

BC Organics Project

Introduction to McMahon Associates, Inc.

CHAD T. OLSEN, P.E., BCEE

THE
McMAHON Way
• FOR OVER 100 YEARS •
Values. Culture. Relationships

McMAHON
ENGINEERS ARCHITECTS

JUNE 25, 2018

Introduction to McMAHON

- Headquartered in Neenah, WI with offices in Machesney Park, IL and Valparaiso, IN
- McMAHON Associates, Inc. (McMAHON)
Full-Service A/E Firm with staff of 140+; Est. 1909
- McMAHON, Inc.
Full-Service Design/Build Firm, Est. 1991
- Recognized regionally and nationally for award winning designs and leadership in innovation
- Implementation of sustainable design principles, including LEED Design, Lean Practices and Waste-to-Energy Concepts
- McMAHON has designed over 100 municipal and industrial water and wastewater treatment facilities throughout the Midwest





Areas of Expertise

- Architecture
- Wastewater Systems Engineering
- Water Systems Engineering
- Waste-to-Energy Engineering
- Environment/Ecology
- Stormwater Management
- Transportation
- Parks and Recreation
- Land Surveying
- Site Development
- Aerial/Terrestrial Geospatial Data Acquisition Services
- BIM
- GIS Development
- LEED®
- Structural Engineering
- Industrial Engineering
- Electrical/Controls Engineering
- Mechanical HVAC/Plumbing Systems
- Funding Strategies, Solutions and Grant Assistance
- Construction Services
- Design/Build Services
- Public/Private Partnerships
- Municipal Administrator Services
- Professional Operations

CORE BELIEFS:

The McMAHON Way is a service-oriented philosophy, with the goal of building long-term client relationships, by combining strong core values with a culture for success.

Build Long-Term Relationships

Long-Term Relationships are built on the foundation of having people with Strong Core Values utilizing the McMAHON Culture to deliver Satisfaction to Clients.

Strong Core Values

Employees that are selected as a part of the McMAHON Team must possess these core values. These are the qualities that McMAHON individuals need to exhibit in order to act in the best interest of the client.

Values

- Honesty and Integrity
- Value of Work
- Strive for Excellence
- Service-Oriented

Client Satisfaction Leads to Long-Term Relationships

Culture

- Diverse Design Capabilities and Expertise
- Investing in Employees
- Freedom to Operate and Innovate
- Entrust/Empower Performers

Culture for Success

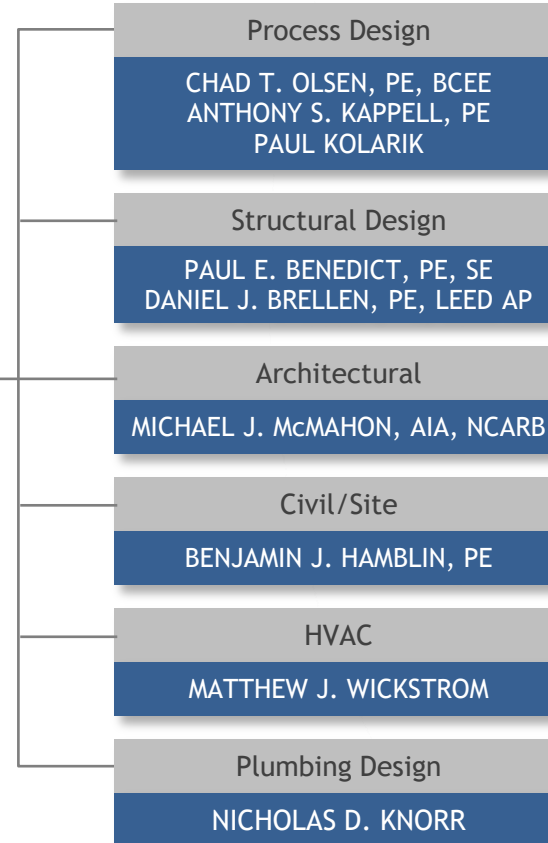
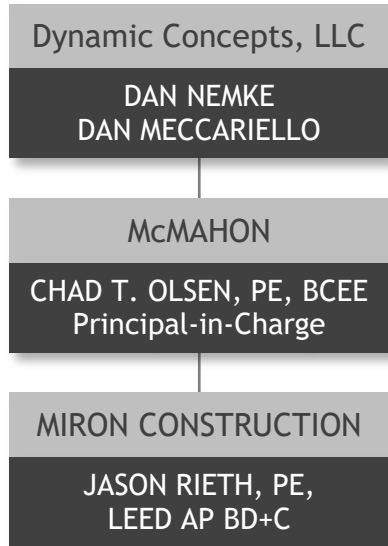
The McMAHON Management Philosophy is to hire quality people that have strong core values, mentor them, treat them well, and retain them to maintain a quality McMAHON Team. Further, we provide a company culture with an empowerment philosophy that promotes success through achievement.

Relationships

- Achieve Client Satisfaction
- Place Client's Needs First
- Involve Client in Decisions
- Become a Trusted Partner

THE
McMAHON
VALUES • CULTURE
RELATIONSHIPS
Way
• FOR OVER 100 YEARS •

BC Organics Project PROJECT TEAM



On-Farm Anaerobic Experience

McMAHON has been actively involved in designing innovative on-farm anaerobic digestion projects. McMAHON has drawn from its 100-years of creative innovation in wastewater treatment to develop cost effective and efficient on-farm digestion projects.

Projects with Clear Horizons / US Biogas / Dynamic Group: **FINAL DESIGN**

▪ **Crave Brothers Farms**

Waterloo, WI 2006

- 0.8 MG Digester
- Screw Press
- Compost Building
- Biogas Conditioning Skid
- 233 kW Genset

▪ **Crave Brothers Farms Expansion**

Waterloo, WI 2008

- Second 0.8 MG Digester
- Biogas Conditioning Skid
- 633 kW Genset

▪ **Goeser Dairy**

Plymouth, WI 2010

- 1.25 MG Digester
- Centrifuge
- Dryer
- Biogas Conditioning Skid
- 1.43 MW Genset

▪ **Dane County Community Digester**

Town Of Waunakee, WI 2011

- Community Digestion System
- Three 1.25 MG Digesters
- Biogas Conditioning Skid
- Two 1.0 MW Gensets
- Centrifuge
- Compost Building

▪ **Mauneshia River Dairy,**

Sun Prairie, WI

- Two 1.25 MG Digesters
- Centrifuge
- Solids Composting
- Biogas Conditioning Skid
- 1.45 MW Genset

▪ **Waste No Energy**

White County Indiana 2013

- One 1.0 MG Digester
- Swine Manure
- Substrate Receiving
- H2S Removal
- Biogas Conditioning Skid
- Engine Genset

▪ **GL Dairy Biogas Project**

Springfield, Wisconsin 2013

- Community Digester Project
- Three 1.0 MG Digesters
- Manure and Substrate Receiving Building
- Two (2) screw presses
- One (1) centrifuge
- Indoor Compost Facility
- Biogas Conditioning Skids
- 1.43 MW and 0.633 MW Gensets

▪ **GL Dairy Sunnyside Project**

Sun Prairie, Wisconsin 2013

- One 1.0 MG Digester
- Solids Separation
- Fiber Storage Area
- Biogas Conditioning Skid
- 633 KW Genset



On-Farm Anaerobic Experience

Projects with Clear Horizons / US Biogas / Dynamic Group: **PRELIMINARY DESIGN**

- **Kremer Family Farms**

Greenville, OH 2010

- 1.25 MG Digester
- Hog Manure
- Hauled-In-Wastes
- Processing Building
- Screw Presses
- Membrane Separators
- Two 843 kW Gensets

- **Ringler Farms**

Cardington, OH 2010

- 0.8 MG Digester
- Hog Manure
- Hauled-In-Waste
- Processing Building
- Screw Pumps
- Membrane Separators

- **Feeder Creek**

Monona, Iowa 2017

- Four 1.0 MG Digesters
- Substrate Receiving
- Biomethane Generation

Other Projects with US Biogas/Dynamic Group

■ Sequel Farms – 2014

DeWitt County, Illinois

- Swine Manure
- Manure Receiving Pit
- Drum Screens
- Membrane Treatment System
- Solids Storage Area
- Clear Water Storage and Pumping Systems

■ Rolling Hills Dairy – 2017

Luxemburg, Wisconsin

- Manure Transfer & Reception Pit
- Screw Presses
- Dryer
- Dried Fiber Storage

■ Aqua Innovations – Springfield Clean Water System - 2017

Springfield Wisconsin

- Membrane Treatment Addition at GL Dairy Facility
- Liquid Loadout Facility

Other Farm Based Projects

■ Triple G Dairy - Preliminary Engineering

Buckeye, Arizona

- Two Digesters
- Hauled-In Waste Receiving
- Sand Settling System
- Solids Settling Pond
- Screening
- 2-Stage Separator
- Engine Generator

■ Rosendale Dairy - BioFerm

Rosendale, Wisconsin

- Two 1.0 MG Digesters
- Raw Manure Transfer
- Raw Solids Screening
- Solids Pumping
- Screw Presses
- Fiber Storage/Bunker
- Biogas Conditioning
- 1.4 MW Genset



Renewable Natural Gas (Biomethane) Project Experience

- Large Industrial Customer - Nebraska
 - Anaerobic Digestion
 - Absorption Column/water scrubbing
 - Molecular sieve descant dryer

- Large Industrial Customer - Wisconsin
 - Anaerobic Digestion
 - Scrubber
 - Carbon Vessels
 - Membrane Separation

Partial List Of Anaerobic Digestion Experience

Client	Size (mgd)	Design	Study	Design Features
ALGOMA, WI	1.5	X		Gravity Belt Thickening (GBT), Anaerobic Digestion, 180-Day On-Site Liquid Storage
APPLETON, CITY Of Dept. Of Utilities, WI	16		X	Temperature Phased Anaerobic Digestion (TPAD) Preliminary Engineering Design Study
APPLETON, CITY Of Dept. Of Utilities, WI	16	X		Digester Rehabilitation; including Biogas Mixing Modifications & Removal, Jetting Of Biogas Piping
BEAVER DAM, WI	3.5	X		Gravity Thickening, Anaerobic Digestion w/Methane Recovery, Sludge Dewatering, 180-Day On-Site Cake Storage In Building
BIG OX ENERGY South Sioux City, NE	N/A	X		Two-Tank Anaerobic Digestion Facility w/Dewatering & Dissolved Air Flotation (DAF) Pretreatment. Facility Receives Both Pumped-In & Hauled-In Wastes. Biogas Is Cleaned To Natural Gas Quality & Injected Into The Natural Gas Grid.
BIG OX ENERGY Denmark, WI Facility Expansion				Three-Tank Anaerobic Digestion Facility For Processing Hauled-In Wastes. Existing Digester Converted To Equalization (EQ) Tank. Resultant Solids Dewatered w/Screw Presses. Biogas Is Cleaned To Natural Gas Quality & Injected Into Natural Gas Pipeline.
BIOFerm ENERGY SYSTEMS GL Dairy Biogas Middleton, WI	N/A	X		Preliminary Engineering On Three-Tank On-Farm Anaerobic Digestion Facility That Accepts Manure From Three (3) Farms. Facility Receives Bedding Pack & Hauled-In High Strength Wastes. Biogas Powers Two (2) 1.0 Mw Engine Generators. Resultant Solids Dewatered & Composted.
BIOFerm ENERGY SYSTEMS UW-Oshkosh Rosendale Dairy, Rosendale, WI	N/A	X		Design Of Two-Tank On-Farm Anaerobic Digestion System w/Fiber Recovery & 1,426 Kw Engine Genset.
CLEAR HORIZONS, LLC Crave Bros. Farm, WI	N/A	X		On-Farm Anaerobic Digester, Complete Mix w/Liquid Substrate Co-Digestion. Digester Effluent Is Dewatered & Solids Composted.
CLEAR HORIZONS, LLC Crave Bros. Farm, WI	N/A		X	Addition Of A Second Anaerobic Digester, Replacement Of Screw Pump & Installation Of Larger Genset.
CLEAR HORIZONS, LLC Dane County Community Digester, WI	N/A	X		On-Farm Anaerobic Digester That Accepts Manure From Three (3) Farms. Facility Receives Bedding Pack & Hauled-In High Strength Wastes. Biogas Powers Two (2) 1.0 Mw Engine Generators. Resultant Solids Dewatered & Dried For Bedding & Compost Market.

Partial List Of Anaerobic Digestion Experience, continued

Client	Size (mgd)	Design	Study	Design Features
CLEAR HORIZONS, LLC Kremer Family Farms Ansonia, OH	N/A	X		Preliminary Engineering Of Hog Manure & Hauled-In Waste Digestion Facility w/Membrane Solids/Liquid Separation & Cogeneration.
CLEAR HORIZONS, LLC Ringler Farms, OH		X		Preliminary Engineering Of A Hog Manure & Hauled-In Waste Digestion Facility. System Included Screw Pump For Solids/Liquid Separation & Cogeneration.
CLEAR HORIZONS, LLC Goeser Dairy Plymouth, WI	N/A	X		On-Farm Anaerobic Digestion System, including Drawings & Specifications For Civil/Site, Architectural, Structural, Underground Piping & Mechanical Design For WI Dept. Of Natural Resources (DNR) Approval, Pricing & Construction. Facilities Included Raw Manure Pumping, Substrate Storage Tank, Package Anaerobic Digester, 1.4 Mw Genset w/Gas Conditioning System, Containerized Pumping/Distribution Piping Manifolds, Containerized Solids Dewatering & Drying Equipment, Solids Storage Building.
CLEAR HORIZONS, LLC Maunesha River Dairy Sun Prairie, WI		X		On-Farm Anaerobic Digestion System, including Drawings & Specifications For Civil/Site, Architectural, Structural, Underground Piping & Mechanical For WI Dept. Of Natural Resources (DNR) Approval, Pricing & Construction. Facilities Included Manure Receiving Building & Pumping Station, Steel Substrate Storage Tank, Package Anaerobic Digester w/Insulated Steel Tank w/Gas Holding Membrane Cover, 1.4 Mw Genset w/ Gas Conditioning System, Containerized Pumping / Distribution Piping Manifolds, Containerized Solids Dewatering & Drying Equipment, Solids Storage Building.
FOREST COUNTY POTAWATOMI COMMUNITY Milwaukee, WI	N/A		X	Feasibility Study On Viability Of Aerobic Digestion Facility To Produce Renewable Heat & Power Adjacent To The Forest County Potawatomi Community (FCPC) Hotel & Casino.
GLENBARD WASTEWATER AUTHORITY, IL	16.0		X	Evaluated Retrofit Of Aerobic Digestion To Auto-Thermal Aerobic Digestion (ATAD), Pulse Power & Two-Stage Thermophilic/Mesophilic Digestion.
GOGEBIC-IRON WASTEWATER AUTHORITY, MI	3.0	X	X	Vortex Digester Mixing System, Two-Phase Thermophilic/Mesophilic Digestion Pilot Study.
LACROSSE, WI	20		X	Temperature Phased Anaerobic Digestion (TPAD) Preliminary Engineering Study
LOUISVILLE METROPOLITAN SEWERAGE DISTRICT, KY	120	X		Preliminary Design Of The World's Largest Temperature Phased Anaerobic Digestion (TPAD) Facilities.
MAPLE LEAF FARMS, Franksville, WI	N/A		X	Study Of Anaerobic Digestion Alternatives For Processing Facility.

Partial List Of Anaerobic Digestion Experience, continued

Client	Size (mgd)	Design	Study	Design Features
MARENGO, IL	1.6	X		Design/Build. Temperature Phased Anaerobic Digestion (TPAD).
MERIDIAN, ID	2.5	X		Temperature Phased Anaerobic Digestion (TPAD).
NEENAH-MENASHA SEWERAGE COMMISSION, Winnebago County, WI	13	X	X	Mesophilic Anaerobic Digestion, Cogeneration, Sludge Thickening, Biosolids Dewatering, Designed Conversion To Temperature Phased Anaerobic Digestion (TPAD).
NEENAH-MENASHA SEWERAGE COMMISSION, Winnebago County, WI	13	X	X	Rehabilitation Of Digester Covers, New Boiler & Spiral Heat Exchangers, Linear Motion Mixer, New Biogas Piping
PORT WASHINGTON, WI	3.0	X		Gravity Belt Thickening (GBT), Anaerobic Digestion With Methane Recovery, 180-Day On-Site Liquid Storage.
PORTAGE, WI	2.0	X		Rehabilitation Of Anaerobic Digestion System, including Installation Of New Mixing System.
RICHLAND CENTER RENEWABILITY ENERGY Richland Center, WI	N/A	X		Complete Wastewater Treatment Facility That Processes Wastewater From Three (3) Dairies (Cheese Making Facilities). System Includes Two (2) Digesters To Process High Strength Wastes. Biogas Used To Power Two (2) 850 Kw Generators For Heat & Power Production.
SCHREIBER FOODS Shippensburg, PA	N/A	X	X	Anaerobic Digestion Of Whey & Other High-Strength Wastes At Production Facility. System Includes 1.4 Mw Genset.
SPECTRUM PREFERRED MEATS, WI	0.04	X		Anaerobic Lagoon For Pretreatment Of Processing Facility Waste.
STURGEON BAY UTILITIES Sturgeon Bay, WI	3.0	X	X	Gravity Thickening, Anaerobic Digestion w/Methane Recovery & Biosolids Dewatering. Conversion To Temperature Phased Anaerobic Digestion (TPAD) In 1996; Upgraded Digestion Heating System In 2006.
U.S. BIOGAS, LLC Goesser Dairy II Plymouth, WI		X		Assisted With Obtaining WI Dept. Of Natural Resources (DNR) Approval Of Proposed On-Farm Digester System, including Preparation Of Drawings For Civil/Site & Underground Piping. Facilities Included Raw Manure Pumping Station, Substrate Storage Tank, Two (2) Digester Tanks, 1.4 Mw Genset w/Gas Conditioning System, Process Building w/Process & Hot Water Piping Manifolds, Centrifuge Solids Dewatering, Centrate Pumping Station, Solids Composting / Storage Building.

Partial List Of Anaerobic Digestion Experience, continued

Client	Size (mgd)	Design	Study	Design Features
U.S. BIOGAS, LLC Mauneshia River Dairy II		X		Assisted With Obtaining WI Dept. Of Natural Resources (DNR) Approval Of Proposed On-Farm Digester System, including Preparation Of Drawings For Civil/Site & Underground Piping. Facilities Included Raw Manure Receiving / Process Building & Pumping Station, Substrate Storage Tank, Two (2) Digester Tanks, 1.4 Mw Genset w/Gas Conditioning System, Centrate Pumping Station, Solids Composting / Storage Building.
U.S. BIOGAS, LLC White County, IN	N/A	X		1.0 M Gallon Anaerobic Digester To Process Swine Manure, Bedding & Hauled-In High Strength Wastes. Facility Includes Service Building w/Enclosed Truck Loading & Unloading, Post-Digestion Membrane Separation Unit To Concentrate Resultant Nutrients. Biogas Will Power Engine Genset To Produce Saleable Electricity & Heat For Use In The Process.
UNIVERSAL ENTECH	N/A		X	Bench Tested At Iowa State University Co-Digestion Of Supernatant Food Spoils w/Corrugated Cardboard & Paunch Manure.
UNIVERSAL ENTECH Buckeye, AZ	N/A	X		Performed Preliminary Engineering On On-Farm Anaerobic Digestion System. Facility Included Two (2) Complete-Mix Digesters, Sand Settling, Manure Thickening, Hauled In Waste Receiving & Post-Digestion Dewatering. Biogas Used To Power Engine Genset.
WASHINGTON ISLAND, WI	N/A		X	Performed Preliminary Engineering On Anaerobic Digester To Recycle Nutrients On Island. Feed Stocks Include Septage, Holding Tank Waste, Food Waste, Fish Spoils & Manure.
WESTERN LAKE SUPERIOR SANITARY DISTRICT, Duluth, MN	45		X	Performed Bench Testing At Iowa State University On Three (3) Anaerobic Digestion Processes For Stabilizing Solids From The Wastewater Treatment Facility.
WISCONSIN FOCUS ON ENERGY	N/A		X	State-Wide Assessment; Anaerobic Digestion Methane-To-Energy Study.

Thank You for visiting us today!

Questions?

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