

Lab #: 728323 Job #: 42339 IS-69033 Co. Job#:
Sample Name: BW_NGL_78801_F_R Co. Lab#:
Company: Anadarko
API/Well:
Container: 125ml bottle
Field/Site Name: BWSE/GWA_NGL_Water_Well
Location: SESE_30_3N_65W
Formation/Depth: Q3
Sampling Point: 755053
Date Sampled: 7/25/2019 12:27 Date Received: 7/30/2019 Date Reported: 8/20/2019

δ D of water ----- -104.3 ‰ relative to VSMOW

δ ¹⁸O of water ----- -13.63 ‰ relative to VSMOW

Tritium content of water ----- na

δ ¹³C of DIC ----- -15.3 ‰ relative to VPDB

¹⁴C content of DIC ----- na

δ ¹⁵N of nitrate ----- na

δ ¹⁸O of nitrate ----- na

δ ³⁴S of sulfate ----- na

δ ¹⁸O of sulfate ----- na

Vacuum Distilled? * ----- No

Remarks: WO#89225208

nd = not detected. na = not analyzed.

*Indicates if vacuum distillation was utilized for hydrogen and oxygen isotopic analysis of water

Lab #: 728349 Job #: 42341 IS-69033 Co. Job#: _____
 Sample Name: BW_NGL_78801_F_R Co. Lab#: _____
 Company: Anadarko
 API/Well: _____
 Container: IsoFlask
 Field/Site Name: BWSE/GWA_NGL_Water_Well
 Location: SESE_30_3N_65W
 Formation/Depth: Q3
 Sampling Point: 755053
 Date Sampled: 7/25/2019 12:27 Date Received: 7/30/2019 Date Reported: 8/30/2019

Component	Chemical mol. %	$\delta^{13}\text{C}$ ‰	δD ‰	$\delta^{18}\text{O}$ ‰	Dissolved gas cc/L	Dissolved gas ppm
Carbon Monoxide -----	nd					
Helium -----	na					
Hydrogen -----	nd					
Argon -----	0.751				0.29	0.49
Oxygen -----	3.58					
Nitrogen -----	35.15				12	14
Carbon Dioxide -----	2.35					
Methane -----	57.77	-73.67	-264.4		23	15
Ethane -----	0.333	-35.6			0.14	0.18
Ethylene -----	nd					
Propane -----	0.0482				0.019	0.035
Propylene -----	nd					
Iso-butane -----	0.0071					
N-butane -----	0.0078					
Iso-pentane -----	0.0016					
N-pentane -----	0.0008					
Hexanes + -----	0.0004					

Remarks:

Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.74

*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.

Ethane carbon isotope data obtained online via GC-C-IRMS. Insufficient propane, butane and pentane concentrations for isotopic analysis.

WO#89225208

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. All gas component carbon isotope values are reported on a scale defined by a two point calibration of LSVEC and NBS 19. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.