Monitoring Nitrogen Levels at 11th Ave. N Surfside Beach, SC

Kyle LaVoie
Coastal Carolina University Engineering Science

Introduction

- This monitoring is important because it is a residential area that could be widely affected by water quality.
- Excess Nitrates become an issue since Nitrates limit the ability of blood to carry oxygen resulting in an oxygen deficiency.
- according to South Carolina Department of Health and Environmental Control (SC DHEC) about 83% of our drinking water in 2019 came from public water systems that use surface water sources
- The purpose of the water monitoring is to show how much ammonia, nitrite, and nitrate are in the water to evaluate the potential risks at 11th Ave. N Surfside Beach, SC.

Table 1: South Carolina Water Supply Total Reported Water Use and Source.

Water Use	Groundwater	Percentage	Surface Water	Percentage	Total	Percentage
Water Supply	$4.27*10^4$	38.20%	$2.12*10^5$	0.90%	$2.55*10^5$	1.00%
Total	$1.12*10^5$	100.00%	$2.48*10^7$	100.00%	$2.49*10^7$	100.00%

Methods and Materials

- Samples were tested using Ammonia Hack test strips and Nitrite and Nitrate Hack test strips. 242 samples of ammonia and nitrite and 239 samples of nitrate were collected between May 27th, 2010 and January 26th, 2021 at 11th Ave.
- The maps bellow show that the areas being monitored for this article is a very residential area close by the water source as well as showing that the water source leads directly to the Atlantic Ocean.

Table 2: Water quality parameters, units and analytical methods used for 11th Ave. N Surfside Beach, SC.

Parameters	Abbreviations	Units	Analytical methods	Instruments
Ammonia	NH3	mg N/L	instrumental	Hack ammonia test strips
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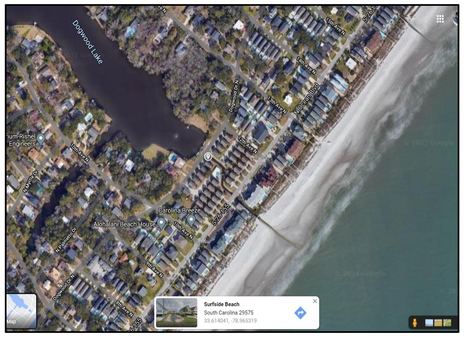

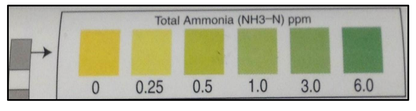

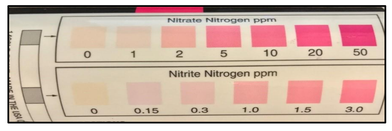

Results

# Samples	Mean	S.D.	Max
242	0.002	0.032	0.5

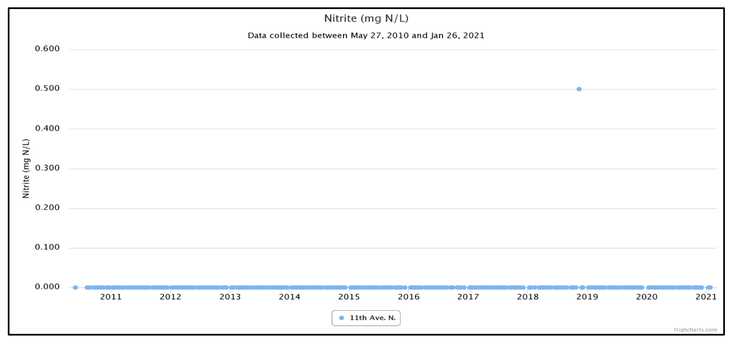

Figure 1: Time trend of nitrites measured at 11th Ave. N Surfside Beach, SC from May 27th, 2010 – Jan 26, 2021.

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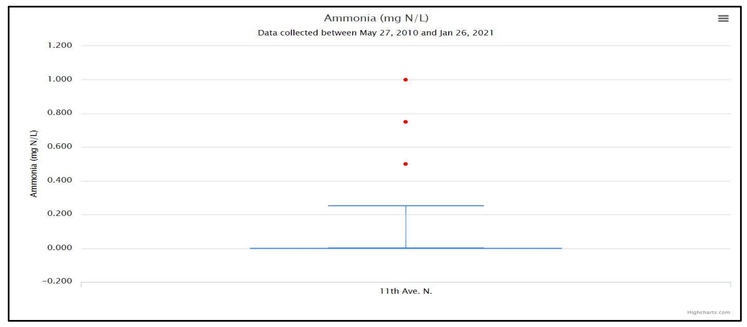
242	0.042	0.125	1



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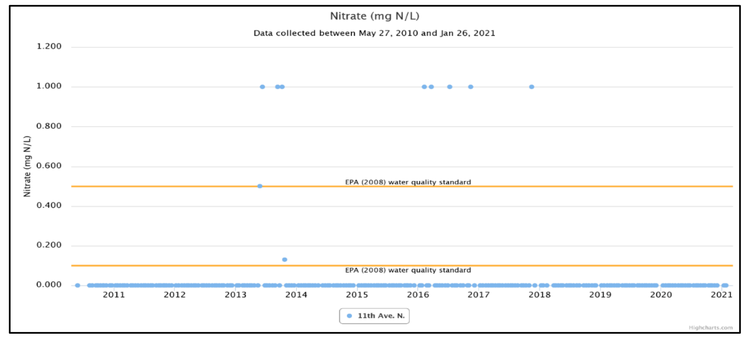

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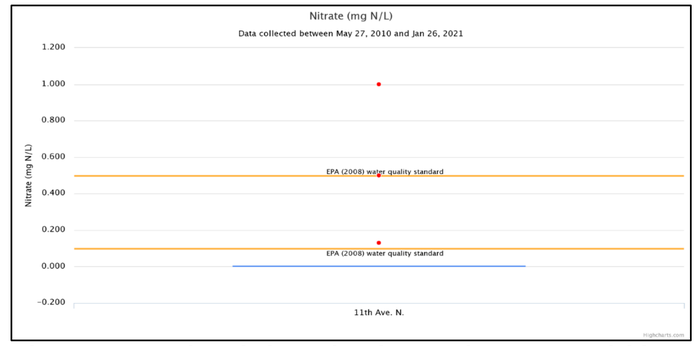

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Conclusion (Calibri 44 Points)

- The presence of nitrates in a water source used for public water supply can be concerning due to its health risks and should be closely monitored in residential areas as well as primary water supply sources.
- 11th Ave. N Surfside Beach, SC currently does not have a concern with excess nitrates as there was only 10 of the 239 trials that were outliers falling above the EPA(2008) standard of fair between 0.1 and 0.5 mg N/L.
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References

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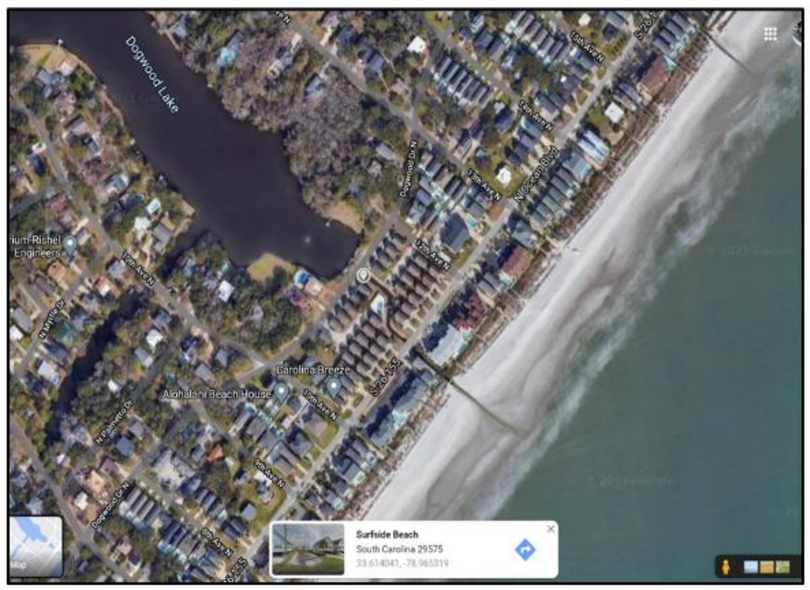

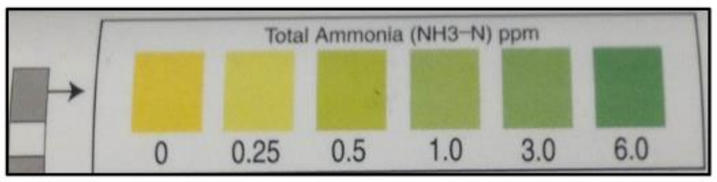

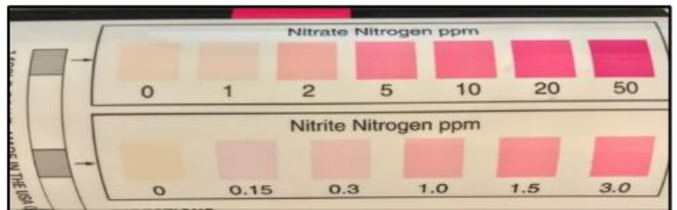

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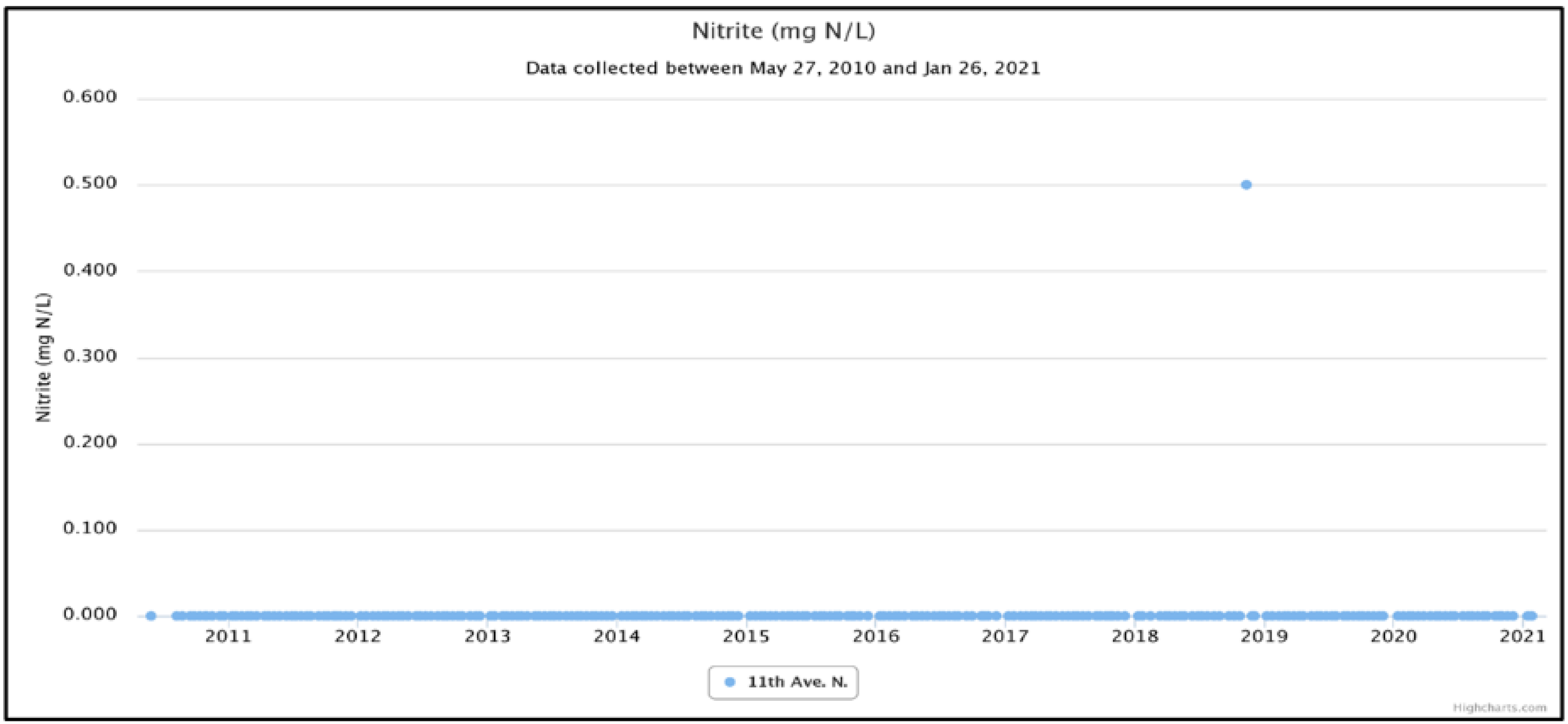

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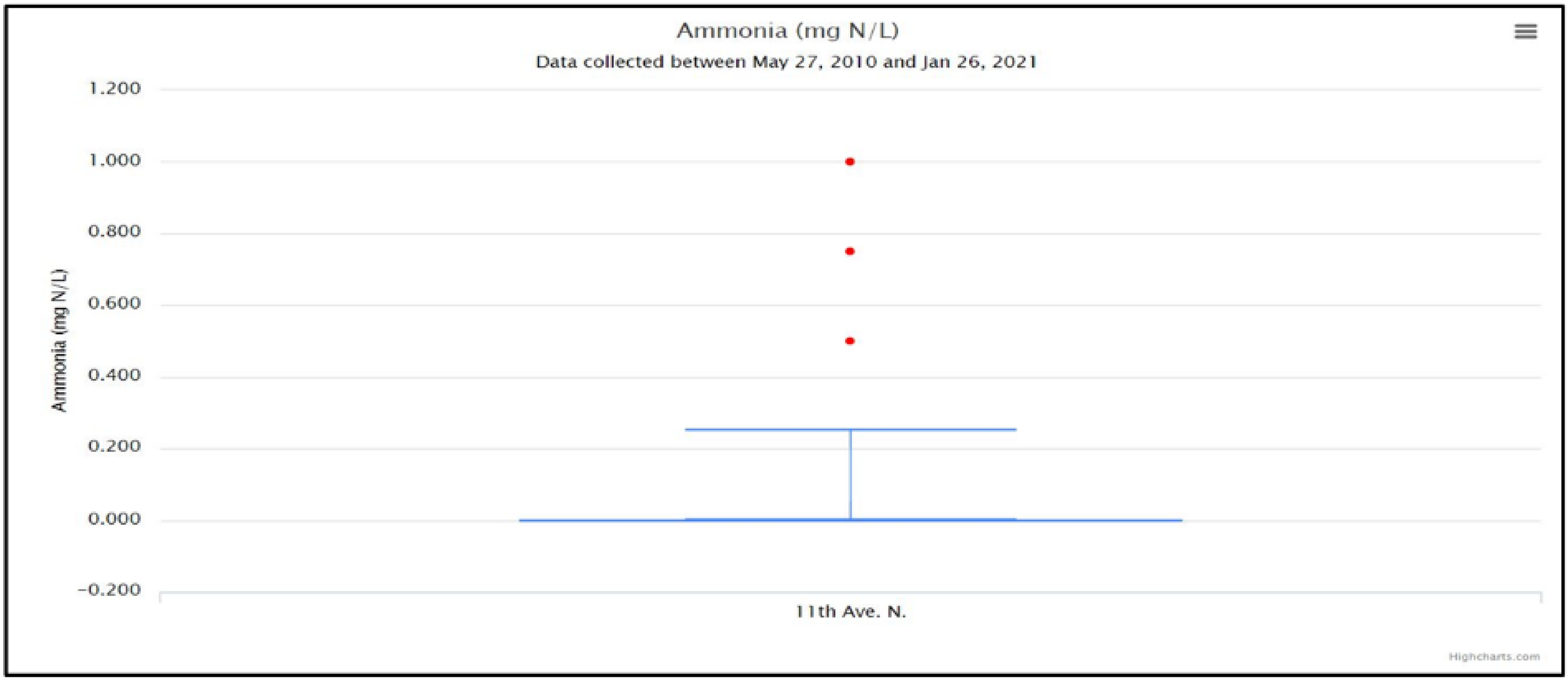

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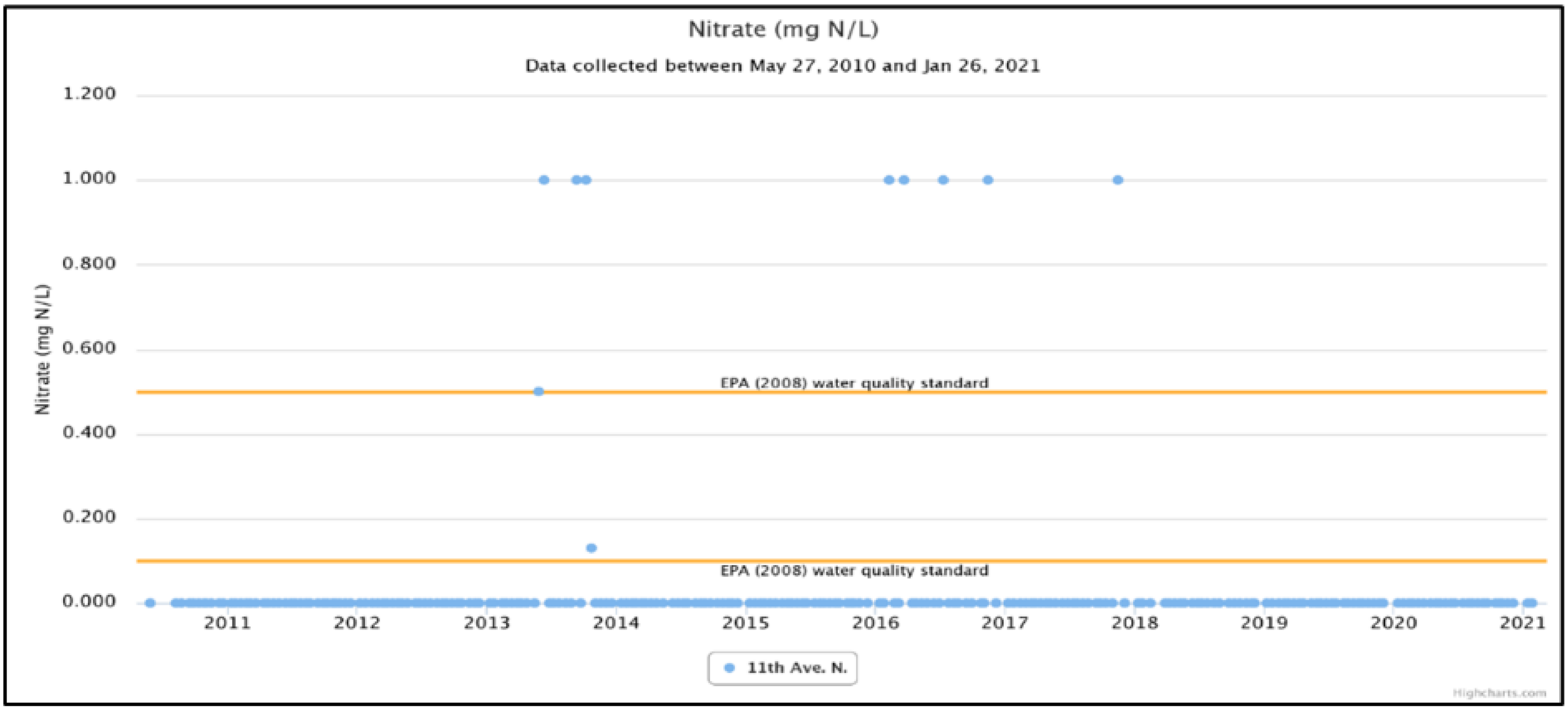

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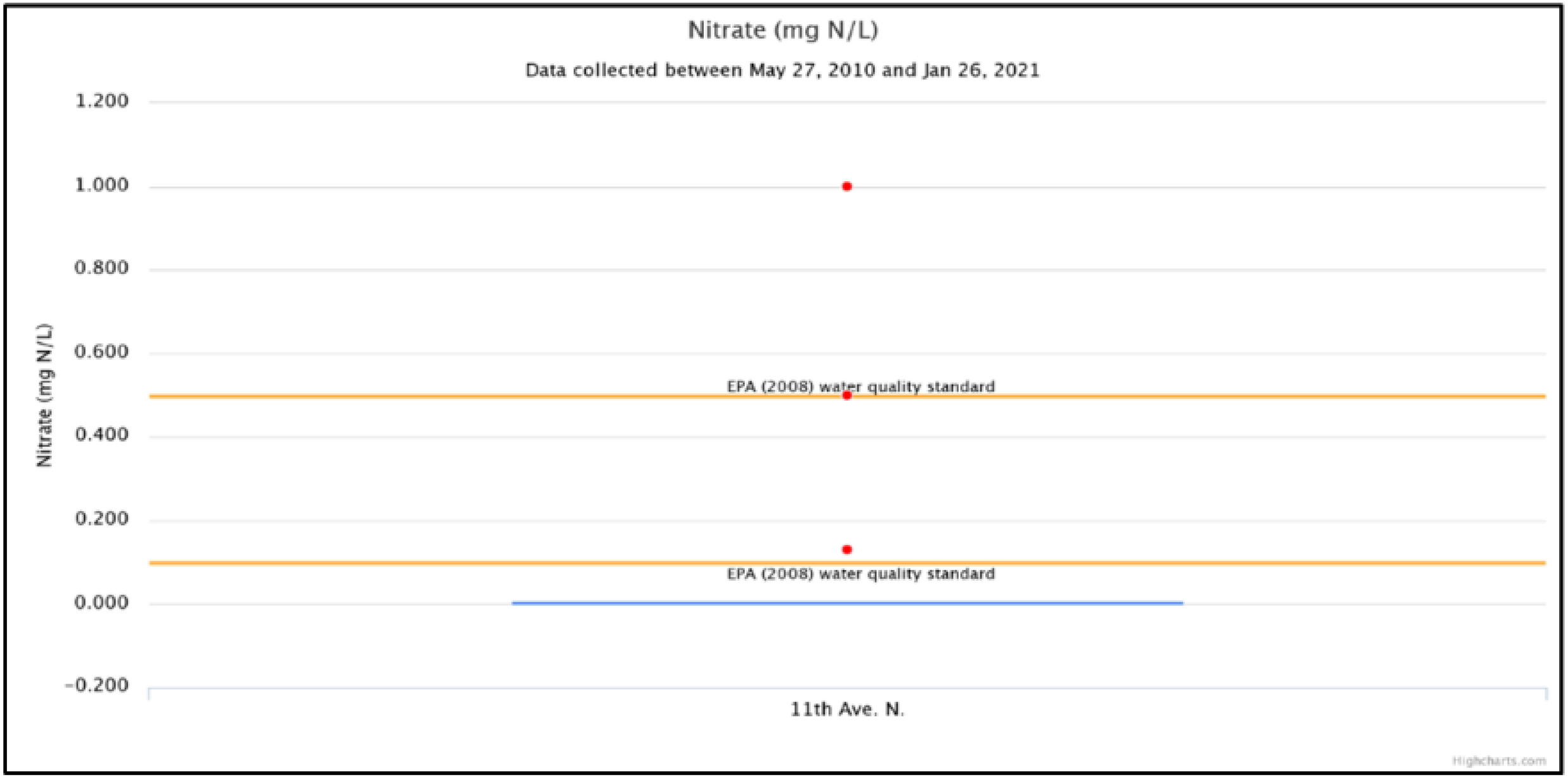

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