The Open Water Project

www.openwaterproject.io

Catherine D'Ignazio
Research Assistant
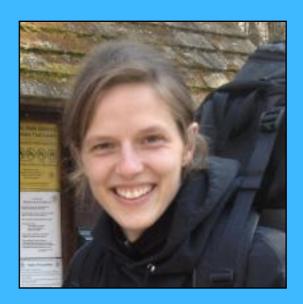MIT Center for Civic Media

publiclab.org

The Team

- -- the Public Lab Community!
- Don Blair (Public Lab, UMass Amherst Physics)
- Juan Camilo Cardenas, Professor, University of Los Andes, Bogotá
- Heather Craig - Research Assistant, MIT Center for Civic Media
- Adrienne Debigare (New Media Catalyst, Boston Globe)
- Catherine D'Ignazio (Assistant Professor of Civic Media and Data Visualization, Emerson College & Research Affiliate MIT Center for Civic Media)
- Ben Gamari (UMass Amherst Physics)
- Mark Green - Assistant Professor of Hydrology, Center for the Environment, Plymouth State University
- Patrick Herron - Water Quality Monitoring Director, Mystic River Watershed Association
- Mary Martin - Research Assistant Professor at the Institute for the Study of Earth, Oceans, Space, University of New Hampshire
- Charlie Schweik, Associate Professor, Center for Public Policy and Administration, UMass Amherst
- Jeff Walker (Ph.D. in "Water: Systems, Science and Society program" at Tufts University).
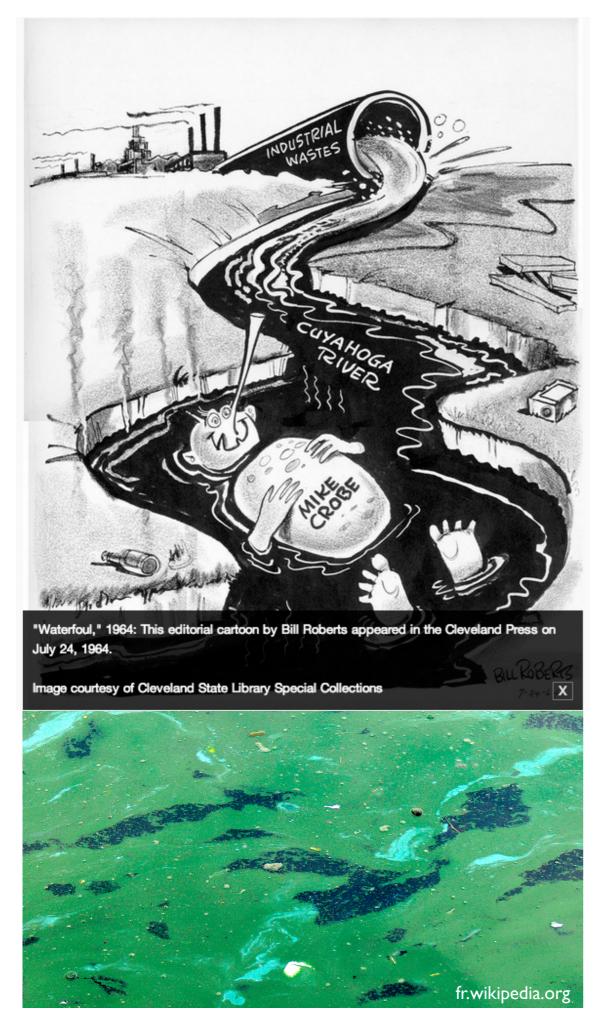- Jennifer Welbourne - Science Teacher at Amherst Middle School in Amherst, MA

Don Blair

Adrienne Debigare

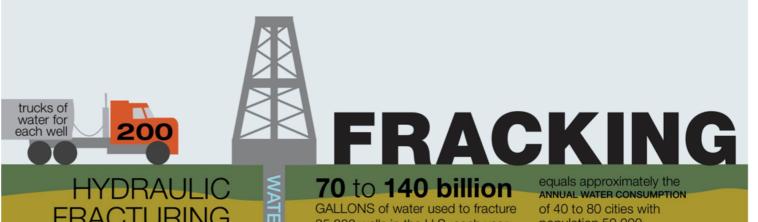Heather Craig

Jeff Warren &
Shannon Dosemagen

"Waterfoul," 1964: This editorial cartoon by Bill Roberts appeared in the Cleveland Press on July 24, 1964.

Image courtesy of Cleveland State Library Special Collections

fr.wikipedia.org

Water monitoring is important to:

- Science & Environmental Journalists
- Watershed Managers & Municipal Governments
- Hydrologists
- Climate Science
- Environmental Advocacy Groups
- Farmers
- USGS
- STE(A)M Educators
- Individuals and Communities affected by CSO events, fracking, runoff, heavy metals, and other pollutants in the system

trucks of water for each well

200

HYDRAULIC FRACTURING

WATE

FRACKING

70 to 140 billion
GALLONS of water used to fracture

equals approximately the
ANNUAL WATER CONSUMPTION
of 40 to 80 cities with

The Five Opens
www.openwaterproject.io

- Open Hardware
- Open Software
- Open Data
- Open Community
- Open Education

Water Quality is Complex
What People Want to Measure is Varied
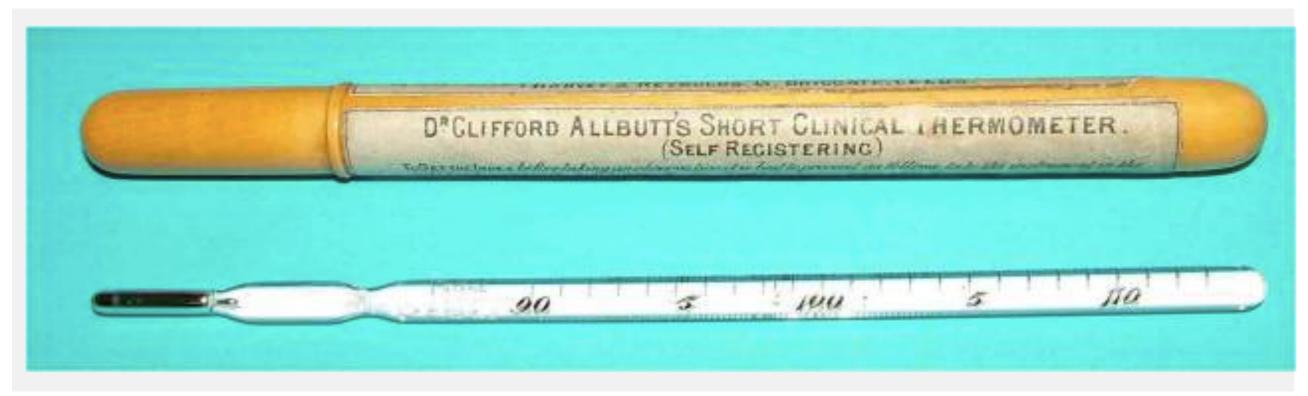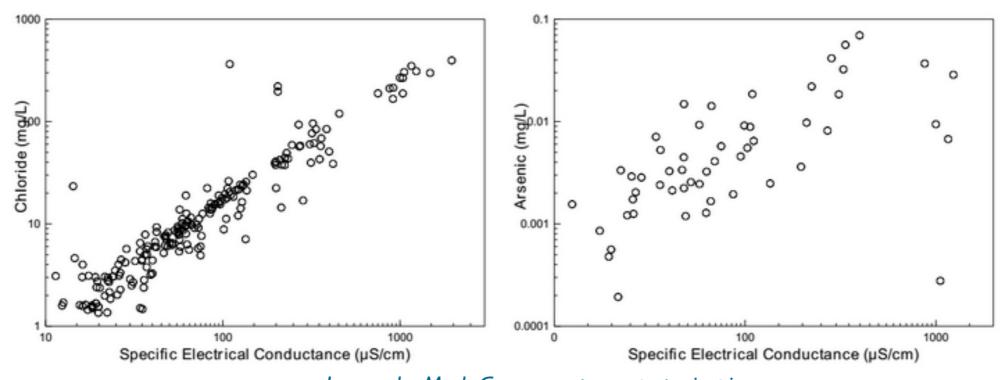# But We Can Use Simple Measures as Indicators

Water Quality is Complex
What People Want to Measure is Varied
But We Can Use Simple Measures as Indicators

Water Electrical Conductivity Sensing to Monitor Pollution

Water conductance of electricity is related to the amount of dissolved ions, which makes electrical conductivity a front line indicator of water pollution. For example, at sites across northern New England, electrical conductivity is related to water pollutants like chloride and arsenic.
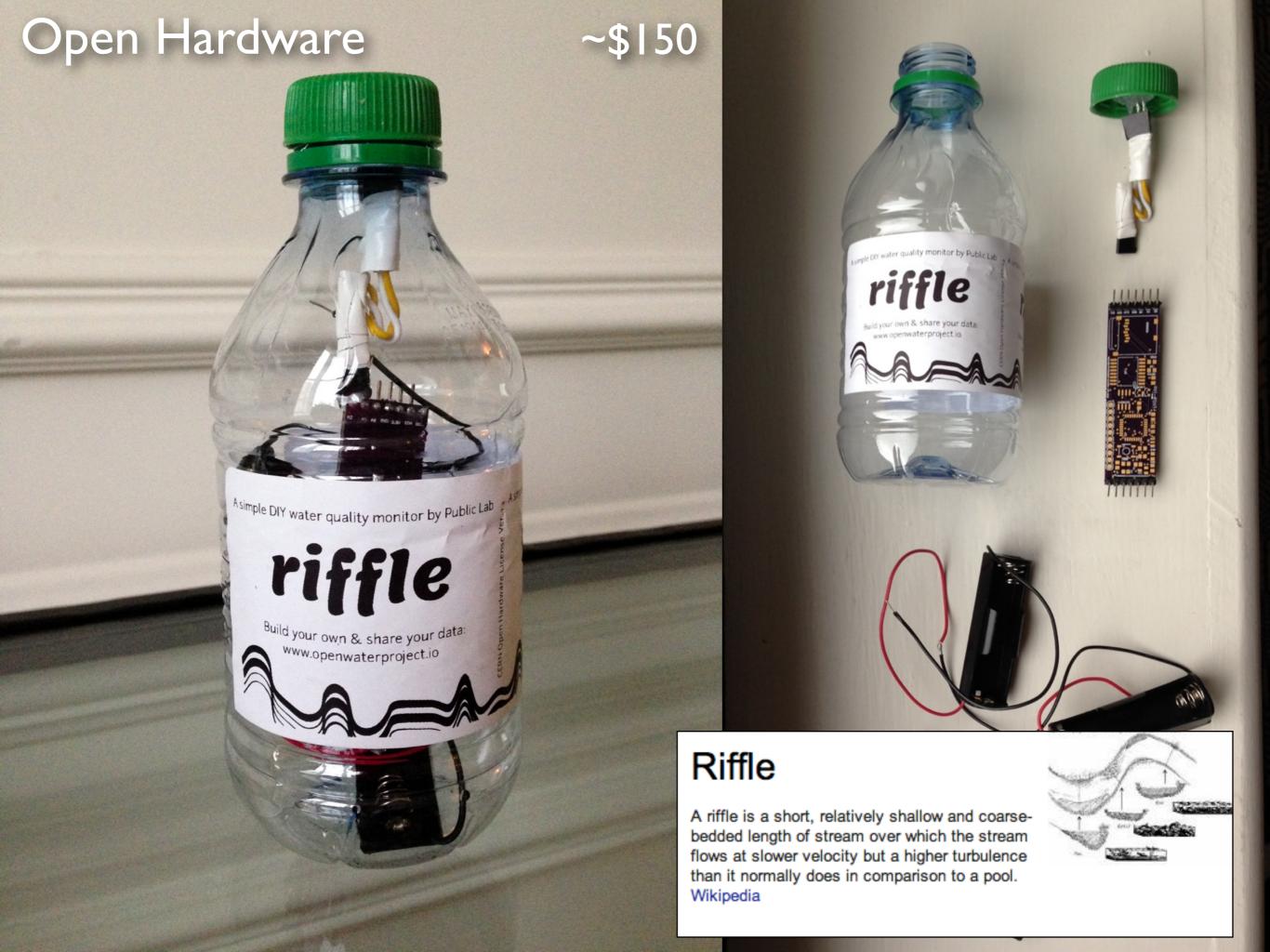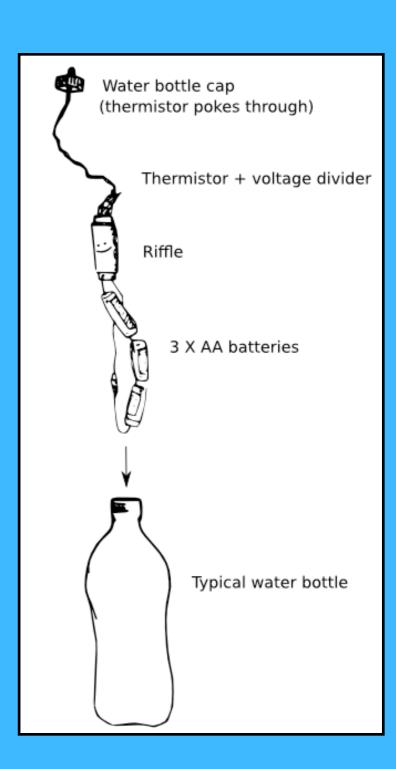

Images by Mark Green on openwaterproject.io
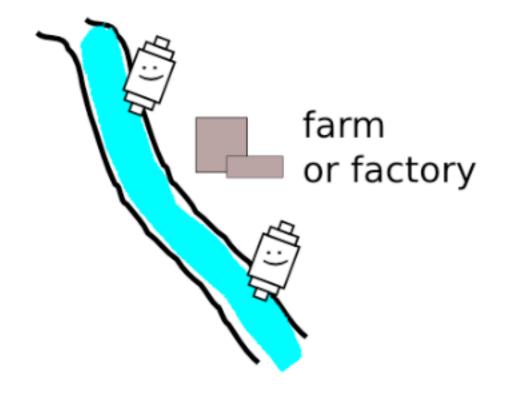
Who can measure?

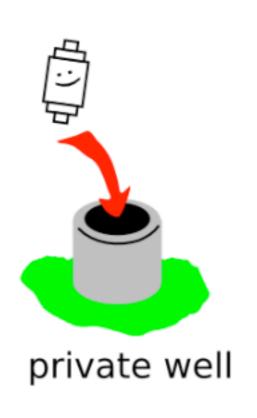Commercial products: ~$1500 for
the hardware and software
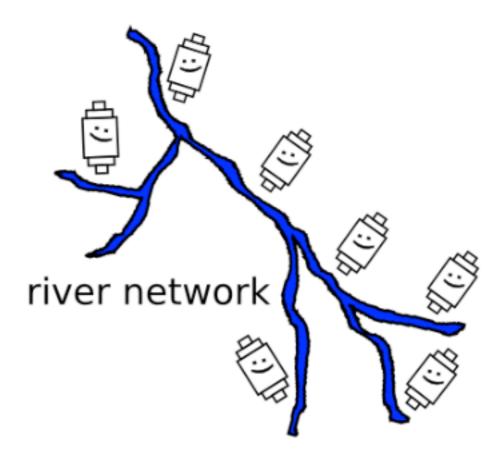
Open Hardware   ~$150

riffle

A simple DIY water quality monitor by Public Lab

riffle

Build your own & share your data:
www.openwaterproject.io

Riffle

A riffle is a short, relatively shallow and coarse-bedded length of stream over which the stream flows at slower velocity but a higher turbulence than it normally does in comparison to a pool.
Wikipedia

Open Hardware

- Temperature
- Conductivity
- Depth

Water bottle cap (thermistor pokes through)

Thermistor + voltage divider

Riffle

3 X AA batteries

Typical water bottle

farm or factory

private well

river network

Open Software & Open Data

Mark G's Citizen Water Monitoring Network in NH
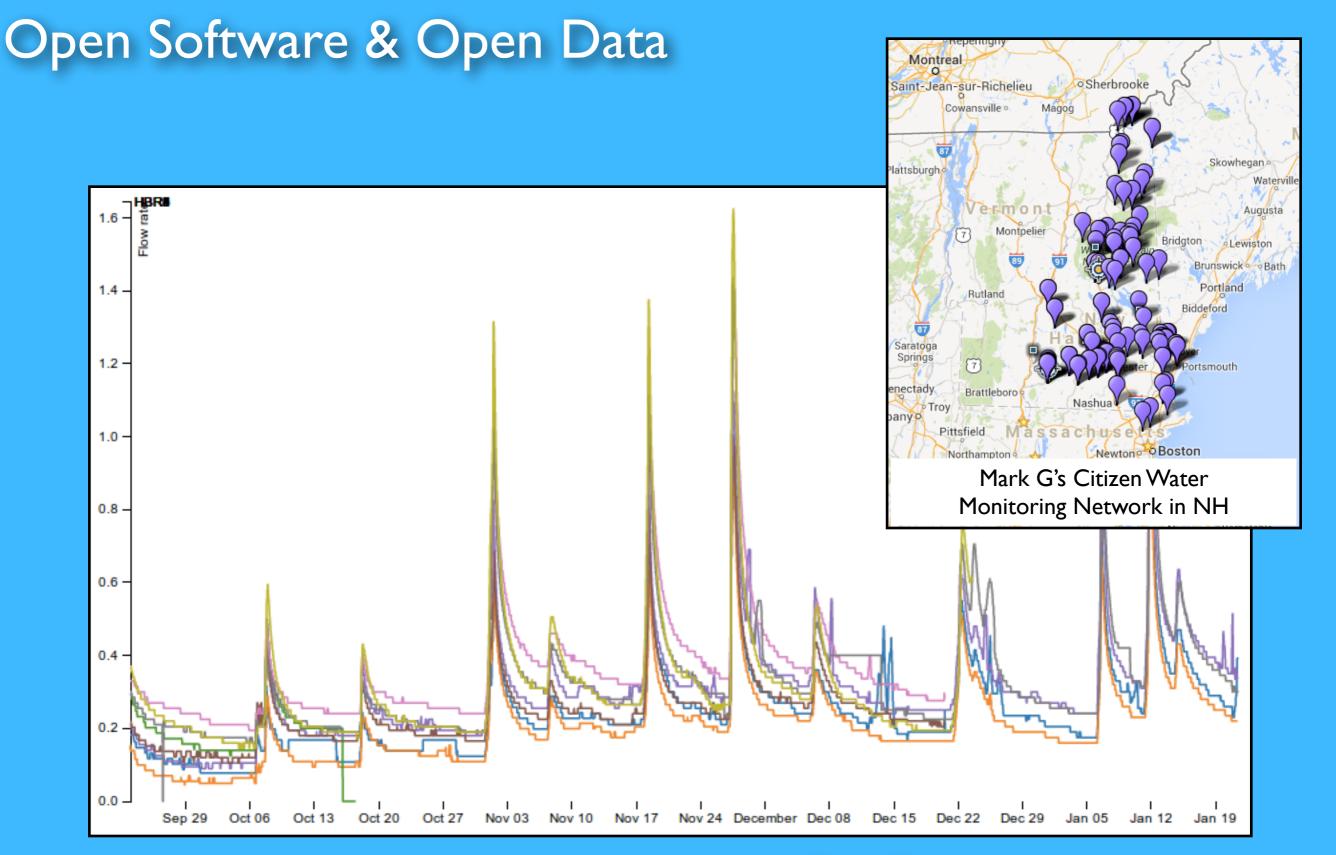
www.openwaterproject.io

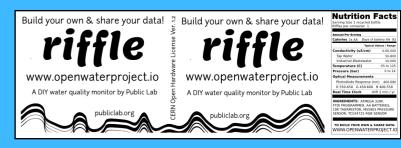# Open Community

A Public Lab Initiative

The Open Water Project was begun by Public Lab, a community where you can learn how to investigate environmental concerns. Using inexpensive DIY techniques, we seek to change how people see the world in environmental, social, and political terms. Public Lab creates a collaborative network of practitioners who actively re-imagine the human relationship with the environment.
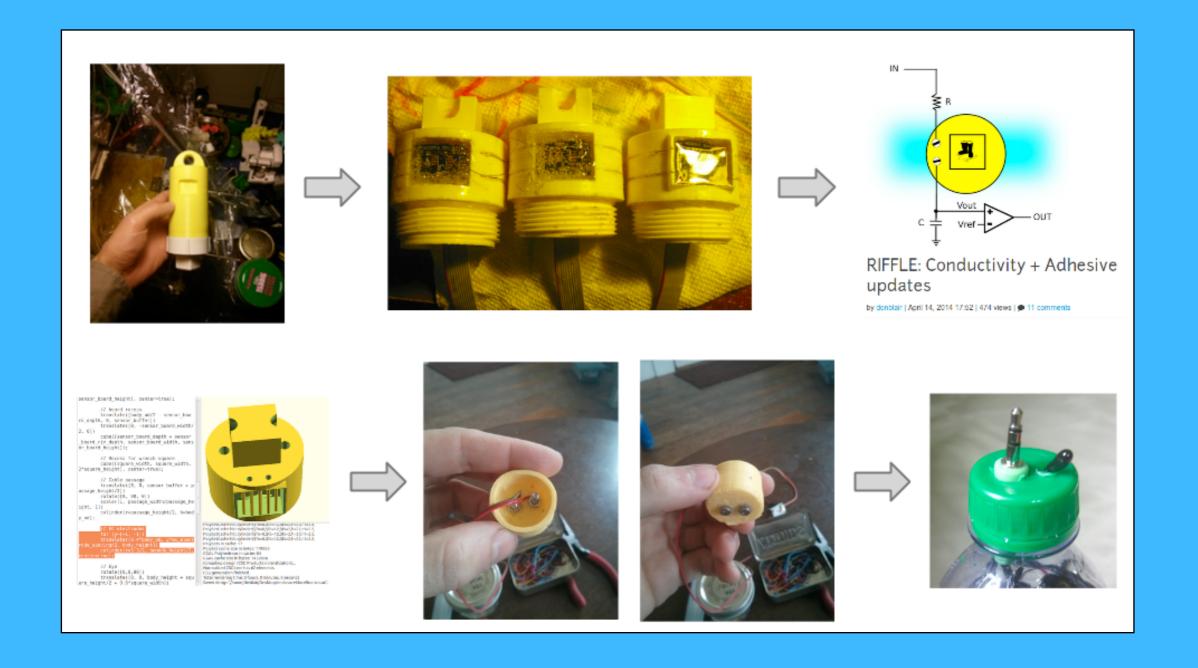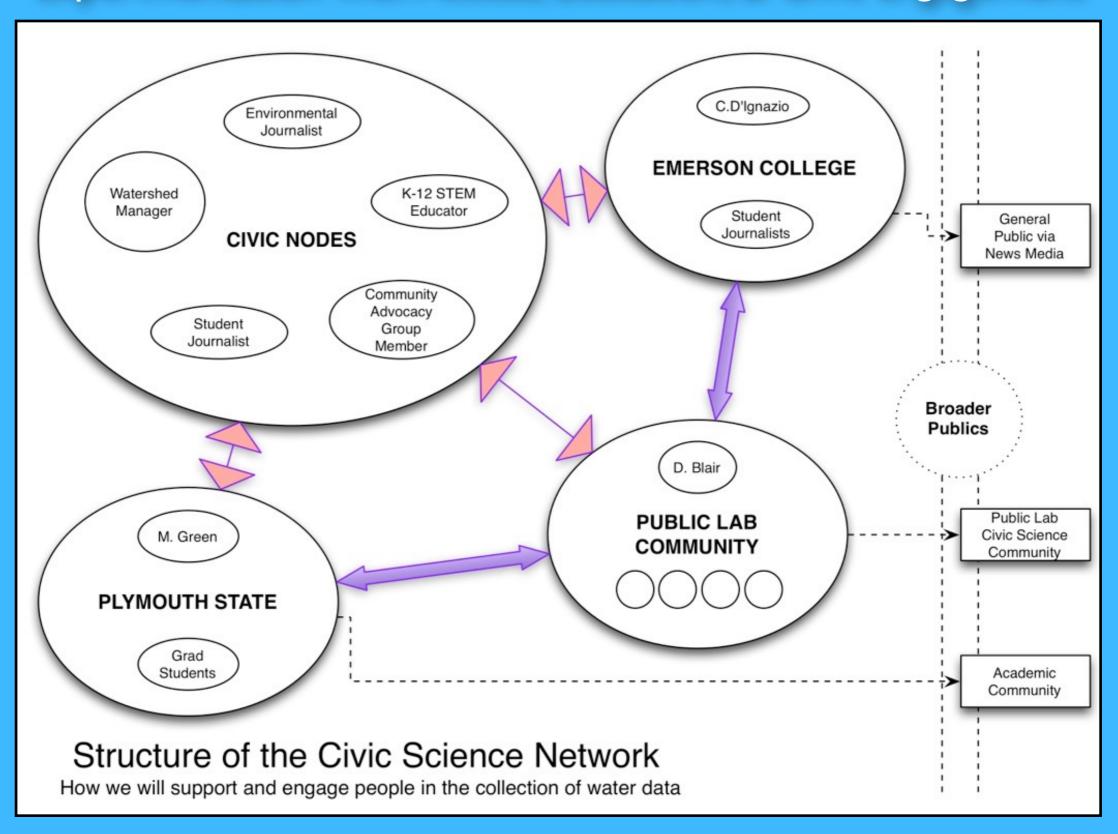
Open Community

Pilot Sites & Partners

- Mystic River/Mystic River Watershed Association
- Tidmarsh Farm Restoration Project, Plymouth, MA
- Merrimack River/Plymouth State, NH
- Cape Cod/Cape Cod Bay Watch, MA

Open Education

Experimentation with Access, Education, & Civic Engagement

Structure of the Civic Science Network

How we will support and engage people in the collection of water data

Get Involved

- Seeking media and community information partners for a journalism-education-science experiment

- Email us on the Public Lab water quality list: https://groups.google.com/forum/#!forum/plots-waterquality

riffle