

Stream Surveying

Christopher Moreno
NIU Environmental Studies Undergraduate



Acknowledgements

- Hey & Associates – Contractor – Stream Characteristics
- Dr. Melissa Lenczewski – Water Quality
- Dr. Carl Von Ende – Aquatic Organisms
- Donna Prain, Scott Horlock – Vegetation/Riparian zone
- Joshua Nixon, Chris Moreno – NIU undergrads



Overview

- **Goals**
- **Method(s)**
- **Materials**
- **Stream sites**
- **Conclusion**



Goals

- **Create a stream survey checklist that can be utilized by citizens for continuous monitoring.**
- **Establish a known set of parameters of identifying current stream conditions.**
- **Create a combined program between Sycamore High School, NIU, and the community.**
- **Collect a snapshot of the Kishwaukee watershed in the local area.**



Methods

- **Ohio EPA - Qualitative Habitat Evaluation Index (QHEI)**
- **Lake County Stormwater Management Commission (SMC) – Stream Inventory Procedures and Form**
- **Merged into one checklist**
- **QHEI values streams on 1-100 scale**
 - > 70 excellent
 - < 30 very poor
- **Modified QHEI scale values streams on 1-120 scale**
 - Added sections: WQ, AO,
 - NIU expertise

Methods

- **Sites were chosen prior by Donna Prain et al**
- **200 foot reach**
- **50 feet away from structures(manmade i.e. bridges)**
- **Begin downstream***

Methods

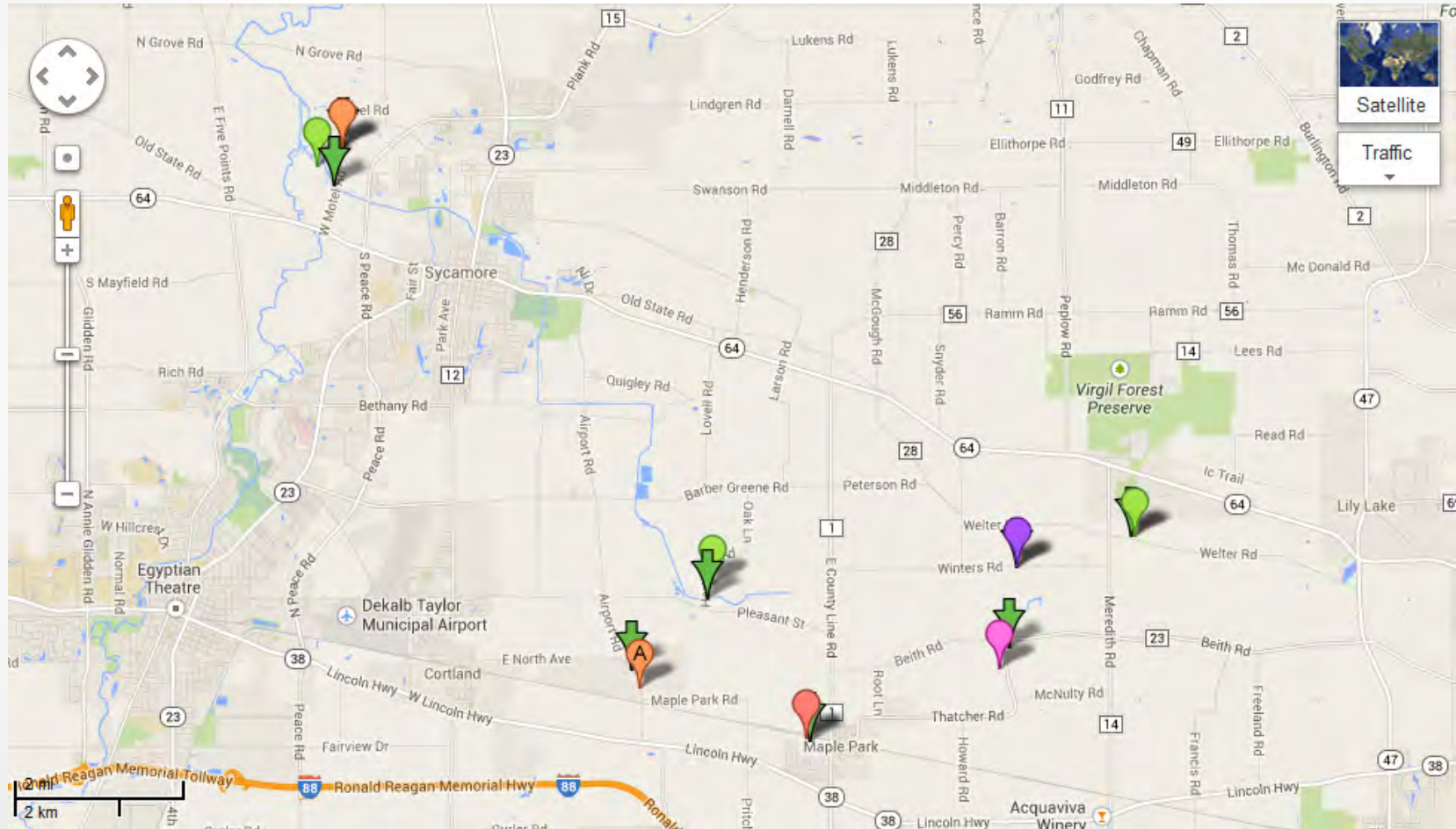
- **Divided sections**
 - **Water quality**
 - **Stream profile**
 - **Aquatic organisms**
 - **Vegetation & Riparian Zone**

Materials

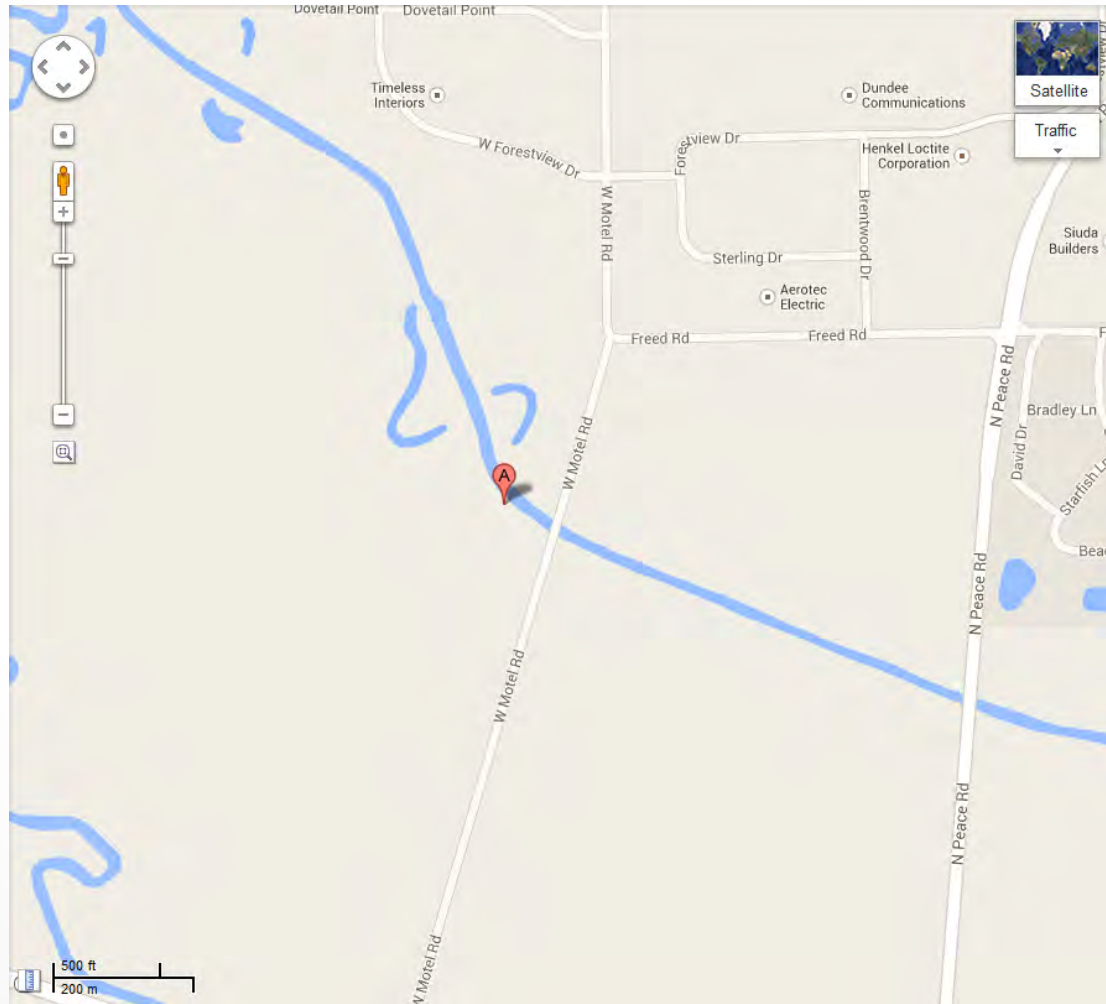
- **Phone apps (gradient/slope/GPS)**
- **Shared Drives (Dropbox)**
- **Safety Vests**
- **Recording equipment (temp, pH, conductivity, etc)**
- **Measuring equipment (flags, tapes, poles, etc)**



Stream Sites



Stream Site #1 Kish



Stream Site #1 Kish

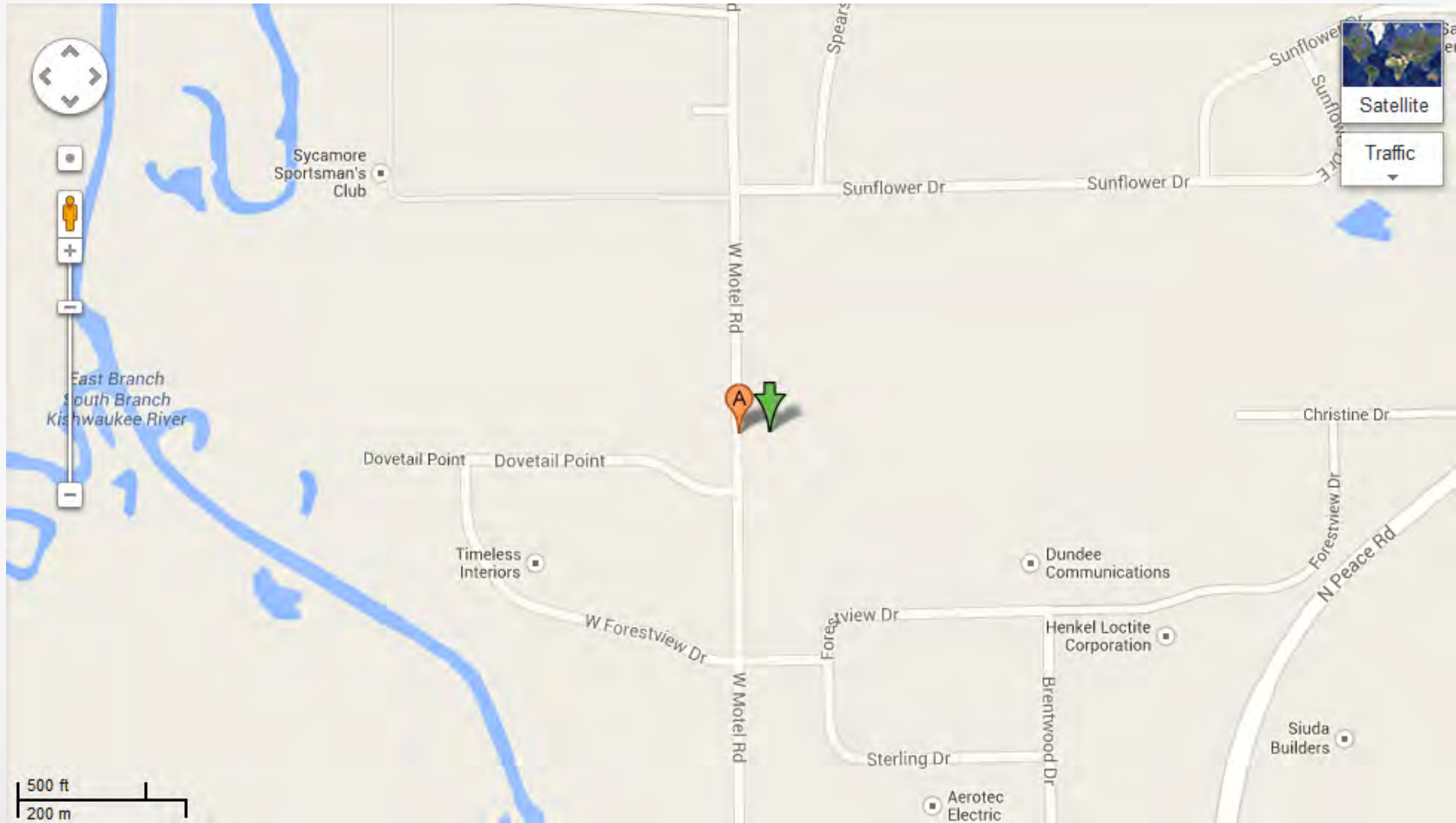
The screenshot displays a GIS application interface. At the top, there are three status boxes: the first shows coordinates '41.94329 N, 88.53231 W', the second shows 'Current map scale: 1: 4,514', and the third shows 'Mouse coordinates: 42.002192, -88.717717'. The map area shows a yellow curved line representing a stream segment. A 'Measure' tool window is open in the bottom-left corner, showing options for Color (yellow), Size (10), Distance Units (Feet), and Area Units (Square Miles). Below these options, the 'Measure Results' section displays 'Length: 206.16 ft'. The map also features a vertical red line and two red numbers, '25' and '30', on the ground surface. The bottom of the map shows the text 'W. Moyal Rd' and 'Illinois State Geological Survey | MNR, Esri, DeLorme, HERE, TomTom, In'.

Stream Site #1 Kish

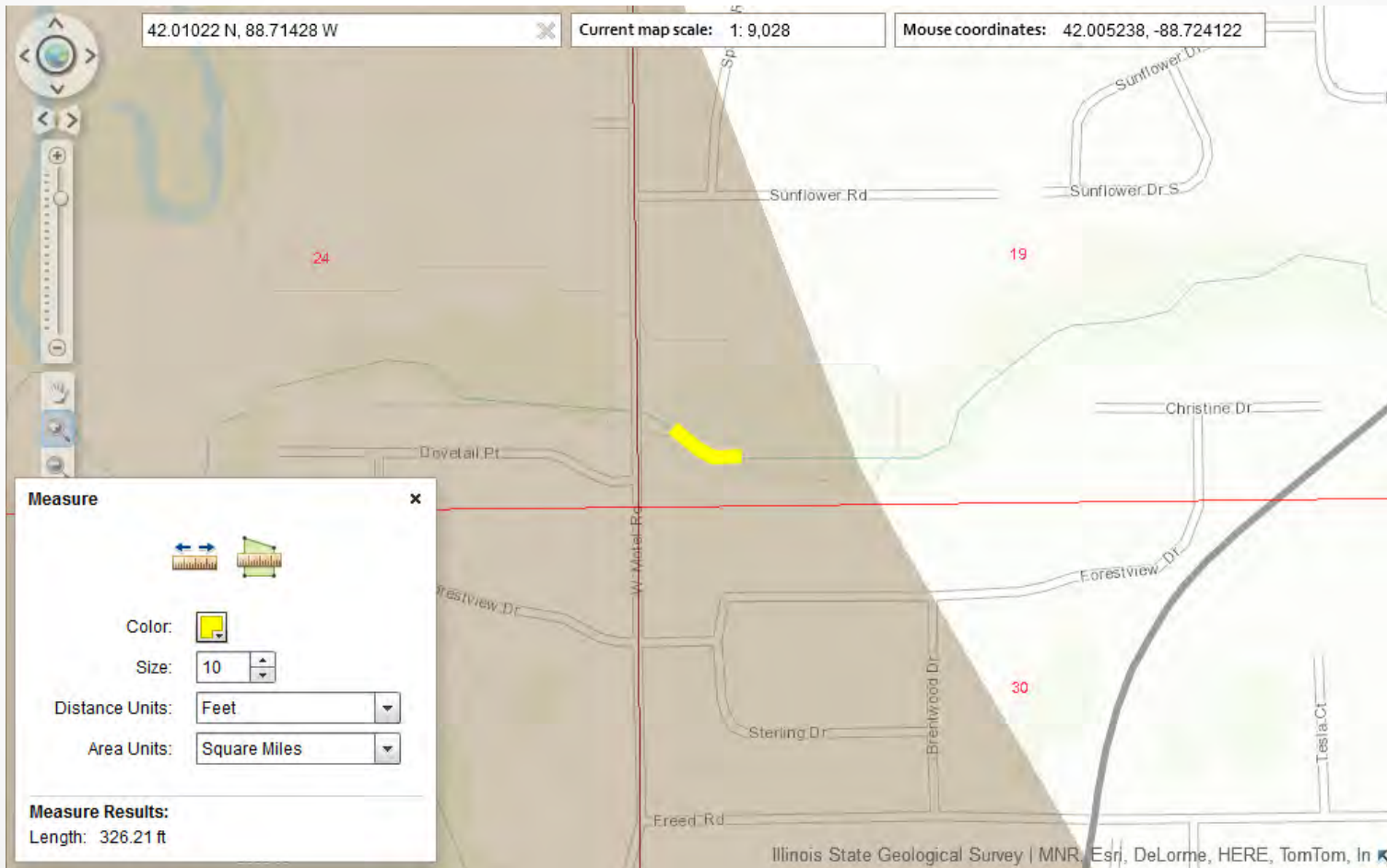
- QHEI Score: 44
- *QHEI Score : 55
- 19 clams
- Small areas of erosions (Low)



Stream Site #2 Heron



Stream Site #2 Heron

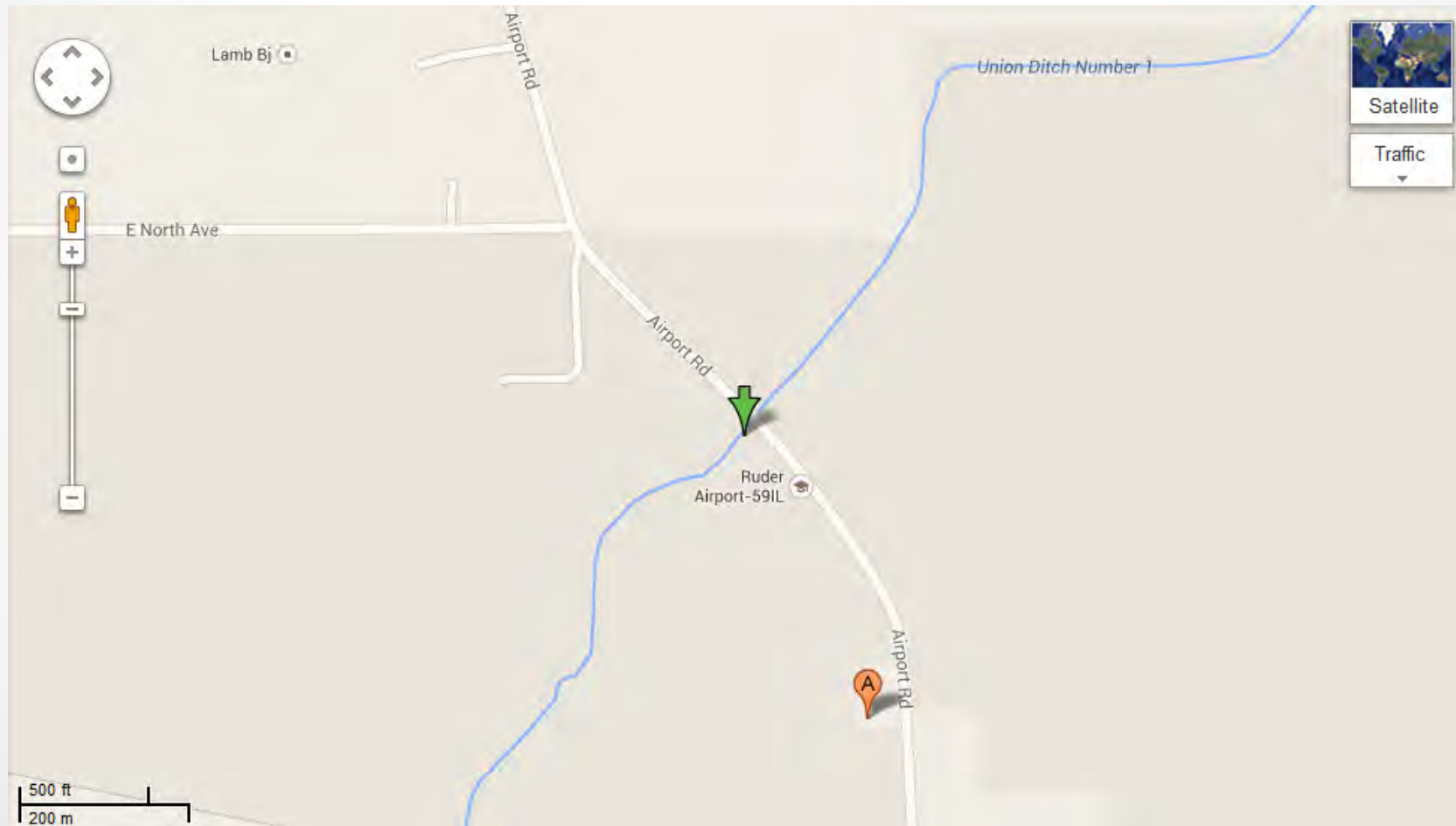


Stream Site #2 Heron

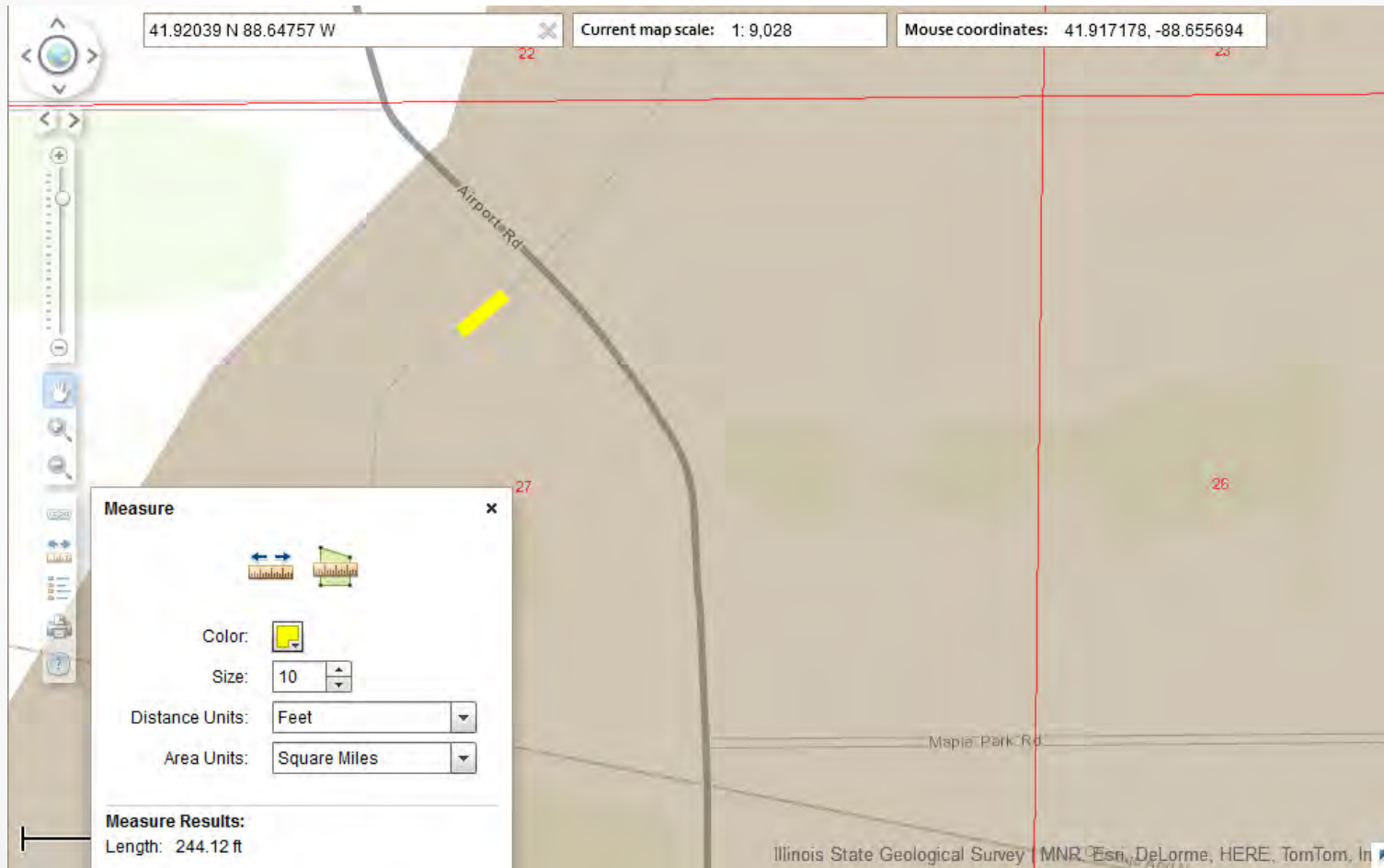
- **QHEI Score: 30**
- ***QHEI Score: 39**
- **10 dead clam shells**
- **Heavy silt**
- **Log debris**



Stream Site #3 Union 1



Stream Site #3 Union 1

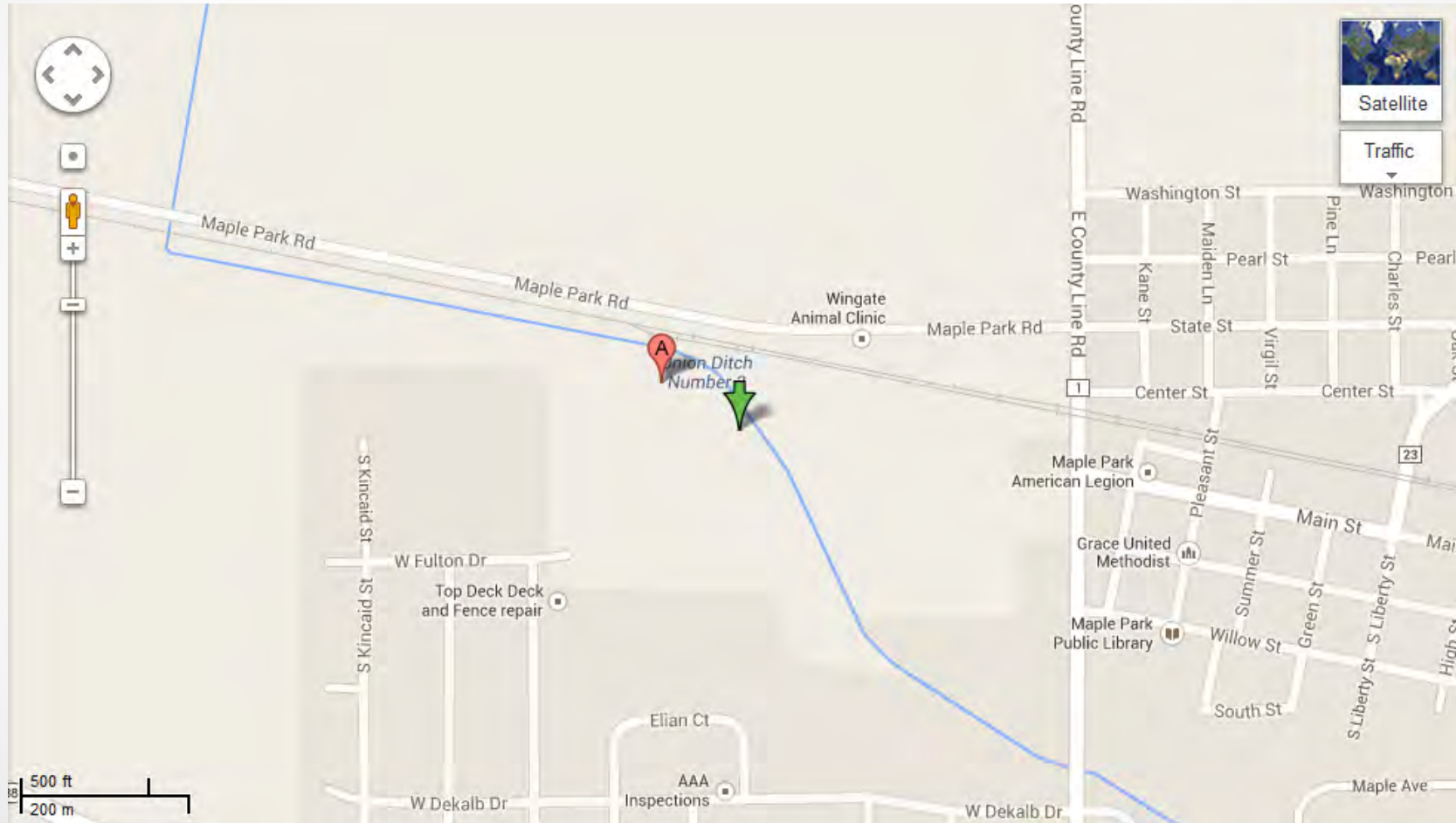


Stream Site #3 Union 1

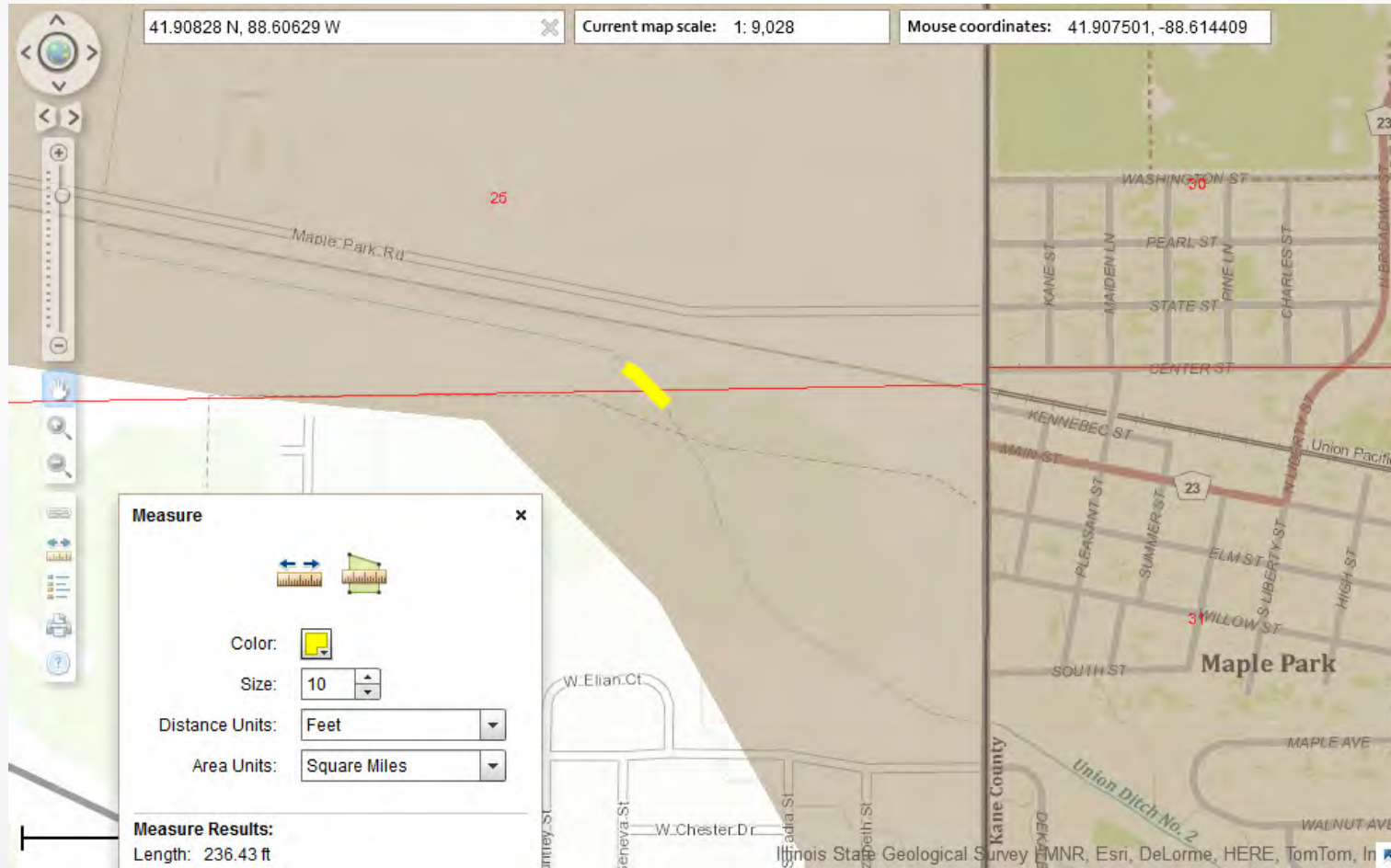
- QHEI Score: 48
- *QHEI Score: 54
- Algae



Stream Site #4 Union 2



Stream Site #4 Union 2

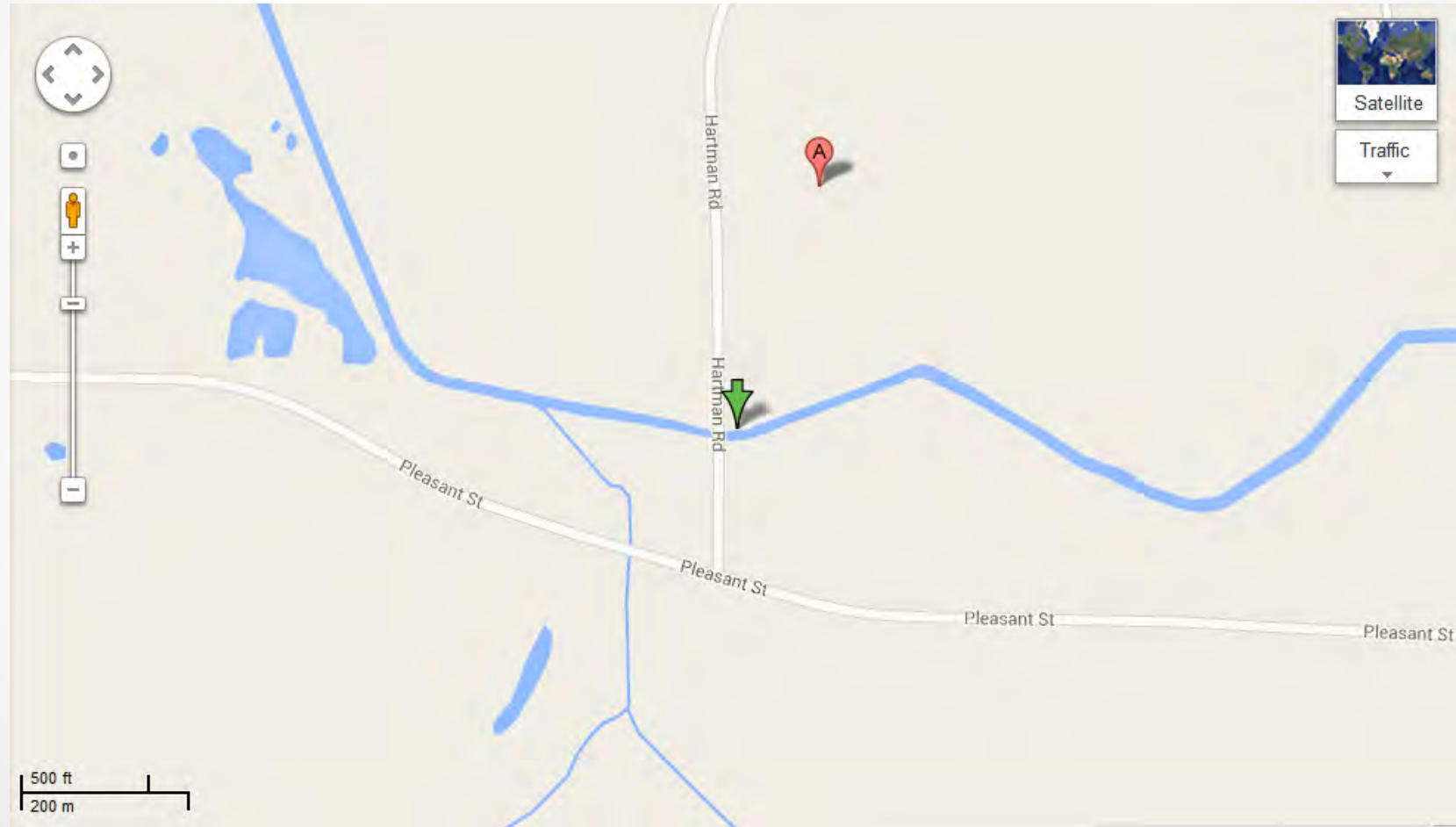


Stream Site #4 Union 2

- QHEI Score: 35
- *QHEI Score: 42
- Narrow/low (5'-6' bottom width)
- Odor



Stream Site #5 Union 3



Stream Site #5 Union 3

41.93259 N, 88.63012 W

Current map scale: 1: 9,028

Mouse coordinates: 41.926789, -88.638120

Hartman Rd

Pleasant St

23

24

Pleasant

Measure

Color:

Size:

Distance Units:

Area Units:

Measure Results:
Length: 217.89 ft

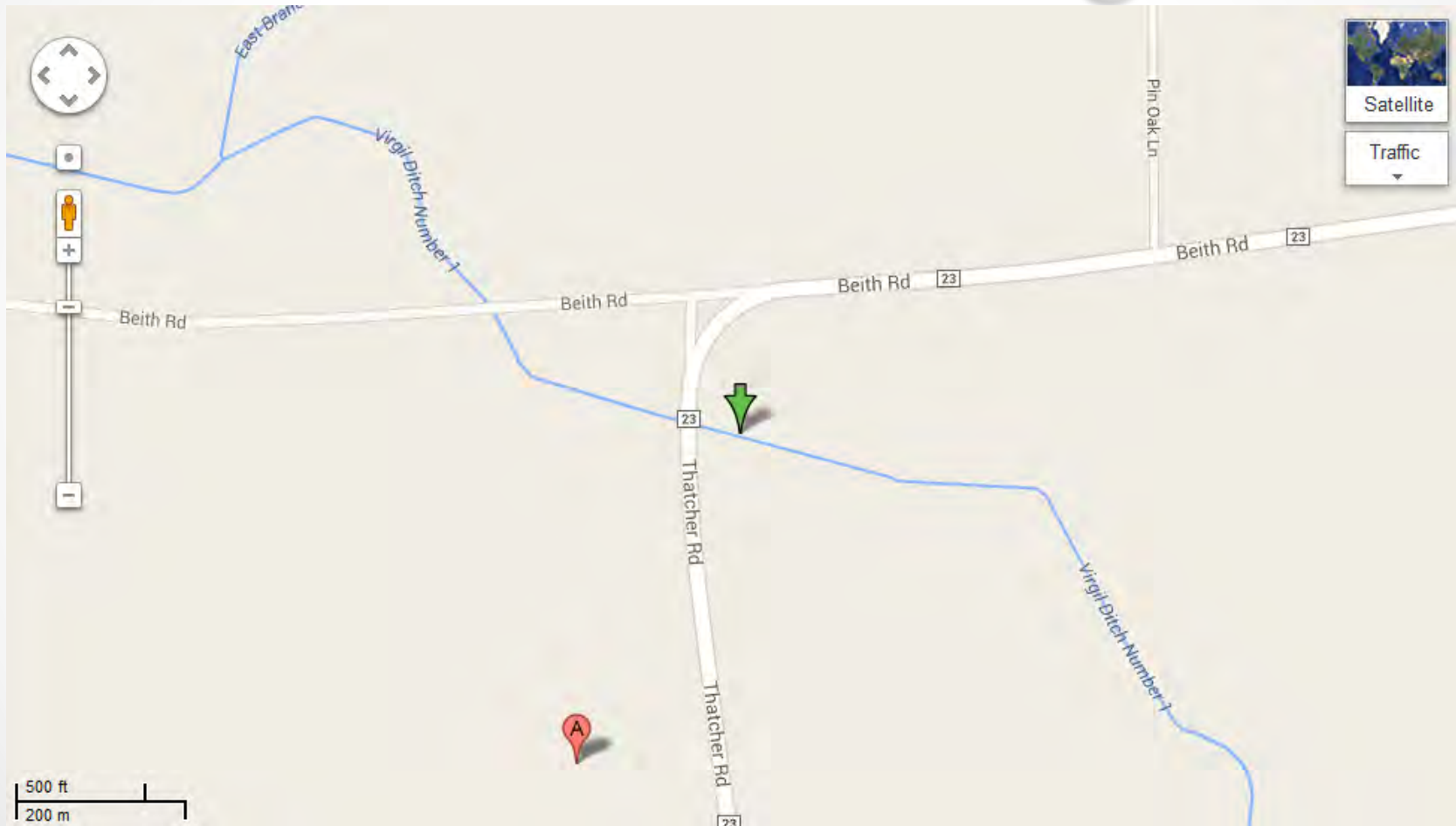
Illinois State Geological Survey | MNR, Esri, DeLorme, HERE, TomTom, In

Stream Site #5 Union 3

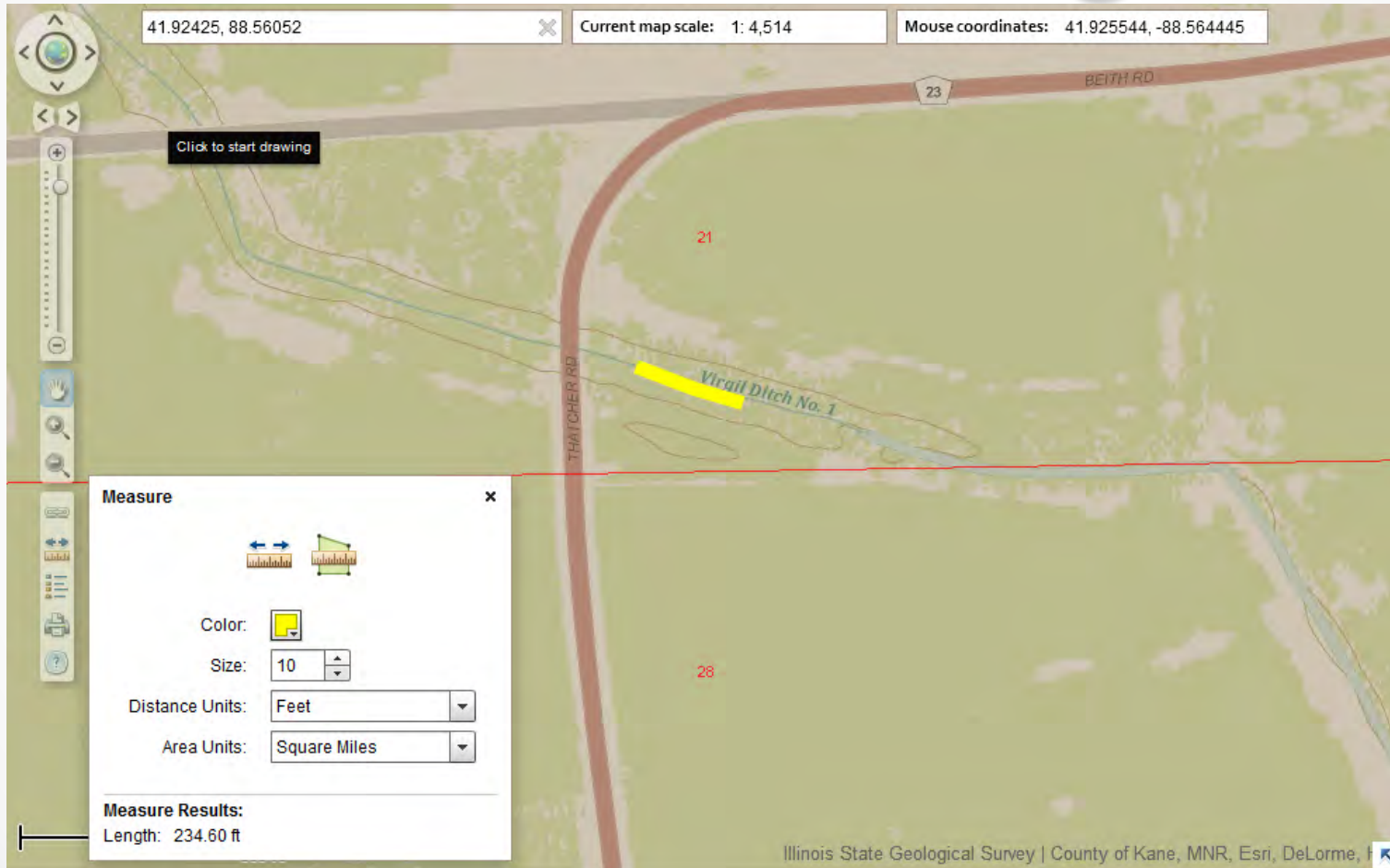
- QHEI Score: 26
- *QHEI Score: 38
- Silt bed blocking flow (RCG)
- 31 clams



Stream Site #6 Virgil 1



Stream Site #6 Virgil 1

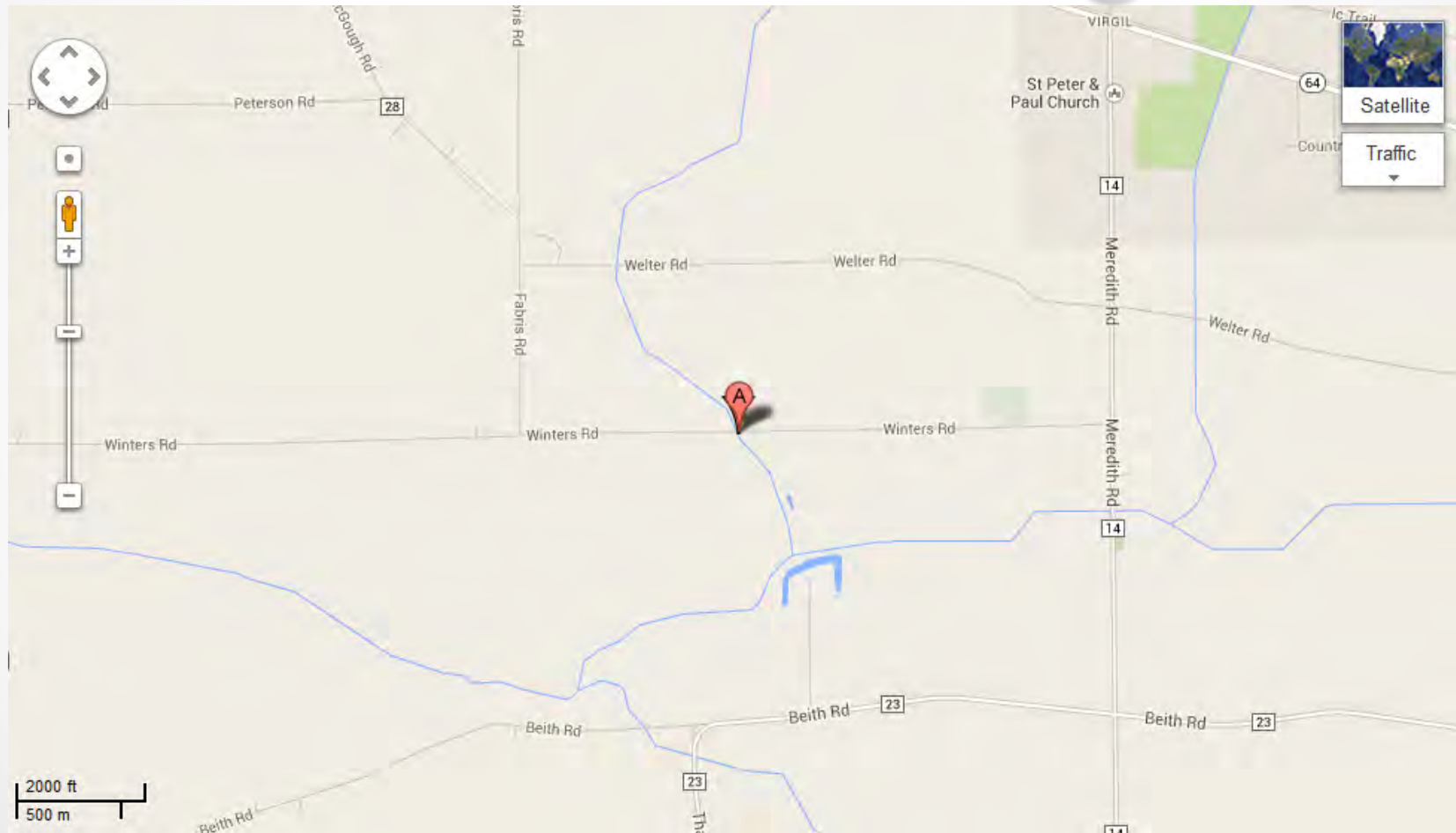


Stream Site #6 Virgil 1

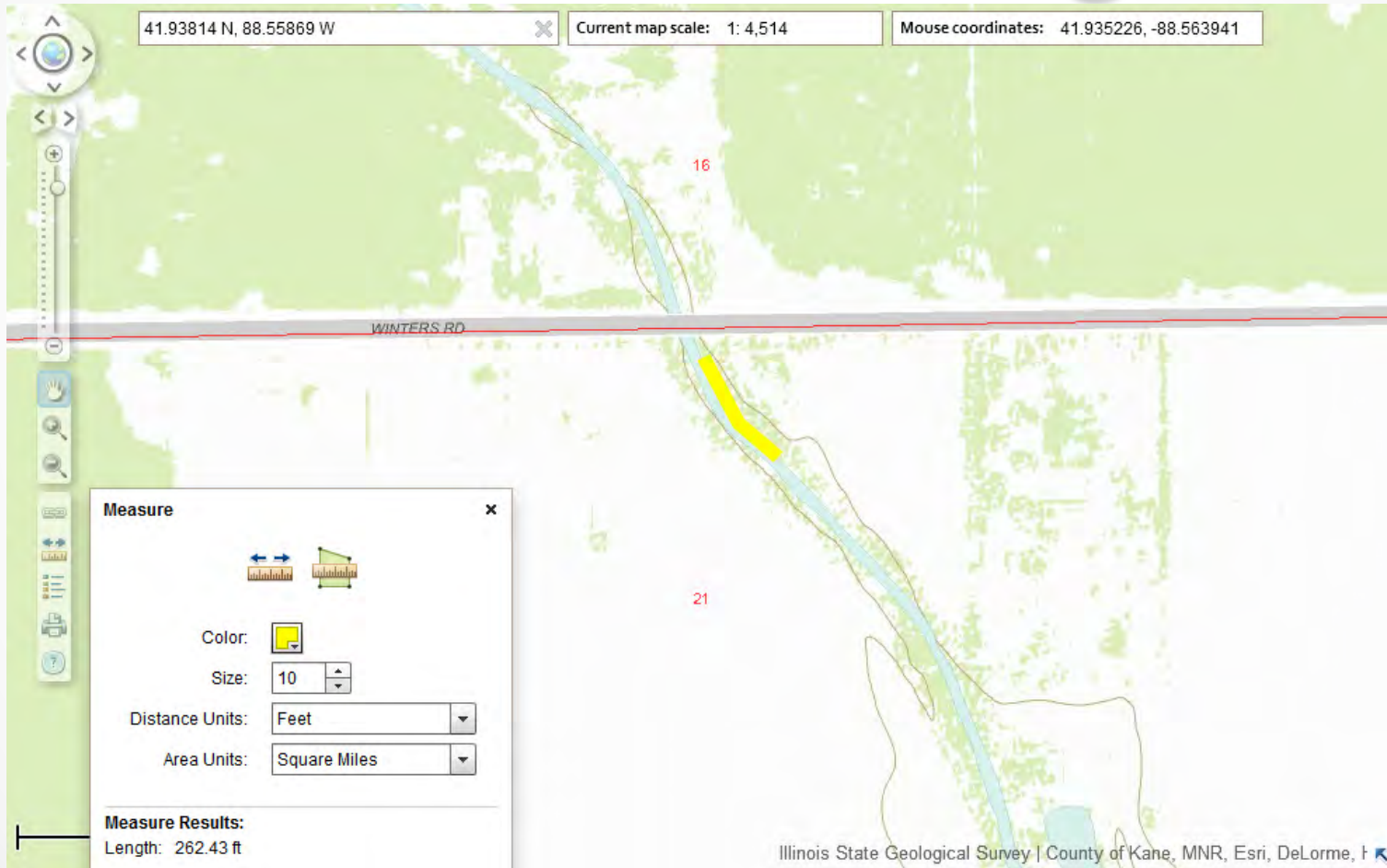
- QHEI Score: 37
- *QHEI Score: 46
- Moderate debris
- Trash/litter
- Birds



Stream Site #7 Virgil 3



Stream Site #7 Virgil 3

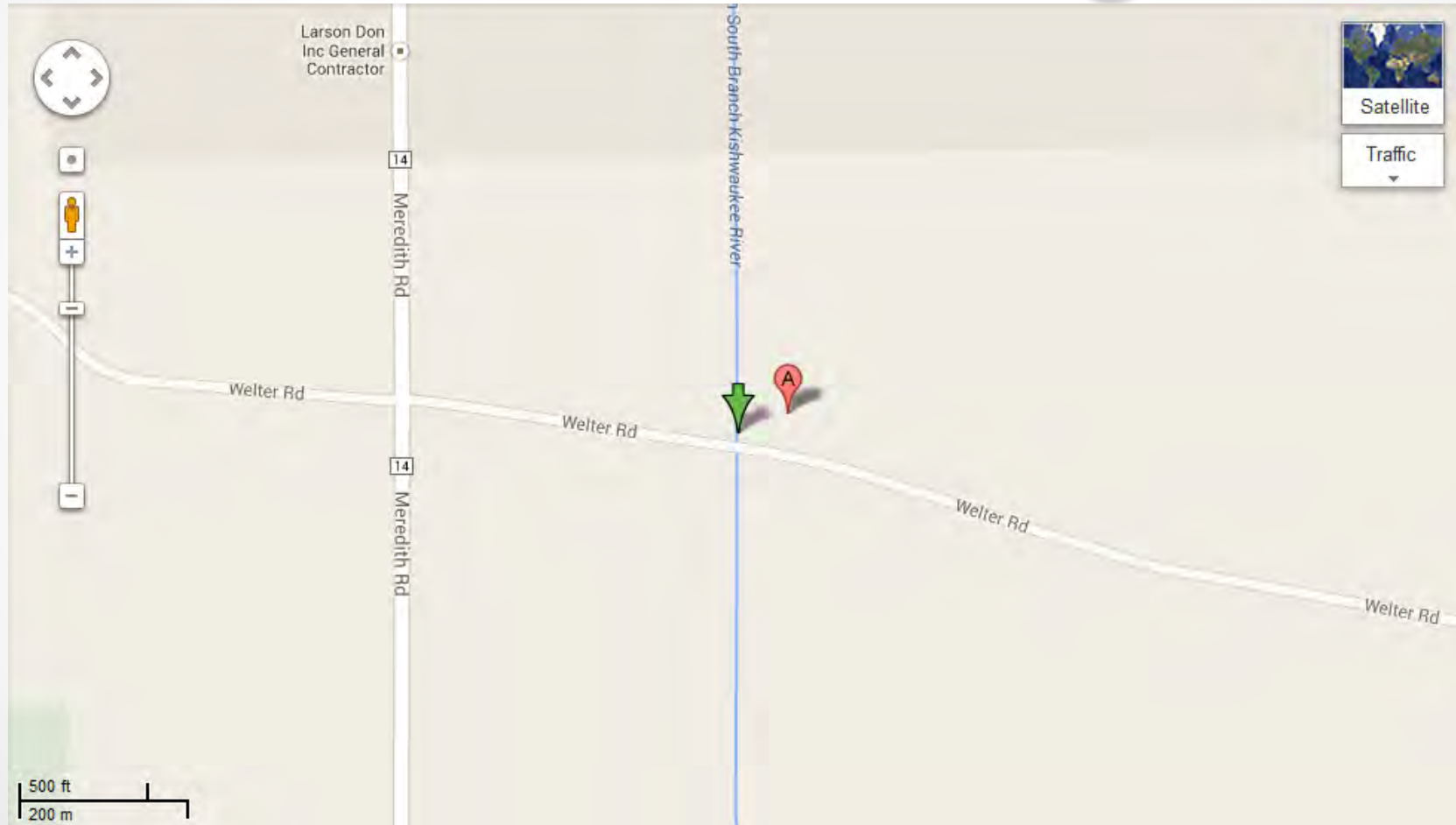


Stream Site #7 Virgil 3

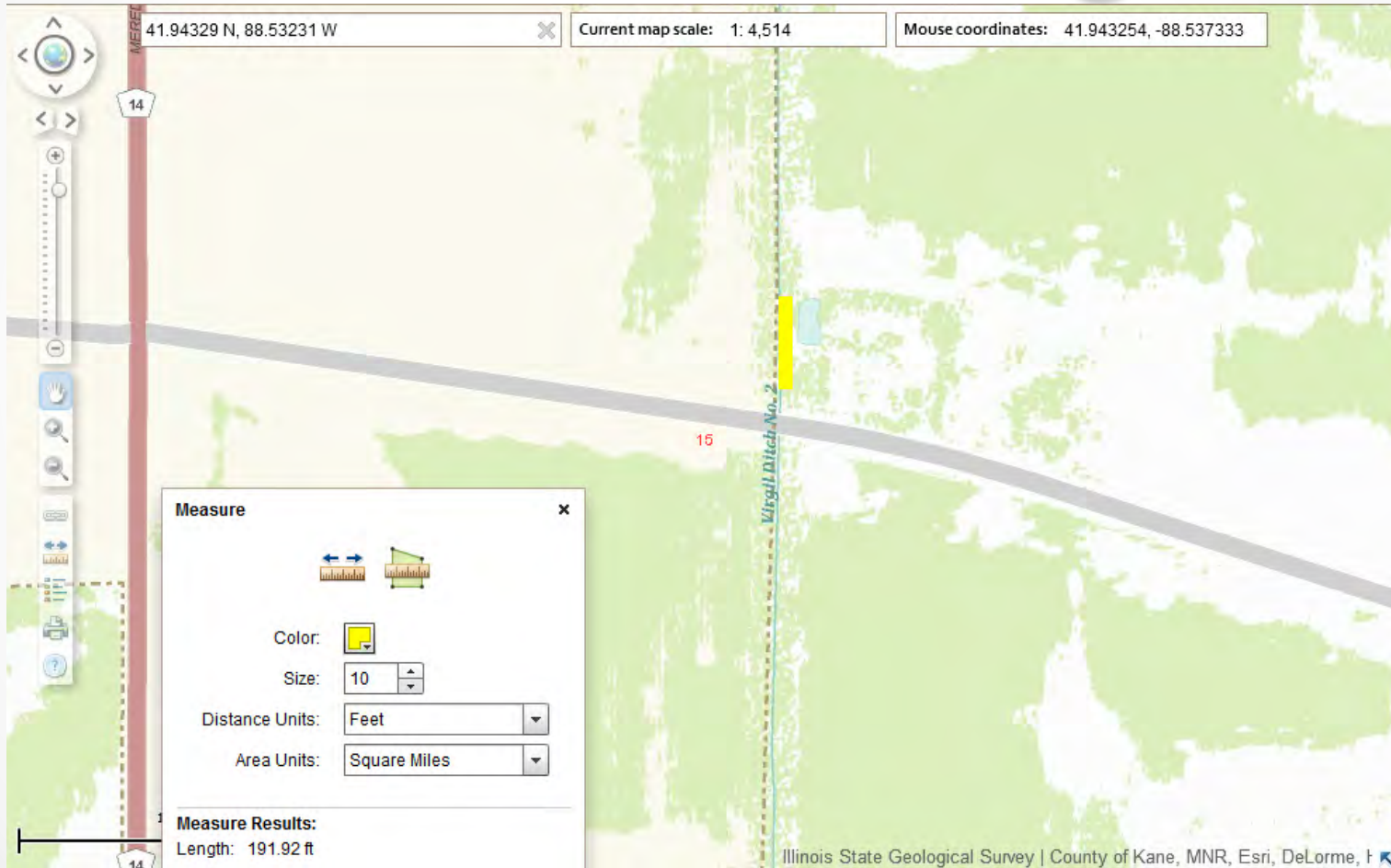
- QHEI Score: 57
- *QHEI Score: 69
- Cobbles/gravel
- Pool/Riffle development



Stream Site #8 Virgil 2



Stream Site #8 Virgil 2



Stream Site #8 Virgil 2

- **QHEI Score: 54**
- ***QHEI Score: 58**
- **Concrete slab**
 - Supporting resident bridge
- **High Nitrate level**
 - 117 mg/L



Conclusions

- The streams surrounding Sycamore are generally in their low stage in the months of July – Sept.
- Calms were found in 3 of the sites with 2 other sites finding evidence of presence before (Shells)
- Odor nuisance was found in 2 streams
- Oil sheen observed, determined as iron reducing bacteria
- Erosion fairly low in reach areas with some moderate mid-stream bars/islands obstructing stream flow.
- Debris load main source is from fell trees

•

•

Conclusions

- **Diverse level of aquatic organisms**
- **Bird specialist would be beneficial**
- **Stream flow absent in low stage streams**
- **Algae in some streams**



Conclusions

- Avg QEHI: 41 (*50)
- Max QEHI: 57 (*69) Site #7 – Virgil 3
- Min QHEI: 26 (*38) Site #5 – Union 3

Future Development

- **Sycamore High School curriculum**
- **Stormwater management grant**



Questions

