

# Water Sciences Laboratory

## Analytical Report



**Nebraska  
Water Center**

Daugherty Water for Food Global Institute

Nebraska Water Center, a part of the  
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**Project: ERG CSD GROUNDWATER  
SAMPLING**

Sampled By: Juan Rogers  
Received: 05/01/2018  
Received By: David Cassada  
Batch: **W18197**

**Protocol: 12\_02\_11\_01**

Nitrogen and Oxygen Isotopes using azide reduction and Trace gas Preconcentrator Method  
Protocol Reference:  
1. Tu, Y.; Fang, Y.; Liu, D.; Pan, Y. (2016) Modifications to the azide method for nitrate isotope analysis.. *Rapid Commun. Mass Sp.*, 30(10), 1213-1222.  
2. McIlvin, Matthew R Altabet, Mark A (2005) Chemical conversion of nitrate and nitrite to nitrous oxide for nitrogen and oxygen isotopic analysis in freshwater and seawater. *Anal. Chem.*, 77, 5589-5595.

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**\*\*\*\* Results of Analysis \*\*\*\***

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Lab ID	Sample ID	Collection Date	$\delta^{15}\text{N-NO}_3$ (‰)	$\delta^{18}\text{O-NO}_3$ (‰)	Analysis Date
18-1775	A1B	04/30/2018	-4.94	+9.19	05/14/2018
18-1780	A3B	04/30/2018	-4.15	+12.5	05/14/2018
18-1781	A4A	04/30/2018	+4.76	+5.27	05/14/2018
18-1782	A4B	04/30/2018	+3.23	+0.699	05/14/2018
18-1784	B1B	04/30/2018	-3.89	+17.6	05/14/2018
18-1786	B2B	04/30/2018	-7.73	+2.04	05/14/2018
18-1787	B3A	04/30/2018	-4.83	-3.64	05/14/2018
18-1790	B4B	04/30/2018	+1.41	+2.66	05/14/2018
18-1791	C3A	04/30/2018	+3.88	+4.41	05/14/2018
18-1792	C3B	04/30/2018	+0.805	-1.22	05/14/2018
18-1794	C1B	04/30/2018	-11.4	+1.50	05/14/2018
18-1795	C2A	04/30/2018	+0.753	+2.30	05/14/2018
18-1796	C2B	04/30/2018	+3.22	+1.51	05/14/2018

$$\delta (\text{‰}) = \frac{R_{\text{sample}} - R_{\text{standard}}}{R_{\text{standard}}} \times 1000$$

Rstandard: D/H= 0.00015575, 18O/16=0.0020052; Standard Mean Ocean Water; 15N/14N=0.0036765 Atmospheric Nitrogen