




STRAIGHT HEMP

CERTIFICATE OF ANALYSIS

PRODUCT: Full Spectrum Hemp Oil
BATCH/LOT: A0056
INGREDIENTS: Full Spectrum Hemp Extract, Organic Hemp Seed Oil
ADDITIVES: none
EXCIPIENTS: none

PRODUCTION DATE: 11/11/2019
EXPIRATION DATE: 11/2021

TEST	METHOD	SPECIFICATION	RESULTS
Strength & Composition			
Identity	Organoleptic	Conforming	PASS
Identity	UPLC/UV	Chemical Fingerprint	PASS
Total Cannabidiol (CBD) ⁱ	UPLC/UV	35.0 – 43.0 mg/g	36.01 mg/g ⁱⁱ
Total Tetrahydrocannabinol (THC) ⁱⁱⁱ	UPLC/UV	NMT 0.30%	0.18%
Terpene assay ^{iv}	HS-GC/MS	n/e	1,900 ppm
Microbiological^v			
Total Plate Count	USP 42	NMT 1,000 cfu/ml	PASS
Total Yeast & Mold	USP 42	NMT 100 cfu/ml	PASS
<i>E. coli</i>	USP 42	Absent	PASS
<i>Salmonella</i>	USP 42	Absent	PASS
<i>Staph. aureus</i>	USP 42	Absent	PASS
<i>Pseudo. aeruginosa</i>	USP 42	Absent	PASS
Heavy Metals^{vi}			
Arsenic (As)	ICP/MS	NMT 5 ppm	PASS
Cadmium (Cd)	ICP/MS	NMT 2 ppm	PASS
Lead (Pb)	ICP/MS	NMT 2 ppm	PASS
Mercury (Hg)	ICP/MS	NMT 1 ppm	PASS
Residual Solvents			
Multi-residue panel	GC-HS-MSD	Below MRL ^{vii}	PASS
Pesticides			
Multi-residue panel	UPLC-MS/MS	Below MRL	PASS


David Cole
Director of Quality

12/6/19
Date

ⁱ Total CBD = CBD + (0.877*CBDA) to account for loss of acid group during decarboxylation
ⁱⁱ Corresponds to 33.5mg/ml
ⁱⁱⁱ Total THC = THC + (0.877*THCA) to account for loss of acid group during decarboxylation
^{iv} Sum of terpene assay (n=22)
^v Microbiological limits based on USP, WHO, and/or NSF/ANSI.
^{vi} Limits for As and Pb set below CA Prop 65 *no significant risk level*; Cd and Hg set below USP permitted daily exposure for 110lb body weight
^{vii} The 11 solvents tested for are not used in the production process: Propane, Butane, Pentane, Ethanol, Acetone, Isopropyl Alcohol, Hexane, Benzene, Heptanes, Toluene, Xylenes

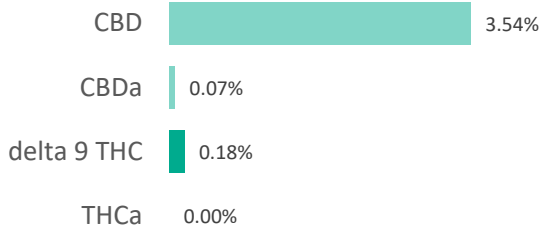
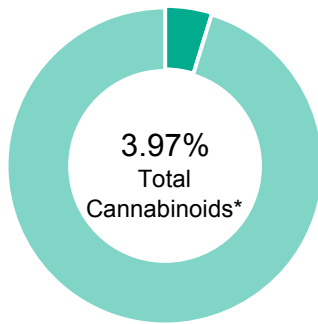
Straight Hemp | 5135 W 58th Ave Unit 5, Arvada, CO 80002 | (720) 739-1578 | www.straighthemp.com

NMT = Not More Than MRL = Method Reporting Limit

FSO A0056 191206

FSO- FULL SPECTRUM HEMP OIL

Batch ID:	A0056	Test ID:	4767729.001
Reported:	21-Nov-2019	Method:	TM14
Type:	Concentrate		
Test:	Potency		

CANNABINOID PROFILE


Compound	LOQ (%)	Result (%)	Result (mg/g)
Delta 9-Tetrahydrocannabinolic acid (THCA-A)	0.04	0.00	0.0
Delta 9-Tetrahydrocannabinol (Delta 9THC)	0.02	0.18	1.8
Cannabidiolic acid (CBDA)	0.02	0.07	0.7
Cannabidiol (CBD)	0.01	3.54	35.4
Delta 8-Tetrahydrocannabinol (Delta 8THC)	0.02	0.00	0.0
Cannabinolic Acid (CBNA)	0.06	0.00	0.0
Cannabinol (CBN)	0.03	0.00	0.0
Cannabigerolic acid (CBGA)	0.04	0.00	0.0
Cannabigerol (CBG)	0.02	0.06	0.6
Tetrahydrocannabivarinic Acid (THCVA)	0.04	0.00	0.0
Tetrahydrocannabivarin (THCV)	0.02	0.00	0.0
Cannabidivarinic Acid (CBDVA)	0.02	0.00	0.0
Cannabidivarin (CBDV)	0.01	0.03	0.3
Cannabichromenic Acid (CBCA)	0.03	0.00	0.0
Cannabichromene (CBC)	0.04	0.09	0.9
Total Cannabinoids		3.97	39.70
Total Potential THC**		0.18	1.80
Total Potential CBD**		3.60	36.01


NOTES:

N/A

% = % (w/w) = Percent (Weight of Analyte / Weight of Product)


* Total Cannabinoids result reflects the absolute sum of all cannabinoids detected.

** Total Potential THC/CBD is calculated using the following formulas to take into account the loss of a carboxyl group during decarboxylation step.

$$\text{Total THC} = \text{THC} + (\text{THCa} * (0.877)) \text{ and } \text{Total CBD} = \text{CBD} + (\text{CBDa} * (0.877))$$
FINAL APPROVAL


Tyler Wiese
21-Nov-2019
7:52 PM

PREPARED BY / DATE



Greg Zimpfer
21-Nov-2019
9:04 PM

APPROVED BY / DATE

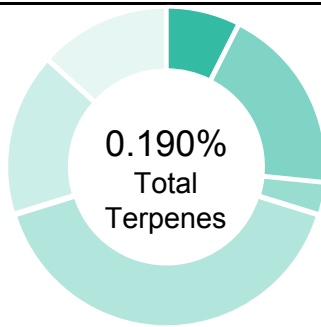
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Certificate #4329.02

FSO- FULL SPECTRUM HEMP OIL

Batch ID:	A0056	Test ID:	4570524.0022
Reported:	20-Nov-2019	Method:	TM10
Type:	Concentrate		
Test:	Terpenes		

TERPENE PROFILE


Compound	%(w/w)	mg/g
(-)-alpha-Bisabolol	0.025	0.25
Camphene	0.000	0
delta-3-Carene	0.000	0
beta-Caryophyllene	0.076	0.76
(-)-Caryophyllene Oxide	0.000	0
p-Cymene	0.000	0
Eucalyptol	0.001	0.01
Geraniol	0.000	0
alpha-Humulene	0.031	0.31
(-)-Isopulegol	0.000	0
d-Limonene	0.036	0.36
Linalool	0.006	0.06
beta-Myrcene	0.014	0.14
cis-Nerolidol	0.000	0
trans-Nerolidol	0.000	0
Ocimene	0.000	0
beta-Ocimene	0.001	0.01
alpha-Pinene	0.000	0
(-)-beta-Pinene	0.000	0
alpha-Terpinene	0.000	0
gamma-Terpinene	0.000	0
Terpinolene	0.000	0
	0.190%	1.90

PREDOMINANT TERPENES

alpha-Pinene	0.000%
(-)-beta-Pinene	0.000%
beta-Myrcene	0.014%
delta-3-Carene	0.000%
alpha-Terpinene	0.000%
d-Limonene	0.036%
Linalool	0.006%
beta-Caryophyllene	0.076%
alpha-Humulene	0.031%
(-)-alpha-Bisabolol	0.025%

 NOTES:
 0

FINAL APPROVAL

 Daniel Weidensaul 20-Nov-2019 12:39 PM	 David Green 20-Nov-2019 1:02 PM
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PREPARED BY / DATE

APPROVED BY / DATE

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FSO- FULL SPECTRUM HEMP OIL

Batch ID:	A0056	Test ID:	T000035736
Reported:	5-Dec-2019	Method:	Arsenic = Arsenic EPA 6020A (mod), Cadmium = Cadmium EPA 6020A (mod), Lead = Lead EPA 6020A (mod), Mercury = Mercury EPA 6020A (mod)
Type:	Other		
Test:	Metals		

HEAVY METALS

Compound	Reporting Limit (ppm)	Result (ppm)
Arsenic	0.05	<0.05
Cadmium	0.05	<0.05
Lead	0.05	<0.05
Mercury	0.05	<0.05

FINAL APPROVAL

Sam Smith
5-Dec-2019
8:22 AM

PREPARED BY / DATE

David Green
5-Dec-2019
8:39 AM

APPROVED BY / DATE

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FSO- FULL SPECTRUM HEMP OIL

Batch ID:	A0056	Test ID:	6003690.001
Reported:	22-Nov-2019	Method:	TM04
Type:	Concentrate		
Test:	Residual Solvents		

RESIDUAL SOLVENTS

Solvent	Reportable Range (ppm)	Result (ppm)
Propane	100 - 2000	0
Butanes (Isobutane, n-Butane)	100 - 2000	0
Pentane	100 - 2000	0
Ethanol	100 - 2000	0
Acetone	100 - 2000	0
Isopropyl Alcohol	100 - 2000	0
Hexane	6 - 120	0
Benzene	0.2 - 4	0.0
Heptanes	100 - 2000	0
Toluene	18 - 360	0
Xylenes (m,p,o-Xylenes)	43 - 860	0

NOTES:

Free from visual mold, mildew, and foreign matter.
 Certificate reissued due to lab calculation error.

FINAL APPROVAL

 Alex Smith 22-Nov-2019 7:35 AM	 Greg Zimpfer 22-Nov-2019 9:30 AM
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PREPARED BY / DATE

APPROVED BY / DATE

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Certificate #4329.02

FSO- FULL SPECTRUM HEMP OIL


Batch ID:	A0056	Test ID:	2559202.0035
Reported:	23-Nov-2019	Method:	TM17
Type:	Concentrate		
Test:	Pesticides		

PESTICIDE RESIDUE

Compound	Dynamic Range (ppb)	Result (ppb)	Compound	Dynamic Range (ppb)	Result (ppb)
Acephate	55 - 2529	ND*	Malathion	55 - 2529	ND*
Acetamiprid	55 - 2529	ND*	Metalaxyl	328 - 2529	ND*
Avermectin	328 - 2529	ND*	Methiocarb	55 - 2529	ND*
Azoxystrobin	55 - 2529	ND*	Methomyl	55 - 2529	ND*
Bifenazate	55 - 2529	ND*	MGK 264 1	55 - 2529	ND*
Boscalid	328 - 2529	ND*	MGK 264 2	328 - 2529	ND*
Carbaryl	55 - 2529	ND*	Myclobutanil	328 - 2529	ND*
Carbofuran	55 - 2529	ND*	Naled	328 - 2529	ND*
Chlorantraniliprole	55 - 2529	ND*	Oxamyl	55 - 2529	ND*
Chlorpyrifos	328 - 2529	ND*	Paclobutrazol	55 - 2529	ND*
Clofentezine	55 - 2529	ND*	Permethrin	328 - 2529	ND*
Diazinon	55 - 2529	ND*	Phosmet	55 - 2529	ND*
Dichlorvos	328 - 2529	ND*	Prophos	328 - 2529	ND*
Dimethoate	55 - 2529	ND*	Propoxur	328 - 2529	ND*
E-Fenproximate	328 - 2529	ND*	Pyridaben	328 - 2529	ND*
Etofenprox	328 - 2529	ND*	Spinosad A	55 - 2529	ND*
Etoxazole	328 - 2529	ND*	Spinosad D	328 - 2529	ND*
Fenoxycarb	55 - 2529	ND*	Spiromesifen	55 - 2529	ND*
Fipronil	328 - 2529	ND*	Spirotetramat	328 - 2529	ND*
Flonicamid	55 - 2529	ND*	Spiroxamine 1	55 - 2529	ND*
Fludioxonil	328 - 2529	ND*	Spiroxamine 2	55 - 2529	ND*
Hexythiazox	328 - 2529	ND*	Tebuconazole	55 - 2529	ND*
Imazalil	328 - 2529	ND*	Thiacloprid	55 - 2529	ND*
Imidacloprid	55 - 2529	ND*	Thiamethoxam	55 - 2529	ND*
Kresoxim-methyl	55 - 2529	ND*	Trifloxystrobin	328 - 2529	ND*


* ND = None Detected (Defined by Dynamic Range of the method)

N/A

FINAL APPROVAL


Chris Jungling
 23-Nov-2019
 8:03 AM

PREPARED BY / DATE



Mike Branvold
 23-Nov-2019
 4:59 PM

APPROVED BY / DATE

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 Arvada, CO 80002
 Phone: 970-214-7814

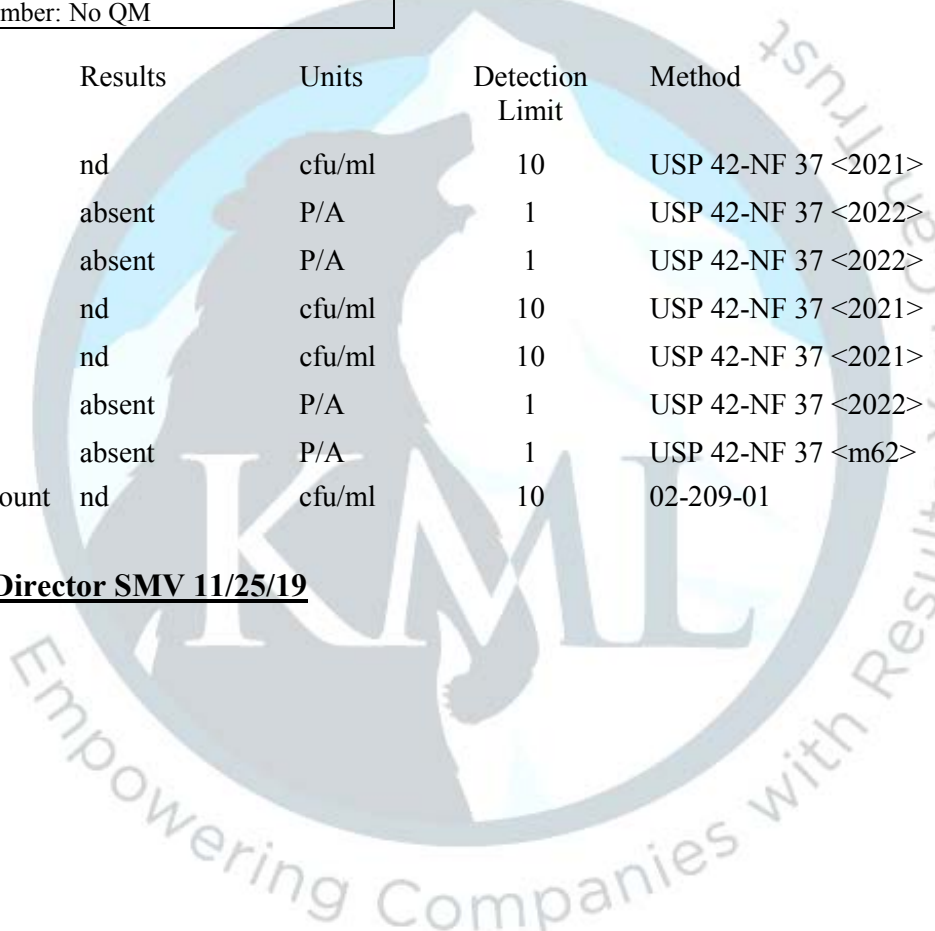
Invoice Number: 19.1801
 PO Number:
 Received Date: 11/18/2019
 Number of Samples: 02
 Project Name: Routine Testing

Microbiology Report:

Lab #: 19-11357	Sample Lot: A0056	Sample Date:
Sample Name: FSO-Full Spectrum Hemp Oil	Additional ID:	Plated Date: 11/18/19
Qualifying Material Number: No QM		

Test Performed	Results	Units	Detection Limit	Method	Date Analyzed
Aerobic Plate Count	nd	cfu/ml	10	USP 42-NF 37 <2021>	11/21/19
<i>E. coli</i>	absent	P/A	1	USP 42-NF 37 <2022>	11/21/19
<i>Staph aureus</i>	absent	P/A	1	USP 42-NF 37 <2022>	11/21/19
Yeast	nd	cfu/ml	10	USP 42-NF 37 <2021>	11/23/19
Mold	nd	cfu/ml	10	USP 42-NF 37 <2021>	11/23/19
Salmonella	absent	P/A	1	USP 42-NF 37 <2022>	11/22/19
<i>Pseudo. aeruginosa</i>	absent	P/A	1	USP 42-NF 37 <m62>	11/21/19
Enterobacteriaceae Count	nd	cfu/ml	10	02-209-01	11/19/19

Approved By: QA Director SMV 11/25/19



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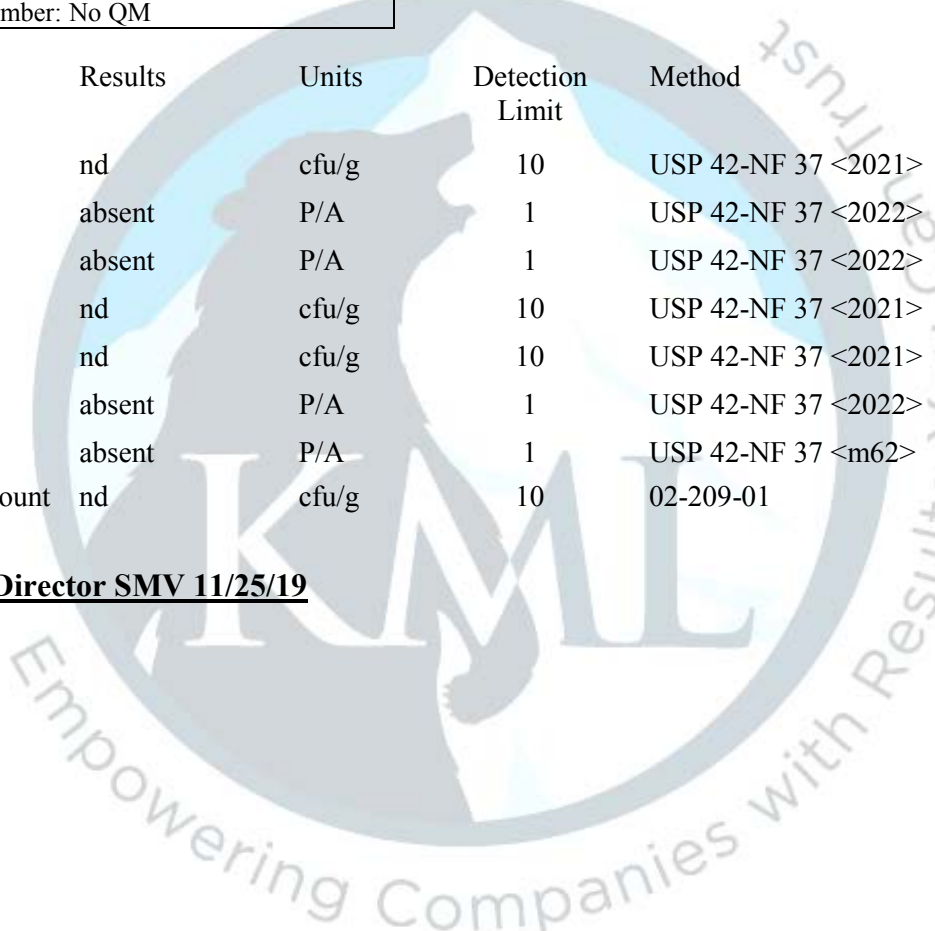
Invoice Number: 19.1801
 PO Number:
 Received Date: 11/18/2019
 Number of Samples: 02
 Project Name: Routine Testing

Microbiology Report:

Lab #: 19-11358	Sample Lot: B0042	Sample Date:
Sample Name: CBD Balm	Additional ID: HHS	Plated Date: 11/18/19
Qualifying Material Number: No QM		

Test Performed	Results	Units	Detection Limit	Method	Date Analyzed
Aerobic Plate Count	nd	cfu/g	10	USP 42-NF 37 <2021>	11/21/19
<i>E. coli</i>	absent	P/A	1	USP 42-NF 37 <2022>	11/21/19
<i>Staph aureus</i>	absent	P/A	1	USP 42-NF 37 <2022>	11/21/19
Yeast	nd	cfu/g	10	USP 42-NF 37 <2021>	11/23/19
Mold	nd	cfu/g	10	USP 42-NF 37 <2021>	11/23/19
Salmonella	absent	P/A	1	USP 42-NF 37 <2022>	11/22/19
<i>Pseudo. aeruginosa</i>	absent	P/A	1	USP 42-NF 37 <m62>	11/21/19
Enterobacteriaceae Count	nd	cfu/g	10	02-209-01	11/19/19

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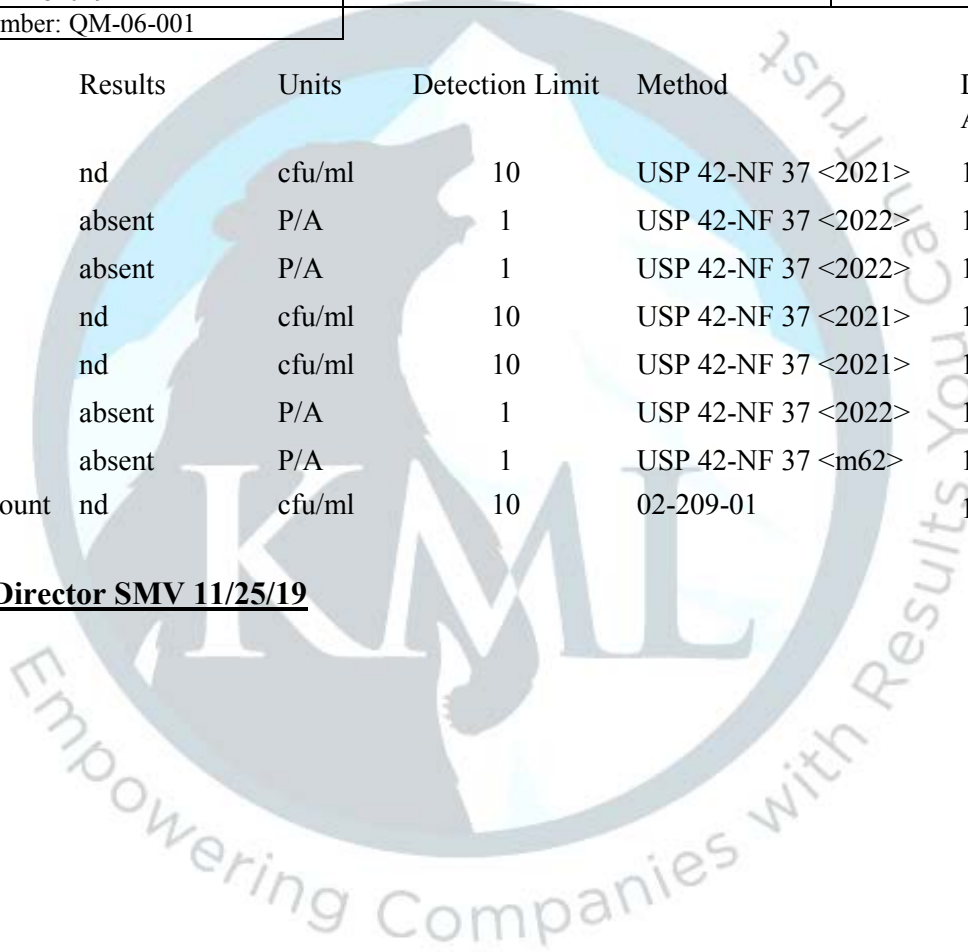
Invoice Number: 19.1801
 PO Number:
 Received Date: 11/18/2019
 Number of Samples: 02
 Project Name: Routine Testing

Microbiology Report:

Lab #: Control 11182019	Additional ID: Negative Control Purposes	Plated Date: 11/18/19
Sample Name: Control 11182019		
Qualifying Material Number: QM-06-001		

Test Performed	Results	Units	Detection Limit	Method	Date Analyzed
Aerobic Plate Count	nd	cfu/ml	10	USP 42-NF 37 <2021>	11/21/19
<i>E. coli</i>	absent	P/A	1	USP 42-NF 37 <2022>	11/21/19
<i>Staph aureus</i>	absent	P/A	1	USP 42-NF 37 <2022>	11/21/19
Yeast	nd	cfu/ml	10	USP 42-NF 37 <2021>	11/23/19
Mold	nd	cfu/ml	10	USP 42-NF 37 <2021>	11/23/19
Salmonella	absent	P/A	1	USP 42-NF 37 <2022>	11/22/19
<i>Pseudo. aeruginosa</i>	absent	P/A	1	USP 42-NF 37 <m62>	11/21/19
Enterobacteriaceae Count	nd	cfu/ml	10	02-209-01	11/19/19

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