

# WELD LABORATORIES, INC.

1527 First Avenue • Greeley, Colorado 80631  
Phone: (970) 353-8118 • Fax: (970) 353-1671  
www.weldlabs.com

March 11, 2020

Red Hawk Petroleum LLC  
575 N. Dairy Ashford, Energy Center 2 Ste 210  
Huston, TX 77079

Laboratory No.: E20061-4A  
Sample: P1

Project: Crumley  
Location: Planck 1-13H

## Analyses performed according to methods in notes below

	Results	Units	Surr Recovery (%)
TRPH (ORO, Oil and Grease)	193	mg/kg - ppm	74.0
TEH (DRO)	1	mg/kg - ppm	96.8
TVH (GRO)	12	µg/kg - ppb	145.4
Benzene	U	µg/kg - ppb	145.4
Toluene	U	µg/kg - ppb	145.4
Ethyl-benzene	U	µg/kg - ppb	145.4
m,p-Xylene	2.5	µg/kg - ppb	145.4
o-Xylene	0.9	µg/kg - ppb	145.4
Sat. Paste pH	NA	SI	NA
Sat. Paste EC	NA	mS/cm	NA
Sat. Paste Saturation%	NA	%	NA
Sat. Paste TDS	NA	mg/L	NA
Sat. Paste SAR	NA	--	NA

## Notes:

TRPH = Total Recoverable Petroleum Hydrocarbons (EPA 1664 or SM5520F Soxhlet extracted SGT-HEM)  
DRO = Diesel Range Organics, GRO = Gas Range Organics, ORO = Oil Range Organics  
TVH = Total Volatile Hydrocarbons (C6-C10 EPA 8015, EPA 5030/5035 purge and trap)  
TEH = Total Extractable Hydrocarbons (Diesel #2 C11-C28, EPA Method 8015 solvent extraction)  
BTEX = Benzene, Toluene, Ethylbenzene, Xylenes (EPA 8015, EPA 5030/5035 purge and trap)  
VOC = Volatile Organic Compounds (EPA 8260B, EPA 5030/5035 purge and trap)  
Soils always run as received but reported on a dry weight basis (mg/kg-dry-wt)  
Saturated Paste methods: Gavlak et al. "Soil, Plant, and Water reference methods for the western region"  
U = Compound analyzed but not detected, NA = Not Applicable or Not Analyzed

  
\_\_\_\_\_  
Project Manager

3-11-20  
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Date

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Red Hawk Petroleum LLC

575 N. Dairy Ashford, Energy Center 2 Ste 210

Houston, TX 77079

Laboratory No.: E20061-4B

Project: Crumley

Sample: P2

Location: Planck 1-13H

## Analyses performed according to methods in notes below

	Results	Units	Surr Recovery (%)
TRPH (ORO, Oil and Grease)	563	mg/kg - ppm	74.0
TEH (DRO)	9	mg/kg - ppm	106.4
TVH (GRO)	12	µg/kg - ppb	110.8
Benzene	U	µg/kg - ppb	110.8
Toluene	4.1	µg/kg - ppb	110.8
Ethyl-benzene	0.5	µg/kg - ppb	110.8
m,p-Xylene	1.4	µg/kg - ppb	110.8
o-Xylene	U	µg/kg - ppb	110.8
Sat. Paste pH	NA	SI	NA
Sat. Paste EC	NA	mS/cm	NA
Sat. Paste Saturation%	NA	%	NA
Sat. Paste TDS	NA	mg/L	NA
Sat. Paste SAR	NA	--	NA

## Notes:

TRPH = Total Recoverable Petroleum Hydrocarbons (EPA 1664 or SM5520F Soxhlet extracted SGT-HEM)

DRO = Diesel Range Organics, GRO = Gas Range Organics, ORO = Oil Range Organics

TVH = Total Volatile Hydrocarbons (C6-C10 EPA 8015, EPA 5030/5035 purge and trap)

TEH = Total Extractable Hydrocarbons (Diesel #2 C11-C28, EPA Method 8015 solvent extraction)

BTEX = Benzene, Toluene, Ethylbenzene, Xylenes (EPA 8015, EPA 5030/5035 purge and trap)

VOC = Volatile Organic Compounds (EPA 8260B, EPA 5030/5035 purge and trap)

Soils always run as received but reported on a dry weight basis (mg/kg-dry-wt)

Saturated Paste methods: Gavlak et al. "Soil, Plant, and Water reference methods for the western region"

U = Compound analyzed but not detected, NA = Not Applicable or Not Analyzed

  
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Red Hawk Petroleum LLC

575 N. Dairy Ashford, Energy Center 2 Ste 210

Houston, TX 77079

Laboratory No.: E20061-4C

Project: Crumley

Sample: P3

Location: Planck 1-13H

## Analyses performed according to methods in notes below

	Results	Units	Surr Recovery (%)
TRPH (ORO, Oil and Grease)	194	mg/kg – ppm	74.0
TEH (DRO)	1	mg/kg - ppm	87.9
TVH (GRO)	21	µg/kg - ppb	148.5
Benzene	U	µg/kg - ppb	148.5
Toluene	2.1	µg/kg - ppb	148.5
Ethyl-benzene	U	µg/kg - ppb	148.5
m,p-Xylene	2.3	µg/kg - ppb	148.5
o-Xylene	4.9	µg/kg - ppb	148.5
Sat. Paste pH	NA	SI	NA
Sat. Paste EC	NA	mS/cm	NA
Sat. Paste Saturation%	NA	%	NA
Sat. Paste TDS	NA	mg/L	NA
Sat. Paste SAR	NA	--	NA

## Notes:

TRPH = Total Recoverable Petroleum Hydrocarbons (EPA 1664 or SM5520F Soxhlet extracted SGT-HEM)

DRO = Diesel Range Organics, GRO = Gas Range Organics, ORO = Oil Range Organics

TVH = Total Volatile Hydrocarbons (C6-C10 EPA 8015, EPA 5030/5035 purge and trap)

TEH = Total Extractable Hydrocarbons (Diesel #2 C11-C28, EPA Method 8015 solvent extraction)

BTEX = Benzene, Toluene, Ethylbenzene, Xylenes (EPA 8015, EPA 5030/5035 purge and trap)

VOC = Volatile Organic Compounds (EPA 8260B, EPA 5030/5035 purge and trap)

Soils always run as received but reported on a dry weight basis (mg/kg-dry-wt)

Saturated Paste methods: Gavlak et al. "Soil, Plant, and Water reference methods for the western region"

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575 N. Dairy Ashford, Energy Center 2 Ste 210

Houston, TX 77079

Laboratory No.: E20061-4D

Project: Crumley

Sample: P4

Location: Planck 1-13H

## Analyses performed according to methods in notes below

	Results	Units	Surr Recovery (%)
TRPH (ORO, Oil and Grease)	85	mg/kg – ppm	74.0
TEH (DRO)	U	mg/kg - ppm	95.8
TVH (GRO)	320	µg/kg - ppb	134.7
Benzene	U	µg/kg - ppb	134.7
Toluene	36.7	µg/kg - ppb	134.7
Ethyl-benzene	28.4	µg/kg - ppb	134.7
m,p-Xylene	99.1	µg/kg - ppb	134.7
o-Xylene	76.3	µg/kg - ppb	134.7
Sat. Paste pH	NA	SI	NA
Sat. Paste EC	NA	mS/cm	NA
Sat. Paste Saturation%	NA	%	NA
Sat. Paste TDS	NA	mg/L	NA
Sat. Paste SAR	NA	--	NA

## Notes:

TRPH = Total Recoverable Petroleum Hydrocarbons (EPA 1664 or SM5520F Soxhlet extracted SGT-HEM)

DRO = Diesel Range Organics, GRO = Gas Range Organics, ORO = Oil Range Organics

TVH = Total Volatile Hydrocarbons (C6-C10 EPA 8015, EPA 5030/5035 purge and trap)

TEH = Total Extractable Hydrocarbons (Diesel #2 C11-C28, EPA Method 8015 solvent extraction)

BTEX = Benzene, Toluene, Ethylbenzene, Xylenes (EPA 8015, EPA 5030/5035 purge and trap)

VOC = Volatile Organic Compounds (EPA 8260B, EPA 5030/5035 purge and trap)

Soils always run as received but reported on a dry weight basis (mg/kg-dry-wt)

Saturated Paste methods: Gavlak et al. "Soil, Plant, and Water reference methods for the western region"

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