BC ORGANICS PROJECT

Introduction to Anaerobic Digestion and the BC Organics Project

Presentation Outline

- Dynamic Introduction
- Review of the Anaerobic Digestion Process
- Drawings of Project
- Benefits of Project
- Safety Features of Project
- Operational Plan/Permits
- Questions/Comments

Dynamic

- Dynamic specializes in anaerobic digestion, organic waste management, and renewable energy
- Over 75 years of combined experience in the Biogas Sector
- Headquartered in Germantown, WI

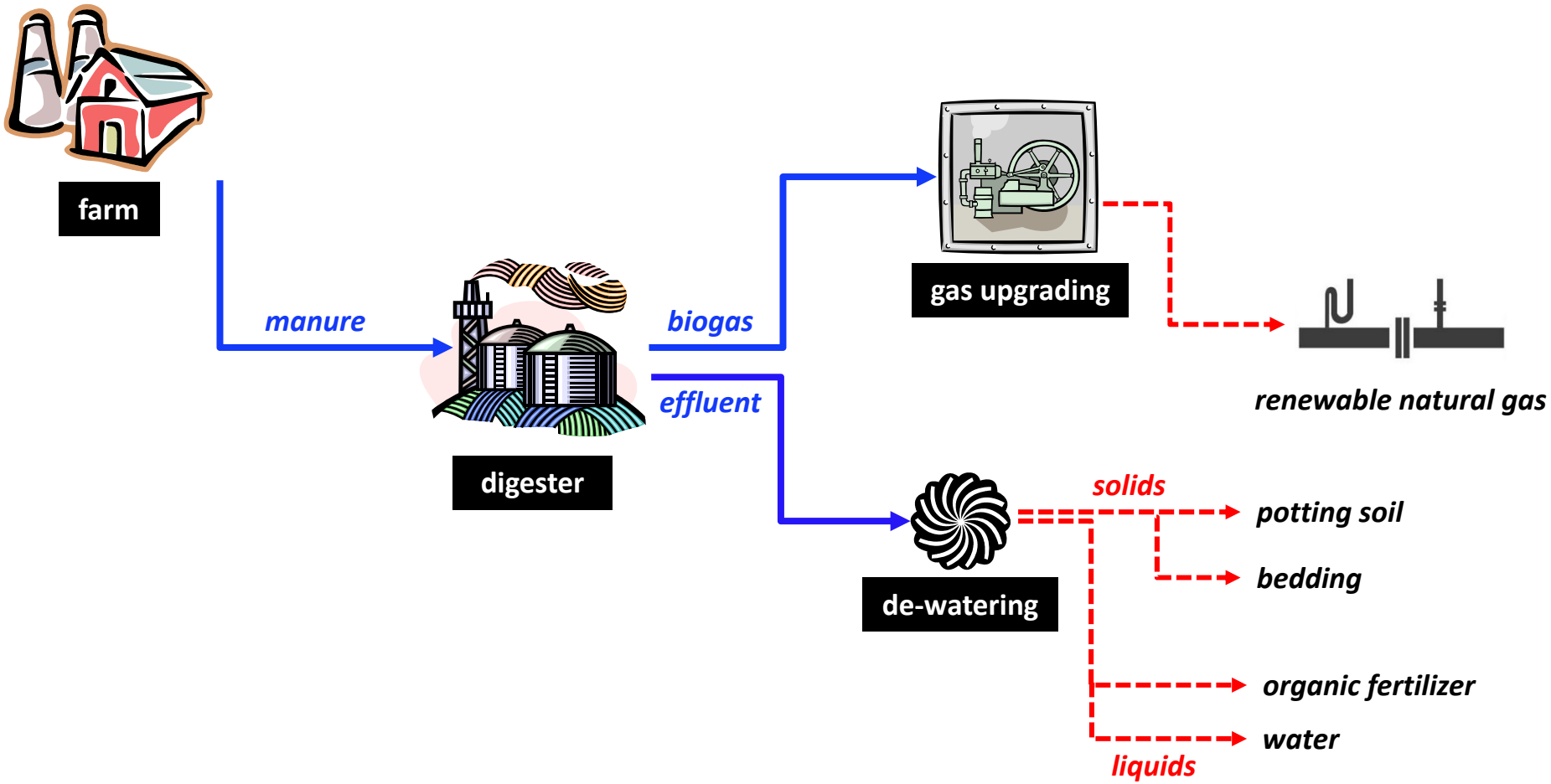
What is Anaerobic Digestion?

- Anaerobic Digestion (AD) is a biological process that takes place in the absence of oxygen; converting manure into biogas.
- Same process and bacteria as a cow's stomach
- Control the process in a heated, sealed tank with mixers

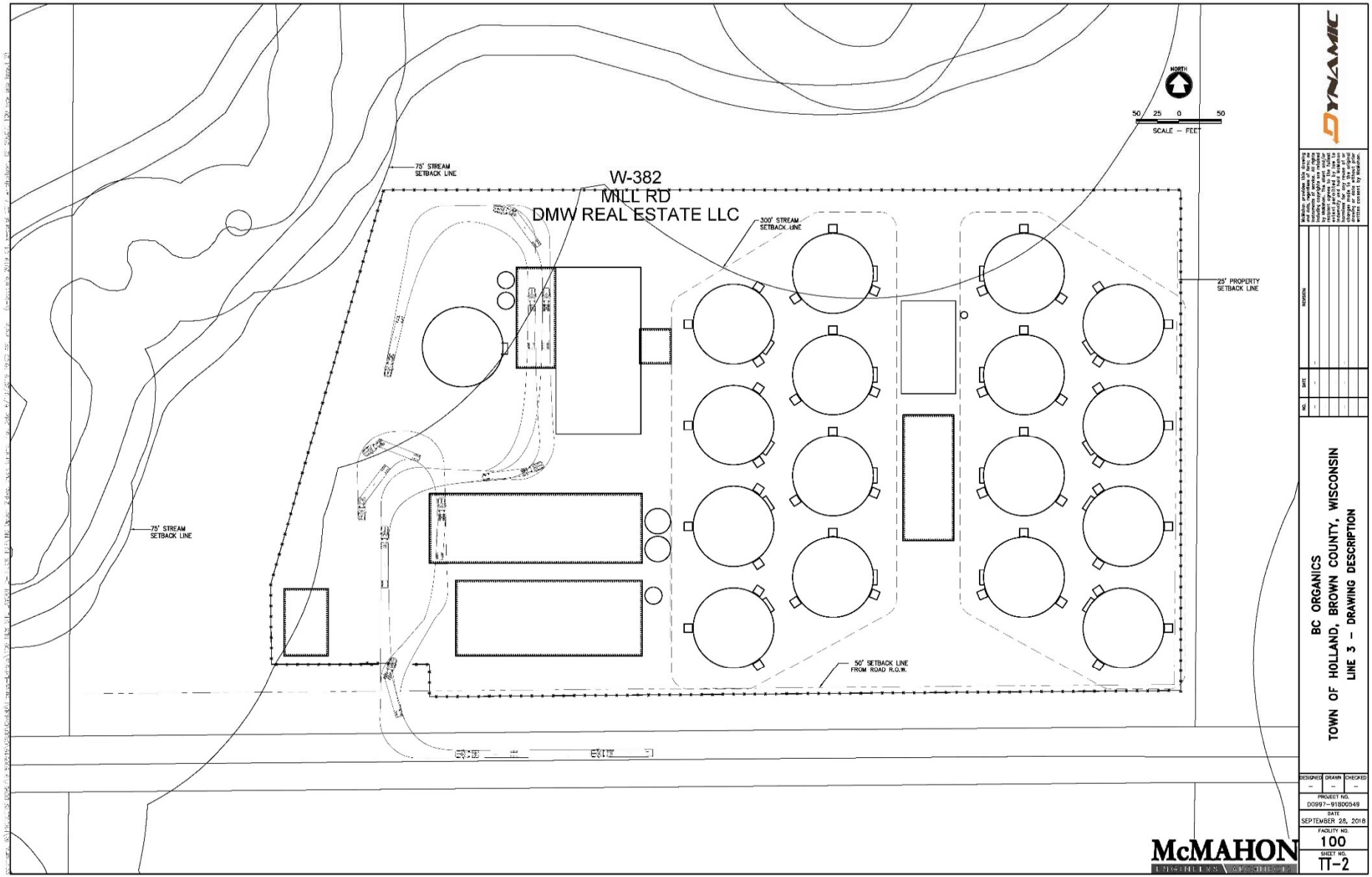
What is Biogas?

- Biogas is mixture of gases that are produced as a result of the decomposition of organic matter and is composed primarily of:
  - 50-70% Methane
  - 25-40% Carbon Dioxide
- Natural Gas is 90-97% methane
  - Reliable, efficient, and safe
    - Over 50% of homes heated with natural gas
    - Cooking, Hot Water Heater, Clothes Dryer

Conceptual AD Process Diagram



BC Organics Project Scaled Drawing



W:\PROJECTS\D0997\91800549\CADD\Civil\3D\Figures-Exhibits\100 NEW SITE LAYOUT 2-TRUCK TURNING Option 2.dwg, Truck Turning, Mon Jun 10 10:00:35 2019, CClements, 1:2

Site Features

- Located across the road from the proposed landfill
- Main entrance to site is County Rd. IL
- Located just west of Wiese Bros. Farm on Wiese Bros. Property
- Site lined with trees
- Close proximity to two largest participants allows 75% of the manure to be pumped to the site

BC Organics 3-D Rendering

BC Organics 3-D Rendering

Benefits of Project

The benefits that are realized resulting from the construction of this AD facility can be grouped into (3) three general categories:

1. Community
2. Farm
3. Environmental

Community Benefits

- **Revenue Source for Community**
  - BC Organics will agree to pay the town's portion of the property taxes even though the facility is property tax exempt
    - $60 million project * $2.95/$1,000 of assessed value = $177,000/yr. in Revenue
  - Project does not require sewer or water service from the town
  - Project does not utilize the schools

Community Benefits

- **Job Creation - Construction**
  - Over $25 million in work for local subcontractors
    - A typical installation uses more than 20 individual subcontractors
  - Large workforce will provide increased revenue to local hotels, restaurants, bars, gas stations, etc. during construction
  - 444 direct construction jobs created
  - An additional 300 indirect jobs created

Note: Job creation multipliers derived using IMPLAN 2.0 with 2007 data.

Community Benefits

Local Project Partners

Miron Construction, Neenah, WI – General Contractor

McMahon, Neenah, WI – Project Engineering Firm

US Biogas, Germantown, WI – Digester System Supplier

Durr Megtec, De Pere, WI – Biogas Upgrading System Supplier

FEECO, Green Bay, WI – Fiber Drying System Supplier

Patz, Pound, WI – Material Handling and Mixing Equipment

Dynamic Systems Management, Germantown, WI – Operations & Maintenance

Community Benefits

- **Job Creation - Operations**
  - Employee up to 20 full-time positions
    - Operations and maintenance staff of 8-10 people
    - 3-4 management positions
    - 5-7 truck driver positions
  - Utilize local subcontractors for support
    - Electrical, Mechanical, HVAC, Welding, Landscaping, Civil, etc.
  - Utilize area equipment suppliers, fab shops, building material supply stores for on-going support
  - Showcase for area manufacturers to demonstrate their products to potential buyers

Community Benefits

- **Odor Reduction**
  - The traditional way that manure is handled in agricultural operations is to land apply it to crop fields during the spring and fall; during this period the manure can be odorous and unpleasant for neighbors.
  - The anaerobic digestion process converts the odor producing compounds in manure into biogas.
  - The effluent from the digester smells similar to soil or wet leaves.

Farm Benefits

- **Improved Sustainability**
  - Project will reduce manure volume by 50%
  - With less volume to store and land apply, farms have more options on utilizing their nutrients
  - Better practices that deliver more of the nutrients to the crops with the use of more efficient and cost effective technologies
  - Changing tillage and cropping practices will help improve surface water quality with less soil loss in the spring and during heavy rain events
  - Helps farms manage the risk of changing regulations
  - Increases the long-term sustainability of multi-generational farms in the community

Environmental Benefits

- **Improve Air Quality**
  - Reduction in methane gas currently emitted to the atmosphere from the existing manure storage lagoons
  - Reduction in odor during storage and land application
- **Improve Water Quality**
  - Improves water quality in East River and Lower Fox River Watershed with less sediment and phosphorus entering the water from snow melts and heavy rain events
  - Preserves the aquifers with less groundwater use by the farms
    - Utilizing water from project rather than groundwater
- **Preserve agricultural land in Town**
  - With a more sustainable farming industry, more land will stay as cropland

Safety Features of Facility

- **General Site Safety**
  - Fencing around site
  - Security cameras for site and buildings
  - Buildings and entrances have letter/number code for quick identification
  - Training with the local fire department/first responders
  - Control system and cameras remotely accessed by plant operators
  - Daily site walk-throughs/checks
  - All visitors are escorted while on site

Safety Features of Facility

- **Spill Prevention/Containment**
  - All pipes are monitored for flow and pressure
  - All buildings are curbed with drains and sumps to contain any spills inside the building
    - Sumps are pumped back into process tanks
  - All building floors have moisture detection sensors
    - If moisture detected, all pumps stop and valves are closed
  - All digester tanks have redundant valves
    - In the event one leaks or fails to close, another valve can be utilized
  - Tank levels are monitored for unexpected change
    - Control system stops pumps and closes valves if unexpected change in tank level
  - Sensors in place to detect equipment malfunction
  - Berm around site to provide secondary containment

Safety Features of Facility

- **Biogas Safety**
  - System operated at 0.1 psi for safety
  - System is anaerobic which means “without oxygen”
    - Need fuel, oxygen, and an ignition source for a fire
  - Use of explosion proof motors and instruments in areas classified as hazardous
  - Biogas flare system activated on high pressure
  - Automatic pressure relief valves on tanks
  - Methane and hydrogen sulfide detection
  - Emergency back-up generator
    - Provides power to control system, biogas system, and digesters in the event of a power outage

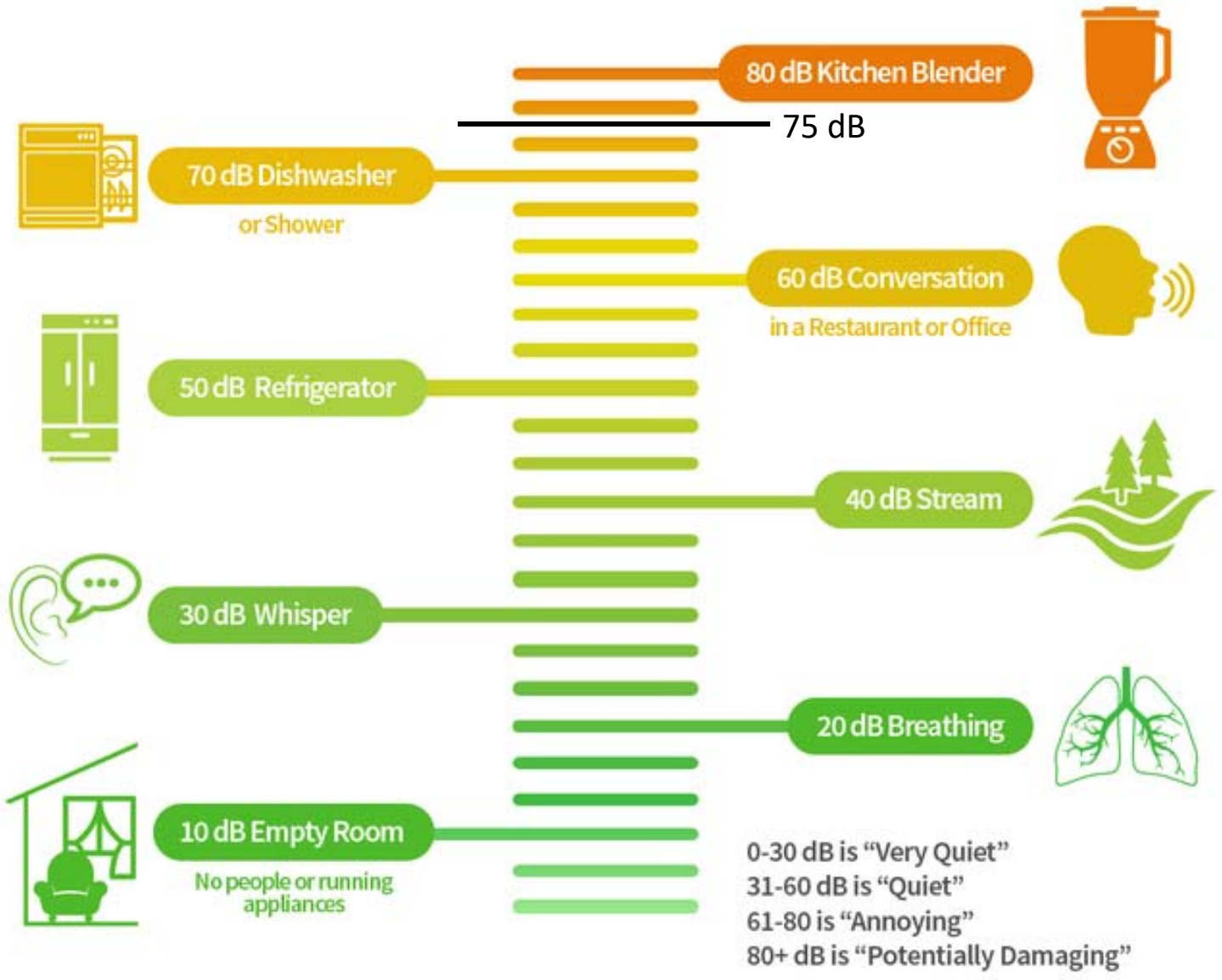
Safety Features of Facility

- **Personnel Safety**
  - System designed to minimize confined spaces
  - System designed for safe and efficient service based on previous operating experience
  - OSHA training
  - Site specific training
  - 4-gas analyzer to detect hazardous conditions, PPE, Harness
  - Limit noise of equipment
  - WDNR Certified Wastewater Operator on staff
  - Work closely with Dr. John Katers, Dean of the College of Science and Technology at UW-GB, on digester issues

BC Organics Operational Plan

- **Hours of Operation**
  - The facility will operate 24/7/365
- **Meet all Federal, State, and Local permitting requirements**
- **Limit noise to 75 dB at the property line**
  - Maximum amount of noise is between a dishwasher and a blender

BC Organics Operational Plan



Required Permits

- **Wisconsin Pollutant Discharge Elimination System (WPDES) Permit**
  - Requires reporting of volumes processed by the facility
  - Requires testing of products sent back to the farms
  - Monitors the volume and quality of the water discharged
  - Approval of construction drawings prior to start of construction
  - Requires plant to have a DNR certified wastewater operator

- **WDNR Air Permit**
  - Modeling of all emissions sources to quantify projected new emissions from plant prior to start of construction
  - Monthly monitoring and reporting of emissions

- **WDNR Stormwater Permit**
  - Ensures the site is designed to treat stormwater prior to flowing off site

Required Permits Continued…

- **WDNR Erosion Control Permit**
  - Ensures protections in place during construction to prevent soil loss
- **WDNR Chapter 30 Permit**
  - Ensures protections are in place with minimal disturbance when installing discharge pipe in stream bank
  - Requires concurrence from the U.S. Army Corps of Engineers
- **WDNR Well Permit**
  - Ensures the well is installed properly
- **Brown County Private Onsite Wastewater Treatment System (POWTS) Permit**
  - Ensures wastewater from on-site restrooms is treated and stored as required
- **Brown County Shoreland Permit**
  - Ensures protections in place to prevent sediment loss to the stream

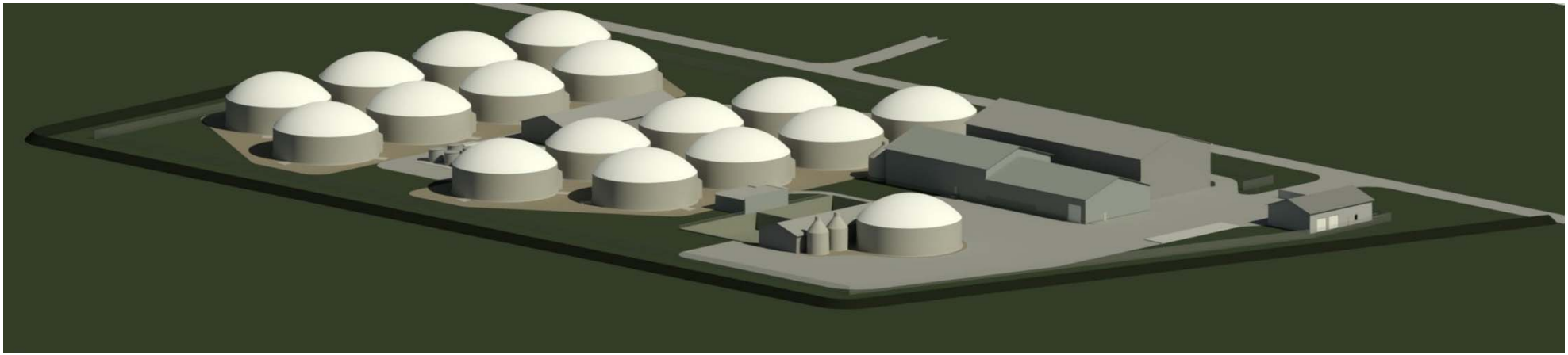
Required Permits Continued…

- **Public Service Commission Pipeline Approval**
  - Approval of the design and interconnection for the natural gas gathering line
- **Wisconsin Department of Commerce Building Approval**
  - Review of all buildings to ensure they meet codes and life safety requirements
- **Wisconsin Department of Agriculture, Trade, and Consumer Protection (DATCP) Scale Permit**
  - Ensures the truck scale is installed correctly and measures accurately
- **Town of Wrightstown Building Permit**
  - Ensures project is built to code

Summary

- AD Process is a simple and proven process
- Project located across from the landfill on Wiese Bros. Property
- Project will provide an economic benefit to the town and surrounding communities
- Creates 20 full-time long-term jobs in the community
- Benefits the farms with volume reduction
- Improves water quality in Lower Fox River Watershed

BC Organics Project



Questions/Comments?