



**POST-CLOSURE ENVIRONMENTAL MONITORING REPORT
(May 2020 Data)**

**Shawmut Avenue Landfill
New Bedford, Massachusetts
MassDEP DSWM Transmittal No. ACOP-SE-08-4004-SEP 120068**

Prepared For:

Massachusetts Department of Environmental Protection
20 Riverside Drive
Lakeville, Massachusetts 02347
Attn: Mark Dakers

&

City of New Bedford
Department of Environmental Stewardship
133 Williams Street, Room 304
New Bedford, Massachusetts 02740

PREPARED BY:

River Hawk Environmental, LLC
2183 Ocean Street
Marshfield, Massachusetts 02050

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1.0 INTRODUCTION

On behalf of the City of New Bedford, River Hawk Environmental, LLC (RHE) has prepared this Post-Closure Environmental Monitoring Report to provide the Massachusetts Department of Environmental Protection (MassDEP) with the results of post-closure landfill gas, groundwater, surface water, and sediment monitoring data collected at the Shawmut Avenue Landfill facility in May 2020. Post-Closure Landfill monitoring was conducted in accordance with the Massachusetts Solid Waste Management Regulations (310 CMR 19.00) and the requirements of the facility-specific Post-Closure Monitoring and Maintenance Plan, which was approved by the MassDEP in a letter dated April 19, 2007.

2.0 SCOPE OF WORK

The following is the Scope of Work associated with the Post-Closure Environmental Monitoring Event conducted in May 2020:

- Collection of landfill gas data at landfill gas wells, temporary monitoring points/vents, two fire hydrants, catch basins, and buildings;
- Collection of in-situ groundwater monitoring data and groundwater samples;
- Collection of in-situ surface water monitoring data and surface water samples;
- Collection of a sediment sample;
- Laboratory analysis of groundwater, surface water, and sediment samples;
- Evaluation of exceedences and contaminant trends; and
- Preparation and submission of a Post-Closure Environmental Monitoring Report.

The following sections include information regarding sample collection procedures, results, and an evaluation of data.

3.0 MONITORING PROCEDURE & RESULTS

The following subsections include information regarding the landfill gas, groundwater, surface water, and sediment sampling procedures.

3.1 Landfill Gas Monitoring

RHE conducted landfill gas monitoring on May 6, 2020. The initial and final concentrations of methane (CH_4), carbon dioxide (CO_2), oxygen (O_2), hydrogen sulfide (H_2S), and total organic volatiles (TOV) were measured at fourteen (14) landfill gas wells (LGW-1 through LGW-14), eight (8) temporary gas probes (TGP-1, TGP-2, TGP-3, TGP-4, TGP-5, TGP-6, TGP-7, and TGP-8), six (6) temporary monitoring points/vents (MP-1 through MP-6), eight (8) temporary gas points (TGP-1 through TGP-8), two (2) fire hydrants (Hydrant #1 and Hydrant #2), three (3) catch basins (CB-1, CB-2, and CB-3), and two (2) building structures (scale house and warehouse building). Concentrations of CH_4 , CO_2 , O_2 , and H_2S were measured in the field using a GEM 5000 Landfill Gas

Meter. TOV concentrations were measured using a RAE Light Organic Volatile Meter (OVM), which was equipped with a 10.6 eV lamp and calibrated prior to conducting screening with 100 ppmv isobutylene span gas.

Temporary gas probes were installed by driving an AMS® Retract-A-Tip to discrete depths below the ground surface. The stainless steel Retract-A-Tips were connected to polyethylene tubing, and landfill gas samples were subsequently drawn.

At least two well/probe volumes of air were evacuated from landfill gas wells and temporary monitoring points/vents prior to the collection of final measurements. Landfill gas monitoring locations are displayed on Figure 2, and a summary of field measurements collected from the above-referenced locations is included in Table 1.

Landfill Gas Well & Temporary Monitoring Point/Vent Results:

- CH₄ was detected at landfill gas wells LGW-1, LGW-2, LGW-3, LGW-5, and LGW-6 and monitoring points/vents MP-2 and MP-4 at concentrations greater than 25% of the Lower Explosive Limit (LEL); however, landfill gas wells and temporary monitoring points/vents were not considered to be “fenceline monitoring locations,” since perimeter temporary gas probes were installed and screened on the same day.
- Significant concentrations of CO₂ (i.e., greater than 10%) were detected in landfill gas wells LGW-1, LGW-2, LGW-3, LGW-5, LGW-6 and monitoring point/vent MP-4.
- Depleted O₂ concentrations (less than 19.5%) were detected at landfill gas wells LGW-1, LGW-2, LGW-3, LGW-4, LGW-5, LGW-6 and monitoring points/vents MP-2, MP-4, and MP-5.
- H₂S was not detected at a concentration greater than 1.0 ppmv.
- TOVs were detected at a concentration greater than 1.0 ppmv with the exception of landfill gas well LGW-1.
- No significantly elevated concentrations of TOVs, CH₄, CO₂, H₂S, or TOVs, nor depleted concentrations of O₂, were detected during field screening of temporary gas probes (i.e., fenceline monitoring locations).

The results of landfill gas monitoring conducted during this Monitoring Period are generally consistent with previous landfill gas well and temporary gas probe monitoring results. It should be noted that monitoring conducted during this event did not reveal the presence of explosive gases at concentrations greater than 25% of the LEL at the property line, or beyond. Therefore, notification to the MassDEP, pursuant to 310 CMR 19.132(5)(h) was not applicable.

Catch Basin, Fire Hydrant, and Indoor Air Monitoring Results:

- No elevated concentrations of TOVs, CH₄, CO₂, H₂S, nor depleted concentrations of O₂, were detected during field screening conducted at catch basins, fire hydrants, or within the scale house or the warehouse building.

The results of catch basin and indoor air screening conducted during this Monitoring Period are generally consistent with previous monitoring results.

3.2 Groundwater Monitoring, Sampling, and Laboratory Analysis

RHE personnel collected groundwater data at nine (9) perimeter groundwater monitoring wells (CDM-1S, CDM-1D, CDM-3S, CDM-3D, CDM-4S, CDM-4D, CDM-5S, CDM-5D, and CDM-6D) on May 5, 2020. Each well was gauged for groundwater level and presence/absence of non-aqueous phase liquid (NAPL) using an electronic interface probe (EIP). Subsequent to gauging, RHE personnel purged a minimum of three well volumes of groundwater from each monitoring well using peristaltic sampling pumps and dedicated polyethylene tubing. Temperature, pH, specific conductivity, oxidation reduction potential (ORP), and dissolved oxygen (DO) were measured during monitoring well purging, using a YSI 600 XL multi-parameter meter. After the field parameters were observed to have stabilized, the flow-through cell of the multi-parameter meter was disconnected and groundwater samples were pumped directly into the sample bottles provided by the laboratory. Samples for dissolved metals analysis were field filtered using 0.45-micron filters, and samples for VOC analysis were collected using disposable polyethylene bailers. One duplicate sample (DUP-1) was collected from monitoring well CDM-1D.

Groundwater samples were submitted to Microbac Laboratory, of Dayville, Connecticut, for laboratory analysis of parameters required by a letter entitled "Approval with Conditions" issued by the MassDEP and dated April 19, 2007. A post-sampling memorandum, including low flow sampling logs and the complete laboratory analytical report associated with the May 2020 groundwater monitoring and sampling event, is included in Appendix A. Summarized field data and laboratory analytical results are included in Table 2.

The results of laboratory analysis conducted on groundwater samples collected from perimeter monitoring wells were compared to the following standards:

- US EPA Maximum Contaminant Levels and Secondary Maximum Contaminant Levels;
- MassDEP Maximum Contaminant Levels and Secondary Maximum Contaminant Levels;
- MassDEP Office of Research and Standards Guidelines (ORSG);
- Massachusetts Contingency Plan (MCP) Method 1 GW-2 Standards (CDM-6D only); and
- MCP Method 1 GW-3 Groundwater Standards.

The following is a summary of exceedences and an evaluation of trends:

Volatile Organic Compounds:

- Cis-1,2-Dichloroethene (cis-1,2-DCE) was detected at a concentration greater than the MCLs in the groundwater sample collected from monitoring well CDM-3D.
- 1,1,2-Trichloroethane was detected at a concentration greater than the MCLs in the groundwater sample collected from monitoring well CDM-4D.

- Trichloroethylene (TCE) was detected at a concentration greater than the MCL in the groundwater sample collected from monitoring well CDM-3D.
- Vinyl Chloride (VC) was detected at a concentration greater than the MCL in the groundwater sample collected from monitoring well CDM-4D.
- 1,4-Dioxane was detected at a concentration greater than the MassDEP ORSG Standard in groundwater samples collected from monitoring wells CDM-1S, CDM-4S, CDM-4D, CDM-5S, and CDM-5D.

These results are generally consistent with the results of previous groundwater sampling rounds.

Inorganic Parameters and Dissolved Metals:

- pH was outside of the SMCL at monitoring wells CDM-3S and CDM-5S.
- Total Dissolved Solids (TDS) was detected at a concentration greater than the SMCL in the groundwater samples collected from monitoring wells CDM-1S, CDM-1D, CDM-3D, CDM-4S, CDM-4D, CDM-5S, and CDM-5D.
- Dissolved Iron and Manganese were detected at concentrations greater than the SMCLs in groundwater samples collected from monitoring wells CDM-1S, CDM-1D, CDM-3S, CDM-4S, CDM-4D, CDM-5S, and/or CDM-5D.
- Dissolved Sodium was detected at concentrations greater than the ORSG in groundwater samples collected from all monitoring wells.
- Chloride was detected at concentrations greater than the SMCLs in groundwater samples collected from monitoring wells CDM-4S and CDM-4D.

These results are generally consistent with the results of previous groundwater sampling rounds.

PCBs:

- One PCB analyte (Aroclor 1016) was detected at a concentration greater than the MCL in the groundwater sample collected from monitoring wells CDM-5S and CDM-5D.

The results of PCB analysis conducted on groundwater samples collected from monitoring wells CDM-5S and CDM-5D is consistent with the results of recent monitoring events. This condition will be monitored during future events to determine if it is part of a larger trend.

Quality Control Samples:

- RHE personnel collected a duplicate sample of groundwater from monitoring well CDM-1D. The results of laboratory analyses conducted on the duplicate sample (DUP-1) closely matched the results of analyses conducted on the original sample (CDM-1D).
- A field blank (de-ionized water) was collected during the sample collection process. The results of VOC analysis conducted on the field blank sample did not reveal the presence of VOCs at concentrations greater than the analytical method detection limit.

3.3 Surface Water Sampling and Laboratory Analysis

RHE personnel collected surface water samples from three (3) surface water sampling locations (SW-1, SW-2, and SW-3) on May 5, 2020. Temperature, pH, specific conductivity, and dissolved oxygen (DO) were measured at the surface water sampling locations using an in-situ multi-parameter meter. Surface water samples were submitted to Microbac Laboratory for laboratory analysis of parameters required by a letter entitled “Approval with Conditions” issued by the MassDEP and dated April 19, 2007. The complete laboratory analytical report associated with the May 2020 surface water sampling event is included in Appendix A, and summarized laboratory analytical results are included in Table 3.

In accordance with the requirements of 310 CMR 19.00, the results of laboratory analyses conducted on surface water samples have been compared to the established National Recommended Water Quality Criteria (NRWQC) for each parameter. The NRWQC for certain hardness-dependent metals analytes (cadmium, copper, lead, silver, and zinc) was calculated in accordance with Appendix B of the NRWQC Guideline (2009). The following is an evaluation of the results of laboratory analysis conducted on surface water samples in comparison to the NRWQC:

Volatile Organic Compounds:

- No VOC analytes were detected at concentrations greater than the MCLs, SMCLs, and/or MassDEP ORSGs.

Inorganic Parameters and Dissolved Metals:

- Alkalinity was detected at concentrations greater than the NRWQC in surface water samples collected at SW-1, SW-2, and SW-3.
- Iron and Lead were detected at concentrations greater than the NRWQC in surface water samples collected at SW-2 and/or SW-3.

PCBs:

- PCBs were not detected at concentrations greater than the analytical method detection limit.

These results are generally consistent with the results of previous surface water sampling rounds.

3.4 Sediment Sampling and Laboratory Analysis

RHE personnel collected one (1) sediment sample (SED-1) on May 5, 2020. The sediment sample was submitted to Microbac Laboratory for laboratory analysis of polychlorinated biphenyls (PCBs), as specified in a letter entitled “Approval with Conditions” issued by the MassDEP and dated April 19, 2007. The complete laboratory analytical report associated with the May 2020 sediment

sampling event is included in Appendix A. Summarized laboratory analytical results are included in Table 4.

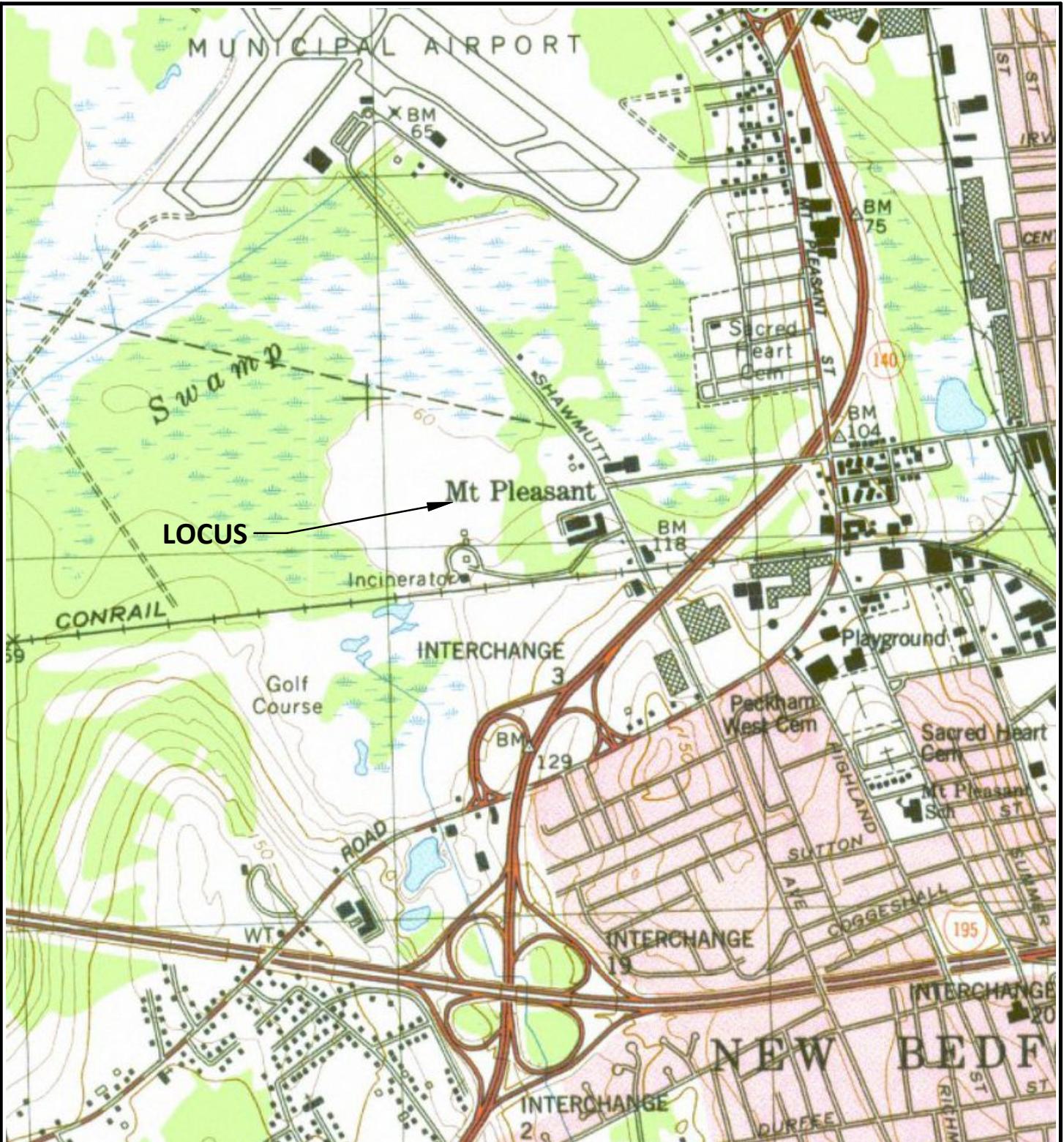
PCBs:

- No PCB analytes were detected at concentrations greater than the MCP Method 1 S-1/GW-3 Soil Standard.

4.0 FUTURE COURSE OF ACTION

The next post-closure environmental monitoring event is scheduled for August 2020.

FIGURES

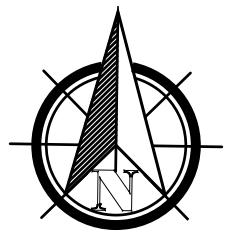


River Hawk
ENVIRONMENTAL
CIVIL & ENVIRONMENTAL ENGINEERING

2183 OCEAN STREET
MARSHFIELD, MA 02050

TEL: 781-536-4639
www.RiverHawkLLC.com

DRAWING TITLE		
FIGURE 1 - LOCUS PLAN		
PROJECT	SHAWMUT AVENUE LANDFILL NEW BEDFORD, MA	
CLIENT	CITY OF NEW BEDFORD NEW BEDFORD, MA	
APPROX. SCALE:	NTS	DATE: OCT. 19, 2016
		DRAWN BY: RSR
		CHECKED BY: WPK



APPROX SCALE 1" = 1000'

0 500 1000 2000

LEGEND

- CDM-1S - GROUNDWATER MONITORING WELL
- LGW-1 - LANDFILL GAS MONITORING WELL
- ▲ SW-1 - SURFACE WATER SAMPLE LOCATION
- ▲ SED-1 - SEDIMENT SAMPLE LOCATION
- ◎ CB-2 - CATCH BASIN
- ❖ MP-1 - TEMPORARY GAS MONITORING POINT/VENT
- TGP-1 - TEMPORARY GAS PROBE

SITE PLAN		
PROJECT	SHAWMUT AVENUE LANDFILL NEW BEDFORD, MA	
CLIENT	CITY OF NEW BEDFORD NEW BEDFORD, MA	
APPROX. SCALE:	1" = 1000'	DRAWN BY: PJK
DATE:	FEB 28, 2017	CHECKED BY: WPK

RiverHawk

ENVIRONMENTAL
CIVIL & ENVIRONMENTAL ENGINEERING

2183 OCEAN ST.
MARSHFIELD, MA 02050

TEL: 508-523-1007
www.RiverHawkLLC.com

TABLES

TABLE 1
Landfill Gas Monitoring Results
May 6, 2020

Shawmut Avenue Landfill
New Bedford, Massachusetts

Monitoring Point Identification	Monitoring Location Type	Purge Time minutes	Total Organic Volatiles (TOV)		Methane (CH ₄)		Lower Explosive Lmt. (LEL)		Carbon Dioxide (CO ₂)		Oxygen (O ₂)		Hydrogen Sulfide (H ₂ S)	
			ppmv		% Initial		% Final		% Initial		% Final		% Initial	
			Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
LGW-1	Gas Well	10+	1.1	2.4	24.9	42.8	498	856	11.2	39.9	0.5	0.0	0	0
LGW-2	Gas Well	10+	0.0	0.0	40.2	51.7	804	1034	14.9	30.2	5.9	0.0	0	0
LGW-3	Gas Well	10+	0.0	0.0	51.1	64.4	1022	1288	19.1	25.9	3.2	0.0	0	0
LGW-4	Gas Well	10+	0.0	0.0	0.0	0.0	0	0	0.0	0.0	21.8	5.7	0	0
LGW-5	Gas Well	10+	0.0	0.0	14.7	14.9	294	298	7.1	10.7	21.8	19.1	0	0
LGW-6	Gas Well	10+	0.0	0.0	5.0	29.8	100	596	0.7	19.8	21.8	0.0	0	0
LGW-7	Gas Well	10+	0.0	0.0	0.0	0.0	0	0	0.0	0.0	21.8	21.8	0	0
LGW-8	Gas Well	10+	0.0	0.0	0.0	0.0	0	0	0.0	0.0	21.8	21.8	0	0
LGW-9	Gas Well	10+	0.0	0.0	0.0	0.0	0	0	0.0	0.0	21.8	21.8	0	0
LGW-10	Gas Well	10+	0.0	0.0	0.0	0.0	0	0	0.0	0.0	21.8	21.8	0	0
LGW-11	Gas Well	10+	0.0	0.0	0.0	0.0	0	0	0.0	0.0	21.8	21.8	0	0
LGW-12	Gas Well	10+	0.0	0.0	0.0	0.0	0	0	0.0	0.0	21.8	21.8	0	0
LGW-13	Gas Well	10+	0.0	0.0	0.0	0.0	0	0	0.0	0.0	21.8	21.8	0	0
LGW-14	Gas Well	10+	0.0	0.0	0.0	0.0	0	0	0.0	0.0	21.8	21.8	0	0
TGP-1	Temp. Gas Probe	1-5	0.0	0.0	0.0	0.0	0	0	0.0	0.0	21.8	21.8	0	0
TGP-2	Temp. Gas Probe	1-5	0.0	0.0	0.0	0.0	0	0	0.0	0.0	21.8	21.8	0	0
TGP-3	Temp. Gas Probe	1-5	0.0	0.0	0.0	0.0	0	0	0.0	0.0	21.8	21.8	0	0
TGP-4	Temp. Gas Probe	1-5	0.0	0.0	0.0	0.0	0	0	0.0	0.0	21.8	21.8	0	0
TGP-5	Temp. Gas Probe	1-5	0.0	0.0	0.0	0.0	0	0	0.0	0.0	21.8	21.8	0	0
TGP-6	Temp. Gas Probe	1-5	0.0	0.0	0.0	0.0	0	0	0.0	0.0	21.8	21.8	0	0
TGP-7	Temp. Gas Probe	1-5	0.0	0.0	0.0	0.0	0	0	0.0	0.0	21.8	21.8	0	0
TGP-8	Temp. Gas Probe	1-5	0.0	0.0	0.0	0.0	0	0	0.0	0.0	21.8	21.8	0	0
CB-1	Catch Basin	<1	0.0	0.0	0.0	0.0	0	0	0.0	0.0	21.8	21.8	0	0
CB-2	Catch Basin	<1	0.0	0.0	0.0	0.0	0	0	0.0	0.0	21.8	21.8	0	0
CB-3	Catch Basin	<1	0.0	0.0	0.0	0.0	0	0	0.0	0.0	21.8	21.8	0	0
MP-1	Monitoring Point	10+	1.3	1.3	0.0	0.0	0	0	0.0	0.1	21.8	21.8	0	0
MP-2	Monitoring Point	10+	0.0	0.0	4.7	9.9	94	198	2.4	4.4	19.9	17.1	0	0
MP-3	Monitoring Point	10+	0.0	0.0	0.0	0.0	0	0	0.0	0.0	21.8	21.8	0	0
MP-4	Monitoring Point	10+	0.0	0.0	12.1	19.9	242	398	1.2	11.7	21.6	18.4	0	0
MP-5	Monitoring Point	10+	0.0	0.0	0.0	0.0	0	0	0.4	0.9	19.5	17.6	0	0
MP-6	Monitoring Point	10+	0.0	0.0	0.0	0.0	0	0	0.0	0.0	21.8	21.8	0	0
Hydrant 1	Fire Hydrant	<1	0.0	0.0	0.0	0.0	0	0	0.0	0.0	21.8	21.8	0	0
Hydrant 2	Fire Hydrant	<1	0.0	0.0	0.0	0.1	0	2	0.0	0.0	21.8	21.8	0	0
Scale House	Indoor Air	<1	0.0	0.0	0.0	0.0	0	0	0.0	0.0	21.8	21.8	0	0
Warehouse Building	Indoor Air	<1	0.0	0.0	0.0	0.0	0	0	0.0	0.0	21.8	21.8	0	0

Notes: 1.) Monitoring points were purged for approximately 10 minutes before final measurements were recorded.

2.) Total Organic Volatiles were measured using a Multi-RAE Organic Volatile Meter.

3.) Methane, LEL, Carbon Dioxide, Oxygen, and Hydrogen Sulfide were measured using a Landtec GEM 2000 Plus Landfill Gas Monitor.

TABLE 2
Groundwater Monitoring Summary
May 5, 2020

Shawmut Avenue Landfill
New Bedford, Massachusetts

ANALYTES	UNITS	MCP GROUNDWATER STANDARDS		DRINKING WATER STANDARDS		GROUNDWATER SAMPLE IDENTIFICATION																					
		GW-2	GW-3	US EPA		MassDEP		CDM-1S	Q	CDM-1D	Q	DUP-1 (CDM-1D)	Q	CDM-3S	Q	CDM-3D	Q	CDM-4S	Q	CDM-4D	Q	CDM-5S	Q	CDM-5D	Q	CDM-6D	Q
				MCLs	SMCLs	MCLs	SMCLs	ORSG																			
VOLATILE ORGANIC COMPOUNDS (US EPA METHOD 8260B)																											
1,1,1,2-Tetrachloroethane	µg/L	10	50,000	NS	NS	NS	NS	NS	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	
1,1,1-Trichloroethane	µg/L	4,000	20,000	200	NS	200	NS	NS	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	
1,1,2,2-Tetrachloroethane	µg/L	9	50,000	NS	NS	NS	NS	NS	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	
1,1,2-Trichlorotrifluoroethane	µg/L	NS	NS	NS	NS	NS	NS	NS	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	
1,1-Dichloroethane	µg/L	2,000	20,000	NS	NS	NS	NS	70	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	
1,1-Dichloroethene	µg/L	80	30,000	7	NS	7	NS	NS	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	
1,1-Dichloropropene	µg/L	NS	NS	NS	NS	NS	NS	NS	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	
1,2,3-Trichlorobenzene	µg/L	NS	NS	NS	NS	NS	NS	NS	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	
1,2,3-Trichloropropane	µg/L	NS	NS	NS	NS	NS	NS	NS	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	
1,2,4-Trichlorobenzene	µg/L	200	50,000	70	NS	70	NS	NS	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	
1,2,4-Trimethylbenzene	µg/L	NS	NS	NS	NS	NS	NS	NS	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	
1,2-Dibromo-3-chloropropane	µg/L	NS	NS	0.2	NS	0.2	NS	NS	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	
1,2-Dibromoethane (EDB)	µg/L	2	50,000	0.02	NS	0.02	NS	NS	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	
1,2-Dichlorobenzene	µg/L	8,000	2,000	NS	600	NS	NS	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
1,2-Dichloroethane	µg/L	5	20,000	5	NS	5	NS	NS	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	
1,2-Dichloropropane	µg/L	3	50,000	5	NS	5	NS	NS	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	
1,3,5-Trimethylbenzene	µg/L	NS	NS	NS	NS	NS	NS	NS	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	
1,3-Dichlorobenzene	µg/L	6,000	50,000	NS	NS	NS	NS	NS	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	
1,3-Dichloropropane	µg/L	NS	NS	NS	NS	NS	NS	NS	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	
1,4-Dichlorobenzene	µg/L	60	8,000	NS	5	NS	NS	NS	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	
1,4-Dioxane	µg/L	6,000	50,000	NS	NS	NS	NS	0.3	29.2	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	
2,2-Dichloropropane	µg/L	NS	NS	NS	NS	NS	NS	NS	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	
2-Butanone (MEK)	µg/L	50,000	50,000	NS	NS	NS	NS	4,000	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	
2-Chlorotoluene	µg/L	NS	NS	NS	NS	NS	NS	NS	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	
2-Hexanone	µg/L	NS	NS	NS	NS	NS	NS	NS	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	
4-Chlorotoluene	µg/L	NS	NS	NS	NS	NS	NS	NS	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	
4-Isopropyltoluene	µg/L	NS	NS	NS	NS	NS	NS	NS	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	
4-Methyl-2-Pentanone (MIBK)	µg/L	50,000	50,000	NS	NS	NS	NS	350	5.00	5.00	5.00	5.00</td															

TABLE 3
Surface Water Analytical Summary
May 5, 2020

Shawmut Avenue Landfill
New Bedford, Massachusetts

ANALYTES	UNITS	NRWQC	SURFACE WATER SAMPLE IDENTIFICATION				
			SW-1	Q	SW-2	Q	SW-3
VOLATILE ORGANIC COMPOUNDS (US EPA METHOD 8260C)							
1,1,1,2-Tetrachloroethane	µg/L	NS	1.00	U	1.00	U	1.00
1,1,1-Trichloroethane	µg/L	NS	1.00	U	1.00	U	1.00
1,1,2,2-Tetrachloroethane	µg/L	NS	1.00	U	1.00	U	1.00
1,1,2-Trichlorotrifluoroethane	µg/L	NS	1.00	U	1.00	U	1.00
1,1,2-Trichloroethane	µg/L	NS	1.00	U	1.00	U	1.00
1,1-Dichloroethane	µg/L	NS	1.00	U	1.00	U	1.00
1,1-Dichloroethene	µg/L	NS	1.00	U	1.00	U	1.00
1,1-Dichloropropene	µg/L	NS	1.00	U	1.00	U	1.00
1,2,3-Trichlorobenzene	µg/L	NS	1.00	U	1.00	U	1.00
1,2,3-Trichloropropane	µg/L	NS	1.00	U	1.00	U	1.00
1,2,4-Trichlorobenzene	µg/L	NS	1.00	U	1.00	U	1.00
1,2,4-Trimethylbenzene	µg/L	NS	1.00	U	1.00	U	1.00
1,2-Dibromo-3-chloropropane	µg/L	NS	1.00	U	1.00	U	1.00
1,2-Dibromoethane (EDB)	µg/L	NS	1.00	U	1.00	U	1.00
1,2-Dichlorobenzene	µg/L	NS	1.00	U	1.00	U	1.00
1,2-Dichloroethane	µg/L	NS	1.00	U	1.00	U	1.00
1,2-Dichloropropane	µg/L	NS	1.00	U	1.00	U	1.00
1,3,5-Trimethylbenzene	µg/L	NS	1.00	U	1.00	U	1.00
1,3-Dichlorobenzene	µg/L	NS	1.00	U	1.00	U	1.00
1,3-Dichloropropane	µg/L	NS	1.00	U	1.00	U	1.00
1,4-Dichlorobenzene	µg/L	NS	1.00	U	1.00	U	1.00
1,4-Dioxane	µg/L	NS	20.0	U	20.0	U	20.0
2,2-Dichloropropane	µg/L	NS	1.00	U	1.00	U	1.00
2-Butanone (MEK)	µg/L	NS	5.00	U	5.00	U	5.00
2-Chlorotoluene	µg/L	NS	1.00	U	1.00	U	1.00
2-Hexanone	µg/L	NS	5.00	U	5.00	U	5.00
4-Chlorotoluene	µg/L	NS	1.00	U	1.00	U	1.00
4-Isopropyltoluene	µg/L	NS	1.00	U	1.00	U	1.00
4-Methyl-2-Pentanone (MIBK)	µg/L	NS	5.00	U	5.00	U	5.00
Acetone	µg/L	NS	5.00	U	5.00	U	5.00
Acrylonitrile	µg/L	NS	5.00	U	5.00	U	5.00
Benzene	µg/L	NS	1.00	U	1.00	U	1.00
Bromobenzene	µg/L	NS	1.00	U	1.00	U	1.00
Bromochloromethane	µg/L	NS	1.00	U	1.00	U	1.00
Bromodichloromethane	µg/L	NS	1.00	U	1.00	U	1.00
Bromoform	µg/L	NS	1.00	U	1.00	U	1.00
Bromomethane	µg/L	NS	1.00	U	1.00	U	1.00
Carbon Disulfide	µg/L	NS	1.00	U	1.00	U	1.00
Carbon Tetrachloride	µg/L	NS	1.00	U	1.00	U	1.00
Chlorobenzene	µg/L	NS	1.00	U	1.00	U	1.00
Chloroethane	µg/L	NS	1.00	U	1.00	U	1.00
Chloroform	µg/L	NS	1.00	U	1.00	U	1.00
Chloromethane	µg/L	NS	1.00	U	1.00	U	1.00
cis-1,2-Dichloroethene	µg/L	NS	1.00	U	1.00	U	1.00
cis-1,3-Dichloropropene	µg/L	NS	1.00	U	1.00	U	1.00
Dibromochloromethane	µg/L	NS	1.00	U	1.00	U	1.00
Dibromomethane	µg/L	NS	1.00	U	1.00	U	1.00
Dichlorodifluoromethane	µg/L	NS	1.00	U	1.00	U	1.00
Diethyl Ether	µg/L	NS	1.00	U	1.00	U	1.00
Ethylbenzene	µg/L	NS	1.00	U	1.00	U	1.00
Hexachlorobutadiene	µg/L	NS	1.00	U	1.00	U	1.00
Isopropylbenzene	µg/L	NS	1.00	U	1.00	U	1.00
Methyl tert-butyl Ether (MTBE)	µg/L	NS	1.00	U	1.00	U	1.00
Methylene Chloride	µg/L	NS	1.00	U	1.00	U	1.00
Naphthalene	µg/L	NS	1.00	U	1.00	U	1.00
n-Butylbenzene	µg/L	NS	1.00	U	1.00	U	1.00
n-Propylbenzene	µg/L	NS	1.00	U	1.00	U	1.00
sec-Butylbenzene	µg/L	NS	1.00	U	1.00	U	1.00
Styrene	µg/L	NS	1.00	U	1.00	U	1.00
tert-Butylbenzene	µg/L	NS	1.00	U	1.00	U	1.00
Tetrachloroethene (PCE)	µg/L	NS	1.00	U	1.00	U	1.00
Tetrahydrofuran (THF)	µg/L	NS	1.45		1.00	U	1.00
Toluene	µg/L	NS	1.00	U	1.00	U	1.00
trans-1,2-Dichloroethene	µg/L	NS	1.00	U	1.00	U	1.00
trans-1,3-Dichloropropene	µg/L	NS	1.00	U	1.00	U	1.00
trans-1,4-Dichloro-2-butene	µg/L	NS	1.00	U	1.00	U	1.00
Trichloroethene (TCE)	µg/L	NS	1.00	U	1.00	U	1.00
Trichlorofluoromethane	µg/L	NS	1.00	U	1.00	U	1.00
Vinyl Chloride	µg/L	NS	1.00	U	1.00	U	1.00
meta-Xylene and para-Xylene	µg/L	NS	1.00	U	1.00	U	1.00
ortho-Xylene	µg/L	NS	1.00	U	1.00	U	1.00

TABLE 3
Surface Water Analytical Summary
May 5, 2020

Shawmut Avenue Landfill
New Bedford, Massachusetts

ANALYTES	UNITS	NRWQC	SURFACE WATER SAMPLE IDENTIFICATION					
			SW-1	Q	SW-2	Q	SW-3	Q
DISSOLVED METALS (US EPA 6000/7000 Series Methods)								
Arsenic	µg/L	150	5	U	5	U	5	U
Barium	µg/L	NS	483		38.7		78.7	
Cadmium	µg/L	see below	2	U	2	U	2	U
Calcium	µg/L	NS	56,700		27,200		33,600	
Chromium	µg/L	74	2	U	2	U	2	U
Copper	µg/L	see below	4.6		3.4		8.0	U
Iron	µg/L	1,000	628		1,220		1,470	
Lead	µg/L	see below	3	U	3	U	9.7	
Manganese	µg/L	NS	321		237		268	
Mercury	µg/L	0.77	0.2	U	0.2	U	0.2	U
Selenium	µg/L	5.0	10	U	10	U	10	U
Silver	µg/L	see below	2	U	2	U	2	U
Sodium	µg/L	NS	55,900		33,300		50,800	
Zinc	µg/L	see below	9.7		11.3		28.9	
GENERAL WATER QUALITY PARAMETERS (US EPA or MassDEP-Approved Methods)								
Alkalinity, Total (as CaCO ₃)	mg/L	20	288		87.5		95.0	
Chloride	mg/L	230	51.9		53.0		76.7	
Chemical Oxygen Demand (COD)	mg/L	NS	75.1		33.5		26.3	
Cyanide (total)	mg/L	0.0052	0.0100	U	0.0100	U	0.0100	U
Nitrate (as Nitrogen)	mg/L	NS	4.59		0.0500	U	0.126	
Sulfate	mg/L	NS	5.00	U	5.00	U	24.3	
Total Dissolved Solids (TDS)	mg/L	NS	405		194		256	
Hardness	mg/L	NS	186		95.5		111	
POLYCHLORINATED BIPHENYLS (US EPA Method 8082)								
Aroclor 1016	µg/L	0.014	----		----		0.100	U
Aroclor 1221	µg/L	0.014	----		----		0.100	U
Aroclor 1232	µg/L	0.014	----		----		0.100	U
Aroclor 1242	µg/L	0.014	----		----		0.100	U
Aroclor 1248	µg/L	0.014	----		----		0.100	U
Aroclor 1254	µg/L	0.014	----		----		0.100	U
Aroclor 1260	µg/L	0.014	----		----		0.100	U
FIELD PARAMETERS (YSI 556)								
Temperature	°C	NS	11.04		15.32		18.20	
pH	SU	6.5-9.0	7.41		7.48		7.30	
Specific Conductance	umhos/cm	NS	713/523		358/292		482/420	
Dissolved Oxygen (DO)	mg/L	NS	0.85		1.39		1.67	

CALCULATED NRWQC FOR HARDNESS DEPENDENT METALS											
Surface Water Sampling Location	Measured Hardness (mg/L)	Cadmium (µg/L)	Calculated Criteria	Copper (µg/L)	Calculated Criteria	Lead (µg/L)	Calculated Criteria	Silver (µg/L)	Calculated Criteria	Zinc (µg/L)	Calculated Criteria
SW-1	186	ND	0.38	4.6	15.2	ND	4.9	ND	9.354	9.7	200
SW-2	95.5	ND	0.2	3.4	8.6	ND	2.4	ND	2.972	11.3	114
SW-3	111	ND	0.3	8.0	9.8	9.7	2.8	ND	3.849	28.9	129

1. Highlighted cells indicate that the NRWQC is exceeded.
2. NRWQC: National Recommended Water Quality Criteria for Freshwater Based Surface Water (2009)
3. Criterion continuous concentrations (CCC) criteria values are compared to. If CCC values are not present, Criterion Maximum Concentration (CMC) values have been used.
4. The NRWQC Standards for select metals analytes are dependent on hardness concentrations. Criteria have been calculated based on equations and factors presented in Appendix B of the NRWQC Guidance (2009).
5. Total Chromium results are compared to the NRWQC for Chromium III.
6. NS: No Standard.
7. U: Analyte was not detected at a concentration greater than the analytical method detection limit.

TABLE 4
Sediment Sample Analytical Summary
May 5, 2020

Shawmut Avenue Landfill
New Bedford, Massachusetts

ANALYTES	UNITS	MCP S-1/GW-3 Concentration	SEDIMENT SAMPLE IDENTIFICATION
			SED-1
POLYCHLORINATED BIPHENYLS (US EPA Method 8082)			
Aroclor 1016	mg/Kg	2	<0.0146
Aroclor 1221	mg/Kg	2	<0.0146
Aroclor 1232	mg/Kg	2	<0.0146
Aroclor 1242	mg/Kg	2	<0.0146
Aroclor 1248	mg/Kg	2	<0.0146
Aroclor 1254	mg/Kg	2	<0.0146
Aroclor 1260	mg/Kg	2	<0.0146
Total PCBs	mg/Kg	2	<0.0146

1. Highlighted cells indicate that the MCP Method 1 S-1/GW-3 Soil Concentration is exceeded.

APPENDIX A

Laboratory Analytical Results & Field Logs



Microbac Laboratories, Inc. - Dayville

CERTIFICATE OF ANALYSIS

D0E0415

Project Description

Shawmut Landfill

For:

William ' Bill' Kenney

City of New Bedford DPI

2183 Ocean St.

Marshfield, MA 02050

A handwritten signature in black ink that reads "Melisa L. Montgomery".

Quality Assurance Officer

Melisa L. Montgomery

Wednesday, May 20, 2020

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories. Review and compilation of your report was completed by Microbac Laboratories, Inc. - Dayville. If you have any questions, comments, or require further assistance regarding this report, please contact your service representative listed above.

I certify that all test results meet all of the requirements of the accrediting authority listed within this report. Analytical results are reported on a 'as received' basis unless specified otherwise. Analytical results for solids with units ending in (dry) are reported on a dry weight basis. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories. The reported results are related only to the samples analyzed as received.

Microbac Laboratories, Inc.

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Microbac Laboratories, Inc. - Dayville

CERTIFICATE OF ANALYSIS

D0E0415

City of New Bedford DPI

William ' Bill' Kenney
2183 Ocean St.
Marshfield, MA 02050

Project Name: Shawmut Landfill

Project / PO Number: Shawmut Landfill
Received: 05/06/2020
Reported: 05/20/2020

Sample Summary Report

<u>Sample Name</u>	<u>Laboratory ID</u>	<u>Client Matrix</u>	<u>Sample Type</u>	<u>Sample Begin</u>	<u>Sample Taken</u>	<u>Lab Received</u>
CDM-1S	D0E0415-01	Groundwater	Grab		05/05/20 08:50	05/06/20 16:50
CDM-1D	D0E0415-02	Groundwater	Grab		05/05/20 08:46	05/06/20 16:50
CDM-3S	D0E0415-03	Groundwater	Grab		05/05/20 10:10	05/06/20 16:50
CDM-3D	D0E0415-04	Groundwater	Grab		05/05/20 09:58	05/06/20 16:50
CDM-4S	D0E0415-05	Groundwater	Grab		05/05/20 10:55	05/06/20 16:50
CDM-4D	D0E0415-06	Groundwater	Grab		05/05/20 10:48	05/06/20 16:50
CDM-5S	D0E0415-07	Groundwater	Grab		05/05/20 11:26	05/06/20 16:50
CDM-5D	D0E0415-08	Groundwater	Grab		05/05/20 11:35	05/06/20 16:50
CDM-6D	D0E0415-09	Groundwater	Grab		05/05/20 14:15	05/06/20 16:50
DUP - 1	D0E0415-10	Groundwater	Grab		05/05/20 08:56	05/06/20 16:50
Field Blank	D0E0415-11	Aqueous	Trip Blank		05/05/20 00:00	05/06/20 16:50



Microbac Laboratories, Inc. - Dayville

CERTIFICATE OF ANALYSIS

D0E0415

Analytical Testing Parameters

Client Sample ID:	CDM-1S	Collected By:	Customer					
Sample Matrix:	Groundwater	Collection Date:	05/05/2020 8:50					
Lab Sample ID:	D0E0415-01							
Inorganics Total	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
EPA 9012A					Method Notes: A28			
Cyanide - Total	<0.0100	0.0100	mg/L	1	Y1	05/13/20 1509	05/14/20 1615	CLW
Wet Chem - W/Hach 8000								
Chemical Oxygen Demand (COD)	72.2	5.00	mg/L	1		05/07/20 1530	05/07/20 1730	CCM
Wet Chem - W/SM 2320 B-2011								
Alkalinity to pH 4.5	433	1.00	mg/L	1	A27		05/12/20 1612	MAD
SM 2540 C-2011								
Total Dissolved Solids (TDS)	814	25.0	mg/L	10		05/06/20 1915	05/08/20 1550	KJE
Wet Chem - W/SM 4500-Cl E-2011								
Chloride	226	10.0	mg/L	5	A21		05/07/20 1359	CLW
Wet Chem - W/SM 4500-NO3⁻ F-2011								
Nitrate as N	<0.0500	0.0500	mg/L	1	A5, U		05/06/20 1927	DJM
Wet Chem - W/SM 4500-SO4⁻ E-2011								
Sulfate as SO4	34.5	5.00	mg/L	1	A21		05/07/20 1530	CLW
Metals Dissolved by CVAA	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
EPA 7470A								
Mercury	<0.00020	0.00020	mg/L	1	U,Y1	05/15/20 1213	05/15/20 1430	DLO
Metals Dissolved by ICP	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
EPA 3010A/EPA 6010C								
Arsenic	<0.0050	0.0050	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2101	JDF
Barium	0.549	0.0050	mg/L	1	Y1	05/12/20 1335	05/13/20 2101	JDF
Cadmium	<0.0020	0.0020	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2101	JDF
Calcium	81.7	0.0500	mg/L	1	Y1	05/12/20 1335	05/13/20 2101	JDF
Chromium	<0.0020	0.0020	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2101	JDF
Copper	<0.0020	0.0020	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2101	JDF
Iron	35.2	0.0500	mg/L	1	Y1	05/12/20 1335	05/13/20 2101	JDF
Lead	<0.0030	0.0030	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2101	JDF
Manganese	1.99	0.0020	mg/L	1	Y1	05/12/20 1335	05/13/20 2101	JDF
Selenium	<0.0100	0.0100	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2101	JDF
Silver	<0.0020	0.0020	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2101	JDF
Sodium	134	1.00	mg/L	1	Y1	05/12/20 1335	05/13/20 2101	JDF
Zinc	0.0096	0.0050	mg/L	1	Y1	05/12/20 1335	05/13/20 2101	JDF

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CERTIFICATE OF ANALYSIS

D0E0415

Client Sample ID:	CDM-1S	Collected By:	Customer					
Sample Matrix:	Groundwater	Collection Date:	05/05/2020 8:50					
Lab Sample ID:	D0E0415-01							
Metals Dissolved by ICP	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
Volatile Organic Compounds by GCMS	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
EPA 5030C/EPA 8260C								
Acetone	5.23	5.00	ug/L	1	Y1	05/14/20 1452	JAN	
Acrylonitrile	<5.00	5.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
Benzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
Bromobenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
Bromo(chloromethane)	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
Bromodichloromethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
Bromoform	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
Bromomethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
2-Butanone (MEK)	<5.00	5.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
sec-Butylbenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
tert-Butylbenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
n-Butylbenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
Carbon disulfide	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
Carbon tetrachloride	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
Chlorobenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
Chloroethane (Ethyl chloride)	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
Chloroform	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
Chloromethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
2-Chlorotoluene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
4-Chlorotoluene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
1,2-Dibromo-3-chloropropane (DBCP)	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
Dibromochloromethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
1,2-Dibromoethane (Ethylene dibromide, EDB)	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
Dibromomethane (Methylene bromide)	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
trans-1,4-Dichloro-2-butene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
1,4-Dichlorobenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
1,3-Dichlorobenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
1,2-Dichlorobenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
Dichlorodifluoromethane (Freon-12)	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
1,2-Dichloroethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
1,1-Dichloroethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
trans-1,2-Dichloroethene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
1,1-Dichloroethene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
cis-1,2-Dichloroethene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
1,3-Dichloropropane	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
1,2-Dichloropropane	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
2,2-Dichloropropane	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
trans-1,3-Dichloropropene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
cis-1,3-Dichloropropene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1452	JAN	

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CERTIFICATE OF ANALYSIS

D0E0415

Client Sample ID:	CDM-1S	Collected By:	Customer					
Sample Matrix:	Groundwater	Collection Date:	05/05/2020 8:50					
Lab Sample ID:	D0E0415-01							
Volatile Organic Compounds by GCMS	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
1,1-Dichloropropene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
Diethyl ether	2.29	1.00	ug/L	1	Y1	05/14/20 1452	JAN	
1,4-Dioxane	29.2	20.0	ug/L	1	Y1	05/14/20 1452	JAN	
Ethylbenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
Hexachlorobutadiene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
2-Hexanone (MBK)	<5.00	5.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
Isopropylbenzene (Cumene)	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
4-Isopropyltoluene (p-Isopropyltoluene)	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
Methyl tert-butyl ether (MTBE)	1.31	1.00	ug/L	1	Y1	05/14/20 1452	JAN	
Methylene chloride (Dichloromethane)	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
4-Methyl-2-pentanone (MIBK)	<5.00	5.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
Naphthalene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
n-Propylbenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
Styrene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
1,1,1,2-Tetrachloroethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
1,1,2,2-Tetrachloroethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
Tetrachloroethene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
Tetrahydrofuran (THF)	20.3	1.00	ug/L	1	Y1	05/14/20 1452	JAN	
Toluene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
1,2,4-Trichlorobenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
1,2,3-Trichlorobenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
1,1,1-Trichloroethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
1,1,2-Trichloroethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
Trichloroethene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
Trichlorofluoromethane (Freon 11)	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
1,2,3-Trichloropropane	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
1,3,5-Trimethylbenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
1,2,4-Trimethylbenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
Vinyl chloride	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
m,p-Xylene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
o-Xylene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1452	JAN	
Surrogate: 1,2-Dichloroethane-d4	99.5	Limit: 70-130	% Rec	1		05/14/20 1452	JAN	
Surrogate: Toluene-d8	101	Limit: 70-130	% Rec	1		05/14/20 1452	JAN	
Surrogate: Pentafluorobenzene	101	Limit: 70-130	% Rec	1		05/14/20 1452	JAN	



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CERTIFICATE OF ANALYSIS

D0E0415

Client Sample ID:	CDM-1D	Collected By:	Customer					
Sample Matrix:	Groundwater	Collection Date:	05/05/2020 8:46					
Lab Sample ID:	D0E0415-02							
Inorganics Total	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
EPA 9012A					Method Notes: A28			
Cyanide - Total	<0.0100	0.0100	mg/L	1	Y1	05/13/20 1509	05/14/20 1616	CLW
Wet Chem - W/Hach 8000								
Chemical Oxygen Demand (COD)	31.2	5.00	mg/L	1		05/07/20 1530	05/07/20 1730	CCM
Wet Chem - W/SM 2320 B-2011								
Alkalinity to pH 4.5	455	1.00	mg/L	1	A27		05/12/20 1612	MAD
SM 2540 C-2011								
Total Dissolved Solids (TDS)	650	25.0	mg/L	10		05/06/20 1915	05/08/20 1550	KJE
Wet Chem - W/SM 4500-Cl E-2011								
Chloride	121	4.00	mg/L	2	A21		05/07/20 1400	CLW
Wet Chem - W/SM 4500-NO3⁻ F-2011								
Nitrate as N	0.0727	0.0500	mg/L	1	A5		05/06/20 1928	DJM
Wet Chem - W/SM 4500-SO4⁻ E-2011								
Sulfate as SO4	23.2	5.00	mg/L	1	A21		05/07/20 1531	CLW
Metals Dissolved by CVAA	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
EPA 7470A								
Mercury	<0.00020	0.00020	mg/L	1	U,Y1	05/15/20 1213	05/15/20 1433	DLO
Metals Dissolved by ICP	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
EPA 3010A/EPA 6010C								
Arsenic	<0.0050	0.0050	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2104	JDF
Barium	0.117	0.0050	mg/L	1	Y1	05/12/20 1335	05/13/20 2104	JDF
Cadmium	<0.0020	0.0020	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2104	JDF
Calcium	115	0.250	mg/L	5	Y1	05/12/20 1335	05/18/20 1018	JDF
Chromium	<0.0020	0.0020	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2104	JDF
Copper	<0.0020	0.0020	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2104	JDF
Iron	1.62	0.0500	mg/L	1	Y1	05/12/20 1335	05/13/20 2104	JDF
Lead	<0.0030	0.0030	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2104	JDF
Manganese	0.402	0.0020	mg/L	1	Y1	05/12/20 1335	05/13/20 2104	JDF
Selenium	<0.0100	0.0100	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2104	JDF
Silver	<0.0020	0.0020	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2104	JDF
Sodium	60.8	1.00	mg/L	1	Y1	05/12/20 1335	05/13/20 2104	JDF
Zinc	0.0083	0.0050	mg/L	1	Y1	05/12/20 1335	05/13/20 2104	JDF



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CERTIFICATE OF ANALYSIS

D0E0415

Client Sample ID:	CDM-1D	Collected By:	Customer					
Sample Matrix:	Groundwater	Collection Date:	05/05/2020 8:46					
Lab Sample ID:	D0E0415-02 <th data-cs="6" data-kind="parent"></th> <th data-kind="ghost"></th> <th data-kind="ghost"></th> <th data-kind="ghost"></th> <th data-kind="ghost"></th> <th data-kind="ghost"></th>							
Volatile Organic Compounds by GCMS	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
EPA 5030C/EPA 8260C								
Acetone	<5.00	5.00	ug/L	1	U,Y1	05/14/20 1517	JAN	
Acrylonitrile	<5.00	5.00	ug/L	1	U,Y1	05/14/20 1517	JAN	
Benzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1517	JAN	
Bromobenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1517	JAN	
Bromochloromethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1517	JAN	
Bromodichloromethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1517	JAN	
Bromoform	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1517	JAN	
Bromomethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1517	JAN	
2-Butanone (MEK)	<5.00	5.00	ug/L	1	U,Y1	05/14/20 1517	JAN	
sec-Butylbenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1517	JAN	
tert-Butylbenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1517	JAN	
n-Butylbenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1517	JAN	
Carbon disulfide	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1517	JAN	
Carbon tetrachloride	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1517	JAN	
Chlorobenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1517	JAN	
Chloroethane (Ethyl chloride)	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1517	JAN	
Chloroform	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1517	JAN	
Chloromethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1517	JAN	
2-Chlorotoluene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1517	JAN	
4-Chlorotoluene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1517	JAN	
1,2-Dibromo-3-chloropropane (DBCP)	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1517	JAN	
Dibromochloromethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1517	JAN	
1,2-Dibromoethane (Ethylene dibromide, EDB)	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1517	JAN	
Dibromomethane (Methylene bromide)	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1517	JAN	
trans-1,4-Dichloro-2-butene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1517	JAN	
1,4-Dichlorobenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1517	JAN	
1,3-Dichlorobenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1517	JAN	
1,2-Dichlorobenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1517	JAN	
Dichlorodifluoromethane (Freon-12)	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1517	JAN	
1,2-Dichloroethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1517	JAN	
1,1-Dichloroethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1517	JAN	
trans-1,2-Dichloroethene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1517	JAN	
1,1-Dichloroethene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1517	JAN	
cis-1,2-Dichloroethene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1517	JAN	
1,3-Dichloropropane	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1517	JAN	
1,2-Dichloropropane	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1517	JAN	
2,2-Dichloropropane	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1517	JAN	
trans-1,3-Dichloropropene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1517	JAN	
cis-1,3-Dichloropropene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1517	JAN	
1,1-Dichloropropene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1517	JAN	
Diethyl ether	1.26	1.00	ug/L	1	Y1	05/14/20 1517	JAN	

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CERTIFICATE OF ANALYSIS

D0E0415

Client Sample ID:	CDM-1D	Sample Matrix:	Groundwater	Collected By:	Customer	Collection Date:	05/05/2020 8:46
Volatile Organic Compounds by GCMS				Note	Prepared	Analyzed	Analyst
1,4-Dioxane	<20.0	20.0	ug/L	1	U,Y1	05/14/20 1517	JAN
Ethylbenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1517	JAN
Hexachlorobutadiene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1517	JAN
2-Hexanone (MBK)	<5.00	5.00	ug/L	1	U,Y1	05/14/20 1517	JAN
Isopropylbenzene (Cumene)	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1517	JAN
4-Isopropyltoluene (p-Isopropyltoluene)	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1517	JAN
Methyl tert-butyl ether (MTBE)	1.33	1.00	ug/L	1	Y1	05/14/20 1517	JAN
Methylene chloride (Dichloromethane)	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1517	JAN
4-Methyl-2-pentanone (MIBK)	<5.00	5.00	ug/L	1	U,Y1	05/14/20 1517	JAN
Naphthalene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1517	JAN
n-Propylbenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1517	JAN
Styrene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1517	JAN
1,1,1,2-Tetrachloroethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1517	JAN
1,1,2,2-Tetrachloroethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1517	JAN
Tetrachloroethene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1517	JAN
Tetrahydrofuran (THF)	7.13	1.00	ug/L	1	Y1	05/14/20 1517	JAN
Toluene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1517	JAN
1,2,4-Trichlorobenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1517	JAN
1,2,3-Trichlorobenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1517	JAN
1,1,1-Trichloroethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1517	JAN
1,1,2-Trichloroethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1517	JAN
Trichloroethene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1517	JAN
Trichlorofluoromethane (Freon 11)	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1517	JAN
1,2,3-Trichloropropane	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1517	JAN
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1517	JAN
1,3,5-Trimethylbenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1517	JAN
1,2,4-Trimethylbenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1517	JAN
Vinyl chloride	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1517	JAN
m,p-Xylene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1517	JAN
o-Xylene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1517	JAN
Surrogate: 1,2-Dichloroethane-d4	101	Limit: 70-130	% Rec	1		05/14/20 1517	JAN
Surrogate: Toluene-d8	102	Limit: 70-130	% Rec	1		05/14/20 1517	JAN
Surrogate: Pentafluorobenzene	98.7	Limit: 70-130	% Rec	1		05/14/20 1517	JAN



Microbac Laboratories, Inc. - Dayville

CERTIFICATE OF ANALYSIS

D0E0415

Client Sample ID:	CDM-3S	Sample Matrix:	Groundwater	Collected By:	Customer				
Lab Sample ID:	D0E0415-03			Collection Date:	05/05/2020 10:10				
Inorganics Total		Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
EPA 9012A									
Cyanide - Total		<0.0100	0.0100	mg/L	1	M2,Y1	05/13/20 1509	05/14/20 1606	CLW
Wet Chem - W/Hach 8000									
Chemical Oxygen Demand (COD)		<5.00	5.00	mg/L	1	U	05/13/20 1528	05/13/20 1728	CCM
Wet Chem - W/SM 2320 B-2011									
Alkalinity to pH 4.5	123		1.00	mg/L	1	A27		05/12/20 1612	MAD
SM 2540 C-2011									
Total Dissolved Solids (TDS)	209		25.0	mg/L	10		05/10/20 1635	05/12/20 1725	ELB
Wet Chem - W/SM 4500-Cl E-2011									
Chloride	53.8		2.00	mg/L	1	A21		05/07/20 1402	CLW
Wet Chem - W/SM 4500-NO3⁻ F-2011									
Nitrate as N	0.120		0.0500	mg/L	1	A5		05/06/20 1929	DJM
Wet Chem - W/SM 4500-SO4⁻ E-2011									
Sulfate as SO4	18.2		5.00	mg/L	1	A21		05/07/20 1532	CLW
Metals Dissolved by CVAA		Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
EPA 7470A									
Mercury		<0.00020	0.00020	mg/L	1	U,Y1	05/15/20 1213	05/15/20 1435	DLO
Metals Dissolved by ICP		Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
EPA 3010A/EPA 6010C									
Arsenic		<0.0050	0.0050	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2108	JDF
Barium	0.0511		0.0050	mg/L	1	Y1	05/12/20 1335	05/13/20 2108	JDF
Cadmium		<0.0020	0.0020	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2108	JDF
Calcium	46.4		0.0500	mg/L	1	Y1	05/12/20 1335	05/13/20 2108	JDF
Chromium		<0.0020	0.0020	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2108	JDF
Copper		<0.0020	0.0020	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2108	JDF
Iron	14.8		0.0500	mg/L	1	Y1	05/12/20 1335	05/13/20 2108	JDF
Lead		<0.0030	0.0030	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2108	JDF
Manganese	1.05		0.0020	mg/L	1	Y1	05/12/20 1335	05/13/20 2108	JDF
Selenium		<0.0100	0.0100	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2108	JDF
Silver		<0.0020	0.0020	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2108	JDF
Sodium	23.1		1.00	mg/L	1	Y1	05/12/20 1335	05/13/20 2108	JDF
Zinc	0.0067		0.0050	mg/L	1	Y1	05/12/20 1335	05/13/20 2108	JDF



Microbac Laboratories, Inc. - Dayville

CERTIFICATE OF ANALYSIS

D0E0415

Client Sample ID:	CDM-3S	Collected By:	Customer					
Sample Matrix:	Groundwater	Collection Date:	05/05/2020 10:10					
Lab Sample ID:	D0E0415-03							
Volatile Organic Compounds by GCMS	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
EPA 5030C/EPA 8260C								
Acetone	<5.00	5.00	ug/L	1	U,Y1	05/14/20	1543	JAN
Acrylonitrile	<5.00	5.00	ug/L	1	U,Y1	05/14/20	1543	JAN
Benzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1543	JAN
Bromobenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1543	JAN
Bromochloromethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1543	JAN
Bromodichloromethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1543	JAN
Bromoform	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1543	JAN
Bromomethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1543	JAN
2-Butanone (MEK)	<5.00	5.00	ug/L	1	U,Y1	05/14/20	1543	JAN
sec-Butylbenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1543	JAN
tert-Butylbenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1543	JAN
n-Butylbenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1543	JAN
Carbon disulfide	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1543	JAN
Carbon tetrachloride	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1543	JAN
Chlorobenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1543	JAN
Chloroethane (Ethyl chloride)	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1543	JAN
Chloroform	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1543	JAN
Chloromethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1543	JAN
2-Chlorotoluene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1543	JAN
4-Chlorotoluene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1543	JAN
1,2-Dibromo-3-chloropropane (DBCP)	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1543	JAN
Dibromochloromethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1543	JAN
1,2-Dibromoethane (Ethylene dibromide, EDB)	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1543	JAN
Dibromomethane (Methylene bromide)	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1543	JAN
trans-1,4-Dichloro-2-butene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1543	JAN
1,4-Dichlorobenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1543	JAN
1,3-Dichlorobenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1543	JAN
1,2-Dichlorobenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1543	JAN
Dichlorodifluoromethane (Freon-12)	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1543	JAN
1,2-Dichloroethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1543	JAN
1,1-Dichloroethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1543	JAN
trans-1,2-Dichloroethene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1543	JAN
1,1-Dichloroethene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1543	JAN
cis-1,2-Dichloroethene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1543	JAN
1,3-Dichloropropane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1543	JAN
1,2-Dichloropropane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1543	JAN
2,2-Dichloropropane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1543	JAN
trans-1,3-Dichloropropene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1543	JAN
cis-1,3-Dichloropropene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1543	JAN
1,1-Dichloropropene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1543	JAN
Diethyl ether	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1543	JAN

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Microbac Laboratories, Inc. - Dayville

CERTIFICATE OF ANALYSIS

D0E0415

Client Sample ID:	CDM-3S	Collected By:	Customer
Sample Matrix:	Groundwater	Collection Date:	05/05/2020 10:10
Lab Sample ID:	D0E0415-03		

Volatile Organic Compounds by GCMS	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
1,4-Dioxane	<20.0	20.0	ug/L	1	U,Y1		05/14/20 1543	JAN
Ethylbenzene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1543	JAN
Hexachlorobutadiene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1543	JAN
2-Hexanone (MBK)	<5.00	5.00	ug/L	1	U,Y1		05/14/20 1543	JAN
Isopropylbenzene (Cumene)	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1543	JAN
4-Isopropyltoluene (p-Isopropyltoluene)	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1543	JAN
Methyl tert-butyl ether (MTBE)	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1543	JAN
Methylene chloride (Dichloromethane)	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1543	JAN
4-Methyl-2-pentanone (MIBK)	<5.00	5.00	ug/L	1	U,Y1		05/14/20 1543	JAN
Naphthalene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1543	JAN
n-Propylbenzene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1543	JAN
Styrene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1543	JAN
1,1,1,2-Tetrachloroethane	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1543	JAN
1,1,2,2-Tetrachloroethane	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1543	JAN
Tetrachloroethene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1543	JAN
Tetrahydrofuran (THF)	2.59	1.00	ug/L	1	Y1		05/14/20 1543	JAN
Toluene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1543	JAN
1,2,4-Trichlorobenzene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1543	JAN
1,2,3-Trichlorobenzene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1543	JAN
1,1,1-Trichloroethane	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1543	JAN
1,1,2-Trichloroethane	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1543	JAN
Trichloroethene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1543	JAN
Trichlorofluoromethane (Freon 11)	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1543	JAN
1,2,3-Trichloropropane	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1543	JAN
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1543	JAN
1,3,5-Trimethylbenzene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1543	JAN
1,2,4-Trimethylbenzene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1543	JAN
Vinyl chloride	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1543	JAN
m,p-Xylene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1543	JAN
o-Xylene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1543	JAN
Surrogate: 1,2-Dichloroethane-d4	101	Limit: 70-130	% Rec	1			05/14/20 1543	JAN
Surrogate: Toluene-d8	100	Limit: 70-130	% Rec	1			05/14/20 1543	JAN
Surrogate: Pentafluorobenzene	103	Limit: 70-130	% Rec	1			05/14/20 1543	JAN

Polychlorinated Biphenyls (PCBs) by GC/ECD	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
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EPA 3510C/EPA 8082A

Aroclor-1016 (PCB-1016)	<0.100	0.100	ug/L	1	U,Y1	05/07/20 1000	05/08/20 1439	MRB
Aroclor-1221 (PCB-1221)	<0.100	0.100	ug/L	1	U,Y1	05/07/20 1000	05/08/20 1439	MRB
Aroclor-1232 (PCB-1232)	<0.100	0.100	ug/L	1	U,Y1	05/07/20 1000	05/08/20 1439	MRB
Aroclor-1242 (PCB-1242)	<0.100	0.100	ug/L	1	U,Y1	05/07/20 1000	05/08/20 1439	MRB

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CERTIFICATE OF ANALYSIS

D0E0415

Client Sample ID:	CDM-3S	Collected By:	Customer
Sample Matrix:	Groundwater	Collection Date:	05/05/2020 10:10
Lab Sample ID:	D0E0415-03		

Polychlorinated Biphenyls (PCBs) by GC/ECD	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
Aroclor-1248 (PCB-1248)	<0.100	0.100	ug/L	1	U,Y1	05/07/20 1000	05/08/20 1439	MRB
Aroclor-1254 (PCB-1254)	<0.100	0.100	ug/L	1	U,Y1	05/07/20 1000	05/08/20 1439	MRB
Aroclor-1260 (PCB-1260)	<0.100	0.100	ug/L	1	U,Y1	05/07/20 1000	05/08/20 1439	MRB
Surrogate: Decachlorobiphenyl (BZ-209)	69.6	Limit: 30-150	% Rec	1		05/07/20 1000	05/08/20 1439	MRB
Surrogate: Decachlorobiphenyl (BZ-209) [2C]	69.5	Limit: 30-150	% Rec	1		05/07/20 1000	05/08/20 1439	MRB
Surrogate: 2,4,5,6-Tetrachloro-m-xylene	46.9	Limit: 30-150	% Rec	1		05/07/20 1000	05/08/20 1439	MRB
Surrogate: 2,4,5,6-Tetrachloro-m-xylene [2C]	48.0	Limit: 30-150	% Rec	1		05/07/20 1000	05/08/20 1439	MRB



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CERTIFICATE OF ANALYSIS

D0E0415

Client Sample ID:	CDM-3D	Collected By:	Customer					
Sample Matrix:	Groundwater	Collection Date:	05/05/2020 9:58					
Lab Sample ID:	D0E0415-04							
Inorganics Total	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
EPA 9012A					Method Notes: A28			
Cyanide - Total	<0.0100	0.0100	mg/L	1	Y1	05/13/20 1509	05/14/20 1620	CLW
Wet Chem - W/Hach 8000								
Chemical Oxygen Demand (COD)	<5.00	5.00	mg/L	1	U	05/13/20 1528	05/13/20 1728	CCM
Wet Chem - W/SM 2320 B-2011								
Alkalinity to pH 4.5	330	1.00	mg/L	1	A27		05/12/20 1612	MAD
SM 2540 C-2011								
Total Dissolved Solids (TDS)	518	25.0	mg/L	10		05/10/20 1635	05/12/20 1725	ELB
Wet Chem - W/SM 4500-CI E-2011								
Chloride	82.3	2.00	mg/L	1			05/07/20 1346	CLW
Wet Chem - W/SM 4500-NO3⁻ F-2011								
Nitrate as N	<0.0500	0.0500	mg/L	1	U		05/06/20 1930	DJM
Wet Chem - W/SM 4500-SO4⁻ E-2011								
Sulfate as SO4	20.7	5.00	mg/L	1			05/07/20 1532	CLW
Metals Dissolved by CVAA	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
EPA 7470A								
Mercury	<0.00020	0.00020	mg/L	1	U,Y1	05/15/20 1213	05/15/20 1437	DLO
Metals Dissolved by ICP	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
EPA 3010A/EPA 6010C								
Arsenic	<0.0050	0.0050	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2111	JDF
Barium	0.0054	0.0050	mg/L	1	Y1	05/12/20 1335	05/13/20 2111	JDF
Cadmium	<0.0020	0.0020	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2111	JDF
Calcium	97.7	0.250	mg/L	5	Y1	05/12/20 1335	05/18/20 1027	JDF
Chromium	<0.0020	0.0020	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2111	JDF
Copper	<0.0020	0.0020	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2111	JDF
Iron	<0.0500	0.0500	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2111	JDF
Lead	<0.0030	0.0030	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2111	JDF
Manganese	0.0476	0.0020	mg/L	1	Y1	05/12/20 1335	05/13/20 2111	JDF
Selenium	<0.0100	0.0100	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2111	JDF
Silver	<0.0020	0.0020	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2111	JDF
Sodium	39.1	1.00	mg/L	1	Y1	05/12/20 1335	05/13/20 2111	JDF
Zinc	0.0069	0.0050	mg/L	1	Y1	05/12/20 1335	05/13/20 2111	JDF



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CERTIFICATE OF ANALYSIS

D0E0415

Client Sample ID:	CDM-3D	Collected By:	Customer					
Sample Matrix:	Groundwater	Collection Date:	05/05/2020 9:58					
Lab Sample ID:	D0E0415-04 <th data-cs="6" data-kind="parent"></th> <th data-kind="ghost"></th> <th data-kind="ghost"></th> <th data-kind="ghost"></th> <th data-kind="ghost"></th> <th data-kind="ghost"></th>							
Volatile Organic Compounds by GCMS	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
EPA 5030C/EPA 8260C								
Acetone	<5.00	5.00	ug/L	1	U,Y1	05/14/20 1608	JAN	
Acrylonitrile	<5.00	5.00	ug/L	1	U,Y1	05/14/20 1608	JAN	
Benzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1608	JAN	
Bromobenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1608	JAN	
Bromochloromethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1608	JAN	
Bromodichloromethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1608	JAN	
Bromoform	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1608	JAN	
Bromomethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1608	JAN	
2-Butanone (MEK)	<5.00	5.00	ug/L	1	U,Y1	05/14/20 1608	JAN	
sec-Butylbenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1608	JAN	
tert-Butylbenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1608	JAN	
n-Butylbenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1608	JAN	
Carbon disulfide	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1608	JAN	
Carbon tetrachloride	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1608	JAN	
Chlorobenzene	1.80	1.00	ug/L	1	Y1	05/14/20 1608	JAN	
Chloroethane (Ethyl chloride)	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1608	JAN	
Chloroform	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1608	JAN	
Chloromethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1608	JAN	
2-Chlorotoluene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1608	JAN	
4-Chlorotoluene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1608	JAN	
1,2-Dibromo-3-chloropropane (DBCP)	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1608	JAN	
Dibromochloromethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1608	JAN	
1,2-Dibromoethane (Ethylene dibromide, EDB)	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1608	JAN	
Dibromomethane (Methylene bromide)	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1608	JAN	
trans-1,4-Dichloro-2-butene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1608	JAN	
1,4-Dichlorobenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1608	JAN	
1,3-Dichlorobenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1608	JAN	
1,2-Dichlorobenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1608	JAN	
Dichlorodifluoromethane (Freon-12)	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1608	JAN	
1,2-Dichloroethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1608	JAN	
1,1-Dichloroethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1608	JAN	
trans-1,2-Dichloroethene	38.8	1.00	ug/L	1	Y1	05/14/20 1608	JAN	
1,1-Dichloroethene	2.35	1.00	ug/L	1	Y1	05/14/20 1608	JAN	
cis-1,2-Dichloroethene	164	1.00	ug/L	1	Y1	05/14/20 1608	JAN	
1,3-Dichloropropane	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1608	JAN	
1,2-Dichloropropane	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1608	JAN	
2,2-Dichloropropane	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1608	JAN	
trans-1,3-Dichloropropene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1608	JAN	
cis-1,3-Dichloropropene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1608	JAN	
1,1-Dichloropropene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1608	JAN	
Diethyl ether	1.37	1.00	ug/L	1	Y1	05/14/20 1608	JAN	

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CERTIFICATE OF ANALYSIS

D0E0415

Client Sample ID:	CDM-3D	Collected By:	Customer
Sample Matrix:	Groundwater	Collection Date:	05/05/2020 9:58
Lab Sample ID:	D0E0415-04		

Volatile Organic Compounds by GCMS	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
1,4-Dioxane	<20.0	20.0	ug/L	1	U,Y1		05/14/20 1608	JAN
Ethylbenzene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1608	JAN
Hexachlorobutadiene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1608	JAN
2-Hexanone (MBK)	<5.00	5.00	ug/L	1	U,Y1		05/14/20 1608	JAN
Isopropylbenzene (Cumene)	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1608	JAN
4-Isopropyltoluene (p-Isopropyltoluene)	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1608	JAN
Methyl tert-butyl ether (MTBE)	1.82	1.00	ug/L	1	Y1		05/14/20 1608	JAN
Methylene chloride (Dichloromethane)	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1608	JAN
4-Methyl-2-pentanone (MIBK)	<5.00	5.00	ug/L	1	U,Y1		05/14/20 1608	JAN
Naphthalene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1608	JAN
n-Propylbenzene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1608	JAN
Styrene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1608	JAN
1,1,1,2-Tetrachloroethane	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1608	JAN
1,1,2,2-Tetrachloroethane	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1608	JAN
Tetrachloroethene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1608	JAN
Tetrahydrofuran (THF)	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1608	JAN
Toluene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1608	JAN
1,2,4-Trichlorobenzene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1608	JAN
1,2,3-Trichlorobenzene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1608	JAN
1,1,1-Trichloroethane	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1608	JAN
1,1,2-Trichloroethane	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1608	JAN
Trichloroethene	169	1.00	ug/L	1	Y1		05/14/20 1608	JAN
Trichlorofluoromethane (Freon 11)	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1608	JAN
1,2,3-Trichloropropane	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1608	JAN
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1608	JAN
1,3,5-Trimethylbenzene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1608	JAN
1,2,4-Trimethylbenzene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1608	JAN
Vinyl chloride	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1608	JAN
m,p-Xylene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1608	JAN
o-Xylene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1608	JAN
Surrogate: 1,2-Dichloroethane-d4	99.0	Limit: 70-130	% Rec	1			05/14/20 1608	JAN
Surrogate: Toluene-d8	100	Limit: 70-130	% Rec	1			05/14/20 1608	JAN
Surrogate: Pentafluorobenzene	102	Limit: 70-130	% Rec	1			05/14/20 1608	JAN

Polychlorinated Biphenyls (PCBs) by GC/ECD	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
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EPA 3510C/EPA 8082A

Aroclor-1016 (PCB-1016)	<0.100	0.100	ug/L	1	U,Y1	05/07/20 1000	05/08/20 1451	MRB
Aroclor-1221 (PCB-1221)	<0.100	0.100	ug/L	1	U,Y1	05/07/20 1000	05/08/20 1451	MRB
Aroclor-1232 (PCB-1232)	<0.100	0.100	ug/L	1	U,Y1	05/07/20 1000	05/08/20 1451	MRB
Aroclor-1242 (PCB-1242)	<0.100	0.100	ug/L	1	U,Y1	05/07/20 1000	05/08/20 1451	MRB

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CERTIFICATE OF ANALYSIS

D0E0415

Client Sample ID:	CDM-3D	Collected By:	Customer
Sample Matrix:	Groundwater	Collection Date:	05/05/2020 9:58
Lab Sample ID:	D0E0415-04		

Polychlorinated Biphenyls (PCBs) by GC/ECD	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
Aroclor-1248 (PCB-1248)	<0.100	0.100	ug/L	1	U,Y1	05/07/20 1000	05/08/20 1451	MRB
Aroclor-1254 (PCB-1254)	<0.100	0.100	ug/L	1	U,Y1	05/07/20 1000	05/08/20 1451	MRB
Aroclor-1260 (PCB-1260)	<0.100	0.100	ug/L	1	U,Y1	05/07/20 1000	05/08/20 1451	MRB
Surrogate: Decachlorobiphenyl (BZ-209)	75.1	Limit: 30-150	% Rec	1		05/07/20 1000	05/08/20 1451	MRB
Surrogate: Decachlorobiphenyl (BZ-209) [2C]	77.2	Limit: 30-150	% Rec	1		05/07/20 1000	05/08/20 1451	MRB
Surrogate: 2,4,5,6-Tetrachloro-m-xylene	39.8	Limit: 30-150	% Rec	1		05/07/20 1000	05/08/20 1451	MRB
Surrogate: 2,4,5,6-Tetrachloro-m-xylene [2C]	42.1	Limit: 30-150	% Rec	1		05/07/20 1000	05/08/20 1451	MRB



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CERTIFICATE OF ANALYSIS

D0E0415

Client Sample ID:	CDM-4S	Collected By:	Customer					
Sample Matrix:	Groundwater	Collection Date:	05/05/2020 10:55					
Lab Sample ID:	D0E0415-05							
Inorganics Total	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
EPA 9012A								
Cyanide - Total	<0.0100	0.0100	mg/L	1	Y1	05/13/20 1509	05/14/20 1617	CLW
Wet Chem - W/Hach 8000								
Chemical Oxygen Demand (COD)	32.4	5.00	mg/L	1		05/12/20 1500	05/12/20 1700	CCM
Wet Chem - W/SM 2320 B-2011								
Alkalinity to pH 4.5	523	1.00	mg/L	1	A27		05/12/20 1612	MAD
SM 2540 C-2011								
Total Dissolved Solids (TDS)	257	25.0	mg/L	10		05/10/20 1635	05/12/20 1725	ELB
Wet Chem - W/SM 4500-Cl E-2011								
Chloride	269	10.0	mg/L	5	A21		05/07/20 1403	CLW
Wet Chem - W/SM 4500-NO3⁻ F-2011								
Nitrate as N	0.0521	0.0500	mg/L	1	A5		05/06/20 1932	DJM
Wet Chem - W/SM 4500-SO4²⁻ E-2011								
Sulfate as SO4	6.30	5.00	mg/L	1	A21		05/07/20 1534	CLW
Metals Dissolved by CVAA	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
EPA 7470A								
Mercury	<0.00020	0.00020	mg/L	1	U,Y1	05/15/20 1213	05/15/20 1439	DLO
Metals Dissolved by ICP	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
EPA 3010A/EPA 6010C								
Arsenic	0.0050	0.0050	mg/L	1	Y1	05/12/20 1335	05/13/20 2121	JDF
Barium	0.274	0.0050	mg/L	1	Y1	05/12/20 1335	05/13/20 2121	JDF
Cadmium	<0.0020	0.0020	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2121	JDF
Calcium	144	0.250	mg/L	5	Y1	05/12/20 1335	05/18/20 1030	JDF
Chromium	<0.0020	0.0020	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2121	JDF
Copper	<0.0020	0.0020	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2121	JDF
Iron	21.9	0.0500	mg/L	1	Y1	05/12/20 1335	05/13/20 2121	JDF
Lead	0.0032	0.0030	mg/L	1	Y1	05/12/20 1335	05/13/20 2121	JDF
Manganese	1.02	0.0020	mg/L	1	Y1	05/12/20 1335	05/13/20 2121	JDF
Selenium	<0.0100	0.0100	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2121	JDF
Silver	<0.0020	0.0020	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2121	JDF
Sodium	192	1.00	mg/L	1	Y1	05/12/20 1335	05/13/20 2121	JDF
Zinc	0.0089	0.0050	mg/L	1	Y1	05/12/20 1335	05/13/20 2121	JDF



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CERTIFICATE OF ANALYSIS

D0E0415

Client Sample ID:	CDM-4S	Collected By:	Customer					
Sample Matrix:	Groundwater	Collection Date:	05/05/2020 10:55					
Lab Sample ID:	D0E0415-05							
Volatile Organic Compounds by GCMS	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
EPA 5030C/EPA 8260C								
Acetone	6.13	5.00	ug/L	1	Y1	05/14/20	1634	JAN
Acrylonitrile	<5.00	5.00	ug/L	1	U,Y1	05/14/20	1634	JAN
Benzene	1.91	1.00	ug/L	1	Y1	05/14/20	1634	JAN
Bromobenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1634	JAN
Bromochloromethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1634	JAN
Bromodichloromethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1634	JAN
Bromoform	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1634	JAN
Bromomethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1634	JAN
2-Butanone (MEK)	<5.00	5.00	ug/L	1	U,Y1	05/14/20	1634	JAN
sec-Butylbenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1634	JAN
tert-Butylbenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1634	JAN
n-Butylbenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1634	JAN
Carbon disulfide	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1634	JAN
Carbon tetrachloride	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1634	JAN
Chlorobenzene	6.88	1.00	ug/L	1	Y1	05/14/20	1634	JAN
Chloroethane (Ethyl chloride)	2.91	1.00	ug/L	1	Y1	05/14/20	1634	JAN
Chloroform	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1634	JAN
Chloromethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1634	JAN
2-Chlorotoluene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1634	JAN
4-Chlorotoluene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1634	JAN
1,2-Dibromo-3-chloropropane (DBCP)	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1634	JAN
Dibromochloromethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1634	JAN
1,2-Dibromoethane (Ethylene dibromide, EDB)	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1634	JAN
Dibromomethane (Methylene bromide)	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1634	JAN
trans-1,4-Dichloro-2-butene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1634	JAN
1,4-Dichlorobenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1634	JAN
1,3-Dichlorobenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1634	JAN
1,2-Dichlorobenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1634	JAN
Dichlorodifluoromethane (Freon-12)	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1634	JAN
1,2-Dichloroethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1634	JAN
1,1-Dichloroethane	3.88	1.00	ug/L	1	Y1	05/14/20	1634	JAN
trans-1,2-Dichloroethene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1634	JAN
1,1-Dichloroethene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1634	JAN
cis-1,2-Dichloroethene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1634	JAN
1,3-Dichloropropane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1634	JAN
1,2-Dichloropropane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1634	JAN
2,2-Dichloropropane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1634	JAN
trans-1,3-Dichloropropene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1634	JAN
cis-1,3-Dichloropropene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1634	JAN
1,1-Dichloropropene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1634	JAN
Diethyl ether	6.27	1.00	ug/L	1	Y1	05/14/20	1634	JAN

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CERTIFICATE OF ANALYSIS

D0E0415

Client Sample ID:	CDM-4S	Collected By:	Customer					
Sample Matrix:	Groundwater	Collection Date:	05/05/2020 10:55					
Lab Sample ID:	D0E0415-05							
Volatile Organic Compounds by GCMS	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
1,4-Dioxane	148	20.0	ug/L	1	Y1	05/14/20	1634	JAN
Ethylbenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1634	JAN
Hexachlorobutadiene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1634	JAN
2-Hexanone (MBK)	<5.00	5.00	ug/L	1	U,Y1	05/14/20	1634	JAN
Isopropylbenzene (Cumene)	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1634	JAN
4-Isopropyltoluene (p-Isopropyltoluene)	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1634	JAN
Methyl tert-butyl ether (MTBE)	2.46	1.00	ug/L	1	Y1	05/14/20	1634	JAN
Methylene chloride (Dichloromethane)	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1634	JAN
4-Methyl-2-pentanone (MIBK)	<5.00	5.00	ug/L	1	U,Y1	05/14/20	1634	JAN
Naphthalene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1634	JAN
n-Propylbenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1634	JAN
Styrene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1634	JAN
1,1,1,2-Tetrachloroethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1634	JAN
1,1,2,2-Tetrachloroethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1634	JAN
Tetrachloroethene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1634	JAN
Tetrahydrofuran (THF)	7.81	1.00	ug/L	1	Y1	05/14/20	1634	JAN
Toluene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1634	JAN
1,2,4-Trichlorobenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1634	JAN
1,2,3-Trichlorobenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1634	JAN
1,1,1-Trichloroethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1634	JAN
1,1,2-Trichloroethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1634	JAN
Trichloroethene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1634	JAN
Trichlorofluoromethane (Freon 11)	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1634	JAN
1,2,3-Trichloropropane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1634	JAN
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1634	JAN
1,3,5-Trimethylbenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1634	JAN
1,2,4-Trimethylbenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1634	JAN
Vinyl chloride	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1634	JAN
m,p-Xylene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1634	JAN
o-Xylene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1634	JAN
Surrogate: 1,2-Dichloroethane-d4	99.0	Limit: 70-130	% Rec	1		05/14/20	1634	JAN
Surrogate: Toluene-d8	99.9	Limit: 70-130	% Rec	1		05/14/20	1634	JAN
Surrogate: Pentafluorobenzene	102	Limit: 70-130	% Rec	1		05/14/20	1634	JAN



Microbac Laboratories, Inc. - Dayville

CERTIFICATE OF ANALYSIS

D0E0415

Client Sample ID:	CDM-4D	Collected By:	Customer					
Sample Matrix:	Groundwater	Collection Date:	05/05/2020 10:48					
Lab Sample ID:	D0E0415-06							
Inorganics Total	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
EPA 9012A					Method Notes: A28			
Cyanide - Total	<0.0100	0.0100	mg/L	1	Y1	05/13/20 1509	05/14/20 1621	CLW
Wet Chem - W/Hach 8000								
Chemical Oxygen Demand (COD)	88.3	5.00	mg/L	1		05/12/20 1500	05/12/20 1700	CCM
Wet Chem - W/SM 2320 B-2011								
Alkalinity to pH 4.5	605	1.00	mg/L	1	A27		05/12/20 1612	MAD
SM 2540 C-2011								
Total Dissolved Solids (TDS)	1160	25.0	mg/L	10		05/10/20 1635	05/12/20 1725	ELB
Wet Chem - W/SM 4500-CI E-2011								
Chloride	319	10.0	mg/L	5	A21		05/07/20 1404	CLW
Wet Chem - W/SM 4500-NO3⁻ F-2011								
Nitrate as N	0.0692	0.0500	mg/L	1	A5		05/06/20 1936	DJM
Wet Chem - W/SM 4500-SO4⁻ E-2011								
Sulfate as SO4	<5.00	5.00	mg/L	1	A21, U		05/07/20 1534	CLW
Metals Dissolved by CVAA	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
EPA 7470A								
Mercury	<0.00020	0.00020	mg/L	1	U,Y1	05/15/20 1213	05/15/20 1441	DLO
Metals Dissolved by ICP	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
EPA 3010A/EPA 6010C								
Arsenic	<0.0050	0.0050	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2134	JDF
Barium	0.0637	0.0050	mg/L	1	Y1	05/12/20 1335	05/13/20 2134	JDF
Cadmium	<0.0020	0.0020	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2134	JDF
Calcium	212	0.500	mg/L	10	Y1	05/12/20 1335	05/18/20 1034	JDF
Chromium	<0.0020	0.0020	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2134	JDF
Copper	<0.0020	0.0020	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2134	JDF
Iron	11.3	0.0500	mg/L	1	Y1	05/12/20 1335	05/13/20 2134	JDF
Lead	<0.0030	0.0030	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2134	JDF
Manganese	5.30	0.0020	mg/L	1	Y1	05/12/20 1335	05/13/20 2134	JDF
Selenium	<0.0100	0.0100	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2134	JDF
Silver	<0.0020	0.0020	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2134	JDF
Sodium	158	1.00	mg/L	1	Y1	05/12/20 1335	05/13/20 2134	JDF
Zinc	0.0066	0.0050	mg/L	1	Y1	05/12/20 1335	05/13/20 2134	JDF



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CERTIFICATE OF ANALYSIS

D0E0415

Client Sample ID:	CDM-4D	Sample Matrix:	Groundwater	Collected By:	Customer			
Lab Sample ID:	D0E0415-06			Collection Date:	05/05/2020 10:48			
Volatile Organic Compounds by GCMS	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
EPA 5030C/EPA 8260C								
Acetone	<5.00	5.00	ug/L	1	U,Y1	05/14/20	1659	JAN
Acrylonitrile	<5.00	5.00	ug/L	1	U,Y1	05/14/20	1659	JAN
Benzene	1.49	1.00	ug/L	1	Y1	05/14/20	1659	JAN
Bromobenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1659	JAN
Bromochloromethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1659	JAN
Bromodichloromethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1659	JAN
Bromoform	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1659	JAN
Bromomethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1659	JAN
2-Butanone (MEK)	<5.00	5.00	ug/L	1	U,Y1	05/14/20	1659	JAN
sec-Butylbenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1659	JAN
tert-Butylbenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1659	JAN
n-Butylbenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1659	JAN
Carbon disulfide	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1659	JAN
Carbon tetrachloride	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1659	JAN
Chlorobenzene	74.6	1.00	ug/L	1	Y1	05/14/20	1659	JAN
Chloroethane (Ethyl chloride)	1.40	1.00	ug/L	1	Y1	05/14/20	1659	JAN
Chloroform	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1659	JAN
Chloromethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1659	JAN
2-Chlorotoluene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1659	JAN
4-Chlorotoluene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1659	JAN
1,2-Dibromo-3-chloropropane (DBCP)	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1659	JAN
Dibromochloromethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1659	JAN
1,2-Dibromoethane (Ethylene dibromide, EDB)	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1659	JAN
Dibromomethane (Methylene bromide)	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1659	JAN
trans-1,4-Dichloro-2-butene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1659	JAN
1,4-Dichlorobenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1659	JAN
1,3-Dichlorobenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1659	JAN
1,2-Dichlorobenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1659	JAN
Dichlorodifluoromethane (Freon-12)	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1659	JAN
1,2-Dichloroethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1659	JAN
1,1-Dichloroethane	9.85	1.00	ug/L	1	Y1	05/14/20	1659	JAN
trans-1,2-Dichloroethene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1659	JAN
1,1-Dichloroethene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1659	JAN
cis-1,2-Dichloroethene	13.5	1.00	ug/L	1	Y1	05/14/20	1659	JAN
1,3-Dichloropropane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1659	JAN
1,2-Dichloropropane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1659	JAN
2,2-Dichloropropane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1659	JAN
trans-1,3-Dichloropropene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1659	JAN
cis-1,3-Dichloropropene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1659	JAN
1,1-Dichloropropene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1659	JAN
Diethyl ether	5.85	1.00	ug/L	1	Y1	05/14/20	1659	JAN

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CERTIFICATE OF ANALYSIS

D0E0415

Client Sample ID:	CDM-4D					Collected By:	Customer	
Sample Matrix:	Groundwater					Collection Date:	05/05/2020 10:48	
Lab Sample ID:	D0E0415-06							
Volatile Organic Compounds by GCMS	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
1,4-Dioxane	180	20.0	ug/L	1	Y1		05/14/20 1659	JAN
Ethylbenzene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1659	JAN
Hexachlorobutadiene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1659	JAN
2-Hexanone (MBK)	<5.00	5.00	ug/L	1	U,Y1		05/14/20 1659	JAN
Isopropylbenzene (Cumene)	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1659	JAN
4-Isopropyltoluene (p-Isopropyltoluene)	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1659	JAN
Methyl tert-butyl ether (MTBE)	2.49	1.00	ug/L	1	Y1		05/14/20 1659	JAN
Methylene chloride (Dichloromethane)	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1659	JAN
4-Methyl-2-pentanone (MIBK)	<5.00	5.00	ug/L	1	U,Y1		05/14/20 1659	JAN
Naphthalene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1659	JAN
n-Propylbenzene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1659	JAN
Styrene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1659	JAN
1,1,1,2-Tetrachloroethane	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1659	JAN
1,1,2,2-Tetrachloroethane	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1659	JAN
Tetrachloroethene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1659	JAN
Tetrahydrofuran (THF)	7.69	1.00	ug/L	1	Y1		05/14/20 1659	JAN
Toluene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1659	JAN
1,2,4-Trichlorobenzene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1659	JAN
1,2,3-Trichlorobenzene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1659	JAN
1,1,1-Trichloroethane	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1659	JAN
1,1,2-Trichloroethane	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1659	JAN
Trichloroethene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1659	JAN
Trichlorofluoromethane (Freon 11)	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1659	JAN
1,2,3-Trichloropropane	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1659	JAN
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1659	JAN
1,3,5-Trimethylbenzene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1659	JAN
1,2,4-Trimethylbenzene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1659	JAN
Vinyl chloride	10.7	1.00	ug/L	1	Y1		05/14/20 1659	JAN
m,p-Xylene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1659	JAN
o-Xylene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1659	JAN
Surrogate: 1,2-Dichloroethane-d4	101	Limit: 70-130	% Rec	1			05/14/20 1659	JAN
Surrogate: Toluene-d8	97.1	Limit: 70-130	% Rec	1			05/14/20 1659	JAN
Surrogate: Pentafluorobenzene	103	Limit: 70-130	% Rec	1			05/14/20 1659	JAN



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CERTIFICATE OF ANALYSIS

D0E0415

Client Sample ID:	CDM-5S	Collected By:	Customer					
Sample Matrix:	Groundwater	Collection Date:	05/05/2020 11:26					
Lab Sample ID:	D0E0415-07							
Inorganics Total	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
EPA 9012A					Method Notes: A28			
Cyanide - Total	<0.0100	0.0100	mg/L	1	Y1	05/13/20 1509	05/14/20 1622	CLW
Wet Chem - W/Hach 8000								
Chemical Oxygen Demand (COD)	80.1	5.00	mg/L	1		05/12/20 1500	05/12/20 1700	CCM
Wet Chem - W/SM 2320 B-2011								
Alkalinity to pH 4.5	485	1.00	mg/L	1	A27		05/12/20 1612	MAD
SM 2540 C-2011								
Total Dissolved Solids (TDS)	745	25.0	mg/L	10		05/10/20 1635	05/12/20 1725	ELB
Wet Chem - W/SM 4500-CI E-2011								
Chloride	130	8.00	mg/L	4			05/07/20 1405	CLW
Wet Chem - W/SM 4500-NO3⁻ F-2011								
Nitrate as N	<0.0500	0.0500	mg/L	1	U		05/06/20 1938	DJM
Wet Chem - W/SM 4500-SO4⁻ E-2011								
Sulfate as SO4	<5.00	5.00	mg/L	1	U		05/07/20 1536	CLW
Metals Dissolved by CVAA	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
EPA 7470A								
Mercury	<0.00020	0.00020	mg/L	1	U,Y1	05/15/20 1213	05/15/20 1443	DLO
Metals Dissolved by ICP	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
EPA 3010A/EPA 6010C								
Arsenic	<0.0050	0.0050	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2137	JDF
Barium	0.106	0.0050	mg/L	1	Y1	05/12/20 1335	05/13/20 2137	JDF
Cadmium	<0.0020	0.0020	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2137	JDF
Calcium	112	0.250	mg/L	5	Y1	05/12/20 1335	05/18/20 1037	JDF
Chromium	<0.0020	0.0020	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2137	JDF
Copper	0.0022	0.0020	mg/L	1	Q11,Y1	05/12/20 1335	05/13/20 2137	JDF
Iron	0.533	0.0500	mg/L	1	Y1	05/12/20 1335	05/13/20 2137	JDF
Lead	<0.0030	0.0030	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2137	JDF
Manganese	7.49	0.0020	mg/L	1	Y1	05/12/20 1335	05/13/20 2137	JDF
Selenium	<0.0100	0.0100	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2137	JDF
Silver	<0.0020	0.0020	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2137	JDF
Sodium	80.4	1.00	mg/L	1	Y1	05/12/20 1335	05/13/20 2137	JDF
Zinc	0.0078	0.0050	mg/L	1	Y1	05/12/20 1335	05/13/20 2137	JDF



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CERTIFICATE OF ANALYSIS

D0E0415

Client Sample ID:	CDM-5S	Collected By:	Customer					
Sample Matrix:	Groundwater	Collection Date:	05/05/2020 11:26					
Lab Sample ID:	D0E0415-07							
Volatile Organic Compounds by GCMS	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
EPA 5030C/EPA 8260C								
Acetone	<5.00	5.00	ug/L	1	U,Y1	05/14/20	1725	JAN
Acrylonitrile	<5.00	5.00	ug/L	1	U,Y1	05/14/20	1725	JAN
Benzene	1.12	1.00	ug/L	1	Y1	05/14/20	1725	JAN
Bromobenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1725	JAN
Bromochloromethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1725	JAN
Bromodichloromethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1725	JAN
Bromoform	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1725	JAN
Bromomethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1725	JAN
2-Butanone (MEK)	<5.00	5.00	ug/L	1	U,Y1	05/14/20	1725	JAN
sec-Butylbenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1725	JAN
tert-Butylbenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1725	JAN
n-Butylbenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1725	JAN
Carbon disulfide	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1725	JAN
Carbon tetrachloride	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1725	JAN
Chlorobenzene	8.52	1.00	ug/L	1	Y1	05/14/20	1725	JAN
Chloroethane (Ethyl chloride)	3.21	1.00	ug/L	1	Y1	05/14/20	1725	JAN
Chloroform	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1725	JAN
Chloromethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1725	JAN
2-Chlorotoluene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1725	JAN
4-Chlorotoluene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1725	JAN
1,2-Dibromo-3-chloropropane (DBCP)	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1725	JAN
Dibromochloromethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1725	JAN
1,2-Dibromoethane (Ethylene dibromide, EDB)	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1725	JAN
Dibromomethane (Methylene bromide)	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1725	JAN
trans-1,4-Dichloro-2-butene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1725	JAN
1,4-Dichlorobenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1725	JAN
1,3-Dichlorobenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1725	JAN
1,2-Dichlorobenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1725	JAN
Dichlorodifluoromethane (Freon-12)	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1725	JAN
1,2-Dichloroethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1725	JAN
1,1-Dichloroethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1725	JAN
trans-1,2-Dichloroethene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1725	JAN
1,1-Dichloroethene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1725	JAN
cis-1,2-Dichloroethene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1725	JAN
1,3-Dichloropropane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1725	JAN
1,2-Dichloropropane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1725	JAN
2,2-Dichloropropane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1725	JAN
trans-1,3-Dichloropropene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1725	JAN
cis-1,3-Dichloropropene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1725	JAN
1,1-Dichloropropene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1725	JAN
Diethyl ether	2.52	1.00	ug/L	1	Y1	05/14/20	1725	JAN

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CERTIFICATE OF ANALYSIS

D0E0415

Client Sample ID:	CDM-5S	Collected By:	Customer
Sample Matrix:	Groundwater	Collection Date:	05/05/2020 11:26
Lab Sample ID:	D0E0415-07		

Volatile Organic Compounds by GCMS	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
1,4-Dioxane	143	20.0	ug/L	1	Y1		05/14/20 1725	JAN
Ethylbenzene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1725	JAN
Hexachlorobutadiene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1725	JAN
2-Hexanone (MBK)	<5.00	5.00	ug/L	1	U,Y1		05/14/20 1725	JAN
Isopropylbenzene (Cumene)	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1725	JAN
4-Isopropyltoluene (p-Isopropyltoluene)	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1725	JAN
Methyl tert-butyl ether (MTBE)	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1725	JAN
Methylene chloride (Dichloromethane)	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1725	JAN
4-Methyl-2-pentanone (MIBK)	<5.00	5.00	ug/L	1	U,Y1		05/14/20 1725	JAN
Naphthalene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1725	JAN
n-Propylbenzene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1725	JAN
Styrene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1725	JAN
1,1,1,2-Tetrachloroethane	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1725	JAN
1,1,2,2-Tetrachloroethane	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1725	JAN
Tetrachloroethene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1725	JAN
Tetrahydrofuran (THF)	22.1	1.00	ug/L	1	Y1		05/14/20 1725	JAN
Toluene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1725	JAN
1,2,4-Trichlorobenzene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1725	JAN
1,2,3-Trichlorobenzene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1725	JAN
1,1,1-Trichloroethane	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1725	JAN
1,1,2-Trichloroethane	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1725	JAN
Trichloroethene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1725	JAN
Trichlorofluoromethane (Freon 11)	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1725	JAN
1,2,3-Trichloropropane	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1725	JAN
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1725	JAN
1,3,5-Trimethylbenzene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1725	JAN
1,2,4-Trimethylbenzene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1725	JAN
Vinyl chloride	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1725	JAN
m,p-Xylene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1725	JAN
o-Xylene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1725	JAN
Surrogate: 1,2-Dichloroethane-d4	101	Limit: 70-130	% Rec	1			05/14/20 1725	JAN
Surrogate: Toluene-d8	99.3	Limit: 70-130	% Rec	1			05/14/20 1725	JAN
Surrogate: Pentafluorobenzene	101	Limit: 70-130	% Rec	1			05/14/20 1725	JAN

Polychlorinated Biphenyls (PCBs) by GC/ECD	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
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EPA 3510C/EPA 8082A

Aroclor-1016 (PCB-1016) [2C]	2.42	0.400	ug/L	4	Y1	05/07/20 1000	05/08/20 1600	MRB
Aroclor-1221 (PCB-1221) [2C]	<0.400	0.400	ug/L	4	U,Y1	05/07/20 1000	05/08/20 1600	MRB
Aroclor-1232 (PCB-1232) [2C]	<0.400	0.400	ug/L	4	U,Y1	05/07/20 1000	05/08/20 1600	MRB
Aroclor-1242 (PCB-1242) [2C]	<0.400	0.400	ug/L	4	U,Y1	05/07/20 1000	05/08/20 1600	MRB

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Microbac Laboratories, Inc. - Dayville

CERTIFICATE OF ANALYSIS

D0E0415

Client Sample ID:	CDM-5S	Collected By:	Customer
Sample Matrix:	Groundwater	Collection Date:	05/05/2020 11:26
Lab Sample ID:	D0E0415-07		

Polychlorinated Biphenyls (PCBs) by GC/ECD	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
Aroclor-1248 (PCB-1248) [2C]	<0.400	0.400	ug/L	4	U,Y1	05/07/20 1000	05/08/20 1600	MRB
Aroclor-1254 (PCB-1254) [2C]	<0.400	0.400	ug/L	4	U,Y1	05/07/20 1000	05/08/20 1600	MRB
Aroclor-1260 (PCB-1260) [2C]	<0.400	0.400	ug/L	4	U,Y1	05/07/20 1000	05/08/20 1600	MRB
Surrogate: Decachlorobiphenyl (BZ-209)	62.2	Limit: 30-150	% Rec	4		05/07/20 1000	05/08/20 1600	MRB
Surrogate: Decachlorobiphenyl (BZ-209) [2C]	67.1	Limit: 30-150	% Rec	4		05/07/20 1000	05/08/20 1600	MRB
Surrogate: 2,4,5,6-Tetrachloro-m-xylene	41.6	Limit: 30-150	% Rec	4		05/07/20 1000	05/08/20 1600	MRB
Surrogate: 2,4,5,6-Tetrachloro-m-xylene [2C]	43.7	Limit: 30-150	% Rec	4		05/07/20 1000	05/08/20 1600	MRB



Microbac Laboratories, Inc. - Dayville

CERTIFICATE OF ANALYSIS

D0E0415

Client Sample ID:	CDM-5D	Collected By:	Customer					
Sample Matrix:	Groundwater	Collection Date:	05/05/2020 11:35					
Lab Sample ID:	D0E0415-08							
Inorganics Total	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
EPA 9012A					Method Notes: A28			
Cyanide - Total	<0.0100	0.0100	mg/L	1	Y1	05/13/20 1509	05/14/20 1623	CLW
Wet Chem - W/Hach 8000								
Chemical Oxygen Demand (COD)	54.6	5.00	mg/L	1		05/12/20 1500	05/12/20 1700	CCM
Wet Chem - W/SM 2320 B-2011								
Alkalinity to pH 4.5	460	1.00	mg/L	1	A27		05/12/20 1612	MAD
SM 2540 C-2011								
Total Dissolved Solids (TDS)	639	25.0	mg/L	10		05/10/20 1635	05/12/20 1725	ELB
Wet Chem - W/SM 4500-CI E-2011								
Chloride	88.6	2.00	mg/L	1			05/07/20 1405	CLW
Wet Chem - W/SM 4500-NO3⁻ F-2011								
Nitrate as N	0.146	0.0500	mg/L	1			05/06/20 1939	DJM
Wet Chem - W/SM 4500-SO4⁻ E-2011								
Sulfate as SO4	<5.00	5.00	mg/L	1	U		05/07/20 1536	CLW
Metals Dissolved by CVAA	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
EPA 7470A								
Mercury	<0.00020	0.00020	mg/L	1	U,Y1	05/15/20 1213	05/15/20 1450	DLO
Metals Dissolved by ICP	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
EPA 3010A/EPA 6010C								
Arsenic	<0.0050	0.0050	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2140	JDF
Barium	0.178	0.0050	mg/L	1	Y1	05/12/20 1335	05/13/20 2140	JDF
Cadmium	<0.0020	0.0020	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2140	JDF
Calcium	109	0.250	mg/L	5	Y1	05/12/20 1335	05/18/20 1040	JDF
Chromium	<0.0020	0.0020	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2140	JDF
Copper	0.0114	0.0020	mg/L	1	Q11,Y1	05/12/20 1335	05/13/20 2140	JDF
Iron	0.104	0.0500	mg/L	1	Y1	05/12/20 1335	05/13/20 2140	JDF
Lead	0.0033	0.0030	mg/L	1	Y1	05/12/20 1335	05/13/20 2140	JDF
Manganese	8.62	0.0020	mg/L	1	Y1	05/12/20 1335	05/13/20 2140	JDF
Selenium	<0.0100	0.0100	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2140	JDF
Silver	<0.0020	0.0020	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2140	JDF
Sodium	45.4	1.00	mg/L	1	Y1	05/12/20 1335	05/13/20 2140	JDF
Zinc	0.0053	0.0050	mg/L	1	Y1	05/12/20 1335	05/13/20 2140	JDF



Microbac Laboratories, Inc. - Dayville

CERTIFICATE OF ANALYSIS

D0E0415

Client Sample ID:	CDM-5D					Collected By:	Customer	
Sample Matrix:	Groundwater					Collection Date:	05/05/2020 11:35	
Lab Sample ID:	D0E0415-08							
Volatile Organic Compounds by GCMS	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
EPA 5030C/EPA 8260C								
Acetone	<5.00	5.00	ug/L	1	U,Y1	05/14/20	1750	JAN
Acrylonitrile	<5.00	5.00	ug/L	1	U,Y1	05/14/20	1750	JAN
Benzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1750	JAN
Bromobenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1750	JAN
Bromochloromethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1750	JAN
Bromodichloromethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1750	JAN
Bromoform	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1750	JAN
Bromomethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1750	JAN
2-Butanone (MEK)	<5.00	5.00	ug/L	1	U,Y1	05/14/20	1750	JAN
sec-Butylbenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1750	JAN
tert-Butylbenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1750	JAN
n-Butylbenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1750	JAN
Carbon disulfide	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1750	JAN
Carbon tetrachloride	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1750	JAN
Chlorobenzene	3.43	1.00	ug/L	1	Y1	05/14/20	1750	JAN
Chloroethane (Ethyl chloride)	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1750	JAN
Chloroform	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1750	JAN
Chloromethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1750	JAN
2-Chlorotoluene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1750	JAN
4-Chlorotoluene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1750	JAN
1,2-Dibromo-3-chloropropane (DBCP)	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1750	JAN
Dibromochloromethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1750	JAN
1,2-Dibromoethane (Ethylene dibromide, EDB)	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1750	JAN
Dibromomethane (Methylene bromide)	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1750	JAN
trans-1,4-Dichloro-2-butene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1750	JAN
1,4-Dichlorobenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1750	JAN
1,3-Dichlorobenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1750	JAN
1,2-Dichlorobenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1750	JAN
Dichlorodifluoromethane (Freon-12)	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1750	JAN
1,2-Dichloroethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1750	JAN
1,1-Dichloroethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1750	JAN
trans-1,2-Dichloroethene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1750	JAN
1,1-Dichloroethene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1750	JAN
cis-1,2-Dichloroethene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1750	JAN
1,3-Dichloropropane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1750	JAN
1,2-Dichloropropane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1750	JAN
2,2-Dichloropropane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1750	JAN
trans-1,3-Dichloropropene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1750	JAN
cis-1,3-Dichloropropene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1750	JAN
1,1-Dichloropropene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1750	JAN
Diethyl ether	3.76	1.00	ug/L	1	Y1	05/14/20	1750	JAN

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Microbac Laboratories, Inc. - Dayville

CERTIFICATE OF ANALYSIS

D0E0415

Client Sample ID:	CDM-5D	Collected By:	Customer
Sample Matrix:	Groundwater	Collection Date:	05/05/2020 11:35
Lab Sample ID:	D0E0415-08		

Volatile Organic Compounds by GCMS	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
1,4-Dioxane	55.5	20.0	ug/L	1	Y1		05/14/20 1750	JAN
Ethylbenzene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1750	JAN
Hexachlorobutadiene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1750	JAN
2-Hexanone (MBK)	<5.00	5.00	ug/L	1	U,Y1		05/14/20 1750	JAN
Isopropylbenzene (Cumene)	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1750	JAN
4-Isopropyltoluene (p-Isopropyltoluene)	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1750	JAN
Methyl tert-butyl ether (MTBE)	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1750	JAN
Methylene chloride (Dichloromethane)	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1750	JAN
4-Methyl-2-pentanone (MIBK)	<5.00	5.00	ug/L	1	U,Y1		05/14/20 1750	JAN
Naphthalene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1750	JAN
n-Propylbenzene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1750	JAN
Styrene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1750	JAN
1,1,1,2-Tetrachloroethane	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1750	JAN
1,1,2,2-Tetrachloroethane	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1750	JAN
Tetrachloroethene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1750	JAN
Tetrahydrofuran (THF)	12.0	1.00	ug/L	1	Y1		05/14/20 1750	JAN
Toluene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1750	JAN
1,2,4-Trichlorobenzene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1750	JAN
1,2,3-Trichlorobenzene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1750	JAN
1,1,1-Trichloroethane	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1750	JAN
1,1,2-Trichloroethane	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1750	JAN
Trichloroethene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1750	JAN
Trichlorofluoromethane (Freon 11)	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1750	JAN
1,2,3-Trichloropropane	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1750	JAN
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1750	JAN
1,3,5-Trimethylbenzene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1750	JAN
1,2,4-Trimethylbenzene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1750	JAN
Vinyl chloride	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1750	JAN
m,p-Xylene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1750	JAN
o-Xylene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1750	JAN
Surrogate: 1,2-Dichloroethane-d4	102	Limit: 70-130	% Rec	1			05/14/20 1750	JAN
Surrogate: Toluene-d8	102	Limit: 70-130	% Rec	1			05/14/20 1750	JAN
Surrogate: Pentafluorobenzene	101	Limit: 70-130	% Rec	1			05/14/20 1750	JAN

Polychlorinated Biphenyls (PCBs) by GC/ECD	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
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EPA 3510C/EPA 8082A

Aroclor-1016 (PCB-1016) [2C]	0.699	0.100	ug/L	1	Y1	05/07/20 1000	05/08/20 1514	MRB
Aroclor-1221 (PCB-1221) [2C]	<0.100	0.100	ug/L	1	U,Y1	05/07/20 1000	05/08/20 1514	MRB
Aroclor-1232 (PCB-1232) [2C]	<0.100	0.100	ug/L	1	U,Y1	05/07/20 1000	05/08/20 1514	MRB
Aroclor-1242 (PCB-1242) [2C]	<0.100	0.100	ug/L	1	U,Y1	05/07/20 1000	05/08/20 1514	MRB

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Microbac Laboratories, Inc. - Dayville

CERTIFICATE OF ANALYSIS

D0E0415

Client Sample ID:	CDM-5D	Collected By:	Customer					
Sample Matrix:	Groundwater	Collection Date:	05/05/2020 11:35					
Lab Sample ID:	D0E0415-08							
Polychlorinated Biphenyls (PCBs) by GC/ECD	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
Aroclor-1248 (PCB-1248) [2C]	<0.100	0.100	ug/L	1	U,Y1	05/07/20 1000	05/08/20 1514	MRB
Aroclor-1254 (PCB-1254) [2C]	<0.100	0.100	ug/L	1	U,Y1	05/07/20 1000	05/08/20 1514	MRB
Aroclor-1260 (PCB-1260) [2C]	<0.100	0.100	ug/L	1	U,Y1	05/07/20 1000	05/08/20 1514	MRB
Surrogate: Decachlorobiphenyl (BZ-209)	69.2	Limit: 30-150	% Rec	1		05/07/20 1000	05/08/20 1514	MRB
Surrogate: Decachlorobiphenyl (BZ-209) [2C]	73.9	Limit: 30-150	% Rec	1		05/07/20 1000	05/08/20 1514	MRB
Surrogate: 2,4,5,6-Tetrachloro-m-xylene	37.4	Limit: 30-150	% Rec	1		05/07/20 1000	05/08/20 1514	MRB
Surrogate: 2,4,5,6-Tetrachloro-m-xylene [2C]	41.3	Limit: 30-150	% Rec	1		05/07/20 1000	05/08/20 1514	MRB



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CERTIFICATE OF ANALYSIS

D0E0415

Client Sample ID:	CDM-6D	Sample Matrix:	Groundwater	Collected By:	Customer			
Lab Sample ID:	D0E0415-09			Collection Date:	05/05/2020 14:15			
Inorganics Total	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
EPA 9012A								
Cyanide - Total	<0.0100	0.0100	mg/L	1	Y1	05/13/20 1509	05/14/20 1611	CLW
Wet Chem - W/Hach 8000								
Chemical Oxygen Demand (COD)	6.16	5.00	mg/L	1		05/13/20 1528	05/13/20 1728	CCM
Wet Chem - W/SM 2320 B-2011								
Alkalinity to pH 4.5	113	1.00	mg/L	1	A27		05/12/20 1612	MAD
SM 2540 C-2011								
Total Dissolved Solids (TDS)	175	25.0	mg/L	10		05/10/20 1635	05/12/20 1725	ELB
Wet Chem - W/SM 4500-Cl E-2011								
Chloride	16.5	2.00	mg/L	1			05/07/20 1350	CLW
Wet Chem - W/SM 4500-NO3⁻ F-2011								
Nitrate as N	0.887	0.0500	mg/L	1			05/06/20 1940	DJM
Wet Chem - W/SM 4500-SO4⁻ E-2011								
Sulfate as SO4	14.0	5.00	mg/L	1			05/07/20 1522	CLW
Metals Dissolved by CVAA	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
EPA 7470A								
Mercury	<0.00020	0.00020	mg/L	1	U,Y1	05/15/20 1213	05/15/20 1456	DLO
Metals Dissolved by ICP	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
EPA 3010A/EPA 6010C								
Arsenic	<0.0050	0.0050	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2143	JDF
Barium	0.0963	0.0050	mg/L	1	Y1	05/12/20 1335	05/13/20 2143	JDF
Cadmium	<0.0020	0.0020	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2143	JDF
Calcium	20.9	0.0500	mg/L	1	Y1	05/12/20 1335	05/13/20 2143	JDF
Chromium	<0.0020	0.0020	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2143	JDF
Copper	0.0065	0.0020	mg/L	1	Q11,Y1	05/12/20 1335	05/13/20 2143	JDF
Iron	<0.0500	0.0500	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2143	JDF
Lead	<0.0030	0.0030	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2143	JDF
Manganese	0.0024	0.0020	mg/L	1	Y1	05/12/20 1335	05/13/20 2143	JDF
Selenium	<0.0100	0.0100	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2143	JDF
Silver	<0.0020	0.0020	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2143	JDF
Sodium	33.3	1.00	mg/L	1	Y1	05/12/20 1335	05/13/20 2143	JDF
Zinc	0.0078	0.0050	mg/L	1	Y1	05/12/20 1335	05/13/20 2143	JDF



Microbac Laboratories, Inc. - Dayville

CERTIFICATE OF ANALYSIS

D0E0415

Client Sample ID:	CDM-6D	Collected By:	Customer					
Sample Matrix:	Groundwater	Collection Date:	05/05/2020 14:15					
Lab Sample ID:	D0E0415-09							
Volatile Organic Compounds by GCMS	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
EPA 5030C/EPA 8260C								
Acetone	<5.00	5.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
Acrylonitrile	<5.00	5.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
Benzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
Bromobenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
Bromochloromethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
Bromodichloromethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
Bromoform	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
Bromomethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
2-Butanone (MEK)	<5.00	5.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
sec-Butylbenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
tert-Butylbenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
n-Butylbenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
Carbon disulfide	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
Carbon tetrachloride	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
Chlorobenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
Chloroethane (Ethyl chloride)	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
Chloroform	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
Chloromethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
2-Chlorotoluene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
4-Chlorotoluene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
1,2-Dibromo-3-chloropropane (DBCP)	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
Dibromochloromethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
1,2-Dibromoethane (Ethylene dibromide, EDB)	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
Dibromomethane (Methylene bromide)	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
trans-1,4-Dichloro-2-butene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
1,4-Dichlorobenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
1,3-Dichlorobenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
1,2-Dichlorobenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
Dichlorodifluoromethane (Freon-12)	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
1,2-Dichloroethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
1,1-Dichloroethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
trans-1,2-Dichloroethene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
1,1-Dichloroethene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
cis-1,2-Dichloroethene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
1,3-Dichloropropane	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
1,2-Dichloropropane	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
2,2-Dichloropropane	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
trans-1,3-Dichloropropene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
cis-1,3-Dichloropropene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
1,1-Dichloropropene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
Diethyl ether	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	

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CERTIFICATE OF ANALYSIS

D0E0415

Client Sample ID:	CDM-6D	Collected By:	Customer					
Sample Matrix:	Groundwater	Collection Date:	05/05/2020 14:15					
Lab Sample ID:	D0E0415-09							
Volatile Organic Compounds by GCMS	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
1,4-Dioxane	<20.0	20.0	ug/L	1	U,Y1	05/14/20 1816	JAN	
Ethylbenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
Hexachlorobutadiene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
2-Hexanone (MBK)	<5.00	5.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
Isopropylbenzene (Cumene)	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
4-Isopropyltoluene (p-Isopropyltoluene)	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
Methyl tert-butyl ether (MTBE)	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
Methylene chloride (Dichloromethane)	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
4-Methyl-2-pentanone (MIBK)	<5.00	5.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
Naphthalene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
n-Propylbenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
Styrene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
1,1,1,2-Tetrachloroethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
1,1,2,2-Tetrachloroethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
Tetrachloroethene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
Tetrahydrofuran (THF)	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
Toluene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
1,2,4-Trichlorobenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
1,2,3-Trichlorobenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
1,1,1-Trichloroethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
1,1,2-Trichloroethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
Trichloroethene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
Trichlorofluoromethane (Freon 11)	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
1,2,3-Trichloropropane	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
1,3,5-Trimethylbenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
1,2,4-Trimethylbenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
Vinyl chloride	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
m,p-Xylene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
o-Xylene	<1.00	1.00	ug/L	1	U,Y1	05/14/20 1816	JAN	
Surrogate: 1,2-Dichloroethane-d4	98.2	Limit: 70-130	% Rec	1		05/14/20 1816	JAN	
Surrogate: Toluene-d8	101	Limit: 70-130	% Rec	1		05/14/20 1816	JAN	
Surrogate: Pentafluorobenzene	99.3	Limit: 70-130	% Rec	1		05/14/20 1816	JAN	



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CERTIFICATE OF ANALYSIS

D0E0415

Client Sample ID:	DUP - 1		Collected By:	Customer						
Sample Matrix:	Groundwater		Collection Date:	05/05/2020 8:56						
Lab Sample ID:	D0E0415-10									
Inorganics Total										
EPA 9012A			Method Notes: A28							
Cyanide - Total	<0.0100	0.0100	mg/L	1	Y1	05/13/20 1509	05/14/20 1624	CLW		
Wet Chem - W/Hach 8000										
Chemical Oxygen Demand (COD)	29.8	5.00	mg/L	1		05/12/20 1500	05/12/20 1700	CCM		
Wet Chem - W/SM 2320 B-2011										
Alkalinity to pH 4.5	465	1.00	mg/L	1	A27		05/12/20 1612	MAD		
SM 2540 C-2011										
Total Dissolved Solids (TDS)	626	25.0	mg/L	10		05/10/20 1635	05/12/20 1725	ELB		
Wet Chem - W/SM 4500-Cl E-2011										
Chloride	122	4.00	mg/L	2	A21		05/07/20 1406	CLW		
Wet Chem - W/SM 4500-NO3⁻ F-2011										
Nitrate as N	0.0698	0.0500	mg/L	1	A5		05/06/20 1941	DJM		
Wet Chem - W/SM 4500-SO4⁻ E-2011										
Sulfate as SO4	22.6	5.00	mg/L	1	A21		05/07/20 1539	CLW		
Metals Dissolved by CVAA										
EPA 7470A			Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
Mercury	<0.00020	0.00020	mg/L	1	U,Y1	05/15/20 1213	05/15/20 1458	DLO		
Metals Dissolved by ICP										
EPA 3010A/EPA 6010C			Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
Arsenic	<0.0050	0.0050	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2146	JDF		
Barium	0.121	0.0050	mg/L	1	Y1	05/12/20 1335	05/13/20 2146	JDF		
Cadmium	<0.0020	0.0020	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2146	JDF		
Calcium	112	0.250	mg/L	5	Y1	05/12/20 1335	05/18/20 1043	JDF		
Chromium	<0.0020	0.0020	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2146	JDF		
Copper	<0.0020	0.0020	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2146	JDF		
Iron	1.64	0.0500	mg/L	1	Y1	05/12/20 1335	05/13/20 2146	JDF		
Lead	0.0039	0.0030	mg/L	1	Y1	05/12/20 1335	05/13/20 2146	JDF		
Manganese	0.409	0.0020	mg/L	1	Y1	05/12/20 1335	05/13/20 2146	JDF		
Selenium	<0.0100	0.0100	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2146	JDF		
Silver	<0.0020	0.0020	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2146	JDF		
Sodium	61.5	1.00	mg/L	1	Y1	05/12/20 1335	05/13/20 2146	JDF		
Zinc	0.0058	0.0050	mg/L	1	Y1	05/12/20 1335	05/13/20 2146	JDF		



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CERTIFICATE OF ANALYSIS

D0E0415

Client Sample ID:	DUP - 1							
Sample Matrix:	Groundwater							
Lab Sample ID:	D0E0415-10							
						Collected By:	Customer	
						Collection Date:	05/05/2020 8:56	
Volatile Organic Compounds by GCMS	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
EPA 5030C/EPA 8260C								
Acetone	<5.00	5.00	ug/L	1	U,Y1	05/14/20	1842	JAN
Acrylonitrile	<5.00	5.00	ug/L	1	U,Y1	05/14/20	1842	JAN
Benzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1842	JAN
Bromobenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1842	JAN
Bromochloromethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1842	JAN
Bromodichloromethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1842	JAN
Bromoform	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1842	JAN
Bromomethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1842	JAN
2-Butanone (MEK)	<5.00	5.00	ug/L	1	U,Y1	05/14/20	1842	JAN
sec-Butylbenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1842	JAN
tert-Butylbenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1842	JAN
n-Butylbenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1842	JAN
Carbon disulfide	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1842	JAN
Carbon tetrachloride	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1842	JAN
Chlorobenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1842	JAN
Chloroethane (Ethyl chloride)	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1842	JAN
Chloroform	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1842	JAN
Chloromethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1842	JAN
2-Chlorotoluene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1842	JAN
4-Chlorotoluene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1842	JAN
1,2-Dibromo-3-chloropropane (DBCP)	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1842	JAN
Dibromochloromethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1842	JAN
1,2-Dibromoethane (Ethylene dibromide, EDB)	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1842	JAN
Dibromomethane (Methylene bromide)	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1842	JAN
trans-1,4-Dichloro-2-butene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1842	JAN
1,4-Dichlorobenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1842	JAN
1,3-Dichlorobenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1842	JAN
1,2-Dichlorobenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1842	JAN
Dichlorodifluoromethane (Freon-12)	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1842	JAN
1,2-Dichloroethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1842	JAN
1,1-Dichloroethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1842	JAN
trans-1,2-Dichloroethene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1842	JAN
1,1-Dichloroethene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1842	JAN
cis-1,2-Dichloroethene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1842	JAN
1,3-Dichloropropane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1842	JAN
1,2-Dichloropropane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1842	JAN
2,2-Dichloropropane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1842	JAN
trans-1,3-Dichloropropene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1842	JAN
cis-1,3-Dichloropropene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1842	JAN
1,1-Dichloropropene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1842	JAN
Diethyl ether	1.20	1.00	ug/L	1	Y1	05/14/20	1842	JAN

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CERTIFICATE OF ANALYSIS

D0E0415

Client Sample ID:	DUP - 1	Sample Matrix:	Groundwater	Collected By:	Customer			
Lab Sample ID:	D0E0415-10			Collection Date:	05/05/2020 8:56			
Volatile Organic Compounds by GCMS	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
1,4-Dioxane	<20.0	20.0	ug/L	1	U,Y1		05/14/20 1842	JAN
Ethylbenzene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1842	JAN
Hexachlorobutadiene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1842	JAN
2-Hexanone (MBK)	<5.00	5.00	ug/L	1	U,Y1		05/14/20 1842	JAN
Isopropylbenzene (Cumene)	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1842	JAN
4-Isopropyltoluene (p-Isopropyltoluene)	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1842	JAN
Methyl tert-butyl ether (MTBE)	1.34	1.00	ug/L	1	Y1		05/14/20 1842	JAN
Methylene chloride (Dichloromethane)	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1842	JAN
4-Methyl-2-pentanone (MIBK)	<5.00	5.00	ug/L	1	U,Y1		05/14/20 1842	JAN
Naphthalene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1842	JAN
n-Propylbenzene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1842	JAN
Styrene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1842	JAN
1,1,1,2-Tetrachloroethane	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1842	JAN
1,1,2,2-Tetrachloroethane	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1842	JAN
Tetrachloroethene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1842	JAN
Tetrahydrofuran (THF)	5.58	1.00	ug/L	1	Y1		05/14/20 1842	JAN
Toluene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1842	JAN
1,2,4-Trichlorobenzene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1842	JAN
1,2,3-Trichlorobenzene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1842	JAN
1,1,1-Trichloroethane	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1842	JAN
1,1,2-Trichloroethane	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1842	JAN
Trichloroethene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1842	JAN
Trichlorofluoromethane (Freon 11)	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1842	JAN
1,2,3-Trichloropropane	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1842	JAN
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1842	JAN
1,3,5-Trimethylbenzene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1842	JAN
1,2,4-Trimethylbenzene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1842	JAN
Vinyl chloride	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1842	JAN
m,p-Xylene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1842	JAN
o-Xylene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1842	JAN
Surrogate: 1,2-Dichloroethane-d4	101	Limit: 70-130	% Rec	1			05/14/20 1842	JAN
Surrogate: Toluene-d8	98.8	Limit: 70-130	% Rec	1			05/14/20 1842	JAN
Surrogate: Pentafluorobenzene	102	Limit: 70-130	% Rec	1			05/14/20 1842	JAN



Microbac Laboratories, Inc. - Dayville

CERTIFICATE OF ANALYSIS

D0E0415

Client Sample ID:	Field Blank							
Sample Matrix:	Aqueous							
Lab Sample ID:	D0E0415-11							
						Collected By:	Customer	
						Collection Date:	05/05/2020	
Volatile Organic Compounds by GCMS	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
EPA 5030C/EPA 8260C								
Acetone	<5.00	5.00	ug/L	1	U,Y1	05/14/20	1426	JAN
Acrylonitrile	<5.00	5.00	ug/L	1	U,Y1	05/14/20	1426	JAN
Benzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1426	JAN
Bromobenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1426	JAN
Bromochloromethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1426	JAN
Bromodichloromethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1426	JAN
Bromoform	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1426	JAN
Bromomethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1426	JAN
2-Butanone (MEK)	<5.00	5.00	ug/L	1	U,Y1	05/14/20	1426	JAN
sec-Butylbenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1426	JAN
tert-Butylbenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1426	JAN
n-Butylbenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1426	JAN
Carbon disulfide	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1426	JAN
Carbon tetrachloride	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1426	JAN
Chlorobenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1426	JAN
Chloroethane (Ethyl chloride)	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1426	JAN
Chloroform	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1426	JAN
Chloromethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1426	JAN
2-Chlorotoluene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1426	JAN
4-Chlorotoluene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1426	JAN
1,2-Dibromo-3-chloropropane (DBCP)	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1426	JAN
Dibromochloromethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1426	JAN
1,2-Dibromoethane (Ethylene dibromide, EDB)	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1426	JAN
Dibromomethane (Methylene bromide)	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1426	JAN
trans-1,4-Dichloro-2-butene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1426	JAN
1,4-Dichlorobenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1426	JAN
1,3-Dichlorobenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1426	JAN
1,2-Dichlorobenzene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1426	JAN
Dichlorodifluoromethane (Freon-12)	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1426	JAN
1,2-Dichloroethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1426	JAN
1,1-Dichloroethane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1426	JAN
trans-1,2-Dichloroethene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1426	JAN
1,1-Dichloroethene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1426	JAN
cis-1,2-Dichloroethene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1426	JAN
1,3-Dichloropropane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1426	JAN
1,2-Dichloropropane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1426	JAN
2,2-Dichloropropane	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1426	JAN
trans-1,3-Dichloropropene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1426	JAN
cis-1,3-Dichloropropene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1426	JAN
1,1-Dichloropropene	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1426	JAN
Diethyl ether	<1.00	1.00	ug/L	1	U,Y1	05/14/20	1426	JAN

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CERTIFICATE OF ANALYSIS

D0E0415

Client Sample ID:	Field Blank							
Sample Matrix:	Aqueous							
Lab Sample ID:	D0E0415-11							
						Collected By:	Customer	
						Collection Date:	05/05/2020	
Volatile Organic Compounds by GCMS	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
1,4-Dioxane	<20.0	20.0	ug/L	1	U,Y1		05/14/20 1426	JAN
Ethylbenzene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1426	JAN
Hexachlorobutadiene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1426	JAN
2-Hexanone (MBK)	<5.00	5.00	ug/L	1	U,Y1		05/14/20 1426	JAN
Isopropylbenzene (Cumene)	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1426	JAN
4-Isopropyltoluene (p-Isopropyltoluene)	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1426	JAN
Methyl tert-butyl ether (MTBE)	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1426	JAN
Methylene chloride (Dichloromethane)	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1426	JAN
4-Methyl-2-pentanone (MIBK)	<5.00	5.00	ug/L	1	U,Y1		05/14/20 1426	JAN
Naphthalene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1426	JAN
n-Propylbenzene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1426	JAN
Styrene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1426	JAN
1,1,1,2-Tetrachloroethane	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1426	JAN
1,1,2,2-Tetrachloroethane	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1426	JAN
Tetrachloroethene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1426	JAN
Tetrahydrofuran (THF)	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1426	JAN
Toluene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1426	JAN
1,2,4-Trichlorobenzene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1426	JAN
1,2,3-Trichlorobenzene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1426	JAN
1,1,1-Trichloroethane	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1426	JAN
1,1,2-Trichloroethane	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1426	JAN
Trichloroethene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1426	JAN
Trichlorofluoromethane (Freon 11)	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1426	JAN
1,2,3-Trichloropropane	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1426	JAN
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1426	JAN
1,3,5-Trimethylbenzene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1426	JAN
1,2,4-Trimethylbenzene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1426	JAN
Vinyl chloride	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1426	JAN
m,p-Xylene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1426	JAN
o-Xylene	<1.00	1.00	ug/L	1	U,Y1		05/14/20 1426	JAN
Surrogate: 1,2-Dichloroethane-d4	101	Limit: 70-130	% Rec	1			05/14/20 1426	JAN
Surrogate: Toluene-d8	100	Limit: 70-130	% Rec	1			05/14/20 1426	JAN
Surrogate: Pentafluorobenzene	98.6	Limit: 70-130	% Rec	1			05/14/20 1426	JAN



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CERTIFICATE OF ANALYSIS

D0E0415

Batch Quality Control Summary: Microbac Laboratories, Inc. - Dayville

Inorganics Total	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes				
Batch DE00228 - Wet-Solids-W - SM 2540 C-2011														
Blank (DE00228-BLK1)					Prepared: 05/06/2020 Analyzed: 05/08/2020									
Total Dissolved Solids (TDS)	<10.0	10.0	mg/L							U				
LCS (DE00228-BS1)														
Total Dissolved Solids (TDS)	105	25.0	mg/L	100	105	80-120								
Duplicate (DE00228-DUP1)	Source: D0E0333-04				Prepared: 05/06/2020 Analyzed: 05/08/2020									
Total Dissolved Solids (TDS)	69.0	25.0	mg/L		75.0			8.33	10					
Batch DE00241 - Wet Chem - W - SM 4500-NO3⁻ F-2011														
Blank (DE00241-BLK1)					Prepared & Analyzed: 05/06/2020									
Nitrate as N	<0.0500	0.0500	mg/L							U				
LCS (DE00241-BS1)														
Nitrate as N	5.02	0.0500	mg/L	5.00	100	90-110								
Duplicate (DE00241-DUP1)	Source: D0E0414-03				Prepared & Analyzed: 05/06/2020									
Nitrate as N	<0.0500	0.0500	mg/L		ND			20	U					
Matrix Spike (DE00241-MS1)	Source: D0E0414-03				Prepared & Analyzed: 05/06/2020									
Nitrate as N	5.00	0.0500	mg/L	5.00	ND	100	75-125							
Matrix Spike Dup (DE00241-MSD1)	Source: D0E0414-03				Prepared & Analyzed: 05/06/2020									
Nitrate as N	5.00	0.0500	mg/L	5.00	ND	100	75-125	0.0540	20					
Batch DE00286 - Wet Chem - W - SM 4500-CI E-2011														
Blank (DE00286-BLK1)					Prepared & Analyzed: 05/07/2020									
Chloride	<2.00	2.00	mg/L							U				
LCS (DE00286-BS1)														
Chloride	18.5	2.00	mg/L	20.0	92.7	90-110								
Duplicate (DE00286-DUP1)	Source: D0E0333-03				Prepared & Analyzed: 05/07/2020									
Chloride	27.1	2.00	mg/L		27.5			1.46	20					
Matrix Spike (DE00286-MS1)	Source: D0E0333-03				Prepared & Analyzed: 05/07/2020									
Chloride	48.1	2.00	mg/L	20.0	27.5	103	75-125							
Matrix Spike Dup (DE00286-MSD1)	Source: D0E0333-03				Prepared & Analyzed: 05/07/2020									
Chloride	48.2	2.00	mg/L	20.0	27.5	103	75-125	0.192	20					
Batch DE00287 - Wet Chem - W - SM 4500-SO4⁻ E-2011														
Blank (DE00287-BLK1)					Prepared & Analyzed: 05/07/2020									
Sulfate as SO4	<5.00	5.00	mg/L							U				
LCS (DE00287-BS1)														
Sulfate as SO4	19.8	5.00	mg/L	20.0	98.8	80-120								
Duplicate (DE00287-DUP1)	Source: D0E0415-09				Prepared & Analyzed: 05/07/2020									
Sulfate as SO4	13.9	5.00	mg/L		14.0			0.573	20					



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CERTIFICATE OF ANALYSIS

D0E0415

Inorganics Total	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD RPD	RPD Limit	Notes
Batch DE00287 - Wet Chem - W - SM 4500-SO4⁻ E-2011										
Matrix Spike (DE00287-MS1)	Source: D0E0415-09	Prepared & Analyzed: 05/07/2020								
Sulfate as SO4	33.5	5.00	mg/L	20.0	14.0	97.3	75-125			
Matrix Spike Dup (DE00287-MSD1)	Source: D0E0415-09	Prepared & Analyzed: 05/07/2020								
Sulfate as SO4	33.7	5.00	mg/L	20.0	14.0	98.5	75-125	0.715	20	
Batch DE00371 - Wet Chem - W - Hach 8000										
Blank (DE00371-BLK1)		Prepared & Analyzed: 05/07/2020								
Chemical Oxygen Demand (COD)	<5.00	5.00	mg/L							U
LCS (DE00371-BS1)		Prepared & Analyzed: 05/07/2020								
Chemical Oxygen Demand (COD)	103	5.00	mg/L	100		103	80-120			
Duplicate (DE00371-DUP1)	Source: D0E0225-01	Prepared & Analyzed: 05/07/2020								
Chemical Oxygen Demand (COD)	90.6	5.00	mg/L		94.2			3.88	20	
Matrix Spike (DE00371-MS1)	Source: D0E0225-01	Prepared & Analyzed: 05/07/2020								
Chemical Oxygen Demand (COD)	186	5.00	mg/L	100	94.2	92.0	80-120			
Batch DE00463 - Wet-Solids-W - SM 2540 C-2011										
Blank (DE00463-BLK1)		Prepared: 05/10/2020 Analyzed: 05/12/2020								
Total Dissolved Solids (TDS)	<10.0	10.0	mg/L							U
LCS (DE00463-BS1)		Prepared: 05/10/2020 Analyzed: 05/12/2020								
Total Dissolved Solids (TDS)	111	25.0	mg/L	100		111	80-120			
Duplicate (DE00463-DUP1)	Source: D0E0415-05	Prepared: 05/10/2020 Analyzed: 05/12/2020								
Total Dissolved Solids (TDS)	273	25.0	mg/L		257			6.04	10	
Batch DE00617 - Wet Chem - W - SM 2320 B-2011										
Blank (DE00617-BLK1)		Prepared & Analyzed: 05/12/2020								
Alkalinity to pH 4.5	<1.00	1.00	mg/L							U
LCS (DE00617-BS1)		Prepared & Analyzed: 05/12/2020								
Alkalinity to pH 4.5	50.0	1.00	mg/L	50.0		100	90-110			
Duplicate (DE00617-DUP1)	Source: D0E0415-03	Prepared & Analyzed: 05/12/2020								
Alkalinity to pH 4.5	125	1.00	mg/L		123			2.02	20	
Batch DE00628 - Wet Chem - W - Hach 8000										
Blank (DE00628-BLK1)		Prepared & Analyzed: 05/12/2020								
Chemical Oxygen Demand (COD)	<5.00	5.00	mg/L							U
LCS (DE00628-BS1)		Prepared & Analyzed: 05/12/2020								
Chemical Oxygen Demand (COD)	99.8	5.00	mg/L	100		99.8	80-120			
Duplicate (DE00628-DUP1)	Source: D0E0707-01	Prepared & Analyzed: 05/12/2020								
Chemical Oxygen Demand (COD)	58.0	5.00	mg/L		56.4			2.85	20	
Matrix Spike (DE00628-MS1)	Source: D0E0707-01	Prepared & Analyzed: 05/12/2020								
Chemical Oxygen Demand (COD)	138	5.00	mg/L	100	56.4	81.4	80-120			



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CERTIFICATE OF ANALYSIS

D0E0415

Inorganics Total	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD RPD	RPD Limit	Notes
Batch DE00705 - Wet-Distillation-W - EPA 9012A										
Blank (DE00705-BLK1)										
Cyanide - Total	<0.0100	0.0100	mg/L		Prepared: 05/13/2020 Analyzed: 05/14/2020					
LCS (DE00705-BS1)										
Cyanide - Total	0.195	0.0100	mg/L	0.200		97.5	90-110			
Duplicate (DE00705-DUP1)										
Cyanide - Total	<0.0100	0.0100	mg/L		ND			20		
Duplicate (DE00705-DUP2)										
Cyanide - Total	<0.0100	0.0100	mg/L		ND			20		
Matrix Spike (DE00705-MS1)										
Cyanide - Total	0.0897	0.0100	mg/L	0.100	ND	89.7	75-125			M2
Batch DE00727 - Wet Chem - W - Hach 8000										
Blank (DE00727-BLK1)										
Chemical Oxygen Demand (COD)	<5.00	5.00	mg/L		Prepared & Analyzed: 05/13/2020					U
LCS (DE00727-BS1)										
Chemical Oxygen Demand (COD)	16.8	5.00	mg/L	20.0		83.8	80-120			
Duplicate (DE00727-DUP1)										
Chemical Oxygen Demand (COD)	5.95	5.00	mg/L		6.16			3.47	20	
Matrix Spike (DE00727-MS1)										
Chemical Oxygen Demand (COD)	28.2	5.00	mg/L	20.0	6.16	110	80-120			
Metals Dissolved by CVAA	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD RPD	RPD Limit	Notes
Batch DE00851 - 245 HG W - EPA 7470A										
Blank (DE00851-BLK1)										
Mercury	<0.00020	0.00020	mg/L		Prepared & Analyzed: 05/15/2020					U
LCS (DE00851-BS1)										
Mercury	0.00524	0.00020	mg/L	0.00500		105	80-120			
Matrix Spike (DE00851-MS1)										
Mercury	0.00517	0.00020	mg/L	0.00500	ND	103	75-125			
Matrix Spike (DE00851-MS2)										
Mercury	0.00377	0.00020	mg/L	0.00500	ND	75.4	75-125			
Matrix Spike Dup (DE00851-MSD1)										
Mercury	0.00508	0.00020	mg/L	0.00500	ND	102	75-125	1.81	20	
Metals Dissolved by ICP	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD RPD	RPD Limit	Notes
Batch DE00561 - 3010A - EPA 6010C										
Blank (DE00561-BLK1)										
Silver	<0.0020	0.0020	mg/L		Prepared: 05/12/2020 Analyzed: 05/13/2020					U
Arsenic	<0.0049	0.0049	mg/L							U

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CERTIFICATE OF ANALYSIS

D0E0415

Metals Dissolved by ICP	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD RPD	RPD Limit	Notes
Batch DE00561 - 3010A - EPA 6010C										
Blank (DE00561-BLK1) Prepared: 05/12/2020 Analyzed: 05/13/2020										
Barium	<0.0049	0.0049	mg/L							U
Calcium	<0.0490	0.0490	mg/L							U
Cadmium	<0.0020	0.0020	mg/L							U
Chromium	<0.0020	0.0020	mg/L							U
Copper	<0.0020	0.0020	mg/L							U
Manganese	<0.0020	0.0020	mg/L							U
Sodium	<0.980	0.980	mg/L							U
Lead	<0.0029	0.0029	mg/L							U
Selenium	<0.0049	0.0049	mg/L							U
Zinc	<0.0049	0.0049	mg/L							U
Blank (DE00561-BLK2) Prepared: 05/12/2020 Analyzed: 05/14/2020										
Iron	<0.0490	0.0490	mg/L							U
LCS (DE00561-BS1) Prepared: 05/12/2020 Analyzed: 05/13/2020										
Silver	0.502	0.0020	mg/L	0.500	100	80-120				
Arsenic	0.493	0.0049	mg/L	0.500	98.7	80-120				
Barium	0.493	0.0049	mg/L	0.500	98.6	80-120				
Calcium	10.5	0.0490	mg/L	10.5	100	80-120				
Cadmium	0.503	0.0020	mg/L	0.500	101	80-120				
Chromium	0.483	0.0020	mg/L	0.500	96.6	80-120				
Copper	0.489	0.0020	mg/L	0.500	97.8	80-120				
Iron	2.59	0.0490	mg/L	2.50	104	80-120				
Manganese	0.511	0.0020	mg/L	0.500	102	80-120				
Sodium	11.1	0.980	mg/L	10.5	105	80-120				
Lead	0.495	0.0029	mg/L	0.500	99.0	80-120				
Selenium	0.492	0.0049	mg/L	0.500	98.5	80-120				
Zinc	0.493	0.0049	mg/L	0.500	98.6	80-120				
Duplicate (DE00561-DUP1) Source: D0E0723-03 Prepared: 05/12/2020 Analyzed: 05/13/2020										
Silver	<0.0020	0.0020	mg/L	ND				20	U	
Arsenic	<0.0049	0.0049	mg/L	ND				20	U	
Barium	0.0223	0.0049	mg/L	0.0220				1.49	20	
Calcium	33.2	0.0490	mg/L	33.2				0.256	20	
Cadmium	<0.0020	0.0020	mg/L	0.00006				17.6	20	
Chromium	<0.0020	0.0020	mg/L	ND				20	U	
Copper	0.0031	0.0020	mg/L	0.0029				6.26	20	
Iron	<0.0490	0.0490	mg/L	0.0285				15.2	20	
Manganese	0.119	0.0020	mg/L	0.119				0.0387	20	
Sodium	140	0.980	mg/L	140				0.0935	20	
Lead	<0.0029	0.0029	mg/L	ND				20	U	
Selenium	<0.0049	0.0049	mg/L	ND				20	U	
Zinc	0.0209	0.0049	mg/L	0.0217				3.72	20	
Matrix Spike (DE00561-MS1) Source: D0E0723-03 Prepared: 05/12/2020 Analyzed: 05/13/2020										
Silver	0.514	0.0020	mg/L	0.500	ND	103	75-125			
Arsenic	0.505	0.0049	mg/L	0.500	ND	101	75-125			

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CERTIFICATE OF ANALYSIS

D0E0415

Metals Dissolved by ICP	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD RPD	RPD Limit	Notes
Batch DE00561 - 3010A - EPA 6010C										
Matrix Spike (DE00561-MS1)										
Source: D0E0723-03 Prepared: 05/12/2020 Analyzed: 05/13/2020										
Barium	0.521	0.0049	mg/L	0.500	0.0220	99.9	75-125			
Calcium	43.8	0.0490	mg/L	10.5	33.2	101	75-125			
Cadmium	0.513	0.0020	mg/L	0.500	0.00006	103	75-125			
Chromium	0.496	0.0020	mg/L	0.500	ND	99.3	75-125			
Copper	0.511	0.0020	mg/L	0.500	0.0029	102	75-125			
Iron	2.69	0.0490	mg/L	2.50	0.0285	106	75-125			
Manganese	0.641	0.0020	mg/L	0.500	0.119	104	75-125			
Sodium	153	0.980	mg/L	10.5	140	119	75-125			
Lead	0.502	0.0029	mg/L	0.500	ND	100	75-125			
Selenium	0.498	0.0049	mg/L	0.500	ND	99.5	75-125			
Zinc	0.524	0.0049	mg/L	0.500	0.0217	101	75-125			
Matrix Spike (DE00561-MS2)										
Source: D0E0414-02 Prepared: 05/12/2020 Analyzed: 05/13/2020										
Silver	0.505	0.0020	mg/L	0.500	0.0008	101	75-125			
Arsenic	0.500	0.0049	mg/L	0.500	ND	100	75-125			
Barium	0.926	0.0049	mg/L	0.500	0.438	97.5	75-125			
Calcium	61.4	0.0490	mg/L	10.5	51.5	93.7	75-125			
Cadmium	0.503	0.0020	mg/L	0.500	0.0002	101	75-125			
Chromium	0.488	0.0020	mg/L	0.500	0.0015	97.4	75-125			
Copper	0.503	0.0020	mg/L	0.500	0.0037	99.8	75-125			
Iron	3.52	0.0490	mg/L	2.50	0.903	105	75-125			
Manganese	0.867	0.0020	mg/L	0.500	0.350	103	75-125			
Sodium	61.1	0.980	mg/L	10.5	50.5	100	75-125			
Lead	0.491	0.0029	mg/L	0.500	0.0025	97.7	75-125			
Selenium	0.490	0.0049	mg/L	0.500	0.0011	97.8	75-125			
Zinc	0.502	0.0049	mg/L	0.500	0.0104	98.3	75-125			
Volatile Organic Compounds by GCMS										
Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD RPD	RPD Limit	Notes	
Batch DE01095 - 5030C VOA W - EPA 8260C										
Blank (DE01095-BLK1) Prepared & Analyzed: 05/14/2020										
Acetone	<5.00	5.00	ug/L							U
Acrylonitrile	<5.00	5.00	ug/L							U
Benzene	<1.00	1.00	ug/L							U
Bromobenzene	<1.00	1.00	ug/L							U
Bromochloromethane	<1.00	1.00	ug/L							U
Bromodichloromethane	<1.00	1.00	ug/L							U
Bromoform	<1.00	1.00	ug/L							U
Bromomethane	<1.00	1.00	ug/L							U
2-Butanone (MEK)	<5.00	5.00	ug/L							U
sec-Butylbenzene	<1.00	1.00	ug/L							U
tert-Butylbenzene	<1.00	1.00	ug/L							U
n-Butylbenzene	<1.00	1.00	ug/L							U

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CERTIFICATE OF ANALYSIS

D0E0415

Volatile Organic Compounds by GCMS	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch DE01095 - 5030C VOA W - EPA 8260C										
Blank (DE01095-BLK1)										
					Prepared & Analyzed: 05/14/2020					
Carbon disulfide	<1.00	1.00	ug/L							U
Carbon tetrachloride	<1.00	1.00	ug/L							U
Chlorobenzene	<1.00	1.00	ug/L							U
Chloroethane (Ethyl chloride)	<1.00	1.00	ug/L							U
Chloroform	<1.00	1.00	ug/L							U
Chloromethane	<1.00	1.00	ug/L							U
2-Chlorotoluene	<1.00	1.00	ug/L							U
4-Chlorotoluene	<1.00	1.00	ug/L							U
1,2-Dibromo-3-chloropropane (DBCP)	<1.00	1.00	ug/L							U
Dibromochloromethane	<1.00	1.00	ug/L							U
1,2-Dibromoethane (Ethylene dibromide, EDB)	<1.00	1.00	ug/L							U
Dibromomethane (Methylene bromide)	<1.00	1.00	ug/L							U
trans-1,4-Dichloro-2-butene	<1.00	1.00	ug/L							U
1,4-Dichlorobenzene	<1.00	1.00	ug/L							U
1,3-Dichlorobenzene	<1.00	1.00	ug/L							U
1,2-Dichlorobenzene	<1.00	1.00	ug/L							U
Dichlorodifluoromethane (Freon-12)	<1.00	1.00	ug/L							U
1,2-Dichloroethane	<1.00	1.00	ug/L							U
1,1-Dichloroethane	<1.00	1.00	ug/L							U
trans-1,2-Dichloroethene	<1.00	1.00	ug/L							U
1,1-Dichloroethene	<1.00	1.00	ug/L							U
cis-1,2-Dichloroethene	<1.00	1.00	ug/L							U
1,3-Dichloropropane	<1.00	1.00	ug/L							U
1,2-Dichloropropane	<1.00	1.00	ug/L							U
2,2-Dichloropropane	<1.00	1.00	ug/L							U
trans-1,3-Dichloropropene	<1.00	1.00	ug/L							U
cis-1,3-Dichloropropene	<1.00	1.00	ug/L							U
1,1-Dichloropropene	<1.00	1.00	ug/L							U
Diethyl ether	<1.00	1.00	ug/L							U
1,4-Dioxane	<20.0	20.0	ug/L							U
Ethylbenzene	<1.00	1.00	ug/L							U
Hexachlorobutadiene	<1.00	1.00	ug/L							U
2-Hexanone (MBK)	<5.00	5.00	ug/L							U
Isopropylbenzene (Cumene)	<1.00	1.00	ug/L							U
4-Isopropyltoluene (p-Isopropyltoluene)	<1.00	1.00	ug/L							U
Methyl tert-butyl ether (MTBE)	<1.00	1.00	ug/L							U
Methylene chloride (Dichloromethane)	<1.00	1.00	ug/L							U
4-Methyl-2-pentanone (MIBK)	<5.00	5.00	ug/L							U
Naphthalene	<1.00	1.00	ug/L							U

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CERTIFICATE OF ANALYSIS

D0E0415

Volatile Organic Compounds by GCMS	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD RPD	RPD Limit	Notes
Batch DE01095 - 5030C VOA W - EPA 8260C										
Blank (DE01095-BLK1)										
Prepared & Analyzed: 05/14/2020										
n-Propylbenzene	<1.00	1.00	ug/L							U
Styrene	<1.00	1.00	ug/L							U
1,1,1,2-Tetrachloroethane	<1.00	1.00	ug/L							U
1,1,2,2-Tetrachloroethane	<1.00	1.00	ug/L							U
Tetrachloroethene	<1.00	1.00	ug/L							U
Tetrahydrofuran (THF)	<1.00	1.00	ug/L							U
Toluene	<1.00	1.00	ug/L							U
1,2,4-Trichlorobenzene	<1.00	1.00	ug/L							U
1,2,3-Trichlorobenzene	<1.00	1.00	ug/L							U
1,1,1-Trichloroethane	<1.00	1.00	ug/L							U
1,1,2-Trichloroethane	<1.00	1.00	ug/L							U
Trichloroethene	<1.00	1.00	ug/L							U
Trichlorofluoromethane (Freon 11)	<1.00	1.00	ug/L							U
1,2,3-Trichloropropane	<1.00	1.00	ug/L							U
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	<1.00	1.00	ug/L							U
1,3,5-Trimethylbenzene	<1.00	1.00	ug/L							U
1,2,4-Trimethylbenzene	<1.00	1.00	ug/L							U
Vinyl chloride	<1.00	1.00	ug/L							U
m,p-Xylene	<1.00	1.00	ug/L							U
o-Xylene	<1.00	1.00	ug/L							U
Surrogate: 1,2-Dichloroethane-d4	49.4		ug/L	50.0		98.9	70-130			
Surrogate: Toluene-d8	50.6		ug/L	50.0		101	70-130			
Surrogate: Pentafluorobenzene	50.5		ug/L	50.0		101	70-130			
Matrix Spike (DE01095-MS1)										
Source: D0E0415-01										
Prepared & Analyzed: 05/14/2020										
Acetone	55.5	5.00	ug/L	50.0	5.23	100	70-130			
Acrylonitrile	43.4	5.00	ug/L	50.0	ND	86.8	70-130			
Benzene	53.4	1.00	ug/L	50.0	ND	107	70-130			
Bromobenzene	46.9	1.00	ug/L	50.0	ND	93.8	70-130			
Bromochloromethane	50.0	1.00	ug/L	50.0	ND	99.9	70-130			
Bromodichloromethane	53.4	1.00	ug/L	50.0	ND	107	70-130			
Bromoform	44.3	1.00	ug/L	50.0	ND	88.6	70-130			
Bromomethane	46.1	1.00	ug/L	50.0	ND	92.1	70-130			
2-Butanone (MEK)	42.2	5.00	ug/L	50.0	ND	84.4	70-130			
sec-Butylbenzene	50.3	1.00	ug/L	50.0	ND	101	70-130			
tert-Butylbenzene	50.9	1.00	ug/L	50.0	ND	102	70-130			
n-Butylbenzene	50.3	1.00	ug/L	50.0	ND	101	70-130			
Carbon disulfide	56.7	1.00	ug/L	50.0	ND	113	70-130			
Carbon tetrachloride	53.0	1.00	ug/L	50.0	ND	106	70-130			
Chlorobenzene	50.6	1.00	ug/L	50.0	ND	101	70-130			
Chloroethane (Ethyl chloride)	57.2	1.00	ug/L	50.0	ND	114	70-130			
Chloroform	52.9	1.00	ug/L	50.0	ND	106	70-130			
Chloromethane	44.5	1.00	ug/L	50.0	ND	89.0	70-130			

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CERTIFICATE OF ANALYSIS

D0E0415

Volatile Organic Compounds by GCMS	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch DE01095 - 5030C VOA W - EPA 8260C										
Matrix Spike (DE01095-MS1)										
Source: D0E0415-01 Prepared & Analyzed: 05/14/2020										
2-Chlorotoluene	48.1	1.00	ug/L	50.0	ND	96.2	70-130			
4-Chlorotoluene	48.0	1.00	ug/L	50.0	ND	96.0	70-130			
1,2-Dibromo-3-chloropropane (DBCP)	43.6	1.00	ug/L	50.0	ND	87.3	70-130			
Dibromochloromethane	50.9	1.00	ug/L	50.0	ND	102	70-130			
1,2-Dibromoethane (Ethylene dibromide, EDB)	49.1	1.00	ug/L	50.0	ND	98.1	70-130			
Dibromomethane (Methylene bromide)	49.5	1.00	ug/L	50.0	ND	99.0	70-130			
trans-1,4-Dichloro-2-butene	40.5	1.00	ug/L	50.0	ND	80.9	70-130			
1,4-Dichlorobenzene	45.1	1.00	ug/L	50.0	ND	90.2	70-130			
1,3-Dichlorobenzene	48.2	1.00	ug/L	50.0	ND	96.4	70-130			
1,2-Dichlorobenzene	45.3	1.00	ug/L	50.0	ND	90.6	70-130			
Dichlorodifluoromethane (Freon-12)	39.7	1.00	ug/L	50.0	ND	79.4	70-130			
1,2-Dichloroethane	51.0	1.00	ug/L	50.0	ND	102	70-130			
1,1-Dichloroethane	53.2	1.00	ug/L	50.0	ND	106	70-130			
trans-1,2-Dichloroethene	57.0	1.00	ug/L	50.0	ND	114	70-130			
1,1-Dichloroethene	53.6	1.00	ug/L	50.0	ND	107	70-130			
cis-1,2-Dichloroethene	55.2	1.00	ug/L	50.0	ND	110	70-130			
1,3-Dichloropropane	49.9	1.00	ug/L	50.0	ND	99.8	70-130			
1,2-Dichloropropane	51.4	1.00	ug/L	50.0	ND	103	70-130			
2,2-Dichloropropane	50.6	1.00	ug/L	50.0	ND	101	70-130			
trans-1,3-Dichloropropene	44.1	1.00	ug/L	50.0	ND	88.3	70-130			
cis-1,3-Dichloropropene	50.9	1.00	ug/L	50.0	ND	102	70-130			
1,1-Dichloropropene	53.8	1.00	ug/L	50.0	ND	108	70-130			
Diethyl ether	55.9	1.00	ug/L	50.0	2.29	107	70-130			
1,4-Dioxane	68.4	20.0	ug/L	50.0	29.2	78.3	70-130			
Ethylbenzene	51.1	1.00	ug/L	50.0	ND	102	70-130			
Hexachlorobutadiene	43.2	1.00	ug/L	50.0	ND	86.4	70-130			
2-Hexanone (MBK)	45.8	5.00	ug/L	50.0	ND	91.5	70-130			
Isopropylbenzene (Cumene)	49.3	1.00	ug/L	50.0	ND	98.6	70-130			
4-Isopropyltoluene (p-Isopropyltoluene)	51.8	1.00	ug/L	50.0	ND	104	70-130			
Methyl tert-butyl ether (MTBE)	53.2	1.00	ug/L	50.0	1.31	104	70-130			
Methylene chloride (Dichloromethane)	47.3	1.00	ug/L	50.0	ND	94.5	70-130			
4-Methyl-2-pentanone (MIBK)	46.1	5.00	ug/L	50.0	ND	92.2	70-130			
Naphthalene	37.4	1.00	ug/L	50.0	ND	74.8	70-130			
n-Propylbenzene	50.1	1.00	ug/L	50.0	ND	100	70-130			
Styrene	54.2	1.00	ug/L	50.0	ND	108	70-130			
1,1,1,2-Tetrachloroethane	49.0	1.00	ug/L	50.0	ND	98.0	70-130			
1,1,2,2-Tetrachloroethane	46.4	1.00	ug/L	50.0	ND	92.8	70-130			
Tetrachloroethene	50.5	1.00	ug/L	50.0	ND	101	70-130			
Tetrahydrofuran (THF)	65.6	1.00	ug/L	50.0	20.3	90.4	70-130			

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CERTIFICATE OF ANALYSIS

D0E0415

Volatile Organic Compounds by GCMS	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes	
Batch DE01095 - 5030C VOA W - EPA 8260C											
Matrix Spike (DE01095-MS1)											
				Source: D0E0415-01							
Toluene	52.6		1.00	ug/L	50.0	ND	105	70-130			
1,2,4-Trichlorobenzene	45.6		1.00	ug/L	50.0	ND	91.1	70-130			
1,2,3-Trichlorobenzene	44.8		1.00	ug/L	50.0	ND	89.7	70-130			
1,1,1-Trichloroethane	54.0		1.00	ug/L	50.0	ND	108	70-130			
1,1,2-Trichloroethane	49.1		1.00	ug/L	50.0	ND	98.1	70-130			
Trichloroethene	48.4		1.00	ug/L	50.0	ND	96.7	70-130			
Trichlorofluoromethane (Freon 11)	46.9		1.00	ug/L	50.0	ND	93.7	70-130			
1,2,3-Trichloropropane	44.8		1.00	ug/L	50.0	ND	89.5	70-130			
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	42.5		1.00	ug/L	50.0	ND	85.0	70-130			
1,3,5-Trimethylbenzene	50.8		1.00	ug/L	50.0	ND	102	70-130			
1,2,4-Trimethylbenzene	50.8		1.00	ug/L	50.0	ND	102	70-130			
Vinyl chloride	48.7		1.00	ug/L	50.0	ND	97.3	70-130			
m,p-Xylene	53.4		1.00	ug/L	50.0	ND	107	70-130			
o-Xylene	52.0		1.00	ug/L	50.0	ND	104	70-130			
Surrogate: 1,2-Dichloroethane-d4	49.2			ug/L	50.0		98.4	70-130			
Surrogate: Toluene-d8	49.1			ug/L	50.0		98.2	70-130			
Surrogate: Pentafluorobenzene	54.6			ug/L	50.0		109	70-130			
Matrix Spike Dup (DE01095-MSD1)											
				Source: D0E0415-01							
				Prepared & Analyzed: 05/14/2020							
Acetone	57.9		5.00	ug/L	50.0	5.23	105	70-130	4.36	20	
Acrylonitrile	43.3		5.00	ug/L	50.0	ND	86.5	70-130	0.300	20	
Benzene	51.4		1.00	ug/L	50.0	ND	103	70-130	3.65	20	
Bromobenzene	47.0		1.00	ug/L	50.0	ND	94.1	70-130	0.277	20	
Bromochloromethane	50.0		1.00	ug/L	50.0	ND	100	70-130	0.0600	20	
Bromodichloromethane	51.9		1.00	ug/L	50.0	ND	104	70-130	2.85	20	
Bromoform	44.2		1.00	ug/L	50.0	ND	88.3	70-130	0.339	20	
Bromomethane	45.5		1.00	ug/L	50.0	ND	91.0	70-130	1.22	20	
2-Butanone (MEK)	42.4		5.00	ug/L	50.0	ND	84.8	70-130	0.520	20	
sec-Butylbenzene	49.9		1.00	ug/L	50.0	ND	99.8	70-130	0.878	20	
tert-Butylbenzene	48.4		1.00	ug/L	50.0	ND	96.9	70-130	5.01	20	
n-Butylbenzene	51.8		1.00	ug/L	50.0	ND	104	70-130	2.82	20	
Carbon disulfide	53.3		1.00	ug/L	50.0	ND	107	70-130	6.19	20	
Carbon tetrachloride	51.2		1.00	ug/L	50.0	ND	102	70-130	3.44	20	
Chlorobenzene	50.1		1.00	ug/L	50.0	ND	100	70-130	1.09	20	
Chloroethane (Ethyl chloride)	53.5		1.00	ug/L	50.0	ND	107	70-130	6.79	20	
Chloroform	50.5		1.00	ug/L	50.0	ND	101	70-130	4.80	20	
Chloromethane	42.6		1.00	ug/L	50.0	ND	85.2	70-130	4.41	20	
2-Chlorotoluene	48.4		1.00	ug/L	50.0	ND	96.7	70-130	0.539	20	
4-Chlorotoluene	48.4		1.00	ug/L	50.0	ND	96.8	70-130	0.850	20	
1,2-Dibromo-3-chloropropane (DBCP)	46.5		1.00	ug/L	50.0	ND	93.1	70-130	6.45	20	
Dibromochloromethane	51.8		1.00	ug/L	50.0	ND	104	70-130	1.79	20	
1,2-Dibromoethane (Ethylene dibromide, EDB)	48.8		1.00	ug/L	50.0	ND	97.5	70-130	0.613	20	

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CERTIFICATE OF ANALYSIS

D0E0415

Volatile Organic Compounds by GCMS	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch DE01095 - 5030C VOA W - EPA 8260C										
Matrix Spike Dup (DE01095-MSD1)										
Dibromomethane (Methylene bromide)	48.8		1.00	ug/L	50.0	ND	97.6	70-130	1.38	20
trans-1,4-Dichloro-2-butene	39.8		1.00	ug/L	50.0	ND	79.7	70-130	1.59	20
1,4-Dichlorobenzene	45.8		1.00	ug/L	50.0	ND	91.7	70-130	1.58	20
1,3-Dichlorobenzene	48.4		1.00	ug/L	50.0	ND	96.9	70-130	0.455	20
1,2-Dichlorobenzene	46.6		1.00	ug/L	50.0	ND	93.2	70-130	2.83	20
Dichlorodifluoromethane (Freon-12)	38.4		1.00	ug/L	50.0	ND	76.8	70-130	3.41	20
1,2-Dichloroethane	49.7		1.00	ug/L	50.0	ND	99.3	70-130	2.62	20
1,1-Dichloroethane	51.9		1.00	ug/L	50.0	ND	104	70-130	2.55	20
trans-1,2-Dichloroethene	52.2		1.00	ug/L	50.0	ND	104	70-130	8.73	20
1,1-Dichloroethene	52.4		1.00	ug/L	50.0	ND	105	70-130	2.40	20
cis-1,2-Dichloroethene	51.6		1.00	ug/L	50.0	ND	103	70-130	6.80	20
1,3-Dichloropropane	50.2		1.00	ug/L	50.0	ND	100	70-130	0.639	20
1,2-Dichloropropane	51.3		1.00	ug/L	50.0	ND	103	70-130	0.214	20
2,2-Dichloropropane	47.3		1.00	ug/L	50.0	ND	94.6	70-130	6.64	20
trans-1,3-Dichloropropene	44.6		1.00	ug/L	50.0	ND	89.3	70-130	1.13	20
cis-1,3-Dichloropropene	51.0		1.00	ug/L	50.0	ND	102	70-130	0.118	20
1,1-Dichloropropene	52.2		1.00	ug/L	50.0	ND	104	70-130	3.08	20
Diethyl ether	53.5		1.00	ug/L	50.0	2.29	102	70-130	4.52	20
1,4-Dioxane	74.9		20.0	ug/L	50.0	29.2	91.4	70-130	9.20	20
Ethylbenzene	50.3		1.00	ug/L	50.0	ND	101	70-130	1.72	20
Hexachlorobutadiene	46.1		1.00	ug/L	50.0	ND	92.2	70-130	6.49	20
2-Hexanone (MBK)	47.9		5.00	ug/L	50.0	ND	95.8	70-130	4.57	20
Isopropylbenzene (Cumene)	49.7		1.00	ug/L	50.0	ND	99.4	70-130	0.828	20
4-Isopropyltoluene (p-Isopropyltoluene)	52.9		1.00	ug/L	50.0	ND	106	70-130	2.20	20
Methyl tert-butyl ether (MTBE)	52.9		1.00	ug/L	50.0	1.31	103	70-130	0.528	20
Methylene chloride (Dichloromethane)	44.6		1.00	ug/L	50.0	ND	89.2	70-130	5.84	20
4-Methyl-2-pentanone (MIBK)	47.5		5.00	ug/L	50.0	ND	94.9	70-130	2.95	20
Naphthalene	42.8		1.00	ug/L	50.0	ND	85.5	70-130	13.4	20
n-Propylbenzene	50.2		1.00	ug/L	50.0	ND	100	70-130	0.179	20
Styrene	54.1		1.00	ug/L	50.0	ND	108	70-130	0.314	20
1,1,1,2-Tetrachloroethane	50.1		1.00	ug/L	50.0	ND	100	70-130	2.08	20
1,1,2,2-Tetrachloroethane	46.9		1.00	ug/L	50.0	ND	93.9	70-130	1.18	20
Tetrachloroethene	50.0		1.00	ug/L	50.0	ND	99.9	70-130	0.956	20
Tetrahydrofuran (THF)	66.8		1.00	ug/L	50.0	20.3	92.9	70-130	1.87	20
Toluene	52.2		1.00	ug/L	50.0	ND	104	70-130	0.706	20
1,2,4-Trichlorobenzene	49.4		1.00	ug/L	50.0	ND	98.8	70-130	8.07	20
1,2,3-Trichlorobenzene	47.2		1.00	ug/L	50.0	ND	94.4	70-130	5.17	20
1,1,1-Trichloroethane	52.6		1.00	ug/L	50.0	ND	105	70-130	2.64	20
1,1,2-Trichloroethane	50.0		1.00	ug/L	50.0	ND	100	70-130	1.86	20
Trichloroethene	47.9		1.00	ug/L	50.0	ND	95.9	70-130	0.852	20
Trichlorofluoromethane (Freon 11)	44.4		1.00	ug/L	50.0	ND	88.7	70-130	5.50	20

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CERTIFICATE OF ANALYSIS

D0E0415

Volatile Organic Compounds by GCMS	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch DE01095 - 5030C VOA W - EPA 8260C										
Matrix Spike Dup (DE01095-MSD1)										
Source: D0E0415-01 Prepared & Analyzed: 05/14/2020										
1,2,3-Trichloropropane	46.1	1.00	ug/L	50.0	ND	92.3	70-130	3.01	20	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	41.3	1.00	ug/L	50.0	ND	82.5	70-130	2.96	20	
1,3,5-Trimethylbenzene	50.4	1.00	ug/L	50.0	ND	101	70-130	0.850	20	
1,2,4-Trimethylbenzene	51.6	1.00	ug/L	50.0	ND	103	70-130	1.54	20	
Vinyl chloride	47.0	1.00	ug/L	50.0	ND	93.9	70-130	3.54	20	
m,p-Xylene	53.0	1.00	ug/L	50.0	ND	106	70-130	0.902	20	
o-Xylene	51.5	1.00	ug/L	50.0	ND	103	70-130	0.948	20	
Surrogate: 1,2-Dichloroethane-d4	48.9		ug/L	50.0		97.7	70-130			
Surrogate: Toluene-d8	50.3		ug/L	50.0		101	70-130			
Surrogate: Pentafluorobenzene	55.0		ug/L	50.0		110	70-130			
Polychlorinated Biphenyls (PCBs) by GC/ECD										
Batch DE00299 - 3510C W Sep Funnel - EPA 8082A										
Blank (DE00299-BLK1)										
Prepared: 05/07/2020 Analyzed: 05/08/2020										
Aroclor-1016 (PCB-1016)	<0.100	0.100	ug/L							U
Aroclor-1016 (PCB-1016) [2C]	<0.100	0.100	ug/L							U
Aroclor-1221 (PCB-1221)	<0.100	0.100	ug/L							U
Aroclor-1221 (PCB-1221) [2C]	<0.100	0.100	ug/L							U
Aroclor-1232 (PCB-1232)	<0.100	0.100	ug/L							U
Aroclor-1232 (PCB-1232) [2C]	<0.100	0.100	ug/L							U
Aroclor-1242 (PCB-1242)	<0.100	0.100	ug/L							U
Aroclor-1242 (PCB-1242) [2C]	<0.100	0.100	ug/L							U
Aroclor-1248 (PCB-1248)	<0.100	0.100	ug/L							U
Aroclor-1248 (PCB-1248) [2C]	<0.100	0.100	ug/L							U
Aroclor-1254 (PCB-1254)	<0.100	0.100	ug/L							U
Aroclor-1254 (PCB-1254) [2C]	<0.100	0.100	ug/L							U
Aroclor-1260 (PCB-1260)	<0.100	0.100	ug/L							U
Aroclor-1260 (PCB-1260) [2C]	<0.100	0.100	ug/L							U
Surrogate: Decachlorobiphenyl (BZ-209)	0.0729		ug/L	0.100		72.9	30-150			
Surrogate: Decachlorobiphenyl (BZ-209) [2C]	0.0757		ug/L	0.100		75.7	30-150			
Surrogate: 2,4,5,6-Tetrachloro-m-xylene	0.0570		ug/L	0.100		57.0	30-150			
Surrogate: 2,4,5,6-Tetrachloro-m-xylene [2C]	0.0608		ug/L	0.100		60.8	30-150			
LCS (DE00299-BS1)										
Prepared: 05/07/2020 Analyzed: 05/08/2020										
Aroclor-1016 (PCB-1016)	0.564	0.100	ug/L	1.00		56.4	40-140			
Aroclor-1016 (PCB-1016) [2C]	0.589	0.100	ug/L	1.00		58.9	40-140			
Aroclor-1260 (PCB-1260)	0.744	0.100	ug/L	1.00		74.4	40-140			
Aroclor-1260 (PCB-1260) [2C]	0.808	0.100	ug/L	1.00		80.8	40-140			
Surrogate: Decachlorobiphenyl (BZ-209)	0.0844		ug/L	0.100		84.4	30-150			
Surrogate: Decachlorobiphenyl (BZ-209) [2C]	0.0851		ug/L	0.100		85.1	30-150			
Surrogate: 2,4,5,6-Tetrachloro-m-xylene	0.0519		ug/L	0.100		51.9	30-150			

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CERTIFICATE OF ANALYSIS

D0E0415

Polychlorinated Biphenyls (PCBs) by GC/ECD	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD RPD	RPD Limit	Notes
Batch DE00299 - 3510C W Sep Funnel - EPA 8082A										
LCS (DE00299-BS1)										
Prepared: 05/07/2020 Analyzed: 05/08/2020										
Surrogate: 2,4,5,6-Tetrachloro-m-xylene [2C]										
0.0563 ug/L 0.100 56.3 30-150										
Matrix Spike (DE00299-MS1)										
Source: D0E0415-04 Prepared: 05/07/2020 Analyzed: 05/08/2020										
Aroclor-1016 (PCB-1016) 0.595 0.109 ug/L 1.09 ND 54.8 40-140										
Aroclor-1260 (PCB-1260) 0.764 0.109 ug/L 1.09 ND 70.3 40-140										
Surrogate: Decachlorobiphenyl (BZ-209) 0.0848 ug/L 0.109 78.0 30-150										
Surrogate: 2,4,5,6-Tetrachloro-m-xylene 0.0464 ug/L 0.109 42.7 30-150										



Microbac Laboratories, Inc. - Dayville

CERTIFICATE OF ANALYSIS

D0E0415

Definitions

- A21:** Sample was filtered in the laboratory before analysis.
A27: Headspace was present in the bottle used for the alkalinity analysis.
A28: Sample was treated for the presence of chlorine.
A5: Sample was filtered (0.45 um) before analysis.
M2: Matrix spike recovery is below acceptance limits.
mg/L: Milligrams per Liter
Q10: The recovery for the closing low level check standard was outside of the established quality control range. The initial low level check standard was within range.
Q11: The recovery for the low level check standard was outside of the quality control range.
RL: Reporting Limit
RPD: Relative Percent Difference
U: Not detected. The concentration is below the RL/LOQ.
ug/L: Micrograms per Liter
Y1: Accreditation is not offered by the accrediting body for this analyte.

Cooler Receipt Log

Cooler ID: Default Cooler Temp: 5.2°C

Cooler Inspection Checklist

Ice Present or not required?	Yes	Shipping containers sealed or not required?	Yes
Custody seals intact or not required?	Yes	Chain of Custody (COC) Present?	Yes
COC includes customer information?	Yes	Relinquished and received signature on COC?	Yes
Sample collector identified on COC?	Yes	Sample type identified on COC?	Yes
Correct type of Containers Received	Yes	Correct number of containers listed on COC?	Yes
Containers Intact?	Yes	COC includes requested analyses?	Yes
Enough sample volume for indicated tests received?	Yes	Sample labels match COC (Name, Date & Time?)	Yes
Samples arrived within hold time?	Yes	Correct preservatives on COC or not required?	Yes
Chemical preservations checked or not required?	Yes	Preservation checks meet method requirements?	Yes
VOA vials have zero headspace, or not recd.?	Yes		

Project Requested Certification(s)

Microbac Laboratories, Inc. - Dayville
M-CT008

Massachusetts Department of Environmental Protection

Report Comments

Samples were received in proper condition and the reported results conform to applicable accreditation standard unless otherwise noted.

The data and information on this, and other accompanying documents, represents only the sample(s) analyzed. This report is incomplete unless all pages indicated in the footnote are present and an authorized signature is included. The services were provided under and subject to Microbac's standard terms and conditions which can be located and reviewed at <<https://www.microbac.com/standard-terms-conditions>>.

Reviewed and Approved By:

Melisa L. Montgomery
Quality Assurance Officer
Reported: 05/20/2020 15:25

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A SWAN NETWORK LABORATORY
61 Louis Vuitton Drive
Dayville, CT 06241 (800) 334-0103



D 0 E 0 4 1 5
New Bedford, City of

Copy of Report To

CUSTOMER: River Hawk Environmental, LLC
ADDRESS: 2183 Ocean Street, Suite 2
Marshfield, MA 02050

ATTENTION: William Kenney
E-MAIL: bkenney@riverhawkllc.com
PHONE: 508-789-8920 Fax: NA

BILL TO: City of New Bedford
ADDRESS: 133 William Street, Room 304
New Bedford, MA 02740

ATTENTION: Bruce Hebbel
TELEPHONE: 508-991-6188
PURCHASE ORDER #: _____

Sample Identification	Date Collected	Time Collected	Sample Type	Sample Matrix	Number of Bottles	GRAB	COMPOSITE	Alkalinity	Chloride & Sulphate	Dissolved Metals**	Nitrate	PCBs	Cyanide	TDS	CoD	Non-pres	HCl	NaOH	HNO3	H2SO4	Na2S2O3	Preservatives	
																						Turnaround (Indicate in calendar days):	
CDM - 1S	5/5/20	8:50	X	GW	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
CDM - 1D	5/5/20	8:46	X	GW	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
CDM - 3S	5/5/20	10:10	X	GW	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
CDM - 3D	5/5/20	9:58	X	GW	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
CDM - 4S	5/5/20	10:55	X	GW	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
CDM - 4D	5/5/20	10:48	X	GW	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
CDM - 5S	5/5/20	11:26	X	GW	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
CDM - 5D	5/5/20	11:35	X	GW	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
CDM - 6D	5/5/20	2:15	X	GW	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
DUP - 1	5/5/20	8:56	X	GW	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Field Blank			X	GW	X																		
SAMPLER:	Pat Kenney		DATE	TIME	EXPIRED SERVICE MAY BE SUBJECT TO SURCHARGE		E-MAIL PRESERVATIVE VERIFIED																
RECEIVED:	5/6/20 14:50				COMMENTS:		Initials																
RELINQUISHED:	5/6/2020 1450				**As, Ba, Ca, Cd, Cr, Cu, Fe, Pb, Mn, Hg, Se, Ag, Na, Zn		Please Bill the New Bedford Dept. of Env. Stewardship.																
RECEIVED:	5/6/2020 1650				CONDITIONS UPON RECEIPT: (CHECK ONE)		COOLED <input type="checkbox"/> AMBIENT <input checked="" type="checkbox"/>																
RELINQUISHED:	5/6/2020 1650				5.2 C Upon Receipt at Lab		5.2 C Upon Receipt at Lab																



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CERTIFICATE OF ANALYSIS

D0E0414

Project Description

Shawmut Landfill

For:

William ' Bill' Kenney

City of New Bedford DPI

2183 Ocean St.

Marshfield, MA 02050

Quality Assurance Officer

Melisa L. Montgomery

Monday, May 18, 2020

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories. Review and compilation of your report was completed by Microbac Laboratories, Inc. - Dayville. If you have any questions, comments, or require further assistance regarding this report, please contact your service representative listed above.

I certify that all test results meet all of the requirements of the accrediting authority listed within this report. Analytical results are reported on a 'as received' basis unless specified otherwise. Analytical results for solids with units ending in (dry) are reported on a dry weight basis. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories. The reported results are related only to the samples analyzed as received.

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CERTIFICATE OF ANALYSIS

D0E0414

City of New Bedford DPI

William ' Bill' Kenney
2183 Ocean St.
Marshfield, MA 02050

Project Name: Shawmut Landfill

Project / PO Number: Shawmut Landfill
Received: 05/06/2020
Reported: 05/18/2020

Sample Summary Report

<u>Sample Name</u>	<u>Laboratory ID</u>	<u>Client Matrix</u>	<u>Sample Type</u>	<u>Sample Begin</u>	<u>Sample Taken</u>	<u>Lab Received</u>
SW-1	D0E0414-01	Surface Water	Grab		05/05/20 09:15	05/06/20 16:50
SW-1	D0E0414-02	Surface Water	Grab		05/05/20 09:15	05/06/20 16:50
SW-2	D0E0414-03	Surface Water	Grab		05/05/20 12:00	05/06/20 16:50
SW-2	D0E0414-04	Surface Water	Grab		05/05/20 12:00	05/06/20 16:50
SW-3	D0E0414-05	Surface Water	Grab		05/05/20 12:35	05/06/20 16:50
SW-3	D0E0414-06	Surface Water	Grab		05/05/20 12:35	05/06/20 16:50



Microbac Laboratories, Inc. - Dayville

CERTIFICATE OF ANALYSIS

D0E0414

Analytical Testing Parameters

Client Sample ID:	SW-1	Collected By:	Customer					
Sample Matrix:	Surface Water	Collection Date:	05/05/2020 9:15					
Lab Sample ID:	D0E0414-01							
Inorganics Total	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
EPA 9012A								
Cyanide - Total	<0.0100	0.0100	mg/L	1	Y1	05/13/20 1509	05/14/20 1613	CLW
Wet Chem - W/Hach 8000								
Chemical Oxygen Demand (COD)	52.0	5.00	mg/L	1		05/07/20 1530	05/07/20 1730	CCM
Wet Chem - W/SM 2320 B-2011								
Alkalinity to pH 4.5	288	1.00	mg/L	1			05/07/20 1549	MAD
SM 2540 C-2011								
Total Dissolved Solids (TDS)	405	25.0	mg/L	10		05/06/20 1915	05/08/20 1550	KJE
Wet Chem - W/SM 4500-Cl E-2011								
Chloride	51.9	2.00	mg/L	1			05/07/20 1340	CLW
Wet Chem - W/SM 4500-NO3⁻ F-2011								
Nitrate as N	4.59	0.0500	mg/L	1			05/06/20 1924	DJM
Wet Chem - W/SM 4500-SO4⁻ E-2011								
Sulfate as SO4	<5.00	5.00	mg/L	1	U		05/07/20 1525	CLW
Metals Dissolved by CVAA	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
EPA 7470A								
Mercury	<0.00020	0.00020	mg/L	1	U,Y1	05/15/20 1213	05/15/20 1428	DLO
Metals Dissolved by ICP	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
EPA 3010A/EPA 6010C								
Arsenic	<0.0050	0.0050	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2030	JDF
Barium	0.483	0.0050	mg/L	1	Y1	05/12/20 1335	05/13/20 2030	JDF
Cadmium	<0.0020	0.0020	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2030	JDF
Calcium	56.7	0.0500	mg/L	1	Y1	05/12/20 1335	05/13/20 2030	JDF
Chromium	<0.0020	0.0020	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2030	JDF
Copper	0.0046	0.0020	mg/L	1	Q11,Y1	05/12/20 1335	05/13/20 2030	JDF
Iron	0.628	0.0500	mg/L	1	Y1	05/12/20 1335	05/13/20 2030	JDF
Lead	<0.0030	0.0030	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2030	JDF
Manganese	0.321	0.0020	mg/L	1	Y1	05/12/20 1335	05/13/20 2030	JDF
Selenium	<0.0100	0.0100	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2030	JDF
Silver	<0.0020	0.0020	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2030	JDF
Sodium	55.9	1.00	mg/L	1	Y1	05/12/20 1335	05/13/20 2030	JDF
Zinc	0.0097	0.0050	mg/L	1	Y1	05/12/20 1335	05/13/20 2030	JDF

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CERTIFICATE OF ANALYSIS

D0E0414

Client Sample ID:	SW-1	Collected By:	Customer
Sample Matrix:	Surface Water	Collection Date:	05/05/2020 9:15
Lab Sample ID:	D0E0414-01		

Metals Dissolved by ICP	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
Volatile Organic Compounds by GCMS	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
EPA 5030C/EPA 8260C								
Acetone	<5.00	5.00	ug/L	1	U,Y1	05/13/20 1858	JAN	
Acrylonitrile	<5.00	5.00	ug/L	1	U,Y1	05/13/20 1858	JAN	
Benzene	<1.00	1.00	ug/L	1	U,Y1	05/13/20 1858	JAN	
Bromobenzene	<1.00	1.00	ug/L	1	U,Y1	05/13/20 1858	JAN	
Bromoform	<1.00	1.00	ug/L	1	U,Y1	05/13/20 1858	JAN	
Bromochloromethane	<1.00	1.00	ug/L	1	U,Y1	05/13/20 1858	JAN	
Bromodichloromethane	<1.00	1.00	ug/L	1	U,Y1	05/13/20 1858	JAN	
Bromomethane	<1.00	1.00	ug/L	1	U,Y1	05/13/20 1858	JAN	
2-Butanone (MEK)	<5.00	5.00	ug/L	1	U,Y1	05/13/20 1858	JAN	
sec-Butylbenzene	<1.00	1.00	ug/L	1	U,Y1	05/13/20 1858	JAN	
tert-Butylbenzene	<1.00	1.00	ug/L	1	U,Y1	05/13/20 1858	JAN	
n-Butylbenzene	<1.00	1.00	ug/L	1	U,Y1	05/13/20 1858	JAN	
Carbon disulfide	<1.00	1.00	ug/L	1	U,Y1	05/13/20 1858	JAN	
Carbon tetrachloride	<1.00	1.00	ug/L	1	U,Y1	05/13/20 1858	JAN	
Chlorobenzene	<1.00	1.00	ug/L	1	U,Y1	05/13/20 1858	JAN	
Chloroethane (Ethyl chloride)	<1.00	1.00	ug/L	1	U,Y1	05/13/20 1858	JAN	
Chloroform	<1.00	1.00	ug/L	1	U,Y1	05/13/20 1858	JAN	
Chloromethane	<1.00	1.00	ug/L	1	U,Y1	05/13/20 1858	JAN	
2-Chlorotoluene	<1.00	1.00	ug/L	1	U,Y1	05/13/20 1858	JAN	
4-Chlorotoluene	<1.00	1.00	ug/L	1	U,Y1	05/13/20 1858	JAN	
1,2-Dibromo-3-chloropropane (DBCP)	<1.00	1.00	ug/L	1	U,Y1	05/13/20 1858	JAN	
Dibromochloromethane	<1.00	1.00	ug/L	1	U,Y1	05/13/20 1858	JAN	
1,2-Dibromoethane (Ethylene dibromide, EDB)	<1.00	1.00	ug/L	1	U,Y1	05/13/20 1858	JAN	
Dibromomethane (Methylene bromide)	<1.00	1.00	ug/L	1	U,Y1	05/13/20 1858	JAN	
trans-1,4-Dichloro-2-butene	<1.00	1.00	ug/L	1	U,Y1	05/13/20 1858	JAN	
1,4-Dichlorobenzene	<1.00	1.00	ug/L	1	U,Y1	05/13/20 1858	JAN	
1,3-Dichlorobenzene	<1.00	1.00	ug/L	1	U,Y1	05/13/20 1858	JAN	
1,2-Dichlorobenzene	<1.00	1.00	ug/L	1	U,Y1	05/13/20 1858	JAN	
Dichlorodifluoromethane (Freon-12)	<1.00	1.00	ug/L	1	U,Y1	05/13/20 1858	JAN	
1,2-Dichloroethane	<1.00	1.00	ug/L	1	U,Y1	05/13/20 1858	JAN	
1,1-Dichloroethane	<1.00	1.00	ug/L	1	U,Y1	05/13/20 1858	JAN	
trans-1,2-Dichloroethene	<1.00	1.00	ug/L	1	U,Y1	05/13/20 1858	JAN	
1,1-Dichloroethene	<1.00	1.00	ug/L	1	U,Y1	05/13/20 1858	JAN	
cis-1,2-Dichloroethene	<1.00	1.00	ug/L	1	U,Y1	05/13/20 1858	JAN	
1,3-Dichloropropane	<1.00	1.00	ug/L	1	U,Y1	05/13/20 1858	JAN	
1,2-Dichloropropane	<1.00	1.00	ug/L	1	U,Y1	05/13/20 1858	JAN	
2,2-Dichloropropane	<1.00	1.00	ug/L	1	U,Y1	05/13/20 1858	JAN	
trans-1,3-Dichloropropene	<1.00	1.00	ug/L	1	U,Y1	05/13/20 1858	JAN	
cis-1,3-Dichloropropene	<1.00	1.00	ug/L	1	U,Y1	05/13/20 1858	JAN	

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CERTIFICATE OF ANALYSIS

D0E0414

Client Sample ID:	SW-1	Sample Matrix:	Surface Water	Collected By:		Customer		
Lab Sample ID:	D0E0414-01			Collection Date:	05/05/2020 9:15			
Volatile Organic Compounds by GCMS	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
1,1-Dichloropropene	<1.00	1.00	ug/L	1	U,Y1		05/13/20 1858	JAN
Diethyl ether	<1.00	1.00	ug/L	1	U,Y1		05/13/20 1858	JAN
1,4-Dioxane	<20.0	20.0	ug/L	1	U,Y1		05/13/20 1858	JAN
Ethylbenzene	<1.00	1.00	ug/L	1	U,Y1		05/13/20 1858	JAN
Hexachlorobutadiene	<1.00	1.00	ug/L	1	U,Y1		05/13/20 1858	JAN
2-Hexanone (MBK)	<5.00	5.00	ug/L	1	U,Y1		05/13/20 1858	JAN
Isopropylbenzene (Cumene)	<1.00	1.00	ug/L	1	U,Y1		05/13/20 1858	JAN
4-Isopropyltoluene (p-Isopropyltoluene)	<1.00	1.00	ug/L	1	U,Y1		05/13/20 1858	JAN
Methyl tert-butyl ether (MTBE)	<1.00	1.00	ug/L	1	U,Y1		05/13/20 1858	JAN
Methylene chloride (Dichloromethane)	<1.00	1.00	ug/L	1	U,Y1		05/13/20 1858	JAN
4-Methyl-2-pentanone (MIBK)	<5.00	5.00	ug/L	1	U,Y1		05/13/20 1858	JAN
Naphthalene	<1.00	1.00	ug/L	1	U,Y1		05/13/20 1858	JAN
n-Propylbenzene	<1.00	1.00	ug/L	1	U,Y1		05/13/20 1858	JAN
Styrene	<1.00	1.00	ug/L	1	U,Y1		05/13/20 1858	JAN
1,1,1,2-Tetrachloroethane	<1.00	1.00	ug/L	1	U,Y1		05/13/20 1858	JAN
1,1,2,2-Tetrachloroethane	<1.00	1.00	ug/L	1	U,Y1		05/13/20 1858	JAN
Tetrachloroethene	<1.00	1.00	ug/L	1	U,Y1		05/13/20 1858	JAN
Tetrahydrofuran (THF)	1.45	1.00	ug/L	1	Y1		05/13/20 1858	JAN
Toluene	<1.00	1.00	ug/L	1	U,Y1		05/13/20 1858	JAN
1,2,4-Trichlorobenzene	<1.00	1.00	ug/L	1	U,Y1		05/13/20 1858	JAN
1,2,3-Trichlorobenzene	<1.00	1.00	ug/L	1	U,Y1		05/13/20 1858	JAN
1,1,1-Trichloroethane	<1.00	1.00	ug/L	1	U,Y1		05/13/20 1858	JAN
1,1,2-Trichloroethane	<1.00	1.00	ug/L	1	U,Y1		05/13/20 1858	JAN
Trichloroethene	<1.00	1.00	ug/L	1	U,Y1		05/13/20 1858	JAN
Trichlorofluoromethane (Freon 11)	<1.00	1.00	ug/L	1	U,Y1		05/13/20 1858	JAN
1,2,3-Trichloropropane	<1.00	1.00	ug/L	1	U,Y1		05/13/20 1858	JAN
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	<1.00	1.00	ug/L	1	U,Y1		05/13/20 1858	JAN
1,3,5-Trimethylbenzene	<1.00	1.00	ug/L	1	U,Y1		05/13/20 1858	JAN
1,2,4-Trimethylbenzene	<1.00	1.00	ug/L	1	U,Y1		05/13/20 1858	JAN
Vinyl chloride	<1.00	1.00	ug/L	1	U,Y1		05/13/20 1858	JAN
m,p-Xylene	<1.00	1.00	ug/L	1	U,Y1		05/13/20 1858	JAN
o-Xylene	<1.00	1.00	ug/L	1	U,Y1		05/13/20 1858	JAN
Surrogate: 1,2-Dichloroethane-d4	101	Limit: 70-130	% Rec	1			05/13/20 1858	JAN
Surrogate: Toluene-d8	102	Limit: 70-130	% Rec	1			05/13/20 1858	JAN
Surrogate: Pentafluorobenzene	94.8	Limit: 70-130	% Rec	1			05/13/20 1858	JAN



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CERTIFICATE OF ANALYSIS

D0E0414

Client Sample ID:	SW-1	Collected By:	Customer
Sample Matrix:	Surface Water	Collection Date:	05/05/2020 9:15
Lab Sample ID:	D0E0414-02		

Metals Total by ICP	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
EPA 200.7, Rev. 4.4 (1994)								
Hardness - Total as CaCO ₃ (Calc)	186	0.331	mg CaCO ₃ /L	1		05/12/20 1335	05/13/20 2114	JDF
Calcium	51.5	0.0500	mg/L	1		05/12/20 1335	05/13/20 2114	JDF
Magnesium	13.9	0.0500	mg/L	1		05/12/20 1335	05/13/20 2114	JDF



Microbac Laboratories, Inc. - Dayville

CERTIFICATE OF ANALYSIS

D0E0414

Client Sample ID:	SW-2	Sample Matrix:	Surface Water	Collected By:	Customer				
Lab Sample ID:	D0E0414-03			Collection Date:	05/05/2020 12:00				
Inorganics Total		Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
EPA 9012A									
Cyanide - Total	<0.0100	0.0100	mg/L	1	Y1	05/13/20 1509	05/14/20 1614	CLW	
Wet Chem - W/Hach 8000									
Chemical Oxygen Demand (COD)	33.4	5.00	mg/L	1		05/07/20 1530	05/07/20 1730	CCM	
Wet Chem - W/SM 2320 B-2011									
Alkalinity to pH 4.5	87.5	1.00	mg/L	1			05/07/20 1549	MAD	
SM 2540 C-2011									
Total Dissolved Solids (TDS)	194	25.0	mg/L	10		05/06/20 1915	05/08/20 1550	KJE	
Wet Chem - W/SM 4500-CI E-2011									
Chloride	53.0	2.00	mg/L	1			05/07/20 1341	CLW	
Wet Chem - W/SM 4500-NO3⁻ F-2011									
Nitrate as N	<0.0500	0.0500	mg/L	1	U		05/06/20 1857	DJM	
Wet Chem - W/SM 4500-SO4⁻ E-2011									
Sulfate as SO4	<5.00	5.00	mg/L	1	U		05/07/20 1529	CLW	
Metals Dissolved by CVAA		Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
EPA 7470A									
Mercury	<0.00020	0.00020	mg/L	1	U,Y1	05/15/20 1213	05/15/20 1418	DLO	
Metals Dissolved by ICP		Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
EPA 3010A/EPA 6010C									
Arsenic	<0.0050	0.0050	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2035	JDF	
Barium	0.0387	0.0050	mg/L	1	Y1	05/12/20 1335	05/13/20 2035	JDF	
Cadmium	<0.0020	0.0020	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2035	JDF	
Calcium	27.2	0.0500	mg/L	1	Y1	05/12/20 1335	05/13/20 2035	JDF	
Chromium	<0.0020	0.0020	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2035	JDF	
Copper	0.0034	0.0020	mg/L	1	Q11,Y1	05/12/20 1335	05/13/20 2035	JDF	
Iron	1.22	0.0500	mg/L	1	Y1	05/12/20 1335	05/13/20 2035	JDF	
Lead	0.0030	0.0030	mg/L	1	Y1	05/12/20 1335	05/13/20 2035	JDF	
Manganese	0.237	0.0020	mg/L	1	Y1	05/12/20 1335	05/13/20 2035	JDF	
Selenium	<0.0100	0.0100	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2035	JDF	
Silver	<0.0020	0.0020	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2035	JDF	
Sodium	33.3	1.00	mg/L	1	Y1	05/12/20 1335	05/13/20 2035	JDF	
Zinc	0.0113	0.0050	mg/L	1	Y1	05/12/20 1335	05/13/20 2035	JDF	



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CERTIFICATE OF ANALYSIS

D0E0414

Client Sample ID:	SW-2							
Sample Matrix:	Surface Water							
Lab Sample ID:	D0E0414-03							
Collected By: Customer Collection Date: 05/05/2020 12:00								
Volatile Organic Compounds by GCMS	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
EPA 5030C/EPA 8260C								
Acetone	<5.00	5.00	ug/L	1	U,Y1	05/13/20	1923	JAN
Acrylonitrile	<5.00	5.00	ug/L	1	U,Y1	05/13/20	1923	JAN
Benzene	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1923	JAN
Bromobenzene	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1923	JAN
Bromochloromethane	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1923	JAN
Bromodichloromethane	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1923	JAN
Bromoform	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1923	JAN
Bromomethane	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1923	JAN
2-Butanone (MEK)	<5.00	5.00	ug/L	1	U,Y1	05/13/20	1923	JAN
sec-Butylbenzene	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1923	JAN
tert-Butylbenzene	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1923	JAN
n-Butylbenzene	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1923	JAN
Carbon disulfide	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1923	JAN
Carbon tetrachloride	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1923	JAN
Chlorobenzene	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1923	JAN
Chloroethane (Ethyl chloride)	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1923	JAN
Chloroform	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1923	JAN
Chloromethane	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1923	JAN
2-Chlorotoluene	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1923	JAN
4-Chlorotoluene	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1923	JAN
1,2-Dibromo-3-chloropropane (DBCP)	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1923	JAN
Dibromochloromethane	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1923	JAN
1,2-Dibromoethane (Ethylene dibromide, EDB)	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1923	JAN
Dibromomethane (Methylene bromide)	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1923	JAN
trans-1,4-Dichloro-2-butene	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1923	JAN
1,4-Dichlorobenzene	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1923	JAN
1,3-Dichlorobenzene	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1923	JAN
1,2-Dichlorobenzene	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1923	JAN
Dichlorodifluoromethane (Freon-12)	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1923	JAN
1,2-Dichloroethane	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1923	JAN
1,1-Dichloroethane	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1923	JAN
trans-1,2-Dichloroethene	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1923	JAN
1,1-Dichloroethene	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1923	JAN
cis-1,2-Dichloroethene	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1923	JAN
1,3-Dichloropropane	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1923	JAN
1,2-Dichloropropane	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1923	JAN
2,2-Dichloropropane	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1923	JAN
trans-1,3-Dichloropropene	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1923	JAN
cis-1,3-Dichloropropene	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1923	JAN
1,1-Dichloropropene	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1923	JAN
Diethyl ether	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1923	JAN

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CERTIFICATE OF ANALYSIS

D0E0414

Client Sample ID:	SW-2							
Sample Matrix:	Surface Water							
Lab Sample ID:	D0E0414-03							
						Collected By:	Customer	
						Collection Date:	05/05/2020 12:00	
Volatile Organic Compounds by GCMS	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
1,4-Dioxane	<20.0	20.0	ug/L	1	U,Y1		05/13/20 1923	JAN
Ethylbenzene	<1.00	1.00	ug/L	1	U,Y1		05/13/20 1923	JAN
Hexachlorobutadiene	<1.00	1.00	ug/L	1	U,Y1		05/13/20 1923	JAN
2-Hexanone (MBK)	<5.00	5.00	ug/L	1	U,Y1		05/13/20 1923	JAN
Isopropylbenzene (Cumene)	<1.00	1.00	ug/L	1	U,Y1		05/13/20 1923	JAN
4-Isopropyltoluene (p-Isopropyltoluene)	<1.00	1.00	ug/L	1	U,Y1		05/13/20 1923	JAN
Methyl tert-butyl ether (MTBE)	<1.00	1.00	ug/L	1	U,Y1		05/13/20 1923	JAN
Methylene chloride (Dichloromethane)	<1.00	1.00	ug/L	1	U,Y1		05/13/20 1923	JAN
4-Methyl-2-pentanone (MIBK)	<5.00	5.00	ug/L	1	U,Y1		05/13/20 1923	JAN
Naphthalene	<1.00	1.00	ug/L	1	U,Y1		05/13/20 1923	JAN
n-Propylbenzene	<1.00	1.00	ug/L	1	U,Y1		05/13/20 1923	JAN
Styrene	<1.00	1.00	ug/L	1	U,Y1		05/13/20 1923	JAN
1,1,1,2-Tetrachloroethane	<1.00	1.00	ug/L	1	U,Y1		05/13/20 1923	JAN
1,1,2,2-Tetrachloroethane	<1.00	1.00	ug/L	1	U,Y1		05/13/20 1923	JAN
Tetrachloroethene	<1.00	1.00	ug/L	1	U,Y1		05/13/20 1923	JAN
Tetrahydrofuran (THF)	<1.00	1.00	ug/L	1	U,Y1		05/13/20 1923	JAN
Toluene	<1.00	1.00	ug/L	1	U,Y1		05/13/20 1923	JAN
1,2,4-Trichlorobenzene	<1.00	1.00	ug/L	1	U,Y1		05/13/20 1923	JAN
1,2,3-Trichlorobenzene	<1.00	1.00	ug/L	1	U,Y1		05/13/20 1923	JAN
1,1,1-Trichloroethane	<1.00	1.00	ug/L	1	U,Y1		05/13/20 1923	JAN
1,1,2-Trichloroethane	<1.00	1.00	ug/L	1	U,Y1		05/13/20 1923	JAN
Trichloroethene	<1.00	1.00	ug/L	1	U,Y1		05/13/20 1923	JAN
Trichlorofluoromethane (Freon 11)	<1.00	1.00	ug/L	1	U,Y1		05/13/20 1923	JAN
1,2,3-Trichloropropane	<1.00	1.00	ug/L	1	U,Y1		05/13/20 1923	JAN
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	<1.00	1.00	ug/L	1	U,Y1		05/13/20 1923	JAN
1,3,5-Trimethylbenzene	<1.00	1.00	ug/L	1	U,Y1		05/13/20 1923	JAN
1,2,4-Trimethylbenzene	<1.00	1.00	ug/L	1	U,Y1		05/13/20 1923	JAN
Vinyl chloride	<1.00	1.00	ug/L	1	U,Y1		05/13/20 1923	JAN
m,p-Xylene	<1.00	1.00	ug/L	1	U,Y1		05/13/20 1923	JAN
o-Xylene	<1.00	1.00	ug/L	1	U,Y1		05/13/20 1923	JAN
Surrogate: 1,2-Dichloroethane-d4	101	Limit: 70-130	% Rec	1			05/13/20 1923	JAN
Surrogate: Toluene-d8	103	Limit: 70-130	% Rec	1			05/13/20 1923	JAN
Surrogate: Pentafluorobenzene	96.8	Limit: 70-130	% Rec	1			05/13/20 1923	JAN



Microbac Laboratories, Inc. - Dayville

CERTIFICATE OF ANALYSIS

D0E0414

Client Sample ID:	SW-2	Collected By:	Customer
Sample Matrix:	Surface Water	Collection Date:	05/05/2020 12:00
Lab Sample ID:	D0E0414-04		

Metals Total by ICP	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
EPA 200.7, Rev. 4.4 (1994)								
Hardness - Total as CaCO ₃ (Calc)	95.5	0.331	mg CaCO ₃ /L	1		05/12/20 1335	05/13/20 2039	JDF
Calcium	26.8	0.0500	mg/L	1		05/12/20 1335	05/13/20 2039	JDF
Magnesium	6.97	0.0500	mg/L	1		05/12/20 1335	05/13/20 2039	JDF



Microbac Laboratories, Inc. - Dayville

CERTIFICATE OF ANALYSIS

D0E0414

Client Sample ID:	SW-3	Collected By:	Customer					
Sample Matrix:	Surface Water	Collection Date:	05/05/2020 12:35					
Lab Sample ID:	D0E0414-05							
Inorganics Total	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
EPA 9012A								
Cyanide - Total	<0.0100	0.0100	mg/L	1	Y1	05/13/20 1509	05/14/20 1614	CLW
Wet Chem - W/Hach 8000								
Chemical Oxygen Demand (COD)	44.2	5.00	mg/L	1		05/07/20 1530	05/07/20 1730	CCM
Wet Chem - W/SM 2320 B-2011								
Alkalinity to pH 4.5	95.0	1.00	mg/L	1			05/07/20 1549	MAD
SM 2540 C-2011								
Total Dissolved Solids (TDS)	256	25.0	mg/L	10		05/06/20 1915	05/08/20 1550	KJE
Wet Chem - W/SM 4500-CI E-2011								
Chloride	76.7	2.00	mg/L	1			05/07/20 1341	CLW
Wet Chem - W/SM 4500-NO3⁻ F-2011								
Nitrate as N	0.126	0.0500	mg/L	1	A5		05/06/20 1926	DJM
Wet Chem - W/SM 4500-SO4⁻ E-2011								
Sulfate as SO4	24.3	5.00	mg/L	1			05/07/20 1529	CLW
Metals Dissolved by CVAA	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
EPA 7470A								
Mercury	<0.00020	0.00020	mg/L	1	U,Y1	05/15/20 1213	05/15/20 1452	DLO
Metals Dissolved by ICP	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
EPA 3010A/EPA 6010C								
Arsenic	<0.0050	0.0050	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2054	JDF
Barium	0.0787	0.0050	mg/L	1	Y1	05/12/20 1335	05/13/20 2054	JDF
Cadmium	<0.0020	0.0020	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2054	JDF
Calcium	33.6	0.0500	mg/L	1	Y1	05/12/20 1335	05/13/20 2054	JDF
Chromium	<0.0020	0.0020	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2054	JDF
Copper	0.0080	0.0020	mg/L	1	Q11,Y1	05/12/20 1335	05/13/20 2054	JDF
Iron	1.47	0.0500	mg/L	1	Y1	05/12/20 1335	05/13/20 2054	JDF
Lead	0.0097	0.0030	mg/L	1	Y1	05/12/20 1335	05/13/20 2054	JDF
Manganese	0.268	0.0020	mg/L	1	Y1	05/12/20 1335	05/13/20 2054	JDF
Selenium	<0.0100	0.0100	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2054	JDF
Silver	<0.0020	0.0020	mg/L	1	U,Y1	05/12/20 1335	05/13/20 2054	JDF
Sodium	50.8	1.00	mg/L	1	Y1	05/12/20 1335	05/13/20 2054	JDF
Zinc	0.0289	0.0050	mg/L	1	Y1	05/12/20 1335	05/13/20 2054	JDF



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CERTIFICATE OF ANALYSIS

D0E0414

Client Sample ID:	SW-3	Sample Matrix:	Surface Water	Collected By:	Customer			
Lab Sample ID:	D0E0414-05			Collection Date:	05/05/2020 12:35			
Volatile Organic Compounds by GCMS	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
EPA 5030C/EPA 8260C								
Acetone	<5.00	5.00	ug/L	1	U,Y1	05/13/20	1949	JAN
Acrylonitrile	<5.00	5.00	ug/L	1	U,Y1	05/13/20	1949	JAN
Benzene	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1949	JAN
Bromobenzene	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1949	JAN
Bromochloromethane	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1949	JAN
Bromodichloromethane	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1949	JAN
Bromoform	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1949	JAN
Bromomethane	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1949	JAN
2-Butanone (MEK)	<5.00	5.00	ug/L	1	U,Y1	05/13/20	1949	JAN
sec-Butylbenzene	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1949	JAN
tert-Butylbenzene	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1949	JAN
n-Butylbenzene	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1949	JAN
Carbon disulfide	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1949	JAN
Carbon tetrachloride	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1949	JAN
Chlorobenzene	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1949	JAN
Chloroethane (Ethyl chloride)	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1949	JAN
Chloroform	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1949	JAN
Chloromethane	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1949	JAN
2-Chlorotoluene	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1949	JAN
4-Chlorotoluene	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1949	JAN
1,2-Dibromo-3-chloropropane (DBCP)	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1949	JAN
Dibromochloromethane	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1949	JAN
1,2-Dibromoethane (Ethylene dibromide, EDB)	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1949	JAN
Dibromomethane (Methylene bromide)	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1949	JAN
trans-1,4-Dichloro-2-butene	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1949	JAN
1,4-Dichlorobenzene	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1949	JAN
1,3-Dichlorobenzene	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1949	JAN
1,2-Dichlorobenzene	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1949	JAN
Dichlorodifluoromethane (Freon-12)	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1949	JAN
1,2-Dichloroethane	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1949	JAN
1,1-Dichloroethane	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1949	JAN
trans-1,2-Dichloroethene	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1949	JAN
1,1-Dichloroethene	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1949	JAN
cis-1,2-Dichloroethene	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1949	JAN
1,3-Dichloropropane	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1949	JAN
1,2-Dichloropropane	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1949	JAN
2,2-Dichloropropane	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1949	JAN
trans-1,3-Dichloropropene	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1949	JAN
cis-1,3-Dichloropropene	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1949	JAN
1,1-Dichloropropene	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1949	JAN
Diethyl ether	<1.00	1.00	ug/L	1	U,Y1	05/13/20	1949	JAN

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CERTIFICATE OF ANALYSIS

D0E0414

Client Sample ID:	SW-3	Collected By:	Customer
Sample Matrix:	Surface Water	Collection Date:	05/05/2020 12:35
Lab Sample ID:	D0E0414-05		

Volatile Organic Compounds by GCMS	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
1,4-Dioxane	<20.0	20.0	ug/L	1	U,Y1	05/13/20 1949	JAN	
Ethylbenzene	<1.00	1.00	ug/L	1	U,Y1	05/13/20 1949	JAN	
Hexachlorobutadiene	<1.00	1.00	ug/L	1	U,Y1	05/13/20 1949	JAN	
2-Hexanone (MBK)	<5.00	5.00	ug/L	1	U,Y1	05/13/20 1949	JAN	
Isopropylbenzene (Cumene)	<1.00	1.00	ug/L	1	U,Y1	05/13/20 1949	JAN	
4-Isopropyltoluene (p-Isopropyltoluene)	<1.00	1.00	ug/L	1	U,Y1	05/13/20 1949	JAN	
Methyl tert-butyl ether (MTBE)	<1.00	1.00	ug/L	1	U,Y1	05/13/20 1949	JAN	
Methylene chloride (Dichloromethane)	<1.00	1.00	ug/L	1	U,Y1	05/13/20 1949	JAN	
4-Methyl-2-pentanone (MIBK)	<5.00	5.00	ug/L	1	U,Y1	05/13/20 1949	JAN	
Naphthalene	<1.00	1.00	ug/L	1	U,Y1	05/13/20 1949	JAN	
n-Propylbenzene	<1.00	1.00	ug/L	1	U,Y1	05/13/20 1949	JAN	
Styrene	<1.00	1.00	ug/L	1	U,Y1	05/13/20 1949	JAN	
1,1,1,2-Tetrachloroethane	<1.00	1.00	ug/L	1	U,Y1	05/13/20 1949	JAN	
1,1,2,2-Tetrachloroethane	<1.00	1.00	ug/L	1	U,Y1	05/13/20 1949	JAN	
Tetrachloroethene	<1.00	1.00	ug/L	1	U,Y1	05/13/20 1949	JAN	
Tetrahydrofuran (THF)	<1.00	1.00	ug/L	1	U,Y1	05/13/20 1949	JAN	
Toluene	<1.00	1.00	ug/L	1	U,Y1	05/13/20 1949	JAN	
1,2,4-Trichlorobenzene	<1.00	1.00	ug/L	1	U,Y1	05/13/20 1949	JAN	
1,2,3-Trichlorobenzene	<1.00	1.00	ug/L	1	U,Y1	05/13/20 1949	JAN	
1,1,1-Trichloroethane	<1.00	1.00	ug/L	1	U,Y1	05/13/20 1949	JAN	
1,1,2-Trichloroethane	<1.00	1.00	ug/L	1	U,Y1	05/13/20 1949	JAN	
Trichloroethene	<1.00	1.00	ug/L	1	U,Y1	05/13/20 1949	JAN	
Trichlorofluoromethane (Freon 11)	<1.00	1.00	ug/L	1	U,Y1	05/13/20 1949	JAN	
1,2,3-Trichloropropane	<1.00	1.00	ug/L	1	U,Y1	05/13/20 1949	JAN	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	<1.00	1.00	ug/L	1	U,Y1	05/13/20 1949	JAN	
1,3,5-Trimethylbenzene	<1.00	1.00	ug/L	1	U,Y1	05/13/20 1949	JAN	
1,2,4-Trimethylbenzene	<1.00	1.00	ug/L	1	U,Y1	05/13/20 1949	JAN	
Vinyl chloride	<1.00	1.00	ug/L	1	U,Y1	05/13/20 1949	JAN	
m,p-Xylene	<1.00	1.00	ug/L	1	U,Y1	05/13/20 1949	JAN	
o-Xylene	<1.00	1.00	ug/L	1	U,Y1	05/13/20 1949	JAN	
Surrogate: 1,2-Dichloroethane-d4	98.6	Limit: 70-130	% Rec	1		05/13/20 1949	JAN	
Surrogate: Toluene-d8	101	Limit: 70-130	% Rec	1		05/13/20 1949	JAN	
Surrogate: Pentafluorobenzene	95.8	Limit: 70-130	% Rec	1		05/13/20 1949	JAN	

Polychlorinated Biphenyls (PCBs) by GC/ECD	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
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EPA 3510C/EPA 8082A

Aroclor-1016 (PCB-1016)	<0.100	0.100	ug/L	1	U,Y1	05/07/20 1000	05/08/20 1428	MRB
Aroclor-1221 (PCB-1221)	<0.100	0.100	ug/L	1	U,Y1	05/07/20 1000	05/08/20 1428	MRB
Aroclor-1232 (PCB-1232)	<0.100	0.100	ug/L	1	U,Y1	05/07/20 1000	05/08/20 1428	MRB
Aroclor-1242 (PCB-1242)	<0.100	0.100	ug/L	1	U,Y1	05/07/20 1000	05/08/20 1428	MRB

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CERTIFICATE OF ANALYSIS

D0E0414

Client Sample ID:	SW-3							
Sample Matrix:	Surface Water					Collected By:	Customer	
Lab Sample ID:	D0E0414-05					Collection Date:	05/05/2020 12:35	

Polychlorinated Biphenyls (PCBs) by GC/ECD	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
Aroclor-1248 (PCB-1248)	<0.100	0.100	ug/L	1	U,Y1	05/07/20 1000	05/08/20 1428	MRB
Aroclor-1254 (PCB-1254)	<0.100	0.100	ug/L	1	U,Y1	05/07/20 1000	05/08/20 1428	MRB
Aroclor-1260 (PCB-1260)	<0.100	0.100	ug/L	1	U,Y1	05/07/20 1000	05/08/20 1428	MRB
Surrogate: Decachlorobiphenyl (BZ-209)	57.6	Limit: 30-150	% Rec	1		05/07/20 1000	05/08/20 1428	MRB
Surrogate: Decachlorobiphenyl (BZ-209) [2C]	59.3	Limit: 30-150	% Rec	1		05/07/20 1000	05/08/20 1428	MRB
Surrogate: 2,4,5,6-Tetrachloro-m-xylene	40.4	Limit: 30-150	% Rec	1		05/07/20 1000	05/08/20 1428	MRB
Surrogate: 2,4,5,6-Tetrachloro-m-xylene [2C]	42.4	Limit: 30-150	% Rec	1		05/07/20 1000	05/08/20 1428	MRB

Client Sample ID:	SW-3							
Sample Matrix:	Surface Water					Collected By:	Customer	
Lab Sample ID:	D0E0414-06					Collection Date:	05/05/2020 12:35	

Metals Total by ICP	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
EPA 200.7, Rev. 4.4 (1994)								
Hardness - Total as CaCO ₃ (Calc)	111	0.331	mg CaCO ₃ /L	1		05/12/20 1335	05/13/20 2057	JDF
Calcium	31.1	0.0500	mg/L	1		05/12/20 1335	05/13/20 2057	JDF
Magnesium	8.15	0.0500	mg/L	1		05/12/20 1335	05/13/20 2057	JDF



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CERTIFICATE OF ANALYSIS

D0E0414

Batch Quality Control Summary: Microbac Laboratories, Inc. - Dayville

Inorganics Total	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes				
Batch DE00228 - Wet-Solids-W - SM 2540 C-2011														
Blank (DE00228-BLK1)					Prepared: 05/06/2020 Analyzed: 05/08/2020									
Total Dissolved Solids (TDS)	<10.0	10.0	mg/L							U				
LCS (DE00228-BS1)														
Total Dissolved Solids (TDS)	105	25.0	mg/L	100	105	80-120								
Duplicate (DE00228-DUP1)	Source: D0E0333-04				Prepared: 05/06/2020 Analyzed: 05/08/2020									
Total Dissolved Solids (TDS)	69.0	25.0	mg/L		75.0			8.33	10					
Batch DE00241 - Wet Chem - W - SM 4500-NO3⁻ F-2011														
Blank (DE00241-BLK1)					Prepared & Analyzed: 05/06/2020									
Nitrate as N	<0.0500	0.0500	mg/L							U				
LCS (DE00241-BS1)														
Nitrate as N	5.02	0.0500	mg/L	5.00	100	90-110								
Duplicate (DE00241-DUP1)	Source: D0E0414-03				Prepared & Analyzed: 05/06/2020									
Nitrate as N	<0.0500	0.0500	mg/L		ND			20	U					
Matrix Spike (DE00241-MS1)	Source: D0E0414-03				Prepared & Analyzed: 05/06/2020									
Nitrate as N	5.00	0.0500	mg/L	5.00	ND	100	75-125							
Matrix Spike Dup (DE00241-MSD1)	Source: D0E0414-03				Prepared & Analyzed: 05/06/2020									
Nitrate as N	5.00	0.0500	mg/L	5.00	ND	100	75-125	0.0540	20					
Batch DE00286 - Wet Chem - W - SM 4500-CI E-2011														
Blank (DE00286-BLK1)					Prepared & Analyzed: 05/07/2020									
Chloride	<2.00	2.00	mg/L							U				
LCS (DE00286-BS1)														
Chloride	18.5	2.00	mg/L	20.0	92.7	90-110								
Duplicate (DE00286-DUP1)	Source: D0E0333-03				Prepared & Analyzed: 05/07/2020									
Chloride	27.1	2.00	mg/L		27.5			1.46	20					
Matrix Spike (DE00286-MS1)	Source: D0E0333-03				Prepared & Analyzed: 05/07/2020									
Chloride	48.1	2.00	mg/L	20.0	27.5	103	75-125							
Matrix Spike Dup (DE00286-MSD1)	Source: D0E0333-03				Prepared & Analyzed: 05/07/2020									
Chloride	48.2	2.00	mg/L	20.0	27.5	103	75-125	0.192	20					
Batch DE00287 - Wet Chem - W - SM 4500-SO4⁻ E-2011														
Blank (DE00287-BLK1)					Prepared & Analyzed: 05/07/2020									
Sulfate as SO4	<5.00	5.00	mg/L							U				
LCS (DE00287-BS1)														
Sulfate as SO4	19.8	5.00	mg/L	20.0	98.8	80-120								
Duplicate (DE00287-DUP1)	Source: D0E0415-09				Prepared & Analyzed: 05/07/2020									
Sulfate as SO4	13.9	5.00	mg/L		14.0			0.573	20					



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CERTIFICATE OF ANALYSIS

D0E0414

Inorganics Total	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD RPD	RPD Limit	Notes
Batch DE00287 - Wet Chem - W - SM 4500-SO4⁻ E-2011										
Matrix Spike (DE00287-MS1)	Source: D0E0415-09	Prepared & Analyzed: 05/07/2020								
Sulfate as SO4	33.5		5.00	mg/L	20.0	14.0	97.3	75-125		
Matrix Spike Dup (DE00287-MSD1)	Source: D0E0415-09	Prepared & Analyzed: 05/07/2020								
Sulfate as SO4	33.7		5.00	mg/L	20.0	14.0	98.5	75-125	0.715	20
Batch DE00326 - Wet Chem - W - SM 2320 B-2011										
Blank (DE00326-BLK1)		Prepared & Analyzed: 05/07/2020								
Alkalinity to pH 4.5	<1.00		1.00	mg/L						U
LCS (DE00326-BS1)		Prepared & Analyzed: 05/07/2020								
Alkalinity to pH 4.5	50.0		1.00	mg/L	50.0	100	90-110			
Duplicate (DE00326-DUP1)	Source: D0E0347-03	Prepared & Analyzed: 05/07/2020								
Alkalinity to pH 4.5	97.5		1.00	mg/L	97.5				0.00	20
Batch DE00371 - Wet Chem - W - Hach 8000										
Blank (DE00371-BLK1)		Prepared & Analyzed: 05/07/2020								
Chemical Oxygen Demand (COD)	<5.00		5.00	mg/L						U
LCS (DE00371-BS1)		Prepared & Analyzed: 05/07/2020								
Chemical Oxygen Demand (COD)	103		5.00	mg/L	100	103	80-120			
Duplicate (DE00371-DUP1)	Source: D0E0225-01	Prepared & Analyzed: 05/07/2020								
Chemical Oxygen Demand (COD)	90.6		5.00	mg/L	94.2				3.88	20
Matrix Spike (DE00371-MS1)	Source: D0E0225-01	Prepared & Analyzed: 05/07/2020								
Chemical Oxygen Demand (COD)	186		5.00	mg/L	100	94.2	92.0	80-120		
Batch DE00705 - Wet-Distillation-W - EPA 9012A										
Blank (DE00705-BLK1)		Prepared: 05/13/2020 Analyzed: 05/14/2020								
Cyanide - Total	<0.0100		0.0100	mg/L						
LCS (DE00705-BS1)		Prepared: 05/13/2020 Analyzed: 05/14/2020								
Cyanide - Total	0.195		0.0100	mg/L	0.200	97.5	90-110			
Duplicate (DE00705-DUP1)	Source: D0E0415-03	Prepared: 05/13/2020 Analyzed: 05/14/2020								
Cyanide - Total	<0.0100		0.0100	mg/L	ND					20
Duplicate (DE00705-DUP2)	Source: D0E0415-09	Prepared: 05/13/2020 Analyzed: 05/14/2020								
Cyanide - Total	<0.0100		0.0100	mg/L	ND					20
Matrix Spike (DE00705-MS1)	Source: D0E0415-03	Prepared: 05/13/2020 Analyzed: 05/14/2020								
Cyanide - Total	0.0897		0.0100	mg/L	0.100	ND	89.7	75-125		M2
Metals Total by ICP	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD RPD	RPD Limit	Notes
Batch DE00561 - 3010A - EPA 200.7, Rev. 4.4 (1994)										
Blank (DE00561-BLK1)		Prepared: 05/12/2020 Analyzed: 05/13/2020								
Calcium	<0.0500		0.0500	mg/L						U
Magnesium	<0.0500		0.0500	mg/L						U

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CERTIFICATE OF ANALYSIS

D0E0414

Metals Total by ICP	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD RPD	RPD Limit	Notes
Batch DE00561 - 3010A - EPA 200.7, Rev. 4.4 (1994)										
Blank (DE00561-BLK2)										
Calcium	<0.0500	0.0500	mg/L							U
LCS (DE00561-BS1)										
Calcium	10.5	0.0500	mg/L	10.5		100	85-115			
Magnesium	11.0	0.0500	mg/L	10.5		105	85-115			
Duplicate (DE00561-DUP1)										
Calcium	33.2	0.0500	mg/L		33.2			0.256	20	
Magnesium	8.02	0.0500	mg/L		8.03			0.184	20	
Matrix Spike (DE00561-MS1)										
Calcium	43.8	0.0500	mg/L	10.5	33.2	101	70-130			
Magnesium	19.4	0.0500	mg/L	10.5	8.03	108	70-130			
Matrix Spike (DE00561-MS2)										
Calcium	61.4	0.0500	mg/L	10.5	51.5	93.7	70-130			
Magnesium	24.7	0.0500	mg/L	10.5	13.9	102	70-130			
Metals Dissolved by CVAA										
Metals Dissolved by CVAA	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD RPD	RPD Limit	Notes
Batch DE00851 - 245 HG W - EPA 7470A										
Blank (DE00851-BLK1)										
Mercury	<0.00020	0.00020	mg/L							U
LCS (DE00851-BS1)										
Mercury	0.00524	0.00020	mg/L	0.00500		105	80-120			
Matrix Spike (DE00851-MS1)										
Mercury	0.00517	0.00020	mg/L	0.00500	ND	103	75-125			
Matrix Spike (DE00851-MS2)										
Mercury	0.00377	0.00020	mg/L	0.00500	ND	75.4	75-125			
Matrix Spike Dup (DE00851-MSD1)										
Mercury	0.00508	0.00020	mg/L	0.00500	ND	102	75-125	1.81	20	
Metals Dissolved by ICP										
Metals Dissolved by ICP	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD RPD	RPD Limit	Notes
Batch DE00561 - 3010A - EPA 6010C										
Blank (DE00561-BLK1)										
Silver	<0.0020	0.0020	mg/L							U
Arsenic	<0.0049	0.0049	mg/L							U
Barium	<0.0049	0.0049	mg/L							U
Calcium	<0.0490	0.0490	mg/L							U
Cadmium	<0.0020	0.0020	mg/L							U
Chromium	<0.0020	0.0020	mg/L							U
Copper	<0.0020	0.0020	mg/L							U
Manganese	<0.0020	0.0020	mg/L							U
Sodium	<0.980	0.980	mg/L							U

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CERTIFICATE OF ANALYSIS

D0E0414

Metals Dissolved by ICP	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch DE00561 - 3010A - EPA 6010C										
Blank (DE00561-BLK1) Prepared: 05/12/2020 Analyzed: 05/13/2020										
Lead	<0.0029	0.0029	mg/L							U
Selenium	<0.0049	0.0049	mg/L							U
Zinc	<0.0049	0.0049	mg/L							U
Blank (DE00561-BLK2) Prepared: 05/12/2020 Analyzed: 05/14/2020										
Iron	<0.0490	0.0490	mg/L							U
LCS (DE00561-BS1) Prepared: 05/12/2020 Analyzed: 05/13/2020										
Silver	0.502	0.0020	mg/L	0.500	100	80-120				
Arsenic	0.493	0.0049	mg/L	0.500	98.7	80-120				
Barium	0.493	0.0049	mg/L	0.500	98.6	80-120				
Calcium	10.5	0.0490	mg/L	10.5	100	80-120				
Cadmium	0.503	0.0020	mg/L	0.500	101	80-120				
Chromium	0.483	0.0020	mg/L	0.500	96.6	80-120				
Copper	0.489	0.0020	mg/L	0.500	97.8	80-120				
Iron	2.59	0.0490	mg/L	2.50	104	80-120				
Manganese	0.511	0.0020	mg/L	0.500	102	80-120				
Sodium	11.1	0.980	mg/L	10.5	105	80-120				
Lead	0.495	0.0029	mg/L	0.500	99.0	80-120				
Selenium	0.492	0.0049	mg/L	0.500	98.5	80-120				
Zinc	0.493	0.0049	mg/L	0.500	98.6	80-120				
Duplicate (DE00561-DUP1)		Source: D0E0723-03		Prepared: 05/12/2020 Analyzed: 05/13/2020						
Silver	<0.0020	0.0020	mg/L	ND				20	U	
Arsenic	<0.0049	0.0049	mg/L	ND				20	U	
Barium	0.0223	0.0049	mg/L	0.0220				1.49	20	
Calcium	33.2	0.0490	mg/L	33.2				0.256	20	
Cadmium	<0.0020	0.0020	mg/L	0.00006				17.6	20	
Chromium	<0.0020	0.0020	mg/L	ND				20	U	
Copper	0.0031	0.0020	mg/L	0.0029				6.26	20	
Iron	<0.0490	0.0490	mg/L	0.0285				15.2	20	
Manganese	0.119	0.0020	mg/L	0.119				0.0387	20	
Sodium	140	0.980	mg/L	140				0.0935	20	
Lead	<0.0029	0.0029	mg/L	ND				20	U	
Selenium	<0.0049	0.0049	mg/L	ND				20	U	
Zinc	0.0209	0.0049	mg/L	0.0217				3.72	20	
Matrix Spike (DE00561-MS1)		Source: D0E0723-03		Prepared: 05/12/2020 Analyzed: 05/13/2020						
Silver	0.514	0.0020	mg/L	0.500	ND	103	75-125			
Arsenic	0.505	0.0049	mg/L	0.500	ND	101	75-125			
Barium	0.521	0.0049	mg/L	0.500	0.0220	99.9	75-125			
Calcium	43.8	0.0490	mg/L	10.5	33.2	101	75-125			
Cadmium	0.513	0.0020	mg/L	0.500	0.00006	103	75-125			
Chromium	0.496	0.0020	mg/L	0.500	ND	99.3	75-125			
Copper	0.511	0.0020	mg/L	0.500	0.0029	102	75-125			
Iron	2.69	0.0490	mg/L	2.50	0.0285	106	75-125			
Manganese	0.641	0.0020	mg/L	0.500	0.119	104	75-125			

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CERTIFICATE OF ANALYSIS

D0E0414

Metals Dissolved by ICP	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD RPD	RPD Limit	Notes
Batch DE00561 - 3010A - EPA 6010C										
Matrix Spike (DE00561-MS1)										
Source: D0E0723-03 Prepared: 05/12/2020 Analyzed: 05/13/2020										
Sodium	153	0.980	mg/L	10.5	140	119	75-125			
Lead	0.502	0.0029	mg/L	0.500	ND	100	75-125			
Selenium	0.498	0.0049	mg/L	0.500	ND	99.5	75-125			
Zinc	0.524	0.0049	mg/L	0.500	0.0217	101	75-125			
Matrix Spike (DE00561-MS2)										
Source: D0E0414-02 Prepared: 05/12/2020 Analyzed: 05/13/2020										
Silver	0.505	0.0020	mg/L	0.500	0.0008	101	75-125			
Arsenic	0.500	0.0049	mg/L	0.500	ND	100	75-125			
Barium	0.926	0.0049	mg/L	0.500	0.438	97.5	75-125			
Calcium	61.4	0.0490	mg/L	10.5	51.5	93.7	75-125			
Cadmium	0.503	0.0020	mg/L	0.500	0.0002	101	75-125			
Chromium	0.488	0.0020	mg/L	0.500	0.0015	97.4	75-125			
Copper	0.503	0.0020	mg/L	0.500	0.0037	99.8	75-125			
Iron	3.52	0.0490	mg/L	2.50	0.903	105	75-125			
Manganese	0.867	0.0020	mg/L	0.500	0.350	103	75-125			
Sodium	61.1	0.980	mg/L	10.5	50.5	100	75-125			
Lead	0.491	0.0029	mg/L	0.500	0.0025	97.7	75-125			
Selenium	0.490	0.0049	mg/L	0.500	0.0011	97.8	75-125			
Zinc	0.502	0.0049	mg/L	0.500	0.0104	98.3	75-125			
Volatile Organic Compounds by GCMS										
Result RL Units Spike Level Source Result %REC %REC Limits RPD RPD Limit Notes										
Batch DE00931 - 5030C VOA W - EPA 8260C										
Blank (DE00931-BLK1)										
Prepared & Analyzed: 05/13/2020										
Acetone	<5.00	5.00	ug/L							U
Acrylonitrile	<5.00	5.00	ug/L							U
Benzene	<1.00	1.00	ug/L							U
Bromobenzene	<1.00	1.00	ug/L							U
Bromochloromethane	<1.00	1.00	ug/L							U
Bromodichloromethane	<1.00	1.00	ug/L							U
Bromoform	<1.00	1.00	ug/L							U
Bromomethane	<1.00	1.00	ug/L							U
2-Butanone (MEK)	<5.00	5.00	ug/L							U
sec-Butylbenzene	<1.00	1.00	ug/L							U
tert-Butylbenzene	<1.00	1.00	ug/L							U
n-Butylbenzene	<1.00	1.00	ug/L							U
Carbon disulfide	<1.00	1.00	ug/L							U
Carbon tetrachloride	<1.00	1.00	ug/L							U
Chlorobenzene	<1.00	1.00	ug/L							U
Chloroethane (Ethyl chloride)	<1.00	1.00	ug/L							U
Chloroform	<1.00	1.00	ug/L							U
Chloromethane	<1.00	1.00	ug/L							U
2-Chlorotoluene	<1.00	1.00	ug/L							U

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CERTIFICATE OF ANALYSIS

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Volatile Organic Compounds by GCMS	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch DE00931 - 5030C VOA W - EPA 8260C										
Blank (DE00931-BLK1)					Prepared & Analyzed: 05/13/2020					
4-Chlorotoluene	<1.00	1.00	ug/L							U
1,2-Dibromo-3-chloropropane (DBCP)	<1.00	1.00	ug/L							U
Dibromochloromethane	<1.00	1.00	ug/L							U
1,2-Dibromoethane (Ethylene dibromide, EDB)	<1.00	1.00	ug/L							U
Dibromomethane (Methylene bromide)	<1.00	1.00	ug/L							U
trans-1,4-Dichloro-2-butene	<1.00	1.00	ug/L							U
1,4-Dichlorobenzene	<1.00	1.00	ug/L							U
1,3-Dichlorobenzene	<1.00	1.00	ug/L							U
1,2-Dichlorobenzene	<1.00	1.00	ug/L							U
Dichlorodifluoromethane (Freon-12)	<1.00	1.00	ug/L							U
1,2-Dichloroethane	<1.00	1.00	ug/L							U
1,1-Dichloroethane	<1.00	1.00	ug/L							U
trans-1,2-Dichloroethene	<1.00	1.00	ug/L							U
1,1-Dichloroethene	<1.00	1.00	ug/L							U
cis-1,2-Dichloroethene	<1.00	1.00	ug/L							U
1,3-Dichloropropane	<1.00	1.00	ug/L							U
1,2-Dichloropropane	<1.00	1.00	ug/L							U
2,2-Dichloropropane	<1.00	1.00	ug/L							U
trans-1,3-Dichloropropene	<1.00	1.00	ug/L							U
cis-1,3-Dichloropropene	<1.00	1.00	ug/L							U
1,1-Dichloropropene	<1.00	1.00	ug/L							U
Diethyl ether	<1.00	1.00	ug/L							U
1,4-Dioxane	<20.0	20.0	ug/L							U
Ethylbenzene	<1.00	1.00	ug/L							U
Hexachlorobutadiene	<1.00	1.00	ug/L							U
2-Hexanone (MBK)	<5.00	5.00	ug/L							U
Isopropylbenzene (Cumene)	<1.00	1.00	ug/L							U
4-Isopropyltoluene (p-Isopropyltoluene)	<1.00	1.00	ug/L							U
Methyl tert-butyl ether (MTBE)	<1.00	1.00	ug/L							U
Methylene chloride (Dichloromethane)	<1.00	1.00	ug/L							U
4-Methyl-2-pentanone (MIBK)	<5.00	5.00	ug/L							U
Naphthalene	<1.00	1.00	ug/L							U
n-Propylbenzene	<1.00	1.00	ug/L							U
Styrene	<1.00	1.00	ug/L							U
1,1,1,2-Tetrachloroethane	<1.00	1.00	ug/L							U
1,1,2,2-Tetrachloroethane	<1.00	1.00	ug/L							U
Tetrachloroethene	<1.00	1.00	ug/L							U
Tetrahydrofuran (THF)	<1.00	1.00	ug/L							U
Toluene	<1.00	1.00	ug/L							U

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CERTIFICATE OF ANALYSIS

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Volatile Organic Compounds by GCMS	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch DE00931 - 5030C VOA W - EPA 8260C										
Blank (DE00931-BLK1)										
1,2,4-Trichlorobenzene	<1.00	1.00	ug/L							U
1,2,3-Trichlorobenzene	<1.00	1.00	ug/L							U
1,1,1-Trichloroethane	<1.00	1.00	ug/L							U
1,1,2-Trichloroethane	<1.00	1.00	ug/L							U
Trichloroethene	<1.00	1.00	ug/L							U
Trichlorofluoromethane (Freon 11)	<1.00	1.00	ug/L							U
1,2,3-Trichloropropane	<1.00	1.00	ug/L							U
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	<1.00	1.00	ug/L							U
1,3,5-Trimethylbenzene	<1.00	1.00	ug/L							U
1,2,4-Trimethylbenzene	<1.00	1.00	ug/L							U
Vinyl chloride	<1.00	1.00	ug/L							U
m,p-Xylene	<1.00	1.00	ug/L							U
o-Xylene	<1.00	1.00	ug/L							U
Surrogate: 1,2-Dichloroethane-d4	49.2		ug/L	50.0		98.4	70-130			
Surrogate: Toluene-d8	51.5		ug/L	50.0		103	70-130			
Surrogate: Pentafluorobenzene	49.1		ug/L	50.0		98.2	70-130			
Matrix Spike (DE00931-MS1)										
Source: D0E0333-01										
Acetone	41.2	5.00	ug/L	50.0	ND	82.3	70-130			
Acrylonitrile	41.1	5.00	ug/L	50.0	ND	82.3	70-130			
Benzene	53.9	1.00	ug/L	50.0	ND	108	70-130			
Bromobenzene	48.8	1.00	ug/L	50.0	ND	97.6	70-130			
Bromochloromethane	49.4	1.00	ug/L	50.0	ND	98.8	70-130			
Bromodichloromethane	53.0	1.00	ug/L	50.0	ND	106	70-130			
Bromoform	44.5	1.00	ug/L	50.0	ND	89.0	70-130			
Bromomethane	45.1	1.00	ug/L	50.0	ND	90.1	70-130			
2-Butanone (MEK)	40.0	5.00	ug/L	50.0	ND	80.0	70-130			
sec-Butylbenzene	53.3	1.00	ug/L	50.0	ND	107	70-130			
tert-Butylbenzene	53.3	1.00	ug/L	50.0	ND	107	70-130			
n-Butylbenzene	52.3	1.00	ug/L	50.0	ND	105	70-130			
Carbon disulfide	55.6	1.00	ug/L	50.0	ND	111	70-130			
Carbon tetrachloride	56.3	1.00	ug/L	50.0	ND	113	70-130			
Chlorobenzene	51.6	1.00	ug/L	50.0	ND	103	70-130			
Chloroethane (Ethyl chloride)	54.0	1.00	ug/L	50.0	ND	108	70-130			
Chloroform	53.8	1.00	ug/L	50.0	ND	108	70-130			
Chloromethane	44.5	1.00	ug/L	50.0	ND	89.0	70-130			
2-Chlorotoluene	50.4	1.00	ug/L	50.0	ND	101	70-130			
4-Chlorotoluene	50.5	1.00	ug/L	50.0	ND	101	70-130			
1,2-Dibromo-3-chloropropane (DBCP)	45.9	1.00	ug/L	50.0	ND	91.8	70-130			
Dibromochloromethane	52.6	1.00	ug/L	50.0	ND	105	70-130			
1,2-Dibromoethane (Ethylene dibromide, EDB)	50.5	1.00	ug/L	50.0	ND	101	70-130			



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Volatile Organic Compounds by GCMS	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD RPD	RPD Limit	Notes		
Batch DE00931 - 5030C VOA W - EPA 8260C												
Matrix Spike (DE00931-MS1)												
					Source: D0E0333-01 Prepared & Analyzed: 05/13/2020							
Dibromomethane (Methylene bromide)	48.9		1.00	ug/L	50.0	ND	97.8	70-130				
trans-1,4-Dichloro-2-butene	43.8		1.00	ug/L	50.0	ND	87.5	70-130				
1,4-Dichlorobenzene	46.0		1.00	ug/L	50.0	ND	92.1	70-130				
1,3-Dichlorobenzene	49.6		1.00	ug/L	50.0	ND	99.2	70-130				
1,2-Dichlorobenzene	48.0		1.00	ug/L	50.0	ND	96.0	70-130				
Dichlorodifluoromethane (Freon-12)	46.9		1.00	ug/L	50.0	ND	93.7	70-130				
1,2-Dichloroethane	51.6		1.00	ug/L	50.0	ND	103	70-130				
1,1-Dichloroethane	52.7		1.00	ug/L	50.0	ND	105	70-130				
trans-1,2-Dichloroethene	55.6		1.00	ug/L	50.0	ND	111	70-130				
1,1-Dichloroethene	55.7		1.00	ug/L	50.0	ND	111	70-130				
cis-1,2-Dichloroethene	53.6		1.00	ug/L	50.0	ND	107	70-130				
1,3-Dichloropropane	51.5		1.00	ug/L	50.0	ND	103	70-130				
1,2-Dichloropropane	51.4		1.00	ug/L	50.0	ND	103	70-130				
2,2-Dichloropropane	52.4		1.00	ug/L	50.0	ND	105	70-130				
trans-1,3-Dichloropropene	46.2		1.00	ug/L	50.0	ND	92.5	70-130				
cis-1,3-Dichloropropene	52.8		1.00	ug/L	50.0	ND	106	70-130				
1,1-Dichloropropene	55.3		1.00	ug/L	50.0	ND	111	70-130				
Diethyl ether	48.3		1.00	ug/L	50.0	ND	96.5	70-130				
1,4-Dioxane	42.0		20.0	ug/L	50.0	ND	84.1	70-130				
Ethylbenzene	53.1		1.00	ug/L	50.0	ND	106	70-130				
Hexachlorobutadiene	45.4		1.00	ug/L	50.0	ND	90.8	70-130				
2-Hexanone (MBK)	43.9		5.00	ug/L	50.0	ND	87.7	70-130				
Isopropylbenzene (Cumene)	53.2		1.00	ug/L	50.0	ND	106	70-130				
4-Isopropyltoluene (p-Isopropyltoluene)	54.5		1.00	ug/L	50.0	ND	109	70-130				
Methyl tert-butyl ether (MTBE)	49.4		1.00	ug/L	50.0	ND	98.8	70-130				
Methylene chloride (Dichloromethane)	46.2		1.00	ug/L	50.0	ND	92.4	70-130				
4-Methyl-2-pentanone (MIBK)	44.5		5.00	ug/L	50.0	ND	89.1	70-130				
Naphthalene	39.8		1.00	ug/L	50.0	ND	79.6	70-130				
n-Propylbenzene	52.9		1.00	ug/L	50.0	ND	106	70-130				
Styrene	55.2		1.00	ug/L	50.0	ND	110	70-130				
1,1,1,2-Tetrachloroethane	52.9		1.00	ug/L	50.0	ND	106	70-130				
1,1,2,2-Tetrachloroethane	47.3		1.00	ug/L	50.0	ND	94.6	70-130				
Tetrachloroethene	54.5		1.00	ug/L	50.0	ND	109	70-130				
Tetrahydrofuran (THF)	42.7		1.00	ug/L	50.0	ND	85.4	70-130				
Toluene	55.1		1.00	ug/L	50.0	ND	110	70-130				
1,2,4-Trichlorobenzene	48.3		1.00	ug/L	50.0	ND	96.5	70-130				
1,2,3-Trichlorobenzene	46.9		1.00	ug/L	50.0	ND	93.7	70-130				
1,1,1-Trichloroethane	56.2		1.00	ug/L	50.0	ND	112	70-130				
1,1,2-Trichloroethane	50.4		1.00	ug/L	50.0	ND	101	70-130				
Trichloroethene	50.7		1.00	ug/L	50.0	ND	101	70-130				
Trichlorofluoromethane (Freon 11)	50.1		1.00	ug/L	50.0	ND	100	70-130				

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CERTIFICATE OF ANALYSIS

D0E0414

Volatile Organic Compounds by GCMS	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes		
Batch DE00931 - 5030C VOA W - EPA 8260C												
Matrix Spike (DE00931-MS1)												
					Source: D0E0333-01 Prepared & Analyzed: 05/13/2020							
1,2,3-Trichloropropane	47.4		1.00	ug/L	50.0	ND	94.7	70-130				
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	47.9		1.00	ug/L	50.0	ND	95.8	70-130				
1,3,5-Trimethylbenzene	52.5		1.00	ug/L	50.0	ND	105	70-130				
1,2,4-Trimethylbenzene	52.4		1.00	ug/L	50.0	ND	105	70-130				
Vinyl chloride	50.4		1.00	ug/L	50.0	ND	101	70-130				
m,p-Xylene	54.3		1.00	ug/L	50.0	ND	109	70-130				
o-Xylene	53.5		1.00	ug/L	50.0	ND	107	70-130				
Surrogate: 1,2-Dichloroethane-d4	48.2			ug/L	50.0		96.4	70-130				
Surrogate: Toluene-d8	50.8			ug/L	50.0		102	70-130				
Surrogate: Pentafluorobenzene	50.5			ug/L	50.0		101	70-130				
Matrix Spike Dup (DE00931-MSD1)												
					Source: D0E0333-01 Prepared & Analyzed: 05/13/2020							
Acetone	40.4		5.00	ug/L	50.0	ND	80.7	70-130	1.91	20		
Acrylonitrile	41.4		5.00	ug/L	50.0	ND	82.8	70-130	0.606	20		
Benzene	50.1		1.00	ug/L	50.0	ND	100	70-130	7.15	20		
Bromobenzene	46.0		1.00	ug/L	50.0	ND	91.9	70-130	6.06	20		
Bromochloromethane	47.1		1.00	ug/L	50.0	ND	94.2	70-130	4.77	20		
Bromodichloromethane	49.0		1.00	ug/L	50.0	ND	98.0	70-130	7.80	20		
Bromoform	42.4		1.00	ug/L	50.0	ND	84.7	70-130	4.93	20		
Bromomethane	43.2		1.00	ug/L	50.0	ND	86.4	70-130	4.21	20		
2-Butanone (MEK)	39.2		5.00	ug/L	50.0	ND	78.5	70-130	1.92	20		
sec-Butylbenzene	49.8		1.00	ug/L	50.0	ND	99.6	70-130	6.72	20		
tert-Butylbenzene	49.0		1.00	ug/L	50.0	ND	98.1	70-130	8.35	20		
n-Butylbenzene	49.1		1.00	ug/L	50.0	ND	98.1	70-130	6.34	20		
Carbon disulfide	51.2		1.00	ug/L	50.0	ND	102	70-130	8.16	20		
Carbon tetrachloride	51.9		1.00	ug/L	50.0	ND	104	70-130	8.12	20		
Chlorobenzene	48.0		1.00	ug/L	50.0	ND	96.0	70-130	7.19	20		
Chloroethane (Ethyl chloride)	49.3		1.00	ug/L	50.0	ND	98.5	70-130	9.23	20		
Chloroform	48.5		1.00	ug/L	50.0	ND	97.0	70-130	10.4	20		
Chloromethane	41.5		1.00	ug/L	50.0	ND	83.0	70-130	7.00	20		
2-Chlorotoluene	46.6		1.00	ug/L	50.0	ND	93.3	70-130	7.81	20		
4-Chlorotoluene	47.7		1.00	ug/L	50.0	ND	95.5	70-130	5.54	20		
1,2-Dibromo-3-chloropropane (DBCP)	43.9		1.00	ug/L	50.0	ND	87.8	70-130	4.45	20		
Dibromochloromethane	48.7		1.00	ug/L	50.0	ND	97.4	70-130	7.56	20		
1,2-Dibromoethane (Ethylene dibromide, EDB)	47.0		1.00	ug/L	50.0	ND	94.0	70-130	7.28	20		
Dibromomethane (Methylene bromide)	46.9		1.00	ug/L	50.0	ND	93.8	70-130	4.22	20		
trans-1,4-Dichloro-2-butene	37.2		1.00	ug/L	50.0	ND	74.5	70-130	16.1	20		
1,4-Dichlorobenzene	44.2		1.00	ug/L	50.0	ND	88.5	70-130	3.97	20		
1,3-Dichlorobenzene	46.4		1.00	ug/L	50.0	ND	92.8	70-130	6.67	20		
1,2-Dichlorobenzene	44.5		1.00	ug/L	50.0	ND	88.9	70-130	7.66	20		
Dichlorodifluoromethane (Freon-12)	43.9		1.00	ug/L	50.0	ND	87.8	70-130	6.57	20		

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CERTIFICATE OF ANALYSIS

D0E0414

Volatile Organic Compounds by GCMS	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch DE00931 - 5030C VOA W - EPA 8260C										
Matrix Spike Dup (DE00931-MSD1)										
Source: D0E0333-01 Prepared & Analyzed: 05/13/2020										
1,2-Dichloroethane	47.7	1.00	ug/L	50.0	ND	95.4	70-130	7.72	20	
1,1-Dichloroethane	49.9	1.00	ug/L	50.0	ND	99.7	70-130	5.52	20	
trans-1,2-Dichloroethene	50.8	1.00	ug/L	50.0	ND	102	70-130	9.08	20	
1,1-Dichloroethene	53.2	1.00	ug/L	50.0	ND	106	70-130	4.66	20	
cis-1,2-Dichloroethene	49.5	1.00	ug/L	50.0	ND	99.0	70-130	7.97	20	
1,3-Dichloropropane	47.8	1.00	ug/L	50.0	ND	95.6	70-130	7.37	20	
1,2-Dichloropropane	47.9	1.00	ug/L	50.0	ND	95.9	70-130	6.87	20	
2,2-Dichloropropane	48.0	1.00	ug/L	50.0	ND	95.9	70-130	8.89	20	
trans-1,3-Dichloropropene	42.6	1.00	ug/L	50.0	ND	85.2	70-130	8.13	20	
cis-1,3-Dichloropropene	47.8	1.00	ug/L	50.0	ND	95.6	70-130	9.94	20	
1,1-Dichloropropene	53.1	1.00	ug/L	50.0	ND	106	70-130	4.19	20	
Diethyl ether	47.3	1.00	ug/L	50.0	ND	94.6	70-130	2.03	20	
1,4-Dioxane	33.7	20.0	ug/L	50.0	ND	67.4	70-130	22.0	20	
Ethylbenzene	49.4	1.00	ug/L	50.0	ND	98.7	70-130	7.25	20	
Hexachlorobutadiene	44.0	1.00	ug/L	50.0	ND	87.9	70-130	3.25	20	
2-Hexanone (MBK)	40.6	5.00	ug/L	50.0	ND	81.1	70-130	7.87	20	
Isopropylbenzene (Cumene)	49.2	1.00	ug/L	50.0	ND	98.5	70-130	7.66	20	
4-Isopropyltoluene (p-Isopropyltoluene)	51.0	1.00	ug/L	50.0	ND	102	70-130	6.54	20	
Methyl tert-butyl ether (MTBE)	48.8	1.00	ug/L	50.0	ND	97.5	70-130	1.30	20	
Methylene chloride (Dichloromethane)	44.9	1.00	ug/L	50.0	ND	89.8	70-130	2.83	20	
4-Methyl-2-pentanone (MIBK)	42.3	5.00	ug/L	50.0	ND	84.6	70-130	5.14	20	
Naphthalene	37.7	1.00	ug/L	50.0	ND	75.5	70-130	5.36	20	
n-Propylbenzene	49.7	1.00	ug/L	50.0	ND	99.4	70-130	6.18	20	
Styrene	50.0	1.00	ug/L	50.0	ND	100	70-130	9.77	20	
1,1,1,2-Tetrachloroethane	48.3	1.00	ug/L	50.0	ND	96.5	70-130	9.10	20	
1,1,2,2-Tetrachloroethane	45.5	1.00	ug/L	50.0	ND	91.1	70-130	3.75	20	
Tetrachloroethene	50.0	1.00	ug/L	50.0	ND	100	70-130	8.67	20	
Tetrahydrofuran (THF)	40.8	1.00	ug/L	50.0	ND	81.6	70-130	4.53	20	
Toluene	49.7	1.00	ug/L	50.0	ND	99.4	70-130	10.3	20	
1,2,4-Trichlorobenzene	44.4	1.00	ug/L	50.0	ND	88.9	70-130	8.26	20	
1,2,3-Trichlorobenzene	43.6	1.00	ug/L	50.0	ND	87.2	70-130	7.14	20	
1,1,1-Trichloroethane	51.2	1.00	ug/L	50.0	ND	102	70-130	9.20	20	
1,1,2-Trichloroethane	48.2	1.00	ug/L	50.0	ND	96.3	70-130	4.47	20	
Trichloroethene	48.7	1.00	ug/L	50.0	ND	97.4	70-130	3.97	20	
Trichlorofluoromethane (Freon 11)	46.5	1.00	ug/L	50.0	ND	93.0	70-130	7.43	20	
1,2,3-Trichloropropane	44.5	1.00	ug/L	50.0	ND	89.0	70-130	6.20	20	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	45.3	1.00	ug/L	50.0	ND	90.5	70-130	5.69	20	
1,3,5-Trimethylbenzene	48.8	1.00	ug/L	50.0	ND	97.7	70-130	7.19	20	
1,2,4-Trimethylbenzene	49.5	1.00	ug/L	50.0	ND	99.0	70-130	5.61	20	
Vinyl chloride	47.0	1.00	ug/L	50.0	ND	94.0	70-130	6.92	20	
m,p-Xylene	50.7	1.00	ug/L	50.0	ND	101	70-130	6.86	20	

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Microbac Laboratories, Inc. - Dayville

CERTIFICATE OF ANALYSIS

D0E0414

Volatile Organic Compounds by GCMS	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch DE00931 - 5030C VOA W - EPA 8260C										
Matrix Spike Dup (DE00931-MSD1)										
Source: D0E0333-01 Prepared & Analyzed: 05/13/2020										
o-Xylene	49.3	1.00	ug/L	50.0	ND	98.6	70-130	8.13	20	
Surrogate: 1,2-Dichloroethane-d4	49.1		ug/L	50.0		98.1	70-130			
Surrogate: Toluene-d8	49.8		ug/L	50.0		99.7	70-130			
Surrogate: Pentafluorobenzene	51.2		ug/L	50.0		102	70-130			
Polychlorinated Biphenyls (PCBs) by GC/ECD										
Blank (DE00299-BLK1)										
Prepared: 05/07/2020 Analyzed: 05/08/2020										
Aroclor-1016 (PCB-1016)	<0.100	0.100	ug/L							U
Aroclor-1016 (PCB-1016) [2C]	<0.100	0.100	ug/L							U
Aroclor-1221 (PCB-1221)	<0.100	0.100	ug/L							U
Aroclor-1221 (PCB-1221) [2C]	<0.100	0.100	ug/L							U
Aroclor-1232 (PCB-1232)	<0.100	0.100	ug/L							U
Aroclor-1232 (PCB-1232) [2C]	<0.100	0.100	ug/L							U
Aroclor-1242 (PCB-1242)	<0.100	0.100	ug/L							U
Aroclor-1242 (PCB-1242) [2C]	<0.100	0.100	ug/L							U
Aroclor-1248 (PCB-1248)	<0.100	0.100	ug/L							U
Aroclor-1248 (PCB-1248) [2C]	<0.100	0.100	ug/L							U
Aroclor-1254 (PCB-1254)	<0.100	0.100	ug/L							U
Aroclor-1254 (PCB-1254) [2C]	<0.100	0.100	ug/L							U
Aroclor-1260 (PCB-1260)	<0.100	0.100	ug/L							U
Aroclor-1260 (PCB-1260) [2C]	<0.100	0.100	ug/L							U
Surrogate: Decachlorobiphenyl (BZ-209)	0.0729		ug/L	0.100		72.9	30-150			
Surrogate: Decachlorobiphenyl (BZ-209) [2C]	0.0757		ug/L	0.100		75.7	30-150			
Surrogate: 2,4,5,6-Tetrachloro-m-xylene	0.0570		ug/L	0.100		57.0	30-150			
Surrogate: 2,4,5,6-Tetrachloro-m-xylene [2C]	0.0608		ug/L	0.100		60.8	30-150			
LCS (DE00299-BS1)										
Prepared: 05/07/2020 Analyzed: 05/08/2020										
Aroclor-1016 (PCB-1016)	0.564	0.100	ug/L	1.00		56.4	40-140			
Aroclor-1016 (PCB-1016) [2C]	0.589	0.100	ug/L	1.00		58.9	40-140			
Aroclor-1260 (PCB-1260)	0.744	0.100	ug/L	1.00		74.4	40-140			
Aroclor-1260 (PCB-1260) [2C]	0.808	0.100	ug/L	1.00		80.8	40-140			
Surrogate: Decachlorobiphenyl (BZ-209)	0.0844		ug/L	0.100		84.4	30-150			
Surrogate: Decachlorobiphenyl (BZ-209) [2C]	0.0851		ug/L	0.100		85.1	30-150			
Surrogate: 2,4,5,6-Tetrachloro-m-xylene	0.0519		ug/L	0.100		51.9	30-150			
Surrogate: 2,4,5,6-Tetrachloro-m-xylene [2C]	0.0563		ug/L	0.100		56.3	30-150			
Matrix Spike (DE00299-MS1)										
Source: D0E0415-04 Prepared: 05/07/2020 Analyzed: 05/08/2020										
Aroclor-1016 (PCB-1016)	0.595	0.109	ug/L	1.09	ND	54.8	40-140			
Aroclor-1260 (PCB-1260)	0.764	0.109	ug/L	1.09	ND	70.3	40-140			
Surrogate: Decachlorobiphenyl (BZ-209)	0.0848		ug/L	0.109		78.0	30-150			
Surrogate: 2,4,5,6-Tetrachloro-m-xylene	0.0464		ug/L	0.109		42.7	30-150			



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CERTIFICATE OF ANALYSIS

D0E0414

Definitions

- A28:** Sample was treated for the presence of chlorine.
A5: Sample was filtered (0.45 um) before analysis.
M2: Matrix spike recovery is below acceptance limits.
mg CaCO₃/L: Milligrams Calcium Carbonate per Liter
mg/L: Milligrams per Liter
Q10: The recovery for the closing low level check standard was outside of the established quality control range. The initial low level check standard was within range.
Q11: The recovery for the low level check standard was outside of the quality control range.
RL: Reporting Limit
RPD: Relative Percent Difference
U: Not detected. The concentration is below the RL/LOQ.
ug/L: Micrograms per Liter
Y1: Accreditation is not offered by the accrediting body for this analyte.

Cooler Receipt Log

Cooler ID: Default Cooler Temp: 5.2°C

Cooler Inspection Checklist

Ice Present or not required?	Yes	Shipping containers sealed or not required?	Yes
Custody seals intact or not required?	Yes	Chain of Custody (COC) Present?	Yes
COC includes customer information?	Yes	Relinquished and received signature on COC?	Yes
Sample collector identified on COC?	Yes	Sample type identified on COC?	Yes
Correct type of Containers Received	Yes	Correct number of containers listed on COC?	Yes
Containers Intact?	Yes	COC includes requested analyses?	Yes
Enough sample volume for indicated tests received?	Yes	Sample labels match COC (Name, Date & Time?)	Yes
Samples arrived within hold time?	Yes	Correct preservatives on COC or not required?	Yes
Chemical preservations checked or not required?	Yes	Preservation checks meet method requirements?	Yes
VOA vials have zero headspace, or not recd.?	Yes		

Project Requested Certification(s)

Microbac Laboratories, Inc. - Dayville
M-CT008

Massachusetts Department of Environmental Protection

Report Comments

Samples were received in proper condition and the reported results conform to applicable accreditation standard unless otherwise noted.

The data and information on this, and other accompanying documents, represents only the sample(s) analyzed. This report is incomplete unless all pages indicated in the footnote are present and an authorized signature is included. The services were provided under and subject to Microbac's standard terms and conditions which can be located and reviewed at <<https://www.microbac.com/standard-terms-conditions>>.

Reviewed and Approved By:

Melisa L. Montgomery
Quality Assurance Officer
Reported: 05/18/2020 16:38

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Microbac Laboratories, Inc. - Dayville

CERTIFICATE OF ANALYSIS

D0E0413

Project Description

Shawmut Landfill

For:

William ' Bill' Kenney

City of New Bedford DPI

2183 Ocean St.

Marshfield, MA 02050

A handwritten signature in black ink that reads "Melisa L. Montgomery".

Quality Assurance Officer

Melisa L. Montgomery

Thursday, May 14, 2020

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories. Review and compilation of your report was completed by Microbac Laboratories, Inc. - Dayville. If you have any questions, comments, or require further assistance regarding this report, please contact your service representative listed above.

I certify that all test results meet all of the requirements of the accrediting authority listed within this report. Analytical results are reported on a 'as received' basis unless specified otherwise. Analytical results for solids with units ending in (dry) are reported on a dry weight basis. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories. The reported results are related only to the samples analyzed as received.

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Microbac Laboratories, Inc. - Dayville

CERTIFICATE OF ANALYSIS

D0E0413

City of New Bedford DPI

William ' Bill' Kenney
2183 Ocean St.
Marshfield, MA 02050

Project Name: Shawmut Landfill

Project / PO Number: Shawmut Landfill
Received: 05/06/2020
Reported: 05/14/2020

Sample Summary Report

<u>Sample Name</u>	<u>Laboratory ID</u>	<u>Client Matrix</u>	<u>Sample Type</u>	<u>Sample Begin</u>	<u>Sample Taken</u>	<u>Lab Received</u>
SED-1	D0E0413-01	Solid	Grab		05/05/20 12:32	05/06/20 16:50



Microbac Laboratories, Inc. - Dayville

CERTIFICATE OF ANALYSIS

D0E0413

Analytical Testing Parameters

Client Sample ID: SED-1

Sample Matrix: Solid

Lab Sample ID: D0E0413-01

Collected By: Customer

Collection Date: 05/05/2020 12:32

Inorganics Total	Result	RL	Units	Dilution	Note	Prepared	Analyzed	Analyst
SM 2540 G-1997								
Percent Solids	68.3		% (by wt.)	1	Y1	05/07/20 2055	05/08/20 1305	MAD
Polychlorinated Biphenyls (PCBs) by GC/ECD								
EPA 3550C/EPA 8082A								
Aroclor-1016 (PCB-1016)	<14.6	14.6	ug/kg dry	1	U,Y1	05/12/20 1000	05/12/20 2307	MRB
Aroclor-1221 (PCB-1221)	<14.6	14.6	ug/kg dry	1	U,Y1	05/12/20 1000	05/12/20 2307	MRB
Aroclor-1232 (PCB-1232)	<14.6	14.6	ug/kg dry	1	U,Y1	05/12/20 1000	05/12/20 2307	MRB
Aroclor-1242 (PCB-1242)	<14.6	14.6	ug/kg dry	1	U,Y1	05/12/20 1000	05/12/20 2307	MRB
Aroclor-1248 (PCB-1248)	<14.6	14.6	ug/kg dry	1	U,Y1	05/12/20 1000	05/12/20 2307	MRB
Aroclor-1254 (PCB-1254)	<14.6	14.6	ug/kg dry	1	U,Y1	05/12/20 1000	05/12/20 2307	MRB
Aroclor-1260 (PCB-1260)	<14.6	14.6	ug/kg dry	1	U,Y1	05/12/20 1000	05/12/20 2307	MRB
Surrogate: Decachlorobiphenyl (BZ-209)	48.2	Limit: 30-150	% Rec	1		05/12/20 1000	05/12/20 2307	MRB
Surrogate: 2,4,5,6-Tetrachloro-m-xylene	61.3	Limit: 30-150	% Rec	1		05/12/20 1000	05/12/20 2307	MRB



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CERTIFICATE OF ANALYSIS

D0E0413

Batch Quality Control Summary: Microbac Laboratories, Inc. - Dayville

Inorganics Total	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch DE00410 - Wet-Solids-S - SM 2540 G-1997										
Blank (DE00410-BLK1)										
Percent Solids	0.00			% (by wt.)						
Duplicate (DE00410-DUP1)	Source: D0E0289-01				Prepared: 05/07/2020 Analyzed: 05/08/2020					
Percent Solids	80.2			% (by wt.)	81.6			1.71	10	
Polychlorinated Biphenyls (PCBs) by GC/ECD										
Batch DE00576 - 3550C Ultrasonic - EPA 8082A										
Blank (DE00576-BLK1)										
Aroclor-1016 (PCB-1016)	<9.99		9.99	ug/kg wet						U
Aroclor-1221 (PCB-1221)	<9.99		9.99	ug/kg wet						U
Aroclor-1232 (PCB-1232)	<9.99		9.99	ug/kg wet						U
Aroclor-1242 (PCB-1242)	<9.99		9.99	ug/kg wet						U
Aroclor-1248 (PCB-1248)	<9.99		9.99	ug/kg wet						U
Aroclor-1254 (PCB-1254)	<9.99		9.99	ug/kg wet						U
Aroclor-1260 (PCB-1260)	<9.99		9.99	ug/kg wet						U
Surrogate: Decachlorobiphenyl (BZ-209)	6.73		ug/kg wet	10.0	67.3	30-150				
Surrogate: 2,4,5,6-Tetrachloro-m-xylene	6.46		ug/kg wet	10.0	64.6	30-150				
LCS (DE00576-BS1)					Prepared & Analyzed: 05/12/2020					
Aroclor-1016 (PCB-1016)	67.9		9.99	ug/kg wet	100	67.9	40-140			
Aroclor-1260 (PCB-1260)	70.0		9.99	ug/kg wet	100	70.0	40-140			
Surrogate: Decachlorobiphenyl (BZ-209)	7.90		ug/kg wet	10.0	79.0	30-150				
Surrogate: 2,4,5,6-Tetrachloro-m-xylene	7.26		ug/kg wet	10.0	72.6	30-150				
Matrix Spike (DE00576-MS1)	Source: D0E0368-01				Prepared & Analyzed: 05/12/2020					
Aroclor-1016 (PCB-1016)	1710		334	ug/kg dry	3350	ND	51.0	40-140		
Aroclor-1260 (PCB-1260)	1030		334	ug/kg dry	3350	ND	30.9	40-140		M2
Surrogate: Decachlorobiphenyl (BZ-209)	101		ug/kg dry	335	30.2	30-150				
Surrogate: 2,4,5,6-Tetrachloro-m-xylene	152		ug/kg dry	335	45.3	30-150				
Matrix Spike Dup (DE00576-MSD1)	Source: D0E0368-01				Prepared & Analyzed: 05/12/2020					
Aroclor-1016 (PCB-1016)	1880		336	ug/kg dry	3360	ND	55.9	40-140	9.64	35

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CERTIFICATE OF ANALYSIS

D0E0413

Polychlorinated Biphenyls (PCBs) by GC/ECD	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD RPD	RPD Limit	Notes
---	--------	----	-------	----------------	------------------	------	----------------	------------	--------------	-------

Batch DE00576 - 3550C Ultrasonic - EPA 8082A

Matrix Spike Dup (DE00576-MSD1)	Source: D0E0368-01	Prepared & Analyzed: 05/12/2020								
Aroclor-1260 (PCB-1260)	1260	336	ug/kg dry	3360	ND	37.4	40-140	19.3	35	M2
Surrogate: Decachlorobiphenyl (BZ-209)	86.9		ug/kg dry	336		25.9	30-150			S2
Surrogate: 2,4,5,6-Tetrachloro-m-xylene	139		ug/kg dry	336		41.3	30-150			



Microbac Laboratories, Inc. - Dayville

CERTIFICATE OF ANALYSIS

D0E0413

Definitions

% (by wt.):	Percent by Weight
M2:	Matrix spike recovery is below acceptance limits.
RL:	Reporting Limit
RPD:	Relative Percent Difference
S2:	Surrogate recovery is below acceptance limits.
U:	Not detected. The concentration is below the RL/LOQ.
Y1:	Accreditation is not offered by the accrediting body for this analyte.

Cooler Receipt Log

Cooler ID: Default Cooler Temp: 5.2°C

Cooler Inspection Checklist

Ice Present or not required?	Yes	Shipping containers sealed or not required?	Yes
Custody seals intact or not required?	Yes	Chain of Custody (COC) Present?	Yes
COC includes customer information?	Yes	Relinquished and received signature on COC?	Yes
Sample collector identified on COC?	No	Sample type identified on COC?	Yes
Correct type of Containers Received	Yes	Correct number of containers listed on COC?	Yes
Containers Intact?	Yes	COC includes requested analyses?	Yes
Enough sample volume for indicated tests received?	Yes	Sample labels match COC (Name, Date & Time?)	Yes
Samples arrived within hold time?	Yes	Correct preservatives on COC or not required?	Yes
Chemical preservations checked or not required?	Yes	Preservation checks meet method requirements?	Yes
VOA vials have zero headspace, or not recd.?	Yes		

Project Requested Certification(s)

Microbac Laboratories, Inc. - Dayville
M-CT008

Massachusetts Department of Environmental Protection

Report Comments

Samples were received in proper condition and the reported results conform to applicable accreditation standard unless otherwise noted.

The data and information on this, and other accompanying documents, represents only the sample(s) analyzed. This report is incomplete unless all pages indicated in the footnote are present and an authorized signature is included. The services were provided under and subject to Microbac's standard terms and conditions which can be located and reviewed at <<https://www.microbac.com/standard-terms-conditions>>.

Reviewed and Approved By:

Melisa L. Montgomery
Quality Assurance Officer
Reported: 05/14/2020 15:06

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GROUNDWATER SAMPLING LOG SHEET

GENERAL INFORMATION

Well I.D.: CDM-1S
Date: 5/5/20
Time: 8:50
Weather: 50°, Sunny

Job #: 1360101
Project Description: Shawmut Avenue Landfill
Project Location: Shawmut Ave, New Bedford, MA
Staff: 

Equipment:

Gauging: EIP

Screening: NA

Purging: Geopoump

Data Collection: YSI

WELL STATUS

	Good	Poor	Missing	N/A		YES	NO	N/A
Casing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Standing Water	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Lock	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Visible Heaving	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Riser Cap	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Visible Subsidence	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Condition	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Damage	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Conc. Pad	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Other:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Remarks:

PURGING AND SAMPLE COLLECTION DATA

Measurement Reference: PVC TOC

Depth to Product:

Reference Elevation: NR

Depth to Groundwater: 6.50

Total Depth: NR

Well Volume: NR

Water Column: NR

OBSERVATIONS

Odor: —
Color: —

Turbidity: XH H M L
Sheen: Y N

Observations: 8:50

Signature of Sampler:

GROUNDWATER SAMPLING LOG SHEET

GENERAL INFORMATION

Well I.D.: CDM-1D
Date: 5/5/20
Time: 8:46
Weather: 50s, sunny

Job #: 1360101
Project Description: Shawmut Avenue Landfill
Project Location: Shawmut Ave, New Bedford, MA
Staff: JPC

Gauging: EIP

Screening: NA

Purging: Geopoump

Data Collection: YSI

Equipment:

WELL STATUS

	Good	Poor	Missing	N/A		YES	NO	N/A
Casing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Standing Water	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Lock	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Visible Heaving	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Riser Cap	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Visible Subsidence	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Condition	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Damage	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Conc. Pad	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Other:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Remarks:

PURGING AND SAMPLE COLLECTION DATA

Measurement Reference: PVC TOC

Depth to Product:

Reference Elevation: NR

Depth to Groundwater: 6.69

Well Volume: NR

Water Column: NR

OBSERVATIONS

Odor: —

Turbidity: XH H M L

Color: —

Sheen: Y N

Observations: 8:46

Signature of Sampler:

GROUNDWATER SAMPLING LOG SHEET

GENERAL INFORMATION

Well I.D.: CPM-35

Date: 5/5/20

Time: 10:10

Weather: 50°, Sunny

Job #: 1360101

Project Description: Shawmut Avenue Landfill

Project Location: Shawmut Ave, New Bedford, MA

Staff: JRC

Gauging: EIP

Screening: NA

Purging: Geopoump

Data Collection: YSI

WELL STATUS

	Good	Poor	Missing	N/A		YES	NO	N/A
Casing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Standing Water	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Lock	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Visible Heaving	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Riser Cap	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Visible Subsidence	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Condition	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Damage	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Conc. Pad	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Other:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Remarks:

PURGING AND SAMPLE COLLECTION DATA

Measurement Reference: PVC TOC

Depth to Product:

Reference Elevation: NR

Depth to Groundwater: 2.0H

Well Volume: NR

Total Depth: NR

OBSERVATIONS

Odor: _____

Turbidity: XH H M L

Color: _____

Sheen: Y N

Observations: 10:10

Signature of Sampler:

GROUNDWATER SAMPLING LOG SHEET

GENERAL INFORMATION

Well I.D.: CVM-30
Date: 5/5/20
Time: 9:38
Weather: 50°, sunny

Job #: 1360101
Project Description: Shawmut Avenue Landfill
Project Location: Shawmut Ave, New Bedford, MA
Staff: [Signature]

Gauging: EIP

Screening: NA

Purging: Geopoump

Data Collection: YSI

WELL STATUS

	Good	Poor	Missing	N/A		YES	NO	N/A
Casing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Standing Water	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Lock	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Visible Heaving	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Riser Cap	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Visible Subsidence	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Condition	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Damage	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Conc. Pad	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Other:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Remarks:

PURGING AND SAMPLE COLLECTION DATA

Measurement Reference: PVC TOC

Depth to Product:

Reference Elevation: NR

Depth to Groundwater: 2.34

Well Volume: NR

Total Depth: NR

Water Column: NR

OBSERVATIONS

Odor: _____
Color: _____

Turbidity: XH H M L
Sheen: Y N

Observations: 9:58

Signature of Sampler:

GROUNDWATER SAMPLING LOG SHEET

GENERAL INFORMATION

Well I.D.: COM-45
Date: 5/5/20
Time: 10:55
Weather: 50°, Sunny

Job #: 1360101
Project Description: Shawmut Avenue Landfill
Project Location: Shawmut Ave, New Bedford, MA
Staff: 78C

Gauging: EIP

Screening: NA

Purging: Geopoump

Data Collection: YSI

WELL STATUS

	Good	Poor	Missing	N/A		YES	NO	N/A
Casing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Standing Water	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Lock	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Visible Heaving	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Riser Cap	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Visible Subsidence	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Condition	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Damage	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Conc. Pad	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Other:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Remarks:

PURGING AND SAMPLE COLLECTION DATA

Measurement Reference: PVC TOC
Reference Elevation: NR

Depth to Product: —
Depth to Groundwater: 2.75

Well Volume: NR

Water Column: NR

OBSERVATIONS

Odor: —
Color: —

Turbidity: XH H M L
Sheen: Y N

Observations: 10:55

Signature of Sampler:

GROUNDWATER SAMPLING LOG SHEET**GENERAL INFORMATION**

Well I.D.: CDM-4D
 Date: 5/5/20
 Time: 10:48
 Weather: SOG, sunny

Job #: 1360101
 Project Description: Shawmut Avenue Landfill
 Project Location: Shawmut Ave, New Bedford, MA
 Staff: JRC

Equipment:

Gauging: EIP Screening: NA Purging: Geopoump Data Collection: YSI

WELL STATUS

	Good	Poor	Missing	N/A	YES	NO	N/A
Casing	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
Lock	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
Riser Cap	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
Condition	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
Conc. Pad	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
					Standing Water	<input type="checkbox"/>	<input checked="" type="checkbox"/>
					Visible Heaving	<input type="checkbox"/>	<input checked="" type="checkbox"/>
					Visible Subsidence	<input type="checkbox"/>	<input checked="" type="checkbox"/>
					Damage	<input type="checkbox"/>	<input checked="" type="checkbox"/>
					Other: _____	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Remarks:

PURGING AND SAMPLE COLLECTION DATAMeasurement Reference: PVC TOCDepth to Product: —Reference Elevation: NRDepth to Groundwater: 2.01Well Volume: NRTotal Depth: NRWater Column: NR

Time	Temp °C	pH s.u.	S.C. umhos/cm	D.O. mg/L	ORP mV	Turbidity NTU	Water Lev. Feet	Purge Gallons	Stabilized
<u>10:48</u>	<u>11.26</u>	<u>6.72</u>	<u>2060/1517</u>	<u>0.11</u>	<u>-26.1</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>

OBSERVATIONS

Odor: —
 Color: —

Turbidity: XH H M L
 Sheen: Y N

Observations: 10:48Signature of Sampler: JRC

GROUNDWATER SAMPLING LOG SHEET

GENERAL INFORMATION

Well I.D.: CDM-55
 Date: 5/5/20
 Time: 11:26
 Weather: 50s, sunny

Job #: 1360101
 Project Description: Shawmut Avenue Landfill
 Project Location: Shawmut Ave, New Bedford, MA
 Staff:

Gauging: EIP

Screening: NA

Purging: Geopoump

Data Collection: YSI

Equipment:

WELL STATUS

	Good	Poor	Missing	N/A	YES	NO	N/A
Casing	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
Lock	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
Riser Cap	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
Condition	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
Conc. Pad	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				

Remarks:

PURGING AND SAMPLE COLLECTION DATA

Measurement Reference: PVC TOC
 Reference Elevation: NR
 Well Volume: NR

Depth to Product: -
 Depth to Groundwater: 2.77
 Total Depth: NR
 Water Column: NR

Time	Temp °C	pH s.u.	S.C. umhos/cm	D.O. mg/L	ORP mV	Turbidity NTU	Water Lev. Feet	Purge Gallons	Stabilized
<u>11:26</u>	<u>9.46</u>	<u>6.50</u>	<u>1287/405</u>	<u>0.07</u>	<u>30.9</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>

OBSERVATIONS

Odor: -
 Color: -

Turbidity: XH H M L
 Sheen: Y N

Observations: 11:26

Signature of Sampler: J. H. Lang

GROUNDWATER SAMPLING LOG SHEET

GENERAL INFORMATION

Well I.D.: CDM-5D
 Date: 3/5/20
 Time: 11:35
 Weather: SOS, Sunny

Job #: 1360101
 Project Description: Shawmut Avenue Landfill
 Project Location: Shawmut Ave, New Bedford, MA
 Staff: JRC

Gauging: EIP

Screening: NA

Purging: Geopoump

Data Collection: YSI

Equipment:

	Good	Poor	Missing	N/A	YES	NO	N/A
Casing	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
Lock	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
Riser Cap	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
Condition	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
Conc. Pad	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
Remarks:							

PURGING AND SAMPLE COLLECTION DATA

Measurement Reference: PVC TOC
 Reference Elevation: NR

Depth to Product: -
 Depth to Groundwater: 2.79
 Total Depth: NR
 Water Column: NR

Well Volume: NR

Time	Temp °C	pH s.u.	S.C. umhos/cm	D.O. mg/L	ORP mV	Turbidity NTU	Water Lev. Feet	Purge Gallons	Stabilized
<u>11:35</u>	<u>10.37</u>	<u>6.53</u>	<u>1084/782</u>	<u>0.13</u>	<u>37.4</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>

OBSERVATIONS

Odor: -
 Color: -

Turbidity: XH H M L
 Sheen: Y N

Observations: 11:35

Signature of Sampler: JRC

GROUNDWATER SAMPLING LOG SHEET

GENERAL INFORMATION

Well I.D.: CDM-6D
Date: 5/5/20
Time: 2:15
Weather: 50s, sunny

Job #: 1360101
Project Description: Shawmut Avenue Landfill
Project Location: Shawmut Ave, New Bedford, MA
Staff: TBC

Equipment:

Gauging: EIP

Screening: NA

Purging: Geopoump

Data Collection: YSI

WELL STATUS

	Good	Poor	Missing	N/A		YES	NO	N/A
Casing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Standing Water	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Lock	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Visible Heaving	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Riser Cap	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Visible Subsidence	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Condition	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Damage	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Conc. Pad	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Other:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Remarks:

PURGING AND SAMPLE COLLECTION DATA

Measurement Reference: PVC TOC

Depth to Product:

Reference Elevation: NR

Depth to Groundwater: 6.18

Total Depth: NR

Well Volume: NR

Water Column: NR

OBSERVATIONS

Odor: —
Color: —

Turbidity: XH H M L
Sheen: Y N

Observations: 2:15

Signature of Sampler:

Johanna

GROUNDWATER SAMPLING LOG SHEET

GENERAL INFORMATION

Well I.D.: SW-1
Date: 5/5/20
Time: 9:15
Weather: 50°, Sunny

Job #: 1360101
Project Description: Shawmut Avenue Landfill
Project Location: Shawmut Ave, New Bedford, MA

Gauging: EIP

Screening: NA

Purging: Geopoump

Data Collection: YSI

Equipment:

WELL STATUS

	Good	Poor	Missing	N/A		YES	NO	N/A
Casing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Standing Water	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lock	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Visible Heaving	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Riser Cap	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Visible Subsidence	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Condition	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Damage	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Conc. Pad	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Remarks: Surface water sample

PURGING AND SAMPLE COLLECTION DATA

Measurement Reference: PVC TOC
Reference Elevation: NR

Depth to Product: ✓

Depth to Groundwater: —

Total Depth: NR

Water Column: NR

OBSERVATIONS

Odor: -

Turbidity: XH H M L
Sheen: Y N

Observations: 9:15

Signature of Sampler:

GROUNDWATER SAMPLING LOG SHEET

GENERAL INFORMATION

Well I.D.: SW-2
Date: 3/5/20
Time: 12:00
Weather: 50s Sunny

Job #: 1360101
Project Description: Shawmut Avenue Landfill
Project Location: Shawmut Ave, New Bedford, MA

Staff:

Gauging: EIP

Screening: NA

Purging: Geopoump

Data Collection: YSI

WELL STATUS

	Good	Poor	Missing	N/A		YES	NO	N/A
Casing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Standing Water	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lock	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Visible Heaving	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Riser Cap	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Visible Subsidence	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Condition	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Damage	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Conc. Pad	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Remarks: Surface water sample

PURGING AND SAMPLE COLLECTION DATA

Measurement Reference: PVC TOC

Depth to Product:

Reference Elevation: NR

Depth to Groundwater:

Well Volume: NB

Total Depth: NR

OBSERVATIONS

Odor:

Turbidity: XH H M L

Color:

Sheen: Y N

Observations: 12 : 00

Signature of Sampler:

GROUNDWATER SAMPLING LOG SHEET**GENERAL INFORMATION**

Well I.D.: SW-3
 Date: 5/5/20
 Time: 12:35
 Weather: SO₂, sunny

Job #: 1360101
 Project Description: Shawmut Avenue Landfill
 Project Location: Shawmut Ave, New Bedford, MA
 Staff:

Gauging: EIP

Screening: NA

Purging: Geopoump

Data Collection: YSI

Equipment:**WELL STATUS**

	Good	Poor	Missing	N/A	YES	NO	N/A
Casing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Standing Water	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Lock	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Visible Heaving	<input type="checkbox"/>	<input type="checkbox"/>
Riser Cap	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Visible Subsidence	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Condition	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Damage	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Conc. Pad	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Other: _____	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Remarks: Surface water sample

PURGING AND SAMPLE COLLECTION DATA

Measurement Reference: PVC TOC
 Reference Elevation: NR
 Well Volume: NR

Depth to Product: —
 Depth to Groundwater: —
 Total Depth: NR
 Water Column: NR

Time	Temp °C	pH s.u.	S.C. umhos/cm	D.O. mg/L	ORP mV	Turbidity NTU	Water Lev. Feet	Purge Gallons	Stabilized
12:35	18.20	7.30	480/420	1.67	32.1	—	—	—	—

OBSERVATIONS

Odor: —
 Color: —

Turbidity: XH H M L
 Sheen: Y N

Observations: 12:35

Signature of Sampler: 