



State of West Virginia
 Department of Administration
 Purchasing Division
 2019 Washington Street East
 Post Office Box 50130
 Charleston, WV 25305-0130

Solicitation

NUMBER
DEP16419

PAGE
1

ADDRESS CORRESPONDENCE TO ATTENTION OF:
FRANK WHITTAKER 304-558-2316

RFQ COPY
 TYPE NAME/ADDRESS HERE
VENDOR
 Extreme Endeavors and Consulting
 1063 Hickory Corner Road
 Philippi, WV 26416

SHIP TO
 ENVIRONMENTAL PROTECTION
 DEPARTMENT OF
 DIVISION OF LAND RESTORATION
 601 57TH STREET SE
 CHARLESTON, WV
 25304 304-926-0499

DATE PRINTED
04/23/2014

BID OPENING DATE: 06/05/2014 BID OPENING TIME 1:30PM

LINE	QUANTITY	UOP	CAT. NO.	ITEM NUMBER	UNIT PRICE	AMOUNT
0001	1	JB	670-81	TANK MONITORING SYSTEM CAPON SPRINGS LF.	\$29,000	\$29,000
0002	1	EA	670-81	TANK MONITORING SYSTEM FOR CENTRAL WV REFUSE LF.	\$29,000	\$29,000
0003	1	EA	670-81	TANK MONITORING SYSTEM FOR JACKSON COUNTY LANDFILL	\$29,000	\$29,000
0004	1	EA	670-81	TANK MONITORING SYSTEM FOR MCDOWELL COUNTY LANDFILL	\$29,000	\$29,000
0005	1	EA	670-81	TANK MONITORING SYSTEM FOR MIDWEST LANDFILL	\$29,000	\$29,000

06/11/14 09:40:46AM
 West Virginia Purchasing Division

SIGNATURE	TELEPHONE 304-457-2500	DATE 5/6/14
TITLE President	FEIN 20-1994813	ADDRESS CHANGES TO BE NOTED ABOVE

WHEN RESPONDING TO SOLICITATION, INSERT NAME AND ADDRESS IN SPACE ABOVE LABELED 'VENDOR'



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LINE	QUANTITY	UOP	CAT. NO.	ITEM NUMBER	UNIT PRICE	AMOUNT
0006	1	EA	670-81	TANK MONITORING SYSTEM FOR MINGO COUNTY LANDFILL	\$29,000	\$29,000
0007	1	EA	670-81	TANK MONITORING SYSTEM FOR MORGAN COUNTY LANDFILL	\$29,000	\$29,000
0008	1	EA	670-81	TANK MONITORING SYSTEM FOR PINE CREEK-OMAR LANDFILL	36,000	36,000
0009	1	EA	670-81	TANK MONITORING SYSTEM FOR WYOMING COUNTY LANDFILL	\$29,000	\$29,000
0010	1	EA	670-81	INTERNET BASED HOSTING SETUP & MAINTENANCE	20,000	20,000

SIGNATURE	TELEPHONE 304-457-2500	DATE 5/6/14
TITLE President	FEIN 20-1994813	ADDRESS CHANGES TO BE NOTED ABOVE

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WV Landfill Closure Assistance Program Leachate Tank Monitoring System

DEP16419

PRICING PAGE

The DEP reserves the right to request additional information and supporting documentation regarding unit prices when the unit price appears to be unreasonable.

ITEM NO.	QUANTITY	DESCRIPTION	UNIT PRICE	EXTENDED PRICE
		Provide and install tank monitoring system at		
1	1 Each	Capon Springs Landfill	\$ 29,000	\$ 29,000
2	1 Each	Central WV Refuse Landfill	\$ 29,000	\$ 29,000
3	1 Each	Jackson County Landfill	\$ 29,000	\$ 29,000
4	1 Each	McDowell County Landfill	\$ 29,000	\$ 29,000
5	1 Each	Midwest Landfill	\$ 29,000	\$ 29,000
6	1 Each	Mingo County Landfill	\$ 29,000	\$ 29,000
7	1 Each	Morgan County Landfill	\$ 29,000	\$ 29,000
8	1 Each	Pine Creek – Omar Landfill	\$ 36,000	\$ 36,000
9	1 Each	Wyoming County Landfill	\$ 29,000	\$ 29,000
10	1 Each	Internet Based Hosting Setup and Maintenance. (5 years)	\$ 20,000	\$ 20,000
		TOTAL		\$ 288,000

Contractor: Mike Masterman / President / Extreme Endeavors

Signature: 

Date: 5/6/14



TECHNICAL PROPOSAL

Bid Documents for DEP16419

ABSTRACT

Extreme Endeavors, a company well-suited for integrating technologies in the harshest conditions, submits the following proposal to record landfill tank monitoring solution with a state-of-the-art, Internet-based system created, designed, and manufactured entirely in West Virginia. The tank monitoring system was developed to meet the Department of Environmental Protection's needs and is flexible, adaptable, and expandable, allowing this technology to serve well into the future.

Prime Contractor

Extreme Endeavors

1063 Hickory Corner Road
Philippi, WV 26416
304-457-2500

Sub-contractors

Bail Contracting

2733 Canvas Nettie Road
Canvas, WV 26662

Let There Be Light

7 Beech Street
Buckhannon, WV 26201

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Introduction

Extreme Endeavors has created a team to provide the DEP with the best value, incorporating years of experience monitoring various environments throughout the mountainous regions of West Virginia. For this project we are proposing a monitoring system for the leachate systems at 9 landfills within West Virginia. Each system will be identical and monitor the following:

- ✓ Tank level
- ✓ Rainfall
- ✓ Battery voltage of a solar-powered monitoring system

A driver liquid offload system will be implemented that identifies the driver and logs the amount of liquid removed. When the driver arrives they will either input a code into the touch screen of the INSCADA module or hold a RFID tag in front of the electronics box to input their identifying information. The system will then record the outflow of water data and link the volume of water pumped to the truck.

Each system will be solar powered with design practices previously used to keep other remote stations operational 100% of the time in rural West Virginia. Extreme Endeavors has developed a design protocol for power systems which utilize sensors and controls for critical infrastructure. This protocol has a proven success rate, as Extreme Endeavors has a significant number of autonomous electronics packages around the state of West Virginia.

The data collected from the remote landfills will be incorporated into a database and made available on a web-based server. Extreme Endeavors will adapt the Environmental Monitoring System developed for Greer Industries in meeting their Department of Environmental Protection permitting requirements. All information will be developed for viewing by the DEP (password-protected) either by logging onto a website or viewing the data on a smart phone.

Extreme Endeavors will provide hosting on a Windows-based server at our facility in Philippi, West Virginia. The server will be supported with a backup power generation system to insure uptime even during times of grid power loss.

Team Introduction

Overview

This team has been selected to provide the DEP with cutting edge technology, installed in a rapid and effective manner. All three businesses, Prime and sub-contractors were started and currently reside in West Virginia. This project will not only provide DEP with a world-class monitoring system, but also improve the economic development within the State.

About Extreme Endeavors

Extreme Endeavors will serve as the project lead and provide engineering, project organization, fabrication, and installation. Extreme Endeavors has vast experience monitoring some of the world's harshest environments, making them ideal to lead this project.

Their experiences are:

- 1) **Central Barbour Public Service District:** Monitoring 5 clean-water tank sites throughout Barbour County, West Virginia. Figure 1 shows the Pt. Pleasant tank of the Central Barbour Public Service District. Extreme Endeavors control system monitors all of the tanks, insuring water is provided to the public.
- 2) **Greer Lime:** Monitoring Schoolhouse and Hellhole Caves in Riverton, West Virginia to allow mining operations to continue around the endangered species of bats living in the caves less than a mile from the quarry. Sensors, networked protocol radio equipment, and remote power stations were developed for the project, all allowing the sensing to occur within Hellhole, thousands of feet past the 180-foot drop to enter the cave.
- 3) **NASA Jet Propulsions Laboratory:** Provided design services and technician support in monitoring the rebound of the Transantarctic Mountains due to the retraction of the ice shelf. This involved one month in Antarctica, working on remote mountain sites hundreds of miles from research stations. Figure 3 shows the extremely remote location in Antartcia where Extreme Endeavors has been designing and installing monitoring systems.
- 4) **West Virginia Geological and Economic Survey (WVGES):** Utilized broadband monitoring of pump stations to log power information in remote regions of West Virginia. This project resulted in detection and correction of a faulty power grid and cavitation at pump stations.



Figure 1: Tank Monitoring Site Extreme Endeavors Controls with the INSCADA System



Figure 2: Extreme Endeavors Installing Sensors to Monitor Hellhole Cave

- 5) **Tunnelton, West Virginia:** Monitored volume of sewage in a chamber and insured proper flows to prevent waste water from backing up into town residences.

- 6) **Huttonsville Water Treatment and Distribution System:** Provide fiber connectivity, monitoring, and control of water distribution based on tank levels and control of water production. Note: This project is currently underway.



Figure 3: Site In Antarctica Where Extreme Endeavors Provided Monitoring for NASA JPL

Extreme Endeavors is a small business located in Philippi, West Virginia. Extreme Endeavors has found its niche in providing monitor and control systems, but in addition to this we have provided the following to various customers:

- ✓ Scientific research
- ✓ Electrical, mechanical, and cryogenic engineering
- ✓ System development, fabrication, and life cycle support
- ✓ IT design, implementation, and support
- ✓ Prototype development
- ✓ Machine shop services

The diversity in our capabilities allows us to quickly contend with non-standard problems and insures the success of your project. Not only do we provide the monitoring and control, we also design and build the control systems here in our shop in Philippi.

Let There Be Light

Let There Be Light is an independent electrical contractor based in Buckhannon, WV. We have worked with them previously on installation of Supervisory Control and Data Acquisition (SCADA) systems for Central Barbour Public Service District and for the project in Tunnelton, WV. They work for AFP lumber, and have wired significant portions of their plants, including automation-3 phase 480-volt work. In addition to generator installation, they have significant experience in rewiring and upgrading residential electrical systems, as well as those in local hotels, restaurants, and churches.

Bail Contracting

Bail Contracting is a small business specializing in excavation, grading, and building construction. Bail Contracting is one of the key members in performing contracting and remediation work for the Department of Environmental Protection and they are familiar with the various sites where the work will be performed.

System Description

State Wide System Block Diagram

Extreme Endeavors will provide Internet-based monitoring of nine remediated landfill sites located around West Virginia. This monitoring concept, shown in Figure 4, will utilize previous developments performed for industry to meet DEP permitting requirements. Each of the nine tank sites will be monitored for

1. Tank Level
2. Flow Out of Tank
3. Amount of Rainfall
4. Battery Voltage
5. Temperature
6. RFID Reading for Access

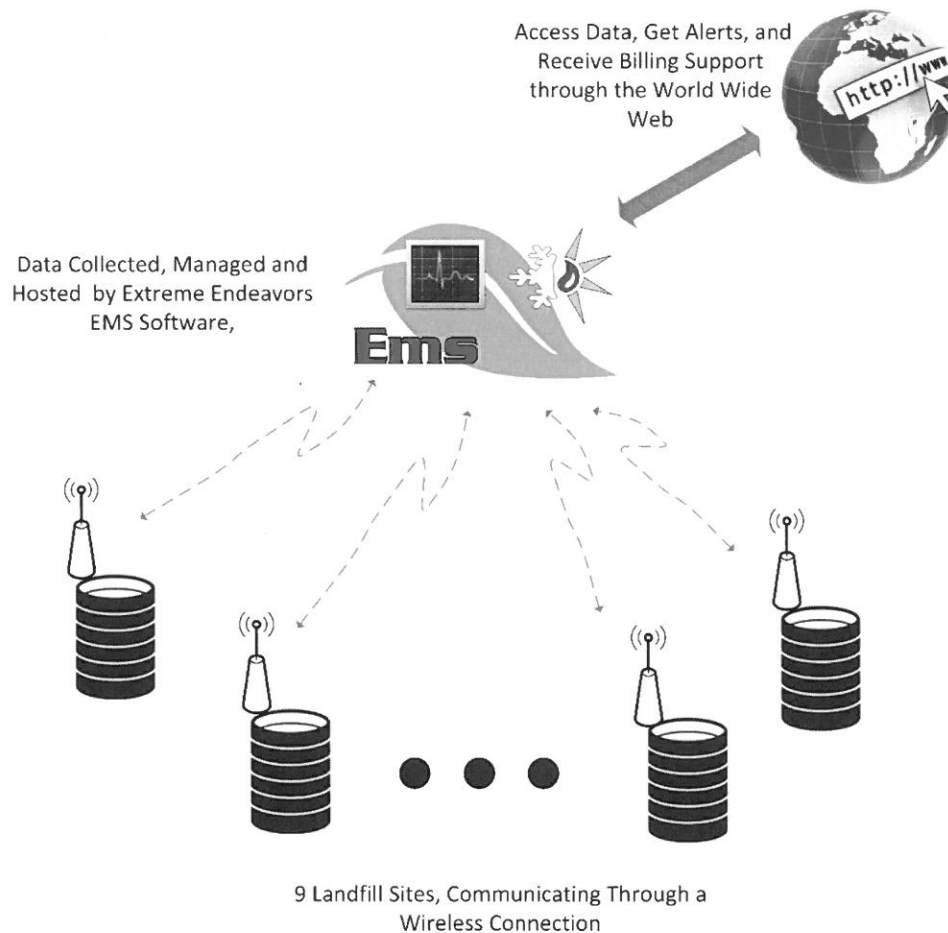


Figure 4: System Drawing Showing the Overall Schematic of Extreme Endeavors Design

All of this data will be logged into a database and web-based software called the Environmental Monitoring System. In 2012, Extreme Endeavors initiated development of the Environmental Monitoring System in order to reduce Greer Industries reporting burden. In 2013, Extreme Endeavors delivered this software which provides complex analysis and reports to federal and state agencies. This software will be modified to fit the needs for landfill tank monitoring.

EMS software will run on a server and the DEP can go to any web browser and log onto the software as either a full access member or a read only member. EMS software benefits the DEP because years of development and testing have already been conducted on the software package and its database and web-based architectures allow for complex analysis and easy reporting. In addition, EMS will include Crystal Reports (<http://www.crystalreports.com/>) functionality to allow the DEP to have professional and accurate reports generated.

Tank System

Each tank system will be constructed to be identical, with the exception of the one station that will require an alternative communication methodology since there is no cell coverage at that site. The system Extreme Endeavors is proposing is shown in Figure 5.

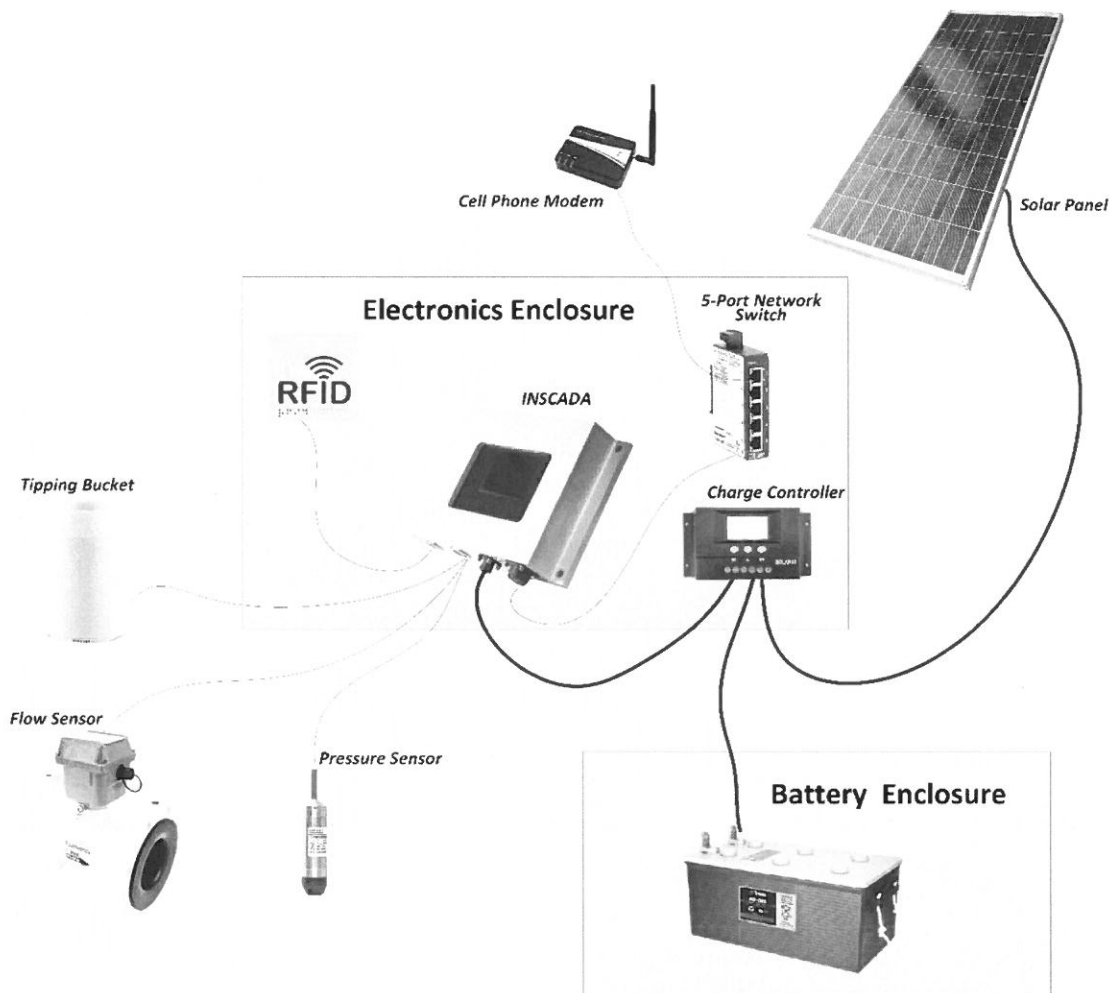


Figure 5: Block Diagram of Solar Powered Tank and Site Monitoring System

At the center of this design is Extreme Endeavors INSCADA system, an intelligent control system used to monitor the drinking water stored in many tanks throughout West Virginia. The INSCADA will collect data from level transmitters, flow meters, and rain gauges. It will then transmit the data via cell phone modem (potentially satellite modem at one site) to be logged into the EMS software solution. The following is a description of the different components Extreme Endeavors is offering in this bid.

System Components Description

Controller

The Controller will be an INSCADA system developed and manufactured by Extreme Endeavors. This system is currently used to sense and control several water tanks and systems. The INSCADA has a 5.7 inch touch TFT display which will be ideal for key pad entry when drivers arrive on site to load liquid. What sets the INSCADA apart from all other controllers is its intelligence level. The INSCADA acquires information from either GPS or its wiring harness, and loads the appropriate registers, allowing automatic programming. In addition, the INSCADA has some of the most sensitive analog-to-digital converters known, giving us better accuracy and precision.

The INSCADA can communicate over Ethernet, RS232, RS485 or WIFI. For this application we will connect all INSCADA modules to communicate over wired Ethernet. Experience has shown that at remote sites, using wired connections is always less problematic. All connections to the INSCADA module will be through PT series military style bayonet connectors. These connectors have been well proven in the field.

The INSCADA module runs off of DC power, requiring 7 to 20 volts DC. The power is optimized to shut down unused peripherals, making it ideal for battery powered applications. The INSCADA will also have a variable data acquisition cycle, which means that the user can select the sample rate from one minute to once an hour, hence the DEP will not be limited to one data sample every 15 minutes.

The INSCADA will be installed in a locked enclosure with an opening allowing you to access the front panel. The front panel will be protected by a small front door that will allow a driver or other personnel to open the smaller door and input a code without opening the main enclosure, and limit access to only the front panel of the INSCADA.

The user will approach the module and touch the TFT display to wake the INSCADA up. Then displayed on the front screen will be the tank level, temperature, flow rate, battery voltage, and amount of rainfall in the last 24 hours. It should be noted that while the on-site display will only show daily rainfall, it will transmit amount of rainfall with every data set to provide the DEP with hourly, daily, weekly and monthly rainfall data through the EMS Software.

Solar System

Extreme Endeavors has much experience developing and implementing several solar-powered battery systems that provide continuous power to sensor and communication networks. Several of these have been working continuously for up to 7 years without power interruption. However, to achieve this goal, and to have reliable power, we have found that the solar and battery sizes must be adjusted to meet the conditions found in West Virginia.

Extreme Endeavors will construct the first electronics system in our lab, and we will measure the power used by the proposed system. From this we will calculate the battery supply and solar panel needs. Extreme Endeavors has formed a partnership with Renogy, and we have found their solar panels to be reasonably priced, yet the real benefit is they have allowed us to standardize our mounting systems, which in turn lowers the cost of production for the Department of Environmental Protection.

From the power measurement budget, battery size will be determined and gel cell batteries, which meet the DEP's approval will be purchased and included in the system.

Communications

Our goal is to keep the stations as similar as possible, and 8 of the 9 sites are accessible with regular cell-phone coverage. We will choose a communication carrier, most likely AT&T, and we will utilize the WR-11 modem from Digi for these applications. Due to lack of cell coverage at the 9th site, we will provide two additional options for connectivity. One option is to use a "NExt" (Node Extender- <http://www.extreme-endeavors.com/NodeExtender.html>) attached to the tank, which would allow the INSCADA controller to communicate with an autonomous tower (<http://www.extreme-endeavors.com/tower.html>) erected on a nearby mountaintop, where there would be a cell phone modem.

The other option would be to install an additional driver on the INSCADA and have it communicate via satellite modem. The decision will be made after an on-site visit to this particular landfill. This option will work but may limit the amount of data which can be transmitting for the associated costs.

Sensors

Tipping Bucket

A tipping bucket will be used to measure rainfall. Extreme Endeavors will use a tipping bucket from RM Young or Texas Electronics. The precision of the tipping bucket will be 0.01 inches per tip. The tipping bucket will contain a heater to allow operation in sub-freezing temperatures.

The tipping bucket will be connected to the INSCADA module. The INSCADA will read the number of tips and calculate the amount of rainfall. With every dataset transmitted to EMS software, the amount of rainfall during that last period will be included as part of that dataset. EMS will store the rainfall information in a database. The monitoring software will then calculate the hourly, daily, monthly, and yearly rain data and provide a report detailing this information.

Pressure Sensors

A Wika LS-10 pressure sensor/transmitter will be connected to the INSCADA, more specifically to one of the 24-bit, analog-to-digital converters. The Wika sensor will be inserted into the bottom of the tank so that the level of the tank will change the pressure reading. The INSCADA system will read the pressure and calculate the water column height in the tank. This data will be sent back to the EMS software for storage in the database and reporting.

In addition, when the INSCADA screen wakes from a low-power state, it will display on the front panel the level of liquid in the tank. The level will be shown on the screen and recorded in the database in units of feet and tenths of feet.

Flow meter

A Seametrics flow meter will be installed at the outlet of the tank. This will be connected to the INSCADA analog-to-digital converter system. The INSCADA will continuously monitor flow and when flow is detected, it will record a start time and ending time, and then calculate the gallons in that event. This information will be sent to the monitoring software where it will be stored in the database. The monitoring software will calculate the totals per day, totals per month, and a running total.

In addition, the INSCADA system will log either a key pad entry or RFID tag read associated with the gallons of the event. This association will be reported back to the monitoring software to allow the Department of Environmental Protection to utilize information from this flow meter for billing purposes.

RFID Reader

Extreme Endeavors will integrate the Skyetek family of RFID readers into the INSCADA system. This can be used for access to the site and/or recording the amount of liquid hauled by a specific driver. Instead of entering a code, a driver could hold a key chain in front of an antenna, and the driver's information would be recorded into the system.



Figure 6: RFID Reader To Be Integrated into the INSCADA Module

Extreme Endeavors will provide sale of the tags to the DEP as needed, the tags will range in cost of \$2 each to \$100 based upon the requirements needed. For example, a small keychain tag would cost \$2 whereas a larger antenna mounted on the side of a truck would be high priced to match the durability requirements.

Software

Extreme Endeavors has recently developed a similar software system for Greer Industries. This software has significantly reduced the cost and improved the reporting ability of their cave monitoring system. Extreme Endeavors will retrofit this software to meet the needs of the Department of Environmental Protection for monitoring these landfill sites.

The software will be reconfigured to wait for an incoming connection through the Internet, which will be opened through our INSCADA modules and cell phone modems. The software will store the rainfall data and the tank level in a database, time stamped so that future processing can be performed. The latest driver identification and tank discharge information will be stored in the database with a time stamp.

In addition to this, a crystal reports (<http://www.crystalreports.com/>) software module will be added to the software solution to make customizable reports. The current software already supports downloading data so that it can be graphed in Excel, and it also has the ability to flag and notify potential problems. For example, if a tank is filling to capacity, or a system does not communicate, an email can be sent to several parties so that this issue can be resolved.

To configure the software correctly, input will be required from the Department of Environmental Protection for the types of alarms, who to notify, and the workflow status. The workflow status is in reference to the driver's loading of liquids. For example, if the driver enters their code or swipes an RFID card, how long do we tie that flow rate with their particular load? Do we reset the flow measurement after several minutes of no flow? What should the software do if no code is entered before flow starts?

One of the benefits to hiring Extreme Endeavors for this tasking is the tight integration between the technology, software, and workflow, providing the DEP with the best value and most effective tool.

Work Plan

Contracting

Extreme Endeavors will provide all necessary paperwork to WV State Purchasing, and the system requirements will be documented by Extreme Endeavors in the form of requirements. This requirement list will be agreed upon prior to inception of work. In addition, prior to initiating work, contractual agreements between Extreme Endeavors and all subcontractors will be executed.

Sight Survey

Extreme Endeavors' Lead Engineer and Installation Supervisor will visit all sites. At each site we will obtain dimensions and document the existing system in order to prebuild the majority of electronics, brackets, and boxes in our shop in Philippi, West Virginia. In addition to this, we will be gathering data for design documentation.

Design

During this phase of the project, Extreme Endeavors will draft site diagrams which show the location of the outflow pipe and mounting of the different systems. Extreme Endeavors will produce drawings showing the block diagram of the system with pertinent information. A wire list, detailing the cables, connectors and connections used, will be drafted. This stage will be essential for not only the design aspects, but for producing the final report as well.

Extreme Endeavors will also perform lab testing and power calculations to insure that the solar power system is capable of keeping the electronics running 24 hours a day, 7 days a week. Design reviews will also be held to present information on the design to the Department of Environment Protection for review.

Site Construction work

Extreme Endeavors will contract with Bail Contracting to perform excavation, extend the outlet pipe, install the flow meter, place conduit in the ground, and encase it in concrete. This site construction work will be conducted in conjunction with Extreme Endeavors' fabrication of the components of the monitoring system.

Fabrication of Equipment

Procurement of Items

Extreme Endeavors will procure all items needed for the project. The solar panels, charge controllers, modems, conduit, unistrut, sensors, network switches, and other applicable items will be purchased.

INSCADA

At the same time as the procurement begins, Extreme Endeavors will begin with the fabrication of 9 INSCADA modules. These modules are constructed at our facility in Philippi, West Virginia. This step will take approximately 40 days to complete. At the same time we are beginning the assembly, the software engineer can initiate programming in the display screen, building drivers for the new sensors and inserting the workflow requirements. These workflow requirements will be written to cater to the DEP's specific needs.

System Construction

All nine stations will be constructed in Extreme Endeavors lab prior to installation on site. All boxes will be either purchased or fabricated directly, made from stainless steel with accommodations for locks, of which Extreme Endeavors will provide Series AM1205 (or equivalent), keyed 36485 on all boxes and vaults. By pre building all equipment in the lab, it reduces the installation time and allows us to review the installation process and be more thorough in testing. In addition, the DEP can stop by the office and view the hardware prior to installation.

Software

EMS is a software solution created for acquiring data, processing data, and reporting. The software currently utilizes a .net language and provides connection to all of Extreme Endeavors' equipment. Currently the software opens a TCP/IP socket, accesses the module and its data, and then closes the socket. For this project we will reconfigure the software to allow the field modules to open the connection, which is what is required in using either cell phone modems or satellite modems.

The EMS software will be updated to show a dashboard relevant to the tank modules. The dashboard will be programmed to display the tank level, rainfall, driver offload, and battery voltage. Extreme Endeavors will then work with the DEP to determine flags or limits that would require notification. Lastly, added to the software will be crystal reports, which will allow the DEP to produce reports. It should be noted that the software already supports exporting of the data into an Excel file, and the addition of crystal reports will allow the software users to rapidly generate common reports.

This reporting system will be set up to provide a costing mechanism to pay the contractors that are hauling away the leachate. The Department of Environmental Protection will be able to enter the rate they are paying per gallon of leachate, and reports will be generated showing the payment amounts to each of the contractors hauling the leachate. The contractor can record this same information when they are loading their trucks, as the INSCADA will display the volume of leachate loaded.

The EMS system must also provide a means for the system as a whole to recognize the individual driver who transported the leachate, and the company for which he works. Under the configuration tab on the EMS software, Extreme Endeavors will program a section that allows the Department of Environmental Protection to input a driver's number/RFID tag configuration, billing address, phone number, name, and email address. The EMS system currently support passwords, but it will be reconfigured to allow one set of passwords configured with read/write access, and another to have read-only access.

Site Hosting

Extreme Endeavors will provide site hosting for the Department of Environmental Protection. The location of the hosting will be in Philippi West Virginia on a Windows-based server. Emergency generator and uninterrupted power supplies will be present to insure that the site remains operational.

Installation

Extreme Endeavors will stage all of the prebuild items at our office in Philippi. Two trucks will be loaded with enough equipment to perform installation at four different sites. A team of three, a network technician from Extreme Endeavors, the electrician from Let There Be Light, and a service technician will start on the installation route.

At each tank site, the mechanical mounting of all equipment will be performed first. Then conduit will be run and wires pulled through the conduit. Any needed connectors and connections will be established. Once the station is installed, the team will notify Extreme Endeavors, who will further test the system and insure it is operational based upon the data received from EMS. Extreme Endeavors will have a resupply system ready to provide additional parts and components should the installation team need it.

Closeout

The project closeout will consist of creating a final report which includes, but is not limited to, the documentation of the system, include wiring diagrams, description of how to use the system, a web interface user's manual, and maintenance suggestions. The Department of Environmental Protection will be provided with 6 copies of the final report.

After delivery of the final reports, Extreme Endeavors will provide a one-day training session for the Department of Environmental Protection. The class will be at a site of their choosing, and must have an Internet connection so that we can log into the system to provide explanations. At this training class, Extreme Endeavors will have a mockup of the INSCADA system for instructional purposes. Extreme Endeavors will also support a site visit on an additional day with the Department of Environmental Protection to demonstrate the equipment in the field.

Hosting and Data Collection Services

Extreme Endeavors will continue working to provide hosting and data connectivity. Currently Extreme Endeavors provides hosting of several applications. Our current EMS software is hosted here in Philippi along with software to provide help desk support. The DEP software solution will be included under the direct supervision of our software engineer, Travis Miller.

Biographical Information

Mike Masterman

Michael F. Masterman is the founder and president of Extreme Endeavors and Consulting, and developed the company with the objective of “engaging austerity through innovation.” He possesses a unique blend of expertise in the fields of engineering, product development, remote station management, scientific research, and emergency services training. He has worked for the National Radio Astronomy Observatory, the Center for Astrophysical Research in Antarctica, and Carnegie Mellon University, including two winters spent in Antarctica, and extensive experience as a firefighter and EMT. At Extreme Endeavors, Mr. Masterman leverages this varied experience in order to create solutions for technologically demanding problems. Recent projects include monitoring the physiology of firefighters via body-worn electronics, and pioneering work on receiver systems on radio telescopes such as those in Green Bank, WV.

Mr. Masterman has spent 28 months in Antarctica designing equipment, repairing various apparatuses, and supporting scientific research systems, including obtaining astrophysics data in the harshest region on the planet. Some of his designs are still in use at Carnegie Mellon University and the University of Chicago. He additionally served in the position of Winter Site Manager at South Pole, where he was responsible for managing forty other individuals and maintaining the most remote station in the world for the National Science Foundation. He was responsible for all emergency operations occurring at South Pole, including fires, medical responses, acid spills, and power outages.

Mike Masterman obtained a BS in electrical engineering and a minor in mathematics from Washington State University, where he specialized in electromagnetic theory and wave propagation. His recent publications include work for NASA and the NSF, and topics such as designing and constructing radio astronomy receiver systems, working under harsh environmental conditions during Antarctic winters, and evaluating Ni-Cad batteries for the Jet Propulsions Laboratory.

Travis Miller

Mr. Travis Miller is Extreme Endeavors’ Software Engineer and has worked on projects for NASA, the Army’s Battle Command Battle Lab, the Air Force Research Lab, Special Operations Command, and US Strategic Command, as well as many private projects utilizing a wide range of technologies such as web and database



systems, embedded circuits, communications, geographic information systems, and 3D visualization.

Mr. Miller, who is also an endurance runner, brings a great deal of diversity to Extreme Endeavors, where he recently pioneered ground-breaking approaches to using cloud fusion to support sensor data acquisition and visualization. He is currently in charge of a project providing IT support to medical facilities in a remote, autonomous system approach.

Mr. Miller obtained a BS in Computer Science (Summa Cum Laude) from West Virginia University. He also has extensive post-graduate education in software engineering, project management, and IT support. He has over 12 years of experience designing and developing software systems.

Stacey Freeman

Mr. Freeman has worked for Extreme Endeavors for a number of years, providing installation of Supervisory Control and Data Acquisition systems around West Virginia. In addition, Mr Freeman provides Information Technology support to several of Extreme Endeavors clients, including, but limited to the medical industry and large companies such as Xerox.

Prior to working at Extreme Endeavors, Mr. Freeman worked in the satellite communication industry, providing installation of ground communications systems on a variety of platforms. Mr. Freeman holds certifications in Machine shop use and provides CNC milling and lathe work as needed.

Mike Wiley

Mr. Wiley is a certified electrician and will be responsible for the field installation work. Mr. Wiley has spent years working with industrial wiring applications, from saw mills to SCADA systems, Mr Wiley has been an integral part of Extreme Endeavors team.

Insurance Information



CERTIFICATE OF LIABILITY INSURANCE

EXTRE-6

OP ID: SP

DATE (MM/DD/YYYY)

06/10/2014

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER United Security Agency 139 W. Main Street Bridgeport, WV 26330 Shannon (Armstrong) Cattafesta		Phone: 304-842-3314 Fax:	CONTACT NAME: SUZIE PITROLO PHONE (A/C, No, Ext): 304-333-2235 FAX (A/C, No): 304-363-5956 E-MAIL ADDRESS: spitrolo@unitedsecurityagency.com
INSURED EXTREME ENDEAVORS & CONSULTING LLC MIKE MASTERMAN 492 HICKORY CORNER ROAD PHILLIPI, WV 26416		INSURER(S) AFFORDING COVERAGE INSURER A: BRICKSTREET INSURANCE INSURER B: ROCKHILL INSURANCE COMPANY INSURER C: INSURER D: INSURER E: INSURER F:	
		NAIC # 12372	

COVERAGES**CERTIFICATE NUMBER:****REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATION MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
B	GENERAL LIABILITY <input type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input type="checkbox"/> OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC			ENVP00869200	03/11/2014	03/11/2015	EACH OCCURRENCE \$ 1,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 50,000 MED EXP (Any one person) \$ 5,000 PERSONAL & ADV INJURY \$ 1,000,000 GENERAL AGGREGATE \$ 2,000,000 PRODUCTS - COMP/OP AGG \$ 2,000,000
	AUTOMOBILE LIABILITY <input type="checkbox"/> ANY AUTO <input type="checkbox"/> ALL OWNED AUTOS <input type="checkbox"/> HIRED AUTOS <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> NON-OWNED AUTOS						COMBINED SINGLE LIMIT (Ea accident) \$ BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$
	<input type="checkbox"/> UMBRELLA LIAB <input type="checkbox"/> OCCUR <input type="checkbox"/> EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE <input type="checkbox"/> DED <input type="checkbox"/> RETENTION \$						EACH OCCURRENCE \$ AGGREGATE \$
A	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY <input type="checkbox"/> ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below		Y/N N/A	WCB1016579	03/17/2014	03/17/2015	<input checked="" type="checkbox"/> WC STATU-TORY LIMITS <input type="checkbox"/> OTH-ER E.L. EACH ACCIDENT \$ 1,000,000 E.L. DISEASE - EA EMPLOYEE \$ 1,000,000 E.L. DISEASE - POLICY LIMIT \$ 1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)

CERTIFICATE HOLDER**CANCELLATION**

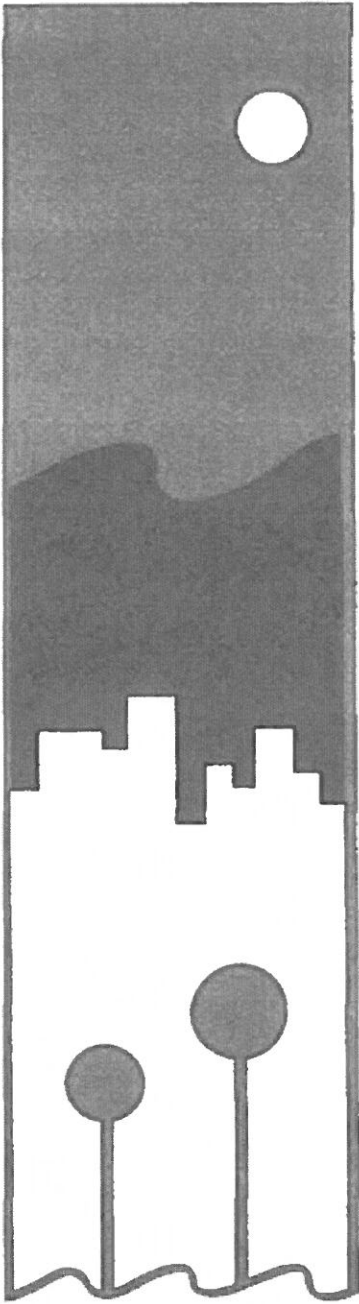
STATE OF WEST VIRGINIA
 DEPARTMENT OF ADMINISTRATION
 PURCHASING DEPARTMENT
 2019 WASHINGTON ST., EAST
 CHARLESTON, WV 25305-0130

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

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Licenses



**WEST VIRGINIA
CONTRACTOR
LICENSING
BOARD**

CONTRACTOR LICENSE

Authorized by the
West Virginia Contractor Licensing Board

Number: WV050966

Classification:
ELECTRICAL

LET THERE BE LIGHT LLC
DBA LET THERE BE LIGHT LLC
7 BEECH ST
BUCKHANNON, WV 26201

Date Issued

JUNE 04, 2014

Expiration Date

JUNE 04, 2015

Authorized Company Signature

Michael A. Carl

Chair, West Virginia Contractor
Licensing Board

This license, or a copy thereof, must be posted in a conspicuous place at every construction site where work is being performed. This license number must appear in all advertisements, on all bid submissions and on all fully executed and binding contracts. This license cannot be assigned or transferred by licensee. Issued under provisions of West Virginia Code, Chapter 21, Article 11.

CONTRACTOR LICENSE

Authorized by the

West Virginia Contractor Licensing Board

Number: WV050920

Classification:
COMMUNICATION & SOUND
LOW VOLTAGE SYSTEMS

EXTREME ENDEAVORS & CONSULTING
DBA EXTREME ENDEAVORS & CONSULTING
492 HICKORY CORNER ROAD
PHILIPPI, WV 26416

Date Issued

MAY 21, 2014

Expiration Date

MAY 21, 2015



**WEST VIRGINIA
CONTRACTOR
LICENSING
BOARD**

Authorized Company Signature

Michael A. Carl

Chair, West Virginia Contractor
Licensing Board

This license, or a copy thereof, must be posted in a conspicuous place at every construction site where work is being performed. This license number must appear in all advertisements, on all bid submissions and on all fully executed and binding contracts. This license cannot be assigned or transferred by licensee. Issued under provisions of West Virginia Code, Chapter 21, Article 11.

Vender Preference Certificate

VENDOR PREFERENCE CERTIFICATE

Certification and application* is hereby made for Preference in accordance with **West Virginia Code**, §5A-3-37. (Does not apply to construction contracts). **West Virginia Code**, §5A-3-37, provides an opportunity for qualifying vendors to request (at the time of bid) preference for their residency status. Such preference is an evaluation method only and will be applied only to the cost bid in accordance with the **West Virginia Code**. This certificate for application is to be used to request such preference. The Purchasing Division will make the determination of the Vendor Preference, if applicable.

- 1. **Application is made for 2.5% vendor preference for the reason checked:**
 Bidder is an individual resident vendor and has resided continuously in West Virginia for four (4) years immediately preceding the date of this certification; **or**,
 Bidder is a partnership, association or corporation resident vendor and has maintained its headquarters or principal place of business continuously in West Virginia for four (4) years immediately preceding the date of this certification; or 80% of the ownership interest of Bidder is held by another individual, partnership, association or corporation resident vendor who has maintained its headquarters or principal place of business continuously in West Virginia for four (4) years immediately preceding the date of this certification; **or**,
 Bidder is a nonresident vendor which has an affiliate or subsidiary which employs a minimum of one hundred state residents and which has maintained its headquarters or principal place of business within West Virginia continuously for the four (4) years immediately preceding the date of this certification; **or**,
- 2. **Application is made for 2.5% vendor preference for the reason checked:**
 Bidder is a resident vendor who certifies that, during the life of the contract, on average at least 75% of the employees working on the project being bid are residents of West Virginia who have resided in the state continuously for the two years immediately preceding submission of this bid; **or**,
- 3. **Application is made for 2.5% vendor preference for the reason checked:**
 Bidder is a nonresident vendor employing a minimum of one hundred state residents or is a nonresident vendor with an affiliate or subsidiary which maintains its headquarters or principal place of business within West Virginia employing a minimum of one hundred state residents who certifies that, during the life of the contract, on average at least 75% of the employees or Bidder's affiliate's or subsidiary's employees are residents of West Virginia who have resided in the state continuously for the two years immediately preceding submission of this bid; **or**,
- 4. **Application is made for 5% vendor preference for the reason checked:**
 Bidder meets either the requirement of both subdivisions (1) and (2) or subdivision (1) and (3) as stated above; **or**,
- 5. **Application is made for 3.5% vendor preference who is a veteran for the reason checked:**
 Bidder is an individual resident vendor who is a veteran of the United States armed forces, the reserves or the National Guard and has resided in West Virginia continuously for the four years immediately preceding the date on which the bid is submitted; **or**,
- 6. **Application is made for 3.5% vendor preference who is a veteran for the reason checked:**
 Bidder is a resident vendor who is a veteran of the United States armed forces, the reserves or the National Guard, if, for purposes of producing or distributing the commodities or completing the project which is the subject of the vendor's bid and continuously over the entire term of the project, on average at least seventy-five percent of the vendor's employees are residents of West Virginia who have resided in the state continuously for the two immediately preceding years.
- 7. **Application is made for preference as a non-resident small, women- and minority-owned business, in accordance with West Virginia Code §5A-3-59 and West Virginia Code of State Rules.**
 Bidder has been or expects to be approved prior to contract award by the Purchasing Division as a certified small, women- and minority-owned business.

Bidder understands if the Secretary of Revenue determines that a Bidder receiving preference has failed to continue to meet the requirements for such preference, the Secretary may order the Director of Purchasing to: (a) reject the bid; or (b) assess a penalty against such Bidder in an amount not to exceed 5% of the bid amount and that such penalty will be paid to the contracting agency or deducted from any unpaid balance on the contract or purchase order.

By submission of this certificate, Bidder agrees to disclose any reasonably requested information to the Purchasing Division and authorizes the Department of Revenue to disclose to the Director of Purchasing appropriate information verifying that Bidder has paid the required business taxes, provided that such information does not contain the amounts of taxes paid nor any other information deemed by the Tax Commissioner to be confidential.

Under penalty of law for false swearing (West Virginia Code, §61-5-3), Bidder hereby certifies that this certificate is true and accurate in all respects; and that if a contract is issued to Bidder and if anything contained within this certificate changes during the term of the contract, Bidder will notify the Purchasing Division in writing immediately.

Bidder: Extreme Endeavors

Signed: 

Date: 5/9/14

Title: President

Purchasing Affidavit

STATE OF WEST VIRGINIA
Purchasing Division

PURCHASING AFFIDAVIT

MANDATE: Under W. Va. Code §5A-3-10a, no contract or renewal of any contract may be awarded by the state or any of its political subdivisions to any vendor or prospective vendor when the vendor or prospective vendor or a related party to the vendor or prospective vendor is a debtor and: (1) the debt owed is an amount greater than one thousand dollars in the aggregate; or (2) the debtor is in employer default.

EXCEPTION: The prohibition listed above does not apply where a vendor has contested any tax administered pursuant to chapter eleven of the W. Va. Code, workers' compensation premium, permit fee or environmental fee or assessment and the matter has not become final or where the vendor has entered into a payment plan or agreement and the vendor is not in default of any of the provisions of such plan or agreement.

DEFINITIONS:

"Debt" means any assessment, premium, penalty, fine, tax or other amount of money owed to the state or any of its political subdivisions because of a judgment, fine, permit violation, license assessment, defaulted workers' compensation premium, penalty or other assessment presently delinquent or due and required to be paid to the state or any of its political subdivisions, including any interest or additional penalties accrued thereon.

"Employer default" means having an outstanding balance or liability to the old fund or to the uninsured employers' fund or being in policy default, as defined in W. Va. Code § 23-2c-2, failure to maintain mandatory workers' compensation coverage, or failure to fully meet its obligations as a workers' compensation self-insured employer. An employer is not in employer default if it has entered into a repayment agreement with the Insurance Commissioner and remains in compliance with the obligations under the repayment agreement.

"Related party" means a party, whether an individual, corporation, partnership, association, limited liability company or any other form or business association or other entity whatsoever, related to any vendor by blood, marriage, ownership or contract through which the party has a relationship of ownership or other interest with the vendor so that the party will actually or by effect receive or control a portion of the benefit, profit or other consideration from performance of a vendor contract with the party receiving an amount that meets or exceeds five percent of the total contract amount.

AFFIRMATION: By signing this form, the vendor's authorized signer affirms and acknowledges under penalty of law for false swearing (W. Va. Code §61-5-3) that neither vendor nor any related party owe a debt as defined above and that neither vendor nor any related party are in employer default as defined above, unless the debt or employer default is permitted under the exception above.

WITNESS THE FOLLOWING SIGNATURE:

Vendor's Name: Extreme Endeavors and Consulting

Authorized Signature: [Signature] Date: 5/9/14

State of WV

County of Booth, to-wit:

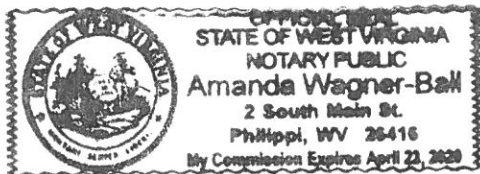
Taken, subscribed, and sworn to before me this 9 day of June, 2014

My Commission expires April 23, 2020

AFFIX SEAL HERE

NOTARY PUBLIC Amanda Wagner-Ball

Purchasing Affidavit (Revised 07/01/2012)



Acknowledgement of Receiving Solicitation

ADDENDUM ACKNOWLEDGEMENT FORM
SOLICITATION NO.: DEP16419

Instructions: Please acknowledge receipt of all addenda issued with this solicitation by completing this addendum acknowledgment form. Check the box next to each addendum received and sign below. Failure to acknowledge addenda may result in bid disqualification.

Acknowledgment: I hereby acknowledge receipt of the following addenda and have made the necessary revisions to my proposal, plans and/or specification, etc.

Addendum Numbers Received:

(Check the box next to each addendum received)

- | | |
|--|--|
| <input checked="" type="checkbox"/> Addendum No. 1 | <input type="checkbox"/> Addendum No. 6 |
| <input type="checkbox"/> Addendum No. 2 | <input type="checkbox"/> Addendum No. 7 |
| <input type="checkbox"/> Addendum No. 3 | <input type="checkbox"/> Addendum No. 8 |
| <input type="checkbox"/> Addendum No. 4 | <input type="checkbox"/> Addendum No. 9 |
| <input type="checkbox"/> Addendum No. 5 | <input type="checkbox"/> Addendum No. 10 |

I understand that failure to confirm the receipt of addenda may be cause for rejection of this bid. I further understand that any verbal representation made or assumed to be made during any oral discussion held between Vendor's representatives and any state personnel is not binding. Only the information issued in writing and added to the specifications by an official addendum is binding.

Extreme Endeavors

Company



Authorized Signature

5/9/14

Date

NOTE: This addendum acknowledgement should be submitted with the bid to expedite document processing.
 Revised 6/8/2012

Certification and Signature Page

CERTIFICATION AND SIGNATURE PAGE

By signing below, I certify that I have reviewed this Solicitation in its entirety; understand the requirements, terms and conditions, and other information contained herein; that I am submitting this bid or proposal for review and consideration; that I am authorized by the bidder to execute this bid or any documents related thereto on bidder's behalf; that I am authorized to bind the bidder in a contractual relationship; and that to the best of my knowledge, the bidder has properly registered with any State agency that may require registration.

Extreme Endeavors

(Company)



(Authorized Signature)

Mike Masterman/ President

(Representative Name, Title)

304-457-2500

(Phone Number)

(Fax Number)

5/9/14

(Date)