

Project Title: Preparing Underserved Communities For Career Pathways in Energy, Environmental Health and Restoration

Award Amount: \$176,546

Awardee: Oxfam America

Award Start Date: 09/01/15

Award End Date: 09/01/16

NAS Grant ID: 2000005980

Project Director: Minor Sinclair

Affiliation: Oxfam America

Project Key Personnel:

- Telley Madina, Senior Gulf Coast Policy Advisor, Oxfam America, New Orleans, LA
- Laura Inouye, Deputy Regional Director, Oxfam America, Boston, MA
- Patrick Barnes, P.G., Chairman, Limitless Vistas, Inc., Orlando, FL
- Sherry Callaway, P.G., Director/Program Manager, Limitless Vistas, Inc., New Orleans, LA
- Elizabeth Cornell, P.G., Senior Crew Leader/Instructor, Limitless Vistas, Inc., New Orleans, LA

I. ORIGINAL PROJECT SUMMARY (from proposal)

Oxfam and Limitless Vistas, Inc. (LVI) will partner to fill gaps in Gulf Coast workforce development systems by developing, testing, and evaluating a new model to leverage public/private resources and local capacities to help underserved minorities and women in low-income communities to access middle-skilled careers with local energy, environmental health, disaster response, and ecosystem restoration-related employers.

As environmental health- and energy production-related careers expand, and billions in resources for ecosystem restoration head to the region, this is a critical window to leverage these investments, overcome racial and gender barriers, and prepare the next generation of scientists, engineers, and professionals in these fields. With support from the National Academy of Sciences the program will implement, test, and evaluate an innovative cross-sector approach to job training, focused on building career pathways, and research next steps to share and expand the program's learning.

By equipping students with common, transferable skills (field testing/sampling, GIS mapping, hazardous materials operation, emergency response, quality control, and safety) students will qualify for work as engineering, survey, and environmental technicians and hazardous materials workers. Such STEM technician jobs represent high-demand, middle-skilled jobs in the Gulf's labor markets and across the US Southeast.

Beginning with a pilot program in Louisiana, the Oxfam-LVI partnership will work with local institutions, including area universities/community colleges, to test a new model for connecting disadvantaged

workers to job training and career opportunities. The program will have an emphasis on monitoring, evaluation and learning, including commissioning an evaluator to track the development of the program, quantitative/qualitative data on its outcomes and the challenges, successes and lessons learned. Criteria for the initial class curriculum will be identified in consultation with local employers across these sectors and educational partners. Additionally, the program will develop an agreement with Louisiana Workforce Commission to utilize local workforce funds to cover eligible expenses for future hard-skills training.

In year one, the pilot training program will prepare 45 students, primarily women and minority young adults, for jobs in these sectors. Courses will be taught by LVI, in Lafitte, LA. Resources will fund training consultants, materials, and equipment over three, 3-month training courses. A small grant will also be provided to a local community organization to identify prospective students and provide pre-employment assistance to eliminate barriers to recruitment, retention, and placement. At least 32 graduates of the program will find work or seek further education following the training.

The project hopes to generate new lessons and learning to be shared with Gulf workforce stakeholders. Additionally, the lessons of this pilot will guide the development of a scalable program for workforce development in these sectors including developing a 4-year business plan for program expansion. The program will also commission research on feasibility of developing a series of stackable credentials covering basic skills needed by workers involved in common tasks across technician-level coastal restoration activities. Finally, the program will conduct outreach to companies in the targeted job sectors, with at least four committing to provide apprenticeships and in-kind assistance.

II. PROJECT RESULTS

Accomplishments

The Oxfam/Limitless Vistas, Inc. (LVI) partnership sought to fill gaps in Gulf Coast workforce development systems by developing, testing, and evaluating a new model to leverage public/private resources and local capacities to help underserved minorities in low-income communities to access middle-skilled careers with local energy, environmental health, disaster response, and ecosystem restoration-related employers. Our intent was to design and implement a short-term job skills training program for vulnerable and underserved coastal residents in the Lafitte area near New Orleans, Louisiana. The project was designed to cater to the needs of employers and the community and furnish program graduates with meaningful portable credentials and a defined path to a career as an environmental field technician.

LVI/Oxfam assembled a project team that included LVI performing project management, soft skill/technical training and employer outreach roles. LVI also developed a four-year business plan. Oxfam supported employer outreach and managed three consultants: one to conduct research on the feasibility of developing stackable credentials for coastal restoration work, one to conduct an independent project evaluation, and a third to recruit people interested in technical training and job placement. During the recruitment process, applicant surveys and community feedback indicated that a shorter duration program offered at night would be more effective at meeting local needs than what was originally planned. Project participants consisted mostly of people who were already employed and

seeking training to enhance job security and their ability to obtain a promotion or to become full-time employees. Employers saw our program as a means to save on employee training costs.

Accomplishments include:

- LVI developed a 6-week curriculum with input from local environmental firms (Attachment 1) and purchased training materials for the classes. LVI also provided students with a tablet allowing them to maintain an electronic copy of course materials and facilitate employment preparation/job searches.
- LVI collaborated with the River of Life Church in Woodmere, located near the Jean Lafitte National Historical Park and Preserve, to provide a central location for classes.
- LVI worked under its existing National Park Service Research Permit at the Jean Lafitte National Historical Park and Preserve (Attachment 2). LVI participates in the Bayou Side Classroom, a water quality monitoring program run by LUMCON. This program provides equipment, training and literature needed to conduct water quality sampling.
<http://www.lumcon.edu/bayousideclassroom/>
- LVI trained 46 individuals and provided credentials in: OSHA 30-Hour Construction Safety, 40-Hour HAZWOPER, CPR, First Aid, and Bloodborne Pathogens. The training program also included an introduction to water/wastewater operations, environmental sampling and coastal wetland ecology.
- LVI/Oxfam contacted 50+ firms (Attachment 3) with contracts in the local environmental/coastal restoration arena. Companies, including Eustis Engineering, AECOM, Resource Environmental Solutions, and Leaf Environmental provided verbal commitments to consider trainees for placement upon successful procurement of suitable restoration contracts. However, most of these contracts are still pending. Therefore, we believe that this objective must continue to be worked on. Success will require that significant employment needs be realized from the recent issuance of multiple major restoration contracts. It is critical for trainees to be prepositioned in the affected communities.
- Based on the pilot's results, LVI developed a four-year business plan (Attachment 4) that includes a detailed job market analysis focusing on the skills trainees received. This analysis supports the need for the program's continuation, by looking closely at the projected number of jobs associated with planned coastal restoration projects for which a 4-year degree will not be necessary. The cost for doing that training across the Gulf for an estimated 10% of the targeted employment demand is considered and rolled out in a staggered fashion over the 4-year period. The cost is extrapolated from the pilot's budget information and includes an economy of scale that results from multiple locations operating simultaneously.
- Oxfam/LVI identified several sources of workforce development funding, including WIOA, the EPA's Environmental Workforce Development and Job Training Grants Program, RESTORE (Resources and Ecosystems Sustainability, Tourist Opportunities, and Revived Economies of the Gulf Coast States Act), NRDA, the DoL's H-1B Technical Skills Training Grants, and other DOL competitive grant solicitations. Oxfam also conducted a literature review of federal and state (Louisiana) workforce development programs; from that long list we will need to identify those programs that could support the kinds of training programs contained in the business plan.
- Oxfam/LVI commissioned Asakura Robinson to study the feasibility of developing a career pathway and series of stackable credentials covering skills needed by workers for middle-skill

jobs in ecosystem restoration and related technician-level occupations in underserved coastal communities (Attachment 5). The research team conducted a literature and best practice review, labor market analysis, and 39 interviews with experts and key stakeholders. They concluded that stackable credentials are feasible and desirable, and outlined a three-tiered set of possible credentials and a recommendation to launch a series of pilot programs to develop the partnerships necessary to establish credentialing programs in the five Gulf Coast states.

- Oxfam commissioned the Verbena Group to conduct an external evaluation of the project (Attachment 6). They found that the project successfully graduated 46 participants with high-demand certifications and skills as environmental technicians, and that the students gave the program high marks in terms of effectiveness of soft skills and technical training and credentialing and a highly skilled and caring instructional staff. The training included both classroom and hands-on field experience. Employer outreach was extensive, yet unable to execute formal partnerships and commitments. While students in previous LVI trainings were largely unemployed young people, this project attracted more older, experienced people who were employed, underemployed or at risk of losing their employment due to the downturn in the oil/gas market. Many of them joined the program to build their credentials to qualify for promotions or increase their job security. As a result, the project did not meet its goal of placing 32 people in new jobs, but nine people secured new jobs, 13 chose to continue their environmental training with LVI and another four continued their training with other institutions. And all graduates are now well positioned to take advantage of employment opportunities as they open up.

Initial Outcomes

- The project results indicate that there is a desire among local unemployed and underemployed minority residents to increase their education and job skills to gain employment access to environmental related job opportunities.
- The implications are that educational institutions that cater to under represented and marginalized minorities should add short term certificate based training programs with very flexible schedules specifically targeted towards this population.
- The results demonstrate that training non-traditional workers is a legitimate method of increasing the employment capacity of coastal communities that are vulnerable to future natural and man-made disasters.

Unexpected Results

The project happened to coincide with a downturn in the oil and gas industry which left many people unemployed, underemployed or at risk of losing their jobs. This directly impacted the profile of LVI trainees. The training curriculum and schedule were adjusted accordingly, and, as noted above, instead of placing the majority of people in jobs, many went on for further training or stayed in their jobs but with new credentials that will qualify them for promotions or increase their job security.

Project Relevance

Community leaders, federal government officials, and the private sector would be interested in the results of this project.

The coastal restoration industry is projected to grow dramatically in coming years, and there will be increased demand for people with credentials covered by this training program. Also the feasibility study of stackable credentials offers a roadmap to create a series of credentials in the coastal restoration sector that will serve employers' needs and offer low-skilled people opportunities to train and qualify for well-paying jobs with career ladders. Also the business community would be interested because an expanded, already trained local workforce could greatly enhance the timely delivery and profitability of their projects.

Education and Training

Number of students, postdoctoral scholars, or educational components involved in the project:

- Undergraduate students: 0
- Graduate students: 0
- Postdoctoral scholars: 0
- Other educational components: 46

Our program offers entry level field technician environmental education and job skills training to non-traditional minority students. Please see training curricula in Attachment 1.

III. DATA AND INFORMATION PRODUCTS

This project produced data and information products of the following types:

- Curricula for education and training

INFORMATION PRODUCTS

Information Product Inventory:

See attached Information Products Report.

Attachment 1

| Greater New Orleans/Jefferson Parish Coastal Restoration Job Training Pilot | | | | | | | | | |
|---|-----------|---|---|---|--|--|------------------------------------|-----------------|------------|
| Training Week | Week Day | Course Title | Subject Area | Course Description | Course Components | Course Materials | Teaching Medium | Instructor | Credential |
| Week 1 5pm to 9pm | Tuesday | Orientation | General | The Environment of Coastal Louisiana and Workforce Trends | History, trends, importance of STEM careers, credentials and typical salary | Handouts and power point | Classroom | Sherry Callaway | |
| | Wednesday | Water, Wastewater Contamination impacts | Environmental | Introduction to water and wastewater operations, sources of contamination, fate and transport of contaminant in the environment and how to assess potential impacts | Hydrologic cycle | Handouts and power point, videos and site visits | Classroom and field visits | Roger Simon | |
| | Thursday | | | | Potable Water sources and treatment | | | | |
| | Friday | | | | Industrial pollution, Contamination assessment and remediation | | | | |
| Week 2 4pm-9pm | Monday | 40-Hour OSHA | Safety | The OSHA 40-hour Hazardous Waste Operations is designed for workers who are involved in cleanup operations, emergency response, storage, disposal or treatment of hazardous chemicals or waste. | 1) Understand the purpose of OSHA and its role in regulating occupational safety; 2) Use Site Characterization to establish problems that may exist in your workplace and measures that can be implemented to eliminate hazards, 3) Identifying hazardous materials existing in the workplace and the possible methods, symptoms and preventative measures of exposure; 4) Encouraging the use of Material Safety Data sheets (MSDS) to identify and properly handle hazardous materials; 5) Familiarizing yourself with materials, compounds and mixtures that may present flammable, explosive, chemical or radiological hazards; 6) Emphasizing the importance of personal protective equipment in limiting hazardous exposure; 7) Establishing an effective Site Control Program to limit the risk of exposure to only those working in the hazardous work zone Implement procedures for treating workers in the event of hazardous exposure. | Handouts and power point, videos | Classroom and Homework Assignments | Roger Simon | Yes |
| | Tuesday | | | | | | | | |
| | Wednesday | | | | | | | | |
| | Thursday | | | | | | | | |
| | Friday | | | | | | | | |
| Week 3 6pm-9pm | Monday | Coastal and Wetland Ecology | Orientation and Introduction to Biology | | Biology and Louisiana Coastal Ecology and Workforce Trends. Definition of biology, earth's history of life, themes of biology, cell structure and function, stability, homeostasis, reproduction, inheritance, evolution, energy, food chains and food webs, niche theory, competition. Video - Louisiana coastal environment and habitats, and disturbance therein. | Handouts and power point, videos | Classroom and Homework Assignments | Peter Hoar | |
| | Tuesday | | Evolution and Ecology | | Complete evolution discussion; description of scientific method; review of ecology, including definition of ecology, populations, communities, ecosystems, ecosphere, lithosphere, hydrosphere, atmosphere, biosphere, energy and cycling of materials, competition, abiotic and biotic factors, | | | | |

| | | | | | | | | | |
|---------------------|-----------|-----------------------------------|--|---|--|-----------------------------------|------------------------------------|---------------------------------------|-----|
| Week 3 6pm-9pm | | Coastal and Wetlands Ecology | Evolution and Ecology | | carrying capacity, steady state, autotrophs and heterotrophs, symbiotic relationships (including mutualism, commensalism, and parasitism), food chains and food webs, energy flow and transfer, primary consumers, secondary and tertiary consumers, decomposers, succession, stability, competition and competitive exclusion principle. | | | | |
| | Wednesday | | Wetland Ecology | | Description of wetlands and types of soils, wetland classification, types of wetlands, physical/hydrological function, cycling, chemical function, biological function, wetland life, types of aquatic macrophytes. Video on Louisiana coastal wetlands | Handouts and power point, videos | Classroom and Homework Assignments | Peter Hoar | |
| | Thursday | | Coastal Ecology | | Review of ecology, levels of organization, factors affecting ecosystems, soil, water, nutrients, Gulf of Mexico coastal ecosystems and coastal habitats of concern, dune systems, saltwater marsh ecosystems, emergent salt marsh species, submerged aquatic vegetation, oyster reefs, and the concept of tragedy of the commons. | | | | |
| | Friday | | Land loss and Coastal Restoration | | Natural causes of wetland loss, alterations caused by humans, historical and predicted coastal Louisiana wetland changes, Coastal restoration activities in Louisiana, including CWPPRA, state and federal agency participation, and a review of past and current Louisiana coastal restoration projects | | | | |
| | Saturday | | Field trip to Jean LaFitte National Park | | Review of topics discussed during lecture in a field setting | Field Trip | Field Trip | | |
| Week 4/5 6pm-9pm | Monday | 30-Hour OSHA | Safety | The OSHA 30-hour Construction Industry Outreach Training course is a comprehensive safety program designed for anyone involved in the construction industry. This course is also applicable to environmental and conservation industries. | This course covers OSHA Standards, policies, and procedures in the construction industry. Topics include scope and application of the OSHA Construction Standards, construction safety and health principles, and special emphasis on those areas in construction, which are most hazardous. Upon course completion students will have the ability to define construction terms found in the OSHA Construction Standards, identify hazards which occur in the construction industry, locate and determine appropriate OSHA Construction Standards, policies, and procedures, and describe the use of the OSHA Construction Standards and regulations to supplement an ongoing safety and health program. | Handouts and power point, videos | Classroom | Sherry Callaway and Elizabeth Cornell | Yes |
| | Tuesday | | | | | | | | |
| | Wednesday | | | | | | | | |
| | Thursday | | | | | | | | |
| | Friday | | | | | | | | |
| | Monday | Equipment Use, Care & Calibration | Sampling | Introduction of field equipment | Covers the proper use, maintenance and calibration of environmental field equipment. | Handouts, PowerPoint Presentation | Classroom | Sherry Callaway, Elizabeth Cornell | |

| | | | | | | | | | |
|---------------------|-----------|------------------------|------------|--|--|---|---------------------------------|------------------------------------|-----|
| Week 6 6pm – 9pm | Tuesday | Water Quality Sampling | Sampling | Basic water quality sampling protocol and BPMs | This will include training in performing field-testing for pH, temperature, salinity, dissolved oxygen, clarity. Students will also be taught how to record test results, and capturing proper field notes. | Handouts, PowerPoint Presentation | Classroom, laboratory and field | Sherry Callaway, Elizabeth Cornell | |
| | Wednesday | First Aid/CPR/AED | Safety | First Aid/CPR/AED Learn how to apply first aid and respond to cardiac and breathing emergencies in adults, including the use of automated external defibrillators (AED). | With an emphasis on hands-on learning, our First Aid/CPR/AED courses give you the skills to save a life. All course options align with OSHA's <i>Best Practices for Workplace First Aid Training Programs</i> and are available in classroom and blended learning formats. | Handouts, PowerPoint, Presentation, Video | Classroom | Willie Ross | Yes |
| | Thursday | Employment Skills | Employment | Student receives training in employability skills. | Job searching techniques; collecting documentation; job application completion; acceptable work habits; switching jobs; grooming and health habits. | Handouts, PowerPoint Presentation | Classroom | Erik Range | |

Attachment 2



SCIENTIFIC RESEARCH AND COLLECTING PERMIT

Grants permission in accordance with the attached general and special conditions

United States Department of the Interior
National Park Service

Jean Lafitte NHP and Preserve

Study#: JELA-00065

Permit#: JELA-2014-SCI-0013

Start Date: Oct 01, 2014

Expiration Date: Dec 31, 2016

Coop Agreement#:

Optional Park Code:

| | | |
|---|---------------------|---------------------------------------|
| Name of principal investigator: | | |
| Name: Ms Sherry Callaway | Phone: 504-529-4301 | Email: scallaway@limitlessvistas.org |
| Name of institution represented: Limitless Vistas, Inc. | | |
| Co-Investigators: | | |
| Name: Matilda Tennessee | Phone: 504-529-4301 | Email: mtennessee@limitlessvistas.org |
| Study Title: Limitless Vistas/Bayouside Classroom Water Quality Sampling and Testing | | |
| Purpose of study: This study has several purposes. 1) Collect data for the Louisiana Universities Marine Consortium's (LUMCON) water quality data base. 2) To teach disadvantaged young adult students (18-29 years of age) how to collect proper water quality samples for testing purposes. 3) Teach young adult students how to conduct water quality field tests and take proper field notes. 4) Collect invasive species information for LUMCON's database...this is strictly a visual verification for presence from LUMCON's list. | | |
| Subject/Discipline: Water Quality | | |
| Locations authorized: At the bulkhead located at the Twin Canal access point along Barataria Boulevard. | | |
| Transportation method to research site(s): Vehicles will transport the students to the location and then students will use established footpaths to access the sampling location, as well as, while looking for invasive species. | | |
| Collection of the following specimens or materials, quantities, and any limitations on collecting: | | |
| Name of repository for specimens or sample materials if applicable: Repository type: Will be destroyed through analysis or discarded after analysis Objects collected: Sample water that is not used for testing will be returned to the canal. Water that is tested using passive (non-chemical) methods will be dumped onto the ground surface (not more than 2 gallons at any given time, and off of the foot paths and/or parking areas). Water that is tested with chemicals will be disposed of in the proper manner by LVI personnel. | | |
| Specific conditions or restrictions (also see attached conditions): The permittee agrees to operate under the guidance provided by both the NPS General Conditions for Scientific Research and Collecting Permits and Jean Lafitte National Historical Park and Preserve's Park Specific Conditions for Scientific Research and Collecting Permits (provided with this permit). A copy of this permit must be carried by the researcher when conducting field activities. Researchers must notify Jean Lafitte NHP&P staff by e-mail (jela_research@nps.gov) 3-7 days prior to conducting any field work. For ANY off-trail work (terrestrial or aquatic) researchers must file a "field work plan" via the JELA_Research@nps.gov distribution list at least 24 hours (and ideally longer) in advance of beginning the field work. Off-trail researchers must also check in and out with the Jean Lafitte NHP&P law enforcement dispatch (1-855-289-7412) each day they are working in the park and abide by the safety procedures outlined in the "field work plan". Note that this permit does not entitle the bearer to access the Park when the Park is closed for any reason. | | |

Recommended by park staff(name and title):

Julie L. Whitbeck, Ecologist

Reviewed by Collections Manager:

Yes

No (renewal)

Approved by park official:

[Signature]

Date Approved:

10/16/14

Title:

Natural Resource Program Manager

I Agree To All Conditions And Restrictions Of this Permit As Specified
(Not valid unless signed and dated by the principal investigator)

[Signature]
(Principal investigator's signature)

12/17/2014
(Date)

THIS PERMIT AND ATTACHED CONDITIONS AND RESTRICTIONS MUST BE CARRIED AT ALL TIMES WHILE CONDUCTING RESEARCH ACTIVITIES IN THE DESIGNATED PARK(S)

Attachment 3

| CPRA Projects and Contact Information | | | | | | | |
|---|---|-----------------|-------------|---|---|---|------------------------------------|
| Contracts and Procurement | | | | | | | |
| Contractor | CPRA Project Title | Project Number | Lead Agency | Lead Agency Contact Information | Company Contact Information | Contact | Telephone |
| Simon & Delany Resource Management, LLC | Operations and Maintenance of Water Control Structure & Monitoring Equipment for Highway 384 Hydrologic Restoration (CS-21) Cameron | CS-21 | NRCS | John Jurgensen, Alexandria LA; 318-473-7694 | 1123 Cecil Watkins Road, Arnauville, LA 70512 | (1) | 337-667-8849 |
| Soil Erosion Services | Lake Hermitage Marsh Creation Plantings & Sand Fence Project BA | BA-42 | FWS | Kevin Roy, Lafayette LA; 337-291-3120 | 307 Gauthier Lane, Simmesport, LA 71369 | (1) | 318-941-2461 |
| Luhr Brothers | Freshwater Bayou Wetland (ME-04) & Freshwater Bayou Bank Stabilization (ME-13) Maintenance Project | ME-04; ME-13 | NRCS | John Jurgensen, Alexandria LA; 318-473-7694 | 5311 3rd St., Alexandria, LA | Lonnie Dunn | W: 318-487-9263 C: 318-729-7588 |
| | South Shore of the Pen Maintenance Project | BA-41 | NRCS | John Jurgensen, Alexandria LA; 318-473-7694 | | | |
| Great Lakes Dredge & Dock Company | NRDA Caillou Headlands (Whiskey Island) | TE-0100 | (1) | (1) | 100 S Railroad Ave. Morgan City, LA 985-384-0871 | Steve Auern Hamer | 800-323-7100 630-574-2973 |
| | Shell Island West NRDA Restoration Project | BA-111 | (1) | (1) | | | |
| Ecological Restoration Service, LLC | Cameron Parish Shoreline Sand Fence Replacement Project | CS-33 | (1) | (1) | 108 3rd Street, Baton Rouge, LA 70801 | Peter Couhig, Chief Executive Officer | 225-612-2583 |
| Patriot Construction Equipment, LLC | Highway 384 Hydrologic Restoration Project Maintenance Event Project | CS-21 | NRCS | John Jurgensen, Alexandria LA; 318-473-7694 | Corporate Office, 4646 Qantas Lane, Suite B-4, Stockton, CA 95206 | (1) | 209-982-9900 |
| Coastal Estuary Services | Coastwide Reference Monitoring System | (1) | (1) | (1) | 2304 Engineers Rd#2, Belle Chasse, LA 504-392-3628 | (1) | 504-392-3628 |
| IEM | Waterway Debris Removal Project Support and Monitoring | (1) | (1) | (1) | 8710 Jefferson Hwy, Baton Rouge 225-952-8191 | Sean Fonpenot | 225-952-8268 |
| Land Management Services, LLC | Professional Land Services | (1) | (1) | (1) | 4033 Veterans Memorial Blvd., Metairie, LA 70002 | (1) | 504-888-1999 |
| LaPac, LLC | | (1) | (1) | (1) | Corporate Office: 343 Third Street, Suite 550, Baton Rouge, LA 70801 (also offices in Lafayette, Madisonville, NO | James Bradford | 225-387-0225 |
| Professional & Consulting Services | | | | | | | |
| Oil Land Services | Professional Land Services | RFP 2503-15-35 | (1) | (1) | 515B Verot School Road, Lafayette, LA 70508 | | 337-233-4156 |
| BCR, Land Services Inc. | | | (1) | (1) | 205 West Anton Ave., Coeur d'Alene, ID 83815 | | 208 664 2852 |
| Coastal Consulting and Land Services, LLC | | | (1) | (1) | 626 Cohen Street, Marrero, La 70072 | | 504-507-8279 |
| Mark A. O'Neal and Associates | | | (1) | (1) | 7732 Goodwood Blvd., Ste. 211 Baton Rouge, LA 70806 | John Bullock | 225-389-1100 |
| Explus Incorporated | Exhibit Fabrication and Installation Services for the Center for River Studies Coastal Exhibit Area | RSIQ 2503-15-49 | (1) | (1) | 44156 Mercure Circle, Dulles, VA 20166 | | 703-260-0780 |
| Eustis Engineering Services, LLC | Geotechnical Services | RSIQ 2503-15-34 | (1) | (1) | 3011 28th Street, Metairie, LA 70002 (also, Baton Rouge, Lafayette, Lake Charles, Gulfport | Kathy LeRouge | 504-834-0157 |
| T. Baker Smith, LLC | Surveying Services | RSIQ 2503-15-33 | (1) | (1) | Corporate Headquarters: 412 South Van Ave., P.O. Box 2266, Houma, LA 70360 (also, Lafayette, Lake Charles, Thibodaux) | David Martinez or Patrick Haley; Kevin Rizzo | 866-357-1050 |
| Hydroterra Technologies, LLC | | | (1) | (1) | Corporate Office: 202 Jacobs Run, Scott, LA 70583 | Keith Roberts, General Manager Land Survey Services | 337-517-3373 |
| Burk-Kleinpeter, Inc. | Engineering Services | RSIQ 2503-15-32 | (1) | (1) | 4176 Canal Street, NO, LA 70119 | Contact by e-mail through internet site | |
| Sigma Consulting Group, Inc. | (1) | (1) | (1) | (1) | 10305 Airline Highway, Baton Rouge, LA 70816 | Robert Lear | 225-298-0800 |
| Design Engineering, Inc. | Engineering Services | (1) | (1) | (1) | Not clear what involvement they have - "pioneer in auto performance industry" | | |
| Tetra Tech | Engineering Services | (1) | (1) | (1) | 309 Dickson Rd., Houma | Lacey Horner | 985-851-0331 |
| Evan Graves Engineers, Inc. | Engineering Services | (1) | (1) | (1) | 1 Galleria Blvd., Ste., 1520, Metairie, LA 70001 | Ashland Graves | 504-836-8190 |
| MWH Americas, Inc. | Engineering Services | (1) | (1) | (1) | 1340 Poydras Street, NO, LA 70112 | Nina Reins | 504-581-6900 |
| CB&I Environmental & Infrastructure, Inc. (Chicago Bridge & Iron Company) | Engineering Services | (1) | (1) | (1) | 7389 Florida Blvd., Baton Rouge | Ruth Anne Louie | 225-932-2500 |
| CH2M Hill | Engineering Services | (1) | (1) | (1) | 1515 Poydras Street, Ste., 1550 | Michael Lucasse | 504-593-9421 |
| Additional Companies | | | | | | | |
| Weeks Marine | (1) | (1) | (1) | (1) | 70854 LA-23 Belle Chasse | | 504-656-7585 |
| Pine Bluff Sand & Gravel | (1) | (1) | (1) | (1) | Alexandria | Jacob Clanton | 318-487-1731 |
| Manson Construction Company | (1) | (1) | (1) | (1) | 408 Old Bayou Dularge Roda, Houma, LA 70363 | Nancy Lee-Gaskowski | 206-762-0850 |
| Grillot Construction | (1) | (1) | (1) | (1) | 2608 Engineers Road, Belle Chasse, LA 70037 | Jason Pox | 504-394-5596 |
| CH2M Hill | (1) | (1) | (1) | (1) | 700 Main St. #400, Baton Rouge | Carlos Jerome | 225-381-8454 |
| Southwind Construction | (1) | (1) | (1) | (1) | 3855 France Road, NO | | 504-836-0627 |
| Notes: (1) Still working on gathering this information | | | | | | | |

Attachment 4

**Limitless Vistas, Inc.
Greater New Orleans Coastal
Restoration STEM Job Skills Training
Pilot Program Expansion**

Business Plan

Prepared For:

**Oxfam America
226 Causeway Street
Boston, MA 02114**

Prepared By:

**Limitless Vistas, Inc.
1215 Prytania Street, Suite 109
New Orleans, LA 70130**



August 31, 2016

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Section 1. Introduction

It has now been documented by several sources including studies and reports by Oxfam, GNO, CPRA and others that, in the coming decade, several tens thousands of new jobs will grow out of restoration work related to the RESTORE Act and BP Deepwater Horizon settlements. We strongly believe that coastal communities are more resilient and thus can more quickly recover from both natural and manmade disasters when more residents in the affected areas are properly trained to actively participate in restoration work. With this as our premise in 2015 Oxfam and Limitless Vistas collaborated on a submittal response to the National Academy of Sciences Gulf Research program Exploratory Grant. Over the past year we have designed, implemented, tested, and evaluated a new model to leverage public/private resources and local capacities to help underserved minorities in low-income coastal communities gain access to middle-skilled careers with local energy, environmental, water resources, construction, ecosystem restoration, and related fields.

This Greater New Orleans Coastal Restoration STEM Job Skills Training Pilot Program was designed by LVI to quickly, efficiently and cost effectively ramp up a national certification based short-term environmental jobs training program, which would dramatically improve the employability of vulnerable, unemployed or underemployed minorities. The Pilot also included an independent evaluation, which was performed by the Verbena Group, under a sub-grant from Oxfam and a separate Oxfam/LVI designed study to determine the feasibility of developing a formal credentialing program based on the anticipated employment skills needed for the pending coastal restoration work; this study was performed by Asakura Robison.

The training for the Pilot was performed at two locations, the LVI offices, 1215 Prytania in “Central City” New Orleans and at the River of Life Church in Woodmere, 2140 Woodmere Blvd in Harvey, LA. The Central City classes were held from 8 to 12 Monday to Thursday and the Woodmere classes were given in the evenings generally from 6 to 10 PM Monday to Friday. Field trips were generally held on Saturday. A general curriculum for the classes is given as Appendix A. The Woodmere location was selected specifically to train folks at a more coastal location.

Over the one-year program 46 African-American students successfully completed the 4 training classes provided. Table 1-1 is a summary of course completion characteristics as provided in the evaluation report.

Oxfam and LVI have a history of working with local institutions, including area universities/community colleges to develop and implement the programs and partnerships necessary to connect vulnerable minority workers to training and career opportunities. Oxfam’s Gulf Program convenes innovative cross-sector partnerships, and builds local institutions’ capacities to develop new solutions to issues like workforce development. Since the BP oil disaster in 2010, Oxfam has supported capacity building and leadership training activities for ten community-based organizations including several directly working to help disadvantaged, low-wage and unemployed workers access training and take advantage of emerging job opportunities.



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Table 1-1 Participant Characteristics

| Category | | Number | Percent |
|--|---|--------|---------|
| Age | | | |
| | 15-19 | 2 | 4% |
| | 20-24 | 14 | 28% |
| | 25-30 | 8 | 16% |
| | 31-35 | 9 | 18% |
| | 40 or older | 9 | 18% |
| | Unknown | 8 | 16% |
| Education Level | | | |
| | Less than HS completion | 8 | 16% |
| | High school diploma or GED | 31 | 62% |
| | Some college or formal training beyond HS | 14 | 28% |
| | Two years of college (AA degree) | 1 | 2% |
| | Four-year college degree | 2 | 4% |
| | Additional education/degrees beyond four-year college | - | - |
| | Unknown | 10 | 20% |
| Gender | | | |
| | Male | 42 | 84% |
| | Female | 8 | 16% |
| Race or Ethnicity | | | |
| | Black/African American | 50 | 100% |
| | Other | - | - |
| Justice Profile | | | |
| | Formerly Incarcerated | 18 | 36% |
| Employment Status | | | |
| | Full-time | 16 | 32% |
| | Part-time | 21 | 42% |
| | Unemployed | 13 | 26% |
| Previous Awareness of Career | | | |
| | Male | 23 | 52% |
| | Female | 3 | 6% |
| Continued Education After Completing Program | | | |
| | Additional LVI Classes | 13 | 26% |
| | Other | 4 | 8% |

The purpose of this document is to identify the workforce need from both the market demand and community need perspective and present the business case to continue this or a similarly structured short-term, targeted environmental jobs training program.



Section 2. Market Analysis

2.1 Background/Employment Market Overview

The Gulf coast coastline stretches 1,631 miles from the Rio Grande in Texas to the Florida Keys and supports abundant and diverse ecosystems and is home to nearly 21 million people¹. The region's natural assets and vibrant communities are the backbone of a thriving economy. The Gulf Coast supports multiple economic activities including commercial fishing, tourism and recreation, oil and gas and navigation and waterborne commerce, which contribute \$234 billion annually² to the American economy.

The Gulf Coast faces a number of environmental, economic, and social challenges. The Coastal infrastructure and environmental assets that support the region's economy and its communities are under threat due to decades of ecological degradation (severe wetland loss and nutrient pollution of Gulf waters); the effects of climate change (sea-level rise, flooding, ocean acidification, increased hurricane intensity); and man-made environmental disasters, such as the aforementioned 2010 Deepwater Horizon Oil Spill. In addition to pressing environmental concerns, the region is in desperate need of new industries and job opportunities³. The people in the region face/share similar socioeconomic issues:

Some of the highest rates of poverty in the nation.

- Higher than national average percentages of their workforce in low-wage jobs that would leave a family of four thousands of dollars below the poverty line.
- Among the worst states in the country for economic mobility and poverty⁴.
- As of July 2016, Alabama, Louisiana and Mississippi face a higher than national average unemployment rates⁵.

“Socioeconomic disparities create uneven exposures and sensitivities to growing coastal risks and limit adaptation options for some coastal communities, resulting in the displacement of the most vulnerable people from coastal areas”⁶.

Recognizing these challenges, the Gulf coast region has undertaken several efforts to improve risk reduction through flood protection, coastal restoration and urban and suburban water management projects, and build a sustainable and resilient ecosystem. Many large coastal restoration and protection projects are currently under way or completed, and there are several projects that are in the feasibility and planning and engineering and design stages or will begin construction. Appendix B includes a brief description of the projects undertaken by the State of Louisiana Coastal Restoration Authority (CPRA). In addition, the implementation of the RESTORE act implies the development of a significant amount of project and programs that target ecosystem restoration and water resources needs. Appendix C includes a brief description of the RESTORE Act. Also, several urban and suburban watershed management efforts are underway to address flooding generated by rainfall and land development, and water quality issues.



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Repairing and restoring the Gulf Coast's coastline, estuaries, and wetlands and managing urban and suburban water resources is vital to the health and safety of the region and offers a tremendous economic development opportunity. Coastal restoration projects involve a full supply chain of materials providers, equipment manufacturers, shipbuilders, machinery repair firms, engineering and construction contractors, and environmental resource firms. About 261 of these firms or 67 percent of the nations' total are based in the Gulf coast region⁷. In addition, a growing number of research institutions and state and local agencies are getting involved in coastal ecosystem restoration and protection and water management activities in the area. Investment in these sectors will boost innovation and generate new jobs and business opportunities for small and large businesses alike and

“Coastal restoration could create 29.54 jobs for every million dollars dedicated”⁸

“Employing 64,587 people in 2013, water management is one of the largest clusters in Southeast Louisiana” and is among the fastest growing”⁹

Billions of dollars in resources for ecosystem restoration have become available to the region as a result of the RESTORE Act, the Natural Resource Damage Assessment (NRDA), Gulf of Mexico Energy Security Act (GOMESA), and the National Fish and Wildlife Foundation, other funds related to the 2010 Deepwater Horizon Oil Spill, and other federal and local funding such as FEMA Hazard Mitigation Grant Program and National Disaster Resilience Competition.

An investment of \$25 billion in coastal restoration projects from RESTORE act funds could create 57,697 new jobs in the Gulf Coast states in 10 years, and almost 77,453 jobs within 50 years.¹⁰

According to a study by GNO (2016) “52% of water management jobs require only middle skills”¹¹ meaning they will be accessible with technician level job skills training. Rebuilding a resilient and sustainable Gulf coast involves many activities and projects that require a local and skilled workforce with some basic knowledge of Science, Technology, Engineering, and Mathematics (STEM) concepts and sustainable construction techniques.

This is a critical window of time to leverage the influx of resources to integrate workforce development into the mix, and create new on-ramps to well-paying careers, overcome racial and gender barriers, and prepare the next generation of technicians, scientists, engineers, and professionals.

This LVI Pilot Job Training program taps into this historic opportunity by offering an innovative cross sector approach to job training, focused on building STEM career pathways, for underserved minorities in low-income vulnerable coastal communities, while meeting the job skill needs of area employers.

2.2 Target Occupations

Coastal ecosystem restoration and water management markets in the Gulf coast require a high number of industries and jobs. These jobs include a wide range of occupations, skills and education, and/or training/preparation background, from entry level to advanced degree¹². Table 2-1 shows common



occupations across the target market with their corresponding skill and preparation levels according to the Bureau of Labor Statistics (BLS) guidelines.

Middle-Skilled and STEM occupations

A significant number of these jobs can be considered middle skilled jobs, requiring some education and training beyond high school diploma, such as post-secondary vocational education, associate’s degree, and/or on-the-job training and industry based credentials, but less than a four-year degree¹³. Middle-skilled jobs also often pay higher wages than low-skilled jobs and makeup more than half of employment across the Gulf coast states¹⁴.

Many of middle-skill jobs, like survey, engineering, and environmental technicians can be considered STEM occupations¹⁵, which in general garner wages significantly above the median wage, and are almost twice as high as the most common jobs in the in the Gulf economy (cashiers, retail salespersons, food service, etc.)¹⁶. STEM occupations are often prioritized for their connection to innovation and economic competitiveness. According to several studies and our analysis, STEM technician jobs are also expected to grow in the Gulf Coast labor market. Figure 2-1 shows the pay range for a few middle-skilled occupations that are common across the target market.

“Employment of environmental engineering technicians is projected to grow 10 percent from 2014 to 2024, faster than the average for all occupations”¹⁷ (nationwide).

Table 2-1: Target Market Occupations and Education and Training Requirements by Skill Level

| Skill-level | Occupation | Education & Training Requirements |
|----------------|---|--|
| Low - skill | Construction laborers and nursery workers Deckhands | High school diploma or equivalent, some preparation |
| Middle - skill | Construction trade workers (welders, fitters, etc.) Construction supervisors and inspectors Architectural and civil drafters Surveying technicians Environmental and engineering technicians GIS technicians and developers Water and wastewater treatment plant operators U.S. Coast Guard-certified captains, boat operators | Training in vocational schools, related on-the-job experience, or an associate's degree; One or two years of training involving both on-the-job experience and informal training with experienced workers. A recognized apprenticeship program may be associated with these occupations. |
| High – skill | Surveyors Environmental and civil engineers Construction Managers Hydrologist Biologist and wetland scientist Specialists in social studies (social workers, anthropologists, archeologists, economists, etc.) | Four-year bachelor's degree or higher, several years of work-related experience, on-the-job training, and/or vocational training |



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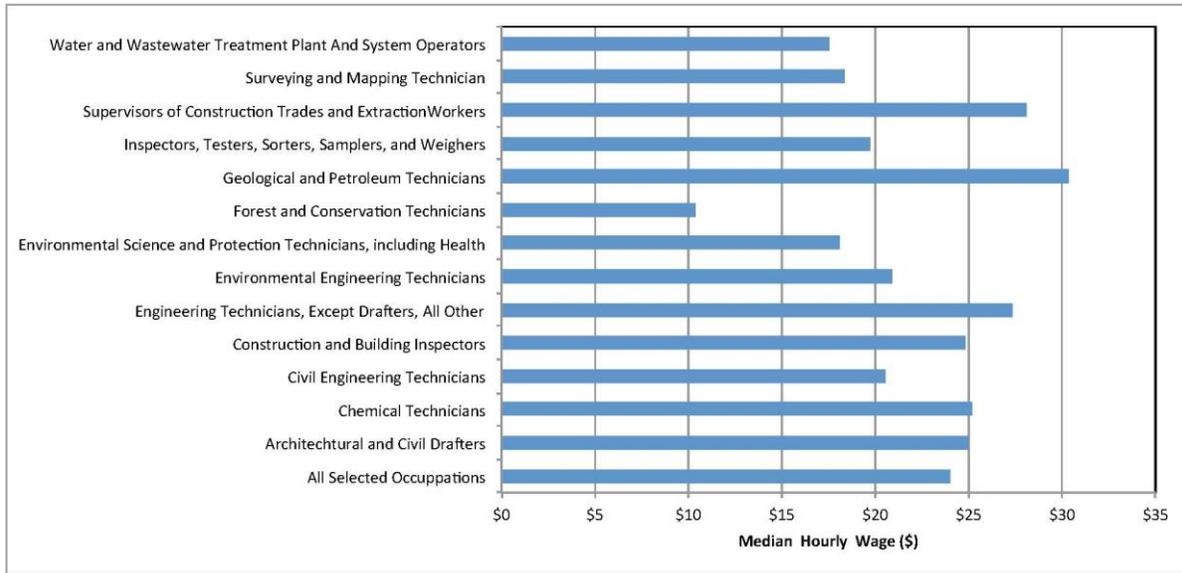


Figure 2-1: Pay Range for Selected/Targeted Middle-Skill Occupations.

Competition for Middle-Skilled Workforce

Many of these middle-skill occupations share many transferable skills that are in high demand across various industry clusters, such as water management, coastal ecosystem restoration; coastal protection; oil and gas production and transportation; local real estate, construction and development; disaster response; and public health. For example, engineering, environmental science, conservation, and survey technicians play an important role across these sectors and share many transferable skills, like field testing, surveying, GIS mapping, hazardous materials management, emergency response, quality control, and safety. Some analyses have shown substantial overlap between occupations in water management/ coastal restoration and the oil and gas industry and local real estate/construction¹⁸. In southeast Louisiana this overlap is about 30% for existing jobs in these industries¹⁹. Moreover, between 78%²⁰ and 90%²¹ of the total job openings in the water management sector will be in occupations shared with the oil and gas industry.

Table 2-2 presents data on number of employees in 2015 and projected annual total openings for middle –skilled occupations common across the target market. Figure 2-2 shows the projected number of job openings in the target industries for middle-skilled occupations. According to our analysis of labor market data, during the next 5 years roughly **1,900** job openings will be available per year for selected occupations/industries in the target market in the Gulf Coast region. These openings will be due to growth and/or replacement (retirement/turnover). Appendix - D details the methodology used for this analysis.

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Table 2-2: Projected Annual Openings for Middle-Skill Occupations for Targeted Industries

| Occupation | ALL STATES | Projected Annual Job Openings | | | | |
|--|---------------------------|-------------------------------|------------|------------|-------------|--------------|
| | Estimated Employment 2015 | ALABAMA | FLORIDA | LOUISIANA | MISSISSIPPI | TEXAS |
| Architectural and Civil Drafters | 7,661 | - | 39 | 17 | 4 | 85 |
| Civil Engineering Technicians | 4,769 | 4 | 24 | 36 | 7 | 65 |
| Environmental Engineering Technicians | 358 | 2 | 5 | - | - | 12 |
| Surveying and Mapping Technician | 5,284 | 4 | 69 | 14 | - | 112 |
| Engineering Technicians, Except Drafters, All Other | 1,347 | - | 8 | 6 | 1 | 47 |
| Chemical Technicians | 1,760 | 1 | 9 | 19 | - | 39 |
| Geological and Petroleum Technicians | 1,260 | - | - | 8 | - | 58 |
| Environmental Science and Protection Technicians, including Health | 754 | 3 | 12 | 6 | - | 15 |
| Forest and Conservation Technicians | 72 | - | 1 | - | - | - |
| Supervisors of Construction Trades and Extraction Workers | 14,500 | 18 | 195 | 62 | 11 | 276 |
| Construction and Building Inspectors | 1,737 | 3 | 32 | 5 | - | 35 |
| Water and Wastewater Treatment Plant And System Operators | 7,173 | 15 | 116 | 40 | 5 | 120 |
| Inspectors, Testers, Sorters, Samplers, and Weighers | 7,297 | 6 | 34 | 64 | - | 159 |
| All | 53,971 | 55 | 544 | 278 | 29 | 1,022 |

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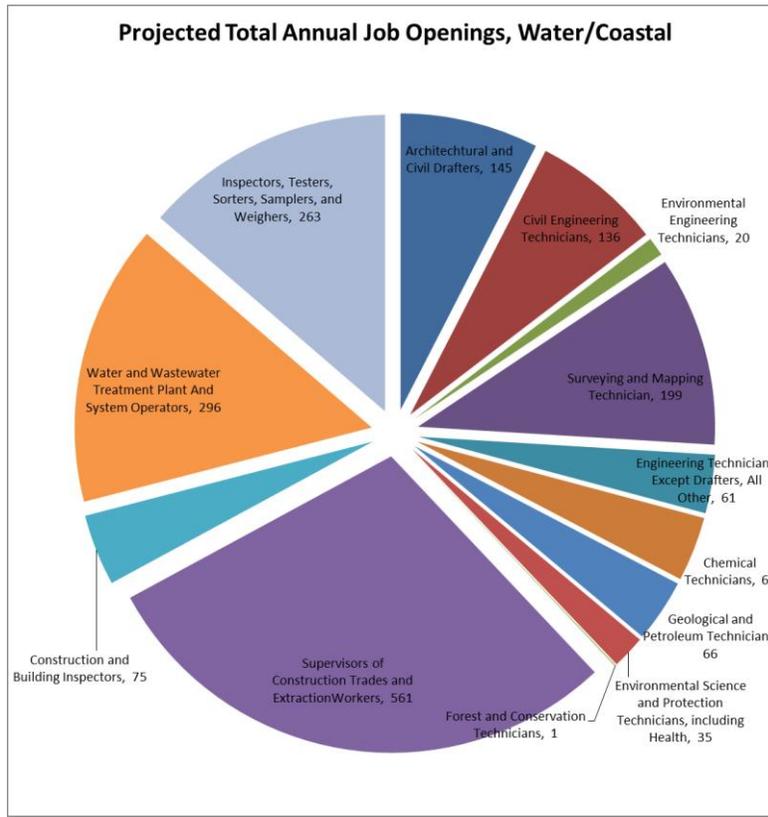


Figure 2-2. Projected Number of Job Openings in the Target Industries for middle-Skill Occupations

Based on the BLS data the annual projected job opening directly related to the proposed training was not significant in 2015 for the target sector, however when one considers the tremendous anticipated influx of jobs from the planned coastal restoration work this need is anticipated to increase to roughly 4,800 in the next 2 – 4 years. This represents a 10-fold increase. Table 2-3 is a state-by-state summary of the likely middle STEM technician restoration job needs. The details of this analysis are further described in Appendices C and D. Moreover, as we found in the pilot greater than 60% of the individuals that completed the program were underemployed and elected to enroll in the program to increase their ability to obtain more hours on an existing job, get a promotion or simply to have more future employment options. Taken into account the underemployed will dramatically broaden the need for this program. The current community college job training (certificate) programs simply do not appeal to the recipients of our pilot program for several reasons the principal ones being, the duration of training, the hours in which the class is typically held and flexibility to deliver the training in a manner that accommodates their schedules.

Therefore there is a great opportunity for skilled local workers to join this emerging market and improve their economic outlook/livelihoods. Yet, every Gulf state still experiences a “skills gap,” with significantly fewer qualified workers than available positions²².

“A recent survey found that 92% of executives believe there is a serious gap in workforce skills, and nearly 50% are struggling to fill jobs”... As a result—despite stubbornly high unemployment rates in several coastal communities—many jobs are left unfilled”²³

2.3 Characteristics of the Gulf Coast Workers

The Gulf coast region is home to a diverse population:

- African Americans account for about 30% of the population in Alabama, Louisiana, and Mississippi²⁴.
- Hispanics account for nearly 23% of Florida’s and more than 38% of Texas’s populations²⁵.
- The region is also home to higher than national average numbers of Native Americans²⁶.

Yet these minorities are drastically under represented in environmental and related natural resource industries even as such communities are disproportionately impacted by all manner of environmental impact. It is LVI’s firm belief that true community resiliency is inextricably linked to diversity and inclusion in the recovery process. For communities to be able to quickly and efficiently recover from both man-made and natural disasters more individuals from the impacted areas must be trained to aid in the recovery process. Additionally, the economic vitality of these areas will be tremendously enhanced if the contractors hired to perform the restoration work can more easily and directly employ local residents and/or qualified local subcontractors. It is often too late to begin the training process when the work needs to be implemented. Therefore, some element of an in place and “ready to hire” workforce is needed to help ensure community environmental and economic resiliency.

As an example, over a 10-month period following hurricanes Katrina and Rita as a critical part of the USACE Debris Removal Mission, BFA Environmental, the founding entity of LVI, was able to train and hire over 150 individuals from the locally effected areas as Debris Removal QA Monitors. Essentially all of these individuals were rehired by BFA and other companies 3 years later to work on similar recovery efforts following hurricanes Gustav and Ike. Additionally, in the following years many of these trainees went on to work across the country responding to tornadoes and other disasters. To this day BFA maintains a database with the contact information of these individuals that is used when the need arises. This type of additional community institutional capability is needed as it relates to coastal restoration in the face of climate change and potential man-made disasters.

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Table 2-3: Estimated Total Jobs Openings for Middle – Skilled Worker for Target Industries, Due to Influx of jobs from Restore Act Funds and BLS Projections

| Year | ALABAMA | | | FLORIDA | | | LOUISIANA | | | MISSISSIPPI | | | TEXAS | | |
|------|-------------|-----|------------|-------------|-----|------------|-------------|-----|------------|-------------|-----|------------|-------------|------|-------------|
| | RESTORE Act | BLS | Total | RESTORE Act | BLS | Total |
| 2 | 206 | 55 | 261 | 194 | 544 | 738 | 272 | 278 | 549 | 198 | 29 | 227 | 145 | 1022 | 1167 |
| 3 | 237 | 55 | 292 | 222 | 544 | 766 | 324 | 278 | 602 | 227 | 29 | 256 | 157 | 1022 | 1179 |
| 4 | 253 | 55 | 308 | 236 | 544 | 780 | 351 | 278 | 628 | 242 | 29 | 271 | 163 | 1022 | 1185 |
| 5 | 284 | 55 | 339 | 264 | 544 | 808 | 404 | 278 | 681 | 271 | 29 | 300 | 174 | 1022 | 1196 |

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Educational Attainment

The Gulf States have working-age population, which lags behind the nation in educational attainment as shown in Table 2-4.

Table 2-4. Educational Attainment for Adults 35 to 64 in Gulf Coast States in 2012.

| State | Percent of Adults 35 to 64 with a | | |
|--|------------------------------------|---------------------------------|-----|
| High School Diploma (or Equivalent) | Associate's Degree or Higher | Bachelor's Degree or Higher. | |
| Alabama | 86% | 33% | 25% |
| Florida | 88% | 38% | 28% |
| Louisiana | 85% | 29% | 23% |
| Mississippi | 85% | 31% | 21% |
| Texas | 83% | 35% | 28% |
| Nation | 88% | 40% | 31% |

Data Source: National Information Center for Higher Education Policymaking and Analysis²⁷

For African-Americans ages 25 and over, the educational attainment is in general is lower than the national average: 84.4% had a high school diploma or higher in 2014 and only 19.7% had a bachelor's degree or higher in 2014²⁸.

Displaced Workers

Additional training is also needed to retrain displaced workers laid off from the usually dependable Oil and Gas sector. From January 2015 to January 2016²⁹ due to the drop in oil and gas prices there has been an 18% decline in oil and gas jobs³⁰. Louisiana reports losing over 15,000 jobs between March 2015 and March 2016. The type of skills needed for entry-level oil and gas industry field hand are very similar to those required for a coastal restoration environmental technician. So this new need also represents an opportunity to cross train oil and gas workers and potentially transition them to the environmental restoration industry³¹.

Section 3 LVI Program Proposal

LVI believes that a community based workforce program that already works with the target community, but that is very familiar with the employment needs of the targeted industry, is best to offer this type of training initiative. The outreach training and support should be implemented over a 1-year period. The approach and services should include the following Tasks:

- 1) Identify and target coastal communities with vulnerable populations, high unemployment or under employment.
- 2) Work with City, Parish, State and Federal project owners to Identify recently awarded or pending coastal restoration projects within a 50-mile radius of target community. Determine the



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entry-level job skill needs for each area of design support and construction work necessary to build the planned project.

- 3) Develop an internship/work transition program with selected employers for program graduates.
- 4) Identify existing community college certificate and associates degree programs that cater to the target geographic and technical discipline area.
- 5) Identify local community workforce outreach programs and support services to include case management, which can be used to identify and recruit and assist program applicants through the process.
- 6) Develop a tailored 6-week job-training curriculum in collaboration with employers who will have positions to fill. Ensure with the local community colleges that the curriculum can serve as an on-ramp to a certificate program, if students desire and that a structure exists to accommodate that.
- 7) Implement a 6-8 week STEM based workforce and job skills training program, which at a minimum includes the following certifications; OSHA 30-Hour Construction Safety, 40 Hour HAZWOPER, FEMA Incident Command System, First Aid/CPR and training in wetland and coastal ecosystem restoration, surveying and mapping, environmental sampling and water/wastewater operations and job readiness. The program should also be flexible enough to include modules, which are designed specifically to meet the immediate project need of a specific employer.
- 8) Provide fulltime case management and job placement support through networking opportunities for program graduates and area employers.

Table 3-1. Project Milestones

| Task | Duration and Delivery |
|--|---|
| 1) Identify Target Community | 30 days after notice-to-proceed (NTP) |
| 2) Work With Project Owners | 5 - 90 after NTP & throughout the training implementation |
| 3) Internship Program Development | 5 - 60 days prior to training & throughout implementation |
| 4) Community College Outreach | 10 - 30 days after NTP |
| 5) Build Community Partners | 10 - 45 days after NTP |
| 6) Curriculum Development | 5 – 60 after NTP and 30 days prior to training |
| 7) Training Implementation and case management | From 90 to 270 days after NTP |
| 8) Job Placement Support and case management | 10 days after NTP until 360 days, full project duration |



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This proposed LVI program, which was proven in the pilot phase, will continue to fill gaps in Gulf Coast workforce development systems, by implementing an innovative cross-sector approach to job training, focused on the coastal region’s middle-skilled STEM occupations in the coastal restoration and water management industries. LVI program will offer a clear pathway for unemployed or under-employed minority workers to access education, training, and credentials aligned with employers’ work readiness standards, to access employment and through additional training and experience, higher wages³².

This program will build on the recently completed pilot and the lessons learned. Whenever possible the program the graduates will feed directly into related programs that offer stackable credentials and further professional attainment through a processes related to the 2016 Creating Career Pathways for Coastal Opportunity: Stackable Credentials Study performed by Asakura Robinson in association with Oxfam and Limitless Vistas³³.

The LVI program plan to provide training for 100 to 300 people/workers annually in selected locations across the five Gulf States. According to our analysis, this represents roughly 10% (of the estimated demand for middle-skilled occupations in the target market. Table 3-2 provides the proposed number of students to be trained per year and per State.

Table 3-2: Proposed Number of Students to be Trained per Year and per State

| Area/ State | Year 1 (Pilot) | Year 2 | Year 3 | Year 4 | Year 5 |
|--------------|----------------|--------|--------|--------|--------|
| Alabama | 0 | 0 | 25 | 25 | 50 |
| Florida | 0 | 0 | 0 | 25 | 50 |
| Louisiana | 46 | 75 | 100 | 100 | 100 |
| Mississippi | 0 | 25 | 25 | 50 | 50 |
| Texas | 0 | 0 | 0 | 25 | 50 |
| Total | 46 | 100 | 150 | 225 | 300 |

Section 4 Cost Analysis and Financial Projections

LVI has demonstrated that this type of training can be prosecuted very efficiently and cost effectively if you have in-house certified trainers. It’s also important that these staffs are fully aware of and comfortable managing the unique challenges for working with this population. Although LVI does not have formal case managers, our professional staff has demonstrated a unique ability, when called upon, to provide the wrap around services necessary for not just the training but placement success.

Because the pilot featured a large number of individuals that were already employed and seeking to enhance their marketability we were able to manage the case management support in-house. Moving forward this additional cost represents the only significant change to the LVI budget for pilot program.

Table 4-1 is summary of the cost for pilot program and at the Woodmere location and a projection for how those costs would change over the next 4 years.



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**Table 4-1. Funds Needed For Continued Environmental Technician Training at Laffite (Woodmere)
 Location ⁽¹⁾**

| Annual Project Expenses | Pilot-Budget | Year -2 | Year - 3 | Year - 4 | Year-5 |
|---|--------------|-----------|-----------|-----------|-----------|
| Personnel | | | | | |
| Project Management | \$20,000 | \$20,000 | \$15,000 | \$10,000 | \$10,000 |
| Training (Assumes 5, 6 week sessions) | \$69,130 | \$35,000 | \$36,050 | \$37,132 | \$38,245 |
| Outreach/Recruitment (starts prior to training)(2) | (3) | \$15,000 | \$10,000 | \$10,000 | \$10,000 |
| Case Management (from training to placement)(2) | (3) | \$15,000 | \$15,000 | \$15,000 | \$15,000 |
| Outreach/Partner Building/Placement (all year)(2) | (3) | \$20,000 | \$15,000 | \$15,000 | \$15,000 |
| Travel | \$6,000 | \$4,000 | \$4,000 | \$4,000 | \$4,000 |
| Equipment/Supplies | | | | | |
| Manuals/Certifications | \$2,500 | \$2,500 | \$2,500 | \$2,500 | \$2,500 |
| Student Tablets/software/support | (3) | \$7,500 | \$7,500 | \$7,500 | \$7,500 |
| Audio Visual | (3) | \$1,500 | \$1,500 | \$1,500 | \$1,500 |
| Operational | | | | | |
| Training Equipment | \$4,000 | \$4,000 | \$4,000 | \$4,000 | \$4,000 |
| Student Travel Support | (3) | \$3,000 | \$3,000 | \$3,000 | \$3,000 |
| Two Outreach Events | (3) | \$4,000 | \$4,000 | \$4,000 | \$4,000 |
| Graduation Events | (3) | \$2,000 | \$2,000 | \$2,000 | \$2,000 |
| | (3) | | | | |
| Facility - Community Partner | (3) | | | | |
| Rent 8 Months | (3) | \$4,000 | \$4,000 | \$4,000 | \$4,000 |
| O&M | (3) | \$500 | \$500 | \$500 | \$500 |
| Miscellaneous | | \$2,500 | \$2,500 | \$2,500 | \$2,500 |
| LVI Cost | \$101,630 | | | | |
| Future Funds Required | | \$140,500 | \$126,550 | \$122,632 | \$123,745 |
| Notes: (1) 1-Year program to training 50 students using 5, 6 week long classes given over an 8 month period. The minimum certifications will include, OSHA-10, 30 -Hour Construction Safety, 40-Hour HAZWOPER, CPR & FEMA ICM (2) These services will be provided by the same individual with support from LVI staff. (3) Not included in LVI component of the pilot. The cost covered provided by in-kind partner match or Oxfam. | | | | | |



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Using this template, with minor adjustments in the management, travel we've projected the anticipated cost to incrementally scale up similar training in each of the five Gulf States. Additionally, to leverage our existing contacts and investments in Louisiana area we've added a second location for Southeast Louisiana. We are prepared to training up to 50 students at each location each year however because of the several unknowns in ramping up a new program the initial goal at each new location will be 25 students. Appendix E is a state-by-state full budget summary for this training expansion.

Table 4-2 is a summary of the total anticipated operational costs for each state for the next 4-year period as programs are incrementally added.

Table 4-2: Training Budget Summary All Five States

| | Year – 1 (Pilot ⁽¹⁾) 2015/16 | Year-2 (2017) | Year-3 (2018) | Year-4 (2019) | Year-5 (2020) |
|--|---|------------------|------------------|------------------|------------------|
| Location | | | | | |
| Louisiana | | | | | |
| Woodmere | \$101,630 | \$140,500 | \$126,550 | \$122,632 | \$123,745 |
| 2nd Location | NA | \$121,500 | \$112,550 | \$112,632 | \$113,745 |
| Mississippi | NA | NA | \$135,550 | \$126,632 | \$115,745 |
| Alabama | NA | NA | \$137,550 | \$128,632 | \$119,745 |
| Florida | NA | NA | NA | \$134,580 | \$113,692 |
| Texas | NA | NA | NA | \$114,632 | \$115,745 |
| Costs | \$101,630 | \$262,000 | | | |
| Funds In Hand | | 55,000 | | | |
| Future Funds Required | NA | \$207,000 | \$512,200 | \$739,740 | \$702,417 |
| Notes: (1) This value does not include the in-kind services or work performed by Oxfam | | | | | |

Section 5 Value Proposition

LVI performed a survey of six private training provides who individually offer the 5 technical certifications our students will receive. The cumulative cost per student for this training is \$2,991, which is more than 3.5 times greater than the LVI per student cost to provide this service.



By helping to build employment equity for vulnerable coastal populations through middle-skills workforce development, the project is helping to ensure community resiliency in the face of man made and natural disasters.

This LVI program expansion aims to fill gaps in Gulf Coast workforce development systems by implementing an innovative cross-sector approach to job training, which leverages public/private resources and local capacities. This project focuses on STEM career pathways to help underserved minorities in low-income communities to access middle-skilled careers and higher earnings with local coastal ecosystem restoration, water management, construction, disaster response and related industries employers. It delivers technical and wrap around soft skills required for high-demand technician level occupations to workers in underserved Gulf coast communities. These skills are the foundation for STEM career pathways and can be part of stackable credentials for related occupation. As part of the pilot project, a study by Asakura Robinson developed in association with Oxfam and LVI³⁴ demonstrated the a practical path and viability of building stackable credentials for environmental technician occupations, covering basic skills needed by workers involved in common tasks across technician-level coastal restoration activities. The LVI program would feed directly into that career path forward for its students.

In summary, by equipping students with common, transferable skills like field testing/sampling, GIS mapping, hazardous materials operation, emergency response, quality control, and safety, students will qualify for work as engineering, survey, and environmental technicians and hazardous materials workers, among other occupations. Many of these transferable skills will help trainees access multiple work options and/or transition from one industry to another, enhancing their resilience. As an additional value, the trainees will gain a better understanding of basic science and their local ecosystem, this knowledge will also build general awareness and environmental stewardship.

5.1 Competitive Edge/Strength and Weakness Analysis

LVI is seeking to expand its workforce development and job training pilot project in the Woodmere, Harvey, LA location, a second location in Southeast Louisiana and one location in each of the remaining four Gulf States. We already work with the target community and have demonstrated our ability to successfully implement this type of training in partnership with the community.

Strengths and Opportunities

LVI believes that it can expand this program, because:

- LVI has experience providing environmental and related field job training to marginalized and often-disconnected young adults. Since, 2006, LVI's award-winning program has trained over 500 young adults as entry-level environmental technicians;
- LVI has already tested this type of program successfully; the Pilot Project was an overall success in meeting many of its stated objectives³⁵;



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- LVI bases its program objectives on a combination of several common elements that have been proven to yield successful career pathway³⁶, such as employer engagement, outreach/recruitment and training and job placement;
- The demand for workers with middle-skilled STEM occupations in the Gulf coast is expected to grow substantially in the next 4 years;
- The program offers STEM skills that are the foundation for high-demand and high-wage STEM career pathways, and can be part of stackable credentials for related occupations;
- LVI has the ability to provide workers with targeted high-quality training at a reasonable cost, while providing a valuable service to the community and meeting the demands for skilled workforce in the Gulf coast region.
- The proposed program fits firmly in the funding and out reach objectives for NOAA Gulf Coast Corps Program, EPA Environmental Workforce Development and Job Training, Initiatives at Water Institute of the Gulf and the 2015-2020 objectives of the NAS Gulf Research Program; and
- Other strengths including effective outreach/recruitment efforts; licensed instructional staff and tested curriculum; locally based; and the emerging partnerships among LVI, industry-based employers, and public sector workforce agencies³⁷

Weaknesses and threats

Some potential threats/weakness and how we intend to address them.

- Difficulties for student to stay in the program – LVI has successfully implemented wrap-around services and those services will be expanded to all training locations.
- Commitment from employers to hire trainees- LVI is currently in the process of obtaining internship agreements with target employers.
- Small number of staff/difficulty finding trainers - LVI is supported by several environmental and engineering consultants who have agreed to loan staff for training purposes if necessary.
- The changing job market - Although the projections show a bright outlook, this may change in a couple of years. The Training is anchored by 5 nationally recognized industry credentials, which graduates can use in multiple related industries and geographic areas.
- Uncertainty about implementation/development/construction of RESTORE Act related projects, CPRA projects and other projects and availability of funding – This training also avails the graduates to work on local related municipal projects.

5.2 Partners and Competitors

LVI is a mature workforce development program that for the past 10 years has worked extensively with local City and Parish government, Community Colleges, WIOA Boards, The Sheriffs Office, The State natural resource managers, Environmental Protection Agency, National Fish and Wildlife Foundation, Louisiana Universities Marine Consortium, National Parks Services, Jean Lafitte, The Corps Network, The



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Regional Planning Commission, Oxfam and several local NGOs as well as environmental engineering and construction firms.

LVI has no direct competitors. We are uniquely positioned as a local non-profit workforce development program providing STEM based training and job skills using degreed and licensed professional practitioners. There are other training programs, which provide service and hospitality industry related jobs skills and trades but we are unaware of any other similar program, which is science based that caters to this vulnerable population.

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APPENDICES

APPENDIX A

APPENDIX - A

| Greater New Orleans/Jefferson Parish Coastal Restoration Job Training Pilot | | | | | | | | | |
|---|-----------|---|---|---|--|--|------------------------------------|-----------------|------------|
| Training Week | Week Day | Course Title | Subject Area | Course Description | Course Components | Course Materials | Teaching Medium | Instructor | Credential |
| Week 1 5pm to 9pm | Tuesday | Orientation | General | The Environment of Coastal Louisiana and Workforce Trends | History, trends, importance of STEM careers, credentials and typical salary | Handouts and power point | Classroom | Sherry Callaway | |
| | Wednesday | Water, Wastewater Contamination impacts | Environmental | Introduction to water and wastewater operations, sources of contamination, fate and transport of contaminant in the environment and how to assess potential impacts | Hydrologic cycle | Handouts and power point, videos and site visits | Classroom and field visits | Roger Simon | |
| | Thursday | | | | Potable Water sources and treatment | | | | |
| | Friday | | | | Industrial pollution, Contamination assessment and remediation | | | | |
| Week 2 4pm-9pm | Monday | 40-Hour OSHA | Safety | The OSHA 40-hour Hazardous Waste Operations is designed for workers who are involved in cleanup operations, emergency response, storage, disposal or treatment of hazardous chemicals or waste. | 1) Understand the purpose of OSHA and its role in regulating occupational safety; 2) Use Site Characterization to establish problems that may exist in your workplace and measures that can be implemented to eliminate hazards, 3) Identifying hazardous materials existing in the workplace and the possible methods, symptoms and preventative measures of exposure; 4) Encouraging the use of Material Safety Data sheets (MSDS) to identify and properly handle hazardous materials; 5) Familiarizing yourself with materials, compounds and mixtures that may present flammable, explosive, chemical or radiological hazards; 6) Emphasizing the importance of personal protective equipment in limiting hazardous exposure; 7) Establishing an effective Site Control Program to limit the risk of exposure to only those working in the hazardous work zone Implement procedures for treating workers in the event of hazardous exposure. | Handouts and power point, videos | Classroom and Homework Assignments | Roger Simon | Yes |
| | Tuesday | | | | | | | | |
| | Wednesday | | | | | | | | |
| | Thursday | | | | | | | | |
| | Friday | | | | | | | | |
| Week 3 6pm-9pm | Monday | Coastal and Wetland Ecology | Orientation and Introduction to Biology | | Biology and Louisiana Coastal Ecology and Workforce Trends. Definition of biology, earth's history of life, themes of biology, cell structure and function, stability, homeostasis, reproduction, inheritance, evolution, energy, food chains and food webs, niche theory, competition. Video - Louisiana coastal environment and habitats, and disturbance therein. | Handouts and power point, videos | Classroom and Homework Assignments | Peter Hoar | |
| | Tuesday | | Evolution and Ecology | | Complete evolution discussion; description of scientific method; review of ecology, including definition of ecology, populations, communities, ecosystems, ecosphere, lithosphere, hydrosphere, atmosphere, biosphere, energy and cycling of materials, competition, abiotic and biotic factors, | | | | |

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| | | | | | | | | | |
|---------------------|-----------------------------------|------------------------------|--|---|--|----------------------------------|------------------------------------|---------------------------------------|-----|
| Week 3 6pm-9pm | | Coastal and Wetlands Ecology | Evolution and Ecology | | carrying capacity, steady state, autotrophs and heterotrophs, symbiotic relationships (including mutualism, commensalism, and parasitism), food chains and food webs, energy flow and transfer, primary consumers, secondary and tertiary consumers, decomposers, succession, stability, competition and competitive exclusion principle. | | | | |
| | Wednesday | | Wetland Ecology | | Description of wetlands and types of soils, wetland classification, types of wetlands, physical/hydrological function, cycling, chemical function, biological function, wetland life, types of aquatic macrophytes. Video on Louisiana coastal wetlands | Handouts and power point, videos | Classroom and Homework Assignments | Peter Hoar | |
| | Thursday | | Coastal Ecology | | Review of ecology, levels of organization, factors affecting ecosystems, soil, water, nutrients, Gulf of Mexico coastal ecosystems and coastal habitats of concern, dune systems, saltwater marsh ecosystems, emergent salt marsh species, submerged aquatic vegetation, oyster reefs, and the concept of tragedy of the commons. | | | | |
| | Friday | | Land loss and Coastal Restoration | | Natural causes of wetland loss, alterations caused by humans, historical and predicted coastal Louisiana wetland changes, Coastal restoration activities in Louisiana, including CWPPRA, state and federal agency participation, and a review of past and current Louisiana coastal restoration projects | | | | |
| | Saturday | | Field trip to Jean LaFitte National Park | | Review of topics discussed during lecture in a field setting | Field Trip | Field Trip | | |
| Week 4/5 6pm-9pm | Monday | 30-Hour OSHA | Safety | The OSHA 30-hour Construction Industry Outreach Training course is a comprehensive safety program designed for anyone involved in the construction industry. This course is also applicable to environmental and conservation industries. | This course covers OSHA Standards, policies, and procedures in the construction industry. Topics include scope and application of the OSHA Construction Standards, construction safety and health principles, and special emphasis on those areas in construction, which are most hazardous. Upon course completion students will have the ability to define construction terms found in the OSHA Construction Standards, identify hazards which occur in the construction industry, locate and determine appropriate OSHA Construction Standards, policies, and procedures, and describe the use of the OSHA Construction Standards and regulations to supplement an ongoing safety and health program. | Handouts and power point, videos | Classroom | Sherry Callaway and Elizabeth Cornell | Yes |
| | Tuesday | | | | | | | | |
| | Wednesday | | | | | | | | |
| | Thursday | | | | | | | | |
| | Friday | | | | | | | | |
| Monday | Equipment Use, Care & Calibration | Sampling | Introduction of field equipment | Covers the proper use, maintenance and calibration of environmental field equipment. | Handouts, PowerPoint Presentation | Classroom | Sherry Callaway, Elizabeth Cornell | | |

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| | | | | | | | | | |
|---------------------|-----------|------------------------|------------|--|--|---|---------------------------------|------------------------------------|-----|
| Week 6 6pm – 9pm | Tuesday | Water Quality Sampling | Sampling | Basic water quality sampling protocol and BPMs | This will include training in performing field-testing for pH, temperature, salinity, dissolved oxygen, clarity. Students will also be taught how to record test results, and capturing proper field notes. | Handouts, PowerPoint Presentation | Classroom, laboratory and field | Sherry Callaway, Elizabeth Cornell | |
| | Wednesday | First Aid/CPR/AED | Safety | First Aid/CPR/AED Learn how to apply first aid and respond to cardiac and breathing emergencies in adults, including the use of automated external defibrillators (AED). | With an emphasis on hands-on learning, our First Aid/CPR/AED courses give you the skills to save a life. All course options align with OSHA's <i>Best Practices for Workplace First Aid Training Programs</i> and are available in classroom and blended learning formats. | Handouts, PowerPoint, Presentation, Video | Classroom | Willie Ross | Yes |
| | Thursday | Employment Skills | Employment | Student receives training in employability skills. | Job searching techniques; collecting documentation; job application completion; acceptable work habits; switching jobs; grooming and health habits. | Handouts, PowerPoint Presentation | Classroom | Erik Range | |

APPENDIX B

APPENDIX B. STATE OF LOUISIANA COASTAL RESTORATION PROJECTS

The State of Louisiana coastal restoration and protection programs include the Louisiana Coastal Master Plan for a Sustainable Coast 2012, the Greater New Orleans Hurricane and Storm Damage Risk Reduction System, and New Orleans Urban Water Plan. Louisiana's Coastal Master Plan has **109 planned projects totaling \$50 billion for a 50-year horizon**. Between July 2007 and August 2014, the CPRA has implemented 59 projects totaling \$2.4 billion. During Fiscal Year 2017 the State of Louisiana is planning to invest \$736 million in coastal restoration and protection projects. These projects include 4 projects in planning phase (\$24 million), 33 projects in design phase (\$102 million), 17 protection projects and 29 restoration projects in construction phase (\$464 million), and the operation and maintenance of 145 projects and monitoring of 111 projects (\$87 million) (Louisiana CPRA, 2016).

The types of projects in this Master Plan are:

| | | |
|-----------------------|----------------------------|-------------------------|
| structural protection | bank stabilization | oyster barrier reef |
| ridge restoration | shoreline protection | infrastructure |
| terraces | barrier island restoration | marsh creation |
| sediment diversion | hydrologic restoration | non-structural projects |

A Louisiana Workforce Commission study found that the \$618 million spent by the state in 2010 on coastal restoration created 4,880 direct jobs and an additional 4,020 indirect and induced jobs, for a total impact of 8,900 Louisiana jobs.

Louisiana's annual investment in coastal restoration is expected to be between \$400 million to \$1 billion, which would translate into: **5,500 and 10,300 total jobs**, \$270-\$520 million in wages, and between \$720 million and \$1.35 billion in total sales per year. (Source: CPRA Master Plan, 2012).

Sources: Louisiana CPRA <http://coastal.la.gov/wp-content/uploads/2016/03/FINAL-AP-17-updated-1.pdf>



APPENDIX C

APPENDIX C. THE RESTORE ACT

General Information

As of July 21, 2016 the RESTORE Act Total Trust Funds total US \$935,780,493.29ⁱ.

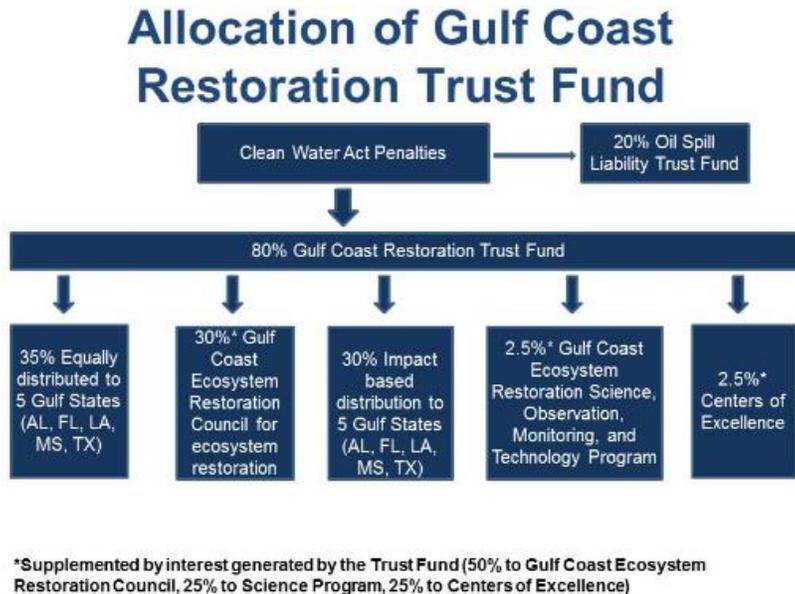


Image source: Gulf Coast Ecosystem Restoration Councilⁱⁱ

The RESTORE Act funds coastal projects and programs that generally target one of these five goals:

- Restore and conserve habitat;
- Restore water quality
- Replenish and protect living coastal and marine resources;
- Enhance community resilience; and
- Restore and revitalize the gulf economy.

An investment of \$25 billion in coastal restoration projects from RESTORE act funds could **create 57,697 new jobs in the Gulf Coast states in 10 years, and almost 80,000 jobs within 50 years.** Jobs generated by funds allocated to coastal restoration would encompass a range of pay scales, from \$13,334-\$54,471 annually per personⁱⁱⁱ.



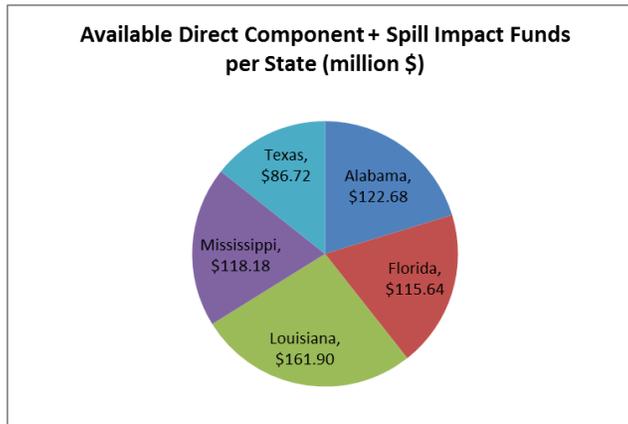
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Estimated Jobs Creation from Restore Act Funds

For this analysis only the Direct Component and the Spill Impact net allocations were considered.

Table C-1: Available funding as of June 30, 2016

| State | Direct Component ^{iv} | Spill Impact ^v | Total |
|--------------|--------------------------------|---------------------------|-------------------------|
| Alabama | \$65,460,782.37 | \$57,222,101.94 | \$122,682,884.31 |
| Florida | \$64,144,818.71 | \$51,499,891.75 | \$115,644,710.46 |
| Louisiana | \$64,877,525.38 | \$97,025,122.86 | \$161,902,648.24 |
| Mississippi | \$64,690,403.98 | \$53,491,445.30 | \$118,181,849.28 |
| Texas | \$65,460,782.37 | \$21,261,937.88 | \$86,722,720.25 |
| Total | \$324,634,312.81 | \$280,500,499.73 | \$605,134,812.54 |



For the Direct Component only available funds were considered, while for the Spill Impact, we considered the future funds projected to become available in the next three years were also considered

Table C-2: Future Spill Impact Component Funding^{vi}:

| | BXP TOTAL SETTLEMENT | ALABAMA | FLORIDA | LOUISIANA | MISSISSIPPI | TEXAS |
|-------------|----------------------|--------------|--------------|--------------|--------------|-------------|
| | 5,500,000,000 | B3 | B3 | B3 | B3 | B3 |
| Year | 100% | 20.40%* | 18.36%* | 34.59%* | 19.07%* | 7.58%* |
| 2017 | \$379,310,345 | \$18,571,034 | \$16,713,931 | \$31,488,828 | \$17,360,276 | \$6,900,414 |
| 2018 | \$189,655,712 | \$9,285,544 | \$8,356,989 | \$15,744,459 | \$8,680,163 | \$3,450,217 |
| 2019 | \$379,310,345 | \$18,571,034 | \$16,713,931 | \$31,488,828 | \$17,360,276 | \$6,900,414 |

*80% of the "BXP Total Settlement" amount (plus interest) will be deposited in the Trust fund over the years indicated. Of that amount, 30% is allocated to the Spill Impact Component. Each State's share indicated above (B3) is a percentage, determined by the Spill Impact Regulation, of the funds allocated to the Spill Impact Component



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It was assumed that the funds would be spread across 4 years. Year 1 is the year of the pilot project, 2015, no spending was assumed for that year. Spending Year 2 is equal to the currently available funding divided by 4. Spending in year 3 is equal to one fourth of the total funds available in year 2 plus the projected funding to become available in year 3 divided by 4, and so on. This schedule can be summarized as:

Spending Year 2 (2016) = total funds year 2 / 4

Spending Year 3 (2017) = total funds year 2 / 4 + total funds year 3 / 4

Spending Year 4 (2018) = total funds year 3 + total funds year 4 / 4

Spending Year 5 (2019) = total funds year 4 + total funds year 5 / 4

For simplicity we have omitted the effects of inflation and other variables.

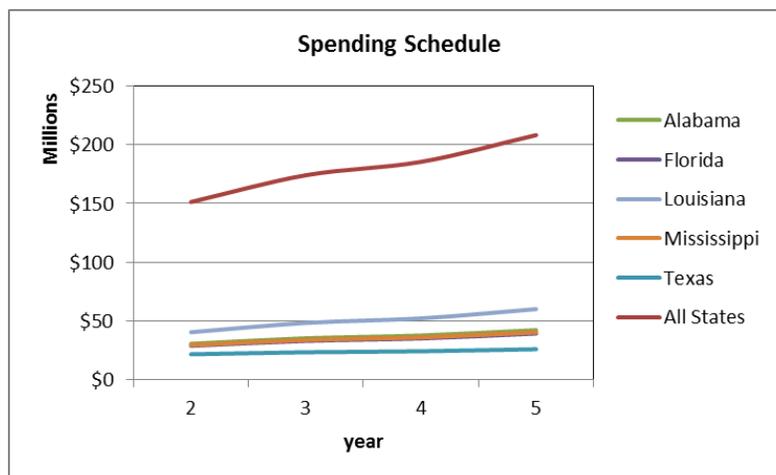
Example :

Alabama spending year 2 = $(\$65,460,782.37 + \$57,222,101.94) / 4 = \$30,670,721$

Alabama spending year 3 = $\$30,670,721 + \$18,571,034 / 4 = \$35,313,480$

Alabama spending year 4 = $\$35,313,480 + \$9,285,544 / 4 = \$37,634,866$

Alabama spending year 5 = $\$37,634,866 + \$18,571,034 / 4 = \$42,277,624$



This is a very conservative approach, because most likely the funds would be spent faster (front loading) as discussed in the report by Mather Economics^{vii}.

In order to estimate the number of jobs that would be created in LVI'S project target market, i.e. middle skilled jobs in the coastal restoration, water management and related industries from the RESTORE Act funds both Direct component and Spill Impact, we assumed the following:

- The funds would be spent according to the spending model described above;



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- The total number of jobs generated per million of dollars invested is calculated using the parameters derived in the studies by Edwards et al.^{viii} and Mather Economics^{ix};
- The total number of jobs that are related to the project's industries/sectors is calculated as the total number of jobs generated multiplied by a *market sector factor*, equal to 0.54. This factor was estimated using the results from the study by Mather Economics^x;
- Finally, the number of jobs that could be considered to be middle-skilled jobs are calculated by multiplying, the results by a "*skill level factor*", equal to 0.50. This factor was obtained from the study by GNO^{xi}.

The results of this analysis are summarized in the tables below.



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Table C-3. Estimated Total Jobs Created with Direct Component and Spill Impact Funds (RESTORE Act) - YEAR 2

| State | Total Funds ^(*) | All Skill Levels | | | | | Middle Skill Level | | | | |
|--------------|----------------------------|------------------|------------------|--------------|--------------|--------------|--------------------|------------------|--------------|--------------|--------------|
| | | Edwards et al. | Mather Economics | | | | Edwards et al. | Mather Economics | | | |
| | | | Constant | Conservative | Moderate | Aggressive | | Constant | Conservative | Moderate | Aggressive |
| | | 17.1 | 15.33 | 24.55 | 29.54 | 35.59 | 17.1 | 15.33 | 24.55 | 29.54 | 35.59 |
| AL | \$30,670,721 | 287 | 257 | 412 | 495 | 597 | 287 | 257 | 412 | 495 | 597 |
| FL | \$28,911,178 | 270 | 242 | 388 | 467 | 562 | 270 | 242 | 388 | 467 | 562 |
| LA | \$40,475,662 | 378 | 339 | 543 | 654 | 787 | 378 | 339 | 543 | 654 | 787 |
| MS | \$29,545,462 | 276 | 248 | 396 | 477 | 575 | 276 | 248 | 396 | 477 | 575 |
| TX | \$21,680,680 | 203 | 182 | 291 | 350 | 422 | 203 | 182 | 291 | 350 | 422 |
| Total | 151,283,703 | 1,414 | 1,268 | 2,030 | 2,443 | 2,943 | 1,414 | 1,268 | 2,030 | 2,443 | 2,943 |

(*) Total funds according to assumed spending schedule

Table C-4. Estimated Total Jobs Created with Direct Component and Spill Impact Funds (RESTORE Act) - YEAR 3

| State | Total Funds ^(*) | All Skill Levels | | | | | Middle Skill Level | | | | |
|--------------|----------------------------|------------------|------------------|--------------|--------------|--------------|--------------------|------------------|--------------|--------------|--------------|
| | | Edwards et al. | Mather Economics | | | | Edwards et al. | Mather Economics | | | |
| | | | Constant | Conservative | Moderate | Aggressive | | Constant | Conservative | Moderate | Aggressive |
| | | 17.1 | 15.33 | 24.55 | 29.54 | 35.59 | 17.1 | 15.33 | 24.55 | 29.54 | 35.59 |
| AL | \$35,313,480 | 330 | 296 | 474 | 570 | 687 | 165 | 148 | 237 | 285 | 344 |
| FL | \$33,089,660 | 309 | 277 | 444 | 534 | 644 | 155 | 139 | 222 | 267 | 322 |
| LA | \$48,347,869 | 452 | 405 | 649 | 781 | 941 | 226 | 203 | 324 | 390 | 470 |
| MS | \$33,885,531 | 317 | 284 | 455 | 547 | 659 | 158 | 142 | 227 | 274 | 330 |
| TX | \$23,405,784 | 219 | 196 | 314 | 378 | 455 | 109 | 98 | 157 | 189 | 228 |
| Total | \$174,042,324 | 1,627 | 1,458 | 2,336 | 2,810 | 3,386 | 813 | 729 | 1,168 | 1,405 | 1,693 |

(*) Total funds according to assumed spending schedule



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Table C-5. Estimated Total Jobs Created with Direct Component and Spill Impact Funds (RESTORE Act) - YEAR 4

| State | Total Funds ^(*) | All Skill Levels | | | | | Middle Skill Level | | | | |
|--------------|----------------------------|------------------|------------------|--------------|--------------|--------------|--------------------|------------------|--------------|--------------|--------------|
| | | Edwards et al. | Mather Economics | | | | Edwards et al. | Mather Economics | | | |
| | | | Constant | Conservative | Moderate | Aggressive | | Constant | Conservative | Moderate | Aggressive |
| | | 17.1 | 15.33 | 24.55 | 29.54 | 35.59 | 17.1 | 15.33 | 24.55 | 29.54 | 35.59 |
| AL | \$37,634,866 | 352 | 315 | 505 | 608 | 732 | 0.5 | 176 | 158 | 253 | 304 |
| FL | \$35,178,908 | 329 | 295 | 472 | 568 | 684 | 0.5 | 164 | 147 | 236 | 284 |
| LA | \$52,283,984 | 489 | 438 | 702 | 844 | 1,017 | 0.5 | 244 | 219 | 351 | 422 |
| MS | \$36,055,572 | 337 | 302 | 484 | 582 | 701 | 0.5 | 169 | 151 | 242 | 291 |
| TX | \$24,268,338 | 227 | 203 | 326 | 392 | 472 | 0.5 | 113 | 102 | 163 | 196 |
| Total | \$185,421,667 | 1,733 | 1,554 | 2,488 | 2,994 | 3,607 | 2.5 | 867 | 777 | 1,244 | 1,497 |

(*) Total funds according to assumed spending schedule

Table C-6. Estimated Total Jobs Created with Direct Component and Spill Impact Funds (RESTORE Act) - YEAR 5

| State | Total Funds ^(*) | All Skill Levels | | | | | Middle Skill Level | | | | |
|--------------|----------------------------|------------------|------------------|--------------|--------------|--------------|--------------------|------------------|--------------|--------------|--------------|
| | | Edwards et al. | Mather Economics | | | | Edwards et al. | Mather Economics | | | |
| | | | Constant | Conservative | Moderate | Aggressive | | Constant | Conservative | Moderate | Aggressive |
| | | 17.1 | 15.33 | 24.55 | 29.54 | 35.59 | 17.1 | 15.33 | 24.55 | 29.54 | 35.59 |
| AL | \$42,277,624 | 395 | 354 | 567 | 683 | 822 | 0.5 | 198 | 177 | 284 | 341 |
| FL | \$39,357,390 | 368 | 330 | 528 | 636 | 766 | 0.5 | 184 | 165 | 264 | 318 |
| LA | \$60,156,191 | 562 | 504 | 807 | 971 | 1,170 | 0.5 | 281 | 252 | 404 | 486 |
| MS | \$40,395,641 | 378 | 339 | 542 | 652 | 786 | 0.5 | 189 | 169 | 271 | 326 |
| TX | \$25,993,441 | 243 | 218 | 349 | 420 | 506 | 0.5 | 121 | 109 | 174 | 210 |
| Total | \$208,180,288 | 1,946 | 1,745 | 2,794 | 3,362 | 4,050 | 2.5 | 973 | 872 | 1,397 | 1,681 |

(*) Total funds according to assumed spending schedule



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ⁱ [https://www.treasury.gov/services/restore-act/Documents/Allocations/Trust%20Fund%20Allocations%20\(revised%2007.21.16\).pdf](https://www.treasury.gov/services/restore-act/Documents/Allocations/Trust%20Fund%20Allocations%20(revised%2007.21.16).pdf)

ⁱⁱ <https://www.restorethegulf.gov/history/about-restore-act>

ⁱⁱⁱ Mather Economics, LLC “White Paper: Job Creation from Gulf Coast Wetlands Restoration,” June 5th, 2012 for GNO Inc. retrieved from <http://www.mississippiriverdelta.org/files/2012/07/Mather-Economics-Job-Creation-from-Gulf-Coast-Wetlands-Restoration.pdf>

^{iv} Same as i.

^v https://www.restorethegulf.gov/sites/default/files/NOFA_SEPs_Final_Draft_ver20160524.pdf

^{vi} Ibid.

^{vii} Same as iii

^{viii} Peter Edwards et al., “Investing in nature: Restoring coastal habitat blue infrastructure and green job creation,” Marine Policy 38 (2013): 65–71

^{ix} Same as iii

^x Ibid

^{xi} Greater New Orleans (GNO) Inc. “State of the Sector. Water Management,” 2016, retrieved from http://gnoinc.org/wp-content/uploads/GNO_Inc_Water_State-of-the-Sector_FINAL.pdf



APPENDIX D

APPENDIX D. EMPLOYMENT AND JOB PROJECTIONS

The estimated employment for 2015, the wage data, and the estimated number of jobs opening were estimated using data from the department of economic statistics of each state, and the Bureau of Labor Statistics.

Alabama: Alabama Department of Labor Labor Market Information Division

<http://www2.labor.alabama.gov/>

Florida: Florida Department of Economic Opportunity

<http://www.floridajobs.org/labor-market-information/data-center/statistical-programs>

Louisiana: Louisiana Workforce Commission

http://www.laworks.net/LaborMarketInfo/LMI_MainMenu.asp

Mississippi: Mississippi Department of Employment Security

<http://mdes.ms.gov/information-center/labor-market-information/>

Texas: Texas Workforce Commission Texas Labor Market Information (TRACER)

<http://www.tracer2.com/?PAGEID=67&SUBID=120>

For each state, we selected the designated Workforce Development Areas located along the Gulf Coast; In the case of Mississippi we selected the Metropolitan Statistical Area (Gulfport-Biloxi-Pascagoula MSA).

The projected number of jobs openings for each State is based on the available data, which is consistently determined across all the five Gulf States. For example, the length of time considered and the period of record are different. Also, in some cases the data was not available or provided, so those potential jobs were not considered. For this exercise we neglected these differences, because our aim was to obtain a conservative value for total job openings per year for the next 4 years, the LVI planning horizon.

The middle-skilled occupations selected for this analysis were chosen based on information found in several studies, the BLS guidelines, and our own experience. For example, the report by Oxfam/BFA, 2014ⁱ provides analyses of several common ecosystem restoration projects, along with projections of skilled workers and related preparation and occupations needed to complete the various types of restoration work.

The jobs opening for each occupation obtained from the local department of labor statistics represent the total number of openings available across all industries. Analyses by Greater New Orleans (GNO) Inc. and The Data Center have shown substantial overlap between occupations in water management/ coastal restoration and the oil and gas industry and local real estate/construction,ⁱⁱ. In



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southeast Louisiana this overlap is about 30% for existing jobs in these industriesⁱⁱⁱ1. Moreover, between 78%^{iv} and 90%^v of the total job openings in the water management sector will be in occupations shared with the oil and gas industry. We applied correction factors to account for the overlap of jobs between the target industries (water management/ coastal restoration) and other industries, such as oil and gas industry and local real estate/construction. We derived these adjustment factors from the study by Data Center (2014)^{vi}.

The results of this analysis are presented in the tables below:



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Table D-1. Employment 2015, Projected Total Annual Job Openings, and Median Hourly Wage for the Gulf Coast Region (5 States)

| Occupational Code | Occupation | All Industries | | | Target Industries | |
|-------------------|--|---------------------------|-------------------------------------|---------------------------------|---------------------------|-------------------------------------|
| | | Estimated Employment 2015 | Projected Total Annual Job Openings | Estimated Median Hourly Wage \$ | Estimated Employment 2015 | Projected Total Annual Job Openings |
| 17-3011 | Architectural and Civil Drafters | 9,006 | 171 | 25.00 | 7,661 | 145 |
| 17-3022 | Civil Engineering Technicians | 6,600 | 189 | 20.54 | 4,769 | 136 |
| 17-3025 | Environmental Engineering Technicians | 753 | 41 | 20.92 | 358 | 20 |
| 17-3031 | Surveying and Mapping Technician | 7,312 | 276 | 18.36 | 5,284 | 199 |
| 17-3029 | Engineering Technicians, Except Drafters, All Other | 4,896 | 223 | 27.32 | 1,347 | 61 |
| 19-4031 | Chemical Technicians | 6,400 | 247 | 25.21 | 1,760 | 68 |
| 19-4041 | Geological and Petroleum Technicians | 4,581 | 240 | 30.37 | 1,260 | 66 |
| 19-4091 | Environmental Science and Protection Technicians, including Health | 2,740 | 127 | 18.12 | 754 | 35 |
| 19-4093 | Forest and Conservation Technicians | 252 | 4 | 10.39 | 72 | 1 |
| 47-1011 | Supervisors of Construction Trades and Extraction Workers | 53,679 | 2,076 | 28.11 | 14,500 | 561 |
| 47-4011 | Construction and Building Inspectors | 6,430 | 277 | 24.77 | 1,737 | 75 |
| 51-8031 | Water and Wastewater Treatment Plant And System Operators | 7,173 | 296 | 17.55 | 7,173 | 296 |
| 51-9061 | Inspectors, Testers, Sorters, Samplers, and Weighers | 36,486 | 1,317 | 19.68 | 7,297 | 263 |
| | All selected occupations | 146,308 | 5,484 | 23.99 | 53,971 | 1,927 |



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Table D-2. Employment 2015, Projected Total Annual Job Openings, and Median Hourly Wage for Alabama

| Occupational Code | Occupation | All Industries | | | Target Industries | |
|-------------------|--|---------------------------|-------------------------------------|---------------------------------|---------------------------|-------------------------------------|
| | | Estimated Employment 2015 | Projected Total Annual Job Openings | Estimated Median Hourly Wage \$ | Estimated Employment 2015 | Projected Total Annual Job Openings |
| 17-3011 | Architectural and Civil Drafters | 150 | - | 26.65 | 128 | - |
| 17-3022 | Civil Engineering Technicians | 290 | 5 | 21.71 | 210 | 4 |
| 17-3025 | Environmental Engineering Technicians | 10 | 5 | 23.31 | 5 | 2 |
| 17-3031 | Surveying and Mapping Technician | 100 | 5 | 18.53 | 72 | 4 |
| 17-3029 | Engineering Technicians, Except Drafters, All Other | 80 | - | 22.79 | 22 | - |
| 19-4031 | Chemical Technicians | 190 | 5 | 27.62 | 52 | 1 |
| 19-4041 | Geological and Petroleum Technicians | - | - | 0.00 | - | - |
| 19-4091 | Environmental Science and Protection Technicians, including Health | - | 10 | 0.00 | - | 3 |
| 19-4093 | Forest and Conservation Technicians | 20 | - | 0.00 | 6 | - |
| 47-1011 | Supervisors of Construction Trades and Extraction Workers | 2,350 | 65 | 29.21 | 635 | 18 |
| 47-4011 | Construction and Building Inspectors | 160 | 10 | 24.32 | 43 | 3 |
| 51-8031 | Water and Wastewater Treatment Plant And System Operators | 340 | 15 | 20.02 | 340 | 15 |
| 51-9061 | Inspectors, Testers, Sorters, Samplers, and Weighers | 1,110 | 30 | 19.35 | 222 | 6 |
| | All selected occupations | 4,800 | 150 | 25.06 | 1,734 | 55 |



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Table D-3. Employment 2015, Projected Total Annual Job Openings, and Median Hourly Wage for Florida

| Occupational Code | Occupation | All Industries | | | Target Industries | |
|-------------------|--|---------------------------|-------------------------------------|---------------------------------|---------------------------|-------------------------------------|
| | | Estimated Employment 2015 | Projected Total Annual Job Openings | Estimated Median Hourly Wage \$ | Estimated Employment 2015 | Projected Total Annual Job Openings |
| 17-3011 | Architectural and Civil Drafters | 2,126 | 46 | 20.11 | 1,808 | 39 |
| 17-3022 | Civil Engineering Technicians | 1,350 | 34 | 18.78 | 975 | 24 |
| 17-3025 | Environmental Engineering Technicians | 243 | 11 | 19.30 | 115 | 5 |
| 17-3031 | Surveying and Mapping Technician | 2,542 | 96 | 15.21 | 1,837 | 69 |
| 17-3029 | Engineering Technicians, Except Drafters, All Other | 1,196 | 28 | 22.85 | 329 | 8 |
| 19-4031 | Chemical Technicians | 780 | 32 | 18.20 | 215 | 9 |
| 19-4041 | Geological and Petroleum Technicians | 1 | - | 0.00 | 0 | - |
| 19-4091 | Environmental Science and Protection Technicians, including Health | 730 | 42 | 14.85 | 201 | 12 |
| 19-4093 | Forest and Conservation Technicians | 92 | 4 | 10.39 | 26 | 1 |
| 47-1011 | Supervisors of Construction Trades and Extraction Workers | 15,419 | 721 | 23.49 | 4,165 | 195 |
| 47-4011 | Construction and Building Inspectors | 2,780 | 117 | 22.52 | 751 | 32 |
| 51-8031 | Water and Wastewater Treatment Plant And System Operators | 2,423 | 116 | 18.80 | 2,423 | 116 |
| 51-9061 | Inspectors, Testers, Sorters, Samplers, and Weighers | 5,096 | 172 | 14.84 | 1,019 | 34 |
| | All selected occupations | 34,778 | 1,419 | 20.44 | 13,865 | 544 |



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Table D-4. Employment 2015, Projected Total Annual Job Openings, and Median Hourly Wage for Louisiana

| Occupational Code | Occupation | All Industries | | | Target Industries | |
|-------------------|--|---------------------------|-------------------------------------|---------------------------------|---------------------------|-------------------------------------|
| | | Estimated Employment 2015 | Projected Total Annual Job Openings | Estimated Median Hourly Wage \$ | Estimated Employment 2015 | Projected Total Annual Job Openings |
| 17-3011 | Architectural and Civil Drafters | 1,050 | 20 | 25.35 | 893 | 17 |
| 17-3022 | Civil Engineering Technicians | 1,050 | 50 | 21.89 | 759 | 36 |
| 17-3025 | Environmental Engineering Technicians | 330 | - | 17.95 | 157 | - |
| 17-3031 | Surveying and Mapping Technician | 1,150 | 20 | 17.33 | 831 | 14 |
| 17-3029 | Engineering Technicians, Except Drafters, All Other | 650 | 20 | 26.04 | 179 | 6 |
| 19-4031 | Chemical Technicians | 1,750 | 70 | 28.66 | 481 | 19 |
| 19-4041 | Geological and Petroleum Technicians | 780 | 30 | 23.33 | 215 | 8 |
| 19-4091 | Environmental Science and Protection Technicians, including Health | 390 | 20 | 20.27 | 107 | 6 |
| 19-4093 | Forest and Conservation Technicians | 10 | - | 20.14 | 3 | - |
| 47-1011 | Supervisors of Construction Trades and Extraction Workers | 9,120 | 230 | 28.22 | 2,464 | 62 |
| 47-4011 | Construction and Building Inspectors | 860 | 20 | 26.76 | 232 | 5 |
| 51-8031 | Water and Wastewater Treatment Plant And System Operators | 1,540 | 40 | 16.14 | 1,540 | 40 |
| 51-9061 | Inspectors, Testers, Sorters, Samplers, and Weighers | 8,510 | 320 | 21.06 | 1,702 | 64 |
| | All selected occupations | 27,190 | 840 | 24.03 | 9,562 | 278 |



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Table D-5. Employment 2015, Projected Total Annual Job Openings, and Median Hourly Wage for Mississippi

| Occupational Code | Occupation | All Industries | | | Target Industries | |
|-------------------|--|---------------------------|-------------------------------------|---------------------------------|---------------------------|-------------------------------------|
| | | Estimated Employment 2015 | Projected Total Annual Job Openings | Estimated Median Hourly Wage \$ | Estimated Employment 2015 | Projected Total Annual Job Openings |
| 17-3011 | Architectural and Civil Drafters | 100 | 5 | 23.77 | 85 | 4 |
| 17-3022 | Civil Engineering Technicians | 130 | 10 | 18.41 | 94 | 7 |
| 17-3025 | Environmental Engineering Technicians | 20 | - | 0.00 | 10 | - |
| 17-3031 | Surveying and Mapping Technician | 70 | - | 20.94 | 51 | - |
| 17-3029 | Engineering Technicians, Except Drafters, All Other | 70 | 5 | 37.49 | 19 | 1 |
| 19-4031 | Chemical Technicians | 110 | - | 20.46 | 30 | - |
| 19-4041 | Geological and Petroleum Technicians | - | - | 0.00 | - | - |
| 19-4091 | Environmental Science and Protection Technicians, including Health | - | - | 25.22 | - | - |
| 19-4093 | Forest and Conservation Technicians | - | - | 22.53 | - | - |
| 47-1011 | Supervisors of Construction Trades and Extraction Workers | 910 | 40 | 25.98 | 246 | 11 |
| 47-4011 | Construction and Building Inspectors | 120 | - | 22.64 | 32 | - |
| 51-8031 | Water and Wastewater Treatment Plant And System Operators | 140 | 5 | 17.28 | 140 | 5 |
| 51-9061 | Inspectors, Testers, Sorters, Samplers, and Weighers | 230 | - | 20.78 | 46 | - |
| | All selected occupations | 1,900 | 65 | 23.51 | 753 | 29 |



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Table D-6. Employment 2015, Projected Total Annual Job Openings, and Median Hourly Wage for Texas

| Occupational Code | Occupation | All Industries | | | Target Industries | |
|-------------------|--|---------------------------|-------------------------------------|---------------------------------|---------------------------|-------------------------------------|
| | | Estimated Employment 2015 | Projected Total Annual Job Openings | Estimated Median Hourly Wage \$ | Estimated Employment 2015 | Projected Total Annual Job Openings |
| 17-3011 | Architectural and Civil Drafters | 5,580 | 100 | 26.78 | 4,747 | 85 |
| 17-3022 | Civil Engineering Technicians | 3,780 | 90 | 20.78 | 2,731 | 65 |
| 17-3025 | Environmental Engineering Technicians | 150 | 25 | 32.70 | 71 | 12 |
| 17-3031 | Surveying and Mapping Technician | 3,450 | 155 | 20.97 | 2,493 | 112 |
| 17-3029 | Engineering Technicians, Except Drafters, All Other | 2,900 | 170 | 29.32 | 798 | 47 |
| 19-4031 | Chemical Technicians | 3,570 | 140 | 25.07 | 982 | 39 |
| 19-4041 | Geological and Petroleum Technicians | 3,800 | 210 | 31.82 | 1,045 | 58 |
| 19-4091 | Environmental Science and Protection Technicians, including Health | 1,620 | 55 | 19.07 | 446 | 15 |
| 19-4093 | Forest and Conservation Technicians | 130 | - | 18.84 | 37 | - |
| 47-1011 | Supervisors of Construction Trades and Extraction Workers | 25,880 | 1,020 | 30.79 | 6,991 | 276 |
| 47-4011 | Construction and Building Inspectors | 2,510 | 130 | 26.71 | 678 | 35 |
| 51-8031 | Water and Wastewater Treatment Plant And System Operators | 2,730 | 120 | 16.93 | 2,730 | 120 |
| 51-9061 | Inspectors, Testers, Sorters, Samplers, and Weighers | 21,540 | 795 | 20.29 | 4,308 | 159 |
| | All selected occupations | 77,640 | 3,010 | 25.52 | 28,057 | 1,022 |



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ⁱ Jeffrey Buchanan, "Building the Gulf: Recommendations for Ensuring Restoration Benefits for Communities and the Environment." Oxfam America, the Nature Conservancy, BFA Environmental and the Corps Network, 2015, retrieved from . <http://www.oxfamamerica.org/explore/research-publications/building-the-gulf/>

ⁱⁱ Greater New Orleans (GNO) Inc. "State of the Sector. Water Management," 2016, retrieved from http://gnoinc.org/wp-content/uploads/GNO_Inc_Water_State-of-the-Sector_FINAL.pdf

ⁱⁱⁱ Niha Shrinath I and Allison Plyer, "The Water Workers: Workforce Opportunities in Water management in Southeast Louisiana," The Data Center. December 2014 retrieved from http://www.datacenterresearch.org/reports_analysis/the-water-workers/

^{iv} Greater New Orleans, Inc., "Analysis of Coastal Restoration Workforce Assets, Challenges, and Opportunities in South Louisiana," Completed for Foundation for Louisiana by Greater New Orleans, Inc. December 2014, retrieved from http://gnoinc.org/uploads/GNO_Inc_FFL_Report_FINAL.pdf

^v Same as (ii)

^{vi} Same as (iii)



APPENDIX E

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APPENDIX E. STATE BY STATE BUDGETS

Table E-1. Funds Needed For Continued Environmental Technician Training in Alabama ⁽¹⁾

| Annual Project Expenses | Year -2 | Year - 3 | Year - 4 | Year-5 |
|--|----------------|------------------|------------------|------------------|
| Personnel | | | | |
| Project Management | NA | \$10,000 | \$10,000 | \$10,000 |
| Training (Assumes 5, 6 week sessions) | NA | \$36,050 | \$37,132 | \$38,245 |
| Outreach/Recruitment (starts prior to training)(2) | NA | \$10,000 | \$5,000 | \$5,000 |
| Case Management (from training to placement)(2) | NA | \$10,000 | \$10,000 | \$10,000 |
| Outreach/Partner Building/Placement (all year)(2) | NA | \$15,000 | \$15,000 | \$15,000 |
| Travel | NA | \$10,000 | \$10,000 | \$10,000 |
| | NA | | | |
| Equipment/Supplies | | | | |
| Manuals/Certifications | NA | \$2,500 | \$2,500 | \$2,500 |
| Student Tablets/software/support | NA | \$7,500 | \$7,500 | \$7,500 |
| Audio Visual | NA | \$1,500 | \$1,500 | \$1,500 |
| | NA | | | |
| Operational | | | | |
| Training Equipment | NA | \$4,000 | \$4,000 | \$4,000 |
| Student Travel Support | NA | \$3,000 | \$3,000 | \$3,000 |
| Two Outreach Events | NA | \$4,000 | \$4,000 | \$4,000 |
| Graduation Events | NA | \$2,000 | \$2,000 | \$2,000 |
| | NA | | | |
| Facility - Community Partner | | | | |
| Rent 8 Months | NA | \$4,000 | \$4,000 | \$4,000 |
| O&M | NA | \$500 | \$500 | \$500 |
| | | | | |
| Miscellaneous | | \$2,500 | \$2,500 | \$2,500 |
| LVI Cost | | | | |
| Future Funds Required | \$0 | \$122,550 | \$118,632 | \$119,745 |
| Notes: | | | | |
| (1) 1-Year program to training 50 students using 5, 6 week long classes given over an 8 month period. The minimum certifications will include, OSHA-10, 30 -Hour Construction Safety, 40-Hour HAZWOPER, CPR & FEMA ICM | | | | |
| (2) These services will be provided by the same individual with support from LVI staff. | | | | |



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Table E-2. Funds Needed For Continued Environmental Technician Training in Florida ⁽¹⁾

| Annual Project Expenses | Year -2 | Year - 3 | Year - 4 | Year-5 |
|--|------------|------------|------------------|------------------|
| Personnel | | | | |
| Project Management | NA | NA | \$20,000 | \$8,000 |
| Training (Assumes 5, 6 week sessions) | NA | NA | \$37,080 | \$38,192 |
| Outreach/Recruitment (starts prior to training)(2) | NA | NA | \$15,000 | \$5,000 |
| Case Management (from training to placement)(2) | NA | NA | \$10,000 | \$10,000 |
| Outreach/Partner Building/Placement (all year)(2) | NA | NA | \$15,000 | \$15,000 |
| Travel | NA | NA | \$6,000 | \$6,000 |
| | NA | NA | | |
| Equipment/Supplies | | | | |
| Manuals/Certifications | NA | NA | \$2,500 | \$2,500 |
| Student Tablets/software/support | NA | NA | \$7,500 | \$7,500 |
| Audio Visual | NA | NA | \$1,500 | \$1,500 |
| | NA | NA | | |
| Operational | | | | |
| Training Equipment | NA | NA | \$4,000 | \$4,000 |
| Student Travel Support | NA | NA | \$3,000 | \$3,000 |
| Two Outreach Events | NA | NA | \$4,000 | \$4,000 |
| Graduation Events | NA | NA | \$2,000 | \$2,000 |
| | NA | NA | | |
| Facility - Community Partner | | | | |
| Rent 8 Months | NA | NA | \$4,000 | \$4,000 |
| O&M | NA | NA | \$500 | \$500 |
| | | | | |
| Miscellaneous | | | \$2,500 | \$2,500 |
| LVI Cost | | | | |
| Future Funds Required | \$0 | \$0 | \$134,580 | \$113,692 |
| Notes: | | | | |
| (1) 1-Year program to training 50 students using 5, 6 week long classes given over an 8 month period. The minimum certifications will include, OSHA-10, 30 -Hour Construction Safety, 40-Hour HAZWOPER, CPR & FEMA ICM | | | | |
| (2) These services will be provided by the same individual with support from LVI staff. | | | | |



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Table E-3. Funds Needed For Continued Environmental Technician Training in Second Southeast Louisiana Location ⁽¹⁾

| Annual Project Expenses | Year -2 | Year - 3 | Year - 4 | Year-5 |
|--|----------------|-----------------|-----------------|---------------|
| Personnel | | | | |
| Project Management | \$10,000 | \$10,000 | \$10,000 | \$10,000 |
| Training (Assumes 5, 6 week sessions) | \$35,000 | \$36,050 | \$37,132 | \$38,245 |
| Outreach/Recruitment (starts prior to training)(2) | \$10,000 | \$5,000 | \$5,000 | \$5,000 |
| Case Management (from training to placement)(2) | \$15,000 | \$10,000 | \$10,000 | \$10,000 |
| Outreach/Partner Building/Placement (all year)(2) | \$15,000 | \$15,000 | \$15,000 | \$15,000 |
| Travel | \$6,000 | \$6,000 | \$5,000 | \$5,000 |
| Equipment/Supplies | | | | |
| Manuals/Certifications | \$2,500 | \$2,500 | \$2,500 | \$2,500 |
| Student Tablets/software/support | \$7,500 | \$7,500 | \$7,500 | \$7,500 |
| Audio Visual | \$1,500 | \$1,500 | \$1,500 | \$1,500 |
| Operational | | | | |
| Training Equipment | \$4,000 | \$4,000 | \$4,000 | \$4,000 |
| Student Travel Support | \$3,000 | \$3,000 | \$3,000 | \$3,000 |
| Two Outreach Events | \$4,000 | \$4,000 | \$4,000 | \$4,000 |
| Graduation Events | \$2,000 | \$2,000 | \$2,000 | \$2,000 |
| Facility - Community Partner | | | | |
| Rent 8 Months | \$3,000 | \$3,000 | \$3,000 | \$3,000 |
| O&M | \$500 | \$500 | \$500 | \$500 |
| Miscellaneous | \$2,500 | \$2,500 | \$2,500 | \$2,500 |
| LVI Cost | | | | |
| Future Funds Required | \$121,500 | \$112,550 | \$112,632 | \$113,745 |
| Notes: | | | | |
| (1) 1-Year program to training 50 students using 5, 6 week long classes given over an 8 month period. The minimum certifications will include, OSHA-10, 30 -Hour Construction Safety, 40-Hour HAZWOPER, CPR & FEMA ICM | | | | |
| (2) These services will be provided by the same individual with support from LVI staff. | | | | |



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Table E-4. Funds Needed For Continued Environmental Technician Training in Mississippi ⁽¹⁾

| Annual Project Expenses | Year -2 | Year - 3 | Year - 4 | Year-5 | |
|--|---------|----------|-----------|-----------|-----------|
| Personnel | | | | | |
| Project Management | NA | \$20,000 | \$15,000 | \$8,000 | |
| Training (Assumes 5, 6 week sessions) | NA | \$36,050 | \$37,132 | \$38,245 | |
| Outreach/Recruitment (starts prior to training)(2) | NA | \$15,000 | \$10,000 | \$5,000 | |
| Case Management (from training to placement)(2) | NA | \$10,000 | \$10,000 | \$10,000 | |
| Outreach/Partner Building/Placement (all year)(2) | NA | \$15,000 | \$15,000 | \$15,000 | |
| Travel | NA | \$8,000 | \$8,000 | \$8,000 | |
| | NA | | | | |
| Equipment/Supplies | | | | | |
| Manuals/Certifications | NA | \$2,500 | \$2,500 | \$2,500 | |
| Student Tablets/software/support | NA | \$7,500 | \$7,500 | \$7,500 | |
| Audio Visual | NA | \$1,500 | \$1,500 | \$1,500 | |
| | NA | | | | |
| Operational | | | | | |
| Training Equipment | NA | \$4,000 | \$4,000 | \$4,000 | |
| Student Travel Support | NA | \$3,000 | \$3,000 | \$3,000 | |
| Two Outreach Events | NA | \$4,000 | \$4,000 | \$4,000 | |
| Graduation Events | NA | \$2,000 | \$2,000 | \$2,000 | |
| | NA | | | | |
| Facility - Community Partner | | | | | |
| Rent 8 Months | NA | \$4,000 | \$4,000 | \$4,000 | |
| O&M | NA | \$500 | \$500 | \$500 | |
| | | | | | |
| Miscellaneous | | \$2,500 | \$2,500 | \$2,500 | |
| LVI Cost | | | | | |
| Future Funds Required | | \$0 | \$135,550 | \$126,632 | \$115,745 |
| Notes: | | | | | |
| (1) 1-Year program to training 50 students using 5, 6 week long classes given over an 8 month period. The minimum certifications will include, OSHA-10, 30 -Hour Construction Safety, 40-Hour HAZWOPER, CPR & FEMA ICM | | | | | |
| (2) These services will be provided by the same individual with support from LVI staff. | | | | | |



Limitless Vistas, Inc
 Greater New Orleans Coastal Restoration STEM Job Skills Training Pilot Program
 Expansion Business Plan - August 31, 2016

Table E-5. Funds Needed For Continued Environmental Technician Training in Texas ⁽¹⁾

| Annual Project Expenses | Year -2 | Year - 3 | Year - 4 | Year-5 |
|--|---------|----------|-----------|-----------|
| Personnel | | | | |
| Project Management | NA | NA | \$10,000 | \$10,000 |
| Training (Assumes 5, 6 week sessions) | NA | NA | \$37,132 | \$38,245 |
| Outreach/Recruitment (starts prior to training)(2) | NA | NA | \$5,000 | \$5,000 |
| Case Management (from training to placement)(2) | NA | NA | \$10,000 | \$10,000 |
| Outreach/Partner Building/Placement (all year)(2) | NA | NA | \$15,000 | \$15,000 |
| Travel | NA | NA | \$6,000 | \$6,000 |
| | NA | NA | | |
| Equipment/Supplies | | | | |
| Manuals/Certifications | NA | NA | \$2,500 | \$2,500 |
| Student Tablets/software/support | NA | NA | \$7,500 | \$7,500 |
| Audio Visual | NA | NA | \$1,500 | \$1,500 |
| | NA | NA | | |
| Operational | | | | |
| Training Equipment | NA | NA | \$4,000 | \$4,000 |
| Student Travel Support | NA | NA | \$3,000 | \$3,000 |
| Two Outreach Events | NA | NA | \$4,000 | \$4,000 |
| Graduation Events | NA | NA | \$2,000 | \$2,000 |
| | NA | NA | | |
| Facility - Community Partner | | | | |
| Rent 8 Months | NA | NA | \$4,000 | \$4,000 |
| O&M | NA | NA | \$500 | \$500 |
| | NA | NA | | |
| Miscellaneous | | | | |
| | NA | NA | \$2,500 | \$2,500 |
| LVI Cost | NA | NA | | |
| Future Funds Required | \$0 | \$0 | \$114,632 | \$115,745 |
| Notes: | | | | |
| (1) 1-Year program to training 50 students using 5, 6 week long classes given over an 8 month period. The minimum certifications will include, OSHA-10, 30 -Hour Construction Safety, 40-Hour HAZWOPER, CPR & FEMA ICM | | | | |
| (2) These services will be provided by the same individual with support from LVI staff. | | | | |



Attachment 5

Creating Career Pathways for Coastal Opportunity: Stackable Credentials for Environmental Technician Occupations

August 2016

Alexandra Miller
Matthew Rufo
Katie Coyne
Atianna Cordova

Report prepared for Oxfam America
and Limitless Vistas, Inc. by:
Asakura Robinson Company LLC



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Author information and acknowledgments

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ACRONYMS AND ABBREVIATIONS

| | |
|-------------|--|
| BP | British Petroleum |
| CAD | Computer-Assisted Design |
| CESB | Council of Engineering & Scientific Specialty Boards |
| CLEP | College Level Examination Program |
| EPA | U.S. Environmental Protection Agency |
| GCERC | Gulf Coast Ecosystem Restoration Council |
| GIS | Geographic Information Systems |
| GPS | Geographic Positioning System |
| HAZWOPER | Hazardous Waste Operations and Emergency Response |
| HiSET | High School Equivalency Test |
| JITW | Jobs in the Woods Program |
| LEAP | Life Experience Assessment Program |
| LVI | Limitless Vistas, Inc. |
| MSA | Metropolitan Statistical Area |
| NCRC | National Career Readiness Certificate |
| NRDA | Natural Resource Damage Assessment |
| OSHA | Occupational Safety and Health Administration |
| RESTORE Act | Resources and Ecosystems Sustainability, Tourist Opportunities, and Revived Economies of the Gulf Coast States Act of 2012 |
| STEM | Science, Technology, Engineering, and Mathematics |
| SWPP | Source Water Protection Plan |
| TAACCCT | Trade Adjustment Assistance Community College and Career Training Grants Program |

| | |
|------|---|
| VIDA | Valley Initiative for Development and Advancement |
| WIB | Workforce Investment Board |
| WIOA | Workforce Investment and Opportunity Act of 2014 |

EXECUTIVE SUMMARY

The purpose of this study is to determine the feasibility of, and examine best practices in, developing career pathways and a series of stackable credentials covering skills needed by workers for middle-skill jobs in ecosystem restoration and related technician-level occupations in underserved coastal communities on the Gulf Coast.¹ Middle-skill jobs require more specialized training than a high school diploma can provide, but do not require a full four-year college degree.

The research aims to identify potential opportunities to assist residents of vulnerable coastal communities and low-to-middle-income coastal workers to gain the skills necessary to meet employers' needs for new middle-skill technician workers who can assist in executing restoration and conservation projects. Given the increasing level of funding currently flowing to the Gulf coast region for coastal restoration projects, understanding whether new credentials could assist vulnerable residents in quickly gaining the technical skills needed for these jobs and allow the benefits of these projects to flow to the most-affected areas is a critical goal. In addition, examining the potential of these new credentials as the foundation of long-term career pathways for residents provides an opportunity to design programs that can lead to jobs with increasing wages and progressively higher levels of responsibility.

The research focuses on Louisiana to allow for in-depth investigation of local conditions, although the conclusions of the study can be applied to communities across the five Gulf Coast states.

RESEARCH DESIGN

The research team conducted a Literature and Best Practice Review to examine nationwide best practices in stackable credentialing and environmental credentialing programs. A Labor Market Analysis provided information on Louisiana and Gulf Coast demand for environmental and ecosystem restoration occupations and opportunities for transitioning workers from related professions, including construction, the oil and gas industry, and other marine industries.

Following this review of the available research and labor market data, the team conducted 39 individual interviews with an array of experts and key stakeholders, including:

¹ Statement of Work, "Determining the Feasibility of Developing Career Pathways and Stackable Credentials for Workers in Gulf Coast Environmental Technician Activities."

- National experts in career pathways and credentialing;
- National regulators who fund workforce development in environmental occupations;
- Representatives of organizations that have developed national best-practice programs in career pathways and environmental credentialing;
- State-level regulators who fund and own coastal restoration projects in Louisiana;
- Louisiana employers in coastal and ecosystem restoration;
- Louisiana training providers, including community colleges and other environmental credentialing providers;
- Trainees who have participated in Limitless Vistas Inc.'s existing environmental credentialing program in Louisiana.

RESEARCH FINDINGS

Based on the results of the Literature and Best Practice Review, the Labor Market Analysis, and the individual interviews, the research team finds that the creation of stackable credentialing programs for ecosystem restoration occupations is both feasible and desirable. This study outlines a three-tiered stackable set of credentials that can be customized for local needs and opportunities. These credentials include:

- **A one-year, 38-credit Certificate program for individuals who already have some experience in activities related to coastal and ecosystem restoration.** These individuals may come from the coastal restoration industry, the oil and gas industry, the marine industry, or other related industries. The certificate program includes 32 introductory and core course credits as well as the opportunity to specialize in a single focus area that comprises the remaining six credits for award of a certificate. This credential could be accredited by the Council of Engineering & Scientific Specialty Boards (CESB) as a standardized body of knowledge and offered either by a community college or a non-profit training provider entity. Individuals would be able to attempt to test out of portions of the program that cover their pre-existing knowledge and certifications.
- **A two-year, 69-credit Associate's degree program that would serve individuals with no previous ecosystem restoration experience.** These trainees would take the same 32 introductory and core course credits as well as 17 additional required credits (which substitute for the on-the-job knowledge that those in the Certificate program would already

likely have gained). A cooperative education experience of 2-4 credits is required to facilitate interaction with employers that can assist in leading to job placement. In addition, 22-24 electives allow trainees to take an array of courses or specialize in individual focus areas that correspond to locally available jobs. Focus areas were established based on existing job market potential and include six categories: Construction, Sustainable Design, Geology/Hydrology, Ecology/Biology, Business, and Surveying.

- **A 13-credit online Management Training Certificate can be added on to either the Associate or Certificate degree track.** This program is intended to be completed online over the course of a year while working in the restoration field and is specifically for those interested in pursuing management of restoration operations. The management training program has a direct focus on implementing strategies and knowledge from the coursework into the day-to-day work of the trainee's current job. It is strongly recommended to establish support from trainees' work supervisors to garner maximum benefit from this program.
- Community colleges may also offer the core courses and focus area courses recommended for the Associate's degree program to students pursuing Transfer Associate's Degree programs that focus on students who wish to transfer to 4-year universities as a junior. Transfer degree programs include more extensive general education requirements than the programs recommended in this report, given that they are designed to accommodate universities' general education requirements for 4-year degrees. However, offering certain courses from the Associate's program to potential transfer students may enhance enrollment and add additional career pathway opportunities in ecosystem restoration professions that require four-year degrees.

Based on the results of the individual interviews and the study of national best practices, the researchers recommend launching initial pilot programs (perhaps one per state) in the near future to allow focused resources for building the foundational web of partnerships that is necessary to successfully implement stackable credentialing programs. In order to ensure long-term success in connecting workers to jobs, critical partners at each program location should include training providers, potential instructors, employers, funders, workforce investment boards, and potential trainees.

In addition, the team finds that educational programming should be customized based on location to fit the types of ecosystem restoration jobs available, and that universities should be engaged to assist in developing these customized curricula (although a potential framework for curriculum development is included in this document). Finally, best practice case studies show that some of the most successful career pathway programs nationally involve deep case management

services and significant financial aid resources for trainees; the researchers recommend exploring funding sources and partnerships with community-based organizations to meet this need.

The results of this research show that there is strong opportunity to engage low-income workers from vulnerable communities in coastal restoration work through the use of customized stackable credentialing programs that target local project demands and employer needs, and that funding these programs with adequate resources for training providers, trainees, and community-based partner organizations should be a priority to ensure long-term success.

INTRODUCTION

The purpose of this study is to determine the feasibility of, and examine best practices in, developing career pathways and a series of stackable credentials covering skills needed by workers for middle-skill jobs in ecosystem restoration and related technician-level occupations in underserved coastal communities in the Gulf Coast, focusing on Louisiana.²

The Gulf Coast region faces a combination of broad ecosystem stresses, including climate change and its associated effects of sea-level rise, ocean acidification, and increased hurricane intensity³; severe wetlands loss that has been accelerated by the Mississippi's channelization and by human dredging activity within coastal wetlands⁴; ongoing nutrient pollution of Gulf Waters due to agricultural and stormwater runoff (which also contributes to acidification)⁵; and increasing upstream utilization of freshwater resources that can be exacerbated by drought conditions.⁶ In addition, the 2010 BP oil spill generated a large number of specific restoration needs for water resources, habitats, and fisheries that have yet to be substantially funded (in fact, the \$20.8 billion BP settlement with Gulf Coast states was not finalized until April 2016, though early restoration activities and compensation of individual and business loss claims have already taken place).^{7 8}

The current ramp-up of coastal ecosystem restoration funding sources to address these issues, as authorized through the RESTORE Act, Natural Resource Damage Assessment (NRDA), Gulf of Mexico Energy Security Act, and the National Fish and Wildlife Foundation, is projected to generate large

² Statement of Work, "Determining the Feasibility of Developing Career Pathways and Stackable Credentials for Workers in Gulf Coast Environmental Technician Activities."

³ Robert R. Twilley, "Coastal Wetlands & Global Climate Change: Gulf Coast Wetland Sustainability in a Changing Climate," *Pew Center on Global Climate Change*, 2007, <http://www.c2es.org/docUploads/Regional-Impacts-Gulf.pdf>.

⁴ U.S. Geological Survey, "Louisiana Coastal Wetlands: A Resource at Risk," *USGS Fact Sheet Series*, 2016, <http://pubs.usgs.gov/fs/la-wetlands/>.

⁵ U.S. Environmental Protection Agency, "Gulf of Mexico," 2016, <https://www.epa.gov/nutrient-policy-data/gulf-mexico>.

⁶ Florida Fish and Wildlife Conservation Commission, "2012-2013 Florida Gulf Coast Oyster Disaster Report," 2013, <http://www.floridajobs.org/docs/default-source/2015-community-development/2015-cmty-plan-acsc/20122013floridagulfcoastoysterdisasterreport.pdf?sfvrsn=2>.

⁷ Debbie Elliott, "5 Years After BP Oil Spill, Effects Linger And Recovery Is Slow," *National Public Radio*, 2015, <http://www.npr.org/2015/04/20/400374744/5-years-after-bp-oil-spill-effects-linger-and-recovery-is-slow>.

⁸ Oxfam, "Six years after BP Oil Spill, \$20 billion settlement presents once in a lifetime opportunity to the Gulf Coast," *Oxfam America*, 2016, <http://www.oxfamamerica.org/explore/stories/six-years-after-bp-oil-spill-20-billion-settlement-presents-once-in-a-lifetime-opportunity-to-the-gulf-coast/>.

numbers of new jobs along the Gulf Coast.⁹ While several research efforts have focused on creating an employment pipeline for coastal restoration work in general,^{10 11} this study focuses on specific credentialing opportunities to support Gulf Coast residents' access to environmental technician work – which requires competency in such skills as surveying, emergency response, soil and water sampling, basic statistics and math, CAD design work, GIS mapping, and wetland delineation. Environmental technician jobs are distinct from direct construction labor (though they encompass many related skills) and are critical for the ongoing planning and adaptive management of coastal ecosystem restoration projects. Relative to the construction field, the environmental technician field offers fewer jobs in coastal restoration work.¹² However, according to many of our employer informants for this research, the jobs offered in this field are well-paying and develop transferable skills that help workers maintain long-term career growth in the face of the cyclical forces that often affect coastal construction workers.¹³

This report assesses the feasibility of assisting residents of vulnerable coastal communities and low-income workers in accessing new “stackable” credentials that allow advancement in environmental technician professions with less than a four-year degree. The research also examines opportunities to integrate these stackable credentials into a career pathway in coastal ecosystem restoration, which combines education, training, and counseling services that assist individuals to succeed in gaining recognized postsecondary credentials in sectors that are in demand by local industries.¹⁴

⁹ Mather Economics LLC, “Job Creation from Gulf Coast Wetlands Restoration,” *Walton Foundation*, 2012, <http://www.mississippiriverdelta.org/files/2012/07/Mather-Economics-Job-Creation-from-Gulf-Coast-Wetlands-Restoration.pdf>.

¹⁰ Greater New Orleans, Inc., “Analysis of Coastal Restoration Workforce Assets, Challenges, and Opportunities in South Louisiana,” *Foundation for Louisiana*, December 2014, http://gnoinc.org/uploads/FFL_Report_FINAL_2014_11_26.pdf.

¹¹ Paul Laperouse et al., “Gulf Coast Job Creation and Workforce Development,” *Oxfam America*, 2012, <https://recoverrestore rebuild.files.wordpress.com/2012/05/job-creation-report-oxfam-ssa.pdf>

¹² Jane B. Watson, PhD, “Job Training to Support Gulf Habitat Restoration and Protection,” *U.S. EPA Region 6*, 2016.

¹³ Asakura Robinson Company informant interviews.

¹⁴ National Skills Coalition, “Career Pathways: Promise and Pitfalls,” 2015, <http://www.nationalskillscoalition.org/resources/publications/file/2015-04-29-Career-Pathways-Promise-and-Pitfalls.pdf>.

RESEARCH DESIGN

This research encompasses a literature review and assessment of available labor market data as well as an analysis of the results of 39 individual interviews with an array of relevant stakeholders and informants. The study focuses on the following research questions, as described in the Project Statement of Work:¹⁵

1. What jobs are considered “in-demand occupations” and have above poverty-level wages, and what experience, skills, and/or certification are needed to enter a career pathway for “in-demand” jobs?
2. What high-demand occupations in ecosystem restoration do Gulf Coast employers think require the development of new or better credentials? Would there be interest in such credentials for technicians involved in restoration?
3. What do employers see as the most important knowledge and skills, and hierarchy of skills, for which there should be clear criteria for training and credentialing? These can include technical and “soft” skills.
4. What credentials and career pathways for such occupations already exist?
5. Is there a need for a new credential certifying a broad, basic understanding of sustainability, coastal ecosystems, and issues of flooding and sea-level rise, industry safety, and quality control?
6. What have been best practices in developing career pathways and stackable credentials with appropriate curricula that are valuable to employers and workers?
7. What are the macro-level ecosystem restoration and other environmental needs of the Gulf Coast?
8. How should the credentialing process be designed to work best?
9. What are key community colleges, other training providers, and credentialing bodies?
10. How can employers and training providers/community colleges work together to develop credentials and the curricula for learning that leads to each credential?

¹⁵ Statement of Work, “Determining the Feasibility of Developing Career Pathways and Stackable Credentials for Workers in Gulf Coast Environmental Technician Activities.”

11. What would good curricula look like for different credentials?

In order to begin the analysis with an understanding of existing research, an initial Literature and Best Practice Review focused on documenting best practices in career pathways and stackable credential development, including:

- A synthesis of research that has established key criteria for the creation of successful career pathways / stackable credential systems.
- Two case studies of previous environmental technician career pathway efforts, including documentation of successes and failures in the abilities of these efforts to connect low- and middle-skill workers to well-paying environmental jobs.

The research team also simultaneously conducted an initial Labor Market Analysis utilizing available data and research from state workforce agencies and the U.S. Environmental Protection Agency Region 6 to determine the likely magnitude of the job market in ecosystem restoration and outline the breadth of related employment sectors, including an initial assessment of middle-skill jobs that exist in ecosystem restoration and related occupations.

Utilizing the results of the Literature and Best Practice Review and the Labor Market Analysis, the research team proceeded to conduct 39 individual interviews with key informants on establishing stackable credentials in environmental technician jobs relevant to coastal restoration. In order to develop an in-depth case study of the feasibility of developing stackable credentials on the Gulf Coast with the resources available, the research team focused on developing a clear understanding of the national context for credentialing and funding of coastal restoration, while targeting on-the-ground interviews with training providers, trainees, and local regulators within the state of Louisiana. The lessons learned on constraints and opportunities for career pathway and stackable credential development in Louisiana can be extrapolated to the Gulf Coast as a whole. The interviewees included:

- Four “connector” interviewees who provided background on the water management sector in Louisiana and on the Gulf Coast and gave the research team additional suggestions for further interviews.
- Four national experts in career pathways and credentialing, including one national accrediting body.
- Three informants with experience in developing and operating national best-practice programs in career pathways and environmental credentialing.

- Five federal regulators who manage funding programs for environmental workforce development.
- Three state-level regulators who are funders and owners of coastal restoration and water management projects in Louisiana.
- Five Louisiana training providers, including representatives of community colleges and environmental credentialing programs.
- Ten employers in the environmental restoration industry, representing the environmental services, engineering, surveying, and geotechnical services industries. The research team intentionally created a balance between small businesses and larger employers in order to understand the differing opportunities that may exist for hiring and partnerships within coastal restoration and water management. Four of the employers interviewed are small businesses with one to three offices located entirely in Louisiana; two of these employers provide regional services with multiple offices on the Gulf Coast; and four of these employers represent large national or multi-national corporations.
- Five trainees who have participated in environmental credentialing programs offered in Louisiana by Limitless Vistas, Inc; trainee interviews focused on understanding the benefits of environmental training, any additional services or training that could be helpful, and opportunities to expand engagement in environmental training programs.

The results of the interviews were analyzed for thematic content related to the research questions, with a particular focus on points of agreement and disagreement, to assess the overall feasibility of developing new stackable credentials for environmental technician occupations and determine critical considerations and partnerships needed for the creation of career pathways for low-income and vulnerable Gulf Coast residents.

LITERATURE AND BEST PRACTICE REVIEW

The Literature and Best Practice Review component of this report establishes the research context for our investigation into the feasibility of establishing career pathways and stackable credentials in environmental restoration on the Gulf Coast. This section:

- Defines key concepts, including “career pathways” and “stackable credentials.”
- Provides context on national best practices and precedents in career pathways and stackable credentials.
- Documents case studies on specific programs that have applied the principles of career pathways and stackable credentials to shifting workers into environmental restoration jobs.

UNDERSTANDING STACKABLE CREDENTIALS

What are Career Pathways and Stackable Credentials?

The Workforce Investment and Opportunity Act (WIOA) of 2014 defines “career pathways” as:

“A combination of rigorous and high-quality education, training, and other services that— (A) aligns with the skill needs of industries in the economy of the State or regional economy involved; (B) prepares an individual to be successful in any of a full range of secondary or postsecondary education options, including registered apprenticeships; (C) includes counseling to support an individual in achieving the individual’s education and career goals; (D) includes, as appropriate, education offered concurrently with and in the same context as workforce preparation activities and training for a specific occupation or occupational cluster; (E) organizes education, training, and other services to meet the particular needs of an individual in a manner that accelerates the educational and career advancement of the individual to the extent practicable; (F) enables an individual to attain a secondary school diploma or its recognized equivalent, and at least 1 recognized postsecondary credential; and (G) helps an individual enter or advance within a specific occupation or occupational cluster.”¹⁶

These defined career pathways of advancement are a critical priority of WIOA and are required to be woven throughout federally-funded workforce activities

¹⁶ National Skills Coalition, “Career Pathways: Promise and Pitfalls,” 2015, <http://www.nationalskillscoalition.org/resources/publications/file/2015-04-29-Career-Pathways-Promise-and-Pitfalls.pdf>.

between 2015 and 2020.¹⁷ Moreover, in April 2016, a partnership of 12 federal agencies signed a joint letter demonstrating their agreement on the definition, importance of and commitment to support for career pathway systems through policy and funding programs.¹⁸

National experts in workforce development have increasingly recognized stackable credentials as a flexible way to enable workers to move along career pathways. The U.S. Department of Labor defines stackable credentials as “part of a sequence of credentials that can be accumulated over time to build up an individual’s qualifications and help them to move along a career pathway or up a career ladder to different and potentially higher-paying jobs.”¹⁹ This model allows workers to gain credit for skills learned in the workplace and continue on their path toward longer-term degree programs while taking time off to work as needed. It recognizes that the demands on low- to moderate-income workers may include moving in and out of education and the workplace in order to earn income while accessing training, and is meant to respond to that need with a more flexible and modular system that provides credit for ongoing increases in skills.^{20 21}

However, creating appropriate stackable credentials that truly work to advance skills in a way that is coordinated with workplace advancement is difficult and requires buy-in from multiple sectors, including training providers (and their faculty), employers, and students themselves. To respond to the need for pilot programs that demonstrate the effectiveness of this approach, the Trade Adjustment Assistance Community College and Career Training Grants Program (TAACCCT) authorized \$2 billion in federal expenditures in 2010 “to drive innovation and the development of model training programs at America’s community colleges and universities.”²²

Impetus for Creating Stackable Credentials

Many demographic changes, economic forces and advancements in learning technology have led workforce development practitioners to focus on creating stackable credentials.

¹⁷ Ibid.

¹⁸ Career Pathways Joint Letter, April 28 2016, <https://careerpathways.workforcegps.org/-/media/WorkforceGPS/careerpathways/Files/Career%20Pathways%20Joint%20Letter%202016.pdf>.

¹⁹ Evelyn Ganzglass, Scaling “Stackable Credentials”: Implications for Evidence and Policy,” *Center for Law and Social Policy*, 2014, <http://www.clasp.org/resources-and-publications/files/2014-03-21-Stackable-Credentials-Paper-FINAL.pdf>. Center for Economic and Postsecondary Success at CLASP.

²⁰ Ibid.

²¹ Lumina Foundation, “Connecting Credentials: A Beta Credentials Framework,” 2015, <http://2rs11m47n9nefk1rmiofa51a.wengine.netdna-cdn.com/wp-content/uploads/2015/05/ConnectingCredentials-4-29-30.pdf>

²² Ibid., 2.

Our workforce lacks the skills necessary for today's high-skill jobs. In a 2010 survey of over 450 CEOs, 53% reported difficult recruiting non-managerial employees with the necessary education and training. By 2018, 63% of American jobs are expected to require some type of post-secondary education or training.²³ The retirement of the baby boomer generation will hasten the need for qualified workers, especially with training in science, technology, engineering – diplomas with which only 15% of college students graduate.²⁴

Nontraditional students, including returning veterans, dislocated workers, those with limited English proficiency, and those with limited training (returning vets, dislocated workers, those with limited education or English proficiency or training) often have competing priorities that hamper mobility within the learning and training environment. Such important moves include from noncredit occupational training to credit bearing programs, and from short-term certificate programs to longer-term degree programs. Earning credit within an education system for knowledge and skills gained through work experience and training is of particular significant to these nontraditional students who drop out of a post-secondary program and must start over to return.²⁵

Historic career ladders are diminishing in relevance. Work advancement in the 20th century often followed ladders within company structure or unions, or through apprenticeships. These systems allowed workers to gain new skills – and higher wages and responsibilities – incrementally. However, in recent decades, employers have required workers with advanced technical and cognitive (teamwork, leadership, problem solving and communication) skills from the onset of entering the work force.²⁶

The U.S. lacks a coherent, transparent system for earning and awarding post-secondary credentials. Within the last 30 years, the number of certificates offered has increased by 80%. Less than 10% of the over 4,000 personnel certification bodies are accredited or otherwise reviewed by third parties. The result is a broad range of credential types with little common understanding of how they compare to one another. Employers do not trust the value of certificates with which they are unfamiliar. Current offerings include diplomas, occupational certificates, certifications, degrees, occupational licenses, apprenticeship

²³ James T. Austin, Gail O. Meadow, Mitch Rosin, and Marlene Seltzer, "Portable, Stackable Credentials: A New Education Model for Industry-Specific Career Pathways," *McGraw-Hill Research Foundation*, 2012.

²⁴ Thomas A. Kochan., David Finegold, and Paul Osterman, "Who can Fix the Middle Skills Gap?" *Harvard Business Review*, December 2012. <https://hbr.org/2012/12/who-can-fix-the-middle-skills-gap>

²⁵ Evelyn Ganzglass, Scaling "Stackable Credentials": Implications for Evidence and Policy," *Center for Economic and Postsecondary Success at CLASP*, March 2014, <http://www.clasp.org/resources-and-publications/files/2014-03-21-Stackable-Credentials-Paper-FINAL.pdf>.

²⁶ Thomas A. Kochan., David Finegold, and Paul Osterman, "Who can Fix the Middle Skills Gap?" *Harvard Business Review*, December 2012. <https://hbr.org/2012/12/who-can-fix-the-middle-skills-gap>.

certificates, and specific skills certificates and certifications within one or more industries or occupations.^{27 28}

Best Practices in Stackable Credential Creation

According to Austin, Meadow, Rosin and Seltzer, to meet the needs of today's workforce, credentials should embody the following three characteristics:²⁹

1. **Stackability:** The ability to be built upon with future short-term credentials to access more advanced jobs and wages. This is critical for nontraditional students who had previously dropped out of school, or who work while in school and may need to drop out and return.
2. **Portability,** meaning that employers and educational institutions across different regions understand and trust the value of the credential. This requires independent verification and accreditation of the credential itself as well as the training provider.
3. **Part of a career pathway system** – when education/training opportunities, supports (financial aid), and milestones toward higher levels of skills and wages within an industry, are clear.

Educational institutions and other training providers nationwide are still at varying stages of the process in recognizing and fulfilling these new credentialing needs. Research reveals a number of critical lessons and opportunities when working to create new stackable credentials. We enumerate these lessons below.

Create qualifications frameworks – systems for translating the depth and breadth of credentials to one another across geographies and industry sectors. This allows employers and educational institutions to compare credentials awarded by separate entities yet with similar characteristics. The European Qualifications Framework, which delineates eight reference levels describing learning outcomes, applies to all types of education and training, and allows workers to take credentials earned in one country to another.³⁰

The Lumina Foundation proposes a similar “beta framework” that incorporates eight levels that “indicate the relative complexity, breadth and/or depth of learning achievement, rather than subject matter.” The beta framework describes the

²⁷ Institute for Credentialing Excellence. Defining Features of Quality Certification and Assessment-Based Certificate Programs. www.credentialingexcellence.org/d/do/71.

²⁸ Lumina Foundation, “Connecting Credentials: Making the Case for Reforming the U.S. Credentialing System,” 2015, <http://2rs11m47n9nefk1rmiofa51a.wpengine.netdna-cdn.com/wp-content/uploads/2015/05/ConnectingCredentials-4-29-30.pdf>.

²⁹ James T. Austin, Gail O. Meadow, Mitch Rosin, and Marlene Seltzer, “Portable, Stackable Credentials: A New Education Model for Industry-Specific Career Pathways,” *McGraw-Hill Research Foundation*, 2012.

³⁰ Ibid.

depth of knowledge as well as specialized, personal and social skills for each level.³¹

Streamline and expand the process for awarding credit for prior, non-collegiate job training and learning. Types of prior learning include military credits, Advanced Placement credits, and credits from Technical Colleges. This can be done through acceptance of credentials validated by third parties, assessment examinations such as the College Level Examination Program (CLEP) and Life Experience Assessment Program (LEAP), and linking coursework tracks with area high schools.³²

Provide wraparound services required by nontraditional students, including child care and transportation. Research has shown that support services such as these, in addition to financial aid, encourage greater participation in job training among disadvantaged individuals.³³

Encourage greater participation of employers in education and training initiatives. No sustainable transformation in credentials will occur without employer acceptance of the reformed credentials. Cultivating and strengthening existing ties between employers and educators will therefore help ensure that educational institutions are helping meet the latest employer needs. This can occur in several ways:

1. Embed existing industry and professional certifications in career and technical programs. This allows students to obtain marketable industry and educational credentials at once.³⁴
2. Create dual enrollment programs, which allow students to get a high school diploma or HiSET as well as industry certifications and post-secondary credentials.³⁵
3. Foster sector-based regional initiatives, in which government agencies, community colleges and employers coordinate resources and collaborate on problem-solving through formal partnerships sponsored by local or regional governments. Examples include the Bay Area Workforce

³¹ Lumina Foundation, "Connecting Credentials: Making the Case for Reforming the U.S. Credentialing System," 2015, <http://2rs11m47n9nefk1rmiofa51a.wpengine.netdna-cdn.com/wp-content/uploads/2015/05/ConnectingCredentials-4-29-30.pdf>.

³² Evelyn Ganzglass, Scaling "Stackable Credentials": Implications for Evidence and Policy," *Center for Economic and Postsecondary Success at CLASP*, March 2014, <http://www.clasp.org/resources-and-publications/files/2014-03-21-Stackable-Credentials-Paper-FINAL.pdf>.

³³ US Departments of Labor, Commerce, Education and Health and Human Services, "What Works in Job Training: A Synthesis of the Evidence," July 2014, <https://www.dol.gov/asp/evaluation/jdt/jdt.pdf>.

³⁴ Evelyn Ganzglass, Scaling "Stackable Credentials": Implications for Evidence and Policy," *Center for Economic and Postsecondary Success at CLASP*, March 2014, <http://www.clasp.org/resources-and-publications/files/2014-03-21-Stackable-Credentials-Paper-FINAL.pdf>.

³⁵ Ibid.

Funding Collaborative. These partnerships can design and fund programs that train and hire graduates.³⁶

Sponsor apprenticeship training. Although apprenticeships have shrunk 36% since 1998, due to the waning union membership, the model remains an effective tool for preparing workers, standardizing training, and increasing employee retention. Graduates of apprenticeship programs have received an estimated \$250,000 in additional lifetime earning while employers benefit from a 38% return on investment. However, firms in competitive industries hesitate to invest in such training out of fear of competitors poaching trainees. In this case, apprenticeship programs may be developed and offered through industry partnerships with unions or regional training initiatives organized by government agencies and trade associations.³⁷

Create “lattice credentials” that allow students to follow multiple career pathways. These include foundational certificates that provide trainees with core knowledge or skills that are applicable in multiple industries. They allow students exposure to field committing to extended study, and tend to be interdisciplinary. For example, the ACT National Career Readiness Certificate (NCRC) is a job skills assessment system that measures foundational and soft skills applicable across many industries.³⁸

Funding Sources for Stackable Credentials

The U.S. Departments of Labor, Education, Health and Human Services, and Agriculture each offer funding through various programs that can support career pathways systems and programs (Table 1).

Table 1: Federal Funding Programs for Career Pathways³⁹

| |
|---|
| U.S. Department of Labor |
| Workforce Innovation and Opportunity Act Title I: Adult and Dislocated Worker |
| Workforce Innovation and Opportunity Act Title I: YouthTrade Adjustment Assistance |
| Workforce Innovation and Opportunity Act Title III: Employment Services (Wagner-Peyser) |
| Trade Adjustment Assistance |
| Registered Apprenticeship and Pre-Apprenticeship |
| U.S. Department of Education |

³⁶ Thomas A. Kochan., David Finegold, and Paul Osterman, “Who can Fix the Middle Skills Gap?” *Harvard Business Review*, December 2012. <https://hbr.org/2012/12/who-can-fix-the-middle-skills-gap>.

³⁷ Ibid.

³⁸ Evelyn Ganzglass, Scaling “Stackable Credentials”: Implications for Evidence and Policy,” *Center for Economic and Postsecondary Success at CLASP*, March 2014, <http://www.clasp.org/resources-and-publications/files/2014-03-21-Stackable-Credentials-Paper-FINAL.pdf>.

³⁹ CLASP, “Funding Career Pathways: A Federal Funding Toolkit for State and Local/Regional Career Pathway Partnerships” February 2016, <http://www.clasp.org/resources-and-publications/publication-1/Career-Pathways-Funding-Toolkit-2015-8.pdf>

| |
|--|
| Workforce Innovation and Opportunity Act Title II: Adult Education and Family Literacy Act |
| Workforce Innovation and Opportunity Act Title IV: Vocational Rehabilitation Services |
| Pell Grants |
| Carl D. Perkins Career and Technical Education |
| US Department of Health and Human Services |
| Temporary Assistance for Needy Families |
| US Department of Agriculture |
| Supplemental Nutrition Assistance Program Employment and Training |

Discretionary federal funding for stackable credentialing has come from the Trade Adjustment Assistance Community College and Career Training Grants Program (TAAACCT), which Congress authorized in 2010 and funded with \$2 billion in discretionary funds. Louisiana has received \$32 million from this program, including \$2.5 million for Delgado Community' College's Scale-Up Southeast Louisiana initiative. This effort will train over 1,100 participants in the advanced manufacturing and energy sectors.⁴⁰ TAAACCT funds are available on a competitive basis for community colleges and other institutions in order to support programs that:

1. Can be completed in less than 2 years
2. Will prep students for high skill high wage jobs
3. Suited for workers who are eligible for training under the Trade Adjustment Assistance for Workers program, which apply to workers displaced from their jobs by foreign trade⁴¹

In addition, it is possible that RESTORE Act funds at the state or federal levels could be used to support stackable credentialing programs in the environmental restoration sector.

EXISTING ENVIRONMENTAL RESTORATION WORKFORCE DEVELOPMENT EFFORTS

After looking at career pathways and stackable credentialing in their general application across the U.S., the research team examined existing examples of environmental workforce development efforts that have generated new job opportunities with advancement potential for workers.

Nationally, environmental restoration workforce development efforts have varied from formalized and heavily funded programs, to small-scale, local, and

⁴⁰ Ibid.

⁴¹ U.S. Department of Labor, "Vice President Biden Announces Recipients of \$450m of Job-Driven Training Grants," September 2014. <https://www.dol.gov/newsroom/releases/eta/eta20141865>

grassroots endeavors. Environmental restoration education exists largely at an academic level with limited technical and hands-on training necessary for low- to middle-income workers. For instance, the Society for Ecological Restoration lists 27 international and 40 US based programs of study – most of which are graduate and undergraduate level.⁴² Accredited colleges with technical certificate or Associate level degree programs related to environmental restoration include Lewis and Clark College in Godfrey, Illinois; Merritt College in Oakland, California; Edmonds Community College in Lynwood, Washington; and, Saddleback College in Mission Viejo, California. Numerous non-profit environmental restoration training programs exist nationally but lack a standard certificate process or broadly applicable programming because of their focus on restoration issues specific to their locale. The following two case studies outline efforts in Illinois and the Pacific Northwest to establish environmental restoration workforce development programs and the lessons that these programs offer for a similar effort on the Gulf Coast.

Case Study: Jobs in the Woods, Pacific Northwest

Jobs in the Woods (JITW) is perhaps the most cited and well-documented effort to establish an environmental restoration workforce training program. During the 1990's, loggers and mill workers in the Pacific Northwest were displaced by the decline in timber output on federal lands. Ecosystem restoration was seen as a solution to timber and millwork job loss, especially because of the backlog of restorative maintenance on public lands. Many of the workers in lumber and mill work had the same skills necessary to shift to ecological restoration work. These factors drove the creation of the JITW Program as part of the Northeast Economic Adjustment Initiative (NEAI).⁴³

The program was intended to help displaced timber workers by focusing on job training and placement in forest and ecosystem restoration. During the first year (1994), \$27 million was spent on 600 restoration contracts in Washington, Oregon, and California. This amounted to 2,200 jobs, 1,000 jobs specifically directed at displaced workers, 59,000 estimated person days of work, and training to 74 workers in Oregon, 35 in California, 77 in Washington.⁴⁴

The JITW training curriculum was developed by non-profits and academic institutions (community colleges) in cooperation with state and federal agencies. Their pilot curriculum was diverse and included topics such as watershed science, ecology, safety and technical knowledge, and business development and management. Most programs followed an apprenticeship model involving

⁴² "Academic Programs," Society for Ecological Restoration, accessed May 18, 2016, <http://www.ser.org/resources/career-center/academic-programs>

⁴³ Peter Kostichack, "Community-Based Ecosystem Restoration Workforce Development – A Discussion of National Policy Issues," Pinchot Institute for Conservation, 2003, accessed May 10, 2016, <http://www.pinchot.org/?module=uploads&func=download&fileId=691>

⁴⁴ Ibid.

both classroom and paid hands-on work outside. One training program was offered in Spanish targeted at recent immigrants. Agencies involved attempted to focus their hiring locally rather than advertising federal contracts.

JITW exhibits many of the features that a Gulf Coast environmental restoration program would ideally provide: it was designed to fill a clear environmental need with associated federal funding; it offered accessible training to low-income workers; and it targeted contracting and employment development toward local workers. However, JITW's initial failures to meet its stated goals offer numerous lessons for environmental credentialing efforts on the Gulf Coast.

- JITW projects only constituted one-third of total contracting jobs in the region and did not fully meet the demand for federal land restoration, partially because JITW funding was vulnerable to political shifts.
- Those responsible for federal agency contracting were overwhelmed with the new responsibility of integrating their work with the JITW work.
- There was a disconnect between displaced timber workers and new jobs for ecological restoration; most successful scenarios occurred with a third party organization connecting workers with contracting firms.
- Despite JITW wage speculation, there was no way to ensure the wage level of workers in the environmental restoration workforce.
- JITW did not offer enough incentives for contractors to train workers on an ongoing basis and federal funding supplied to organizations and community colleges for pilot training and job placement programs had to meet eligibility requirements and performance evaluations.
- Many unemployed candidates were turned away because they did not fit the target group cited in the grant application.
- Alumni from the program found demand for their skills was not yet firmly established upon completion of their training.
- The inconsistent and short-lived nature of restoration work proved to be a barrier to long-term program success.
- Differences in the business, planning, and bidding in the timber industry as compared to the environmental restoration industry also hindered the shift of ex-timber industry workers into environmental restoration jobs.
- Training that focuses on the most pressing ecological restoration needs seems practical; however, actual jobs were determined not by priority but by the administrative and financial limitations of the land management agencies. Therefore, priorities in training may have been inconsistent with actual workforce technical knowledge needs.

- Linkages between restoration projects and the JITW program became increasingly the responsibility of non-profits, which limited the program's long-term sustainability absent a viable funding source for those non-profits to scale up their work.
- A lack of monitoring at the beginning of the study made it difficult to measure impact after the program was implemented.⁴⁵

Kostichack's extensive review of the JITW program provides some clear recommendations for adapting the program for greater success, in ways that could also be applied to a Gulf Coast environmental restoration program from the outset.

- One option focuses on expanding contractor assistance programs to empower local contractors and enable them to provide high-quality work and family-wage jobs. Options include educating contractors about environmental restoration goals, improving contractor access to bonding, and providing business development support for contractors interested in doing ecosystem management and restoration work. This recommendation is highly applicable to the work currently being done on the Gulf Coast; for example, Greater New Orleans, Inc. highlights local subcontractor engagement as a critical component of employing local workers in Louisiana restoration projects.⁴⁶
- Another potential improvement would be securing federal agency cooperation to move workforce development demonstration projects to the private marketplace, and reforming project design and packaging to ensure development of a larger multi-objective, multi-year contracting program.
- In order to facilitate realization of goal wage levels, JITW should provide wage and hour enforcement that ensures "high wages for high quality work."
- In the interest of long-term sustainability, interagency collaboration (and ongoing collaborations with non-profits) should be institutionalized using partnership agreements.
- Finally, Kostichack recommends that monitoring and impact evaluation should become integral parts of the program. Impact evaluation should include development of a mechanism for assessing ecological and

⁴⁵ Ibid.

⁴⁶ Greater New Orleans, Inc. "Analysis of Coastal Restoration Workforce Assets, Challenges, and Opportunities in South Louisiana," *Foundation for Louisiana*, 2014, http://gnoinc.org/uploads/FLL_Report_FINAL_2014_11_26.pdf.

socioeconomic values of restoration projects, and a decision-making formula to balance these values.⁴⁷

Applying these lessons to the Gulf Coast is not completely straightforward, as some of the policy and program recommendations (e.g. establishing a mechanism for assessing the value of restoration projects) are already embodied in certain documents such as coastal master plans. However, concepts such as ensuring stable funding for workforce training, providing technical assistance and financial tools to contractors working on restoration projects, providing wage and hour enforcement, institutionalizing partnerships, and evaluating outcomes on a consistent basis are highly applicable to the Gulf Coast situation.

Case Study: Ecological Restoration Education and Training in Illinois

Through the efforts of Lewis and Clark Community College, GreenCorps Chicago, and OAI Inc., the state of Illinois has benefited from environmental workforce development programming that offers multiple types and levels of training. Each party offers different types of training and utilizes different funding sources, minimizing competition and providing an array of environmental restoration educational options to northern Illinois residents.

Lewis and Clark Community College offers both an Associate of Applied Science degree and a certificate of proficiency in Restoration Ecology as well as a certificate of completion in Sustainable Urban Horticulture.

GreenCorps Chicago focuses on workforce development in ecological restoration and invasive species management. Since 1994, GreenCorps has been funded by various agencies including the City of Chicago since 2002, the Community Development Block Grants program in 2010 & 2011, the USCOM/WalMart Award, and the ARRA/U.S.D.A. Forest Service. Trainees must be over 18, be Chicago residents, and “motivated and capable of outdoor, labor-intensive work.” Communities they serve include low-income communities (0-30% area median income) where only 17% have more than a high school education. Ninety percent of their trainees are ex-offenders. GreenCorps’ training program includes coursework in basic ecology and restoration, invasive species management, environmental health and safety, pesticide application, and Chicago Wilderness Burn training. Resulting professional certifications can include First Aid/CPR, HAZWOPER, OSHA 10-Hour Safety, and the Illinois Pesticide license. The program utilizes a tiered training system by which trainees must complete core goals and 70% of other goals in each tier before advancing to each consecutive tier of training. Hands-on application of concepts introduced in training is part of the curriculum. GreenCorps cites a Wells Fargo-funded four-acre savannah and prairie restoration project as an example of experiential learning during which

⁴⁷ Ibid.

trainees practiced tractor operation, drill seeder operation, invasive species treatment, plant identification, habitat renewal, and chainsaw operation.⁴⁸

OAI Inc. is a Chicago based non-profit training and education agency with national programming. They specialize in “opportunity, advancement, and innovation in workforce development.” While their workforce development efforts extend beyond environmental restoration, they have been involved in numerous related training programs including the Brownfields 2015 Job Training Program funded by a grant through the EPA Brownfields Program. Disadvantaged, unemployed, and underemployed residents primarily from the South and West Sides of Chicago, including Empowerment Zones and Renewal Communities are specifically targeted for the program with a special emphasis placed on recruiting women, veterans, dislocated workers, ex-offenders, and at-risk young adults.⁴⁹ Through their Environmental Career Worker Training (ECWT) Program, OAI Inc. provides trainees with the opportunity to acquire “more than 12 industry-recognized health and safety-related certifications such as Hazardous Waste handling, OSHA safety, Forklift, and Lead RRP that prepare them for entry-level career paths in environmental remediation” and other environmental occupations.⁵⁰

These three programs together provide a clear example of a less-structured set of interventions in a single geographic area that benefit low- to moderate-income populations and utilize a diverse array of funding sources. Some advantages of this type of loose, networked approach are: multiple types of training are available with varying time commitments and educational prerequisites; communities and workers receive targeted approaches that focus on local needs; and more mentoring and one-on-one attention may be available within these individual organization than in larger programs like JITW. However, the disadvantages include a lack of scalability due to lack of systematic funding sources, geographic spread of programs (Lewis and Clark is located in southern Illinois while the other two programs are in the Chicago area), and a non-coordinated approach to training that makes it difficult to create true career pathways.

⁴⁸ “Mission,” GreenCorps Chicago, accessed May 18, 2016, <https://greencorpschicago.org/>

⁴⁹ “Our Work,” OAI Inc., accessed May 20, 2016, <https://oaiinc.org/our-work/>

⁵⁰ “Environmental Career Worker Training (ECWT),” OAI Inc., accessed August 26, 2016, <https://oaiinc.org/portfolio/career-training/>

LABOR MARKET ANALYSIS

The previous sections of the literature review have clarified many of the opportunities and challenges of developing stackable credentialing systems within the environmental restoration field. Another critical question in evaluating the feasibility of an environmental restoration credentialing program on the Gulf Coast is an examination of the labor market and the scale of likely middle-skill job growth in restoration activities.

This section addresses labor-market questions surrounding ecosystem restoration as a sector, including the types and numbers of jobs that are likely to be created over the next ten years, the availability of middle-skill and living-wage jobs within these sectors, and the opportunities to move workers from competing sectors into environmental restoration work.

ECOSYSTEM RESTORATION AND OTHER ENVIRONMENTAL NEEDS OF THE GULF COAST

As a response to the 2010 BP oil spill, the federal RESTORE Act created the Gulf Coast Ecosystem Restoration Council (GCERC), which is composed of the governors of the five Gulf states (Texas, Louisiana, Mississippi, Alabama, and Florida), and six Cabinet-level officials.⁵¹ The initial plan that the GCERC created for addressing ecosystem restoration along the Gulf Coast identifies goals and projects that contribute to addressing coastal ecosystem restoration and resilience in a holistic and comprehensive way. The five priorities identified in the GCERC's "Restoring the Gulf Coast's Ecosystem and Economy" plan include the following.⁵²

- (1) Restore and Conserve Habitat – Restore and conserve the health, diversity, and resilience of key coastal, estuarine, and marine habitats.
- (2) Restore Water Quality – Restore and protect water quality of the Gulf Coast region's fresh, estuarine, and marine waters.
- (3) Replenish and Protect Living Coastal and Marine Resources – Restore and protect healthy, diverse, and sustainable living coastal and marine resources.
- (4) Enhance Community Resilience – Build upon and sustain communities with capacity to adapt to short- and long-term changes.

⁵¹ Gulf Coast Ecosystem Restoration Council, "Restoring the Gulf Coast's Ecosystem and Economy," 2013, <https://www.restorethegulf.gov/sites/default/files/Initial%20Comprehensive%20Plan%20Aug%202013.pdf>.

⁵² *Ibid.*, 10.

5) Restore and Revitalize the Gulf Economy – Enhance the sustainability and resiliency of the Gulf economy.

Specific ecosystem restoration needs enumerated in the plan are numerous and diverse; they include many activities and projects that are likely to require workers to have at least some specialized knowledge of local ecology and sustainable construction techniques. Some of the specific activities and project types suggested include:

- Restoration of habitats such as “barrier islands, beaches, dunes, coastal wetlands, coastal forests, pine savannahs, coastal prairies, submerged aquatic vegetation, oyster reefs, and shallow and deepwater corals.”⁵³
- Improvements in water quality through “implementation of watershed best management practices; improved agricultural and silvicultural management practices; enhanced stormwater and/or wastewater management” and more options.⁵⁴
- Protection and restoration of species that are essential to the local ecosystem through “recovery of threatened and endangered species, overfishing and bycatch, improved fisheries assessments, sustainable resource management of commercially and recreationally important activities (such as fishing, hunting, and wildlife watching), increased resource stocks, invasive and nuisance species management and removal.”⁵⁵
- Restoration and revitalization of shorelines to reduce effects of sea-level rise through “removal of barriers to improve freshwater, inflow and fish passage; improved sediment management (e.g., through increased beneficial use, dedicated dredging, and sediment capture structures); restoration of coastal wetlands, restoration of eroded shorelines; river diversions (also known as river re-introduction projects) and other types of hydrologic restoration; natural ridge restoration” and other elements of shoreline and wetland natural process enhancement and restoration.⁵⁶

In addition to coastal restoration and protection jobs, water management within urban and suburban areas also presents an additional area of long-term growth, as municipalities and counties or parishes work to decrease their vulnerability to flooding generated by rainfall. As seen in the flooded streets of Houston and New Orleans during major rainfall events, mitigating the effects of impervious surface

⁵³ Ibid. 14.

⁵⁴ Ibid.

⁵⁵ Ibid., 14-15.

⁵⁶ Ibid., 15.

development with non-structural and “green infrastructure” interventions presents a critical opportunity for establishing more sustainable growth patterns and generating additional jobs in the environmental restoration economy.^{57 58}

MIDDLE-SKILL JOB AVAILABILITY IN ECOSYSTEM RESTORATION ACTIVITIES

The project types enumerated above focus on intervening in the landscape with large-scale projects that involve ecologically sensitive restoration and construction work that is essential to the future of the Gulf Coast region. These projects, according to economic and workforce development studies, will generate thousands of middle-skill jobs that will be accessible to workers who have not graduated from a four-year college. According to GNO Inc., the economic development organization for a 10-parish region that spreads around the New Orleans metro area, up to 13,600 jobs are anticipated to grow in water management in this region alone between 2016 and 2026, primarily from coastal restoration initiatives.⁵⁹ GNO Inc. anticipates that over half of these jobs (approximately 6,600) will be middle-skill jobs accessible through postsecondary training that is less than a bachelor’s degree.

A study completed by Laperouse et al. and a concept paper by Jane B. Watson of the U.S. Environmental Protection Agency Region 6 predict that large numbers of these jobs will go to construction workers with specialized training in welding and equipment operation and repair, including heavy equipment and marine operations certifications.^{60 61} However, according to Watson’s analysis and GNO Inc’s listing of water sector jobs, a substantial minority of jobs (approximately 7,500 across the Gulf Coast) in coastal protection are likely to go to technician occupations including including inspectors, testers, sorters, samplers, and weighers; civil engineering technicians; environmental engineering technicians; construction managers for environmental projects; mapping and survey technicians; and business operations specialists. Shrinath and Plyer also identify similar sectors for job growth motivated by water management and

⁵⁷ Richard Rainey, “New Orleans’ Urban Water Plan: A search for success and money,” *NOLA.com*, 2015, http://www.nola.com/environment/index.ssf/2015/12/new_orleans_urban_water_plan_a.html.

⁵⁸ Josh Stephens, “What if Houston Fell in Love with Planning,” *Next City*, 2016, <https://nextcity.org/features/view/houston-flood-development-gentrification>.

⁵⁹ GNO Inc., “State of the Sector: Water Management,” 2016, https://www.scribd.com/fullscreen/300344562?access_key=key-Kh7KDuaeGosaQRctakg&allow_share=true&escape=false&view_mode=scroll.

⁶⁰ Laperouse et al, “Gulf Coast Job Creation and Workforce Development: A review of recent research studies and recommended strategies for local, state, and federal agencies,” *Oxfam America*, 2012, <https://recoverrestorerebuild.files.wordpress.com/2012/05/job-creation-report-oxfam-ssa.pdf>

⁶¹ Jane B. Watson, PhD, “Job Training to Support Gulf Habitat Restoration and Protection,” *U.S. EPA Region 6*, 2016.

environmental restoration, though they add architectural and civil drafting and additional information technology sectors to their list of potential occupations in this arena.⁶²

Overall, Watson's analysis predicts the availability of nearly 7,500 jobs in the environmental technician sector across the Gulf Coast over the next 10 years within the construction management, engineering technician, environmental engineering technician, and survey/GIS/mapping technician occupations.⁶³ Construction management jobs account for over 50% of this projected growth, indicating that training those with experience in construction to perform quality restoration work should be one important goal of any additional credential.

THE GULF COAST LABOR MARKET

As these middle-skill jobs that require technical training grow in the restoration sector, other usually high-demand Gulf Coast sectors such as energy have been vulnerable and volatile in 2015-2016. National statistics show a sharp decline in employment in the mining and logging super sector, of which oil and gas extraction is a subset, between January 2015 and January 2016.⁶⁴ The drop in oil and gas prices has led to a national decline in oil rig activity and an 18% decline in oil and gas jobs during that time period.⁶⁵ Louisiana lost a total of 15,500 jobs year-over-year between March 2015 and March 2016, and coastal MSAs that generally house energy-sector workers were most heavily represented within this decline. The Lafayette MSA (a traditionally energy-dependent area) lost 9,300 jobs during this period, with most of that loss occurring in mining and logging, and in manufacturing.⁶⁶ The Houma MSA lost 6,500 jobs, with losses concentrated in the trade, transportation, and utilities super sector and the mining and logging super sector. Statewide in Louisiana, the vacancy rate for jobs in natural resources and mining was only 0.8% in 2015, showing the effects of this market contraction on job availability.⁶⁷ This decline in energy-sector jobs, which tend to have similar technical requirements for living-wage jobs as environmental

⁶² Nihal Shrinath and Plyer, Alison, "The Water Workers: Workforce Opportunities in Water Management in Southeast Louisiana," *The Data Center*, 2014, http://www.datacenterresearch.org/reports_analysis/the-water-workers/.

⁶³ Jane B. Watson, PhD, "Job Training to Support Gulf Habitat Restoration and Protection," USEPA Region 6, 2016, p. 7.

⁶⁴ Bureau of Labor Statistics, Current Occupation Statistics Survey, 2016, http://data.bls.gov/timeseries/CES1021100001?data_tool=XGtable.

⁶⁵ Devashri Saha and Muro, Mark, "Rigged: Declining U.S. oil and gas rigs forecast job pain," *Brookings Institution*, 2016, <http://www.brookings.edu/blogs/the-avenue/posts/2016/03/16-declining-us-oil-gas-rigs-saha-muro>.

⁶⁶ Louisiana Workforce Commission, "Louisiana Workforce at a Glance: March 2016," 2016, <http://www.laworks.net/Downloads/LMI/LMIBulletin.pdf>

⁶⁷ Chris Schmidt, Stephen Barnes, and Dek Terrell, "2015 Louisiana Job Vacancy Survey," *Louisiana State University E.J Ourso College of Business: Division of Economic Development*, 2016, http://www.laworks.net/Downloads/LMI/JVS_FinalReport_2015.pdf

restoration work, presents an opportunity to transition workers from energy production toward environmental restoration.⁶⁸

Meanwhile, construction employment in Louisiana increased by 7,000 jobs between March 2015 and March 2016;⁶⁹ the 3.1% vacancy rate in construction jobs in 2015 represents additional opportunity present in this field,⁷⁰ and construction's \$18.00 median wage shows that there are living-wage opportunities in the field. Given that many environmental restoration middle-skill jobs are construction-focused or share commonalities with the skills required for construction work, opportunities exist to build on this market strength and attract existing workers to environmental restoration with stackable credentials and training programs.

In Louisiana and across the Gulf Coast, living-wage jobs remain all too scarce for many working families. An as-yet-unpublished analysis for Oxfam America shows that 30% or more of working families in all five Gulf Coast states live in or near poverty, and that minority employees are far more likely to work in a job earning less than \$15 per hour than white employees.⁷¹ The presence of well-paying restoration jobs, if they are made accessible to low-income and minority populations, should therefore be a motivating factor for creating a labor market transition toward higher-paying opportunities.

⁶⁸ Jeffrey Buchanan, "Rebuilding a resilient and sustainable Gulf Coast," *Center for American Progress: Regional Energy, National Solutions*, 2012, http://thenextgeneration.org/files/RegEn_Gulf.pdf, 23.

⁶⁹ Louisiana Workforce Commission, "Louisiana Workforce at a Glance: March 2016," 2016, <http://www.laworks.net/Downloads/LMI/LMIBulletin.pdf>

⁷⁰ Chris Schmidt, Stephen Barnes, and Dek Terrell, "2015 Louisiana Job Vacancy Survey," *Louisiana State University E.J Ourso College of Business: Division of Economic Development*, 2016, http://www.laworks.net/Downloads/LMI/JVS_FinalReport_2015.pdf

⁷¹ Oxfam America, Economic Policy Institute, "Few Rewards: An agenda to give the working poor a raise," *Oxfam America*, June 2016, <https://policy-practice.oxfamamerica.org/work/poverty-in-the-us/low-wage-map/>.

INDIVIDUAL INTERVIEW RESULTS

Based on the results of the Labor Market Analysis, which showed that middle-skill job opportunities in the environmental technician fields are likely to grow along the Gulf Coast as a result of coastal restoration activity, the research team used individual interviews to understand the feasibility and opportunities of creating stackable credentials that could lead low-income and vulnerable workers into well-paying jobs in the coastal restoration field. Key issues to address through the interview process included:

- Gauge the level of employer interest in new middle-skill credentials for technicians involved in coastal ecosystem restoration;
- Understand the key skills in demand by employers for which there should be clear criteria for training and credentialing;
- Explore the existing credentials and career pathways already extant for coastal restoration work, and examine the need for a new, separate credential that would include education on basic concepts of sustainability, coastal ecosystems, sea-level rise, safety, and quality control;
- Delve deeper into national best practices by speaking with representatives from exemplary national programs in career pathways and environmental education;
- Enable implementation by understanding how the credentialing process can work best for all necessary partners and stakeholders, including community colleges and non-profit training providers, regulators, funders, employers, and students/trainees;
- Develop a framework for stackable credential curricula based on input from all key partners and stakeholders.

The results of the interviews demonstrate that stackable credentials that include an understanding of key environmental and quality control concepts can indeed be a critical component of career pathways for Gulf Coast residents in coastal restoration and impart skills that are valued and needed by employers in a number of fields. The interviews also indicate that these credentialing programs will be most successful when deep partnerships are established among key stakeholders to ensure that credentials are customized to local restoration project needs; that employers are engaged throughout the process through internships and job placement programs; that training providers and community colleges can

find the instructors they need; and that trainees are supported throughout their education with financial aid and case management services where possible.

DEVELOPING EMPLOYER-VALUED SKILLS WITH STACKABLE CREDENTIALS

According to national experts in career pathways research and stackable credentialing who spoke with the research team, the first critical consideration in developing stackable credentials is that each level of certificate or credential must have value in the labor market. In order to determine the potential value of a new environmental technician credential in Louisiana and across the Gulf Coast, the research team interviewed a diverse set of Louisiana employers engaged in coastal restoration activities in order to better understand the skills needed for their employees, and whether employers felt that a new middle-skill credential could beneficially impart these skills.

Selected employers were intentionally balanced between small businesses and larger employers in order to understand the differing opportunities that may be available at large corporations compared to smaller businesses that act in specialty roles or as subcontractors. Four of the employers interviewed are small businesses with one to three offices located entirely in Louisiana; two of these employers provide regional services with multiple offices on the Gulf Coast; and four of these employers represent large national or multi-national corporations.

Overall, employers valued a diverse set of skills but had agreement about core concepts and skills that are important for any employee's advancement in coastal restoration activities. The most common areas of agreement concerned a set of skills and required for basic competency in any coastal field occupation:

- Knowledge of basic environmental vocabulary in order to facilitate communication (including remedial literacy education if needed)
- Knowledge of basic ecosystem restoration concepts including sea-level rise and flooding, salinity, ecology and habitat considerations, soil composition
- Attainment of required field safety credentials including OSHA and HAZWOPER
- Experience in the field and/or field-based training

"I call it the "connect the dot" skills. I need employees to be able to do some problem solving, to think - what's the next step? Where do I need to go? I used to be an engineering teacher, and I saw how Google took the place of problem solving skillsets; students were no longer being challenged. It is difficult for employees without this skill set. This is not designs off the shelf. You have to be creative. You can't just Google the answer." - Tonja Koob, GAEA Engineering Consultants

Employer interviews included representatives of survey firms, geotechnical firms, environmental services firms, and engineering firms. These informants valued a number of different and specialized skills depending on their areas of specialization and the ecosystem restoration projects they were engaged in. Some specific skills that were of interest to a subset of employers included:

- Math skills – particularly technology-based math for surveying and design occupations (also including remedial math education if needed)
- CAD design and GIS mapping technology skills
- Detailed habitat and plant knowledge – particularly as related to planning, wetland delineation and permitting, and ongoing monitoring of projects

"Training or experience in data collecting/sampling in the field would be a valuable skill-set. Our firm does so by virtue of a Scientific Collection Permit from the LA Department of Wildlife and Fisheries. There are other certifications that would be valuable, an example being a person who has completed the U.S. Army Corps of Engineers Wetland Identification course." –Ralph Gipson, Eric G. Ryals, Inc.

- Hydrological and geological knowledge for environmental services inspectors engaged in initial sampling as well as ongoing sampling for quality control purposes
- Construction programs that could integrate with existing community college programs in this field and provide enhanced experience in areas like welding and electrical specialties, together with knowledge of marine operations and ecosystem restoration basics
- Construction project management
- Stormwater and wastewater management
- Business management and computer literacy

Employers were generally in agreement that many of these skills and sets of field expertise could be earned with less than a 4-year college degree, and that having a program or set of programs that would confer these credentials to help attract qualified individuals to coastal ecosystem restoration work would be of

benefit when attempting to hire locally as more restoration funds begin flowing. However, many of the interviewees cautioned that different types of restoration projects will require different skill sets and that a one-size-fits-all approach would be unlikely to succeed in every coastal location. Most felt that a program that could be customized for local needs and local projects would be most beneficial in generating real job outcomes for participants.

Given the job outlook projected by the Labor Market Analysis and the feedback from employers on needed skills, the research team concludes that developing new ecosystem restoration credentials for environmental technicians is indeed a feasible and valuable approach to help coastal residents access well-paying jobs in restoration activities. The remaining sections of this report focus on practical considerations for implementing such a credentialing program.

LEVERAGING EXISTING EDUCATIONAL PROGRAMS

During interviews with employers and training providers, both sets of informants noted that programs should be designed to leverage existing programs offered by non-profit training providers and community colleges that have relevance to coastal restoration. Programs mentioned included:

- Construction-related programs including welding and electrical skills
- Marine operations programs and courses
- Programs offered by university Environmental Research Stations, such as Turtle Cove, an environmental research center operated by Southeastern Louisiana University
- Programs offered through National Estuarine Research Reserves
- General Education Science courses including biology and chemistry

To assist in understanding the existing landscape of educational opportunities within Louisiana that could be leveraged as part of an effort to build ecosystem restoration programs, the research team compiled an index of relevant courses at each Louisiana Community and Technical College System school as well as certifications and educational opportunities offered by two known non-profit educational providers (Limitless Vistas, Inc. and Groundwork NOLA). This index can be found in Appendix A: Existing Louisiana Credentialing Programs with Potential Relation to Environmental Restoration. The certifications identified include relevant degrees and certificates in environmental management, construction, marine operations, and equipment operation.

Available courses vary by training provider; according to the training provider informants, the variation in these courses likely reflects an understanding of local market conditions and jobs available, and can therefore be a good guide to which focus areas in an ecosystem restoration curriculum may be marketable in training providers' localities already. Some training provider informants have even gone so far as to develop "non-credit" training courses for individual companies in order to meet the company's needs while benefiting local workers; these usually occur on an ad-hoc basis but could become a flexible opportunity for offering additional training in ecosystem restoration based on the needs of individual coastal projects.

"The great thing about our "noncredit" programs and courses is that it provides our college with a way to meet industry needs in a more timely manner. For example, if a company approaches our college and is looking for training, we can develop a course or program that addresses that need with minimal delays. It creates an additional opportunity for our students to become employed in the industry." –Daniel Roberts, Northshore Technical Community College

CURRICULUM FRAMEWORK

Based on information from employers about the skills they value in potential coastal restoration employees, and on research and consultation with training providers about structuring programs appropriately, our team recommends the following curriculum framework which should provide an appropriate set of stackable options for residents of the Gulf Coast with varying levels of initial experience and varying career pathway tracks that provide multiple occupation options and multiple opportunities for advancement. The framework is described below and visualized on pages 38 and 39.

Option 1: One-Year Certificate Track for Individuals with Some Experience

For individuals who already have some experience in activities related to coastal and ecosystem restoration, a one-year, 38-credit Certificate program is recommended. These individuals may come from the coastal restoration industry, the oil and gas industry, the marine industry, or other related industries.

The certificate program includes 32 introductory and core course credits. The required introductory courses (9 credits) offer a base level of restoration knowledge and vocabulary, and serve as the first element in the credential "stack"; they offer the basic knowledge of ecosystem restoration concepts and vocabulary requested by employers. The core courses include more specialized work related to the science and techniques needed to perform and analyze restoration projects, including field biology, soil analysis, field safety (including

OSHA and HAZWOPER certifications), and a field practicum course. These core courses constitute the second “stackable” component of the full Certificate credential. Finally, Certificate candidates have the opportunity to take six credits of approved electives, preferably specializing in a single focus area.

Focus areas were established based on existing job market potential and include six categories: Construction, Sustainable Design (including a Disaster Response course), Geology/Hydrology, Ecology/Biology, Business, and Surveying. It is unlikely that an individual training provider would offer all six of these focus areas; rather, focus areas would be tailored to fit local employer demands, restoration project needs, and instructor availability. Disaster response courses could include an 8-hour annual refresher requirement and could be incorporated into other focus areas to ensure that residents of vulnerable coastal communities can participate in restoration efforts after potential future disaster events.

This one-year credential and the individual stackable components could be accredited by the Council of Engineering & Scientific Specialty Boards (CESB) as a standardized body of knowledge and offered either by a community college or a non-profit training provider entity. Separation of this one-year Certificate into the suggested set of shorter “stackable” credentials would require tests of mastery and individual certificates of completion for each individual component: the required introductory courses, the core courses, and the focus area courses. Individuals would be able to attempt to test out of portions of the program that cover their pre-existing knowledge and certifications.

Option 2: Two-Year Associate’s Degree Track

A two-year, 69-credit Associate’s degree program would serve individuals with no previous ecosystem restoration experience. These trainees would take the same 32 introductory and core course credits as in the Certificate program, as well as 17 additional required credits (which substitute for the on-the-job knowledge that those in the Certificate program would already likely have gained). The 17 additional credits focus on hard skills including Technical Writing and Communications, Technology-Integrated Math, GIS/GPS Mapping, and Native Plants in the Landscape to assist with habitat monitoring and recognition in the field. In addition, a Cooperative Education Experience of 2-4 credits is required to facilitate interaction with employers that can assist in job placement and can function as an experience item on each trainee’s resume. These additional required credits form another element of the Associate credential “stack”.

In addition, 22-24 credits of required electives allow trainees to specialize in tailored focus areas or take an array of courses most relevant to the jobs they wish to apply for when they finish the program. The same set of focus areas apply as in the Certificate program; again, customizing the focus areas offered to local needs and employer demands is highly recommended.

The two-year Associate's degree would be accredited by the relevant regional accreditation boards for community colleges. However, individual "stackable" certificates for completion of each stage of the degree program could still be awarded through tests of mastery and accredited by CESB.

Stackable Component: Online Management Training Certificate

A 13-credit online Management Training Certificate can be added on to either the Associate or Certificate degree track. This program is intended to be completed online over the course of a year while working in the restoration field and is specifically for those interested in pursuing management of restoration operations. The management training program has a direct focus on implementing strategies and knowledge from the coursework into the day-to-day work of the trainee's current job and includes courses on advanced hard skills including job site inspection, cost estimation, rules and regulations for restoration projects, and small business operations. Establishing support from trainees' work supervisors will help them garner maximum benefit from this program.

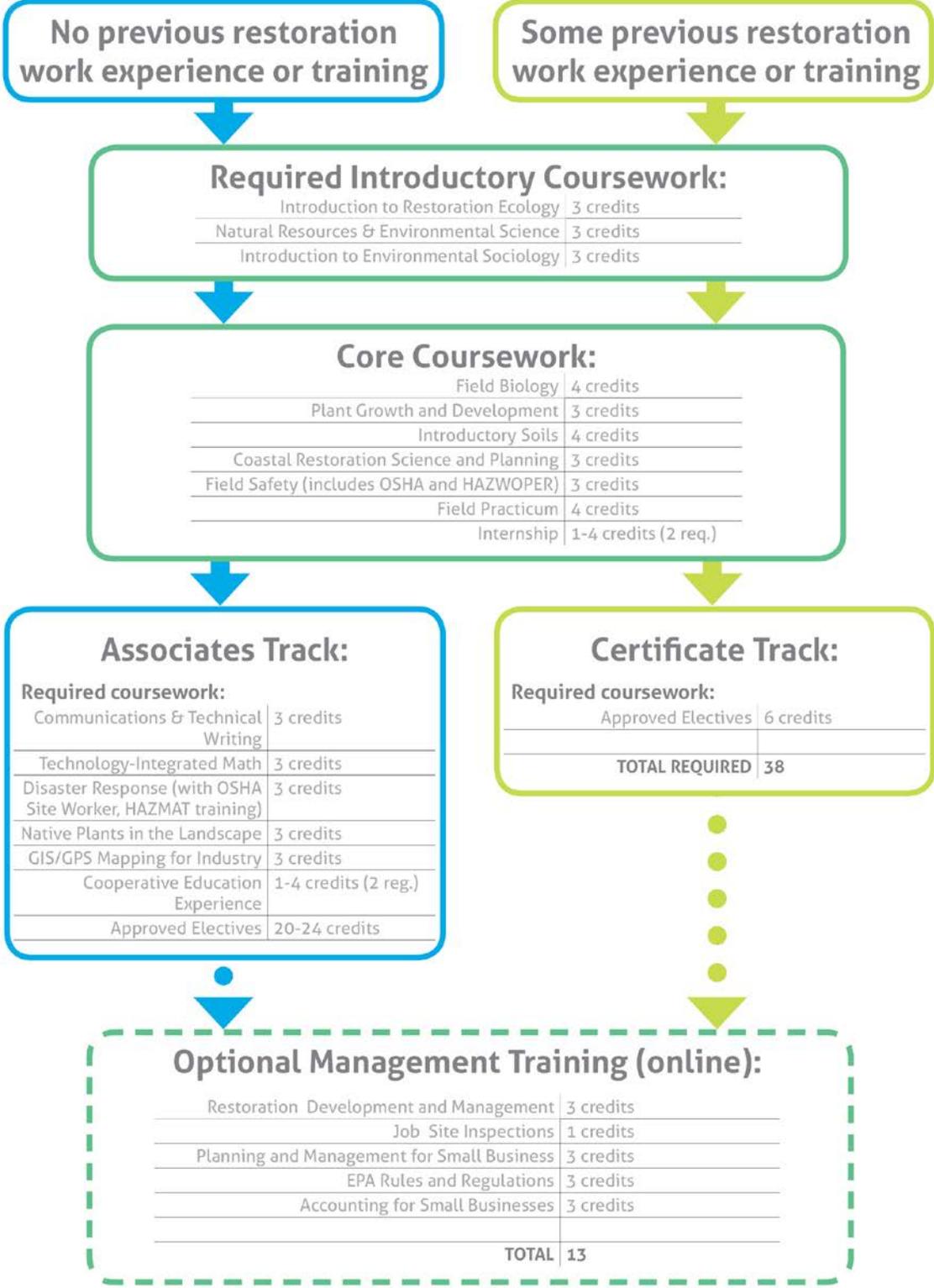
Additional Option: Integration with Transfer-Oriented Programs

An additional opportunity that community colleges may pursue is to offer the core courses and focus area courses recommended for the Associate's degree program to students pursuing transfer Associate's Degree programs which focus on students who wish to transfer to 4-year universities as a junior. Transfer degree program requirements vary in states across the Gulf Coast, but they generally include more extensive general education requirements than the programs recommended in this report, given that they are designed to accommodate universities' general education requirements for 4-year degrees.

Offering certain courses from the recommended Associate's program to potential transfer students may enhance enrollment and add additional career pathway opportunities in ecosystem restoration professions that require four-year degrees. For example, the Ecology/Biology focus area, the Geology/Hydrology focus area, and the Business focus area could all be customized to integrate with community colleges' STEM curricula. Students could then take a break to work between their 2-year program and their transfer, or potentially obtain part-time employment during their 4-year degree work if needed.

"It would be beneficial to draw more people into the university and offer opportunities to people who are in jobs they don't like right now. They could gain some extra credentials, which could lead to a better job." –Daniel McCarthy, Southeastern Louisiana University

RECOMMENDED ECOSYSTEM RESTORATION TECHNICAL TRAINING PROGRAM



APPROVED ELECTIVES

Associates Degree (choose 20-24 credits - minimum of 12 credits in one focus area to specialize)

Certificate Focus Areas (choose focus area - 6 credits required)

Construction:

| | |
|------------------------------------|-----------|
| Outdoor Power Equipment Technology | 3 credits |
| Intro to Welding | 3 credits |
| Marine Operations | 3 credits |
| Technology-Integrated Math | 3 credits |
| Coastal Restoration Techniques | 3 credits |
| Intro Electrical | 3 credits |
| TOTAL REQUIRED | 6 |

Sustainable Design:

| | |
|--|-----------|
| Sustainable Principles | 3 credits |
| Careers in Green Industry | 3 credits |
| Architectural Graphics | 3 credits |
| Intro to Landscape Architecture | 2 credits |
| Coastal Restoration Techniques | 3 credits |
| Disaster Response (with OSHA Site Worker, HAZMAT training) | 3 credits |
| TOTAL REQUIRED | 6 |

Geology / Hydrology:

| | |
|-----------------------------------|-----------|
| Environmental Sampling Techniques | 2 credits |
| Introduction to Stormwater | 1 credits |
| Watershed Dynamics | 1 credits |
| Erosion and Sedimentation Control | 2 credits |
| Coastal Restoration Techniques | 3 credits |
| SWPP Development and Management | 1 credit |
| Wetland Delineation | 3 credits |
| TOTAL REQUIRED | 6 |

Ecology / Biology:

| | |
|--|-----------|
| Coastal Ecology | 2 credits |
| Plant Identification | 3 credits |
| Wetland Delineation | 3 credits |
| Environmental Sampling Techniques | 2 credits |
| Principles of Horticulture | 3 credits |
| Fundamentals of General, Organic, & Biochemistry | 4 credits |
| General Botany | 4 credits |
| Wetland Delineation | 3 credits |
| TOTAL REQUIRED | 6 |

Business:

| | |
|---------------------------------|-----------|
| Technical Writing | 3 credits |
| Technology-Integrated Math | 3 credits |
| Communications | 3 credits |
| Microsoft Excel | 3 credits |
| Principles of Microeconomics | 3 credits |
| Business Software Applications | 3 credits |
| SWPP Development and Management | 1 credit |
| Disaster Response | 3 credits |
| TOTAL REQUIRED | 6 |

Surveying:

| | |
|-----------------------------------|-----------|
| Surveying Technology | 3 credits |
| Technology-Integrated Math | 3 credits |
| Microsoft Excel | 3 credits |
| Environmental Sampling Techniques | 3 credits |
| GIS/GPS Mapping for Industry | 3 credits |
| Coastal Restoration Techniques | 3 credits |
| Wetland Delineation | 3 credits |
| TOTAL REQUIRED | 6 |

National Best Practice Case Study: Lewis and Clark Community College, Godfrey, IL

Lewis and Clark Community College, located in southwestern Illinois, offers both Associate's and certificate programs in Restoration Ecology. Program Director and founder, James Scott Moss, understood the need for differentiation between the program at Lewis and Clark College and other non-technical programs. During an individual interview, he explained that his motivation for creating the program was practical and based in the needs for a more skilled environmental workforce in the area: "This is about creating a workforce of people... when I was out getting my master's degree, who did I need to go out and work for me?"

Early on in the program's development, Moss focused more on introductory restoration courses much like the ones he experienced in his undergraduate and master's education, but quickly realized that he needed to get his students in the field doing hands-on projects in order to give them a clear understanding of how classroom knowledge relates to the success of projects on the ground.

Based on the experience of Lewis and Clark Community College, the research team has recommended that a number of core courses in the Certificate and Associate's include field experience, and that participants in both programs participate in a full Field Practicum project-based course, while Associate's students should also participate in a Cooperative Education Experience with employers in order to facilitate job placement and expose students to real project work. In general, the researchers recommend that all coursework throughout the program should be tailored to include experiential learning more often than classroom, especially as students progress.

CREATING PARTNERSHIPS FOR IMPLEMENTATION

Throughout the interviews, all informants mentioned that partnerships and strong communication between partners would be a critical element that could cause a new ecosystem restoration credential to either succeed or fail. In order to ensure long-term success in connecting workers to jobs and creating true career pathways, a web of partnerships needs to be created in each location where a new restoration credential will be offered. The critical partners include training providers, potential instructors, employers, regulators and governmental agencies including project owners and federal/state environmental agencies, workforce investment boards, local municipalities, and potential trainees; the roles that these partners play in the program's success are detailed below.

Partners for Program Development and Provision

Training providers are the most essential partners for program development; they will provide the accredited Certificate and Associate's Degree programs and will

work to attract trainees and coordinate other essential partners, including employers and Workforce Investment Boards. For the Associate's program, training providers must be accredited community and technical colleges. For the one-year Certificate program and the 13-credit online Management Training Certificate, an initial accreditation must be established in order to ensure that these certificates represent a standard body of knowledge; once the accreditation is in place, the relevant training providers can be either community colleges, or private non-profit or for-profit entities.

Instructors with strong experience in relevant subject areas are necessary components of any educational program. Community college training providers mentioned some barriers to finding instructors with experience, including competing with jobs that pay high salaries and are in high demand. According to training provider informants and previous research,⁷² opportunities to overcome this challenge include recruiting retirees, establishing partnerships with non-profit training providers, scheduling courses outside normal working hours, and offering some online course options where appropriate. In addition, the research team recommends examining the potential for an experienced training provider non-profit such as Limitless Vistas, Inc. to partner with a community college in order to provide instruction for some of the key classes (e.g. field safety, field practicum) as well as mentorship and case management services.

"One of our most limiting resources in the community college system is human capital. When industry professionals actively engage with us and make the invaluable investment of serving as faculty members and/or advising in curriculum design to meet relevant workforce demands, the return on that investment [is] sustainable employees for their companies that ultimately drive our entire economy." –Daniel Roberts, Northshore Technical Community College

Accreditation partners should be identified to ensure that curricula meet relevant local and national standards. In all cases, a university partner should assist in structuring, studying and certifying curriculum. For Associate's Degrees, community colleges' local accreditation boards can accredit any new proposed program. For Certificate programs, working with the Council of Engineering & Scientific Specialty Boards (CESB) to accredit a certificate program by developing tests to measure students' level of knowledge through a "majoring instrument," or standardized test, would be appropriate.

⁷² Greater New Orleans, Inc., "Analysis of Coastal Restoration Workforce Assets, Challenges, and Opportunities in South Louisiana," *Foundation for Louisiana*, December 2014, http://gnoinc.org/uploads/FFL_Report_FINAL_2014_11_26.pdf.

Workforce Development and Job Placement Partners

Employers should be deeply involved in program development and implementation to help them understand this new source of potential employees, to structure internship opportunities for students, and to act as potential contacts for job placement after students have completed their training. Employers may also be sources of potential instructors if courses can be offered after normal working hours. Key employers in Louisiana include survey firms and the LSPS; environmental services firms; geotech firms; and large engineering firms.

Local Workforce Investment Boards and economic development organizations can provide insight on how to structure curriculum to help meet the needs of local employers, and can provide connections to large employers where necessary. They may also be sources of partnerships and funding to help partially or fully fund trainees' tuition.

Regulators who are the funders and owners of restoration projects can assist with workforce development and job placement by helping training providers and employers understand where specific types of restoration projects will be implemented and prioritized. Transparency around project types and timelines is badly needed in order to clarify job needs in different areas throughout the Gulf Coast. In addition, regulators should ensure that contractors and training providers understand the skills and commitment that will be required for up-front project planning as well as ongoing "adaptive management" and quality control, so workers can be effectively trained for those skills.

Generally, the research team found that neither employers nor regulators see a need for regulators to certify or approve any potential credential in order for it to be successful. However, given the clear value of threshold credentials such as OSHA and HAZWOPER training courses, U.S. Army Corps of Engineers Wetland Delineation certificates, and other credentials that respond to federal agencies' requirements, the team believes that these certifications should be integrated into the curriculum to ensure that trainees realize the value of these credentials. In addition, after the pilot phase of these new credentialing programs, further exploration of establishing some regulatory approval of these programs may be warranted.

Funding Sources

Federal funding sources for career pathway programs, as identified in the Literature and Best Practice Review, provide one significant opportunity for funding traditional career pathway programs that are based at community colleges.

The U.S. Environmental Protection Agency offers the Environmental Workforce Development and Job Training Grants program, which is specifically designed to

help under-represented groups such as formerly incarcerated individuals, low-income workers, and less-educated workers receive credentials that help them engage in environmental work. This program is open to non-traditional training providers including private non-profits.

Local Centers of Excellence established under the RESTORE Act also have more flexible opportunities to employ RESTORE Act funding toward new educational and workforce approaches. Working with these Centers of Excellence in each Gulf Coast state as key partners may provide both funding opportunities and a strengthened ability to coordinate with RESTORE-funded restoration project implementation as a whole.

Trainee Program Promotion and Support Services

Existing coastal jobs programs, including the ongoing effort by NOAA to establish a Gulf Coast-area Conservation Corps program, can provide a natural means of outreach and communication with potential trainees. Currently, the Gulf Coast Conservation Corps effort is still in its preliminary stages and is working toward final funding and implementation through the RESTORE Act. Once established, individuals selected for the Corps will receive lower-skill jobs that provide an introduction to fieldwork and coastal restoration. These Corps members could be a strong fit for continuing on to the one-year ecosystem restoration Certificate program in order to acquire more technician-level skills and the opportunity to advance into higher-paying jobs.

Trainee support and mentoring organizations are another critical ingredient to keep trainees enrolled and moving forward on their career pathways. One good Gulf Coast example is Limitless Vistas, Inc. (LVI), which incorporates mentoring and soft skills assistance into its training programs for all of its younger environmental trainee cohorts. LVI also provides its training services at no cost to the trainees by funding its staff entirely through grant sources. One of the research team's goals was to determine whether any national best practices existed for scaling up a similar model that supports trainees with mentoring services, financial assistance, and case management. The below case study of the Valley Initiative for Development and Advancement illustrates a strong example of a local effort in Texas that has been incredibly successful in helping trainees complete their education and move on to well-paying jobs.

National Best Practice Case Study: Valley Initiative for Development and Advancement (VIDA), Mercedes, Texas

VIDA is a non-profit, community-based organization devoted to ensuring that low-income and underemployed residents of the Lower Rio Grande Valley in South Texas receive the education and supportive services necessary to complete career pathways and receive a credential in occupational areas that are in-demand and well-paying. VIDA began 21 years ago in response to the needs of employers in the Rio Grande

Valley. Conceived by Valley Interfaith and private industry leaders, VIDA began as a small grassroots organization. Through partnerships and strategic planning, the organization continues to help chronically unemployed and underserved populations in the region be able to obtain well-paying jobs in the four-county region. On average, VIDA helps up to 750 students per year, obtain credentials in well-paying local occupations.

Priscilla Alvarez, Director of Community Engagement, describes VIDA's mission as follows: "Our job is to support our participants to get a credential – certificate programs, associate's degree programs, on occasion the last two years of a bachelor's degree that will get them into good-paying jobs that offer benefits so they can help their families and contribute to the economy. We know that having a qualified, skilled workforce is what drives a community's growth and contributes to economic development in our region."

In order to ensure that trainees succeed in obtaining a credential, VIDA provides extensive wrap-around support services, case management, and financial assistance to all participants so they can attend college full time. Additionally, participants must make the commitment to meet with their case manager on a weekly basis to address issues such as time management and finances, soft skills and general employability skills. VIDA credits this activity with helping participants avoid crises that may cause them to drop out of school. VIDA requires that all trainees in their program pursue their education full-time in order to finish their degrees and credentials in a timely manner. The organization provides financial assistance such as tuition, books and course-related materials, transportation and child care and works with local partners such as Workforce Solutions (funded through the Texas Workforce Commission), Mujeres Unidas, and other service agencies to ensure that its participants have access to other local support while in training. Deep partnerships with training providers allow VIDA's counselors to work with instructors to head off problems that students may be having with one-on-one interventions and to meet on campus with participants weekly.

VIDA is funded through contributions from local governments, county government, philanthropy, state and federal grants. Local government contributions are a critical portion of VIDA's budget and one of the ways the program has been able to scale up. Using clear tracking of results and monitoring of students for two to four years after completion of the program, an economic impact study by the University of Texas-Pan American (now University of Texas-Rio Grande Valley), demonstrates that for every dollar invested in assistance to local residents, there is a return of \$12.12 to the communities served in additional jobs, income, taxes and output in the local economy. VIDA provides all of its services with a staff of 15, including 5 case managers, one placement coordinator, a case aide, and senior management staffers who oversee the programs.

Based on the strong success of VIDA's partnership with local training providers, the research team recommends that pilot programs and expanded programs on the Gulf Coast for technicians in restoration should strongly consider incorporating and funding community-based organization support systems for trainees to help them complete their programs successfully and access job placement services.

CONSIDERATIONS FOR ESTABLISHING AN INITIAL PILOT PROGRAM

Based on the number of partnerships that are important for program success, the research team recommends establishing one initial pilot program per Gulf Coast state to test the curriculum framework with training providers and trainees, build employer buy-in, develop trainee interest, and establish funding for financial aid and trainee support services. This section establishes some key parameters for selecting pilot program locations for a new ecosystem restoration credential.

Location

Employer perspectives emphasized the harsh conditions of working in a coastal environment, particularly during summer months. Heat, humidity, lack of shade, mosquitoes, and geographic isolation make coastal work difficult for workers who are not used to these conditions. Coastal locations can also be challenging to commute to, especially for those without a personal automobile. These factors lead to higher rates of turnover. Training and recruitment activities should therefore consider the ability and willingness of trainees to commute to and work in this type of environment. Residents who live in coastal areas have the benefit of being acclimated to these conditions and being able to take these jobs while still working near their homes, and should therefore be targeted for pilot coastal restoration programs. Ultimately, the location of a pilot training program should be selected in consultation with local training providers, regulators, Workforce Investment Boards, and potential trainee recruitment partners such as the Conservation Corps.

“Local Louisiana folks understand the problem and dire situation and are passionate about it and there’s no substitute for being passionate about the type of work you do.”

- Carlos Giron, CH2M

“About 80% of our graduates live within 100 miles of the school, which means that they want to work in the area. It wouldn’t do us or them any good if we didn’t prepare them for the specific knowledge that regional industry is looking for.”

–Daniel McCarthy, Southeastern Louisiana University

For urban areas, providing training in related but distinct occupations such as wastewater management may be more productive to help students access jobs. According to employer interviews, municipal water management agencies face labor shortages. These include not just towns and cities near the coast, but throughout the state of Louisiana. Reasons cited for the shortage include high rates of long-employed, retiring baby boomers, and lack of awareness among workers of these opportunities. The Sewerage & Water Board of New Orleans faces a particularly deep shortage. According to a recent news interview, as of July 2016 the agency is attempting to fill 260 open positions, ranging from

accountants to water quality technicians, steam plant engineers, boiler plant operators, lab technicians and water service inspectors, at varying levels of responsibility.⁷³

Funding Opportunities through the RESTORE Act

Opportunities may exist to fund further development of a Louisiana-based pilot program through the RESTORE Act and the local Center of Excellence through an upcoming funding cycle. The Baton Rouge-based Water Institute of the Gulf was named Louisiana's RESTORE Act Center for Excellence, making the organization the recipient of RESTORE Act funds to support research and understanding of coastal restoration and risk reduction. Its work includes services to private and public sector clients. The Center will begin funding research topics in the coming months. While financial aid and program implementation may not be eligible for this specific type of funding, program development activities such as curriculum development, partnership development, and accreditation of credentials could be eligible.

Ongoing Evaluation

VIDA used data on their program participants' success in receiving jobs to show local and county governments why they should continue to contribute to VIDA's operations. Similarly, an ongoing evaluation process that tracks trainees' success in job placement and career growth should be institutionalized within all Gulf Coast pilot programs in order to understand the contributions such programs make. An evaluation process will also allow training providers and workforce development boards to examine any difficulties that former trainees are having in obtaining jobs and correct those issues through additional partnerships or curriculum customization.

⁷³ Capo, Bill. "Sewerage & Water Board hiring hundreds." *WWLTV.com*. WWL-TV, 27 July 2016. Web. 28 July 2016.

APPENDIX A: EXISTING LOUISIANA CREDENTIALING PROGRAMS WITH POTENTIAL RELATION TO ENVIRONMENTAL RESTORATION

The following table outlines the available educational and technical training programs available in Louisiana that could be coordinated with or complementary to a new ecosystem restoration credentialing program. While many technical programs exist that could be related to environmental restoration work, most technical programs do not promote restoration work within their curriculum unless it is explicitly stated. For instance, welding and electrician programs may prepare trainees for some aspects of restoration work; however, critical restoration concepts may not be taught in the context of that work.

| School/Organization | Location | Associate's Degrees | Technical Certificates | Training (no certificate/ accreditation) | Bachelor's Degrees | Advanced Degree Programs | Other | Oil/Gas Production |
|----------------------------------|-----------------|--|---|--|---------------------------------|--|--|--------------------|
| University of New Orleans | New Orleans, LA | | | | Earth and Environmental Science | Graduate Certificate in Coastal Sciences | Laboratory for Coastal and Restoration Science | |
| Delgado Community College | New Orleans, LA | Science Laboratory Technology; Civil and Construction Applied Engineering Technology; Architectural Design / Construction Technology; Horticulture Technology; CADD; Electrical-Engineering Technology | Small Industrial Electrician; Industrial Maintenance Technology; Welding; Precision Machining; Industrial Maintenance Technology; Logistics Technology; Maritime Technical Training; Marine/ Maintenance Electrical Apprenticeship; Pipefitter Apprenticeship; Sheetmetal Apprenticeship; Shipfitter Apprenticeship | | | | | |

| School/Organization | Location | Associate's Degrees | Technical Certificates | Training (no certificate/ accreditation) | Bachelor's Degrees | Advanced Degree Programs | Other | Oil/Gas Production |
|---|---------------|---|---|--|--------------------|--------------------------|-------|---|
| Nunez Community College | Chalmette, LA | Industrial Technology | Technical Studies - Commercial & Industrial Electrical Construction; Technical Studies - Industrial Maintenance; Industrial Technology Technical Competency Area; Natural Sciences Technical Competency Area; Technical Studies - Welding | Solar Construction courses | | | | |
| River Parishes Community College | Gonzales, LA | Louisiana Transfer Degree (ASLT): Biological Sciences Track | Electrical Technician; Welding; Pipefitting | | | | | |
| Fletcher Technical Community College | Houma, LA | | Marine Operations; Electrician; Marine Diesel Engine Technician; Welding; Petroleum Division - Integrated Production Technologies | | | | | Petroleum Division - Integrated Production Technologies |

| School/Organization | Location | Associate's Degrees | Technical Certificates | Training (no certificate/ accreditation) | Bachelor's Degrees | Advanced Degree Programs | Other | Oil/Gas Production |
|---|------------------|--|---|--|--------------------|--------------------------|-------|---|
| Baton Rouge Community College | Baton Rouge, LA | General Science - Coastal Environmental Science Concentration; Pre-Engineering - Environmental Engineering Concentration; General Science - Environmental Management Systems; General Science - Natural Resource Management Concentration; General Science - Natural Science Concentration; Construction Management; Pre-Engineering - Civil Eng. Concentration; Pre-Engineering - Petroleum Engineering | Surveying Technology; Industrial Maintenance Technical Competency Area; Welding | | | | | Pre-Engineering - Petroleum Engineering |
| Bossier Parish Community College | Bossier City, LA | General Science - Option in Natural Sciences; Louisiana Transfer (Physical Sciences Concentration); Construction Technology and Management; Engineering; Oil and Gas Production Technology | Welding; Construction Technology | | | | | Oil and Gas Production Technology |

| School/Organization | Location | Associate's Degrees | Technical Certificates | Training (no certificate/ accreditation) | Bachelor's Degrees | Advanced Degree Programs | Other | Oil/Gas Production |
|--|----------------|--|--|--|--------------------|--------------------------|-------|--------------------|
| Central Louisiana Technical Community College | Winnfield, LA | | Forest Technology; Electrician; Industrial Instrumentation and Electrical Technology; Industrial Manufacturing Technology; Outdoor Power Equipment Technology; Welding | | | | | |
| Louisiana Delta Community College | Monroe, LA | Louisiana Transfer Degree - Physical sciences concentration; | Agricultural Aviation; Industrial Training; Diesel Powered Equipment Technology; Electrician; industrial Instrumentation Technology; Industrial Maintenance Technology; Welding | | | | | |
| Northshore Technical Community College | Greensburg, LA | | Diesel Powered Equipment Technology; Electrician - Industrial; Welding | | | | | |
| Northwest Louisiana Technical College | Minden, LA | | Diesel Powered Equipment Technology; Electrician - Industrial; Energy Services; Heavy Construction Vehicle Operator; Industrial Maintenance Technology; Outdoor Power Equipment; Welding | | | | | Energy Services |

| School/Organization | Location | Associate's Degrees | Technical Certificates | Training (no certificate/ accreditation) | Bachelor's Degrees | Advanced Degree Programs | Other | Oil/Gas Production |
|--|------------------|---|--|--|--------------------|--------------------------|-------|--|
| South Central Louisiana Technical College | Morgan City, LA | | Commercial Diving; Diesel Powered Equipment Technology; Electrical Technology; Industrial Maintenance Technology; Industrial Marine Electronics Technology; Marine Operations; Process Production Technology - Gulf of Mexico; Process Technology; Welding | | | | | Process Production Technology - Gulf of Mexico; Process Technology |
| South Louisiana Community College | Lafayette, LA | Civil, Survey, and Mapping; Industrial Electronics Technology | Civil, Survey, and Mapping; Commercial/Industrial Electrical Technician; Diesel Powered Equipment Technology; Industrial/Agricultural Mechanics Technology; Industrial Electronics Technology; Welding | | | | | |
| SOWELA Technical Community College | Lake Charles, LA | | Industrial Instrumentation Technology; Process Technology; Industrial Electrician; Welding | | | | | Process Technology |

| School/Organization | Location | Associate's Degrees | Technical Certificates | Training (no certificate/ accreditation) | Bachelor's Degrees | Advanced Degree Programs | Other | Oil/Gas Production |
|-------------------------|-----------------|---------------------|---|---|--------------------|--------------------------|-------|--------------------|
| Groundwork NOLA | New Orleans, LA | | | High school age workforce training and education: Landscape Contracting and Maintenance; Produce and Plant Cultivation; Environmental Restoration and Remediation; Life and Work Force skills; Community Research and Mapping; Soil and Water Quality testing; Coastal Wetlands Nurseries; Woodworking and Building | | | | |
| Limitless Vistas | New Orleans, LA | | 40 Hour Hazardous Waste Operations; 10-30 Hour OSHA Construction Safety, 15 Hour OSHA Disaster Site Worker, 8 Hour DOT HAZMAT, First Aid/ CPR/ Bloodborne Pathogens, FEMA Incident Command Systems. | Environmental Workforce training targeted at vulnerable 18-28 year olds focused on classroom STEM activities, conservation corps service learning, coastal and wetlands restoration, water and wastewater operations, brownfield area Phase I/II site assessment and remediation, asbestos abatement, on-the-job training/mentorship provided through working with professionals in the environmental industry: | | | | |

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Creating Career Pathways for Coastal Opportunity: Stackable Credentials for
Environmental Technician Occupations

August 2016

Report prepared for Oxfam America and Limitless Vistas, Inc. by:
Asakura Robinson Company LLC



Attachment 6

Greater New Orleans Workforce Training Pilot Project
Evaluation Report
Prepared for Oxfam America and Limitless Vistas Incorporated
By The Verbena Group
July 2016

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II. Executive Summary

Background

The Greater New Orleans region is recovering from a series of man-made and natural ecological disasters since Hurricane Katrina and the ensuing levee failures flooded 80 percent of New Orleans in 2005. These disasters, however, have also ushered in significant resources to support a more resilient and sustainable region. In 2007, the state of Louisiana developed the country's first Master Plan for Coastal Protection and Restoration.¹ The U.S. Congress allocated \$15 billion to build coastal protection and levees to protect the Greater New Orleans region, while the state of Louisiana allocated \$790 million in state surpluses in 2007, 2008 and 2009 to coastal protection and restoration activities.² Before much of this work was well underway, the April 2010 Deepwater Horizon oil platform explosion off the Louisiana coast created a massive oil spill and ecological disaster that devastated the marshes that are New Orleans' first line of defense against hurricane storm surge. The strategic federal and state investments combined with the penalties from the oil spill will result in \$50 billion over 50 years being spent on the Gulf Coast.³ The Gulf Coast is starting to benefit as these large-scale ecosystem restoration investments begin flowing to federal, state and local agencies, businesses and nonprofit organizations. This investment has the potential to stabilize the coast while forming a new economic cluster capable of building new ladders of economic opportunity for local workers. The Gulf Coast will rank as one of the largest ecological restoration endeavors in our nation's history.

Since Hurricane Katrina, Oxfam America's Gulf Coast Program (Oxfam) has sought to build the resilience of socially vulnerable communities in Louisiana and Mississippi. The first phase of the Gulf Coast Program focused on equitable recovery and aiding the poor and most under resourced as they rebuilt and recovered from deep economic inequity exacerbated by a series of devastating hurricanes. The second stage, sparked by the BP oil spill, centered on directing funding and resources to restore decades of damage to the coast and to create well-paying employment opportunities for coastal communities. The third phase, launched most recently, focuses on policy implementation to benefit local workers and unresolved flood control issues. Oxfam is working to ensure that federal and state policies are properly implemented, giving local

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1. Coastal Protection and Restoration Authority. State-only projects. <http://coastal.la.gov/about/coastal-programs/>
 2. Tilove, J. (August 2009). *The Times-Picayune*. Rebuilding New Orleans still a priority Obama says. Retrieved from http://www.nola.com/politics/index.ssf/2009/08/post_1.html
 3. Greater New Orleans Data Center. *The Coastal Index: Tracking Development of the Water Management Cluster in Southeast Louisiana*. (April 2015) https://s3.amazonaws.com/gnocdc/reports/TheDataCenter_TheCoastalIndex2015.pdf

people a first opportunity at the new jobs being created, while also ensuring ongoing flood control issues that are unresolved by the coastal restoration plans are addressed.⁴ Oxfam's partnership with Limitless Vistas, Inc. (LVI) on the Greater New Orleans Workforce Training Pilot Project (Pilot Project) is an outgrowth of Oxfam's commitment to build workforce models that can be replicated and taken to scale for sustainable long-term impact.

Limitless Vistas, Inc. is dedicated to providing job training in environmental and related fields to marginalized and often-disconnected youth. Founded in 2006, LVI's program has trained over 500 young adults as entry-level environmental technicians. LVI's core environmental training program includes instruction in Hazardous Waste Operations and Emergency Response Standard (HAZWOPER), construction safety, solid waste management, water treatment, groundwater, soil, and surface water sampling, mapping, and coastal restoration sciences.

With funding from the National Academy of Sciences (NAS) Gulf Research Program Oxfam and LVI sought to build a new model for partnerships for science, technology, education and mathematics (STEM) career pathways for underrepresented workers through the Pilot Project. Focusing on sector-specific career pathways in ecosystem restoration related fields, this partnership had two goals: increasing workers' skill attainment to improve employment and earning potential, and meeting the skills needs of employers.

Summary of Key Findings⁵

Overall, the Pilot Project was successful in meeting many of its stated objectives. LVI successfully graduated 46 African American participants with high-demand certifications and skills as environmental technicians. When interviewed, the program participants considered the overall design of the pilot to be effective, highlighting in particular the strong technical and soft skills training, credentialing, training location and a high-skilled and caring instructional staff. The technical instruction included hands-on experience in the field by leveraging cross-agency partnerships with Jean Lafitte National Park and Preserve, Louisiana Universities Marine Consortium (LUMCON) and the Coastal Protection and Restoration Authority (CPRA), thus building LVI and Oxfam's capacity to collaborate and better serve workers and employers.

The Program effectively reached out to more than 40 major employers during the initial phases of development regarding potential partnerships in curriculum development, apprenticeships, mentoring/job shadowing and on-the-job training. Although the pilot was unable to secure hiring commitments and execute formal partnerships with the employers, it has successfully positioned

⁴ Oxfam America. Gulf Coast Program 2015-2018 Strategic Plan June 2015.

⁵ It is important to note that this evaluation was completed prior to the completion of the project, so the figures contained within the report do not represent the final outcomes for the entire pilot.

the participants to maintain their current jobs and receive promotions related to their enhanced skills. As federal and state resources continue to be mobilized along the Gulf Coast to ramp up the ecosystem restoration industry, it is anticipated that these participants are strategically positioned and uniquely qualified to step into the resultant employment opportunities.

The Pilot Project did not meet its original employment goal of employing 32 program graduates who entered the program unemployed. As envisioned, the program would focus on enrolling unemployed young adults and helping them obtain employment or pursue further training following the program. Upon implementation, LVI staff found, however, that interest in the program was far greater among older, more experienced workers – many of whom were already employed, under-employed and/or at-risk of losing employment due to the latest decrease in oil prices and associated decline in the oil industry. Thirty-two of the 46 program participants who graduated from the Pilot Program were already employed upon enrollment. As a result, only one program graduate was placed in new employment in the field with program partners. Four more were hired by non-program partners. Many participants enrolled in the program to advance or secure their current careers. So, in total 80 percent of program graduates are currently working. Thirteen graduates continued their environmental technician training with Limitless Vistas and another four continued their training outside of LVI.

Challenges and Lessons Learned

The employer outreach and recruitment activities focused on job development and job placement were the least effective aspects of pilot design and implementation. While employers were largely supportive of the program concept, further cultivation of these relationships in advance of the program launch would enable LVI to focus on building the necessary support structures for program graduates to connect directly with targeted employers and be competitive for employment with those companies.

Program participants identified an unmet need for comprehensive wrap around social services. Nearly one third of the program participants reported some involvement with the criminal justice system, among other challenges. Formal relationships with agencies providing childcare, social work or case management, re-entry supports, transportation to the training and job sites and post-placement follow up would effectively address common barriers to participation in the program and, ultimately, employment. While case management was not an articulated objective of the program, the program instructors acted as informal case managers amidst other responsibilities to assist individual program participants in connecting with much-needed resources and supports.

Conclusions and Recommendations

The findings of this Pilot Project evaluation suggest that the project is capable of reaching the desired target population to develop a qualified pool of candidates for environmental technician jobs in related industries; identifying and developing a strong network of potential employer partners; leveraging its existing dollars; and aligning its current programs.

To help improve the overall effectiveness and potential scalability of the Pilot Project in other communities, the Oxfam-LVI partnership should consider the following recommendations:

- 1) Strengthen the project design by creating a logic model to guide future implementation, data tracking and evaluation;
- 2) Cultivate employer relationships over a one to two-year timeframe to address the challenge of limited employer engagement, with year one devoted to building a support network and research, and year two primarily focused on training participants;
- 3) Provide intensive case management and supportive services during training, particularly those that can help hard-to-serve participants address problems and unique barriers to employment;
- 4) Invest in a management information system (MIS) such as Social Solutions' Efforts to Outcomes to assist in tracking project outcomes and overall participant progress as they move from training into employment and up the career ladder with industry employers;
- 5) Expand the institutional infrastructure for outreach, job development and/or placement assistance;
- 6) Explore and maximize the drawdown of federal and state funding streams; and
- 7) Consider placing a greater emphasis on leveraging the infrastructure and financial resources of local workforce development entities and community colleges to respond to the labor shortages and workforce opportunities in the environmental restoration industry.

III. Introduction

Background and Context

Oxfam America (Oxfam) and Limitless Vistas, Inc. (LVI) jointly applied for and were awarded a grant from the National Academy of Sciences to conduct the Greater New Orleans Pilot Project (Pilot Project), a workforce training program. The Greater New Orleans Pilot Project was designed to recruit and train 45 individuals, primarily women and people of color, from Greater New Orleans with emphasis in Lower Jefferson Parish, to access middle-skilled employment with environmental and ecosystem restoration-related employers.

In the aftermath of the BP Oil Spill, billions of dollars of resources and funding will flood the region providing much needed resources for ecosystem restoration as a result of the RESTORE

Act, the Natural Resource Damage Assessment, and similarly committed funding.⁶ This historic investment in repairing the coast provides a critical opportunity to integrate workforce development into ecosystem restoration, building new ladders of economic opportunity for local workers.

Over the course of one year, the project recruited 50 and ultimately trained 46 job seekers for positions with employers working on Federal, State and Parish coastal restoration, maintenance, monitoring and environmental sustainability projects. A variety of training courses were offered including OSHA (Occupational Safety and Health Administration) Construction Safety, Bloodborne Pathogens and First Aid, Cardiopulmonary Resuscitation (CPR), Geotechnical, Land Survey, Construction Inspection and Environmental Sampling/Assessment and common transferable STEM (science, technology, engineering and mathematics) skills that will qualify trainees for high-demand entry-level work as environmental technicians.

Oxfam America hired The Verbena Group, a New Orleans based consulting firm that specializes in youth development and workforce development, to conduct an independent evaluation of the pilot project. The evaluation was designed to assess the achievement of the project against its objectives and expected results in order to inform the development of a scalable workforce development program. The evaluation team consisted of Annette Hollowell who served as the Project Manager and primary point of contact for Oxfam America and provided data collection support. Alvertha Penny, Senior Evaluation Consultant, spearheaded the evaluation design, data gathering and evaluation implementation. Hamilton Simons-Jones served as an editor of the final evaluation report.

Goals and Objectives of Pilot Project

The Greater New Orleans Pilot Project was developed to offer a clear pathway for unemployed or under-employed women and minority workers to access education, training and credentials aligned with employers' work readiness standards, to access employment and through additional training and expertise, higher wages. Goals and objectives outlined in the National Academy of Sciences grant included to:

1. **Design education and training programs.** LVI in consultation with major employers will develop an initial 15-week pilot training program curriculum to equip students with skills for entry-level technician work, including instruction in HAZWOPER, construction, offshore

⁶ "WHERE ARE WE NOW?" Gulf of Mexico Recovery and Restoration. Environmental Law Institute March 5, 2015. <http://eli-ocean.org/gulf/updates/>.

safety, chemical safety awareness, water/wastewater treatment facility operation, groundwater, soil and surface water sampling, mapping and coastal restoration sciences.

- a. Graduate 45 students, primarily women and minority workers, over three, 15-week classes.
- b. Work with academic partners to research best practices in developing career pathways and stackable credentials covering basic skills across coastal technician activities. A research institution will be contracted to conduct a feasibility study to determine next steps for developing a stackable credential for middle-skilled workers in coastal restoration and environmental health fields.⁷

Milestones:

- Develop initial curriculum, including up to five existing credentials relevant to above industries, for pilot class.
- Acquire necessary training materials and equipment to conduct curriculum.
- Launch class in Lafitte on Jean Lafitte National Park property, training 45 students over three, 15-week classes. Students will learn about field-testing and sampling, GIS mapping, hazardous materials operation, emergency response, quality control, and safety and leave with up to five state or federally recognized credentials. At least 32 students will find jobs or seek additional educational opportunities after graduating.⁸
- Working with academic partners (e.g. Delgado Community College and Louisiana Community and Technical College System), commission research on the feasibility and best practices in developing a career pathway and series of stackable credentials covering basic skills needed by workers involved in common tasks across coastal technician activities and providing students a roadmap for continuing education to advance with their careers.

2. **Develop programs that build cross-agency partnerships** between workforce, educational, national resource management and community organizations, and build their capacity to collaborate and better serve workers and employers.

- a. Key partners include: LVI, community-based partners, Jefferson Parish Workforce Investment Board, Jean Lafitte National Park and Preserve, Delgado Community College, Coastal Protection and Restoration Authority (CPRA).

Milestones:

⁷ At the time of the evaluation, the research related to this particular objective was not due to be completed until the end of August 2016. As a result the evaluators did not assess the attainment of this objective.

⁸ This goal assumed individuals were unemployed. Because of the increased layoffs that resulted from the down turn in the local economy, resulting from the drop in oil prices, several of the participants simply joined the program to get certificates to maintain their jobs.

- Provide one sub-grant to a community-based organization in Lafitte for capacity building to assist in outreach and providing pre-employment/job readiness training and assistance to eliminate barriers to recruitment, retention, and placement such as providing access to social services with a goal of recruiting 45 women and minority students to participate.
- Develop a MOU between partner institutions.
- Develop agreement with Jefferson Parish Workforce Investment Board to provide Workforce Innovation and Opportunity Act (WIOA) funds for eligible students.

3. **Identify and engage sector employers as partners** in the initiative. Major employers will be consulted in the development of all curricula and become partners, serve as advisors, provide curriculum development, apprenticeships, mentoring/job shadowing, on-the-job training, and in-kind assistance.

Milestones:

- Interviews with employers and industry associations on skills and credentials among coastal restoration, environmental health, and offshore oil/gas production.
- Conduct outreach to companies in targeted job sectors, with at least four committing to provide either: Apprenticeships for 2-3 graduates; Job placement assistance for graduates by agreements to review graduates for employment opportunities; or other in-kind assistance. (e.g. volunteer hours/loan equipment, input to curriculum development, and/or mentoring/job shadowing opportunities.)

4. **Identify funding needs and sources and align programs** with those funding sources. This includes the development and testing of a model, and planning to scale this model by developing a 4-year business plan for program expansion.

Milestones:

- Developing a 4-year business plan for program expansion, including outreach to community colleges and training institutions, and identifying additional partners, staffing, siting, and a fundraising plans.⁹

5. Given the focus on testing a model, **a robust monitoring and evaluation plan** will be developed for the project to gather quantitative and qualitative data to assess both the processes and the impact of the project on workers and other workforce system stakeholders and to help guide future training programs in the region, including the potential to expand this model across the region.

⁹ At the time of the evaluation, the research and outreach related to this particular objective was not due to be completed until the end of August 2016. As a result the evaluators did not assess the attainment of this objective.

Milestones:

- Evaluation of pilot program finds at least 32 graduates find work or seek further education after completing coursework.
- Partner institutions conduct four quarterly meetings to update on progress, and identify challenges and next steps.
- The program draws on the evaluation to develop materials for outreach meetings and webinars to inform peers about learning from the program.
- Partners review pilot program evaluation and key lessons to refine future programming.

Methods Used in Project Evaluation and Limitations

This evaluation was designed to measure achievement of the five Project objectives and provide information on process improvements. The evaluation also aims to contribute a set of recommendations for making the model more replicable in other communities. Beginning in February 2016, the Verbena Group employed a mixed methods evaluation process to examine the key evaluation questions. The questions are as follows:

1. To what extent did the Project effectively build cross-agency partnerships to facilitate the participation and coordination of all stakeholders in the recruitment, training and hiring processes of project participants?
2. To what extent did the project train 45 job seekers/holders and place 35 in new/enhanced employment or supplemental related career training opportunities? Does the Project introduce economically disadvantaged, non-traditional individuals to career opportunities they were previously unaware of or enhance their ability for career advancement with an existing employer?
3. What worked well for the stakeholders and job seekers and what lessons can be drawn from their experiences with the Project?
4. To what extent did the Project identify funding needs and sources, and align existing/new programs necessary to develop and test the Project model?
5. What changes will the Project need to make to optimize its operations, enhance the future performance among similar projects and become sustainable, including but not limited to added capacity, structure, etc.?
6. What lessons does the Project offer for scaling this effort to other communities?

The evaluation team conducted a process and outcome evaluation for the Project participants and participating partners that examined their accomplishments and provided guidance to Oxfam and LVI on how to strengthen this pilot and prepare for scaling to other communities. The evaluation methods consisted of the following:

- Nine interviews with program and partner staff, including in-person or telephone interviews with four project staff from Oxfam and LVI, and five key stakeholders/partner agencies. These interviews instruments were designed with significant input from Oxfam

and LVI, to collect detailed information about the staff and stakeholder understanding of the design of the Project, their experiences participating in the Project, including successes, challenges and lessons learned.

- Two focus groups with a total of 27 job seekers/holders involved in the third and fourth cohorts of the program. The focus groups were conducted to identify what worked well and what lessons could be learned from their experience with the Project.
- An extensive review of program records and one site visit. This visit provided clarity on opportunities to optimize operations and enhance future performance of the Project.

In the remainder of this report, Section IV examines the model and training curriculum for the Pilot Program, providing insights on the classroom instruction and external partner engagement. Section V addresses the demographic characteristics of the cohort participants. Section VI addresses the project implementation by focusing on the effectiveness of the project design, participant outcomes, partner engagement, funding and the associated challenges. Section VII outlines lessons learned for scaling and sustaining the project through reviewing institutional capacity, partnership development, outreach and recruitment strategies and participant hiring. The final recommendations for strengthening the model are shared in Section VIII.

IV. Description of Model and Training Curriculum

In September 2015, the Oxfam-LVI partnership established the Greater New Orleans Workforce Training Pilot Project to test a new model of connecting disadvantaged workers to job training and career opportunities in the fields of coastal restoration and environmental sustainability. Through this model, Oxfam and LVI sought to build new partnerships for accessing jobs and career opportunities in the coastal region's Science, Technology, Engineering and Math (STEM) related industries. STEM career pathways are the most recent in a long series of workforce development approaches to address complex and interrelated challenges to both fill needs of employers for skilled workers in specific industry sectors and increase the employment potential of underrepresented populations. The key features helping to define this model are: (1) creating programs that build cross-agency partnerships; (2) targeting a specific industry and engaging its employers; (3) designing education and training programs; (4) identifying funding needs and sources and aligning programs; and (5) measuring system change and performance.¹⁰

The Pilot Project design included two basic components: a sequence of outreach and recruitment activities, and classroom-based occupational skills training and field visits with soft skills training (i.e., resume preparation, interviewing and testing techniques, personal appearance and verbal and nonverbal communication) embedded in the curriculum.

¹⁰ Oxfam America Services Agreement for Project Management of Jefferson Parish Workforce Training Project, Project Description

Additionally, in the pilot launch, a component that included work experience through community service and/or internships played a role in the design.

As envisioned, project participants would be exposed to field testing and sampling, GIS mapping, hazardous materials operations, emergency response, quality control, and safety policies and procedures required for environmental and engineering technician jobs considered common across a number of sectors including environmental restoration. The original design of the Pilot Project included three, 15-week training courses and promised the acquisition of up to five state or federally-recognized credentials. However, the actual pilot implementation occurred over a six-month period consisting of an 11-week training course, an 18-week (1,134-hour) community service/ internship component, and incorporated access to seven certifications¹¹. Following the six-month pilot period, the course was modified to also consist of a concurrent six-week curriculum without a community service/internship component and that also offered skills components on water and wastewater operations, coastal and wetland ecology, water quality sampling, and employment skills; and offered four certifications: Hazardous Waste Operations and Emergency Response (HAZWOPER); Occupational Safety and Health Administration (OSHA) Construction Industry Outreach Training, Bloodborne pathogens, and First Aid/CPR/AED). A factor in the decision to adjust the curriculum after the first cohort took into account the availability of an AmeriCorps grant that allowed LVI to initially provide training and community service and internships for a younger cohort that was eligible under the grant guidelines. However, LVI adjusted its recruitment strategy after the first cohort to focus on individuals with tenuous jobs or part-time positions who recognized that LVI classes, particularly the OSHA 30, would enhance their ability to keep their jobs, secure more work hours and/or get a promotion.

V. Characteristics of Target Population and Services Received

From September 2015 through June 2016, the Pilot Project enrolled 50 program participants across four cohorts. Of the 50 who enrolled, only four participants were unable to complete the training due to an inability to reconcile scheduling challenges between their existing jobs and the evening course schedule. The dates and class size of the four training cohorts were as follows:

Table A: Pilot Project training cohort schedule with class sizes

| Cohort | Class Size | Start Date | End Date | Notes |
|--------|------------|------------|----------|--|
| 1 | 13 | 10/26/15 | 4/29/16 | |
| 2 | 12 | 1/18/16 | 3/11/16 | Included one-week extended orientation and |

¹¹ Certifications included: 10-hour OSHA Construction Safety; 40-HAZWOPER; Community Emergency Response Team; DOT HAZMAT; FEMA Incident Command; First Aid/CPR; Underground Storage Tank (UST) Awareness

| | | | | |
|---|----|---------|---------|--------------|
| | | | | recruitment. |
| 3 | 16 | 3/29/16 | 5/6/16 | |
| 4 | 9 | 5/16/16 | 6/24/16 | |

Below, Table B reviews the characteristics of participants engaged in the pilot project. It should be noted, however, that neither the project management staff nor the evaluation team were successful in reconstituting missing data elements on some of the participants. In consideration of the complication of missing data, participant and overall project success are based on responses provided by project management staff and focus groups only.

Table B. Participant Characteristics

| Category | | Number | Percent |
|-------------------|---|--------|---------|
| Age | | | |
| | 15-19 | 2 | 4% |
| | 20-24 | 14 | 28% |
| | 25-30 | 8 | 16% |
| | 31-35 | 9 | 18% |
| | 40 or older | 9 | 18% |
| | Unknown | 8 | 16% |
| Education Level | | | |
| | Less than HS completion | 8 | 16% |
| | High school diploma or GED | 31 | 62% |
| | Some college or formal training beyond HS | 14 | 28% |
| | Two years of college (AA degree) | 1 | 2% |
| | Four-year college degree | 2 | -4% |
| | Additional education/degrees beyond four-year college | - | - |
| | Unknown | 10 | 20% |
| Gender | | | |
| | Male | 42 | 84% |
| | Female | 8 | 16% |
| Race or Ethnicity | | | |
| | Black/African American | 50 | 100% |
| | Other | - | - |
| Justice Profile | | | |
| | Formerly Incarcerated | 18 | 36% |
| Employment Status | | | |
| | Full-time | 16 | 32% |
| | Part-time | 21 | 42% |
| | Unemployed | 13 | 26% |

| | | | |
|--|------------------------|----|-----|
| Previous Awareness of Career | | | |
| | Male | 23 | 52% |
| | Female | 3 | 6% |
| Continued Education After Completing Program | | | |
| | Additional LVI Classes | 13 | 26% |
| | Other | 4 | 8% |

Of the 62 individuals initially recruited (unduplicated count) for the pilot project, 44 were male (71%) and 18 (29%) were female. A total of 50 individuals enrolled in the program, all of whom were African American. Of those enrolled, the majority were male (42), and females constituted 16 % (8) of enrollees. For those participants for whom data was available, 24, or nearly half (48%) were 30 years old or younger. In terms of formal education, 31 enrollees, or nearly two-thirds (62%) had either completed high school, received a HiSET (High School Equivalency Test) or General Education Diploma (GED). An additional 17 participants (34%) had acquired some college or formal training beyond high school. LVI project records also indicated that 13 participants, or 26% of project graduates, all of whom were in the first training cohort, had received additional training through other classes offered by LVI.

In terms of participants' employment status at time of enrollment, 37 individuals –more than 74% of participants – were either in full-time or part-time positions in a variety of industries ranging from retail sales in the automobile industry to asbestos abatement in chemical plants. While the pilot model did not specifically target system involved individuals, 18 – more than one third (36%) of participants – had been formerly incarcerated. The evaluators were unable to interview participants from Cohorts 1 and 2, however focus groups were conducted with 27 participants from Cohorts 3 and 4. When asked their reasons for enrolling in the Project, many shared that they sought to add to their existing skills sets (by securing the OSHA 30 certification), better themselves and build their resumes, make a career change, and secure opportunities for advancement at their current jobs.

As noted above in Section IV, the services that participants received depended on the training cohort in which they participated. Participants in the first cohort received two formal types of services: occupational skills training with soft skills embedded in the curriculum, and paid community service or internship positions. In addition, the curriculum offered more hours of training, a greater number of certifications, and a longer training period. Overall this cohort was composed of younger unemployed students who were receiving living stipends and an education award under an AmeriCorps program. The extended curriculum and community service and internship offerings helped supplement the lack of previous industry related work experience of cohort. The second through fourth cohorts were composed of older and more experienced

workers, many of whom had previous exposure to jobs and had obtained some certifications within the various training related industries. As a result, the curriculum was adjusted, and these cohort participants did not receive the paid community service or internship opportunity, and underwent a shorter training period (6 weeks) with fewer certifications and fewer training hours.

VI. Project Implementation and Challenges

Effectiveness of Project Design

In consultation with major employers, LVI sought to develop a 15-week pilot training program curriculum to equip students with skills for entry-level technician work, including the provision of technical instruction that resulted in student attainment of up to five state or nationally recognized certifications. LVI sought to graduate a total of 45 students, primarily women and minority workers. In partnership with academic institutions, the Project would also commission research on the feasibility and best practices in developing a career pathway and series of stackable credentials covering basic skills needed by workers engaged in coastal technician activities.

Through both in-person interviews and focus groups, key stakeholders and project participants identified common themes in their analysis of the effectiveness of the Pilot Project training program, which was designed to help underrepresented individuals find jobs in a growing field. For those individuals already employed in a related industry, the project sought to enhance employment security and opportunities for advancement, and to competitively position participants for employment resiliency in the face of future environmental disasters similar to the BP Oil Spill or Hurricane Katrina . Overwhelmingly, both focus group respondents and key informants considered the overall design of the project to be effective as it met expectations in the acquisition of job-related knowledge and technical skills. In the focus groups the participants reported that the program largely met their expectations by providing training and access to certifications that they might not otherwise have. Whether the participant lacked previous work experience in the field, or possessed an extensive history in construction or oil and gas, they reported that they learned a significant amount of new information that will allow them to advance in their desired (or current) industries. In the end the majority of the participants felt that an employer would see their resume and credentials and see them differently from other jobseekers.

The participants identified several key features of the project as being particularly strong, including: the training curriculum's emphasis on both technical and soft skills along with in-demand industry credentials; a highly skilled and caring instructional staff; and an easily accessible community-based training site. The use of a well-known and respected local recruiter

earned praise, as word-of-mouth proved to be an extremely effective recruitment tool for the latter cohorts.

With regard to challenges in the way the project design was implemented, focus group participants and key informants alike cited the lack of effective employer outreach/connections and other stakeholder engagement, particularly in the areas of job development and job placement, as the least effective components of the pilot design. Program participants expressed during the focus groups their interest in making employers available to the classes who could directly convey the necessary skills needed and opportunities for employment in their companies. In addition, some focus group participants requested greater access to the range of other classes and certificate programs offered by LVI, expressing specific interest in the Transportation Worker Identification Credential (TWIC).¹²

The issue of the TWIC certification was largely informed by the contingent of the cohorts who were formerly incarcerated. The sentiment among some participants was that the process for successfully acquiring a TWIC card was evasive, and that initially most applications are denied. For the justice involved participants they shared that after being incarcerated, dependent upon the crime committed, the TWIC was attainable when a probation officer provided a reference letter in support of a waiver application.¹³ Ultimately, the TWIC card is a frequently requested credential in workforce training programs, however it can only be obtained at specific locations operated by the federal government. LVI does not have the appropriate designation to support applications for this certification as it is beyond the purview of the organization.

Both focus group participants and key informants identified the following challenges to participation in the training: lack of dependable and consistent transportation to the training site; incompatibility of day-time work requirements and evening class schedules; and access to childcare. While childcare was not a component of the project, LVI worked closely with the participants to work out arrangements that did not hinder their ability to take the class. However, these common challenges may have contributed to an inconsistency in class attendance that several key respondents cited as a cause for students either dropping out or not completing the six-week training course on time. Of the 50 individuals recruited for the project,

¹² The Transportation Worker Identification Credential (TWIC) is a Transportation Security Administration and U.S. Coast Guard initiative in the U.S. that issues a tamper-resistant biometric credential to maritime workers requiring unescorted access to secure areas of port facilities, outer continental shelf facilities, and vessels regulated under the Maritime Transportation Security Act of 2002, and all U.S. Coast Guard credentialed Merchant Marines.

¹³ For criminal record disqualifications TSA will primarily look at the length of time the applicant has been out of prison if sentenced to incarceration, the applicant's history since the conviction, the circumstances surrounding the conviction, and references from employers, probation officers, parole officers, clergy and others who know the applicant and can attest to his or her responsibility and good character.

four were unable to complete the training, citing either changes in their work schedules or the choice to pursue employment outside of New Orleans.

Reaching and Retaining Targeted Population

The project experienced a high level of recruitment success by enrolling 81% (50 individuals) of those recruited. The project was successful in reaching African American young adults between the ages of 17 and 30 as well as a population pool of more mature candidates who represented an older, under-employed cohort of adults, including veterans. Although the project did not set a specific recruitment or enrollment target for either females or people of color, it had difficulty in recruiting and enrolling women. Of the 18 females recruited, 8 enrolled and completed the training. The entire pool of participants (100%) were African American, of that number 18 participants (36% of all enrolled participants) had been formerly incarcerated.

For the pilot, Oxfam subcontracted with an independent consultant, who is a well-known resident of Marrero, LA, a community in Greater New Orleans, to manage outreach and recruitment for the project. When asked how they learned about the project, focus group participants reported word-of-mouth as their primary source of information. All of the participants interviewed expressed their enthusiasm for the program and an overarching willingness to recommend the program to others. Other effective recruitment strategies included personal telephone calls and formal written outreach to local area churches; one-on-one meetings with employers, or elected and appointed officials; use of ongoing connections to existing networks and social media; referrals from former participants; peer-to-peer communications; and mass distribution of marketing materials such as flyers to area businesses and social services agencies.

As previously mentioned, the Pilot Project experienced a high retention rate among participants. All but four participants who enrolled in the project completed the hard and soft skills components of the training. This success can be attributed to a number of tactics that LVI employed to ensure participant satisfaction and continued attendance, including offering the following: in-demand credentials; incentives, such as Kindle tablets to participants to ensure their access to technology and internet services; and informal counseling and support to help participants overcome challenges and everyday stresses. A few of the key informant respondents indicated that access to either stipends or “emergency funds” to address minor financial crises would be useful to solve short-term problems encountered by some participants.

Achieving Positive Participant Outcomes

Training of 45 individuals and the placement of 32 graduates into industry-related jobs or their pursuit of further education after completing the required coursework were two of the intended

outcomes of this project. Since several of the participants were employed and chose to enroll in order to maintain their tenuous employment, a third outcome of enhancing job security for program participants was added. Overall, 50 of those recruited enrolled in the Pilot Project. Of this number, the vast majority (46 or 92% of participants) completed the course, exceeding the project goal.

To help increase the workplace exposure of participants and encourage the hiring of program graduates, LVI made referrals for short-term internships, job openings at local environmental engineering companies and to the City of New Orleans Mayor's Office Reentry Program. For example, Terracon, a 51-year-old employee-owned engineering consulting firm and Leaf Environmental, LLC, an 11-year-old women-owned environmental firm, were engaged around available job openings and hosted short-term internships ranging from two days to two weeks, respectively. These types of efforts did not prove successful with regard to either hiring or retaining participants. As such, at the completion of four training cohorts, available project data show that only one person was interviewed, employed and retained by an industry-related employer (New Orleans Sewerage and Water Board) 30 days following course completion.

However, when asked about job applications and interviews, focus group participant responses revealed a more robust level of activity among participants. At least two focus group participants reported having job interviews; one with a water technology company in Florida and another with the Sewerage and Water Board in New Orleans, who was scheduled to take the civil service test in July. Two focus group participants reported applying for apprenticeships through The Dow Chemical Company. Several focus group participants reported placing applications with boat and offshore companies, and with oil companies including Shell, ConocoPhillips, and ExxonMobil for positions as insulators, scaffolders, and basic laborers. At least one person reported taking a FEMA course to become qualified to address disasters in Louisiana and another participant plans to attend Delgado Community College to take chemistry classes to increase his knowledge in the area of testing.

In addition, enrolled program participants were asked about the kinds of technical knowledge gained, soft skills developed, and job search and assistance acquired that prepared them for employment in the targeted industries. Focus group participants mentioned that water sampling, GIS mapping, topography, and exposure to knowledge about chemical use and safety were among their new learnings. However, many praised access to resume preparation, interviewing and testing skills, self-marketing, interpersonal skills, and dressing for success as important skills and techniques learned through the training project.

Key stakeholders and some of the project participants believe strongly that the momentum of the project is also being propelled by one important external factor: the expectations about the increasing number of job opportunities projected for the coastal restoration industry. Numerous research studies have documented the enormous need to invest in the restoration of the Gulf Coast following natural and man-made disasters such as Hurricane Katrina in 2005 and the Deepwater Horizon oil spill in 2010. Many large and small scale businesses alike are expected to benefit from a multi-billion dollar restoration effort planned along the Gulf Coast that is largely attributed to the RESTORE the Gulf Coast Act and other ecosystem restoration policy efforts. As a result, some researchers predict that more than 57,000 jobs will be created in association with these restoration efforts.

Engaging Partners

From the design of the Pilot Project, LVI sought to develop a program that built cross-agency partnerships between workforce, educational, natural resource management, and community organizations. An intended project outcome was to identify at least four companies in targeted job sectors willing to commit to providing apprenticeships for 2-3 graduates; job placement assistance for graduates by agreements to review graduates for employment opportunities; and other in-kind assistance such as volunteer hours, loan equipment, input on curriculum development, mentoring and job shadowing. Partner and employer engagement proved to be one of the more challenging aspects of the project, and while some inroads were made with a number of key employers, those relationships largely did not result in the desired participant outcomes.

Since the launch of the workforce training project in September 2015, LVI contacted over 40 companies that either had past or current projects, or anticipated bidding for future projects in coastal restoration in southern Louisiana. Contacts with all of the companies were established through the Louisiana Coastal Protection & Restoration Authority (CPRA) and the Louisiana Department of Natural Resources (LADNR), which are the lead agencies for coastal restoration projects in Louisiana. The companies engaged in conversations with LVI are listed in Table C below:

Table C. Companies contacted by LVI

| | |
|--|--|
| AECOM, New Orleans, LA | CF Bean, Belle Chase, LA |
| Royal Engineers, New Orleans | Volute Inc., Houma, LA |
| Ecological Restoration Services, New Orleans, LA | Luhr Brothers, Port Allen, LA |
| Simon & Delaney Resource Management, Cameron, LA | Weeks Marine, Covington, LA |
| American Amphibious Equipment Rentals, Inc., | Pine Bluff Sand & Gravel, Pine Bluff, AR |

| | |
|---|---|
| Gretna, LA | |
| API Control, Boutee, LA | Soil Erosion Services, Inc., Simmesport, LA |
| McManus Construction, Lake Charles, LA | Professional Construction Services, New Orleans, LA |
| L.S. Womack, Port Allen, LA | Wharton Smith, Baton Rouge, LA |
| Great Southern Dredge, Mandeville, LA | Boh Brothers, New Orleans, LA |
| B&J Inc., Lake Arthur, LA | Great Lakes Dredge and Dock, Morgan City, LA |
| M&M Electric, New Orleans, LA | Sealevel Construction, Thibodaux, LA |
| CC Lynch, Pass Christian, MS | LeBlanc Marine, New Iberia, LA |
| Bertucci Construction, Jefferson, LA | Patriot Construction, Lafayette, LA |
| Grillot Construction, Belle Chase, LA | Coastal Estuary Services, Houma, LA |
| AECOM, New Orleans, LA | IEM, Morrisville, NC |
| Beta, LLC, New Orleans, LA | Beta, LLC, New Orleans, LA |
| Royal Engineers, New Orleans | LaPac, Crowley, LA |
| Ecological Restoration Services, New Orleans, LA | Eustis Engineering, Metairie, LA |
| Simon & Delaney Resource Management, Cameron, LA | T. Baker Smith, Houma, LA |
| American Amphibious Equipment Rentals, Inc., Gretna, LA | Hydroterra Technologies, LLC, Scott, LA |
| API Control, Boutee, LA | Burk Kleinpeter, Inc., Baton Rouge, LA |

The following are examples of successful partnership efforts achieved to-date:

- Continued to work closely with Louisiana Coastal Protection & Restoration Authority (CPRA) to learn about and access potential employers working on ongoing restoration projects.
- The City of New Orleans aided with recruitment and job placement assistance, and helped coordinate guided tours at the Sewerage and Water Board treatment plants and institutions the participants were learning about in the courses.
- River of Life Church served as an accommodating training venue and provided needed support with recruitment efforts, connected participants to wrap around supportive services, and provided access to childcare during the evening class time.
- Collaborated with environmental firms to establish opportunities for program participants to shadow professional fieldwork being conducted. Barnes, Ferland and Associates, Inc. (BFA Environmental Consultants) was able to provide some hands on experience in the field for participants being trained for water sampling.
- LVI worked with the one-stop career centers in Orleans and Jefferson Parishes (City of New Orleans JOB1 Business and Career Services Center and the West Jefferson Solutions Center, respectively) on program recruitment, and accessing job fairs and placement services for program participants.

Overall of the more than 40 companies LVI contacted, the majority were receptive to the concept of external workforce training for potential employees for their current or proposed projects. In general, however, many of these companies ultimately did not hire program participants due to hiring constraints (e.g., Boh Brothers, which tends to hire out of union halls), or already have internal workforce training in place. While other companies lacked the infrastructure to incorporate hires that have undergone external workforce training programs into their workforce, due to concerns that the training content was not customized to match specific employer demand. All of the initial contacts were with project managers for the respective companies. LVI doubled back on those efforts by following up with the Human Resource departments of these coastal restoration companies. However, these efforts proved largely ineffective.¹⁴ More time is needed to build such relationships and collaborations before the trainings begin. Additionally, alignment between the timing of the trainings and the awarding of contracts in the geographic area of the training would be helpful.

Meeting Organizational Needs

During the evaluation process three key areas of organizational development were identified as needing attention to optimize operations and enhance future project performance: management information systems (MIS); staffing; and fundraising. MIS and staffing will be covered in this section. Fundraising will be discussed in the following section on funding operations.

The Verbena Group evaluation team relied heavily on project management staff to provide data on participant characteristics and outcomes as well as services provided to each enrolled program participant. While project management staff was able to provide a “hard copy” of each enrolled participant’s file, and an electronic copy of a spreadsheet on participants containing information on specific variables requested, this task revealed gaps in available data on all participants. The evaluation team spent a significant amount of follow-up to access up-to-date participant information from project staff. The lack of an integrated automated system as a management tool for this project made it difficult for staff to permanently and consistently document and retrieve data, rigorously track the changing status of participants over time, match students to particular courses and credentials received, produce interim progress reports, and trigger periodic follow-up contact with enrolled participants. Because participants in these types of workforce training efforts tend to be more transient, conducting follow-up interviews, by either telephone or email, can be a particular challenge. An effective MIS system can help mitigate this and similar issues.

¹⁴ LVI/Oxfam NAS Workforce Training Project for Coastal Restoration in Louisiana, Update on Status of Industry/State Partners, March 2016.

As previously mentioned, the training curriculum and instructional staff were seen as particularly strong elements of the project across stakeholder groups. However, the critique of the effectiveness of the project design also identified employer outreach/connections, and placement in industry-related jobs as the most underdeveloped and least effective components of the Pilot Project. All three existing LVI trainers garnered high praise from participants. Two of the full-time trainers, however, were also tasked with providing a broader set of services to enrolled participants, including case management and job placement assistance. At times this may have presented challenges to their ability to implement the training curriculum while also providing case management and job placement services. In addition, the ~~Chief Executive Officer~~ Founder/Chairman of LVI and an Oxfam senior staff person assigned to the Gulf Coast region served as the principal leads in reaching out to companies in the Greater New Orleans area to help generate job placement opportunities for project graduates. The Founder/Chairman ~~CEO~~ of LVI is also the owner of BFA Environmental Consultants. Oxfam's locally-based senior staff member had significant other responsibilities as well. The reality that many of the ecosystem restoration job opportunities have yet to come on line, combined with limited staff capacity for employer engagement and job placement support may have contributed to the project not meeting its goal of placing 32 graduates into industry-related jobs or further education.

Funding of Operations

The ability to identify the funding needs and sources and align existing and new programs necessary to develop and test this new model was another intended outcome of this project. The metrics for success focused on leveraging local and state workforce development agencies, philanthropic partners, employers and other sources of support for this work. LVI was able to generate a total budget of approximately \$115,000 over one year to support project operations, \$75,000 of which was contributed by NAS, the major funder in the project. It is notable that LVI and BFA Environmental Consultants contributed \$30,000 in in-kind resources to the project. As a 21st Century Conservation Service Corps member organization, LVI dedicated \$10,000 of an Opportunity Youth Service Initiative grant awarded to the agency to support the project.¹⁵

The River of Life Church provided a high level of support to the project, including the primary training space for the last three cohorts, informal connections to supportive services for participants, access to childcare and aided with project recruitment efforts. Lastly, while the project did not generate funding from either local workforce development agencies or industry-related employers, the successful program completion rate coupled with the ongoing

¹⁵ The Opportunity Youth Service Initiative, an AmeriCorps program designed to engage diverse youth and young adults (16-24 years of age) from disadvantaged backgrounds in environmental stewardship projects, is funded through the Corporation for National and Community Service.

commitment and engagement of a faith-based anchor institution in the community should bode well for the project in attracting additional investors in the future.

Factors Contributing to Implementation Success

Gaining a better understanding of those elements of the project that worked well for stakeholders and participants alike is one of the key questions that is to be addressed by this assessment. The internal strengths of the Oxfam-LVI partnership that contributed to the overall success of project implementation already discussed in foregoing sections include: project design features, employer engagement, outreach/recruitment, and training and job placement. In addition, major success factors widely acknowledged by focus group participants and key stakeholders included the strength of outreach/recruitment efforts; instructional staff and curriculum; easily accessible location of the training venue; the evolving maturity and work profiles of the participants; and potential emerging partnerships among LVI, industry-based employers, and public sector workforce agencies.

VII. Recommendations for Achieving Scale and Sustainability

Project Planning and Institutional Capacity

The implementation and execution of the Pilot has yielded promising programmatic results. With slight adjustments to the existing model LVI will be situated to successfully achieve its stated program objectives. The program staff, key stakeholders and participants shared the following recommendations:

Developing and Nurturing Partnerships

- Build and solidify partnerships with the employers far in advance of the implementation of the training project. Further cultivation of these relationships is a multi-year and multi-phased process. Year one could focus on building the support structures and researching potential ecosystem restoration projects. Year two could focus on the training of participants. However, this approach would also require a significant increase in funding.
- Leverage federal support and resources to create a qualified pool of workers to handle natural disaster clean-up in Louisiana.
- Research upcoming coastal ecosystem restoration projects in advance of the start of the next cohorts. Identify the project locations and contract awardees in order to cultivate a list of potential partners; and structure the curriculum and location for the out-of-class training components accordingly.

Project Implementation

- Dedicate full-time support staff to provide case management assistance for participants, particularly those with barriers to employment.

- Continue to target participants with previous relevant job experience, and expand the curriculum to offer more advanced or mid-level professional training and certifications in the ecosystem restoration field.
- Continue to provide a flexible training structure and class schedule to accommodate employed or underemployed individuals who either work during the day or at night.

Developing a Package of Services

- Consider providing participants comprehensive wrap around social services that include child care, social work/case management, re-entry supports, transportation to the training and job sites, and post-placement follow up.
- Anticipate and address common barriers to employment such as securing and paying for state issued drivers licenses, driver's education courses, vehicle inspections fees and insurance.
- Continue to provide unfettered access to technology and the internet through the use of the Kindle tablets and similar personal devices.
- Provide small stipends and financial assistance to compensate participants who are forgoing work opportunities while participating in the training.

VIII. Recommendations for Strengthening the Model

Conclusion

The Oxfam-LVI Greater New Orleans Workforce Training Pilot Project was launched at a time punctuated by significant attention on the rebuilding and recovery of Gulf Coast communities following Hurricane Katrina and the Deepwater Horizon oil spill. It is the second of Oxfam's workforce development efforts in Louisiana that seek to develop and test innovative models that train and place local workers, particularly those who are underrepresented including women and people of color, within environmental restoration-related industries along the Gulf Coast. The high quality implementation and management of the project, along with the predicted boom in coastal restoration jobs, have been critical to its ultimate success. The Pilot Project exceeded one of its major intended outcomes: training and graduating more than 45 program participants, all of whom were people of color. While initial data on job interviews and hiring by industry employers (and the pursuit of further education upon completion of the training) has not been as robust as anticipated, the partnership has begun to institute measures that will accelerate the building of cross-agency partnerships with state, regional and local workforce development entities as well as employers. The findings of this Pilot Project evaluation suggests that it is capable of reaching the desired target population to develop a qualified pool of candidates for environmental technician jobs in related industries; identifying and developing a strong network of potential employer partners; leveraging its existing dollars and aligning its current programs.

Recommendations

To help improve the overall effectiveness and potential scalability of the Pilot Project in other communities, the Oxfam-LVI partnership should consider the following:

Strengthen the Project Design. Despite a theory of change for the Oxfam Gulf Coast Program for 2015-2018, a logic model has yet to be developed for this work of training local residents in well-paying jobs dedicated to creating more resilient Gulf Coast communities. A logic model would allow prospective nonprofit and employer partners to better understand the connections among the strategies, delineate the desired outcomes/results, and connect the desired outcomes/results to the longer term population and industry impacts it hopes to achieve. It would also allow for frequent evaluation of project progress that is necessary for mid-course corrections based on the analysis of what is working and of best practices that might impact project implementation. In addition, to respond to changes in the curriculum suggested by participants, the partnership should consider reinstating the internship/community service component for inexperienced participants to gain more hands on workplace experience; providing more advanced and mid-level training for those participants with previous/relevant job experiences such as access to a Transportation Worker Identification Credential, which several program participants identified as a barrier to advancement in their current jobs; and adding a mentoring and/or coaching component that would match each enrolled participant with a mentor or coach during the first few weeks of training.

Provide sufficient level of project planning and adaptive project management. Despite the significant level of outreach and referrals to local industry-based employers, the partnership efforts to gain commitments for apprenticeships or review candidates for jobs, and provide other in-kind assistance such as input on the design of the training curriculum were less successful than anticipated. To address the challenge of limited employer engagement, a upfront partner development period is suggested for cultivating employer relationships, with time devoted exclusively to building a support network and research, followed by a period entirely focused on training participants. Increased awareness and knowledge of projects planned in the region are essential, and it is equally important to work with companies that have been awarded contracts in order to customize the classroom-based training curriculum and incorporate an on-site, hands-on training element. This level of employer engagement would place a stronger emphasis on the importance of having committed partnerships with – and active participation from – employers beyond their willingness to hire project graduates. In addition, the project and any future replications of it, should establish an advisory committee of five to eight members to advise LVI on retooling the design and implementation of this type of training effort. The committee should consist of representation from community-based partners; local, parish and statewide workforce development boards; community colleges and/or training institutions; the

Louisiana Coastal Protection Authority; regional environmental employers; and program graduates.

Build on Effective Services to Improve Participant Outcomes. While stakeholders and participants alike praised several of its existing components, they suggested that the project should provide intensive case management and supportive services during training, particularly those that can help hard-to-serve participants address problems that might otherwise lead them to drop out. Other suggestions included scheduling training classes around full-time working participants, and creating a program element that could underwrite the costs of the acquisition of a driver's license for participants, a prerequisite for most employers as jobs are routinely in locations that are not accessible by public transportation. To assist participants who might encounter child care issues and/or financial hardships, LVI should explore federal and state child care assistance programs and the use of a vehicle like Individual Development Accounts (IDAs) offered by United Way agencies and other forms of financial assistance (i.e., stipends or scholarships).

Create a Centralized Online Data Collection and Tracking Capacity. Based on the inherent challenges of receiving timely and accurate data for this evaluation, the partnership should invest in the creation of a management information system (MIS). This data would inform future planning and decision-making by LVI and prospective partners based on participant progress and overall project outcomes, including tracking graduates as they move from training into employment and up the career ladder with industry employers. Many workforce training providers focused on opportunity youth in the New Orleans area have adopted Social Solutions' Efforts to Outcomes as a shared participant tracking system.

Expand Institutional Infrastructure for Outreach, Job Development and/or Placement Assistance. Currently, the project's staffing structure includes one part-time externally contracted recruiter for outreach and marketing to prospective participants, and three full-time instructors, two of whom also provide informal counseling and job placement assistance, as time permits. In addition, LVI's job development function to date has been handled by its Founder and Oxfam senior staff assigned to the Gulf Coast region that includes states beyond just Louisiana. As the recruiter is the personal connection or "go-to" person and face of the project in the early stages of the operations, the partnership should consider increasing this position to a full-time slot. The partnership should also consider adding one-to-two new staff primarily dedicated to case management and job development and/or job placement, both of which are critical project aspects lifted up in both of the focus groups. The latter position could effectively increase the marketing and contacts with company representatives and expand the soft skills training component of the project from a three-hour session in the final week of the six-week curriculum to a half-hour or one-hour session every week and provide on-demand support for participants.

Leverage Additional Funding and Resources for Overall Sustainability. The project should explore and maximize the drawdown of federal and state funding streams. Specifically, it is recommended that staff review resources available through the RESTORE Act, the Natural Damage Assessment, Environmental Protection Agency, AmeriCorps, the National Conservation Corps, and other funds related to the Deepwater Horizon BP oil spill to capture new sources of funding. The Rockefeller and Jessie duPont Fund as well as local community foundations such as the Greater New Orleans Foundation are additional funding opportunities. LVI should also create linkages with local education and training partners that can supplement its organizational capacity to provide high quality training in the targeted occupational sectors.

IX. Appendices

Appendix A: Interview List

Oxfam/LVI Greater New Orleans Workforce Training Pilot Project

~~BFA Environmental~~/Limitless Vistas, Inc. Project Personnel

Patrick Barnes

Sherry Callaway

Elizabeth Cornell

Roger Simon

Peter Hoar

DCR Consulting Services

DeShannon Cobb-Russell, Participant Recruiter

Oxfam Staff

Telley Madina, Senior Gulf Coast Policy Officer

Partners

Gina Marie-Bernal, Royal Engineers

Rebecca Otte, Brownfield Redevelopment Coordinator Regional Planning Commission

Kathy Hunter, Veolia

Carlette Washington, Director of Operations at The River of Life Church

Appendix B: Interview Protocol
OXFAM/LVI GREATER NEW ORLEANS
WORKFORCE TRAINING PILOT PROJECT
PROTOCOL AND INTERVIEW QUESTIONS—KEY INFORMANTS

Oxfam America has committed to use a segment of its resources to impact the issue of job training and advancing career opportunities along the Gulf Coast. Oxfam and Limitless Vistas, Inc. (LVI) are designing a new model of connecting disadvantaged workers through job training to career opportunities in the disaster response and ecosystem restoration industries along the Gulf Coast. As such, they have engaged the Verbena Group to evaluate the Project to inform the development of a scalable model for workforce development.

The purpose of this interview is to learn more about the design and operations of the pilot, its accomplishments and challenges, and the lessons that you are learning that can improve similar projects in the future. The other focus is to hear your insights about the most important needs, opportunities, and areas for additional support necessary to advance this field of work.

Name of Organization:

Person Completing Interview and Title:

Background

1. Briefly describe your organization and its role in the pilot project.

2. In what ways have you interacted or participated with Oxfam or LVI in relationship to job training and career opportunities in disaster response, ecosystem restoration and related construction fields over the past few years?

I. Project Objectives

3. What is your understanding of the main objectives of the pilot project?

4. What was your role and approach(s) for meeting these objectives?

II. Project Design: Structure and Cross-Agency Partnerships

5. Are you currently working or did you work with any other organizations or individuals to help meet the goals of this project? Yes No

If yes, with whom do you or did you work and what were their respective roles (e.g., project planning, recruitment, training, hiring, referrals to opportunities, other)? [Check all that apply]

- _Employers/role:
- _Training and education providers/role:
- _Supportive services providers/role:
- _Government/role:
- _Religious institutions/role:
- _Other specialist/role:

6. [If applicable] What worked well within the partnerships (e.g., collaboration, project coordination, management, staffing, marketing and communications)?

7. [If applicable] What were the constraints or what was difficult?

- a. How were these issues resolved?

8. On a scale of 1 to 5, with 5 being very satisfied and 1 being least satisfied, please rate your level of satisfaction with project coordination. Very Satisfied (5), Satisfied (4) Somewhat Satisfied (3), Less Satisfied (2), and Least Satisfied

9. Do you maintain ongoing partnerships with any of the entities or individuals mentioned above?

_Yes. If so, with whom? _____

_No

III. Implementation Experiences and Project Assessment

10. What have you found to be the key features that have contributed to the successful implementation of the project (e.g., project plan/design, employer recruitment, management and staffing, curriculum, soft skills training, case management, training designed to match employment requirements, participant follow-up)?

11. Are there any anticipated or unexpected outside factors that have helped with the implementation of the project?

12. What have been some of the project implementation challenges you have encountered?

13. Do you believe that the project effectively addresses barriers, challenges and employment opportunities for individuals, and especially women and minorities, in disaster response, ecosystem restoration and related construction industries along the Gulf Coast? Yes _No _

a. If yes, how?

b. If no, why not?

14. On a scale of 1 to 5, with 5 being very effective and 1 being least effective, please rate your assessment of the level of effectiveness of each of the following processes in meeting the objectives of the Project.

Very Effective (5) Effective (4) Somewhat Effective (3) Less Effective (2)
Least Effective (1)

- a. Recruitment:
- b. Case Management
- c. Soft Skills Development
- d. Technical Training/Credentialing
- e. Retention/Completion
- f. Employer outreach/relations
- g. Job Placement Support

15. Do you believe that the project is either fulfilling a unique niche or making a contribution to training and employing disadvantaged or underrepresented individuals, including women and minorities, in disaster response and ecosystem restoration industries along the Gulf Coast?

Yes_ No_

- a. If yes, in what ways?_
- b. If no, why not?

16. Did the project meet your expectations? Yes_ No_

- a. If so, how?
- b. If not, what adjustments would you like to have seen in its implementation?

17. What about the project did you find most useful and why?

18. How would you recommend that the project be improved?

IV. Funding

19. What level of program funding and what was the purpose of the investments provided by each of the following:

- a. Local and state workforce development agencies: amount _____ purpose_____
- b. Private philanthropy: amount_____ purpose_____
- c. Employer partners: amount_____ purpose_____
- d. Other sources: amount_____ purpose-----

20. Were there gaps in project funding? If so, what were they?

21. Were there missed opportunities to leverage additional funding for the project? If so, what were they?

22. What were the challenges in raising needed funding for the project?

V. Lessons Learned

23. What are the key lessons you have learned through this project that may help Oxfam and LVI in their planning, implementation and funding of future projects focused on connecting disadvantaged workers to job training and career opportunities in the environmental health, energy production, disaster response and ecosystem industries along the Gulf Coast?

24. Are there particular areas (such as specific approaches, types of jobs, geographic regions, types of residents, etc.) that you would recommend that Oxfam and LVI target in the future?

25. What types of support do you see as the most important to focus on to help workers and their families gain employment in the industries targeted by this project (e.g., childcare, supportive services including case management, mentoring and coaching, post-placement supports, transportation assistance, financial assistance etc.)?

26. Have you referred or would you refer this project to others (e.g., job seekers or industry employers)?

27. Is there anything that you would like to add that was not asked in this interview?

Appendix C: Focus Group Protocol
OXFAM/LVI GREATER NEW ORLEANS
WORKFORCE TRAINING PILOT PROJECT
Protocol for Focus Groups/Telephone Interviews/Online Surveys with
Job Seekers/Job Holders

Overview of Focus Groups/Telephone Interviews/Supplemental Online Surveys

The Verbena Group will be holding a total of three focus groups, one at the conclusion of each of the three remaining training cohorts¹⁶ of the project. Alternately, for participants unable to participate in the focus groups, either due to their absence at the time of the focus groups or their inability to complete the training project, data will be collected either by telephone or via an online survey. Participants selected for each data collection option will represent a mix of backgrounds (i.e., gender, ethnicity, race, geographic residency, etc.). The purpose of the focus groups/telephone interviews/online surveys is to collect data from the perspective of the participants involved with the project.

The length of the focus groups will be 90 minutes, and will include time for the participants to settle in, complete consent forms, and wrap-up any questions the participants may have about the workforce training pilot evaluation process. If questions are administered as either a telephone interview or online survey, the length of time required to complete each will be 45 minutes.

Introduction

Oxfam America has committed to use a segment of its resources to impact the issue of job training and advancing career opportunities along the Gulf Coast. Oxfam and Limitless Vistas, Inc. (LVI) are designing a new model of connecting disadvantaged workers through job training to career opportunities in the environmental health, energy production, disaster response and ecosystem restoration industries along the Gulf Coast. As such, they have engaged the Verbena Group to evaluate the Project to inform the development of a scalable model for workforce development.

This purpose of the discussion/[interview or survey] is to learn more about your participation in the project, your perspectives on its different aspects, and your experiences and challenges, if any, that are related to your experiences.

¹⁶ Dates for training cohorts include: October 26, 2016 – April 30, 2016, January 15, 2016 – February 28, 2016, March 29, 2016 – May 6, 2016, and May 15, 2016 – June 30, 2016.

Background

1. Tell us a little about your background: your family, work experience and work history, educational and occupational skills.
2. In what city/town do you reside?
3. Which category best describes your age?
 - a. 15 – 19
 - b. 20 – 24
 - c. 25 – 30
 - d. 30 – 35
 - e. 40 or older
4. You identify your gender as- male, female, transgender, prefer not to answer.
5. How would you identify your race? Black/African American, White, American Indian or Alaska Native, Asian, Native American or Other Pacific Islander, Multiracial, or Other?
6. How did you learn about the ecosystem restoration workforce training program with Limitless Vistas, Inc.?
7. Why did you decide to enroll in the program?
8. Prior to starting the program were you aware of career opportunities in the ecosystem restoration field?
9. Prior to starting the program were you already employed? If so, what type of work did you do?

Project Design

10. What is or was your understanding of the objectives of the project?
11. What were you others hoping to get out of participating in the project (i.e., new/improved skills, improved job stability, increased wages, potential for advancement, etc.)?

Program Experience

12. What skills did you learn and develop that could help you advance in the ecosystem restoration industry?
13. What soft skills did you develop through your participation?
14. Were there challenges or barriers, if any, that affected your participation (i.e. transportation, childcare etc.)?
 - a. If so, did the program provide any case management assistance or connect you to resources to address those issues?
15. How has the training you received in the program prepared you for jobs in the ecosystem restoration industry?
16. Did the project meet your expectations?
 - a. If so, how?
 - b. If not, what would you like to have gained through this project?

17. What about the project was most useful to you?
18. What recommendations do you have for improving the project?

Post Program Experience

19. What job search and placement assistance did you receive upon completion of the program?
20. What supports did you receive in developing a career plan that accounts for skills development and wage increases over time?
21. Upon completing the program have you enrolled in additional courses?
22. Upon completing the program did you apply for any new jobs? If so, how many and with whom?
23. Have you received any job interviews from employers? If so, how many and with whom?
24. Did you receive any job offers from employers? If so, from whom and for what types of positions?
25. Would you recommend this program to other jobseekers looking for opportunities to advance their careers in the ecosystem restoration industry? Why or why not?

OXFAM/LVI Greater New Orleans Workforce Training Pilot Project Focus Group Agenda

- Introduction of Facilitator/Note-taker – 5 mins
- Review & Collect Signed Consent forms – 5 mins
 - Have participants read consent form in a round robin
 - Answer any questions
 - Emphasize the following:
 - Purpose of the focus group
 - Confidentiality – no personal attribution
- Facilitate Introductions of Participants – 5 mins
 - Name, what they hope to accomplish through the program
- Overview of the evaluation process – 5 mins
 - What is it? Purpose? Goals?
 - Who is involved?
- Focus Group Questions – 60 min
- Wrap-up – 5 mins
 - Outline next steps for evaluation process
 - Answer participant questions