I have strong ties to Wisconsin, so I was thrilled when Public Lab received funding in early 2014 to work in the Western part of the state assessing impacts of frac sand mining. Sand frac mining is an often-overlooked part of the production line in the fracking process that is having a huge impact on Wisconsin’s water and ecology. I believe the ability for us to assess frac sand mining impacts is indicative of a new level of maturation for Public Lab: we have established the infrastructure to support a new way to do science collaboratively, and now we can dig deeper into specific topics.

In early 2014, we were able to hire two additional staff members to provide more support for community outreach and development, including assisting local community projects, engaging deeper in the cultural aspects of participation, and launching new programs (like OpenHour) to test structures for supporting collaborative models of research, design and action.

Public Lab is creating new ways for people to collaborate on environmental monitoring and engagement. This type of transformational work takes time, and in our fourth year we reached a new level of capacity in both our abilities and depth of focus. We are creating new designs for environmental monitoring tools and techniques, reimagining the configuration of proprietary devices, and establishing a space that allows for expertise to arise in various forms, while supporting both regional and cross-geographic collaboration.

In 2014 we launched our Fellowship program, which provides funding and support for Public Lab community members to focus on the use of community data or tool development. We’ve also launched two new projects around indoor air quality and water monitoring.

One of the goals when we started in 2010 was to create, collect, and share data that communities could use. To further support this objective, in January of 2015, we launched our Data Advocacy Initiative to support work across the “full data lifecycle” from problem identification to data collection to using the data for action. This new initiative is supported by our Data Ambassador who is focused on thinking through how we replicate and scale the goals that people outline in their work and how Public Lab methods and tools can support those goals. We’re making strides towards reestablishing science as a resource that can leverage the needs of communities, fill in information gaps, and accompany community-generated narratives to provide deeper insight into a side of environmental analysis that is many times missing.

–Shannon Doemagen
Executive Director
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Open Land Initiative

The Open Land Initiative encourages people to document local environments through aerial and ground-based photography. Launching community satellites thousands of feet in the air from New Orleans to Rio de Janeiro, people are capturing high-resolution imagery of the world below, supplemented by ground-based imagery and notes.

During 2014, the Public Lab community focused on the following projects:

- Aerial Mapping: Using kites and balloons, communities across the globe are doing aerial mapping to document changes to land, capture the scale of social events such as protests, and help communities contribute to planning processes.
- The Infragram Project: Using modified cameras and DIY camera-hacking methodologies, individuals and groups can detect the health of plants and identify certain invasive species.

Open Water Initiative

The Open Water Initiative supports communities who seek to investigate, address, and share information about the water quality issues that concern them. From detecting oil contamination to measuring water conductivity, the Public Lab community aims to develop a set of tools for collecting, interpreting, and sharing water chemistry data.

During 2014, Public Lab supported the following projects:

- The Homebrew Sensing Project: A variety of low-cost, open hardware and software spectroscopy units that can be used to indicate contamination by compounds such as oils.
- Riffle Water Monitoring: A low-cost, open hardware device that will measure some of the most common water quality parameters such as temperature and conductivity.
- Coqui Data Logger: An open-source data retrieval, storage, and export device compatible with a variety of sensors, including the Riffle.
- Thermal Fishing Bob: A DIY device to detect and log changes in water temperature, which can indicate pollution sources in a waterways.

Open Air Initiative

The Open Air Initiative supports the work of individuals and groups across the globe focused on creating better indoor and outdoor air quality for their communities. From interest in measuring the amount of silica dust in the air to creating an at-home set-up for monitoring formaldehyde levels, the Public Lab community is working toward creating easy, understandable, accessible tools and techniques for monitoring airborne toxics.

During 2014, the Public Lab community focused on the following projects:

- Particulate Sensing: Measuring and detecting particulate matter using sensing devices around frac sand mining sites in Wisconsin.
- Indoor Air Quality Monitoring: Creating a community portal (Where We Breathe) for sharing and recording information about air quality and health effects in manufactured housing, and developing tools available for self-testing through a “lending library” model. The Where We Breathe portal will launch Summer 2015.

Data Advocacy Initiative

In January 2015, Public Lab launched the Data Advocacy Initiative. The goal of this initiative is to support the use of community collected data in achieving tangible environmental outcomes. The initiative will include the development and incorporation of data quality assurance parameters in relevant field studies, relevant policy and regulation analysis, and strategic relationship-building to facilitate advocacy. Target environmental outcomes will be unique to each situation, but are anticipated to include contributions to policy discussions, regulation enforcement, litigation, and invoking larger environmental investigations.
Over 22,000 kits distributed internationally to date; 13,800 in 2014 alone.

Kits Initiative

The Public Lab Kits Initiative creates, assembles, and distributes kits from the open research designs of the Public Lab community to foster and develop the reach of open, accessible science by placing tools in the hands of those that need them. Revenue from the kits program directly supports the Public Lab nonprofit.

New Research Tools Distributed in 2014

- Infragram webcam
- Infragram point & shoot
- Hack Bundle Packs
- Acetate collimation slits
- Wheestat potentiostat
- Pole Mapping Kit
- Homebrew oil testing kits

During 2014, the Kits Initiative began incubating the research tools of community members. New community kits that will be available include 3D printed aerial mapping rigs, the MultiSynq, the Riffle, and Coqui for water monitoring, and home testing devices for formaldehyde.

Top Image by Linda Sandvik.
2014 Project Highlights

Barnraisings
The first regional Barnraising was hosted in June in Massachusetts on a wetland bog restoration research site. The Barnraising was 2 1/2 days long and gathered 30 people from Public Lab’s Northeast community, including representatives from local environmental justice organizations that are interested in incorporating community science into their programs. Together, through unconference style sessions, the attendees engaged in discussions, research and tool development around environmental justice issues of water quality.

The annual Barnraising in Louisiana brought together 54 people in mid November from around the US, Canada and the United Kingdom. People gathered to build, plan, and collaborate at LUMCON in Cocodrie, Louisiana.

Barataria Bay Mapping Project
The Gulf Coast Chapter wrapped up the Barataria Mapping project, producing a total of 20 maps which provide visual proof of how marshes oiled by the BP disaster were more prone to marsh loss. The results of this project were shared online and in a publication put together by community researchers.

New Orleans Wetland Mapping Project
Public Lab received federal funding from the EPA to support community researchers mapping eight wetland restoration sites around New Orleans. Between October, when the project began, and the end of the year, over 175 people participated in the project, which is ongoing through mid-2015.

Open Water Project in the Gulf
Community members in the Gulf became increasingly interested in the progress of the Public Lab Open Water Project. During the month of November, three local events attracted a total of 57 people to work on water monitoring issues and tools. One major outcome of these events was the expansion of the Open Water Toolkit to include a tool that could measure for water depth.

Frac Sand Project
A new project in the Midwest focusing on frac sand mining and air quality drew extensive interest from local universities (UW Stout and UW Eau Claire), organizations (Concerned Citizens of Bridgecreek, Concerned Citizens of Augusta, Concerned Citizens of Chippewa County, Save the Hills Alliance, the Crawford Stewardship Project, Buffalo County Defenders, The Wisconsin Farmer’s Union) and citizens concerned about environmental quality. In June, Public Lab partnered with the Concerned Citizens of Bridgecreek and University of Wisconsin Stout to map the Five Star Mine and nearby Hi Crush facility in Augusta, Wisconsin. This mine and processing plant are located adjacent to several Amish farms and the conveyor that travels between the two operations separates farm from farm fields. Public Lab returned to the region in October and sponsored a Dust Hack event drawing 17 local community members to the Hundredth Monkey Maker Space in Menomonie, Wisconsin to explore dust issues and the tools people are using to monitor dust.

LEAFFEST 2014
The third annual LEAFFEST, hosted by Organizer Chris Fastie, took place in Salisbury, Vermont in September. Alongside camping and potluck-style meals, attendees conducted a field deployment of the Riffle water monitoring tool, worked on the Oil Testing Kit, and tested protocols for producing calibrated NDVI values from infrared photos.

Partnership Developments in NY & NJ
New York City and New Jersey Public Labbers have focused on building community partnerships with environmental justice activists of the North Shore Waterfront Conservancy of Staten Island, North Brooklyn Boat Club, Flushing Bay Dragon boaters in Queens, community environmental managers at the Gowanus Canal Conservancy, and Newark community gardeners.

OpenHour
In June, Public Lab kicked off a new program called OpenHour. OpenHour is an interactive monthly seminar hosted by Public Lab, both online through Google Hangout and in-person. The topics of OpenHour vary from presentations on tools and methods, to environmental issues, to discussions on data-based advocacy. During the second half of 2014, OpenHour drew over 175 participants and over 350 total views.
2014 Community Growth

- **2,600 new mailing list members**
- **700 new research notes**
- **18,570 new spectra**
- **3 new chapters**
- **2,393 new Infragram users**

New homepage offers more collaboration features for community researchers.

New features:

- Give and showcase barnstars via research notes
- Select the language of a research note or wiki page
- Co-author research notes

Online community highlights:

- Organizers summit piloted in June with a full event launched in November
- Paper research notes created in the form of notepads
- “Ask a Question / Answer a Question” tagging system was added to publiclab.org

*Image Credit: Chris Fastie. LEAFFEST 2014, Salisbury, VT.*
2014 Event Highlights

# Participants.

**FEBRUARY**

9 🗓 Snowfest (Salisbury, VT)

30 🗓 Boston Toolshed Raising (Somerville, MA)
Presentations, open work time, and workshops on Public Lab projects and the Riffle.

18 🗓 First Ironbound Community Corp. Meeting (Newark, NJ)

10 🗓 Gowanus-Newton CAG Exchange (Brooklyn, NY) The GLAM team shared best practices with the newly forming Newtown Creek research group consisting of North Brooklyn Boat Club and LaGuardia Community College.

**MARCH**

9 🗓 NYC’s First Spectrometer Meetup (Brooklyn, NY)

**APRIL**

17 🗓 El Puente Community Garden Aerial Mapping (Brooklyn, NY)

8 🗓 Toolshed Raising: MBTA mapping (Somerville, MA) Kite mapping of future Union Square Massachusetts Bay Transportation Authority site.

**MAY**

8 🗓 Virtual Contaminant’s Call (Online)

**JUNE**

100+ 🗓 White House Maker Faire (Washington, DC)

8 🗓 Staten Island North Shore Aerial Mapping (Staten Island, NY) Aerial mapping from NY/NJ Baykeeper boat with North Shore Waterfront Conservancy.

100+ 🗓 Aerial Mapping at Raritan Bay Festival (Staten Island, NY)

20 🗓 OpenHour Kickoff (Online) Discussed aerial photography and MapKnitter.

**JULY**

12 OpenHour on Near Infrared Photography (Online)

100+ City of Water Day (Brooklyn, NY)
Aerial mapping of the Gowanus Canal using balloons flown from canoes.

9 OpenHour on Spectrometry (Online)

19 OpenHour: Open Water Initiative (Online)

20 OpenHour: Air Pollutants (Online)

12 Samples with Spectrometry (New Orleans, LA)

AUGUST

18 OpenHour: Thermal Imaging (Online)

SEPTEMBER

14 Public Lab & Gulf Restoration Network Training (New Orleans, LA) Training on Gulf Coast land loss and building rigs for mapping.

18 LEAFFEST (Salisbury, VT)
Third annual gathering of the Public Lab community to work on tools and share ideas hosted by Organizer Chris Fastie. This year included time to work on the Oil Testing Kit, the Riffle, and Infragram.

14 Map Building Workshop (New Orleans, LA) Map building workshop with Washington University students.

17 Mapping out in Bayou Plaquemine (Bayou Plaquemine, LA)

7 Aerial Mapping Training (New Orleans, LA)

OCTOBER

7 OpenHour: Events (Online)

31 Mapping at City Park with NOCCA students (New Orleans, LA)

32 NOCCA Mapping at Bayou St. John (New Orleans, LA)

17 Dust Hack (Menomie, WI)

NOVEMBER

50 Public Lab Australia Exploratory Discussion (Melbourne, Australia)

4 OpenHour: Gearing up for the Barnraising (Online)

24 Organizer’s Summit (Cocodrie, LA)

57 2014 Barnraising (Cocodrie, LA)

35 Water Hackathon (New Orleans, LA)

17 Riffle Training (New Orleans, LA)

DECEMBER

4 OpenHour: a year in Review (Online)

4 Mapping Wetland Watchers Park (New Orleans, LA) Part of the EPA Urban Waters Project.

Image Credit: Nathan Dappen. Barnraising 2014 at LUMCON in Cocodrie, LA.
Public Lab has a growing network of friends, partners, and collaborators. We welcomed the opportunity to work with the following groups during 2014. Please visit publiclab.org/wiki/partners to see a full list of groups that the Public Lab nonprofit or Organizers work with.

CEDAPS (Rio de Janeiro, Brazil) The Health Promotion Centre is a non-governmental, non-profit, established in 1993. Their mission is to promote the full participation of poor communities in the development process and the improvement of public policies that work in these areas, contributing to the promotion of health, the guarantee of rights, and equity.

Civic Hall (New York, NY) A new home for civic tech.

Empire Dragon Boat (Flushing, Queens) Breast cancer survivors advocating to clean up the sewer overflow at the marina on Flushing Bay.

El Puente (Brooklyn, NY) is a community human rights institution that promotes leadership for peace and justice through the engagement of members (youth and adult) in arts, education, scientific research, wellness, and environmental action.

Friends of Penobscot Bay (Maine) works to care for Penobscot Bay—America’s lobster basket, sturgeon/salmon/sailing and tourist destination.

Green Community Garden (Newark, NJ)

North Shore Waterfront Conservancy (Staten Island, NY) advances and promotes safe and sustainable public access to the waterfront, builds healthier greener communities along the Kill Van Kull, and advances public policies and laws to include the needs of Staten Island’s North Shore environmental justice communities and waterfront communities.

Save the Hills Alliance (Wisconsin) helps educate the public about the environmental impact of the silica frac sand industry and silica dust air pollution and diesel emissions on surface and groundwater and truck traffic safety.

Concerned Citizens of Bridge Creek (Wisconsin)

Concerned Citizens of Buffalo County (Buffalo County, WI)

Wisconsin Farmers Union (Wisconsin) a member-driven organization, committed to enhancing the quality of life for family farmers, rural communities, and all people through educational opportunities, cooperative endeavors, and civic engagement.

Guardians of the Land and Water (Grand Bois, LA)

Propublica is an independent, non-profit newsroom that produces investigative journalism in the public interest.

Rosa F. Keller Library (New Orleans, LA) and Community Center is one of the many branches of the New Orleans Public Library System. Located in the heart of the Broadmoor Community.

Hundredth Monkey Maker Space (Menomonie WI)

Water Works (New Orleans, LA) creates more resilient and engaged communities, in which water is managed effectively to reduce flooding and water pollution.

Propeller (New Orleans, LA) is a New Orleans-based nonprofit organization founded in 2009 to incubate and launch socially-minded ventures from its co-working and event space.

Crawford Stewardship Project (Wisconsin) works to protect the environment of the Crawford County region from threats of polluting and extractive industries and to promote sustainable land use, environmental justice, and local control of natural resources.

Thanks to our new partners
Currently there are 62 organizers from 8 countries.

Public Lab organizers are community members that are leaders in the Public Lab community, and have an interest in the way our community collaborates and grows. Typically, but not exclusively, these are people who are both key organizers in their local communities as well as key contributors to the broader Public Lab community.

New Organizers for 2014:
Will Macfarlane (Somerville, MA)
Michelle Schmitt (Philadelphia, PA)
Melissa Nunes (Vancouver, Canada)
Ann Chen (Alberta, Canada)
VJ pixel (Brazil)
Yagiz Sutcu (Arlington, MA)
Benjamin Sugar (Chicago, IL)
Stefan Unterhauser (Somerville, MA)
Jack Summers (Cullowhee, NC)
Katie Gradowski (Somerville, MA)
Catherine D’Ignazio (Waltham, MA)
Sean McGinnis (New Jersey)
Bronwen Densmore (Brooklyn, NY)
Matt Pendergraft (San Diego, CA)
Willie Schubert (Washington, DC)

Image Credit: Chris Fastie, above NE Barnraising 2014, below 2014 Organizer’s Summit
2014 FINANCES

Total Expenses

- Fundraising $66,797
- Management & Administration $77,981
- Programs $484,299

Total Expenses $629,076

Income

- Direct Public Support $18,159
- Civic Kits Income $216,013
- Misc. Income $7,676
- In-Kind $24,000

Income $806,181

The Public Lab fiscal year runs from June-July. The finances listed below have not been CPA reviewed. For reviewed fiscal year statements, please email shannon@publiclab.org.
STAFF

Becki Chall
Development Director

Molly Danielsson
Layout Editor

Noah Hochman
Kits Fulfillment Coordinator

Jeffrey Warren
Research Director

Liz Barry
Director of Community Development

Mathew Lippincott
Director of Production

Natalie Mayorga
Civic Kits Manager

Gretchen Gehrke
Data Ambassador

Hope LeBlanc
Bookkeeper

Stevie Lewis
Outreach Manager

Melissa Nunes
Web Developer

Micheal Crumpler
Administrative Coordinator

Shannon Dosemagen
Executive Director

Catherine Bracy
Code for America, Director of Community Organizing

Eymund Diegel
Community Organizer

Micah Sifry
Personal Democracy Media, Co-Founder and Editorial Director

Dr. Christine Walley
MIT Anthropology Associate Professor

Bobbie King Jr.
Skadden, Arps, Slate, Meagher & Flom LLP, associate

BOARD

New Orleans

Durham

NYC

Portland

Somerville

Vancouver, BC
None of the amazing things we accomplished in 2014 would have been possible without the help of our supporters! Thank you to each and every one of you for making our work possible!

$100,000+
John S. and James L. Knight Foundation, Knight News Challenge
The 11th Hour Project, a program of the Schmidt Family Foundation

$50,000-$99,999
Foundation to Promote Open Society, a part of the Open Society Foundations
U.S. Environmental Protection Agency
Rita Allen Foundation

$10,000-$49,999
Propeller
New World Foundation
Rackspace
Passport Foundation
Betsy and Jesse Fink Foundation
Raspberry Pi Foundation

$1,000-$9,999
New Knowledge Foundation Ltd
Google Summer of Code
Heeja Yoo-Warren
Glorianna Davenport

$500-$999
Eugene Ruenger
General Electric (GE)
Hank Boschen

$250-$499
Illah Nourbakhsh

$100-$249
Peter Johnson
North Shore Waterfront Conservancy of Staten Island
Dennis Chall
William Dosemagen
Anastasia Macris
Nick Shapiro
Bob Stevens
Lance Wickum
William Rau
Terry Relph-Knight
eliseo riesco orellana
Dianne Rocheleau
Olivier Rolland
Raminder Saluja
Franco Salza
Arturo Saracho
William Schill
Juergen Schilling
Eric Schoe
Miles Scott
Jacquelyn Baker
Sennett
Wayne Shino
David Slocombe
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Harald Sterly
Benjamin Sugar
Philip Sulikosky
Gotoh Takumi
Lei Tian
TopDot Graphics, Inc
Mark Trotter
Kazutoshi Tsuda
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Keith Tyler
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Rolf Veen
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Robert Webber
James Welsh
Thomas Wessel
Judith White
Christoph Wiedenkehr
Hugo Wikstrom
David Williams
Ira Wood
Ben Yahr
Eric Younken
Ellen Lewis
Amir Bernat
Carl Cobb
Chris Fastie
Jenny Heyden
Paul Johnson
Steven Kimball
Thom Maughan
Donald Thieme
Stefan Weissen

Image Credit: Nathan Dappen, 2014 LUMCON in Cocodrie, LA.
Public Lab in the Media

Awards
2014: Social Venture Network Innovation Award Winner
2014: Knight Foundation Knight News Challenge: Health
2014: The Public Lab Foldable Mini-Spectrometer is nominated as one of the Design Museum’s Designs of the Year

Articles

Presentations
The Public Lab community presented work across the globe during 2014, including at:

- Bioneers (Marin, CA)
- Open Knowledge Festival (Berlin, GR)
- Social Venture Network (New Haven, CT)
- SE Regional Meeting of the American Chemical Society
- Grinnell University (Grinnell, IA)
- Marfa Dialogues (St. Louis, MO)
- Society of Environmental Journalists (New Orleans, LA)
- Fab10 Barcelona (Barcelona, Spain)
- White House Maker Faire (Washington, DC)
- EPA Air Sensors (Raleigh Durham, NC)
- EPA Tech Innovation Day (Washington DC)
- Personal Democracy Forum (NYC)
- Columbia University Tow Center for Journalism panel (NYC)
- Chicago Community/Campus Partnerships for Health Annual Conference
- Building Resilience Workshop IV (New Orleans, LA)
- Citizen Cyberscience Summit (London, UK)

Press
Engadget: 60 seconds with the Kit that makes Everyone their own 'Mini EPA', Terrence O’Brien, November 9, 2014.
Vice: The Hunt for Brooklyn’s Hidden Creeks, Ben Richmond, August 29, 2014.
TechPresident: Public Lab Builds Environmental Monitoring Community, Online and Off, Sam Roudman, August 19, 2014.
New Hampshire Public Radio: Tech, Environmentalism and Agriculture Converge for iFarm, Michael Samuels, May 2014.
Fast Company: How the BP Oil Spill Launched a Movement to Investigate Pollution with DIY tools, Sydney Brownstone, February 6, 2014.
