

# Water Sciences Laboratory

## Analyte/Protocol Price List

### 2019



**Nebraska  
Water Center**  
Daugherty Water for Food Global Institute

Nebraska Water Center, a part of the  
Robert B. Daugherty Water for Food Global Institute at the University of Nebraska  
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| Matrix Protocol   | Analyte   | Reporting Level  | Protocol Cost | NU Cost (20% discount) |
|---|---|--|---------------|------------------------|
| <b>ISOTOPES</b>   |   |  |               |                        |
| <b>SOLIDS</b>   |   |  |               |                        |
| <p><b><math>\delta^{15}\text{N}</math> in nitrate/ammonia in soils</b></p> <p>Protocol ID: 12_01_01_02</p> <p>Sample Container: 125 mL wide mouth amber glass bottle</p> <p>Preservation: Frozen</p> <p>Holding Time: 60 Days</p> <p>Estimated Turnaround Time: 74 Days</p>   | <p><math>\delta\text{NH}_3\text{-}^{15}\text{N}</math></p> <p><math>\text{NH}_3\text{-N}</math></p> <p><math>\delta\text{NO}_3\text{-}^{15}\text{N}</math></p> <p><math>\text{NO}_3\text{-N}</math></p> | <p>0.5 <math>\mu\text{g/g}</math></p> <p>0.5 <math>\mu\text{g/g}</math></p>          | \$165.00      | \$132.00               |
| <p><b>Deuterium in extracted water</b></p> <p>Protocol ID: 12_01_03_02</p> <p>Sample Container: 125 mL polyethylene bottle</p> <p>Preservation: Frozen</p> <p>Holding Time: 180 Days</p> <p>Estimated Turnaround Time: 74 Days</p>  | 2H  | Pending  | \$25.00       | \$20.00                |
| <p><b><math>\delta\text{HD}</math>, <math>\delta^{13}\text{C}</math>, <math>\delta^{15}\text{N}</math>, <math>\delta^{18}\text{O}</math> isotopes in solids</b></p> <p>Protocol ID: 12_01_04_01</p> <p>Reference:<br/>Meier-Augenstein, Wolfram (2004), "GC and IRMS Technology for <math>^{13}\text{C}</math> and <math>^{15}\text{N}</math> Analysis on Organic Compounds and Related Gases", <i>Handbook of stable isotope analytical techniques</i> 1, 153.</p> | <p>%C</p> <p>%H</p> <p>%N</p> <p>%O</p> <p><math>\delta^{18}\text{O}</math> (‰)</p> <p><math>\delta\text{HD}</math> (‰)</p>   | <p>0.01 %</p> <p>0.1 %</p> <p>0.01 %</p> <p>0.01 %</p> <p>Pending</p> <p>Pending</p> | \$22.00       | \$17.60                |

Reporting Limits are subject to verification

\* = protocol cost is per analyte

& = add digestion cost of \$8/sample

| Matrix Protocol  | Analyte   | Reporting Level   | Protocol Cost         | NU Cost (20% discount) |
|--|---|---|-----------------------|------------------------|
| <p><b>Sample Container:</b> 125 mL polyethylene bottle<br/> <b>Preservation:</b> Frozen<br/> <b>Holding Time:</b> 60 Days<br/> <b>Estimated Turnaround Time:</b> 74 Days</p>   |   |   |                       |                        |
| <p><b><math>\delta^{13}\text{C}</math>, <math>\delta^{15}\text{N}</math> in plants</b><br/> <b>Protocol ID:</b> 12_01_04_06</p> <p><b>Sample Container:</b> Paper bag for plants or 125 mL glass amber bottle for other types<br/> <b>Preservation:</b> Frozen<br/> <b>Holding Time:</b> 60 Days<br/> <b>Estimated Turnaround Time:</b> 74 Days</p>  | <p>%C<br/>           %N<br/> <math>\delta^{13}\text{C}</math> (‰)<br/> <math>\delta^{15}\text{N}</math> (‰)</p> | <p>0.05 %<br/>           0.01 %<br/>           Pending<br/>           Pending</p> | <p><b>\$25.00</b></p> | <p>\$20.00</p>         |
| <p><b><math>\delta^{13}\text{C}</math>, <math>\delta^{18}\text{O}</math> in bulk carbonate</b><br/> <b>Protocol ID:</b> 12_01_06_01</p> <p><b>Reference:</b><br/>           McCrea, J. M. (1950), "On the isotopic chemistry of carbonates and a paleotemperature scale.", <i>The Journal of Chemical Physics</i> <b>18</b>(6), 849-857.</p> <p><b>Sample Container:</b> 125 mL polyethylene bottle<br/> <b>Preservation:</b> Frozen<br/> <b>Holding Time:</b> 60 Days<br/> <b>Estimated Turnaround Time:</b> 74 Days</p>                    | <p><math>\delta^{13}\text{C}</math> (‰)</p>   | <p>Pending</p>  | <p><b>\$33.00</b></p> | <p>\$26.40</p>         |
| <p><b><math>\delta^{13}\text{C}</math>, <math>\delta^{18}\text{O}</math> in carbonate by dual inlet</b><br/> <b>Protocol ID:</b> 12_02_06_02</p> <p><b>Reference:</b><br/>           McCrea, J. M. (1950), "On the isotopic chemistry of carbonates and a paleotemperature scale.", <i>The Journal of Chemical Physics</i> <b>18</b>(6), 849-857.</p> <p><b>Sample Container:</b> 125 mL wide mouth amber glass bottle<br/> <b>Preservation:</b> Frozen<br/> <b>Holding Time:</b> 60 Days<br/> <b>Estimated Turnaround Time:</b> 74 Days</p> | <p><math>\delta^{13}\text{C}</math> (‰)<br/> <math>\delta^{18}\text{O}</math> (‰)</p>                           | <p>Pending<br/>           Pending</p>   | <p><b>\$38.50</b></p> | <p>\$30.80</p>         |

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| Matrix Protocol  | Analyte  | Reporting Level            | Protocol Cost          | NU Cost (20% discount) |
|--|--|----------------------------|------------------------|------------------------|
| <p><b><math>\delta^{18}\text{O}</math> and <math>\delta^{15}\text{N}</math> in <math>\text{NO}_3^-</math> in sediment by azide reduction</b></p> <p><b>Protocol ID:</b> 12_02_11_02</p> <p><b>Reference:</b><br/>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", <i>Anal. Chem.</i> <b>77</b>, 5589-5595.</p> <p><b>Sample Container:</b> 125 mL wide mouth amber glass bottle<br/> <b>Preservation:</b> Frozen<br/> <b>Holding Time:</b> 60 Days<br/> <b>Estimated Turnaround Time:</b> 74 Days</p> | <p><math>\delta^{15}\text{N}</math><br/><math>\delta^{18}\text{O}</math></p> | <p>Pending<br/>Pending</p> | <p><b>\$110.00</b></p> | <p>\$88.00</p>         |
| <p><b><math>\delta^{15}\text{N}</math> in <math>\text{NO}_3^-</math> by precipitation of silver nitrate in soils</b></p> <p><b>Protocol ID:</b> 12_03_02_02</p> <p><b>Sample Container:</b> 125 mL wide mouth amber glass bottle<br/> <b>Preservation:</b> Frozen<br/> <b>Holding Time:</b> 60 Days<br/> <b>Estimated Turnaround Time:</b> 74 Days</p>   | <p><math>\delta^{18}\text{O}</math>-Nitrate</p>                              | <p>Pending</p>             | <p><b>\$110.00</b></p> | <p>\$88.00</p>         |
| <p><b><math>\delta^{18}\text{O}</math> in extracted water</b></p> <p><b>Protocol ID:</b> 12_03_05_01</p> <p><b>Reference:</b><br/>Wassenaar, L. I.; Koehler, G. (1999), "An On-Line Technique for the Determination of the <math>\delta^{18}\text{O}</math> and <math>\delta^{17}\text{O}</math> of Gaseous and Dissolved Oxygen", <i>Anal. Chem.</i> <b>71</b>, 4965-4968.</p> <p><b>Sample Container:</b> 125 mL wide mouth amber glass bottle<br/> <b>Preservation:</b> Frozen<br/> <b>Holding Time:</b> 60 Days<br/> <b>Estimated Turnaround Time:</b> 74 Days</p>   |  |                            |                        |                        |

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| Matrix Protocol   | Analyte                      | Reporting Level  | Protocol Cost | NU Cost (20% discount) |
|---|------------------------------|--|---------------|------------------------|
| <p><b><math>\delta^{18}\text{O}</math> in organics</b></p> <p><b>Protocol ID:</b> 12_03_05_07</p> <p><b>Reference:</b><br/>Wassenaar, L. I.; Koehler, G. (1999), "An On-Line Technique for the Determination of the <math>\delta^{18}\text{O}</math> and <math>\delta^{17}\text{O}</math> of Gaseous and Dissolved Oxygen", <i>Anal. Chem.</i> <b>71</b>, 4965-4968.</p> <p><b>Sample Container:</b> 125 mL wide mouth amber glass bottle</p> <p><b>Preservation:</b> Frozen</p> <p><b>Holding Time:</b> 60 Days</p> <p><b>Estimated Turnaround Time:</b> 74 Days</p> | Oxygen-18                    | Pending  | \$26.50       | \$21.20                |
| <p><b><math>\delta^{15}\text{N}</math> of Total Kjeldahl Nitrogen digests from soils</b></p> <p><b>Protocol ID:</b> 14_01_02</p> <p><b>Reference:</b><br/>Gormly, J. R.; Spalding, R. F. (1979), "Sources and Concentrations of Nitrate-Nitrogen in Ground Water of the Central Platte Region, Nebraska", <i>Ground Water</i> <b>17</b>(3), 291-301.</p> <p><b>Sample Container:</b> 125 mL wide mouth amber glass bottle</p> <p><b>Preservation:</b> Frozen</p> <p><b>Holding Time:</b> 60 Days</p> <p><b>Estimated Turnaround Time:</b> 74 Days</p>                 | $\delta^{15}\text{N}$<br>TKN | 0.2 $\mu\text{g/g}$ (ppm)<br>0.2 $\mu\text{g/g}$ (ppm) | \$165.00      | \$132.00               |

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