Community Collaboration to Advance Citizen Science: A Success Story in Louisiana

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1 - Hanby Environmental, Houston, Texas
2 - The Lifeline Group, Annandale, Virginia
3 - RAND Corporation, Arlington, Virginia
4 - BISCO (Bayou Interfaith Shared Community Organizing), Houma, Louisiana
5 – Sarpy & Associates. LLC, Charlottesville, Virginia
6 - OMG Solutions, Victoria, Texas

NEXT MEETING: AUG 6–10 2018 IN NEW ORLEANS, LOUISIANA

Environmental Measurement Symposium
a combined meeting of the National Environmental Monitoring Conference and The NELAC Institute

NAS-funded project designed for building community capacity for environmental monitoring:

- The objective is to train coastal Louisiana communities to use citizen science to monitor the environment for contaminants.
- As part of this capacity building, BISCO also intends to develop a network and create sustainable avenues for communication, collaboration and knowledge exchange.
- the emphasis here is to establish a credible and durable capacity for the monitoring tasks and understanding of the basic underlying scientific principles.

NAS-funded project designed for building community capacity for environmental monitoring:

- With that accomplished, this group is well positioned to receive the bigger funding necessary for meaningful and long-term monitoring of the Gulf Coast regions by citizen scientists--collaborating with the network of scientists, experts and community.
- A key to all of this is teaching the underlying principles of monitoring science.

Before The Workshop Gets In Full Swing
Dr. Sue Ann Sarpy of Sarpy & Associates, LLC
Explains Her Company's Role As
The Workshop Evaluator for
The National Academy of Sciences

Dr. Sue Ann Sarpy Had The Attendees Complete A Pre-Workshop Survey

- Part One of The Survey Determined If Any of The Attendees Knew Each Other and If So, How?
- The Answer Selection Choices for Each Attendee Name were:
- Do Not Know
- Discuss Community Issues with
- Go to for Advice
- Share Information and Resources with
- Collaborate with (Community Partner)

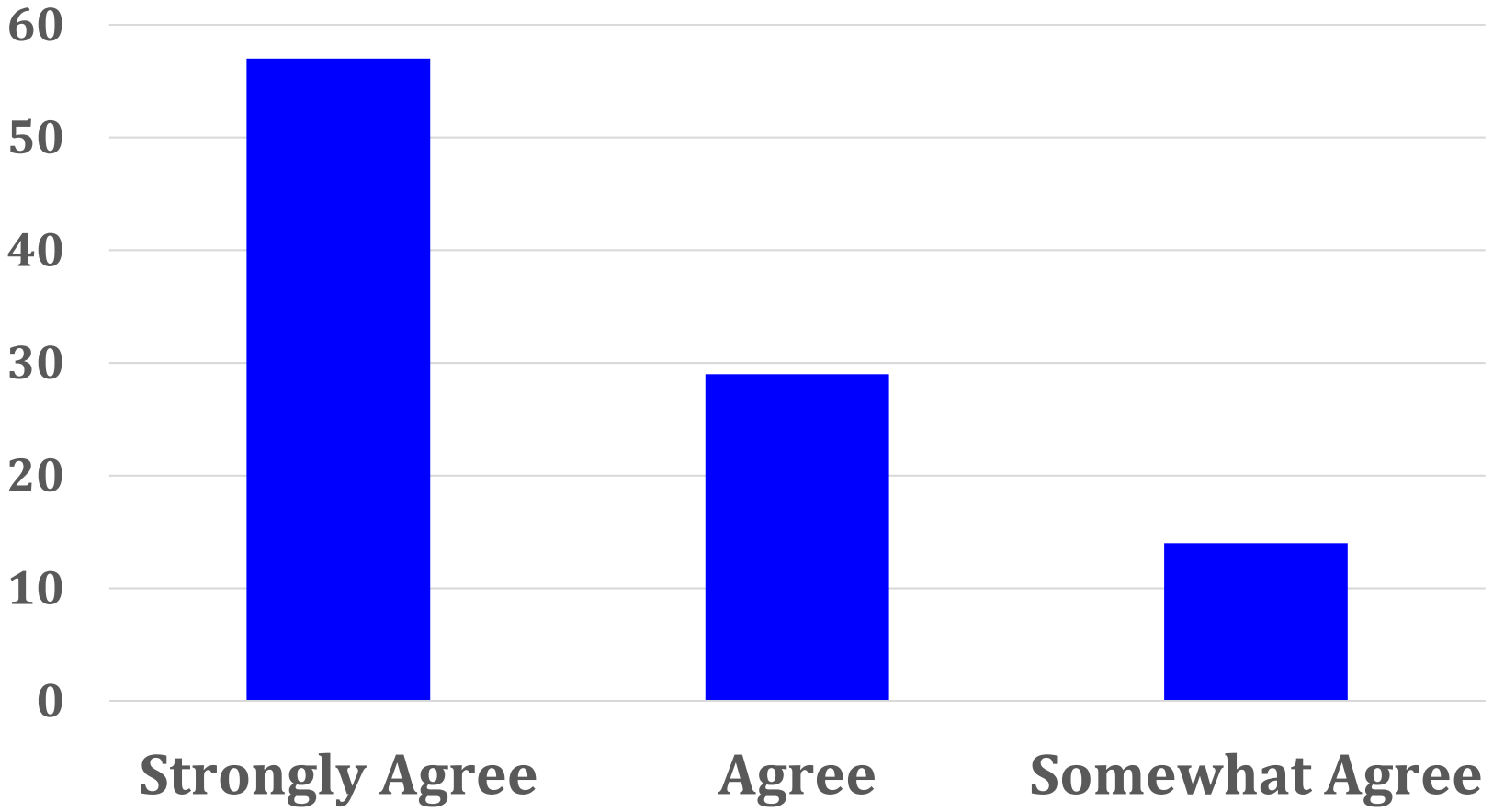
Dr. Sue Ann Sarpy Had The Attendees Complete A Pre-Workshop Survey

- Part Two of The Survey Asked The Attendees To Answer The Following Questions With A Rating Scale:
- Before attending the Citizen Science training, I am confident that:
- 1. I feel empowered to make positive changes in my community
- 2. I am competent in the general principles of Citizen Science.
- 3. I am competent in the principles of environmental monitoring and standard protocols for designing and carrying out a monitoring activity or program.
- 4. I am competent in the procedures for carrying out air, water, and soil testing for oil contaminants.
- 5. I am competent in the strengths, limitations, and uses of Citizen Science environmental monitoring data.

Evaluation of the Citizen Science Training Program

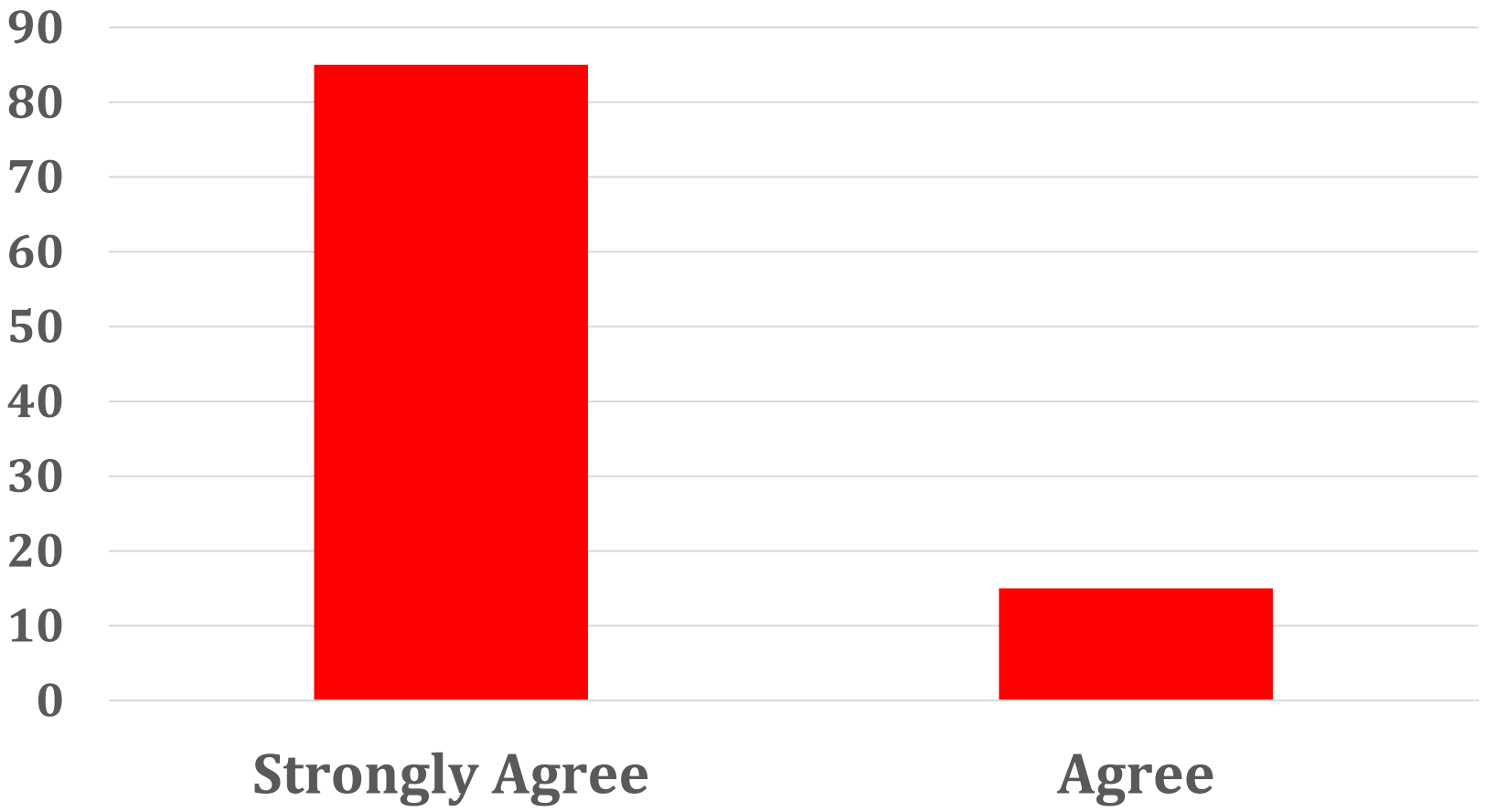
- Utilization focused evaluation was developed
- Participants were surveyed pre-/post-training program
- Training participants reported high levels of satisfaction
- Training participants reported significant gains in knowledge and skills (e.g., enhanced scientific literacy)
- Training participants reported higher levels of community involvement
- Social Network Analysis revealed networks with greater communication, collaboration, and resource sharing

I am competent in the procedures for carrying out air, water, and soil testing for oil contaminants.



86 Percent of Respondents either Agree or Strongly Agree

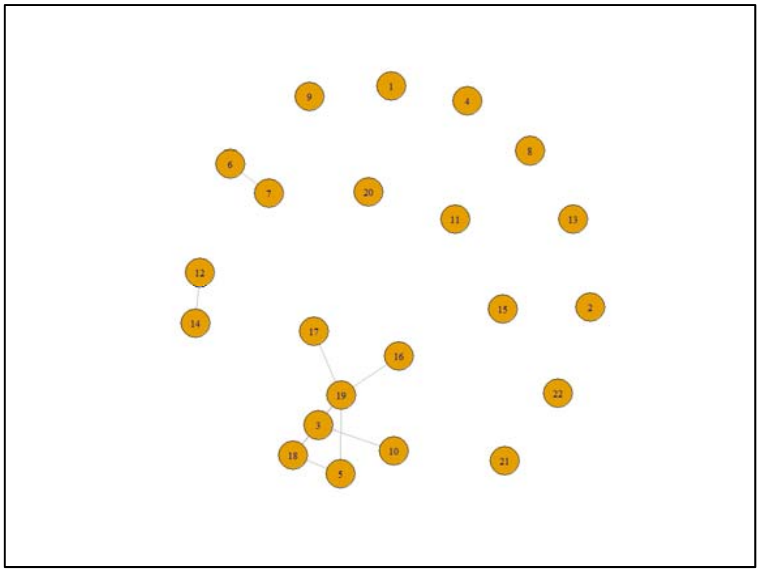
Overall, Citizen Science Training is Effective



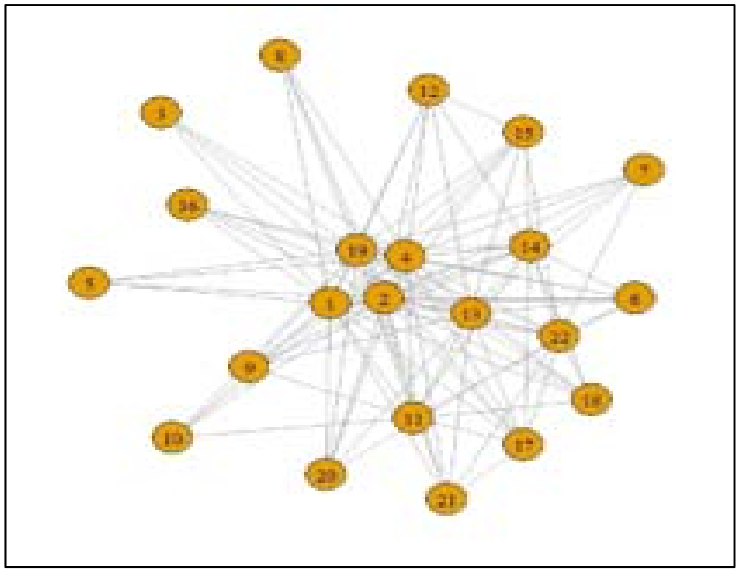
100 Percent of Respondents either Agree or Strongly Agree

Participants "Discuss Community Issues With"

PRE-TRAINING



POST-TRAINING



Slide shows a visual depiction of the reported relationships between the training participants Pre and Post-training.
The dots represent the individuals who received training.
The lines represent the reported "Ties" or relationships between the participants.
The graphs show that while there were a few individuals who "discussed community issues with each other" before the training started (pre-training), there were many reported relationships among the participants which community issues were discussed following training (post-training). The more lines there are on the graphs, the more communication/discussions are going on between the participants.

The Workshop Began With A Group Discussion of What is Citizen Science?

Dr. Chari Discusses Some History of The Citizen Science Concept

Dr. Chaisson of The Lifeline Group Discusses Principles of Monitoring for Citizen Scientists

Part 1 - Principles of Monitoring for Citizen Scientists

Designing for Community Objectives and Understanding the Data: The Technical Issues

Objective:

Introduce basic principles related to technical elements and scientific credibility of monitoring projects

Monitoring is much more than just collecting samples and determining what is in the sample.

Credible monitoring is built from an understanding of the basic principles:

- Specificity
- Sensitivity
- Precision

Operating always under discipline of written technical SOPs

The **technical capacity** developed within the community is the jewel to be preserved, nurtured, expanded, celebrated.

Part 2 - Implementing the Principles in Our Monitoring Training Program

The Monitoring Equipment, SOP Development Process, Data Characterization

Objectives:

1. Illustrate the monitoring equipment to be used in the training program and how each exemplifies aspects of the principles learned in Part 1.

Show each monitoring system, how it will be demonstrated at the Training Sessions and principles of each.

Illustrate development of the Standard Operating Practices to be used by the Citizen Scientists for

- Each monitoring system
- Data collection/recording
- Field sample collection

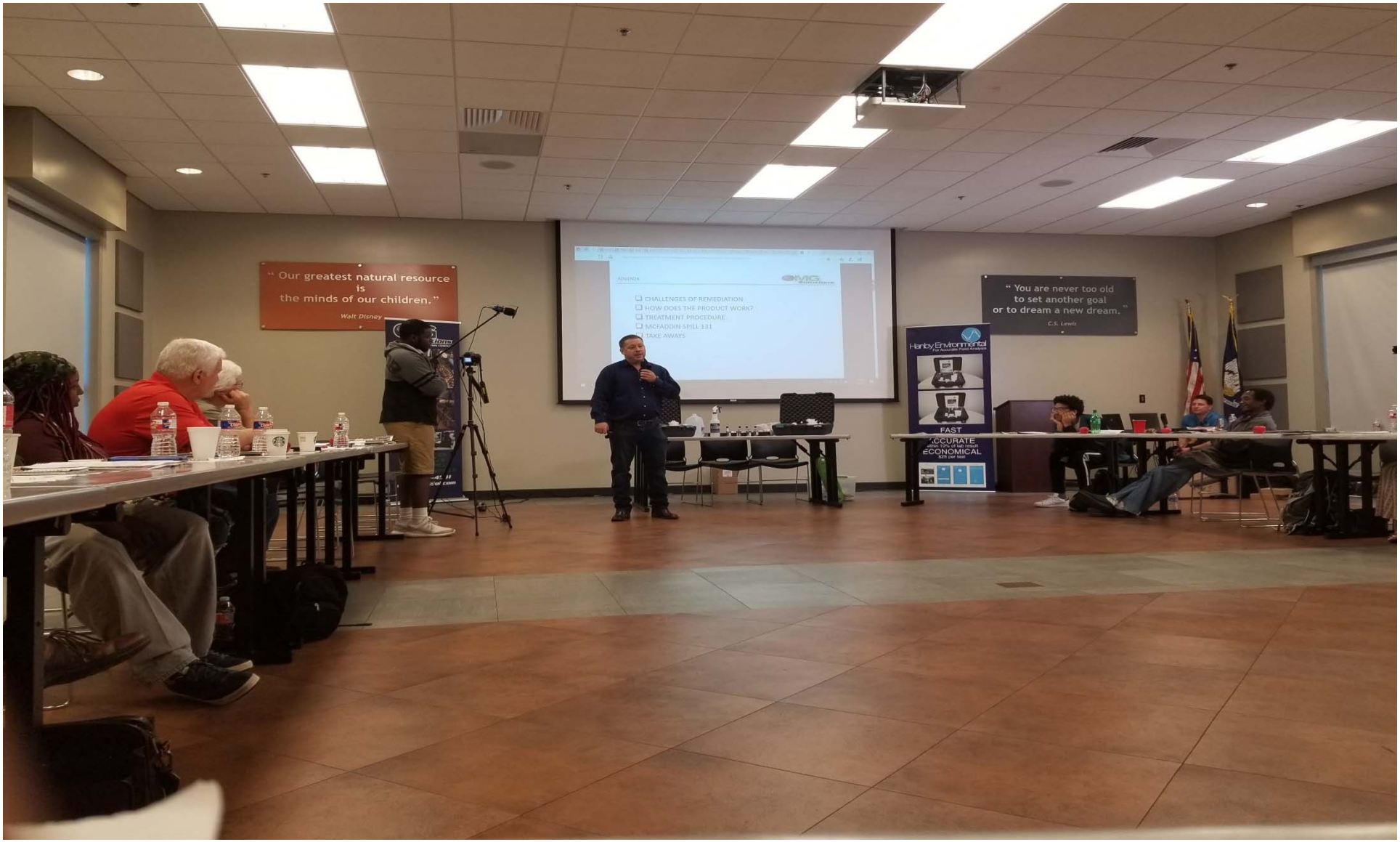
Illustrate development of Monitoring Plans consistent with Community objective for how data are to be used and purpose of a monitoring program.

2. Provide an opportunity for members of the Expert Panel to highlight issues and lessons of importance (from their point of view with their experience) for Citizen Science monitoring. The focus will be on creating the capacity for technical excellence and credibility – the importance of this and how to accomplish it.

Note: Selected members of the Expert Panel will participate in the actual Training Sessions and will also have an opportunity at a later date to listen and discuss this program and its “lessons learned”.

C. Fator of Hanby Environmental Introduces Hanby's Field Test Kits

R. Cook of OMG Solutions Introduces ELMN8 and ELMN8+

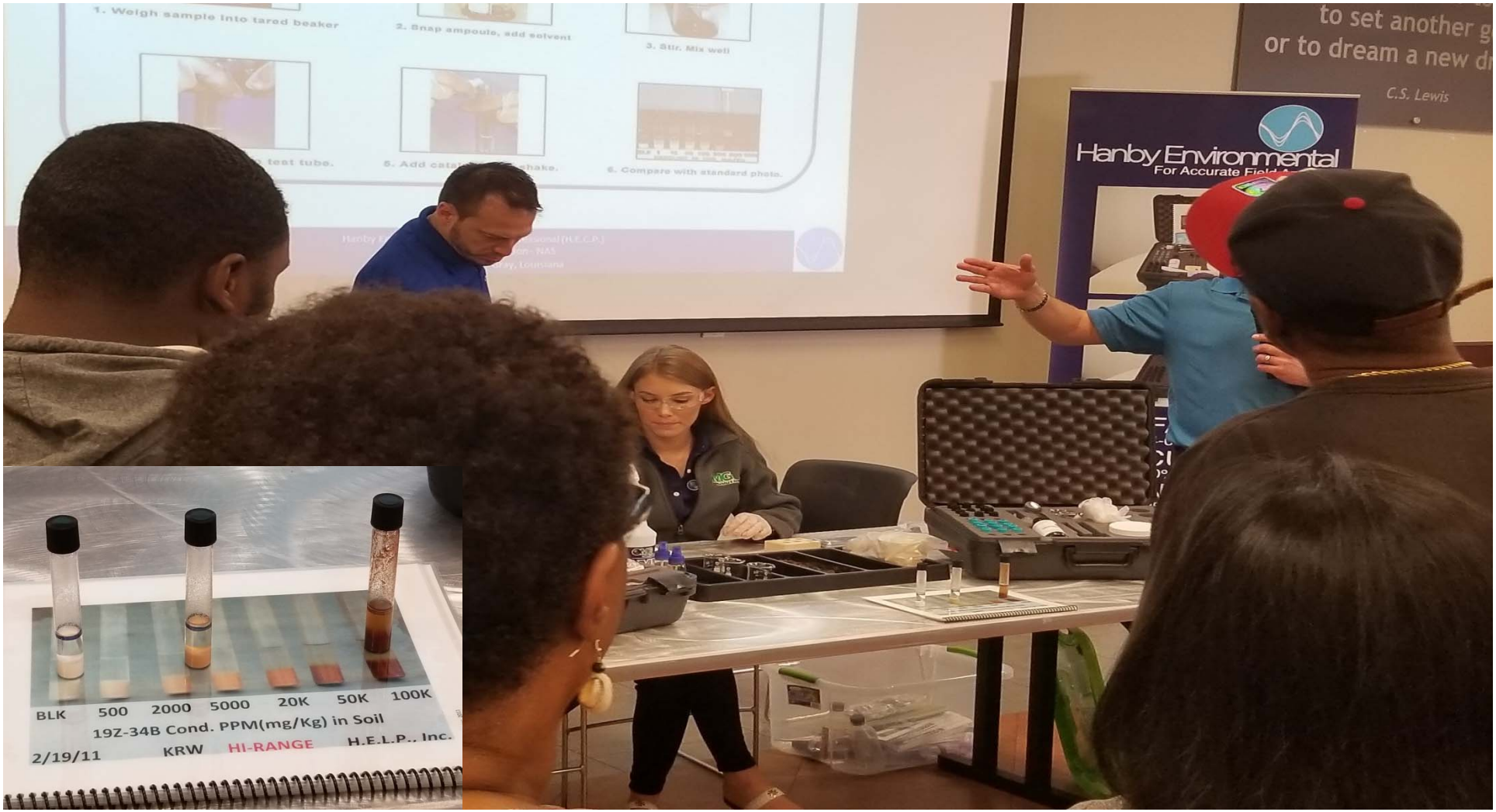


Hanby and OMG Introduce
The New Remediation Paradigm

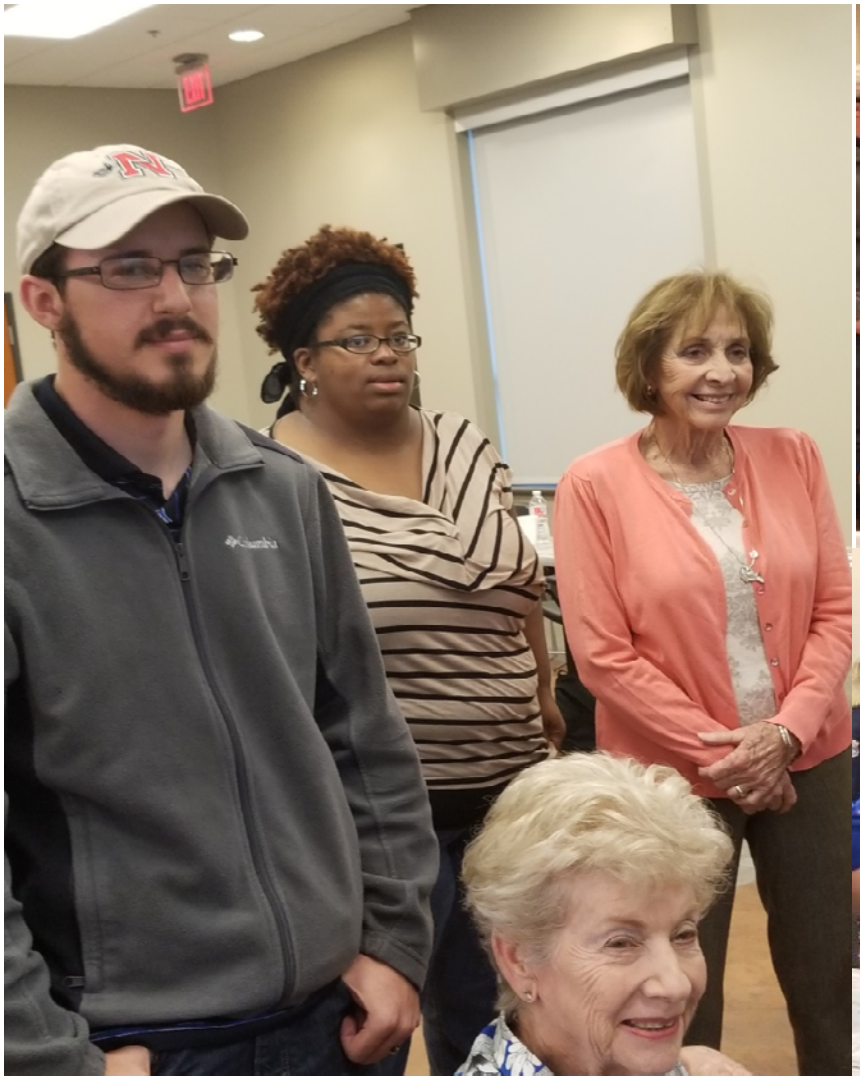
J. Innocenti of OMG Solutions Demonstrates The Soil Analysis

The Students Get Up Close to “Black Gold”

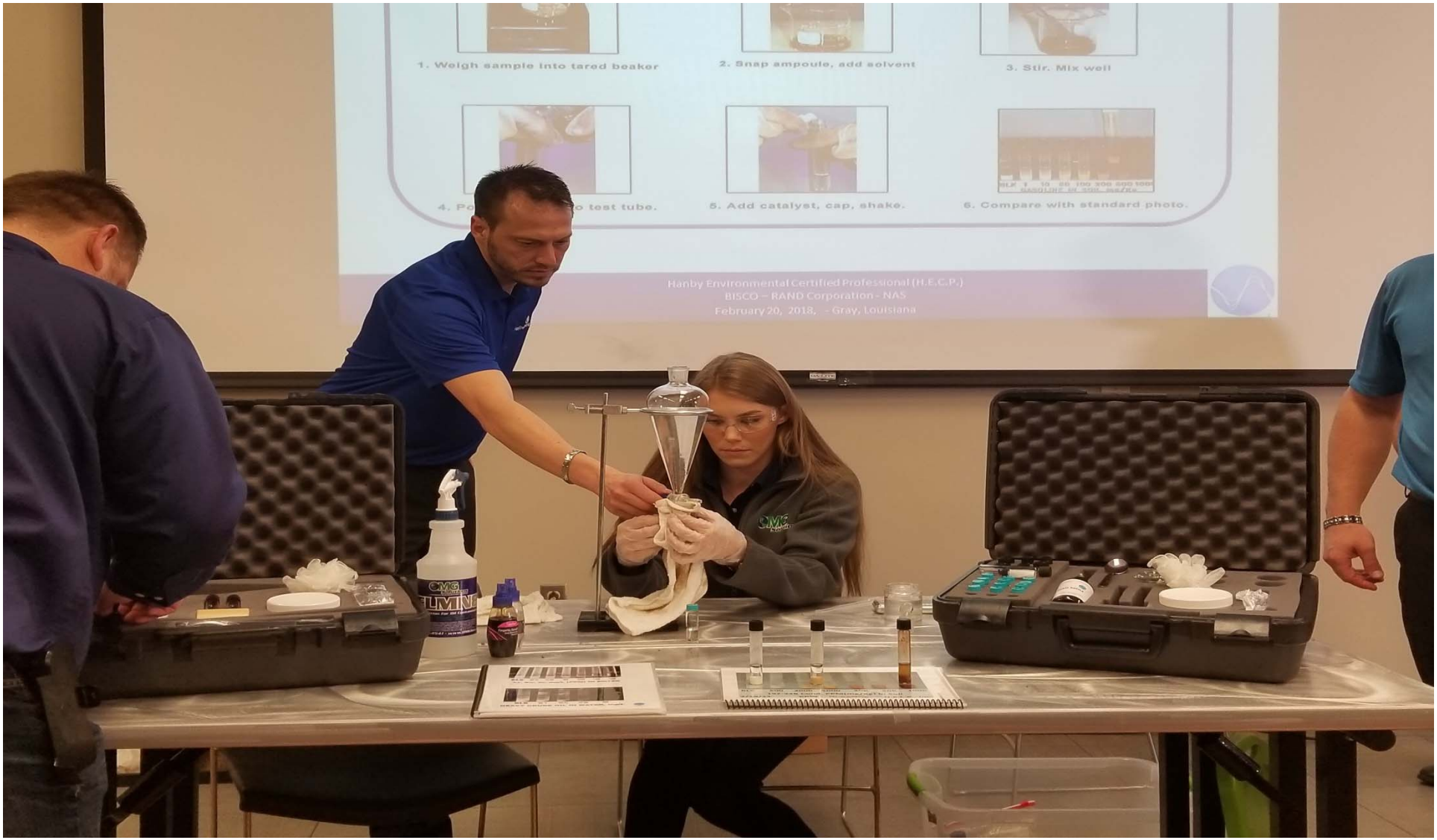
The Students Are Impressed to See The Crude Oil Contamination Disappear from The Contaminated Soil



The Students Are Impressed to See The Crude Oil Contamination Disappear from The Contaminated Soil



E. Ricco of Hanby and J. Innocenti of OMG Demonstrate The Water Analysis



Hydrocarbon ELMN8-ated from Water

Students Get Up Close and Hands On

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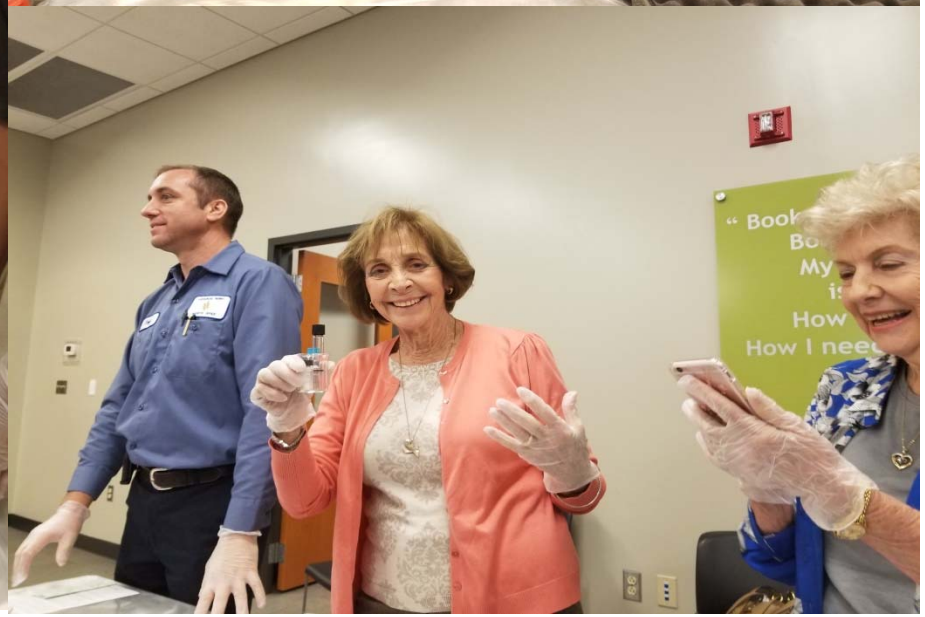


Students Go Outside for Real Samples

And Then Get To Work on The Real Samples

Students Are Excited To See Their Analysis Results

Introducing The Hanby Mobile App

Day 2 Begins with Dr. Chaisson Discussing Proper Recording in Field Notebook

We Go Around Room Discussing Student Home Work Assignment of Sample Collecting

Students Excited To Analyze Their Soil Samples

Students Excited To Analyze Their Soil Samples

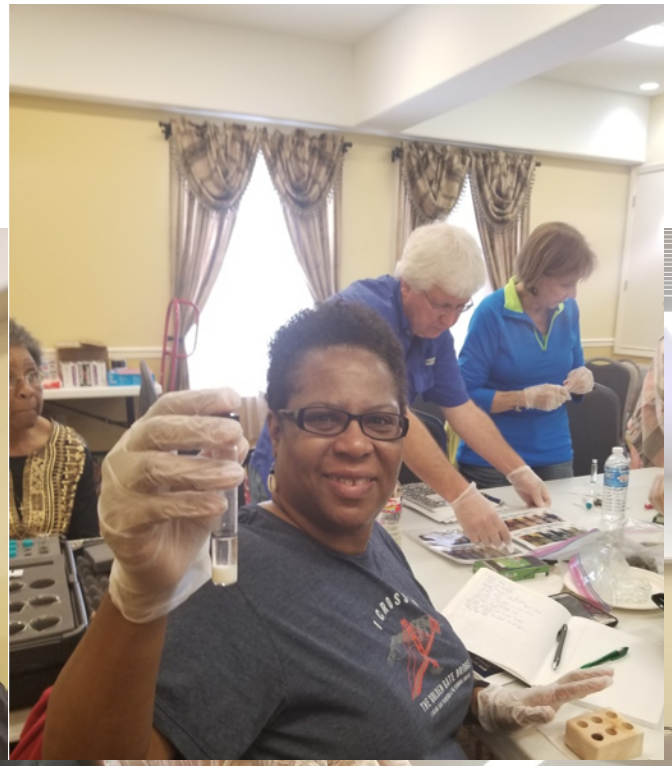
And Obtain and Record The Results of Their Soil Sample Analysis

“This is Easy and Fun!”

Students Hands On Soil Analysis

Entire Classroom Hard at Work on Soil Samples

“I Did It, Look What I Got!”



Going Around The Room Discussing Their Soil Results

Quick Discussion on Difference of Oil-N-Soil vs. Hanby Method of Analysis

The Entire Classroom Begins Analysis of Their Water Samples

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Dr. Chaisson Discusses What Goes Into Their Field Sampling Supply Boxes

Students Building Their Field Sampling Supply Boxes

After 1.5 Days of Learning and Hands on Training, The Students Have Earned Their Hanby Environmental Certified Professional (H.E.C.P.) Designations and Certificates

New “Citizen” Hanby Environmental Certified Professionals (H.E.C.P.s)

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Dr. Chaisson Continues by Teaching a PID Instrument

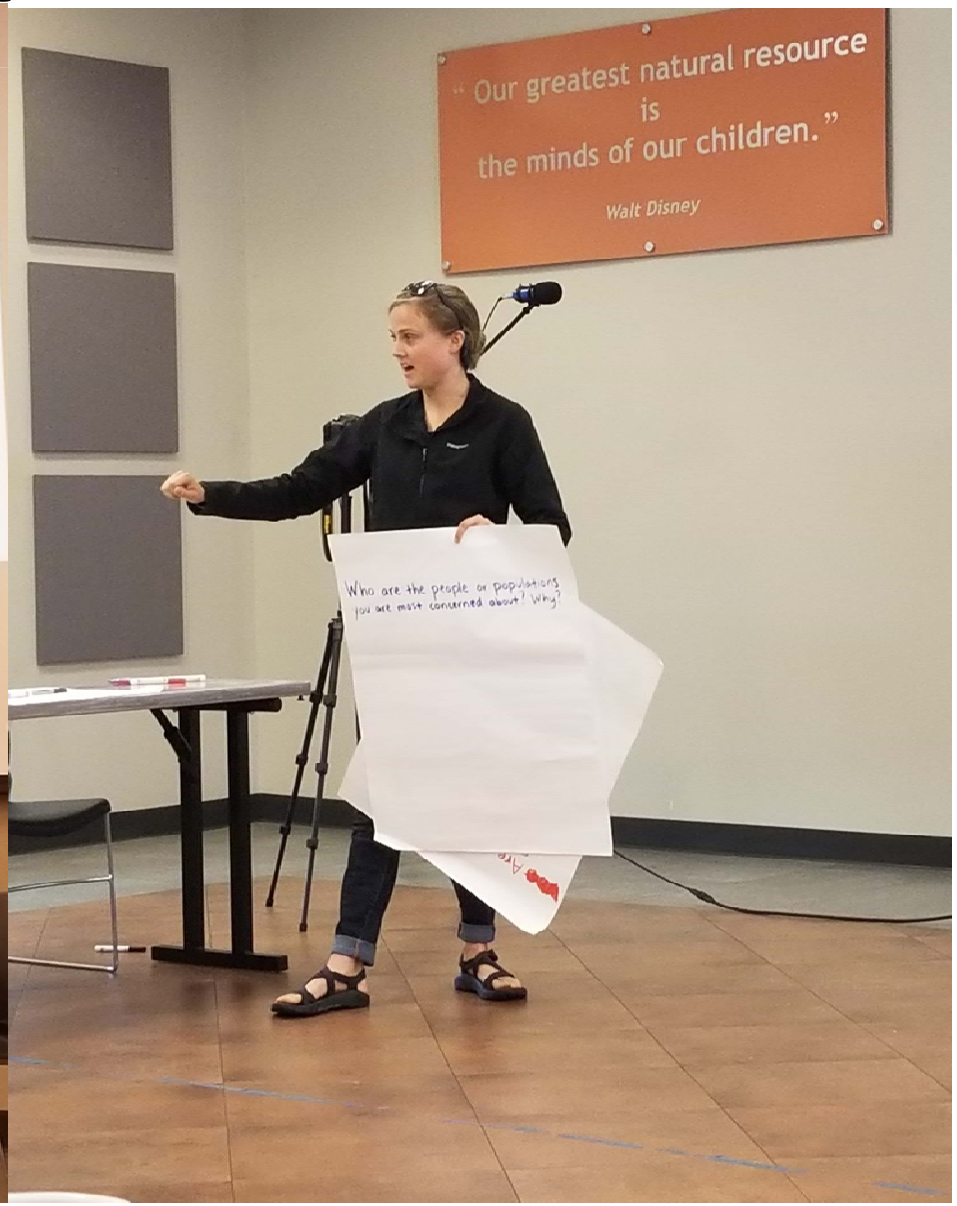
Students Hands On PIDs and Field Sampling

A. Neal of Groundwork NOLA Discusses Strategy and Planning Ideas

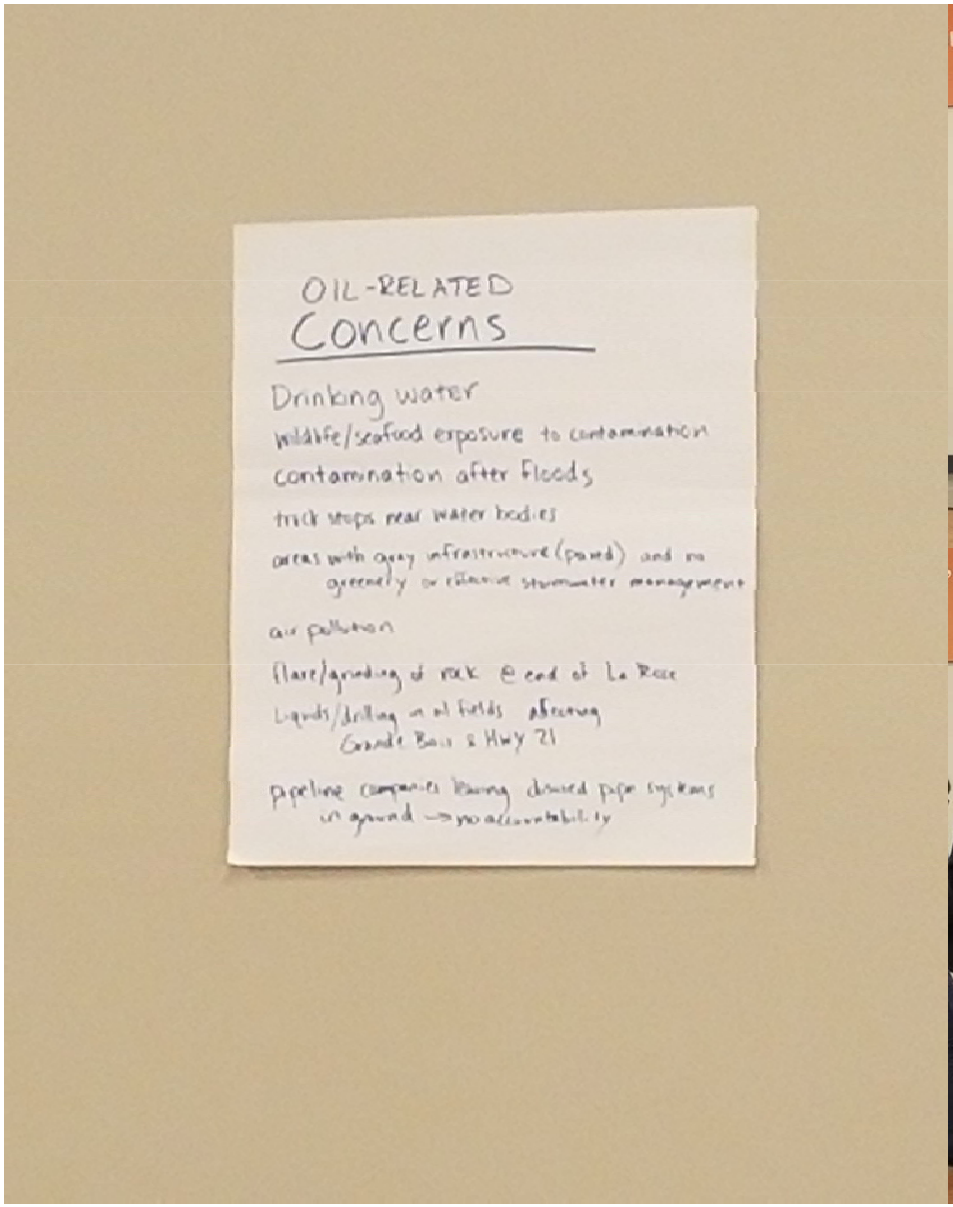
Groundwork USA is the only network of local organizations devoted to transforming the natural and built environment of marginalized communities — a national enterprise with local roots, working at the intersection of the environment, equity and civic engagement.

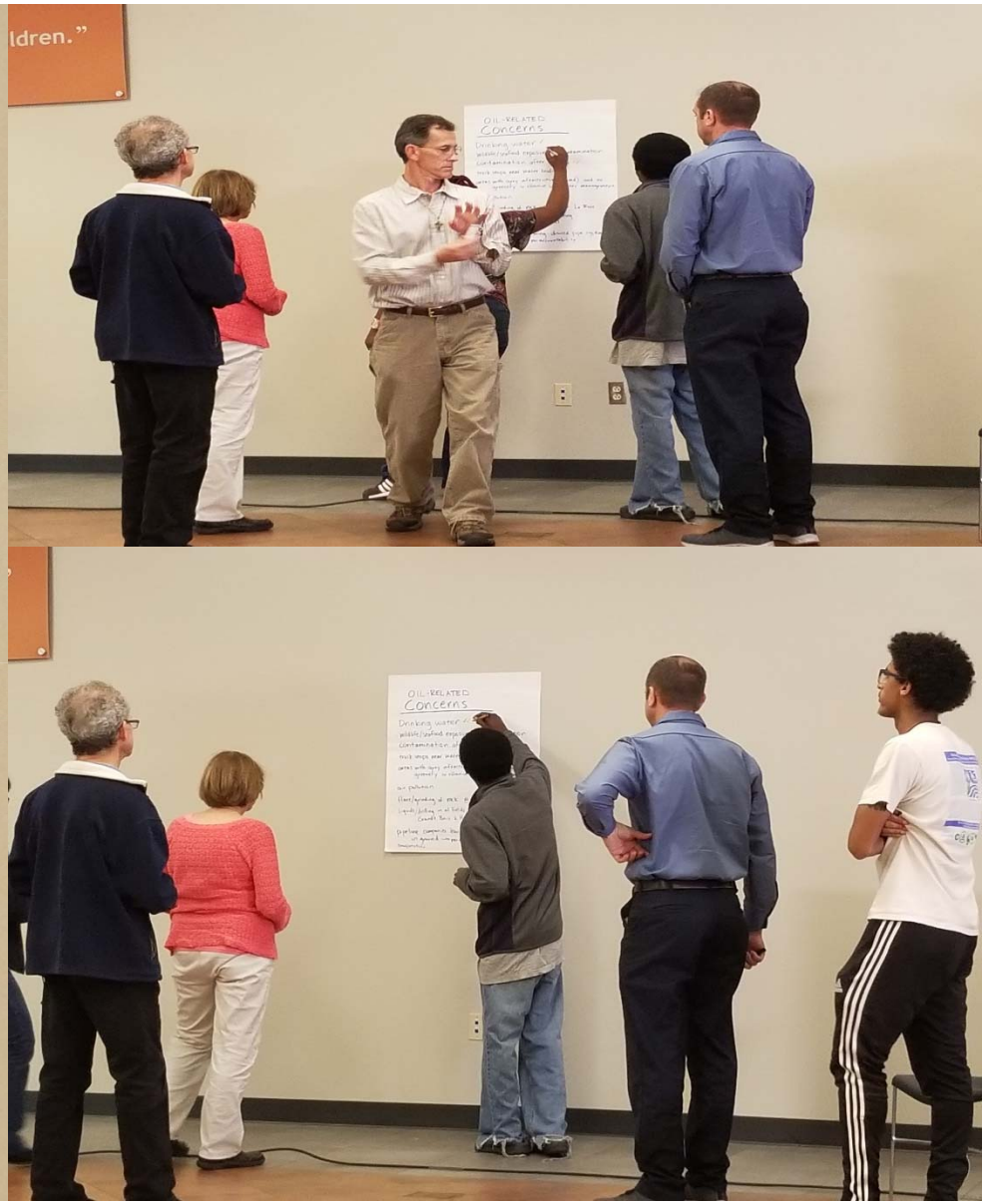
Illustration of Sampling Strategy

Dr. Chari Leads A Discussion on Community Concerns



Community Concerns Being Identified





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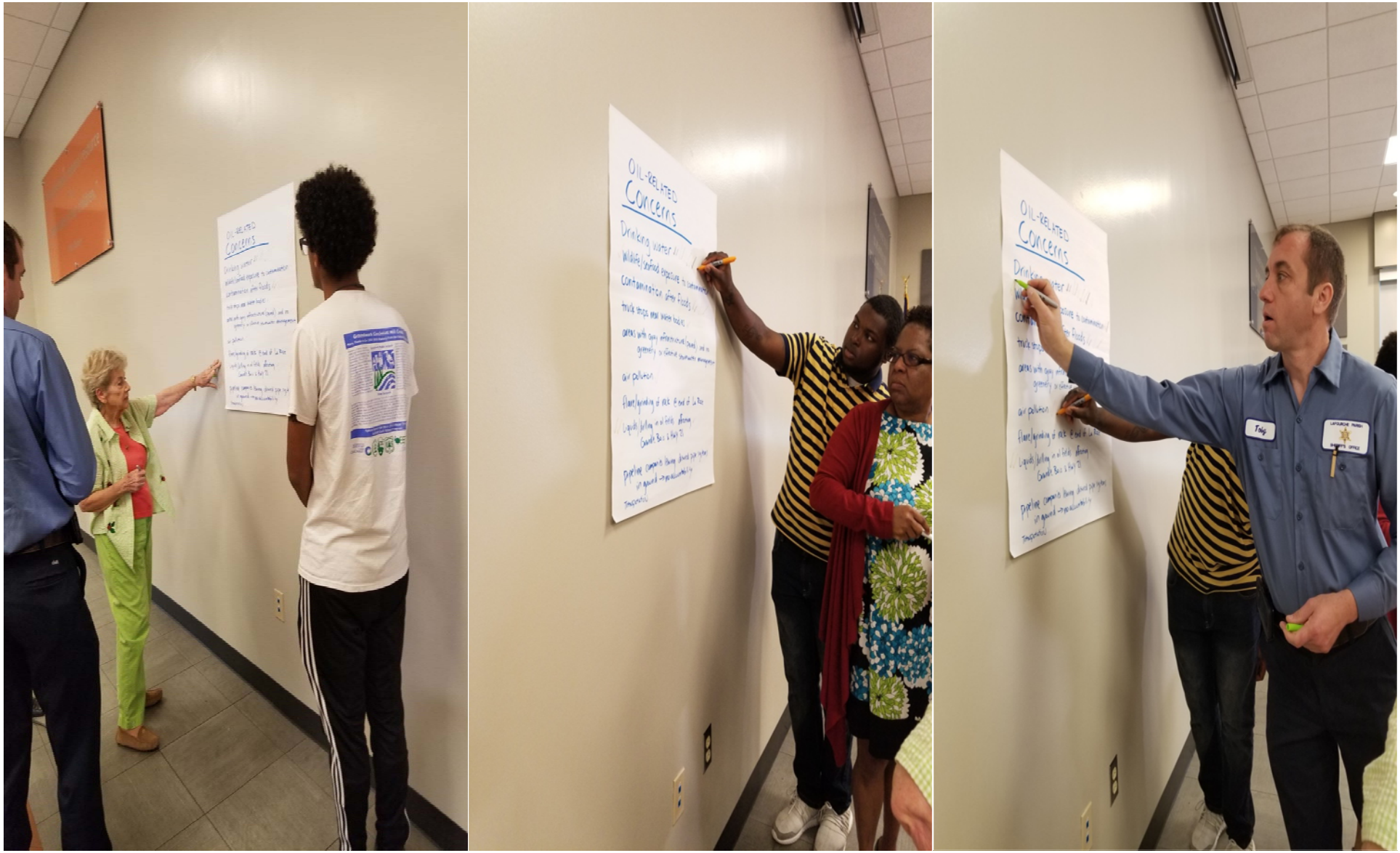

Smaller Group Concerns Reporting

Entire Group Discussions on Developing Monitoring Plans, Creating SOPs, Expert Panel Input and Feedback and Future Plans

Workshop Objectives Completed

- Engaged Community Citizens
- Introduced Citizen Scientists Concepts and Objectives
- Training Citizen Scientists on Monitoring Equipment and Data Preservation
- Formulated Ongoing Monitoring Plans and Objectives Based on Community Concerns and Interests
- Empowered Community Citizen Scientists!

Acknowledgements and Thanks!

- **The National Academy of Sciences Gulf Research Programs' Capacity Building Grant**
- Building Organizational Capacity Through a Community-based Citizen Science Program for Monitoring Environmental Contamination in Louisiana Coastal Parishes
- The Grant covered the basis for workshop formulation – "**The Basics**"

Acknowledgements and Thanks!

- The Organizers Staff and The Instructors…..For Their Time, Expertise and Knowledge Transfer "The Details"
- Sharon Gauthe' and David Gauthe', Sharon Foret, Donald Bogen, Jr. all of BISCO along with Alicia Neal and Rebecca Berry of Groundwork NOLA.

BISCO
BAYOU INTERFAITH SHARED COMMUNITY ORGANIZING

GROUNDWORK
CHANGING PLACES
CHANGING LIVES

GROUNDWORK
USA

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- Dr. Ramya Chari of The RAND Corporation and Dr. Christine Chaisson of The Lifeline Group

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- Randy Cook and Jessica Innocenti of OMG Solutions and Edward Ricco and Charles Fator of Hanby Environmental

Hanby Environmental

Hanby PetroAnalysis

OMG Solutions LLC
A PETROLEUM REMEDIATION COMPANY

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- Dr. Sue Ann Sarpy of Sarpy & Associates, LLC as The Workshop Evaluator for The National Academy of Sciences provided instrumental information and feedback prior to, during and post workshop and have been greatly appreciated!
- Alicia Neal did an outstanding job with the photography providing the documentation of the entire workshops success!

Acknowledgements and Thanks!

- **Industry Support…..Donations of Time of Experts, Equipment and Training – "The Details"**
- **A Special Recognition of the Support Contributions of Hanby Environmental by The Donations of Ten Field Test Kits and The Certification Training of Twenty Four Citizen Scientists to Utilize Those Kits for The Monitoring of Their Communities.**

Hanby Environmental

Acknowledgements and Thanks!

- And Last But Not Least The Concerned Citizens – Turned Citizen Scientists – "The Interest"
- The Collaborative Efforts of "The Basics," "The Details" and "The Interest" Made This Workshop A Success Story.
- **A Huge "Thank You" to ALL Involved!**
- With Support, Time, Effort, Desire and Interest, We Can All Have An Active Contribution To Protecting Our Communities.