Surface Water & Petroleum Sheen Assessment Report

TCEQ 30 TAC Ch. 307 / 327 • TX RRC Ch. 4 • 40 CFR 110 Sheen Rule • EPA 1664B / TX-1005 / 8260D / 8270E Forensic Matrix

TRACK 3 PETROLEUM CONFIRMED (SW-01)

SW-01 HEM (1664B)	SW-01 TPH (TX-1005)	TOTAL BTEX (8260D)	SW-02 BIOGENIC FILM
14.2 mg/L	**9.6 mg/L**	**8.9 µg/L**	**Track 2 Pass**
SGT-HEM 11.8 mg/L (Petrogenic)	C12-C28 Diesel Signature	SW-03 Upgradient Marsh: ND	Iron bacteria (SGT-HEM <2.0)

CLIENT & RECEIVING WATERWAY (FICTITIOUS SPECIMEN)

Client Account	**Clear Creek Marina & Terminal Auth.**
EHS Contact	ehs@example.com • (555) 016-0519
Waterway / Segment	**Clear Creek Tidal Seg. 1101, Outfall #3, League City, TX**
Sample Event	2026-04-11 • Slack-Low Tide (07:30–09:15)

NELAP LABORATORY & REGULATORY FRAMEWORK

Analytical Lab	**Envirogyn NELAP Partner (SPECIMEN-NELAP-0000)**
Lead Hydrogeologist	**T. Navarro, PG (SPECIMEN-PG-0000)**
Clean Water Act	40 CFR 110 Sheen • TCEQ RG-415 15 mg/L
Chain Preservation	HCl pH <2 • Ice Cooler 3.4°C Intact

SEC 01 3-Track Forensic Sheen Differentiation Decision Matrix

Forensic Track	Field Stick/Crack Test & Analytical Signature	Observed Station	Regulatory Trigger
TRACK 1: CLEAN	No visible iridescence; HEM <2.0 mg/L; BTEX & TPH ND	SW-03 Upgradient Marsh, SW-04	Normal tidal baseline; no action
TRACK 2: BIOGENIC	Brittle iron-bacterial film fractures cleanly on poke; HEM 2.4 / **SGT-HEM <2.0**	SW-02 Mid-Basin Dock	Natural biofilm; NOT reportable oil
TRACK 3: PETROLEUM	Elastic cohesive iridescent sheen reforms rapidly; **SGT-HEM 11.8 mg/L • TPH 9.6 mg/L**	**SW-01 Outfall #3 Plume**	**40 CFR 110 + 30 TAC § 327.4 Notify**

EXECUTIVE DETERMINATION: Analytical results distinguish **two unrelated surface phenomena** inside the Clear Creek Marina basin. Station **SW-01 (Storm Outfall #3)** exhibits an active **petrogenic diesel-range hydrocarbon discharge (TPH C12-C28 = 7.4 mg/L; SGT-HEM = 11.8 mg/L; Fluoranthene PAH detected)** triggering Clean Water Act sheen response under 40 CFR 110 and 30 TAC Ch. 327. Conversely, Station **SW-02** was proved **biogenic (non-petroleum)** by silica-gel cleanup removal and brittle iron-hydroxide fracture morphology.



SW-COVER Station SW-01 Outfall #3: Stainless steel surface-skim decant adjacent to cohesive diesel iridescence (14.2 mg/L HEM).



MARINA-QC Slack-low tide eCoC field telemetry logging and cold-chain VOA stabilization at Clear Creek basin.

SEC 02 In-Situ YSI Multi-Parameter Sonde Telemetry (Pre/Post-Run NIST Calibrated)

Station ID	Location Description	Temp (°C)	pH	DO (mg/L)	Cond (µS/cm)	ORP (mV)	Turbidity
SW-01	Outfall #3 Culvert Plume	23.4	7.42	3.1 (Low)	14,820	-42	18.6 NTU
SW-02	Mid-Basin Pier 4 Slip	22.9	7.68	5.4	16,100	+118	8.2 NTU
SW-03	Upgradient Cordgrass Marsh	22.6	7.74	6.1	16,450	+142	6.4 NTU
SW-04	Outer Channel Confluence	23.0	7.80	6.4	17,020	+156	5.9 NTU

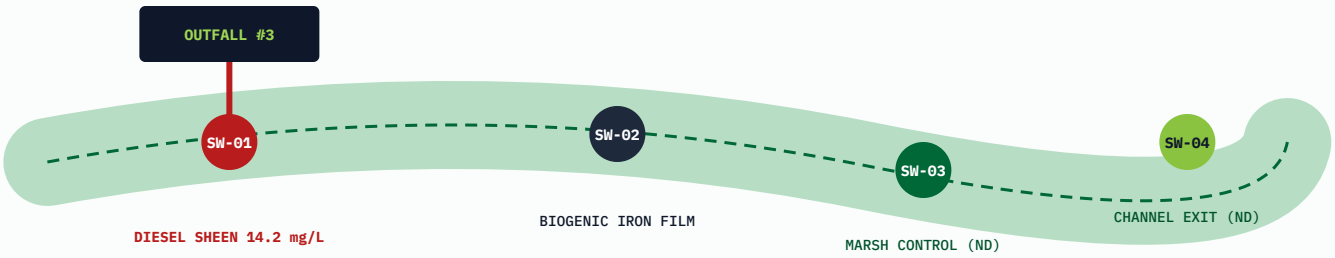
SEC 03 NELAP Quantitative Hydrocarbon Suite (EPA 1664B / TX-1005 / 8260D / 8270E)

Analytical Method & Parameter	SW-01 Outfall	SW-02 Dock	SW-03 Marsh	SW-04 Chan.	Benchmark / Rule
EPA 1664B: Oil & Grease (HEM)	**14.2 mg/L**	2.4 mg/L	<1.4 (ND)	<1.4 (ND)	15 mg/L TCEQ Max
EPA 1664B: Silica Gel Treated (SGT-HEM)	**11.8 mg/L**	<1.4 (ND)	<1.4 (ND)	<1.4 (ND)	Petrogenic Fraction
TX-1005 TPH C6–C12 (Gasoline Range)	0.6 mg/L	<0.4 (ND)	<0.4 (ND)	<0.4 (ND)	TCEQ TRRP Screen
TX-1005 TPH C12–C28 (Diesel Range)	**7.4 mg/L**	<0.4 (ND)	<0.4 (ND)	<0.4 (ND)	Diesel Fuel Marker
TX-1005 TPH C28–C35 (Motor Oil)	1.6 mg/L	<0.4 (ND)	<0.4 (ND)	<0.4 (ND)	Lube Residual
EPA 8260D: Benzene / Total BTEX	**1.8 / 8.9 µg/L**	<0.5 (ND)	<0.5 (ND)	<0.5 (ND)	Zero-Headspace HCl
EPA 8270E-SIM: Naphthalene / Phenanthrene	1.4 / 0.9 µg/L	<0.1 (ND)	<0.1 (ND)	<0.1 (ND)	30 TAC Ch. 307 Aq



Silica Gel Treated SGT-HEM isolates synthetic mineral oil/diesel (>83% at SW-01 vs 0% residual at SW-02) TCEQ TX-1005 + EPA 1664B

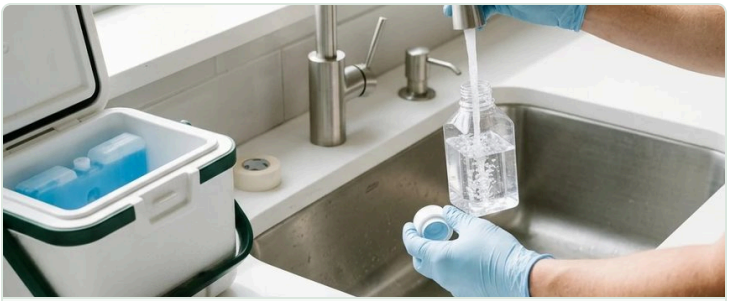
Sec 04 • Clear Creek Tidal Seg. 1101 Watershed & 4-Station Sampling Map (Not to Scale)



SEC 05 Surface Sheen Sampling & NELAP Analytical Evidence Plate



SW-P1 SW-01 Outfall #3: Technician decanting surface skim via stainless dipper into clean amber bottle adjacent to iridescent sheen.



SW-P2 SW-02 / SW-03 Stations: Filling 40 mL HCl-preserved VOA vials with convex meniscus for zero-headspace EPA 8260D BTEX testing.



SONDE-1664 EPA 1664B 1,000 mL wide-mouth amber glass bottles paired with NIST-calibrated multi-parameter YSI conductivity/DO probe.



FLD-LOG Digital eCoC logging and Pelican field kit staging along Clear Creek seawall at slack-low tide (07:30 CDT).

SEC 06 Corrective Containment, Spill Notification & Sampling QA Gate

MANDATED CONTAINMENT & 30 TAC § 327.4 ACTION PLAN:

1. Deploy hydrophobic oil-absorbent containment boom immediately across Storm Outfall #3 cove to isolate SW-01 floating hydrocarbon film.
2. Vac-truck pump and inspect the upstream parking-lot oil/water separator (OWS) serving Fuel Canopy North; verify coalescer plates and baffle integrity.
3. Confirm whether cumulative discharge triggered State 25-gal tidal threshold / federal 40 CFR 110 sheen notice to NRC / TCEQ Emergency Response.

QA / Preservation Protocol	Method Specification	Field Verification Logged
Zero-Headspace BTEX Vials	Three 40 mL amber glass vials w/ 1:1 HCl (pH <2); zero air bubbles	VERIFIED AT LAB INTAKE
1664B Gravimetric Bottles	1,000 mL wide-mouth glass w/ PTFE liner; non-rinsed direct fill	INTACT SEALS • 3.4°C
Sonde NIST Pre/Post Check	4.01/7.00 pH & 1413 µS/cm standards within ±5% drift	PASS (+0.02 pH DRIFT)

Specimen Attribution Notice: All station names, concentrations, and client details in this Water Quality Assessment are 100% fictitious illustrative records.

Tomas Navarro, PG

Senior Project Hydrogeologist
SPECIMEN-PG-0000 • Field Sampling & Sonde Lead

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