



NOWRA Installer Academy Agenda Description and Instructor Biographies 12/11/09

I. CIDWT Installation of Wastewater Treatment Systems

Day 1

Welcome, Introduction, and Business Practices

Course Instructor: Nancy Deal, North Carolina State University

Course Length: 0.75 hour

This session provides an overview of the Installer Training program. A professional installer must be able to effectively communicate with the facility owner, the system designer, and the regulatory community. Documentation that facilitates this effective communication will be discussed and available educational resources will be described.

Soils and Site Evaluation Overview for Installers

Course Instructor: Randy Miles, University of Missouri

Course Length: 1.0 hour

Part of the installation process is having a system that works within the constraints of the soil and site conditions to achieve wastewater treatment. The installer must be able to identify and understand the soil information provided by system designers, and interpret the actual soil conditions to achieve a good installation. Processes describing water movement through soils will also be discussed.

Installation Techniques and Material

Course Instructor: Sara Heger Christopherson, University of Minnesota

Course Length: 1.0 hour

This presentation provides broadly applicable information describing specifications, handling, and storage of materials used in system construction to assure long-term system performance. The discussion will include matching equipment with site conditions to maintain natural soil conditions.

Installation Planning

Course Instructor: Tom Fritts, Residential Sewage Treatment Co.

Course Length: 1.0 hour

Planning is the first step in the installation process. A construction plan that matches the constraints of the site and the capabilities of the installer must be developed and implemented. Approaches and considerations for achieving this will be presented.

Installation Safety

Course Instructor: Nancy Deal, North Carolina State University

Course length: 1.0 hour

Safety is a critical consideration for any business. The process of constructing onsite wastewater treatment systems must be conducted in a safe manner. Appropriate construction practices should be followed on the job site to limit the risk of worker injuries and contractor exposure to liability. OSHA terminology and safety practices will be discussed.

Piping Installation

Course Instructor: Sara Heger Christopherson, University of Minnesota

Course length: 0.75 hour

This presentation includes descriptions of various types of pipe and pipe selection criteria, and highlights procedures for properly connecting PVC piping. The discussion will include proper pipe trench excavation, bedding, layout, sleeving, and backfilling to assure watertight piping installations.

Watertight Tank Installation

Course Instructor: Randy Miles, University of Missouri

Course length: 1.0 hour

Appropriate tank installation is essential for long-term performance of the wastewater treatment system. All tanks must be installed in a stable manner to achieve a watertight treatment system with adequate access for performing appropriate operation and maintenance after the installation is complete. The key steps of installation will be presented.

Day 2

Homework

Course Instructor: Randy Miles, University of Missouri and Tom Fritts, Residential Sewage Treatment Co.

Course Length: 1.0 hour

In this optional presentation, the homework problems will be reviewed and calculations will be discussed. This session is a particularly useful guide for those taking the NEHA Certified Installer Exam.

Installation of Pressure and Gravity Distribution Components

Course Instructor: Nancy Deal, North Carolina State University

Course Length: 1.0 hour

Maximizing uniformity of effluent distribution is critical to effective wastewater treatment. The components used for pressure and gravity distribution to soil treatment areas will be discussed with respect to critical construction considerations. Topics include valves, manifolds, distribution and drop boxes, as well as parallel, serial, and sequential distribution. Providing access for operation and maintenance is emphasized.

Installing Soil Treatment Areas I

Course Instructor: Sara Heger Christopherson, University of Minnesota

Course Length: 1.0 hour

The soil treatment area is the final component of the onsite wastewater treatment system. The key considerations for installation of below-grade soil treatment areas will be presented with a focus on trenches and beds, including staking, excavation, placement of trench media, and final cover.

Installing Soil Treatment Areas II

Course Instructor: Sara Heger Christopherson, University of Minnesota

Course Length: 0.75 hour

The second part of this presentation will focus on above-grade systems including at-grades, areal fill systems, mounds, and bottomless media filters. The key considerations for proper installation of above-grade soil treatment areas will be presented including vegetation removal, scarification, and fill/sand material placement.

Installing Pressure Dosing Systems: Pumps & Controls

Course Instructor: Tom Fritts, Residential Sewage Treatment Co.

Course Length: 1 hour

Pumps and siphons may be used to convey sewage and effluent to various components of onsite wastewater treatment systems. The different types of pumps used to convey sewage and effluent will be discussed. Proper pump selection and sizing criteria will be identified so that installers can verify system specifications. Appropriate construction methods for installation and maintenance of pumps, controls, and discharge assemblies will be presented.

Installing Aerobic Treatment Units

Course Instructor: Randy Miles, University of Missouri

Course Length: 1.0 hour

In this session, the components of an aerobic treatment unit (ATU) are discussed with respect to their expected operational criteria and associated installation practices. Construction techniques that facilitate system stability, accessibility for operation and maintenance, and long-term performance will be presented.

Media Filter Installation

Course Instructor: Sara Christopherson, University of Minnesota

Course Length: 1.0 hour

In this session, media filters are discussed with respect to their expected operational criteria and associated installation practices. Critical construction practices for media filter components will be presented with respect to facilitating operation and maintenance for optimal long-term performance.

Installing Disinfection Systems

Course Instructor: Nancy Deal, North Carolina State University

Course Length: 0.75 hour

Disinfection is a critical part of many treatment trains located across the country. Disinfection methods and effective approaches to installing these systems with adequate access for operation and maintenance will be discussed.

Installing Drip Distribution Systems

Course Instructor: Tom Fritts, Residential Sewage Treatment Co.

Course Length: 1.0 hour

This session presents a discussion of drip distribution system components and potential treatment trains. Key differences between drip distribution and other pressure distribution methods will be highlighted. Simple but critical guidelines that facilitate the installation and maintenance of drip distribution systems for optimum performance will be presented.

II. Onsite Business Strategies and Zoeller Plant Tour

Overview of Onsite Industry

Course Instructor: Matthew E. Byers, Ph.D. Onsite Manager

Course Length: 0.75 hour

This presentation will look at where the industry is and where it is going -- how the industry stacks up, both regionally and organizationally.

Relationships and Health Departments, Engineers, and Local Officials

Course Instructor: Wes Combs R.S.

Course Length: 1.0 hour

This is a presentation regarding who you need to know, how to get to know them, and what to say when you get the chance. These relationships are your business "lifeline" and this presentation will give you some pointers and best practices.

Effluent Pump Sizing for Onsite Wastewater Applications

Course Instructor: Dave Theobald, SSPMA

Course Length: 1.0 hour

One of the keys to the sustainability of an onsite wastewater system is a properly sized and applied pump. This presentation will introduce the concepts and processes necessary in the appropriate sizing and selection of pumps for effluent applications, such as Low Pressure Pipe (LPP), Enhanced Flow, and STEP systems.

Secondary and Advanced Treatment

Course Instructor: Darren Meyers, P.E.

Course Length: 1.0 hour

This presentation will look at some of the more common forms of secondary and advanced treatment in use today. The discussion will include mechanisms for treatment, operation and maintenance, and sustainability considerations.

O&M Coordination, Business Management and You

Course Instructor: Jason Nett M.B.A.

Course Length: 1.0 hour

This presentation will discuss how to do business, improve business, and different ways to work the service side of your business.

Zoeller Plant Tour

Course Instructors: Dave Theobald and Darren Meyers

Course Length: 2.0 hours

This tour will highlight the various pumps, effluent screens, and decentralized technologies being manufactured at the Zoeller plant.

III. Vendor Training Rooms

Bio-Microbics, Inc.

RetroFAST® Wastewater Treatment Systems

Course Instructor: Reza Shams

Session length: 2.0 hours

RetroFAST(R) wastewater treatment systems are used as an enhancement for conventional septic systems and provide a simple upgrade to renovate biologically failed septic systems. RetroFAST also reduces the concentration of high strength waste, making it a good fit for many troubled systems. When used with new home construction, the RetroFAST delivers high levels of treatment to help assure the clogging layer never forms in the first place.

Norweco, Inc.

Troubleshooting Chlorination and Dechlorination Systems

Course Instructor: Don Bach

Session length: 1.0 hour

Effective chlorination and dechlorination of wastewater depends on the knowledge and control of variables such as pH, alkalinity, ammonia, and suspended solids. This session explores the potential impact of these variables and corrective actions.

Norweco, Inc

Introduction to Remote Monitoring of Residential Aerobic Treatment Systems

Course Instructor: Robert Fletcher

Session length: 1.0 hour

This course is a basic introduction to the design, operation, and troubleshooting of residential ATU's equipped with remote monitoring capability. Taught from the service technician's point of view, this course promises a wealth of valuable advice.

Polylok, Inc.

Septic Tank Filters

Course Instructor: Harry Nurse & Peter Gavin

Session length: 1.0 hour

The session will describe why in this day and age septic tank filters are more important than ever as described by one of the early pioneers of the industry. A brief overview and description of how filters work and why they are critical to every system will be provided.

Polylok, Inc.

Selling Your Business to a Competitor

Course Instructor: Harry Nurse & Peter Gavin

Session length: 1.0 hour

This session will provide a brief overview of the trials of selling your business to a competitor.

IV. Onsite Drip Dispersal Overview, Design, Installation, and Operation

Introduction to Onsite Drip Dispersal

Course Instructor: Mike Stoll, Netafim USA

Course Length: 1.0 hour

This session presents how drip dispersal works. It will also describe the differences between drip dispersal and other disposal techniques, as well as provide a description of systems ranging from single family homes to municipalities.

Soil and Site Considerations

Course Instructor: David Morgan, Geoflow

Course Length: 1.0 hour

The importance of soil structure in determining the application rate will be discussed along with how to manage impermeable layers, compacted soils, and fill.

General Design and Layout of Drip Dispersal Systems

Course Instructor: Mike Stoll, Netafim USA

Course Length 2.0 hours

An overview of the components of a drip dispersal system will be covered including the dripline, filters, valves, air-vacuum relief valves, and other components. Techniques will be presented on how to design for slopes and freezing climates. Typical designs will be provided with an emphasis on difficult or unusual conditions. There will also be discussion on how drip dispersal systems can provide beneficial reuse opportunities for the effluent, including irrigation.

Dosing and Flushing

Course Instructor: David Morgan, Geoflow

Course Length: 1.0 hour

This presentation will cover why timed dosing is preferable, as well as flushing of the filter and the driplines. Manual flushing vs. automatic flushing vs. continuous flushing also will be discussed.

Installation Techniques

Course Instructor: Mike Stoll, Netafim USA

Course Length: 2.0 hours

Various techniques, as well as tips and hints for installation techniques including shovel, trencher, vibratory plow, and custom built plows will be discussed.

Operation & Maintenance

Course Instructor: David Morgan, Geoflow

Course Length: 1.0 hour

Proper installation is just the beginning. This presentation will cover important information on how to get and keep the system working: system start-up, system operation, and routine maintenance.

V. Vendor Training Rooms

Bord na Mona Environmental Products US Inc.

Design, Installation and Operation & Maintenance of the Pura-Mc® (compact membrane) System

Course Instructor: John Payne

Session length: 2.0 hours

Topics covered include design guidelines, typical components of a Pura-Mc®, and installation of the system. Also covered will be expected performance of the Pura-Mc® system and on-going O&M requirements.

Bio-Microbics, Inc.

Membrane Technology

Course Instructor: Reza Shams

Session length: 2.0 hours

This short course focuses on the installation and operation for small scale applications of the Membrane Bioreactor (MBR) in decentralized wastewater applications. The unique features and challenges of this new technology for decentralized applications will be reviewed. Several examples of installations will be discussed along with detailed procedures in operation.

Infiltrator, Inc.

Drainfield Malfunction Investigation and Remedies

Course Instructor: Dennis F. Hallahan

Session length: 2.0 hours

Causes of drainfield malfunction can be numerous. This presentation will review the basic functions of each system component and methods to investigate each.

Infiltrator, Inc.

Effluent Distribution

Course Instructor: Dennis F. Hallahan

Session length: 2.0 hours

This session will present a review of gravity, pressure, and timed dosing strategies to achieve the desired goals for onsite wastewater systems. Advantages and disadvantages will be discussed for each method.

Instructor Biographies

Don Bach, Director of Sales, Norweco, Inc. has 30 years experience in tablet chlorination and dechlorination of small flow wastewater and potable water. He graduated from Kent State University in 1974 with a major in Business Management and pursued graduate education at Cleveland State University and Case Western University. Prior to joining Norweco in 1991, Don held several sales management positions for Jet Inc. in Cleveland, Ohio and Eltech Systems Corporation in Chardon, Ohio.

Nancy Deal, BS, MS, REHS, CIOWTS is an Extension Associate with NC State University Soil Science Cooperative Extension and an adjunct lecturer with East Carolina University. She develops curricula and delivers training, education, and technical assistance regarding decentralized wastewater treatment to homeowners, small communities, onsite professionals, and government personnel. She has served as project manager and writer on numerous projects conducted by the Consortium of Institutes for Decentralized Wastewater Treatment (CIDWT), including the Installer Training Program. Ms. Deal is also engaged in research on system malfunction as related to best management practices (BMPs). Projects include soil and site evaluation and the use of water treatment devices in conjunction with decentralized systems. She earned a BS in Horticultural Science from the Pennsylvania State University and an MS in Plant Nutrition from NC State University.

Matt Byers, Ph.D. is an Onsite Program Manager and heads up the Onsite Research and Development Program at Zoeller®. His primary roles are to facilitate the progress of the Onsite Program within his company and to develop desirable onsite wastewater components, systems, and procedures. He obtained his Ph.D. in Entomology/ Environmental Programs from the University of Nebraska in 1990, his M.S. in Entomology from South Dakota State University in 1987, and his B.S. in Biology at the University of South Dakota in 1982. He has been an Adjunct Assistant Professor with the University of Kentucky Department of Biosystems and Agricultural Engineering. For many years, Matt has served in prominent positions in many water quality associations such as KOWA, NOWRA, WERF-DRAC, etc. al.

Wes Combs, R.S. is an Onsite Sales Manager at Zoeller®. In this role, Wes will be working with each rep and territory to further Onsite efforts there. Wes graduated from the University of Kentucky in 1984 with B.S. in Agronomy with Major in Soil Science and Minor in Microbiology. He carries the title of Registered Sanitarian. He was employed as Soil Scientist and Technical Consultant with the Kentucky Department for Public Health in the Onsite Sewage Disposal Program from 1985 to 1996 and worked as Section Supervisor for the same Department from 1996 to 1999.

Robert Fletcher is the Business Development Manager for Norweco, Inc. In this position he works with existing and new distributors to improve their working knowledge of system installation, operation and maintenance. Robert also spends considerable time providing classroom training to system designers, sanitarians, and installers, as well as hands-on training in the field for installers and maintenance providers. Robert is a graduate of Clarion University of Pennsylvania with a Bachelor of Science degree in Marketing and Management.

Tom Fritts is the Vice President / Owner of Residential Sewage Treatment Company (RSTC). RSTC is located in Grandview, Missouri where they design, sell & service alternative onsite wastewater systems. RSTC currently has over 2,500 single-family homes under annual service contracts covering a 75-mile radius of Kansas City. Tom was instrumental in establishing wastewater drip irrigation in the Missouri / Kansas area over 12 years ago.

Tom is past president and current board member of the Missouri Smallflows Organization and Kansas Small Flows Association. Tom is a current board member of the National Onsite Wastewater Recycling Association (NOWRA) and serves on the NOWRA Technical Practices Committee.

Tom is approved by the Missouri Department of Health and Senior Services, Missouri Smallflows Organization, Kansas Small Flows Association, and the Consortium of Institutes for Decentralized Wastewater Treatment as an instructor for Continuing Education Seminars for the Onsite Wastewater Professional.

Peter Gavin has a degree in Mechanical Engineering as well as 25 years of precast concrete experience. Peter Gavin is taking filter technology into the 21st century. As the current owner and President of Polylok, Inc. he has done this through new ideas, new technologies and the purchase of Zabel Environmental Technology.

Dennis F. Hallahan, P.E. has worked for Infiltrator for over ten years and is currently its Technical Director. In that position, he is responsible for government relations and technology transfer between Infiltrator and the regulatory and design communities. Mr. Hallahan oversees a staff that is responsible for obtaining approvals, product research, and testing for both universities and private consultants. This department develops system sizing charts *and something is missing here – what for national and international approvals* and assists customers and field representatives in the planning and review of large commercial onsite wastewater systems.

Mr. Hallahan has over twenty years of experience in the design and construction of onsite wastewater treatment systems. He has authored several articles for onsite industry magazines and has given numerous presentations nationally on the science and fundamentals of onsite wastewater treatment systems. Mr. Hallahan also holds patents for onsite wastewater products.

Mr. Hallahan is a licensed professional Civil Engineer in Colorado and Connecticut. He received his Masters Degree in Civil Engineering from the University of Connecticut and a Bachelor of Science Degree in Civil Engineering from the University of Vermont.

Sara Heger Christopherson, MS, CIOWTS is an Extension Specialist in the Onsite Sewage Treatment Program at the University of Minnesota, where she provides education and technical assistance to homeowners, small communities, onsite professionals, and local units of government regarding onsite wastewater treatment. Sara was a lead author on the national project writing team for the Consortium of Institutes for Decentralized Wastewater Treatment (CIDWT) Installer Curriculum Project.

Sara serves on the board of the Minnesota Onsite Wastewater Association (MOWA) and as the education chairperson for the National Onsite Wastewater Recycling Association (NOWRA). She is also the chair of the Minnesota State Advisory Committee on Decentralized Systems and serves on the Minnesota Pollution Control Agency Technical Assistance Panel.

She has a MS in Water Resource Science (WRS) and a BS in Biosystems and Agricultural Engineering and is working on completing a PhD in WRS.

Darren Meyers, P.E. serves as the Application Engineer at Zoeller® in Louisville, Kentucky. His position combines nearly all aspects of Onsite Wastewater System design, including pump and line sizing, floats and controls, biology, and treatment rates. He holds a degree in Civil Engineering from the University of Dayton and is a licensed Professional Engineer in the states of Kentucky and Kansas. His experience in the water and wastewater industries includes work with municipal, private residential, and community projects.

Randall J. Miles, Ph.D. is a faculty member in the Department of Soil, Environmental, and Atmospheric Sciences at the University of Missouri. Dr. Miles' current research deals with on-site wastewater treatment and disposal and soil site characteristics. He is Director of the Missouri SmallFlows Wastewater Education/Research Training Center and Director of Historical Sanborn Field, the third oldest continuous research field in the world. Dr. Miles also works in the soils and archaeology arena. His major teaching responsibilities include: Introduction to Soil Science; Genesis of Soil Landscapes; and Pedology. He also

serves as coach of the MU Soil Judging Team and co-Director of the Missouri Soil Characterization Laboratory in support of the Missouri Cooperative Soil Survey Program. Dr. Miles is on the Board of Directors of NOWRA and a member of the Executive Committee of the Consortium of Institutes for Decentralized Wastewater Treatment (CIDWT).

David Morgan is a Regional Manager for Geoflow, Inc. He has a B.S. degree in Agriculture Engineering from Mississippi State University. Since June of 2008, Mr. Morgan has been assisting regulators with development of rules and regulations for subsurface drip disposal systems. He also provides training and assistance to professionals involved in the soil and site evaluation, system design, and installation of subsurface disposal systems.

He previously worked eighteen years for the Mississippi State Department of Health. While there he assisted in writing and implementing rules and regulations for soil and site evaluation, as well as wastewater treatment and disposal systems for the onsite industry. Mr. Morgan also developed training programs for Public Health Environmentalists, designers, installers, and operators of individual onsite wastewater treatment and disposal systems.

He worked for one year for Geoflow, Inc. as the southeastern regional sales manager, where he worked with regulators, designers and installers of subsurface drip disposal systems. He also worked ten years for Delta Environmental Products, Inc. While there he assisted in the development and refinement of the Whitewater[®] Pre-Engineered Subsurface Drip Disposal System. Mr. Morgan obtained regulatory approval for the Whitewater[®] system and trained designers, installers, operators, and regulatory officials on proper use of the system. While with Delta he served on the peer-review team for the TVA guidance document on subsurface drip disposal systems.

Jason E. Nett graduated from the University of Southern Indiana in 1999 with a Bachelor of Arts Degree in Biology and completed a Masters in Business Administration at Indiana University Southeast in 2009. He has served as a laboratory technician for five years researching onsite wastewater treatment systems. He holds a Class IV Wastewater Lab Analyst certification and a Class II Drinking Water Lab Analyst certification in the state of Kentucky. In his current position he serves as President of a service company that provides installation, maintenance, and repair services for all types of wastewater handling and treatment systems. He is a licensed septic system installer in the state of Indiana and provides field support and training to onsite system installers and maintenance personnel.

John Payne is the Executive Vice President of Bord na Móna, Environmental Products US Inc. and Manager of the Onsite Products Division. He has over 7 years experience in the US onsite wastewater sector and has been heavily involved in R&D and Operations for Bord na Móna, Environmental Products US Inc.

Prior to joining Bord na Mona, Environmental Products US Inc., John worked in various business units within Bord na Mona, Ireland over the previous 15 years. John is a Graduate of the Queens University of Belfast, holding a Bachelor's degree in Mechanical Engineering.

Reza Shams is the Vice President of Process Technology at Bio-Microbics, Inc. He has been with Bio-Microbics for over five years developing new treatment systems suitable for the onsite wastewater treatment sector. Prior to joining Bio-Microbics, he was with USFilter, Memcor, Jet Tech and Evirex for nine years, performing equipment and system designs for various processes including SBR and MBR. Before joining USFilter, Reza worked for Black & Veatch Consulting Engineers for six years, performing process design for various liquid and biosolids treatment systems. Reza received his M.S. and Ph.D. in Environmental Health Engineering at the University of Kansas. He is currently an adjunct professor at KU. Dr. Shams has written and presented over 50 technical papers.

Mike Stoll is Netafim USA's Wastewater Division Market Manager and has worked for Netafim since 1994. In that role, he oversees sales, product management, distribution strategy, and market development for Netafim's wastewater products in North America. Before that, he was the Market Manager for Netafim's Landscape & Turf Division.

Prior to joining Netafim, Mike worked from 1979-1994 for The Toro Company where he held various sales management positions including National Sales Manager of the Irrigation Division. He began irrigation contracting in 1964 and served for 7½ years in the U.S. Air Force's Air Weather Service.

Mike attended the State University of New York, the University of New Hampshire and Eastern Illinois University and holds degrees in Business Administration, Business Management, and Education.

Dave Theobald is an Application Technician at Zoeller®. Working in the onsite department, his responsibilities include the design, development, pricing,

support, and troubleshooting of wastewater products and systems. Previously, Dave logged many years of experience in the Canadian plumbing industry as a licensed pump and onsite wastewater installer and well technician. Dave earned a B.S. in Biology from the University of Western Ontario and both the M.Div. and Th.M. from the Southern Baptist Theological Seminary. He serves on the board of directors for the Sump and Sewage Pump Manufacturers Association (SSPMA).

Bob Zabel was a man ahead of his time. In 1959 he invented and patented the septic tank effluent filter. It was not until 31 years later that Harry Nurse, a modern day pioneer built Zabel Environmental Technology and brought the septic tank filter into mainstream America.