

**INDEPENDENT TESTING LAB**

830 ROBINWOOD COURT, TRAVERSE CITY, MI 49686

PH: 231-929-0905

FAX: 231-929-0894

www.gtanalytical.com

Company: MAVERICK NATURAL RESOURCES

Name:

ClientProj: BREITBURN OPERATING LP

GTA ProjNo: 071319-1

Site Addr: EPA-UIC ANNUAL SAMPLES

Sampled By: BBOP

Date Rec: 7/13/2019

Time Rec: 11:30 AM

Sample No.	Sample ID	Date Sampled	Time Sampled	Sample Matrix
1	RICH FIELD UNIT	7/11/2019		UIC
2	FONTINALIS CLUB D2-17 228400.004.00	7/11/2019	10:30 AM	UIC
3	SWITALSKI 1-9 21Z812219.00	7/9/2019	2:20 PM	UIC
4	FONTINALIS CLUB B3-25 228400.006.00	7/11/2019	7:40 AM	UIC
5	LIVINGSTON C3-19 227870.024.00	7/9/2019	2:35 PM	UIC
6	STURGEON RIVER A1-33 228448.002.00	7/11/2019	8:25 AM	UIC

ELECTRONIC SIGNATURE REPORT. This is a final report for the following pages of data for the samples specified above. All analysis was performed by the methods stated and all quality control measures required were completed. All quality control information is available upon request.

Kirk L Chase

Kirk L. Chase/Chemist
Grand Traverse Analytical
830 Robinwood Court
Traverse City, MI 49686
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COMPANY: MAVERICK NATURAL RESOURCES

GTA PROJECT NO: 071319-1

PROJECT NO: BREITBURN OPERATING LP
LOCATION: EPA-UIC ANNUAL SAMPLES

GTA SAMPLE NO: 1

DATE SAMPLED: 7/11/2019
TIME SAMPLED:SAMPLED BY: MI
BBOPDATE RECEIVED: 7/13/2019
TIME RECEIVED: 11:30 AM

SAMPLE MATRIX: UIC

SAMPLE ID: RICH FIELD UNIT

METALS

<u>Analysis</u>	<u>Concentration</u>	<u>LOD</u>	<u>Units</u>	<u>Analyst</u>	<u>Date Completed</u>	<u>Digestion Method</u>
BARIUM DISS EPA 6020A	0.13	0.010	mg/L (PPM)	MR/TR	7/30/2019	EPA 3005A
CALCIUM DISS EPA 6020A	42,000	100	mg/L (PPM)	MR/TR	7/30/2019	EPA 3005A
IRON TOTAL EPA 6020A	0.83	0.10	mg/L (PPM)	MR/TR	7/30/2019	EPA 3005A
MAGNESIUM DISS EPA 6020A	7,700	100	mg/L (PPM)	MR/TR	7/30/2019	EPA 3005A
POTASSIUM DISS EPA 6020A	7,400	100	mg/L (PPM)	MR/TR	7/30/2019	EPA 3005A
SODIUM DISS EPA 6020A	18,000	100	mg/L (PPM)	MR/TR	7/30/2019	EPA 3005A

ND = NOT DETECTED, RESULT < LOD

LOD = LIMIT OF DETECTION

DISS = DISSOLVED

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COMPANY: MAVERICK NATURAL RESOURCES
PROJECT NO: BREITBURN OPERATING LP
LOCATION: EPA-UIC ANNUAL SAMPLES
MI
SAMPLED BY: BBOP
SAMPLE ID: RICH FIELD UNIT

GTA PROJECT NO: 071319-1
GTA SAMPLE NO: 1
DATE RECEIVED: 7/13/2019
TIME RECEIVED: 11:30 AM
DATE SAMPLED: 7/11/2019
TIME SAMPLED:
SAMPLE MATRIX: UIC

SAMPLE RESULTS

<u>Analysis</u>	<u>Concentration</u>	<u>LOD</u>	<u>Units</u>	<u>Analyst</u>	<u>Date Complete</u>
ALKALINITY SM 4500CO2D (BICARBONATE)	380	10	mg/L (PPM)	TR	7/19/2019
ALKALINITY SM 4500CO2D (CARBONATE)	ND	10	mg/L (PPM)	TR	7/19/2019
CHLORIDE EPA 300.0	170,000	2,000	mg/L (PPM)	LV	7/19/2019
CONDUCTIVITY SM2510-B	62,000	5.0	uS/cm@25C	LV	7/19/2019
pH EPA 150.1 - LAB	5.7	0.10	s.u.	TR	7/19/2019
RESISTIVITY SM 2510A	16	-	ohms x cm	LV	7/19/2019
SPECIFIC GRAVITY SM 2710F	1.166	-	-	LV	7/22/2019
SULFATE EPA 300.0	520	50	mg/L (PPM)	LV	7/19/2019
SULFIDE SM 4500S D	690	10	mg/L (PPM)	KC	7/15/2019
TOTAL DISSOLVED SOLIDS EPA 160.1	250,000	5.0	mg/L (PPM)	TR	7/18/2019

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COMPANY: MAVERICK NATURAL RESOURCES

GTA PROJECT NO: 071319-1

PROJECT NO: BREITBURN OPERATING LP
LOCATION: EPA-UIC ANNUAL SAMPLES

GTA SAMPLE NO: 2

DATE SAMPLED: 7/11/2019

TIME SAMPLED: 10:30 AM

DATE RECEIVED: 7/13/2019

TIME RECEIVED: 11:30 AM

SAMPLED BY: MI
BBOP

SAMPLE MATRIX: UIC

SAMPLE ID: FONTINALIS CLUB D2-17 228400.004.00

METALS

<u>Analysis</u>	<u>Concentration</u>	<u>LOD</u>	<u>Units</u>	<u>Analyst</u>	<u>Date Completed</u>	<u>Digestion Method</u>
BARIUM DISS EPA 6020A	0.17	0.010	mg/L (PPM)	MR/TR	7/30/2019	EPA 3005A
CALCIUM DISS EPA 6020A	13	0.10	mg/L (PPM)	MR/TR	7/30/2019	EPA 3005A
IRON TOTAL EPA 6020A	1.1	0.10	mg/L (PPM)	MR/TR	7/30/2019	EPA 3005A
MAGNESIUM DISS EPA 6020A	7.9	0.10	mg/L (PPM)	MR/TR	7/30/2019	EPA 3005A
POTASSIUM DISS EPA 6020A	3.8	0.10	mg/L (PPM)	MR/TR	7/30/2019	EPA 3005A
SODIUM DISS EPA 6020A	630	10	mg/L (PPM)	MR/TR	7/30/2019	EPA 3005A

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PH: 231-929-0905

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COMPANY: MAVERICK NATURAL RESOURCES
PROJECT NO: BREITBURN OPERATING LP
LOCATION: EPA-UIC ANNUAL SAMPLES
MI
SAMPLED BY: BBOP
SAMPLE ID: FONTINALIS CLUB D2-17
228400.004.00

GTA PROJECT NO: 071319-1
GTA SAMPLE NO: 2
DATE RECEIVED: 7/13/2019
TIME RECEIVED: 11:30 AM
DATE SAMPLED: 7/11/2019
TIME SAMPLED: 10:30 AM
SAMPLE MATRIX: UIC

SAMPLE RESULTS

<u>Analysis</u>	<u>Concentration</u>	<u>LOD</u>	<u>Units</u>	<u>Analyst</u>	<u>Date Complete</u>
ALKALINITY SM 4500CO2D (BICARBONATE)	740	10	mg/L (PPM)	TR	7/19/2019
ALKALINITY SM 4500CO2D (CARBONATE)	60	10	mg/L (PPM)	TR	7/19/2019
CHLORIDE EPA 300.0	370	50	mg/L (PPM)	LV	7/19/2019
CONDUCTIVITY SM2510-B	3,000	1.0	uS/cm@25C	LV	7/19/2019
pH EPA 150.1 - LAB	8.9	0.10	s.u.	TR	7/19/2019
RESISTIVITY SM 2510A	330	-	ohms x cm	LV	7/19/2019
SPECIFIC GRAVITY SM 2710F	1.009	-	-	LV	7/22/2019
SULFATE EPA 300.0	180	50	mg/L (PPM)	LV	7/19/2019
SULFIDE SM 4500S D	ND	1.0	mg/L (PPM)	KC	7/15/2019
TOTAL DISSOLVED SOLIDS EPA 160.1	1,800	5.0	mg/L (PPM)	TR	7/18/2019

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GTA PROJECT NO: 071319-1

PROJECT NO: BREITBURN OPERATING LP
LOCATION: EPA-UIC ANNUAL SAMPLES

GTA SAMPLE NO: 3

DATE SAMPLED: 7/9/2019
TIME SAMPLED: 2:20 PM
DATE RECEIVED: 7/13/2019
TIME RECEIVED: 11:30 AM
SAMPLE MATRIX: UICSAMPLED BY: MI
BBOP

SAMPLE ID: SWITALSKI 1-9 21Z812219.00

METALS

<u>Analysis</u>	<u>Concentration</u>	<u>LOD</u>	<u>Units</u>	<u>Analyst</u>	<u>Date Completed</u>	<u>Digestion Method</u>
BARIUM DISS EPA 6020A	1.0	0.010	mg/L (PPM)	MR/TR	7/30/2019	EPA 3005A
CALCIUM DISS EPA 6020A	81	10	mg/L (PPM)	MR/TR	7/30/2019	EPA 3005A
IRON TOTAL EPA 6020A	2.8	10	mg/L (PPM)	MR/TR	7/30/2019	EPA 3005A
MAGNESIUM DISS EPA 6020A	69	10	mg/L (PPM)	MR/TR	7/30/2019	EPA 3005A
POTASSIUM DISS EPA 6020A	38	10	mg/L (PPM)	MR/TR	7/30/2019	EPA 3005A
SODIUM DISS EPA 6020A	4,000	100	mg/L (PPM)	MR/TR	7/30/2019	EPA 3005A

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COMPANY: MAVERICK NATURAL RESOURCES
PROJECT NO: BREITBURN OPERATING LP
LOCATION: EPA-UIC ANNUAL SAMPLES
MI
SAMPLED BY: BBOP
SAMPLE ID: SWITALSKI 1-9 21Z812219.00

GTA PROJECT NO: 071319-1
GTA SAMPLE NO: 3
DATE RECEIVED: 7/13/2019
TIME RECEIVED: 11:30 AM
DATE SAMPLED: 7/9/2019
TIME SAMPLED: 2:20 PM
SAMPLE MATRIX: UIC

SAMPLE RESULTS

<u>Analysis</u>	<u>Concentration</u>	<u>LOD</u>	<u>Units</u>	<u>Analyst</u>	<u>Date Complete</u>
ALKALINITY SM 4500CO2D (BICARBONATE)	1,500	10	mg/L (PPM)	TR	7/19/2019
ALKALINITY SM 4500CO2D (CARBONATE)	35	10	mg/L (PPM)	TR	7/19/2019
CHLORIDE EPA 300.0	4,200	500	mg/L (PPM)	LV	7/22/2019
CONDUCTIVITY SM2510-B	14,000	1.0	uS/cm@25C	LV	7/22/2019
pH EPA 150.1 - LAB	8.4	0.10	s.u.	TR	7/19/2019
RESISTIVITY SM 2510A	69	-	ohms x cm	LV	7/22/2019
SPECIFIC GRAVITY SM 2710F	1.019	-	-	LV	7/22/2019
SULFATE EPA 300.0	150	50	mg/L (PPM)	LV	7/22/2019
SULFIDE SM 4500S D	ND	1.0	mg/L (PPM)	KC	7/15/2019
TOTAL DISSOLVED SOLIDS EPA 160.1	7,400	5.0	mg/L (PPM)	TR	7/18/2019

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COMPANY: MAVERICK NATURAL RESOURCES

GTA PROJECT NO: 071319-1

PROJECT NO: BREITBURN OPERATING LP
LOCATION: EPA-UIC ANNUAL SAMPLES

GTA SAMPLE NO: 4

DATE SAMPLED: 7/11/2019

TIME SAMPLED: 7:40 AM

DATE RECEIVED: 7/13/2019

TIME RECEIVED: 11:30 AM

SAMPLED BY: MI
BBOP

SAMPLE MATRIX: UIC

SAMPLE ID: FONTINALIS CLUB B3-25 228400.006.00

METALS

<u>Analysis</u>	<u>Concentration</u>	<u>LOD</u>	<u>Units</u>	<u>Analyst</u>	<u>Date Completed</u>	<u>Digestion Method</u>
BARIUM DISS EPA 6020A	0.25	0.010	mg/L (PPM)	MR/TR	7/30/2019	EPA 3005A
CALCIUM DISS EPA 6020A	15	0.10	mg/L (PPM)	MR/TR	7/30/2019	EPA 3005A
IRON TOTAL EPA 6020A	1.0	0.10	mg/L (PPM)	MR/TR	7/30/2019	EPA 3005A
MAGNESIUM DISS EPA 6020A	7.0	0.10	mg/L (PPM)	MR/TR	7/30/2019	EPA 3005A
POTASSIUM DISS EPA 6020A	4.4	0.10	mg/L (PPM)	MR/TR	7/30/2019	EPA 3005A
SODIUM DISS EPA 6020A	690	10	mg/L (PPM)	MR/TR	7/30/2019	EPA 3005A

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COMPANY: MAVERICK NATURAL RESOURCES
PROJECT NO: BREITBURN OPERATING LP
LOCATION: EPA-UIC ANNUAL SAMPLES
MI
SAMPLED BY: BBOP
SAMPLE ID: FONTINALIS CLUB B3-25
228400.006.00

GTA PROJECT NO: 071319-1
GTA SAMPLE NO: 4
DATE RECEIVED: 7/13/2019
TIME RECEIVED: 11:30 AM
DATE SAMPLED: 7/11/2019
TIME SAMPLED: 7:40 AM
SAMPLE MATRIX: UIC

SAMPLE RESULTS

<u>Analysis</u>	<u>Concentration</u>	<u>LOD</u>	<u>Units</u>	<u>Analyst</u>	<u>Date Complete</u>
ALKALINITY SM 4500CO2D (BICARBONATE)	930	10	mg/L (PPM)	TR	7/19/2019
ALKALINITY SM 4500CO2D (CARBONATE)	44	10	mg/L (PPM)	TR	7/19/2019
CHLORIDE EPA 300.0	400	50	mg/L (PPM)	LV	7/22/2019
CONDUCTIVITY SM2510-B	3,200	1.0	uS/cm@25C	LV	7/22/2019
pH EPA 150.1 - LAB	8.7	0.10	s.u.	TR	7/19/2019
RESISTIVITY SM 2510A	320	-	ohms x cm	LV	7/22/2019
SPECIFIC GRAVITY SM 2710F	1.012	-	-	LV	7/22/2019
SULFATE EPA 300.0	100	50	mg/L (PPM)	LV	7/22/2019
SULFIDE SM 4500S D	ND	1.0	mg/L (PPM)	KC	7/15/2019
TOTAL DISSOLVED SOLIDS EPA 160.1	1,700	5.0	mg/L (PPM)	TR	7/18/2019

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DISS = DISSOLVED

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COMPANY: MAVERICK NATURAL RESOURCES

GTA PROJECT NO: 071319-1

PROJECT NO: BREITBURN OPERATING LP
LOCATION: EPA-UIC ANNUAL SAMPLES

GTA SAMPLE NO: 5

DATE SAMPLED: 7/9/2019
TIME SAMPLED: 2:35 PM
DATE RECEIVED: 7/13/2019
TIME RECEIVED: 11:30 AM
SAMPLE MATRIX: UICSAMPLED BY: MI
BBOP

SAMPLE ID: LIVINGSTON C3-19 227870.024.00

METALS

<u>Analysis</u>	<u>Concentration</u>	<u>LOD</u>	<u>Units</u>	<u>Analyst</u>	<u>Date Completed</u>	<u>Digestion Method</u>
BARIUM DISS EPA 6020A	5.7	0.010	mg/L (PPM)	MR/TR	7/30/2019	EPA 3005A
CALCIUM DISS EPA 6020A	110	10	mg/L (PPM)	MR/TR	7/30/2019	EPA 3005A
IRON TOTAL EPA 6020A	13	0.10	mg/L (PPM)	MR/TR	7/30/2019	EPA 3005A
MAGNESIUM DISS EPA 6020A	130	10	mg/L (PPM)	MR/TR	7/30/2019	EPA 3005A
POTASSIUM DISS EPA 6020A	45	10	mg/L (PPM)	MR/TR	7/30/2019	EPA 3005A
SODIUM DISS EPA 6020A	5,700	100	mg/L (PPM)	MR/TR	7/30/2019	EPA 3005A

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COMPANY: MAVERICK NATURAL RESOURCES
PROJECT NO: BREITBURN OPERATING LP
LOCATION: EPA-UIC ANNUAL SAMPLES
MI
SAMPLED BY: BBOP
SAMPLE ID: LIVINGSTON C3-19 227870.024.00

GTA PROJECT NO: 071319-1
GTA SAMPLE NO: 5
DATE RECEIVED: 7/13/2019
TIME RECEIVED: 11:30 AM
DATE SAMPLED: 7/9/2019
TIME SAMPLED: 2:35 PM
SAMPLE MATRIX: UIC

SAMPLE RESULTS

<u>Analysis</u>	<u>Concentration</u>	<u>LOD</u>	<u>Units</u>	<u>Analyst</u>	<u>Date Complete</u>
ALKALINITY SM 4500CO2D (BICARBONATE)	1,300	10	mg/L (PPM)	TR	7/19/2019
ALKALINITY SM 4500CO2D (CARBONATE)	24	10	mg/L (PPM)	TR	7/19/2019
CHLORIDE EPA 300.0	6,600	2,000	mg/L (PPM)	LV	7/22/2019
CONDUCTIVITY SM2510-B	22,000	1.0	uS/cm@25C	LV	7/22/2019
pH EPA 150.1 - LAB	8.3	0.10	s.u.	TR	7/19/2019
RESISTIVITY SM 2510A	45	-	ohms x cm	LV	7/22/2019
SPECIFIC GRAVITY SM 2710F	1.021	-	-	LV	7/22/2019
SULFATE EPA 300.0	ND	50	mg/L (PPM)	LV	7/22/2019
SULFIDE SM 4500S D	ND	1.0	mg/L (PPM)	KC	7/15/2019
TOTAL DISSOLVED SOLIDS EPA 160.1	11,000	5.0	mg/L (PPM)	TR	7/18/2019

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COMPANY: MAVERICK NATURAL RESOURCES

GTA PROJECT NO: 071319-1

PROJECT NO: BREITBURN OPERATING LP
LOCATION: EPA-UIC ANNUAL SAMPLES

GTA SAMPLE NO: 6

DATE SAMPLED: 7/11/2019

TIME SAMPLED: 8:25 AM

DATE RECEIVED: 7/13/2019

TIME RECEIVED: 11:30 AM

SAMPLED BY: MI
BBOP

SAMPLE MATRIX: UIC

SAMPLE ID: STURGEON RIVER A1-33 228448.002.00

METALS

<u>Analysis</u>	<u>Concentration</u>	<u>LOD</u>	<u>Units</u>	<u>Analyst</u>	<u>Date Completed</u>	<u>Digestion Method</u>
BARIUM DISS EPA 6020A	0.39	0.010	mg/L (PPM)	MR/TR	7/30/2019	EPA 3005A
CALCIUM DISS EPA 6020A	14	0.10	mg/L (PPM)	MR/TR	7/30/2019	EPA 3005A
IRON TOTAL EPA 6020A	2.1	0.10	mg/L (PPM)	MR/TR	7/30/2019	EPA 3005A
MAGNESIUM DISS EPA 6020A	7.9	0.10	mg/L (PPM)	MR/TR	7/30/2019	EPA 3005A
POTASSIUM DISS EPA 6020A	5.9	0.10	mg/L (PPM)	MR/TR	7/30/2019	EPA 3005A
SODIUM DISS EPA 6020A	960	10	mg/L (PPM)	MR/TR	7/30/2019	EPA 3005A

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COMPANY: MAVERICK NATURAL RESOURCES
PROJECT NO: BREITBURN OPERATING LP
LOCATION: EPA-UIC ANNUAL SAMPLES
MI
SAMPLED BY: BBOP
SAMPLE ID: STURGEON RIVER A1-33
228448.002.00

GTA PROJECT NO: 071319-1
GTA SAMPLE NO: 6
DATE RECEIVED: 7/13/2019
TIME RECEIVED: 11:30 AM
DATE SAMPLED: 7/11/2019
TIME SAMPLED: 8:25 AM
SAMPLE MATRIX: UIC

SAMPLE RESULTS

<u>Analysis</u>	<u>Concentration</u>	<u>LOD</u>	<u>Units</u>	<u>Analyst</u>	<u>Date Complete</u>
ALKALINITY SM 4500CO2D (BICARBONATE)	1,500	10	mg/L (PPM)	TR	7/19/2019
ALKALINITY SM 4500CO2D (CARBONATE)	70	10	mg/L (PPM)	TR	7/19/2019
CHLORIDE EPA 300.0	570	50	mg/L (PPM)	LV	7/22/2019
CONDUCTIVITY SM2510-B	4,400	1.0	uS/cm@25C	LV	7/22/2019
pH EPA 150.1 - LAB	8.7	0.10	s.u.	TR	7/19/2019
RESISTIVITY SM 2510A	230	-	ohms x cm	LV	7/22/2019
SPECIFIC GRAVITY SM 2710F	1.015	-	-	LV	7/22/2019
SULFATE EPA 300.0	ND	50	mg/L (PPM)	LV	7/22/2019
SULFIDE SM 4500S D	ND	1.0	mg/L (PPM)	KC	7/15/2019
TOTAL DISSOLVED SOLIDS EPA 160.1	2,200	5.0	mg/L (PPM)	TR	7/18/2019

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DISS = DISSOLVED

CHAIN OF CUSTODY

PROJECT NUMBER	SITE NAME/ADDRESS	COMPANY/NAME
Breithorn Operating, LP	See Below	Maverick Natural Resources LLC
SAMPLED BY	COMPANY	GTA PROJECT #
See Below	See Below	071319-1 UIC Samples

SAMPLE INFORMATION

#	SAMPLE ID	DATE SAMPLED	TIME	MATRIX	ANALYSIS
1	Rich Field Unit	7-11-19		UIC	Rich Field
2	Fontinalis Club Dam	7-11-19	10:30am	UIC	228400.004.00
3	Switalski 1-9	7-9-19	2:20pm	UIC	212812219.00
4	Fontinalis Club B3-25	7-11-19	7:40am	UIC	228400.006.00
5	Livingston C3-19	7-9-19	2:35pm	UIC	227870.024.00
6	Sturgeon River M-33	7-11-19	8:25am	UIC	228448.002.00

BILL TO: Breithorn Operating LP
1165 Elkview
Gaylord, MI 49735

REPORT TO:

Lori Hansen
lori.hansen@maverickresources.com

RELEASED BY	DATE/TIME	RECEIVED BY	DATE/TIME
Lori Hansen	3pm / 7-11-19	Jim Brubaker	3pm 7-11-19
Jim Brubaker	7-13-19 10am	R. /	7/12/19 11:30am

REQUESTED TAT ☒ STANDARD ☐ 1 BUSINESS DAY ☐ 2 BUSINESS DAYS ☐ 3 BUSINESS DAYS