Dolan Integration Group
Geochemistry for Energy
11025 Dover Street Unit 800
Westminster, CO 80021
p: 303.531.2030

Hydrocarbon Gas Composition and Stable Isotopes
Data and Interpretation

Job #:	**260215229**
Lab #:	**DIG-042770 - DIG-042771**
Client:	**Prairie Operating Company, LLC**
Well Name:	**Waag 19**
API #:	**05-123-40351**

Client/Well Name: Prairie Operating Company, LLC / Waag 19
Job #: 260215229
Lab #: DIG-042770 - DIG-042771

SAMPLE INFORMATION						COMPLETE GAS ANALYSIS															HYDROCARBON GAS ANALYSIS (normalized to total HC content)								BTU CONTENT*
Job Number	Lab Number	Well Name	Sample Type	Sample Date	Sample Time	GC Date	N_2 ppm	O_2 + Ar ppm	CO_2 ppm	C_1 ppm	C_2 ppm	C_3 ppm	iC_4 ppm	nC_4 ppm	iC_5 ppm	nC_5 ppm	C_6+ ppm	C_2H_6 ppm	He ppm	H_2 ppm	C_1 mol%	C_2 mol%	C_3 mol%	iC_4 mol%	nC_4 mol%	iC_5 mol%	nC_5 mol%	C_6+ mol%	Total Gas BTU/ft³
260215229	DIG-042770	Waag 19 Bradenhead gas	Bradenhead gas	02/06/26	8:20	2/9/2026	977890	[illegible]	[illegible]	7374	1358	602	56	148	[illegible]	[illegible]	82	[illegible]	[illegible]	744	76.7	14.12	6.26	0.58	1.54	[illegible]	[illegible]	0.85	14
260215229	DIG-042771	Waag 19 Production gas	Production gas	02/06/26	8:30	2/9/2026	9125	746	25679	441900	173489	152677	25245	95587	22522	27488	11126	[illegible]	[illegible]	[illegible]	46.5	18.26	16.07	2.66	10.06	2.37	2.89	1.17	1811

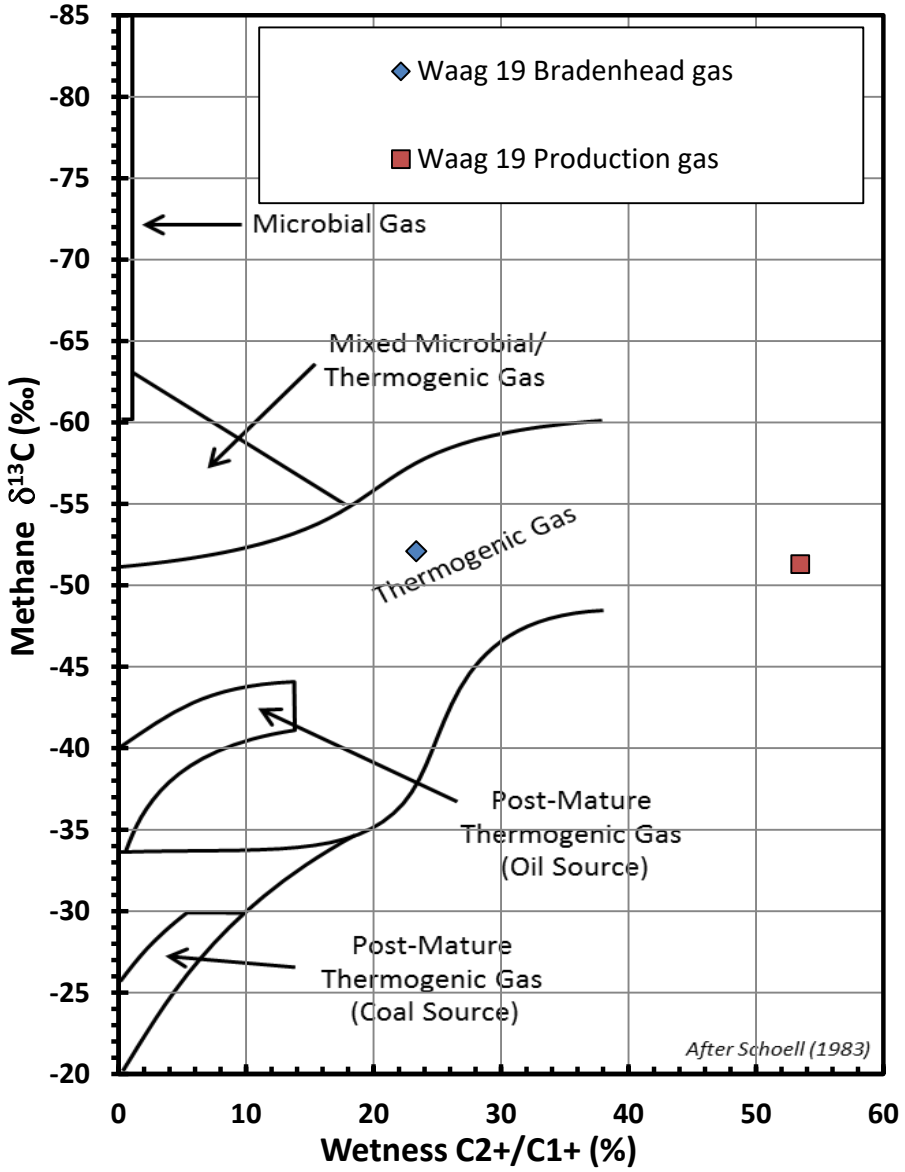
SAMPLE INFORMATION						HYDROCARBON RATIOS				STABLE ISOTOPE ANALYSIS										
Job Number	Lab Number	Well Name	Sample Type	Sample Date	Sample Time	Total HC ppm	Wetness % C_2 to C_5	C_1/C_2+C_3 mol/mol	Balance Ratio C_1+C_2/C_3-C_5	Mass Spec Date	$\delta^{13}C_1$ ‰ VPDB	$\delta^{13}C_2$ ‰ VPDB	$\delta^{13}C_3$ ‰ VPDB	$\delta^{13}iC_4$ ‰ VPDB	$\delta^{13}nC_4$ ‰ VPDB	$\delta^{13}iC_5$ ‰ VPDB	$\delta^{13}nC_5$ ‰ VPDB	$\delta^{13}CO_2$ ‰ VPDB	δD ‰ VSMOW	Comments
260215229	DIG-042770	Waag 19 Bradenhead gas	Bradenhead gas	02/06/26	8:20	9620	23.3	3.8	10.8	2/13/2026	-52.1	-35.9	-31.8		-29.3				-281	
260215229	DIG-042771	Waag 19 Production gas	Production gas	02/06/26	8:30	950033	53.5	1.4	1.9	2/13/2026	-51.3	-36.0	-31.4	-32.5	-29.1	-28.7	-28.6	-0.2	-291	

Stable isotope results based on multi-point laboratory calibration
low signal; interpret with caution
Precision $\delta^{13}C$ <0.5 ‰
Precision δD < 5 ‰
* As ideal gas, with gas concentrations normalized to 100%; caculations based on GPA 2145-09 physical constants.

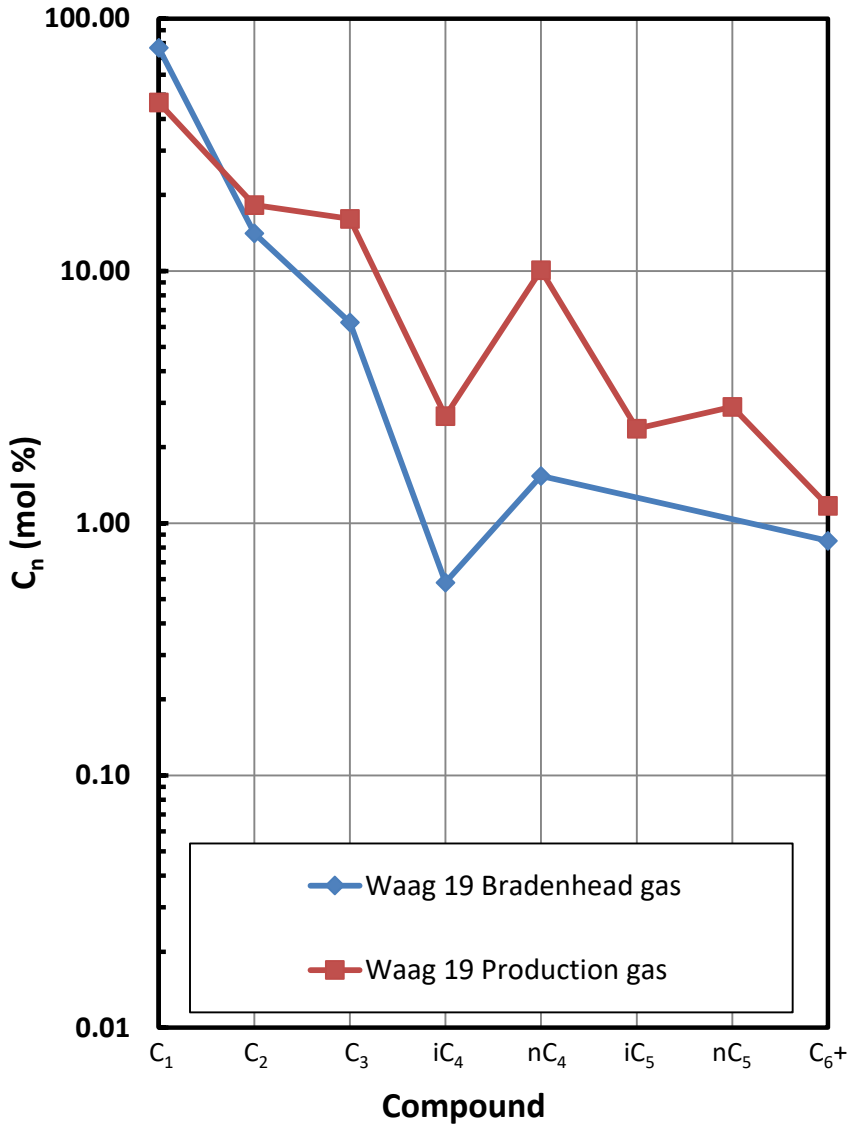
SPECIFIC GRAVITY*	
Total Gas Spec Grav	HCs only Spec Grav
0.965	0.734
1.122	1.113

INTERPRETIVE PLOTS

Methane $\delta^{13}C$ vs Wetness Genetic Classification Plot

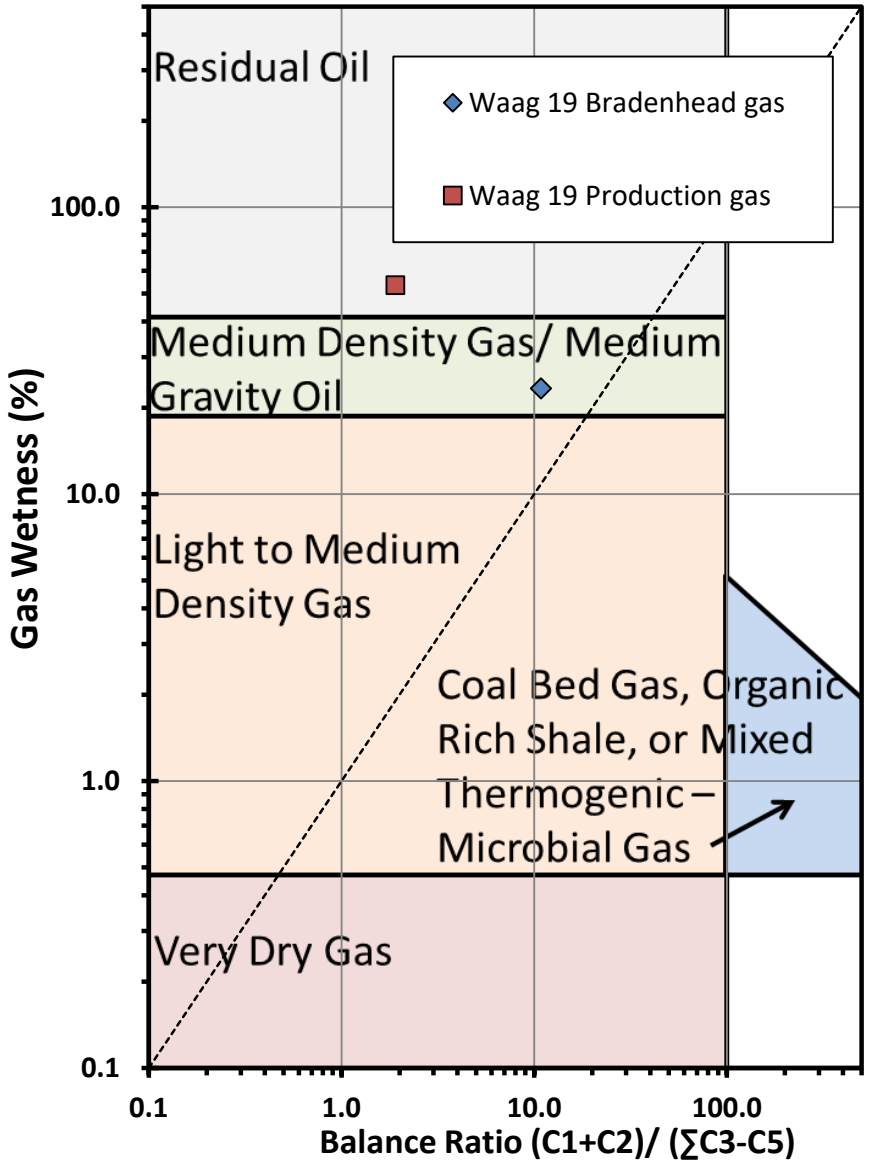


Hydrocarbon Composition Plot

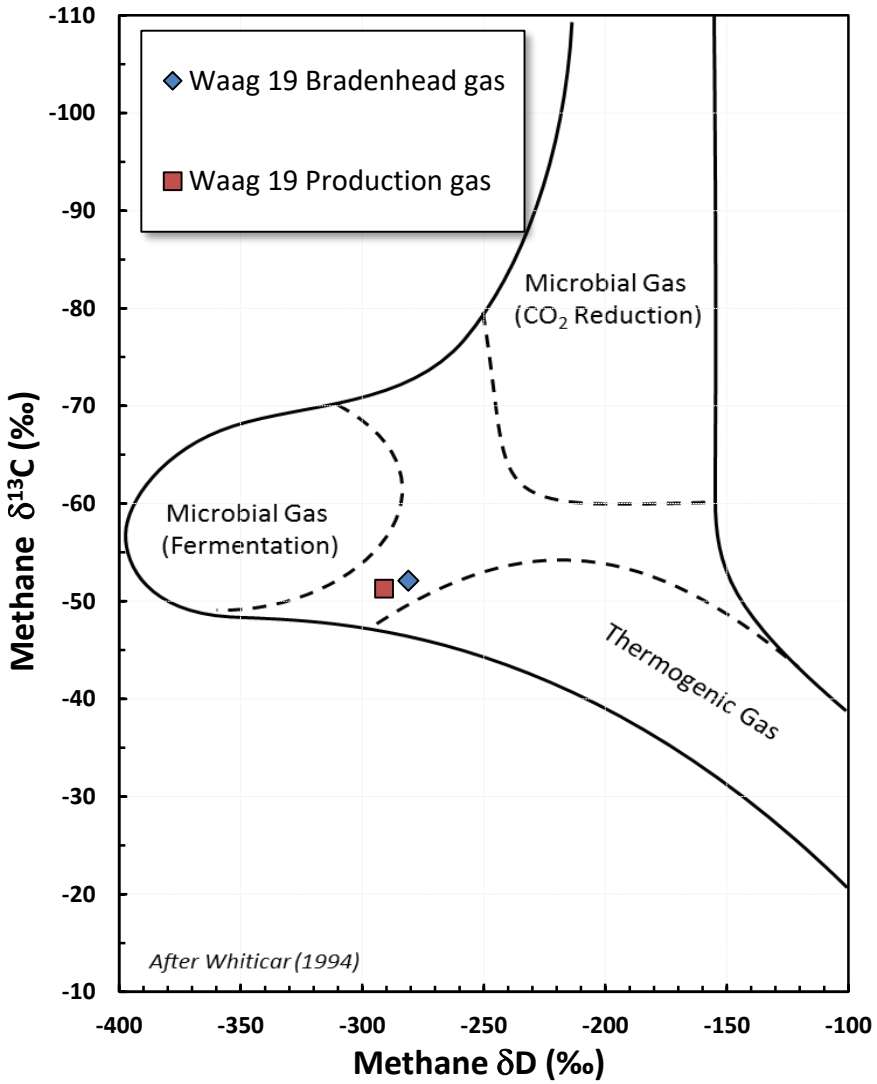


INTERPRETIVE PLOTS

Haworth Ratio Plot - Characterization of Hydrocarbon Type

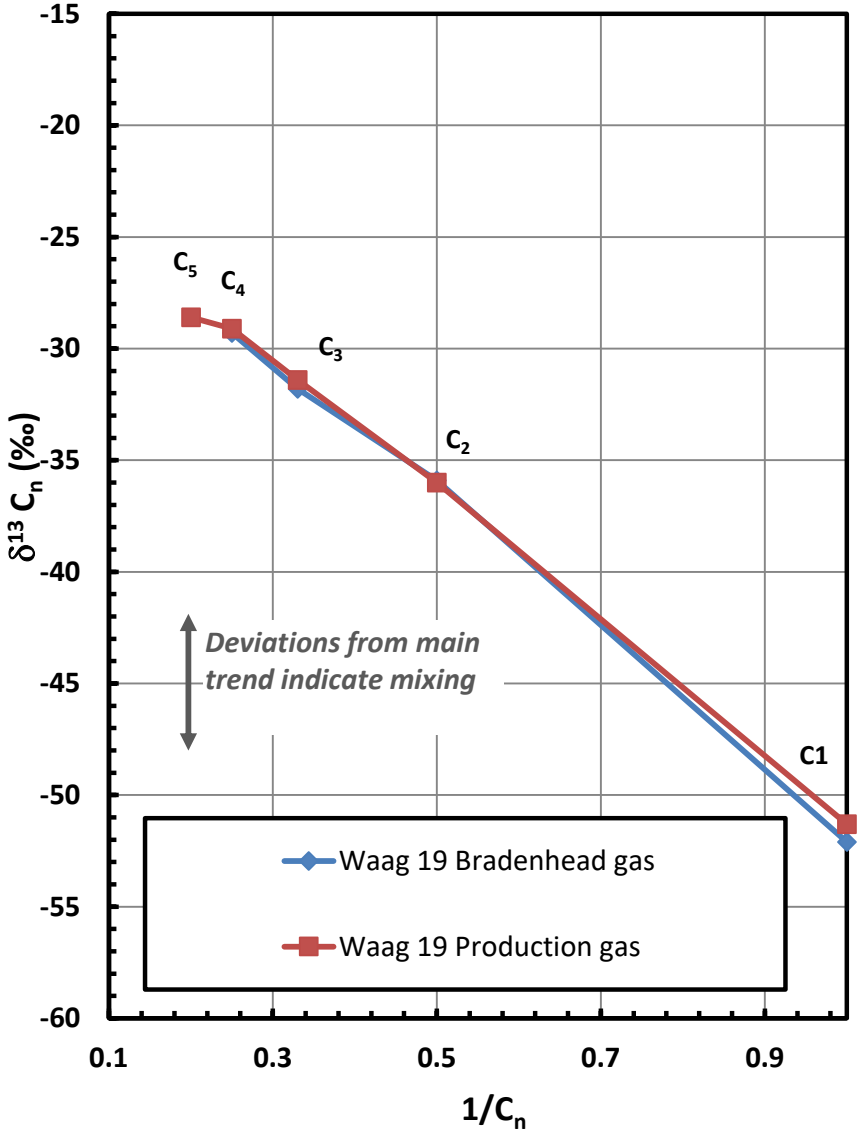


Methane $\delta^{13}C$ vs δD Genetic Classification Plot

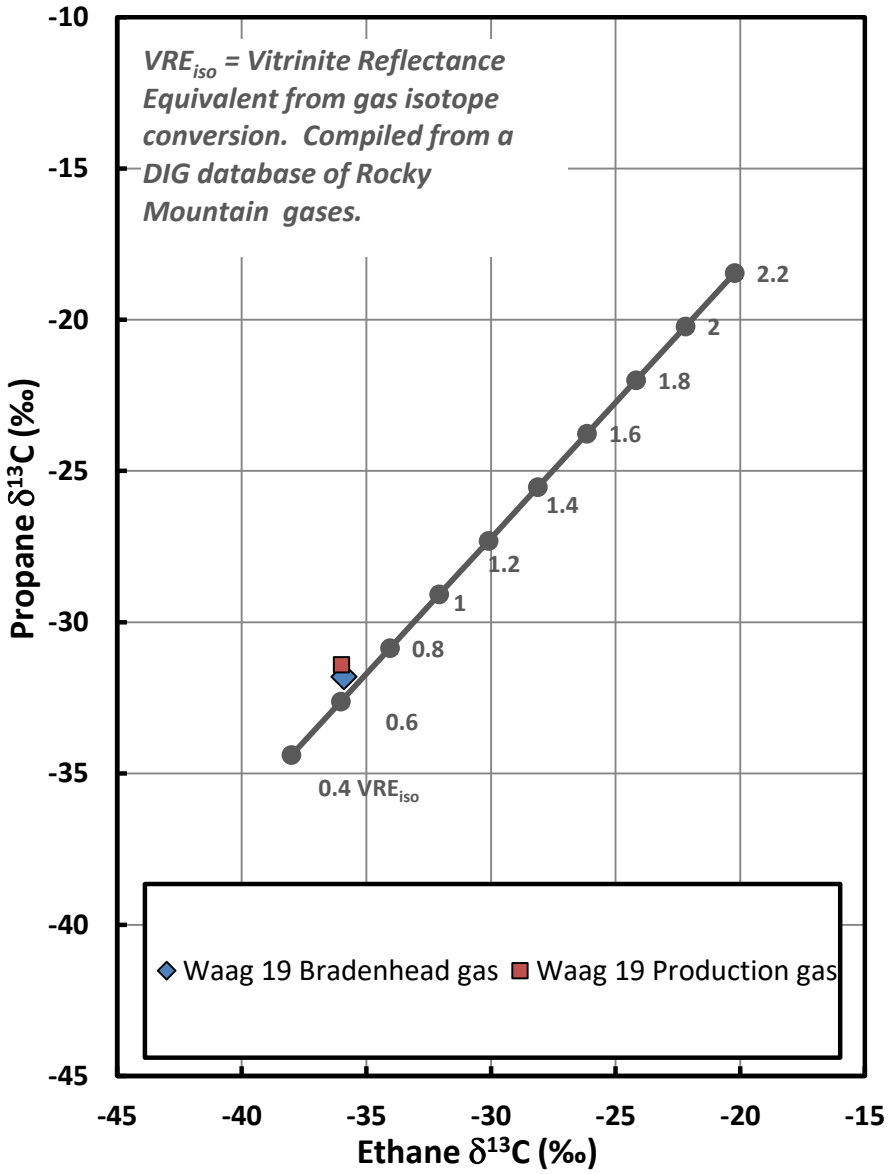


INTERPRETIVE PLOTS

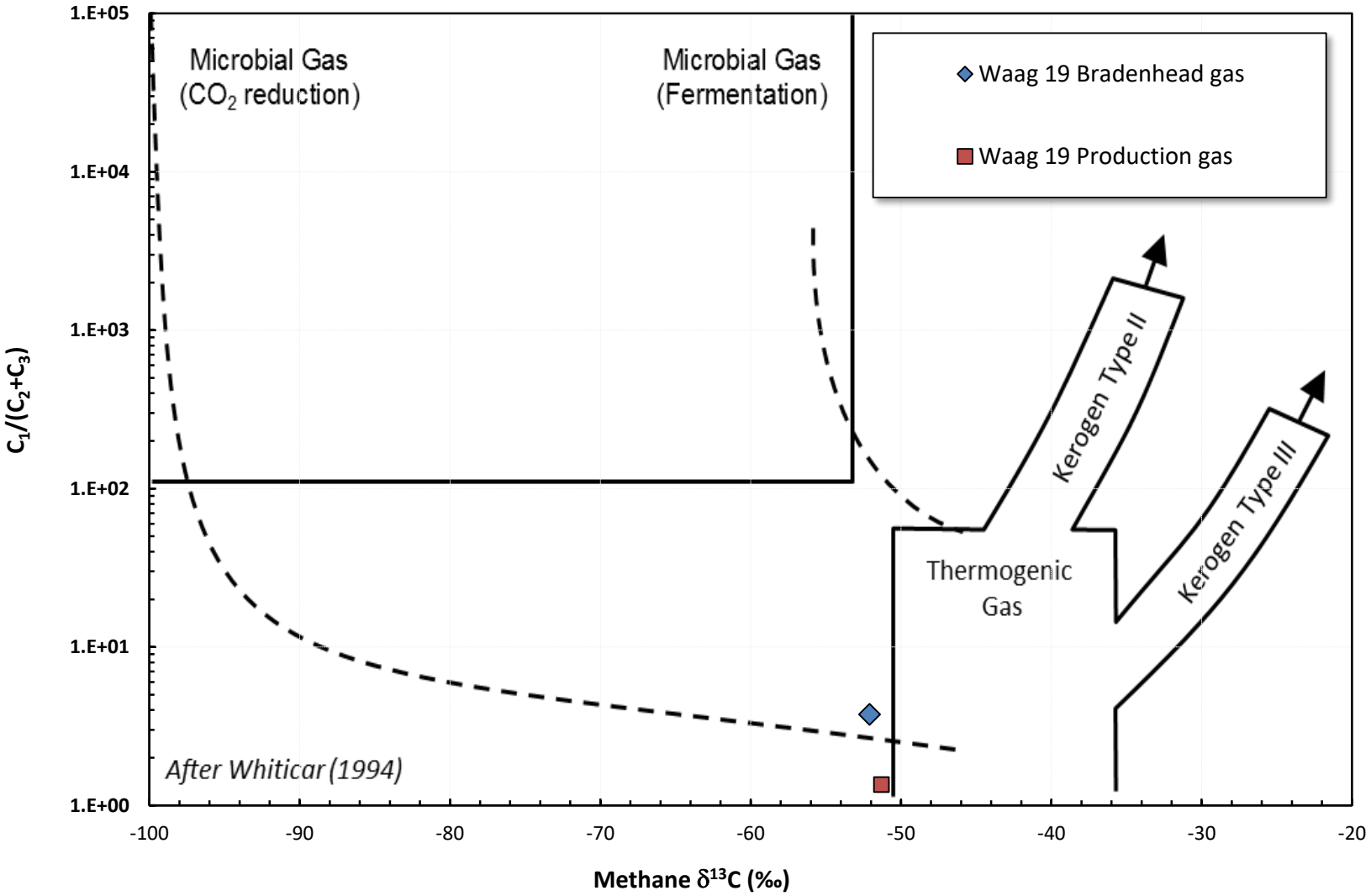
Mixing Plot



Ethane - Propane Maturity Plot



Methane $\delta^{13}C$ vs $C_1/(C_2+C_3)$ Genetic Classification Plot



Organization	Reporting Organization	Reporting Organization Name	Order Number	Entity Requesting Analysis	Purpose	Project														
	10206	Dolan Integration Group		Prairie Operating Company, LLC																
Sample	COGCC Facility No.	Sample Date and Time	API #	LAB Sample ID	Sample Type	Matrix	Comments	Project Number	Chain of Custody ID	Date Received by Lab										
	439205	2/6/26 8:20	123-40351	DIG-042770	BDH	GAS			Waag 19	2/6/2026										
Batch	LabID	Lab Batch Identifier	Leach Date	Extract Date and Time	Extract Method	Start Date and Time	Conc Method	Init Vol	Final Vol	Init Vol Units	Final Vol Units	Analysis Date and Time	Report Basis	Comments	File Name	Column #				
	10206	260215229																		
Result	CAS Number	Analysis Name	Analysis Method	Analytical Method Modifier	Unit	Result Value	Qualifier	Test Type	Result Text	Data Flag	Dilution	Fraction Type	MDC	Requested MDC	Detection Limit	Instrument Detection Limit	Method Detection Limit	Comments	AnalyticalBatchID	
	O2+AR	OXYGEN + ARGON	SOP		MOL %	0.005	ND								0.005	0.005	0.005		260215229	
	124-38-9	CARBON DIOXIDE	SOP		MOL %	0.005	ND								0.005	0.005	0.005		260215229	
	7727-37-9	NITROGEN (N2)	SOP		MOL %	98.951									0.005	0.005	0.005		260215229	
	7440-59-7	Helium	SOP		MOL %	0.005	ND								0.005	0.005	0.005		260215229	
	1333-74-0	HYDROGEN	SOP		MOL %	0.075									0.005	0.005	0.005		260215229	
	74-82-8	METHANE	SOP		MOL %	0.746									0.005	0.005	0.005		260215229	
	74-84-0	ETHANE	SOP		MOL %	0.137									0.005	0.005	0.005		260215229	
	74-85-1	ETHENE	SOP		MOL %	0.005	ND								0.005	0.005	0.005		260215229	
	74-98-6	PROPANE	SOP		MOL %	0.061									0.005	0.005	0.005		260215229	
	75-28-5	ISOBUTANE	SOP		MOL %	0.006									0.005	0.005	0.005		260215229	
	106-97-8	N-BUTANE	SOP		MOL %	0.015									0.005	0.005	0.005		260215229	
	iC5	ISOPENTANE	SOP		MOL %	0.005	ND								0.005	0.005	0.005		260215229	
	109-66-0	N-PENTANE	SOP		MOL %	0.005	ND								0.005	0.005	0.005		260215229	
	92112-69-1+	C6+ (hexanes +)	SOP		MOL %	0.008									0.005	0.005	0.005		260215229	
	delta13C_C1	DELTA 13C C1	SOP		per mil	-52.1													260215229	
	deltaD C1	DELTA D C1	SOP		per mil	-281													260215229	
	delta13C C2	DELTA 13C C2	SOP		per mil	-35.9													260215229	
	delta13C_C3	DELTA 13C C3	SOP		per mil	-31.8													260215229	
	delta13C_nC4	DELTA 13C nC4	SOP		per mil	-29.3				Low Signal									260215229	
	BTU	BRITISH THERMAL UNITS	SOP		BTU/cuft	14													260215229	
	SpGrav	SPECIFIC GRAVITY	SOP		No Unit	0.965													260215229	

Organization	Reporting Organization	Reporting Organization Name	Order Number	Entity Requesting Analysis	Purpose	Project														
	10206	Dolan Integration Group		Prairie Operating Company, LLC																
Sample	COGCC Facility No.	Sample Date and Time	API #	LAB Sample ID	Sample Type	Matrix	Comments	Project Number	Chain of Custody ID	Date Received by Lab										
	439205	2/6/26 8:30	123-40351	DIG-042771	PRDG	GAS			Waag 19	2/6/2026										
Batch	LabID	Lab Batch Identifier	Leach Date	Extract Date and Time	Extract Method	Start Date and Time	Conc Method	Init Vol	Final Vol	Init Vol Units	Final Vol Units	Analysis Date and Time	Report Basis	Comments	File Name	Column #				
	10206	260215229																		
Result	CAS Number	Analysis Name	Analysis Method	Analytical Method Modifier	Unit	Result Value	Qualifier	Test Type	Result Text	Data Flag	Dilution	Fraction Type	MDC	Requested MDC	Detection Limit	Instrument Detection Limit	Method Detection Limit	Comments	AnalyticalBatchID	
	O2+AR	OXYGEN + ARGON	SOP		MOL %	0.076									0.005	0.005	0.005		260215229	
	124-38-9	CARBON DIOXIDE	SOP		MOL %	2.605									0.005	0.005	0.005		260215229	
	7727-37-9	NITROGEN (N2)	SOP		MOL %	0.926									0.005	0.005	0.005		260215229	
	7440-59-7	Helium	SOP		MOL %	0.005	ND								0.005	0.005	0.005		260215229	
	1333-74-0	HYDROGEN	SOP		MOL %	0.005	ND								0.005	0.005	0.005		260215229	
	74-82-8	METHANE	SOP		MOL %	44.836									0.005	0.005	0.005		260215229	
	74-84-0	ETHANE	SOP		MOL %	17.603									0.005	0.005	0.005		260215229	
	74-85-1	ETHENE	SOP		MOL %	0.005	ND								0.005	0.005	0.005		260215229	
	74-98-6	PROPANE	SOP		MOL %	15.491									0.005	0.005	0.005		260215229	
	75-28-5	ISOBUTANE	SOP		MOL %	2.561									0.005	0.005	0.005		260215229	
	106-97-8	N-BUTANE	SOP		MOL %	9.699									0.005	0.005	0.005		260215229	
	iC5	ISOPENTANE	SOP		MOL %	2.285									0.005	0.005	0.005		260215229	
	109-66-0	N-PENTANE	SOP		MOL %	2.789									0.005	0.005	0.005		260215229	
	92112-69-1+	C6+ (hexanes +)	SOP		MOL %	1.129									0.005	0.005	0.005		260215229	
	delta13C_C1	DELTA 13C C1	SOP		per mil	-51.3													260215229	
	deltaD C1	DELTA D C1	SOP		per mil	-291													260215229	
	delta13C C2	DELTA 13C C2	SOP		per mil	-36.0													260215229	
	delta13C_C3	DELTA 13C C3	SOP		per mil	-31.4													260215229	
	delta13C_iC4	DELTA 13C iC4	SOP		per mil	-32.5													260215229	
	delta13C_nC4	DELTA 13C nC4	SOP		per mil	-29.1													260215229	
	delta13C_iC5	Delta 13C iC5	SOP		per mil	-28.7													260215229	
	delta13C_nC5	Delta 13C nC5	SOP		per mil	-28.6													260215229	
	delta13C_CO2	DELTA 13C CO2	SOP		per mil	-0.2													260215229	
	BTU	BRITISH THERMAL UNITS	SOP		BTU/cuft	1811													260215229	
	SpGrav	SPECIFIC GRAVITY	SOP		No Unit	1.122													260215229	

dig Geochemistry for Energy
Dolan Integration Group

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Office and Lab 11025 Dover St • Ste 800 • Westminster, CO 80021

Send Data to:	Send Invoice to (if different):	Additional Information:
Name: Dana Hanneman	Name:	AFE #:
Company: Prairie Operating Company	Company:	Project: Bradenhead Sampling
Address: 44 Cook Street Suite 1000	Address:	PO #: 09F4045007
City, State: Denver, CO 80206	City, State:	Location: Waag South SESW Pad #1
Phone: 832.744.1484	Phone:	Sampled By: Jeff Braden
Email: dana.hanneman@prairieopco.com	Email:	API #:

Turnaround Time**: (●) Standard (≤ 10 Business days) ( ) Rush (≤ 5 Business days) ( ) Expedited Rush (≤ 3 Business days)

Container Number	Sample Identification	Date Sampled	Time	Sample Type*	Gas Composition	d13C of Methane (C1)	d13C of Ethane (C2)	d13C of Propane+ (C3+)	d13C of Carbon Dioxide (CO2)	dD of Methane (C1)	Whole Oil Gas Chromatography	d18O and dD Isotopes of Water	RSK 175 Dissolved Gas Quantification
F029KG	Waag 19 bh	2/6/26	0820	Bradenhead Gas	●	●	●	●	●	●	☐	☐	☐
F029KH	Waag 19 pr	2/6/26	0830	Production gas	●	●	●	●	●	●	☐	☐	☐
F029KK	Waag 21 bh	2/6/26	0850	Bradenhead gas	●	●	●	●	●	●	☐	☐	☐
F029KL	Waag 21 pr	2/6/26	0900	Production gas	●	●	●	●	●	●	☐	☐	☐
F029KP	Waag 23 bh	2/6/26	0920	Bradenhead gas	●	●	●	●	●	●	☐	☐	☐
F029KR	Waag 23 pr	2/6/26	0930	Production gas	●	●	●	●	●	●	☐	☐	☐
F029KZ	Waag 25 bh	2/6/26	0950	Bradenhead gas	●	●	●	●	●	●	☐	☐	☐
F029MN	Waag 25 pr	2/6/26	1000	Production gas	●	●	●	●	●	●	☐	☐	☐
				Bradenhead gas	●	●	●	●	●	●	☐	☐	☐
				Production gas	●	●	●	●	●	●	☐	☐	☐

Chain of Custody Record

Comments:

Relinquished by Signature	Company	Date	Time	Received by Signature	Company	Date	Time
Jeffrey D Braden Digitally signed by Jeffrey D Braden Date: 2026.02.06 11:49:42 -07'00'	Ensolum, LLC	2/6/26	1200	Abigail Hollmann Digitally signed by Abigail Hollmann Date: 2026.02.06 13:26:55 -07'00'	DIG	2/6/26	1200

*Gas composition vs RSK-175 - Gas composition is a basic analysis of the concentration (ppm) of gases within the headspace of the sample (headspace is created at the lab). RSK-175 is a specific analysis technique combined with calculations to give the total dissolved gas of each species in the water sample (mg/L). Why one or the other? Gas composition gives us a quick, general look at relative concentrations and ratios (e.g., gas wetness). RSK-175 gives us an exact total of gas present in the sample (headspace and dissolved in the water). Questions? Give us a call at 303-531-2030.

** Rush and Expedited Rush turnaround time analysis will incur additional costs at 2x and 3x the standard turnaround time pricing.