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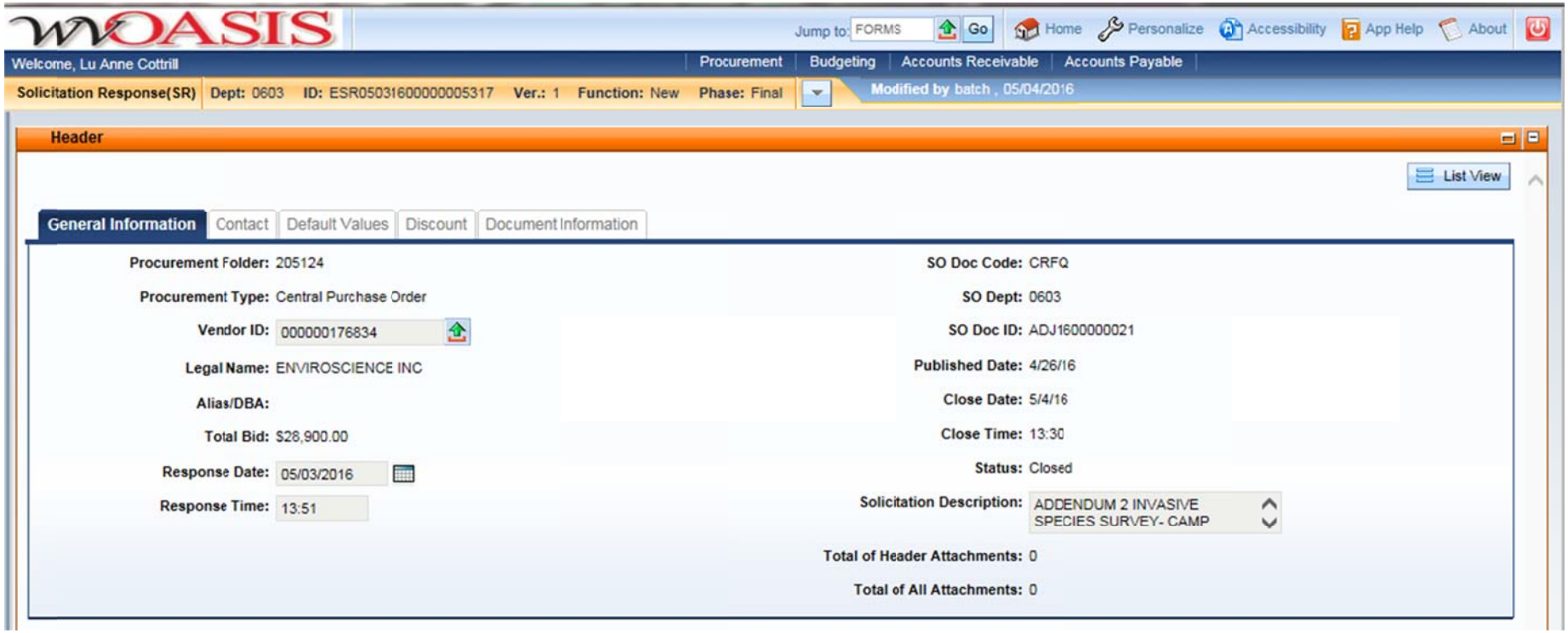
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Welcome, Lu Anne Cottrill
Procurement
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Solicitation Response(SR) Dept: 0603 ID: ESR05031600000005317 Ver.: 1 Function: New Phase: Final
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Header
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Procurement Folder: 205124
Procurement Type: Central Purchase Order
Vendor ID: 000000176834
Legal Name: ENVIROSCIENCE INC
Alias/DBA:
Total Bid: $26,900.00
Response Date: 05/03/2016
Response Time: 13:51
SO Doc Code: CRFQ
SO Dept: 0603
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Published Date: 4/26/16
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Close Time: 13:30
Status: Closed
Solicitation Description: ADDENDUM 2 INVASIVE SPECIES SURVEY- CAMP
Total of Header Attachments: 0
Total of All Attachments: 0

Purchasing Division
2019 Washington Street East
Post Office Box 50130
Charleston, WV 25305-0130

State of West Virginia
Solicitation Response

Proc Folder : 205124

Solicitation Description : ADDENDUM 2 INVASIVE SPECIES SURVEY- CAMP DAWSON

Proc Type : Central Purchase Order

Date issued	Solicitation Closes	Solicitation No	Version
	2016-05-04 13:30:00	SR 0603 ESR05031600000005317	1

VENDOR

000000176834

ENVIROSCIENCE INC

FOR INFORMATION CONTACT THE BUYER

Crystal Rink

(304) 558-2402
crystal.g.rink@wv.gov

Signature X **FEIN #** **DATE**

All offers subject to all terms and conditions contained in this solicitation

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
1	Invasive Species Survey-Camp Dawson				$28,900.00

Comm Code	Manufacturer	Specification	Model #
77111507			

Extended Description : Invasive Species Survey Inventory and Assessment, and Update of the Plant Community Mapping Data per the attached specifications.

Price Proposal for the Invasive Species Inventory & Assessment, Update of Plant Community Mapping Data on Camp Dawson Army Training Site in Kingwood, West Virginia

CRFQ 0603 ADJ1600000021

Prepared for:

West Virginia Army National Guard
Department of Administration,
Purchasing Division
2019 Washington Street East
Charleston, WV 25305-0130
Attn: Crystal Rink

Prepared by:

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Excellence In Any Environment

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FID: 34-1603505
DUNS No.: 55-682-3359

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1.0 INTRODUCTION

EnviroScience, Inc. (EnviroScience) is pleased to submit the following proposal to the West Virginia Army National Guard (WVARNG) to conduct an invasive species survey, a threatened and endangered plant survey, and provide Geographic Information Services (GIS) at Camp Dawson. This includes survey and assessment of the invasive species within 652 acres of the Volkstone and Cantonment area as well as survey services for previously documented extant, historical, and new occurrences of known federal and state listed plant species of special concern. A survey of approximately 275.8 acres of newly developed land is also included in the proposed services. Additionally, EnviroScience proposes to integrate the data collected into the existing vegetative communities database and to update all current and new vegetative community data, including existing and new invasive species survey data, to conform to the National Vegetation Classification System (NVCS) in accordance with the NGB Quality Assurance Plan. EnviroScience also proposes to produce a digital map of the plant communities at Camp Dawson and a digital map based on analysis of the invasive species survey and assessment.

The monitoring objectives include: 1) early detection of new plant invasions and 2) documentation of the abundance and distribution of established invasive, exotic plants. EnviroScience has provided costs in accordance with the performance requirements stated in the State of West Virginia Request for Quotation CRFQ 0603 ADJ1600000021 and Addendums 1 and 2 of that solicitation. Services will be provided between late May and August of 2016.

EnviroScience is uniquely qualified for the proposed project due to the technical expertise of our biologists and extensive project experience on similar projects. EnviroScience biologists assigned to this project have experience completing large-scale ecological projects in excess of 2,000 acres for government agencies, including comprehensive, multi-season ecological surveys for metroparks, state agencies, and private companies. Our biologists have developed their excellent botanical skills through graduate and undergraduate level college courses, and these skills are routinely refined through short course technical training, as well as by years of consulting experience conducting rare plant surveys, comprehensive botanical surveys, and wetland delineations.

Additionally, EnviroScience has experience working with the Ohio Army National Guard on their most recent update to the Camp Ravenna Integrated Resource Management Plan, as well as their Planning Level Survey Reports.

2.0 KEY STAFF

EnviroScience has assembled a team of expert biologists and ecologists to conduct the proposed services. The team has extensive past experience working on large scale ecological investigations throughout the United States as well as broad knowledge and experience with services identified in the Scope of Work for this proposal. We also have extensive experience working within West Virginia and have been working under various contracts with the WV Division of Highways for ecological surveys since 2001.

Table 1. List of Key Personnel on the EnviroScience Team

Key Personnel	Project Role	Qualifications
Nick Schell, Project Manager/Aquatic Biologist	Project Manager, Technical Lead, Report and Management Plan Compilation	Completed numerous large-scale wetland and stream delineations as well as several threatened and endangered species surveys.
Dr. Tim Walters, Senior Ecologist/Biologist	Lead Botanist, Technical Assistance	Numerous plant collections, surveys and identifications in approximately 40 of the 50 States, Canada and Brazil.
Mary Mahoney, GIS Analyst / Biologist	Lead GIS Analyst, Technical Assistance	Experienced in cartographic design and production, data acquisition, creation, manipulation and management, experience with large dataset and cartographic products.

Mr. Nick Schell will be the technical lead for the invasive species survey. Mr. Schell has diverse experiences and training that help make him a well-rounded aquatic biologist at EnviroScience. His professional experiences include fish surveys, stream and wetland delineations, stream and wetland restorations, aquatic surveys, flora and fauna rare threatened and endangered (RTE) species surveys, erosion and sediment control inspections, environmental compliance, and fulfilling SWPPP requirements. He specializes in fish management and research, including experience in laboratory work, electrofishing, tagging, ageing, gillnet surveys, preparation of fish and wildlife management plans, and completing stream and wetland quality assessments such as the Qualitative Habitat Evaluation Index (QHEI), Headwater Habitat Evaluation Index (HHEI), and the Ohio Rapid Habitat Assessment (ORAM). In addition to his formal scientific training and consulting experience, Mr. Schell is certified in applied fluvial geomorphology, is a Master Stormwater Practitioner and Certified Stormwater Best Managed Practices Reviewer, US EPA National Aquatic Resource Survey (NARS) approved auditor and trainer, Certified Ecologist, and a member of the American Fisheries Society (AFS) Ohio, Virginia, and West Virginia Chapters.

Dr. Tim Walters will be the technical lead for the federal and state listed plant species of special concern. Dr. Walters is a botanist, wetland ecologist, and project manager, whose responsibilities include conducting threatened and endangered plant surveys, terrestrial and aquatic plant community surveys, stream surveys, wetland delineation studies, faunal surveys, permitting (404, 401, Isolated, MDEQ), mitigation planning in Ohio and Michigan, and mitigation design and monitoring. He has been trained for Federal endangered species consultation by the USFWS and wetland and stream assessments (VIBI, FQAI, AMPHIBI, QHEI) by the Ohio EPA. For the past twenty years, Dr. Walters has been considered one of the most respected botanists in the state working on many botanical surveys. In this period of time, he has performed wetland delineation studies, functional assessments, rare plant surveys and community ecology assessments in some of the most rare and diverse areas of Ohio, Michigan and Indiana. Dr. Walters has conducted plant collections, surveys and identifications in approximately 40 of the 50 States, Canada and Brazil. Through his individual research, he has also completed several fully vouchered floral and community surveys of natural areas and provided management recommendations for several park districts and conservation agencies. This has included the collection and submission of over 12,000 plant specimens for permanent curation to several university and museum herbaria. Dr. Walters has also taught sedge and grass classes for the past seven years in June and August. These have been well attended by members of the US

Corps of Engineers, Ohio EPA, NRCS, USDA and county parks and agencies.

Ms. Mary Mahoney currently works as a GIS Analyst, using ESRI's ArcGIS software suite. She is well practiced in spatial data analysis and management, data conversion between CAD and GIS environments, and cartographic production. Mary has experience in mapping threatened and endangered species/habitat and Storm Water Pollution Prevention Plans (SWPPP) for installation, repair, and replacement of natural gas pipeline and well locations. Primary duties for Mary include GIS data creation, management, and manipulation, and creation of numerous cartographic products. This work results in reports, maps, and data used to coordinate with state and federal agencies and minimize ecological impacts while work is underway. Mary has also created numerous cartographic products for large acreage projects and assignments with immense amounts of data. She has experience with report creation, United States Army Corps of Engineers (USACE) permit form preparation including preconstruction notification submittal documents, and various local, state, and federal coordination documents including SWPPPs, United States Fish and Wildlife (USFWS) tree clearing coordination, and Ohio Division of Wildlife (DOW) submittal documents. Mary has also served as staff field biologist to assess potential bat habitat at small sites as well as large, extended portions of pipeline. She is experienced in assisting with wetland delineations and has also assisted with mussel surveys, tree and vegetation plantings, water sampling efforts, restoration projects, and fish studies.

3.0 DETAILED SCOPE OF WORK

EnviroScience proposes to perform an invasive species survey, a rare and threatened botanical survey, and GIS services for an update of onsite vegetative communities. Services will be completed from May of 2016 to November of 2016 in accordance with the performance requirements stated in the State of West Virginia Request for Quotation CRFQ 0603 ADJ1600000021 and Addendums 1 and 2 of that solicitation.

3.1 Coordination Efforts

3.1.1 Kick-off Meeting and Weekly Updates

Within fifteen (15) days of contract award, the EnviroScience project manager will meet with the Camp Dawson Environmental personnel to coordinate the field schedule and develop an outline for the effort work plan. The meeting will be scheduled by Camp Dawson personnel and will occur prior to fieldwork initiation. WVARNG Camp Dawson is expected to provide data from the Integrated Natural Resources Management Plan (INRMP), GIS data and any other Resource Management Plans, Faunal Survey Reports, Vegetative Survey Reports, and other relevant project information.

3.1.2 Study Plan

Following the kick-off meeting with Camp Dawson Environmental personnel, EnviroScience will develop a summer survey work plan for the project. The work plan will include survey methodologies, data handling procedures, how results will be handled and reported, a breakdown of costs, a project schedule, and the credentials of staff performing all efforts.

3.2 Field Survey Efforts

3.2.1 Invasive Species Survey

Nick Schell of EnviroScience will lead the field survey as the lead biologist. Included in this task will be a survey of approximately 652 acres in the Cantonment and Volkstone Tracts of the facility. The assessment and survey will be based on the United States Fish and Wildlife Service's (USFWS) standards for monitoring procedures for National Wildlife Refuges. Physical copies of datasheets will be prepared and this data will also incorporated into GPS data. Using this method, collected data will be ready for immediate integration into Camp Dawson's existing GIS database.

The slight increase in effort required to prepare the data forms by hand and post-process the data will be offset by increased efficiency in the field, increased data integrity, and a ready-to-use electronic deliverable. We are confident that this method of data collection will provide WVARNG with the highest levels of accuracy and efficiency. EnviroScience's GIS Analyst will create transect line shapefiles and include fields to hold invasive species and percent-cover attribute data for each transect. These modified transect lines will be loaded into a Trimble GeoXT field GPS unit with sub-meter accuracy, along with WVARNG Camp Dawson boundaries (provided by WVARNG).

It is understood that obstacles may impede field work in some areas. Although EnviroScience biologists will make every effort to include all areas, areas that cannot be reached due to extreme slope (e.g., cliff faces), areas with lack of legal ingress or egress, or areas with water depths or muck exceeding 2.5 feet in depth will be excluded. Thick vegetation may be circumvented on a limited basis in dense areas or in areas with poisonous plants (e.g., poison ivy). Difficulty penetrating vegetation will not constitute a legitimate reason for not performing field work.

3.2.2 Threatened and Endangered Plant Survey

Dr. Tim Walters of EnviroScience will lead the field survey efforts at the Camp Dawson Training Site for plant identification and threatened and endangered plant survey services. Surveys will be conducted from May 15th to August 15th. Historical locations for previously identified state-listed plants will be observed. Additionally, surveying for state-listed species will occur during the initial invasive plant assessment. GPS data and digital photographs will be recorded at any location where state-listed species are found.

3.2.3 Vegetative Community Data Update

Mary Mahoney of EnviroScience will lead the GIS efforts for this portion of the project. Nick Schell of EnviroScience will lead the field survey efforts for 275.8 acres at the Camp Dawson Training Site. Field surveys will be used to ground-truth GIS data. The data will be derived through the use of aerial imagery. GPS data will be recorded at locations to confirm correct vegetation classification. All data from the invasive species survey will also be integrated into existing WVARNG plant community mapping data.

3.2.4 Field Survey Reporting

EnviroScience will compose a draft report detailing the findings of the field survey efforts. The report will detail the methods used to perform the survey; the survey locations, conditions, and timing of each sampling event; the results of all survey efforts including detailed vegetation data; mapping of the sampling sites created in GIS; and a discussion of the survey findings. EnviroScience will submit two (2) hard copies and one (1) electronic copy of the draft Invasive Species Inventory and Assessment (dISIA) and a draft Update of Plant Community Mapping Data (dUPCMD) to WVARNG Environmental personnel for review. Upon receiving written comments on the dISIA, EnviroScience will prepare a final Invasive Species Inventory and Assessment

(fISIA) and submit two (2) hard copies bound in a three ring binders and one (1) electronic copy to WVARNG personnel, including the final Update of Plant Community Mapping Data (fUPCMD).

3.3 Project Timeline

Table 2. Project Deliverable and Payment Schedule

Deliverables	Date	Payment Schedule
Project Start Date	May/June 2016	
Weekly Progress Reports	Weekly for Project Duration	
Completion of Surveys	By August 15, 2016	
Completion of Draft Survey Report	By September 15, 2016	50% of Funds
Completion of Project	By November 15, 2016	50% of Funds

4.0 QUALIFICATIONS AND EXPERIENCE

4.1 Overall Company Description

EnviroScience, Inc. (EnviroScience) was established in 1989 to provide technical services in the environmental field. EnviroScience's reputation for Excellence in Any Environment has been built one project at a time by the use of technically sound and proven scientific protocols, understanding of current regulatory climates, accurate and detailed reports, and commitment to superior client service while remaining cost conscious. These strengths have made EnviroScience one of the fastest-growing companies in the region and led to its ranking as one of the Top 10 Workplaces in Northeast Ohio.

EnviroScience's depth of staff and company focus are two key areas that set us apart from the competition. The staff brings a broad range of scientific, construction and project management expertise to the table. EnviroScience is a small business employing over 80 permanent employees, including 55 scientists with PhD, MS, and other highly advanced degrees and certifications. EnviroScience also features a Marine Services Group, which employs a staff of fulltime ADCI commercial divers including three certified supervisors. Together, EnviroScience employees create a network of highly specialized and skilled experts; each bringing a unique interpretation and perspective to problem solving.

EnviroScience's technical expertise and company size is ideal to address almost any problem within our skill set, while allowing the agility and flexibility to meet the changing demands of projects. The EnviroScience team is well-versed in the most current regulatory demands and latest technologies. These breakthroughs are incorporated into every project, enabling EnviroScience to exceed the client's expectations while adhering to a fixed budget and meeting aggressive schedules.

A true test of performance is client satisfaction. Our dedication and technical excellence has resulted in many repeat clients and established EnviroScience as the premier service provider in this highly specialized and competitive field.

4.2 Demonstration of Past Experience

EnviroScience has been performing surveys for vegetative assessments for over 20 years.

EnviroScience vegetation projects have included vegetation classification surveys, invasive species surveys, threatened and endangered plant surveys, wetland delineations, wetland mitigation and restoration, Section 404 permits, Section 401 Water Quality Certifications, Isolated Wetland Permits, and all forms of project coordination with federal, state, and local compliance and regulatory agencies. EnviroScience surveys have ranged in size and scope depending on the project needs and have included extensive efforts for military facilities, utility corridors, large mining sites, the railroad industry, and private development. Our staff uses the most up to date equipment and agency protocols, and all survey efforts are documented with reporting including mapping, site and species data, photographs, and fully completed field data forms.

EnviroScience also leverages the power of Geographic Information Systems (GIS) to analyze, manage, and display environmental data. GIS is utilized in nearly 90% of ES projects, spanning all disciplines within the company. Our GIS analysts are capable of displaying data from many different sources and in many different formats, including local, state, and federal datasets, aerial and satellite imagery, digital elevation models (DEMs), CAD drawings, Google Earth KMZ files, and field collected GPS data. We are committed to staying current with the latest desktop and mobile GIS technology.

EnviroScience has significant experience with large multidisciplinary projects for government and private industry. A summary of our experience is contained below in Table 3, and several highlight project summaries are included in Appendix I of this proposal.

Table 3. Project Experience Matrix (Abbreviated).				
SELECTED PROJECTS WITH SIMILAR ELEMENTS	**Large Site**	**Vegetation Survey**	**Threatened & Endangered Plant Survey**	**GIS**
Camp Ravenna Joint Military Training Center	●	●		●
Camp Ravenna 3000+ acre Wetland Delineation	●	●		●
Willow Creek Sub-Basin Restoration and Preservation Project	●			●
Eastern Tributaries Areas Of Concern (AOC) Wetland And Riparian Inventory And Restoration Plans - Ohio EPA	●	●		●
Tinkers Creek Watershed Comprehensive Wetland Assessment	●			●
NASA Plum Brook Station and Lewis Field Delineation	●	●		●
Midwest Nuclear Station Ecological Survey – Piketon, Ohio	●	●		●
Wetland & Stream Delineation, Permitting, And Other Ecological Services For Pipeline Installation - Western Access II	●	●		●
Ravenna Training and Logistics Site Wetland Delineation and Restoration		●		●
Portage Bike and Hike Trail: Middlebury Road to Stow Road		●	●	●
Ecological Survey of Pond Brook in Liberty Park	●	●		
First Energy Corporation Wetland Delineation and Restoration	●	●		●
Survey Of Wetland Vegetation In Cuyahoga Valley National Park		●		
Eastern Prairie Fringed Orchid Habitat and Presence Possibility Survey			●	
Wetland Delineation, VIBI, Stream Survey and Threatened and Endangered Species Survey, Gavin Plant, Gallia County, Ohio	●	●	●	●
Toledo Express Airport, Lucas County, Ohio		●	●	●

APPENDIX I
Resumes and Exemplary Project Summaries

MARY MAHONEY
GIS Analyst / Biologist

EDUCATION

University of Mount Union, BS Environmental Science, 2013, Summa cum Laude

PROFESSIONAL SUMMARY

Mary has been with EnviroScience for 1 year and currently works as a GIS Analyst, using ESRI's ArcGIS software suite. She is well practiced in spatial data analysis and management, data conversion between CAD and GIS environments, and cartographic production. Mary also serves as staff biologist for wetlands work. She is experienced in assisting with wetland delineations and has also assisted with mussel surveys, tree and vegetation plantings, water sampling efforts, and restoration projects.

PROFESSIONAL EXPERIENCE

GIS Analyst / Biologist, Ecological Division, EnviroScience, Inc., Stow, Ohio, 2013 – Present

- GIS Analyst and Cartographer for pipeline delineation projects
- Experienced in cartographic design and production; data conversion between CAD and GIS environments; data acquisition, creation, manipulation and management; DEM analysis and contour generation; coordinate system and datum transformations
- Staff biologist assisting with wetland delineations, mussel and aquatic habitat surveys field data collection, report writing, and agency coordination; proficient with Trimble GeoXT

Reasearcher, Miami University, Oxford, Ohio, 2012

- Studied the relationship between surface and groundwater around Oxford, Ohio in order to better manage surface water and to determine the best water treatment technique for the City of Oxford
- Discovered patterns in water use that established grounds for further research into better management practices for the City of Oxford's drinking water wells
- Published and presented findings during a research symposium attended by the community

PROJECT EXPERIENCE (abbreviated)

Dominion East Ohio Gas – Various Locations throughout Ohio, 2013 – Present
GIS Analyst and Cartographer for wetlands delineations. Includes mapping threatened and endangered species/habitat and Storm water Pollution Prevention Plans for installation, repair, and replacement of natural gas pipeline and well locations. Primary duties included GIS data creation, management, and manipulation, and creation of numerous cartographic products. This work results in reports, maps and data used to coordinate with state and federal agencies and minimize ecological impacts while work is underway. Additional responsibilities include report creation, United States Army Corps of Engineers (USACE) permit form preparation including preconstruction notification submittal documents, and various local, state, and federal coordination documents including Stormwater Pollution Prevention Plans (SWPPPs), United States Fish and Wildlife tree clearing coordination, and Ohio Division of Wildlife submittal documents. Also served as staff field biologist to assess potential bat habitat at small sites as well as large, extended portions of pipeline.

CSXT – Emergency Response, Various Locations, 2013 – Present
GIS Analyst and Cartographer for emergency response, monitoring, and restoration activities. Primary duties include expedited desktop assessment of natural resources, logistics support, GIS data management, manipulation, and creation of numerous cartographic products including projects that required daily updates. Also provided staff biologist support for water sampling efforts and restoration projects.

First Energy Corporation – Perry Nuclear Power Plant Delineation, Perry, Ohio, 2014
GIS Analyst / Cartographer and Staff Biologist endangered species' habitat identification and wetland delineation for an approximately 125 acre site. Responsibilities included collection of GPS data and documenting potential endangered bat habitat, as well as GIS data management, manipulation, and creation of cartographic products.

Hands and Associates - Ashtabula, Ohio, 2013
GIS Analyst / Cartographer for an approximately 75 acre site. Primary duties included GIS data creation, management, and manipulation, and creation of numerous cartographic products for wetland delineation.

ConRail Emergency Response Plans, Various Locations, 2014
Principal GIS Analyst/Cartographer for several plans that involve large-scale mapping for ecologically sensitive areas.

Carmeuse Sand and Gravel, Erie, Pennsylvania, 2013-2015
GIS Analyst / Cartographer for 2013 and 2014 dredging locations, required organization and analysis for over 20,000 excel data points.

Ohio Department of Transportation, Pennsylvania Department of Transportation, and West Virginia Division of Highways, Various Locations, 2013-Present
GIS Analyst and Cartographer for several mussel surveys in streams across Ohio, Pennsylvania, and West Virginia. Also provided staff biologist support in the field for mussel assessment and relocation efforts.

PUBLICATIONS

Determining Effectiveness of Fresh and Spent Alum to Decrease Internal Loading of Phosphate in a Reservoir in Stark County, OH (2013)
Presentation, Ohio Academy of Science, 123rd Annual Meeting
Abstract published in conference booklet

PROFESSIONAL AFFLIATIONS, CERTIFICATIONS, and TRAINING

FRA Certification
E-Rail Safe Certification
Red Cross CPR/First Aid

NICK SCHELL
Environmental Scientist

EDUCATION

M.S. Environmental Policy and Planning, Ohio University 2010
B.S. Environmental Management (minor in Environmental Studies), Ohio University 2008
Associate of Science in Fish and Wildlife Science, Hocking College 2005

PROFESSIONAL SUMMARY

Mr. Schell has diverse experiences and training that help make him a well-rounded aquatic biologist at EnviroScience. His professional experiences include fish surveys, stream and wetland delineations, stream and wetland restorations, aquatic surveys, bat habitat surveys, erosion and sediment control inspections, environmental compliance, and fulfilling SWPPP requirements. He specializes in fish management and research, including experience in laboratory work, creel surveys, electrofishing, tagging, ageing, gillnet surveys, preparation of fish and wildlife management plans, and completing stream and wetland quality assessments such as the Qualitative Habitat Evaluation Index (QHEI), Headwater Habitat Evaluation Index (HHEI), and the Ohio Rapid Habitat Assessment (ORAM). In addition to his formal scientific training and consulting experience, Mr. Schell is certified in applied fluvial geomorphology, is a Master Stormwater Practitioner and Certified Stormwater Best Managed Practices Reviewer, US EPA National Aquatic Resource Survey (NARS) approved auditor, and a member of the American Fisheries Society (AFS) Ohio Chapter.

PROFESSIONAL EXPERIENCE

EnviroScience, Inc. - Stow, OH. Environmental Scientist (2014-present)

- Fisheries biologist conducting electrofishing, gill net, and other types of fishery surveys
- Wetland and upland restoration
- Wetland delineations and functional assessments
- US EPA National Aquatic Resource Survey (NARS) approved auditor

Kleinfelder, Inc. – Canton, OH. Lead Environmental Biologist (2012–2014)

- Areas of concentration in environmental biology and ecology
- Conducted environmental investigations for both state and federal stream and wetlands permitting.
- Asisistant project manager for Antero Resoures enviromental servces contract.
- Active in pre-site walks and in the pipeline route development process
- Developed feasible routes for linear projects by identifying possible aquatic environmental hazards and areas of high ecological sensitivity.

West Virginia Department of Environmental Protection (WVDEP) – Romney, WV. , Compliance Assistance Specialist ERS II in the Chesapeake Bay Program (2011–2012)

- Provided technical and compliance assistance for stormwater & MS4 permit holders in the Potomac River Basin. Responsibilities included planning and monitoring construction best management practices (BMPs) and watershed assessments, researching and planning and permitting of stormwater and low impact development (LID) practices.
- Developed and contributed to office safety plans, mitigation plans, SWPPP, grant reviews, scope of work proposals, and Chesapeake Bay Watershed Implementation Plan (WIP).
- Successfully designed and developed a BMP tracking & functionality system adopted by the state of West Virginia.

Cardno JFNew – Cincinati, OH. Ecological Resource Specialist (2010–2011)

- Responsible for implementing restoration project work; native planting, seeding, floodplain management, wetland mitigation, herbicide application, heavy equipment operation, GPS mapping, and water percolation testing.

Ohio Division of Mineral Resources Management & Division of Wildlife – Athens, OH. Graduate Research Intern (2008–2010)

- Responsible for site reconnaissance, collecting stream parameter data (YSI), acid mine drainage sampling, electrofishing, gillnetting, fish community assemblages in relation to acid mine runoff, and alternative aluminum sampling research.

Hocking College – Nelsonville, OH. School of Natural Resources Adjunct Instructor, Ichthyology (March – June 2009)

- Responsible for teaching multiple classes on proper identification methods, habitat needs and life history of Ohio fishes. This included field and lab components, developing lesson plans and use of electrofishing equipment.

Buckeye Wildlife Institute – Athens, OH. Field Manager/Wildlife Management Consultant (2008–2009)

- Designed and implemented wildlife management plans, site assessments, and ecological restoration
- Completed scopes of work, cost estimates, and maintained client relationships, including Cabela's Trophy Properties Ohio.

Ohio EPA, Division of Surface Water – Logan, OH. Data Collection/Field Staff (College Intern) (May – September 2007)

- Conducted fish, water, and soil chemistry sampling in a 23-county area
- Also assisted in wetland determinations, permitting, USEPA national lakes survey, qualitative habitat evaluation index (QHEI) methods, ambient water sampling. OSU fisheries studies program sampling and TMDL studies on Ohio and Scioto Brush Creeks.

ODNR, Division of Wildlife (Fisheries Section) – Athens, OH. Conservation Worker (2004 – 2007)

- Assisted with fish management & research activities in a 19-county area including lab technician, creel, electrofishing, Ohio River percid project, elastomer tagging and gillnet surveys.

PROFESSIONAL CERTIFICATIONS

- CSX Roadway Worker Protection, April 2014
- MSAH Mine Safety, April 2014
- Applied Fluvial Geomorphology - Rosgen, June 2013
- State of Ohio Qualitative Habitat Evaluation Index (QHEI), November 2012
- State of Ohio. Ohio Rapid Habitat Assessment (ORAM), May 2012
- Master Stormwater Practitioner, July 2011
- NCS University & NCDENR. Certified Stormwater BMP Reviewer, May 2011
- Thomas Biebhauser & State of WV. Wetland Restoration, March 2011

PROJECT EXPERIENCE

Ohio River Percid Survey (2006 – 2007)
Mr. Schell performed large scale fisheries tagging study of sauger (*Sander canadensis*), walleye (*Sander vitreus*), & saugeye (*Sander vitreus x Sander canadensis*) by means of lock & dam tail-waters electrofishing and hoop netting surveys. The goal of the study was to determine growth rates in relation to forage base & angler catch rates.

National Lakes Survey (OEPA) (May - September 2007)
Mr. Schell collected data for the USEPA National inventory of various Ohio reservoirs, including water chemistry, substrate, turbidity, etc.

Ohio State University Smallmouth Bass Study/ TMDL of Ohio & Scioto Brush Creeks (May-September 2007)
Mr. Schell conducted fish, macroinvertebrate and habitat studies focused on smallmouth bass (Micropterus dolomieu) recruitment. The study was conducted using seines and electrofishing equipment. Habitat assessments included QHEI and HHEI, and biological assessment methods included IBI and ICI.

WVDNR Largemouth Bass Recapture Study (2011- 2012)
Mr. Schell conducted electrofishing and mark/recapture surveys of largemouth bass (Micropterus salmoides) on the South Branch of Potomac River

USEPA American Eel Survey (2011 – 2012)
Mr. Schell collected American eels (Anguilla rostrata) using boat electrofishing on the Potomac River to help the USEPA determine whether the species should be relisted as an endangered species.

Chesapeake Bay (BMP) Inventory Project (2011 - 2012)
Mr. Schell successfully designed and developed a Best Management System (BMP) tracking & functionality system that was adopted by the state of West Virginia. Mr. Schell worked in conjunction with Tetra Tech & the Chesapeake Bay Foundation to design and implement a statewide BMP tracking and evaluation system to allow for specific Bay requirements to be accomplished.

Utica East Ohio Midstream (UEOM) Kensington Facility (2012 – 2013)
Mr. Schell performed site walks with UEOM representatives as part of the route development process. This included completion of ASTM Phase 1 due diligence services, stream & wetland jurisdictional delineations for pipeline and facility, bat surveys, and permit packages.

Publications

N. Kruse, N. Schell, B. McCament, A. Mackey, Journal of Freshwater Ecology, In Review. The potential for reintroduction of native muskellunge to the lower reaches of Raccoon Creek, Ohio. Northeastern Naturalist.

TIMOTHY L. WALTERS, Ph.D.
Senior Ecologist / Botanist

EDUCATION

B.A., Biology, 1989, Environmental Science, Hiram College, Hiram, OH
M.S., Biology, 1993, (emphasis on Botany & Vertebrate Biology) John Carroll University, University Heights, OH
Ph.D., 2004, Biology-Botany, University of Toledo, Toledo, OH

PROFESSIONAL SUMMARY

Dr. Walters is a botanist, wetland ecologist, and project manager, whose responsibilities include conducting threatened and endangered plant surveys, terrestrial and aquatic plant community surveys, stream surveys, wetland delineation studies, faunal surveys, permitting (404, 401, Isolated, MDEQ), mitigation planning in Ohio and Michigan, design and monitoring. He has been trained for Federal endangered species consultation by the USFWS and wetland and stream assessments (VIBI, FQAI, AMPHIBI, QHEI) by the Ohio EPA.

For the past twenty years, Dr. Walters has been considered one of the most respected botanists in the state working on many botanical surveys. In this period of time, he has performed wetland delineation studies, functional assessments, rare plant surveys and community ecology assessments in some of the most rare and diverse areas of Ohio, Michigan and Indiana. Dr. Walters has conducted plant collections, surveys and identifications in approximately 40 of the 50 States, Canada and Brazil.

Through his individual research, he has also completed several fully vouchered floral and community surveys of natural areas and provided management recommendations for several park districts and conservation agencies. This has included the collection and submission of over 12,000 plant specimens for permanent curation to several university and museum herbaria. Dr. Walters has also taught sedge and grass classes for the past seven years in June and August. These have been well attended by members of the US Corps of Engineers, Ohio EPA, NRCS, USDA and county parks and agencies.

PROFESSIONAL EXPERIENCE

- EnviroScience, Inc. July 2011 – Present
- The Mannik & Smith Group, Inc. 1999-2011
- Independent Environmental Consultant / Botanist 1993-1999
- University of Toledo – Teaching Assistant 1993-1996
- John Carroll University – Graduate Teaching Assistant 1989-1993

PROFESSIONAL CONFERENCES AND CONTINUING EDUCATION

- 2012 EcoSummit – 4th International EcoSummit on Ecological Sustainabiltiy, Columbus, Ohio
- 2012 Ohio Stormwater Conference, Toledo, Ohio
- 2012 Botanical Society of America Conference, Columbus, Ohio
- 2010 Stream and Riparian Areas Restoration- 3-day workshop taught by David Derrick US Corps of Engineers, Buffalo, New York.
- 2009 Restoration of Streams and Riparian Areas for Ecological Function 3-day workshop taught by. David Derrick and Dr. Richard Fischer, US Corps of Engineers sponsored by Partners for Clean Streams.
- 2008 Training workshop on the Rapanos decision and the Midwest Supplement of the Wetland Delineation Manual - US Corps of Engineers in November 2008
- 2008 Quality Habitat Evaluation Index (QHEI) training - Ohio Environmental Protection Agency, Columbus, Ohio on October 2, 2008
- 2006 Planning Hydrology in Constructed Wetlands, Wetland Training Institute, Hickory Corners, MI
- 2005 Waterway Permits Training -- Ohio Department of Transportation
- 2005 Ecological Training -- Ohio Department of Transportation
- 2005 Wetland Biocriteria Training; including Vegetation Indices of Biotic Integrity (VIBI) and Amphibian Biotic Index (AMPHIBI), Ohio Environmental Protection Agency, Columbus, Ohio
- 2005 Endangered Species Consultation in Ohio - United States Fish and Wildlife Service, Reynoldsburg, Ohio
- 2004 Constructed Wetlands Workshop (presenter), Lake Erie Center, University of Toledo, Ohio
- 2004 Sedge Workshop - Hocking County, Ohio Dr. Anton A. Reznicek, instructor
- 2001 Ohio Rapid Assessment Method (ORAM) training version 5, Ohio Environmental Protection Agency, Columbus, Ohio

PROJECT EXPERIENCE (abbreviated)

Plum Brook Station Wetland Delineation, Sandusky, Ohio
Ecologist assisted in the wetland and stream delineation of the 6,431-acre NASA Plum Brook Station in Sandusky, Ohio. Plum Brook Station contained 1,050 wetlands totaling over 400 acres, 373 waterways totaling over 300,000 linear feet, and 15 ponds totaling approximately 15 acres. All site data were compiled using ArcGIS and provided to the client to help inform NASA during its decision making process for future use of the sites. The GIS data were also provided in kml format so that any NASA user could view the resources using Google Earth. Lead botanist in locating and identifying several new locations for rare, threatened, and endangered plants were found at Plum Brook Station during the fieldwork. The information collected is being used by NASA as part of their siting process for a proposed wind farm at Plum Brook Station.

Eastern Maumee AOC Wetland & Riparian Inventory & Restoration Plans Eastern Tributaries Habitat Inventory, Lucas, Ottawa, Wood and Sandusky Counties, Ohio
Lead ecologist in developing 35 restoration plans for use and potential mitigation projects or granting possibilities. These were developed for Partners for Clean Streams through the Ohio EPA. Field evaluations were led at 50 sites that included wetland delineation, ORAM and FQAI evaluations, and fish and macroinvertebrate (IBI and MIWB) sampling. Assisted in the development of 35 unique community restoration plans to be used in the individual restoration site plans.

Wetland Delineation, VIBI, Stream Survey and Threatened and Endangered Species Survey Gavin Plant, Gallia County, Ohio
Lead Ecologist responsible for delineating wetlands and mapping and evaluating streams at AEP's Gavin Generation Facility. Over 40 wetlands and 20 streams were evaluated and mapped over the 450 acre site. Each wetland boundary was flagged and mapped using GPS technology. A threatened and endangered species survey was also performed in conjunction with the wetland survey. Species were mapped used in the evaluation of the assessment. Conducted 7 VIBI's to contest the ORAM categorization of the wetlands.

Wetland & Riparian Inventory & Restoration Plans for Swan Creek and Ottawa River, Lucas County, Ohio
Lead ecologist in developing 35 restoration plans for use and potential mitigation projects or granting possibilities. These were developed for Partners for Clean Streams through the Ohio EPA. Field evaluations were led at 37 sites that included wetland delineation, ORAM and FQAI evaluations, and fish and macroinvertebrate (IBI and MIWB) sampling. Assisted in the development of six unique community restoration plans to be used in the individual restoration site plans.

Wetland Delineation, Stream Survey and Threatened and Endangered Species Survey Mitchell Plant, Moundsville, West Virginia
Lead Ecologist responsible for delineating wetlands and mapping and evaluating streams at AEP's Mitchell Plant. Each wetland boundary was flagged and mapped using GPS technology. A threatened and endangered species survey was also performed in conjunction with the wetland survey.

U.S. 24 Corridor Studies: New Haven Indiana to Defiance, Ohio and Napoleon to Maumee, Ohio (PID #18904 and PID# 17893)
Assisted in evaluating 130 woodlots in the counties of Paulding, Defiance, Henry and Lucas County, Ohio and Allen County, Indiana for floral and faunal species composition, size, function, disturbance, and community structure. I was the lead in conducting wetland determinations and ORAM's (v. 5.0) for all wetlands and wetland delineations for all impacted wetlands. Assisted in the wetland permitting and mitigation process including writing and revising the wetland application and drawings for the 404/401 and isolated permits; identifying, and evaluating the mitigation sites and the development of the chosen mitigation site (including preparation of hydrographs, planting and grading plans).

U.S. 33 Bypass, Nelsonville, Ohio (PID# 14040), Hocking and Athens County, Ohio
Assisted in the characterization (via HHEI or QHEI) of approximately 80 streams along a 13-mile corridor through the Wayne National Forest as part of the Nelsonville Bypass Project, while assisting in further conducting macroinvertebrate and salamander surveys on these streams when appropriate. Lead in the identifying, and evaluating the mitigation sites and the planning of the chosen mitigation site (including preparation of hydrographs, planting and grading plans).

Wetland Delineation within the Duck and Otter Creek Watersheds, Lucas County, Ohio
Ecologist responsible in assisting the delineation and assessment of wetlands within the Duck and Otter Creek Watersheds in a multi-firm cooperative charged with designing potential wetland restoration and enhancement sites. Each wetland boundary was flagged and mapped using GPS technology. Ten sites were assessed for potential restoration and /or enhancement.

Wetland Delineation and Assessment at the Ottawa National Wildlife Refuge, Ottawa County, Ohio

Lead Ecologist responsible for delineating wetlands at the environmentally sensitive Ottawa Wildlife Refuge, Ottawa County, Ohio. Each wetland boundary was flagged and mapped using GPS technology. A threatened and endangered species survey was also performed in conjunction with the wetland survey.

Toledo Express Airport, Lucas County, Ohio
Lead Ecologist responsible for the delineating wetlands and documenting threatened and endangered species for possible airport expansion. Also completed permitting (404, 401 and isolated), planned mitigation and mitigation monitoring (FQAI and VIBI) for mitigation sites.

Characterization of Aquatic Macrophytes Communities in the Pantanal Region, Brazil and the Okefenokee Swamp, Georgia
Botanist responsible for the identification, physiognomy and collection of the aquatic macrophytes along vegetation transects in the Pantanal Region of western Brazil and the Okefenokee Swamp of southern Georgia. Characterized vegetation along twenty transects through multiple vegetation zones including shrub, emergent, submergent vegetated mat, floating mat and free-floating.

Northern Ohio Rural Water Pipeline Corridor Surveys, Erie, Seneca, Huron, and Crawford Counties, Ohio
Lead Ecologist responsible for the delineating wetlands and documenting stream crossings along 150 miles of roadway in four counties. Each wetland boundary was flagged and mapped using GPS technology. A threatened and endangered species survey was also performed in conjunction with the wetland survey.

Tree Inventory and Wetland Delineation, Toyota Technical Center, Washtenaw County, Michigan
Botanist and ecologist responsible for leading the team in the identification of 2500 trees, half of which were horticultural/ornamental plantings in and around an abandoned arboretum. Each tree was individually tagged, numbered, assessed for health and measured using diameter at breast height (DBH). Also delineated and mapped using GPS technology all wetlands within the 640-acre site.

Monroe County Road Commission Site, Monroe County, Michigan
Ecologist responsible for the delineating and assessing wetlands on a 40-acre site for the Monroe County Road Commission, Monroe County, Michigan. Each wetland boundary was flagged and mapped using GPS technology. I assisted in the completion of the Conceptual Mitigation Plan, permitting, selection of seeding mixes, construction and wetland monitoring. Performed the required threatened and endangered species survey for the likelihood of the Duke's Skipper butterfly and was issued a "no effects" letter.

Long term vegetation and water monitoring of Pine River, Manistee County Michigan
Responsible botanist for assisting with the wetland delineation study, vegetation characterization, river, groundwater and oxbow water level following dam removal in 1995. This was an eight-year study working with Consumers Energy, U.S. Fish and Wildlife and the Manistee National Forest to examine the impacts of removing unused dams on state scenic rivers. Vegetation monitoring is conducted twice a year with the water level survey conducted four times a year.

Ecological Assessment along Two 15 Mile Transmission Lines, Manistee County, Michigan

Ecologist responsible for the delineating approximately 20 wetlands along two 15-mile transmission lines in Manistee County, Michigan. Each wetland boundary was flagged and mapped using GPS technology. A threatened and endangered species survey was also performed in conjunction with the wetland survey.

Natural Communities and Ornamental Collection Evaluation for the Stranahan Arboretum, Toledo, Lucas County, Ohio
For the purpose of updating the Master Plan for the University of Toledo's Stranahan Arboretum, a complete inventory of the ornamental collection and the natural communities was conducted. Each individual in the collection was identified, checked for proper location on arboretum's map, and assessed health and size. The natural communities were designated by presence of rare or unusual species, natural uniqueness and maturity. Full documentation was provided for each of the four state-threatened or endangered species present along with possible threats to each species.

Ecological Assessment of 4 bridge replacement sites over the Tiffin and St. Joseph Rivers, Fulton and Williams County, Ohio
Ecologist responsible for floral and faunal surveys and wetlands delineation studies at 4 bridge crossings over the Tiffin and St. Joseph Rivers. Studies were conducted to determine the potential long- and short-term impacts that the construction projects might have on existing aquatic and terrestrial communities which surrounded each site.

Flora of the Ottawa, Jermain and Greenwood Parks
Complete inventory of the flora of the three Toledo City Parks, Ohio. The plant communities of Ottawa, Jermain and Greenwood Parks were also characterized and future management recommendations were provided. Full documentation was provided for all of the state-threatened species present along with present threats and methods for their control.

Flora of the Lorain Metro Parks, Lorain County, Ohio
Complete inventory of the flora of the Black River Reservation, Lorain County Metro Parks, Ohio. Also, included a summary of plants found for the remaining nine reservations and land holdings. Full documentation was provided for all of the state-threatened species present and new county records. Created a working herbarium of over 1200 specimens including at least one specimen of each of the 734 species recorded during the survey. Forty-seven species were new county records and 14 species with 25 populations carried threatened or endangered status in the state.

Botanist, Ohio Chapter of Nature Conservancy/Ohio Department of Natural Areas and Preserves, Lake, Ashtabula, Fulton, Lucas, Williams Counties, Ohio
The data collected while surveying the Northern Ohio Lake Erie communities for rare plants, baseline, and possibly future land acquisition, was used in Schneider & Cochrane's 1997 publication, "Plant Community Survey of the Lake Erie Drainage".

Botanist for the Oak Openings Region
Present research includes the identification and inventory of the flora of the Oak Openings Region, Lucas, Henry and Fulton Counties, Ohio. This entails the identification and confirmation of all species collected within the region to making a comparison between historic and recent changes in plant populations (important step in intelligent, effective management). This would be updating the first flora of the region written by E. L. Moseley (1928). To date, over 4,000 specimens have been collected with another 3,900 specimens verified from local herbarium. A total of 1,300 species have now been documented from the region, including 164 species that are presently on the State of Ohio's Rare Plant List.

AFFILIATIONS

Cleveland Museum of Natural History
Michigan Botanical Club
Natural Areas Association
Ohio Biological Survey
Oak Openings Region Conservancy
Ohio Rare Plant Advisory Board
Partners for Clean Streams
South Appalachian Botanical Society
The Nature Conservancy
Torrey Botanical Society

PUBLICATIONS AND TECHNICAL REPORTS

(DOES NOT INCLUDE 100+ WETLAND DELINEATION, STREAM SURVEY AND RARE SPECIES TECHNICAL REPORTS PROVIDED TO PRIVATE INDIVIDUALS OR COMPANIES).

- Schetter, T, K. Root and T. L. Walters. In Press. A multi-scale spatial analysis of native and exotic plant species richness within a mixed-disturbance oak savanna landscape Enviromental Management
- Walters, T. L. 2009. First Post-treatment Monitoring Report for Six Tracts within the Historic Wet Prairie Area of the Oak Openings Region, Lucas County, Ohio. Annual Report to the Ohio Chapter of The Nature Conservancy, Dublin, Ohio. 75p.
- Walters, T. L. 2008. Pre-treatment Monitoring Report for Six Tracts within the Historic Wet Prairie Area of the Oak Openings Region, Lucas County, Ohio. Annual Report to the Ohio Chapter of The Nature Conservancy, Dublin, Ohio. 57p.
- Walters, T. L. 2007. Floral inventory and community survey of Meilke Road Savanna Wildlife Area, Spencer Township, Lucas County, Ohio. Final Report to the Ohio Division of Wildlife, Columbus, Ohio 135p.
- Walters, T. L. 2004. The effects of controlled burning and mowing on vegetation in an Oak Openings Sand Prairie. University of Toledo, Toledo, Ohio. Ph.D. Dissertation 105p.
- Walters, T. L. 2004. Rare Plants of the Oak Openings. IN: Living in the Oak Openings; A Homeowner's Guide to one of the World's Last Great Places. M. Grigore, editor, Homewood Press, Toledo, Ohio
- Walters, T. L. 2004. Wild Blue Lupine. IN: Living in the Oak Openings; A Homeowner's Guide to one of the World's Last Great Places. M. Grigore, editor, Homewood Press, Toledo, Ohio
- Fortney R. H., M. Benedict, J. F. Gottgens, T. Walters, B. Leady and J. Rentch 2004. Aquatic Macrophyte communities along inundation gradients in two ecologically-distinct regions of the Brazilian Pantanal. *Wetlands Ecology and Management* 12(6): 575-585.
- Neher, D. A., T. L. Walters, E. Tramer, T. R. Weicht, R.M. Veluci, K. Saiya-Cork, S. Will-Wolf, J. Toppin, J. Traub and J. R. Johansen 2003. Biological soil crust and vascular plant communities in a sand savanna of Northwestern Ohio *Journal of the Torrey Botanical Society* 130: 244-252.
- Walters, T. L. 1999. Floral survey of Ottawa and Jermaine Park, Final Report to the Toledo Urban Forestry Commission Toledo Ohio 110p.
- Walters, T. L. 1998. Floral survey of Greenwood Park, Final Report to the Toledo Urban Forestry Commission, Toledo, Ohio 101p.
- Walters, T. L. 1996. Additions and summary of floral evaluation and species inventory of the Mancy Tract, Kitty Todd Preserve. Final Report to the Ohio Chapter of The Nature Conservancy, Columbus, Ohio 125p.

- Walters, T. L. 1995. Additions to the floral of Lorain County, Ohio. *Ohio Journal of Science* 95 (4): 300-302p.
- Walters, T. L. 1996. Report of rare native Ohio plants. Final report to the Ohio Division of Natural Areas and Preserves, Columbus, Ohio 57p.
- Walters, T. L. 1995. Annotated flora of the Stranahan Arboretum*. Toledo Naturalists' Association Yearbook* 20 - 27p.
- Walters, T. L. 1994. Flora of the Lorain County Metro Parks. Lorain County Metro Parks, La Grange, Ohio 70p.
- Walters, T. L. 1993. Quantitative analysis of the flora of Thorn Acres, East Claridon, Geauga County, Ohio. John Carroll University, University Heights, Ohio. M.S. Thesis 191p.
- Walters, T. L. 1992. Hell's Hollow limnology study: For the possibility of Brook Trout (*Salvelinus fontinalis*) introduction. Final Report to the Lake County Metroparks, Concord Twp., Ohio 9 p.

PRESENTATIONS AT SCIENTIFIC MEETINGS / SEMINARS

- Walters, T. L. 2012 *Natural re-vegetation after Rhamnus removal in the Oak Openings Region Of Northwestern Ohio* EcoSummit – 4th International Ecosummit on Ecological Sustainabiltiy, Columbus, Ohio
- Walters, T. L. 2012 *Wetland Delineation Update; Application and Effects of the Use of the Regional Supplements to the 1987 Delineation Manual and 2012 National Wetland Plant List.* Ohio Wetlands Conference, CLE International, Canton, Ohio
- Walters, T. L. 2012 Native *Graminoids for the Garden.* Toledo Botanical Garden, Toledo, Ohio
- Walters, T. L. 2012 *Revegetation through natural seed bank expression following invasive Rhamnus removal in the Oak Openings region of northwestern Ohio* Botany 2012-The Next Generation - Botanical Society of America Conference, Columbus, Ohio
- Walters, T. L. 2012 *A Look Back at the 2011 Season* Ohio Botanical Symposium, Columbus Ohio
- Walters, T. L. 2011 *Best Plant Finds of 2010* Ohio Botanical Symposium, Columbus Ohio
- Schetter, T., K. V. Root, and T. L. Walters 2009 *Patterns of plant diversity in remnant Oak Openings prairies: Implications for restoration within a mixed disturbance landscape* Midwest Oak Savanna and Woodland Conference, Sylvania, Ohio
- Walters, T.L. 2009 *Update of the Flora of the Oak Openings Region of Ohio* Midwest Oak Savanna and Woodland Conference, Sylvania, Ohio
- Schetter, T., K. V. Root, and T. L. Walters 2009 *Patterns of plant diversity in remnant Oak Openings prairies: Implications for restoration within a mixed disturbance landscape* Midwest Oak Savanna and Woodland Conference, Sylvania, Ohio
- Abella, S. R., J. F. Jaeger, T. L. Walters and T. Schetter 2009 *Reestablishing Oak Openings Species on Pine Plantation Sites in Northwestern Ohio* Midwest Oak Savanna and Woodland Conference, Sylvania, Ohio (submitted)
- Walters, T.L. 2007 *Changes in the flora of the Oak Openings Region of Ohio over the past 100 years.* Natural Areas Association Conference, Cleveland, Ohio
- Walters, T.L. 2007 *Flora of the Oak Openings, since Moseley.* Oak Openings Research Forum, Toledo Ohio

- Walters, T.L. and J. Windus 2006 *Protection, management, and plant survey and monitoring efforts at Meilke Road Savanna Wildlife Area.* Oak Openings Research Forum, Toledo Ohio
- Walters, T. L 2005 *Oak Openings Flora*. Invited Seminar to the Mohican Botanical Society, Massilion, Ohio
- Walters, T.L. 2004 *Wetland plants and communities of Lake Erie*. Constructed Wetlands Workshop, University of Toledo, Toledo, Ohio
- Benedict, M, R. H. Fortney, T. L. Walters, J. F. Gottgens and B. S. Simmers 1999 *Aquatic plant community composition and distribution along inundation gradients at two ecologically distant*

sites in the Pantanal Region of Brazil. 20th Annual Society of Wetland Scientists Conference, Norfolk, Virginia

- Fortney, R. H., M. Benedict, J. F. Gottgens, B. S. Simmers and T. L. Walters 1999 *Aquatic plant community composition and distribution along inundation gradients at two ecologically distant sites in the Pantanal Region of Brazil*. Second World Conference on Preservation and Sustainable Development in the Pantanal. World University Federation, Washington D. C.
- Walters, T.L. and E. J. Tramer 1998 *Responses of four oak openings forbs to prescribed fire and mowing* Natural Areas Natural Areas Association Conference, Mackinac Island, Michigan
- Walters, T.L. 1998 *Distribution of state rare and endangered plants of the oak openings region of Ohio*. Natural Areas Association Conference, Mackinac Island, Michigan
- Walters, T.L. and E. J. Tramer 1997 *Prescribed burning and mowing effects on a sand barren flora*. Midwest oak Savanna and Woodland Ecosystems Conference, Madison, Wisconsin
- Walters, T.L. 1997 *Prescribed burning and mowing effects on a sand barren flora*. Sigma Xi Symposium, Toledo, Ohio
- Walters, T.L. and E. J. Tramer 1997 *Floral responses of four oak openings forbs to prescribed fire and mowing*. Ohio Acadamy of Science Conference, Bowling Green, Ohio
- Simmers, B. S., T. L. Walters, and J. F. Gottgens 1997 *Bioaccumulation of mercury in plants of the Okefenokee Swamp*. American Society of Limnology and Oceanography 1997 Annual Meeting, Sante Fe, New Mexico
- Walters, T.L. and E. J. Tramer 1996 *Effects of burning and mowing on a sand barren*. Natural Areas Conference, Chicago, Illinois
- Walters, T.L. 1996 *Pre-treatment floral evaluation of palustrine oak openings communities*. Society of Wetlands Scientists Conference, Kansas City, Missouri
- Walters, T.L. and E. J. Tramer 1996 *Effects of burning and mowing on a sand barren*. Ohio Academy of Science Conference, Canton, Ohio
- Walters, T.L. and E. J. Tramer 1996 *Effects of fire and mowing on reproduction in four oak opening forbs*. Midwest Ecology and Evolution Conference, East Lansing, Michigan
- Walters, T.L. 1996 *Floral evaluation of Mancy Tract, Kitty Todd Preserve, Ohio* Midwest Ecology and Evolution Conference, East Lansing, Michigan
- Walters, T.L. 1995 *Flora of the Stranahan Arboretum, Lucas County, Ohio* 15th Annual Midwest Ecology and Evolution Conference, Bowling Green, Ohio
- Walters, T.L. 1995 *Effects of burning and mowing on a disturbed oak openings sand prairie*. Midwest Oak Savanna and Woodland Ecosystem Conference, Springfield Missouri.

COMMUNITY LEADERSHIP

• Trustee, Partners for Clean Streams	2008-2010
• Member, Swan Creek Watershed Pilot Project, Technical Committee	2007-present
• Member. Ohio Rare Plant Advisory Committee	2003-present
• Trustee, Secretary. Oak Openings Region Preservation Alliance	2000-2005
• Member. Maumee River RAP Open Space and Wetlands Action Group	1999-2006
• Trustee, Secretary. Oak Openings Region Conservancy.	1997-2011
• Vice-president, Trustee. Maumee Audubon Society	1997-2000
• Member. Toledo Urban Forestry Commission	1996-2000
• Member. Stranahan Arboretum Advisory Committee	1993-1996

Integrated Natural Resources Management Plan (INRMP) Update at the Camp Ravenna Joint Military Training Center

Client
Ohio Army National Guard - Camp Ravenna Joint Military Training Center

ES Project No. 5278

Key Services Provided
- Coordination with military and agency personnel
- Existing document analysis & update
- Inclusion of Previous 5 Years' Survey and facility Data
- GIS updates to spatial and cartographic data
- 22+ Maps
- Compliance with the Sikes Act protocol and requirements

Contact
Timothy Morgan

Project Duration
2012-2015

ES Project Cost
$32,470.40

ES Key Staff
Jamie Willaman
Danielle Papineau

Integrated Natural Resources Management Plan Update - Environmental consultancy support for a review for operation and effect of existing management plan, including spatial data and cartographic products

EnviroScience, Inc. (ES) has been contracted by the Ohio Army National Guard (OHARNG) to provide environmental consultancy support for evaluating and updating the existing Integrated Natural Resources Management Plan (INRMP) at the Camp Ravenna Joint Military Training Center (CRJMTC) in Portage and Trumbull Counties, Ohio, in accordance with the The Sikes Act (16 USC 670a-670o, 74 Stat. 1052) for cooperation by the Department of the Interior and Department of Defense with State agencies in planning, development and maintenance of fish and wildlife resources on military reservations throughout the United States. This update acted as a review for operation and effect of the 2008 INRMP for the 21,680 acre facility and involved incorporating all biological surveys, facility changes, and status updates that have occurred with regards to natural resources, since the finalization of the 2008 INRMP. As a result of this effort, continued implementation of the INRMP has been favored by cooperating environmental agencies for conservation and preservation of natural resources while in support of the installation's primary purpose, the military mission.

As part of updating the INRMP, EnviroScience was also tasked with updating 22 maps and related spatial data, packaged within a completely new, visually pleasing, map layout design. Integration of several datasets and sources was necessary to capture, and subsequently map, current conditions. Sources included publically available spatial data from USFWS and USGS, the previous geodatabase, field survey data from the previous 5 years, GIS shapefiles, CAD drawings, hand-drawn paper maps, and hand-written data. Additionally, heads-up digitizing captured verbal accounts of current conditions as given by Timothy Morgan, CRJMTC's State Environmental Manager of 20+ years. Cartographic products included an installation and facilities map, soils classification, surface water, surveyed wetlands, forest management, rare species locations, improved/semi-improved/unimproved grounds, mowing plan, herbicide vegetation control map, hunting areas, map, cultural resources / archaeological survey map, timber harvest history, timber stand improvement, and others.

In conjunction with updates to the INRMP, planning level surveys (PLS) were also updated to include survey, inventory, and spatial data within the previous 5-years for threatened and endangered species, wetlands, surface waters, vascular plants, and fauna. Additional mapping was also required for this task and resulted in 2 – 6 additional maps per PLS.

EnviroScience
www.EnviroScienceInc.com

3000+ ACRES WETLAND DELINEATIONS AND FUNCTIONAL ASSESSMENTS

Portage and Trumbull Counties, Ohio

Client
Ohio Army National Guard

Key Services Provided
- Wetland Delineations and Functional Assessments
- GIS Generation

Contact
Tim Morgan
(614) 336-6568

Project Duration
2003 – 2004, 2006

ES Key Staff
Jamie Willaman
Michael Liptak

The Ohio Army National Guard (OHARNG) is developing the Ravenna Training and Logistics Site (RTLS) as a training facility. This development involves the construction of miscellaneous new roads, training areas, and buildings on both previously developed and undeveloped areas. EnviroScience, Inc. performed a delineation of wetlands and other waters for the OHARNG on over 3,000 acres situated within the RTLS in 2004 and 2006. Wetlands and streams were delineated in accordance with the methods outlined in the 1987 Corps of Engineers Wetlands Delineation Manual, and wetland functional quality was assessed using the OEPA Ohio Rapid Assessment Method v. 5.0. All available secondary resource information was compiled and analyzed and a field survey was conducted. Wetlands and stream locations were marked using a submeter accurate GPS, and the data were entered into a GIS.

In 2004, EnviroScience investigated 2,900 acres at a total of 26 separate sites within the RTLS. These areas are comprised of 15 proposed development areas and 11 bridge locations. A total of 434 wetlands accounting for 208 acres were delineated in the 26 areas investigated, as well as 121 ephemeral, intermittent and perennial headwater streams.

In 2006, EnviroScience delineated an additional 390 acres at the RTLS, and marked an additional 19 acres of wetlands and 54 streams. These data were also entered into a GIS including wetland type, size, location, and ORAM scores to meet RTLS specifications.

EnviroScience
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Willow Creek Sub-Basin Restoration and Preservation Project

Client
Lorain General Health District

ES Project No. 6407

Key Services Provided
- GIS Analysis of Watershed Resources
- Public Involvement
- Restoration Potential Assessment
- Restoration Plan Development

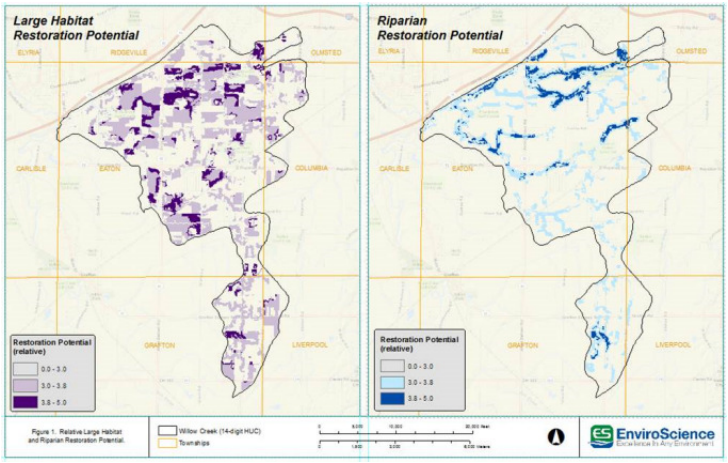
Contact
Jill Lis

Project Duration
2014-2015

ES Project Cost
$60,000

Total Project Cost
$60,000

ES Key Staff
Paul Anderson
Joel Bingham
Michael Liptak, Ph.D.
Danielle Papineau
Tim Walters



EnviroScience is completing an analysis of the restoration potential within the Willow Creek subwatershed of the Black River for the Lorain General Health District. This project was being funded by the Black River Remedial Action Plan for the purpose of improving water quality in the Willow Creek watershed, a 23-square mile watershed that is located in Eaton Township, as well as portions of four other communities . The project identified locations within the Willow Creek watershed that may be eligible for future grant funding to conduct wetland, stream, or floodplain restoration. The project also developed specific restoration or preservation plans for these areas as well as a budget for conducting the work. A 2012 survey conducted by the Ohio EPA found that the creek is polluted and is not meeting state water quality standards. In addition, county and local officials have noted water quality and flooding problems in the watershed, caused mainly by excessive storm water runoff and erosion as well as poorly treated sewage entering the creek.

The project was conducted in four stages: GIS analysis, public involvement, restoration site evaluation, and restoration plan preparation. At each step of the project, EnviroScience coordinated with the Black River RAP, local officials, and concerned citizens to guide our progress. The first phase of the project used GIS-based modeling and the review of local data to identify problem areas potentially most in need of restoration. The second phase of the project was the public involvement phase, which included meetings with the technical advisory committee as well as a public shareholder meeting to receive input from local landowners and community officials to identify potential sites for more in-depth study. Once this information was processed and landowner permission was obtained, EnviroScience biologists and restoration experts visited 16 sites by to collect the detailed information needed to develop the restoration plans. Of the 16 sites visited, three were chosen for the development of detailed restoration or preservation plans siutable for inclusion in grant applictaions. Restoration plans will be developed for two additional sites under a separate contract with the landowners. A final report will be developed that includes all of the data collected for use of all stakeholders and watershed communities. A final public meeting will be held in May 2015 to present the final report and project plans.

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EASTERN TRIBUTARIES AREAS OF CONCERN (AOC) WETLAND AND RIPARIAN INVENTORY AND RESTORATION PLANS-OHIO EPA

Northwestern Ohio

Client
Ohio EPA/Tetra Tech

ES Project No.

Key Services Provided

- Wetland Assessment
- Vegetation Assessment
- Fish Sampling
- Macroinvertebrate Sampling
- Watershed Analysis

Contact
Cherie Blair
Maumee RAP Coordinator
419-373-3010
Cherie.blair@epa.state.ohio.us

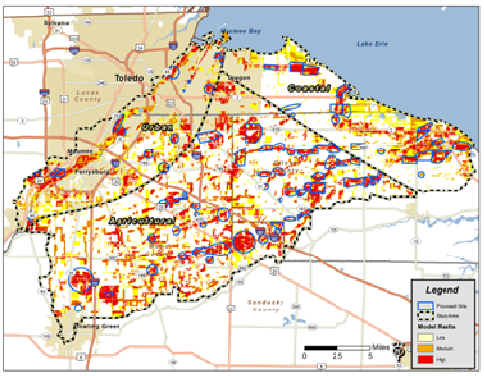
Project Duration
September 2010 – July 2012

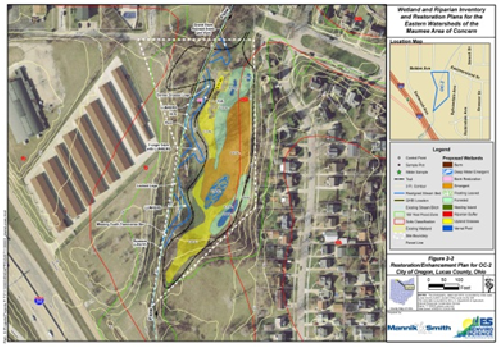
ES Project Cost
$90,000

Total Project Cost
$190,000

ES Key Staff
Timothy Walters, Ph.D. (project manager)

Michael Liptak, Ph.D.
Emmalisa Kennedy
David Czayka





The Eastern Watersheds of the Maumee Area of Concern (AOC) encompasses approximately 420 square miles in portions of Lucas, Ottawa, Sandusky and Wood Counties. This area is considered an AOC by the US EPA due to excessive agricultural runoff, runoff from contaminated industrial sites and dumps, combined sewer overflow, and disposal of dredged materials. A Remedial Action Plan (RAP) is required for the Maumee River AOC. EnviroScience Inc. in cooperation with Mannik and Smith Group and subcontracting to TetraTech through the US EPA, performed vegetative, stream and wetland assessments for 40 sites within the Eastern Tributaries of the Maumee River AOC for the Ohio EPA. Notable streams and tributaries in the project area are Amlosch Ditch, Cedar Creek, Crane Creek, Duck Creek, Maumee River, Otter Creek, Packer Creek, Turtle Creek and Toussaint Creek/River. In addition, EnviroScience Inc. surveyed the fish and macroinvertebrate communities at 15 sites to gather more information for the development of plans. This study was intended to identify the most desirable locations for wetland or stream restoration or enhancement in the project area. The sites were located using GIS technology evaluating all available information including land cover, soils, topography, rare species, preserved lands and the expertise of the project team. Once landowner permission was given, these sites were visited by the team. These site surveys identify specific sites to develop conceptual plans for wetland and riparian restoration and/or enhancement. The primary objective of this study was to develop these plans within the watershed that, once implemented, would have measureable positive impacts on three Beneficial Use Impairments (BUIs). The targeted BUIs were to improve fish and wildlife populations, benthos and loss of fish and wildlife habitat. Eighteen conceptual site plans were created for restoration and/or enhancement. These plans contained site location, existing site conditions, restoration and enhancement recommendations, challenges of the site, potential measurable improvements and preliminary cost estimates. Also a figure depicting the conceptual restoration/enhancement was created. Each plan also references detailed methods for the stream and wetlands enhancements. These concepts include different descriptions of goal communities, costs, typical amounts or equipment needed, challenges for the proper accomplishment. This information allows the user all the information needed apply for grants for the successful funding of the project. Dr. Walters was also the project manager of a similar study for the western half of the Maumee AOC while with another firm.

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TINKERS CREEK WATERSHED COMPREHENSIVE WETLAND ASSESMENT

Cuyahoga, Summit, Portage, and Geauga Counties, Ohio

Client
Cuyahoga County Board of Health

ES Project No. 2105

Key Services Provided
- Wetland Inventory
- Wetland Functional Evaluation
  - Ecological
  - Economic
  - Hydrologic

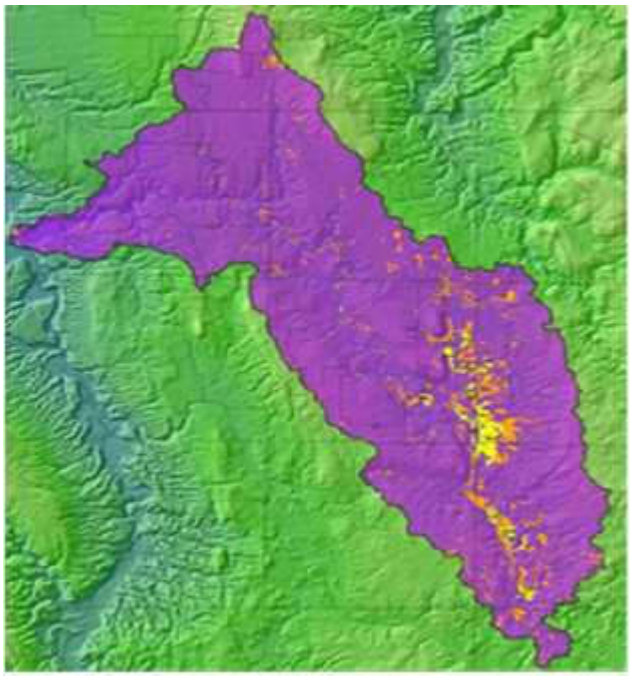
Contact
Mr. J. Meiring Borcherds
216-201-2001

Project Duration
August 2007 – May 2008

ES Project Cost
$25,000

Total Project Cost
$25,000

ES Key Staff
Michael Liptak
Joe Papineau



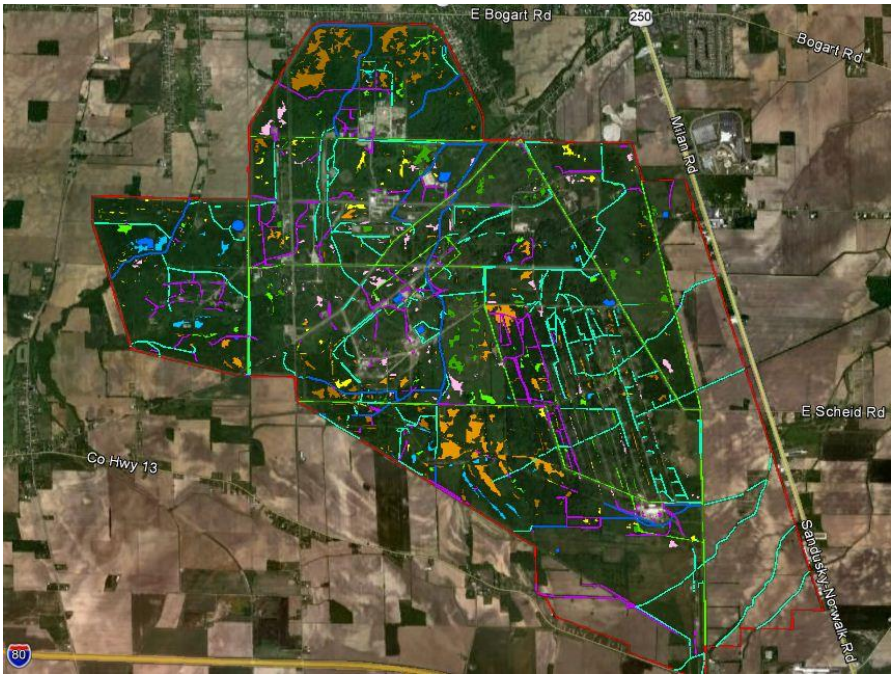
EnviroScience completed a Comprehensive Wetland Assessment and Prioritization Plan for the Tinkers Creek Watershed in order to inventory and assess the ecological, hydrologic and economic value of wetlands within the entire Tinkers Creek Watershed (96.4 sq. mi.), from headwaters to the confluence of Tinkers Creek and the Cuyahoga River at Cuyahoga River Mile 16.36. This Assessment and Prioritization Plan will assist the Cuyahoga County Board of Health (CCBH) in identifying priority areas with high ecological, hydrological and societal economic values, and will also help CCBH and local communities explain the values of particular wetlands to the public.

Wetlands were evaluated using analysis of recent aerial and satellite imagery, available geographic information systems (GIS) data and secondary resources, and limited field verifications. Wetlands were ranked according to their ecological, hydrological, and economic values. Ecological values were determined primarily by ORAM Category, ORAM score, and occurrence of threatened or endangered species within the wetland. Hydrological values were obtained using the ArcView Generalized Watershed Loading Function (AVGWLF) watershed model developed by Penn State University. Hydrological importance was also evaluated by calculating the volume of each wetland using regression equations developed by Ohio EPA. Economic importance of wetlands was evaluated by calculating the recreational, property, flood reduction, permitting, mitigation and stormwater retention values for wetlands in the watershed.

A total of 951 wetlands were identified in the Tinkers Creek Watershed with a total acreage of 3,917 ac. Not surprisingly, the larger wetlands had the highest ecological and hydrologic values. The AVGWLF model calculated that, as a whole, wetlands within the Tinkers Creek Watershed reduced stream inputs by over 8,000 acre-feet annually and returned another 8,000 acre-feet to the atmosphere by evapotranspiration. An acre of wetland in the Tinkers Creek Watershed, on average, retains and processes 3.70 acre-ft water per year. Average calculated economic values for wetlands in the Tinkers Creek Watershed were $130,572 per wetland acre outside of parks, and $361,995 per wetland acre in park.

6,700 AC WETLAND & STREAM DELINEATION FOR NASA FACILITIES

Plum Brook Station and Lewis Field



In 2011-2012, EnviroScience delineated wetlands and other waters on two NASA properties: the 6,431-acre NASA Plum Brook Station in Sandusky, Ohio and the 300-acre NASA Lewis Field in Cleveland, Ohio. Plum Brook Station contains a diverse assemblage of vegetative communities and a high number of rare, threatened, and endangered species, while Lewis Field is a highly urbanized area with a small amount of natural habitat remaining, including a hemlock ravine forest.

EnviroScience's team of highly trained wetland delineators was able to devote the resources to delineate the large project areas in an efficient manner. Plum Brook Station was divided into ten priority areas and delineated separately to provide data to NASA throughout the project.

Plum Brook Station contained 1,050 wetlands (over 400 acres), 373 waterways (over 300,000 linear feet), and 15 ponds (approximately 15 acres). Lewis Field contained 17 wetlands totaling 2.1 acres, 16 streams totaling over 7,000 lf, and one pond. All site data were compiled using ArcGIS and provided to the client to help inform NASA during its decision making process for future use of the sites. The GIS data were also provided in .kml format so that any NASA user could view the resources using Google Earth.

Because of the technical skill of EnviroScience biologists, several new locations for rare, threatened, and endangered plants were found at Plum Brook Station during the fieldwork. The information collected is being used by NASA as part of their siting process for a proposed wind farm at Plum Brook Station.

Client
NASA
under contract with SAIC

Key Services Provided
- Wetland delineation
- Wetland functional assessment
- GIS Mapping

Contact
Ms. Jen Thomas
(419) 621-2114
jennifer.thomas@nasa.gov

Project Duration
June 2011-Nov 2012

Total ES Project Cost
$287,000

Key Staff
Michael Liptak
Tim Walters
Brooke Harrison
Emma Kennedy
Laura Sayre
Danielle Papineau
Max Koran

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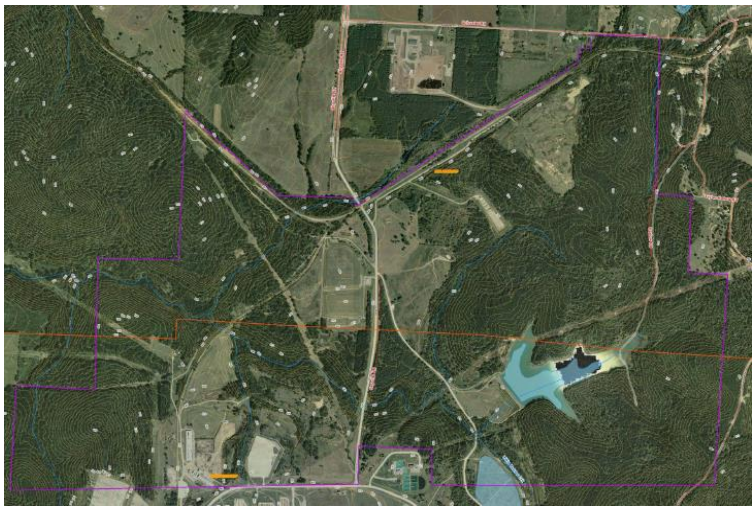
RARE, THREATENED AND ENDANGERED SPECIES / ECOLOGICAL STUDY / WETLANDS DELINEATION FOR THE PROPOSED MIDWEST NUCLEAR STATION



EnviroScience performed a natural resources study for Geosyntec Consultants to identify all ecological resources present on a 1400 acre site in southern Ohio. This study included multi-season studies of the plant, avian, mammal, amphibian, reptile and fish communities within the project area. Wetlands, streams, listed rare, threatened and endangered species and their habitats and the Indiana bat (*Myotis sodalis*) were also surveyed. Wetland delineations were conducted in accordance with the *Corps of Engineers Wetlands Delineation Manual* (1987), the OEPA Ohio Rapid Assessment Method v. 5.0 (2001), and Headwater Habitat Evaluation Index (HHEI). Indiana bat surveys were conducted to determine presence / absence. ES coordinated with the USFWS to determine the extent of the potential habitat on site and the survey effort required. EnviroScience conducted a mist net survey using double-canopy ultra-fine mesh nets. Nets were set at dusk and checked every 20 minutes for a five hour period each night. Data collected on captured bats include species, sex, weight, age, weight, reproductive condition and capture site. All features were surveyed using differential Global Positioning System (dGPS) and data were used to create digital mapping in ArcGIS. Following the field work, ES presented the results in a wetland delineation report, Indiana bat survey report and ecological studies report.

EnviroScience identified nearly 288 plant species, 27 reptile and amphibian species, 100 bird species, and 23 mammal species. One hundred and nine functional wetlands, accounting for nearly nine acres, were identified and evaluated. No state or federal listed threatened or endangered species, including the Indiana bat, were identified during the study. Based on these results and the locations of sensitive rare species, EnviroScience recommended areas for Active Recreational, Passive Recreational or Restricted Recreational management zones, including 4 preserves to protect the restricted zones. These preserves comprise over 440 acres of the park, which includes two ledges, a pristine riverine wetland, a large mixed emergent marsh and a bog-like wetland. In addition, ten restoration projects were recommended for further evaluation, as well as several areas in need of further investigation or monitoring.

Client
Geosyntec Consultants

ES Project No. 3386

Key Services Provided
- Wetland Delineation Survey
- Ecological Survey for Rare, Threatened and Endangered Species
- Terrestrial and Aquatic Communities (Plant, Avian, Mammal, Amphibian, Reptile, Fish)

Contact
Geosyntec Consultants
David Vance
678-202-9612
dvance@geosyntec.com

Project Duration
2010 – 2011

ES Project Cost
$197,000

ES Key Staff
Brooke Harrison
Michael Liptak
Jamie Willaman
David Czayka

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ECOLOGICAL SURVEY AND WETLAND DELINEATIONS
Portage Bike and Hike Trail: Middlebury Road to Stow Road PID: 80660

Client
GDP Group

Key Services Provided
- Terrestrial Ecological Survey
- Wetland Delineations and Functional Assessments
- Stream Survey

Contact
Mr. Nick Moskos
(330) 572-2100

Project Duration
June 2006 – January 2008

Total Project Cost
$11,500

ES Key Staff
Michael Liptak

EnviroScience, Inc. biologists performed an Ecological Survey for a proposed segment of the Portage Hike and Bike Trail along the Cuyahoga River in Kent, Portage County, Ohio (PID

80660). The 2.1-mile trail segment would begin at the Middlebury Road bridge and continue along the south side of the Cuyahoga River, over a new river crossing, and continuing west through an existing park.

All headwater streams within the survey area were evaluated using the Headwater Habitat Evaluation Index (HHEI), and the Cuyahoga River and Plum Creek were evaluated using the Qualitative Headwater Habitat Index (QHEI). All plants encountered in the study area were identified, and terrestrial vertebrates were surveyed by visual encounters or audible cues. All wetlands within the survey area were delineated according to methods outlined in the Corps of Engineers Wetlands Delineation Manual (1987). The Ohio Rapid Assessment Method for Wetlands (ORAM), version 5.0 was used for determining the functional quality of each wetland surveyed. Wetlands and stream locations were marked in the field using submeter accurate Trimble dGPS units.

Twenty-nine wetlands were delineated within or adjacent to the study area. A total of eight streams or rivers were located within or adjacent to the study area, including six headwater streams, Plum Creek, and the Cuyahoga River. Two state listed species, the potentially threatened butternut (Juglans cinerea) and American chestnut (Castanea dentata), were identified within or adjacent to the study area. No other state or federally or state listed species were observed during the survey.

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16.4 MILE WETLAND & STREAM DELINEATION, PERMITTING, AND OTHER ECOLOGICAL SERVICES FOR PIPELINE INSTALLATION

Western Access II

EnviroScience (ES) delineated wetlands and other waters and identified potential endangered species habitat along a 16.4 mile long (200 feet wide) proposed pipeline corridor in Harrison and Tuscarawas Counties, Ohio. Portions of the corridor were located within existing right-of-way and portions were located within new right-of-way. The project area contained 61 wetlands (10.5 acres), 79 waterways (17,000 linear feet), 2 ponds (0.06 acres), and 304 trees that could potentially provide habitat for threatened and endangered bats. All site data were compiled using ArcGIS and provided to the client before the due date.

As part of the project, ES attended weekly meeting with the client to discuss the progress and advise on potential problems that may arise. Throughout the project, ES coordinated with Ohio Department of Natural Resources (ODNR), U.S. Fish and Wildlife (USFWS), Ohio Historic Preservation Office, and the Muskingum Watershed Conservation District to receive various approvals and ensure the project was in compliance. Through coordination with the ODNR, ES was required to perform a point count survey for the upland sandpiper and a Phase I mussel survey on two streams. ES also prepared a Stormwater Pollution Prevention Plan for use during site construction. In addition, ES prepared applications for a Nationwide Permit (NWP #12) through the U.S. Army Corps of Engineers (USACE) and an Individual 401 Water Quality Certification through the Ohio Environmental Protection Agency. Through the permitting process, ES provided timely updates and responses to both the USACE and OEPA's questions. The most significant issue during permitting was the applicant's desire to clear approximately 90 acres of forest between April 1 and October 1. ES developed several options on how to proceed for the applicant. The applicant decided to assume presence of threatened and endangered bats and prepare a Biological Assessment (BA). ES prepared the BA according to the applicant's strict deadline and it was submitted to the USACE and USFWS in under one month. The BA that ES prepared was accepted and was made part of a Biological Opinion (BO) and the final permits were issued. As part of the issued NWP and BO, ES had to monitor all onsite summer tree clearing activities to ensure the contractors did not clear more than the proposed forested acreage and that the take of threatened and endangered bats was kept below the permitted number. After construction is complete, ES will go back to the project area and ensure all wetlands and streams were replaced as specified in the permits. This monitoring will continue for a period of five years.

Because of their dedication, technical skill, and knowledge of regulations, ES biologists were able to meet or exceed all project deadlines and provide the client with valuable insight regarding environmental compliance, saving the client time and money.

Client
The East Ohio Gas Company

Key Services Provided
- Wetland & Stream Delineation
- GIS Mapping
- Nationwide Permit
- Individual 401 Permit
- Endangered Species Coordination
- Historic Coordination
- Stormwater Plan
- Upland Sandpiper Survey
- Mussel Survey
- Biological Assessment

Contact
Ms. Tara Buzzelli
(330) 664-2579
Tara.E.Buzelli@dom.com

Project Duration
June 2014-September 2015

Total ES Project Cost
$200,000

Key Staff
Laura Sayre
Emma Kennedy
Danielle Papineau
Mary Mahoney
Ann Gilmore
Mary Gilmore
Brooke Harrison
Jamie Willaman

EnviroScience
www.EnviroScienceInc.com

WETLAND DELINEATIONS, FUNCTIONAL ASSESSMENTS, AND RESTORATION

Ravenna Training and Logistics Site, Portage County, OH

Client
Ohio Army National Guard
Under contract with SAIC

Key Services Provided
- Wetland delineation
- Wetland Functional Assessment
- Mitigation Plan Technical Support
- Restoration Plan Technical Support
- Restoration Implementation

Contact
OHARNG:
Mr. Tim Morgan
(614) 336-6568

SAIC
Mr. Jed Thomas
(330) 405-5802

Project Duration
Oct 2008- Sept 2010

Total ES Project Cost
$20,000

Key Staff

EnviroScience
Michael Liptak
Jeff Niehaus

The Ohio Army National Guard (OHARNG) is in the process of developing the Ravenna Training and Logistics Site (RTLS) as a training facility. As part of this process, certain areas are being remediated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Potential impacts to wetlands and/or other waters within these areas must be avoided or properly permitted and mitigated as part of this process. For this reason, EnviroScience, Inc., under contract to SAIC, performed a delineation of wetlands and other waters for the OHARNG on three CERCLA cleanup sites within the RTLS.

EnviroScience investigated a total of three remedial action areas within the RTLS: Ramsdell Quarry Landfill, Load Line 12, and Fuze and Booster Quarry Landfill/Ponds. The methods used for determining and delineating wetlands and open waters strictly adhere to those found in the 1987 Corps of Engineers Wetlands Delineation Manual.

A total of 23 wetlands accounting for 5.536 acres were delineated in the three areas investigated. One intermittent and three perennial streams having ordinary high water mark (OHWM) widths between 4 and 14 ft accounted for an additional 0.423 acres and 2,508 l.f. of waterway.

Following completion of the wetland delineations, EnviroScience provided additional consulting regarding wetland mitigation techniques, invasive species control, and proper native seed mixes to SAIC. Following permit coordination with OEPA, EnviroScience implemented invasive species control and installed native seed mixes along with live stakes and erosion control measures at the restoration sites.

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APPENDIX II
Proposed Costing

EXHIBIT A
CRFQ # ADJ1600000021

ALL LABOR, MATERIALS, EQUIPMENT, AND SUPPLIES NECESSARY TO CONDUCT AN INVASIVE SPECIES INVENTORY AND ASSESSMENT AND TO UPDATE PLANT COMMUNITY MAPPING DATA, ON CAMP DAWSON ARMY TRAINING SITE AT KINGWOOD, WV

BID FORM

The undersigned, hereafter called the Bidder, being familiar with and understanding the bidding documents; and being familiar with the required qualifications and the mandatory requirements of the Project with regards to the deliverables and associated timelines, hereby proposes to furnish labor, material, equipment, supplies, and transportation to perform the work as described in the bidding documents

BIDDERS COMPANY NAME: EnviroScience, Inc.

VENDOR ADDRESS: 551 Eastpark Court
Sandston, Virginia 23150

TELEPHONE: 330-688-0111

FAX NUMBER: 804-326-0293

E-MAIL ADDRESS: mhilovsky@enviroscienceinc.com

CONTRACT TOTAL BID:

Twenty-eight thousand and nine hundred dollars

($ 28,900) ***(Contract bid to be written in words and numbers.)

The contract will be awarded to the Bidder with the lowest contract total bid meeting all of the specifications. Bidder understands that to the extent allowed by the West Virginia Code, the OWNER reserves the right to waive any informality or irregularity in any bid, or bids, and to reject any and all bids in whole or in part; to reject a bid not accompanied by the required bid security or by other data required by the bidding documents; to reject any conditions of the bid by the Bidder that is any way inconsistent with the requirements, terms, and conditions of the bidding documents; or to reject a bid that is in any way incomplete or irregular.

Failure to use this bid form may result in bid disqualification.

SIGNATURE: _____ **DATE:** 5/2/16

NAME: Martin Hilovsky
(Please Print)

TITLE: CEO

APPENDIX III
Signed and Legal Documentation

ADDENDUM ACKNOWLEDGEMENT FORM
SOLICITATION NO.: CRFQ ADJ1600000021

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)

[X] Addendum No. 1	[ ] Addendum No. 6
[X] Addendum No. 2	[ ] Addendum No. 7
[ ] Addendum No. 3	[ ] Addendum No. 8
[ ] Addendum No. 4	[ ] Addendum No. 9
[ ] Addendum No. 5	[ ] 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.

EnviroScience, Inc.
Company

Authorized Signature, CEO

5/2/16
Date

NOTE: This addendum acknowledgement should be submitted with the bid to expedite document processing.

CERTIFICATIONAND SIGNATURE PAGE

By signing below, or submitting documentation through wvOASIS, I certify that I have reviewed this Solicitation in its entirety; that I understand the requirements, terms and conditions, and other information contained herein; that this bid, offer or proposal constitutes an offer to the State that cannot be unilaterally withdrawn; that the product or service proposed meets the mandatory requirements contained in the Solicitation for that product or service, unless otherwise stated herein; that the Vendor accepts the terms and conditions contained in the Solicitation, unless otherwise stated herein; that I am submitting this bid, offer or proposal for review and consideration; that I am authorized by the vendor to execute and submit this bid, offer, or proposal, or any documents related thereto on vendor's behalf; that I am authorized to bind the vendor in a contractual relationship; and that to the best of my knowledge, the vendor has properly registered with any State agency that may require registration.

EnviroScience, Inc.
(Company)

[signature], CEO
(Authorized Signature) (Representative Name, Title)

330-688-0111
(Phone Number) (Fax Number) (Date)

Rev. 04/14

State of West Virginia

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*.**
X 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: Envaro Science, Inc. **Signed:** [signature]

Date: 5/2/16 **Title:** CEO

RFQ No. ADJ1600000021

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 exceed 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: EnviroScience, Inc.

Authorized Signature: [signature] Date: 5/2/2016

State of Ohio

County of Summit, to-wit:

Taken, subscribed, and sworn to before me this 2 day of May, 2016.

My Commission expires 5/30, 2018.

AFFIX SEAL HERE

NOTARIAL SEAL STATE OF OHIO

NOTARY PUBLIC Rebecca R. Pedone

Rebecca R. Pedone
Resident Summit County
Notary Public, State of Ohio
My Commission Expires: 05/30/2018

ENVIINC-01 CKLEINTOP

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 4/18/2016

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 License # 1010 SeibertKeck Insurance Agency 2950 W. Market Street Akron, OH 44333	CONTACT NAME: Jill Lucey PHONE (A/C, No, Ext): (330) 867-1049 FAX (A/C, No): E-MAIL ADDRESS: jlucey@seibertkeck.com
	INSURER(S) AFFORDING COVERAGE — NAIC #
	INSURER A : Greenwich Insurance Co. — 22322
INSURED EnviroScience, Inc. Scientific Equipment LLC 5070 Stow Road Stow, OH 44224	INSURER B : XL Specialty Insurance Company — 37885
	INSURER C :
	INSURER D :
	INSURER E :
	INSURER F :

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 CERTIFICATE 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 INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	X COMMERCIAL GENERAL LIABILITY			GEC300905	07/30/2015	07/30/2016	EACH OCCURRENCE	$ 1,000,000
	CLAIMS-MADE X OCCUR						DAMAGE TO RENTED PREMISES (Ea occurrence)	$ 100,000
							MED EXP (Any one person)	$ 5,000
							PERSONAL & ADV INJURY	$ 1,000,000
	GEN'L AGGREGATE LIMIT APPLIES PER:						GENERAL AGGREGATE	$ 2,000,000
	POLICY X PRO-JECT X LOC						PRODUCTS - COMP/OP AGG	$ 2,000,000
	OTHER:							$
A	AUTOMOBILE LIABILITY			AEC0046349	07/30/2015	07/30/2016	COMBINED SINGLE LIMIT (Ea accident)	$ 1,000,000
	X ANY AUTO						BODILY INJURY (Per person)	$
	ALL OWNED AUTOS / SCHEDULED AUTOS						BODILY INJURY (Per accident)	$
	X HIRED AUTOS / X NON-OWNED AUTOS						PROPERTY DAMAGE (Per accident)	$
								$
B	UMBRELLA LIAB X OCCUR			UEC0046347	07/30/2015	07/30/2016	EACH OCCURRENCE	$ 6,000,000
	X EXCESS LIAB CLAIMS-MADE						AGGREGATE	$ 6,000,000
	DED X RETENTION $ 10,000							$
A	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY Y / N	N / A		WEC3000906	07/30/2015	07/30/2016	X PER STATUTE / OTH-ER	
	ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH)						E.L. EACH ACCIDENT	$ 1,000,000
	If yes, describe under DESCRIPTION OF OPERATIONS below						E.L. DISEASE - EA EMPLOYEE	$ 1,000,000
							E.L. DISEASE - POLICY LIMIT	$ 1,000,000
A	Professional &			GEC300905	07/30/2015	07/30/2016	Limit	7,000,000
A	Pollution Liabilit			GEC300905	07/30/2015	07/30/2016	Deduct	10,000

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

CERTIFICATE HOLDER

Department of Administration, Purchasing Division
2019 Washington Street East
Charleston, WV 25302-0130

CANCELLATION

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

Christie Klentop