

HIGH NORTH ID:  
00277754  
Date: 2022-12-12  
Certificate: 1670884591



High North Inc.  
241 Hanlan Rd, Unit 7  
Woodbridge, ON, L4L 3R7  
1-416-864-6119  
LIC-P4PNJMAC20-2022

Client:	Atlas Growers Ltd	Strain:	BSE (772-2022)
	56322 Range Road 25,	Lot:	E220030
	Gunn, AB, T0E1A0	Matrix:	Oil
Name:	Garrett Wagner	Sub-matrix:	Concentrate
	780-430-9514	Sampled:	2022-12-08
	garrettw@atlasgrowers.com	Received:	2022-12-09

## Certificate of Analysis

Cannabinoid Analysis	LOD (%)	LOQ (%)	wt%	mg/g
Total THC [(THCA x 0.877) + D9-THC]			23.097	230.971
Total CBD [(CBDA x 0.877) + CBD]			52.226	522.264
CBD	0.0081	0.03	37.435	374.354
D9-THC	0.0086	0.03	18.672	186.721
CBDA	0.008	0.03	16.866	168.655
THCA-A	0.004	0.03	5.046	50.456
CBG	0.0028	0.03	BLQ	BLQ
CBN	0.0069	0.03	BLQ	BLQ
CBC	0.0092	0.03	BLQ	BLQ
D8-THC	0.0074	0.03	ND	ND
THCV	0.0068	0.03	ND	ND
CBGA	0.007	0.03	ND	ND
CBDV	0.0073	0.03	ND	ND
<b>Total of all quantified cannabinoids:</b>			78.019	780.186

Terpene Analysis	LOD (%)	LOQ (%)	wt%
Farnesene*	0.0021	0.025	2.478
Trans-Caryophyllene	0.0016	0.025	1.545
alpha-Bisabolol	0.0022	0.025	1.287
Alpha-Humulene	0.0017	0.025	0.499
Beta-Myrcene	0.0012	0.025	0.495
Guaiol	0.0016	0.025	0.423
Alpha-Pinene	0.0013	0.025	0.223
(R)-(+)-Limonene	0.0023	0.025	0.11
Caryophyllene oxide	0.0023	0.025	0.08
Ocimene*	0.0030	0.025	0.08
trans-Nerolidol	0.0025	0.025	0.065

Abbreviations: wt% = percentage of weight, CFU = colony forming units, ppm = Parts per million, ppb = Parts per billion, ND = None Detected, BLQ = Below Limit of Quantification, LOQ = Limit of Quantification, LOD = Limit of Detection, RL = Reporting Limit, \* = Mixture of Isomers

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Terpene Analysis	LOD (%)	LOQ (%)	wt%
Linalool	0.0014	0.025	0.064
(R)-Endo-(+)-Fenchyl Alcohol	0.0013	0.025	0.042
Terpineol*	0.0013	0.025	0.03
Beta-Pinene	0.0016	0.025	BLQ
Citronellol	0.0014	0.025	BLQ
Phytol*	0.0028	0.050	ND
(+)-Cedrol	0.0023	0.025	ND
cis-Nerolidol	0.0028	0.025	ND
Valencene	0.0015	0.025	ND
Eugenol	0.0019	0.025	ND
Alpha-Cedrene	0.0016	0.025	ND
Geranyl acetate	0.0015	0.025	ND
Pulegone	0.0011	0.025	ND
Geraniol	0.0020	0.025	ND
Nerol	0.0023	0.025	ND
Camphor + Borneol*	0.0013	0.050	ND
Isoborneol	0.0013	0.025	ND
Hexahydrothymol	0.0020	0.025	ND
Isopulegol	0.0011	0.025	ND
Fenchone*	0.0014	0.025	ND
Terpinolene	0.0018	0.025	ND
Sabinene Hydrate	0.0011	0.025	ND
Gamma-Terpinene	0.0014	0.025	ND
Eucalyptol	0.0028	0.025	ND
p-Cymene	0.0010	0.025	ND
Alpha-Terpinene	0.0021	0.025	ND
Alpha-Phellandrene	0.0018	0.025	ND
(1S)-3-Carene	0.0020	0.025	ND
Sabinene	0.0017	0.025	ND
Camphene	0.0019	0.025	ND
<b>Total of all quantified terpenes:</b>			<b>7.421</b>

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<b>Mycotoxin Analysis</b>	LOD (ppb)	LOQ (ppb)	RL (ppb)	Result (ppb)	Status
Aflatoxin-B1	0.0004	2	2	ND	PASS
Aflatoxin-B2	0.0004	2		ND	PASS
Aflatoxin-G1	0.0003	2		ND	PASS
Aflatoxin-G2	0.0005	2		ND	PASS
<b>Sum of Aflatoxins:</b>			4	0	PASS
Ochratoxin-A	0.0017	20	20	ND	PASS

<b>Microbial Analysis</b>	LOD (CFU/g)	RL (CFU/g)	Result (CFU/g)	Status
Total Aerobic Count	12	200	ND	PASS
Total Yeast and Mold Count	1.8	20	ND	PASS
Bile-Tolerant Gram-Negative			Absent in 1g	PASS
S.aureus/P.aeruginosa			Absent in 1g	PASS

<b>Heavy Metals Analysis</b>	LOD (ppm)	LOQ (ppm)	RL (ppm)	Result (ppm)	Status
Arsenic	0.05	0.2	0.2	ND	PASS
Cadmium	0.01	0.05	0.3	ND	PASS
Lead	0.02	0.5	0.5	ND	PASS
Mercury	0.01	0.05	0.1	ND	PASS

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<b>Residual Solvents Analysis</b>	LOD (ppm)	LOQ (ppm)	RL (ppm)	Result (ppm)	Status
1-Butanol	22.7	1000	5,000	ND	PASS
1-Pentanol	28.9	1000	5,000	ND	PASS
1-Propanol	44.6	1000	5,000	ND	PASS
2-Butanol	20.1	1000	5,000	ND	PASS
2-Methyl-1-propanol	11.6	1000	5,000	ND	PASS
2-Propanol	13.3	1000	5,000	ND	PASS
3-Methyl-1-butanol	16.8	1000	5,000	ND	PASS
Acetone	19.4	1000	5,000	ND	PASS
Anisole	104	1000	5,000	ND	PASS
Butyl acetate	67.3	1000	5,000	ND	PASS
Dimethyl sulfoxide	55.8	1000	5,000	ND	PASS
Ethanol	34.5	1000	5,000	ND	PASS
Ethyl acetate	17.3	1000	5,000	ND	PASS
Ethyl ether	27	1000	5,000	ND	PASS
Ethyl formate	92.5	1000	5,000	ND	PASS
Heptane	19.2	1000	5,000	ND	PASS
Isobutyl acetate	28.4	1000	5,000	ND	PASS
Isopropyl acetate	13.5	1000	5,000	ND	PASS
Methyl acetate	26.9	1000	5,000	ND	PASS
Methylethyl ketone	13.1	1000	5,000	ND	PASS
Pentane	35.7	1000	5,000	ND	PASS
Propyl acetate	13.5	1000	5,000	ND	PASS
Tert-Butylmethyl ether	134.2	1000	5,000	ND	PASS
Triethylamine	22.4	1000	5,000	ND	PASS

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<b>Pesticides Analysis</b>	LOD (ppm)	LOQ (ppm)	RL (ppm)	Result (ppm)	Status
Abamectin	0.0218	0.25	0.25	ND	PASS
Acephate	0.0022	0.05	0.05	ND	PASS
Acequinocyl	0.0047	0.05		ND	PASS
Acetamiprid	0.0028	0.05	0.05	ND	PASS
Aldicarb	0.0796	0.5	0.5	ND	PASS
Allethrin	0.0365	0.1	0.1	ND	PASS
Azadirachtin	0.0149	0.5	0.5	ND	PASS
Azoxystrobin	0.0008	0.01	0.01	ND	PASS
Benzovindiflupyr	0.0018	0.01	0.01	ND	PASS
Bifenazate	0.0009	0.01	0.01	ND	PASS
Bifenthrin	0.0369	1		ND	PASS
Boscalid	0.0011	0.01	0.01	ND	PASS
Buprofezin	0.0012	0.02		ND	PASS
Carbaryl	0.0014	0.025	0.025	ND	PASS
Carbofuran	0.001	0.01	0.01	ND	PASS
Chlorantraniliprole	0.0017	0.02		ND	PASS
Chlorfenapyr	0.7181	1.5	1.5	ND	PASS
Chlorpyrifos	0.0724	0.5	0.5	ND	PASS
Clofentezine	0.0016	0.01	0.01	ND	PASS
Clothianidin	0.002	0.025	0.025	ND	PASS
Coumaphos	0.0021	0.01	0.01	ND	PASS
Cyantraniliprole	0.0024	0.01	0.01	ND	PASS
Cyfluthrin	0.1386	1		ND	PASS
Cypermethrin	0.1288	1		ND	PASS
Cyprodinil	0.0014	0.01	0.01	ND	PASS
Daminozide	0.0056	0.10		ND	PASS
Deltamethrin	0.0547	1		ND	PASS
Diazinon	0.0019	0.02		ND	PASS
Dichlorvos	0.0115	0.05	0.05	ND	PASS
Dimethoate	0.0008	0.01	0.01	ND	PASS
Dimethomorph	0.0019	0.05		ND	PASS
Dinotefuran	0.0029	0.05	0.05	ND	PASS
Dodemorph	0.0029	0.05		ND	PASS
Endosulfan-alpha	0.747	2.5	2.5	ND	PASS
Endosulfan-beta	0.5482	2.5	2.5	ND	PASS
Endosulfan sulfate	0.2185	2.5	2.5	ND	PASS
Ethoprophos	0.0011	0.01	0.01	ND	PASS
Etofenprox	0.0021	0.05		ND	PASS
Etoxazole	0.0011	0.02		ND	PASS
Etridiazol	0.0215	0.15	0.15	ND	PASS
Fenoxycarb	0.0012	0.01	0.01	ND	PASS
Fenpyroximate	0.0019	0.02		ND	PASS
Fensulfothion	0.0009	0.01	0.01	ND	PASS

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<b>Pesticides Analysis</b>	LOD (ppm)	LOQ (ppm)	RL (ppm)	Result (ppm)	Status
Fenthion	0.0021	0.01	0.01	ND	PASS
Fenvalerate	0.0144	0.1		ND	PASS
Fipronil	0.0015	0.01	0.01	ND	PASS
Flonicamid	0.0046	0.025	0.025	ND	PASS
Fludioxonil	0.0015	0.01	0.01	ND	PASS
Fluopyram	0.0006	0.01	0.01	ND	PASS
Hexythiazox	0.0012	0.01		ND	PASS
Imazalil	0.0025	0.01	0.01	ND	PASS
Imidacloprid	0.001	0.01	0.01	ND	PASS
Iprodione	0.0607	0.5	0.5	ND	PASS
Kinoprene	0.1272	1.25	1.25	ND	PASS
Kresoxim-methyl	0.0111	0.15	0.15	ND	PASS
Malathion	0.0009	0.01	0.01	ND	PASS
Metalaxyl	0.0006	0.01	0.01	ND	PASS
Methiocarb	0.001	0.01	0.01	ND	PASS
Methomyl	0.0012	0.025	0.025	ND	PASS
Methoprene	0.1356	2		ND	PASS
Mevinphos	0.0016	0.025	0.025	ND	PASS
MGK-264	0.0039	0.05		ND	PASS
Myclobutanil	0.0016	0.01	0.01	ND	PASS
Naled	0.0163	0.20		ND	PASS
Novaluron	0.0042	0.025	0.025	ND	PASS
Oxamyl	0.0456	1.5	1.5	ND	PASS
Paclobutrazol	0.0014	0.01	0.01	ND	PASS
Parathion-methyl	0.005	0.05		ND	PASS
Permethrin	0.0192	0.5		ND	PASS
Phenothrin	0.0057	0.05		ND	PASS
Phosmet	0.002	0.02		ND	PASS
Piperonyl butoxide	0.2722	1.25	1.25	ND	PASS
Pirimicarb	0.0005	0.01	0.01	ND	PASS
Prallethrin	0.0087	0.05		ND	PASS
Propiconazole	0.0073	0.10		ND	PASS
Propoxur	0.0019	0.01	0.01	ND	PASS
Pyraclostrobin	0.0006	0.01	0.01	ND	PASS
Pyrethrins	0.0049	0.05		ND	PASS
Pyridaben	0.0012	0.02	0.02	ND	PASS
Quintozene	0.0065	0.02		ND	PASS
Resmethrin	0.0028	0.05	0.05	ND	PASS
Spinetoram	0.0014	0.01	0.01	ND	PASS
Spinosad	0.0013	0.01	0.01	ND	PASS
Spirodiclofen	0.0128	0.25		ND	PASS
Spiromesifen	0.5285	3		ND	PASS
Spirotetramat	0.0012	0.01	0.01	ND	PASS

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<b>Pesticides Analysis</b>	LOD (ppm)	LOQ (ppm)	RL (ppm)	Result (ppm)	Status
Spiroxamine	0.0018	0.10		ND	PASS
Tebuconazole	0.0022	0.01	0.01	ND	PASS
Tebufenozide	0.0007	0.01	0.01	ND	PASS
Teflubenzuron	0.0049	0.025	0.025	ND	PASS
Tetrachlorvinphos	0.0011	0.01	0.01	ND	PASS
Tetramethrin	0.0057	0.1		ND	PASS
Thiacloprid	0.0009	0.01	0.01	ND	PASS
Thiamethoxam	0.0011	0.01	0.01	ND	PASS
Thiophanate-methyl	0.0031	0.05		ND	PASS
Trifloxystrobin	0.0006	0.01	0.01	ND	PASS

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## Details of Testing

### **Cannabinoid Analysis**

LAB-MTD-020: Determination of 11 Cannabinoids in Cannabis Flower (LOQ 0.06%), Fresh Flower (LOQ 0.015%), Oil (LOQ 0.03%) and Concentrates (LOQ 0.6%) by HPLC and UHPLC

LAB-MTD-021: Determination of Cannabinoids of Individually Isolated Sample by HPLC/UHPLC

LAB-MTD-023: Determination of 11 Cannabinoids in Cannabis Tablets and Granules (LOQ 0.025%) by HPLC/UHPLC

LAB-MTD-030: Determination of 11 Cannabinoids in Cannabis Topicals (LOQ 0.005%) by HPLC/UHPLC

LAB-MTD-039: Determination of 5 Cannabinoids in Cannabis Edibles; Liquid Edibles (LOQ 0.0002%) and Solid Edibles (LOQ 0.005%) by UHPLC

### **Terpene Analysis**

LAB-MTD-035: Determination of Terpenes in Cannabis Flower and Oil by GC-MS

### **Pesticide Analysis**

LAB-MTD-010: Determination of Pesticide and Mycotoxins in Cannabis by LC-MS/MS and GC-MS/MS

LAB-MTD-040: Determination of EP Pesticide Residues in Cannabis Oil and Related Products by GC-MS/MS

LAB-MTD-041: Determination of EP Pesticide Residues in Cannabis Flower and Related Products by GC-MS/MS

LAB-MTD-046: Determination of Health Canada Pesticide Residues and Toxins in Cannabis Oil and Related Products by LC-MS/MS

### **Mycotoxin Analysis**

LAB-MTD-010: Determination of Pesticide and Mycotoxins in Cannabis by LC-MS/MS and GC-MS/MS

LAB-MTD-029: Determination of Toxins in Tablet Samples by LC-MS/MS

LAB-MTD-037: Determination of Mycotoxins in Topical/Cream Samples by LC-MS/MS

### **Heavy Metal Analysis**

LAB-MTD-027: Determination of Heavy Metals in Cannabis Samples by ICP-MS

### **Residual Solvents Analysis**

LAB-MTD-036: Determination of Residual Solvents in Cannabis Oil by GC-MS

LAB-MTD-028: Determination of Residual Solvents in Tablet Samples by GC-MS

LAB-MTD-034: Determination of Propane and Butane in Cannabis Oil by GC-MS

LAB-MTD-038: Determination of Toluene in Cannabis Isolate by GC-MS

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## Details of Testing

### **Microbial Analysis**

MIC-MTD-001: Microbial Analysis of Cannabis Flower and Oil by qPCR

MIC-MTD-006: Determination of Viruses in Cannabis via qPCR and ELISA

MIC-MTD-007: Microbial Analysis of Cannabis by Culture Techniques

### **Moisture Analysis**

LAB-MTD-017: Determination of Moisture Content in Cannabis Flower

LAB-MTD-031: Water Activity Meter Setup and Operation

### **Sample Appearance and Foreign Matter**

LAB-MTD-022: Sample Appearance and Detection of Foreign Matter Content in Cannabis Samples

### **Total Ash Analysis**

LAB-MTD-043: Total Ash by Muffle Furnace in Cannabis Products

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