the NCDC - http://www.ncdc.noaa.gov.

WFO Monthly/Daily Climate Data

000 CXUS56 KLOX 011814 CF6LGB PRELIMINARY LOCAL CLIMATOLOGICAL DATA (WS FORM: F-6)

STATION: LONG BEACH AIRPORT CA

MONTH: DECEMBER
YEAR: 2020
LATITUDE: 33 49 N
LONGITUDE: 118 9 W

TEMPERATURE IN F:							1000						7 7 7 7	SHINE			:PK WND		
1	2	3	4	5			7	8	9 12Z	10	11		13			16	17	18	
			eria	7 7		1222	WTR	-			3.3	2 - 1	4.5	PSBL			SPD	700	
1	73	44	59	1	6	0	0.00	0.0	0	1.6	. 0	190	М	м	a	8	12	200	
2	74	44	59	1	6		0.00	0.0	0		21	60	M	M	0			100	
3	75	49	62	5			0.00	0.0	0	100	24	80	M	M	1	- 72	36	96	
4	76	45	61	4			0.00	0.0	0			290	M	м	0	-		286	
5	72	41	57	0	8		0.00	0.0	0	1.9	-		M	М	-	18	1000	140	
6	74	41	58	1	7	7	0.00	0.0	0	-		310	M	M		18		300	
7	76	44	60	3	5	170	0.00	0.0	0	200		110	M	M	0	8	20.11	110	
8	83	55	69	12	0		0.00	0.0	0	1202	18		M	M	0		26	86	
9	75	52	64	8	1		0.00	0.0	0		14	Sec. 10.00	М	M	0		100	290	
10	63	46	55	-1	10		0.00	M	M	2777	-	200	М	M	2		1,000	130	
11	63	45	54	-2	11		0.00	М	М	7.0		190	M	M		18	0.75	190	
12	66	46	56	0	9	200	0.00	M	M			290	M	M		18	21	286	
13	72	47	60	4	5	-	0.00	M	M	37.27		290	M	M		18	24	226	
14	68	48	58	2	7		T	M	M	6.9	20	280	M	M	4	1	24	286	
15	70	43	57	1	8	0	0.00	M	M	3.3	14	290	M	M	0		17	266	
16	72	44	58	2	7	0	0.00	M	M	1.9	10	300	M	M	0	8	11	300	
17	63	48	56	0	9	0	0.00	M	M	3.6	16	290	M	M	2	18	20	296	
18	71	44	58	2	7	0	0.00	M	M	2.8	13	310	M	M	0	1	16	316	
19	72	43	58	2	7	0	0.00	M	M	4.4	12	290	M	M	0		14	286	
20	81	42	62	6	3	0	0.00	M	M	4.2	12	290	M	M	0		14	290	
21	83	46	65	9	0	0	0.00	M	M	4.1	. 13	300	M	M	0	1	14	300	
22	64	48	56	0	9	0	0.00	M	M	2.5	8	120	M	M	1	1	12	198	
23	70	49	60	4	5	0	0.00	M	M	4.7	20	80	M	M	1	18	26	86	
24	65	52	59	3	6	0	T	M	M	6.9	17	80	M	M	2		24	78	
25	74	47	61	5	4	0	0.00	M	M	4.1	17	290	M	M	0	8	21	290	
26	70	44	57	1	8	0	0.00	M	M	1.7	15	280	M	M	0	18	18	296	
27	63	54	59	3	6	0	0.00	M	M	3.9	10	220	M	M	6		14	190	
28	57	44	51	-5	14	0	1,49	M	M	6.8	20	340	M	M	8	13	26	250	
29	63	41	52	-4	13		0.00	M	M	3.1	. 8	160	M	M	0		10	170	
30	70	41	56	0	9	0	0.00	M	M	2.9	14	280	M	M	0		16	276	
31	68	41	55	-1	10		0.00	М	М			300	М	М	0		-	280	
	2186				207	4	1.49	0.6		21.4			М	4=513	34			-4,00	
	70.5					CER			.0.000			STST	M	M	1		IAX (MPI		

24 80 MISC ---->

36 90

NOTES:

LAST OF SEVERAL OCCURRENCES

COLUMN 17 PEAK WIND IN M.P.H.

PRELIMINARY LOCAL CLIMATOLOGICAL DATA (WS FORM: F-6) , PAGE 2

STATION: LONG BEACH AIRPORT CA

MONTH: DECEMBER YEAR: 2020 LATITUDE: 33 49 N LONGITUDE: 118 9 W

[TEMPERATURE DATA] [PRECIPITATION DATA] SYMBOLS USED IN COLUMN 16

AVERAGE MONTHLY: 58.1 TOTAL FOR MONTH: 1.49 1 = FOG OR MIST DPTR FM NORMAL: 1.8 DPTR FM NORMAL: -0.46

HIGHEST: 83 ON 21, 8 GRTST 24HR 1.49 ON 28-28

41 ON 29,31 LOWEST:

> SNOW, ICE PELLETS, HAIL TOTAL MONTH: 0.0 INCH

GRTST 24HR 0.0 GRTST DEPTH: 0

[WEATHER - DAYS WITH]

TO 1/4 MILE OR LESS 3 = THUNDER

4 = ICE PELLETS 5 = HAIL

6 = FREEZING RAIN OR DRIZZLE 7 = DUSTSTORM OR SANDSTORM: VSBY 1/2 MILE OR LESS

2 = FOG REDUCING VISIBILITY

8 = SMOKE OR HAZE 9 = BLOWING SNOW X = TORNADO

0.01 INCH OR MORE: MAX 32 OR BELOW: 0 1 MAX 90 OR ABOVE: 0 0.10 INCH OR MORE: 1 1

MIN 32 OR BELOW: 0 0.50 INCH OR MORE: MIN Ø OR BELOW: 0 1.00 INCH OR MORE:

[HDD (BASE 65)]

[NO. OF DAYS WITH]

207 CLEAR (SCALE 0-3) 27 TOTAL THIS MO. DPTR FM NORMAL -64 PTCLDY (SCALE 4-7) TOTAL FM JUL 1 337 CLOUDY (SCALE 8-10) 0 DPTR FM NORMAL -82

[CDD (BASE 65)]

TOTAL THIS MO. 4 3 [PRESSURE DATA] DPTR FM NORMAL

TOTAL FM JAN 1 1491 HIGHEST SLP 30.30 ON 24 DPTR FM NORMAL 365 LOWEST SLP 29.84 ON 28

[REMARKS] #FINAL-12-20# These data are preliminary and have not undergone final quality control by the National Climatic Data Center (NCDC). Therefore, these data are subject to revision. Final and certified climate data can be accessed at the NCDC - http://www.ncdc.noaa.gov.

Climatological Report (Monthly)

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CXUS56 KLOX 020001

CLMLGB

CLIMATE REPORT

NATIONAL WEATHER SERVICE LOS ANGELES/OXNARD

401 PM PST FRI JAN 01 2021

... THE LONG BEACH AIRPORT CA CLIMATE SUMMARY FOR THE MONTH OF DECEMBER 2020...

CLIMATE NORMAL PERTOD: 1981 TO 2010 CLIMATE RECORD PERTOD: 1958 TO 2020

WEATHER	OBSERV	/ED	NORMAL	DEPART	LAST YEAR'S
	VALUE	DATE(S)	VALUE	FROM NORMAL	VALUE

TEMPERATURE (F)					
HIGHEST	83	12/08			
a de la dela	- 1/4	12/21			
LOWEST	41	12/30			
		12/31			
0.02 00.020.00	23.1	12/29	67.5	42.2	
	70.5		66.8	3.7	
AVG. MINIMUM				-0.1	
MEAN	58.1		56.3	1.8	
DAYS MAX >= 90					
DAYS MAX <= 32	0				
DAYS MIN <= 32	0				
DAYS MIN <= 0	0				
PRECIPITATION (INCHES)				
TOTALS	1.49		1.95	-0.46	
DAILY AVG.	0.05				
DAYS >= .01	1				
DAYS >= .10	1				
DAYS >= .50	1				
DAYS >= 1.00	1				
GREATEST					
24 HR. TOTAL	1.49	12/28 TO 3	12/28		
STORM TOTAL	1,49				
DEGREE DAYS					
	207		271	-64	271
SINCE 7/1	337		419	-82	382
COOLING TOTAL	4		1	3	0
SINCE 1/1			1126	365	1418
************			1120		1410
WIND (MPH)					
AVERAGE WIND SP	EED		3.9		
AVERAGE WIND SP					. (00

24/080

DATE 12/03

HIGHEST WIND SPEED/DIRECTION

9

HIGHEST GUST SPEED/DIRECTION 36/090 DATE 12/03

SKY COVER

POSSIBLE SUNSHINE (PERCENT) MM
AVERAGE SKY COVER 0.11
NUMBER OF DAYS FAIR 27
NUMBER OF DAYS PC 3
NUMBER OF DAYS CLOUDY 1

AVERAGE RH (PERCENT) 53

WEATHER CONDITIONS. NUMBER OF DAYS WITH
THUNDERSTORM 1 MIXED PRECIP

HEAVY RAIN RAIN 1 1 FREEZING RAIN LIGHT RAIN 2 0 0 LT FREEZING RAIN HAIL 0 HEAVY SNOW 0 SNOW 0 LIGHT SNOW SLEET 0 0 FOG W/VIS <= 1/4 MILE FOG 13 0

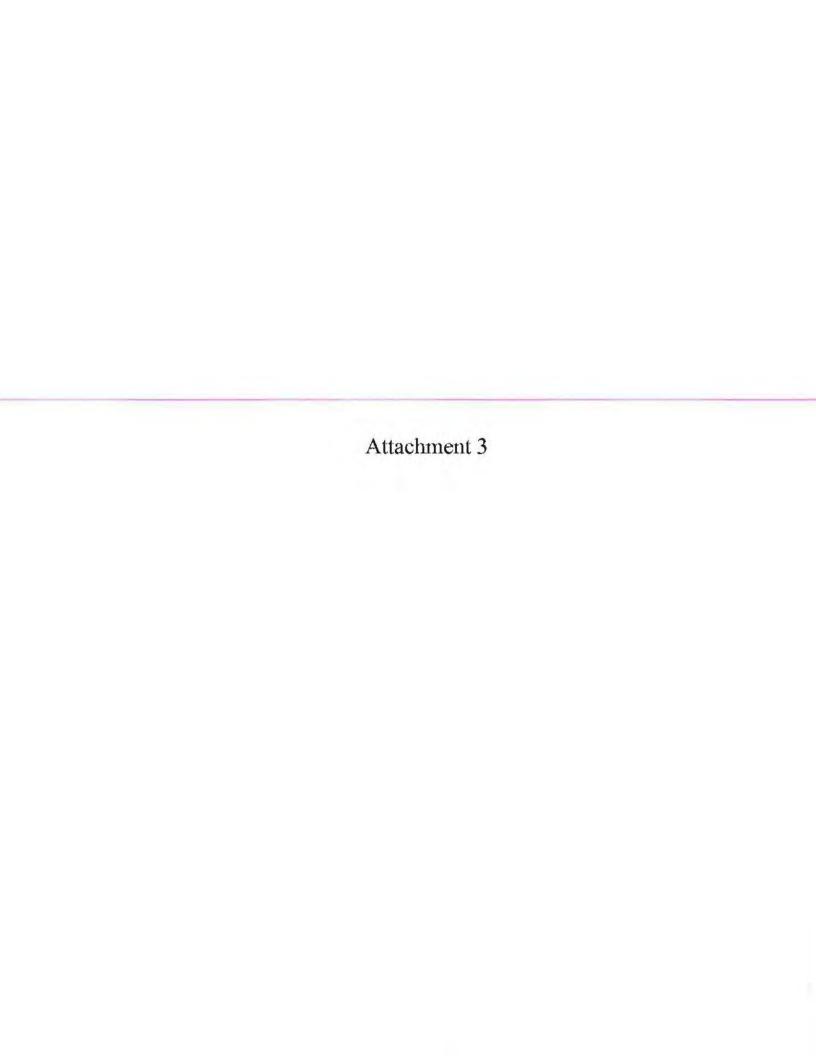
HAZE 15

⁻ INDICATES NEGATIVE NUMBERS.

R INDICATES RECORD WAS SET OR TIED.

MM INDICATES DATA IS MISSING.

T INDICATES TRACE AMOUNT.





Dominguez Channel Estuary April 2020 Sediment Monitoring Report

Prepared for:

Tesoro Refining & Marketing Company LLC Los Angeles Refinery – Carson Operations 1801 East Sepulveda Boulevard Carson, CA 90745

Prepared by:

WGR Southwest, Inc. 11021 Winners Circle, Suite 101 Los Alamitos, CA 90720

> Date: September 11, 2020

TESORO REFINING & MARKETING COMPANY LLC LOS ANGELES REFINERY – CARSON OPERATIONS DOMINGUEZ CHANNEL ESTUARY SEDIMENT MONITORING REPORT 2020

TABLE OF CONTENTS

1.0	Introduction
2.0	Sediment Monitoring
3.0	Laboratory Results
4.0	Executive Summary
	TABLES
Table	2.0: Sediment Monitoring Field Observation and Analyses
-	FIGURES

ATTACIMENTS

Dominguez Channel Estuary Sediment Monitoring Locations

Attachment 1:	Sediment Monitoring Field Logs
Attachment 2, Table 1:	Sediment Monitoring Laboratory Result Summary Table
Attachment 2, Table 2:	Sediment Monitoring Particle Grain Size Summary Table
Attachment 3:	Sediment Monitoring Eurofins Calscience Analytical Laboratory Report
Attachment 4:	Sediment Monitoring Aquatic Bioassay Analytical Laboratory Report
Attachment 5:	Organic/Inorganic Analytical Validation Report
Attachment 6:	Sediment Bioassay Data Validation Report

Figure 1:

Tesoro Refining & Marketing Company LLC Los Angeles Refinery – Carson Operations Dominguez Channel Estuary April 2020 Sediment Monitoring Report Page 1 of 2

1.0 Introduction

On behalf of Tesoro Refining & Marketing Company LLC Los Angeles Refinery – Carson Operations (Tesoro LAR Carson), WGR Southwest, Inc. (WGR) conducted sediment monitoring of the Dominguez Channel Estuary in accordance with National Pollutant Discharge Elimination System Waste Discharge Requirements Permit Number CA0000680 Order Number R4-2015-0259 (WDR Permit). As required in Table E-7 of WDR Permit Attachment E, Monitoring and Reporting Program Number 5424 (MRP No. 5424), sediment monitoring is required at least once a year for all parameters and at least twice a year for Chronic Toxicity regardless of Tesoro LAR Carson discharge associated with the WDR Permit¹. Therefore, this report constitutes sediment monitoring for the first event of the 2020 reporting year, where the sediment samples collected were analyzed for all required parameters and all required monitoring (i.e. field observations and field analyses) was completed.

2.0 Sediment Monitoring

As shown in Figure 1, the WDR Permit designates seven sediment monitoring locations: SED-001, SED-002, SED-003, SED-004, SED-005, SED-006, and SED-007. WGR field personnel utilized an Ekman dredge and a Horiba U-50 Series Multi-Parameter Meter. According to historic Tesoro LAR Carson Sediment Monitoring Reports, samplers have been unable to collect sediment samples from SED-001 since 2003, SED-002 since 2003, SED-003 since 2009, SED-004 since 2009, and have infrequently collected sediment samples from SED-005 since 2009.

Sediment monitoring was attempted at all designated sediment monitoring locations on April 30, 2020. As detailed in the field logs (see Attachment 1), sediment samples and associated monitoring could only be feasibly completed at four of the seven sediment monitoring locations. Table 2.0 provides a summary of the field observations and analyses.

	Table 2.0: Se	ediment Monitoring Fie	ld Observation and A	nalyse	S									
		Field Observations						Field Analyses						
Sample ID	Sediment Description	Biological Matter	Pollutants	pH (SU)	Salinity (PPT)	DO (mg/L)	SC (mS/Cm)	Turbidity (NTU)	Flow					
SED-001	Not Sampled	Not Sampled	Not Sampled	æ.	93	+-	¥.	44	144					
SED-002	Not Sampled	Not Sampled	Not Sampled	4	44	1	44	25	1					
SED-003	Not Sampled	Not Sampled	Not Sampled	=	-	1		1						

Tesoro LAR Carson did not discharge under the WDR Permit during the 2020 calendar year.

Tesoro Refining & Marketing Company LLC Los Angeles Refinery – Carson Operations Dominguez Channel Estuary April 2020 Sediment Monitoring Report Page 2 of 2

	X	Field Observations	Field Analyses						
Sample ID	Sediment Description	Biological Matter	Pollutants	pH (SU)	Salinity (PPT)	DO (mg/L)	SC (mS/Cm)	Turbidity (NTU)	Flow
SED-004	Dark in color, no odor	Vegetation, shells, rocks	Some trash/debris	167	23.7	4.65	37.4	11.8	-
SED-005	Dark in color, decaying odor	Vegetation and rocks	Some trash/debris	7.75	21.6	4.30	34.4	8.3	
SED-006	Dark in color, decaying odor	Vegetation	Some trash/debris	19.7	19.9	4.21	31.9	8.8	- 44
SED-007	Dark in color, decaying odor	Vegetation	Some trash/debris	7.37	18.3	4.1	29.4	7.5	-

3.0 Laboratory Results

Table 2.0 summarizes the field observations and analyses for the April 2020 sediment monitoring event. Laboratory results are summarized in Attachment 2. The Eurofins Calscience laboratory report is in Attachment 3 and the Aquatic Bioassay laboratory report is in Attachment 4. Data validation reports for these laboratory analytical reports are in Attachment 5 and Attachment 6.

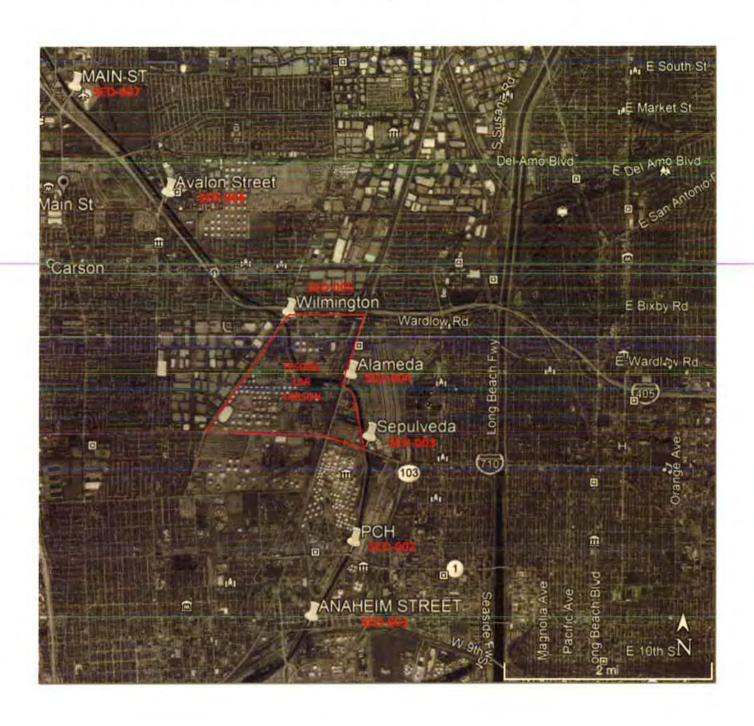
4.0 Executive Summary

Receiving water sediment monitoring and analysis was conducted independent of any discharge from Tesoro LAR Carson. Pollutant concentrations demonstrated in this report are not associated with any contribution from Tesoro LAR Carson to the receiving water. There are no pollutant concentration limits associated with this type of sampling as prescribed by the WDR Permit. Receiving water sediment monitoring and analysis was completed in compliance with the WDR Permit Attachment E, MRP No. 5424. As noted in the Organic/Inorganic Analytical Validation Report and the Sediment Bioassay Data Validation Report included in Attachment 5 and 6, respectively, analytical data obtained for this sampling event was deemed acceptable. No instances of non-compliance were identified.

FIGURE 1

DOMINGUEZ CHANNEL ESTUARY SEDIMENT MONITORING LOCATIONS

Figure 1: Dominguez Channel Estuary Sediment Monitoring Locations



Tesoro Refining & Marketing Company LLC Los Angeles Refinery – Carson Operations Dominguez Channel Estuary Sediment Monitoring Report

ATTACHMENT 1

SEDIMENT MONITORING FIELD LOGS

Tesoro Refining & Marketing Company LLC Los Angeles Refinery – Carson Operations Dominguez Channel Estuary April 2020 Sediment Monitoring Report

	WGR Southwest, Inc.		Page 1 of 3
	Field Log		Date: 4-30-2020
Project Nar	ne: UARC Sediment 2020	Field Personnel: (Imper Ballnot
Project Nu	mber: 021. APC. 01	Field Personnel: I	Dave Montdongo
	itions/Project Discrepancies: cast, 64°F, light breeze		
Time		Field Notes	
0800	Arrive @ WGR office, 1	oad equipment	discuss safety
	and gather senor		
0845	Leave office		
0915	Arrive @ sed-007 u	nload equipm	ent
	NOW and again 129	A Kny NW	corner of 1 1 1 0
	to sample point - san	note within 10	of Intwally from SP/27
)	31 ft from top of bris	day to water	line
K1	minimal trush in the		
1100	shallow water dept		
1100	Begin Alling parsiba		,
1100	HOPIBA: 24.38°C	7 1 37 oH .	29.4 mS/cm
	7.5 NTU 4.1 m		
	Gratersample col	exted and a	us hized in This
	15 minutes	0.40.0000	3-01 (01) -(14)
1115	complete sample i	allection suc	ensuation and
1110	de ion equipmen		
	load up for new so		
1130	leave SED-007 ave		
1190	arvive SED-OOL UN		ent
111	walk west appear	40 ft from	SE comer of bonder
	to simula et -	de this los	+ laterally from SF/ea
	29 ft from top of b	wide to water	v line
	minimal trash in chann		
	water depth between		
1230	Begin filling in bag	1011011	NYCCANIP
10-50	HOPELPA: 15 42°C	7 61 H 31	9 ma Slam
	HOPEIRA: 25. 43°C / 8-8 NTU, 1.21	m 11 DO 10	9 - t. 1
	X-0 MW, 1-21	Marie of	CPP CSallanty
	Jate Sample	of corra wal	analyzed within 15 mi
	complete sample colle		
	And day TOY day	ander le point	

Last Revised 9/5/2019

Page 2 of 3 WGR Southwest, Inc. Field Log Date: 4-30-2020 Project Name: LARC Sediment 2020 Field Personnel: amber Bullrot Project Number: 021 APC.01 Field Personnel: Dave Montelonas Field Conditions/Project Discrepancies: overcast burning out, son coming out Field Notes Time visit store to purchase additional plante sample 1245 Collection bags and PPF 1315 LUNCH BREAK arrive @ SED-005 area walk 117 ft west from NE corner of bridge to comple area - sample to ft in either direction measure 27 ft from top of bridge to mater line minimal trash is chancel degetation along side; 1425 Sediment is hurky with less as bons Than Tes-ook 1007 water aupth approx 10-20 ft Benin filling ins bass property sunges 76°C 7.75 3H 1430 34.4 m S/cm S. 2NTU 4.3 milLDO 21. 6 ppt Jahnit Swater sample collected and ordered I can equipment I sad up for next sumple point leave SED-005 area 1445 Arrive SED-004 500 Walk 80ft from north from SE corner of bridge to sample area- collect lott in ether direction measure It from top of bridge to vater line minimal trash in channel sparse vegetation along sides coar, sediment, murky up little debris -marry smells rocks no odo? water liph upprox 20 ft 1605 13 (buy 5, preserving samples Begin filling HORIBA: 24 91°C; 7.91 plt, 37.4 ms 11.8 NTU, 4. les mall DO 23.7 ppt salinity Duater sample collected and margied win is min duon equip

some notes decomp ofor

load is and leave

	WGR Southwest, Inc.	Page of 3
	Field Log	Date: 4-30-2020
Project Nan	ie: LITRC Sediment 2020 Field Personnel:	amber Ballrot
Project Nur		Dave Montelongo
The state of the s	tions/Project Discrepancies: ny, Slight wind	
Time	Field Notes	
1645	Arrive SED-007	
	walk 20 ft. west from NE cov	ner of bridge to
	sample point - attempt sollection	
-	measure 24 ft from top of bridge	to water line
	some wasty in channel, sparse	regretation many sides
	unater depth approx 10 ft	
	attempt & average drops, collected	only vegetation
	and stills wisome mud wenns	
.====	dump minimal collection and about	, ,
1300	deen expressent and land up to	or ment sample point
1715	lenve SED-003 arra	
1730	arrive SED-DP2 area, where to	
	stage equipment, bridge on bo	
1225	arrive Sed-sol area	altempt sumple col
1730	unik leb8 feet west from NEw	ar f bilar
	to sample point - attempt will	costs of production
	mensure 56 feet from top of	boilers to other 11 - 2
	greaty of train in channel, veg	etation = law side i
	water depth approx. 10 ff.	1.0.0.1.5
		inor amount of
	Shells / solvare - dump back and alo	andon further of Hon
1800	dean equipment and load up	
1800	Lewe to office	
1800	arrive office uload equipment	and repretage
	vental equipment for shipment	1
	1	come cocs
1830	END END	CONTRACTORS

ATTACHMENT 2

SEDIMENT MONITORING LABORATORY RESULT SUMMARY TABLE AND PARTICLE GRAIN SIZE SUMMARY TABLE

Sample ID	SED-001	SED-002	SED 003	SED-004	SED-005	SED-006	SED-007
Date Sampled	NS	NS	NS	4/30/2020	4/30/2020	4/30/2020	4/30/2020
Time Sampled	NS	NS	NS	16:10	14:30	12:30	11:04
Total Metals							
Cadmium (EPA 6020) (mg/Kg)	NS	NS	NS	ND<0.806	ND<0.851	1.26	0.862
Chromium (EPA 6020) (mg/Kg)	NS	NS	NS	26.8	26	24.4	12.1
Copper (EPA 6020) (mg/Kg)	NS	NS	NS	77.8	90.9	68.8	46.6
Lead (EPA 6020) (mg/Kg)	NS	NS	NS	201	54.7	48.7	35.6
Nickel (EPA 6020) (mg/Kg)	NS	NS	NS	7.54	8.08	10.1	9.07
Zinc (EPA 6020) (mg/Kg)	NS	NS	NS	304	329	479	292
Mercury (EPA 7471A) (mg/Kg)	NS	NS	NS	0.137	0.100	0.0468	0.0516
Volatile/Semi-Volatile Organic Compounds							
Chlordane (EPA 8081A) (ug/Kg)	NS	NS	NS	13	14	65	12
DDT (EPA 8081A) (ug/Kg, sum of 4,4'-DDT, 2,4'-DDT, 4,4'-DDE, 2,4'-DDE, 4,4'-DDD, and 2,4'-DDD)	NS	NS	NS	19.9	19.3	54.3	13
PCBs (EPA 8082) (ug/Kg, sum of Arochlor 1016, Arochlor 1221, Arochlor 1232, Arochlor 1242, Arochlor 1248, Arochlor 1254, and Arochlor 1260)	NS	NS	NS	49	196	152	168
PAHs (EPA 8270C) (mg/Kg, sum of acenaphthene, anthracene, 1,2-benzanthracene, 3,4-benzofluoranthene, benzo(k)fluoranthene, 1,12-benzoperylene, benzo(a)pyrene, chrysene, dibenzo(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, and pyrene)	NS	NS	NS	1.3899	1.395	2.254	0.7014
Total Petroleum Hydrocarbons (EPA 8015B) (mg/Kg)	NS	NS	NS	23	70	295	218.42
Sediment Grain Size (ASTM D4464)			Refer	to Attachme	nt 2, Table 2		
Total Organic Carbon (EPA 9060A) (mg/Kg)	NS	NS	NS	31,800	38,900	30,700	22,600
Tributyltin (Krone et al.) (ug/Kg)	NS	NS	NS	ND<2.5	ND<2.8	ND<2.5	ND<2.6
Chronic Toxicity							
Eohaustorius estuarius (NOEC in mg/L)	NS	NS	NS	100%	100%	100%	100%
Mytilus galloprovincialis (NOEC in mg/L)	NS	NS	NS	100%	100%	100%	100%

NS = Not Sampled

ND = Non-Detect

NOEC = No Observed Effect Concentration

		E-se		Particl	e Size Distri	bution (W	eight Percent)			
Sample ID	Mean Grain Size (mm)	Total Silt & Clay (0 - 0.0626 mm)	Clay (< 0.00391 mm)	Silt (0.00391 - 0.0625 mm)	Very Fine Sand (0.0625 - 0.125 mm)	Fine Sand (0.125 - 0.25 mm)	Medium Sand (0.25 - 0.5 mm)	Coarse Sand (0.5 - 1 mm)	Very Coarse Sand (1-2 mm)	Gravel (>2 mm)
SED-001	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
SED-002	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
SED-003	NS	NS	NS	NS	NS	NS	NS	NS	N5	NS
SED-004	0.042	75.95	12.19	63.76	13.94	10.10	ND<0.01	ND<0.01	ND<0.01	ND<0.01
SED-005	0.032	83.01	16.11	66.90	12.11	4.88	ND<0.01	ND<0.01	ND<0.01	ND<0.01
SED-006	0.226	37.10	4.48	32.62	9.22	17.59	19.04	17.06	ND<0.01	ND<0.01
SED-007	0.043	76.07	12.62	63,45	12.56	11.36	0.01	ND<0.01	ND<0.01	ND<0.01

NS = Not Sampled ND = Non-Detect

ATTACHMENT 3

SEDIMENT MONITORING EUROFINS CALSCIENCE ANALYTICAL LABORATORY REPORT

Tesoro Refining & Marketing Company LLC Los Angeles Refinery – Carson Operations Dominguez Channel Estuary April 2020 Sediment Monitoring Report



Environment Testing America

ANALYTICAL REPORT

Eurofins Calscience LLC 7440 Lincoln Way Garden Grove, CA 92841 Tel: (714)895-5494

Laboratory Job ID: 570-27181-1

Client Project/Site: WGR - Tesoro LA Refinery

For:

WGR Southwest Inc 11021 Winners Circle Suite 101 Los Alamitos, California 90720

Attn: Amber Ballrot

Authorized for release by: 5/22/2020 9:39:05 PM

Xuan Dang, Project Manager I (714)895-5494

xuandang@eurofinsus.com

LINKS

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: WGR Southwest Inc.

Project/Site: WGR - Tesoro LA Refinery

Job ID: 570-27181-1

Qualifiers GC/MS Semi VOA **Qualifier Description** Qualifier F1 MS and/or MSD recovery exceeds control limits. F2 MS/MSD RPD exceeds control limits Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. GC Semi VOA Qualifier **Qualifier Description** F Result exceeded calibration range. F1 MS and/or MSD recovery exceeds control limits. F2 MS/MSD RPD exceeds control limits Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. J p The %RPD between the primary and confirmation column/detector is >40%. The lower value has been reported. X Surrogate recovery exceeds control limits Metals Qualifier **Qualifier Description** Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. Glossary Abbreviation These commonly used abbreviations may or may not be present in this report. Listed under the "D" column to designate that the result is reported on a dry weight basis %R Percent Recovery CFL Contains Free Liquid CNF Contains No Free Liquid DER Duplicate Error Ratio (normalized absolute difference) Dil Fac Dilution Factor Detection Limit (DoD/DOE) DL DL, RA, RE, IN Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample DLC Decision Level Concentration (Radiochemistry) EDL Estimated Detection Limit (Dioxin) LOD Limit of Detection (DoD/DOE) LOQ Limit of Quantitation (DoD/DOE) MDA Minimum Detectable Activity (Radiochemistry) MDC Minimum Detectable Concentration (Radiochemistry) MDL Method Detection Limit ML Minimum Level (Dioxin) MQL Method Quantitation Limit NC Not Calculated ND Not Detected at the reporting limit (or MDL or EDL if shown) PQL Practical Quantitation Limit QC Quality Control RER Relative Error Ratio (Radiochemistry) RL Reporting Limit or Requested Limit (Radiochemistry) RPD Relative Percent Difference, a measure of the relative difference between two points TEF Toxicity Equivalent Factor (Dioxin) TEQ Toxicity Equivalent Quotient (Dioxin)

Case Narrative

Client: WGR Southwest Inc.

Project/Site: WGR - Tesoro LA Refinery

Job ID: 570-27181-1

Laboratory: Eurofins Calscience LLC

Narrative

Job Narrative 570-27181-1



No additional comments.

Receipt

The samples were received on 5/1/2020 1:56 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.0° C.

GC/MS Semi VOA

Method 8270C SIM: The matrix spike / matrix spike duplicate / sample duplicate (MS/MSD/DUP) precision for preparation batch 570-66884 and 570-67217 and analytical batch 570-68220 was outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample / laboratory control sample duplicate (LCS/LCSD) precision was within acceptance limits.

Method 8270C SIM: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 570-66884 and 570-67217 and analytical batch 570-68220 were outside control limits. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC Semi VOA

Method 8081A: Surrogate recovery for the following samples were outside control limits: SED-004 (570-27181-1), SED-005 (570-27181-2), SED-006 (570-27181-3), SE-D-007 (570-27181-4), (570-27181-B-1-B MS) and (570-27181-B-1-C MSD). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Method 8081A: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 570-69209 and 570-69126 and analytical batch 570-68894 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) recovery were within acceptance limits.

Method 8081A: Surrogate recovery for the following samples were outside control limits: (570-27181-A-1-E MS) and (570-27181-A-1-H MSD). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Method 8081A: The following samples were diluted due to the nature of the sample matrix: SED-004 (570-27181-1), SED-005 (570-27181-2), SED-005 (570-27181-3) and SE-D-007 (570-27181-4). Elevated reporting limits (RLs) are provided.

Method 8082: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 570-66884 and 570-67132 and analytical batch 570-68205 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method 8082: The following samples appears to contain polychlorinated biphenyls (PCBs); however, due to weathering or other environmental processes, the PCBs in the sample do not closely match any of the laboratory's Aroclor standards used for instrument calibration: SED-005 (570-27181-2) and SED-006 (570-27181-3). The sample(s) has been quantified and reported as Aroclor 1260. Due to the poor match with the Aroclor standard(s), there is increased qualitative and quantitative uncertainty associated with this result.

Method 8082: The following sample appears to contain polychlorinated biphenyls (PCBs); however, due to weathering or other environmental processes, the PCBs in the sample do not closely match any of the laboratory's Aroclor standards used for instrument calibration: SED-004 (570-27181-1). The sample(s) has been quantified and reported as Aroclor 1254. Due to the poor match with the Aroclor standard(s), there is increased qualitative and quantitative uncertainty associated with this result.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Metals

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

4

Job ID: 570-27181-1

Case Narrative

Client: WGR Southwest Inc

Project/Site: WGR - Tesoro LA Refinery

Job ID: 570-27181-1 (Continued)

Laboratory: Eurofins Calscience LLC (Continued)

General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep

Method D4464: The sample duplicate precision for the following sample associated with analytical batch 570-68372 was flagged as being outside control limits due to a LIMS limitation: (570-27622-B-3) and (570-27622-B-3 DU). The mean grain size for the sample and sample duplicate were within RPD acceptance criteria.

(570-27622-B-3) and (570-27622-B-3 DU)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

4

Job ID: 570-27181-

Client: WGR Southwest Inc

Project/Site: WGR - Tesoro LA Refinery

Job ID: 570-27181-1

Client Sample ID: SED-004

1 - 1-		IP.	CTA !	27404 4
l an	Sample	יווו ב	2/11-	27181-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acenaphthene	0,0045	J	0.035	0,0018	mg/Kg	2	N	8270C SIM	Total/NA
Anthracene	0.031	J	0.035	0.0023	mg/Kg	2	p	8270C SIM	Total/NA
1,2-Benzanthracene	0.097		0.035	0.0038	mg/Kg	2	ä	8270C SIM	Total/NA
Benzo[a]pyrene	0.13		0.035	0.0047	mg/Kg	2	Q	8270C SIM	Total/NA
3,4-Benzofluoranthene	0.15		0.035	0.0050	mg/Kg	2	¢	8270C SIM	Total/NA
Benzo[k]fluoranthene	0.11		0.035	0.0056	mg/Kg	2	D	8270C SIM	Total/NA
1,12-Benzoperylene	0.12		0.035	0.0051	mg/Kg	2	Ü	8270C SIM	Total/NA
Chrysene	0.22		0.035	0.0027	mg/Kg	2	C	8270C SIM	Total/NA
Dibenz(a,h)anthracene	0.032	J	0.035	0.0037	mg/Kg	2	*	8270C SIM	Total/NA
Fluoranthene	0.20		0.035	0.0034	mg/Kg	2	n	8270C SIM	Total/NA
Fluorene	0.0054	J	0.035	0.0029	mg/Kg	2	n	8270C SIM	Total/NA
Indeno[1,2,3-cd]pyrene	0.060		0.035	0.0043	mg/Kg	2	4	8270C SIM	Total/NA
1-Methylnaphthalene	0.0092	J	0.035	0.0025	mg/Kg	2	*	8270C SIM	Total/NA
2-Methylnaphthalene	0.015	J	0.035	0.0025	mg/Kg	2	\$	8270C SIM	Total/NA
Naphthalene	0.015	J	0.035	0.0027	mg/Kg	2	47	8270C SIM	Total/NA
Phenanthrene	0.088		0.035	0.0029	mg/Kg	2	ø	8270C SIM	Total/NA
Pyrene	0.23		0.035	0.0026	mg/Kg	2	*	8270C SIM	Total/NA
C6-C44	23		9.1	6.5	mg/Kg	1	4	8015B	Total/NA
2,4'-DDD	0.78	Jp	0.99	0.15	ug/Kg	1		8081A	Total/NA
4,4'-DDD	6.4		0.99	0.24	ug/Kg	1		8081A	Total/NA
4,4'-DDE	11		5.0	0.83	ug/Kg	5		8081A	Total/NA
4,4'-DDT	1.7	p	0.99	0.30	ug/Kg	1		8081A	Total/NA
Chlordane	13	p	9.9	0.67	ug/Kg	1		8081A	Total/NA
Aroclor-1254	49		17	2.0	ug/Kg	1	Ċ.	8082	Total/NA
Chromium	26.8		3.58	0.537	mg/Kg	20	10	6020	Total/N/
Copper	77.8		1.79	0.482	mg/Kg	20	335	6020	Total/NA
Lead	201		1.79	0.385	mg/Kg	20	p	6020	Total/NA
Nickel	7.64		1.79	0.484	mg/Kg	20	Ú.	6020	Total/NA
Zinc	304		8.96	8.27	mg/Kg	20	Ž.	6020	Total/NA
Mercury	0.137	J	0.149	0.0105	mg/Kg	1	ŭ	7471A	Total/NA
Carbon, Total Organic	31800		878	305	mg/Kg	1	ø	9060A	Total/NA
Clay(less than 0.00391 mm)	12.19		D.01	0.01	%	1		D4464	Total/NA
Fine Sand (0.125 to 0.25mm)	10.10		0.01	0.01	%	1		D4464	lotal/NA
Silt (0.00391 to 0.0625mm)	63.76		0.01	0.01	%	1		D4464	Total/NA
Total Silt and Clay (0 to 0.0626mm)	75,95		0.01	0,01	%	1		D4464	Total/NA
Very Fine Sand (0.0625 to 0,125 mm)	13.94		0.01	0.01	%	1		D4464	Total/NA

Client Sample ID: SED-005

Lab Sample ID: 570-27181-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acenaphthene	0.0046	J	0.038	0.0019	mg/Kg	2	B	8270C SIM	Total/NA
Anthracene	0.027	J	0.038	0.0025	mg/Kg	2	C)	8270C SIM	Total/NA
1,2-Benzanthracene	0.090		0.038	0.0042	mg/Kg	2	ø	8270C SIM	Total/NA
Benzo[a]pyrene	0.12		0.038	0.0051	mg/Kg	2	Ľ1	8270C SIM	Total/NA
3,4-Benzofluoranthene	0.15		0.038	0.0055	mg/Kg	2	Di.	8270C SIM	Total/NA
Benzo[k]fluoranthene	0.14		0.038	0.0061	mg/Kg	2	*	8270C SIM	Total/NA
1,12-Benzoperylene	0.097		0.038	0.0055	mg/Kg	2	ij.	8270C SIM	Total/NA
Chrysene	0.21		0.038	0.0029	mg/Kg	2	CF.	8270C SIM	Total/NA
Dibenz(a,h)anthracene	0.027	J	0.038	0.0040	mg/Kg	2	n	8270C SIM	Total/NA
Fluoranthene	0.21		0.038	0.0037	mg/Kg	2	tt	8270C SIM	Total/NA
Fluorene	0.0046	J	0.038	0.0032	mg/Kg	2	O	8270C SIM	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Calscience LLC

Client Sample ID: SED-005 (Continued)

Lab Sample ID: 570-27181-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Indeno[1,2,3-cd]pyrene	0.055		0.038	0.0047	mg/Kg	2	X	8270C SIM	Total/NA
1-Methylnaphthalene	0,0054	J	0.038	0.0027	mg/Kg	2	ø	8270C SIM	Total/NA
2-Methylnaphthalene	0.012	J	0.038	0.0027	mg/Kg	2	Ø	8270C SIM	Total/NA
Naphthalene	0.015	J	0.038	0.0029	mg/Kg	2	Žį.	8270C SIM	Total/NA
Phenanthrene	0.079		0.038	0.0032	mg/Kg	2	D	8270C SIM	Total/NA
Pyrene	0.26		0.038	0.0028	mg/Kg	2	D.	8270C SIM	Total/NA
C25-C28	8.7	J	9.8	6.9	mg/Kg	1	*	8015B	Total/NA
C29-C32	10		9.8	6.9	mg/Kg	1	O	8015B	Total/NA
C33-C36	8.3	J	9.8	6.9	mg/Kg	1	\$\$	8015B	Total/NA
C6-C44	43		9.8	6.9	mg/Kg	1	*	8015B	Total/NA
2,4'-DDE	1.7	Jp	2,0	0.83	ug/Kg	1		8081A	Total/NA
4,4'-DDD	5.8		0.99	0.24	ug/Kg	1		8081A	Total/NA
4,4'-DDE	9.5		5.0	0.83	ug/Kg	5		8081A	Total/NA
4,4'-DDT	2.3	p	0.99	0.30	ug/Kg	1		8081A	Total/NA
Chlordane	14		9.9	0.67	ug/Kg	1		8081A	Total/NA
Aroclor-1254	76		19	2.2	ug/Kg	1	4	8082	Total/NA
Aroclor-1260	120	F1	19	4.5	ug/Kg	1	ø	8082	Total/NA
Chromium	26.0		3.78	0.568	mg/Kg	20	ø	6020	Total/NA
Copper	90.9		1.89	0.509	mg/Kg	20	ø	6020	Total/NA
Lead	54.7		1.89	0.407	mg/Kg	20	*	6020	Total/NA
Nickel	8.08		1.89	0.511	mg/Kg	20	a	6020	Total/NA
Zinc	329		9.46	8.73	mg/Kg	20	33	6020	Total/NA
Mercury	0.100	J	0.166	0.0117	mg/Kg	1	Ü	7471A	Total/NA
Carbon, Total Organic	38900		965	335	mg/Kg	4	ø	9060A	Total/NA
Clay(less than 0.00391 mm)	16.11		0.01	0.01	%	1		D4464	Total/NA
Fine Sand (0.125 to 0.25mm)	4.88		0.01	0.01	%	1		D4464	Total/NA
Silt (0.00391 to 0.0625mm)	66,90		0.01	0.01	%	1		D4464	Total/NA
Total Silt and Clay (0 to 0.0626mm)	83.01		0.01	0.01	%	1		D4464	Total/NA
Very Fine Sand (0.0625 to 0.125 mm)	12.11		0.01	0.01	%	1		D4464	Total/NA

Client Sample ID: SED-006

Lab Sample ID: 570-27181-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acenaphthene	0.011	1	0.034	0.0017	mg/Kg	2	五	8270C SIM	Total/NA
Anthracene	0.049		0.034	0.0023	mg/Kg	2	ø	8270C SIM	Total/NA
1,2-Benzanthracene	0.22	F2 F1	0.034	0.0037	mg/Kg	2	*	8270C SIM	Total/NA
Benzo[a]pyrene	0.19	F2	0.034	0.0046	mg/Kg	2	ø	8270C SIM	Total/NA
3,4-Benzofluoranthene	0.20	F2	0.034	0.0049	mg/Kg	2	Ø	8270C SIM	Total/NA
Benzo[k]fluoranthene	0.16	F2	0.034	0.0054	mg/Kg	2	n	8270C SIM	Total/NA
1,12-Benzoperylene	0.10		0.034	0.0049	mg/Kg	2	ø	8270C SIM	Total/NA
Chrysene	0.25	F2 F1	0.034	0.0026	mg/Kg	2	B	8270C SIM	Total/NA
Dibenz(a,h)anthracene	0.031	J	0.034	0.0036	mg/Kg	2	C)	8270C SIM	Total/NA
Fluoranthene	0.49	F2 F1	0.034	0.0032	mg/Kg	2	12	8270C SIM	Total/NA
Fluorene	0.011	JF2	0.034	0.0028	mg/Kg	2	ø	8270C SIM	Total/NA
Indeno[1,2,3-cd]pyrene	0.072		0.034	0.0042	mg/Kg	2	t;e	8270C SIM	Total/NA
1-Methylnaphthalene	0.013	J	0.034	0.0024	mg/Kg	2	in.	8270C SIM	Total/NA
2-Methylnaphthalene	0.0064	J	0.034	0.0024	mg/Kg	2	Ħ	8270C SIM	Total/NA
Naphthalene	0.0066	J	0.034	0.0026	mg/Kg	2	×	8270C SIM	Total/NA
Phenanthrene	0.20	F2 F1	0.034	0.0028	mg/Kg	2	Q	8270C SIM	Total/NA
Pyrene	0.47	F2 F1	0.034	0.0025	mg/Kg	2	ŭ	8270C SIM	Total/NA
C21-C22	6.2	1	8.2	5.8	mg/Kg	1	ŭ.	8015B	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Calscience LLC

5

Detection Summary

Client: WGR Southwest Inc.

Project/Site: WGR - Tesoro LA Refinery

Job ID: 570-27181-1

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Client Sami	ple ID: SED-006	(Continued)	
Chent Sam	DIE ID. 3LD-000	(Continueu)	

La	h	Cam	nla	ID.	570	274	04 2
La	lD.	sam	pie	ID.	3/0	-211	81-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
C23-C24	11		8.2	5.8	mg/Kg	1	D	B015B	Total/NA
C25-C28	32		8.2	5.8	mg/Kg	1	n	8015B	Total/NA
C29-C32	35		8,2	5.8	mg/Kg	1	Ø	8015B	Total/NA
C33-C36	29		8.2	5.8	mg/Kg	1	Ø	8015B	Total/NA
C37-C40	17		8.2	5.8	mg/Kg	1	n	8015B	Total/NA
C41-C44	11		8.2	5.8	mg/Kg	1	Q	8015B	Total/NA
C6-C44	160		8.2	5.0	mg/Kg	1	A	80150	Total/NA
2,4'-DDD	1.2	p	0.98	0.14	ug/Kg	1		8081A	Total/NA
2,4'-DDE	4.1	p	2.0	0.82	ug/Kg	1		8081A	Total/NA
4,4'-DDD	15	p	4.9	1.2	ug/Kg	5		8081A	Total/NA
4,4'-DDE	22		4.9	0.82	ug/Kg	5		8081A	Total/NA
4,4'-DDT	12	p	4.9	1.5	ug/Kg	5		8081A	Total/NA
Chlordane	65		9.8	0.67	ug/Kg	1		8081A	Total/NA
Aroclor-1254	B1		17	1.9	ug/Kg	1	×	8082	Total/NA
Arodor-1260	71		17	3.9	ug/Kg	1	Ü	8082	Total/NA
Cadmium	1.26	J	1.68	0.758	mg/Kg	20	ü	6020	Iotal/NA
Chromium	24.4		3.37	0.505	mg/Kg	20	0	6020	Total/NA
Copper	68.8		1.68	0,453	mg/Kg	20	**	6020	Total/NA
Lead	48.7		1.68	0.362	mg/Kg	20	*	6020	Total/NA
Nickel	10.1		1.68	0.455	mg/Kg	20	Ü	6020	Total/NA
Zinc	479		8.42	7.77	mg/Kg	20	Ö	6020	Total/NA
Mercury	0.0468	J	0.147	0.0104	mg/Kg	1	ø	7471A	Total/NA
Carbon, Total Organic	30700		854	297	mg/Kg	1	ø	9060A	Total/NA
Clay(less than 0.00391 mm)	4.48		0.01	0.01	%	1		D4464	Total/NA
Coarse Sand (0.5mm to 1mm)	17.06		0.01	0.01	%	1		D4464	Total/NA
Fine Sand (0.125 to 0.25mm)	17.59		0.01	0.01	%	1		D4464	Total/NA
Medium Sand (0.25 to 0.5 mm)	19.04		0.01	0.01	%	1		D4464	Total/NA
Silt (0.00391 to 0.0625mm)	32,62		0.01	0.01	%	1		D4464	Total/NA
Total Silt and Clay (0 to 0.0626mm)	37.10		0.01	0.01	%	1		D4464	Total/NA
Very Fine Sand (0.0625 to 0.125 mm)	9.22		0.01	0.01	%	1		D4464	Total/NA

Client Sample ID: SE-D-007

Lab Sample ID: 570-27181-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acenaphthene	0,0019	J	0.018	0.00089	mg/Kg	1	T	8270C SIM	Total/NA
Anthracene	0.010	J	0.018	0.0012	mg/Kg	1	O	8270C SIM	Total/NA
1,2-Benzanthracene	0.047		0.018	0.0019	mg/Kg	1	Ò	8270C SIM	Total/NA
Benzo[a]pyrene	0.053		0.018	0.0024	mg/Kg	1	ø	8270C SIM	Total/NA
3,4-Benzofluoranthene	0.068		0.018	0.0025	mg/Kg	1	ø	8270C SIM	Total/NA
Benzo[k]fluoranthene	0.073		0.018	0.0028	mg/Kg	1	Ö	8270C SIM	Total/NA
1,12-Benzoperylene	0.037		0.018	0.0026	mg/Kg	1	15	8270C SIM	Total/NA
Chrysene	0.10		0.018	0.0014	mg/Kg	1	O	8270C SIM	Total/NA
Dibenz(a,h)anthracene	0.0095	J	0.018	0.0019	mg/Kg	1	0	8270C SIM	Total/NA
Fluoranthene	0.12		0.018	0.0017	mg/Kg	1	Ø	8270C SIM	Total/NA
Fluorene	0.019		0.018	0.0015	mg/Kg	1	D	8270C SIM	Total/NA
Indeno[1,2,3-cd]pyrene	0.023		0.018	0.0022	mg/Kg	1	33	8270C SIM	Total/NA
1-Methylnaphthalene	0.0026	J	0.018	0.0013	mg/Kg	1	ø	8270C SIM	Total/NA
2-Methylnaphthalene	0.0054	J	0.018	0.0013	mg/Kg	1	ø	8270C SIM	Total/NA
Naphthalene	0.0056	J	0.018	0.0014	mg/Kg	1	¢	8270C SIM	Total/NA
Phenanthrene	0.044		0.018	0.0015	mg/Kg	1	ø	8270C SIM	Total/NA
Pyrene	0.14		0.018	0.0013	mg/Kg	1	15	8270C SIM	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Calscience LLC

Client: WGR Southwest Inc.

Project/Site: WGR - Tesoro LA Refinery

Client Sample ID: SE-D-007 (Continued)

Lab Sample ID: 570-27181-4

Job ID: 570-27181-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
C21-C22	8.4		8.4	6.0	mg/Kg	1	17	8015B	Total/NA
C23-C24	8.2	J -	8.4	6.0	mg/Kg	1	D	8015B	Total/NA
C25-C28	23		8.4	6.0	mg/Kg	1	SA	8015B	Total/NA
C29-C32	24		8.4	6.0	mg/Kg	4	0	8015B	Total/NA
C33-C36	20		8.4	6.0	mg/Kg	1	12	8015B	Total/NA
C37-C40	13		8.4	6.0	mg/Kg	- 1	13	8015B	Total/NA
C41-C44	9.2		8.4	6.0	mg/Kg	1	ò	8015B	Total/NA
C6-C44	120		8.4	6.0	mg/Kg	1	n	8015B	Total/NA
4,4'-DDD	4.8		0.99	0.24	ug/Kg	1		8081A	Total/NA
4,4'-DDE	6.9	p	0.99	0.17	ug/Kg	1		B081A	Total/NA
4,4'-DDT	1.3	p	0.99	0.30	ug/Kg	1		8081A	Total/NA
Chlordane	12		9.9	0.67	ug/Kg	1		8081A	Total/NA
Aroclor-1254	68		17	2.0	ug/Kg	1	*	8082	Total/NA
Aroclor-1260	100		17	4.1	ug/Kg	1	0	8082	Total/NA
Cadmium	0.862	J	1.78	0.803	mg/Kg	20	*	6020	Total/NA
Chromium	12.1		3.57	0.535	mg/Kg	20	ò	6020	Total/NA
Copper	46.6		1.78	0.480	mg/Kg	20	Ü	6020	Total/NA
Lead	35.6		1.78	0.384	mg/Kg	20	¢	6020	Total/NA
Nickel	9.07		1.78	0.482	mg/Kg	20	ü	6020	Total/NA
Zinc	292		8.92	B.24	mg/Kg	20	ø	6020	Total/NA
Mercury	0.0516	J	0.145	0.0102	mg/Kg	1	章	7471A	Total/NA
Carbon, Total Organic	22600		883	307	mg/Kg	1	D	9060A	Total/NA
Clay(less than 0.00391 mm)	12.62		0.01	0.01	%	1		D4464	Total/NA
Fine Sand (0.125 to 0.25mm)	11.36		0.01	0.01	%	1		D4464	Total/NA
Medium Sand (0.25 to 0.5 mm)	0.01		0.01	0.01	%	1		D4464	Total/NA
Silt (0.00391 to 0.0625mm)	63.45		0.01	0.01	%	1		D4464	Total/NA
Total Silt and Clay (0 to 0.0626mm)	76.07		0.01	0.01	%	1		D4464	Total/NA
Very Fine Sand (0.0625 to 0.125 mm)	12.56		0.01	0.01	%	1		D4464	Total/NA

Client: WGR Southwest Inc

Client Sample ID: SED-004

2-Fluorobiphenyl (Surr)

Nitrobenzene-d5 (Surr)

Project/Site: WGR - Tesoro LA Refinery

Method: 8270C SIM - PAHs (GC/MS SIM)

Lab Sample ID: 570-27181-1

Job ID: 570-27181-1

Date Collected: 04/30/20 16:10 Date Received: 05/01/20 13:56								Matrix	: Solid
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	0.0045	J	0.035	0.0018	mg/Kg	T T	05/05/20 21:50	05/11/20 21:07	2
Acenaphthylene	ND		0.035	0.030	mg/Kg	*	05/05/20 21:50	05/11/20 21:07	2
Anthracene	0.031	J	0.035	0.0023	mg/Kg	D	05/05/20 21:50	05/11/20 21:07	2
1,2-Benzanthracene	0.097		0.035	0.0030	mg/Kg	1,1	05/05/20 21:50	05/11/20 21:07	2
Benzo[a]pyrene	0.13		0.035	0.0047	mg/Kg	Ø	05/05/20 21:50	05/11/20 21:07	2
3,4-Benzofluoranthene	0.15		0.035	0.0050	mg/Kg	2,5	05/05/20 21:50	05/11/20 21:07	2
Benzo[k]fluoranthene	0.11		0.035	0.0056	mg/Kg	Ħ	05/05/20 21:50	05/11/20 21:07	2
1,12-Benzoperylene	0.12		0.035	0.0051	mg/Kg	13	05/05/20 21:50	05/11/20 21:07	2
Chrysene	0.22		0.035	0.0027	mg/Kg	D	05/05/20 21:50	05/11/20 21:07	2
Dibenz(a,h)anthracene	0.032	J	0.035	0.0037	mg/Kg	10	05/05/20 21:50	05/11/20 21:07	2
Fluoranthene	0.20		0.035	0.0034	mg/Kg	n	05/05/20 21:50	05/11/20 21:07	2
Fluorene	0.0054	J	0.035	0.0029	mg/Kg	ti	05/05/20 21:50	05/11/20 21:07	2
Indeno[1,2,3-cd]pyrene	0.060		0.035	0.0043	mg/Kg	1,2	05/05/20 21:50	05/11/20 21:0/	2
1-Methylnaphthalene	0.0092	J	0.035	0.0025	mg/Kg	n	05/05/20 21:50	05/11/20 21:07	2
2-Methylnaphthalene	0.015	J	0.035	0.0025	mg/Kg	X	05/05/20 21:50	05/11/20 21:07	2
Naphthalene	0.015	J	0.035	0.0027	mg/Kg	TI.	05/05/20 21:50	05/11/20 21:07	2
Phenanthrene	0.088		0.035	0.0029	mg/Kg	Č1	05/05/20 21:50	05/11/20 21:07	2
Pyrene	0.23		0.035	0.0026	mg/Kg	C	05/05/20 21:50	05/11/20 21:07	2
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	79		22 - 130				05/05/20 21:50	05/11/20 21:07	2
Nitrobenzene-d5 (Surr)	48		20 - 145				05/05/20 21:50	05/11/20 21:07	2
p-Terphenyl-d14 (Surr)	85		33 - 147				05/05/20 21:50	05/11/20 21:07	2

Client Sample ID: SED-005 Lab Sample ID: 570-27181-2 Date Collected: 04/30/20 14:30 Matrix: Solid

Date Received: 05/01/20 13:56									oonu
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	0.0046	J	0.038	0.0019	mg/Kg	22	05/05/20 21:50	05/11/20 21:31	2
Acenaphthylene	ND		0.038	0.032	mg/Kg	**	05/05/20 21:50	05/11/20 21:31	2
Anthracene	0.027	J	0.038	0.0025	mg/Kg	305	05/05/20 21:50	05/11/20 21:31	2
1,2-Benzanthracene	0.090		0.038	0.0042	mg/Kg	102	05/05/20 21:50	05/11/20 21:31	2
Benzo[a]pyrene	0.12		0.038	0.0051	mg/Kg	Ü	05/05/20 21:50	05/11/20 21:31	2
3,4-Benzofluoranthene	0.15		0.038	0.0055	mg/Kg	35	05/05/20 21:50	05/11/20 21:31	2
Benzo[k]fluoranthene	0.14		0.038	0.0061	mg/Kg	322	05/05/20 21:50	05/11/20 21:31	2
1,12-Benzoperylene	0.097		0.038	0.0055	mg/Kg	TO TO	05/05/20 21:50	05/11/20 21:31	2
Chrysene	0.21		0.038	0.0029	mg/Kg	C.	05/05/20 21:50	05/11/20 21:31	2
Dibenz(a,h)anthracene	0.027	J	0.038	0.0040	mg/Kg	ra.	05/05/20 21:50	05/11/20 21:31	2
Fluoranthene	0.21		0.038	0.0037	mg/Kg	12	05/05/20 21:50	05/11/20 21:31	2
Fluorene	0.0046	J	0.038	0.0032	mg/Kg	t)	05/05/20 21:50	05/11/20 21:31	2
Indeno[1,2,3-cd]pyrene	0.055		0.038	0.0047	mg/Kg	D	05/05/20 21:50	05/11/20 21:31	2
1-Methylnaphthalene	0.0054	J	0.038	0.0027	mg/Kg	**	05/05/20 21:50	05/11/20 21:31	2
2-Methylnaphthalene	0.012	J	0.038	0.0027	mg/Kg	12	05/05/20 21:50	05/11/20 21:31	2
Naphthalene	0.015	J	0.038	0.0029	mg/Kg	13	05/05/20 21:50	05/11/20 21:31	2
Phenanthrene	0.079		0.038	0.0032	mg/Kg	A	05/05/20 21:50	05/11/20 21:31	2
Pyrene	0.26		0.038	0.0028	mg/Kg	TX.	05/05/20 21.50	05/11/20 21:31	2
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac

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05/05/20 21:50 05/11/20 21:31

05/05/20 21:50 05/11/20 21:31

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20-145

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5/22/2020

Client: WGR Southwest Inc

Project/Site: WGR - Tesoro LA Refinery

Method: 8270C SIM - PAHs (GC/MS SIM) (Continued)

Client Sample ID: SED-005 Lab Sample ID: 570-27181-2

Date Collected: 04/30/20 14:30 Date Received: 05/01/20 13:56

 Surrogate
 %Recovery
 Qualifier
 Limits
 Prepared
 Analyzed
 Dil Fac

 p-Terphenyl-d14 (Surr)
 84
 33 - 147
 05/05/20 21:50
 05/11/20 21:31
 2

Client Sample ID: SED-006 Lab Sample ID: 570-27181-3
Date Collected: 04/30/20 12:30 Matrix: Solid

Date Collected: 04/30/20 12:30

Date Received: 05/01/20 13:56 Analyte Result Qualifier RL MDL. Unit D Prepared Analyzed Dil Fac 0.034 Ħ 05/05/20 21:50 0.011 J 0.0017 mg/Kg 05/11/20 21:55 2 Acenaphthene Ü Acenaphthylene ND 0.034 mg/Kg 05/05/20 21:50 05/11/20 21:55 2 0.029 Anthracene 0.049 0.034 0.0023 mg/Kg 05/05/20 21:50 05/11/20 21:55 2 1.2-Benzanthracene 0.22 F2 F1 0.034 0.0037 mg/Kg 05/05/20 21:50 05/11/20 21:55 2 0.034 05/05/20 21:50 05/11/20 21:55 2 Benzo[a]pyrene 0.19 F2 0.0046 mg/Kg 0.20 F2 3,4-Benzofluoranthene 0.034 0.0049 mg/Kg 05/05/20 21:50 05/11/20 21:55 2 Ď Benzo[k]fluoranthene 0.16 F2 0.034 0.0054 mg/Kg 05/05/20 21:50 05/11/20 21:55 2 mg/Kg 1,12-Benzoperylene 0.10 0.034 0.0049 12 05/05/20 21:50 05/11/20 21:55 2 0.25 F2 F1 0.034 0.0026 mg/Kg 05/05/20 21:50 05/11/20 21:55 2 Chrysene 0.031 J 0.034 0.0036 mg/Kg 05/05/20 21:50 05/11/20 21:55 2 Dibenz(a,h)anthracene 0.034 0.0032 mg/Kg 05/05/20 21:50 05/11/20 21:55 2 Fluoranthene 0.49 F2 F1 Fluorene 0.011 JF2 0.034 0.0028 mg/Kg 05/05/20 21:50 05/11/20 21:55 2 0.034 0.0042 2 Indeno[1,2,3-cd]pyrene 0.072 mg/Kg 05/05/20 21:50 05/11/20 21:55 0.013 J 0.034 0.0024 mg/Kg 05/05/20 21:50 05/11/20 21:55 2 1-Methylnaphthalene 0.0064 0.034 0.0024 mg/Kg 05/05/20 21:50 05/11/20 21:55 2 2-Methylnaphthalene 0.0026 05/05/20 21:50 05/11/20 21:55 Naphthalene 0.0066 0.034 mg/Kg 2 0.034 0.0028 mg/Kg 05/05/20 21:50 05/11/20 21:55 2 Phenanthrene 0.20 F2 F1 Pyrene 0.47 F2 F1 0.034 0.0025 mg/Kg 05/05/20 21:50 05/11/20 21:55 2

%Recovery Qualifier Limits Analyzed Dil Fac Surrogate Prepared 22-130 55 05/05/20 21:50 05/11/20 21:55 2 2-Fluorobiphenyl (Surr) Nitrobenzene-d5 (Surr) 22 20-145 05/05/20 21:50 05/11/20 21:55 2 58 p-Terphenyl-d14 (Surr) 33-147 05/05/20 21:50 05/11/20 21:55 2

Client Sample ID: SE-D-007

Date Collected: 04/30/20 11:04

Lab Sample ID: 570-27181-4

Matrix: Solid

Date Received: 05/01/20 13:56 Result Qualifier RL MDL Unit Analyte D Prepared Analyzed Dil Fac 0.0019 J 0.018 0.00089 吞 05/05/20 21:50 mg/Kg 05/07/20 17:57 Acenaphthene ND 0.018 Ľ. 05/05/20 21:50 Acenaphthylene 0.015 mg/Kg 05/07/20 17:57 1 Anthracene 0.010 J 0.018 0.0012 mg/Kg 05/05/20 21:50 05/07/20 17:57 0.047 1,2-Benzanthracene 0.018 0.0019 mg/Kg 05/05/20 21:50 05/07/20 17:57 0.053 0.018 0.0024 mg/Kg 05/05/20 21:50 05/07/20 17:57 Benzo[a]pyrene 3,4-Benzofluoranthene 0.018 05/05/20 21:50 0.068 0.0025 mg/Kg 05/07/20 17:57 Benzo[k]fluoranthene 0.073 0.018 0.0028 mg/Kg 05/05/20 21:50 05/07/20 17:57 0.037 0.018 0.0026 mg/Kg 05/05/20 21:50 1,12-Benzoperylene 05/07/20 17:57 0.10 0.018 0.0014 mg/Kg 05/05/20 21:50 05/07/20 17:57 Chrysene 0.0095 J 0.018 0.0019 mg/Kg 05/05/20 21:50 05/07/20 17:57 Dibenz(a,h)anthracene 0.018 0.0017 mg/Kg Fluoranthene 0.12 05/05/20 21:50 05/07/20 17:57 0.019 0.018 0.0015 mg/Kg 05/05/20 21:50 05/07/20 17:57 Fluorene 0.023 0.018 0.0022 mg/Kg 05/05/20 21:50 05/07/20 17:57 Indeno[1,2,3-cd]pyrene 1-Methylnaphthalene 0.0026 J 0.018 0.0013 mg/Kg 05/05/20 21:50 05/07/20 17:57 2-Methylnaphthalene 0.0054 0.018 0.0013 mg/Kg 05/05/20 21:50 05/07/20 17:57 Naphthalene 0.0056 0.018 0.0014 mg/Kg 05/05/20 21:50 05/07/20 17:57

Eurofins Calscience LLC

Job ID: 570-27181-1

Matrix: Solid

Client: WGR Southwest Inc

Pyrene

Project/Site: WGR - Tesoro LA Refinery

Method: 8270C SIM - PAHs (GC/MS SIM) (Continued)

0.14

Client Sample ID: SE-D-007 Date Collected: 04/30/20 11:04

Date Collected: 04/30/20 11:04								Matrix	: Solid
Date Received: 05/01/20 13:56 Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenanthrene	0.044		0.018	0.0015	mg/Kg	×	05/05/20 21:50	05/07/20 17:57	1

0.0013 mg/Kg

Surrogate	%Recovery Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	62	22 - 130	05/05/20 21:50	05/07/20 17:57	1
Nitrobenzene-d5 (Surr)	40	20 - 145	05/05/20 21:50	05/07/20 17:57	1
p-Temhenyl-d14 (Surr)	88	33-147	05/05/20 21:50	05/07/20 17:57	1

0.018

Job ID: 570-27181-1

Lab Sample ID: 570-27181-4

© 05/05/20 21:50 05/07/20 17:57

Job ID: 570-27181-1

Method: Organotins SIM - Organotins (GC/MS SIM)

Client Sample ID: SED-004 Date Collected: 04/30/20 16:10 Date Received: 05/01/20 13:56							Lub Gui	nple ID: 570-2 Matrix	: Solid
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tributyltin	ND		5.1	2.5	ug/Kg	*	05/04/20 09:52	05/05/20 20:17	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Tripentyltin	77		27 - 135				05/04/20 09:52	05/05/20 20:17	1
Client Sample ID: SED-005							Lab San	nple ID: 570-2	7181-2
Date Collected: 04/30/20 14:30									: Solid
Date Received: 05/01/20 13:56									
Analyte	Result	Qualifier	RL	7.00	Unit	D	Prepared	Analyzed	Dil Fac
Tributyltin	ND		5.6	2.8	ug/Kg	77	05/04/20 09:52	05/05/20 20:35	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fa
Tripentyltin	77		27 - 135				05/04/20 09:52	05/05/20 20:35	1
Client Sample ID: SED-006							Lab San	nple ID: 570-2	7181-3
Date Collected: 04/30/20 12:30									: Solid
Date Received: 05/01/20 13:56									
Analyte	Result	Qualifier	RL	MDL		D	Prepared	Analyzed	Dil Fac
Tributyltin	ND		5.1	2.5	ug/Kg	20	05/04/20 09:52	05/05/20 20:53	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Tripentyltin	62		27 - 135				05/04/20 09:52	05/05/20 20:53	1
Client Sample ID: SE-D-007							Lab San	ple ID: 570-2	7181-4
Date Collected: 04/30/20 11:04								Matrix	: Solid
Date Received: 05/01/20 13:56									
Analyte	Result	Qualifier	RL	MDL		D	Prepared	Analyzed	Dil Fac
Tributyltin	ND		5.2	2.6	ug/Kg	吞	05/04/20 09:52	05/05/20 21:10	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Tripentyltin	77		27 - 135				05/04/20 09:52	05/05/20 21:10	1

Client: WGR Southwest Inc

Client Sample ID: SED-004

Project/Site: WGR - Tesoro LA Refinery

Job ID: 570-27181-1

Lab Sample ID: 570-27181-1

Analyzed

Dil Fac

Prepared

05/06/20 15:46 05/07/20 02:10

Method: 8015B - Diesel Range Organics (DRO) (GC)

Date Collected: 04/30/20 16:10								Matrix	: Solid
Date Received: 05/01/20 13:56 Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C6 as C6	ND		9.1	6.5	mg/Kg	₩.	05/06/20 15:46	05/07/20 02:10	1
C7 as C7	ND		9.1	6.5	mg/Kg	C	05/06/20 15:46	05/07/20 02:10	1
C8 as C8	ND		9,1	6.5	mg/Kg	XI.	05/06/20 15:46	05/07/20 02:10	1
C9-C10	ND		0.1	6.5	mg/Kg	O	05/06/20 15:46	06/07/20 02:10	1
C11-C12	ND		9.1	6.5	mg/Kg	O	05/06/20 15:46	05/07/20 02:10	1
C13-C14	ND		9.1	6.5	mg/Kg	Ø	05/06/20 15:46	05/07/20 02:10	1
C15-C16	ND		9.1	6.5	mg/Kg	32	05/06/20 15:46	05/07/20 02:10	7
C17-C18	ND		9.1	6.5	mg/Kg	Ö	05/06/20 15:46	05/07/20 02:10	3
C19-C20	ND		9.1	6.5	mg/Kg	×	05/06/20 15:46	05/07/20 02:10	7
C21-C22	ND		9.1	6.5	mg/Kg	12	05/06/20 15:46	05/07/20 02:10	1
C23-C24	ND		9.1	6.5	mg/Kg	n	05/06/20 15:46	05/07/20 02:10	1
C25-C28	ND		9.1	6.5	mg/Kg	17	05/06/20 15:46	05/07/20 02:10	1
C29-C32	ND		9.1	6.5	mg/Kg	125	05/06/20 15:46	05/07/20 02:10	- 1
C33-C36	ND		9.1	6.5	mg/Kg	ø	05/06/20 15:46	05/07/20 02:10	- 1
C37-C40	ND		9.1	6.5	mg/Kg	p	05/06/20 15:46	05/07/20 02:10	1
C41-C44	ND		9.1	6.5	mg/Kg	42	05/06/20 15:46	05/07/20 02:10	1
C6-C44	23		9.1	6.5	mg/Kg	C	05/06/20 15:46	05/07/20 02:10	1

Client Sample ID: SED-005 Lab Sample ID: 570-27181-2
Date Collected: 04/30/20 14:30 Matrix: Solid

Limits

61 - 145

%Recovery Qualifier

107

Date Received: 05/01/20 13:56

Surrogate

n-Octacosane (Surr)

Date Received: 05/01/20 13:56 Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C6 as C6	ND		9.8	6.9	mg/Kg	Ç£	05/06/20 15:46	05/07/20 02:30	1
C7 as C7	ND		9.8	6.9	mg/Kg	Ø.	05/06/20 15:46	05/07/20 02:30	1
C8 as C8	ND		9.8	6.9	mg/Kg	ĸ	05/06/20 15:46	05/07/20 02:30	. 1
C9-C10	ND		9.8	6.9	mg/Kg	TX.	05/08/20 15.46	05/07/20 02:30	1
C11-C12	ND		9.8	6.9	mg/Kg	0	05/06/20 15:46	05/07/20 02:30	1
C13-C14	ND		9.8	6.9	mg/Kg	D	05/06/20 15:46	05/07/20 02:30	1
C15-C16	ND		9.8	6.9	mg/Kg	KS.	05/06/20 15:46	05/07/20 02:30	1
C17-C18	ND		9.8	6.9	mg/Kg	D.	05/06/20 15:46	05/07/20 02:30	- 1
C19-C20	ND		9.8	6.9	mg/Kg	D	05/06/20 15:46	05/07/20 02:30	1
C21-C22	ND		9.8	6.9	mg/Kg	*	05/06/20 15:46	05/07/20 02:30	1
C23-C24	ND		9.8	6.9	mg/Kg	ø	05/06/20 15:46	05/07/20 02:30	- 1
C25-C28	8.7	J	9.8	6.9	mg/Kg	立	05/06/20 15:46	05/07/20 02:30	- 1
C29-C32	10		9.8	6.9	mg/Kg	a	05/06/20 15:46	05/07/20 02:30	1
C33-C36	8.3	J	9.8	6.9	mg/Kg	ra-	05/06/20 15:46	05/07/20 02:30	1
C37-C40	ND		9.8	6.9	mg/Kg	13	05/06/20 15:46	05/07/20 02:30	- 1
C41-C44	ND		9.8	6.9	mg/Kg	n	05/06/20 15:46	05/07/20 02:30	. 1
C6-C44	43		9.8	6.9	mg/Kg	垃	05/06/20 15:46	05/07/20 02:30	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
n-Octacosane (Surr)	96		61 - 145				05/08/20 15 48	05/07/20 02:30	1

Client: WGR Southwest Inc.

n-Octacosane (Surr)

Project/Site: WGR - Tesoro LA Refinery

Job ID: 570-27181-1

Method: 8015B - Diesel Range Organics (DRO) (GC)

Client Sample ID: SED-006 Date Collected: 04/30/20 12:3 Date Received: 05/01/20 13:5	. 71						Lab San	nple ID: 570-2 Matrix	7181-3 :: Solid
Analyte	Total (1) (0)	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C6 as C6	ND		8.2	5.8	mg/Kg	單	05/06/20 15:46	05/07/20 02:50	1
C7 as C7	ND		8.2	5.8	mg/Kg	¢	05/06/20 15:46	05/07/20 02:50	1
C8 as C8	ND		8.2	5.8	mg/Kg	n	05/06/20 15:46	05/07/20 02:50	1
C9-C10	ND		8.2	5.8	mg/Kg	ø	05/06/20 15:46	05/07/20 02:50	1
C11-C12	ND		8.2	5.8	mg/Kg	101	05/06/20 15:46	05/07/20 02:50	1
C13-C14	ND		8.2	5.8	mg/Kg	12	05/06/20 15:46	05/07/20 02:50	1
C15-C16	ND		8.2	5.8	mg/Kg	O	05/06/20 15:46	05/07/20 02:50	1
C17-C18	ND		8.2	5.8	mg/Kg	B	05/06/20 15:46	05/07/20 02:50	- 1
C19-C20	ND		8.2	5.8	mg/Kg	13	05/06/20 15:46	05/07/20 02:50	1
C21-C22	6.2	J	8.2	5.8	mg/Kg	a	05/06/20 15:46	05/07/20 02:50	1
C23-C24	11		8.2	5.8	mg/Kg	Q	05/06/20 15:46	05/07/20 02:50	1
C25-C28	32		8.2	5.8	mg/Kg	Ø	05/06/20 15:46	05/07/20 02:50	1
C29-C32	35		8.2	5.8	mg/Kg	p	05/06/20 15:46	05/07/20 02:50	1
C33-C36	29		8.2	5.8	mg/Kg	0	05/06/20 15:46	05/07/20 02:50	1
C37-C40	17		8.2		mg/Kg	13	05/06/20 15:46	05/07/20 02:50	1
C41-C44	11		8.2	5.8	mg/Kg	42	05/06/20 15:46	05/07/20 02:50	1
C6-C44	160		8.2	5.8	mg/Kg	13	05/06/20 15:46	05/07/20 02:50	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
n-Octacosane (Surr)	100		61 - 145				05/06/20 15:46	05/07/20 02:50	1

Client Sample ID: SE-D-007

Date Collected: 04/30/20 11:04

Date Received: 05/01/20 13:55

Date Received: 05/01/20 13:56 Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C6 as C6	ND		8.4	6.0	mg/Kg	0	05/06/20 15:46	05/07/20 03:11	1
C7 as C7	ND		8.4	6,0	mg/Kg	故	05/06/20 15:46	05/07/20 03:11	1
C8 as C8	ND		8.4	6.0	mg/Kg	n	05/06/20 15:46	05/07/20 03:11	1
C9-C10	ND		8.4	6.0	mg/Kg	ø	05/06/20 15:46	05/07/20 03:11	1
C11-C12	ND		8.4	6.0	mg/Kg		05/06/20 15:46	05/07/20 03:11	1
C13-C14	ND		8.4	6.0	mg/Kg	D	05/06/20 15:46	05/07/20 03:11	1
C15-C16	ND		8.4	6.0	mg/Kg	故	05/06/20 15:46	05/07/20 03:11	1
C17-C18	ND		8.4	6.0	mg/Kg	A	05/06/20 15:46	05/07/20 03:11	1
C19-C20	ND		8.4	6.0	mg/Kg	p	05/06/20 15:46	05/07/20 03:11	- 1
C21-C22	8.4		8.4	6.0	mg/Kg	禁	05/06/20 15:46	05/07/20 03:11	- 1
C23-C24	8.2	J	8.4	6.0	mg/Kg	CI.	05/06/20 15:46	05/07/20 03:11	1
C25-C28	23		8.4	6.0	mg/Kg	垃	05/06/20 15:46	05/07/20 03:11	1
C29-C32	24		8.4	6.0	mg/Kg	10	05/06/20 15:46	05/07/20 03:11	1
C33-C36	20		8.4	6.0	mg/Kg	n	05/06/20 15:46	05/07/20 03:11	4
C37-C40	13		8.4	6.0	mg/Kg	13	05/06/20 15:46	05/07/20 03:11	1
C41-C44	9.2		8.4	6.0	mg/Kg	K	05/06/20 15:46	05/07/20 03:11	1
C6-C44	120		8.4	6.0	mg/Kg	c	05/06/20 15:46	05/07/20 03:11	1
Surrogate	Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac

Eurofins Calscience LLC

05/06/20 15:46 05/07/20 03:11

61-145

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Client: WGR Southwest Inc

Project/Site: WGR - Tesoro LA Refinery

Job ID: 570-27181-1

Method: 8081A - Organochlorine Pesticides (GC)
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Client Sample ID: SED-004 Date Collected: 04/30/20 16:10							Lab San	nple ID: 570-2 Matrix	7181-1 c: Solid
Date Received: 05/01/20 13:56 Analyte	Pasult	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4'-DDD	0.78		0.99	21111	ug/Kg			05/14/20 08:47	1
2,4'-DDE	ND	3 h	2.0		ug/Kg			05/14/20 08:47	1
2,4'-DDT	ND	_	0.99		ug/Kg	_		05/14/20 08:47	1
4,4'-DDD	8.4		0.99		ug/Kg			05/14/20 08:47	. 1
4,4'-DDE	11		5.0		ug/Kg			05/14/20 06:24	5
4,4'-DDT		4	0.99		ug/Kg			05/14/20 08:47	
	1.7		9.9		ug/Kg			05/14/20 08:47	
Chlordane	13	P	9,9	0.67	ug/kg		05/11/20 20.49	03/14/20 06.47	
Surrogate	%Recovery	Qualitier	Limits				Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	50		25 - 126				05/11/20 20:49	05/14/20 06:24	5
Tetrachloro-m-xylene	76	D	25-126				05/11/20 20:49	05/14/20 08:47	1
DCB Decachlorobiphenyl (Surr)	110		20 - 155				05/11/20 20:49	05/14/20 06:24	5
DCB Decechlorobiphonyl (Surr)	100	p	20 - 155				05/11/20 20:49	05/14/20 08:47	1
Client Sample ID: SED-005							Lab San	ple ID: 570-2	
Date Collected: 04/30/20 14:30								Matrix	: Solid
Date Received: 05/01/20 13:56 Analyte	Popult	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4'-DDD	ND	Qualifier	0.99	-	ug/Kg		05/11/20 20:49	The second second second	1
2,4'-DDE	1000	Jp	2.0		ug/Kg		05/11/20 20:49		1
2,4'-DDT	ND.	2 b	0.99		ug/Kg		05/11/20 20:49		1
	5.8		0.99		ug/Kg		05/11/20 20:49	THE COURT PROPERTY.	1
4,4'-DDD			5.0		ug/Kg		아무리없은 어떻게 하다 없다.	05/14/20 06:38	5
4,4'-DDE	9.5								1
4,4'-DDT	2.3	P	0.99 9.9		ug/Kg		05/11/20 20:49		
Chlordane	14		9.9	0.67	ug/Kg		05/11/20 20:49	05/14/20 09:01	-
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	DII Fac
Tetrachloro-m-xylene	38	-	25 - 126				05/11/20 20:49	05/14/20 06:38	5
Tetrachloro-m-xylene	81	p	25-126				05/11/20 20:49	05/14/20 09:01	1
DCB Decachlorobiphenyl (Surr)	94		20 - 155				05/11/20 20:49	05/14/20 06:38	5
DCB Decachlorobiphenyl (Surr)	82	p	20 - 155				05/11/20 20:49	05/14/20 09:01	1
Client Sample ID: SED-006							Lab San	ple ID: 570-2	
Date Collected: 04/30/20 12:30								Matrix	: Solid
Date Received: 05/01/20 13:56	Deside	Oueliffer	DI	MDL	Link		Desmand	Annhand	DII F
Analyte		Qualifier	RL			D	Prepared	Analyzed	Dil Fac
2,4'-DDD	1.2		0.98		ug/Kg		05/11/20 20:49		1
2,4'-DDE	4.1 ND	P	2.0		ug/Kg		05/11/20 20:49		
2,4'-DDT	ND	2	0.98		ug/Kg			05/14/20 09:15	1
4,4'-DDD	15	P	4.9		ug/Kg		05/11/20 20:49		5
4,4'-DDE	22		4.9		ug/Kg		05/11/20 20:49		5
4,4'-DDT	12	p	4.9		ug/Kg		05/11/20 20:49		5
Chlordane	65		9.8	0.67	ug/Kg		05/11/20 20:49	05/14/20 09:15	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	46		25 - 126				05/11/20 20:49	05/14/20 06:52	- 5
Tetrachloro-m-xylene	85	p	25 - 126				05/11/20 20:49		1
DCB Decachlorobiphenyl (Surr)	2392	1	20 - 155				05/11/20 20:49		5
DCB Decachlorobiphenyl (Surr)	3034		20 - 155				05/11/20 20:49		1

Eurofins Calscience LLC

Client: WGR Southwest Inc Project/Site: WGR - Tesoro LA Refinery

Job ID: 570-27181-1

Method: 8081A - Organochlorine Pesticides (GC)

Client Sample ID: SE-D-007 Date Collected: 04/30/20 11:04 Date Received: 05/01/20 13:56							Lab San	nple ID: 570-2 Matrix	7181-4 :: Solid
Analyte		Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4'-DDD	ND		0.99	0.15	ug/Kg		05/11/20 20:49	05/14/20 09:29	1
2,4'-DDE	ND		2.0	0.83	ug/Kg		05/11/20 20:49	05/14/20 09:29	1
2,4'-DDT	ND		0.99	0.13	ug/Kg		05/11/20 20:49	05/14/20 09:29	4
4,4'-DDD	4.8		0.99	0.24	ug/Kg		05/11/20 20:49	05/14/20 09:29	1
4,4'-DDE	6.9	р	0.99	0.17	ug/Kg		05/11/20 20:49	05/14/20 09:29	1
4,4'-DDT	1.3	P	0.99	0.30	ug/Kg		05/11/20 20:49	05/14/20 09:29	1
Chlordane	12		9.9	0.67	ug/Kg		05/11/20 20:49	05/14/20 09:29	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	101	p	25-126				05/11/20 20:49	05/14/20 09:29	1
DCB Decachlorobiphenyl (Surr)	87	0	20-155				05/11/20 20:49	05/14/20 09:29	1

Job ID: 570-27181-1

Date Received: 05/01/20 13:56	Lab Sample ID: 570-271 Matrix: S							Client Sample ID: SED-004 Date Collected: 04/30/20 16:10
Accident-1016	matra.							
Arcolor-1232 ND	D Prepared Analyzed D	D	Unit	MDL	RL	Qualifier	Result	Analyte
Arcidor-1232 ND	© 05/05/20 14:07 05/11/20 14:04	8	ug/Kg	3.5	17		ND	Aroclor-1016
Aroclor-1242 ND 17 2.9 ug/Kg 0 0505/20 14:07 0511/120 14:04 Aroclor-1254 49 17 2.0 ug/Kg 0 0505/20 14:07 0511/120 14:04 Aroclor-1260 ND 17 4.1 ug/Kg 0 0505/20 14:07 0511/120 14:04 Aroclor-1260 ND 17 4.1 ug/Kg 0 0505/20 14:07 0511/120 14:04 Aroclor-1260 ND 17 4.1 ug/Kg 0 0505/20 14:07 0511/120 14:04 Aroclor-1260 ND 17 4.1 ug/Kg 0 0505/20 14:07 0511/120 14:04 Aroclor-1260 ND 17 4.1 ug/Kg 0 0505/20 14:07 0511/120 14:04 Aroclor-1260 ND 17 4.1 ug/Kg 0 0505/20 14:07 0511/120 14:04 Client Sample ID: SED-005 Date Collected: 04/30/20 14:30 Date Received: 05/01/20 13:56 Analyte ND 17 19 19 19 19 19 19 19 19 19 19 19 19 19	© 05/05/20 14:07 05/11/20 14:04	ø	ug/Kg	11	17		ND	Aroclor-1221
Arcolor-1248 ND 17 2.1 ug/Kg □ 0505/20 14:07 05/11/20 14:04 Arcolor-1260 ND 17 2.0 ug/Kg □ 0505/20 14:07 05/11/20 14:04 Arcolor-1260 ND 17 4.1 ug/Kg □ 0505/20 14:07 05/11/20 14:04 Surrogate	© 05/05/20 14:07 05/11/20 14:04	22	ug/Kg	4.1	17		ND	Aroclor-1232
Arcolor-1248 ND 17 2.1 ug/Kg □ 0505/20 14:07 05/11/20 14:04 Arcolor-1260 ND 17 2.0 ug/Kg □ 0505/20 14:07 05/11/20 14:04 Arcolor-1260 ND 17 4.1 ug/Kg □ 0505/20 14:07 05/11/20 14:04 Surrogate	☆ 05/05/20 14:07 05/11/20 14:04	1,1	ug/Kg	2.9	17		ND	Aroclor-1242
Arcolor-1254	© 05/05/20 14:07 05/11/20 14:04	125	-					
Surrogate Surr		n						
DCB Decachiorobiphenyl (Surr) 78 20.155		Ď.						
DCB Descehlorobiphenyl (Surr) 78 20.155 25.126 25.005/20 14.07 05/11/20 14.04	Prepared Analyzed D				Limits	Qualitier	%Recovery	Surrogate
Tetrachloro-m-xylene (Surr) 67 25-126	05/05/20 14:07 05/11/20 14:04				20 - 155		and the second second	
Date Received: 05/01/20 13:55	05/05/20 14:07 05/11/20 14:04				25 - 126		67	
Date Received: 05/01/20 13:55	Lab Sample ID: 570-271							Client Sample ID: SED-005
Analyte	Matrix: S							Date Collected: 04/30/20 14:30
Arcolor-1016 ND F2F1	D Prepared Analyzed D	D	Unit	MDL	RL	Qualifier	Result	Not the state of t
Arcclor-1221 ND 19 4.5 ug/Kg 0 05/05/20 14.07 05/11/20 12:34 Arcclor-1232 ND 19 4.5 ug/Kg 0 05/05/20 14.07 05/11/20 12:34 Arcclor-1242 ND 19 3.1 ug/Kg 0 05/05/20 14:07 05/11/20 12:34 Arcclor-1248 ND 19 2.3 ug/Kg 0 05/05/20 14:07 05/11/20 12:34 Arcclor-1248 ND 19 2.3 ug/Kg 0 05/05/20 14:07 05/11/20 12:34 Arcclor-1254 76 19 2.2 ug/Kg 0 05/05/20 14:07 05/11/20 12:34 Arcclor-1260 120 F1 19 4.5 ug/Kg 0 05/05/20 14:07 05/11/20 12:34 Arcclor-1260 120 F1 19 4.5 ug/Kg 0 05/05/20 14:07 05/11/20 12:34 Arcclor-1260 120 F1 19 4.5 ug/Kg 0 05/05/20 14:07 05/11/20 12:34 Surrogate 7/Recovery Qualitier Limits 7/Letrachloro-m-xylene (Surr) 92 25 - 126 7/Letrachloro-m-xylene (Surr) 92 92 92 92 92 92 92 92 92 92 92 92 92		- 6	ug/Kg	3.9	19	F2 F1	ND	
Arcolor-1232 ND 19 4.5 ug/Kg \$ 0.505/20 14:07 05/11/20 12:34 Arcolor-1242 ND 19 3.1 ug/Kg \$ 0.505/20 14:07 05/11/20 12:34 Arcolor-1248 ND 19 2.2 ug/Kg \$ 0.505/20 14:07 05/11/20 12:34 Arcolor-1254 76 19 2.2 ug/Kg \$ 0.505/20 14:07 05/11/20 12:34 Arcolor-1260 120 F1 19 4.5 ug/Kg \$ 0.505/20 14:07 05/11/20 12:34 Arcolor-1260 120 F1 19 4.5 ug/Kg \$ 0.505/20 14:07 05/11/20 12:34 Arcolor-1260 120 F1 19 4.5 ug/Kg \$ 0.505/20 14:07 05/11/20 12:34 Surrogate %Recovery Qualifier Limits Limits Prepared Analyzed DCB Decechlorobiphenyl (Surr) 136 20.155 Tetrachloro-m-xylene (Surr) 92 25.126	© 05/05/20 14:07 05/11/20 12:34	-			19		ND	Fig. 1. To Fig.
Arcclor-1242 ND 19 3.1 ug/Kg	© 05/05/20 14:07 05/11/20 12:34	100						
Arcolor-1248 ND 19 2.3 ly/kg □ 05/05/20 14:07 05/11/20 12:34 Arcolor-1254 76 19 2.2 ly/kg □ 05/05/20 14:07 05/11/20 12:34 Arcolor-1260 120 F1 19 4.5 ly/kg □ 05/05/20 14:07 05/11/20 12:34 Surrogate %Recovery Qualifier Limits Prepared Analyzed Client Sample ID: SED-006 325-126 525-126 505/05/20 14:07 05/11/20 12:34 Client Sample ID: SED-006 325-126 525-126	© 05/05/20 14:07 05/11/20 12:34	L.			19		ND	
Aroclor-1254 76 19 2.2 ug/Kg								Charles Hall
Aroclor-1260 120 F1 19 4.5 ug/kg								ALTERNATION OF THE PARTY OF THE
DCB Decachlorobiphenyl (Surr) 136 20 - 155 05/05/20 14:07 05/11/20 12:34			-			F1		The state of the s
DCB Decachiorobiphenyl (Surr) 136 20 - 155 05/05/20 14:07 05/11/20 12:34	Prepared Analyzed D				Limits	Qualitier	%Recovery	Surrogate
Client Sample ID: SED-006	05/05/20 14:07 05/11/20 12:34				20 - 155		136	
Date Collected: 04/30/20 12:30 Date Received: 05/01/20 13:56 Result Qualifier RL MDL Unit D Prepared Analyzed	05/05/20 14:07 05/11/20 12:34				25 - 126		92	
Date Received: 05/01/20 13:56	Lab Sample ID: 570-271							Client Sample ID: SED-006
Analyte Result Aroclor-1016 ND 17 3.4 ug/Kg W 05/05/20 21:57 O5/11/20 13:28 Aroclor-1021 ND 17 3.4 ug/Kg \$ 05/05/20 21:57 05/11/20 13:28 Aroclor-1221 ND 17 11 ug/Kg \$ 05/05/20 21:57 05/11/20 13:28 Aroclor-1232 ND 17 2.8 ug/Kg \$ 05/05/20 21:57 05/11/20 13:28 Aroclor-1242 ND 17 2.8 ug/Kg \$ 05/05/20 21:57 05/11/20 13:28 Aroclor-1248 ND 17 2.0 ug/Kg \$ 05/05/20 21:57 05/11/20 13:28 Aroclor-1254 81 17 1.9 ug/Kg \$ 05/05/20 21:57 05/11/20 13:28 Aroclor-1260 71 17 3.9 ug/Kg \$ 05/05/20 21:57 05/11/20 13:28 Surrogate %Recovery Qualifier Limits Prepared Analyzed DCB Decachlorobiphenyl (Surr) 90 20-155 5 05/05/20 21:57 05/11/20 13:28 Client Sample ID: SE-D-007 25-126 5 25-05/05/20 21:57 05/11/20 13:28	Matrix: S							
Aroclor-1016 ND 17 3.4 ug/kg © 05/05/20 21:57 05/11/20 13:28 Aroclor-1221 ND 17 11 ug/kg © 05/05/20 21:57 05/11/20 13:28 Aroclor-1232 ND 17 3.9 ug/kg © 05/05/20 21:57 05/11/20 13:28 Aroclor-1242 ND 17 2.8 ug/kg © 05/05/20 21:57 05/11/20 13:28 Aroclor-1248 ND 17 2.0 ug/kg © 05/05/20 21:57 05/11/20 13:28 Aroclor-1254 81 17 1.9 ug/kg © 05/05/20 21:57 05/11/20 13:28 Aroclor-1260 71 17 3.9 ug/kg © 05/05/20 21:57 05/11/20 13:28 Surrogate %Recovery Qualifier Limits Prepared Analyzed DCB Decachlorobiphenyl (Surr) 90 20-155 05/05/20 21:57 05/11/20 13:28 Client Sample ID: SE-D-007 2 25-126 05/05/20 21:57 05/11/20 13:28 Client Sample ID: Se-D-007 2 2 MD MD	D Prepared Analyzed D		Unit	MOL		Our littles	Doguđi	
Aroclor-1221 ND 17 11 ug/Kg \$\frac{1}{2}\$ 05/05/20 21:57 05/11/20 13:28 Aroclor-1232 ND 17 3.9 ug/Kg \$\frac{1}{2}\$ 05/05/20 21:57 05/11/20 13:28 Aroclor-1242 ND 17 2.8 ug/Kg \$\frac{1}{2}\$ 05/05/20 21:57 05/11/20 13:28 Aroclor-1248 ND 17 2.0 ug/Kg \$\frac{1}{2}\$ 05/05/20 21:57 05/11/20 13:28 Aroclor-1254 81 17 1.9 ug/Kg \$\frac{1}{2}\$ 05/05/20 21:57 05/11/20 13:28 Aroclor-1260 71 17 3.9 ug/Kg \$\frac{1}{2}\$ 05/05/20 21:57 05/11/20 13:28 Surrogate \$\frac{1}{2}\$ Recovery Qualifier Limits \$\frac{1}{2}\$ Ug/Kg \$\frac{1}{2}\$ 05/05/20 21:57 05/11/20 13:28 Client Sample ID: SE-D-007 Date Collected: 04/30/20 11:04 Date Received: 05/01/20 13:56 Analyte \$\frac{1}{2}\$ Result Qualifier RL MDL Unit D Prepared Analyzed Aroclor-1221 ND 17 3.6 ug/Kg \$\frac{1}{2}\$ 05/05/20 21:57 05/11/20 13:46 Aroclor-1221 ND 17 11 ug/Kg \$\frac{1}{2}\$ 05/05/20 21:57 05/11/20 13:46		-	2000	1000		Quanner	7 7 7 7 7 7	
Aroclor-1232 ND 17 3.9 ug/Kg © 05/05/20 21:57 05/11/20 13:28 Aroclor-1242 ND 17 2.8 ug/Kg © 05/05/20 21:57 05/11/20 13:28 Aroclor-1248 ND 17 2.0 ug/Kg © 05/05/20 21:57 05/11/20 13:28 Aroclor-1254 81 17 1.9 ug/Kg © 05/05/20 21:57 05/11/20 13:28 Aroclor-1260 71 17 3.9 ug/Kg © 05/05/20 21:57 05/11/20 13:28 Surrogate %Recovery Qualifier Limits Prepared Analyzed DCB Decachlorobiphenyl (Surr) 90 20-155 Tetrachloro-m-xylene (Surr) 72 25-126 Client Sample ID: SE-D-007 Date Collected: 04/30/20 11:04 Date Received: 05/01/20 13:56 Analyte Result Qualifier RL MDL Unit D Prepared Analyzed Aroclor-1216 ND 17 3.6 ug/Kg © 05/05/20 21:57 05/11/20 13:46 Aroclor-1221 ND 17 11 ug/Kg © 05/05/20 21:57 05/11/20 13:46	00.00.20 21.01 00111120 10.20							STATISTICS.
Aroclor-1242 ND 17 2.8 ug/Kg \(\text{ 05/05/20 21:57 } 05/11/20 13:28 \) Aroclor-1248 ND 17 2.0 ug/Kg \(\text{ 05/05/20 21:57 } 05/11/20 13:28 \) Aroclor-1254 81 17 1.9 ug/Kg \(\text{ 05/05/20 21:57 } 05/11/20 13:28 \) Aroclor-1260 71 17 3.9 ug/Kg \(\text{ 05/05/20 21:57 } 05/11/20 13:28 \) Surrogate \(\t	00/00/20 21:01 00/11/20 10:20						2.75	
Aroclor-1248 ND 17 2.0 ug/Kg □ 05/05/20 21:57 05/11/20 13:28 Aroclor-1254 81 17 1.9 ug/Kg □ 05/05/20 21:57 05/11/20 13:28 Aroclor-1260 71 17 3.9 ug/Kg □ 05/05/20 21:57 05/11/20 13:28 Surrogate %Recovery Qualifier Limits Prepared Analyzed DCB Decachlorobiphenyl (Surr) 90 20 - 155 05/05/20 21:57 05/11/20 13:28 Tetrachloro-m-xylene (Surr) 72 25 - 126 05/05/20 21:57 05/11/20 13:28 Client Sample ID: SE-D-007 Date Collected: 04/30/20 11:04 Lab Sample ID: 570-5 Matri: Date Received: 05/01/20 13:56 Result Qualifier RL MDL Unit D Prepared Analyzed Aroclor-1016 ND 17 3.6 ug/Kg □ 05/05/20 21:57 05/11/20 13:46 Aroclor-1221 ND 17 11 ug/Kg □ 05/05/20 21:57 05/11/20 13:46	00100100 21101 00111120 10120						3.5-	NO DESCRIPTION OF THE PROPERTY
Aroclor-1254								
Surrogate %Recovery Qualifier Limits Prepared Analyzed DCB Decachlorobiphenyl (Surr) 90 20 - 155 05/05/20 21:57 05/11/20 13:28								
DCB Decachlorobiphenyl (Surr) 90 20-155 05/05/20 21:57 05/05/20 21:57 05/11/20 13:28 Client Sample ID: SE-D-007 Date Collected: 04/30/20 11:04 Lab Sample ID: 570-7 Date Received: 05/01/20 13:56 Analyte Result Qualifier RL MDL Unit D Prepared Analyzed Aroclor-1016 ND 17 3.6 ug/Kg © 05/05/20 21:57 05/11/20 13:46 Aroclor-1221 ND 17 11 ug/Kg © 05/05/20 21:57 05/11/20 13:46								
DCB Decachlorobiphenyl (Surr) 90 20-155 05/05/20 21:57 05/05/20 21:57 05/11/20 13:28 Tetrachloro-m-xylene (Surr) 72 25-126 05/05/20 21:57 05/11/20 13:28 Client Sample ID: SE-D-007 Date Collected: 04/30/20 11:04 Matrix Date Received: 05/01/20 13:56 Analyte Result Qualifier RL MDL Unit D Prepared Analyzed Aroclor-1016 ND 17 3.6 ug/Kg © 05/05/20 21:57 05/11/20 13:46 Aroclor-1221 ND 17 11 ug/Kg © 05/05/20 21:57 05/11/20 13:46	Prepared Analyzed D				Limite	Qualifier	%Recovery	Surrogate
Tetrachloro-m-xylene (Surr) 72 25-126 05/05/20 21:57 05/11/20 13:28	200 at 100 at 10						401 - 21 - 440 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	
Date Collected: 04/30/20 11:04 Matrix Date Received: 05/01/20 13:56 Result Qualifier RL MDL Unit D Prepared Analyzed Aroclor-1016 ND 17 3.6 ug/Kg © 05/05/20 21:57 05/11/20 13:46 Aroclor-1221 ND 17 11 ug/Kg © 05/05/20 21:57 05/11/20 13:46	05/05/20 21:57 05/11/20 13:28							
Date Collected: 04/30/20 11:04 Matrix Date Received: 05/01/20 13:56 Result Qualifier RL MDL Unit D Prepared Prep	Lab Sample ID: 570-271							Client Sample ID: SE-D-007
Analyte Result Qualifier RL MDL Unit D Prepared Analyzed Aroclor-1016 ND 17 3.6 ug/Kg IX 05/05/20 21:57 05/11/20 13:46 Aroclor-1221 ND 17 11 ug/Kg IX 05/05/20 21:57 05/11/20 13:46	Matrix: S							Date Collected: 04/30/20 11:04
Aroclor-1016 ND 17 3.6 ug/Kg © 05/05/20 21:57 05/11/20 13:46 Aroclor-1221 ND 17 11 ug/Kg © 05/05/20 21:57 05/11/20 13:46	D Prepared Analyzed D	D	Unit	MDL	RL	Qualifier	Result	
Aroclor-1221 ND 17 11 ug/Kg © 05/05/20 21:57 05/11/20 13:46		_				200		
Aroclor-1232 ND 17 4.1 ug/Kg 🌣 05/05/20 21:57 05/11/20 13:46								

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5/22/2020

Client: WGR Southwest Inc

Project/Site: WGR - Tesoro LA Refinery

Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography (Continued)

Client Sample ID: SE-D-007

Lab Sample ID: 570-27181-4

Date Collected: 04/30/20 11:04

Matrix: Solid

Date Received: 05/01/20 13:56

Tetrachloro-m-xylene (Surr)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arodor-1242	ND		17	2.9	ug/Kg	Ö	05/05/20 21:57	05/11/20 13:46	1
Aroclor-1248	ND		17	2.1	ug/Kg	*	05/05/20 21:57	05/11/20 13:46	1
Aroclor-1254	68		17	2.0	ug/Kg	Þ	05/05/20 21:57	05/11/20 13:46	1
Aroclor-1260	100		17	4.1	ug/Kg	Þ	05/05/20 21:57	05/11/20 13:46	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl (Surr)	128		20 - 155				05/05/20 21:57	05/11/20 13:46	1

25-126

88

Job ID: 570-27181-1

05/05/20 21:57 05/11/20 13:46

Client: WGR Southwest Inc

Client Sample ID: SED-004

Date Collected: 04/30/20 16:10

Project/Site: WGR - Tesoro LA Refinery

Method: 6020 - Metals (ICP/MS)

Lab	Sample	ID:	570-27181-1	
-				

Matrix: Solid

Job ID: 570-27181-1

Date Received: 05/01/20 13:56 Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.79	0.806	mg/Kg	Ø	05/13/20 16:54	05/14/20 09:17	20
Chromium	26.8		3.58	0.537	mg/Kg	ø	05/13/20 16:54	05/14/20 09:17	20
Copper	77.8		1.79	0.482	mg/Kg	12	05/13/20 16:54	05/14/20 09:17	20
Lead	201		1.79	0.385	mg/Kg	171	05/13/20 16:54	05/14/20 09:17	20
Nickel	7.64		1.79	0.484	mg/Kg	10	05/13/20 16:54	05/14/20 09:17	20
Zinc	304		8.96	8,27	mg/Kg	C	05/13/20 16:54	05/14/20 09:17	20

Client Sample ID: SED-005

Date Collected: 04/30/20 14:30

Lab Sample ID: 570-27181-2

Matrix: Solid

Date Received: 05/01/20 13:56

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.89	0.851	mg/Kg	n	05/13/20 16:54	05/14/20 09:20	20
Chromium	26.0		3.78	0.568	mg/Kg	17	05/13/20 16:54	05/14/20 09:20	20
Copper	90.9		1.89	0.509	mg/Kg	43	05/13/20 16:54	05/14/20 09:20	20
Lead	54.7		1.89	0.407	mg/Kg	C	05/13/20 16:54	05/14/20 09:20	20
Nickel	8.08		1.89	0.511	mg/Kg	*	05/13/20 16:54	05/14/20 09:20	20
Zinc	329		9.46	8.73	mg/Kg		05/13/20 16:54	05/14/20 09:20	20

Client Sample ID: SED-006

Date Collected: 04/30/20 12:30

Lab Sample ID: 570-27181-3

Matrix: Solid

Date Received: 05/01/20 13:56

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	1.26	J	1.68	0.758	mg/Kg	*	05/13/20 16:54	05/14/20 09:22	20
Chromium	24.4		3.37	0.505	mg/Kg	***	05/13/20 16:54	05/14/20 09:22	20
Copper	68.8		1.68	0.453	mg/Kg	Ø.	05/13/20 16:54	05/14/20 09:22	20
Lead	48.7		1.68	0.362	mg/Kg	5,2	05/13/20 16:54	05/14/20 09:22	20
Nickel	10.1		1.68	0.455	mg/Kg	12	05/13/20 16:54	05/14/20 09:22	20
Zinc	479		8.42	7.77	mg/Kg	¢	05/13/20 16:54	05/14/20 09:22	20

Client Sample ID: SE-D-007

Date Collected: 04/30/20 11:04

Lab Sample ID: 570-27181-4

Matrix: Solid

Date Received: 05/01/20 13:56

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	0.862	1	1.78	0.803	mg/Kg	13	05/13/20 16:54	05/14/20 09:25	20
Chromium	12.1		3.57	0.535	mg/Kg	302	05/13/20 16:54	05/14/20 09:25	20
Copper	46.6		1.78	0.480	mg/Kg	故	05/13/20 16:54	05/14/20 09:25	20
Lead	35.6		1.78	0.384	mg/Kg	Ø	05/13/20 16:54	05/14/20 09:25	20
Nickel	9.07		1.78	0.482	mg/Kg	Ø	05/13/20 16:54	05/14/20 09:25	20
Zinc	292		8.92	8.24	mg/Kg	to.	05/13/20 16:54	05/14/20 09:25	20

.

Client: WGR Southwest Inc

Project/Site: WGR - Tesoro LA Refinery

Job ID: 570-27181-1

Client Sample ID: SED-004 Date Collected: 04/30/20 16:10							Lab San	nple ID: 570-2 Matrix	7181-1 :: Solid
Date Received: 05/01/20 13:56 Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.137	7	0.149	0.0105	mg/Kg	*	05/13/20 08:10	05/13/20 13:42	
Client Sample ID: SED-005 Date Collected: 04/30/20 14:30 Date Received: 05/01/20 13:56							Lab San	nple ID: 570-2 Matrix	: Solid
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.100	J	0.166	0.0117	mg/Kg	- 5	05/13/20 08:10	05/13/20 13:44	1
Client Sample ID: SED-006							Lab San	ple ID: 570-2	7181-3
Date Collected: 04/30/20 12:30 Date Received: 05/01/20 13:56									: Solid
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.0468	J	0.147	0.0104	mg/Kg	Ø	05/13/20 08:10	05/13/20 13:45	1
Client Sample ID: SE-D-007							Lab San	ple ID: 570-2	7181-4
Date Collected: 04/30/20 11:04 Date Received: 05/01/20 13:56									: Solid
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.0516	J	0.145	0.0102	mg/Kg	- 4	05/13/20 08:10	05/13/20 13:47	1

Client: WGR Southwest Inc

Project/Site: WGR - Tesoro LA Refinery

Job ID: 570-27181-1

General Chemistry											
Client Sample ID: SED-004 Date Collected: 04/30/20 16:10 Date Received: 05/01/20 13:56							Lab Sample ID: 570-27181-1 Matrix: Solid				
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac		
Carbon, Total Organic	31800		878	305	mg/Kg	Ď.		05/21/20 18:40	1		
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac		
Percent Moisture	43.0		0.1	0.1	%			05/02/20 11:03	1		
Client Sample ID: SED-005 Date Collected: 04/30/20 14:30 Date Received: 05/01/20 13:56					ot. F.			34 6 8 4 3	c: Solid		
Analyte	14077700	Qualifier	RL	11/2/2	Unit	_ D	Prepared	Analyzed	Dil Fac		
Carbon, Total Organic	38900		965	335	mg/Kg	Ø		05/21/20 18:40	1		
Analyte	Result	Qualifier	RL	RL		D	Prepared	Analyzed	Dil Fac		
Percent Moisture	48.2		0,1	0.1	%			05/02/20 11:03	,		
Client Sample ID: SED-006							Lab Sa	mple ID: 570-2	7181-3		
Date Collected: 04/30/20 12:30 Date Received: 05/01/20 13:56								Matrix	c: Solid		
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac		
Carbon, Total Organic	30700		854	297	mg/Kg	- A		05/21/20 18:40	1		
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac		
Percent Moisture	41.5		0.1	0.1	%			05/02/20 11:03	1		
Client Sample ID: SE-D-007 Date Collected: 04/30/20 11:04 Date Received: 05/01/20 13:56							Lab Sa	mple ID: 570-2 Matrix	27181-4 c: Solid		
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac		
Carbon, Total Organic	22600		883	307	mg/Kg	Ø.		05/21/20 18:40	1		
Analyte	Result	Qualifier	RL	RL	- 5107	D	Prepared	Analyzed	Dil Fac		
Percent Moisture	43.4		0.1	0.1	%			05/02/20 11:03	1		

Job ID: 570-27181-1

Method: D4464 - Particle Size Distribution of Catalytic Material (Laser light scattering)

Client Sample ID: SED-004 Date Collected: 04/30/20 16:10 Date Received: 05/01/20 13:56							Lab Sa	mple ID: 570-2 Matrix	7181-1 :: Solid
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Clay(less than 0.00391 mm)	12.19		0.01	0.01	%			05/11/20 15:29	1
Coarse Sand (0.5mm to 1mm)	ND		0.01	0.01	%			05/11/20 15:29	1
Fine Sand (0.125 to 0.25mm)	10.10		0.01	0.01	%			05/11/20 15:29	1
Gravel (greater than 2 mm)	ND		0.01	0.01	%			05/11/20 15:29	1
Medium Sand (0.25 to 0.5 mm)	ND		0.01	0.01	%			05/11/20 15:29	1
Silt (0.00391 to 0.0625mm)	63.76		0.01	0.01	%			05/11/20 15:29	1
Total Silt and Clay (0 to 0.0626mm)	75.95		0.01	0.01	%			05/11/20 15:29	1
Very Coarse Sand (1 to 2mm)	ND		0.01	0.01	%			05/11/20 15:29	1
Very Fine Sand (0.0625 to 0.125 mm)	13.94		0.01	0.01	%			05/11/20 15:29	1

Client Sample ID: SED-005

Date Collected: 04/30/20 14:30

Date Received: 05/01/20 13:56

Lab Sample ID: 570-27181-2

Matrix: Solid

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Clay(less than 0.00391 mm)	16.11		0.01	0.01	%			05/11/20 15:37	1
Coarse Sand (0.5mm to 1mm)	ND		0.01	0.01	%			05/11/20 15:37	1.
Fine Sand (0.125 to 0.25mm)	4.88		0.01	0.01	%			05/11/20 15:37	1
Gravel (greater than 2 mm)	ND		0.01	0.01	%			05/11/20 15:37	1
Medium Sand (0.25 to 0.5 mm)	ND		0.01	0.01	%			05/11/20 15:37	1
Silt (0.00391 to 0.0625mm)	66.90		0.01	0.01	%			05/11/20 15:37	1
Total Silt and Clay (0 to 0.0626mm)	83.01		0.01	0.01	%			05/11/20 15:37	1
Very Coarse Sand (1 to 2mm)	ND		0.01	0.01	%			05/11/20 15:37	1
Very Fine Sand (0.0625 to 0.125 mm)	12.11		0.01	0.01	%			05/11/20 15:37	1

Client Sample ID: SED-006 Lab Sample ID: 570-27181-3
Date Collected: 04/30/20 12:30 Matrix: Solid

Date Received: 05/01/20 13:56 Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Clay(less than 0.00391 mm)	4.48		0.01	0.01	%			05/11/20 15:46	1
Coarse Sand (0.5mm to 1mm)	17.06		0.01	0.01	%			05/11/20 15:46	- 1
Fine Sand (0.125 to 0.25mm)	17.59		0.01	0.01	%			05/11/20 15:46	1
Gravel (greater than 2 mm)	ND		0.01	0.01	%			05/11/20 15:46	1
Medium Sand (0.25 to 0.5 mm)	19.04		0.01	0.01	%			05/11/20 15:46	1
Silt (0.00391 to 0.0625mm)	32.62		0.01	0.01	%			05/11/20 15:46	1
Total Silt and Clay (0 to 0.0626mm)	37.10		0.01	0.01	%			05/11/20 15:46	1
Very Coarse Sand (1 to 2mm)	ND		0.01	0.01	%			05/11/20 15:46	1
Very Fine Sand (0.0625 to 0.125	9.22		0.01	0.01	%			05/11/20 15:46	1

Client Sample ID: SE-D-007

Lab Sample ID: 570-27181-4

Date Collected: 04/30/20 11:04

Matrix: Solid

Date Received: 05/01/20 13:56 Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Clay(less than 0.00391 mm)	12.62		0.01	0.01	%			05/11/20 15:54	1
Coarse Sand (0.5mm to 1mm)	ND		0.01	0.01	%			05/11/20 15:54	1
Fine Sand (0.125 to 0.25mm)	11.36		0.01	0.01	%			05/11/20 15:54	1
Gravel (greater than 2 mm)	ND		0.01	0.01	%			05/11/20 15:54	1

Client: WGR Southwest Inc

Project/Site: WGR - Tesoro LA Refinery

Job ID: 570-27181-1

Method: D4464 - Particle Size Distribution of Catalytic Material (Laser light scattering) (Continued)

Client Sample ID: SE-D-007	
Date Collected: 04/30/20 11:04	

Lab Sample ID: 570-27181-4

Matrix: Solid

Date Received: 05/01/20 13:56 Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac	
Medium Sand (0.25 to 0.5 mm)	0.01		0.01	0.01	%			05/11/20 15:54	1	ı
Silt (0.00391 to 0.0625mm)	63.45		0.01	0.01	%			05/11/20 15:54	1	
Total Silt and Clay (0 to 0.0626mm)	76.07		0.01	0.01	%			05/11/20 15:54	1	
Very Coarse Sand (1 to 2mm)	ND		0.01	0.01	%			05/11/20 15:54	1	
Very Fine Sand (0.0625 to 0.125	12.56		0.01	0.01	%			05/11/20 15:54	1	

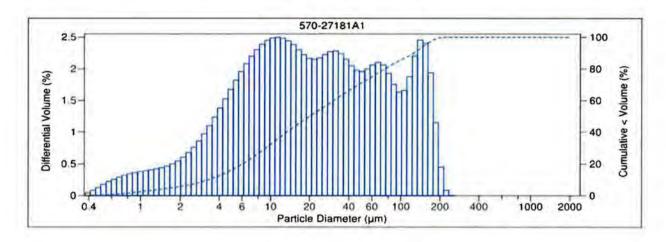
(ASTM D422 / D4464M)

WGR Southwest, Inc.	Date Sampled:	04/30/20
	Date Received:	05/01/20
	Work Order No:	570-27181
	Date Analyzed:	05/11/20
	Method:	ASTM D4464M

Project:

Sample ID	Depth ft	Description	Mean Grain Size mm
SED-004		Silt	0.042

		Particle	e Size Distribution	n, wt by perce	ent			
455	Very	- San x	22.0	4	Very		1	Total
Total Gravel	Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Fine Sand	Silt	Clay	Silt &
								75.95
0.00	0.00	0.00	0.00	10.10	13.94	63.76	12.19	_



V 3,0

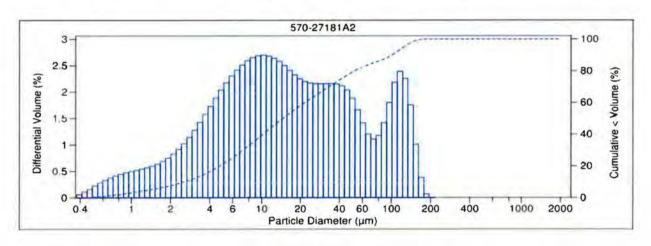
(ASTM D422 / D4464M)

WGR Southwest, Inc.	Date Sampled:	04/30/20
	Date Received:	05/01/20
	Work Order No:	570-27181
	Date Analyzed:	05/11/20
	Method:	ASTM D4464M

Project:

	Sample ID	Depth ft	Description	.Mean Grain Size mm
_	SED-005		Silt	0.032

		Particle	e Size Distribution	n, wt by perc	ent			
	Very				Very			Total
Total	Coarse	Coarse	Medium	Fine	Fine			Silt &
Gravel	Sand	Sand	Sand	Sand	Sand	Silt	Clay	Clay
0.00	0.00	0.00	0.00	4.88	12.11	66.90	16.11	83.01

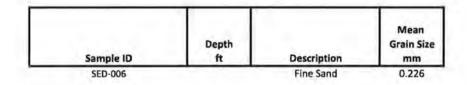


V 3.0

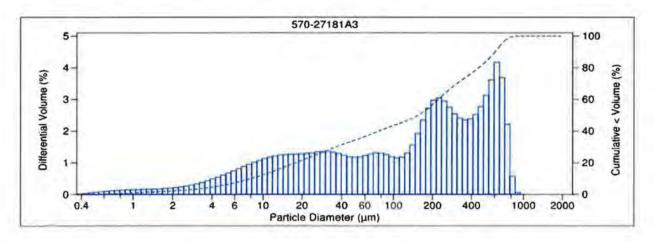
(ASTM D422 / D4464M)

WGR Southwest, Inc.	Date Sampled:	04/30/20
	Date Received:	05/01/20
	Work Order No:	570-27181
	Date Analyzed:	05/11/20
	Method:	ASTM D4464M

Project:



		Particle	e Size Distributio	n, wt by perce	ent			
4/87	Very		No. de.	FI.	Very			Total
Total Gravel	Coarse Sand	Coarse	Medium Sand	Fine Sand	Fine	Silt	Clav	Silt &
0.00	0.00	17.06	19.04	17.59	9.22	32.62	4.48	37.10



V 3.0

(ASTM D422 / D4464M)

 WGR Southwest, Inc.
 Date Sampled:
 04/30/20

 Date Received:
 05/01/20

 Work Order No:
 5/0-2/181

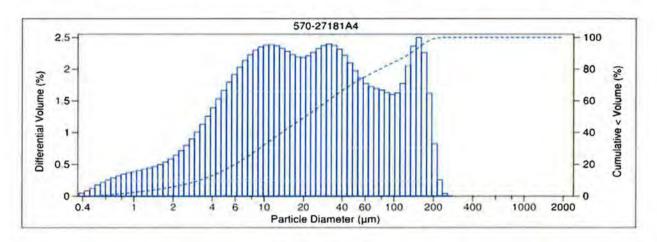
 Date Analyzed:
 05/11/20

 Method:
 ASTM D4464M

Project:

Sample	ID	Depth ft	Description	Grain Size
SED-007		1	Silt	0.043

Particle Size Distribution, wt by percent								
	Very	- 7 - 7			Very			Total
Total	Coarse	Coarse	Medium	Fine	Fine			Silt &
Gravel	Sand	Sand	Sand	Sand	Sand	Silt	Clay	Clay
0.00	0.00	0.00	0.01	11.36	12.56	63.45	12.62	76.07



V3.0

Job ID: 570-27181-

Method: 8270C SIM - PAHs (GC/MS SIM)

Prep Type: Total/NA Matrix: Solid

			Pe	rcent Surrog
		FBP	NBZ	TPHd14
Lab Sample ID	Client Sample ID	(22-130)	(20-145)	(33-147)
570-27181-1	SED-004	79	48	85
570-27181-2	SED-005	81	48	84
570-27181-3	SED-006	55	22	58
570-27181-3 MS	SED-006	76	46	78
570-27181-3 MSD	SED-006	76	45	84
570-27181-4	SE-D-007	62	40	88
LCS 570-67217/2-A	Lab Control Sample	66	51	75
LCSD 570-67217/3-A	Lab Control Sample Dup	74	54	82
MB 570-67217/1-A	Method Blank	55	34	67

Surrogate Legend

FBP = 2-Fluorobiphenyl (Surr) NBZ = Nitrobenzene-d5 (Surr) TPHd14 = p-Terphenyl-d14 (Surr)

Method: Organotins SIM - Organotins (GC/MS SIM)

Matrix: Solid

Matrix: Solid	Section of Section 1	part and a train	Prep Type: Total/NA
Lab Sample ID	Client Sample ID	TPTT (27-135)	Percent Surrogate Recovery (Acceptance Limits)
570-27181-1	SED-004	77	
570-27181-2	SED-005	77	
570-27181-3	SED-006	62	
570-27181-4	SE-D-007	77	
660-101903-A-1-A MS	Matrix Spike	50	
660-101903-A-1-B MSD	Matrix Spike Duplicate	61	
LCS 570-66829/2-A	Lab Control Sample	84	
LCSD 570-66829/3-A	Lab Control Sample Dup	68	
MB 570-66829/1-A	Method Blank	90	
Surrogate Legend			
TPTT = Tripentyltin			

Method: 8015B - Diesel Range Organics (DRO) (GC)

Matrix: Solid Prep Type: Total/NA

		OTCSN1	Percent Surrogate Recovery (Acceptance Limits)
Lab Sample ID	Client Sample ID	(61-145)	
570-27181-1	SED-004	107	
570-27181-2	SED-005	96	
570-27181-3	SED-006	100	
70-27181-4	SE-D-007	91	
70-27190-A-1-J MS	Matrix Spike	98	
70-27190-A-1-K MSD	Matrix Spike Duplicate	97	
CS 570-67364/2-A	Lab Control Sample	103	
CSD 570-67364/3-A	Lab Control Sample Dup	95	
MB 570-67364/1-A	Method Blank	96	
Surrogate Legend			

OTCSN = n-Octacosane (Surr)

Surrogate Summary

Client: WGR Southwest Inc

Project/Site: WGR - Tesoro LA Refinery

Job ID: 570-27181-1

Method: 8081A - Organochlorine Pesticides (GC)

Matrix: Solid Prep Type: Total/NA

			Percent	Surrogate Recovery (Accept	ptance Limits
		TCX1	DCB1		
ab Sample ID	Client Sample ID	(25-126)	(20-155)		
70-27181-1	SED-004	50	110		
70-27181-1	SED-004	76 p	100 p		
70-27181-1 MS	SED-004	75 p	134		
70-27181-1 MSD	SED-004	83 p	307 X		
70-27181-2	SED-005	38	94		
70-27181-2	SED-005	81 p	82 p		
70-27181-3	SED-006	46	2392 X		
70-27181-3	SED-006	85 p	3034 X		
70-27181-4	SE-D-007	101 p	87 p		

Surrogate Legend

TCX = Tetrachioro-m-xylene

DCB = DCB Decachlorobiphenyl (Surr)

Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Matrix: Solid Prep Type: Total/NA

			Percent St	urrogate Recovery (Acceptance Limits)
		DCB1	TCX1	
Lab Sample ID	Client Sample ID	(20-155)	(25-126)	
570-27181-1	SED-004	78	67	
570-27181-2	SED-005	136	92	
570-27181-2 MS	SED-005	144	118	
570-27181-2 MSD	SED-005	139	119	
570-27181-3	SED-006	90	72	
570-27181-4	SE-D-007	128	88	
LCS 570-67132/4-A	Lab Control Sample	72	53	
LCSD 570-67132/5-A	Lab Control Sample Dup	77	54	
MB 570-67132/1-A	Method Blank	93	83	
Surrogate Legend				

DCB = DCB Decachlorobiphenyl (Surr)

TCX = Tetrachloro-m-xylene (Surr)

Job ID: 570-27181-1

Client: WGR Southwest Inc

Project/Site: WGR - Tesoro LA Refinery

Method: 8270C SIM - PAHs (GC/MS SIM)

Lab Sample ID: MB 570-67217/1-A

Matrix: Solid

Analysis Batch: 67642

MB MB

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 67217

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.010	0.00051	mg/Kg		05/05/20 21:50	05/07/20 14:44	1
Acenaphthylene	ND		0.010	0.0085	mg/Kg		05/05/20 21:50	05/07/20 14:44	1
Anthracene	ND		0.010	0.00067	mg/Kg		05/05/20 21:50	05/07/20 14:44	1
1,2-Benzanthracene	ND		0.010	0.0011	mg/Kg		05/05/20 21:50	05/07/20 14:44	1
Benzo[a]pyrene	ND		0.010	0.0014	mg/Kg		05/05/20 21:50	05/07/20 14:44	1
3,4-Benzofluoranthene	ND		0.010	0.0015	mg/Kg		05/05/20 21:50	05/07/20 14:44	- 3
Benzo[k]fluoranthene	ND		0.010	0.0016	mg/Kg		05/05/20 21:50	05/07/20 14:44	9
1,12-Benzoperylene	ND		0.010	0.0015	mg/Kg		05/05/20 21:50	05/07/20 14:44	1
Chrysene	ND		0.010	0.00078	mg/Kg		05/05/20 21:50	05/07/20 14:44	1
Dibenz(a,h)anthracene	ND		0.010	0.0011	mg/Kg		05/05/20 21:50	05/07/20 14:44	1
Fluoranthene	ND		0.010	0.00097	mg/Kg		05/05/20 21:50	05/07/20 14:44	1
Fluorene	ND		0.010	0.00084	mg/Kg		05/05/20 21:50	05/07/20 14:44	3
Indeno[1,2,3-cd]pyrene	ND		0.010	0.0012	mg/Kg		05/05/20 21:50	05/07/20 14:44	1
1-Methylnaphthalene	ND		0,010	0.00072	mg/Kg		05/05/20 21:50	05/07/20 14:44	1
2-Methylnaphthalene	ND		0.010	0.00072	mg/Kg		05/05/20 21:50	05/07/20 14:44	1
Naphthalene	ND		0.010	0.00078	mg/Kg		05/05/20 21:50	05/07/20 14:44	1
Phenanthrene	ND		0.010	0.00084	mg/Kg		05/05/20 21:50	05/07/20 14:44	1
Pyrene	ND		0.010	0.00075	mg/Kg		05/05/20 21:50	05/07/20 14:44	1
	МО	MD							

MB MB Surrogate %Recovery Qualifier Limits Prepared Analyzed Dil Fac 2-Fluorobiphenyl (Surr) 55 22 - 130 05/05/20 21:50 05/07/20 14:44 Nitrobenzene-d5 (Surr) 34 20-145 05/05/20 21:50 05/07/20 14:44 p-Terphenyl-d14 (Surr) 67 33-147 05/05/20 21:50 05/07/20 14:44

Lab Sample ID: LCS 570-67217/2-A

Matrix: Solid

Analysis Batch: 67642

Client Sample ID: Lab Control Sample Prep Type: Total/NA Prep Batch: 67217

	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Acenaphthene	0.100	0.06909	-	mg/Kg		69	53 - 125	
Acenaphthylene	0.100	0.07078		mg/Kg		71	50 - 123	
Anthracene	0.100	0.06420		mg/Kg		64	50-132	
1,2-Benzanthracene	0.100	0.07612		mg/Kg		76	50-133	
Benzo[a]pyrene	0.100	0.06694		mg/Kg		67	50 - 134	
3,4-Benzofluoranthene	0.100	0.06620		mg/Kg		66	50 - 142	
Benzo[k]fluoranthene	0.100	0.07592		mg/Kg		76	49-150	
1,12-Benzoperylene	0.100	0.07130		mg/Kg		71	50-130	
Chrysene	0.100	0.06962		mg/Kg		70	51-129	
Dibenz(a,h)anthracene	0.100	0.06804		mg/Kg		68	50-133	
Fluoranthene	0.100	0.07528		mg/Kg		75	55-127	
Fluorene	0.100	0.07475		mg/Kg		75	55 - 127	
Indeno[1,2,3-cd]pyrene	0.100	0.06777		mg/Kg		68	50 - 148	
1-Methylnaphthalene	0.100	0.06269		mg/Kg		63	54 - 132	
2-Methylnaphthalene	0.100	0.05840		mg/Kg		58	50 - 127	
Naphthalene	0.100	0.05399		mg/Kg		54	51 - 129	
Phenanthrene	0.100	0.06518		mg/Kg		65	50 - 122	
Pyrene	0.100	0.06937		mg/Kg		69	50-134	

Client: WGR Southwest Inc.

Project/Site: WGR - Tesoro LA Refinery

Client Sample ID: Lab Control Sample

Prep Type: Total/NA Prep Batch: 67217

Job ID: 570-27181-1

Method: 8270C SIM - PAHs (GC/MS SIM) (Continued)

Lab Sample ID: LCS 570-67217/2-A

Lab Sample ID: LCSD 570-67217/3-A

Matrix: Solid

Analysis Batch: 67642

LCS LCS Limits Surrogate %Recovery Qualifier 22-130 2-Fluorobiphenyl (Surr) Nitrobenzene-d5 (Surr)

p-Terphenyl-d14 (Surr)

Analysis Batch: 67904

Matrix: Solid

20-145 51 75 33 - 147

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 67217

									D
Spike	LCSD	LCSD				%Rec.	mits RPD Limit 3-125 9 20 0-123 4 20 0-132 7 20 0-133 6 20 0-134 6 20		
Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit	
0.100	0.07590		mg/Kg	-	76	53 - 125	9	20	
0.100	0.07341		mg/Kg		73	50 - 123	4	20	
0.100	0.06860		mg/Kg		69	50 - 132	7	20	
0.100	0.08054		mg/Kg		81	50 - 133	6	20	
0.100	0.07084		mg/Kg		71	50 - 134	6	20	
0.100	0.07161		mg/Kg		72	50 - 142	8	20	
0.100	0.07584		mg/Kg		76	49 - 150	0	20	
0.100	0.07149		mg/Kg		71	50 - 130	0	20	
0.100	0.06948		mg/Kg		69	51 - 129	0	20	
0.100	0.06938		mg/Kg		69	50 - 133	2	20	
0.100	0.07834		mg/Kg		78	55 - 127	4	20	
0.100	0.07768		mg/Kg		78	55 - 127	4	20	
0.100	0.06968		mg/Kg		70	50 - 148	3	20	
0.100	0.06289		mg/Kg		63	54 - 132	0	20	
0.100	0.06142		mg/Kg		61	50 - 127	5	20	
0.100	0.05926		mg/Kg		59	51 - 129	9	20	
0.100	0.06862		mg/Kg		69	50 - 122	5	20	
0.100	0.06700		mg/Kg		67	50 - 134	3	20	
	0.100 0.100	Added Result 0.100 0.07590 0.100 0.07341 0.100 0.06860 0.100 0.07084 0.100 0.07084 0.100 0.07161 0.100 0.07584 0.100 0.07584 0.100 0.07189 0.100 0.06948 0.100 0.06948 0.100 0.07684 0.100 0.07684 0.100 0.06988 0.100 0.07688 0.100 0.07688 0.100 0.07688 0.100 0.07688 0.100 0.06968 0.100 0.06968 0.100 0.06968	Added Result Qualifier 0.100 0.07590 0.100 0.07341 0.100 0.06860 0.100 0.08054 0.100 0.07161 0.100 0.07584 0.100 0.07584 0.100 0.07149 0.100 0.06948 0.100 0.06938 0.100 0.07834 0.100 0.07768 0.100 0.07768 0.100 0.06968 0.100 0.06289 0.100 0.06142 0.100 0.06862	Added Result Qualifier Unit 0.100 0.07590 mg/Kg 0.100 0.07341 mg/Kg 0.100 0.06860 mg/Kg 0.100 0.08054 mg/Kg 0.100 0.07084 mg/Kg 0.100 0.07161 mg/Kg 0.100 0.07584 mg/Kg 0.100 0.07149 mg/Kg 0.100 0.06948 mg/Kg 0.100 0.06938 mg/Kg 0.100 0.07768 mg/Kg 0.100 0.07768 mg/Kg 0.100 0.06968 mg/Kg 0.100 0.06289 mg/Kg 0.100 0.05289 mg/Kg 0.100 0.05926 mg/Kg 0.100 0.05926 mg/Kg	Added Result Qualifier Unit D 0.100 0.07590 mg/Kg mg/Kg 0.100 0.07341 mg/Kg 0.100 0.06860 mg/Kg 0.100 0.08054 mg/Kg 0.100 0.07084 mg/Kg 0.100 0.07161 mg/Kg 0.100 0.07584 mg/Kg 0.100 0.07149 mg/Kg 0.100 0.06948 mg/Kg 0.100 0.06938 mg/Kg 0.100 0.07768 mg/Kg 0.100 0.07768 mg/Kg 0.100 0.06968 mg/Kg 0.100 0.06289 mg/Kg 0.100 0.05926 mg/Kg 0.100 0.05926 mg/Kg 0.100 0.06862 mg/Kg	Added Result Qualifier Unit D %Rec 0.100 0.07590 mg/Kg 76 0.100 0.07341 mg/Kg 73 0.100 0.06860 mg/Kg 69 0.100 0.08054 mg/Kg 81 0.100 0.07084 mg/Kg 71 0.100 0.07161 mg/Kg 76 0.100 0.07584 mg/Kg 76 0.100 0.07149 mg/Kg 71 0.100 0.06948 mg/Kg 69 0.100 0.06938 mg/Kg 69 0.100 0.07768 mg/Kg 78 0.100 0.07768 mg/Kg 78 0.100 0.06968 mg/Kg 70 0.100 0.06289 mg/Kg 63 0.100 0.05926 mg/Kg 61 0.100 0.05926 mg/Kg 69	Added Result Qualifier Unit D %Rec Limits 0.100 0.07590 mg/Kg 76 53-125 0.100 0.07341 mg/Kg 73 50-123 0.100 0.06860 mg/Kg 69 50-132 0.100 0.08054 mg/Kg 81 50-133 0.100 0.07084 mg/Kg 71 50-134 0.100 0.07161 mg/Kg 72 50-142 0.100 0.07584 mg/Kg 76 49-150 0.100 0.07149 mg/Kg 71 50-130 0.100 0.06948 mg/Kg 69 51-129 0.100 0.06938 mg/Kg 69 50-133 0.100 0.07768 mg/Kg 78 55-127 0.100 0.07768 mg/Kg 78 55-127 0.100 0.06988 mg/Kg 70 50-148 0.100 0.05289 mg/Kg 63 54-132 <td>Added Result Qualifler Unit D %Rec Limits RPD 0.100 0.07590 mg/Kg 76 53-125 9 0.100 0.07341 mg/Kg 73 50-123 4 0.100 0.06860 mg/Kg 69 50-132 7 0.100 0.08054 mg/Kg 81 50-133 6 0.100 0.07084 mg/Kg 71 50-134 6 0.100 0.07161 mg/Kg 72 50-142 8 0.100 0.07584 mg/Kg 76 49-150 0 0.100 0.07149 mg/Kg 71 50-130 0 0.100 0.06948 mg/Kg 69 51-129 0 0.100 0.06938 mg/Kg 69 50-133 2 0.100 0.07768 mg/Kg 78 55-127 4 0.100 0.07696 mg/Kg 78 55-127 4 <tr< td=""><td>Added Result Qualifier Unit D %Rec Limits RPD Limits 0.100 0.07590 mg/Kg 76 53-125 9 20 0.100 0.07341 mg/Kg 73 50-123 4 20 0.100 0.06860 mg/Kg 69 50-132 7 20 0.100 0.08054 mg/Kg 81 50-133 6 20 0.100 0.07084 mg/Kg 71 50-134 6 20 0.100 0.07161 mg/Kg 72 50-142 8 20 0.100 0.07584 mg/Kg 76 49-150 0 20 0.100 0.07149 mg/Kg 71 50-130 0 20 0.100 0.06948 mg/Kg 69 51-129 0 20 0.100 0.07834 mg/Kg 69 50-133 2 20 0.100 0.07768 mg/Kg <</td></tr<></td>	Added Result Qualifler Unit D %Rec Limits RPD 0.100 0.07590 mg/Kg 76 53-125 9 0.100 0.07341 mg/Kg 73 50-123 4 0.100 0.06860 mg/Kg 69 50-132 7 0.100 0.08054 mg/Kg 81 50-133 6 0.100 0.07084 mg/Kg 71 50-134 6 0.100 0.07161 mg/Kg 72 50-142 8 0.100 0.07584 mg/Kg 76 49-150 0 0.100 0.07149 mg/Kg 71 50-130 0 0.100 0.06948 mg/Kg 69 51-129 0 0.100 0.06938 mg/Kg 69 50-133 2 0.100 0.07768 mg/Kg 78 55-127 4 0.100 0.07696 mg/Kg 78 55-127 4 <tr< td=""><td>Added Result Qualifier Unit D %Rec Limits RPD Limits 0.100 0.07590 mg/Kg 76 53-125 9 20 0.100 0.07341 mg/Kg 73 50-123 4 20 0.100 0.06860 mg/Kg 69 50-132 7 20 0.100 0.08054 mg/Kg 81 50-133 6 20 0.100 0.07084 mg/Kg 71 50-134 6 20 0.100 0.07161 mg/Kg 72 50-142 8 20 0.100 0.07584 mg/Kg 76 49-150 0 20 0.100 0.07149 mg/Kg 71 50-130 0 20 0.100 0.06948 mg/Kg 69 51-129 0 20 0.100 0.07834 mg/Kg 69 50-133 2 20 0.100 0.07768 mg/Kg <</td></tr<>	Added Result Qualifier Unit D %Rec Limits RPD Limits 0.100 0.07590 mg/Kg 76 53-125 9 20 0.100 0.07341 mg/Kg 73 50-123 4 20 0.100 0.06860 mg/Kg 69 50-132 7 20 0.100 0.08054 mg/Kg 81 50-133 6 20 0.100 0.07084 mg/Kg 71 50-134 6 20 0.100 0.07161 mg/Kg 72 50-142 8 20 0.100 0.07584 mg/Kg 76 49-150 0 20 0.100 0.07149 mg/Kg 71 50-130 0 20 0.100 0.06948 mg/Kg 69 51-129 0 20 0.100 0.07834 mg/Kg 69 50-133 2 20 0.100 0.07768 mg/Kg <

LCSD LCSD

Surrogate	%Recovery	Qualifier	Limits
2-Fluorobiphenyl (Surr)	74		22 - 130
Nitrobenzene-d5 (Surr)	54		20 - 145
p-Terphenyl-d14 (Surr)	82		33 - 147

Lab Sample ID: 570-27181-3 MS

Matrix: Solid

Analysis Batch: 68220

Client Sample ID: SED-006

Prep Type: Total/NA

Prep Batch: 67217

Sample	Sample	Spike	MS	MS				%Rec.	
Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
0.011	J	0.171	0.1032		mg/Kg	Ø	54	29 - 137	
ND		0.171	0.1342		mg/Kg	D	79	29-131	
0.049		0.171	0.1485		mg/Kg	n	58	26 - 134	
0.22	F2 F1	0.171	0.2422	F1	mg/Kg	13	13	24 - 150	
0.19	F2	0.171	0.2535		mg/Kg	n	35	29 - 149	
0.20	F2	0.171	0.2939		mg/Kg	O	57	21 - 153	
0.16	F2	0.171	0.2611		mg/Kg	*	61	28 - 148	
0.10		0.171	0.2109		mg/Kg	· C	65	20-148	
0.25	F2 F1	0.171	0.3260		mg/Kg	ti.	44	25 - 145	
0.031	J	0.171	0.1443		mg/Kg	Ø	66	20 - 132	
	Result 0.011 ND 0.049 0.22 0.19 0.20 0.16 0.10 0.25	0.049 0.22 F2 F1 0.19 F2 0.20 F2 0.16 F2	Result Qualifier Added 0.011 J 0.171 ND 0.171 0.049 0.171 0.22 F2 F1 0.171 0.19 F2 0.171 0.20 F2 0.171 0.16 F2 0.171 0.10 0.171 0.171 0.25 F2 F1 0.171	Result Qualifier Added Result 0.011 J 0.171 0.1032 ND 0.171 0.1342 0.049 0.171 0.1485 0.22 F2 F1 0.171 0.2422 0.19 F2 0.171 0.2535 0.20 F2 0.171 0.2939 0.16 F2 0.171 0.2611 0.10 0.171 0.2109 0.25 F2 F1 0.171 0.3260	Result Qualifier Added Result Qualifier 0.011 J 0.171 0.1032 ND 0.171 0.1342 0.049 0.171 0.1485 0.22 F2 F1 0.171 0.2422 F1 0.19 F2 0.171 0.2535 0.2939 0.16 F2 0.171 0.2611 0.2611 0.10 0.171 0.2109 0.25 F2 F1 0.171 0.3260	Result Qualifier Added Result Qualifier Unit 0.011 J 0.171 0.1032 mg/Kg ND 0.171 0.1342 mg/Kg 0.049 0.171 0.1485 mg/Kg 0.22 F2 F1 0.171 0.2422 F1 mg/Kg 0.19 F2 0.171 0.2535 mg/Kg 0.20 F2 0.171 0.2939 mg/Kg 0.16 F2 0.171 0.2611 mg/Kg 0.10 0.171 0.2109 mg/Kg 0.25 F2 F1 0.171 0.3260 mg/Kg	Result Qualifier Added Result Qualifier Unit D 0.011 J 0.171 0.1032 mg/Kg 0 ND 0.171 0.1342 mg/Kg 0 0.049 0.171 0.1485 mg/Kg 0 0.22 F2 F1 0.171 0.2422 F1 mg/Kg 0 0.19 F2 0.171 0.2535 mg/Kg 0 0 0.20 F2 0.171 0.2939 mg/Kg 0 0 0.16 F2 0.171 0.2611 mg/Kg 0 0 0.10 0.171 0.2109 mg/Kg 0 0 0 0.25 F2 F1 0.171 0.3260 mg/Kg 0	Result Qualifier Added Result Qualifier Unit D %Rec 0.011 J 0.171 0.1032 mg/kg 0 54 ND 0.171 0.1342 mg/kg 0 79 0.049 0.171 0.1485 mg/kg 0 58 0.22 F2 F1 0.171 0.2422 F1 mg/kg 0 13 0.19 F2 0.171 0.2535 mg/kg 0 35 0.20 F2 0.171 0.2939 mg/kg 0 57 0.16 F2 0.171 0.2611 mg/kg 0 61 0.10 0.171 0.2109 mg/kg 0 65 0.25 F2 F1 0.171 0.3260 mg/kg 0 44	Result 0.011 Qualifier Added Adde

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Job ID: 570-27181-1

Client Sample ID: SED-006

QC Sample Results

Client: WGR Southwest Inc

Project/Site: WGR - Tesoro LA Refinery

Method: 8270C SIM - PAHs (GC/MS SIM) (Continued)

Lab Sample ID: 570-27181-3 MS Client Sample ID: SED-006 Matrix: Solid Prep Type: Total/NA

Prep Batch: 67217 Analysis Batch: 68220

Sample	Sample	Spike	MS	MS				%Rec.
Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits
0.49	F2 F1	0.171	0.4051	F1	mg/Kg	Ø	-52	20 - 151
0.011	JF2	0.171	0.1427		mg/Kg	*	77	36 - 132
0.072		0.171	0.1856		mg/Kg	Ø	66	20 - 154
0.013	J	0.171	0.08118		mg/Kg	Ø.	40	34 - 136
0.0064	J	0.171	0.07858		mg/Kg	C.	42	29 - 137
0.0066	1	0.171	0.07912		mg/Kg	13	42	20 - 150
0.20	F2 F1	0.171	0.2280	F1	mg/Kg	ø	19	20 - 144
0.47	F2 F1	0.171	0.4477	F1	mg/Kg	贷	-11	20 - 150
	0.49 0.011 0.072 0.013 0.0064 0.0066	Sample Sample Result Qualifier 0.49 F2 F1 0.011 J F2 0.072 0.013 J 0.0064 J 0.0066 J 0.20 F2 F1 0.47 F2 F1	Result Qualifier Added 0.49 F2 F1 0.171 0.011 J F2 0.171 0.072 0.171 0.013 J 0.171 0.0064 J 0.171 0.0066 J 0.171 0.20 F2 F1 0.171	Result Qualifier Added Result 0.49 F2 F1 0.171 0.4051 0.011 J F2 0.171 0.1427 0.072 0.171 0.1856 0.013 J 0.171 0.08118 0.0064 J 0.171 0.07858 0.0066 J 0.171 0.07912 0.20 F2 F1 0.171 0.2280	Result Qualifier Added Result Qualifier 0.49 F2 F1 0.171 0.4051 F1 0.011 J F2 0.171 0.1427 0.072 0.171 0.1856 0.013 J 0.171 0.08118 0.0064 J 0.171 0.07858 0.0066 J 0.171 0.07912 0.20 F2 F1 0.171 0.2280 F1	Result Qualifier Added Added Result Qualifier Unit 0.49 F2 F1 0.171 0.4051 F1 mg/Kg 0.011 J F2 0.171 0.1427 mg/Kg 0.072 0.171 0.1856 mg/Kg 0.013 J 0.171 0.08118 mg/Kg 0.0064 J 0.171 0.07858 mg/Kg 0.0066 J 0.171 0.07912 mg/Kg 0.20 F2 F1 0.171 0.2280 F1 mg/Kg	Result Qualifier Added Added Result Qualifier Unit Durity Durity 0.49 F2 F1 0.171 0.4051 F1 mg/Kg □ 0.011 J F2 0.171 0.1427 mg/Kg □ 0.072 0.171 0.1856 mg/Kg □ 0.013 J 0.171 0.08118 mg/Kg □ 0.0064 J 0.171 0.07858 mg/Kg □ 0.0066 J 0.171 0.07912 mg/Kg □ 0.20 F2 F1 0.171 0.2280 F1 mg/Kg □	Result Qualifier Added Added Result Qualifier Unit Unit Unit Unit Unit Unit Unit Unit

MS MS Surrogate %Recovery Qualifier Limits 2-Fluorobiphenyl (Surr) 76 22-130 Nitrobenzene-d5 (Surr) 46 20-145 78 33-147 p-Terphenyl-d14 (Surr)

Lab Sample ID: 570-27181-3 MSD

Lau Sample ID. 570-27 161						Client Sample ID. SED-006					
Matrix: Solid									Prep Ty	pe: Tot	al/NA
Analysis Batch: 68220									The state of the s	Batch: (
	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Acenaphthene	0.011	J	0.168	0.1177		mg/Kg	TO TO	64	29 - 137	13	28
Acenaphthylene	ND		0.168	0.1398		mg/Kg	*	83	29 - 131	4	32
Anthracene	0.049		0.168	0.1901		mg/Kg	405	84	26 - 134	25	27
1,2-Benzanthracene	0.22	F2 F1	0.168	0.4634	F2	mg/Kg	章	144	24 - 150	63	24
Benzo[a]pyrene	0.19	F2	0.168	0.4097	F2	mg/Kg	**	128	29-149	47	22
3,4-Benzofluoranthene	0.20	F2	0.168	0.4335	F2	mg/Kg	¢	141	21 - 153	38	26
Benzo(k)fluoranthene	0.16	F2	0.168	0.3894	F2	mg/Kg	兹	138	28-148	39	26
1,12-Benzoperylene	0.10		0.168	0.2531		mg/Kg	0	91	20 - 148	18	27
Chrysene	0.25	F2 F1	0.168	0.5681	F1 F2	mg/Kg	*	189	25 - 145	54	28
Dibenz(a,h)anthracene	0.031)	0.168	0.1753		mg/Kg	٥	86	20 - 132	19	26
Fluoranthene	0.49	F2 F1	0.168	0.7200	F2	mg/Kg	305	134	20 - 151	56	26
Fluorene	0.011	JF2	0.168	0.1931	F2	mg/Kg	ÇE.	108	36 - 132	30	27
Indeno[1,2,3-cd]pyrene	0.072		0.168	0.2371		mg/Kg	**	98	20 - 154	24	25
1-Methylnaphthalene	0.013	J	0.168	0.08693		mg/Kg	0	44	34 - 136	7	29
2-Methylnaphthalene	0.0064	J	0.168	0.08751		mg/Kg	Ø.	48	29-137	11	31
Naphthalene	0.0066	J	0.168	0.08187		mg/Kg	Ø	45	20 - 150	3	33
Phenanthrene	0.20	F2 F1	0.168	0.4345	F2	mg/Kg	O	142	20-144	62	27
Pyrene	0.47	F2 F1	0.168	0.7860	F1 F2	mg/Kg	(2)	189	20 - 150	55	32

Surrogate	%Recovery	Qualifier	Limits
2-Fluorobiphenyl (Surr)	76		22 - 130
Nitrobenzene-d5 (Surr)	45		20 - 145
p-Terphenyl-d14 (Surr)	84		33 - 147

Client: WGR Southwest Inc

Project/Site: WGR - Tesoro LA Refinery

Job ID: 570-27181-1

Method: Organotins SIM - Organotins (GC/MS SIM)

Lab Sample ID: MB 570-66829/1-A

Lab Sample ID: LCS 570-66829/2-A

Matrix: Solid

Matrix: Solid

Analysis Batch: 67134

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 66829

MB MB

Result Qualifier RL MDL Unit D Prepared Analyte Analyzed Dil Fac Tributyltin ND 3.0 1.5 ug/Kg 05/04/20 09:52 05/05/20 17:51

MR MR

Surrogate %Recovery Qualifier Limits Prepared Analyzed Dil Fac Tripentyltin 27 - 135 05/04/20 09:52 05/05/20 17:51 90

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 66829

Analysis Batch: 67134 Spike LCS LCS %Rec. %Rec Analyte Added Result Qualifier Unit Limits

Tetrabutyltin 100 93.02 ug/Kg 93 40 - 142 Tributyltin 100 76.09 ug/Kg 76 33 - 147

LCS LCS

%Recovery Qualifler Surrogate Limits 27 - 135 Tripentyltin

Lab Sample ID: LCSD 570-66829/3-A

Matrix: Solid

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analysis Batch: 67134 Prep Batch: 66829 Spike LCSD LCSD %Rec. RPD

Analyte Added Result Qualifier Unit D %Rec Limits RPD Limit Tetrabutyltin 100 88.94 ug/Kg 89 40 - 142 20 Tributyltin 100 73.19 ug/Kg 73 33 - 147 20

LCSD LCSD

Limits Surrogate %Recovery Qualifier Tripentyltin 27 - 135

Lab Sample ID: 660-101903-A-1-A MS

Matrix: Solid

Analysis Batch: 67134

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Prep Batch: 66829

MS MS Sample Sample Spike %Rec. Result Qualifier Added Result Qualifier Unit D %Rec Limits Analyte 1.5 J 100 95.02 ug/Kg 94 33 - 129 Tetrabutyltin 100 35 Tributyltin 140 175.0 ug/Kg 34 - 142

MS MS Limits Surrogate %Recovery Qualifier

27 - 135 Tripentyltin 50

Lab Sample ID: 660-101903-A-1-B MSD

Matrix: Solid

Tributyltin

Analysis Batch: 67134

Client Sample ID: Matrix Spike Duplicate Prep Type: Total/NA

Prep Batch: 66829

MSD MSD %Rec. Sample Sample Spike RPD Result Qualifier Added Result Qualifier Unit D %Rec Limits RPD Limit Analyte Tetrabutyltin 1.5 99.0 68.43 ug/Kg 68 33 - 129 33 36 140 99.0 181.0 ug/Kg 34 - 142 3

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Job ID: 570-27181-1

Method: Organotins SIM - Organotins (GC/MS SIM) (Continued)

Lab Sample ID: 660-101903-A-1-B MSD

Matrix: Solid

Analysis Batch: 67134

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Prep Batch: 66829

MSD MSD

Surrogate

%Recovery Qualifier

Limits

Tripentyltin

61

27 - 135

Method: 8015B - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 570-67364/1-A

Matrix: Solid

Analysis Batch: 67570

Client Sample ID: Method Blank Prep Type: Total/NA

Prep Batch: 67364

	MB	MB						, rop Baton	
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
C6 as C6	ND		5.0	3.6	mg/Kg		05/06/20 13:07	05/07/20 12:39	1
C7 as C7	ND		5.0	3.6	mg/Kg		05/06/20 13:07	05/07/20 12:39	1
C8 as C8	ND		5.0	3.6	mg/Kg		05/06/20 13:07	05/07/20 12:39	1
C9-C10	ND		5.0	3.6	mg/Kg		05/06/20 13:07	05/07/20 12:39	1
C11-C12	ND		5.0	3.6	mg/Kg		05/06/20 13:07	05/07/20 12:39	7
C13-C14	ND		5.0	3.6	mg/Kg		05/06/20 13:07	05/07/20 12:39	1
C15-C16	ND		5.0	3.6	mg/Kg		05/06/20 13:07	05/07/20 12:39	1
C17-C18	ND		5.0	3.6	mg/Kg		05/06/20 13:07	05/07/20 12:39	1
C19-C20	ND		5.0	3.6	mg/Kg		05/06/20 13:07	05/07/20 12:39	1
C21-C22	ND		5.0	3.6	mg/Kg		05/06/20 13:07	05/07/20 12:39	1
C23-C24	ND		5.0	3.6	mg/Kg		05/06/20 13:07	05/07/20 12:39	1
C25-C28	ND		5.0	3.6	mg/Kg		05/06/20 13:07	05/07/20 12:39	1
C29-C32	ND		5.0	3.6	mg/Kg		05/06/20 13:07	05/07/20 12:39	1
C33-C36	ND		5.0	3.6	mg/Kg		05/06/20 13:07	05/07/20 12:39	-1
C37-C40	ND		5.0	3.6	mg/Kg		05/06/20 13:07	05/07/20 12:39	1
C41-C44	ND		5.0	3.6	mg/Kg		05/06/20 13:07	05/07/20 12:39	1
C6-C44	ND		5.0	3.6	mg/Kg		05/06/20 13:07	05/07/20 12:39	1
	MB	мв							

Limits

61 - 145

Lab Sample ID: LCS 570-67364/2-A

Matrix: Solid

n-Octacosane (Surr)

Surrogate

Analysis Batch: 67332

Client Sample ID: Lab Control Sample Prep Type: Total/NA

05/06/20 13:07 05/07/20 12:39

Prepared

Prep Batch: 67364

Dil Fac

%Rec.

Analyzed

Spike LCS LCS Added Result Qualifier Unit D %Rec Limits Analyte 400 389.4 67 - 121 mg/Kg Diesel Range Organics

[C10-C28]

LCS LCS

Surrogate n-Octacosane (Surr)

%Recovery Qualifier

%Recovery Qualifier

96

Limits 61-145

Lab Sample ID: LCSD 570-67364/3-A

Matrix: Solid

Analyte

Analysis Batch: 67332

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA Prep Batch: 67364

%Rec. RPD Limits Limit

Diesel Range Organics [C10-C28]

Spike Added 400

LCSD LCSD Result Qualifier 360.0

Unit mg/Kg

%Rec

67 - 121

Client: WGR Southwest Inc

Project/Site: WGR - Tesoro LA Refinery

Job ID: 570-27181-1

Method: 8015B - Diesel Range Organics (DRO) (GC) (Continued)

Lab Sample ID: LCSD 570-67364/3-A

Lab Sample ID: 570-27190-A-1-J MS

Matrix: Solid

n-Octacosane (Surr)

Matrix: Solid

Analysis Batch: 67332

Analysis Batch: 67332

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 67364

LCSD LCSD

%Recovery Qualifier Surrogate

Limits 61 - 145

Client Sample ID: Matrix Spike

Prep Type: Total/NA Prep Batch: 67364

Prep Type: Total/NA

Prep Batch: 67364

RPD

6

Limit

32

%Rec.

Client Sample ID: Matrix Spike Duplicate

%Rec.

Limits

33 - 153

Client Sample ID: SED-004

Prep Type: Total/NA

Prep Batch: 69209

MS MS Sample Sample Spike Result Qualifier Added Result Qualifler Unit %Rec Limits Analyte 409 391.8 92 33 - 153 Diesel Range Organics mg/Kg

[C10-C28]

MS MS

Surrogate %Recovery Qualifier Limits n-Octacosane (Surr) 98 61 - 145

Lab Sample ID: 570-27190-A-1-K MSD

Matrix: Solid

Diesel Range Organics

Analysis Batch: 67332

MSD MSD Sample Sample Spike Result Qualifier Added Result Qualifier Unit %Rec D 393 369.9 90 mg/Kg

[C10-C28]

Analyte

MSD MSD

Surrogate %Recovery Qualifier Limits 61 - 145 n-Octacosane (Surr)

Method: 8081A - Organochlorine Pesticides (GC)

Lab Sample ID: 570-27181-1 MS

Matrix: Solid

Analysis Batch: 68894

Sample Sample Spike MS MS %Rec. Analyte Result Qualifier Added Result Qualifier Unit %Rec Limits 4.4' DDD 6.4 4.08 12.90 E ug/Kg 133 12-180 4.4'-DDE 11 EF1p 4.9B 18.93 E ug/Kg 159 B-184 4.4'-DDT 1.7 4.98 2,301 p ug/Kg 11 2-187

MS MS

%Recovery Limits Surrogate Qualifier 25-126 75 Tetrachloro-m-xylene P 20-155 DCB Decachlorobiphenyl (Surr) 134

Lab Sample ID: 570-27181-1 MSD

Matrix: Solid

Analysis Batch: 68894

Client Sample ID: SED-004 Prep Type: Total/NA Prep Batch: 69209 %Rec. RPD

Sample Sample Spike MSD MSD Added Result Qualifier Result Qualifier Unit D %Rec Limits RPD Limit Analyte 4.4'-DDD 6.4 4.95 19.87 EF1 ug/Kg 273 12 - 180 42 79 4,4'-DDE 4.95 148 11 EF1p 18.33 Ep ug/Kg 8-184 3 76 4,4'-DDT 1.7 p 4.95 4.182 p ug/Kg 49 2-187 58 78

Client: WGR Southwest Inc

Project/Site: WGR - Tesoro LA Refinery

Job ID: 570-27181-1

Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: 570-27181-1 MSD

Matrix: Solid

Analysis Batch: 68894

Client Sample ID: SED-004 Prep Type: Total/NA

Prep Batch: 69209

MSD MSD

%Recovery Qualifier Surrogate Limits Tetrachloro-m-xylene 83 p 25-126 DCB Decachlorobiphenyl (Surr) 307 X 20-155

Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Lab Sample ID: MB 570-67132/1-A

Matrix: Solid

Analysis Batch: 68205

Client Sample ID: Method Blank Prep Type: Total/NA

Prep Batch: 67132

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Araclor-1016	ND		10	2.0	ug/Kg		05/05/20 14:07	05/11/20 11:23	1
Aroclor-1221	ND		10	6.3	ug/Kg		05/05/20 14:07	05/11/20 11:23	1
Aroclor-1232	ND		10	2.3	ug/Kg		05/05/20 14:07	05/11/20 11:23	1
Aroclor-1242	ND		10	1.6	ug/Kg		05/05/20 14:07	05/11/20 11:23	1
Aroclor-1248	ND		10	1.2	ug/Kg		05/05/20 14:07	05/11/20 11:23	1
Aroclor-1254	ND		10	1.2	ug/Kg		05/05/20 14:07	05/11/20 11:23	1
Arodor-1260	ND		10	2.3	ug/Kg		05/05/20 14:07	05/11/20 11:23	1

MB MB

Surrogate	%Recovery Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl (Surr)	93	20 - 155	05/05/20 14:07 0	5/11/20 11:23	1
Tetrachloro-m-xylene (Surr)	83	25-126	05/05/20 14:07 0	5/11/20 11:23	1

LCS LCS

13.78

15.78

Result Qualifier

Unit

ug/Kg

ug/Kg

Spike

Added

20.0

20.0

Lab Sample ID: LCS 570-67132/4-A

Matrix: Solid

Analyte

Aroclor-1016

Aroclor-1260

Analysis Batch: 68205

Client Sample ID: Lab Control Sample Prep Type: Total/NA

Prep Batch: 67132

%Rec. D %Rec Limits 69 50-142

50 - 150

Surrogate	LCS %Recovery	LCS Qualifier	Limits
DCB Decachlorobiphenyl (Surr)	72		20 - 155
Tetrachloro-m-xylene (Surr)	53		25-126

Lab Sample ID: LCSD 570-67132/5-A

Matrix: Solid

Analysis Batch: 68205

Client Sample ID: Lab Control Sample Dup

79

Prep Type: Total/NA

Prep Batch: 67132

	Spike	LCSD	LCSD				%Rec.		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Aroclor-1016	20.0	14.24		ug/Kg		71	50 - 142	3	30
Aroclor-1260	20.0	16.44		ug/Kg		82	50 - 150	4	30

LCSD LCSD

Surrogate	%Recovery	Qualifier	Limits
DCB Decachlorobiphenyl (Surr)	77		20 - 155
Tetrachloro-m-xylene (Surr)	54		25-126

Client: WGR Southwest Inc

Project/Site: WGR - Tesoro LA Refinery

Job ID: 570-27181-1

Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography (Continued)

Lab Sample ID: 570-27181-2 MS

Lab Sample ID: 570-27181-2 MSD

Matrix: Solid

Matrix: Solid

Analysis Batch: 68205

Analysis Batch: 68205

Client Sample ID: SED-005

Prep Type: Total/NA Prep Batch: 67132

Spike MS MS %Rec. Sample Sample Analyte Result Qualifier Added Result Qualifier Unit D %Rec Limits ND F2F1 Ü Aroclor-1016 38.6 124.5 F1 ug/Kg 323 20-175 Aroclor-1260 120 F1 38.6 186.0 ug/Kg 173 20 - 180

MS MS

 Surrogate
 %Recovery
 Qualifier
 Limits

 DCB Decachlorobiphenyl (Surr)
 144
 20 - 155

 Tetrachloro-m-xylene (Surr)
 118
 25 - 126

Client Sample ID: SED-005

Prep Type: Total/NA

Prep Batch: 67132

MSD MSD Spike %Rec. RPD Sample Sample Limit Result Qualifier Added Result Qualifier Unit %Rec Limits RPD Analyte D Ħ ND F2F1 38.0 124.5 F1 327 20 - 175 Aroclor-1016 ug/Kg 0 40 ¢ Arodor-1260 120 F1 38.0 201.0 F1 ug/Kg 215 20 - 180

 MSD MSD

 Surrogate
 %Recovery
 Qualifier
 Limits

 DCB Decachlorobiphenyl (Surr)
 139
 20 - 155

 Tetrachloro-m-xylene (Surr)
 119
 25 - 126

Method: 6020 - Metals (ICP/MS)

Lab Sample ID: MB 570-68912/1-A ^20

Matrix: Solid

Analysis Batch: 69097

Client Sample ID: Method Blank Prep Type: Total/NA

Prep Batch: 68912

Constitution of the second	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		0.985	0.443	mg/Kg		05/13/20 16:54	05/14/20 08:41	20
Chromium	ND		1.97	0.296	mg/Kg		05/13/20 16:54	05/14/20 08:41	20
Copper	ND		0.985	0.265	mg/Kg		05/13/20 16:54	05/14/20 08:41	20
Lead	ND		0.985	0.212	mg/Kg		05/13/20 16:54	05/14/20 08:41	20
Nickel	ND		0.985	0.266	mg/Kg		05/13/20 16:54	05/14/20 08:41	20
Zinc	ND		4.93	4.55	ma/Ka		05/13/20 16:54	05/14/20 08:41	20

Lab Sample ID: LCS 570-68912/2-A ^20

Matrix: Solid

Analysis Batch: 69097

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 68912

	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Cadmium	24.9	25.91		mg/Kg		104	80 - 120	
Chromium	24.9	24.84		mg/Kg		100	80 - 120	
Copper	24.9	26.20		mg/Kg		105	80 - 120	
Lead	24.9	24.41		mg/Kg		98	80 - 120	
Nickel	24.9	24.93		mg/Kg		100	80 - 120	
Zinc	24.9	26.28		mg/Kg		106	80 - 120	

Client: WGR Southwest Inc.

Project/Site: WGR - Tesoro LA Refinery

Method: 6020 - Metals (ICP/MS) (Continued)

Lab Sample ID: LCSD 570-68912/3-A ^20 Matrix: Solid

Analysis Batch: 69097

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA Pren Batch: 68912

Job ID: 570-27181-1

Analysis Datell. 05057							LICPL	attil.	30312
	Spike	LCSD	LCSD				%Rec.		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Cadmium	25.0	25.90	-	mg/Kg	_	104	80 - 120	0	20
Chromium	25.0	25.30		mg/Kg		101	80 - 120	2	20
Copper	25.0	26.22		mg/Kg		105	80 - 120	0	20
Lead	25.0	24.39		mg/Kg		98	80 - 120	0	20
Nickel	25.0	25.37		mg/Kg		101	80 - 120	2	20
Zinc	25.0	26.60		mg/Kg		106	80 - 120	1	20

Lab Sample ID: 570-28125-A-1-B MS ^20

Matrix: Solid

Analysis Batch: 69097

Client Sample ID: Matrix Spike

Prep Type: Total/NA Prep Batch: 68912

	Sample	Sample	Spike	MS	MS				%Rec.	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Cadmium	ND		24.6	25.87		mg/Kg		105	85 - 121	
Chromium	4.53		24.6	28.90		mg/Kg		99	20 - 182	
Copper	7.14		24.6	32.21		mg/Kg		102	25 - 157	
Lead	4.75		24.6	28.42		mg/Kg		96	62 - 134	
Nickel	3.80		24.6	26.70		mg/Kg		93	46 - 154	
Zinc	33.9		24.6	56.53		mg/Kg		92	23-173	

Lab Sample ID: 570-28125-A-1-C MSD ^20

Sample Sample

Matrix: Solid

Analysis Batch: 69097

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Prep Batch: 68912 %Rec. RPD

Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
ND		25.0	25.71	-	mg/Kg		103	85 - 121	1	12
4.53		25.0	29.81		mg/Kg		101	20 - 182	3	15
7.14		25.0	32.61		mg/Kg		102	25 - 157	1	22
4.75		25.0	28.54		mg/Kg		95	62 - 134	0	23
3.80		25.0	26.86		mg/Kg		92	46 - 154	1	15
33,9		25.0	57.54		mg/Kg		94	23 - 173	2	18
	ND 4.53 7.14 4.75 3.80	4.53 7.14 4.75 3.80	ND 25.0 4.53 25.0 7.14 25.0 4.75 25.0 3.80 25.0	ND 25.0 25.71 4.53 25.0 29.81 7.14 25.0 32.61 4.75 25.0 28.54 3.80 25.0 26.86	ND 25.0 25.71 4.53 25.0 29.81 7.14 25.0 32.61 4.75 25.0 28.54 3.80 25.0 26.86	ND 25.0 25.71 mg/Kg 4.53 25.0 29.81 mg/Kg 7.14 25.0 32.61 mg/Kg 4.75 25.0 28.54 mg/Kg 3.80 25.0 26.86 mg/Kg	ND 25.0 25.71 mg/Kg 4.53 25.0 29.81 mg/Kg 7.14 25.0 32.61 mg/Kg 4.75 25.0 28.54 mg/Kg 3.80 25.0 26.86 mg/Kg	ND 25.0 25.71 mg/Kg 103 4.53 25.0 29.81 mg/Kg 101 7.14 25.0 32.61 mg/Kg 102 4.75 25.0 28.54 mg/Kg 95 3.80 25.0 26.86 mg/Kg 92	ND 25.0 25.71 mg/Kg 103 85 - 121 4.53 25.0 29.81 mg/Kg 101 20 - 182 7.14 25.0 32.61 mg/Kg 102 25 - 157 4.75 25.0 28.54 mg/Kg 95 62 - 134 3.80 25.0 26.86 mg/Kg 92 46 - 154	ND 25.0 25.71 mg/Kg 103 85-121 1 4.53 25.0 29.81 mg/Kg 101 20-182 3 7.14 25.0 32.61 mg/Kg 102 25-157 1 4.75 25.0 28.54 mg/Kg 95 62-134 0 3.80 25.0 26.86 mg/Kg 92 46-154 1

Spike

MSD MSD

Method: 7471A - Mercury (CVAA)

Lab Sample ID: MB 570-68728/1-A

Matrix: Solid

Analysis Batch: 68804

Client Sample ID: Method Blank

Prep Type: Total/NA Prep Batch: 68728

MB MB RL Analyte Result Qualifier MDL Unit Prepared Analyzed Dil Fac 05/13/20 08:10 05/13/20 13:12 Mercury ND 0.0847 0.00597 mg/Kg

Lab Sample ID: LCS 570-68728/2-A

Matrix: Solid

Analysis Batch: 68804

Client Sample ID: Lab Control Sample

Prep Type: Total/NA Prep Batch: 68728

Spike LCS LCS %Rec. Added Result Qualifier %Rec Limits Analyte Unit 0.833 0.8593 103 85 - 121 Mercury mg/Kg

Client: WGR Southwest Inc

Project/Site: WGR - Tesoro LA Refinery

Job ID: 570-27181-1

Method: 7471	- Mercury (C	(VAA) (Continued)
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Lab Sample ID: LCSD 570-68728/3-A			(Client Sa	mple	ID: Lal	Control	Sample	Dup
Matrix: Solid							Prep Typ	e: Tot	al/NA
Analysis Batch: 68804							Prep B	atch:	8728
A CAMP CONTRACTOR OF THE CAMP CONTRACTOR	Spike	LCSD	LCSD				%Rec.		RPD
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	0.820	0.8752		mg/Kg		107	85 - 121	2	10

Lab Sample ID: 570-27852-A-1-E MS Client Sample ID: Matrix Spike Matrix: Solid Prep Type: Total/NA Analysis Batch: 68804 Prep Batch: 68728

Sample Sample Spike MS MS %Rec. Analyte Result Qualifier Added Result Qualifier Unit Limits स्र

0.905

Lab Sample ID: 570-27852-A-1-F MSD Client Sample ID: Matrix Spike Duplicate Matrix: Solid Prep Type: Total/NA Analysis Batch: 68804 Prep Batch: 68728

1.006

mg/Kg

111

Client Sample ID: Lab Control Sample Dup

71 - 137

Sample Sample Spike MSD MSD %Rec. RPD Added Analyte Result Qualifier Result Qualifier Unit D %Rec Limits RPD Limit ND 0.862 0.9329 108 71 - 137 8 Mercury mg/Kg

Method: 9060A - Organic Carbon, Total (TOC)

ND

Lab Sample ID: MB 570-70905/4 Client Sample ID: Method Blank Matrix: Solid Prep Type: Total/NA

Analysis Batch: 70905

Mercury

MB MB Result Qualifier RL MDL Unit Prepared Dil Fac Analyte Analyzed 174 mg/Kg Carbon, Total Organic ND 500 05/21/20 18:40

Lab Sample ID: LCS 570-70905/5 Client Sample ID: Lab Control Sample Matrix: Solid Prep Type: Total/NA

Analysis Batch: 70905

Lab Sample ID: LCSD 570-70905/6

LCS LCS Spike %Rec. Added Result Qualitier Unit D %Rec Limits

Carbon, Total Organic 30000 30250 mg/Kg 101 80 - 120

Matrix: Solid Prep Type: Total/NA Analysis Batch: 70905 LCSD LCSD Spike %Rec. RPD Added Result Qualifier RPD D %Rec Limits Limit Analyte Unit

30000 80 - 120 Carbon, Total Organic 26450 88 13 mg/Kg 20

Lab Sample ID: 570-27650-A-1-A MS Client Sample ID: Matrix Spike Matrix: Solid Prep Type: Total/NA

Analysis Batch: 70905

Sample Sample Spike MS MS %Rec. Result Qualifier Added Result Qualifier Unit %Rec Limits Carbon, Total Organic 11800 54500 63350 mg/Kg 亞 75 - 125

Client: WGR Southwest Inc

Project/Site: WGR - Tesoro LA Refinery

Job ID: 570-27181-1

Method: 9060A - Organic Carbon, Total (TOC) (Continued)

Lab Sample ID: 570-27650-A-1-A MSD Client Sample ID: Matrix Spike Duplicate Matrix: Solid Prep Type: Total/NA

Analysis Batch: 70905

Sample Sample Spike MSD MSD RPD %Rec. Analyte Result Qualifier Added Result Qualifier Unit D %Rec Limits RPD Limit 11800 53500 Carbon, Total Organic 66470 mg/Kg 102 75 - 125 5 25

Method: Moisture - Percent Moisture

Lab Sample ID: 570-27185-B-1 DU Client Sample ID: Duplicate Prep Type: Total/NA

Matrix: Solid

Analysis Batch: 66697 DU DU Sample Sample RPD Result Qualifier Result Qualifier Analyte Unit D RPD Limit

7.3 Percent Moisture 7.1 % 3 10

Client: WGR Southwest Inc

Project/Site: WGR - Tesoro LA Refinery

GC/MS Semi VOA

Pre	o Ba	tch:	668	129
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Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-27181-1	SED-004	Total/NA	Solid	Organotin Prep	66884
570-27181-2	SED-005	Total/NA	Solid	Organotin Prep	66884
570-27181-3	SED-006	Total/NA	Solid	Organotin Prep	66884
570-27181-4	SE-D-007	Total/NA	Solid	Organotin Prep	66884
MB 570-66829/1-A	Method Blank	Total/NA	Solid	Organotin Prep	
LCS 570-66829/2-A	Lab Control Sample	Total/NA	Solid	Organotin Prep	
LCSD 570-66829/3-A	Lab Control Sample Dup	Total/NA	Solid	Organotin Prep	
660-101903-A-1-A MS	Matrix Spike	Total/NA	Solid	Organotin Prep	
660-101903-A-1-B MSD	Matrix Spike Duplicate	Total/NA	Solid	Organotin Prep	

Cleanup Batch: 66884

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-27181-1	SED-004	Total/NA	Solid	Homogenize	-
150 / 150 m		12.000		Prep	
570-27181-2	SED-005	Total/NA	Solid	Homogenize	
Laboration III		2.050		Prep	
570-27181-3	SED-006	Total/NA	Solid	Homogenize	
Val contains	W. C. Law		4.00	Prep	
570-27181-4	SE-D-007	Total/NA	Solid	Homogenize	
Are acoust to other	CE 3 CM		5-89	Prep	
570-27181-3 MS	SED-006	Total/NA	Solid	Homogenize	
	200 000		Section 1	Prep	
570-27181-3 MSD	SED-006	Total/NA	Solid	Homogenize	
				Prep	

Analysis Batch: 67134

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-27181-1	SED-004	Total/NA	Solid	Organotins SIM	66829
570-27181-2	SED-005	Total/NA	Solid	Organotins SIM	66829
570-27181-3	SED-006	Total/NA	Solid	Organotins SIM	66829
570-27181-4	SE-D-007	Total/NA	Solid	Organotins SIM	66829
MB 570-66829/1-A	Method Blank	Total/NA	Solid	Organotins SIM	66829
LCS 570-66829/2-A	Lab Control Sample	Total/NA	Solid	Organolins SIM	88829
LCSD 570-66829/3-A	Lab Control Sample Dup	Total/NA	Solid	Organotins SIM	66829
660-101903-A-1-A MS	Matrix Spike	Total/NA	Solid	Organotins SIM	66829
660-101903-A-1-B MSD	Matrix Spike Duplicate	Total/NA	Solid	Organotins SIM	66829

Prep Batch: 67217

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-27181-1	SED-004	Total/NA	Solid	3541	66884
570-27181-2	SED-005	Total/NA	Solid	3541	66884
570-27181-3	SED-006	Total/NA	Solid	3541	66884
570-27181-4	SE-D-007	Total/NA	Solid	3541	66884
MB 570-67217/1-A	Method Blank	Total/NA	Solid	3541	
LCS 570-67217/2-A	Lab Control Sample	Total/NA	Solid	3541	
LCSD 570-67217/3-A	Lab Control Sample Dup	Total/NA	Solid	3541	
570-27181-3 MS	SED-006	Total/NA	Solid	3541	66884
570-27181-3 MSD	SED-006	Total/NA	Solid	3541	66884

Analysis Batch: 67642

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-27181-4	SE-D-007	Total/NA	Solid	8270C SIM	67217
MB 570-67217/1-A	Method Blank	Total/NA	Solid	8270C SIM	67217

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Job ID: 570-27181-1

Job ID: 570-27181-1

QC Association Summary

Client: WGR Southwest Inc

Project/Site: WGR - Tesoro LA Refinery

GC/MS Semi VOA (Continued)

Analysis Batch: 67642 (Continued)

1	Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
ı	LCS 570-67217/2-A	Lab Control Sample	Total/NA	Solid	8270C SIM	67217

Analysis Batch: 67904

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCSD 570-67217/3-A	Lab Control Sample Dup	Total/NA	Solid	8270C SIM	67217

Analysis Batch: 68220

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-27181-1	SED-004	Total/NA	Solid	8270C SIM	67217
570-27181-2	SED-005	Total/NA	Solid	8270C SIM	67217
570-27181-3	SED-006	Total/NA	Solid	8270C SIM	67217
570-27181-3 MS	SED-006	Total/NA	Solid	8270C SIM	67217
570-27181-3 MSD	SED-006	Total/NA	Solid	8270C SIM	67217

GC Semi VOA

Cleanup Batch: 66884

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-27181-1	SED-004	Total/NA	Solid	Homogenize	
				Prep	
570-27181-2	SED-005	Total/NA	Solid	Homogenize	
				Prep	
570-27181-3	SED-006	Total/NA	Solid	Homogenize	
				Prep	
570-27181-4	SE-D-007	Total/NA	Solid	Homogenize	
				Prep	
570-27181-2 MS	SED-005	Total/NA	Solid	Homogenize	
				Prep	
570-27181-2 MSD	SED-005	Total/NA	Solid	Homogenize	
				Prep	

Prep Batch: 67132

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-27181-1	SED-004	Total/NA	Solid	3541	66884
570-27181-2	SED-005	Total/NA	Solid	3541	66884
570-27181-3	SED-006	Total/NA	Solid	3541	66884
570-27181-4	SE-D-007	Total/NA	Solid	3541	66884
MB 570-67132/1-A	Method Blank	Total/NA	Solid	3541	
LCS 570-67132/4-A	Lab Control Sample	Total/NA	Solid	3541	
LCSD 570-67132/5-A	Lab Control Sample Dup	Total/NA	Solid	3541	
570-27181-2 MS	SED-005	Total/NA	Solid	3541	66884
570-27181-2 MSD	SED-005	Total/NA	Solid	3541	66884

Analysis Batch: 67332

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-27181-1	SED-004	Total/NA	Solid	8015B	67364
570-27181-2	SED-005	Total/NA	Solid	8015B	67364
570-27181-3	SED-006	Total/NA	Solid	8015B	67364
570-27181-4	SE-D-007	Total/NA	Solid	8015B	67364
LCS 570-67364/2-A	Lab Control Sample	Total/NA	Solid	8015B	67364
LCSD 570-67364/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B	67364
570-27190-A-1-J MS	Matrix Spike	Total/NA	Solid	8015B	67364
570-27190-A-1-K MSD	Matrix Spike Duplicate	Total/NA	Solid	8015B	67364

Client: WGR Southwest Inc

Project/Site: WGR - Tesoro LA Refinery

Job ID: 570-27181-1

GC Semi VOA

Prep Ba	tch:	67364
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Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-27181-1	SED-004	Total/NA	Solid	3550C	66884
570-27181-2	SED-005	Total/NA	Solid	3550C	66884
570-27181-3	SED-006	Total/NA	Solid	3550C	66884
570-27181-4	SE-D-007	Total/NA	Solid	3550C	66884
MB 570-67364/1-A	Method Blank	Total/NA	Solid	3550C	
LCS 570-67364/2-A	Lab Control Sample	Total/NA	Solid	3550C	
LCSD 570-67364/3-A	Lab Control Sample Dup	Total/NA	Solid	3550C	
570-27190-A-1-J MS	Matrix Spike	Total/NA	Solid	3550C	
570-27190-A-1-K MSD	Matrix Spike Duplicate	Total/NA	Solid	3550C	

Analysis Batch: 67570

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 570-67364/1-A	Method Blank	Total/NA	Solid	8015B	67364

Analysis Batch: 68205

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-27181-1	SED-004	Total/NA	Solid	8082	67132
570-27181-2	SED-005	Total/NA	Solid	8082	67132
570-27181-3	SED-006	Total/NA	Solid	8082	67132
570-27181-4	SE-D-007	Total/NA	Solid	8082	67132
MB 570-67132/1-A	Method Blank	Total/NA	Solid	8082	67132
LCS 570-67132/4-A	Lab Control Sample	Total/NA	Solid	8082	67132
LCSD 570-67132/5-A	Lab Control Sample Dup	Total/NA	Solid	8082	67132
570-27181-2 MS	SED-005	Total/NA	Solid	8082	67132
570-27181-2 MSD	SED-005	Total/NA	Solid	8082	67132

Analysis Batch: 68894

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-27181-1	SED-004	Total/NA	Solid	8081A	69209
570-27181-1	SED-004	Total/NA	Solid	8081A	69209
570-27181-2	SED-005	Total/NA	Solid	8081A	69209
570-27181-2	SED-005	Total/NA	Solid	8081A	69209
570-27181-3	SED-006	Total/NA	Solid	8081A	69209
570-27181-3	SED-006	Total/NA	Solid	8081A	69209
570-27181-4	SE-D-007	Total/NA	Solid	8081A	69209
570-27181-1 MS	SED-004	Total/NA	Solid	8081A	69209
570-27181-1 MSD	SED-004	Total/NA	Solid	8081A	69209
370-27101-11005	OLD-004	1 Ottalities	Golio	000 111	· ·

Cleanup Batch: 69126

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-27181-1	SED-004	Total/NA	Solid	Homogenize	
				Prep	
570-27181-2	SED-005	Total/NA	Solid	Homogenize	
		20.00		Prep	
570-27181-3	SED-006	Total/NA	Solid	Homogenize	
				Prep	
570-27181-4	SE-D-007	Total/NA	Solid	Homogenize	
				Prep	
570-27181-1 MS	SED-004	Total/NA	Solid	Homogenize	
				Prep	
570-27181-1 MSD	SED-004	Total/NA	Solid	Homogenize	
				Prep	

Client: WGR Southwest Inc

Project/Site: WGR - Tesoro LA Refinery

GC Semi VOA

Prep Batch: 69209

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-27181-1	SED-004	Total/NA	Solid	3541	69126
570-27181-2	SED-005	Total/NA	Solid	3541	69126
570-27181-3	SED-006	Total/NA	Solid	3541	69126
570-27181-4	SE-D-007	Total/NA	Solid	3541	69126
570-27181-1 MS	SED-004	Total/NA	Solid	3541	69126
570-27181-1 MSD	SED-004	Total/NA	Solid	3541	69126

Metals

Cleanup Batch: 66884

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-27181-1	SED-004	Total/NA	Solid	Homogenize	
				Prep	
570-27181-2	SED-005	Total/NA	Solid	Homogenize	
				Prep	
570-27181-3	SED-006	Total/NA	Solid	Homogenize	
				Prep	
570-27181-4	SE-D-007	Total/NA	Solid	Homogenize	
				Prep	

Prep Batch: 68728

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-27181-1	SED-004	Total/NA	Solid	7471A	66884
570-27181-2	SED-005	Total/NA	Solid	7471A	66884
570-27181-3	SED-006	Total/NA	Solid	7471A	66884
570-27181-4	SE-D-007	Total/NA	Solid	7471A	66884
MB 570-68728/1-A	Method Blank	Total/NA	Solid	7471A	
LCS 570-68728/2-A	Lab Control Sample	Total/NA	Solid	7471A	
LCSD 570-68728/3-A	Lab Control Sample Dup	Total/NA	Solid	7471A	
570-27852-A-1-E MS	Matrix Spike	Total/NA	Solid	7471A	
570-27852-A-1-F MSD	Matrix Spike Duplicate	Total/NA	Solid	7471A	

Analysis Batch: 68804

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-27181-1	SED-004	Total/NA	Solid	7471A	68728
570-27181-2	SED-005	Total/NA	Solid	7471A	68728
570-27181-3	SED-006	Total/NA	Solid	7471A	68728
570-27181-4	SE-D-007 /1-A Method Blank	Total/NA	Solid	7471A 7471A	68728 68728
MB 570-68728/1-A		Total/NA	Solid		
LCS 570-68728/2-A	Lab Control Sample	Total/NA	Solid	7471A	68728
LCSD 570-68728/3-A	Lab Control Sample Dup	Total/NA	Solid	7471A	68728
570-27852-A-1-E MS	Matrix Spike	Total/NA	Solid	7471A	68728
570-27852-A-1-F MSD	Matrix Spike Duplicate	Total/NA	Solid	7471A	68728

Prep Batch: 68912

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-27181-1	SED-004	Total/NA	Solid	3050B	66884
570-27181-2	SED-005	Total/NA	Solid	3050B	66884
570-27181-3	SED-006	Total/NA	Solid	3050B	66884
570-27181-4	SE-D-007	Total/NA	Solid	3050B	66884
MB 570-68912/1-A ^20	Method Blank	Total/NA	Solid	3050B	
LCS 570-68912/2-A ^20	Lab Control Sample	Total/NA	Solid	3050B	

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Job ID: 570-27181-1

Client: WGR Southwest Inc.

Project/Site: WGR - Tesoro LA Refinery

Metals (Continued)

Prep	Batch:	68912	(Continued)	1
1 100	Date.	00012	Committee	п

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCSD 570-68912/3-A ^20	Lab Control Sample Dup	Total/NA	Solid	3050B	
570-28125-A-1-B MS ^20	Matrix Spike	Total/NA	Solid	3050B	
570-28125-A-1-C MSD ^20	Matrix Spike Duplicate	Total/NA	Solid	3050B	

Analysis Batch: 69097

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-27181-1	SED-004	Total/NA	Solid	6020	68912
570-27181-2	SED-005	Total/NA	Solid	6020	68912
570-27181-3	SED-006	Total/NA	Solid	6020	68912
570-27181-4	SE-D-007	Total/NA	Solid	6020	68912
MB 570-68912/1-A ^20	Method Blank	Total/NA	Solid	6020	68912
LCS 570-68912/2-A ^20	Lab Control Sample	Total/NA	Solid	6020	68912
LCSD 570-68912/3-A ^20	Lab Control Sample Dup	Total/NA	Solid	6020	68912
570-28125-A-1-B MS ^20	Matrix Spike	Total/NA	Solid	6020	68912
570-28125-A-1-C MSD ^20	Matrix Spike Duplicate	Total/NA	Solid	6020	68912

General Chemistry

Analysis Batch: 66697

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-27181-1	SED-004	Total/NA	Solid	Moisture	
570-27181-2	SED-005	Total/NA	Solid	Moisture	
570-27181-3	SED-006	Total/NA	Solid	Moisture	
570-27181-4	SE-D-007	Total/NA	Solid	Moisture	
570-27185-B-1 DU	Duplicate	Total/NA	Solid	Moisture	

Cleanup Batch: 66884

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-27181-1	SED-004	Total/NA	Solid	Homogenize	
				Prep	
570-27181-2	SED-005	Total/NA	Solid	Homogenize	
				Prep	
570-27181-3	SED-006	Total/NA	Solid	Homogenize	
				Prep	
570-27181-4	SE-D-007	Total/NA	Solid	Homogenize	
				Pren	

Cleanup Batch: 67938

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-27650-A-1-A MS	Matrix Spike	Total/NA	Solid	Homogenize	
				Prep	
570-27650-A-1-A MSD	Matrix Spike Duplicate	Total/NA	Solid	Homogenize	
				Pren	

Analysis Batch: 70905

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-27181-1	SED-004	Total/NA	Solid	9060A	66884
570-27181-2	SED-005	Total/NA	Solid	9060A	66884
570-27181-3	SED-006	Total/NA	Solid	9060A	66884
570-27181-4	SE-D-007	Total/NA	Solid	9060A	66884
MB 570-70905/4	Method Blank	Total/NA	Solid	9060A	
LCS 570-70905/5	Lab Control Sample	Total/NA	Solid	9060A	
LCSD 570-70905/6	Lab Control Sample Dup	Total/NA	Solid	9060A	

Eurofins Calscience LLC

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Job ID: 570-27181-1

Client: WGR Southwest Inc

Project/Site: WGR - Tesoro LA Refinery

Job ID: 570-27181-1

General Chemistry (Continued)

Analysis Batch: 70905 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-27650-A-1-A MS	Matrix Spike	Total/NA	Solid	9060A	67938
570-27650-A-1-A MSD	Matrix Spike Duplicate	Total/NA	Solid	9060A	67938

Geotechnical

Analysis Batch: 68372

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-27181-1	SED-004	Total/NA	Solid	D4464	
570-27181-2	SED-005	Total/NA	Solid	D4464	
570-27181-3	SED-006	Total/NA	Solid	D4464	
570-27181-4	SE-D-007	Total/NA	Solid	D4464	

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Lab Chronicle

Client: WGR Southwest Inc

Project/Site: WGR - Tesoro LA Refinery

Lab Sample ID: 570-27181-1

Matrix: Solid

Job ID: 570-27181-1

Client Sample ID: SED-004 Date Collected: 04/30/20 16:10

Date Received: 05/01/20 13:56

Prep Type	Batch Type	Batch Method	Run	Dil	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab	
Total/NA	Cleanup	Homogenize Prep	Kun	racioi	Amount	Amount	66884	05/04/20 13:41		ECL 1	_
Total/NA	Prep	3541			20.2 g	2 mL	67217	05/05/20 21:50		ECL 1	
Total/NA	Analysis	8270C SIM		2	24.2 9	2.772	68220	05/11/20 21:07		ECL 1	
		t ID: GCMSMM					444	34,000,000		200	
Total/NA	Prep	Organotin Prep			10.3 g	5 mL	66829	05/04/20 09:52	UWEZ	ECL 1	
Total/NA	Cleanup	Homogenize Prep			1000		66884	05/04/20 13:41	C4LT	ECL 1	
Total/NA	Analysis	Organotins SIM		1			67134	05/05/20 20:17	AJ2Q	ECL 1	
	Instrumer	t ID: GCMSY									
Total/NA	Cleanup	Homogenize Prep					66884	05/04/20 13:41	C4LT	ECL 1	
Total/NA	Prep	3550C			9.60 g	10 mL	67364	05/06/20 15:46	N5Y3	ECL 1	
Total/NA	Analysis	8015B		1			67332	05/07/20 02:10	N5Y3	ECL 1	
	Instrumer	it ID: GC50									
Total/NA	Prep	3541			20.2 g	2 mL	69209	05/11/20 20:49	DE 77 P. DE	ECL 1	
Total/NA	Analysis	8081A		5			68894	05/14/20 06:24	UHHN	ECL 1	
T-1 (818		t ID: GC51					20400	05144/004007		FOI 1	
Total/NA	Cleanup	Homogenize Prep			170	2.4	69126	05/14/20 13:37		ECL 1	
Total/NA	Prep	3541		1.0	20.2 g	2 mL	69209	05/11/20 20:49		ECL 1	
Total/NA	Analysis	8081A t ID: GC51		1			68894	05/14/20 08:47	UHHN	ECL 1	
Total/NA	Cleanup	Homogenize Prep					69126	05/14/20 13:37	C4LT	ECL 1	
Total/NA	Cleanup	Homogenize Prep					66884	05/04/20 13:41	CALT	ECL 1	
Total/NA	Prep	3541			20.2 g	2 mL	67132	05/05/20 14:07	Section of the second	ECL 1	
Total/NA	Analysis	8082		1			68205	05/11/20 14:04	UHHN	ECL 1	
	Instrumen	t ID: GC58									
Total/NA	Cleanup	Homogenize Prep					66884	05/04/20 13:41	C4LT	ECL 1	
Total/NA	Prep	3050B			1.96 g	100 mL	68912	05/13/20 16:54	X7RL	ECL 1	
Total/NA	Analysis	6020		20			69097	05/14/20 09:17	UFLE	ECL 1	
	Instrumen	t ID: ICPMS05									
Total/NA	Cleanup	Homogenize Prep					66884	05/04/20 13:41		ECL 1	
Total/NA	Prep	7471A			0,59 g	100 mL	68728	05/13/20 08:10		ECL 1	
Total/NA	Analysis	7471A t ID: HG8		4			68804	05/13/20 13:42	MD3A	ECL 1	
T-4-1/41A							ccno.	05/04/20 13:41	CHT	ECL 1	
Total/NA Total/NA	Cleanup	Homogenize Prep 9060A		1	206.7 mg	206.7 mg	66884 70905	05/04/20 13:41		ECL 1	
Totalina		t ID: TOCB			200.7 mg	200,7 mg	74903	03/21/20 18.40	O T ZIVI	EGE I	
Total/NA	Analysis	Moisture		1			66697	05/02/20 11:03	W6MG	ECL 2	
100,000		ID: NOEQUIP						The state of the state of			
Total/NA	Analysis	D4464		3.1			68372	05/11/20 15:29	C4LT	ECL 1	
	Instrumen	LID: NOEQUIP									

Client Sample ID: SED-005 Date Collected: 04/30/20 14:30

Date Received: 05/01/20 13:56

Lab Sample ID: 570-27181-2

Matrix: Solid

	Batch	Batch		Dil	Initial	Final	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Amount	Amount	Number	or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					66884	05/04/20 13:41	C4LT	ECL 1
Total/NA	Prep	3541			20.4 g	2 mL	67217	05/05/20 21:50	UM1W	ECL 1
Total/NA	Analysis Instrumer	8270C SIM at ID: GCMSMM		2			68220	05/11/20 21:31	AJ2Q	ECL 1
Total/NA	Prep	Organotin Prep			10.3 g	5 mL	66829	05/04/20 09:52	UWFZ	ECL 1
Total/NA	Cleanup	Homogenize Prep			10.0 9	5	66884	05/04/20 13:41		ECL 1
Total/NA	Analysis	Organotins SIM		3			67134	05/05/20 20:35		ECL 1
Total/NA	Cleanup	Homogenize Prep					66884	05/04/20 13:41	C4LT	ECL 1
Total/NA	Prep	3550C			9.89 g	10 mL	67364	05/06/20 15:46	N5Y3	ECL 1
Total/NA	Analysis Instrumer	8015B at ID: GC50		1			67332	05/07/20 02:30	N5Y3	ECL 1
Total/NA	Prep	3541			20.2 g	2 mL	69209	05/11/20 20:49	USUL	ECL 1
Total/NA	Analysis	8081A at ID: GC51		.5			68894	05/14/20 06:38	UHHN	ECL 1
Total/NA	Cleanup	Homogenize Prep					69126	05/14/20 13:37	C4LT	ECL 1
Total/NA	Prep	3541			20.2 g	2 mL	69209	05/11/20 20:49	USUL	ECL 1
Total/NA	Analysis	8081A at ID: GC51		1	1000		68894	05/14/20 09:01	UHHN	ECL 1
Total/NA	Cleanup	Homogenize Prep					69126	05/14/20 13:37	C4LT	ECL 1
Total/NA	Cleanup	Homogenize Prep					66884	05/04/20 13:41	C4LT	ECL 1
Total/NA	Prep	3541			20.2 g	2 mL	67132	05/05/20 14:07	UM1W	ECL 1
Total/NA	Analysis Instrumen	8082 at ID: GC58		1			68205	05/11/20 12:34	UHHN	ECL 1
Total/NA	Cleanup	Homogenize Prep					66884	05/04/20 13:41	C4LT	ECL1
Total/NA	Prep	3050B			2.04 g	100 mL	68912	05/13/20 16:54	X7RL	ECL 1
Total/NA	Analysis Instrumen	6020 et ID: ICPMS05		20			69097	05/14/20 09:20	UFLE	ECL 1
Total/NA	Cleanup	Homogenize Prep					66884	05/04/20 13:41	C4LT	ECL 1
Total/NA	Prep	7471A			0.58 g	100 mL	68728	05/13/20 08:10	MD3A	ECL 1
Total/NA	Analysis Instrumen	7471A It ID: HG8		1			68804	05/13/20 13:44	МДЗА	ECL 1
Total/NA	Cleanup	Homogenize Prep					66884	05/04/20 13:41	C4LT	ECL 1
Total/NA	Analysis Instrumen	9060A t ID: TOC8		1	208.2 mg	208.2 mg	70905	05/21/20 18:40	CY2M	ECL 1
otal/NA	Analysis Instrumen	Moisture t ID: NOEQUIP		1			66697	05/02/20 11:03	W6MG	ECL 2
Total/NA	Analysis Instrumen	D4464 t ID: NOEQUIP		1			68372	05/11/20 15:37	C4LT	ECL 1

Lab Chronicle

Client: WGR Southwest Inc

Project/Site: WGR - Tesoro LA Refinery

Lab Sample ID: 570-27181-3

Matrix: Solid

Job ID: 570-27181-1

Client Sample ID: SED-006
Date Collected: 04/30/20 12:30

Date	Collected:	04/30/20	12:30
Date	Received:	05/01/20	13:56

Prep Type	Batch Type	Batch Method	Run	Dil	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab	
Total/NA	Cleanup	Homogenize Prep	Kun	ractor	Amount	Amount	66884	05/04/20 13:41	C4LT	ECL 1	_
Total/NA	Prep	3541			20.3 g	2 mL	67217	05/05/20 21:50		ECL 1	
Total/NA	Analysis	8270C SIM		2			68220	05/11/20 21:55		ECL 1	
22.03.77		IT ID: GCMSMM		-				- 10 to FAME	1 20.40	0.800.5	
Total/NA	Prep	Organotin Prep			10.0 g	5 mL	66829	05/04/20 09:52	UWEZ	ECL 1	
Total/NA	Cleanup	Homogenize Prep					66884	05/04/20 13:41	C4LT	ECL 1	
Total/NA	Analysis	Organotins SIM		1			67134	05/05/20 20:53	AJ2Q	ECL 1	
	Instrumer	t ID: GCMSY									
Total/NA	Cleanup	Homogenize Prep					66884	05/04/20 13:41	C4LT	ECL 1	
Total/NA	Prep	3550C			10.37 g	10 mL	67364	05/06/20 15:46	N5Y3	ECL 1	
Total/NA	Analysis	8015B		1			67332	05/07/20 02:50	N5Y3	ECL 1	
	Instrumer	it ID: GC50									
Total/NA	Prep	3541			20.4 g	2 mL	69209	05/11/20 20:49	USUL	ECL 1	
Total/NA	Analysis	8081A		5			68894	05/14/20 06:52	UHHN	ECL 1	
a Carrie		t ID: GC51						303, NEV 35.75	202	E44 1	
Total/NA	Cleanup	Homogenize Prep					69126	05/14/20 13:37	C4LT	ECL 1	
Total/NA	Prep	3541			20.4 g	2 mL	69209	05/11/20 20:49	USUL	ECL 1	
Total/NA	Analysis	8081A		.1			68894	05/14/20 09:15	UHIIN	ECL 1	
_ 174271		t ID. GC51						00000000000000	1		
Total/NA	Cleanup	Homogenize Prep					69126	05/14/20 13:37	C4LT	ECL1	
Total/NA	Cleanup	Homogenize Prep					66884	05/04/20 13:41		ECL 1	
Total/NA	Prep	3541			20.4 g	2 mL	67132	05/05/20 21:57		ECL 1	
Total/NA	Analysis	8082		1			68205	05/11/20 13:28	UHHN	ECL 1	
	Instrumen	t ID: GC58									
Total/NA	Cleanup	Homogenize Prep				200	66884	05/04/20 13:41		ECL 1	
Total/NA	Prep	3050B		2.2	2.03 g	100 mL	68912	05/13/20 16:54		ECL 1	
Total/NA	Analysis	6020		20			69097	05/14/20 09:22	UFLE	ECL 1	
	200000000	t ID: ICPMS05									
Total/NA	Cleanup	Homogenize Prep				722 .0	66884	05/04/20 13:41	4.050	ECL 1	
Total/NA	Prep	7471A			0.58 g	100 mL	68728	05/13/20 D8:10	1000	ECL 1	
Total/NA	Analysis	7471A t ID: HG8		1			68804	05/13/20 13:45	МВЗА	ECL 1	
Total/NA	СІеапир	Homogenize Prep					66884	05/04/20 13:41	C4LT	ECL 1	
Total/NA	Analysis	9060A		1	201.8 mg	201.8 mg	70905	05/21/20 18:40	1305 Av.	ECL 1	
1,000,111,		t ID: TOCB		,	20/10/11/3	20,10,1119	,		9,500		
Total/NA	Analysis	Moisture		1			66697	05/02/20 11:03	W6MG	ECL 2	
	In contrast of the second	ID: NOEQUIP									
Total/NA	Analysis	D4464		1			68372	05/11/20 15:46	C4LT	ECL1	
	Instrumen	t ID: NOEQUIP									

Lab Chronicle

Client: WGR Southwest Inc

Project/Site: WGR - Tesoro LA Refinery

Lab Sample ID: 570-27181-4

Matrix: Solid

Job ID: 570-27181-1

Client Sample ID: SE-D-007 Date Collected: 04/30/20 11:04

Date Received: 05/01/20 13:56

Initial Batch Batch Dil Final Batch Prepared Prep Type Type Method Run Factor Amount Amount Number or Analyzed Analyst Lab Total/NA Cleanup Homogenize Prep 66884 05/04/20 13:41 C4LT ECL 1 Total/NA Prep 3541 20.1 g 2 mL 67217 05/05/20 21:50 UM1W ECL 1 Total/NA 8270C SIM Analysis 67642 05/07/20 17:57 AJ2Q ECL1 1 Instrument ID: GCMSMM Total/NA Organotin Prep 66829 05/04/20 09:52 UWEZ ECL 1 Prep 10.1 g 5 mL Total/NA Cleanup Homogenize Prep 66884 ECL 1 05/04/20 13:41 C4LT Total/NA Analysis Organotins SIM 67134 05/05/20 21:10 AJ2Q ECL 1 Instrument ID: GCMSY Total/NA Cleanup Homogenize Prep 66884 05/04/20 13:41 C4LT ECL1 Total/NA Prep 3550C 10.47 g 10 mL 67364 05/06/20 15:46 N5V3 ECL 1 Total/NA Analysis 8015B 67332 05/07/20 03:11 N5Y3 ECL 1 Instrument ID: GC50 Total/NA 3541 Prep 20.2 g 2 mL 69209 05/11/20 20:49 USUL ECL 1 Total/NA Analysis 8081A 68894 05/14/20 09:29 UHHN ECL 1 Instrument ID: GC51 Total/NA Cleanup Homogenize Prep 69126 05/14/20 18:19 C4LT ECL 1 Total/NA Cleanup Homogenize Prep 66884 05/04/20 13:41 C4LT ECL 1 Total/NA 67132 ECL 1 Prep 3541 20.2 g 2 mL 05/05/20 21:57 UM1W Total/NA 8082 68205 05/11/20 13:46 UHHN ECL 1 Analysis Instrument ID: GC58 Homogenize Prep ECL 1 Total/NA Cleanup 66884 05/04/20 13:41 C4LT Total/NA 1.98 g Prep 3050B 100 mL 68912 05/13/20 16:54 X7RL ECL 1 05/14/20 09:25 UFLE Total/NA Analysis 6020 20 69097 ECL 1 Instrument ID: ICPMS05 Total/NA Cleanup Homogenize Prep 66884 05/04/20 13:41 C4LT ECL 1 Total/NA Prep 7471A 100 mL 68728 05/13/20 08:10 MD3A ECL 1 0.61 g Total/NA Analysis 7471A 68804 05/13/20 13:47 MD3A ECL 1 Instrument ID: HG8 Total/NA 66884 ECL 1 Cleanup Homogenize Prep 05/04/20 13:41 C4LT Total/NA Analysis 9060A 201.8 mg 70905 05/21/20 18:40 CY2M 201.8 mg ECL 1 Instrument ID: TOC8 Total/NA Analysis Moisture 66697 05/02/20 11:03 W6MG ECL 2 Instrument ID: NOEQUIP Total/NA Analysis D4464 68372 05/11/20 15:54 C4LT ECL 1

Laboratory References:

ECL 1 = Eurofins Calscience LLC Lincoln, 7440 Lincoln Way, Garden Grove, CA 92841, TEL (714)895-5494
ECL 2 = Eurofins Calscience LLC Lampson, 7445 Lampson Ave, Garden Grove, CA 92841, TEL (714)895-5494

Instrument ID: NOEQUIP

Accreditation/Certification Summary

Client: WGR Southwest Inc

Project/Site: WGR - Tesoro LA Refinery

Job ID: 570-27181-1

Laboratory: Eurofins Calscience LLC

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	Los Angeles County Sanitation Districts	10109	09-29-20
California	SCAQMD LAP	17LA0919	11-30-20
California	State	2944	09-29-20
Guam	State	20-003R	10-31-20
Nevada	State	GA00111	07 31 20
Oregon	NELAP	CA300001	01-29-21
USDA	US Federal Programs	P330-20-00034	02-10-23
Washington	State	C916-18	10-11-20

112

Job ID: 570-27181-1

Method Summary

Client: WGR Southwest Inc.

Project/Site: WGR - Tesoro LA Refinery

Method Method Description Protocol Laboratory **B270C SIM** PAHs (GC/MS SIM) SW846 ECL 1 Organotins SIM Organotins (GC/MS SIM) Lab SOP ECL 1 8015B Diesel Range Organics (DRO) (GC) SW846 ECL 1 8081A Organochlorine Pesticides (GC) SW846 ECL 1 8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography SW846 ECL 1 6020 Metals (ICP/MS) SW846 ECL 1 7471A Mercury (CVAA) SW846 ECL 1 SW846 ECL 1 9060A Organic Carbon, Total (TOC) Moisture Percent Moisture EPA ECL 2 D4464 Particle Size Distribution of Catalytic Material (Laser light scattering) ASTM ECL 1 3050B SW846 ECL1 Preparation, Metals Automated Soxhlet Extraction 3541 SW846 ECL 1 3550C SW846 Ultrasonic Extraction ECL 1 7471A Preparation, Mercury SW846 ECL 1 Homogenize Prep Preparation, Homogenization None ECL 1 ECL 1 Organotin Prep Extraction (Organotins) None

Protocol References:

ASTM = ASTM International

EPA = US Environmental Protection Agency

Lab SOP = Laboratory Standard Operating Procedure

None = None

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

ECL 1 = Eurofins Calscience LLC Lincoln, 7440 Lincoln Way, Garden Grove, CA 92841, TEL (714)895-5494

ECL 2 = Eurofins Calscience LLC Lampson, 7445 Lampson Ave, Garden Grove, CA 92841, TEL (714)895-5494

Sample Summary

Client: WGR Southwest Inc

Project/Site: WGR - Tesoro LA Refinery

Job ID: 570-27181-1

ab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset II
70-27181-1	SED-004	Solid	04/30/20 16:10	05/01/20 13:56	
70-27181-2	SED-005	Solid	04/30/20 14:30	05/01/20 13:56	
70-27181-3	SED-006	Solid	04/30/20 12:30	05/01/20 13:56	
70-27181-4	SE-D-007	Solid	04/30/20 11:04	05/01/20 13:56	

Page 55 of 56

Tesoro Los Angeles Refinery - Car Facility Name		TOIL	Cin	te (Fa		_	_	_			-	_			_			_	_							_	Page 1 of 1
LA Refinery - Carson Operations		180)1 E	Sep	ulve	dal	Blvd	., Ca	arson CA 9	90749	Pro	Ch	Man	nagi sa C	er (C Orey	ions rer	utan	0		Pro		1.AP	c.01				Laboratory Name Eurofins Calscience
facility Contact		Fac		elep 0) 84							Tel		one (2) 79					13	7	Fax	No. (0		ent) 9-8510			7	7440 Lincoln Way
Consultant Company			10.	0,00	1-00		Cor	suit	ant Address		•	100	2) 11	00.0	2010	· GA	100	-	-	-	(50	22) (38	2-0010			1	Garden Grove 928- (714) 895-5494
VGR Southwest, Inc.	1	-	_	-	atri	_		21 V	Vinners Circ	e #101 Lo	A Ala	amil	os,	Cali	form	ia 9	0720	-	-	_	-		MALV	ore		4	Lab Project Manag
	10 V		Н	1	-0.	Ì	۳	1	1		И		П				1	П	ŀ		PI	I	NALY	SES	1	+	Xuan Dang Special Detection
											П		(xo	Sediment grain size ASTM D4464		Total Organic Carbon EPA 9060A		1	pox	M			Som		brej		Limit/Reporting
		Ш	П			М					×		- see text box)	Σ		M	1		see text box	M		2	3	1	(if possible)	1	Please report MDL and RL for
			П			W					ž	4	98 t	₹		5	1		866		4	Bm.	8	=	E		ali analytes
	100	2	ı								Total Metals (see text box)	Chlordane EPA 8081A	32-8	ZIII	X	ē,		Indutyrin Krone et al	ģ	<u>_</u>	PPt	Dissolved Oxygen (mg/L)	Conductance (S/m)	Furbidity (NTU) [<50]	5	I	
	ab Sample No.	lo, of Containers	ı		М				ate	E E	8 (8	EP/	PCBs (EPA 8082	힕	DDT (see text box)	읟	THE EPA 8015B	2	PAHS (EPA 8270C	(SU) [6.5-8.5]		Dissolved Oxygen	Ja de	15	14		Duplicate eamples must be
9	l de	É	П			Н	L		Og.	1 Br	8	ane	EP/	Ĕ	99	<u>اع</u>	8		EP	9	É	Dev 7: 8	Ü	2	Series .	- 11	analyzed at a
Sample I.D.	SS	1 8	_	Water		18	10	V	Sampling Date	Sampling Time	E	lord	Bs	Ĕ.	2	9			2	S S	Salinity (FBH)	Solvens	Specific	景	雪	11	frequency of 5%
Sa	Fe	2	Soll	_	Ą	Other	Yes	å	Sa	Sar	-	-	-	-	_	_	_	_	2	Ŧ	S	ă Ē	, g	12	Tê.	1,	The case that are
E0-001		2	×				X.				Х	X		\simeq	×			<u>x</u>	×.							S	pecial QA/QC
ED-002		2	×				×		-		×	×	×	~1	^	×	~1	4	×				-	+		1	
ED-003		2	×				×				×	×	X	×	×	×	×Į:	4	×			_	\vdash		\pm	S	ub'd COC Attch'd:
ED-004		2	X				X		4/30/20		X	X	X	X	X	X Z	X 3	K 2	X.	1.91	23.4	4.6	37.4	11.8	24,6	11	
ED-005		2	X				X		4/30/20	1430	X	X	X	X	X	X.	x	x 2	x):	7.75	21/6	4.30	34.4	18.3	25.7	16	
ED-006		2	x				X		4 30/20	1230	x	X	X	x	X	X	x ?	K 2	X:	7.61	19,9	42	31.0	18.8	25,5	13	
ED-007		2	X			U	X		9/30/20	1194	X	X	X	X	X	X :	X ?	()	X	7.37	18.3	4.	29.	1 7.5	24	36	8
Total Metala analyzed with EPA 6	020:	1	425	200	N. S.	1.75		32	M. S. S.	£9935	165	30	24	20	3/20	-	1	1	1	1.1	1		1.1	1.1	1_	1	É
Total Metala analyzed with EPA 6 Cadmium, Chromium, Copper, Leas Total Metala analyzed with EPA 7	f; Nickel; Zinc 471A;															1)[Ш		ш				т	٦ <u>×</u>	Email Results to: nbusch@marathonpetroleum.co m cdreyer@wgr-sw.com abalirot@wgr-sw.com
Mercury PCBs			33					Se.	100				6	뛼		1		IM	Ш		Ш		11.00		+	٦₹	pet mo
Sum of Arochlor 1016, Arochlor 122 BBT	Sales Property of the State of	P. 42.4	12.5	17.5	2000	* 12	48.	Arrox	obior 1254,	and Argo	dikx	12	60	2				Ш	Ш						+	٦z	Email Results to: nbusch@marathonpel m cdreyer@wgr-sw.com
Sum of 4,4-00T, 2,4-00T, 4,4-00 PAHs	E, 2,4-DDE, 4,4-DD	9, and	2.4	DOS	•			燙						S	1	57	0-27	18	1 C	hain o	Cust	ody	-	_	- †	٦.	ts to
Sum of acenaphthene, anthracene,	1,2 benzanthracene,	3,4-be	ezol	luora	mth	9710,	ber	120(1	c)fluoranith	ene, 1,12	-ben	200	eryl	ene		19	1	1	1	1.1	L	1	11	11	I]~	insell man
														1	\Box	1	1	1	1						\perp	4	S de de de
ample Received Intact: Yes	No								Temperatur	re receive	d:		Ice				N	lo id	œ								Email Results to: nbusch@marath m cdreyer@wgr-sw
elinquished by SAMPLER (Print & Sign	Name)			Date			Time	8		Received	by (Prin	t&S	ign	Nar	ne)										1	<u> </u>
David Montebras	MIL			5	1	20		1	3:56	1		,	4				V	0	7								
LADIO WONTENDINA					11	1-11				11			-					-									

2.9/2.0 506

Revised 9/23/2019

Login Sample Receipt Checklist

Client: WGR Southwest Inc

Job Number: 570-27181-1

Login Number: 27181 List Number: 1 Creator: Liao, Gineyau List Source: Eurofins Calscience

Question	Answer	Comment	
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>N/A</td> <td></td> <td></td>	N/A		
The cooler's custody seal, if present, is intact.	True		
Sample custody seals, if present, are intact.	True		
The cooler or samples do not appear to have been compromised or tampered with.	True		
Samples were received on ice.	True		
Cooler Temperature is acceptable.	True		
Cooler Temperature is recorded.	True		
COC is present.	True		
COC is filled out in ink and legible.	True		
COC is filled out with all pertinent information.	True		
Is the Field Sampler's name present on COC?	True		
There are no discrepancies between the containers received and the COC.	True		
Samples are received within Holding Time (excluding tests with immediate HTs)	True		
Sample containers have legible labels.	True		15
Containers are not broken or leaking.	True		1
Sample collection date/times are provided.	True		
Appropriate sample containers are used.	True		
Sample bottles are completely filled.	True		
Sample Preservation Verified.	True		
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True		
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True		
Multiphasic samples are not present.	True		
Samples do not require splitting or compositing.	True		
Residual Chlorine Checked.	N/A		

Eurofins Calscience

ATTACHMENT 4

SEDIMENT MONITORING AQUATIC BIOASSAY ANALYTICAL LABORATORY REPORT



June 4, 2020

Amber Ballrot WGR Southwest, Inc. 1801 E. Sepulveda Blvd. Carson, CA 90749

Dear Mrs. Ballrot

We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in Methods for Assessing the Toxicity of Sediment-associated Contaminants with Estuarine and Marine Amphipods, Method EPA/600/R-94/025. Results were as follows:

CLIENT: WGR Southwest, Inc.

SAMPLE I.D.: SED-004 DATE RECEIVED: 5/1/2020

ABC LAB. NO.: WGR0520.004

ACUTE EOHAUSTORIUS SURVIVAL BIOASSAY

NOEC = 100.00 %

TUc = 1.00

EC25 = >100.00 %

EC50 = >100.00 %

Yours yer truly,

Scott Ighnson

Laboratory Director

CETIS Summary Report

Report Date:

04 Jun-20 14:24 (p 1 of 1)

Test Code/ID:

WGR0520,004 / 04-0349-5941

							test	Code/ID:	WGR	0520,004/0	04-0349-594
Eohaustorius	10-d Survival an	d Reburi	al Sedime	ent Test				Aquatic	Bioassay &	Consultin	g Labs, Inc.
Batch ID:	17-3915-7507	Te	st Type:	Survival-Reburi	al		Anal	yst: Joe	Freas		
Start Date:	05 May-20 13:00	Pr	otocol:	EPA/600/R-94/	025 (1994)		Dilu	ent: Lat	poratory Seav	vater	
Ending Date:	15 May-20 13:00	S	ecies:	Echaustorius es	stuarius		Brin	e: Not	Applicable		
Test Length:	10d 0h	Ta	xon:	Malacostraca			Soul	rce: No	rthwestern Ad	quatic Scien	c Age;
Sample ID:	15-9636-4471	C	ode:	WGR0520.004	-		Proj	ect: 021	.APC.01		
Sample Date:	30 Apr-20 16:05	M	aterial:	Sediment			Soul	rce: Bio	assay Repor	t	
Receipt Date:	01 May-20 16:10	C	AS (PC):				Stati	on: SE	D-004		
Sample Age:	4d 21h	CI	ient:	WGR Southwes	st Inc.						
Single Compa	rison Summary										
Analysis ID	Endpoint		Comp	arison Method			P-Value	Compari	son Result		
08-8685-6214	Survival Rate		Wilco	xon Rank Sum T	wo-Sample	Test	1,0000	100% pas	ssed survival	rate	
Test Acceptat	oility					TAC	Limits				
Analysis ID	Endpoint		Attrib	ute	Test Stat	Lower	Upper	Overlap	Decision		
08-8685-6214	Survival Rate		Contro	ol Resp	1	0.9	>>	Yes	Passes C	riteria	
Survival Rate	Summary										
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	5	1.000	0 1.0000	1,0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
100		5	1.000	0 1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
Survival Rate	Detail										
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	N	1.0000	1.000	0 1.0000	1.0000	1.0000					
100		1.0000	1.000	0 1.0000	1.0000	1.0000					
Survival Rate	Binomials			7.5							
					B	Dest					
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
Conc-%	Code N	Rep 1 20/20	20/20		20/20	20/20					

Report Date: Test Code/ID: 04 Jun-20 14:24 (p 1 of 2) WGR0520.004 / 04-0349-5941

Eohaustorius	10-d Survival and R	eburial Sedime	ent Test	Aq	uatic B	lioassay & Consulting Labs, Inc.
Analysis (D: Analyzed:	08-8685-6214 04 Jun-20 14:08	Endpoint: Analysis:	Survival Rate Nonparametric-Two Sample	CETIS Ver Status Lev		CETISv1.9.5
Batch ID:	17-3915-7507	Test Type:	Survival-Reburlal	Analyst:	Joe F	reas
Start Date:	05 May-20 13:00	Protocol:	EPA/600/R-94/025 (1994)	Diluent:	Labo	ratory Seawater
Ending Date:	15 May-20 13:00	Species:	Echaustorius estuarius	Brine:	Not A	Applicable
Test Length:	10d 0h	Taxon:	Malacostraca	Source:	North	western Aquatic Scienc Age:

 Sample ID:
 15-9636-4471
 Code:
 WGR0520.004
 Project:
 021 APC.01

 Sample Date:
 30 Apr-20 16:05
 Material:
 Sediment
 Source:
 Bioassay Report

 Receipt Date:
 01 May-20 16:10
 CAS (PC):
 Station:
 SED-004

Sample Age: 4d 21h Client: WGR Southwest Inc.

Data Transform Alt Hyp Comparison Result

Angular (Corrected) C > T 100% passed survival rate

Wilcoxon Rank Sum Two-Sample Test

Control	VS	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(a:5%)	
Negative Co	ontrol	100	27.5	n/a	1	8	Exact	1.0000	Non-Significant Effect	

Test Acceptabili	ty Criteria	TAC	Limits			
Attribute	Test Stat	Lower	Upper	Overlap	Decision	
Control Resp	1	0.9	>>	Yes	Passes Criteria	

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(a:5%)	
Between	0	0	3	65540	<1.0E-37	Significant Effect	
Error	0	0	8			1145.114	
Total	0		9				

Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	5	1.0000	1 0000	1 0000		1 0000	1.0000	0.0000	0.00%	0.00%
100		5	1.0000	1.0000	1.0000		1.0000	1.0000	0.0000	0.00%	0.00%

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	5	1.459	1.458	1 459		1.459	1.459	0	0.00%	0.00%
100		5	1 459	1.458	1.459		1,459	1 459	0	0.00%	0.00%

Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	
0	N	1.0000	1.0000	1.0000	1.0000	1,0000	
100		1 0000	1.0000	1.0000	1.0000	1,0000	

Angular (Corrected) Transformed Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	
0	N	1.459	1 459	1 459	1 459	1.459	
100		1 459	1 459	1 459	1.459	1.459	

Analyst A QA. ~

Report Date: Test Code/ID:

04 Jun-20 14:24 (p 2 of 2) WGR0520.004 / 04-0349-5941

Echaustorius 10-d Survival and Reburial Sediment Test

Aquatic Bioassay & Consulting Labs, Inc.

Analyzed: 04 Jun-20 14:08

Analysis ID: 08-8685-6214

Endpoint: Survival Rate

Analysis: Nonparametric-Two Sample

CETIS Version:

CETISv1.9.5

Status Level:

Report Date:

04 Jun-20 14:24 (p 1 of 2) WGR0520 004 / 04-0349-5941

CE IIS Mea	Isurement F	kepoi	1					Test Code/ID			04-0349-5941
Eohaustorius	10-d Survival ar	ıd Reb	urial Sedime	ent Test				Aqual	ic Bioassay &	. Consulti	ng Labs, Inc.
24.30 (4.50)	17-3915-7507 05 May-20 13:00 15 May-20 13:00 10d 0h		Test Type: Protocol: Species: Taxon:	Survival-Rebur EPA/600/R-94 Eohaustorius e Malacostraca	/025 (1994)			Diluent: L Brine: N	oe Freas aboratory Sea lot Applicable lorthwestern A		enc Age:
and the second second	15-9636-4471 30 Apr-20 16:05 01 May-20 16:10 4d 21h		Code: Material: CAS (PC): Client:	WGR0520.004 Sediment WGR Southwe				Source: E	21 APC.01 Bioassay Repo SED-004	t	
Dissolved Ox	ygen-mg/L			10.101				11.2			
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	9.85	9.215	10.49	9.8	9.9	0.05	0.0707	0.72%	0
100		2	9.95	9.315	10.59	9.9	10	0.05001	0.07073	0.71%	0
Overall		4	9.9	9.77	10.03	9.8	10	0.04082	0.08165	0.82%	0 (0%)
pH-Units					7 30						
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N.	2	7.9	7.884	7.916	7.9	7.9	0	0	0.0%	0
100		2	7.75	7,115	8.385	7.7	7.8	0.06001	0.07072	0.81%	0
Overall		4	7.825	7.673	7.977	7.7	7.9	0.04787	0.09574	1.22%	0 (0%)
Salinity-ppt							u 7 -				
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	20	20	20	20	20	0	0	0.0%	0
100		2	20	20	20	20	20	0	0	0.0%	0
Overall		4	20	20	20	20	20	0	0	0.00%	0 (0%)
Temperature-	°C										1000
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	14.85	14,21	15.49	14.8	14.9	0.05004	0.07077	0.48%	.0
100		2	14.85	14.21	15.49	14.8	14.9	0.05004	0.07077	0.48%	0
Overall		4	14.85	14.76	14.94	14.8	14.9	0.02887	0.05773	0.39%	0 (0%)

Report Date:

04 Jun-20 14:24 (p 2 of 2)

Test Code/ID:

WGR0520.004 / 04-0349-5941

Eohaustorius 10-	Survival	and Rebu		Aquatic Bioassay & Consulting Labs, Inc					
Dissolved Oxygen	n-mg/L								
Conc-%	Code	Read	Time	Measure	QA	Diff-%	Inst ID	Analyst	Notes
0	N.	1		9.9					
100				9.9					
0	N	2		9.8					
100				10					
pH-Units									
Conc-%	Code	Read	Time	Measure	QA	Diff-%	Inst ID	Analyst	Notes
0	N	1		79			1.1		
100				7.7					
0	N	2		7.9					
100				7.8					
Salinity-ppt									
Conc-%	Code	Read	Time	Measure	QA	Diff-%	Inst ID	Analyst	Notes
0	N	1		20					
100				20					
0	N	2		20					
100				20					
Temperature-°C									
Conc-%	Code	Read	Time	Measure	QA	Diff-%	Inst ID	Analyst	Notes
0	N	1		14.8					
100				14.8					
0	N	2		14.9					
100				14.9					



June 4, 2020

Amber Ballrot WGR Southwest, Inc. 1801 E. Sepulveda Blvd. Carson, CA 90749

Dear Mrs. Ballrot:

We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in Methods for Assessing the Toxicity of Sediment-associated Contaminants with Estuarine and Marine Amphipods, Method EPA/600/R-94/025. Results were as follows:

CLIENT: WGR Southwest, Inc.

SAMPLE I.D.: SED-005 DATE RECEIVED: 5/1/2020

ABC LAB. NO.: WGR0520.005

ACUTE EOHAUSTORIUS SURVIVAL BIOASSAY

NOEC = 100.00 %

TUc = 1.00

EC25 = >100.00 % EC50 = >100.00 %

Yours yety truly,

w Scott Johnson

Laboratory Director

CETIS Summary Report

Report Date:

04 Jun-20 14:25 (p 1 of 1)

Test Code/ID:

WGR0520 005 / 04-2534-2144

							1621	Code/ID:	WOR	1520 005 / 0	4-2004-214
Eohaustorius	10-d Survival an	d Reburi	al Sedime	ent Test				Aquatic	Bioassay &	Consulting	g Labs, Inc
Batch ID:	13-7617-4475	Te	st Type:	Survival-Reburi	al		Anal	yst: Joe	Freas		
Start Date:	05 May-20 13:01	Pr	otocol:	EPA/600/R-94/	025 (1994)		Dilu	ent: Lat	Laboratory Seawater		
Ending Date:	15 May-20 13:01	S	ecies:	Echaustorius es	stuarius		Brin	e: No	Not Applicable		
Test Length:	10d 0h	T	ixon:	Malacostraca			Sou	rce: No	rthwestern Ad	quatic Scien	c Age:
Sample ID:	04-6158-0956	C	ode:	WGR0520.005			Proj	ect: 021	1 APC 01		
Sample Date:	30 Apr-20 14:30	M	aterial:	Sediment			Sou	rce: Bio	assay Report	t	
Receipt Date:	01 May-20 16:10	C	AS (PC):				Stati	ion: SE	D-005		
Sample Age:	4d 23h	C	ient:	WGR Southwes	st inc.						
Single Compa	arison Summary										
Analysis ID	Endpoint		Comp	arison Method			P-Value	Compari	son Result		
15-2973-4738	Survival Rate		Wilco	xon Rank Sum T	wo-Sample	Test	0.5000	100% pa:	ssed survival	rate	
Test Acceptat	bility					TAC	Limits				
Analysis ID	Endpoint		Attrib	ute	Test Stat	Lower	Upper	Overlap	Decision		
15-2973-4738	Survival Rate		Contro	ol Resp	1	0.9	>>	Yes	Passes C	riteria	
Survival Rate	Summary										
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	5	1.000	0 1.0000	1,0000	1 0000	1.0000	0.0000	0.0000	0 00%	0.00%
100		5	0.990	0 0.9622	1.0000	0.9500	1.0000	0.0100	0.0224	2.26%	1.00%
Survival Rate	Detail										
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	N	1.0000	1,000	0 1.0000	1.0000	1.0000					
100		0.9500	1,000	0 1,0000	1.0000	1.0000					
Survival Rate	Binomials										
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
Conc-%	Code	Rep 1 20/20	20/20		Rep 4 20/20	Rep 5 20/20					_

Report Date: Test Code/ID: 04 Jun-20 14:25 (p 1 of 2) WGR0520.005 / 04-2534-2144

										1631	Code/ID.	WORL	1320.0037	04-2554-2
Eohaustorius	10-d	Survival an	d Rebur	ial Sedime	ent To	est					Aquatic I	Bioassay &	Consultin	g Labs, In
Analysis ID:	15-2	973-4738	E	indpoint:	Surv	vival Rate				CET	S Version:	CETISv1	.9.5	
Analyzed:	04 J	un-20 14:15		nalysis:	Non	parametric-	Two Sa	mple		Statu	ıs Level:	1		
Batch ID:	13-7	617-4475	Т	est Type:	Surv	ival-Reburi	al			Anal	yst: Joe	Freas		
Start Date:	0.00	May-20 13:01		rotocol:		/600/R-94/		94)		Dilue	· do librari	oratory Seav	rater	
Ending Date:		1ay-20 13:01		pecies:		austorius e				Brine		Applicable		
Test Length:	10d			axon:		costraca	oludi i do			Sour	C.A. 12001	hwestern Ad	juatic Scien	nc Age:
	24.0	450 0050		1232	1110	D0500 005		_		Dest	200			77.79.00
Sample ID:		158-0956		ode:		R0520.005				Proje		APC 01		
Sample Date:		And the second		Material:	Sed	iment				Sour		ssay Report	8	
Receipt Date: Sample Age:				:AS (PC):	MO	R Southwe	at Inc			Stati	on: SEL	0-005		
		230		-	VVG	K Southwe	St inc.	_	_	14 1000			_	-
Data Transfor			Alt Hy	Р	_						on Result	747	-	PMSD
Angular (Corre	ected)		C>T							100% pas	sed survival	rate		2,36%
Wilcoxon Ran	nk Su	m Two-Sam	ple Test											
97114 410	vs	Conc-%		Test S	Stat	Critical	Ties	_	P-Type	P-Value	Decision(-	
Negative Contr	rol	100		25		n/a	1	8	Exact	0.5000	Non-Signif	ficant Effect		
Test Acceptat	bility	Criteria	TAC	C L imits										
Attribute		Test Stat		Upper		Overlap	Decis	ion						
Control Resp		1	0.9	>>		Yes	Passe	s Cri	teria					
ANOVA Table			_											
Source		Sum Squa	res	Mean	Sour	are	DF		F Stat	P-Value	Decision(a:5%)		
Between		0.0012877		0.001	_		1	-	I	0.3466		licant Effect		
Error		0.0012877		0.001	3200,		8		4	0.5400	Non-Signii	incarit Ellect		
Total		0.0103014	_	0.001	2011		9		-					
ANOVA Assur	motio			_	_		-	_	_	-			_	
Attribute	- iprio						Test :	2tot	Critical	P-Value	Dentalus	10/A		
		Test	malitar area	Author -	i.i.		7.111		11.28	0.0285	Decision(_
Variance		Levene Eq				et.			13.75	0.0285	Equal Vari			
Distribution		Mod Leven					1.796			<1.0E-37	1.00	ances al Distributio		
Distribution		Anderson- D'Agostino			168		3.335		3 878	8.5E-04	31. 52. 3 0 1. K.	al Distribution		
		Control of the Contro							0.3025	6.1E-05				
		Kolmogoro Shapiro-W					0.4	7	0.3025	1.1E-04		al Distribution al Distribution		
0.000	5		IIV AA 140	manty res		_	0.024		J.7411	1.12-04	Non-Norm	ai Distributio	200	
Survival Rate	Sum			8.00					3.5					
Conc-%		Code				95% LCL	95% L		Median	Min	Max	Std Err	CV%	%Effec
0		N	5	1 000		1.0000	1.000			1.0000	1.0000	0.0000	0.00%	0.00%
100			5	0.990	0	0.9622	1 000	0		0 9500	1.0000	0.0100	2,26%	1 00%
Angular (Corr	rected	d) Transform	ned Sun	mary										
Conc-%		Code	Count	Mean		95% LCL	95% (JCL	Median	Min	Max	Std Err	CV%	%Effec
0		N	5	1.459		1 458	1 459	1		1 459	1.459	0	0.00%	0.00%
100			5	1.438		1 373	1.499			1.345	1 459	0.02269	3 53%	1.56%
Survival Rate	Deta	il												
Conc-%		Code	Rep 1	Rep 2		Rep 3	Rep 4		Rep 5					
0	-	N	1.0000			1.0000	1.000	_	1.0000					
100			0.9500			1.0000	1.000		1.0000					
	roots -	1) Teanofa				1000	17.52		100057					
	COLLEGE	i) transform	neu Deta	an.										
	COLC	0 4		-		D								
Conc-%	-	Code	Rep 1	Rep 2		Rep 3	Rep 4	_	Rep 5					
Angular (Corr Conc-% 0 100		Code	Rep 1 1.459 1.345	Rep 2 1 459 1 459		Rep 3 1 459 1 459	1 459 1 459		1 459 1 459				-	

Analyst: 1 QA:

Report Date: Test Code/ID:

04 Jun-20 14:25 (p 2 of 2) WGR0520.005 / 04-2534-2144

Echaustorius 10-d Survival and Reburial Sediment Test

Aquatic Bloassay & Consulting Labs, Inc.

Analyzed:

Analysis ID: 15-2973-4738 04 Jun-20 14:15

Endpoint: Survival Rate

Analysis: Nonparametric-Two Sample

CETIS Version:

CETISV1.9.5

Status Level:

008-575-097-1

CETIS™ v1.9 5.5

Report Date:

Test Code/ID:

04 Jun-20 14:25 (p 1 of 2) WGR0520:005 / 04-2534-2144

Eohaustorius	10-d Survival ar	d Rebi	urial Sedime	ent Test				Aqua	tic Bioassay &	Consultin	g Labs, Inc.
Batch ID: Start Date: Ending Date: Test Length:	13-7617-4475 05 May-20 13:01 15 May-20 13:01 10d Oh		Test Type: Protocol: Species: Taxon:	Survival-Rebur EPA/600/R-94 Eohaustorius e Malacostraca	(025 (1994)			Diluent: Brine:	Joe Freas Laboratory Sea Not Applicable Northwestern A		nc Age:
The second second	ample Date: 30 Apr-20 14:30 Material: cas (PC) ample Age: 4d 23h Client:				est Inc.			Project: 021 APC.01 Source: Bioassay Report Station: SED-005			
Dissolved Oxy	/gen-mg/L										
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std En	Std Dev	CV%	QA Count
0	N	2	8.2	4.388	12.01	7.9	8.5	0.3	0.4243	5.17%	0
100		2	8.9	-6.347	24.15	7.1	10.1	1.2	1.697	19.07%	0
Overall		4	8.55	6.819	10.28	7.7	10.1	0.5439	1,088	12.72%	0 (0%)
pH-Units											
Conc-%	Code	Count	Mean	95% LCL	98% UCL	Min	Max	Std En	std Dev	CV%	QA Count
0	N	2	7.9	7.884	7.916	7.9	7.9	0	0	0.0%	0
100		2	7.7	7.698	7.702	7.7	7.7	0	0	0.0%	0
Overall		4	7.8	7.616	7.984	7.7	7.9	0.0577	4 0.1155	1.48%	0 (0%)
Salinity-ppt											
Conc-%	Code	Count	Mean	96% LCL	95% UCL	Min	Max	Std En	Std Dev	CV%	QA Count
0	N	2	20	20	20	20	20	0	0	0.0%	0
100		2	20	20	20	20	20	0	0	0.0%	0
Overall		4	20	20	20	20	20	0	0	0.00%	0 (0%)
Temperature-	°C										
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std En	Std Dev	CV%	QA Count
0	N	2	14.85	14.21	15.49	14.8	14.9	0.0500	4 0.07077	0.48%	ō
100		2	147	14.68	14.72	14.7	14.7	0	0	0.0%	0
Overall		4	14.77	14.62	14.93	14.7	14.9	0.0478	7 0 09574	0 65%	0 (0%)

Report Date:

04 Jun-20 14:25 (p 2 of 2)

Test Code/ID: WGR0520.005 / 04-2534-2144

Cabanatasina	40 d Completed	and Dahmaial	Sediment Test
Congresioning	10-d Survival	and Reburial	Seament rest

Aquatic Bioassay & Consulting Labs, Inc.

		dita ricos	mu com	ionic root					riquitie bloodsay a constituing basel in
Dissolved Oxyger	n-mg/L Code	Read	Time	Measure	00	Diff-%	Inst ID	Analyst	inia.
			1 mme	11111111111111111111111111111	WA	DIII-76	Inst ID	Analyst	Notes
0	N	1		7.9					
100				7.7					
0	N	2		8.5					
100				101					
pH-Units							111		
Conc-%	Code	Read	Time	Measure	QA	Diff-%	Inst ID	Analyst	Notes
0	N	1		7.9					
100				7.7					
0	N	2		7,9					
100				77					
Salinity-ppt									
Conc-%	Code	Read	Time	Measure	QA	Diff-%	Inst ID	Analyst	Notes
0	N	1		20					
100				20					
0	N	2		20					
100				20					
Temperature-°C									
Conc-%	Code	Read	Time	Measure	QA	Diff-%	Inst ID	Analyst	Notes
0	N	1		14.8					
100				14.7					
0	N	2		14.9					
100				14.7					



June 4, 2020

Amber Balirot WGR Southwest, Inc. 1801 E. Sepulveda Blvd. Carson, CA 90749

Dear Mrs.Ballrot:

We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in *Methods for Assessing the Toxicity of Sediment-associated Contaminants with Estuarine and Marine Amphipods, Method EPA/600/R-94/025.* Results were as follows:

CLIENT: WGR Southwest, Inc.

SAMPLE I.D.: SED-006 DATE RECEIVED: 5/1/2020

ABC LAB. NO.: WGR0520.006

ACUTE EOHAUSTORIUS SURVIVAL BIOASSAY

NOEC = 100.00 %

TUc = 1.00

EC25 = >100.00 % EC50 = >100.00 %

Yours Jepy truly,

Scott Johnson

Laboratory Director

CETIS Summary Report

Report Date:

04 Jun-20 14:25 (p 1 of 1)

2000							Test	Code/iD:	WGR	0520.006 / 0	8-3790-367
Eohaustorius	10-d Survival an	d Reburia	I Sedime	ent Test				Aquatic	Bioassay &	Consulting	g Labs, Inc.
Batch ID:	06-5084-6734	Te	st Type:	Survival-Reburi	al		Anal	yst: Joe	Freas		
Start Date:	05 May-20 13:02	Pr	otocol:	EPA/600/R-94/	025 (1994)		Dilue	Diluent: Labo		valer	
Ending Date:	15 May-20 13:02	Sp	ecies:	Echaustorius es	stuarius		Brin	e: Not	Applicable		
Test Length:	10d Oh	Ta	xon:	Malacostraca			Sour	ce: Nor	thwestern A	quatic Scien	c Age:
Sample ID:	12-8966-3448	Co	de:	WGR0520.006			Proje	ect: 021	.APC.01		
Sample Date:	30 Apr-20 12:30	Ma	terial:	Sediment			Sour	ce: Bio	assay Repor	1	
Receipt Date:	01 May-20 16:10	CA	S (PC):				Stati	on: SEI	0-006		
Sample Age:	5d 1h	CI	ent:	WGR Southwes	et Inc						
Single Compa	arison Summary										
Analysis ID	Endpoint		Comp	arison Method			P-Value	Comparis	son Result		
06-3987-2589	Survival Rate		Wilco	kon Rank Sum T	wo-Sample	Test	1.0000	100% pas	sed survival	rate	
Test Acceptal	bllity					TAC	Limits				
Analysis ID	Endpoint		Attrib	ute	Test Stat	Lower	Upper	Overlap	Decision		
06-3987-2589	Survival Rate		Contro	ol Resp	1	0.9	>>	Yes	Passes C	riteria	
Survival Rate	Summary										
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
O	N	5	1.000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
100		5	1.000	1.0000	1.0000	1 0000	1.0000	0.0000	0.0000	0.00%	0.00%
Survival Rate	Detail										
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	N	1.0000	1.000	0.0000	1,0000	1.0000					
100		1,0000	1,000	1.0000	1,0000	1.0000					
Survival Rate	Binomials										
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
Conc-%	Code N	Rep 1 20/20	Rep 2 20/20		Rep 4 20/20	Rep 5 20/20	-				

Report Date: Test Code/ID:

04 Jun-20 14:25 (p 1 of 2) WGR0520,006 / 08-3790-3672

2500 2500														
Echaustorius	10-d Survival a	nd Reburial	d Reburial Sediment Test						Aquatic Bioassay & Consulting Labs, Inc.					
Analysis ID:	06-3987-2589	End	ooint: Survival Rate					CETI	S Version:	CETISv1	95			
Analyzed:	04 Jun-20 14:18	3 Ana	lysis: No	inparametric-	Two Sam	ple		Statu	s Level:	1				
Batch ID:	06-5084-6734	Tes	t Type: Su	rvival-Reburi	al			Anal	yst: Joe	Freas				
Start Date:	05 May-20 13:0	2 Pro	tocol: EF	A/600/R-94/	025 (1994	1)		Dilue	nt: Labo	oratory Seav	vater			
Ending Date:	15 May-20 13:0	2 Spe	cles: Ec	haustorius es	stuarius			Brine	: Not	Applicable				
Test Length:	10d Oh	Tax	on: Ma	alacostraca				Sour	ce: Nort	hwestern A	quatic Scien	nc Age:		
Sample ID:	12-8966-3448	Coc	te: W	GR0520.006	2			Proje	ct: 021.	APC.01				
Sample Date:	30 Apr-20 12:30	Mat	erial: Se	diment				Sour	ce: Bioa	ssay Report	t			
Receipt Date:	01 May-20 16:1	U CAS	S (PC):					Stati	on: SED	-006				
Sample Age:	The second secon	Clie	nt: W	GR Southwes	st Inc									
Data Transfor	m	Alt Hyp						Comparis	on Result					
Angular (Corre	cted)	C>T						100% pas:	sed survival	rate				
Wilcoxon Ran	k Sum Two-Sar	nple Test												
	vs Conc-%	-3.A COT.	Test Stat	Critical	Ties	DF I	P-Type	P-Value	Decision(a:5%)				
Negative Contr	ol 100		27.5	n/a	1	-	Exact	1.0000		icant Effect				
Test Acceptab	oility Criteria	TAC	imits											
Attribute	Test Stat		Upper	Overlap	Decisio	on								
Control Resp	r	0.9	35	Yes	Passes	Crite	eria							
ANOVA Table														
Source	Sum Squ	ares	Mean Sq	uare	DF	-	F Stat	P-Value	Decision(a:5%)				
Belween	0		0		1		65540	<1.0E-37	Significant					
Error	0		0		8					40.00				
					_	_								
Total	0				9									
					9	-	-							
Survival Rate		Count	Mean	95% LCL	95% UC	L I	Median	Min	Max	Std Err	CV%	%Effec		
Survival Rate Conc-%	Summary	Count 5	Mean 1,0000	95% LCL		EL I	Median	Min 1.0000	Max 1 0000	Std Err	CV%	%Effect		
Survival Rate Conc-%	Summary Code				95% UC	EL I	Median		711750			%Effec 0.00% 0.00%		
Survival Rate Conc-% 0 100	Summary Code	5 5	1.0000 1.0000	1.0000	95% UC	al I	Median	1.0000	1 0000	0.0000	0.00%	0.00%		
Survival Rate Conc-% 0 100 Angular (Corr	Summary Code N	5 5	1.0000 1.0000	1.0000	95% UC 1.0000 1.0000		Median Median	1.0000	1 0000	0.0000	0.00%	0.00%		
Survival Rate Conc-% 0 100 Angular (Corr Conc-%	Summary Code N ected) Transfor	5 5 med Summ	1.0000 1.0000 ary	1,0000	95% UC 1.0000 1.0000		A	1.0000	1 0000	0.0000 0.0000	0.00%	0.00%		
Survival Rate Conc-% 0 100 Angular (Corr Conc-%	Code N ected) Transfor	5 5 med Summ Count	1.0000 1.0000 ary Mean	1.0000 1.0000 95% LCL	95% UC		A	1.0000 1.0000 Min	1,0000 1,0000 Max	0.0000 0.0000 Std Err	0.00% 0.00%	0.00% 0.00% %Effec		
Survival Rate Conc-% 0 100 Angular (Corr Conc-% 0	Summary Code N ected) Transfor Code N	5 5 med Summ Count 5	1.0000 1.0000 ary Mean 1,459	1.0000 1.0000 95% LCL 1.458	95% UC 1.0000 1.0000 96% UC		A	1.0000 1.0000 Min 1.459	1 0000 1,0000 Max 1 459	0.0000 0.0000 Std Err	0.00% 0.00% CV% 0.00%	0.00% 0.00% %Effec 0.00%		
Survival Rate Conc-% 0 100 Angular (Corr Conc-% 0 100 Survival Rate	Summary Code N ected) Transfor Code N	5 5 med Summ Count 5	1.0000 1.0000 ary Mean 1,459	1.0000 1.0000 95% LCL 1.458	95% UC 1.0000 1.0000 96% UC	DL (A	1.0000 1.0000 Min 1.459	1 0000 1,0000 Max 1 459	0.0000 0.0000 Std Err	0.00% 0.00% CV% 0.00%	0.00% 0.00% %Effec 0.00%		
Survival Rate Conc-% 0 100 Angular (Corr Conc-% 0 100 Survival Rate Conc-%	Summary Code N ected) Transfor Code N	5 5 med Summ Count 5 5	1.0000 1.0000 ary Mean 1.459 1.459	1.0000 1,0000 95% LCL 1.458 1.458	95% UC 1.0000 1.0000 96% UC 1.459 1.459	OL (Median	1.0000 1.0000 Min 1.459	1 0000 1,0000 Max 1 459	0.0000 0.0000 Std Err	0.00% 0.00% CV% 0.00%	0.00% 0.00% %Effec 0.00%		
Survival Rate Conc-% 0 100 Angular (Corn Conc-% 0 100 Survival Rate Conc-%	Code N ected) Transfor Code N Detail Code	5 5 med Summ Count 5 5	1.0000 1.0000 ary Mean 1.459 1.459	1.0000 1.0000 95% LCL 1.458 1.458	96% UC 1.0000 1.0000 96% UC 1.459 1.459	DL (Median Rep 5	1.0000 1.0000 Min 1.459	1 0000 1,0000 Max 1 459	0.0000 0.0000 Std Err	0.00% 0.00% CV% 0.00%	0.00% 0.00% %Effec 0.00%		
Survival Rate Conc-% 0 100 Angular (Corr Conc-% 0 100 Survival Rate Conc-% 0 100	Code N ected) Transfor Code N Detail Code	5 5 med Summ. Count 5 5 5 Rep 1 1 0000 1 0000	1.0000 1.0000 ary Mean 1.459 1.459 Rep 2	1.0000 1.0000 95% LCL 1.458 1.458 Rep 3	95% UC 1.0000 1.0000 95% UC 1.459 1.459 Rep 4	DL (Median Rep 5	1.0000 1.0000 Min 1.459	1 0000 1,0000 Max 1 459	0.0000 0.0000 Std Err	0.00% 0.00% CV% 0.00%	0.00% 0.00% %Effec 0.00%		
Survival Rate Conc-% 0 100 Angular (Corn Conc-% 0 100 Survival Rate Conc-% 0 100 Angular (Corn	Summary Code N ected) Transfor Code N Detail Code N	5 5 med Summ Count 5 5 5 Rep 1 1,0000 1,0000 med Detail	1.0000 1.0000 ary Mean 1.459 1.459 Rep 2 1.0000 1.0000	1.0000 1.0000 95% LCL 1.458 1.458 Rep 3 1.0000 1.0000	95% UC 1.0000 1.0000 95% UC 1.459 1.459 Rep 4	DE (Median Rep 5 1,0000	1.0000 1.0000 Min 1.459	1 0000 1,0000 Max 1 459	0.0000 0.0000 Std Err	0.00% 0.00% CV% 0.00%	0.00% 0.00% %Effec 0.00%		
Conc-% 0 100 Survival Rate Conc-% 0 100	Summary Code N ected) Transfor Code N Detail Code N	5 5 med Summ. Count 5 5 5 Rep 1 1 0000 1 0000	1.0000 1.0000 ary Mean 1.459 1.459 Rep 2	1.0000 1.0000 95% LCL 1.458 1.458 Rep 3	96% UC 1.0000 1.0000 96% UC 1.459 1.459 Rep 4 1.0000 1.0000	CCL (Median Rep 5	1.0000 1.0000 Min 1.459	1 0000 1,0000 Max 1 459	0.0000 0.0000 Std Err	0.00% 0.00% CV% 0.00%	0.00% 0.00% %Effec 0.00%		

100

Report Date:

04 Jun-20 14:25 (p 2 of 2)

Test Code/ID:

WGR0520,006 / 08-3790-3672

Echaustorius 10-d Survival and Reburial Sediment Test

Aquatic Bioassay & Consulting Labs, Inc.

Analyzed:

Analysis ID: 06-3987-2589 04 Jun-20 14:18

Endpoint: Survival Rate

Analysis: Nonparametric-Two Sample

CETIS Version:

CETISVI 9.5

Status Level: 1

CETIS Measurement Report

Report Date:

04 Jun-20 14:25 (p 1 of 2)

Test Code/ID:

WGR0520 006 / 08-3790-3672

									7	a State of the state of	25.22.22.
Eohaustorius	10-d Survival ar	d Reb	urial Sedime		Aqua	tic Bioassay 8	Consultin	g Labs, Inc.			
Batch ID: Start Date: Ending Date: Test Length:	06-5084-6734 05 May-20 13:02 15 May-20 13:02 10d 0h		Test Type: Protocol: Species: Taxon:	Survival-Rebur EPA/600/R-94 Eohaustorius e Malacostraca	(025 (1994)			Diluent: Brine:	Joe Freas Laboratory Sea Not Applicable Northwestern A		nc Age:
	12-8966-3448 30 Apr-20 12:30 01 May-20 16:10 5d 1h	1	Code: Material: CAS (PC): Client:	WGR0520.006 Sediment WGR Southwe				Project: 021 APC 01 Source: Bioassay Report Station: SED-006			
Dissolved Oxy	/gen-mg/L										
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Cour
0	N	2	6.2	4.388	12.01	7.9	85	03	0.4243	5.17%	0
100		2	10	10	10	10	10	0	0	0 0%	0
Overall		4	9.1	7.401	10.8	79	10	0.5339	1.068	11 73%	0 (0%)
pH-Units											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Cour
0	N	2	7,9	7.884	7.916	7.9	7.9	0	.0	0.0%	0
100		2	7 95	7.315	8.585	7.9	8	0.04999	9 0.0707	0.89%	0
Overall		4	7.925	7.845	8.005	7.9	8	0.025	0.05	0.63%	0 (0%)
Salinity-ppt		7									
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Cour
0	N	2	20	20	20	20	20	0	0	0.0%	0
100		2	20	20	20	20	20	0	0	0.0%	0
Overall	- V	4	20	20	20	20	20	0	0	0.00%	0 (0%)
Temperature-	c										
Conc-%	Code	Count	Mean	95% LCL	98% UCL	Min	Max	Std Er	Std Dev	CV%	QA Cour
0	N	2	14.85	14.21	15.49	14.8	14.9	0.05004	4 0.07077	0.48%	0
100		2	14.85	14,21	15,49	14.8	14.9	0.0500	4 0.07077	0.48%	0
Overall		4	14.85	14.76	14.94	14.8	14.9	0.0286	7 0.05773	0.39%	0 (0%)

Report Date:

04 Jun-20 14:25 (p 2 of 2)

Test Code/ID:

WGR0520.006 / 08-3790-3672

Eohaustorius 10-c	Survival	and Rebu		Aquatic Bioassay & Consulting Labs, I					
Dissolved Oxyger	n-mg/L								
Conc-%	Code	Read	Time	Measure	QA	DIFF-%	Inst ID	Analyst	Notes
0	N	1		7.9					
100				10					
0	N	2		8.5					
100				10					
pH-Units									
Conc-%	Code	Read	Time	Measure	QA	Diff-%	Inst ID	Analyst	Notes
0	N	1		7.9					
100				8					
0	N	2		7.9					
100				7.9					
Salinity-ppt									
Conc-%	Code	Read	Time	Measure	QA	Diff-%	Inst ID	Analyst	Notes
0	N	1		20					
100				20					
0	N	2		20					
100				20					
Temperature-°C									
Conc-%	Code	Read	Time	Measure	QA	Diff-%	Inst ID	Analyst	Notes
0	N	1		14.8					
100				14.8					
0	N	2		14.9					
100				14.9					



June 4, 2020

Amber Ballrot WGR Southwest, Inc. 1801 E. Sepulveda Blvd. Carson, CA 90749

Dear Mrs. Ballrot

We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in Methods for Assessing the Toxicity of Sediment-associated Contaminants with Estuarine and Marine Amphipods, Method EPA/600/R-94/025. Results were as follows:

CLIENT: WGR Southwest, Inc.

SAMPLE I.D.: SED-007 DATE RECEIVED: 5/1/2020

ABC LAB. NO.: WGR0520.007

ACUTE EOHAUSTORIUS SURVIVAL BIOASSAY

NOEC = 100.00 %

TUc = 1.00

EC25 = >100.00 % EC50 = >100.00 %

Your yery truly,

Scott Johnson Laboratory Director

CETIS Summary Report

Report Date:

04 Jun-20 14:25 (p 1 of 1)

Test Code/ID:

WGR0520.007 / 12-7840-7953

							1020	Code/ID.	WOR	0520.00111	2-1040-19
Eohaustorius	10-d Survival an	d Reburia	l Sedimi	ent Test				Aquatio	Bioassay &	Consultin	g Labs, Inc
Batch ID:	02-5872-3289	Te	st Type:	Survival-Reburi	al		Anal	yst: Jo	e Freas		
Start Date:	05 May-20 13:03	Pro	tocol:	EPA/600/R-94/	025 (1994)		Dilue	ent: Lai	boratory Seav	vater	
Ending Date:	15 May-20 13:03	Sp	ecies:	Echaustorius es	stuarius		Brin	e: No	t Applicable		
Test Length:	10d 0h	Ta	con:	Malacostraca			Sour	rce: No	rthwestern Ad	quatic Scien	c Age:
Sample ID:	12-9198-1077	Co	de:	WGR0520.007			Proje	ect: 02	1.APC.01		
Sample Date:	30 Apr-20 11:00	Ma	terial:	Sediment			Soul	rce: Bio	assay Report	t	
Receipt Date:	01 May-20 16:10	CA	S (PC):				Stati	on: SE	D-007		
Sample Age:	5d 2h	Cli	ent:	WGR Southwes	st Inc.						
Single Compa	arison Summary										
Analysis ID	Endpoint		Comp	parison Method			P-Value	Compar	son Result		
18-7151-9781	Survival Rate		Wilco	xon Rank Sum T	wo-Sample	est	1,0000	100% pa	ssed survival	rate	
Test Acceptat	bility					TAC	Limits				
Analysis ID	Endpoint		Attrit	ute	Test Stat	Lower	Upper	Overlap	Decision		
18-7151-9781	Survival Rate		Contr	ol Resp	1.	0.9	>>	Yes	Passes C	riteria	
Survival Rate	Summary									- 1	
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	5	1,000	0 1 0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
100		5	1,000	0 1 0000	1 0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
	Detail										
Survival Rate	12.74										
A 44 L 5 L 11 T 11 L 2	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
Survival Rate Conc-% 0	Code N	Rep 1	Rep 2		Rep 4 1.0000	Rep 5					
Conc-%				0 1,0000							
Conc-% 0 100	N	1.0000	1.000	0 1,0000	1.0000	1.0000					
Conc-%	N	1.0000	1.000	0 1,0000 0 1.0000	1.0000	1.0000					
Conc-% 0 100 Survival Rate	N Binomials	1 0000	1.000	0 1,0000 0 1,0000	1.0000	1.0000					

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Report Date: Test Code/ID: 04 Jun-20 14:25 (p 1 of 2) WGR0520.007 / 12-7840-7953

									Test	Code/ID;	WGR	0520.007 /	12-7840-795
Eohaustorius	10-d	Survival an	d Reburia	I Sediment	t Test					Aquatic	Bioassay 8	Consultin	g Labs, Inc.
Analysis ID:	18-7	151-9781	Ene	dpoint: S	urvival Rate				CET	IS Version:	CETISV	9.5	
Analyzed:	04 J	un-20 14:20			lonparametric-	Two San	nple		Stati	us Level:	1		
Batch ID:	02-5	872-3289	Tes	st Type: S	urvival-Rebuni	al			Anal	yst: Joe	Freas		
Start Date:	05 N	May-20 13:03	Pro	tocol: E	PA/600/R-94/	025 (199	4)		Dilu	ent: Lab	oratory Sea	water	
Ending Date:	15 N	May-20 13:03	Spe	ecies: E	ohaustorius es	stuarius			Brin	e: Not	Applicable		
Test Length:	10d	0h	Tax	con: N	Malacostraca				Sour	rce: Nor	thwestern A	quatic Scie	nc Age:
Sample ID:	12-9	198-1077	Co	de: V	VGR0520.007				Proje	ect: 021	APC 01		
Sample Date:	30 A	pr-20 11:00	Ma	terial: S	ediment				Sour	rce: Bioa	assay Repor	t	
Receipt Date:	01 N	lay-20 16:10	CA	S (PC):					Stati	on: SE	0-007		
Sample Age:	5d 2	2h	Cli	ent: V	VGR Southwes	st Inc							
Data Transfor	m		Alt Hyp	Pu ⁻¹					Comparis	on Result			
Angular (Corre	cted)		C>T						100% pas	sed survival	rate		
Wilcoxon Ran	k Su	m Two-Sam	ple Test				Ε						
Control	vs	Conc-%		Test Sta	at Critical	Ties	DF	P-Type	P-Value	Decision	a:5%)		
Negative Contr	ol	100		27.5	n/a	11-	8	Exact	1.0000	Non-Signi	ficant Effect	E)	
Test Acceptal	bility	Criteria	TAG	Limits									
Attribute		Test Stat	Lower	Upper	Overlap	Decisi	on						
Control Resp		1	0.9	>>	Yes	Passes		iteria					
ANOVA Table											-		
Source		Sum Squa	rec	Mean S	muara	DF		F Stat	P-Value	Decision	W-8071		
Belween		0		0	400.0	1	-	65540	<1.0E-37	Significan			
Error		0		0		В		300-10	1,000	olgililicari	L C ICCL		
Total		0		-		9	_	-					
Survival Rate	Sum	mary											
Conc-%		Code	Count	Mean	95% LCL	95% U	CL	Median	Min	Max	Std Err	CV%	%Effect
0		N	5	1.0000	1.0000	1.0000			1.0000	1.0000	0.0000	0.00%	0.00%
100			5	1.0000	1.0000	1.0000			1.0000	1.0000	0.0000	0.00%	0.00%
Angular (Corr	ected	d) Transform	ned Summ	ary									
Conc-%		Code	Count	Mean	95% LCL	95% U	CL	Median	Min	Max	Std Err	CV%	%Effect
0		N	5	1.459	1.458	1 459			1.459	1.459	0	0.00%	0.00%
100			5	1.459	1.458	1.459			1.459	1.459	0	0.00%	0.00%
Survival Rate	Deta	il											
Conc-%		Code	Rep 1	Rep 2	Rep 3	Rep 4		Rep 5					
0		N	1 0000	1.0000	1.0000	1 0000		1 0000					
100			1,0000	1 0000	1 0000	1.0000		1.0000					
Angular (Corr	ected	i) Transform	ned Detail										
Conc-%		Code	Rep 1	Rep 2	Rep 3	Rep 4		Rep 5					
0		N	1.459	1,459	1.459	1.459		1.459					
9-14													

100

1.459

1.459

1.459

1 459

1.459

Report Date:

04 Jun-20 14:25 (p 2 of 2)

Test Code/ID:

WGR0520.007 / 12-7840-7953

Echaustorius 10-d Survival and Reburial Sediment Test

Aquatic Bioassay & Consulting Labs, Inc.

Analyzed:

Analysis ID: 18-7151-9781 04 Jun-20 14:20

Analysis:

Endpoint: Survival Rate

Nonparametric-Two Sample

CETIS Version:

CETISV1.9.5 Status Level:

Report Date:

Test Code/ID:

04 Jun-20 14:25 (p 1 of 2) WGR0520.007 / 12-7840-7953

Eohaustorius	10-d Survival ar	d Reb	urial Sedime	ent Test				Aqua	tic Bioassay 8	Consultin	ng Labs, Inc.
Batch ID: Start Date: Ending Date: Test Length:	02-5872-3289 05 May-20 13:03 15 May-20 13:03 10d 0h		Test Type: Protocol: Species: Taxon:	Survival-Rebur EPA/600/R-94 Echaustorius e Malacostraca	(025 (1994)			Diluent: Brine:	Joe Freas Laboratory Sea Not Applicable Northwestern A		nc Age:
	12-9198-1077 30 Apr-20 11:00 01 May-20 16:10 5d 2h		Code: Material: CAS (PC): Client:	WGR0520.007 Sediment WGR Southwe				Source:	021.APC.01 Bloassay Repor	rt	
Dissolved Oxy	ygen-mg/L										
Conc-%	Code	Count	Mean	96% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	10.05	9.415	10.69	10	10.1	0.0500	0.07073	0.7%	0
100		2	10.05	9.415	10.69	10	10.1	0.0500	0.07073	0.7%	0
Overall		4	10,05	9,958	10.14	10	10.1	0.0288	7 0.05774	0,57%	0 (0%)
pH-Units											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Er	Std Dev	CV%	QA Count
0	N	2	7.9	7.884	7.916	7.9	7.9	0	0	0.0%	0
100		2	7.85	5.944	9.756	7.7	8	0.15	0.2121	2.7%	0
Overall		4	7.875	7 675	8.075	7.7	8	0.0629	2 0.1258	1.60%	0 (0%)
Salinity-ppt											
Conc-%	Code	Count	Mean	96% LCL	96% UCL	Min	Max	Std Er	Std Dev	CV%	QA Count
0	N	2	20	20	20	20	20	0	0	0.0%	0
100		2	20	20	20	20	20	0	0	0.0%	0
Overall		4	20	20	20	20	20	0	0	0.00%	0 (0%)
Temperature.	°C										
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std En	Std Dev	CV%	QA Count
0	N	2	14.85	14.21	15.49	14.8	14.9	0.0500	4 0.07077	0.48%	0
100		2	14.85	14.21	15.49	14.8	14.9	0.0500	4 0.07077	0.48%	0
Overall		4	14.85	14.76	14.94	14.8	14.9	0.0288	7 0.05773	0.39%	0 (0%)

Report Date: Test Code/ID: 04 Jun-20 14:25 (p 2 of 2)

WGR0520.007 / 12-7840-7953

Eohaustorius 10-	d Survival	and Rebu	ırlal Sedim	ent Test					Aquatic Bioassay & Consulting Labs, Inc
Dissolved Oxyger	n-mg/L								
Conc-%	Code	Read	Time	Measure	QA	Diff-%	Inst ID	Analyst	Notes
0 100	N	1		10.1 10.1					
0 100	N	2		10 10					
pH-Units									
Conc-%	Code	Read	Time	Measure	QA	Diff-%	Inst ID	Analyst	Notes
0 100	N	1		7.9 8					
0 100	N	2		7.9 7.7					
Salinity-ppt Conc-%	Code	Read	Time	Measure	QA	Diff-%	Inst ID	Analyst	Notes
0	N	1	Time	20 20	MA	DIII-78	IIISL IID	Analyst	Motes
0 100	N	2		20 20					
Temperature-°C	Code	Read	Time	Measure	QA	Diff-%	Inst ID	Analyst	Notes
0	N	1		14.8	2000			· · · · · · · · · · · · · · · · · · ·	9-117

Analyst: 1 QA 7

0 100

N

2

14.9 14.9



96 Hour Eohaustorius estuarius Survival Bioassay - Standard Toxicant

DATE: 5/5/2020

STANDARD TOXICANT: Ammonium Chloride

ENDPOINT: SURVIVAL

UNIONIZED AMMONIA

NOEC = 0.452 mg/L

EC25 = 1.347 mg/LEC50 = 2.152 mg/L

Yours very truly.

Scott Johnson
Laboratory Director

CETIS Summary Report

Reference Toxicant 96-h Acute Survival Test

Report Date:

04 Jun-20 14:24 (p 1 of 1) EOH050520 / 11-1853-5336

PMSD S

7 70%

rest bodener	CO110000207 11-1000-0000
Aquatic Bio	assay & Consulting Labs, Inc.

Batch ID:	11-3267-0880	Test Type:	Survival	Analyst:	Joe Freas
Start Date:	05 May-20 13:05	Protocol:	EPA/600/R-94/025 (1994)	Difuent:	Laboratory Seawater
Ending Date:	09 May-20 13:05	Species:	Eohaustorius estuarius	Brine:	Not Applicable
Test Length:	96h	Taxon:	Malacostraca	Source:	Northwestern Aquatic Scienc Age:
Sample ID:	06-7733-0739	Code:	EOH050520	Project:	REF TOX
Sample Date:	05 May-20 13:05	Material:	Ammonia (Unionized)	Source:	Reference Toxicant

Receipt Date:

Sample Age: n/a Client: Internal Lab

CAS (PC):	Station:	REF TOX

Multiple Comparison Summary Analysis ID Endpoint Comparison Method ✓ NOEL LOEL TOEL TU Steel Many-One Rank Sum Test 0.6036 07-3615-2608 Survival Rate 0.452 0.806

07-0010-2000	OGI TIVOI TILDO	Sicol Wally-One Marin Colli Teac	9,402	0,000	0.0000		11210	- 3
Point Estimat	e Summary							
Analysis ID	Endpoint	Point Estimate Method	√ Level	mg/L	95% LCL	95% UCL	TU	s
05-4686-7001	Survival Rate	Linear Interpolation (ICPIN)	EC5	0.5936	0.5289	0.6502		t
			EC10	0.7352	0.8057	0.8485		
			EC15	0.9143	0.6601	1.203		
			EC20	1.131	0.8421	1.65		
			EC25	1 347	1.001	1.962		
			FC40	1 878	1.351	2.218		

Survival Rate S	ummary										
Conc-mg/L	Code	Count	Mean	96% LCL	96% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	1.0000	1 0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
0.227		4	1 0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
0.452		4	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.00%
0.806		4	0.8750	0.7954	0.9546	0.8000	0.9000	0.0250	0.0500	5.71%	12,50%
1.672		4	0.6750	0.4748	0.8752	0.5000	0.8000	0.0629	0.1258	18.64%	32.50%
3.524		4	0.0000	0.0000	0,0000	0 0000	0.0000	0.0000	0.0000		100.00%

EC50

2.152

1 653

2,435

Survival Rate Detail Code Conc-mg/L Rep 1 Rep 2 Rep 3 Rep 4 0 1.0000 1.0000 1,0000 1,0000 0.227 1.0000 1 0000 1 0000 1.0000 1 0000 1.0000 0.452 1.0000 1.0000 0.9000 0.806 0.9000 0.8000 0 9000 1.672 0.8000 0.7000 0.7000 0.5000 3.524 0.0000 0.0000 0.0000 0.0000

Survival Rate E	Binomíals					
Conc-mg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	
0	N	10/10	10/10	10/10	10/10	
0.227		10/10	10/10	10/10	10/10	
0.452		10/10	10/10	10/10	10/10	
0.806		9/10	8/10	9/10	9/10	
1 672		8/10	7/10	7/10	5/10	
3.524		0/10	0/10	0/10	0/10	

Report Date: Test Code/ID; 04 Jun-20 14:24 (p 1 of 2) EOH050520 / 11-1853-5336

										Test	Code/ID;		EOI	H050520 / 1	1-1853-53
Reference To	xicant	96-h Acu	te Survi	val Test							Aquati	ic Bic	assay &	Consulting	Labs, Inc
Analysis ID:	07-36	15-2608		Endpoint:	Sur	vival Rate					S Version	n:	CETISv1	.9.5	
Analyzed:	04 Ju	n-20 14:24	4	Analysis:	Nor	parametric-	Control v	s Tr	eatments	State	ıs Level:		1		
Batch ID:	11-32	67 0880		Test Type:	Sur	vival				Anal	yst: Jo	oe Fre	883		
Start Date:	05 M	ay-20 13:0	5	Protocol:	EP	A/600/R-94/	025 (199	14)		Dilue	ent: La	abora	tory Seav	vater	
Ending Date:	09 M	ay-20 13:0	5	Species:	Eoh	austorius es	stuarius			Brine	e: N	ot Ap	plicable		
Test Length:	96h			Taxon:	Mal	acostraca				Sour	ce; N	orthw	estem A	quatic Scien	c Age:
Sample ID:	1000	33-0739		Code:	EO	H050520				Proje	ect: R	EFT	OX		
Sample Date:		ay-20 13:0		Material:	Am	monia (Unio	nized)			Sour	ce: R	efere	nce Toxic	ant	
Receipt Date:				CAS (PC):						Statt	on: R	EFT	OX		
Sample Age:	n/a		1	Client:	Inte	rnal Lab									
Data Transfor	m		Alt H							NOEL	LOEL	1	TOEL	TU	PMSD
Angular (Corre	cted)		C>T							0.452	0,806	- (0.6036		7.20%
Steel Many-O	ne Ra	nk Sum T	est												
	VS	Conc-m	g/L	Test :	Stat	Critical	Ties	_	P-Type	P-Value	Decisio	-	-		
Negative Contr	rol	0.227		18		10	1	6	CDF	0.8000			ant Effect		
		0.452		18		10	1	6	CDF	0.8000	T		ent Effect		
		0.806*		10		10	0	6	CDF	0.0350	Significe				
		1.672*		10	_	10	0	6	CDF	0.0350	Significa	ant E	ffect		
ANOVA Table					Ţ.										
Source		Sum Squ	_	Mean	-	are	DF	_	F Stat	P-Value	Decisio	_			
Between		0.614114		0.153			4		33 44	2.6E-07	Significa	ent E	ffect		
Error Total	_	0.068877		0.004	5918		15	_	-						
ANOVA Assur	motion				-	-		-		-	_		_		
Attribute	irptioi	Test					Test S	tat	Critical	P-Value	Decisio	nim	19/3		
Variance	_		quality of	Variance Te	et.	_	4,407	-	4.893	0.0149	Equal V	-			
Variation				ity of Varian		est	1.68		4.893	0.2067	Equal V				
Distribution				A2 Normality			3.19		3.878	<1.0E-37			Distribution	on	
-0.034000		D'Agostin					294		2.576	0.0033		7.1.1	Distribution		
		D'Agostin					2.287		2.576	0.0222	Normal	300000			
		200 to 200 to 100 to 10		n K2 Omnib	us T	est	13.87		9.21	9.7E-04	Non-No	rmal	Distribution	n	
		The second second		ov D Test			0.4		0.2235	2.9E-09	Non-No	rmal	Distribution	on	
		1000		ormality Tes	t		0.710	1	0.866	5.2E-05	Non-No	rmai	Distribution	οn	
Survival Rate	Sumn	nary													
Conc-mg/L		Code	Count	Mean	100	98% LCL	95% U	CL	Median	Min	Max		Std Err	CV%	%Effect
0		N	4	1,000	0	1.0000	1,0000)	1.0000	1.0000	1.0000	(0000	0.00%	0.00%
0.227			4	1.000	0	1.0000	1.0000)	1.0000	1,0000	1.0000	(0.0000	0.00%	0.00%
0.452			4	1.000	0	1,0000	1 0000)	1 0000	1 0000	1.0000	(0.0000	0.00%	0 00%
0.808			4	0.875	0	0.7954	0.9546	5	0.9000	0.8000	0.9000		0.0250	5.71%	12.50%
1.672			4	0.675		0.4748	0.8752		0.7000	0.5000	0.8000	(0.0629	18.64%	32 50%
3.524			4	0.000	0	0.0000	0.0000)	0.0000	0.0000	0 0000	(0.0000		100.009
Angular (Corr	rected	Transfor	med Su	mmary											
Conc-mg/L		Code	Coun			95% LCL	95% U	CL	Median	Min	Max		Std Err	CV%	%Effect
0		N	4	1.412		1.412	1 412		1 412	1.412	1.412			0.00%	0.00%
			4	1.412		1 412	1.412		1 412	1 412	1.412)	0.00%	0.00%
				4 410		1 412	1.412		1.412	1.412	1.412)	0.00%	0.00%
0.452			4	1 412											
0.452 0.806			4	1 214		1 101	1:326		1.249	1 107	1 249		03547	5.85%	
0.227 0.452 0.806 1.672 3.524					7							(14.05% 31.39% 88.76%

Analyst _____ QA(____

Report Date: Test Code/ID: 04 Jun-20 14:24 (p 2 of 2) EOH050520 / 11-1853-5336

Reference Toxicant 96-h Acute Survival Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 07-3615-2608 Endpoint: Survival Rate CETIS Version: CETISv1.9,5
Analyzed: 04 Jun-20 14:24 Analysis: Nonparametric-Control vs Treatments Status Level: 1

Survival Rate D	etail					
Conc-mg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	
0	N	1.0000	1.0000	1.0000	1.0000	
0.227		1.0000	1.0000	1.0000	1.0000	
0.452		1,0000	1.0000	1.0000	1 0000	
0.806		0.9000	0.8000	0.9000	0.9000	
1.672		0.8000	0.7000	0.7000	0.5000	
3.524		0.0000	0.0000	0.0000	0.0000	

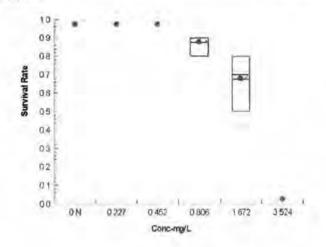
Angular (Corrected) Transformed Detail

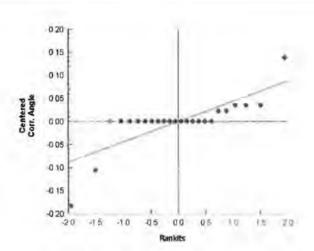
Conc-mg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	
0	N	1.412	1.412	1.412	1.412	
0 227		1.412	1 412	1.412	1.412	
0.452		1 412	1.412	1.412	1.412	
0.806		1 249	1.107	1.249	1,249	
1.672		1.107	0.9912	0.9912	0.7854	
3.524		0.1588	0.1588	0.1588	0.1588	

Survival Rate Binomials

Conc-mg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	10/10	10/10	10/10	10/10
0.227		10/10	10/10	10/10	10/10
0.452		10/10	10/10	10/10	10/10
0.806		9/10	8/10	9/10	9/10
1.672		8/10	7/10	7/10	5/10
3.524		0/10	0/10	0/10	0/10

Graphics





Report Date:

04 Jun-20 14:24 (p 1 of 2)

CE 115 Analytical Report								Test Code/ID: EOH050520 / 11-1853-5336								
Refere	nce Tox	cicant 96-h Acut	e Survival	Test							Aqu	atic E	Bioassay	& Cons	sulting	g Labs, Inc
Analysis ID: 05-4686-7001 Endpoint: Analyzed: 04 Jun-20 14:24 Analysis:				Survival Rate Linear Interpolation (ICPIN)						ETIS Vers	2	CETIS	v1.9.5			
Batch ID: 11-3267-0880 Test Type:			Survival					A	nalyst:	Joe i	Freas					
Start Date: 05 May-20 13:05 Protocol: EPA/600/R-94/025 (1994)						Diluent: Laboratory Seawater										
Ending	nding Date: 09 May-20 13:05 Species: Echaustorius estuarius				B	rine:		Applicable								
Test Le	100	96h	Tax	on:	Malacostr					S	ource:		thwestern Aquatic Scienc Age:			c Age:
Sample	ample ID: 06-7733-0739 Code: F				E0H0505	520				P	roject:	RFF	TOX			
Sample	e Date:	05 May-20 13:05	Mat	erial:	Ammonia	(Union	nized)				iource:	Refe	rence To	xicant		
Receip		Transfer and Co		(PC):						S	tation:	12.333	TOX			
Sample	e Age:	n/a	Clie	1000	Internal La	ab										
Linear	Interpo	lation Options														
X Tran	sform	Y Transform	1 See	d	Resample	es	Exp 95%	CL	Meth	od						
Linear		Linear	0		280		Yes		Two-l	Point int	erpolation					
Point E	stimate	s														
Level	mg/L	95% LCL	95% UCL													
EC5	0.593	6 0.5289	0.6502			-										
EC10	0,735	2 0.6057	0.8485													
EC15	0.914	3 0.6601	1.203													
EC20	1.131	0.8421	1.65													
EC25	1.347		1.962													
EC40	1.878	100.00	2.218													
EC50	2,152	1.653	2.435													
Surviv	al Rate	Summary		_			Calc	ulated	Variat	te(A/B)					sotor	ic Variate
Conc-r	ng/L	Code	Count	Mean			Max	_	Dev	CV%	%Eff	ect	A/B	Me	an	%Effect
0		N	4	1.000			1.0000	0.00		0.00%			40/40	.1		0.0%
0,227			4	1.000			1.0000	0.00		0,00%			40/40	1		0.0%
0.452			4	1 000			1.0000	0.00		0.00%			40/40	1		0.0%
0.806			4	0.875			0.9000	0.05		5.71%			35/40	0.8		12.5%
1.672			4	0.675		8-7/	0.8000	0.12		18.649			27/40	0.6	15	32.5%
3.524	Salar Salar	el acad	4	0.000	0.00	UU	0.0000	0.00	JUU		100.0	1%6	0/40	0		100.0%
	al Rate		2.00		Ų,											
Conc-n	ng/L	Code	Rep 1	1.000			Rep 4					_		_		
		N	1.0000	1.000												
0,227							1.0000									
0.452			1.0000	1.000			1.0000									
0,806			0.9000	0.800			0,9000									
1 672 3 524			0.0000	0.700			0.5000									
	al Date	Pinomiala	0,000	0,000	0.00		5,0000					-			_	
		Binomials Code	Pan 1	Pan *	2 Rep	3	Ren 4									
Conc-n	ng/L	N	Rep 1 10/10	10/10			Rep 4			_		_			_	
0.227		14	10/10	10/10			10/10									
f 3.1					3 3 3 3 3 3											
0 452			10/10	10/10			10/10									
908.0			9/10	8/10	9/10		9/10									

5/10

0/10

1.672

3.524

8/10

0/10

7/10

0/10

7/10

0/10

Report Date: Test Code/ID:

04 Jun-20 14:24 (p 2 of 2) EOH050520 / 11-1853-5336

Reference Toxicant 96-h Acute Survival Test

Aquatic Bioassay & Consulting Labs, Inc.

Analyzed:

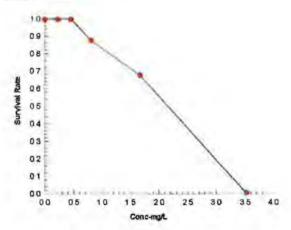
Analysis ID: 05-4686-7001 04 Jun-20 14:24 Endpoint: Survival Rate

Analysis: Linear Interpolation (ICPIN)

CETIS Version: Status Level:

CETISV1.9.5

Graphics



Report Date:

04 Jun-20 14:24 (p 1 of 3)

Test Code/ID:

EOH050520 / 11-1853-5336

Reference To:	kicant 96-h Acı	ute Surv		Aquatic Bioassay & Consulting Labs, Inc.									
Batch ID: Start Date: Ending Date: Test Length:	11-3267-0880 05 May-20 13: 09 May-20 13: 96h		Test Type: Protocol: Species: Taxon:	Survival EPA/600/R-94 Eohaustorius e Malacostraca			Diluent: Brine:	Joe Freas Laboratory Seawater Not Applicable Northwestern Aquatic Scienc Age:					
Sample ID: Sample Date: Receipt Date; Sample Age:	Table 1	05	Code: Material: CAS (PC): Client:	Ammonia (Unionized) Se				Source:	REF TOX Reference Toxicant REF TOX				
Dissolved Oxygen-mg/L Conc-mg/L Code Count Mean 95% LCL 95% UCL Min Max Std Err Std De						Std Dev	CV%	QA Count					
0	N	2	7 65	-6.962	22.26	6.5	8.8	1.15	1 626	21.26%	0		
0.227		2	6 75	-7.862	21 36	5,6	7.9	1.15	1 626	24.09%	0		
0.452		2	6.55	2.103	11	6.2	6.9	0.35	0.495	7.56%	0		
0.806		2	7.65	7.015	8 285	7.6	77	0.05	0.07071	0 92%	0		
1 672		2	7.6	6 329	8,871	7.5	7.7	0.1	0.1414	1 86%	0		
3.524		2	7	7	7	7	7	0	C	0.0%	0		
Overall		12	7.2	6.657	7.743	5.6	8.8	0.2465	0.8539	11.86%	0 (0%)		
pH-Units													
Conc-mg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std En	Std Dev	CV%	QA Count		
0	N	2	7.9	7.884	7.016	7.9	7.9	0	0	0.0%	0		
0.227		2	7.9	7.884	7.916	7.9	7.9	0	0	0.0%	0		
0.452		2	7.8	7.787	7.813	7.8	7.8	0	0	0.0%	0		
0.806		2	7.8	7.787	7,813	7.8	7.8	0	0	0.0%	0		
1.672		2	7.7	7.698	7.702	7.7	7.7	0	O	0.0%	0		
3.524		2	7.7	7.698	7.702	7.7	7.7	0	0	0.0%	0		
Overall		12	7.8	7.746	7.854	77	7.9	0.0246	2 0.08528	1.09%	0 (0%)		
Salinity-ppt													
Conc-mg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std En	Std Dev	CV%	QA Count		
0	N	2	20	20	20	20	20	0	0	0.0%	0		
0.227		2	20	20	20	20	20	0	0	0 0%	0		
0.452		2	20	20	20	20	20	0	C	0.0%	0		
0.806		2	20	20	20	20	20	0	0	0.0%	0		
1.672		2	20	20	20	20	20	0	0	0.0%	0		
3.524		2	20	20	20	20	20	0	0	0.0%	0		
Overall		12	20	20	20	20	20	0	0	0.00%	0 (0%)		
Temperature-	c												
Conc-mg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std En	Std Dev	CV%	QA Count		
0	N	2	14.85	14.21	15.49	148	14.9	0 0500	200 4 -6 -6 (4)	0 48%	0		
0.227		2	14.85	14.21	15.49	148	14.9	0.0500		0.48%	0		
0.452		2	14.85	14.21	15.49	14.8	14.9	0.0500		0.48%	0		
0.806		2	14.85	14.21	15.49	148	14.9	0.0500	4 0,07077	0 48%	0		
1 672		2	14.85	14.21	15 49	14.8	14.9	0.0500	4 0.07077	0.48%	0		
3.524		2	14.85	14.21	15.49	14.8	14,9	0,0500		0 48%	0		
Overall		12	14.85	14.82	14.88	14.8	14.9	0.0150	8 0.05222	0.35%	0 (0%)		



Reference Toxicant 96-h Acute Survival Test

Report Date:

04 Jun-20 14:24 (p 2 of 3) EOH050520 / 11-1853-5336

Test Code/ID: EO

Aquatic Bioassay & Consulting Labs, Inc.

Dissolved Oxyg	en-mg/L								
Conc-mg/L	Code	Read	Time	Measure	OA	Diff-%	Inst ID	Analyst	Notes
0	N	1	1004	8.8	-	400.00	11,141,14	7.11.11.7	
0.227	.,			7.9					
0 452				6.2					
0.806				7.7					
1.672				7.5					
3.524				7					
0	N	2		6.5					
0.227		-		5.6					
0.452				69					
0.806				76					
1.672				7.7					
3.524				7					
pH-Units									
17.34	0.4		*	********	-	PSE IV		American	wie.e
Conc-mg/L	Code	Read	Time	Measure 7,9	QA	Diff-%	Inst ID	Analyst	Notes
0 227	N	1		7.9					
				78					
0.452									
0.806				78					
1.672				7.7 7.7					
3.524	-								
0	N	2		7.9					
0.227				7.9					
0 452				7.8					
0.806				7.8					
1.672				77					
3.524				7.7					
Salinity-ppt									
Conc-mg/L	Code	Read	Time	Measure	QA	Diff-%	Inst ID	Analyst	Notes
0	N	1		20					
0.227				20					
0.452				20					
0.806				20					
1,672				20					
3.524				20					
0	N	2		20					
0.227				20					
0.452				20					
0.806				20					
1 672				20					
3.524				20					

CETIS Measurement Report

Report Date:

04 Jun-20 14:24 (p 3 of 3)

Test Code/ID:

EOH050520 / 11-1853-5336

Reference Toxica	nt 96-h Ac	Aquatic Bioassay & Consulting Labs, Inc.							
Temperature-°C						77.7			
Conc-mg/L	Code	Read	Time	Measure	QA	Diff-%	Inst ID	Analyst	Notes
0	N	1		14.8					
0.227				14.8					
0.452				14.8					
0.806				14.8					
1 672				14.8					
3.524				14.8					
n	N	2		149					
0.227				14.9					
0.452				14.9					
0.806				149					
1.672				14.9					
3.524				14.9					

(PLASTIC BAGS)

Facility Name LA Refinery - Carson Operations		180		Sep	ulve	da E	lvd.	. Ca	arson CA 9	0749	Project Manager (Consultant) Chelsea Dreyer				Project No. (Consultant) 021.APC.01				Laboratory Name Aquatic Bioassay						
			acility Telephone No. (310) 847-3920					Telephone No. (Consultant) (562) 799-8510 ex. 1003				Fax No. (Consultant) (562) 799-8510					29 N Olive Street Ventura 93001								
Consultant Company		-1-	ton	1704	1-002		Con	sulta	ant Address		1 (5	JE) I	30 00 10 0	x. 1000			100	12/10	3 60 1	_			1	(805) 643-5621	
WGR Southwest, Inc.			_						Vinners Circl	e #101 Lo	s Alami	tos,	California	90720									4		
				M	atrix		Pr	sv.				6	3		-				T	1			1	Special Detection Limit/Reporting	
											tuarius 25)	vincialis	1											Please report VDL and RL for all analytes	
Sample I.D.	.ab Sample No.	No. of Containers	Soil	Water	Air	Other	Yes	No	Sampling Date	Sampling Time	Eohaustorius estuarius (EPA 600/R-94/025)	Mydilus-galloprovit	LEDA-609/R-95/H											Duplicate samples must be analyzed at a frequency of 5%	
SED-001		2	X				X				X	1											Spe	ecial QA/QC	
SED-002		2	X			=	×	-		- 000	X	7	H							1			1		
SED-003		2	x			-	×	-			X	\exists											Sub	o'd COC Attch'd:	
SED-004		2	x				х		930 20	1405	X	×							17	9	7				
SED-005		2	х				x		4/30/20	1430	X	×					55		00	_	-		1		
HAR-THE-	1	2	х		\neg		х		4/30/20	1230	X	7	W =						190	$\overline{}$	5		1		
SED-006 SED-007	-	2	X		\dashv		X		4/30/20	1100	X	1	-	Н	+				160	9	7	-	1	8	
325-307		1-					-		11.74	* *ACORO	T	H	11	Н		П		П	1		1		1	Ë	
Sample bottles required for each sample p (2) x 1-gallon plastic bag																							M A R K	Email Results to: nbusch@marathonpetroleum.co m cdreyer@wgr-sw.com	
		+		\vdash	\dashv		-				₩	Н	++-	Н	+	H	+	H	+	+	+	H	1	s to	
					\dashv						+	\forall	++	H	+	+		+	+	+	+	+	2	ma	
												\vdash		H		\forall			11	+				9 6 6 6	
Sample Received Intact: Yes No			_				_		Temperatur	e received	1:	Ice		No	ice	_							1	uscl reye	
Relinquished by SAMPLER (Print & Sign Nam	e)			Date		-	Time)		Received			ign Name	2.2	0.6	_	-		_	-		-	1	교육 E 질 원	
	1.1		- 1		4					h	-			-	10			C	1.11		11	1			
David Montelones De Relinquished by (Print & Sign Name)	tot			つ Date	1/2		Time			Received	Low			rint & Cu	on No	ma\	_	7	11/6	13	16	10.	lat	Work No.	
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ATTACHMENT 5

ORGANIC/INORGANIC ANALYTICAL VALIDATION REPORT

Tesoro Refining & Marketing LLC Los Angeles Refinery – Carson Operations Organic/Inorganic Analytical Validation Report

Table of Contents

1.0	Overview
1.1	Data Assessment
1.2	Overall Data Review Narrative

Attachments:

Attachment I - Dominguez Channel Estuary Sediment Monitoring Inorganic/Organic Analytical Validation Form

Tesoro Refining & Marketing LLC Los Angeles Refinery – Carson Operations April 2020 Organic/Inorganic Analytical Validation Report Page 1 of 3

1.0 Overview

The Tesoro Refining & Marketing Company LLC, Los Angeles Refinery – Carson Operations (herein facility) collected sediment samples at monitoring locations SED-004, SED-005, SED-006, and SED-007 on April 30, 2020. Collected samples were submitted to the laboratory on May 1, 2020 for analysis as required in NPDES Permit No. CA0000680 Attachment E, Table E-7.

Sediment monitoring analysis was performed by laboratories certified under the Environmental Laboratory Accreditation Program (ELAP). Sediment chemistry samples were analyzed by Eurofins Calscience, Inc. in Garden Grove California with ELAP accreditation number 2944 and chronic toxicity samples were submitted to Aquatic Bioassay and Consulting Laboratories, Inc. in Ventura, California with ELAP accreditation number 1907. This document presents the analytical validation criteria used to determine the usability of data gathered as result of the sediment monitoring conducted. Analytical data was evaluated based on the validation criteria set forth in the National Functional Guidelines for Organic Superfund Methods Data Review, document number USEPA-540-R-2017-002, January 2017, and the USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review, document number USEPA 540-R-2017-001, January 2017, as applied to the reported methodology. Sediment monitoring parameters, including the sample type and corresponding analytical method, are listed in Table 1.0 below.

Parameters	Sample Type	Analytical Method	
Cadmium, Total Recoverable	Surface Grab	EPA 6020B	
Chlordane	Surface Grab	EPA 8081A	
Chromium, Total	Surface Grab	EPA 6020B	
Copper, Total Recoverable	Surface Grab	EPA 6020B	
Lead, Total Recoverable	Surface Grab	EPA 6020B	
Mercury, Total Recoverable	Surface Grab	EPA 7471A	
Nickel, Total Recoverable	Surface Grab	EPA 6020B	
Zinc, Total Recoverable	Surface Grab	EPA 6020B	
PCBs ¹	Surface Grab	EPA 8082A	
Sediment Grain Size	Surface Grab	ASTM D4464	
Chronic Toxicity	Surface Grab	4	
Pesticides	Surface Grab	EPA 8081A	
Total Organic Carbon	Surface Grab	EPA 9060A	

Tesoro Refining & Marketing LLC Los Angeles Refinery – Carson Operations April 2020 Organic/Inorganic Analytical Validation Report Page 2 of 3

Table 1.0 - Sec	diment Monitoring Paras	meters
Total Petroleum Hydrocarbons ²	Surface Grab	EPA 8015B
Tributyltin	Surface Grab	Krone et. Al.
Polynuclear Aromatic Hydrocarbons ³	Surface Grab	EPA 8270C

Footnotes:

Analytical laboratory reports are included in Attachment 3 and Attachment 4 of the Dominguez Channel Estuary April 2020 Sediment Monitoring Report. All of the sediment monitoring parameters listed in Table 1.0 were analytically validated except for Sediment Grain Size and Chronic Toxicity. Data from these analyses do not qualify for environmental data validation guidance procedures. As a result, sediment grain size and chronic toxicity data was assessed for completion using Chain of Custody records and field sample preservation guidelines. Detailed analytical validation for chronic toxicity is provided in the Sediment Bioassay Data Validation Report in Attachment 6 of the Dominguez Channel Estuary April 2020 Sediment Monitoring Report.

Analytical data validation for organic/inorganic parameters determinations are included in the Dominguez Channel Estuary Sediment Monitoring Organic/Inorganic Analytical Data Validation Form in Attachment I included in this report.

1.1 Data Assessment

Analytical data validation consisted of evaluating laboratory precision, laboratory accuracy, method compliance, and overall completeness of laboratory data provided. Based on this assessment, it was determined that data obtained for the April 30, 2020 sediment samples at SED-004, SED-005, SED-006, and SED-007 is acceptable. Data components reviewed during the data review process included:

- Chain of Custody records and holding times
- Sample integrity/case narratives
- Sample results, reporting limits, dilution factors
- Laboratory QA/QC data

A summary of the sediment samples collected are provided in Table 1.0 below:

^{1 –} PCBs is the sum of Arochlor-1016, Arochlor-1221, Arochlor-1232, Arochlor-1242, Arochlor-1248, Arochlor-1254, and Arochlor-1260.

^{2 -} DDT is the sum of 4,4' DDT, 2,4' DDT, 4,4'DDE, 2,4' DDE, 4,4' DDD, and 2,4' DDD

^{3 –} PAHs is the um of acenaphthene, anthracene, 1,2-benzanthracene, 3,4-benzofluoranthene, benzo(k)fluoranthene, 1,12-benzoperylene, benzo(a)pyrene, chrysene, dibenzo(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, and pyrene.

Tesoro Refining & Marketing LLC Los Angeles Refinery – Carson Operations April 2020 Organic/Inorganic Analytical Validation Report Page 3 of 3

Ja	ble 2.0 – Dominguez Ch	anner Sediment Samp	nes
Sample ID	Sample Date	Sample Time	Laboratory ID
SED-004	April 30, 2020	16:10	570-27181-1
SED-005	April 30, 2020	14:30	570-27181-2
SED-006	April 30, 2020	12:30	570-27181-3
SED-007	April 30, 2020	11:04	570-27181-4

1.2 Overall Data Review Narrative

Analytical data was assessed for precision, accuracy, method compliance and overall completeness. Data review determined these components to be acceptable. However, as noted in the attached data validation form, the Matrix Spike (MS)/Matrix Spike Duplicate (MSD) recoveries in QA/QC samples for PAHs, PCBs and Pesticides were outside the control limits. Since associated Laboratory Control Sample (LCS)/Laboratory Control Sample Duplicates (LCSD) recoveries were within acceptance limits, the data was qualified and deemed acceptable. In addition, the samples from sampling station SED-004, SED-005 and SED-006 experienced weathering or other environmental processes. As a result, the weathered patterns obtained from these sample stations were quantified to the closest Arochlor laboratory standard. Arochlor concentrations reported in the laboratory report should be taken as estimations.

[Remainder of page intentionally left blank]

Attachment I

Dominguez Channel Estuary Sediment Monitoring Inorganic/Organic Analytical Validation Form

Tesoro Refining & Marketing LLC Los Angeles Refinery - Carson Operations

Dominguez Channel Estuary Sediment Monitoring Organic/Inorganic Analytical Data Validation Form

PROJECT INFORMATION

SEDIMENT MONITORING PARAMETERS

Analytical Method

Project Name: Dominguez Channel Sediment Sampling

Data Validator: Ana Horn

Holding Times

Analytical Laboratories: Eurofins Calscience, Inc.

Parameters

Validation Date: September 11, 2020

Aquatic Bioassays & Consulting Laboratories Inc.

Sample Collection Date: April 30, 2020

Sample Type

Signature: Ana Hom

Parameter Validation Comments:

Sample Collection Locations: SED-004, SED-005, SED-006, SED-007

	- seculore	. 16-	S. Cristalia I. Cristalia	1111011101	Tremanie innes	Taractical targetter delimination			
Cadmium, Total Recoverable	ım, Total Recoverable Surface		EPA 6	020B	180 days				
Chlordane	Surface	Grab	EPA 8	3081A	14 days	1			
Chromium, Total Surface Copper, Total Recoverable Surface		Grab	EPA 6	020B	180 days	1			
		Grab	EPA 6	020B	180 days	All sediment monitoring parameters were			
Lead, Total Recoverable	Surface	Grab	EPA 6	020B	180 days	게 하다 아이들이 있어요? 얼마는 점하다 사람들이 하고 하고 있는데 없어요? 아이들이 살아내다 되었다.			
Mercury, Total Recoverable	Surface	Grab	EPA 7	471A	180 days	analytically validated except for Sediment Grain			
Nickel, Total Recoverable	Surface	Grab	EPA 6	020B	180 days	Size and Chronic Toxicity. Data from these			
Zinc, Total Recoverable	Surface	Grab	EPA 6	020B	180 days	analyses do not qualify for environmental data			
PCBs	Surface	Grab	EPA 8	082A	14 days	validation guidance procedures. Grain size a			
Sediment Grain Size	Surface	Grab	ASTM	D4464		chronic toxicity data was assessed for			
Chronic Toxicity	Surface	Grab							
Pesticides	Surface	Grab	EPA 8	081A	14 days	completion based on Chain of Custody records			
Total Organic Carbon	Surface	Grab	EPA 9	060A	28 days	and field sample preservation procedures.			
Total Petroleum Hydrocarbons	Surface	Grab	EPA 8	8015B	14 days				
Tributyltin	Surface	Grab	Krone	et. Al.	14 days				
Polynuclear Aromatic Hydrocarbons	Surface	Grab	EPA 8	3270C	14 days				
			VALIDATIO	N CRITERIA					
1.Was the Chain of Custody (COC) form compl samples submitted?	ete for all	☑ YES	□ no□ n/a	complete. The and laborator	e COC includes samp ry personnel signatu	(COC) form submitted to the laboratory is ole location information, field parameter results, res denoting the date and time the samples were received by the laboratory.			
2. Were ALL of the requested analyses specified in the COC completed by the laboratory?			□ NO□ N/A	Comments: L requested in	Control of the contro	vas performed in accordance with the methods			

Dominguez Channel Estuar	Los Angeles Refinery	& Marketing LLC / - Carson Operations Organic/Inorganic Analytical Data Validation Form
3. Were samples received in good condition and appropriately preserved as required by each analysis?	☑ YES ☐ NO ☐ N/A	Comments: The samples were received by the laboratory on May 1, 2020. The samples arrived in good condition and were properly preserved. No sample receipt deficiencies were noted in the laboratory report Sample Job Narrative.
4. Were the reported analytical methods in compliance with the facility's NPDES permit and/or COC requests?	☑ YES ☑ NO☐ N/A	Comments: All analytical methods were completed as requested in the COC and are in compliance with the facility's NPDES permit.
5.Were detection limits in accordance with the facility's NPDES permit or analytical method?	☑ YES □ NO□ N/A	Comments: The method detection limits and reporting limits were reported for each analytical method. Sediment results were primarily reported on a dry weight basis except for DDT analyzed by method 8081A and sediment particle size analyzed by method D4464. DDT and sediment particle size was reported on a wet weight basis.
6. Did the laboratory identify any deficiencies/non- conformances related to the analytical results?	☑ YES □ NO□ N/A	Comments: The Job Narrative included on page 4 of the laboratory report outlines QA/QC issues for results analyzed by method 8081A, 8082A and 8270C. Method 8082A was utilized ofr the analysis of polychlorinated biphenyls (PCBs). The laboratory reported that sediment samples at station SED-004, SED-005, and SED-006 experienced weathering. As a result, the PCBs in the sample did not closely match any of the laboratory's Aroclor standards used for instrument calibration. The samples were quantified based on the Arochlor standard closest to the sample's pattern. Therefore, the Arochlor identification and concenetrations reported for these stations should be considered estimates. Additional QA/QC issues are further discussed in the comment section to questions 14 and 16.
7. Were sample holding times met?	☑ YES ☐ NO□ N/A	Comments: Sample holding times were met for all analytical methods. The analytical methods and the corresponding holding time is provided in the Sediment Monitoring Parameter Table above.

Dominguez Channel Estuary		& Marketing LLC - Carson Operations Organic/Inorganic Analytical Data Validation Form
8. Were correct concentration units reported?	☑YES ☐ NO ☐ N/A	Comments: Analytical results are reported in the correct concentration units required for sediment sample matrices. Results are reported in varying units as follows: dry weight results reported in mg/kg include PAHs analyzed by method EPA 8270C, TPH analyzed by method 8015B, total metals analyzed by method 6020, mercury analyzed by method 7471A and total organic carbon analyzed by method 9060A. Results reported in dry weight as ug/kg included PCBs analyzed by method 8082. Results reported in wet weight as ug/kg included DDT analyzed by 8081A. This unit trend is consistent at all four sampling stations.
9. Were the reporting requirements for flagged data met?	☑ YES □ NO□ N/A	Comments: Reporting requirements for flagged data were met. Qualifiers included: J - result is less than R_ but greater than or equal to MDL and the result is approximate value p - The %RPD between the primary and confirmation column/detector is >40%. The lower value was reported F1 - MS and/or MSD recovery is outside acceptance limits F2 - MS/MSD RPD exceeds control limits X - Surrogate recoveries exceed control limits Data with the above qualifiers, except for J flag results, are discussed in the comment section to questions 14 and 16.
10. Does the laboratory report include results for only those constituents requested in the COC?	□ YES ☑ NO□ N/A	Comments: The laboratory report includes results for the required parameters as included in Table E-7 of the NPDES Permit; however, the laboratory report includes 5 additional PAH results not requested in the COC at all four sampling stations. These additional PAHs include Acenaphthylene, 1-Methylnaphthalene, 2-Methylnaphthalene, Naphthalene, and Phenanthrene. Data for these parameters are not required and are therefore not accounted for in this data validation.

Dominguez Channel Estua	Los Angeles Refinery	& Marketing LLC / - Carson Operations Organic/Inorganic Analytical Data Validation Form
11. Were laboratory method blank samples free of target analyte contamination?	☑ YES ☐ NO☐ N/A	Comments: Laboratory method blanks were free of target analyte for all parameters at all sampled stations.
12. Were instrument calibrations within method or data validation control limits?	□ YES □ NO☑ N/A	Comments: Instrument calibration data was not supplied in the analytical report and, therefore, not included in this analytical data validation analysis.
13. Were trip blank, field blank, and/or equipment rinse blank samples free of target analyte contamination?	☐ YES ☐ NO☑ N/A	Comments: Not applicable. Trip blanks, field blanks and/or equipment rinse blank samples were not collected for this project.
14. Were surrogate recoveries within control limits?	□ YES ☑ NO□ N/A	Comments: Surrogate recoveries are within control limits at all sampling stations including surrogates used for PAHs (method 8279C), tributyltin (Krone et al), TPH (method 8015B), PCBs (method 8082), metals (method 6020) and total organic carbon (9060A). Surrogate recoveries for Pesticides (method 8081A) were outside control limits at all sampling stations. Pesticide surrogate recoveries outside the control limits indicate interferences caused by the specific sample matrix. The laboratory control sample (LCS)/laboratory control sample duplicate (LCSD) indicate the laboratory's performance to successfully recover target analytes. Since the LCS/LCSD demonstrate recoveries within acceptance limits for the Pesticide analytes the analytical results are deemed acceptable.
15. Were laboratory control sample recoveries within control limits?	☑ YES □ NO□ N/A	Comments: Laboratory control sample recoveries were within acceptable control limits for all parameters.

Dominguez Channel Estuar	Los Angeles Refinery	& Marketing LLC - Carson Operations Organic/Inorganic Analytical Data Validation Form
16. Were Matrix Spike (MS) / Matrix Spike Duplicate (MSD) recoveries within control limits?	10	Comments: The Matrix Spike (MS)/Matrix Spike Duplicate (MSD) recoveries were within control limits for TPH, metals, total organic carbon, and tribultyltin. The MS/MSD recovery for PAH preparation batch 570-56884 and 570-68220 and analytical batch 570-68220 were outside the control limits. The MS/MSD recovery for Pesticide preparation batch 570-69209 and 570-69126 and analytical batch 570-8894 were outside the control limits. Additionally, the MS/MSD recoveries for PCB preparation batch 570-66884 and 570-67132 and analytical batch 570-68205 were outside the control limits. The MS/MSD measures the effects of interferences caused by the specific sample matrix. Poor spike recoverires for MS/MSD samples indicates the sample matrix is causing interference issues. Since the associated laboratory control sample (LCS)/laboratory control sample duplicate (LCSD) recoveries for PAHs, Pesticides and PCBs were within acceptable limits it is determined that the laboratory performance is within standards and, therefore, the results are deemed acceptable.
17. Were internal standards within method criteria for GC/MS sample analysis?	□ YES □ NO ☑ N/A	Comments: Does not apply to this level of data validation. In addition, GC/MS internal standard data was not supplied in the analytical reports and was therefore not included in this data review.
18. Were 100% of the Electronic Data Deliverable (EDD) concentrations and reporting limits compared to the hardcopy data reports?	☐ YES ☑ NO□ N/A	Comments: No EDD was used for this project.

Tesoro Refining & Marketing LLC

Los Angeles Refinery - Carson Operations

Dominguez Channel Estuary Sediment Monitoring Organic/Inorganic Analytical Data Validation Form PRECISION, ACCURACY, METHOD COMPLIANCE AND COMPLETENESS ASSESSMENT Precision Determination: ✓ Acceptable Not Acceptable Comments: Precision is the measure of variability of individual sample measurements. Laboratory precision was determined by examination of laboratory duplicate results. To evaluate laboratory duplicates for precision the Relative Percent difference (RPD) was used. RPD is defined as the difference between two duplicate samples divided by the mean and expressed as a percent, RPD precision measurements were compared to laboratory QC limits and it was determined that RPDs were within the RPD limits, except for PAHs. The associated laboratory control sample / laboratory sample duplicate for this parameter, however, was within acceptance limits. Therefore, data precision obtained for all analyzed parameters was determined to be acceptable. Accuracy Determination: ☑ Acceptable Not Acceptable Comments: Accuracy is the closeness of a measured result to an accepted reference value usually measured as percent recoveries. Laboratory accuracy is a measure of system bias measured by evaluating Lab Control Samples (LCS), Lab Control Sample Duplicate (LCSD), matrix spikes (MS) and/or matrix spike duplicates (MSD), and organic system monitoring compound surrogate percent recoveries (%Rs). Data validation assessments revealed all LCS/LCSD were within acceptable criteria. MS and MSD recoveries were outside the acceptable range for PCBs, Pesticides and PAHs as discussed in Question 16. Due to the LCS/LCSD meeting applicable criteria, data accuracy for analyzed parameters was determined to be acceptable. Method Compliance Determination: | Acceptable Not Acceptable Comments: Method compliance was determined by evaluating sample integrity, holding time, reporting limits and laboratory blanks per method specific requirements. Assessment of these factors is presented above in questions 1, 2, 3 and 4. Data validation determined method compliance to be acceptable. Completeness Determination: ✓ Acceptable ☐ Not Acceptable Comments: Completeness is the overall ratio of the number of samples planned versus the number of samples with valid analyses. Project completeness was performed by evaluating COC records, laboratory analytical methods, and detection limits as well as sample data results and QC summary reports. Data assessment for the collected samples determined the overall data completeness to be acceptable.

ATTACHMENT 6

SEDIMENT BIOASSAY DATA VALIDATION REPORT

Tesoro Refining & Marketing LLC Los Angeles Refinery – Carson Operations Sediment Bioassay Data Validation Report April 2020

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1.0	Chronic Toxicity Test Overview	1
2.0	Data Review	1
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3.1	Sample Collection, Sample Preservation, Chain of Custody	2
3.2		
3.3	Test Implementation	2
3	3.3.1 Test Acceptability Criteria	
3.4		
3.5		

Attachment:

Attachment I - Dominguez Channel Estuary Sediment Bioassay Data Validation Form

Tesoro Refining & Marketing LLC Los Angeles Refinery – Carson Operations April 2020 Sediment Bioassay Data Validation Report Page 1 of 4

1.0 Chronic Toxicity Test Overview

The Tesoro Refining & Marketing Company LLC, Los Angeles Refinery — Carson Operations (herein facility) collected sediment samples at monitoring locations SED-004, SED-005, SED-006, and SED-007 as required in National Pollutant Discharge Elimination System (NPDES) No. CA0000680. Sediment samples for chronic toxicity testing were collected on April 30, 2020 and submitted to Aquatic Bioassay & Consulting Laboratories Inc. on May 1, 2020 for analysis. Aquatic Bioassay & Consulting Laboratories has Environmental Laboratory Accreditation Program (ELAP) Certification number 1907.

In accordance with NPDES No. CA0000680 Attachment E, Section V.A.4, chronic toxicity samples are required to undergo a species sensitivity screening by concurrently conducting three toxicity tests using the fish, invertebrate and alga species listed in the permit order. Based on the results of the species sensitivity screening, the single species exhibiting the highest percent effect is required to be used for routine monitoring during the permit cycle. The species listed in the permit order, however, are more commonly used to evaluate for effluent chronic toxicity rather than sediment toxicity. Therefore, with laboratory staff and Los Angeles Regional Water Quality Control Board guidance, a species sensitivity screening was conducted for chronic toxicity samples on September 25, 2019 using two different sediment species: Echaustorius estuarius and Mytilus galloprovincialis. As explained in the September 25th sediment report, both sediment species exhibited no observed effect concentration to the sediment samples collected from Stations SED-005, SED-006 and SED-007. Given that both species exhibited no toxicity effect, the facility opted to utilize Echaustorius estuarius in all future chronic toxicity testing. Therefore, sediment chronic toxicity samples collected on April 30, 2020 were tested using Eohaustorius estuarius in accordance with the guidelines prescribed in Methods for Assessing the Toxicity of Sediment Associated Contaminants with Estuarine and Marine Amphipods, Method EPA/600/R-94/025.

2.0 Data Review

A level 2 data verification protocol was used for bioassay validation. The level 2 data review compares bioassay testing holding conditions, test setup, test implementation, and test termination in accordance with bioassay protocols. As part of the level 2 data verification protocol the laboratory was expected to follow all internal quality control procedures as directed in the applicable analytical method. Outcome of the data review for each of the chronic toxicity tests performed is documented in the Chronic Toxicity QA/QC Bioassay Data Validation Form included in Attachment I of this report.

Sediment samples at Stations SED-004, SED-005, SED-006, and SED-007 were collected on April 30, 2020 by WGR Southwest Inc. All collected samples were preserved as required and submitted to Aquatic Bioassay and Consulting Laboratories Inc. on May 1, 2020. Chronic toxicity tests for all four stations began on May 5, 2020 and

Sediment samples were collected and preserved in accordance with the Surface Water Ambient Monitoring Program (SWAMP) standard operating procedure, Collection of Water and Bed Sediment Samples with Associated Field Measurement and Physical Habitat in California, Version 1.1.

Tesoro Refining & Marketing LLC Los Angeles Refinery – Carson Operations April 2020 Sediment Bioassay Data Validation Report Page 2 of 3

concluded on May 15, 2020. A summary of data usability determinations for the chronic toxicity test performed are described in the following section.

3.0 Eohaustorius estuarius Chronic Toxicity Test

3.1 Sample Collection, Sample Preservation, Chain of Custody

Sediment samples for *E. estuarius* chronic toxicity testing were collected from Stations SED-004, SED-005, SED-006, and SED-007 using an Eckman dredge sampler. Sampling equipment was decontaminated prior to use at each station to prevent cross contamination. Field samples were handled with care in order to minimize sediment disturbance and prevent the loss of sample integrity, chemical speciation and chemical equilibrium. Collected samples were maintained at 4°C and a Chain of Custody documenting the collected samples was completed and submitted to Aquatic Bioassay & Consulting Laboratories Inc. Chronic toxicity testing was initiated for all samples within the required 14-day holding time for sample collection and analysis. Document review of sample collection, sample preservation and Chain of Custody procedures was deemed acceptable and in compliance with the facility's Waste Discharge Requirements (WDRs).

3.2 Test Setup

Chronic toxicity testing with *E. estuarius* was completed in accordance with EPA method 600/R-94-025. Organisms used for testing were field collected and supplied by Northwestern Amphipod in Oregon. Amphipods ranging in 3-5 mm in size were used, with at least twenty organisms per replicate. Test setup review is provided in the bioassay data validation form attached to this document. Based on a review of laboratory test setup procedures, test set up procedure were deemed acceptable and in compliance with EPA method requirements.

3.3 Test Implementation

Test implementation for chronic toxicity testing with *E. estuarius* was completed in accordance with EPA method 600/R-94/025. Water quality measurements were recorded during the duration of the test and were found to be in the acceptable range as specified in the test protocol. Ranges for the water quality measurements are provided in the QA/QC Checklist of Attachment I. No abnormal conditions were observed throughout the duration of the test. Thus, the test implementation was determined to be acceptable and in compliance with EPA method requirements.

Tesoro Refining & Marketing LLC Los Angeles Refinery – Carson Operations April 2020 Sediment Bioassay Data Validation Report Page 3 of 3

3.3.1 Test Acceptability Criteria

3.3.1.1 Reference Toxicant

The reference toxicant used during *E. estuarius* chronic toxicity testing was unionized ammonia. The length of the reference toxicant test was 96 hours. All reference toxicant testing was within the two standard deviation quality control limit meeting the test acceptability criteria in compliance with EPA method requirements.

3.3.1.2 Negative Control Samples

Negative control samples were above the 90% mean acceptability survival criteria. As a result, the negative control sample results are considered acceptable at all sampled stations and in compliance with EPA method requirements.

3.4 Reporting

Bioassay results were delivered in a laboratory report documenting a summary of water quality results, reference toxicity results, test results, statistical calculations and percent mortality. Additional information regarding test setup/test implementation procedures was provided by the laboratory via email to complete the QA/QC bioassay data validation form. Overall, the reporting component presenting chronic toxicity test results for *E. estuarius* was deemed acceptable.

3.5 Overall Data Usability

Review of laboratory data indicated chronic toxicity testing was performed in accordance with EPA method 600/R-94/025 as documented in Attachment I. Through the bioassay laboratory report and additional clarification from the laboratory, the bioassay test results at all sample stations was deemed acceptable and in compliance with EPA method requirements.

Attachment I Dominguez Channel Estuary Sediment Bioassay Data Validation Form

Tesoro Refining & Marketing LLC Los Angeles Refinery - Carson Operations

Dominguez Channel Estuary Chronic Toxicity QA/QC Bioassay Data Validation

	Dominguez Channel Est	uary Chronic T	Toxicity QA/QC Bioassay Data Validation						
		PROJECT IN	VEORMATION						
Project Name:	Dominguez Channel Sedime	ent Sampling							
Analytical Laboratory:	Aquatic Bioassays & Consul	quatic Bioassays & Consulting Laboratories Inc.							
Laboratory Technician:	Joe Freas	e Freas							
Sample Collection Date:	April 30, 2020	pril 30, 2020							
Sample Locations/Lab Number:	SED-004 / WGR0520.004 SED-005 / WGR0520.005 SED-006 / WGR0520.006 SED-007 / WGR0520.007								
Species/Test Method Referenced:	Eohaustorius estuarius EPA/600/R-94-025	그 아마는 그 내용을 하다면 그는 내를 하면 하면 이렇게 되었다. 그 전에 대표를 보고 있다면 하는데 하는데 가지 않는데 하는데 하는데 하는데 하는데 하는데 하는데 하는데 하는데 하는데 하							
Sample Matrix:	Sediment								
Type of Species:	Estuarine								
Data Validator:	Ana Horn								
Validation Date:	August 31, 2020								
Signature:	Fine Hom								
Problems Noted:	No problems or deficiencies	s identified. Ch	ronic toxicity testing was performed in accordance with EPA method guidelines.						
		ECHAUSTOR	IUS ESTUARIUS						
		And the Lot of the Lot							

Completeness and Holding Conditions:

Type of Samples Collected: Grab Sediment Samples	Number of Samples Analyzed: 4
Were samples maintained at 4°C and in the dark after collection? Ves	

Did chronic toxicity testing begin within 14 days of sample collection? Yes

Holding conditions acceptable? Yes

If holding conditions were not acceptable, explain: Not Applicable

Quality of Test Organism, Collection and Acclimation:

Who is the supplier of the test organisms?	Northwestern Amphipod in Oregon
Are organisms field collected or cultured?	Field Collected

Tesoro Refining & Marketing LLC

Los Angeles Refinery - Carson Operations

Dominguez Channel Estuary Chronic Toxicity QA/QC Bioassay Data Validation

If field collected:

Where was the collection location? Oregon

What was the organism collection date? Organism were collected on April 27, 2020. Organisms were received by the laboratory on April 29, 2020.

What was the water salinity and temperature at the time of collection? Water salinity at the time of collection was 30 ppt. Acclimation after collection began at 26ppt. Final acclimation in laboratory was from 26 ppt to 20 ppt decreasing at 2 ppt/day.

Was site sediment collected for holding and acclimation purposes? Yes, site sediment was collected and used for acclimation and negative control testing. Additional Comments: Quality of test organisms, collection, and acclimation is deemed acceptable.

Field Collection Sorting Methods

Were healthy amphipods placed into 10 cm diameter finger bowls with 2 cm sieved site sediment and seawater of appropriate salinity? Yes, only healthy organisms were used for bioassay testing. Amphipods were placed in 10 cm finger bowls with sieved site sediment and checked for appropriate salinity.

Were organisms held for 2-10 days? Yes, organisms were held for 6 days prior to test initiation.

Was test sediment sieved through 2 mm sieve or forceps for predator removal? Yes, sediment was sieved through a 2 mm stainless sieve.

Was control sediment sieved twice through 0.5 mm? Yes

Did control sediment have a 4-hour settling period after each sieving? Yes

Test Initiation

Was salinity adjusted in all testing chambers? Yes

Was overlying ammonia detected? No overlying ammonia was detected during testing.

Were there at least 5 replicates per sample? Yes

Was there at least 20 animals per replicate? Yes

Was the organism length between 3-5 mm during test initiation? Yes, organism length was verified by use of caliper measurement.

Was the overlying water volume 800 mL? Yes

Were there any water quality adjustments? Yes, water quality measurements were collected during the duration of the test and are provided in the corresponding laboratory report.

Test Implementation

Photoperiod for 24 hours? Yes, continuous light was provided.

Was daily water quality monitoring conducted? Yes

What was the overlying daily temperature range (15°C)? The overlying daily temperature was between 14.7-14.85°C.

Was the daily salinity range 20+/-1 ppt? Yes, salinity range was 20ppt.

Was water renewal conducted? No, water remained static and was not renewed over the 10-day exposure period as required in the EPA method.

Tesoro Refining & Marketing LLC Los Angeles Refinery - Carson Operations

Dominguez Channel Estuary Chronic Toxicity QA/QC Bioassay Data Validation

Was the overlying daily pH between 7 - 8 standard units? Yes

What was the overlying ammonia detection (ND)? No ammonia was detected during testing.

Were appropriate test chambers used (1-liter glass containers with 10 cm diameter)? Yes

Was water in each test chamber aerated overnight before start and throughout the test? Yes, overlying water was continuously aerated at 1bbl/sec during the test

Did the water maintain at least more than 90% saturation of dissolved oxygen concentration? Yes

Test Results and Analysis

Were the number of amphipods reported for each replicate? Yes, 20 amphipods were used per replicate

Was the percent mortality reported for each replicate? Yes

Was the sample mean for survival reported? Yes, the mean control survival was 99-100%

QA/QC Samples	
Positive Control	Negative Control
Length of reference toxicity test? 96 hours	Negative control response above 90% acceptability criteria? Yes
What reference toxicant was used? Unionized Ammonia	Mean control survival? 100%
Exposure concentrations? Exposure ammonia concentrations were 0, 15.6, 32.2, 62.5, 125.0, 250 mg/L	Did EC 50 fall within lab standards? Yes
Did EC 50 fall within lab standards? Yes	



Dominguez Channel Estuary October 2020 Sediment Monitoring Report

Prepared for:

Tesoro Refining & Marketing Company LLC Los Angeles Refinery – Carson Operations 1801 East Sepulveda Boulevard Carson, CA 90745

Prepared by:

WGR Southwest, Inc. 11021 Winners Circle, Suite 101 Los Alamitos, CA 90720

Date:

December 1, 2020

TESORO REFINING & MARKETING COMPANY LLC LOS ANGELES REFINERY – CARSON OPERATIONS DOMINGUEZ CHANNEL ESTUARY SEDIMENT MONITORING REPORT 2020

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Attachm	ent 3: Sediment Monitoring Aquatic Bioassay Analytical Laboratory Report
Attachm	ent 4: Sediment Bioassay Data Validation Report

Tesoro Refining & Marketing Company LLC Los Angeles Refinery – Carson Operations Dominguez Channel Estuary October 2020 Sediment Monitoring Report Page 1 of 3

1.0 Introduction

On behalf of Tesoro Refining & Marketing Company LLC Los Angeles Refinery – Carson Operations (Tesoro LAR Carson), WGR Southwest, Inc. (WGR) conducted sediment monitoring of the Dominguez Channel Estuary in accordance with National Pollutant Discharge Elimination System Waste Discharge Requirements Permit Number CA0000680 Order Number R4-2015-0259 (WDR Permit). As required in Table E-7 of WDR Permit Attachment E, Monitoring and Reporting Program Number 5424 (MRP No. 5424), sediment monitoring is required at least once a year for all parameters and at least twice a year for Chronic Toxicity regardless of Tesoro LAR Carson discharge associated with the WDR Permit¹. Therefore, this report constitutes sediment monitoring for the second event of 2020, where the sediment samples collected were analyzed for Chronic Toxicity and required monitoring (i.e. field observations and field analyses) was completed.

2.0 Sediment Monitoring

As shown in Figure 1, the WDR Permit designates seven sediment monitoring locations: SED-001, SED-002, SED-003, SED-004, SED-005, SED-006, and SED-007. WGR field personnel utilized an Ekman dredge and a Horiba U-50 Series Multi-Parameter Meter. According to historic Tesoro LAR Carson Sediment Monitoring Reports, samplers have been unable to collect sediment samples from SED-001 since 2003 and SED-002 since 2003.

Sediment monitoring was attempted at all designated sediment monitoring locations on October 8, 2020. As detailed in the field logs (see Attachment 1), sediment samples and associated monitoring could only be feasibly completed at five of the seven sediment monitoring locations. Table 2.0 provides a summary of the field observations and analyses.

	Table 2.0: See	diment Monitoring Fiel	d Observation and A	nalyse	s				
		Field Observations		Field Analyses					
Sample ID	Sediment Description	Biological Matter	Pollutants	pH (SU)	Salinity (PPT)	DO (mg/L)	SC (mS/Cm)	Turbidity (NTU)	Flow
SED-001	Not Sampled	Not Sampled	Not Sampled	-	*	ш.	LL.	-	
SED-002	Not Sampled	Not Sampled	Not Sampled			-		-	

Tesoro LAR Carson did not discharge under the WDR Permit during the 2020 calendar year.

Tesoro Refining & Marketing Company LLC Los Angeles Refinery – Carson Operations Dominguez Channel Estuary October 2020 Sediment Monitoring Report Page 2 of 3

	1 1	Field Observations				Field Analyses					
Sample ID	Sediment Description	Biological Matter	Pollutants	pH (SU)	Salinity (PPT)	DO (mg/L)	SC (mS/Cm)	Turbidity (NTU)	Flow		
SED-003	Dark in color with shell, vegetation and debris, fine particles, light biological odor	Vegetation present	No trash present	7.63	24.8	6.02	39.0	0.1	ı		
SED-004	Dark in color with shells, vegetation and debris, rough particles, light biological odor	Vegetation present	No trash present	7.62	24.2	5.81	38.2	4.3	ı		
SED-005	Dark in color with vegetation/debris and trash, fine particles, strong biological odor	Vegetation present	Trash present	7.52	22.9	5.02	36.3	2.3	q		
SED-006	Dark in color with vegetation/debris and trash, fine particles, strong biological order	Vegetation present	Trash present	7.28	21.4	4.9	34.2	2.4	3		
SED-007	Dark in color with some vegetation/debris, shells, salty, strong biological odor	Vegetation present	No trash present	7.05	20.7	4.52	33.1	4.3	1		

3.0 Laboratory Results

SC: Specific Conductance

Table 2.0 summarizes the field observations and analyses for the October 2020 sediment monitoring event. Laboratory results are summarized in Attachment 2. The Aquatic Bioassay laboratory report is in Attachment 3. A data validation report for this laboratory analytical report is in Attachment 4.

4.0 Executive Summary

Receiving water sediment monitoring and analysis was conducted independent of any discharge from Tesoro LAR Carson. Pollutant concentrations demonstrated in this report are not associated with any contribution from Tesoro LAR Carson to the receiving water. There are

Tesoro Refining & Marketing Company LLC Los Angeles Refinery – Carson Operations Dominguez Channel Estuary October 2020 Sediment Monitoring Report Page 3 of 3

no pollutant concentration limits associated with this type of sampling as prescribed by the WDR Permit. Receiving water sediment monitoring and analysis was completed in compliance with the WDR Permit Attachment E, MRP No. 5424. As noted in the Sediment Bioassay Data Validation Report included in Attachment 4, analytical data obtained for this sampling event was deemed acceptable. No instances of non-compliance were identified.

FIGURE 1

DOMINGUEZ CHANNEL ESTUARY SEDIMENT MONITORING LOCATIONS

Figure 1: Dominguez Channel Estuary Sediment Monitoring Locations



Tesoro Refining & Marketing Company LLC Los Angeles Refinery – Carson Operations Dominguez Channel Estuary Sediment Monitoring Report

ATTACHMENT 1

SEDIMENT MONITORING FIELD LOGS

Tesoro Refining & Marketing Company LLC Los Angeles Refinery – Carson Operations Dominguez Channel Estuary October 2020 Sediment Monitoring Report

	WGR Southwest, Inc.		Page 1 of 3		
W. 1	Field Log	Li se s	Date: 10-8-2020		
	ne: LARC Sediment 2020		amber Ballrot		
	nber: 021, APC, 01	Field Personnel:	Dave Montelongo		
	itions/Project Discrepancies:				
68	-75°F 0				
Time	nt to moderate breize	Field Notes			
0630	arrive @ office, load truc		ensured to monacular		
000	secure items in truck				
	Conduct overall safety				
0740	Leave office and head				
0745	arrive @ SED-UOT, We				
	vegetation and some	truck along emt	pankment		
	WUK 94 H from SE co				
	of bridge for sample	le collection			
	water level is 25 ft from top of bridge walkway				
	water is slightly marky, can see botton on how por				
	sedment dark in who I wisome vergetarion Idebris, shoell's				
	salty wil bio decomp.				
	23.1°C; 7.05 pH; 33,1,	ms/6m, 4.3 NT	U, 4.52 mg/L DD,		
	20.7 ppt.				
~35	clean up and dewn equ				
7830	Leave SED-007 for		1 2 1 2		
0845	arrive (a) SED-OOD Wea				
	vegetation and son	A			
	walk 119 ft from NW c		TOWARDS CENTER		
	water level is 25 ft		las de la contra del la contra de la contra del la contra del la contra de la contra de la contra del la contra de la contra de la contra del la c		
	water is slightly murk				
	sediment dank in wolor				
	smells mostly of bi	- deison	CHIS COLD TO SHE, TO PER		
	22.67 C, 7.28 pH, 34.2	mS/Cm : J.4	NTU 4.9 mall DO!		
	21.4 ppt	1 / 27	1 1 1 1 1		
	clean up and duon eg	il pment			
415	take break				
0930	leave sep-oole for	SED-005			
0940	arrive Scoos, weather	y overlast, waste	ar in channel,		
	regetation and some to	rash alway em	bankment		

	WGR Southwest, Inc.		Page 2 of 3		
	Field Log		Date: 10 -8-2620		
Project Na	me: LARC Sediment 2020	Field Personnel:	amber Ballrot		
Project Nu	mber: 021 4PC, 01	Field Personnel:	Dave Montelongs		
Field Cond	litions/Project Discrepancies:				
52	e page 1				
Time		Field Notes			
	walk 103 ft from NE	corner of	bridge towards unter		
	of bridge to som				
	what last is 22 ft t	von top of	bridge walkung		
	water is murky can				
	sediment darkin ider				
	smells smongly of				
		morch, de	NTU, 5D2 mg/LDD		
	clean up and decon equipment				
1015	leve SED-005 for				
1030	marive SED-OOF, went		overcast sun comings		
	wanter in channel regetation and trash stong embankment				
	walk 89 ft from 3	t corner of	bridge toward center		
	of bridge for sm		A Castill		
	water Level is 20 ft				
	writing is musty, can				
	sediment dark in wor a		+ albris, rough parts		
	smells lightly of bis		na lun to Reida e lee al		
	2295C, 7.620H, 362n				
	29 2 ppt	Ment 13	1014/ 3-01 mg/cpc		
	clean up and decon. Ego	ipment			
1145	Leave SED-OCH for				
	arrive septois, weath	er bowaly ou	ereast sun shining		
	unter in channel, vegetañ	ion and tras	h along embarkment		
	unik 109 ft from NE		ge toward center		
	of bridge for smyl				
	water level is 19 ft for				
	water is murky canno	it see botton	n, heavy rippling from		

WGR Southwest, Inc. Field Log			Page 3 of 3 Date: 15 -8-2020
Project Na	ne: LARC Sediment 2020	Field Personnel:	Imber Bailvot
Project Nu	A		Dave Montelongo
	itions/Project Discrepancies:	1-1-1-1)
Se	ce page 1		
Time		Field Notes	
	29.8 pot 39.0 v		NTU, 602 mg/LDO,
	cleaning and decon equ	ipment	
1230	leave Sed-very for sed	-009	
	drive by set ood area	5 rimple poin	at still inaccessible
	due to Fences, mare	on to seb-	001
245	arrive SeD-OOL, went		
	water in channel, veget	action and to	ash along embankment
	heavy ripoling from u		
	WALK 637 FF from 1		
	of bridge for surn	ple collection	
	water level is 51 feet		
	water is murky can		
	attempt 4-5 fines 7		
1315	cease attempts and		10 pment
-	leave SED as for aft		ald read of the
1500	* avive @ office	-end of the	eld Sumpling day

A. 3

ATTACHMENT 2

SEDIMENT MONITORING LABORATORY RESULT SUMMARY TABLE

Tesoro Refining & Marketing Company LLC Los Angeles Refinery – Carson Operations Dominguez Channel Estuary October 2020 Sediment Monitoring Report

Sample ID	SED-001	SED-002	SED-003	SED-004	SED-005	SED-006	SED-007
Date Sampled	NS	NS	10/8/2020	10/8/2020	10/8/2020	10/8/2020	10/8/2020
Time Sampled	NS NS	NS	11:45	10:45	9:50	8:55	8:00
Total Metals							
Cadmium (EPA 6020) (mg/Kg)	NS	NS	NR	NR	NR	NR	NR
Chromium (EPA 6020) (mg/Kg)	NS	NS	NR	NR	NR	NR	NR
Copper (EPA 6020) (mg/Kg)	NS	NS	NR	NR	NR	NR	NR
Lead (EPA 6020) (mg/Kg)	NS	NS	NR	NR	NR	NR	NR
Nickel (EPA 6020) (mg/Kg)	NS	NS	NR	NR	NR	NR	NR
Zinc (EPA 6020) (mg/Kg)	NS	NS	NR	NR	NR	NR	NR
Mercury (EPA 7471A) (mg/Kg)	NS	NS	NR	NR	NR	NR	NR
Volatile/Semi-Volatile Organic Compounds							
Chlordane (EPA 8081A) (ug/Kg)	NS	NS	NR	NR	NR	NR	NR
DDT (EPA 8081A) (ug/Kg, sum of 4,4'-DDT, 2,4'-DDT, 4,4'-DDE, 2,4'-DDE, 4,4'-DDD, and 2,4'-DDD)	NS	NS	NR	NR	NR	NR	NR
PCBs (EPA 8082) (ug/Kg, sum of Arochlor 1016, Arochlor 1221, Arochlor 1232, Arochlor 1242, Arochlor 1248, Arochlor 1254, and Arochlor 1260)	NS	NS	NR	NR	NR	NR	NR
PAHs (EPA 8270C) (mg/Kg, sum of acenaphthene, anthracene, 1,2-benzanthracene, 3,4-benzofluoranthene, benzo(k)fluoranthene, 1,12-benzoperylene, benzo(a)pyrene, chrysene, dibenzo(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, and pyrene)	NS	NS	NR	NR	NR	NR	NR
Total Petroleum Hydrocarbons (EPA 8015B) (mg/Kg)	NS	NS	NR	NR	NR	NR	NR
Sediment Grain Size (ASTM D4464)				NR			
Total Organic Carbon (EPA 9060A) (mg/Kg)	NS	NS	NR	NR	NR	NR	NR
Tributyltin (Krone et al.) (ug/Kg)	NS	NS	NR	NR	NR	NR	NR
Chronic Toxicity		200		2 4 4			
Mytilus galloprovincialis (NOEC in %)	NS	NS	100%	100%	100%	100%	100%

NS = Not Sampled

NR = Not Required

ND = Non-Detect

NOEC = No Observed Effect Concentration

ATTACHMENT 3

SEDIMENT MONITORING AQUATIC BIOASSAY ANALYTICAL LABORATORY REPORT

Tesoro Refining & Marketing Company LLC Los Angeles Refinery – Carson Operations Dominguez Channel Estuary October 2020 Sediment Monitoring Report



November 30, 2020

Amber Ballrot WGR Southwest, Inc. 1801 E. Sepulveda Blvd. Carson, CA 90749

Dear Mrs. Ballrot

We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in Methods for Assessing the Toxicity of Sediment-associated Contaminants with Estuarine and Marine Amphipods, Method EPA/600/R-94/025. Results were as follows:

CLIENT: WGR Southwest, Inc.

SAMPLE I.D.: SED-003

DATE RECEIVED: 10/9/2020

ABC LAB. NO.: WGR1020.043

ACUTE EOHAUSTORIUS SURVIVAL BIOASSAY

NOEC = 100.00 %

TUc = 1.00

EC25 = >100.00 % EC50 = >100.00 %

Yours very truly,

w Scott Johnson

Laboratory Director

CETIS Summary Report

Report Date:

19 Nov-20 16:28 (p 1 of 1)

Test Code

MGR1020 043 / 08-5037-5335

	The second						Test	Code/ID:	WGR	1020 043 / 0	08-5037-5335
Eohaustorius	10-d Survival an	d Reburia	al Sedime	ent Test				Aquatic	Bioassay &	Consultin	g Labs, Inc.
Batch ID:	11-1061-3819	Te	st Type:	Survival-Reburi	ial		Anal	yst: Joi	e Freas		
Start Date:	16 Oct-20 13:01	Pr	otocol:	EPA/600/R-94/	025 (1994)		Dilue	nt: Lal	boratory Seav	vater	
EndingDate:2	60CT-20 13:01	Sp	ecies:	Echaustorius e	stuarius.		Brine	: No	t Applicable		
Test Length:	10-Days	Ta	xon:	Malacostraca			Sour	ce: No	rthwestern A	quatic Scien	nc Age:
Sample ID:	09-1150-6296	Co	de:	WGR1020.043	5		Proje	ct: 02	1.APC 01		
Sample Date:	08 Oct-20 11:45	Ma	aterial:	Sediment			Sour	ce: Bio	assay Repor	t	
Receipt Date:	09 Oct-20 15:03	CA	S (PC):				Stati	on: SE	D-003		
Sample Age:	8d 1h	CI	ient:	WGR Southwe	st inc						
Single Compa	arison Summary										
Analysis ID	Endpoint		Comp	arison Method			P-Value	Compari	son Result		5
08-3312-6127	Survival Rate		Wilco	xon Rank Sum T	wo-Sample	Test	1,0000	100% pa	ssed survival	rate	- 1
Test Accepta	bility					TAC	Limits				
Analysis ID	Endpoint		Attrib	ute	Test Stat	Lower	Upper	Overlap	Decision		
08-3312-6127	Survival Rate		Contr	ol Resp	0.99	0,9	>>	Yes	Passes C	riteria	
Survival Rate	Summary										
Conc-%	Code	Count	Mean	96% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	5	0.990	0 0.9622	1.0180	0.9500	1,0000	0.0100	0.0224	2.26%	0.00%
100		5	1.000	0 1.0000	1.0000	1.0000	1 0000	0.0000	0.0000	777	-1 01%
Survival Rate	Detail						MDS	200171	270BD92003	8C743B1A	5C61F036
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
٥	N	1 0000	0.950	0 1 0000	1 0000	1.0000					
100		1.0000	1 000	0 1.0000	1 0000	1 0000					
Survival Rate	Binomials				7.4.7						
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	N	20/20	19/20	20/20	20/20	20/20					

100

20/20

20/20

20/20

20/20

20/20

Report Date:

19 Nov-20 16:28 (p 1 of 2)

	ilyiloai Nep							Tes	Code/ID:	WGR	1020 043 /	08-5037-533
Eohaustorius	10-d Survival a	nd Reburi	al Sedime	ent Test					Aquatic	Bioassay 8	Consultin	g Labs, Inc
Analysis ID:	08-3312-6127	E	ndpoint:	Survival Rate				CET	'IS Version	CETISY	197	
Analyzed:	19 Nov-20 15:23	3 A	nalysis:	Nonparametr	ic-Two San	nple		Stat	us Level:	1		
Edit Date:	19 Nov-20 15:23	2 M	D5 Hash:	20C171270B	D920038C	743E	31A5C61F	036 Edit	or ID:	007-979	-628-1	
Batch ID:	11-1061-3819	T	est Type:	Survival-Reb	urial			Ana	lyst: Jo	Freas		
Start Date:	16 Oct-20 13:01	P	rotocol:	EPA/600/R-9	94/025 (199	94)		Dilu	ent: La	boratory Sea	water	
EndingDate26	OCT-2020 13.0)1 S	pecies:	Echaustorius	estuarius			Brin		t Applicable		
Test Length:1			axon:	Malacostraca				Sou		rthwestern A	quatic Scie	nc Age:
Sample ID:	09-1150-6296	-	ode:	WGR1020.0	43	_		Proi	ect: 02	1.APC.01	7.30.74.07	-
	08 Oct-20 11:45	-	aterial:		40			200				
	09 Oct-20 15:03			Sediment						assay Repo	T.	
Sample Age:		7	AS (PC): lient:	WGR South	unel Inn			Stat	ion: SE	D-003		
	ANTY	V - T	7-10/1-	WGK South	west inc		-					-
Data Transfor		Alt Hyp						son Result				PMSD
Angular (Corre	cted)	C>T					100% pas	sed survival	rate endpoi	nt		2.12%
Wilcoxon Ran	k Sum Two-Sar	nple Test										
Control	vs Conc-%	p	Test S	Stat Critical	Ties	DF	P-Type	P-Value	Decision	(a:5%)		
Negative Contr	ol 100		30	**	1	8	Exact	1.0000	Non-Sign	ificant Effec	t	
Test Acceptab	oility Criteria	TAC	Limits									
Attribute	Test Stat	7 6 7	Upper	Overlag	Decisi	ion						
Control Resp	0.99	0.9	>>	Yes	Passe		teria					
ANOVA Table					30.72							
Source	Sum Squ	ares	Mean	Square	DF		F Stat	P-Value	Decision	(a:5%)		
Between	0.001287		0.001		1	-	1	0.3466		ificant Effec		
Error	0.010301		0.001	75.0%	8			0.0400	, ion Digi	moon Lives	•	
Total	0.011589		0.001	2011	9		-					
ANOVA Assur	notions Tests											
Attribute	Test				Test S		Critical	P-Value	6 mariata	4		
The Report Co.	11,000					olat			Decision		_	
Variance		quality of V			7 111		11.26	0.0285	Equal Va			
		ne Equality		ce Test	1		13.75	0.3559	Equal Va			
with one of the co	A TOTAL STATE OF THE PARTY OF T	Ratio F Te					Lane	Contractor	Indeterm			
Distribution	100,000,000,000,000	-Darling A			1.796		3.878	<1.0E-05	100000000000000000000000000000000000000	mal Distribut	23.00	
		o Skewnes			3 335		2.576	0.0009		mal Distribut		
	Kolmogore	ov-Smirnov	D Test		0.4		0.3025	6.1E-05	Non-Nor	mal Distribut	on	
	Shapiro-V	Vilk W Nor	mality Tes	t	0.6247	7	0.7411	0.0001	Non-Non	mal Distribut	on	
Survival Rate	Summary											
Conc-%	Code	Count	Mean	95% LC	L 95% U	CL	Median	Min	Max	Std Err	CV%	%Effect
0	N	5	0.990	0.9622	1.0000	3		0.9500	1 0000	0.0100	2.26%	0.00%
100		5	1.000	1.0000	1.0000)		1.0000	1 0000	0.0000	0.00%	-1.01%
Angular (Corr	ected) Transfor	med Sum	mary									
Conc-%	Code	Count	Mean	95% LC	L 95% U	CL	Median	Min	Max	Std Err	CV%	%Effect
0	N	5	1.436		1 4990			1 3450	1.4590	0.0227	3.53%	0.00%
100		5	1.459		1,4590			1.4590	1.4590	0.0000	0.00%	-1.58%
CHI TO LANGUE	Detail											
Survival Rate				2	Rep 4		Rep 5					
Survival Rate	Code	Ren 1	Ren 2	Rep 3								
Conc-%	Code	Rep 1	Rep 2									
Survival Rate Conc-% 0 100	Code	1.0000 1.0000	0 950 1 000	1.0000	1 0000)	1 0000					

Conc-%

0

100

Code

N

Rep 1

1 4590

1 4590

Rep 2

1 3450

1 4590

Rep 3

1.4590

1 4590

Rep 5

1.4590

1 4590

Rep 4

1 4590

1 4590

Report Date:

19 Nov-20 16:28 (p 2 of 2)

Test Code/ID:

WGR1020.043 / 08-5037-5335

Echaustorius 10-d Survival and Reburial Sediment Test

Aquatic Bloassay & Consulting Labs, Inc.

Analysis ID: 08-3312-6127

Endpoint: Survival Rate

CETIS Version: Status Level:

CETISV1.9.7

Analyzed: Edit Date:

19 Nov-20 15:23 19 Nov-20 15:22

Analysis: Nonparametric-Two Sample MD6 Hash: 20C171270BD920038C743B1A5C61F036

Editor ID:

007-979-628-1

Echaustorius 10-d Survival and Reburial Sediment Test

Report Date:

19 Nov-20 16:28 (p 1 of 1)

Test Code/ID:

WGR1020 043 / 08-5037-5335

Aquatic Bioassay & Consulting Labs, Inc.

Batch ID:	11-1061-3819	1 11 1	Test Type:	Survival-Rebur	ial		A	nalyst:	Joe Freas		
Start Date:	16 Oct-20 13:0	1	Protocol:	EPA/600/R-94	(025 (1994)		Di	luent:	Laboratory Sea	water	
Ending Date:	26OCT-2020 13	3.01	Species:	Echaustorius e	stuarius		B	rine:	Not Applicable		
Test Length:	10-Days		Taxon:	Malacostraca	de-o E a a l		S	ource:	Northwestern A	quatic Scie	nc Age:
Sample ID:	09-1150-6296	1	Code:	WGR1020.043	3		Pi	roject:	021 APC 01		
Sample Date:	08 Oct-20 11:4	5	Material:	Sediment			S	ource:	Bloassay Repo	rt	
Receipt Date:	09 Oct-20 15:03	3	CAS (PC):				S	tation:	SED-003		
Sample Age:	8d 1h		Client:	WGR Southwe	st Inc.						
Dissolved Ox	ygen-mg/L										
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std E	r Std Dev	CV%	QA Count
0	N	2	10.05	9.415	10.69	10	10 1	0 0353	36 0.07073	0.70%	0

100		2	9.95	9.315	10.59	9.9	10	0.03536	0.07073	0.71%	0
Overall		4	10	9.87	10.13	9,9	10.1	0.04082	0.08165	0.82%	0 (0%)
pH-Units											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	7.9	7 884	7.916	7.9	7.9	0	0	0.00%	0
100		2	8.2	6.929	9.471	8.1	8.3	0.07071	0.1414	1.72%	0
Overall		4	8.05	7.745	8.355	7.9	8.3	0.09574	0.1915	2.38%	0 (0%)
Salinity-ppt					****			1			
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	20	20	20	20	20	0	0	0.00%	0
100		2	20	20	20	20	20	0	0	0.00%	0
Overall		4	20	20	20	20	20	0	0	0.00%	0 (0%)

Temperature-°C											
Conc-%	Code	Count	Mean	96% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	14.85	14.21	15,49	14.8	14.9	0.03539	0.07077	0.48%	0
100		2	14.85	14.21	15.49	148	14.9	0.03539	0 07077	0.48%	0
Overall		4	14.85	14.76	14,94	14.8	14.9	0.02887	0.05773	0.39%	0 (0%)



November 30, 2020

Amber Ballrot WGR Southwest, Inc. 1801 E. Sepulveda Blvd. Carson, CA 90749

Dear Mrs. Ballrot:

We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in Methods for Assessing the Toxicity of Sediment-associated Contaminants with Estuarine and Marine Amphipods, Method EPA/600/R-94/025. Results were as follows:

CLIENT:

WGR Southwest, Inc.

SAMPLE I.D.:

SED-004

DATE RECEIVED:

10/9/2020

ABC LAB. NO .:

WGR1020.044

ACUTE EOHAUSTORIUS SURVIVAL BIOASSAY

NOEC = 100.00%

TUc = 1.00

EC25 = >100.00 %

>100.00 % EC50 =

Yours very truly,

Scott/Johnson

Laboratory Director

Report Date:

19 Nov-20 16:28 (p 1 of 1)

00.29	
Test	Code/ID:

WGR1020.044 / 06-5455-3201

Eohaustorius	10-d Survival an	d Reburia	l Sedime	ent Test				Aquatic	Bioassay &	Consultin	g Labs, Inc.
Batch ID:	17-6653-2202	Te	st Type:	Survival-Reburi	al		Anal	yst: Joe	Freas		
Start Date:	16 Oct-20 13:02	Pro	otocol:	EPA/600/R-94/	025 (1994)		Dilu	ent: Lal	boratory Seav	vater	
Ending Date:	26 Oct-20 13:02	Sp	ecies:	Echaustorius es	and the second second		Brin	e: No	t Applicable		
Test Length:	10d Oh	Ta	xon:	Malacostraca			Soul	rce: No	rthwestern A	quatic Scien	ic Age:
Sample ID:	18-5161-8008	Co	de:	WGR1020.044	8		Proj	ect: 02	1.APC.01		
Sample Date:	08 Oct-20 10:45	Ma	terial:	Sediment			Soul	rce: Bio	assay Repor	b .	
Receipt Date:	09 Oct-20 15:03	CA	S (PC):				Stati	ion: SE	D-004		
Sample Age:	8d 2h	Cli	ent:	WGR Southwes	st Inc						
Single Compa	rison Summary	d a									
Analysis ID	Endpoint		Comp	oarison Method			P-Value	Compari	son Result		
04-7891-8558	Survival Rate		Wilco	xon Rank Sum T	wo-Sample	Test	1.0000	100% pa	ssed survival	rate	
Test Acceptal	bility					TAC	Limits				
Analysis ID	Endpoint		Attrib	ute	Test Stat	Lower	Upper	Overlap	Decision		
04-7891-8558	Survival Rate		Contro	ol Resp	0.99	0.9	>>	Yes	Passes C	riteria	
Survival Rate	Summary										
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	5	0.990	0 0.9622	1.0180	0.9500	1.0000	0.0100	0.0224	2.26%	0.00%
100		5	1.000	0 1.0000	1,0000	1.0000	1,0000	0.0000	0.0000	110-	-1.01%
Survival Rate	Detail						MD	5: 20C171	270BD92003	8C743B1A	5C61F036
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	N	1 0000	0.950	0 1.0000	1.0000	1.0000					
100		1.0000	1.000	0 1.0000	1,0000	1.0000					
Survival Rate	Binomials										
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	N	20/20	19/20	20/20	20/20	20/20					
100		20/20	20/20	20/20	20/20	20/20					

Report Date: Test Code/ID: 19 Nov-20 16:28 (p 1 of 2) WGR1020 044 / 06-5455-3201

ensulting Labs, 28-1 ter atic Scienc Age: PMS 2.129
ter atic Scienc Age:
ter atic Scienc Age:
ter atic Scienc Age: PMS
atic Scienc Age:
atic Scienc Age:
atic Scienc Age:
PMS
20(2)
b L
CV% %Effe
2 25% 0.00%
0.00% -1.019
CV% %Effe
3.53% 0.00%
0.00% -1.589

Analyst 1 QA. 7

Report Date: Test Code/ID:

19 Nov-20 16:28 (p 2 of 2) WGR1020.044 / 06-5455-3201

Echaustorius 10-d Survival and Reburial Sediment Test

Aquatic Bloassay & Consulting Labs, Inc.

Analysis ID: 04-7891-8558 Analyzed:

Edit Date:

19 Nov-20 15:32

19 Nov-20 15:31

Endpoint: Survival Rate

Analysis: Nonparametric-Two Sample MD5 Hash: 20C171270BD920038C743B1A5C61F036 **CETIS Version:**

CETISV1,9.7

Status Level: Editor ID:

007-979-628-1

CETIS™ VI 977

007-979-628-1

CETIS Measurement Report

Report Date:

19 Nov-20 16:28 (p 1 of 1)

Test Code/ID: WGR1020.04

WGR1020.044 / 06-5455-3201

Echaustorius 10-d Survival and Reburial Sedim	nent Test
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Aquatic Bioassay & Consulting Labs, Inc.

Batch ID:	17-6653-2202	Test Type:	Survival-Reburial	Analyst:	Joe Freas
Start Date:	16 Oct-20 13:02	Protocol:	EPA/600/R-94/025 (1994)	Diluent:	Laboratory Seawater
Ending Date:	26 Oct-20 13:02	Species:	Editaustorius estuarius	Brine:	Not Applicable
Test Length:	10d 0h	Taxon:	Malacostraca	Source:	Northwestern Aquatic Scienc Age:

 Sample ID:
 18-5161-8008
 Code:
 WGR1020.044
 Project:
 021.APC.01

 Sample Date:
 08 Oct-20 10:45
 Material:
 Sediment
 Source:
 Bioassay Report

 Receipt Date:
 09 Oct-20 15:03
 CAS (PC):
 Station:
 SED-004

Sample Age: 8d 2h Client: WGR Southwest Inc.

	Dissolved	Oxygen-mg/L
--	-----------	-------------

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	10.05	9.415	10 69	10	10.1	0.03536	0.07073	0.70%	0
100		2	9.95	9.315	10.59	9.9	10	0.03536	0.07073	0.71%	0
Overall		4	10	9.87	10.13	9.9	10.1	0.04082	0.08165	0.82%	0 (0%)

pH-Units

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	7.9	7.884	7.916	7.9	7.9	0	0	0.00%	Q
100		2	7.85	5 944	9.756	7.7	8	0.1061	0.2121	2.70%	O .
Overall		4	7.875	7 675	8.075	7.7	8	0.06292	0.1258	1.60%	0 (0%)

Salinity-ppt

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	20	20	20	20	20	0	0	0.00%	0
100		2	20	20	20	20	20	0	0	0.00%	0
Overall		4	20	20	20	20	20	U	U	0.00%	0 (0%)

Temperature-°C

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	14.85	14.21	15.49	14.8	14.9	0.03539	0.07077	0.48%	0
100		2	14.85	14.21	15.49	14.8	14.9	0.03539	0.07077	0.48%	0
Overall		4	14.85	14.76	14.94	14.8	14.9	0.02887	0.05773	0.39%	0 (0%)



November 30, 2020

Amber Ballrot WGR Southwest, Inc. 1801 E. Sepulveda Blvd. Carson, CA 90749

Dear Mrs. Ballrot:

We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in Methods for Assessing the Toxicity of Sediment-associated Contaminants with Estuarine and Marine Amphipods, Method EPA/600/R-94/025. Results were as follows:

CLIENT:

WGR Southwest, Inc.

SAMPLE I.D.:

SED-005

DATE RECEIVED:

10/9/2020

ABC LAB. NO .:

WGR1020.045

ACUTE EOHAUSTORIUS SURVIVAL BIOASSAY

NOEC = 100.00 %

TUc = 1.00

EC25 = >100.00 %

EC50 = >100.00 %

Your very truly,

Scott Johnson

Laboratory Director

CETI	S	Summary	Report
OE 11		Juninary	LEDOIL

Report Date: Test Code/ID: 19 Nov-20 16:28 (p 1 of 1) WGR1020.045 / 02-7886-3007

Eohaustori	us 10-d Survival and I	Reburial Sediment Test	Aq	quatic Bioassay & Consulting Labs, Inc.
Batch ID:	16-5839-8947	Test Type: Survival-Reburial	Analyst:	Joe Freas
The Street of th	The state of the state of the state of			The state of the s

Start Date: 16 Oct-20 13:03 Protocol: EPA/600/R-94/025 (1994) Diluent: Laboratory Seawater

Ending Date: 26 Oct-20 13:03 Species: Eohaustorius estuarius Brine: Not Applicable

Test Length: 10d 0h Taxon: Malacostraca Source: Northwestern Aquatic Scienc Age:

 Sample ID:
 20-2563-0493
 Code:
 WGR1020.045
 Project:
 021.APC.01

 Sample Date:
 08 Oct-20 09:50
 Material:
 Sediment
 Source:
 Bioassay Report

 Receipt Date:
 09 Oct-20 15:03
 CAS (PC):
 Station:
 SED-005

Sample Age: 8d 3h Client: WGR Southwest Inc.

Single Comparison Summary

Analysis ID	Endpoint		Compari	son Method			P-Value	Comparis	on Result			
11-2731-9195	Survival Rate		Wilcoxon	Rank Sum T	wo-Sample	Test	0.7778	100% passed survival rate			1	
Test Acceptal	bility					TAC	Limits					
Analysis ID	Endpoint		Attribute		Test Stat	Lower	Upper	Overlap	Decision			
11-2731-9195	Survival Rate		Control R	tesp	0.99	0.9	>>	Yes	Passes C	riteria		
Survival Rate	Summary											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect	
0	N	5	0.9900	0.9622	1 0180	0.9500	1.0000	0.0100	0.0224	2.26%	0.00%	
100		5	0.9900	0.9622	1.0180	0.9500	1.0000	0.0100	0.0224	2.26%	0.00%	
Survival Rate	Detail						MD	5: 7E8A563	7EBEE1384	4679AD861	61476EB3	
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5						
0	N	1.0000	0.9500	1.0000	1.0000	1.0000						
100		0.9500	1.0000	1.0000	1.0000	1.0000						

Binomials						
Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	
N	20/20	19/20	20/20	20/20	20/20	
	19/20	20/20	20/20	20/20	20/20	
	Code	Code Rep 1 N 20/20	Code Rep 1 Rep 2 N 20/20 19/20	Code Rep 1 Rep 2 Rep 3 N 20/20 19/20 20/20	Code Rep 1 Rep 2 Rep 3 Rep 4 N 20/20 19/20 20/20 20/20	Code Rep 1 Rep 2 Rep 3 Rep 4 Rep 5 N 20/20 19/20 20/20 20/20 20/20

Analysi 1 OA

Report Date: Test Code/ID: 19 Nov-20 16:28 (p 1 of 2) WGR1020.045 / 02-7886-3007

	200										Test	Code/ID:		WGR	020.045 / 0	2-7886-300
Eohaustorius	10-d	Survival an	d Rebu	rial Sedime	ent T	est						Aquat	ic Bioas	say &	Consultin	g Labs, Inc.
Analysis ID:	11-2	731-9195	- 1	Endpoint:	Sun	vival Rate					CETI	S Versio	n: CE	TISVI	.9.7	
Analyzed:	19 N	ov-20 15:46		Analysis:	Non	parametric-	Two Sam	ple			Statu	s Level:	1			
Edit Date:	19 N	ov-20 15:44	0.11	MD5 Hash:	7E8	A5637EBE	E138A67	9AD	86161476	E83	Edito	or ID:	00	7-979-	628-1	
Batch ID:	16-58	839-8947	-	Test Type:	Sun	vival-Reburi	al				Analy	yst: J	oe Freas			
Start Date:		ct-20 13:03		Protocol:	-	V600/R-94/		4)			Dilue	C. C.	aborator		veter	
Ending Date:	100	ct-20 13:03		Species:		austorius es	The second				Brine		ot Applic	Victoria.	300	
Test Length:				Taxon:	Mala	acostraca					Sour				quatic Scien	nc Age:
Sample ID:	20-25	563-0493		Code:	WG	R1020.045				-	Proje	ect: 0	21 APC.	01	-	
Sample Date:	7777			Material:	200	iment					Sour	C'A TO	ioassay	200	6	
Receipt Date:				CAS (PC):		10.140.11					Statio		ED-005	-	3	
Sample Age:	122.00	26-02 (20-04-2)		Client:	WG	R Southwes	st inc				5,1	260 74	A01.955			
Data Transfor	-		AH 10.		00.74	-			Comparis	on D	nearle.	_			_	PMSD
Angular (Corre			C>T	/P	_			-	100% pas			rate andn	nint			2,76%
	2000		1000	_	_				Tou to pas	acu a	ai vivoi	rate enop	Out			2.70%
Wilcoxon Ran	k Sur	n Two-Sam	ple Tes	67.33												
Control	vs	Conc-%		Test S	Stat	Critical	Ties	_	P-Type		alue		n(a:5%)			
Negative Contr	oi	100		27.5		***	2	8	Exact	0.77	778	Non-Sig	gnificant	Effect		
Test Acceptat	oility (Criteria	TA	C Limits												
Attribute		Test Stat	Lower			Overlap	Decision	on								
Control Resp		0.99	0.9	>>		Yes	Passes	s Cr	teria							
ANOVA Table																
Source		Sum Squa	res	Mean	Sau	are	DF		F Stat	P.V	alue	Decisio	n(a:5%			
Between		0	.,	0	Julu	-14	1	-	D	_	000		nificant			
Error		0.0206028	0	0.002	5754		8		7	5.0			- Company			
Total		0.0206028					9									
ANOVA Assur	nntio	ns Tests	_					_								
Attribute		Test					Test S	tat	Critical	P.V	alue	Decisio	on(a:1%			
Variance	_		uality of	Variance Te	et		0	Lut	11.26		000		/ariances		_	_
Variotico		the state of the state of the	the second second	ity of Varian		est	0		13.75	1.00			/ariances			
		Variance R		and the second second			1		23.15	1.00			/ariance			
Distribution		Anderson-	12070	550C-0-0			2.912		3.878		DE-05	500000000000000000000000000000000000000	rmal Dis		on	
2.00.20.00.		D'Agostino					2.495		2.576	0.0		Normal	Distribu	tion		
		Kolmogoro					0.4824		0.3025	<1.0	DE-05	Non-No	rmal Dis	tribution	on	
				ormality Tes	t		0.5093	9	0.7411	<1.	DE-05	Non-No	rmal Dis	tributk	on	
Survival Rate	Sumi	mary												-		
Conc-%		Code	Count	Mean		95% LCL	95% U	CL	Median	Min		Max	Sto	Err	CV%	%Effect
0		N	5	0.990	_	0.9622	1.0000	_		0.9		1.0000		_	2.26%	0.00%
100		3	5	0.990		0.9622	1.0000			0.9		1.0000		100	2.26%	0.00%
Angular (Corr	ected	1 Transform	ned Su	mmary				_	-							
Conc-%	33,60	Code	Count			95% LCL	95% U	CI	Median	Mir	6	Max	214	Err	CV%	%Effect
0		N	5	1.436	_	1.3730	1.4990		Mediaii	1.3	_	1.4590		227	3 53%	0.00%
100		14	5	1.436		1.3730	1.4990			1.3		1.4590		227	3.53%	0.00%
Survival Rate	Detri	0	-								100	- VVI 3/102	- 70		-1300	
	Detai		Den 4	new A		Dan 2	Den 6		Dan #							
Conc-%	_	Code	Rep 1			Rep 3	Rep 4	-	Rep 5	_	_	_	_	_		
0 100		N	0.9500			1.0000	1.0000		1.0000							
100			0,3500	1.000	-	1 0000	1.0000		1,0000	_		_				_
Z om s el R e i		W 2														
Angular (Corr	ected) Transform	ned Del	ail												
25.2 mm at 1.4	ected) Transform Code	ned Del Rep 1		2	Rep 3	Rep 4		Rep 5							
Angular (Corr Conc-%	ected			Rep 2	_	Rep 3 1.4590	Rep 4 1.4590		Rep 5		_					

Analyst DA

Report Date: Test Code/ID: 19 Nov-20 16:28 (p 2 of 2) WGR1020.045 / 02-7886-3007

Echaustorius 10-d Survival and Reburial Sediment Test

Aquatic Bioassay & Consulting Labs, Inc.

Analysis ID: 11-2731-9195 Endpoint: Survival Rate CETIS Version: CETISV1.9.7

Analyzed: 19 Nov-20 15:46 Analysis: Nonparametric-Two Sample Status Level: 1

Edit Date: 19 Nov-20 15:44 MD6 Hash: 7E8A5637EBEE138A679AD86161476EB3 Editor ID: 007-979-628-1

Report Date:

19 Nov-20 16:28 (p 1 of 1)

Test Code/ID:

WGR1020.045 / 02-7886-3007

Echaustorius 10-d Survival and Reburial Sediment Test	us 10-d Survival and Reburial Sediment Test	
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Aquatic Bioassay & Consulting Labs, Inc.

Batch ID:	16-5839-8947	Test Type:	Survival-Reburial	Analyst:	Joe Freas
Start Date:	16 Oct-20 13:03	Protocol:	EPA/600/R-94/025 (1994)	Diluent:	Laboratory Seawater
Ending Date:	26 Oct-20 13:03	Species:	Echaustorius estuarius	Brine:	Not Applicable
Test Length:	10d 0h	Taxon:	Malacostraca	Source:	Northwestern Aquatic Scienc Age:

 Sample ID:
 20-2563-0493
 Code:
 WGR1020.045
 Project:
 021.APC.01

 Sample Date:
 08 Oct-20 09:50
 Material:
 Sediment
 Source:
 Bioassay Report

 Receipt Date:
 09 Oct-20 15:03
 CAS (PC):
 Station:
 SED-005

Sample Age: 8d 3h Client: WGR Southwest Inc.

Dissolved	Oxygen-mg/L
-----------	-------------

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	10.05	9.415	10.69	10	10.1	0.03536	0.07073	0.70%	0
100		2	9.95	9.315	10.59	9.9	10	0.03536	0.07073	0.71%	0
Overall		4	10	9.87	10 13	9.9	10.1	0.04082	0.08165	0.82%	0 (0%)

pH-Units

Conc-%	Code	Count	Mean	96% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	7.9	7.884	7.916	7.9	7.9	0	0	0.00%	0
100		2	7.8	6.529	9.071	7.7	7.9	0.07071	0.1414	1.81%	0
Overall		4	7.85	7.691	8.009	7.7	7.9	0.05	01	1.27%	0 (0%)

Salinity-ppt

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	20	20	20	20	20	0	0	0.00%	0
100		2	20	20	20	20	20	0	0	0.00%	0
Overall		4	20	20	20	20	20	0	0	0.00%	0 (0%)

Temperature-°C

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	14.85	14.21	15.49	14.8	14.9	0.03539	0.07077	0.48%	0
100		2	14.85	14.21	15.49	14.8	14.9	0.03539	0.07077	0.48%	0
Overall		4	14 85	14.76	14.94	14.8	14.9	0.02887	0.05773	0.39%	0 (0%)



November 30, 2020

Amber Ballrot WGR Southwest, Inc. 1801 E. Sepulveda Blvd. Carson, CA 90749

Dear Mrs.Ballrot:

We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in Methods for Assessing the Toxicity of Sediment-associated Contaminants with Estuarine and Marine Amphipods, Method EPA/600/R-94/025. Results were as follows:

CLIENT: WGR Southwest, Inc.

SAMPLE I.D.: SED-006

DATE RECEIVED: 10/9/2020

ABC LAB. NO.: WGR1020.046

ACUTE EOHAUSTORIUS SURVIVAL BIOASSAY

NOEC = 100.00 %

TUc = 1.00

EC25 = >100.00 % EC50 = >100.00 %

Youns very truly,

Scott Johnson

Laboratory Director

CETIS Summary Report

Report Date:

19 Nov-20 16:28 (p 1 of 1)

Test Code/ID:

WGR1020.046 / 03-8581-0986

							Test	Code/ID:	WGR1	020.046 / 0	3-8581-0986
Eohaustorius	10-d Survival an	d Reburia	I Sedime	ent Test				Aquatic	Bioassay &	Consultin	g Labs, Inc.
Batch ID:	00-4035-1759	Te	st Type:	Survival-Reburi	ai		Anal	yst: Joe	Freas		
Start Date:	16 Oct-20 13:04	Pre	otocol:	EPA/600/R-94/	025 (1994)		Dilue	ent: Lat	oratory Seaw	ater	
Ending Date:	26 Oct-20 13:04	Sp	ecies:	Echaustorius es	stuarius		Brin	e: No	Applicable		
Test Length:	10d 0h	Ta	xon:	Malacostraca			Soul	rce: No	rthwestern Ad	quatic Scien	c Age:
Sample ID:	19-5265-2256	Co	de:	WGR1020.046			Proje	ect: 02	.APC.01		
Sample Date:	08 Oct-20 08:55	Ma	terial:	Sediment			Sour	rce: Bio	assay Report		
Receipt Date:	09 Oct-20 15:03	CA	S (PC):				Stati	on: SE	D-006		
Sample Age:	8d 4h	Cli	ent:	WGR Southwes	st Inc.						
Single Compa	rison Summary								77.7		
Analysis ID	Endpoint		Comp	oarison Method			P-Value	Compari	son Result		S
05-4159-7461	Survival Rate		Wilco	xon Rank Sum T	wo-Sample	Γest	0.7778	100% pa	ssed survival	rate	
Test Acceptat	oility					TAC	Limits				
Analysis ID	Endpoint		Attrib	ute	Test Stat	Lower	Upper	Overlap	Decision		
05-4159-7461	Survival Rate		Contro	ol Resp	0.99	0.9	>>	Yes	Passes C	riteria	
Survival Rate	Summary										
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	5	0.990	0 0,9622	1.0180	0.9500	1.0000	0.0100	0.0224	2,26%	0.00%
100		5	0.990	0 0.9622	1.0180	0.9500	1.0000	0.0100	0.0224	2.26%	0.00%
Survival Rate	Detail				777	- 17	MD	5: E38F5E	D130D079E	98E484D2F	2A2F4666
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 6					
0	N	1.0000	0,950	0 1.0000	1.0000	1.0000					
100		1 0000	1.000	0 1.0000	0.9500	1.0000					
Survival Rate	Binomials	4	- 7								
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	N	20/20	19/20	20/20	20/20	20/20					
100		20/20	20/20	20/20	19/20	20/20					

Report Date: Test Code/ID:

19 Nov-20 16:28 (p 1 of 2) WGR1020.046 / 03-8581-0986

Echaustorius	10-d Survival and R	Reburial Sedime	ent Test	Aquatic Bioassay & Consulting Labs, Inc			
Analysis ID:	05-4159-7461	Endpoint:	Survival Rate	CETIS Vers	ion:	CETISv1.9.7	
Analyzed:	19 Nov-20 16:09	Analysis:	Nonparametric-Two Sample	Status Leve	et:	1	
Edit Date:	19 Nov-20 16:08	MD5 Hash:	E38F5ED130D079E98E484D2F2A2F4666	Editor ID:		007-979-628-1	
Batch ID:	00-4035-1759	Test Type:	Survival-Reburial	Analyst:	Joe F	reas	
Start Date:	16 Oct-20 13:04	Protocol:	EPA/600/R-94/025 (1994)	Diluent:	Labo	ratory Seawater	
Ending Date:	26 Oct-20 13:04	Species:	Eohaustorius estuarius	Brine:	Not A	Applicable	
Test Length:	10d Oh	Taxon:	Malacostraca	Source:	North	nwestern Aquatic Scienc Age:	
Sample ID:	19-5265-2256	Code:	WGR1020.046	Project:	021 /	APC.01	
Sample Date:	08 Oct-20 08:55	Material:	Sediment	Source:	Bioas	ssay Report	
Receipt Date:	09 Oct-20 15:03	CAS (PC):		Station:	SED-	-006	
Sample Age:	8d 4h	Client:	WGR Southwest Inc				

Data Transform	Alt Hyp	Comparison Result	PMSD
Angular (Corrected)	C>T	100% passed survival rate endpoint	2.76%

Angular (Co	rreoted)	C>T				2.76%				
Wilcoxon F	Rank Sur	m Two-Sample Test	1500							
Control	VS	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(a:5%)	
Negative Co	ontrol	100	27.5	-	2	8	Exact	0.7778	Non-Significant Effect	

The second secon	riteria	TAC	Limits			
Attribute	Test Stat	Lower	Upper	Overlap	Decision	
Control Resp	0.99	0.9	>>	Yes	Passes Criteria	

ANOVA Table							
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(a:5%)	
Between	0	0	1	0	1.0000	Non-Significant Effect	
Error	0.0206028	0.0025754	8				
Total	0.0206028		9				

ANOVA Assum	ptions Tests					
Attribute	Test	Test Stat	Critical	P-Value	Decision(a:1%)	
Variance	Levene Equality of Variance Test	0	11.26	1.0000	Equal Variances	
	Mod Levene Equality of Variance Test	0	13.75	1.0000	Equal Variances	
	Variance Ratio F Test	1	23.15	1.0000	Equal Variances	
Distribution	Anderson-Darling A2 Test	2.912	3.878	<1.0E-05	Non-Normal Distribution	
	D'Agostino Skewness Test	2.495	2.576	0.0126	Normal Distribution	
	Kolmogorov-Smirnov D Test	0.4824	0.3025	<1.0E-05	Non-Normal Distribution	
	Shaniro Milk M Normalih, Tost	0.5003	0.7411	-1 0F.05	Non-Normal Distribution	

	Kullinge	ANIMITION	Diest		0.4024	0.3023	-1.0E-03	14011-14011	tial Distributi	QII.	
	Shapiro-	Wilk W Norn	nality Test		0.5093	0.7411	<1.0E-05 Non-Normal Distrib			on	
Survival Rate	Summary										
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	5	0.9900	0.9622	1.0000		0.9500	1.0000	0.0100	2.26%	0.00%
100		5	0.9900	0.9622	1.0000		0.9500	1.0000	0 0100	2.26%	0.00%
Angular (Corr	ected) Transfo	rmed Summ	nary								
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	N	5	1.4360	1.3730	1.4990		1.3450	1.4590	0.0227	3.53%	0.00%
100		5	1.4360	1.3730	1.4990		1,3450	1.4590	0.0227	3.53%	0 00%
Survival Rate	Detail										
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5					
0	N	1.0000	0.9500	1.0000	1.0000	1,0000					

Angular (Corr							
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	
0	N	1.4590	1.3450	1.4590	1.4590	1 4590	
100		1.4590	1 4590	1 4590	1 3450	1.4590	

0.9500

1.0000

100

1.0000

1.0000

1,0000

Report Date:

19 Nov-20 16:28 (p 2 of 2)

Test Gode/ID:

WGR1020.048 / 03-8581-0986

Echaustorius 10-d Survival and Reburial Sediment Test

Aquatic Bioassay & Consulting Labs, Inc.

Analyzed: Edit Date:

Analysis ID: 05-4159-7461 Analyzed: 19 Nov-20 16:09

19 Nov-20 16:08

Enape

Endpoint: Survival Rate

Analysis: Nonparametric-Two Sample

MD6 Hash: E38F5ED130D079E98E484D2F2A2F4666

CETIS Version: CETISv1.9.7 Status Level: 1

Editor ID:

007-979-628-1

CETIS Measurement Report

Report Date:

19 Nov-20 16:28 (p 1 of 1)

Test Code/ID:

WGR1020.046 / 03-8581-0986

								TOL BOULER		1020.0101	00 0001 0000
Eohaustorius	10-d Survival a	nd Rebu	irial Sedimo	ent Test				Aquat	ic Bioassay &	Consultin	ng Labs, Inc.
Batch ID:	00-4035-1759	- 0	Test Type:	Survival-Rebu	rial		10	Analyst: J	oe Freas		
Start Date:	16 Oct-20 13:04	0 1	Protocol:	EPA/600/R-94	A/600/R-94/025 (1994)			Diluent: L	aboratory Sea	water	
Ending Date:	26 Oct-20 13:04		Species:	Echaustorius e	hau storius estuarius			Brine: N	lot Applicable		
Test Length:	10d Oh	1	Taxon:	Malacostraca			5	Source: N	lorthwestern A	quatic Scie	nc Age:
Sample ID:	19-5265-2256	-	Code:	WGR1020 04	6			Project: 0	21.APC.01		
Sample Date:	08 Oct-20 08:55		Material:	Sediment				Source: B	loassay Repo	rt	
Receipt Date:	09 Oct-20 15:03	1	CAS (PC):				5	station: S	ED-006		
Sample Age:	8d 4h	-)	Client:	WGR Southwe	est Inc.						
Dissolved Ox	ygen-mg/L										
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	10,05	9.415	10.69	10	10,1	0.03536	0.07073	0.70%	0
100		2	9.95	9.315	10.59	9.9	10	0.03536	0.07073	0.71%	0
Overall		4	10	9,87	10.13	9.9	1.01	0,04082	0.08165	0 82%	0 (0%)
pH-Units											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	7.9	7.884	7.910	7.9	7.9	0	0	0.00%	0
100		2	7.9	6.629	9.171	7.8	8	0.07071	0 1414	1.79%	0
Overall		4	7.9	7,77	8.03	7.8	В	0.04082	0.08165	1,03%	0 (0%)
Salinity-ppt											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	20	20	20	20	20	0	0	0.00%	0
100		2	20	20	20	20	20	0	0	0.00%	0
Overall		4	20	20	20	20	20	.0	0	0.00%	0 (0%)
Temperature-	°C										
Conc-%	Code	Count	Mean	96% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	14.85	14.21	15.49	14.8	14.9	0.03539	0.07077	0.48%	0
100		2	14.85	14.21	15.49	14.8	14.9	0.03539	0.07077	0.48%	0
Overall		4	14,85	14.76	14.94	14.8	14.9	0.02887	0.05773	0.39%	0 (0%)



November 30, 2020

Amber Ballrot WGR Southwest, Inc. 1801 E. Sepulveda Blvd. Carson, CA 90749

Dear Mrs.Ballrot

We are pleased to present the enclosed bioassay report. The test was conducted under guidelines prescribed in Methods for Assessing the Toxicity of Sediment-associated Contaminants with Estuarine and Marine Amphipods, Method EPA/600/R-94/025. Results were as follows:

CLIENT: WGR Southwest, Inc.

SAMPLE I.D.: SED-007

DATE RECEIVED: 10/9/2020

ABC LAB. NO.: WGR1020.047

ACUTE EOHAUSTORIUS SURVIVAL BIOASSAY

NOEC = 100.00 % TUc = 1.00

EC25 = >100.00 % EC50 = >100.00 %

Yours, very truly,

Scott Johnson

Laboratory Director

Report Date:

19 Nov-20 16:28 (p 1 of 1)

Test Code/ID: WGR1020 047 / 09-4459-7732

							1000		11011	020011		
Eohaustorius	10-d Survival an	d Reburia	al Sedime	ent Test				Aquatic	Bioassay &	Consultin	g Labs, Inc.	
Batch ID:	14-5549-5995	Te	st Type:	Survival-Reburi	al		Anal	yst: Joe	Freas			
Start Date:	16 Oct-20 13:05	Pr	otocol:	EPA/600/R-94/	025 (1994)		Dilu	ent: Lat	oratory Seav	vater		
Ending Date:	26 Oct-20 13:05	Sp	ecies:	Echaustorius es	stuarius		Brin	e: No	Not Applicable			
Test Length:	10d 0h	Ta	xon:	Malacostraca	Malacostraca			Source: Northwe		western Aquatic Scienc Age:		
Sample ID:	20-4615-2857	Co	de:	WGR1020.047			Proj	ect: 02	021.APC.01			
Sample Date:	08 Oct-20 08:00	Ma	terial:	Sediment			Sou	rce: Bio	assay Report	t I		
Receipt Date:	09 Oct-20 15:03	CA	S (PC):				Stati	on: SE	D-007			
Sample Age:	8d 5h	CII	ent:	WGR Southwe	st inc							
Single Compa	rison Summary			10.11			100					
Analysis ID	Endpoint		Comp	arison Method			P-Value	Compari	son Result			
13-1348-9319	Survival Rate		Wilco	xon Rank Sum T	wo-Sample	Test	1.0000	100% pa	ssed survival	rate		
Test Acceptat	oility					TAC	Limits					
Analysis ID	Endpoint		Attrib	ute	Test Stat	Lower	Upper	Overlap	Decision			
13-1348-9319	Survival Rate		Contro	ol Resp	0.99	0.9	>>	Yes	Passes C	riteria		
Survival Rate	Summary	7										
Conc-%	Code	Count	Mean	95% LCL	96% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect	
0	N	5	0.990	0.9622	1.0180	0.9500	1.0000	0.0100	0.0224	2.25%	0.00%	
100		5	1.000	0.0000	1.0000	1 0000	1.0000	0.0000	0.0000	ème	-1.01%	
Survival Rate	Detail						MD	5: 2001712	270BD92003	8C743B1A	5C61F036	
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5						
0	N	1.0000	0.950	1 0000	1.0000	1.0000						
100		1.0000	1.000	1.0000	1.0000	1.0000						
Survival Rate	Binomials											
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5						
0	N	20/20	19/20	20/20	20/20	20/20						
100		20/20	20/20	20/20	20/20	20/20						

Report Date: Test Code/ID: 19 Nov-20 16:28 (p 1 of 2) WGR1020.047 / 09-4459-7732

										Code/ID:			
Eohaustorius	10-d Sui	rvival an	d Rebu	rial Sedime	ent Te	st				Aquatic	Bioassay &	Consultin	g Labs, In
Analysis (D:	13-1348	-9319	- + 3	Endpoint:	Survi	ival Rate			CET	S Version:	CETISv1	.9.7	
Analyzed:	19 Nov-	20 16:22		Analysis:	2.500	arametric-	Two Sample		State	is Level:	1		
Edit Date:	19 Nov-			MD6 Hash:	The same of			B1A5C61F	036 Edito	or ID:	007-979-	628-1	
Batch ID:	14-5549	-5995	110	Test Type:	Survi	ival-Reburia	1		Anal	yst: Joe	Freas		
Start Date:	16 Oct-2			Protocol:	12.36	600/R-94/0	245.464		Dilue	ALC: NO.	oratory Seav	vater	
Ending Date:	26 Oct-2	20 13:05	9	Species:		ustorius es	7 - 1000 - 1100		Brine	e: Not	Applicable		
Test Length:	10d 0h		- 10	Taxon:	Mala	costraca			Sour	ce: Nor	thwestern A	quatic Scien	c Age:
Sample ID:	20-4615	-2857	- 19	Code:	WGF	R1020.047			Proje	ect: 021	APC 01		
Sample Date:	PD 0717	77.7		Material:	Sedin	0.771770			Sour		assay Repor		
Receipt Date:	09 Oct-2	20 15:03	7 10	CAS (PC):					Stati	on: SEI	0-007		
Sample Age:	8d 5h			Client:	WGF	R Southwes	it Inc.						
Data Transfor	m		Alt Hy	vo.				Comparis	on Result				PMSD
Angular (Corre			C>T					-	sed survival	rate endpoir	nt		2.12%
772			- t- T					160.000		Sear Search Fran			21.72.00
Wilcoxon Ran			ple les				_		A 17.4.1				
Control		onc-%	-	Test :	Stat	Critical		P-Type	P-Value	Decision	-		
Negative Contr	ol 1	00		30		-	1 8	Exact	1.0000	Non-Sign	ficant Effect		
Test Acceptat	oility Crit	leria	TA	C Limits									
Attribute	Te	est Stat	Lower	Uppe	r	Overlap	Decision						
Control Resp	0.	99	0.9	>>		Yes	Passes C	riteria					
ANOVA Table									Lynn				
Source	St	um Squa	ires	Mean	Squa	re	DF	F Stat	P-Value	Decision	(a:5%)		
Between	0.	0012877	-	0.001	2877		1	1	0.3466	Non-Sign	ficant Effect		
Error	0.	0103014		0.001	2877		8						
Total	0.	D115891					9						
ANOVA Assur	notions	Tests											
Attribute		est					Test Stat	Critical	P-Value	Decision	(a:1%)		
Attribute Variance	Te	est	uality of	Variance To	est		Test Stat	Critical 11.26	P-Value 0.0285	Decision Equal Var			
	Te	est evene Eq		Variance To		st	10/2/2015/2015	31503350	150, 200 5 400 1		iances		
	Te Le M	est evene Eq	e Equal	ity of Varian		st	7.111	11.26	0.0285	Equal Var	iances iances		
Variance	Le M Va	est evene Eq od Leven	e Equal tatio F T	ity of Varian		st	7.111	11.26	0.0285	Equal Var Equal Var Indetermi	iances iances	on	
Variance	Te Le M Va	est evene Eq od Leven ariance R nderson-	e Equal tatio F T Darling	ity of Varian		st	7.111	11.26 13.75	0.0285 0.3559	Equal Var Equal Var Indetermi Non-Norm	iances iances nate	441	
Variance	Te Le M Va Ar	est evene Eq od Leven ariance R nderson-	e Equal tatio F T Darling Skewn	ity of Varian est A2 Test		st	7.111	11.26 13.75 3.878	0.0285 0.3559 <1.0E-05	Equal Var Equal Var Indetermin Non-Norm Non-Norm	iances iances nate nal Distribution	on	
Variance	Te Le M Va Ar D'	est evene Equation Leven ariance Randerson- 'Agostino olmogoro	e Equal tatio F T Darling Skewn v-Smirn	ity of Varian est A2 Test ess Test	ice Tes	st	7.111 1 1.796 3.335	11.26 13.75 3.878 2.576	0.0285 0.3559 <1.0E-05 0.0009	Equal Var Equal Var Indetermin Non-Norm Non-Norm Non-Norm	iances iances nate nal Distributional Distribution	on on	
Variance Distribution	Te Le M Va Ar D' Ko	est evene Eq od Leven ariance R nderson- 'Agostino olmogoro hapiro-W	e Equal tatio F T Darling Skewn v-Smirn	ity of Varian est A2 Test ess Test ov D Test	ice Tes	st	7.111 1 1,796 3.335 0.4	11.26 13.75 3.878 2.576 0.3025	0.0285 0.3559 <1.0E-05 0.0009 6.1E-05	Equal Var Equal Var Indetermin Non-Norm Non-Norm Non-Norm	iances iances nate nal Distributional Distributional nal Distributional	on on	
Variance Distribution Survival Rate	Te Le M Va Ar D' Ko SI	est evene Eq od Leven ariance R nderson- 'Agostino olmogoro hapiro-W	e Equal tatio F T Darling Skewn v-Smirn	ity of Varian rest A2 Test ess Test ov D Test ormality Tes	st	95% LCL	7.111 1 1,796 3.335 0.4	11.26 13.75 3.878 2.576 0.3025 0.7411	0.0285 0.3559 <1.0E-05 0.0009 6.1E-05	Equal Var Equal Var Indetermin Non-Norm Non-Norm Non-Norm	iances iances nate nal Distributional Distributional nal Distributional	on on	%Effect
Variance Distribution Survival Rate Conc-%	Te Le M Va Ar D' Ko SI	est evene Equod Leven ariance R nderson- Agostino olmogoro hapiro-W ry ode	e Equal tatio F T Darling Skewn Skewn v-Smirn tilk W N	ity of Varian rest A2 Test ess Test ov D Test ormality Tes	st		7.111 1.796 3.335 0.4 0.6247	11.26 13.75 3.878 2.576 0.3025 0.7411	0.0285 0.3559 <1.0E-05 0.0009 6.1E-05 0.0001	Equal Var Equal Var Indetermi Non-Norn Non-Norn Non-Norn Non-Norn	iances iances nate nal Distributi nal Distributi nal Distributi	on on	%Effect
Variance Distribution Survival Rate Conc-% 0	Te Le M Va Ai D Ko SI	est evene Equod Leven ariance R nderson- Agostino olmogoro hapiro-W ry ode	e Equal tatio F T Darling Skewner V-Smirn lik W N	ity of Varian fest A2 Test ess Test ov D Test ormality Tes	st	95% LCL	7.111 1.796 3.335 0.4 0.6247	11.26 13.75 3.878 2.576 0.3025 0.7411	0.0285 0.3559 <1.0E-05 0.0009 6.1E-05 0.0001 Min	Equal Var Equal Var Indetermin Non-Norm Non-Norm Non-Norm Max	iances iances nate nal Distributional Distributiona	on on on CV%	
	Te Le M Va Ar D' Ke SI Summar	est evene Eq od Leven ariance R nderson- 'Agostino olmogoro hapiro-W ry ode	te Equal Patio F T Darling Skewner Skewner Skewner Count 5	ity of Varian rest A2 Test ess Test ov D Test ormality Tes t Mean 0 990 1 000	st	95% LCL 0 9622	7.111 1.796 3.335 0.4 0.6247 96% UCL 1.0000	11.26 13.75 3.878 2.576 0.3025 0.7411	0.0285 0.3559 <1.0E-05 0.0009 6.1E-05 0.0001 Min 0.9500	Equal Var Equal Var Indetermin Non-Norm Non-Norm Non-Norm Max 1 0000	iances iances nate nal Distributi nal Distributi nal Distributi std Err 0.0100	cv%	0.00%
Variance Distribution Survival Rate Conc-% 0 100	Te Le M Va An D K SI Summan	est evene Eq od Leven ariance R nderson- 'Agostino olmogoro hapiro-W ry ode	te Equal Patio F T Darling Skewner Skewner Skewner Count 5	ity of Varian lest A2 Test ess Test ov D Test ormality Tes t Mean 0 990 1 000	st	95% LCL 0 9622	7.111 1.796 3.335 0.4 0.6247 96% UCL 1.0000	11.26 13.75 3.878 2.576 0.3025 0.7411 Median	0.0285 0.3559 <1.0E-05 0.0009 6.1E-05 0.0001 Min 0.9500	Equal Var Equal Var Indetermin Non-Norm Non-Norm Non-Norm Max 1 0000	iances iances nate nal Distributi nal Distributi nal Distributi std Err 0.0100	cv%	0.00% -1.01%
Variance Distribution Survival Rate Conc-% 0 100 Angular (Corr	Te Le M Va An D K SI Summan	est evene Eq evene Eq ood Leven eriance R nderson- 'Agostino olmogoro hapiro-W ry oode	te Equal tatio F T Darling Skewn Skewn V-Smirn tilk W N Count 5 5	ity of Varian lest A2 Test ess Test ov D Test ormality Tes t Mean 0 990 1 000	st	95% LCL 0 9622 1.0000	7.111 1.796 3.335 0.4 0.6247 95% UCL 1.0000 1.0000	11.26 13.75 3.878 2.576 0.3025 0.7411 Median	0.0285 0.3559 <1.0E-05 0.0009 6.1E-05 0.0001 Min 0.9500 1.0000	Equal Var Equal Var Indetermin Non-Norm Non-Norm Non-Norm Max 1 0000 1.0000	iances iances nate nal Distributi nal Distributi nal Distributi Std Err 0.0100 0.0000	CV% 2.26% 0.00%	0.00% -1.01%
Variance Distribution Survival Rate Conc-% 0 100 Angular (Corr Conc-% 0	Le M Va A A D K SI Summar C N	est evene Eq evene Eq ood Leven eriance R nderson- 'Agostino olmogoro hapiro-W ry oode	e Equal tatio F T Darling Skewn Skewn V-Smirn ilk W N Count 5 5 med Sur	ity of Varian Test A2 Test ess Test ov D Test ormality Tes Mean 0 990 1 000 mmary t Mean	st 100	95% LCL 0 9622 1.0000	7.111 1.796 3.335 0.4 0.6247 95% UCL 1.0000 1.0000	11.26 13.75 3.878 2.576 0.3025 0.7411 Median	0.0285 0.3559 <1.0E-05 0.0009 6.1E-05 0.0001 Min 0.9500 1.0000	Equal Var Equal Var Indetermin Non-Norm Non-Norm Non-Norm Max 1 0000 1 0000	iances iances nate nal Distributi nal Distributi nal Distributi Std Err 0.0100 0.0000	CV% 2.26% 0.00%	0.00% -1.01% %Effec
Variance Distribution Survival Rate Conc-% 0 100 Angular (Corr Conc-% 0	Le M Va Air D' Kr SI Summai	est evene Eq evene Eq ood Leven eriance R nderson- 'Agostino olmogoro hapiro-W ry oode	te Equal tatio F T Darling Skewn Skewn V-Smirn ilk W N Count 5 Tried Sur Count 5	ity of Varian Test A2 Test ess Test ov D Test ormality Tes t Mean 0 990 1 000 mmary t Mean 1 436	st 100	95% LCL 0 9622 1.0000 95% LCL 1.3730	7.111 1.796 3.335 0.4 0.6247 95% UCL 1.0000 1.0000	11.26 13.75 3.878 2.576 0.3025 0.7411 Median	0.0285 0.3559 <1.0E-05 0.0009 6.1E-05 0.0001 Min 0.9500 1.0000 Min 1.3450	Equal Var Equal Var Indetermin Non-Norm Non-Norm Non-Norm Max 1 0000 1 0000 Max 1 4590	iances iances iances nate nal Distributi nal Distributi nal Distributi Std Err 0.0100 0.0000 Std Err 0.0227	CV% 2.26% 0.00% CV% 3.53%	0.00% -1.01% %Effect 0.00%
Variance Distribution Survival Rate Conc-% 0 100 Angular (Corr	Le M Va A A D K K SI Summar C N N C C N D Detail	est evene Eq evene Eq ood Leven eriance R nderson- 'Agostino olmogoro hapiro-W ry oode	te Equal tatio F T Darling Skewn Skewn V-Smirn ilk W N Count 5 Tried Sur Count 5	ity of Varian Test A2 Test ess Test ov D Test ormality Tes t Mean 0,990 1,000 mmary t Mean 1,436 1,459	ast	95% LCL 0 9622 1.0000 95% LCL 1.3730	7.111 1.796 3.335 0.4 0.6247 95% UCL 1.0000 1.0000	11.26 13.75 3.878 2.576 0.3025 0.7411 Median	0.0285 0.3559 <1.0E-05 0.0009 6.1E-05 0.0001 Min 0.9500 1.0000 Min 1.3450	Equal Var Equal Var Indetermin Non-Norm Non-Norm Non-Norm Max 1 0000 1 0000 Max 1 4590	iances iances iances nate nal Distributi nal Distributi nal Distributi Std Err 0.0100 0.0000 Std Err 0.0227	CV% 2.26% 0.00% CV% 3.53%	0.00% -1.01% %Effec 0.00%
Variance Distribution Survival Rate Conc-% 0 100 Angular (Corr Conc-% 0 100 Survival Rate	Le M Va A A D K K SI Summar C N N C C N D Detail	est evene Eq od Leven eriance R nderson- 'Agostino olmogoro hapiro-W ry ode ransform ode	e Equal tatio F T Darling Skewn v-Smirn ilk W N Count 5 5 red Su 5 5	ity of Varian Test A2 Test ess Test ov D Test ormality Tes t Mean 0 990 1 000 mmary t Mean 1 436 1.459	1 100 000 000 000 000 000 000 000 000 0	95% LCL 0 9622 1.0000 95% LCL 1.3730 1.4580	7.111 1.796 3.335 0.4 0.6247 95% UCL 1.0000 1.0000 95% UCL 1.4990 1.4590	11.26 13.75 3.878 2.576 0.3025 0.7411 Median	0.0285 0.3559 <1.0E-05 0.0009 6.1E-05 0.0001 Min 0.9500 1.0000 Min 1.3450	Equal Var Equal Var Indetermin Non-Norm Non-Norm Non-Norm Max 1 0000 1 0000 Max 1 4590	iances iances iances nate nal Distributi nal Distributi nal Distributi Std Err 0.0100 0.0000 Std Err 0.0227	CV% 2.26% 0.00% CV% 3.53%	0.00% -1.01% %Effec 0.00%
Variance Distribution Survival Rate Conc-% 0 100 Angular (Corr Conc-% 0 100 Survival Rate Conc-%	Le M Va Ar D Kr SI Summar C N N C C N D Estail C	est evene Eq od Leven eriance R nderson- 'Agostino olmogoro hapiro-W ry ode ransform ode	tatio F T Darling Skewn Skewn V-Smirn ilk W N Count 5 Tred Sur Count 5 Rep 1	ity of Varian Test A2 Test ess Test ov D Test ormality Tes t Mean 0 990 1 000 mmary t Mean 1 436 1 459 Rep 2 0 0 950	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	95% LCL 0 9622 1.0000 95% LCL 1.3730 1.4580	7.111 1.796 3.335 0.4 0.6247 95% UCL 1.0000 1.0000 95% UCL 1.4990 1.4590	11.26 13.75 3.878 2.576 0.3025 0.7411 Median	0.0285 0.3559 <1.0E-05 0.0009 6.1E-05 0.0001 Min 0.9500 1.0000 Min 1.3450	Equal Var Equal Var Indetermin Non-Norm Non-Norm Non-Norm Max 1 0000 1 0000 Max 1 4590	iances iances iances nate nal Distributi nal Distributi nal Distributi Std Err 0.0100 0.0000 Std Err 0.0227	CV% 2.26% 0.00% CV% 3.53%	0.00% -1.01% %Effec 0.00%
Variance Distribution Survival Rate Conc-% 0 100 Angular (Corr Conc-% 0 100 Survival Rate Conc-% 0 100	Le MM V2 An D' K4 SI Summai C4 N D' C4 N N D' C4 N N D' C4 N N D' C4 N N N N N N N N N N N N N N N N N N	est evene Eq od Leven ariance R nderson- Agostino olmogoro hapira-W ry ode ransform ode	ce Equal tatio F T Darling of Skewney-Smirn Filk W N N Count 5 5 5 Feed Sur Count 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	ity of Varian lest A2 Test ess Test ov D Test ormality Tes t Mean 0 990 1 000 mmary t Mean 1 436 1 459 Rep 2 0 0 950 0 1 000	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	95% LCL 0 9622 1.0000 95% LCL 1.3730 1.4580 Rep.3 1.0000	7.111 1.796 3.335 0.4 0.6247 95% UCL 1.0000 1.0000 95% UCL 1.4990 1.4590 Rep 4	11.26 13.75 3.878 2.576 0.3025 0.7411 Median Median	0.0285 0.3559 <1.0E-05 0.0009 6.1E-05 0.0001 Min 0.9500 1.0000 Min 1.3450	Equal Var Equal Var Indetermin Non-Norm Non-Norm Non-Norm Max 1 0000 1 0000 Max 1 4590	iances iances iances nate nal Distributi nal Distributi nal Distributi Std Err 0.0100 0.0000 Std Err 0.0227	CV% 2.26% 0.00% CV% 3.53%	0.00% -1.01% %Effect 0.00%
Variance Distribution Survival Rate Conc-% 0 100 Angular (Corr Conc-% 0 100 Survival Rate Conc-% 0 100 Angular (Corr	Tected) T Control C	est evene Eq od Leven eriance R nderson- 'Agostino olmogoro hapiro-W ry ode ransform ode	ce Equal tatio F T Darling a Skewnow-Smirn ilk W N Count 5 5 7 1.0000 1.	ity of Varian Test A2 Test ess Test ov D Test ormality Tes t Mean 0 990 1 000 mmary t Mean 1 436 1 459 Rep 2 0 0 950 0 1 000 tail	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	95% LCL 0 9622 1.0000 95% LCL 1.3730 1.4580 Rep 3 1.0000 1.0000	7.111 1.796 3.335 0.4 0.6247 95% UCL 1.0000 1.0000 95% UCL 1.4990 1.4590 Rep 4 1,0000 1.0000	11.26 13.75 3.878 2.576 0.3025 0.7411 Median Median Rep 5 1.0000 1.0000	0.0285 0.3559 <1.0E-05 0.0009 6.1E-05 0.0001 Min 0.9500 1.0000 Min 1.3450	Equal Var Equal Var Indetermin Non-Norm Non-Norm Non-Norm Max 1 0000 1 0000 Max 1 4590	iances iances iances nate nal Distributi nal Distributi nal Distributi Std Err 0.0100 0.0000 Std Err 0.0227	CV% 2.26% 0.00% CV% 3.53%	0.00% -1.01% %Effect 0.00%
Variance Distribution Survival Rate Conc-% 0 100 Angular (Corr Conc-% 0 100 Survival Rate Conc-% 0 100	Tected) T Control C	est evene Eq od Leven ariance R nderson- 'Agostino olmogoro hapiro-W ry ode ransform ode	ce Equal tatio F T Darling of Skewney-Smirn Filk W N N Count 5 5 5 Feed Sur Count 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	ity of Varian Test A2 Test ess Test ov D Test ormality Tes t Mean 0 990 1 000 mmary t Mean 1 436 1 459 Rep 2 0 0 950 0 1 000 tail Rep 2	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	95% LCL 0 9622 1.0000 95% LCL 1.3730 1.4580 Rep.3 1.0000	7.111 1.796 3.335 0.4 0.6247 95% UCL 1.0000 1.0000 95% UCL 1.4990 1.4590 Rep 4	11.26 13.75 3.878 2.576 0.3025 0.7411 Median Median	0.0285 0.3559 <1.0E-05 0.0009 6.1E-05 0.0001 Min 0.9500 1.0000 Min 1.3450	Equal Var Equal Var Indetermin Non-Norm Non-Norm Non-Norm Max 1 0000 1 0000 Max 1 4590	iances iances iances nate nal Distributi nal Distributi nal Distributi Std Err 0.0100 0.0000 Std Err 0.0227	CV% 2.26% 0.00% CV% 3.53%	0.00% -1.01% %Effect 0.00%

Analyst 0 QA

Report Date:

19 Nov-20 16:28 (p 2 of 2)

Test Code/ID:

WGR1020.047 / 09-4459-7732

Echaustorius 10-d Survival and Reburial Sediment Test

Aquatic Bloassay & Consulting Labs, Inc.

Analyzed: Edit Date:

Analysis ID: 13-1348-9319 19 Nov-20 16:22

19 Nov-20 16:21

Endpoint: Survival Rate

Analysis: Nonparametric-Two Sample MD6 Hash: 20C171270BD920038C743B1A5C61F036 CETIS Version:

CETISV1.9.7

Status Level: Editor ID:

007-979-628-1

CETIS Measurement Report

Report Date:

19 Nov-20 16:28 (p 1 of 1)

Test Code/ID:

WGR1020.047 / 09-4459-7732

Eohaustorius	10-d Survival ar	nd Reb	urial Sedim	ent Test				Aqua	atic Bioassay 8	Consultin	ng Labs, Inc.
Batch ID:	14-5549-5995		Test Type:	Survival-Rebur	ial			Analyst:	Joe Freas		
Start Date:	16 Oct-20 13:05		Protocol:	EPA/600/R-94	/025 (1994)			Diluent:	Laboratory Sea	water	
Ending Date:	26 Oct-20 13:05		Species:	Echaustorius e	stuarius			Brine:	Not Applicable		
Test Length:	10d 0h		Taxon:	Malacostraca				Source:	Northwestern A	quatic Scie	nc Age:
Sample ID:	20-4615-2857		Code:	WGR1020.047	7			Project:	021.APC.01		
Sample Date:	08 Oct-20 08:00		Material:	Sediment				Source:	Bloassay Repor	t	
Receipt Date:	09 Oct-20 15:03		CAS (PC):					Station:	SED-007		
Sample Age:	8d 5h		Client:	WGR Southwe	est Inc.						
Dissolved Ox	ygen-mg/L										
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Er	r Std Dev	CV%	QA Count
0	N	2	10.05	9.415	10.69	10	10.1	0.0353	6 0.07073	0.70%	0
100		2	10.05	9.415	10.69	10	10.1	0.0353	6 0.07073	0.70%	0
Overall		4	10.05	9.958	10.14	10	10.1	0.0288	7 0.05774	0.57%	0 (0%)
pH-Units											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Er	r Std Dev	CV%	QA Count
0	N	2	7.9	7.884	7,916	7.9	7.9	0	0	0.00%	0
100		2	7.9	5.359	10.44	7.7	8.1	0.1414	0.2828	3,58%	0
Overall		4	7.9	7.64	8.16	7.7	8.1	0.0816	5 0.1633	2.07%	0 (0%)
Salinity-ppt											
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Er	r Std Dev	CV%	QA Count
0	N	2	20	20	20	20	20	0	0	0.00%	0
100		2	20	20	20	20	20	0	0	0.00%	0
Overall		4.	20	20	20	20	20	0	0	0.00%	0 (0%)
Temperature-	°C										
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Er	r Std Dev	CV%	QA Count
0	N	2	14.85	14.21	15.49	14.8	14.9	0.0353	9 0.07077	0.48%	0
100		2	14.85	14.21	15.49	14.8	14.9	0.0353	9 0.07077	0.48%	0
Overall		4	14.85	14.76	14.94	14.8	14.9	0.0288	7 0.05773	0.39%	0 (0%)



96 Hour Eohaustorius estuarius Survival Bioassay - Standard Toxicant

DATE: 11/19/2020

STANDARD TOXICANT: Ammonium Chloride

ENDPOINT: SURVIVAL

UNIONIZED AMMONIA

NOEC = 0.4270 mg/L

EC25 = 1.0630 mg/LEC50 = 1.9020 mg/L

Yours very truly,

w Scott Johnson

Laboratory Director

CETIS Summary Report

Sample Age: 13h

Report Date:

19 Nov-20 16:27 (p 1 of 1)

	Charles Services		Test Code/ID: EOH101620 / 18-8280-2					
Reference 1	Foxicant 96-h Acute S	Survival Test	Aquatic Bioassay & Consulting Labs, Inc					
Batch ID:	20-8834-1019	Test Type: Survival	Analyst: Joe F	reas				

Diluent: Start Date: 16 Oct-20 13:00 Protocol: EPA/600/R-94/025 (1994) Laboratory Seawater Ending Date: 20 Oct-20 13:00 Species: Echaustorius estuarius Brine: Not Applicable Test Length: 96h Taxon: Malacostraca Source: Northwestern Aquatic Scienc Age:

Sample ID: 08-2994-6924 Code: EOH101620 Project: REF TOX Sample Date: 16 Oct-20 Material: Ammonia (Unionized) Source: Reference Toxicant

Receipt Date: CAS (PC): Station: REF TOX

Internal Lab

Client:

Multiple Comparison Summary Analysis ID Endpoint Comparison Method ✓ NOEL LOEL TOEL **PMSD** 15-8459-6569 Survival Rate Steel Many-One Rank Sum Test 0.427 0.783 0.5782 8.25%

Point Estimat	e Summary							
Analysis ID	Endpoint	Point Estimate Method	1	Level	mg/L	95% LCL	95% UCL	S
07-6344-0004	Survival Rate	Linear Interpolation (ICPIN)		EC10	0.6406	0.5267	0.8684	1
				EC15	0.783	0.6203	0.9728	
				EC20	0.9232	0.6989	1.11	
				EC25	1.063	0.8615	1 32	
				EC40	1 484	1.133	2.067	
				EC50	1.902	1.191	2,444	

Survival Rate S	ummary										
Conc-mg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	N	4	1,0000	1.0000	1.0000	1.0000	1.0000	0,0000	0.0000	04	0,00%
0.214		4	1.0000	1.0000	1.0000	1,0000	1.0000	0.0000	0.0000	-	0 00%
0.427		4	0.9750	0.8954	1.0550	0.9000	1.0000	0 0250	0.0500	5.13%	2.50%
0.783		4	0.8500	0.7581	0.9419	0.8000	0.9000	0,0289	0,0577	6.79%	15.00%
1.554		4	0.5750	0.3748	0.7752	0.4000	0.7000	0.0629	0.1258	21.88%	42.50%
4.104		4	0.0250	-0.0546	0.1046	0.0000	0.1000	0.0250	0.0500	200.00%	97 50%

Survival Rate D	etail					MD5; E090CBA9FEE7DC00F2F598E96AA501B7
Conc-mg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	
0	N	1.0000	1.0000	1.0000	1.0000	
0.214		1.0000	1.0000	1.0000	1.0000	
0.427		0.9000	1.0000	1.0000	1 0000	
0,783		0.8000	0.9000	0.9000	0.8000	
1.554		0.6000	0.7000	0.6000	0.4000	
CCGL		41000		4.4000	100000	

					7.74	
0	N	1.0000	1.0000	1.0000	1.0000	
0.214		1.0000	1.0000	1.0000	1.0000	
0.427		0.9000	1.0000	1.0000	1 0000	
0,783		0.8000	0.9000	0.9000	0,8000	
1.554		0.6000	0.7000	0.6000	0.4000	
4.104		0.0000	0.1000	0.0000	0.0000	

Conc-mg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	10/10	10/10	10/10	10/10
214		10/10	10/10	10/10	10/10
0.427		9/10	10/10	10/10	10/10
0.783		8/10	9/10	9/10	8/10
1.554		6/10	7/10	6/10	4/10
4.104		0/10	1/10	0/10	0/10

Analyst 17 QA

Report Date: Test Code/ID: 19 Nov-20 16:27 (p 1 of 2) EOH101620 / 18-8280-2991

Reference Toxicant 96-h Acute Survival Test Aquatic Bioassay & Analysis ID: 15-8459-6569 Endpoint: Survival Rate CETIS Version: CETIS Versio	1.9.7 9-628-1 water	g Labs, Inc
Analyzed: 19 Nov-20 16:27 Analysis: Nonparametric-Control vs Treatments Status Level: 1 Edit Date: 19 Nov-20 16:26 MD8 Hash: E090CBA9FEE7DC00F2F598E96AA50187 Editor ID: 007-979 Batch ID: 20-8834-1019 Test Type: Survival Analyst: Joe Freas Start Date: 16 Oct-20 13:00 Protocol: EPA/600/R-94/025 (1994) Diluent: Laboratory Sea Ending Date: 20 Oct-20 13:00 Species: Eohaustorius estuarius Brine: Not Applicable Test Length: 96h Taxon: Malacostraca Source: Northwestern A	9-628-1 water	
Analyzed: 19 Nov-20 16:27 Analysis: Nonparametric-Control vs Treatments Status Level: 1 Edit Date: 19 Nov-20 16:26 MD6 Hash: E090CBA9FEE7DC00F2F598E96AA50187 Editor ID: 007-979 Batch ID: 20-8834-1019 Test Type: Survival Analyst: Joe Freas Start Date: 16 Oct-20 13:00 Protocol: EPA/600/R-94/025 (1994) Diluent: Laboratory Sea Ending Date: 20 Oct-20 13:00 Species: Eohaustorius estuarius Brine: Not Applicable Test Length: 96h Taxon: Malacostraca Source: Northwestern A	9-628-1 water	
Edit Date: 19 Nov-20 16:26 MD5 Hash: E090CBA9FEE7DC00F2F598E96AA501B7 Editor ID: 007-979 Batch ID: 20-8534-1019 Test Type: Survival Analyst: Joe Freas Start Date: 16 Oct-20 13:00 Protocol: EPA/600/R-94/025 (1994) Diluent: Laboratory Sea Ending Date: 20 Oct-20 13:00 Species: Eohaustorius estuarius Brine: Not Applicable Test Length: 96h Taxon: Malacostraca Source: Northwestern A	water	
Start Date: 16 Oct-20 13:00 Protocol: EPA/600/R-94/025 (1994) Diluent: Laboratory Sea Ending Date: 20 Oct-20 13:00 Species: Eohaustorius estuarius Brine: Not Applicable Test Length: 96h Taxon: Malacostraca Source: Northwestern A		
Start Date: 16 Oct-20 13:00 Protocol: EPA/600/R-94/025 (1994) Diluent: Laboratory Sea Ending Date: 20 Oct-20 13:00 Species: Echaustorius estuarius Brine: Not Applicable Test Length: 96h Taxon: Malacostraca Source: Northwestern A		
Ending Date: 20 Oct-20 13:00 Species: Eohaustorius estuarius Brine: Not Applicable Test Length: 96h Taxon: Malacostraca Source: Northwestern A		
Test Length: 96h Taxon: Malacostraca Source: Northwestern A		
		c Age:
Sample ID: 08-2994-6924	iquatic Scien	o age.
2 (1985) HONE : [10 - 10 10 10 10 10 - 10 10 10 10 10 10 10 10 10 10 10 10 10		
Sample Date: 16 Oct-20 Material: Ammonia (Unionized) Source: Reference Tox	cant	
Receipt Date: CAS (PC): Station: REF TOX		
Sample Age: 13h Client: Internal Lab		
Data Transform Alt Hyp NOEL LOEL TOEL TU	MSDu	PMSD
Angular (Corrected) C > T 0.427 0.783 0.5782 —	0.08253	8.25%
Steel Many-One Rank Sum Test		
Control vs Conc-mg/L Test Stat Critical Ties DF P-Type P-Value Decision(q:5%)		
Negative Control 0.214 18 10 1 6 CDF 0.8333 Non-Significant Effec	t	
0.427 18 10 1 8 CDF 0.8105 Non-Significant Effect		
0.783* 10 10 0 6 CDF 0.0417 Significant Effect		
1.554* 10 10 0 6 CDF 0.0417 Significant Effect		
4.104* 10 10 0 6 CDF 0.0417 Significant Effect		
ANOVA Table		
Source Sum Squares Mean Square DF F Stat P-Value Decision(0:6%)		
Between 4.54942 0.909884 5 149.9 <1.0E-05 Significant Effect		
Error 0.109243 0.0060691 18		
Total 4.65866 23		
ANOVA Assumptions Tests		
Attribute Test Test Stat Critical P-Value Decision(q:1%)		
Variance Bartlett Equality of Variance Test Indeterminate		
Levene Equality of Variance Test 3.69 4.248 0.0179 Equal Variances		
Mod Levene Equality of Variance Test 1.161 4.248 0.3658 Equal Variances		
Distribution Anderson-Darling A2 Test 0.6872 3.878 0.0728 Normal Distribution		
D'Agostino Kurtosis Test 1.282 2.576 0.1998 Normal Distribution		
D'Agostino Skewness Test 1.081 2.576 0.2799 Normal Distribution		
D'Agostino-Pearson K2 Omnibus Test 2.811 9.21 0 2452 Normal Distribution		
Kolmogorov-Smirnov D Test 0.2083 0.2056 0.0084 Non-Normal Distribut	ion	
Shapiro-Wilk W Normality Test 0.9471 0.884 0.2347 Normal Distribution		
Survival Rate Summary		
Conc-mg/L Code Count Mean 95% LCL 96% UCL Median Min Max Std Err	CV%	%Effect
0 N 4 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 0.0000	0.00%	0.00%
0.214 4 1,0000 1,0000 1,0000 1,0000 1,0000 1,0000 0,0000	0.00%	0.00%
0.427 4 0.9750 0.8954 1.0000 1.0000 0.9000 1.0000 0.0250	5.13%	2.50%
0.783 4 0.8500 0.7581 0.9419 0.8500 0.8000 0.9000 0.0289	6.79%	15.00%
1.554 4 0.5750 0.3748 0.7752 0.6000 0.4000 0.7000 0.0629	21.88%	42.50%
	200.00%	97.50%
4 104 4 0.0250 0.0000 0.1046 0.0000 0.0000 0.1000 0.0250		
The state of the s		%Effect
Angular (Corrected) Transformed Summary Conc-mg/L Code Count Mean 95% LCL 96% UCL Median Min Max Std Err	CV%	MEHICL
Angular (Corrected) Transformed Summary Conc-mg/L Code Count Mean 95% LCL 96% UCL Median Min Max Std Err 0 N 4 1.4120 1.4120 1.4120 1.4120 1.4120 1.4120 1.4120 1.4120 0.0000	0.00%	0.00%
Angular (Corrected) Transformed Summary Conc-mg/L Code Count Mean 95% LCL 95% UCL Median Min Max Std Err 0 N 4 1.4120 1.4120 1.4120 1.4120 1.4120 1.4120 1.4120 0.0000 0.214 4 1.4120 1.4120 1.4120 1.4120 1.4120 1.4120 0.0000	0.00% 0.00%	0.00%
Angular (Corrected) Transformed Summary Conc-mg/L Code Count Mean 95% LCL 95% UCL Median Min Max Std Err 0 N 4 1.4120 1.4120 1.4120 1.4120 1.4120 1.4120 1.4120 0.0000 0.214 4 1.4120 1.4120 1.4120 1.4120 1.4120 1.4120 0.0000 0.427 4 1.3710 1.2420 1.5010 1.4120 1.2490 1.4120 0.0407	0.00% 0.00% 5.94%	0.00% 0.00% 2.89%
Angular (Corrected) Transformed Summary Conc-mg/L Code Count Mean 95% LCL 96% UCL Median Min Max Std Err 0 N 4 1.4120 1.4120 1.4120 1.4120 1.4120 1.4120 1.4120 0.0000 0.214 4 1.4120 1.4120 1.4120 1.4120 1.4120 1.4120 0.0000 0.427 4 1.3710 1.2420 1.5010 1.4120 1.2490 1.4120 0.0407 0.783 4 1.1780 1.0480 1.3080 1.1780 1.1070 1.2490 0.0410	0.00% 0.00% 5.94% 6.95%	0.00% 0.00% 2.89% 16.57%
Angular (Corrected) Transformed Summary Conc-mg/L Code Count Mean 95% LCL 95% UCL Median Min Max Std Err 0 N 4 1.4120 1.4120 1.4120 1.4120 1.4120 1.4120 1.4120 0.0000 0.214 4 1.4120 1.4120 1.4120 1.4120 1.4120 1.4120 0.0000 0.427 4 1.3710 1.2420 1.5010 1.4120 1.2490 1.4120 0.0407	0.00% 0.00% 5.94%	0.00% 0.00% 2.89%

nalyst // QA. Ø

Report Date: Test Code/ID: 19 Nov-20 16:27 (p 2 of 2) EOH101620 / 18-8280-2991

Reference Toxicant 96-h Acute Survival Test

19 Nov-20 16:26

Aquatic Bioassay & Consulting Labs, Inc.

CETISV1.9.7

d	Analysis ID
N	Analyzed:
	Edit Date:

15-8459-6569 19 Nov-20 16:27 Endpoint: Survival Rate

Analysis: Nonparametric-Control vs Treatments
MD5 Hash: E090CBA9FEE7DC00F2F598E96AA501B7

CETIS Version: Status Level:

Editor ID:

007-979-628-1

OUTAIA LIGIT DOIGH	Survival	Rate	Detail
--------------------	----------	------	--------

Conc-mg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	
0	N	1.0000	1.0000	1.0000	1.0000	
0.214		1 0000	1.0000	1.0000	1.0000	
0.427		0 9000	1.0000	1,0000	1.0000	
0.783		0.8000	0.9000	0.9000	0.8000	
1.554		0.6000	0,7000	0.6000	0.4000	
4.104		0.0000	0.1000	0.0000	0.0000	

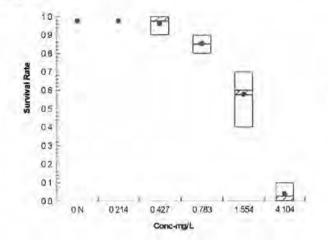
Angular (Corrected) Transformed Detail

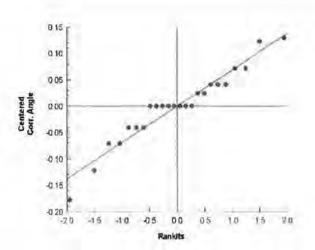
Conc-mg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4	
0	N	1.4120	1.4120	1.4120	1.4120	
0.214		1.4120	1.4120	1.4120	1.4120	
0.427		1.2490	1.4120	1.4120	1.4120	
0 783		1 1070	1.2490	1.2490	1.1070	
1.554		0.8861	0.9912	0.8861	0,6847	
4.104		0.1588	0,3218	0.1588	0.1588	

Survival Rate Binomials

Conc-mg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	10/10	10/10	10/10	10/10
0.214		10/10	10/10	10/10	10/10
0.427		9/10	10/10	10/10	10/10
0.783		8/10	9/10	9/10	8/10
1.554		6/10	7/10	6/10	4/10
4.104		0/10	1/10	0/10	0/10

Graphics





Report Date:

19 Nov-20 16:27 (p 1 of 2)

Test Code/ID:	EOH101620 / 18-8280-299
indiana.	12.114. 2- 1-2.

Reference To	xicant 96-h Acute Si	irvival Test				Aqu	atic B	lioassay & Consulting Labs, Inc.
Analysis ID: Analyzed: Edit Date:	07-6344-0004 19 Nov-20 16:27 19 Nov-20 16:26	Endpoint: Analysis: MD6 Hash:	Survival Rate Linear Interpola E090CBA9FE	ation (ICPIN) E7DC00F2F598E9	96AA501B7	CETIS Vers Status Leve Editor ID:		CETISv1.9.7 1 007-979-628-1
Batch ID:	20-8834-1019	Test Type:	Survival			Analyst:	Joe F	reas
Start Date:	16 Oct-20 13:00	Protocol:	EPA/600/R-94/025 (1994)			Diluent:	Laboratory Seawater	
Ending Date:	20 Oct-20 13:00	Species:	Echaustorius e		Brine:	Not Applicable		
Test Length:	96h	Taxon:	Malacostraca			Source:	North	western Aquatic Scienc Age:
Sample ID:	08-2994-6924	Code:	EOH101620			Project:	REF	тох
Sample Date:	16 Oct-20	Material:	Ammonia (Unionized)			Source:	Refer	rence Toxicant
Receipt Date:		CAS (PC):				Station:	REF	TOX
Sample Age:	13h	Client:	Internal Lab					
Linear Interpo	lation Options							
X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method			
Linear	Linear	0	280	Yes	Two-Point	Interpolation		

Point Estimates

Level	mg/L	95% LCL	95% UCL		
EC10	0.6406	0.5267	0.8684		
EC15	0.783	0.6203	0.9728		
EC20	0.9232	0.6989	1.11		
EC25	1.063	0.8615	1.32		
EC40	1.484	1.133	2.067		
EC50	1.902	1.191	2,444		

Survival Rate S	ummary			Calculated Variate(A/B)					Isotonic Variate		
Conc-mg/L	Code	Count	Mean	Median	Min	Max	CV%	%Effect	A/B	Mean	%Effect
0	N	4	1.0000	1 0000	1.0000	1 0000	0,00%	0.00%	40/40	1.0000	0.00%
0.214		4	1.0000	1.0000	1.0000	1.0000	0.00%	0.00%	40/40	1.0000	0.00%
0.427		4	0.9750	1.0000	0.9000	1.0000	5.13%	2.50%	39/40	0.9750	2.50%
0.783		4	0.8500	0.8500	0.8000	0.9000	6 79%	15.00%	34/40	0.8500	15.00%
1.554		4	0.5750	0.6000	0.4000	0.7000	21.88%	42.50%	23/40	0 5750	42,50%
4.104		4	0.0250	0.0000	0.0000	0.1000	200.00%	97.50%	1/40	0.0250	97.50%

Survival Rate Detail

Conc-mg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	1.0000	1.0000	1.0000	1,0000
0.214		1.0000	1,0000	1.0000	1.0000
0.427		0.9000	1.0000	1.0000	1 0000
0.783		0.8000	0.9000	0.9000	0.8000
1.554		0.6000	0.7000	0.6000	0.4000
4.104		0.0000	0.1000	0.0000	0.0000

Survival Rate Binomials

Conc-mg/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	N	10/10	10/10	10/10	10/10
0.214		10/10	10/10	10/10	10/10
0 427		9/10	10/10	10/10	10/10
0.783		8/10	9/10	9/10	8/10
1 554		6/10	7/10	6/10	4/10
4.104		0/10	1/10	0/10	0/10

Analyst A QA -

Report Date: Test Code/ID:

19 Nov-20 16:27 (p 2 of 2) EOH101620 / 18-8280-2991

Reference Toxicant 96-h Acute Survival Test

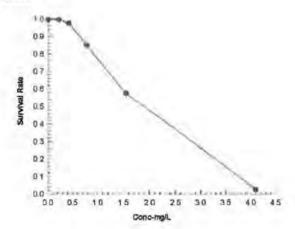
Aquatic Bloassay & Consulting Labs, Inc.

CETIS Version: Analysis ID: 07-6344-0004 Endpoint: Survival Rate CETISV1.9.7

Analyzed: Analysis: Linear Interpolation (ICPIN) 19 Nov-20 16:27 Status Level:

MD6 Hash: E090CBA9FEE7DC00F2F598E96AA501B7 Edit Date: 19 Nov-20 16:26 Editor ID: 007-979-628-1

Graphics



CETIS Measurement Report

Report Date: Test Code/ID: 19 Nov-20 16:27 (p 1 of 1) EOH101620 / 18-8280-2991

Reference Toxicant 96-h Acute Survival Test

Aquatic Bloassay & Consulting Labs, Inc.

REF TOX

Batch ID:	20-8834-1019	Test Type:	Survival	Analyst:	Joe Freas
Start Date:	16 Oct-20 13:00	Protocol:	EPA/600/R-94/025 (1994)	Diluent:	Laboratory Seawater
Ending Date:	20 Oct-20 13:00	Species:	Eohaustorius estuarius	Brine:	Not Applicable
Test Length:	96h	Taxon:	Malacostraca	Source:	Northwestern Aquatic Scienc Age:

Sample ID: 08-2994-6924 Code: EOH101620 Project: REF TOX
Sample Date: 16 Oct-20 Material: Ammonia (Unionized) Source: Reference Toxicant

Receipt Date: CAS (PC): Station:

Sample Age: 13h Client: Internal Lab

Dissolved	Oxygen-mg/L
-----------	-------------

1768 0.3	0707 1.03% 0536 5.16%	0
		0
1414 0.2	2828 3.98%	0
0	0.00%	0
03535 0.0	7071 1.02%	0
1061 0.2	2121 3.05%	0
05419 01	875 2.69%	0 (0%)
	1061 0.2	1061 0.2121 3.05%

pH-Units

Conc-mg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	7.9	7.884	7.916	7.9	7.9	0	0	0.00%	0
0.214		2	7.9	7.884	7.916	7.9	7.9	0	0	0.00%	0
0,427		2	7.9	7,884	7.916	7.9	7.9	0	0	0.00%	0
0 783		2	7.9	7.884	7.916	7.9	7.9	0	0	0.00%	0
1.554		2	7.9	7.884	7.916	7.9	7,9	0	0	0.00%	0
4.104		2	7.9	7.884	7.916	7.9	7.9	0	0	0.00%	0
Overall		12	79	79	7.9	7.9	7.9	0	0	0.00%	0 (0%)

Salinity-ppt

Conc-mg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	20	20	20	20	20	0	0	0.00%	0
0.214		2	20	20	20	20	20	0	0	0.00%	0
0.427		2	20	20	20	20	20	0	0	0.00%	O
0.783		2	20	20	20	20	20	Q	0	0.00%	0
1.554		2	20	20	20	20	20	0	0	0.00%	0
4 104		2	20	20	20	20	20	0	0	0.00%	0
Overall		12	20	20	20	20	20	0	0	0.00%	0 (0%)

Temperature-°C

Conc-mg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	QA Count
0	N	2	14.85	14.21	15.49	14.8	14.9	0.03539	0.07077	0.48%	0
0.214		2	14.85	14.21	15.49	14.8	14.9	0.03539	0.07077	0.48%	0
0.427		2	14.85	14.21	15.49	148	14.9	0.03539	0 07077	0.48%	0
0.783		2	14.85	14.21	15.49	14.8	14.9	0.03539	0.07077	0.48%	0
1.554		2	14.85	14.21	15.49	14.8	14.9	0.03539	0.07077	0.48%	0
4.104		2	14.85	14.21	15.49	14.8	14.9	0.03539	0.07077	0.48%	0
Overall		12	14.85	14.82	14.88	14.8	14.9	0.01508	0.05222	0.35%	0 (0%)

Analyst 4 OA: 7

Facility Name LA Refinery - Carson Operations City, State (Facility) 1801 E. Sepulveda Bl						Blvd.	, Ca	arson CA 9	0749	Project Manager (Consultant) Chelsea Dreyer					oject No 02	Laboratory Name Aquatic Bioassay						
Facility Contact Fac				Facility Telephone No. (310) 847-3920									o. (Consultant 1-8510 ex. 10		Fa		Consulta (S2) 799				29 N Olive Street Ventura 93001	
Consultant Company		-	1011	0,04	1-00	20	Con	sulta	ant Address		1 10	52/155	7-0010 CX. 10	700		13	32) 133	0010			(805) 643-5621	
WGR Southwest, Inc.			_						Vinners Circle	#101 Los	Alamito	s, Cali	fornia 90720									
				M	atri	X	Pr	SV.								FIE	LD A	NALY	SES	_		
													Ш					5		possible]	Special Detection Limit/Reporting	
			ľ			ľ					tuarius					t,	(mg/L)	nce (Sim)	los) [if po	Please report MDL and RL for all analytes	
Sample I.D.	ab Sample No.	No. of Containers	Soil	Water	Air	Other	Yes	No	Sampling Date	Sampling Time	Eohaustorius estuarius (FPA 600/R-94/025)				PH (SU) [6.5-8.5]	Salinity (POU) PPt	Dissolved Oxygen (mg/L) [mean>7; single>5]	Specific Conductance (6/m)	Turbidity (NTU) [<50]	Flow (units =	Duplicate samples must be analyzed at a frequency of 5%	
SED-001		1	×				×		-0.	- "	×		\Box								Special QA/QC	
		14	v				v				v											
SED-002			-		F		~		alala a	TIAS	X		HH		2 / 2	34 6	/	20.		-	Sub'd COC Attch'd:	
SED-003		1	X	-	_	-	X	-	10/8/20			-	+++	\rightarrow		_	6.02	_	_		pro construction	
SED-004		1	X				X		10/8/20	-	X	-		\rightarrow	_	_	_	-	4.3	•		
SED-005		1	X				X		10 8 2	0950	X				7.52	23.9	5.0	36.3	2.3	•		
SED-006		1	X				X		19 8 21	0855	X				7.28	214	44	34.	2.4	-	-	
SED-007		1	X				X	Ü	10 8 2	0800	X				1.05	20.8	4.50	33.1	4.3	-	5	
																					Ė	
Sample bottles required for ea	ch sample poi	nt:												2							> 흥	
(1) x 1-gallon plastic bag											11										A R om	
(1) x 1 gallon plaste sag										-	1	-	+++	-	-	-	-	1	1	-	M SON	
		-		-			-			1	1	-	+++	+	+		1	H	-	+	E N s to	
		+	-	-	-	-	-			-	-	+	++++		+	-	-	H	-	-	war war	
		+	-					-		1	-	-	+++		+				-	-	\$ 9 9 9	
Sample Received Intact: Yes No		1	1				-		Temperatur	e received:		Ice		No ice	1					-	R E M A R K Email Results to: nbusch@marathonpetroleum.com cdreyer@wgr-sw.com aballrot@wgr-sw.com	
Relinquished by SAMPLER (Print & Sign Nam	e) r 1			Date	8		Time	9	100	Received	by (Pri	nt & Sig	gn Name)		-	-	_	-	-	-	교문용품	
Dave Montelongo	11-	_		10/	04/8	20	150	3		CHAR	215	FAM	IA . C	fun	ni	>						
Relinquished by (Print & Sign Name)	6 5/			Date	- "	-	Time						ORY (Print 8							-	Lab Work No.	

ATTACHMENT 4

SEDIMENT BIOASSAY DATA VALIDATION REPORT

Tesoro Refining & Marketing Company LLC Los Angeles Refinery – Carson Operations Dominguez Channel Estuary October 2020 Sediment Monitoring Report

Tesoro Refining & Marketing LLC Los Angeles Refinery – Carson Operations Sediment Bioassay Data Validation Report

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3.0	Eohaustorius estuarius Chronic Toxicity Test	2
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3.2		
3.3		
2	3.3.1 Test Acceptability Criteria	
3.4	Reporting	3
3.5		

Attachment:

Attachment I - Dominguez Channel Estuary Sediment Bioassay Data Validation Form

Tesoro Refining & Marketing LLC Los Angeles Refinery – Carson Operations Sediment Bioassay Data Validation Report Page 1 of 4

1.0 Chronic Toxicity Test Overview

The Tesoro Refining & Marketing Company LLC, Los Angeles Refinery – Carson Operations (herein facility) collected sediment samples at monitoring locations SED-003, SED-004, SED-005, SED-006, and SED-007 as required in National Pollutant Discharge Elimination System (NPDES) No. CA0000680. Sediment samples for chronic toxicity testing were collected on October 8, 2020 and submitted to Aquatic Bioassay & Consulting Laboratories Inc. on October 9, 2020 for analysis. Aquatic Bioassay & Consulting Laboratories has Environmental Laboratory Accreditation Program (ELAP) Certification number 1907.

In accordance with NPDES No. CA0000680 Attachment E, Section V.A.4, chronic toxicity samples are required to undergo a species sensitivity screening by concurrently conducting three toxicity tests using the fish, invertebrate and alga species listed in the permit order. Based on the results of the species sensitivity screening, the single species exhibiting the highest percent effect is required to be used for routine monitoring during the permit cycle. The species listed in the permit order, however, are more commonly used to evaluate effluent chronic toxicity rather than sediment toxicity. Therefore, with laboratory staff and Regional Water Quality Control Board guidance, a species sensitivity screening was conducted for chronic toxicity samples on September 25, 2019 using two different sediment species: Eohaustorius estuarius and Mytilus galloprovincialis. As explained in the September 25th sediment report, both sediment species exhibited no observed effect concentration to the sediment samples collected from Stations SED-005, SED-006 and SED-007. Given that both species exhibited no toxicity effect, the facility opted to utilize Echaustorius estuarius in all future chronic toxicity testing. Therefore, sediment chronic toxicity samples collected on October 8, 2020 were tested using Eohaustorius estuarius in accordance with the guidelines prescribed in Methods for Assessing the Toxicity of Sediment Associated Contaminants with Estuarine and Marine Amphipods, Method EPA/600/R-94/025.

2.0 Data Review

A level 2 data verification protocol was used for bioassay validation. The level 2 data review compares bioassay testing holding conditions, test setup, test implementation, and test termination in accordance with bioassay protocols. As part of the level 2 data verification protocol the laboratory was expected to follow all internal quality control procedures as directed in the applicable analytical method. Outcome of the data review for each of the chronic toxicity tests performed is documented in the Chronic Toxicity QA/QC Bioassay Data Validation Form included in Attachment I of this report.

Sediment samples at Stations SED-003, SED-004, SED-005, SED-006, and SED-007 were collected on October 8, 2020 by WGR Southwest Inc. All collected samples were preserved as required and submitted to Aquatic Bioassay and Consulting Laboratories Inc. on October 9, 2020. Chronic toxicity tests for all five stations began on October 16,

Tesoro Refining & Marketing LLC Los Angeles Refinery – Carson Operations Sediment Bioassay Data Validation Report Page 2 of 3

2020 and concluded on October 26, 2020. A summary of data usability determinations for the chronic toxicity test performed are described in the following section.

3.0 Eohaustorius estuarius Chronic Toxicity Test

3.1 Sample Collection, Sample Preservation, Chain of Custody

Sediment samples for *E. estuarius* chronic toxicity testing were collected from Stations SED-003, SED-004, SED-005, SED-006, and SED-007 using an Eckman dredge sampler. Sampling equipment was decontaminated prior to use at each station to prevent cross contamination. Field samples were handled with care to minimize sediment disturbance and prevent the loss of sample integrity, chemical speciation and chemical equilibrium. Collected samples were maintained at 4°C and a Chain of Custody documenting the collected samples was completed and submitted to Aquatic Bioassay & Consulting Laboratories Inc. Chronic toxicity testing was initiated for all samples within the required 14-day holding time for sample collection and analysis. Document review of sample collection, sample preservation and Chain of Custody procedures was deemed acceptable and in compliance with the facility's Waste Discharge Requirements (WDRs).

3.2 Test Setup

Chronic toxicity testing with *E. estuarius* was completed in accordance with EPA method 600/R-94-025. Organisms used for testing were field collected and supplied by Northwestern Amphipod in Oregon. Amphipods ranging in 3-5 mm in size were used, with at least twenty organisms per replicate. Test setup review is provided in the bioassay data validation form attached to this document. Based on a review of laboratory test setup procedures, test set up procedure were deemed acceptable and in compliance with EPA method requirements.

3.3 Test Implementation

Test implementation for chronic toxicity testing with *E. estuarius* was completed in accordance with EPA method 600/R-94/025. Water quality measurements were recorded during the duration of the test and were found to be in the acceptable range as specified in the test protocol. Ranges for the water quality measurements are provided in the QA/QC Checklist of Attachment I. No abnormal conditions were observed throughout the duration of the test. Thus, the test implementation was determined to be acceptable and in compliance with EPA method requirements.

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3.3.1 Test Acceptability Criteria

3.3.1.1 Reference Toxicant

The reference toxicant used during *E. estuarius* chronic toxicity testing was unionized ammonia. The length of the reference toxicant test was 96 hours. All reference toxicant testing was within the two standard deviation quality control limit meeting the test acceptability criteria in compliance with EPA method requirements.

3.3.1.2 Negative Control Samples

Negative control samples demonstrated a 99% survival at all sample stations, which is above the 90% mean acceptability survival criteria. As a result, the negative control sample results are considered acceptable at all sampled stations and in compliance with EPA method requirements.

3.4 Reporting

Bioassay results were delivered in an acceptable laboratory report documenting a summary of water quality results, reference toxicity results, test results, statistical calculations and percent mortality. Additional information regarding test setup/test implementation procedures was provided by the laboratory to complete the QA/QC bioassay data validation form. Overall, the reporting component presenting chronic toxicity test results for *E. estuarius* was deemed acceptable.

3.5 Overall Data Usability

Review of laboratory data indicated chronic toxicity testing was performed in accordance with EPA method 600/R-94/025 as documented in Attachment I. Through the bioassay laboratory report and additional clarification from the laboratory, the bioassay test results at all sample stations was deemed acceptable and in compliance with EPA method requirements.

Attachment I Dominguez Channel Estuary Sediment Bioassay Data Validation Form

Tesoro Refining & Marketing LLC

Los Angeles Refinery - Carson Operations

Dominguez Channel Estuary Chronic Toxicity QA/QC Bioassay Data Validation

Project Name: Analytical Laboratory: Laboratory Technician:	Dominguez Channel Sedime	nt Sampling										
	Aquatic Bioassays & Consult											
Laboratory Technician:	Aquatic bloassays & Consult	uatic Bioassays & Consulting Laboratories Inc.										
	Joe Freas	e Freas										
Sample Collection Date:	October 8, 2020	tober 8, 2020										
Sample Locations/Lab Number:	SED-003 / WGR1020.043 SED-004 / WGR1020.044 SED-005 / WGR1020.045 SED-006 / WGR1020.046 SED-007 / WGR1020.047											
pecies/Test Method Referenced:	Epa/600/R-94-025	Test Duration:	SED-003: October 16, 2020 @ 13: 01 - October 26, 2020 @13:01 (10 day) SED-004: October 16, 2020 @ 13: 02 - October 26, 2020 @13:02 (10 day) SED-005: October 16, 2020 @ 13: 03 - October 26, 2020 @13:03 (10 day) SED-006: October 16, 2020 @ 13: 04 - October 26, 2020 @13:04 (10 day) SED-007: October 16, 2020 @ 13: 05 - October 26, 2020 @13:05 (10 day)									
Sample Matrix:	Sediment		•									
Type of Species:	Estuarine											
Data Validator:	Ana Horn											
Validation Date:	December 1, 2020											
Signature:	ame tem											
Problems Noted:	No problems or deficiencies	identified. Ch	ronic toxicity testing was performed in accordance with EPA method guideline									

Completeness and Holding Conditions:

Type of Samples Collected: Grab Sediment Samples

Number of Samples Analyzed: 5

Were samples maintained at 4°C and in the dark after collection? Yes

Did chronic toxicity testing begin within 14 days of sample collection? Yes

Holding conditions acceptable? Yes

If holding conditions were not acceptable, explain: N/A

Tesoro Refining & Marketing LLC

Los Angeles Refinery - Carson Operations

Dominguez Channel Estuary Chronic Toxicity QA/QC Bioassay Data Validation

Quality of Test Organism, Collection and Acclimation:

Who is the supplier of the test organisms? | Northwestern Amphipod in Oregon

Are organisms field collected or cultured? | Field Collected

If field collected:

Where was the collection location? Oregon

What was the organism collection date? Organism were collected on October 5, 2020 and received by the laboratory on October 8, 2020.

What was the water salinity and temperature at the time of collection? Water salinity at the time of collection was 30 ppt. Temperature at the time of collection was 14.8 Degrees Celsius. Acclimation after collection began at 28 ppt. Final acclimation in laboratory was from 28 ppt to 20 ppt at 2 ppt/day.

Was site sediment collected for holding and acclimation purposes? Yes, 2L of site sediment was collected and used for acclimation.

Additional Comments: Quality of test organisms, collection, and acclimation is deemed acceptable.

Field Collection Sorting Methods

Were healthy amphipods placed into 10 cm diameter finger bowls with 2 cm sieved site sediment and seawater of appropriate salinity? Yes, only healthy organisms were used for bioassay testing. Health is verified visually on a light table.

Were organisms held for 2-10 days? Yes, organisms were acclimated for 8 days.

Was test sediment sieved through 2 mm sieve or forceps for predator removal? Yes, all sediment was sieved using a stainless steel 2mm sieve.

Was control sediment sieved twice through 0.5 mm? Yes

Did control sediment have a 4-hour settling period after each sieving? Yes

Test Initiation

Was salinity adjusted in all testing chambers? Yes

Was overlying ammonia detected? No overlying ammonia was detected during testing.

Were there at least 5 replicates per sample? Yes

Was there at least 20 animals per replicate? Yes

Was the organism length between 3-5 mm during test initiation? Yes, organism size was determined using a light table and calipers.

Was the overlying water volume 800 mL? Yes

Were there any water quality adjustments? Yes, water quality measurements were collected during the duration of the test and are provided in the corresponding laboratory report.

Test Implementation

Photoperiod for 24 hours? Yes, 24 hour light cycle was employed for testing.

Was daily water quality monitoring conducted? Yes

What was the overlying daily temperature range (15°C)? The overlying daily temperature was between 14.8-14.9°C.

Tesoro Refining & Marketing LLC Los Angeles Refinery - Carson Operations

Dominguez Channel Estuary Chronic Toxicity QA/QC Bioassay Data Validation

Was the daily salinity range 20+/-1 ppt? Yes, salinity range was 20ppt.

Was water renewal conducted? No, water remained static and was not renewed over the 10-day exposure period as required in the EPA method.

Was the overlying daily pH between 7 - 8 standard units? Yes

What was the overlying ammonia detection (ND)? No ammonia was detected during testing.

Were appropriate test chambers used (1-liter glass containers with 10 cm diameter)? Yes

Was water in each test chamber aerated overnight before start and throughout the test? Yes, 24-hour aeration was performed.

Did the water maintain at least more than 90% saturation of dissolved oxygen concentration? Yes

Test Results and Analysis

Were the number of amphipods reported for each replicate? Yes

Was the percent mortality reported for each replicate? Yes

Was the sample mean for survival reported? Yes, the mean control survival was 99-100%

QA/QC Samples

dry de samples	
Positive Control	Negative Control
Length of reference toxicity test? 96 hours	Negative control response above 90% acceptability criteria? Yes
What reference toxicant was used? Unionized Ammonia	Mean control survival? 99%
Exposure concentrations? Exposure ammonia concentrations were 0, 15.6, 31.2, 62.5, 125.0, 250 mg/L	Did EC 50 fall within lab standards? Yes
Did EC 50 fall within lab standards? Yes	